

TECHNICAL REPORT

Ice Bulletins for the Antarctic Shipping Season 2021 – 2022



Compiled by Dr Jan L Lieser

Antarctic Meteorology Section — Bureau of Meteorology

Ice Bulletins for the Antarctic shipping season 2021–2022

Compiled by: Dr Jan L Lieser (Jan.Lieser@bom.gov.au)

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For further enquiries, please contact Dr Jan Lieser at antforecasters@bom.gov.au

Executive summary

The Ice Bulletins compiled in this document are weekly reports on ice conditions for predominantly East Antarctica, including sub-weekly updates. They were prepared to support ship operations in East Antarctica during the 2021/2022 shipping season. These bulletins were primarily used to inform the Australian Antarctic program, but were provided to other Antarctic operators as well.

Throughout the shipping season, the focus of individual bulletins shifts with the main purpose of respective voyages of the Australian Antarctic program. The voyages of the 2021/2022 season were (totalling more than 68 950 km, more than 37 230 nautical miles):

No.	Depart port	Main Purpose	Return to port
V1	17/12/2021	Casey - Sustainment and Traverse Delivery	27/01/2022
V2	23/12/2021	Davis - Helicopter Deployment; Casey - Refuel; Marine Science commissioning	30/01/2022
V3	29/12/2021	Davis - Refuel	29/01/2022
V4	09/02/2022	Mawson, Davis - Dry Cargo Resupplies	18/03/2022
V5	16/02/2022	Davis - Helicopter and Summer Personnel Retrieval; Macquarie Island - Resupply	27/03/2022
V6	10/02/2022	Mawson - Refuel; Davis - Summer Personnel Retrieval	22/03/2022

In 2021, total sea-ice cover around the Antarctic continent was recovering from below average conditions early in the year to slightly above average conditions in August before collapsing to record low conditions towards the end of the year. As the sea-ice distribution is not only determined by oceanic forcing (currents and waves) but also by atmospheric drivers (large-scale and regional wind pattern) this year appears to be dominated by an intricate interplay of various climate modes of the Southern Hemisphere including the Southern Annual Mode and atmospheric circulation patterns typically associated with La Niña events amongst others.

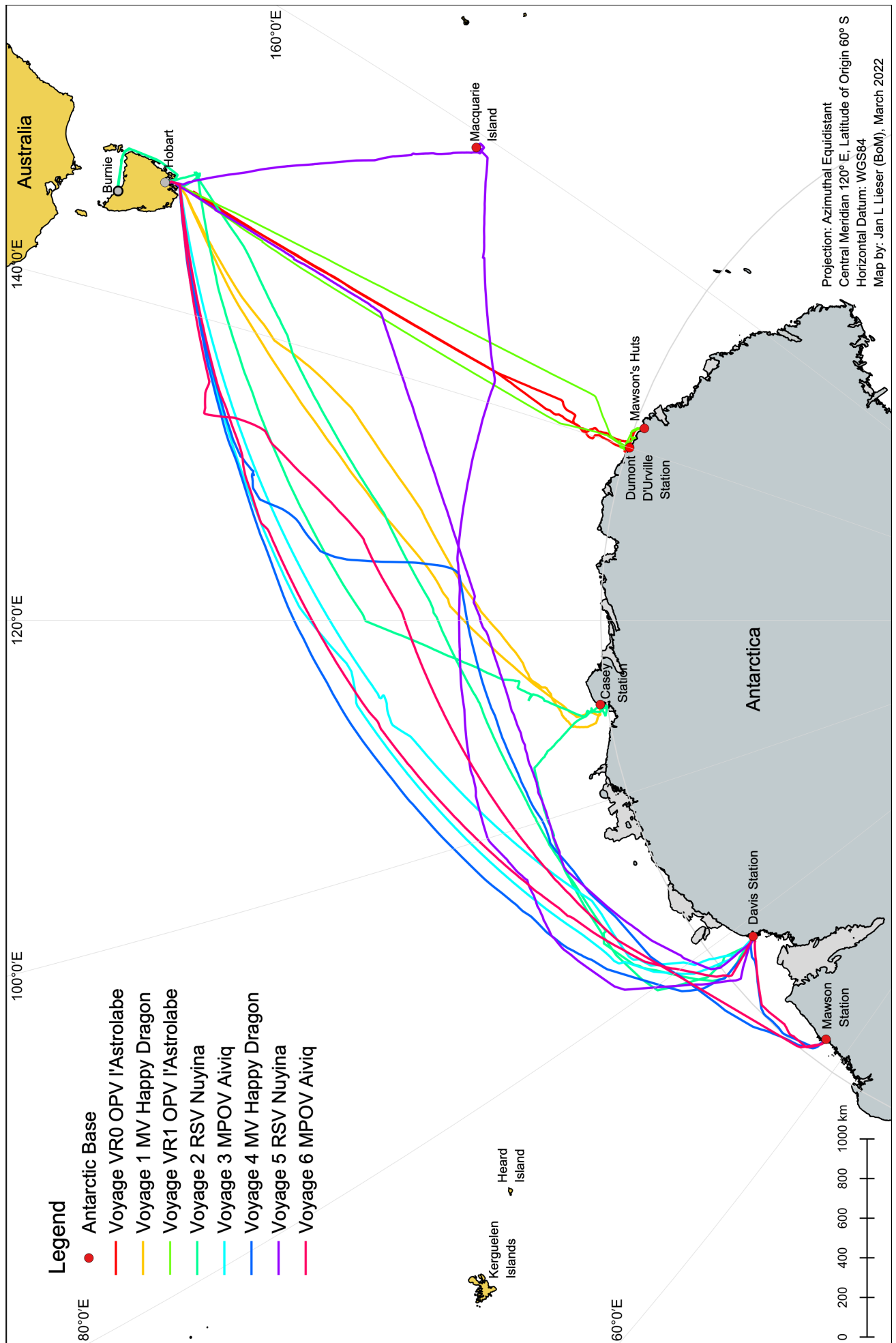
The annual daily sea-ice extent minimum was 2.36×10^6 km² and observed on 19 February 2021, which is well below the median value of minimum sea-ice extent. On the same day, the annual minimum sea-ice area was also measured to be 1.38×10^6 km², the second lowest on record. The annual daily sea-ice extent maximum was 18.79×10^6 km² and observed on 30 August 2021, the second earliest on record. This maximum sea-ice extent value is also the median of the 43-year observation record. However, the annual maximum sea-ice area was observed already on 25 August 2021 at 15.21×10^6 km², ranking in the top third.

The sea-ice extent of the year 2021 in context: up until 2014, pan-Antarctic sea-ice extent was on a slightly upwards trend and reached its highest recorded daily extent on 20 September 2014. It has since then turned to record minimum conditions when it reached the lowest recorded daily extent on 1 March 2017. Since then, it appears to be recovering slightly and sat in 2021 roughly at the average of the long-term record during autumn and winter before collapsing to almost record low levels during spring and summer.

During 2021, notable new large tabular icebergs calved off the Larsen-D Ice Shelf (A-70, A-71, A-72 and A-73 in January), off Iceberg A-68A (A-68G, A-68H, A-68I, A-68J, A-68K, A-68L and A-68M in January; A-68N A-68O, A-68P in February), the Brunt Ice Shelf (A-74 in February), the Larsen-F Ice Shelf (D-75 in March), the Ronne Ice Shelf (A-76 and breaking into A-76A, A-76B and A-76C in May), the King Baudouin Ice Shelf (D-29 immediately breaking into D-29A, D-29B and D-29C in May), the Borchgrevink Ice Shelf (D-30 immediately breaking into D-30A and D-30B in June), the Ekström Ice Shelf (A-77 in August), the Jelbart Ice Shelf (A-78 in August) and off Iceberg A-69B (A-69C in October).

During the first quarter of 2022, notable new large tabular icebergs calved off the Fimbul Ice Shelf (D-31 in January), the Larsen-D Ice Shelf (A-79 in March), the Glenzer Ice Shelf (C-37 in March) and the Conger Ice Shelf (C-38 and subsequently breaking into C-38A and C-38B in March).

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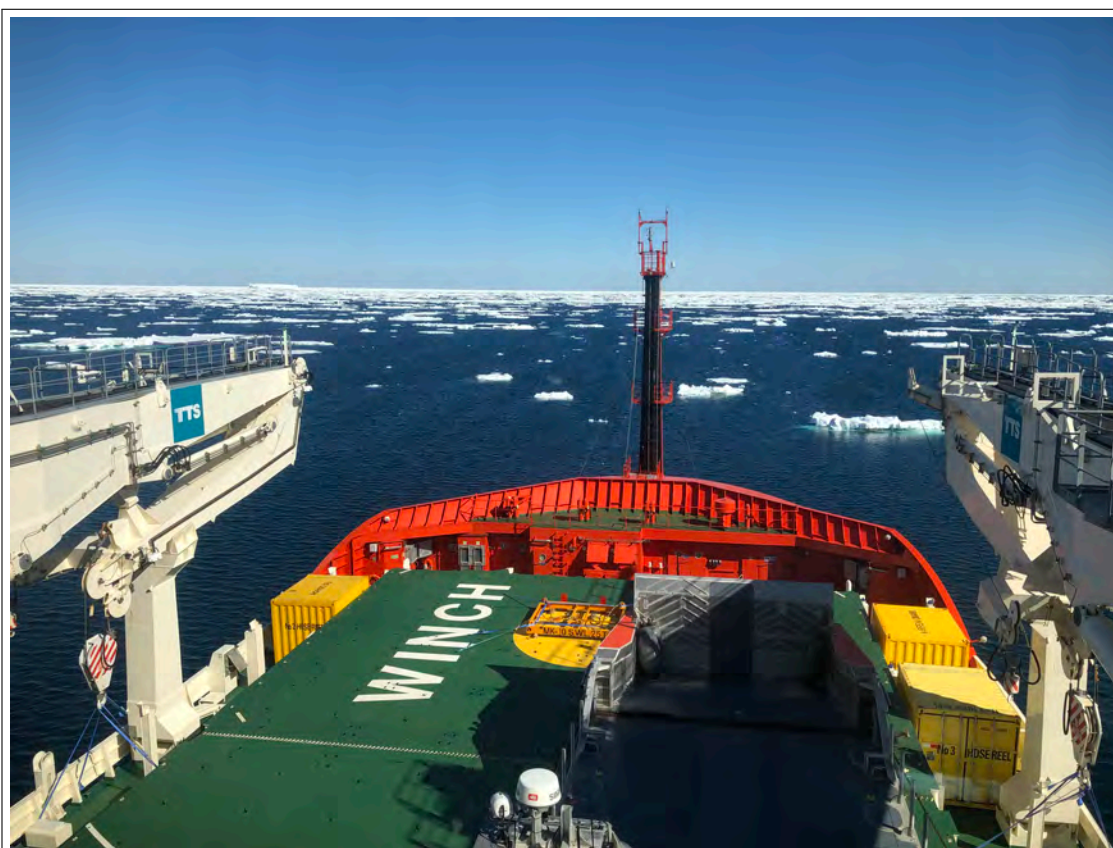
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MPOV Aiviq, RSV Nuyina and MV Happy Dragon alongside Macquarie Wharf, Hobart © Jan L Lieser

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RSV Nuyina - first ever sea-ice encounter © Gerry O'Doherty/Master RSV Nuyina.

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MPOV Aiviq at Davis Research Station © Kirk Yatras/Australian Antarctic Program.

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MV Happy Dragon at Casey Research Station © Dave Buller/Australian Antarctic Program.

Frequently used acronyms

AMSR-2 ¹	Advanced Microwave Scanning Radiometer 2
AWS	Automatic Weather Station
BoM	Bureau of Meteorology (AUS)
DNB	Day-Night Band (panchromatic VIIRS channel)
ESA	European Space Agency
EW	Extra Wide swath (a SAR mode)
GMRT	Global Multi-Resolution Topography
ICDC	Integrated Climate Data Centre, University of Hamburg (GER)
IW	Interferometric Wide swath (a SAR mode)
JAXA	Japan Aerospace Exploration Agency
MODIS ²	Moderate Resolution Imaging Spectroradiometer
NASA	National Aeronautics and Space Administration (USA)
OLCI	Ocean and Land Colour Instrument (instrument payload on Sentinel-3 satellites)
OLI	Operational Land Imager (instrument payload on Landsat-8 satellite)
SAR	Synthetic Aperture RADAR
Suomi NPP	Suomi National Polar-orbiting Partnership
USGS	United States Geological Survey
VIIRS	Visible Infrared Imaging Radiometer Suite
VIS	Visible Spectrum

Data sources

The authors acknowledge the use of data from:

NASA Worldview application (<https://worldview.earthdata.nasa.gov>), part of the NASA Earth Observing System Data and Information System (EOSDIS);

Landsat-8 and Landsat-9 courtesy of the U.S. Geological Survey;

Copernicus programme Sentinel satellites © ESA (2021, 2022);

SCAR Antarctic Digital Database (2021).

About this compendium

This compilation is the third volume of Ice Bulletins prepared by the Antarctic Meteorology Section's Ice Service at the Australian Bureau of Meteorology. It is a continuation of previous years' Technical Reports, which were also provided by the Sea Ice Service of the Antarctic Climate & Ecosystems Cooperative Research Centre at the University of Tasmania.

The first bulletin of this compilation was issued on 15 April 2021, after the 2020/2021 Australian Antarctic shipping season ended.

¹ The AMSR-2 instrument is onboard the GCOM-W1 satellite, which is operated by JAXA.

² The MODIS instrument is operational on two satellites: AQUA and TERRA, both operated by NASA.

Ice Bulletin: Davis Station

Issued: Thursday 15th April 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Ingrid Christensen Coast between the Amery Ice Shelf in the southwest and the West Ice Shelf in the northeast. Fast ice areas are outlined by red lines.

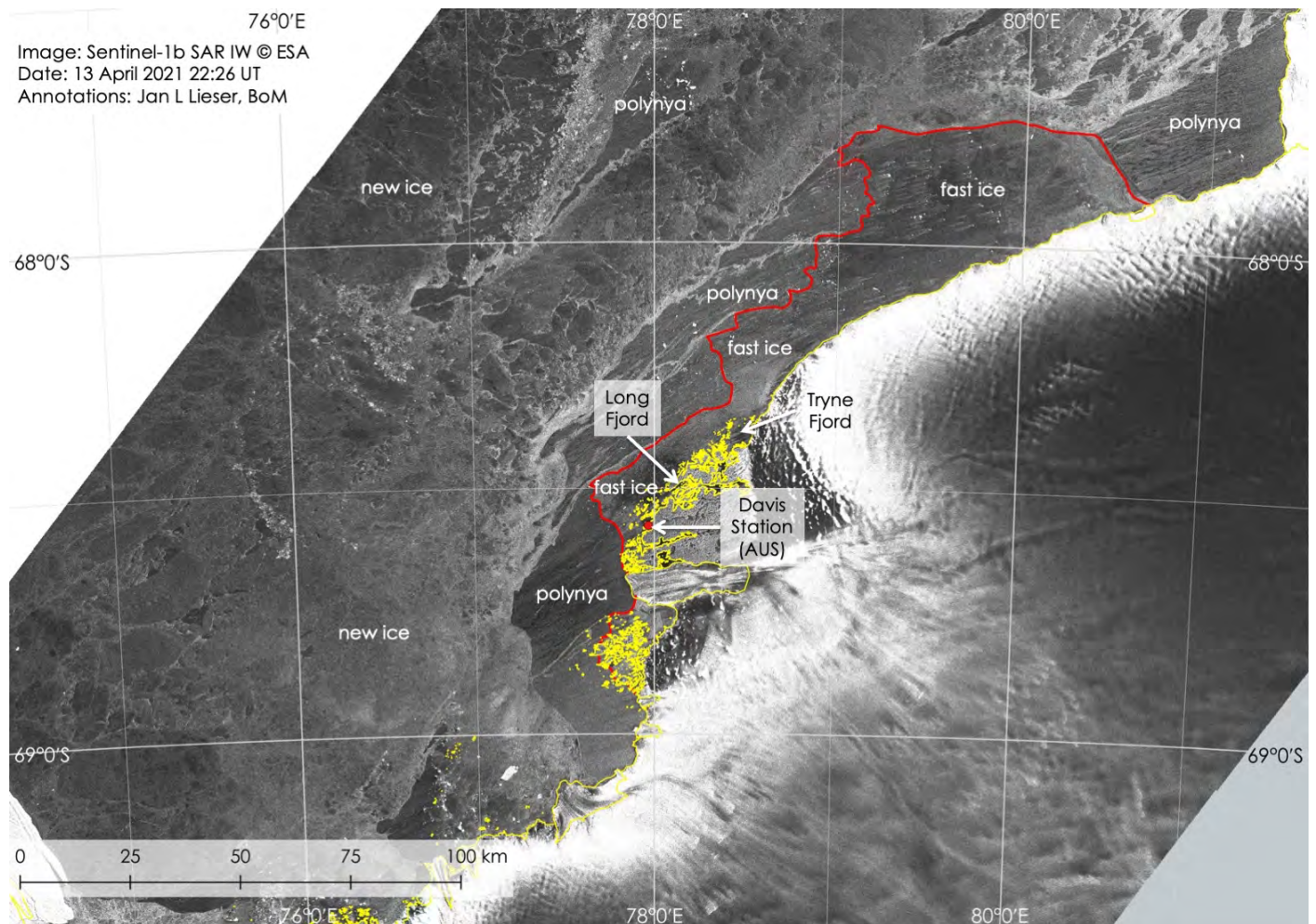


Figure 1: Sentinel-1b SAR IW data acquired 13 April 2021 at 22:26 UT and provided by PolarView.

Off Davis Station and around the offshore islands, fast ice has consolidated in recent weeks and displays more homogeneous surface conditions now. Off the Vestfold Hills, the majority of icebergs offshore is frozen in. Off the fast-ice edge, some icebergs are not grounded. Off the fast-ice edge, a polynya is present.

Northeast of Davis Station, Long Fjord is closed off and frozen over. Tryne Fjord is also covered by fast ice.

Ice Bulletin: Casey Station

Issued: Thursday 15th April 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Knox Coast west of Casey Station. The median sea-ice extent for April is shown as a cyan line.

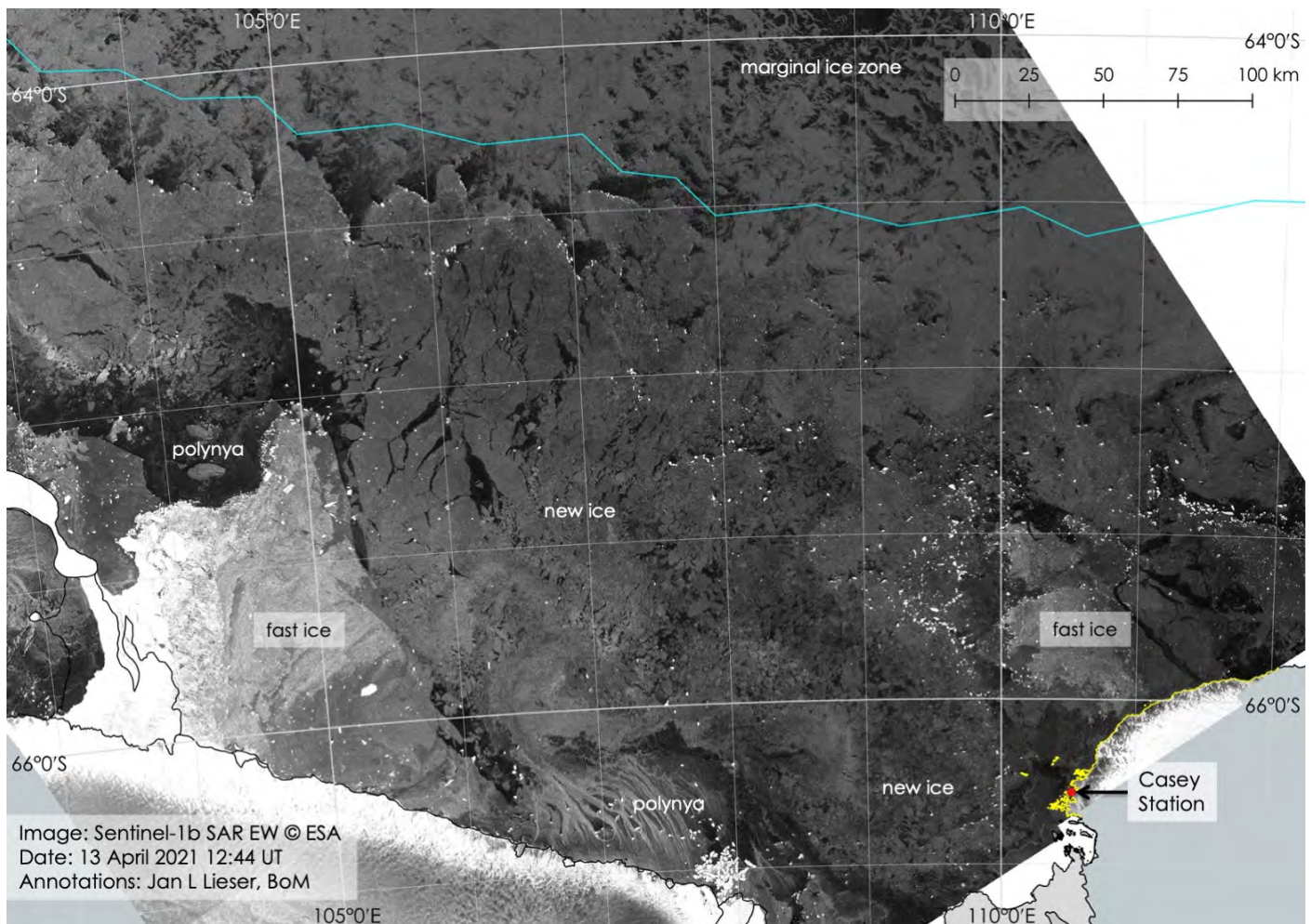


Figure 1: Sentinel-1b SAR EW data acquired 13 April 2021 at 12:44 UT and provided by PolarView.

Off Casey Station and around the offshore islands, fast ice is consolidating in recent weeks. North of the station, fast ice is growing around icebergs grounded on Peterson Bank. Within the new sea ice, many small to medium-sized icebergs are present.

The marginal ice zone has already advanced northward of the April median sea-ice extent and the northern sea-ice edge (outside of Figure 1) is up to 70 nautical miles north of this median ice extent.

Ice Bulletin: Iceberg A-68A

Issued: Thursday 15th April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data of the northern Weddell Sea/southern South Atlantic.

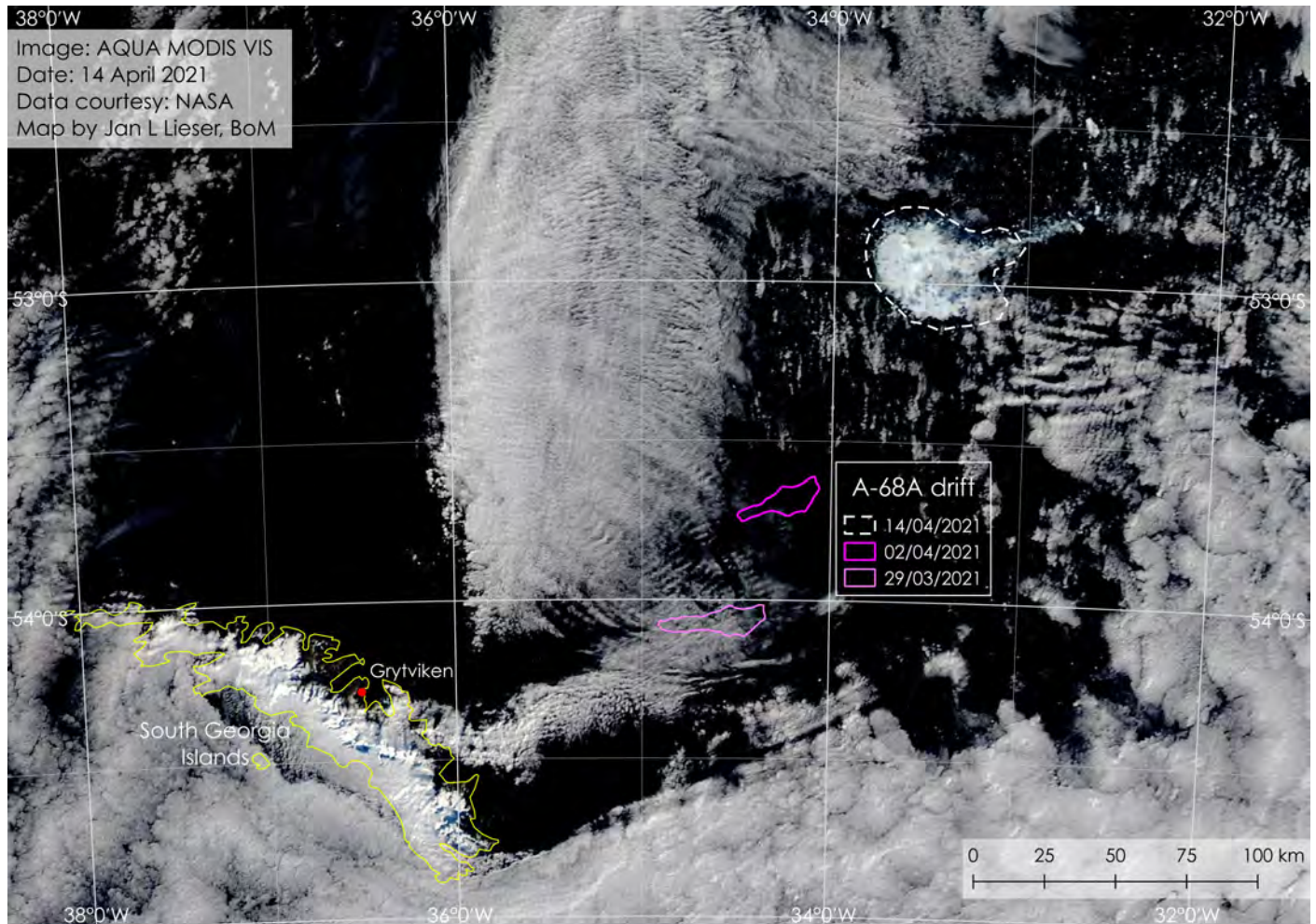


Figure 1: AQUA MODIS VIS data acquired 14 April 2021 and provided by NASA.

The last remaining large tabular iceberg of the A-68 family, A-68A, appears to have started disintegrating on 10 April 2021 and is now below individually trackable size. As a result, many 100s of icebergs are moving freely in the waters predominantly northeast of the South Georgia Islands.

Iceberg A-68A has therefore completed its journey and travelled more than 4 250 km as a from space trackable feature for 45 months (between mid-July 2017 and mid-April 2021). In July 2017, the area of the iceberg was more than 5 670 km² which shrank to roughly 180 km² by early April 2021 before shattering into pieces.

But the number of individual small to medium-sized icebergs is still significant and they continue to pose a major hazard for shipping in the vicinity of the South Georgia Islands and further afield.

Ice Bulletin: Mawson Station

Issued: Friday 16th April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The fast-ice edge is marked by a red outline. The median sea-ice extent for April is included as a cyan line.

Off the fast-ice edge, new sea ice has pushed residual ice westward out of the frame shown in Figure 1.

Northwest of the station, a small polynya is reduced in size but active. Similarly, the polynya east of the station (the Cape Darnley polynya) is reduced in size but still exporting new sea ice north-westward.

The northern sea-ice edge appears fuzzy as strips and patches of the marginal ice zone are expanding northward and beyond (northward of) the April median sea-ice extent already.

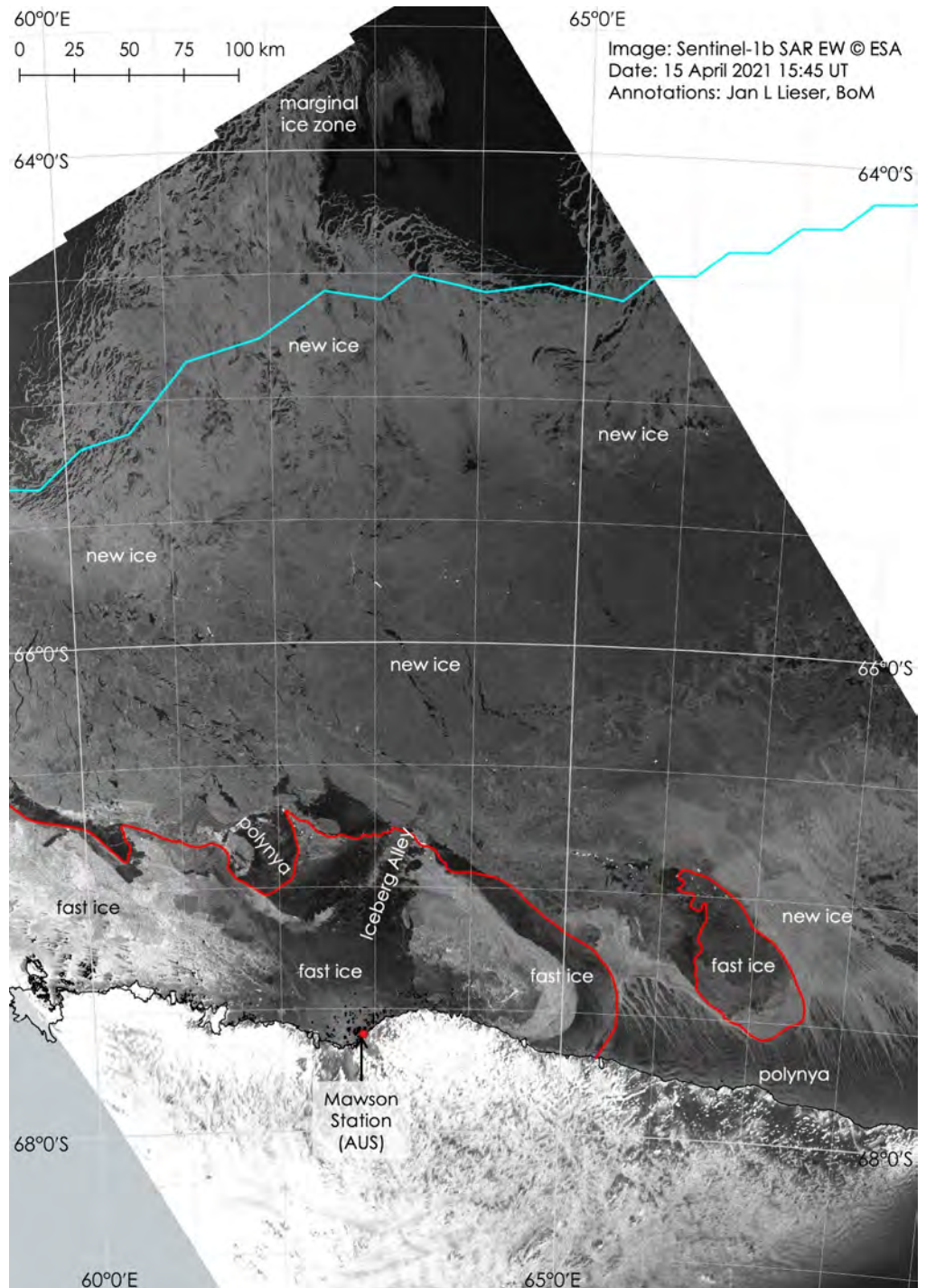


Figure 1: Sentinel-1b SAR EW data acquired 15 April 2021 at 15:45 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Iceberg A-68A

Issued: Monday 19th April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data of the northern Weddell Sea/southern South Atlantic.

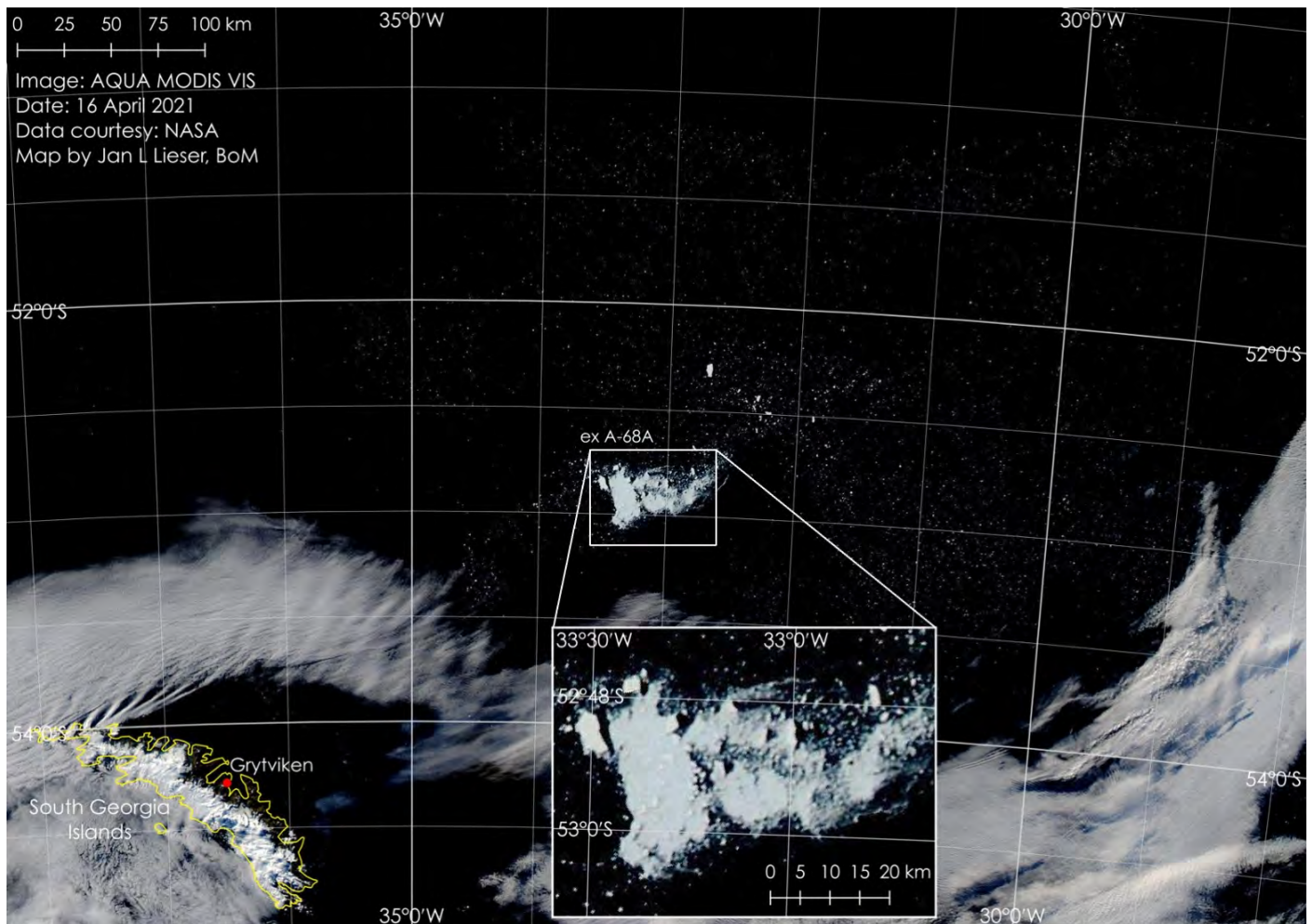


Figure 1: AQUA MODIS VIS data acquired 16 April 2021 and provided by NASA.

This largely cloud-free image of the region northeast of South Georgia Islands clearly shows the extent of glacial debris that is the result of the disintegration of iceberg A-68A. The inset highlights that there remains no iceberg of individually trackable size. The largest remaining piece is located in the figure along 33°30'W and just south of 52°48'S (see inset) and is roughly 19 km² (icebergs are tracked by the US National Ice Center when they are at least 20 square nautical miles, which is roughly 68.5 km²).

Many 100s of icebergs are moving freely in the waters predominantly northeast of the South Georgia Islands and they continue to pose a significant hazard for shipping in the vicinity of the islands and further afield.

Iceberg A-68A travelled more than 4 250 km as a trackable feature for 45 months (from mid-July 2017 to mid-April 2021). When it first calved off the Larsen-C Ice Shelf in July 2017, the area of the iceberg was more than 5 670 km². It shrank to roughly 180 km² by early April 2021 before shattering into pieces.

Ice Bulletin: Davis Station

Issued: Wednesday 21st April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. Fast-ice areas are outlined by red lines.

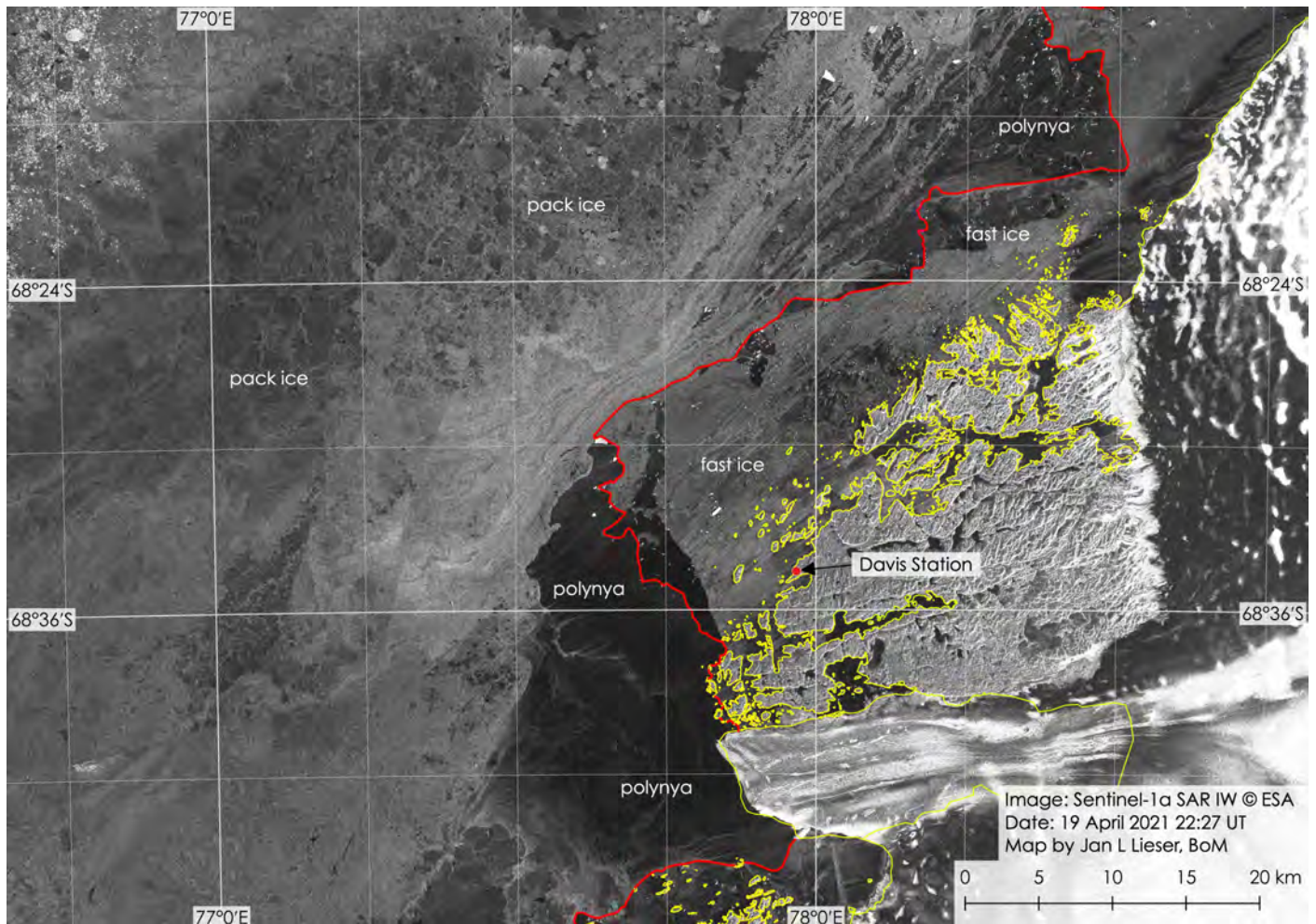


Figure 1: Sentinel-1a SAR IW data acquired 19 April 2021 at 22:27 UT and provided by PolarView.

Off Davis Station and around the offshore islands, fast ice continues to consolidate and displays more homogeneous surface conditions. Off the Vestfold Hills, the majority of icebergs offshore is frozen in. Off the fast-ice edge, some icebergs are not grounded. Off the southwest facing fast-ice edge, polynyas are present as the pack ice is generally drifting south-westward offshore.

Ice Bulletin: Casey Station

Issued: Wednesday 21st April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. Fast-ice areas are outlined by red lines.

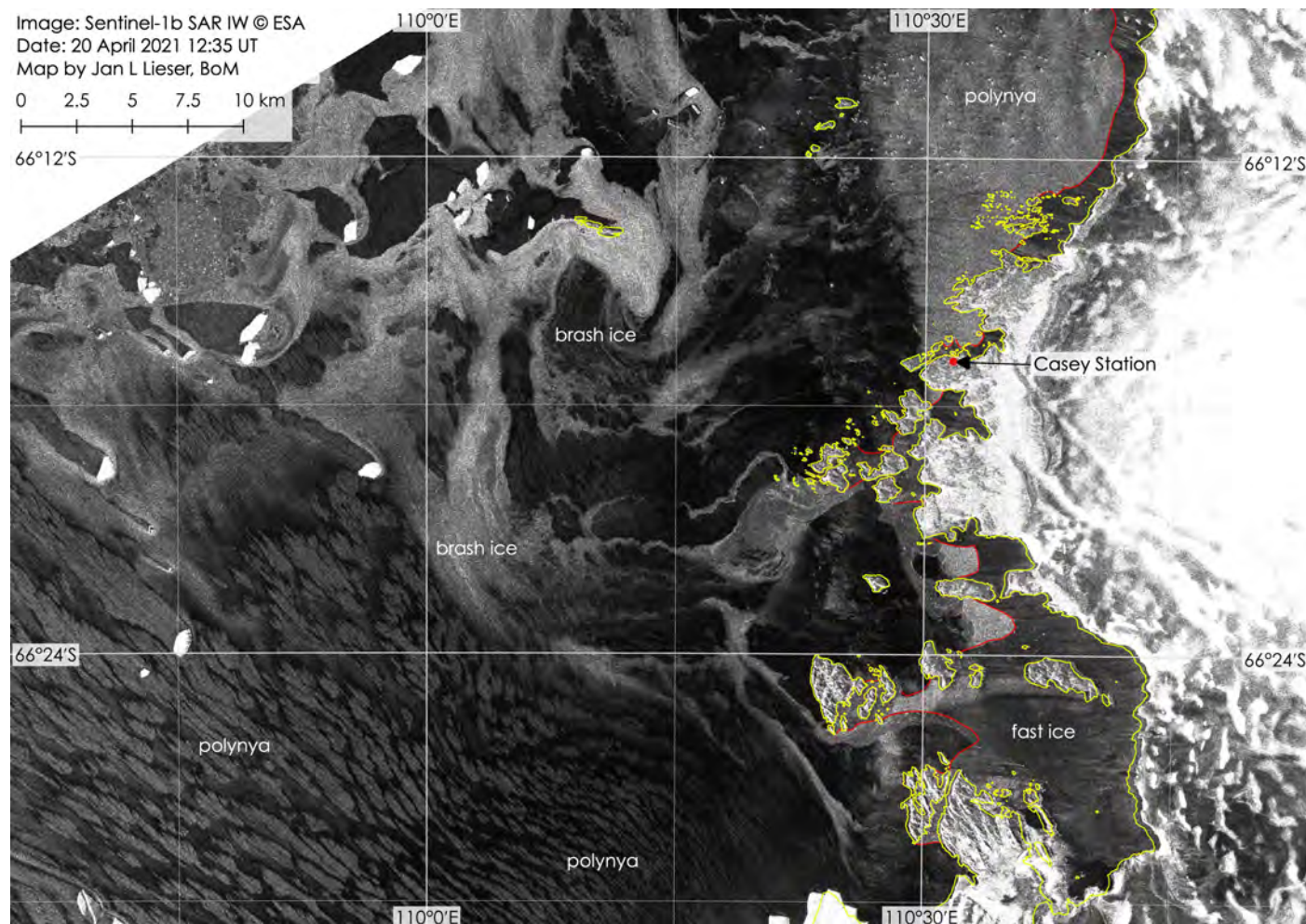


Figure 1: Sentinel-1b SAR IW data acquired 20 April 2021 at 12:35 UT and provided by PolarView.

Off Casey Station and around the offshore islands, fast ice is growing and breaking out. Only sheltered near-shore bays are covered by more permanent fast ice.

Offshore, Vincennes Bay is largely polynya area where brash ice forms and is exported westward. Some icebergs can be seen drifting in the polynya.

Ice Bulletin: D'Urville Sea

Issued: Friday 23rd April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of southern D'Urville Sea between Dumont D'Urville Station and Mawsons Huts.

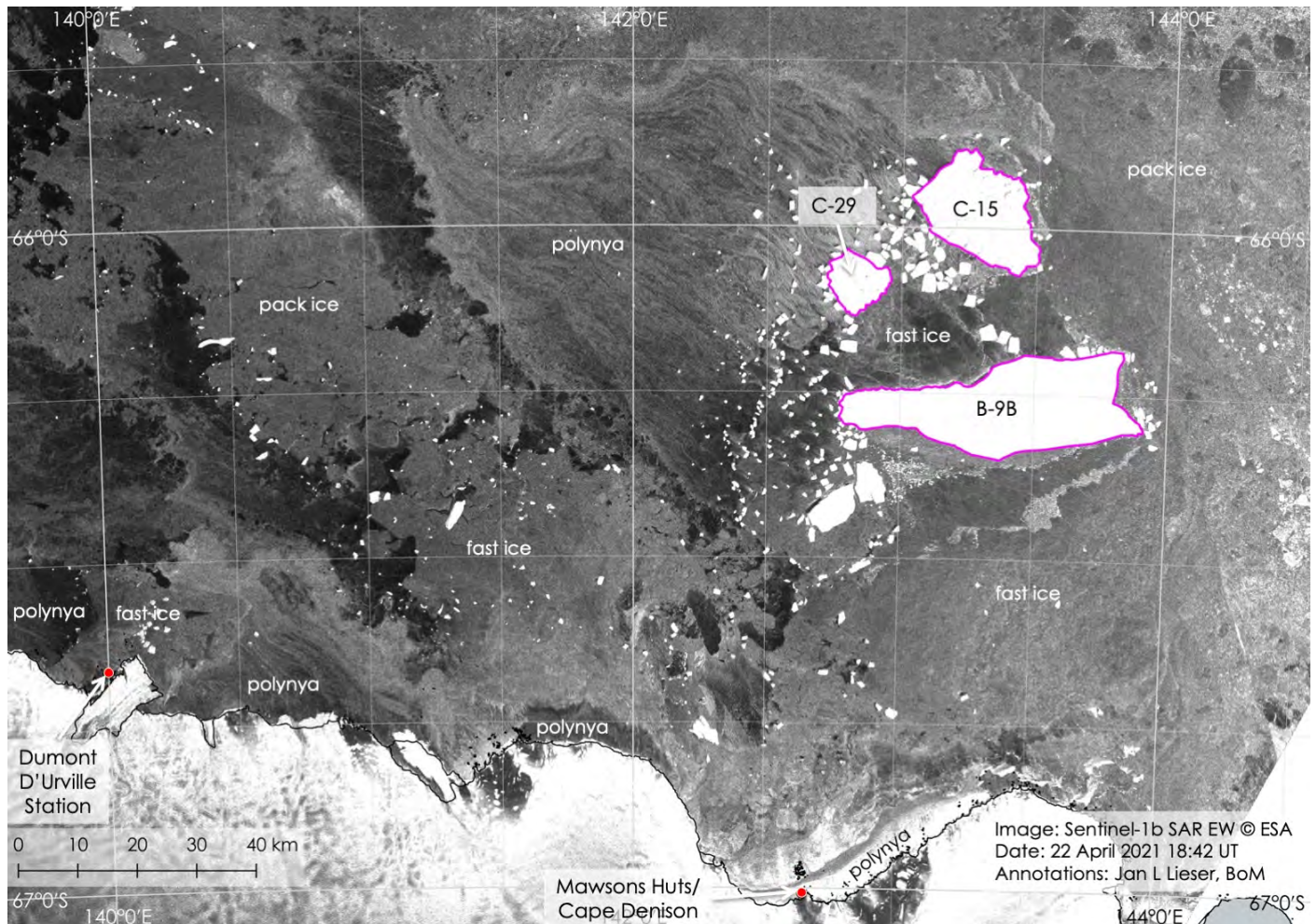


Figure 1: Sentinel-1b SAR EW data acquired 22 April 2021 at 18:42 UT and provided by PolarView.

Off Cape Denison, a small polynya remains active. Further north, icebergs B-9B and C-15 have not moved and are surrounded by fast ice, but iceberg C-29 keeps pushing north-westward (roughly 1.3 km during the past two weeks) and is displacing grounded icebergs at its western edge.

Off Dumont D'Urville Station, fast ice has grown between grounded icebergs offshore, but two polynyas are still active east and west of the station.

Further north, the boundary between high-concentration pack ice and the marginal ice zone is approaching the median sea-ice extent for April (not shown in the figure) while the northern sea-ice edge (the northern edge of the marginal ice zone) is already north of the median extent.

Ice Bulletin: Mawson Station

Issued: Tuesday 27th April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows Day-Night-Band data of Mawson Coast and offshore. Fast-ice areas are outlined by red lines. The median sea-ice extent is marked by the cyan line. The drift of iceberg D-27 during April is included as colour-coded shapes.

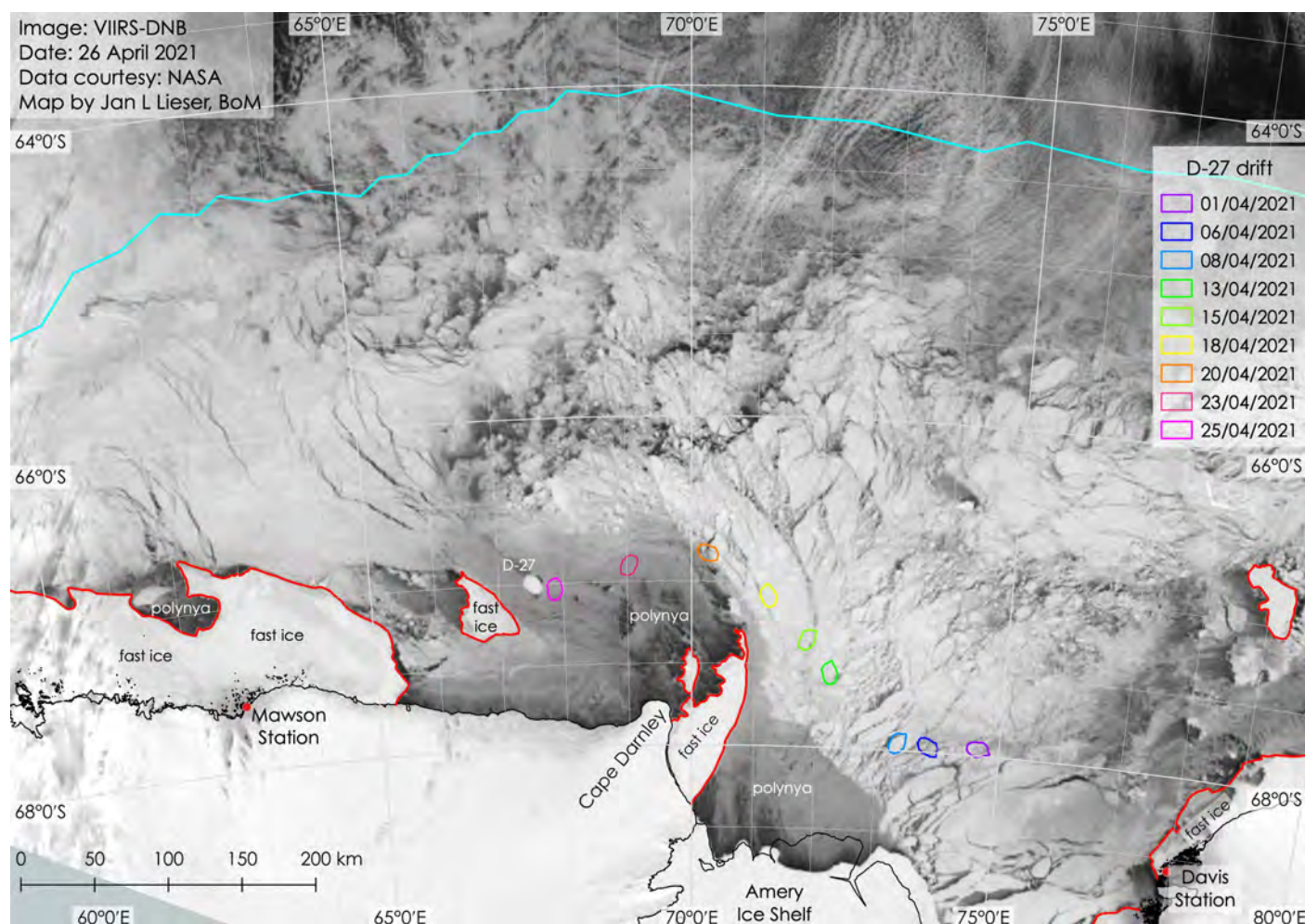


Figure 1: VIIRS Day-Night-Band data acquired 26 April 2021 and provided by NASA.

Off Mawson Station, the fast-ice edge has assumed its typical shape for the winter season.

Further north, the sea-ice edge has advanced beyond (north of) the median sea-ice edge (the cyan line). Off the Amery Ice Shelf and north of Cape Darnley, two polynyas are active and producing new sea ice.

During April, iceberg D-27 has drifted out of the Amery Basin (off the Amery Ice Shelf) and continues its way westward off Mawson Coast.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Wednesday 28th April 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Casey Station and offshore. Fast-ice areas are outlined by red lines.

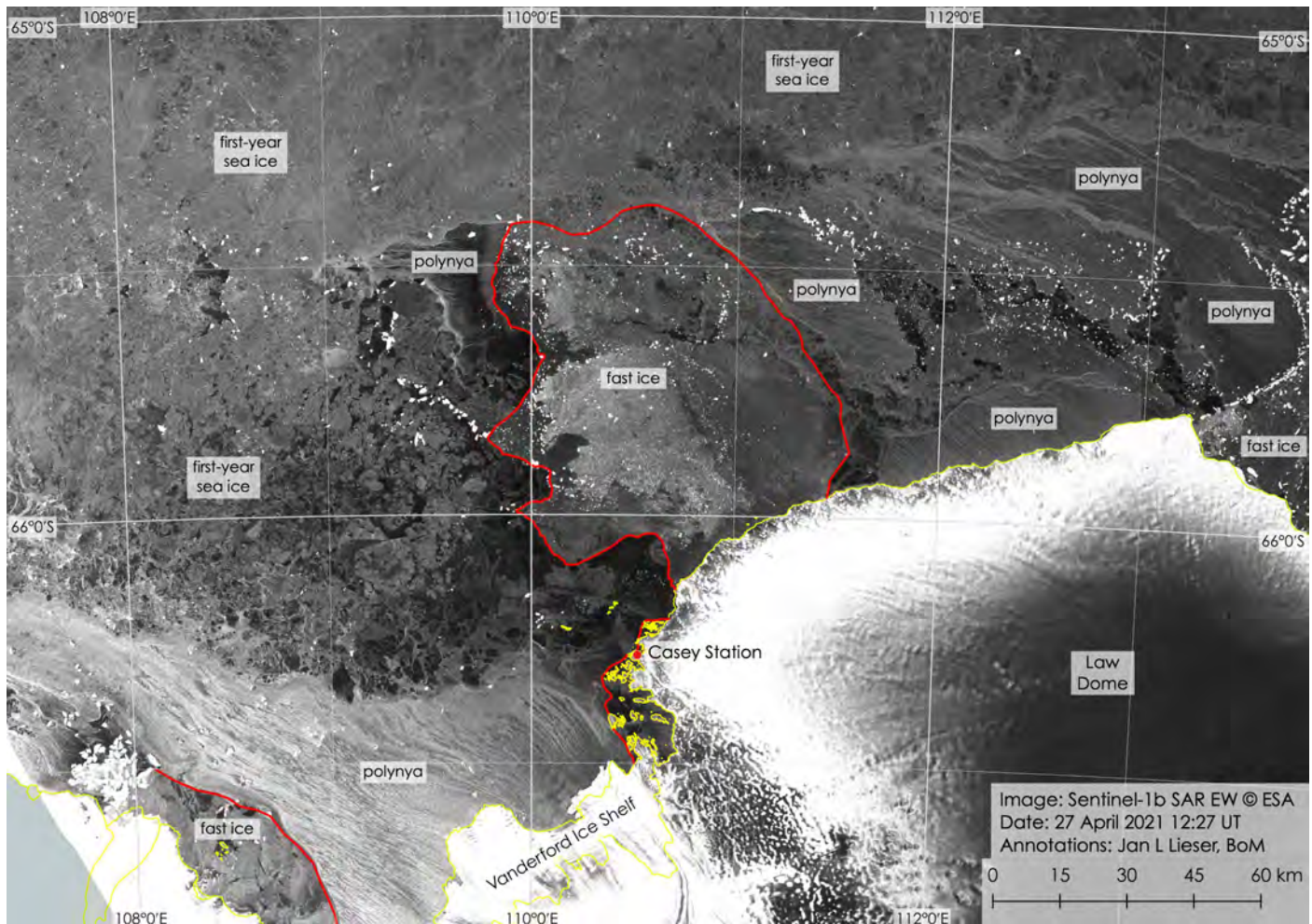


Figure 1: Sentinel-1b SAR EW data acquired 27 April 2021 at 12:27 UT and provided by PolarView.

Off Casey Station and around the offshore islands, fast ice is growing. North of the station, old fast ice is consolidating off the north-western flank of Law Dome. North of the dome, many areas of open water (polynya) remain scattered.

Off Vanderford Ice Shelf, a largely polynya is active and brash ice is exported westward.

Many icebergs are present in the region of which the majority appears grounded north of Law Dome and on Peterson Bank (northwest of the dome). Some icebergs are drifting in the southern polynya.

Further north, the sea-ice edge (the northern edge of the marginal ice zone; not shown in the figure) is currently at the median sea-ice extent for May already.

Ice Bulletin: Davis Station

Issued: Thursday 29th April 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and surrounds. Fast-ice areas are outlined by red lines.

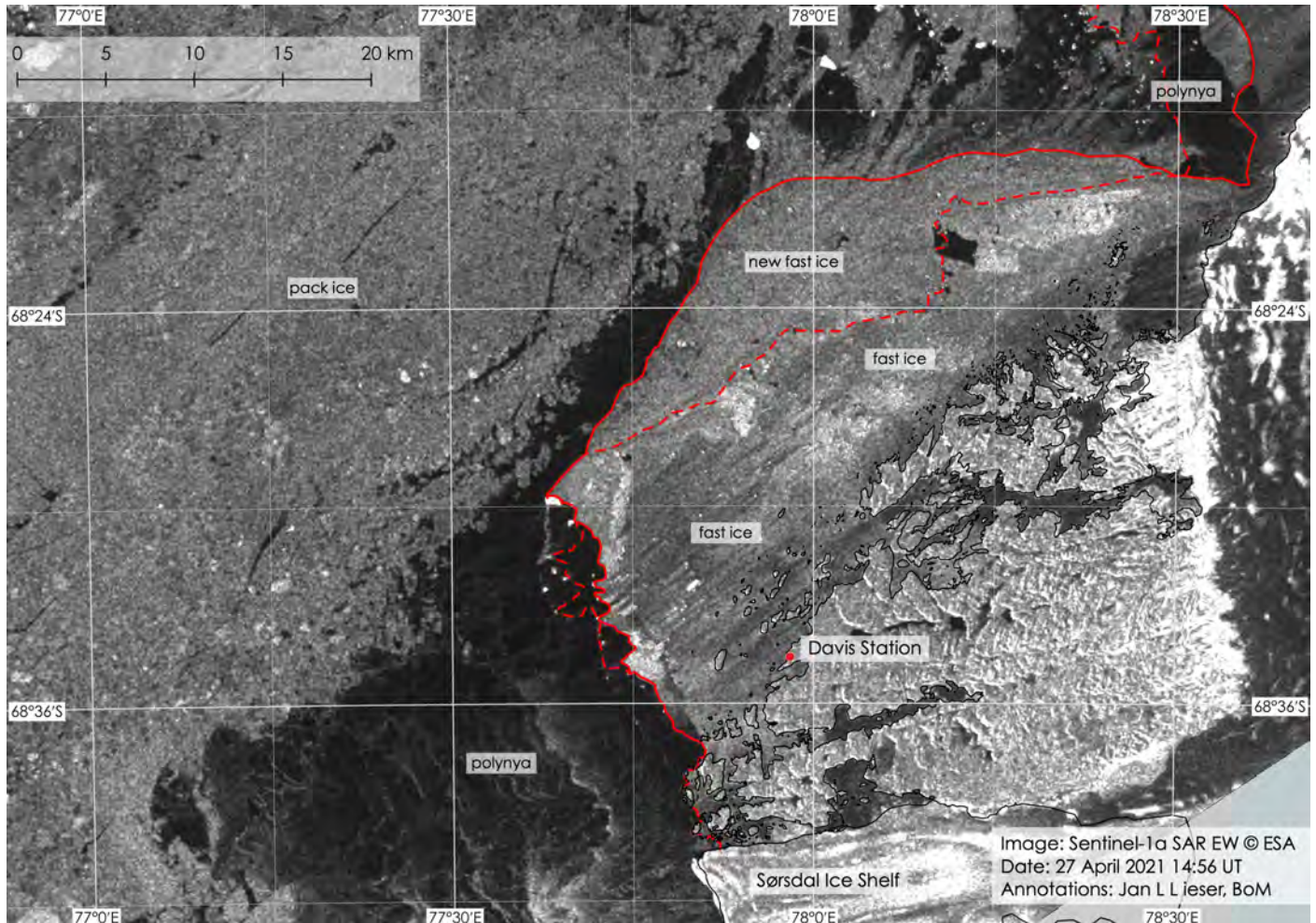


Figure 1: Sentinel-1a SAR EW data acquired 27 April 2021 at 14:56 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been shifting back and forth as is indicated with the inclusion of the fast-ice edge on 19 April 2021 (the dashed red line).

Off the Vestfold Hills, the majority of icebergs offshore is frozen in. Off the fast-ice edge, some icebergs are not grounded. Off the southwest facing fast-ice edge, polynyas are present as the pack ice is generally drifting south-westward offshore.

Further north, the northern sea-ice edge (not shown in the figure) is north of the median sea-ice extent for April in the region but south of the May median sea-ice extent.

Ice Bulletin: Mawson Station

Issued: Wednesday 5th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Coast and offshore. Fast-ice areas are outlined by red lines.

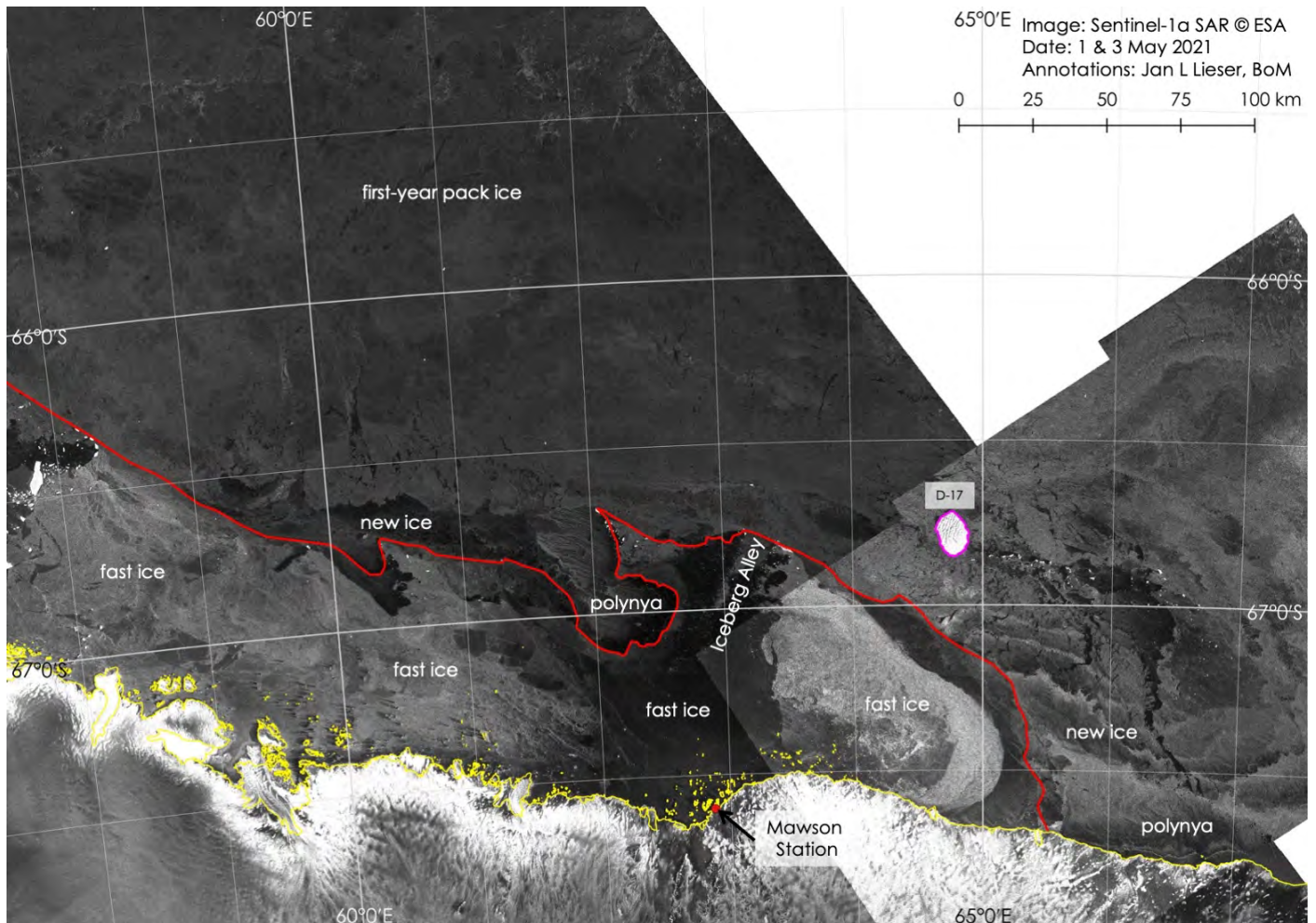


Figure 1: Sentinel-1a SAR EW data acquired 1 May 2021 at 16:02 UT;
overlay: Sentinel-1a SAR IW data acquired 3 May 2021 at 15:45 UT, both provided by PolarView.

Off Mawson Station, the fast-ice edge has assumed its typical shape for the winter season.

Further north, the sea-ice edge (not shown in the figure) is near the median sea-ice edge for May. Two small polynyas are present in the region and producing new sea ice.

Since 25 April 2021, iceberg D-27 (pink outline) has drifted roughly 75 nautical miles on its way westward off Mawson Coast.

Ice Bulletin: Casey Station

Issued: Friday 7th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore.

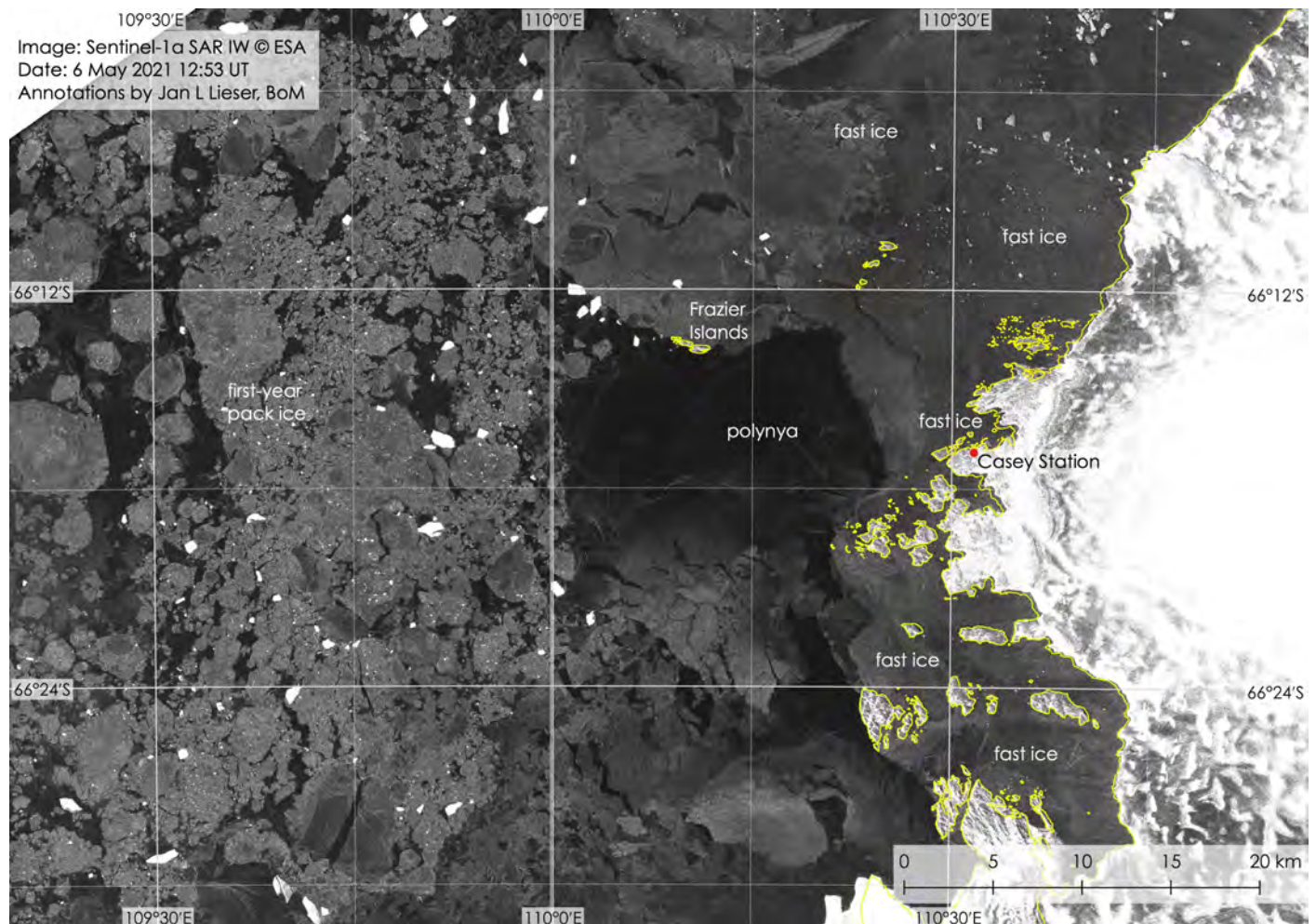


Figure 1: Sentinel-1a SAR IW data acquired 6 May 2021 at 12:53 UT and provided by PolarView.

Off Casey Station and around the offshore islands, fast ice is growing and is now reaching the Frazier Islands.

Off the fast-ice edge, a polynya is currently frozen over by thin sea ice.

Many icebergs are present in the region of which the majority appears grounded northwest of the station. Some icebergs are drifting in between the first-year pack ice.

Further north, the sea-ice edge (the northern edge of the marginal ice zone; not shown in the figure) is beyond (north of) the median sea-ice extent for May.

Ice Bulletin: Antarctica

Issued: Tuesday 11th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

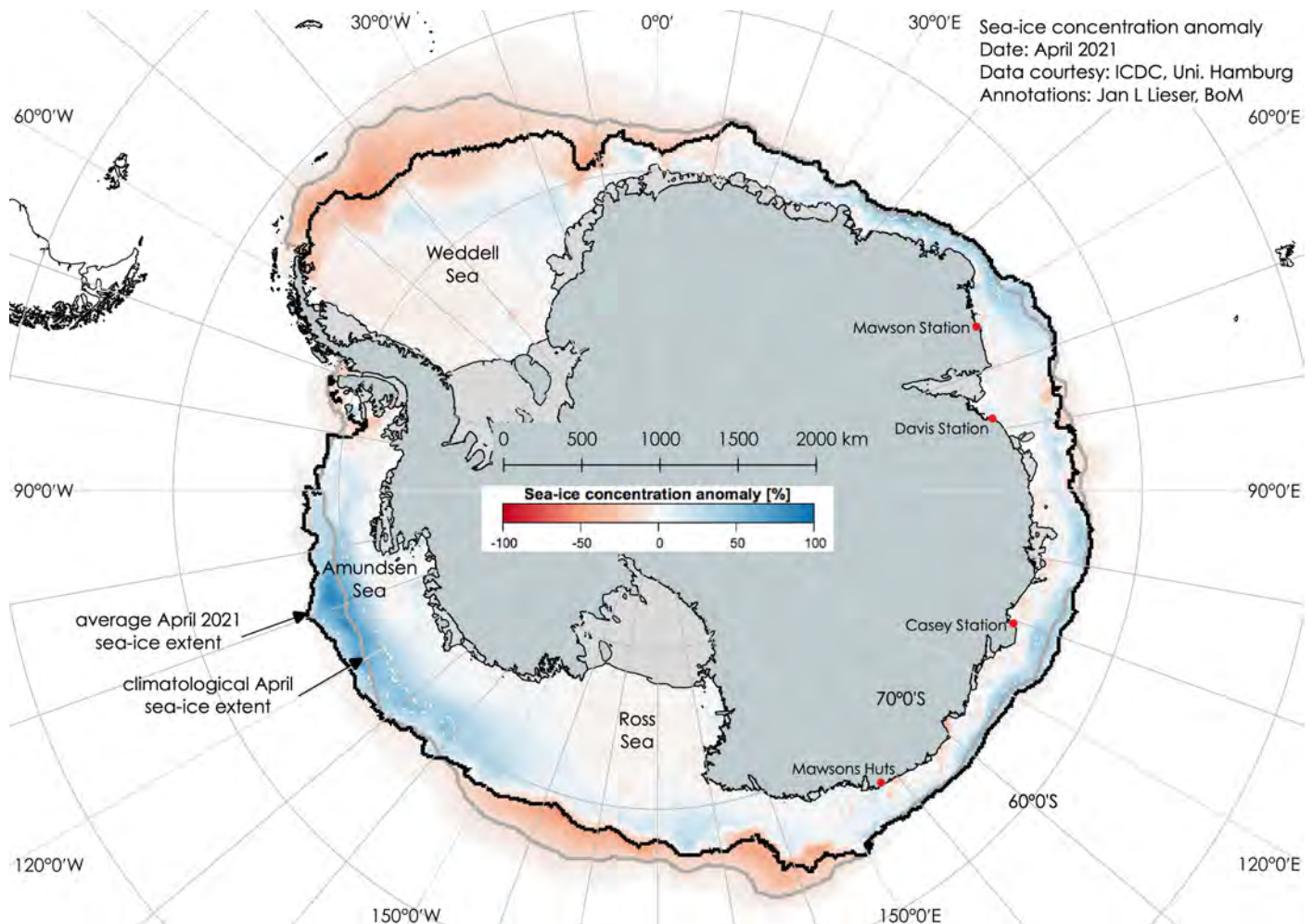


Figure 1: Sea-ice concentration anomaly for April 2021 provided by ICDC (Universität Hamburg).

In April 2021, pan-Antarctic sea-ice extent sat almost on par with the climatological April average, but regionally sea-ice extent and associated concentration anomalies varied strongly.

In East Antarctica, slightly above and below average extent was found but within the extent a generally positive concentration anomaly spanning almost constantly from roughly 10°0'E to 150°0'E.

In the Ross Sea, lower than average sea-ice extent with associated negative concentration dominated while the Amundsen Sea showed strong above average conditions but again negative sea-ice extent and concentration along the western side of the Antarctic Peninsula, in Bellingshausen Sea.

The Weddell Sea sea-ice extent continued to experience strongly below average conditions

Ice Bulletin: Mawson Station

Issued: Wednesday 12th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Coast and offshore. Fast-ice areas are outlined by red lines.

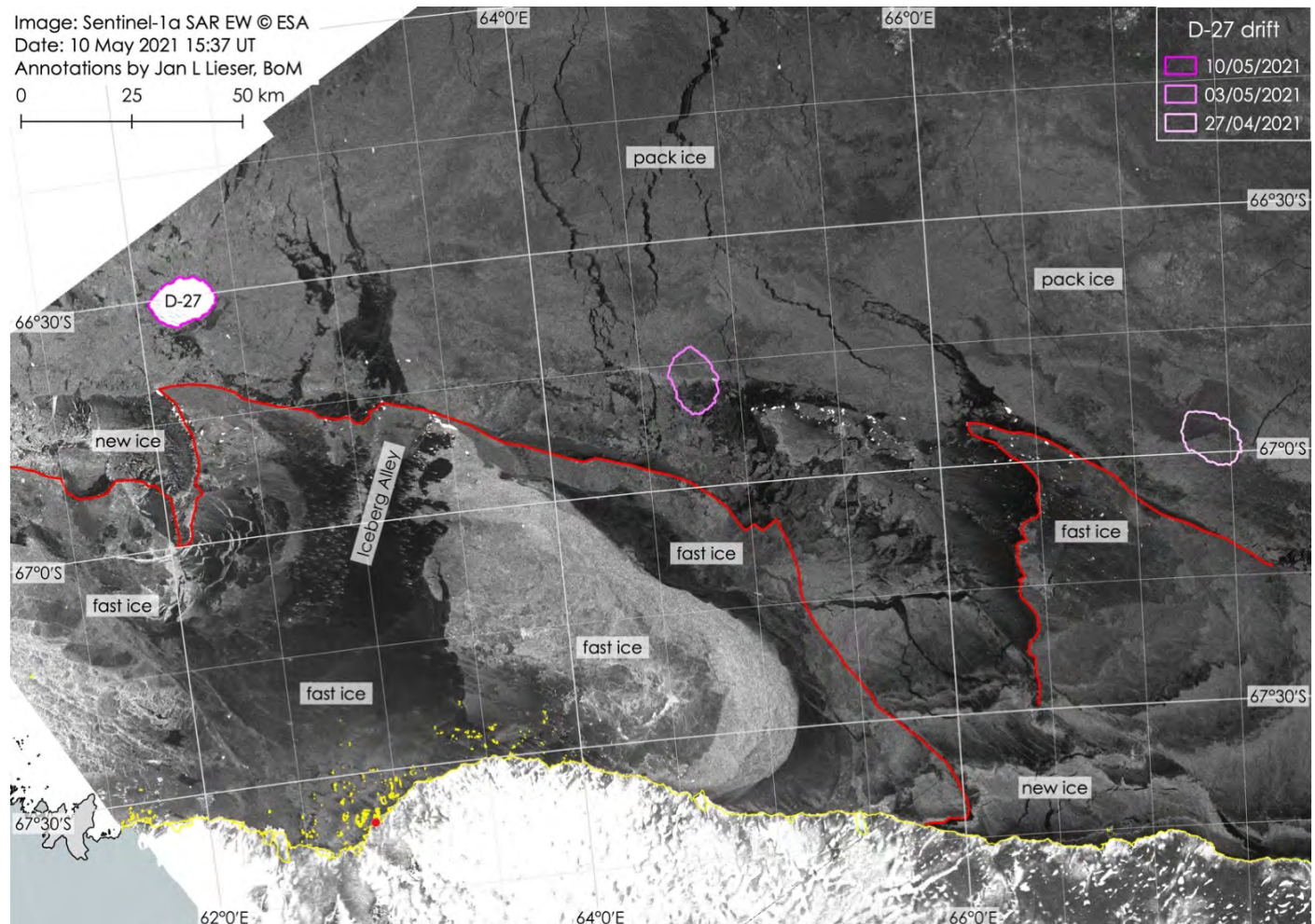


Figure 1: Sentinel-1a SAR EW data acquired 10 May 2021 at 15:37 UT and provided by PolarView.

Off Mawson Station, the fast-ice edge has grown during the past week but retained largely its typical shape for the winter season. East of 66°0'E, the southern edge of the fast ice is undetermined as new ice accumulates from the southeast against the northern patch and the new ice can be seen in layers reaching almost the coastline at 67°30'E.

Further north, the sea-ice edge (not shown in the figure) is beyond (north of) the median sea-ice edge for May. Two small polynyas in the region are covered by new sea ice.

Since 27 April 2021, iceberg D-27 has drifted at a steady pace roughly 125 nautical miles on its way westward off the fast-ice edge.

Ice Bulletin: Davis Station

Issued: Thursday 13th May 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and surrounds. Fast-ice areas are outlined by red lines.

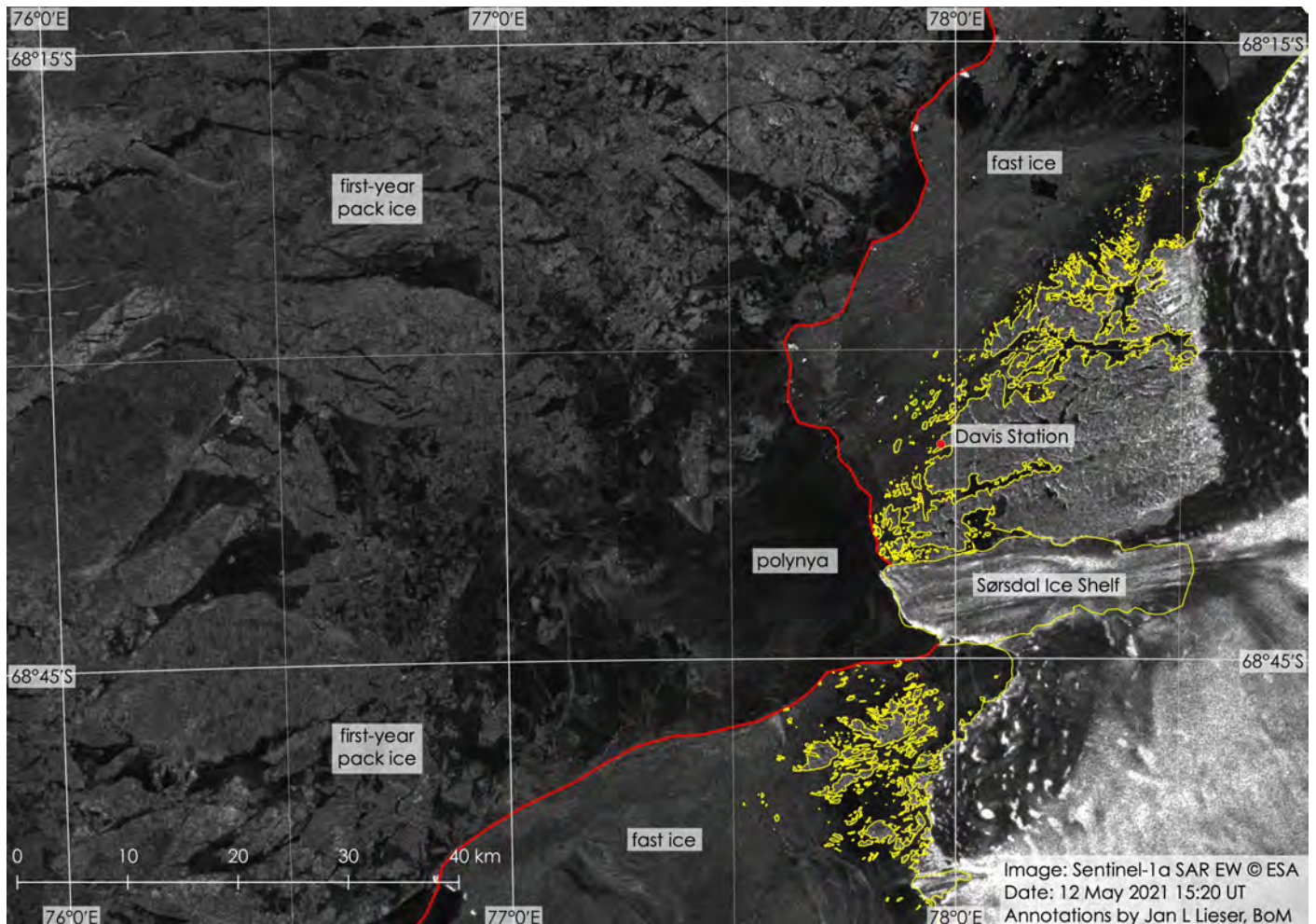


Figure 1: Sentinel-1a SAR EW data acquired 12 May 2021 at 15:20 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been roughly steady recently. South of the Sørdsdal Ice Shelf, the fast-ice edge has been consolidating around the Rauer Group and generally advancing northward offshore.

Off the southwest facing fast-ice edge, a polynya is frozen over, and further west pack ice is generally drifting south-westward offshore.

Further north, the northern sea-ice edge (not shown in the figure) is approaching the median sea-ice extent for May in the region.

Ice Bulletin: Casey Station

Issued: Friday 14th May 2021

Analyst: Jan L. Lieser

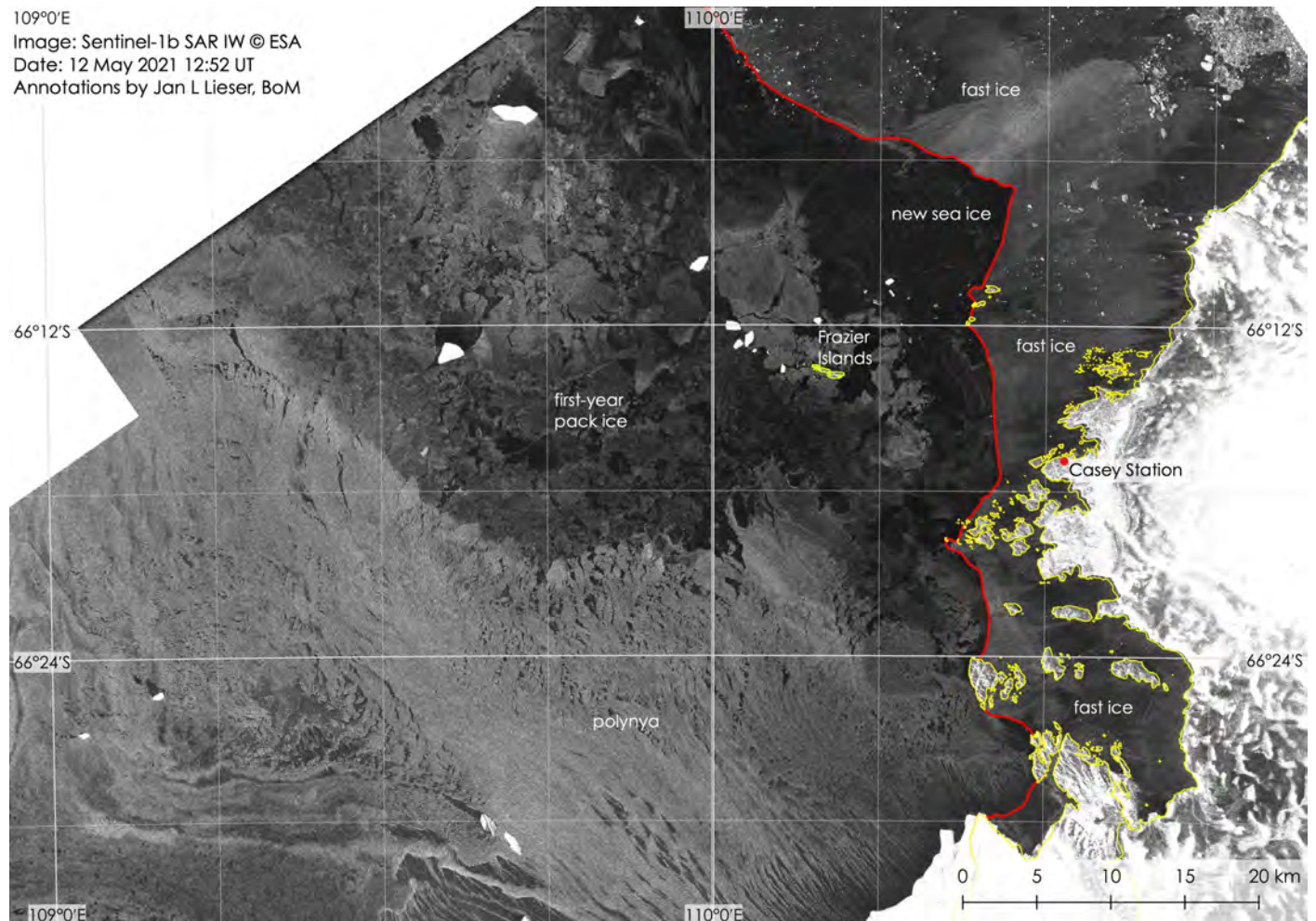


Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore.



Off Casey Station and around the offshore islands, fast ice is growing and but has broken out around the Frazier Islands. Northeast of the islands, new sea ice is forming.

Many icebergs are present in the region of which the majority appears grounded northwest of the station. Some icebergs are drifting in between the first-year pack ice.

Further north, the sea-ice edge (the northern edge of the marginal ice zone; not shown in the figure) is currently roughly 45 nautical miles north of the median sea-ice extent for May and already at the June median sea-ice extent east of 111°0'E.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Iceberg A-76

Issued: Tuesday 18th May 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the south-western Weddell Sea.

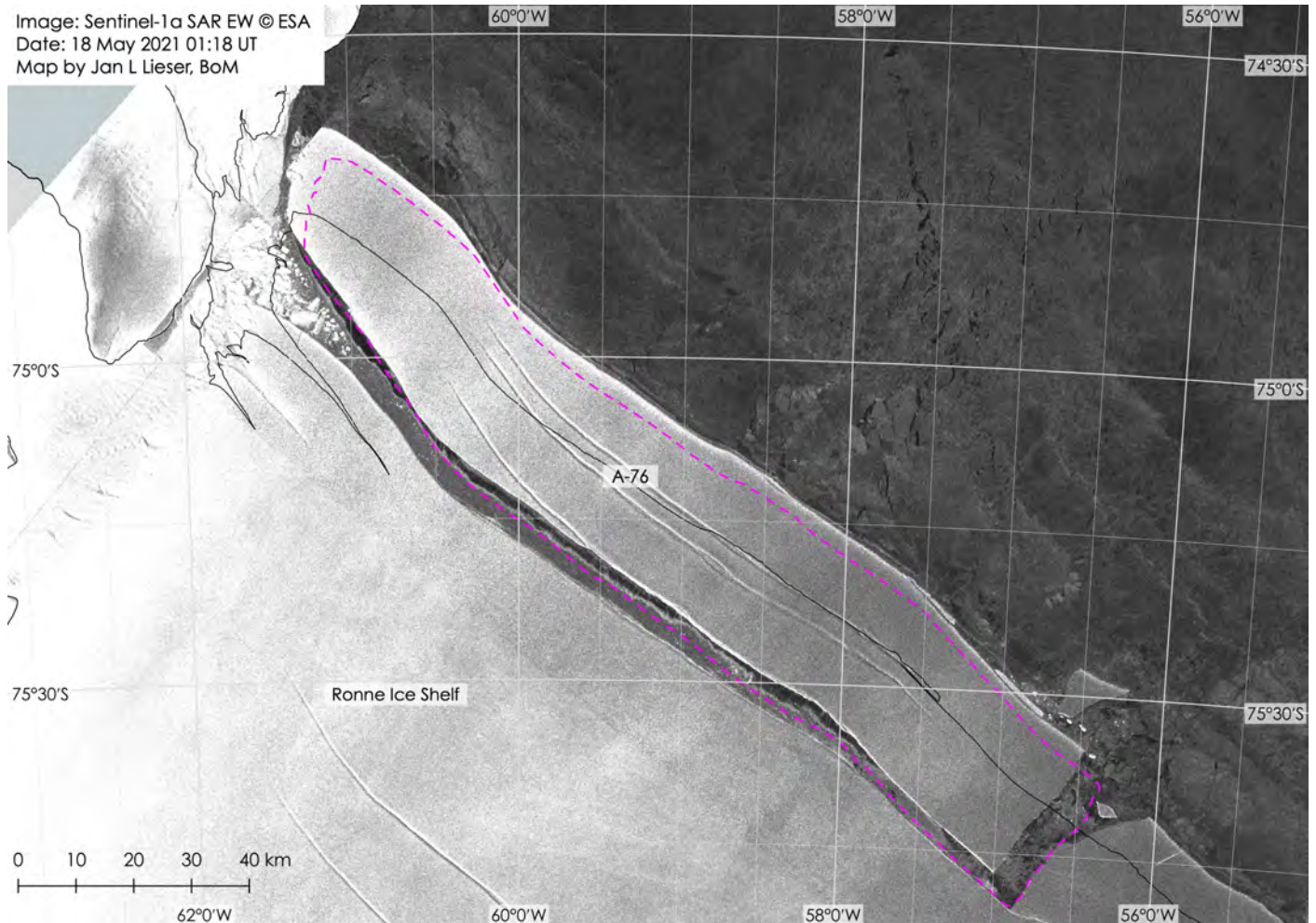


Figure 1: Sentinel-1a SAR EW data acquired 18 May 2021 at 01:18 UT and provided by PolarView.

Off the Ronne Ice Shelf, a new iceberg calved on 13 May 2021 (the dashed pink shape indicates its original position). This new iceberg is roughly 92 nautical miles long and about 14.5 nautical miles wide. With a surface area of almost 4 400 km², which compares to Kangaroo Island off South Australia, it is currently the largest iceberg in the world and ranks seventh overall (n.b. iceberg D-28, which calved off the Amery Ice Shelf in 2019, ranks eighth now).

This latest iceberg calving constitutes the seventh large iceberg calving of ice shelves surrounding the Weddell Sea this year, where icebergs A-70, A-71, A-72 and A-73 calved off the Larsen-D Ice Shelf in January, iceberg A-74 calved off the Brunt Ice Shelf in March, iceberg A-75 calved off the Larsen-F Ice Shelf also in March and now iceberg A-76 off the Ronne Ice Shelf in May.

Ice Bulletin: Mawson Station

Issued: Friday 21st May 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Mawson Coast and offshore. Fast-ice areas are outlined by red lines.

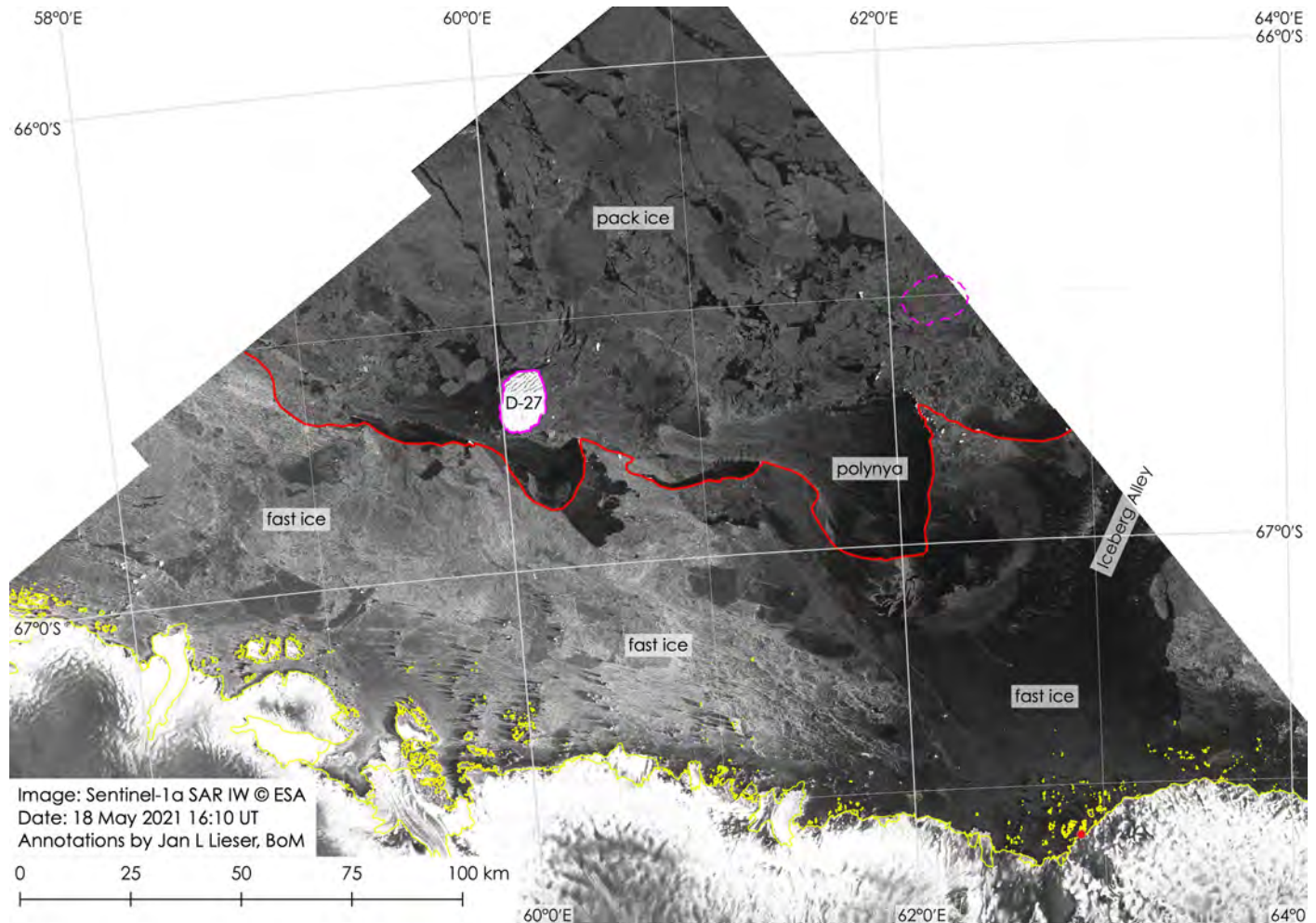


Figure 1: Sentinel-1a SAR IW data acquired 18 May 2021 at 16:10 UT and provided by PolarView.

Off Mawson Station, the fast-ice edge has largely retained its typical shape for the winter season.

Further north, the sea-ice edge (not shown in the figure) is up to 50 nautical miles north of the median sea-ice edge for May. Two small polynyas in the region (northwest of the station and south of iceberg D-27) are covered by new sea ice.

Since 10 May 2021, iceberg D-27 has continued its drift at a steady pace and is roughly 50 nautical miles further west off the fast-ice edge.

Ice Bulletin: Davis Station

Issued: Friday 21st May 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and offshore. Fast-ice areas are outlined by red lines.

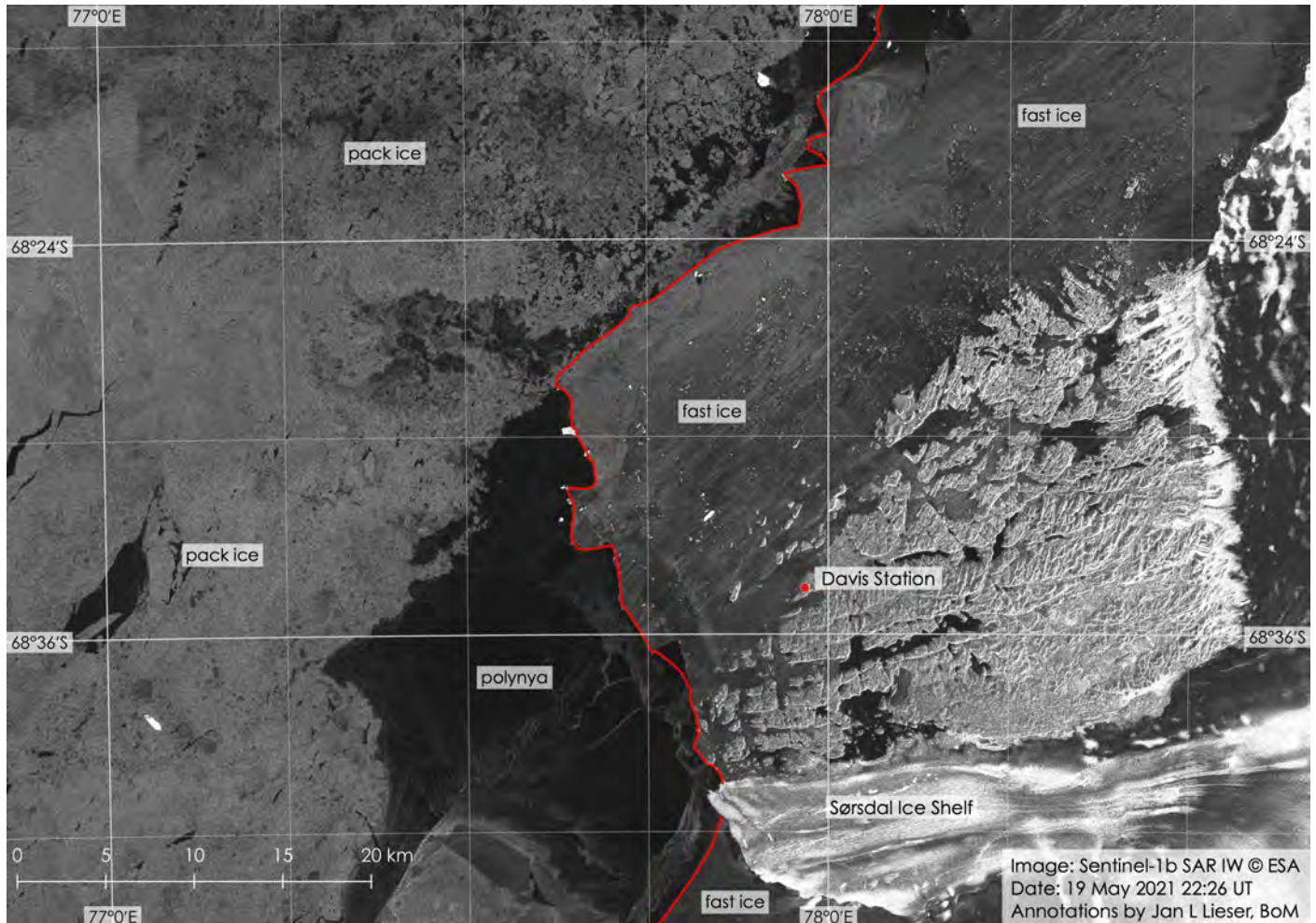


Figure 1: Sentinel-1b SAR IW data acquired 19 May 2021 at 22:26 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has largely retained its typical shape for the winter season. West of the station and off the fast-ice edge, a polynya is covered by new sea ice.

Further north, the sea-ice edge (not shown in the figure) is within 30 nautical miles north and south of the median sea-ice edge for May.

Ice Bulletin: Casey Station

Issued: Friday 21st May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. Fast-ice areas are outlined by red lines (dashed red line for 12 May 2021).

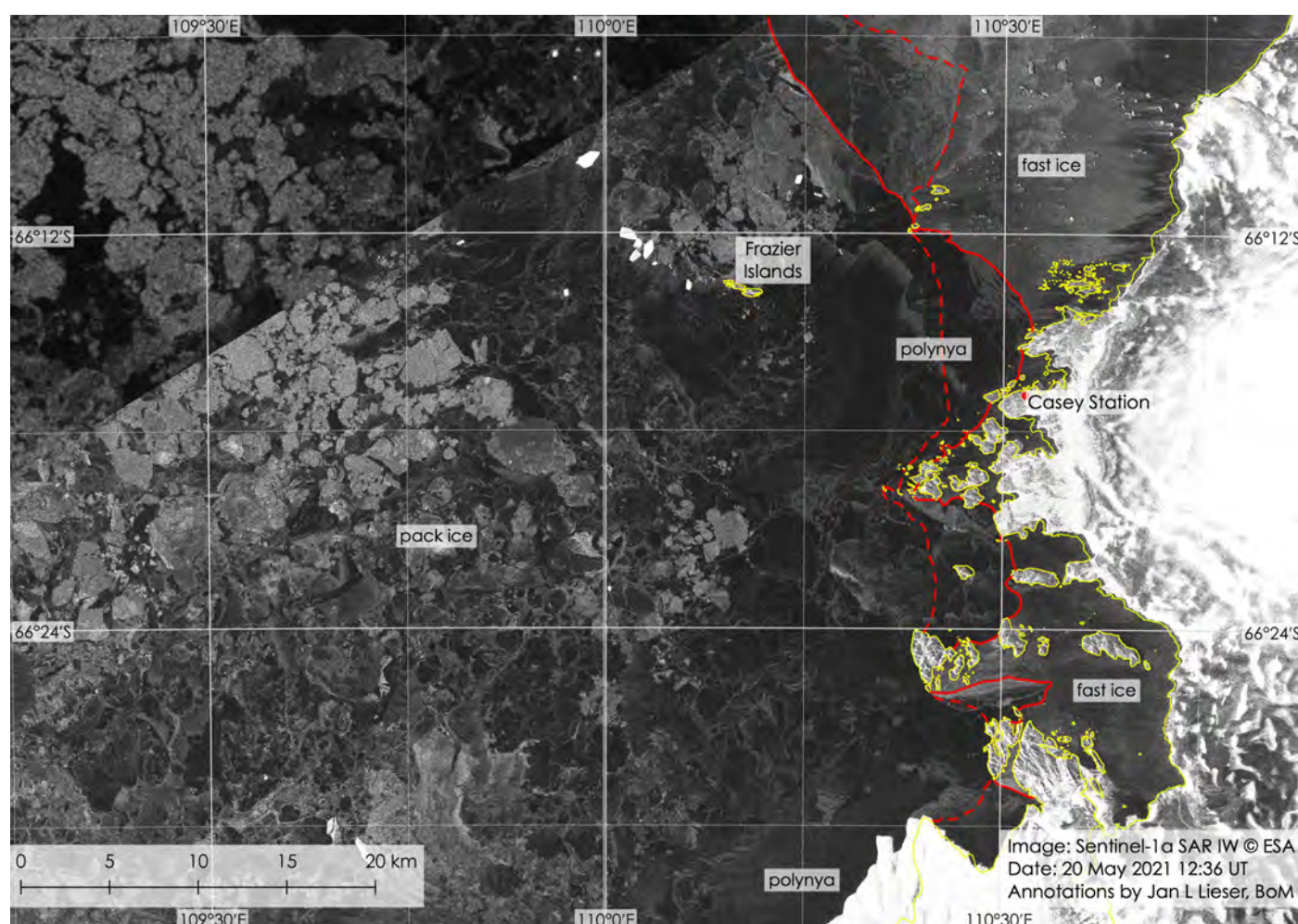


Figure 1: Sentinel-1a SAR IW data acquired 20 May 2021 at 12:36 UT;
 complemented in the northwest by Sentinel-1b SAR EW data acquired 19 May 2021 at 12:44 UT;
 both data sets provided by PolarView.

Off Casey Station, the fast-ice edge has been shifting shape during the past week. West of the station and off the fast-ice edge, a polynya is covered by new sea ice. Further south, another polynya shows some open water and new ice production.

The northern sea-ice edge (not shown in the figure) is up to 50 nautical miles north of the median sea-ice edge for May.

Ice Bulletin: Icebergs A-76

Issued: Wednesday 26th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the south-western Weddell Sea.

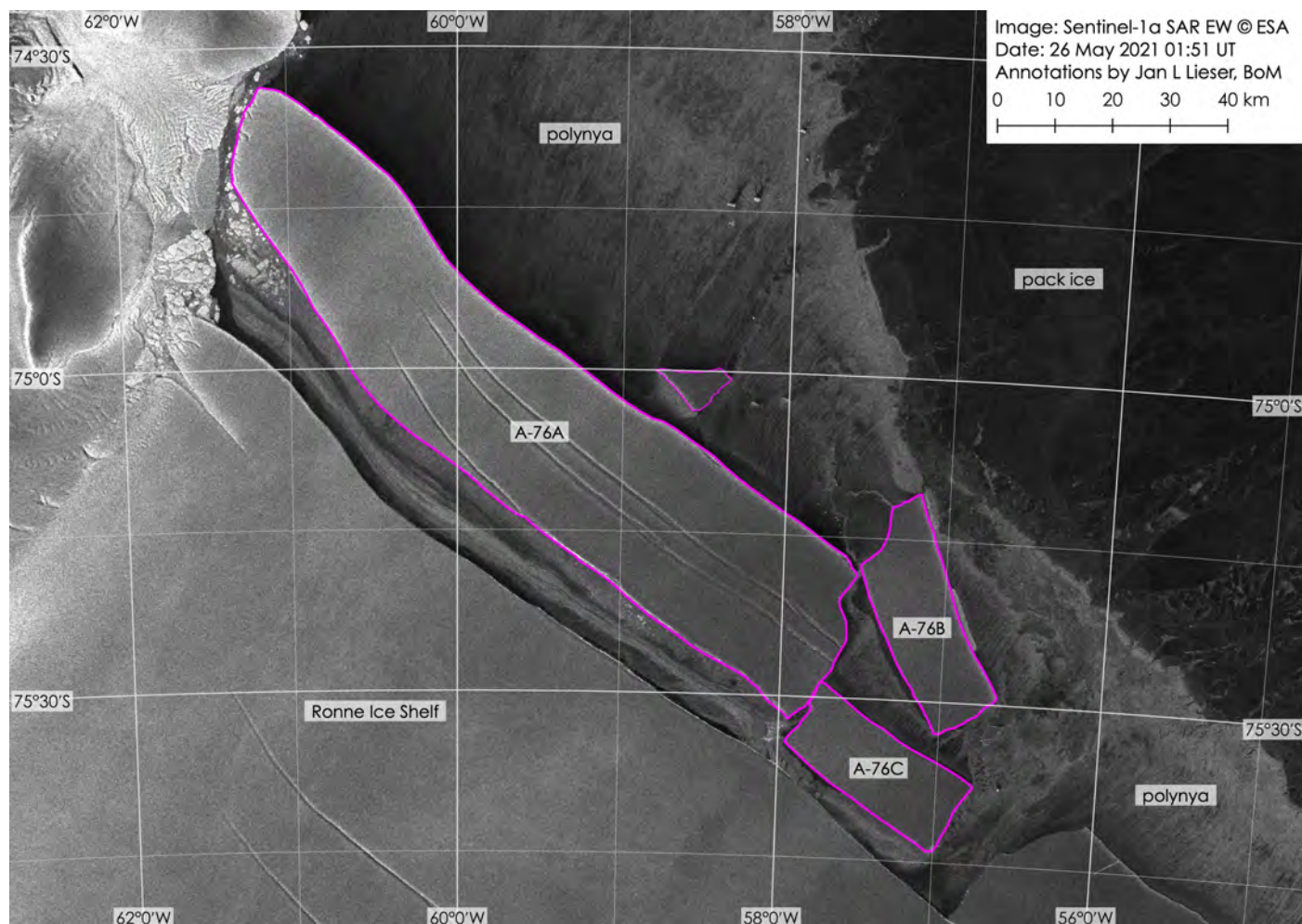


Figure 1: Sentinel-1a SAR EW data acquired 26 May 2021 at 01:51 UT and provided by PolarView.

Off the Ronne Ice Shelf, new iceberg A-76 has broken into three large pieces only two weeks after the initial calving off the ice shelf.

The largest piece, A-76A, is still more than 3500 km² and retains its place as seventh largest iceberg on record. Iceberg A-76B is more than 470 km² and comparable in area to *truwana* / Cape Barren Island (part of the Furneaux Group in the Bass Strait). Iceberg A-76C is a little more than 410 km².

Another sizeable iceberg is currently centred at 58°30'E just south of 75°0'S that is just under 50 km² and therefore below the official naming and tracking limit for icebergs.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Thursday 27th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore.

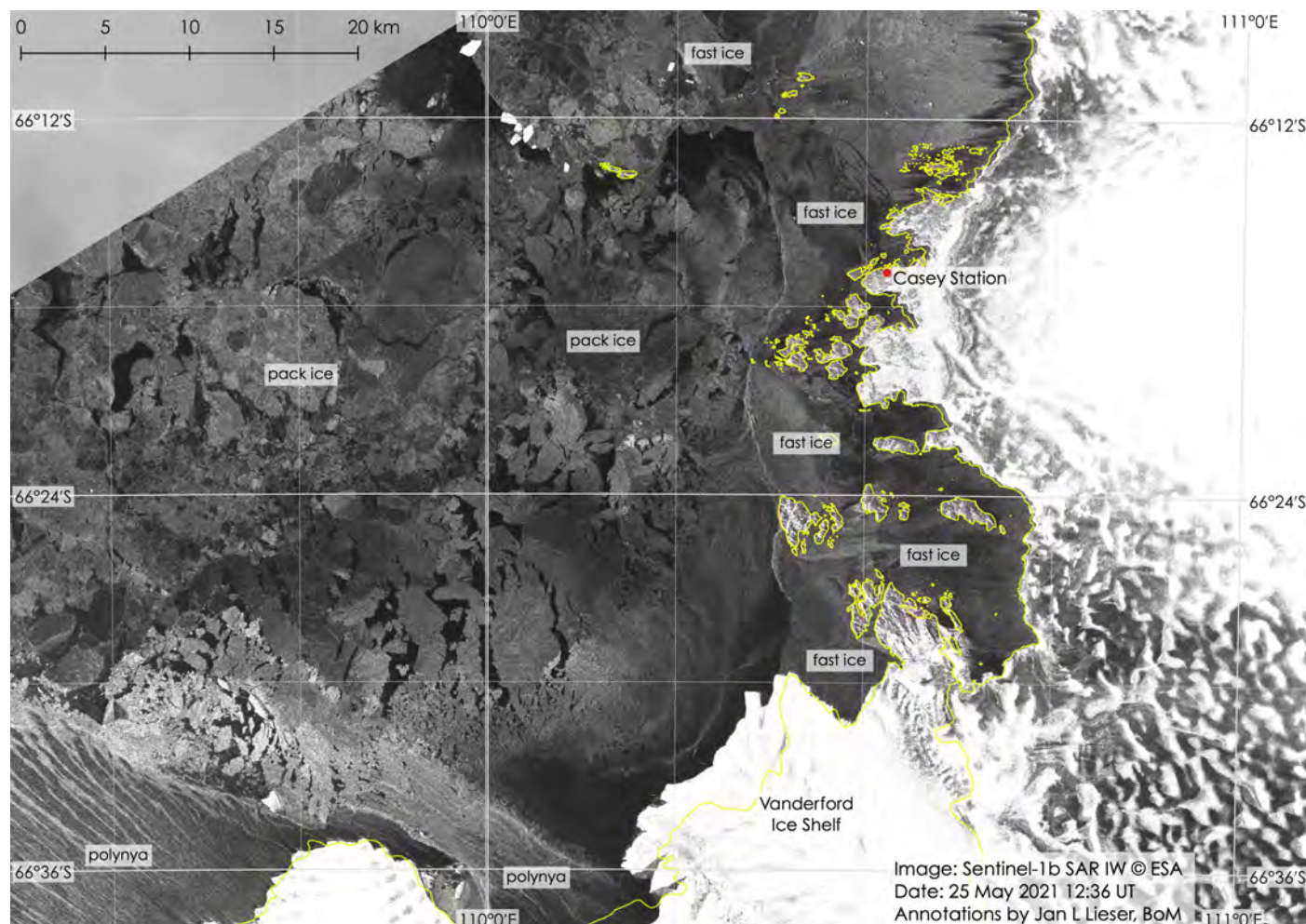


Figure 1: Sentinel-1b SAR IW data acquired 25 May 2021 at 12:36 UT and provided by PolarView.

Off Casey Station, the fast-ice edge has been growing seawards during the past week. West of the station and off the fast-ice edge, a polynya is covered by new sea ice. Off the Vanderford Ice Shelf, another polynya shows some open water and new ice production.

The northern sea-ice edge (not shown in the figure) is between 25 and 40 nautical miles north of the median sea-ice edge for May and touching on the June median extent already.

Ice Bulletin: Davis Station

Issued: Thursday 27th May 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and offshore.

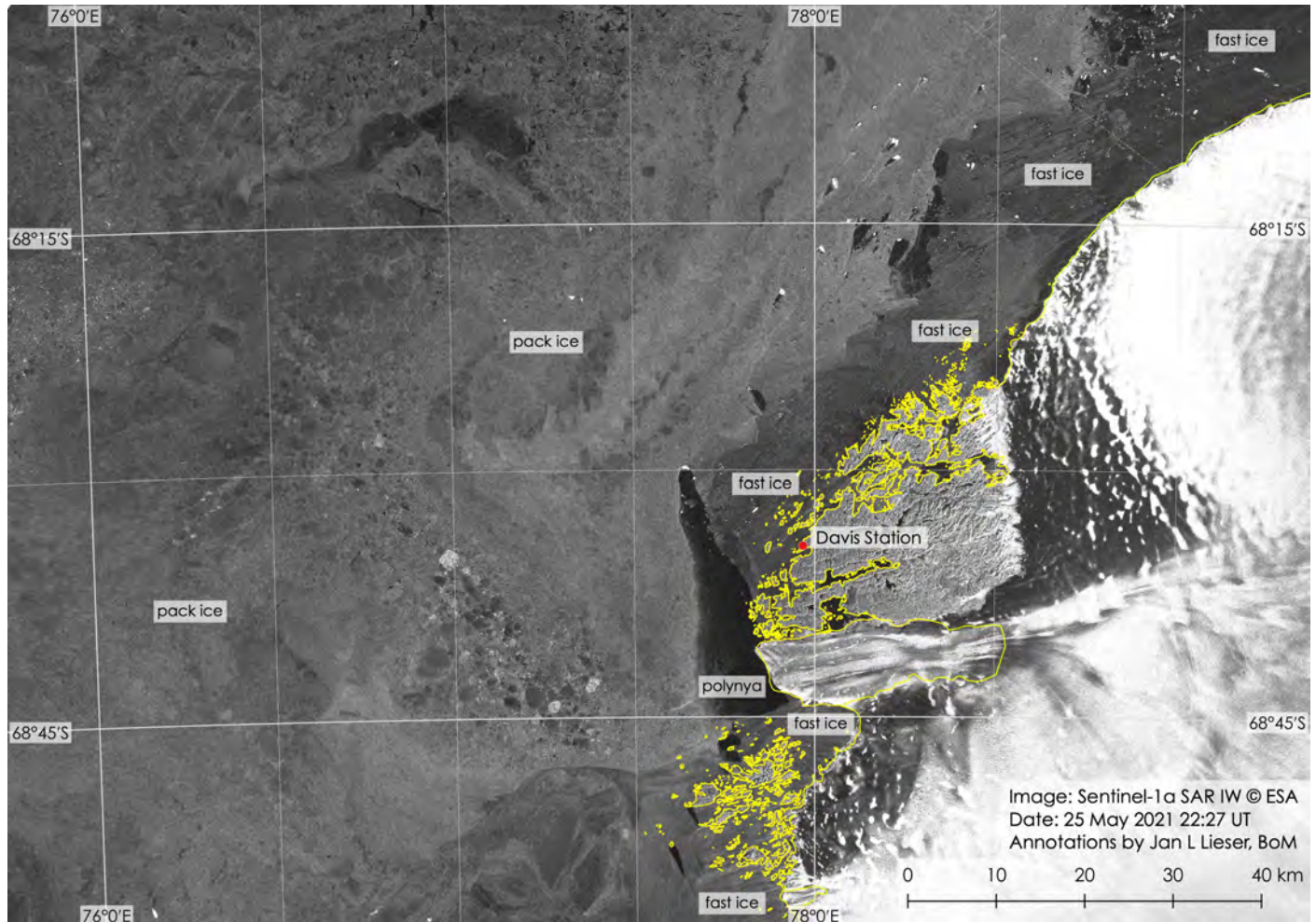


Figure 1: Sentinel-1a SAR IW data acquired 25 May 2021 at 22:27 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been largely stable during the past week. North of the station, the edge between fast ice and pack ice is difficult to discern as high concentration of pack ice closed in on the fast ice. Further offshore, 100% pack-ice concentration of various types of sea ice is evident from the SAR data.

Off the Sørsdal Ice Shelf (south of the station), a small polynya shows limited open water and is mostly covered by thin new sea ice.

The northern sea-ice edge in the region (not shown in the figure) is meandering around the median sea-ice edge for May.

Ice Bulletin: Mawson Station

Issued: Thursday 27th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows Day-Night-Band data of Mawson Coast and offshore illuminated by the full moon. Only some clouds obscure the ice surface in the north-western and south-eastern part of the figure.

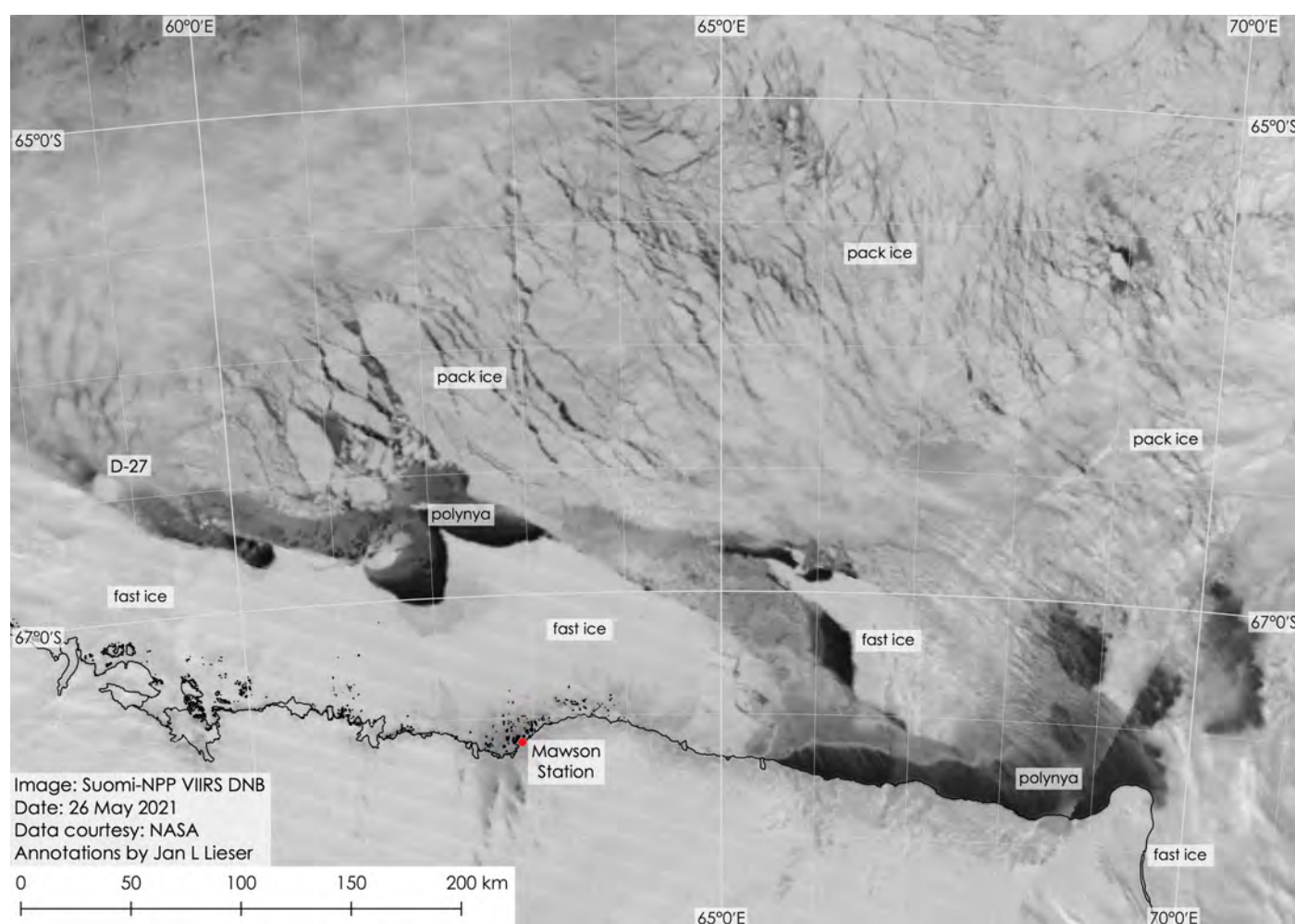


Figure 1: Suomi-NPP DNB data acquired 26 May 2021 and provided by NASA.

Off Mawson Station, the fast-ice edge has largely remained at its typical shape for the winter season.

Further north, the sea-ice edge (not shown in the figure) is up to 60 nautical miles north of the median sea-ice extent for May and partly touching the June median sea-ice extent already. Two polynyas in the region (north of Cape Darnley and northwest of the station) are active and producing new sea ice.

During May 2021, iceberg D-27 continued its drift further west along the fast-ice edge and is identified at 58°45'E and 66°26'S.

Ice Bulletin: D'Urville Sea

Issued: Friday 28th May 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows Day-Night-Band data of the southern D'Urville Sea illuminated by the full moon.

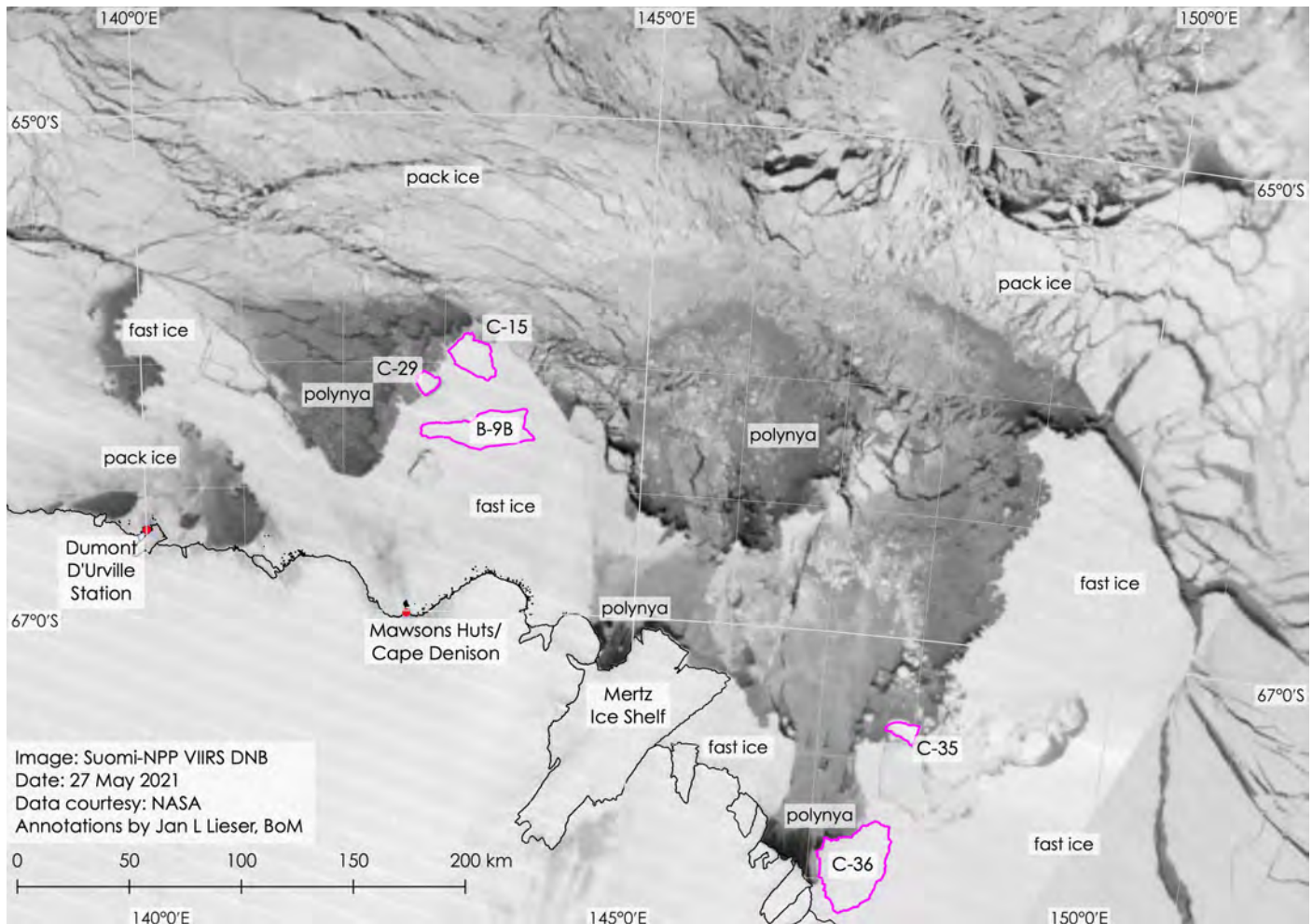


Figure 1: Suomi-NPP DNB data acquired 27 May 2021 and provided by NASA.

Off Mawsons Huts, fast ice has grown northward and surrounds the large icebergs north of Cape Denison. It has assumed its typical shape for the winter season since the arrival of iceberg B-9B in the area. The only icebergs exhibiting minimal movements currently are two larger (but unnamed) icebergs just south of the western edge of iceberg B-9B, which are maintaining a hole in the fast ice, and iceberg C-35 at the edge of the fast ice north of iceberg C-36, which is grounded immediately north of the Ninnis Ice Shelf (just outside of Figure 1).

Polynyas in the region are largely frozen over. Only at the north-western edge of the Mertz Ice Shelf and west of iceberg C-36, some open water is present close to the coast.

Further north, the sea-ice edge (not shown in the figure) is largely at the median sea-ice extent for June already.

Ice Bulletin: Davis Station

Issued: Wednesday 2nd June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and offshore.

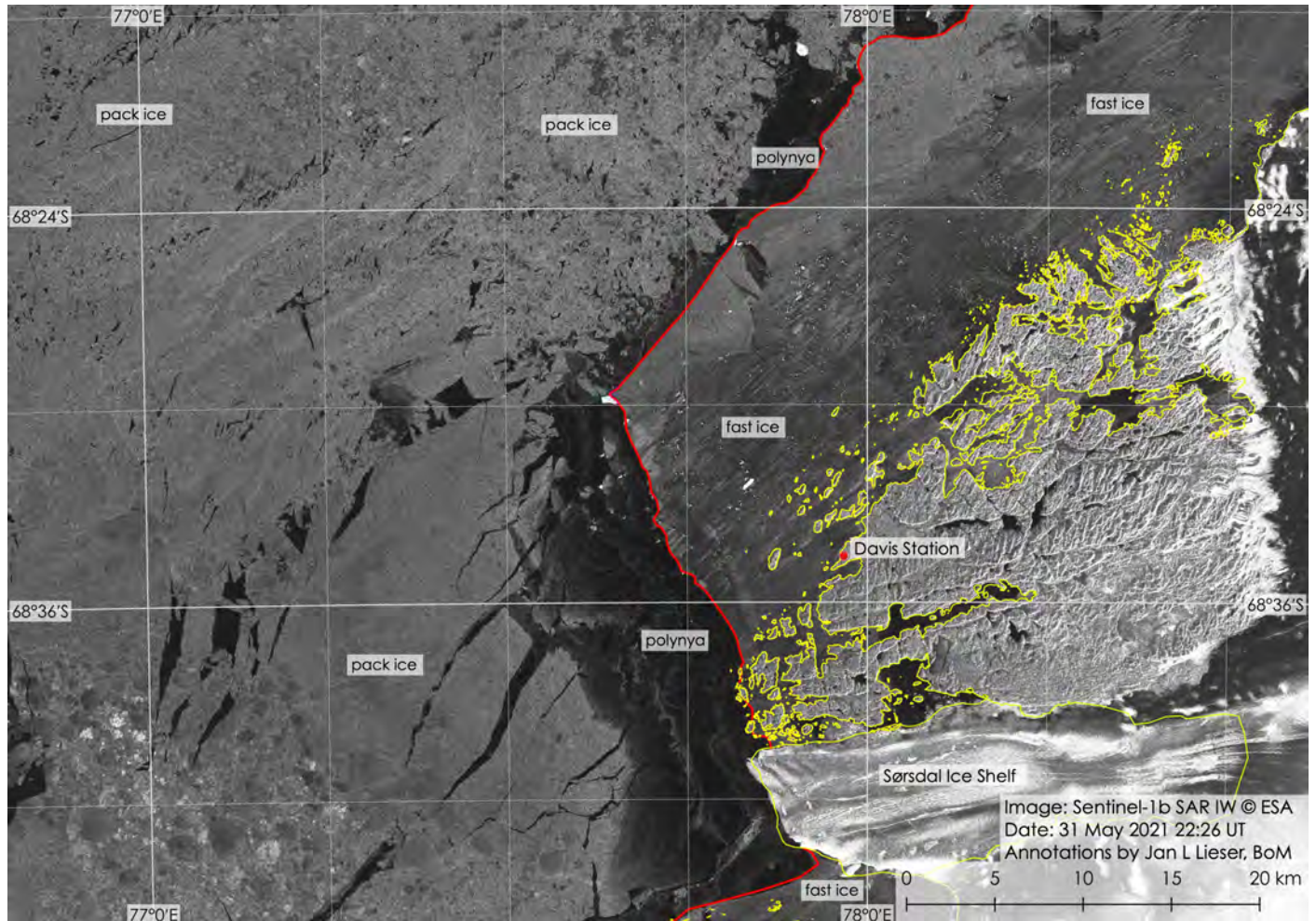


Figure 1: Sentinel-1b SAR IW data acquired 31 May 2021 at 22:26 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been largely stable during the past week. North of the station, the fjords of the Vestfold Hills are closed by fast ice. Further offshore, up to 100% pack-ice concentration of various types of sea ice is evident from the SAR data.

Off the Sørsdal Ice Shelf (south of the station), a small polynya shows very limited open water and is mostly covered by thin new sea ice.

West of 70°0'E, the northern sea-ice edge (not shown in the figure) is at the median sea-ice extent for June whereas east 70°0'E, the sea-ice edge is up to 150 nautical miles south of the median extent for June (for example, at 80°0'E).

Ice Bulletin: Casey Station

Issued: Friday 4th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

West of the fast-ice edge, new sea ice can be seen broken up and exposing some open water in cracks and leads.

Off the Vanderford Ice Shelf, a polynya shows some open water and new ice production.

The northern sea-ice edge (not shown in the figure) is largely at the median sea-ice extent for June already.

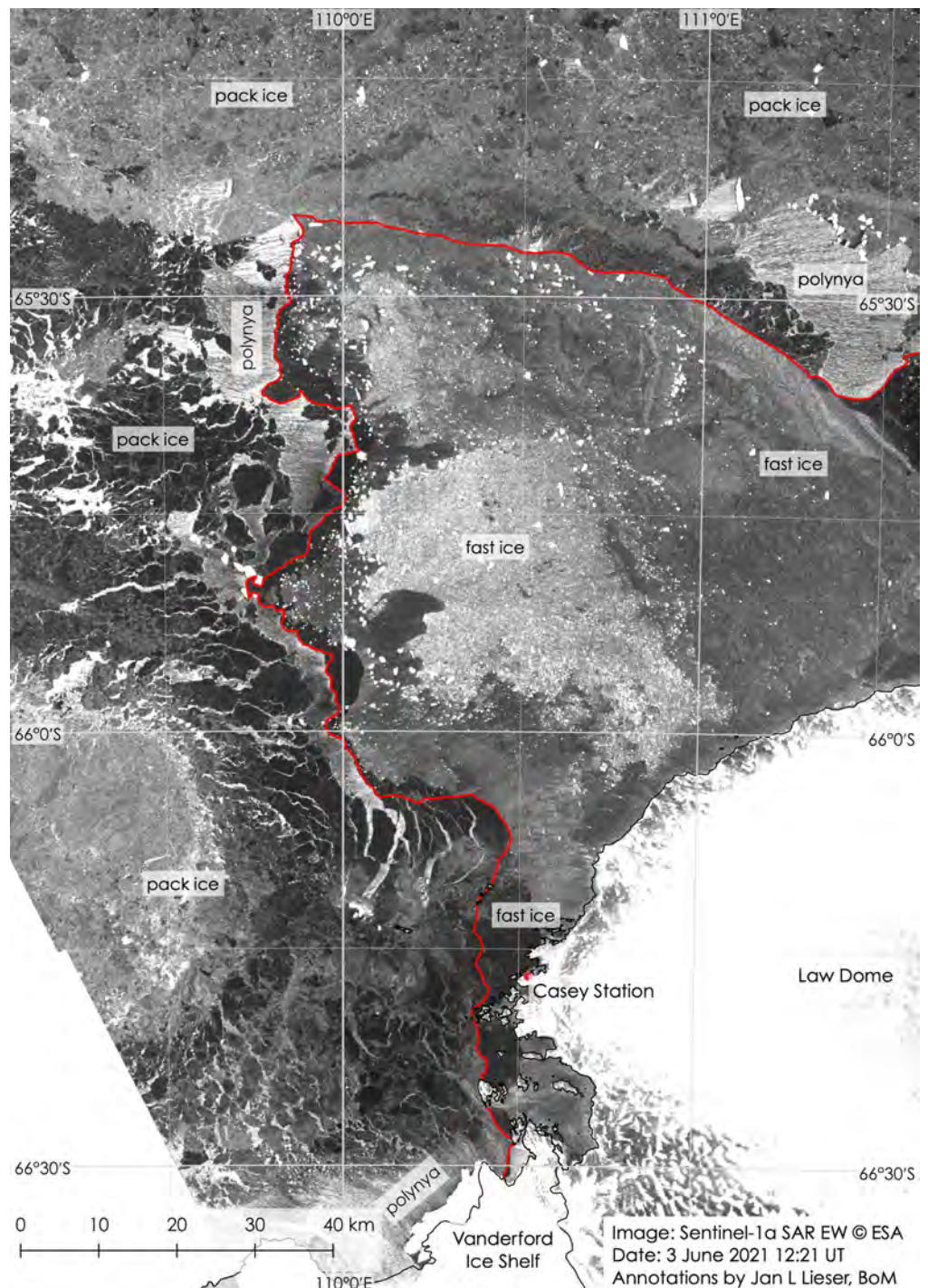


Figure 1: Sentinel-1a SAR EW data acquired 3 June 2021 at 12:21 UT and provided by PolarView.

Image: Sentinel-1a SAR EW © ESA
Date: 3 June 2021 12:21 UT
Annotations by Jan L. Lieser, BoM

Ice Bulletin: Mawson Station

Issued: Friday 4th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Station and offshore.

Off station, the typical extent of fast ice is offshore. The nearest significant open water is a polynya northwest of the station (roughly 40 nautical miles away). Further east, another small polynya is producing new sea.

The fast-ice edge has not been determined as high-concentration pack ice (100%) is present off the fast ice. Two larger icebergs are freely drifting with the pack ice.

Between 60°0'E and 70°0'E, the northern sea-ice edge (not shown in the figure) is at the median sea-ice extent for June.

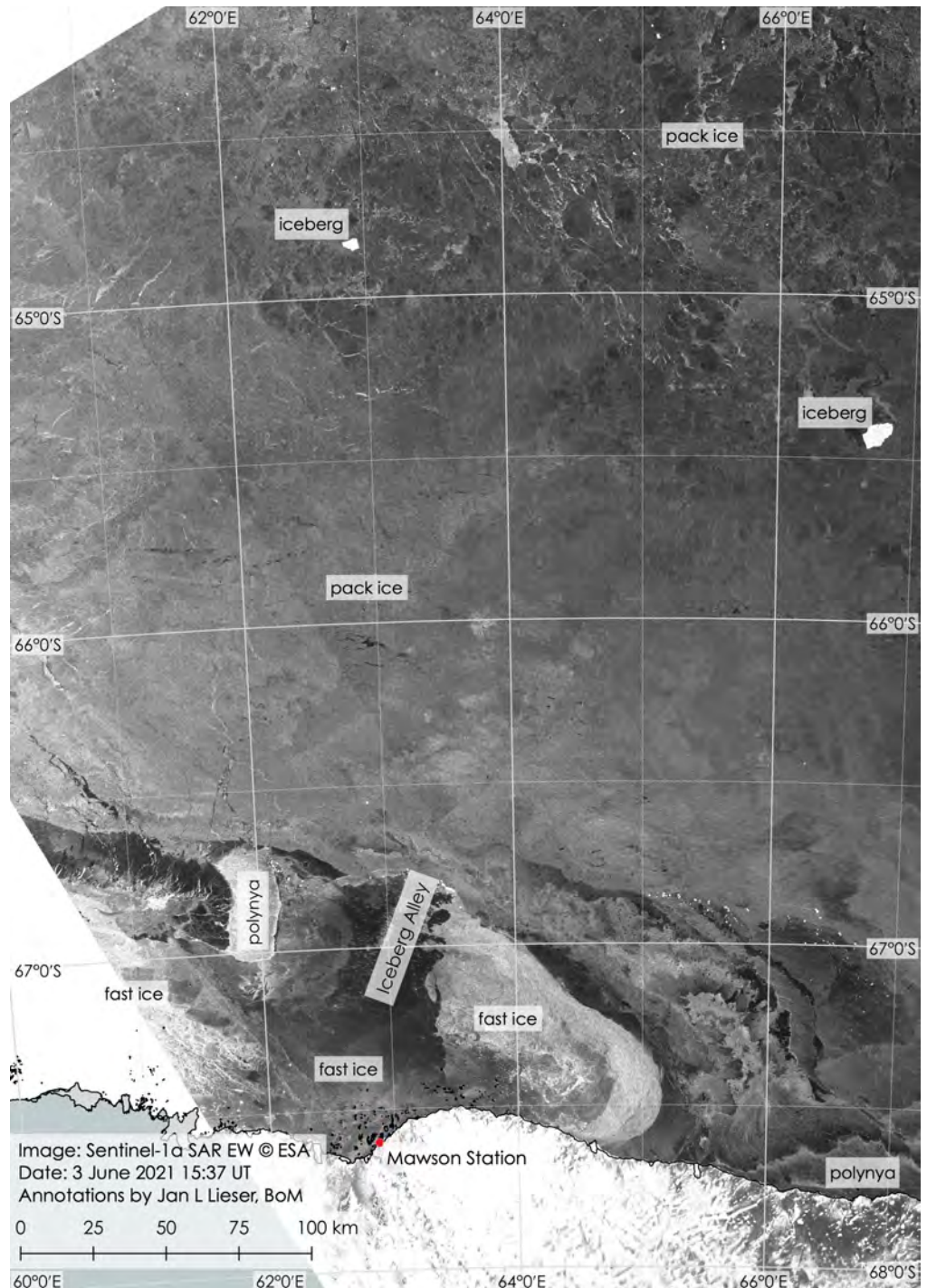


Figure 1: Sentinel-1a SAR EW data acquired 3 June 2021 at 15:37 UT and provided by PolarView.

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Ice Bulletin: Icebergs D-29

Issued: Tuesday 8th June 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the Princes Ragnhild Coast, East Antarctica.

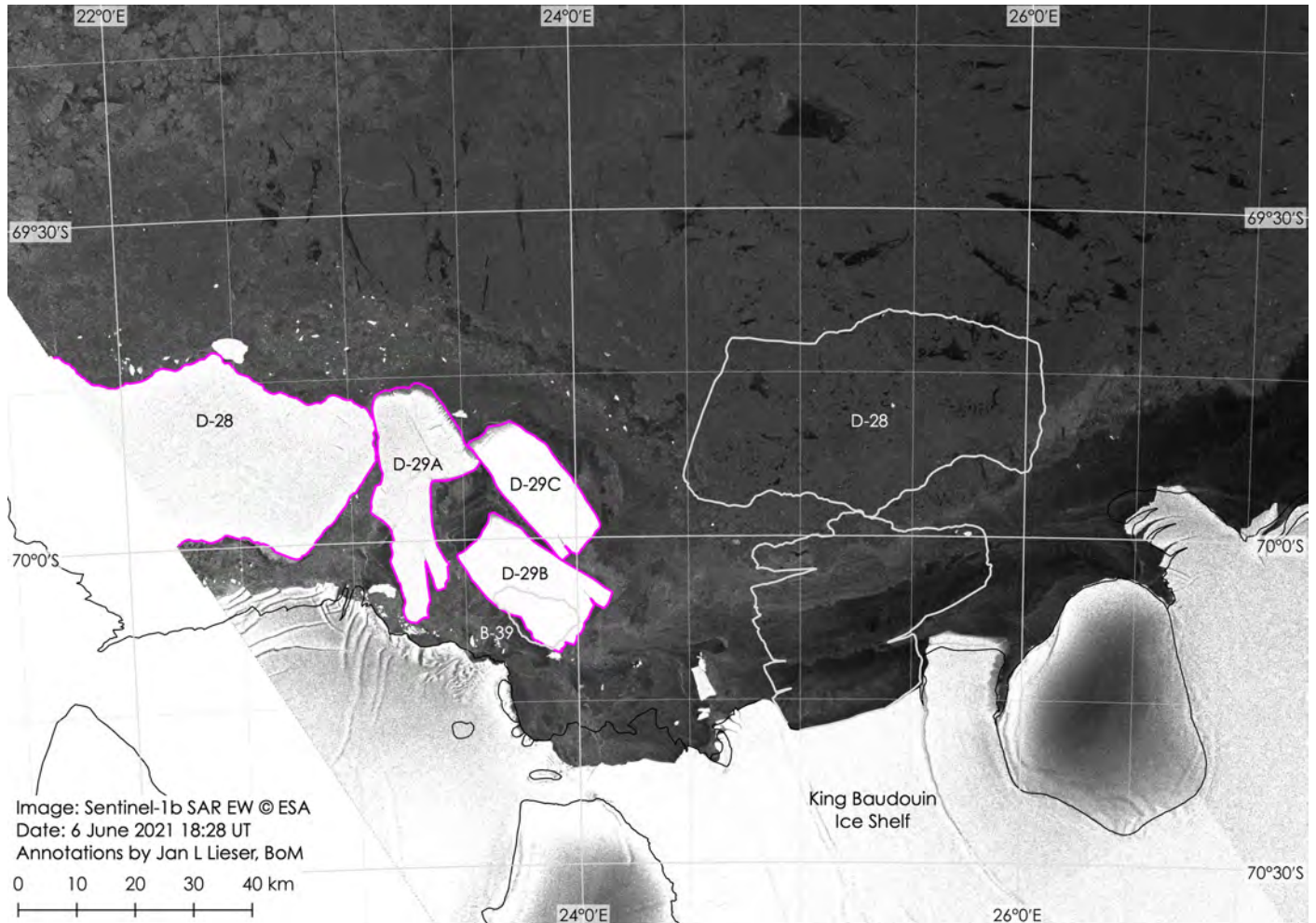


Figure 1: Sentinel-1b SAR EW data acquired 6 June 2021 at 18:28 UT and provided by PolarView.

On 31 May 2021, iceberg D-28 knocked-off a loose tooth from the King Baudouin Ice Shelf. The iceberg's position, the position of iceberg B-39 and the shape of the eastern part of the ice shelf on that day are marked by light-grey shapes. The loose tooth immediately broke into three large pieces that form three new large icebergs, namely D-29A, D-29B and D-29C.

Iceberg D-29A, the largest of the new icebergs, is 400 km², which is roughly 10% larger than Bruny Island off southeast Tasmania. Iceberg D-29B is roughly 300 km² and about 15% smaller than Bruny Island. Iceberg D-29C is a little more than 250 km².

Ice Bulletin: Icebergs D-30

Issued: Tuesday 8th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Borchgrevinkisen, East Antarctica, between Princess Astrid Coast in the west and Princes Ragnhild Coast to the east.

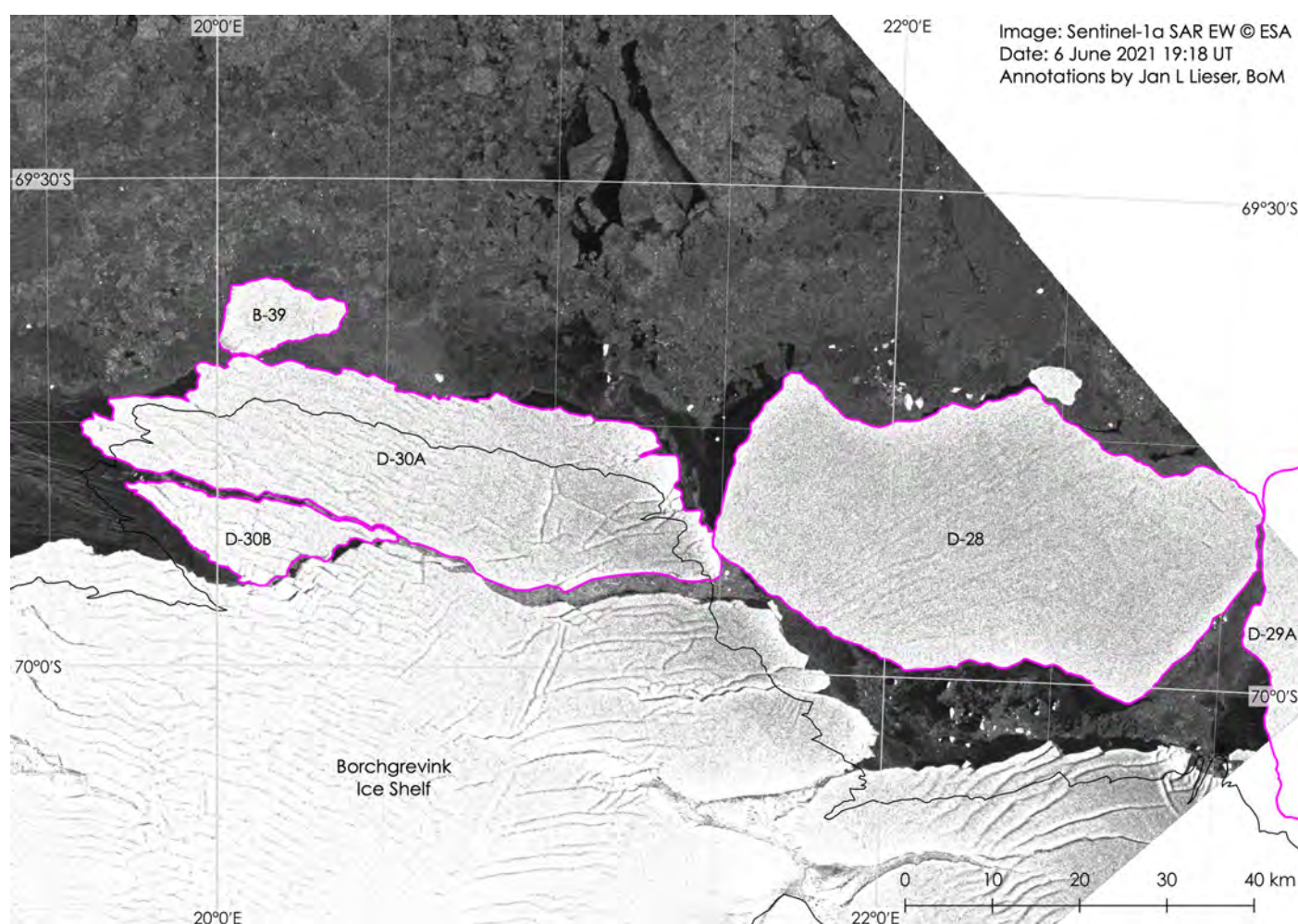


Figure 1: Sentinel-1a SAR EW data acquired 6 June 2021 at 19:18 UT and provided by PolarView.

On 6 June 2021, iceberg D-28 knocked-off the northern part of Borchgrevink Ice Shelf, which immediately broke into two large pieces that form two new large icebergs, namely D-30A and D-30B.

Iceberg D-30A is 1080 km², which compares to King Island in Bass Strait. Iceberg D-30B is roughly 160 km² and therefore about 25% larger than Macquarie Island.

Together with the three icebergs that were formed on 31 May 2021 a bit further east, iceberg D-28 has changed the northern front of two ice shelves, which are only about 180 km apart from each other, within the course of less than one week, which has resulted in five new significant icebergs in the region.

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Ice Bulletin: Antarctica

Issued: Thursday 10th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

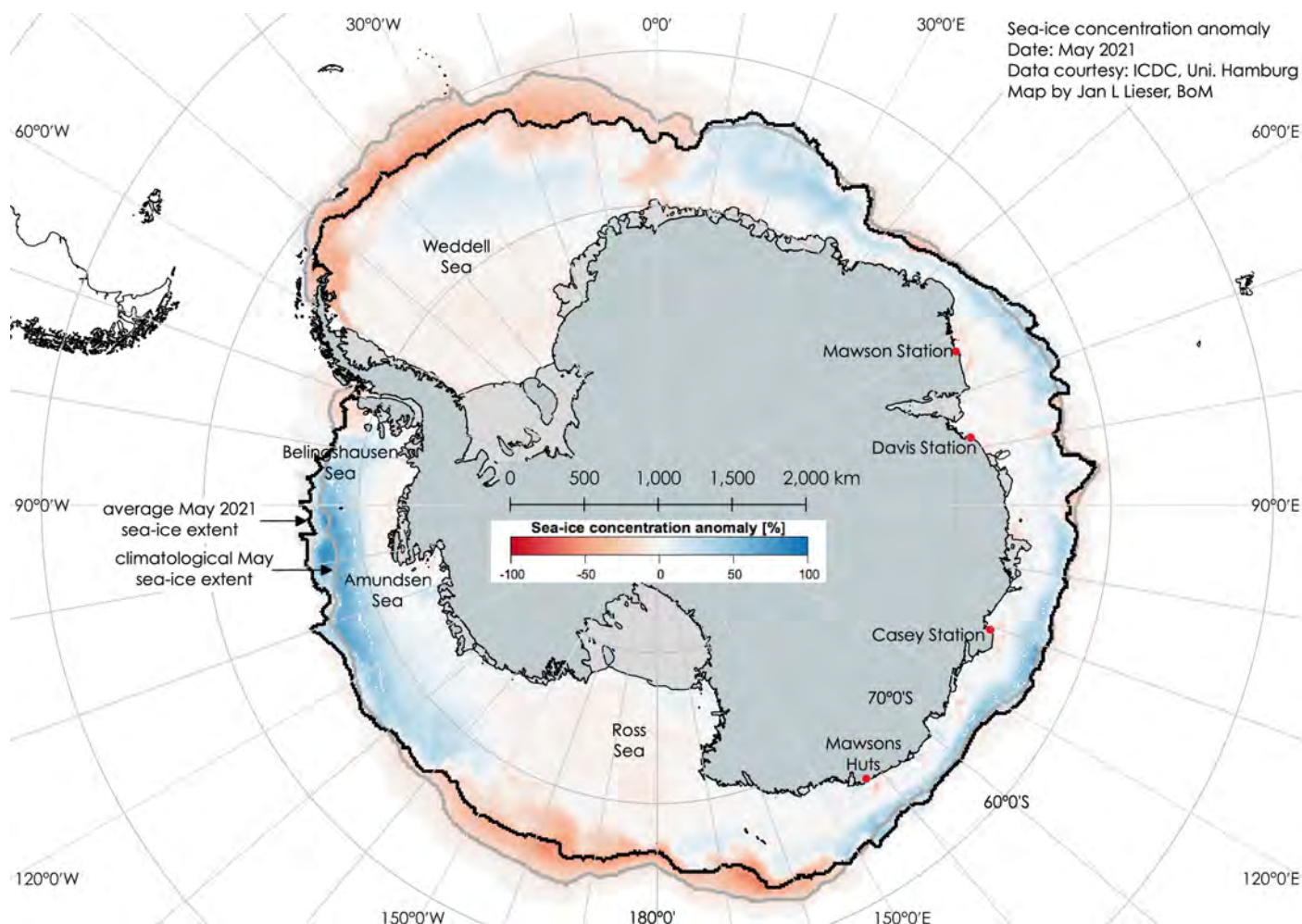


Figure 1: Sea-ice concentration anomaly for May 2021 provided by ICDC (Universität Hamburg).

In May 2021, pan-Antarctic sea-ice extent sat on par with the climatological May average, but regionally sea-ice extent and associated concentration anomalies varied with a clear bi-modal pattern of positive anomalies off East and West Antarctica and negative anomalies in the Weddell Sea and Ross Sea.

In East Antarctica, roughly average extent was found and within the extent a slightly positive concentration anomaly spanning almost constantly between 10°0'E and 150°0'E.

In the Ross Sea, the April trend continued with lower-than-average sea-ice extent and associated negative concentration while the Amundsen Sea and western Bellingshausen Sea showed strong above average conditions but again negative sea-ice extent and concentration near the western side of the Antarctic Peninsula.

The Weddell Sea sea-ice extent continued to experience strongly below average conditions

Ice Bulletin: Casey Station

Issued: Wednesday 16th June 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

Fast ice has broken off the edge recently and a reduced fast-ice area is the result. The fast-ice edge on 3 June 2021 is marked by the black/white line.

West of the fast-ice edge, a large polynya is producing new sea ice.

The northern sea-ice edge (not shown in the figure) is largely at the median sea-ice extent for June west of 108°0'E and below (south of) the median east of 108°0'E.

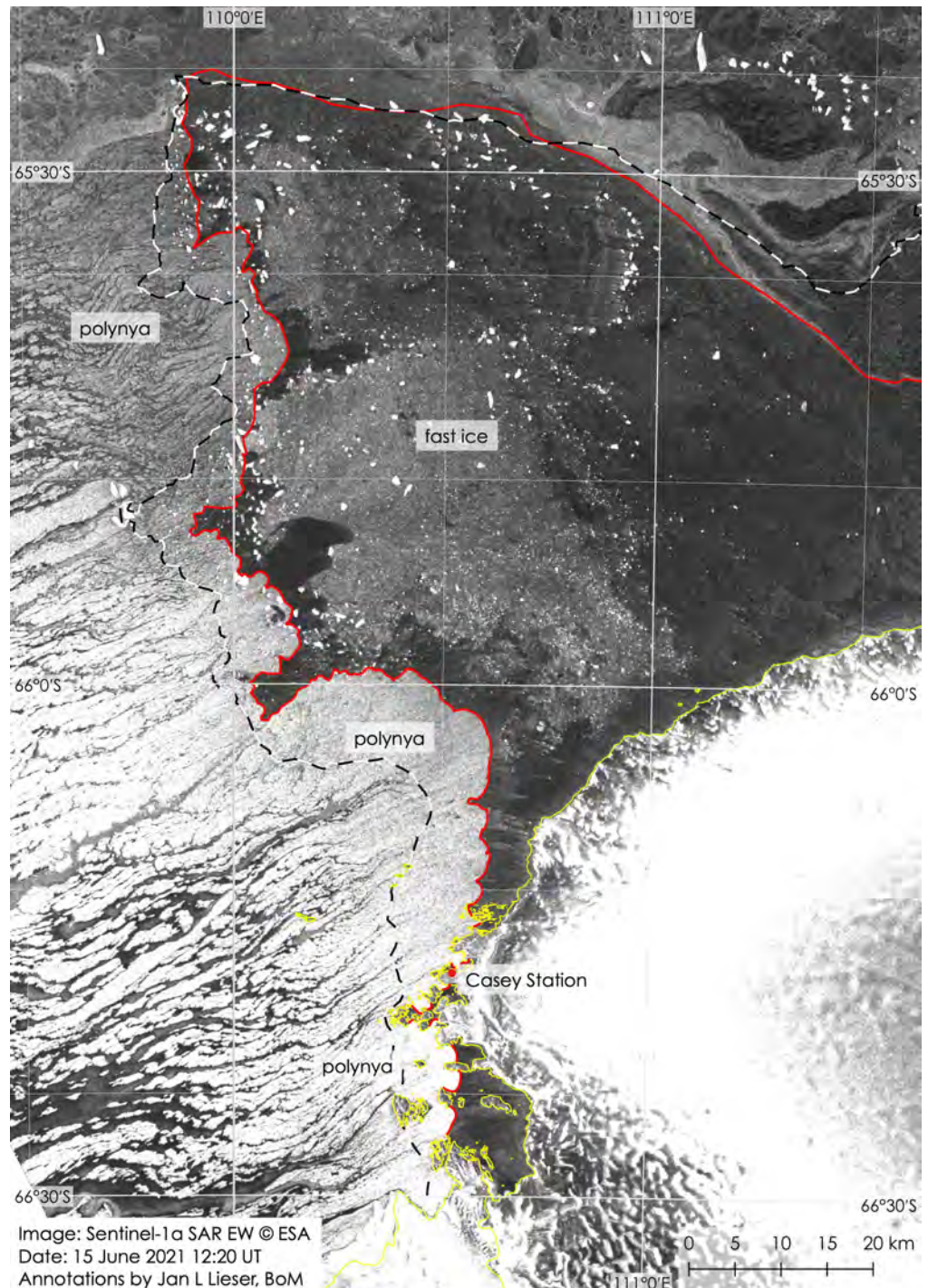


Figure 1: Sentinel-1a SAR EW data acquired 15 June 2021 at 12:20 UT and provided by PolarView.

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Ice Bulletin: Mawson Station

Issued: Wednesday 16th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Station and offshore. The fast-ice edge is marked by a red line.

The fast-ice edge has been largely stable recently.

Roughly 40 nautical miles northwest of the station, a large polynya is producing new sea ice.

The northern sea-ice edge (not shown in the figure) is meandering plus/minus 25 nautical miles around the median sea-ice extent for June.

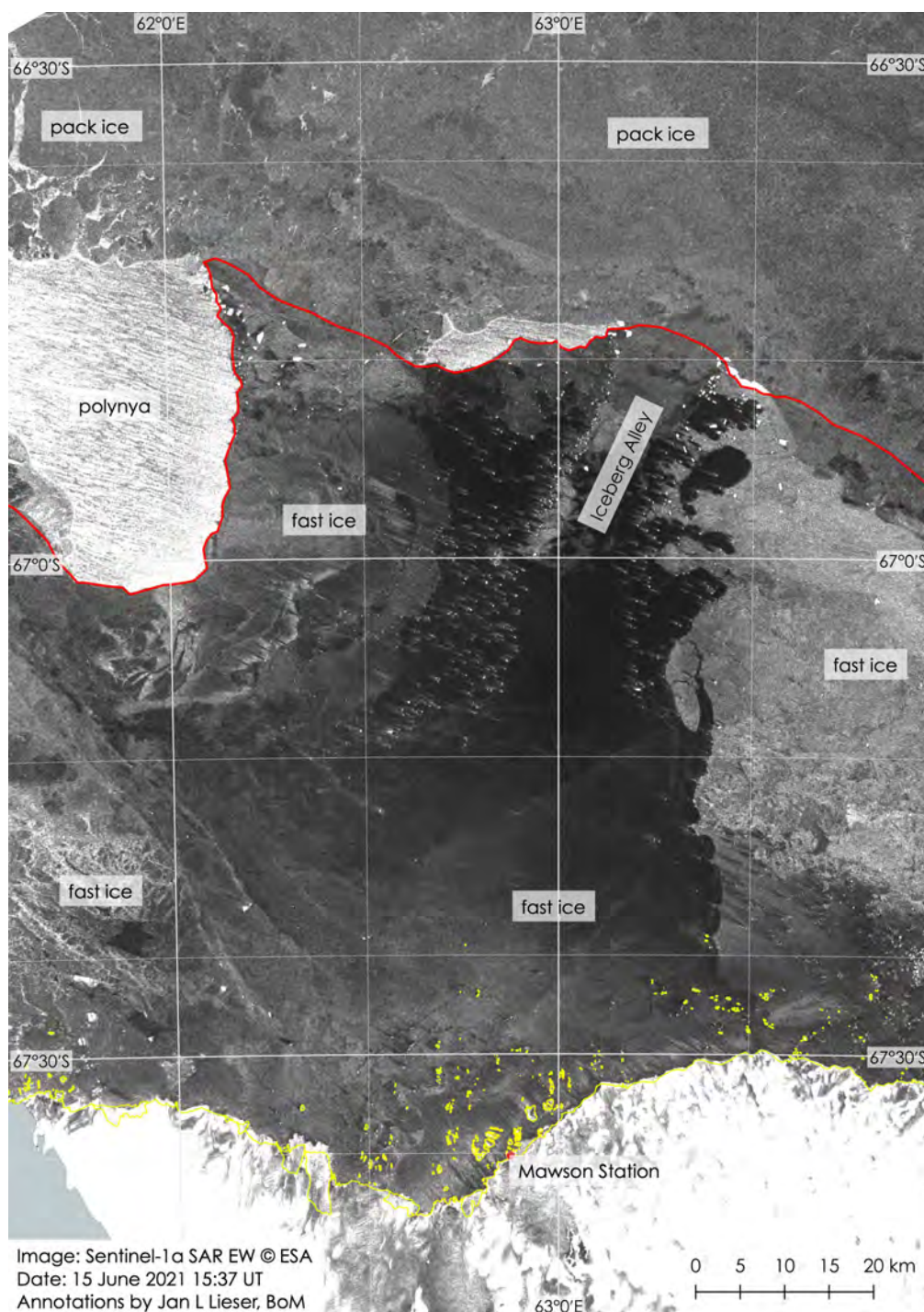


Figure 1: Sentinel-1a SAR EW data acquired 15 June 2021 at 12:20 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Friday 18th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and offshore. The fast-ice edge on 12 June 2021 is marked by a dashed red line.

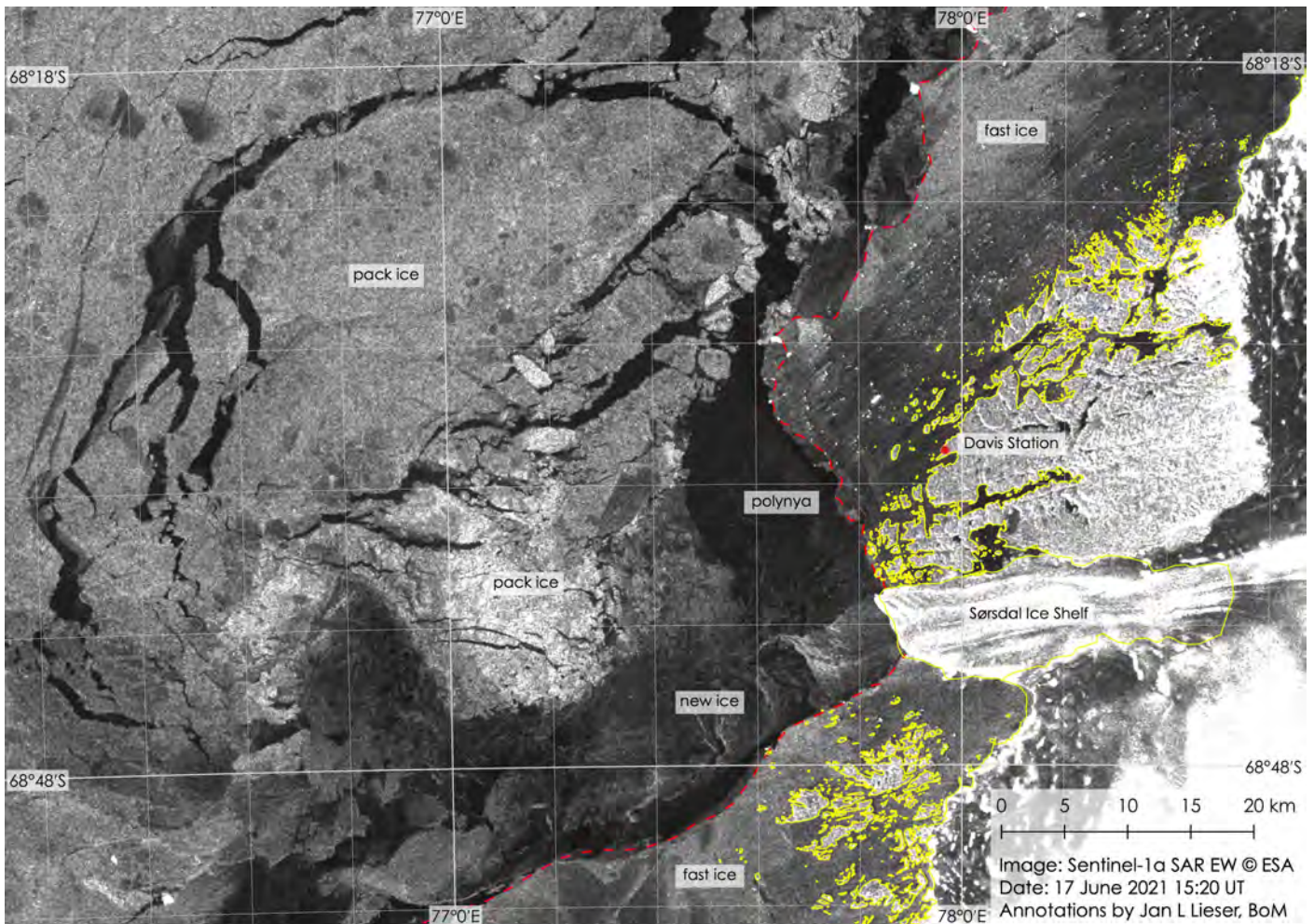


Figure 1: Sentinel-1a SAR EW data acquired 17 May 2021 at 15:20 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been largely stable during the past week. North of the station, the fjords of the Vestfold Hills are closed by fast ice. Further offshore, high pack-ice concentration of various types of sea ice is evident from the SAR data only broken up by some fractures.

Off the station and Sørsdal Ice Shelf (south of the station), a small polynya is mostly covered by thin new sea ice.

West of 76°30'E, the northern sea-ice edge (not shown in the figure) is at the median sea-ice extent for June whereas east 76°30'E, the sea-ice edge is up to 60 nautical miles south of the median extent for June.

Ice Bulletin: Mawson Station

Issued: Friday 18th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Station and offshore. A light-grey diagonal line is a stitching artefact where two consecutive scenes are joint together. A proposed route along the coastline between Mawson Station and Colbeck Hut is shown in colour-coded segments.

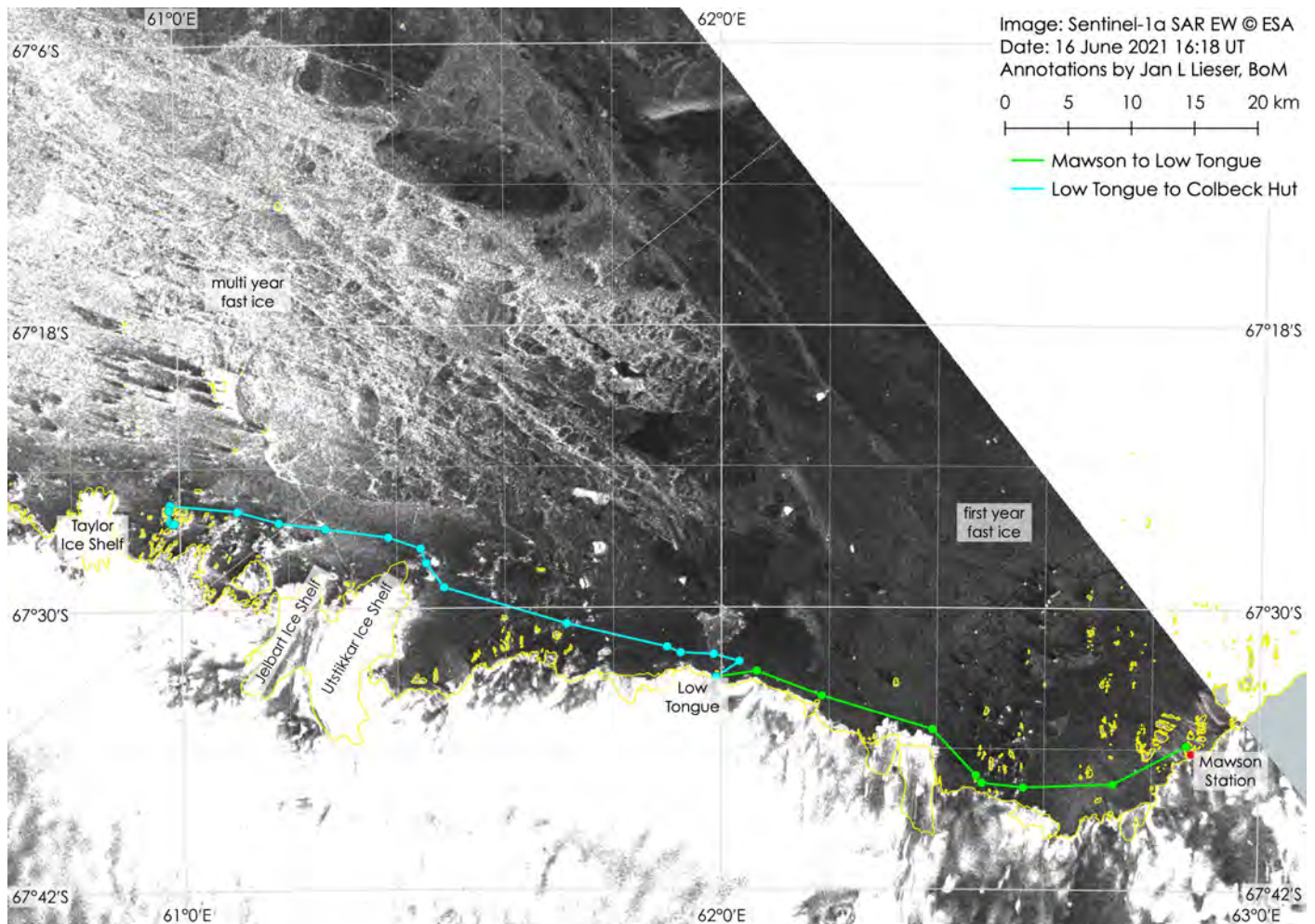


Figure 1: Sentinel-1a SAR EW data acquired 16 June 2021 at 16:18 UT and provided by PolarView.

North and west of Mawson Station, first-year fast ice appears smooth between the offshore islands and towards Low Tongue.

West of Low Tongue, second-year and multi-year fast ice is present and more rough the further offshore.

Small to medium-sized icebergs are incorporated in the fast-ice matrix and may exhibit vertical movements with the local tides.

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Ice Bulletin: D'Urville Sea

Issued: Thursday 23rd June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows Day-Night-Band data of the southern D'Urville Sea illuminated by the full moon.

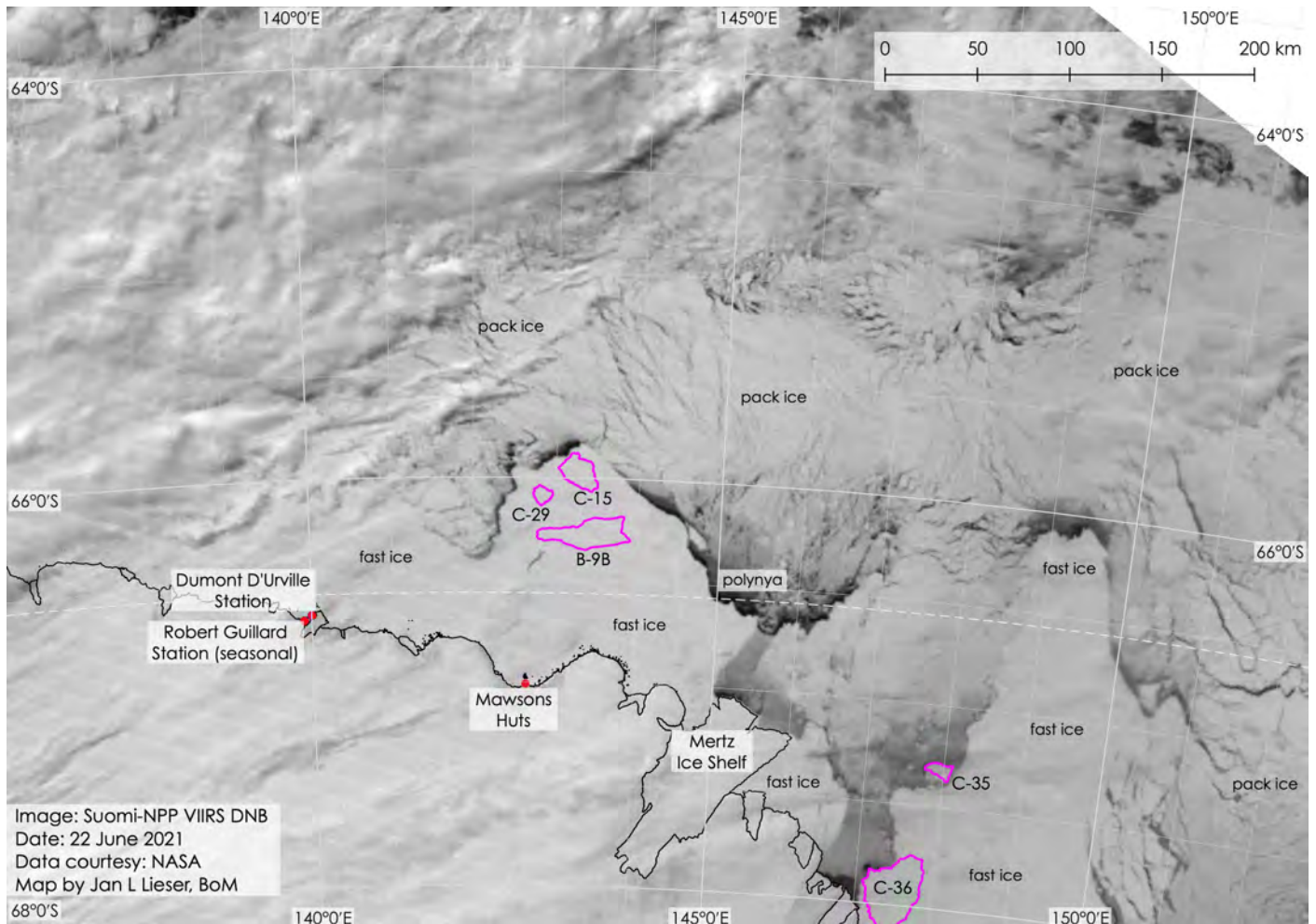


Figure 1: Suomi-NPP VIIRS DNB data acquired 22 June 2021 and provided by NASA.

North of Mawsons Huts, fast ice continues to grow around the large icebergs. Only two larger (but unnamed) icebergs still show minimal movements just south of the western edge of iceberg B-9B, where they are maintaining a hole in the fast ice. Also, iceberg C-35 at the edge of the fast ice north of iceberg C-36, which is grounded immediately north of the Ninnis Ice Shelf (just outside of Figure 1) is still slightly mobile.

Polynyas in the region are still largely frozen over. Only north of the Mertz Ice Shelf and west of iceberg C-36, some open water is present close to the coast.

Further north, the sea-ice edge (not shown in the figure) continues to be largely at the median sea-ice extent for June.

Ice Bulletin: Mawson Station

Issued: Thursday 24th June 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Mawson Station and offshore. A light-grey diagonal line is a stitching artefact where two consecutive scenes are joint together. A proposed route along the coastline between Mawson Station and Colbeck Hut/Taylor Rookery is shown in colour-coded segments.

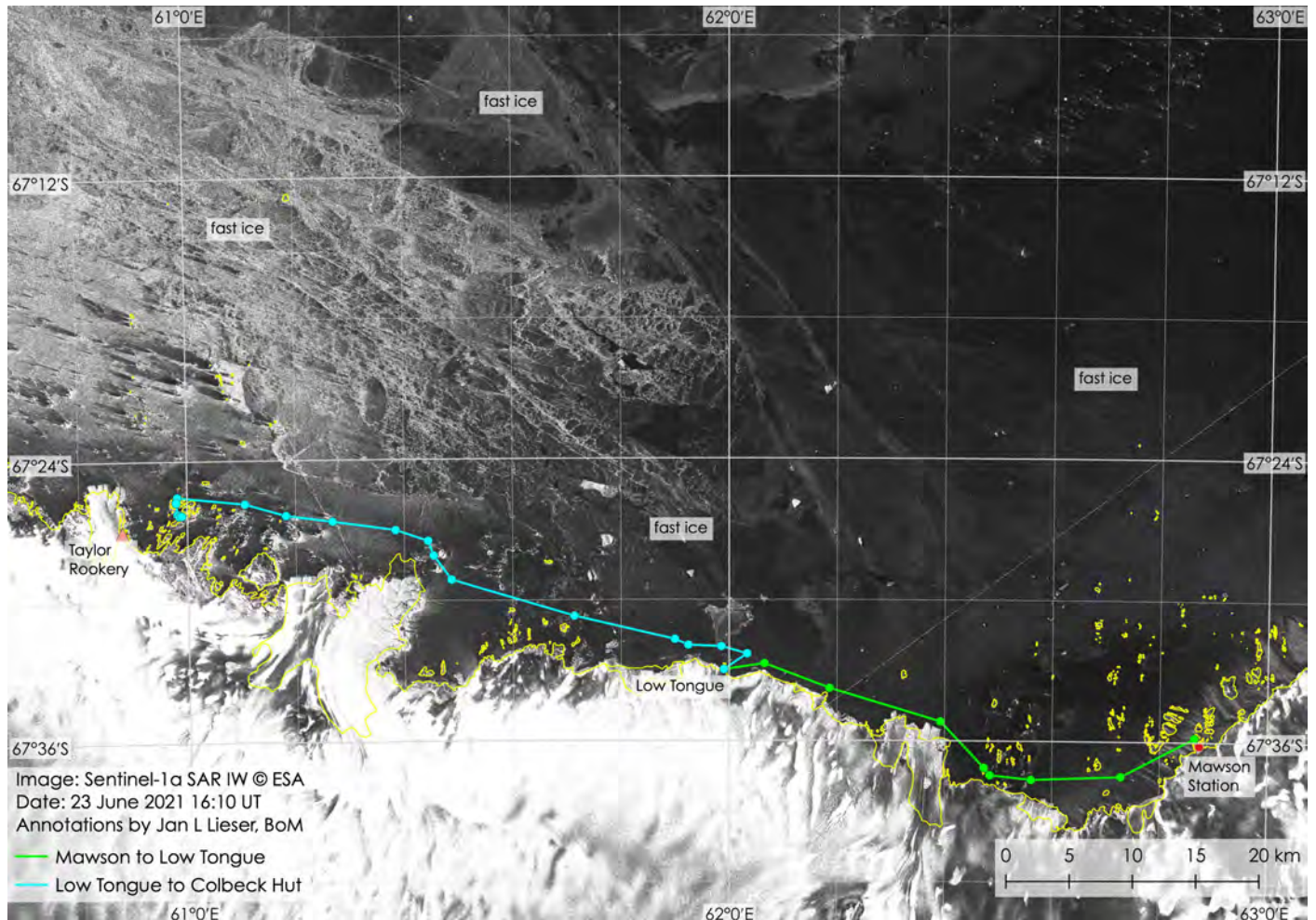


Figure 1: Sentinel-1a SAR IW data acquired 23 June 2021 at 16:10 UT and provided by PolarView.

North and west of Mawson Station, first-year fast ice appears smooth between the offshore islands and towards Low Tongue.

West of Low Tongue, second-year and multi-year fast ice is present and more rough the further offshore.

Small to medium-sized icebergs are incorporated in the fast-ice matrix and may exhibit vertical movements with the local tides.

Ice Bulletin: Davis Station

Issued: Friday 25th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and offshore. The fast-ice edge on 12 June 2021 is marked by a dashed red line.

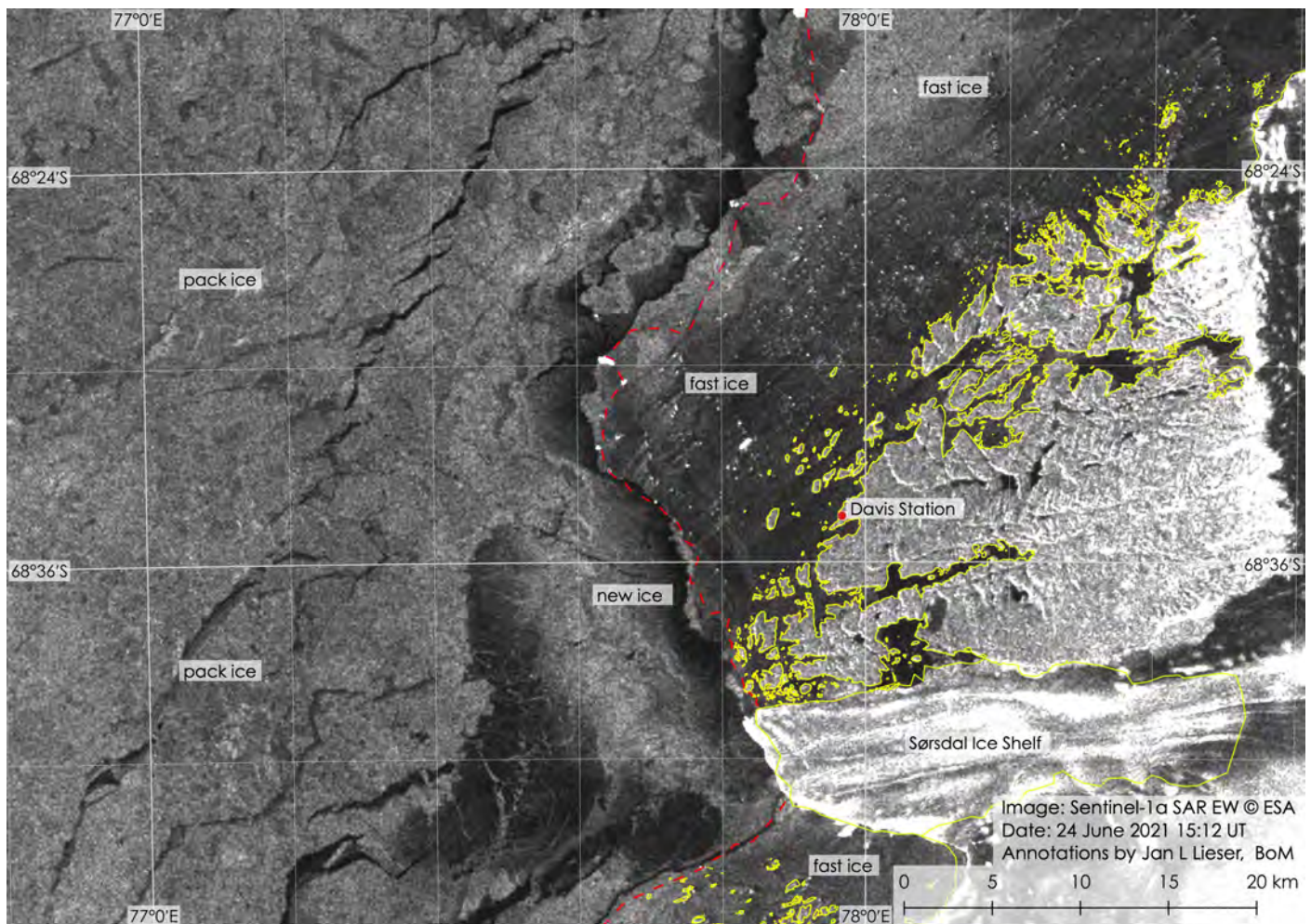


Figure 1: Sentinel-1a SAR EW data acquired 24 June 2021 at 15:12 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been largely stable during the past fortnight. Offshore, high pack-ice concentration of various types of sea ice is evident from the SAR data only broken up by minimal fractures.

Off the station and Sørsdal Ice Shelf (south of the station), new sea ice has closed the polynya temporarily.

The northern sea-ice edge (not shown in the figure) is at around the median sea-ice extent for June.

Ice Bulletin: Casey Station

Issued: Monday 28th June 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

Fast ice has re-grown off the previous edge (dashed red line from 15 June 2021).

West of the fast-ice edge, a large polynya is still producing new sea ice.

The northern sea-ice edge (not shown in the figure) is between the median sea-ice extent for June and July.

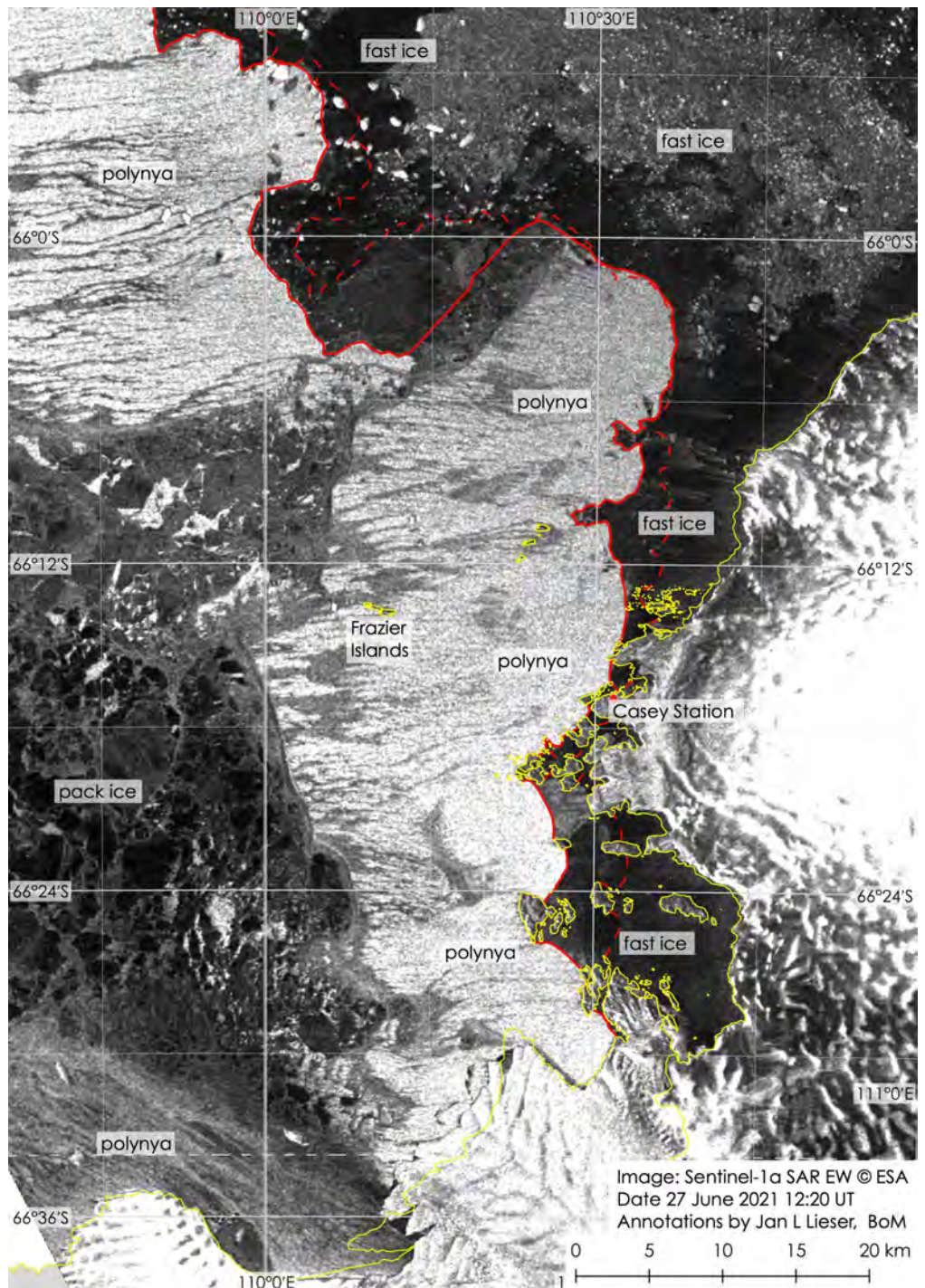


Figure 1: Sentinel-1a SAR EW data acquired 27 June 2021 at 12:20 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Tuesday 29th June 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Mawson Station and offshore. A light-grey diagonal line is a stitching artefact where two consecutive scenes are joint together. A proposed route along the coastline between Mawson Station and Colbeck Hut/Taylor Rookery is shown in colour-coded segments.

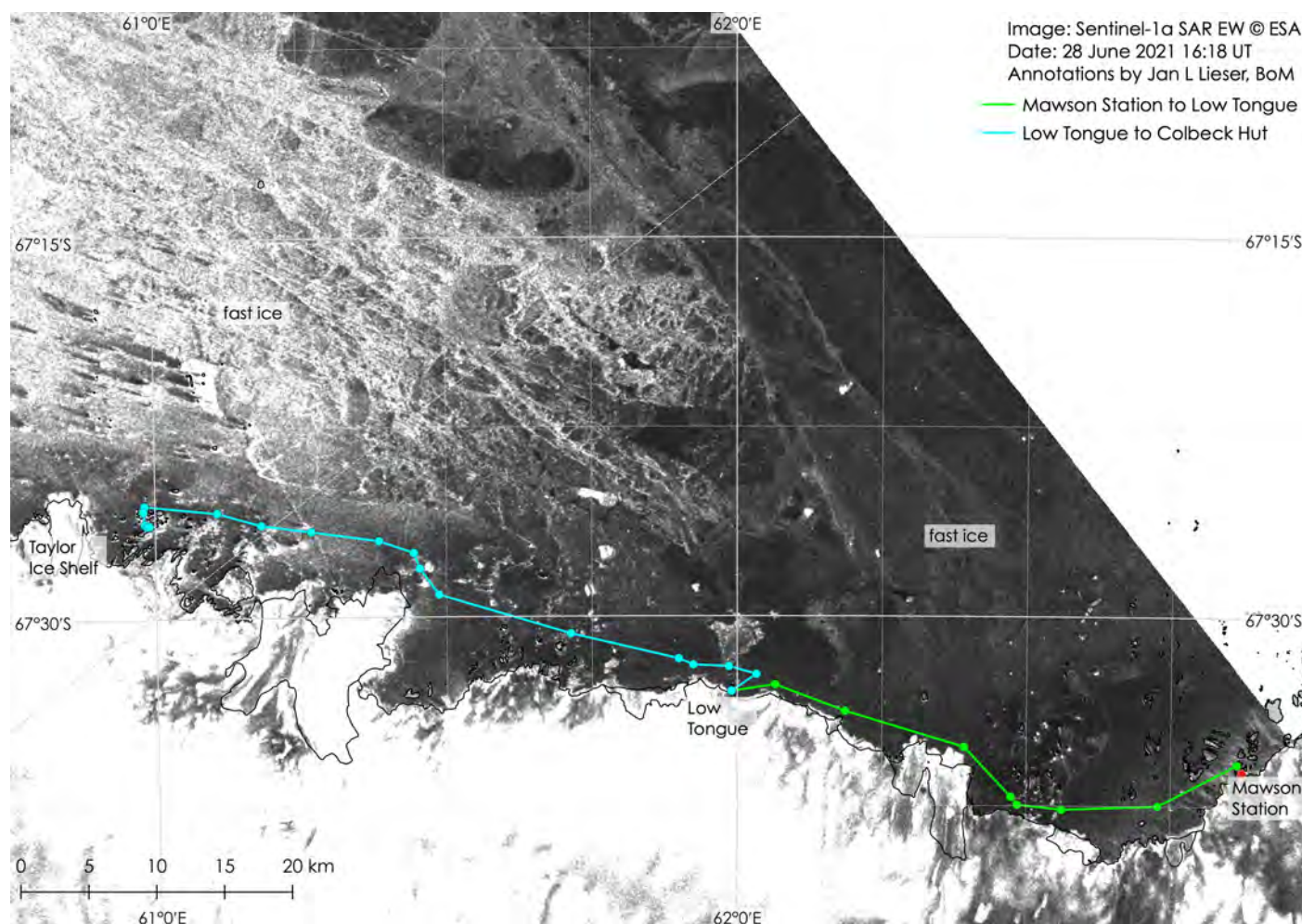


Figure 1: Sentinel-1a SAR IW data acquired 28 June 2021 at 16:10 UT and provided by PolarView.

Fast-ice conditions have not changed significantly during the past week. North and west of Mawson Station, first-year fast ice appears smooth between the offshore islands and towards Low Tongue.

West of Low Tongue, second-year and multi-year fast ice is present and more rough the further offshore.

Small to medium-sized icebergs are incorporated in the fast-ice matrix and may exhibit vertical movements with the local tides.

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Ice Bulletin: Princess Astrid Coast

Issued: Monday 5th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Princess Astrid Coast. The positions of various large icebergs are indicated by colour-coded shapes as they drift along the coast westward. East and west of the Lazarev Ice Shelf, some fast ice is attached to the coast.

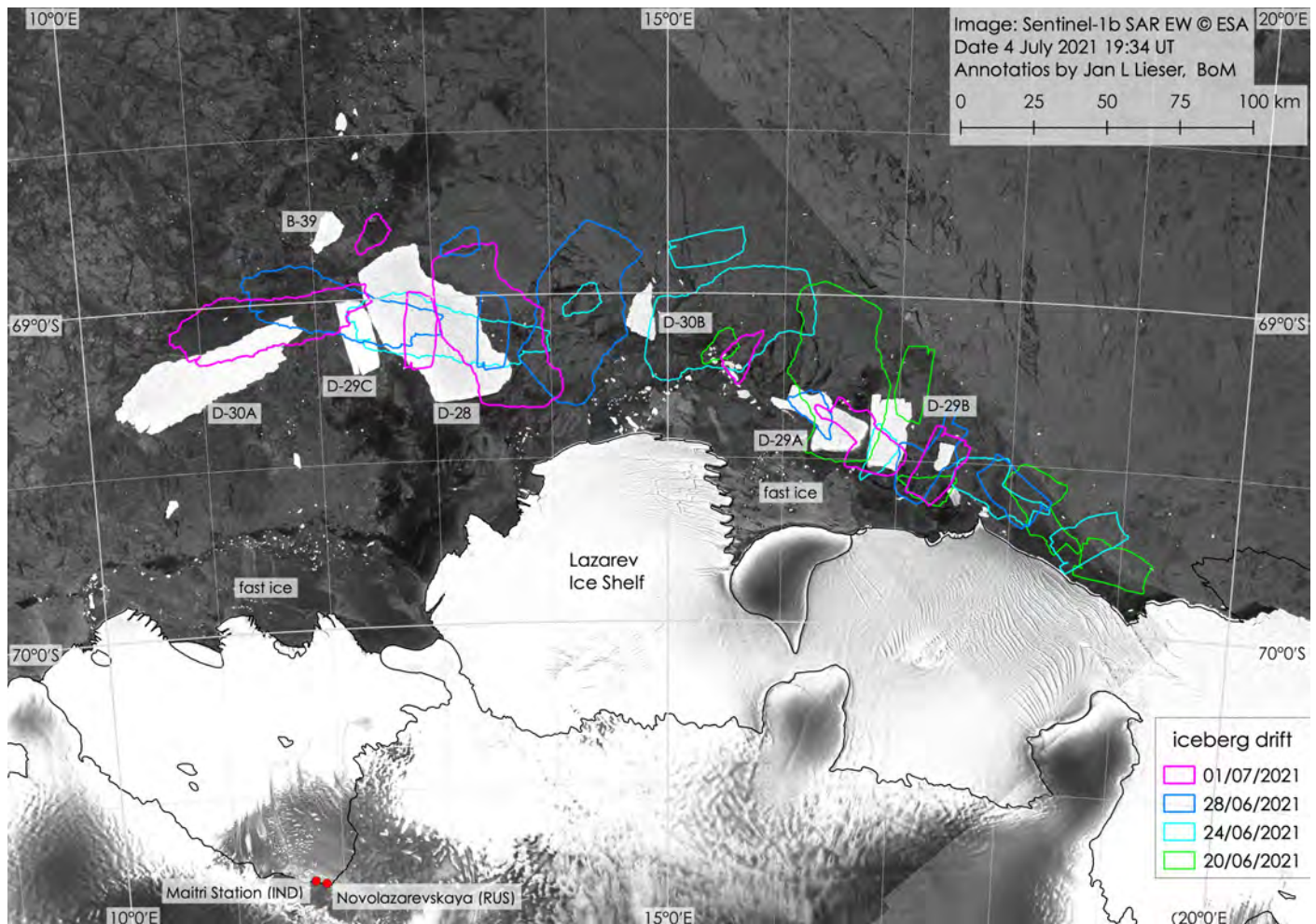


Figure 1: Sentinel-1b SAR EW data acquired 4 July 2021 at 19:34 UT and provided by PolarView.

Since iceberg D-28 assisted in the calving of iceberg D-29 (which broke immediately into three pieces) and iceberg D-30 (which as well broke immediately into two pieces) about a month ago, all these new icebergs have joined D-28 and iceberg B-39 on their westward journey along Princess Astrid Coast.

Of the D-29 icebergs, D-29C drifted the farthest (280 nautical miles) and overtook iceberg D-28, while iceberg D-29B drifted only 180 nautical miles since 31 May 2021.

On 6 June 2021, the D-30 icebergs calved and since then iceberg D-30A has drifted 215 nautical miles while iceberg D-30B has drifted 80 nautical miles less than that.

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Ice Bulletin: Mawson Station

Issued: Tuesday 6th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Mawson Station and offshore. A light-grey diagonal line is a stitching artefact where two consecutive scenes are joint together. A proposed route along the coastline between Mawson Station and Colbeck Hut/Taylor Rookery is shown in colour-coded segments.

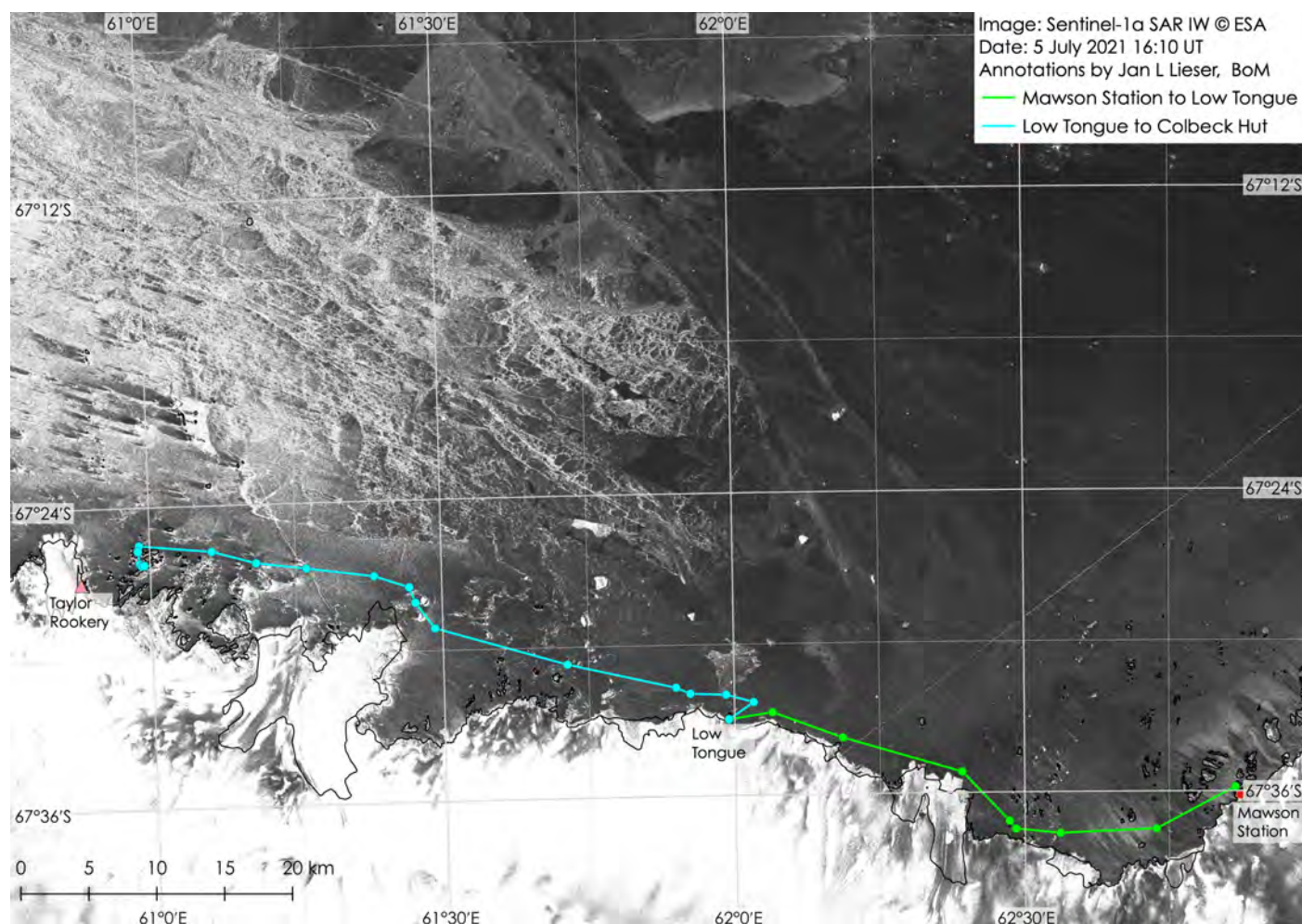


Figure 1: Sentinel-1a SAR IW data acquired 5 July 2021 at 16:10 UT and provided by PolarView.

Fast-ice conditions have not changed significantly during the past week. North and west of Mawson Station, first-year fast ice appears smooth between the offshore islands and towards Low Tongue.

West of Low Tongue, second-year and multi-year fast ice is present and more rough the further offshore.

Small to medium-sized icebergs are incorporated in the fast-ice matrix and may exhibit vertical movements with the local tides.

Figures 2 and 3 show details of sections of the proposed route between Mawson Station and Low Tongue and between Low Tongue and Colbeck Hut/Taylor Rookery, respectively. At waypoint 'COL-10', a refrozen crack is visible as a line across the ice surface.

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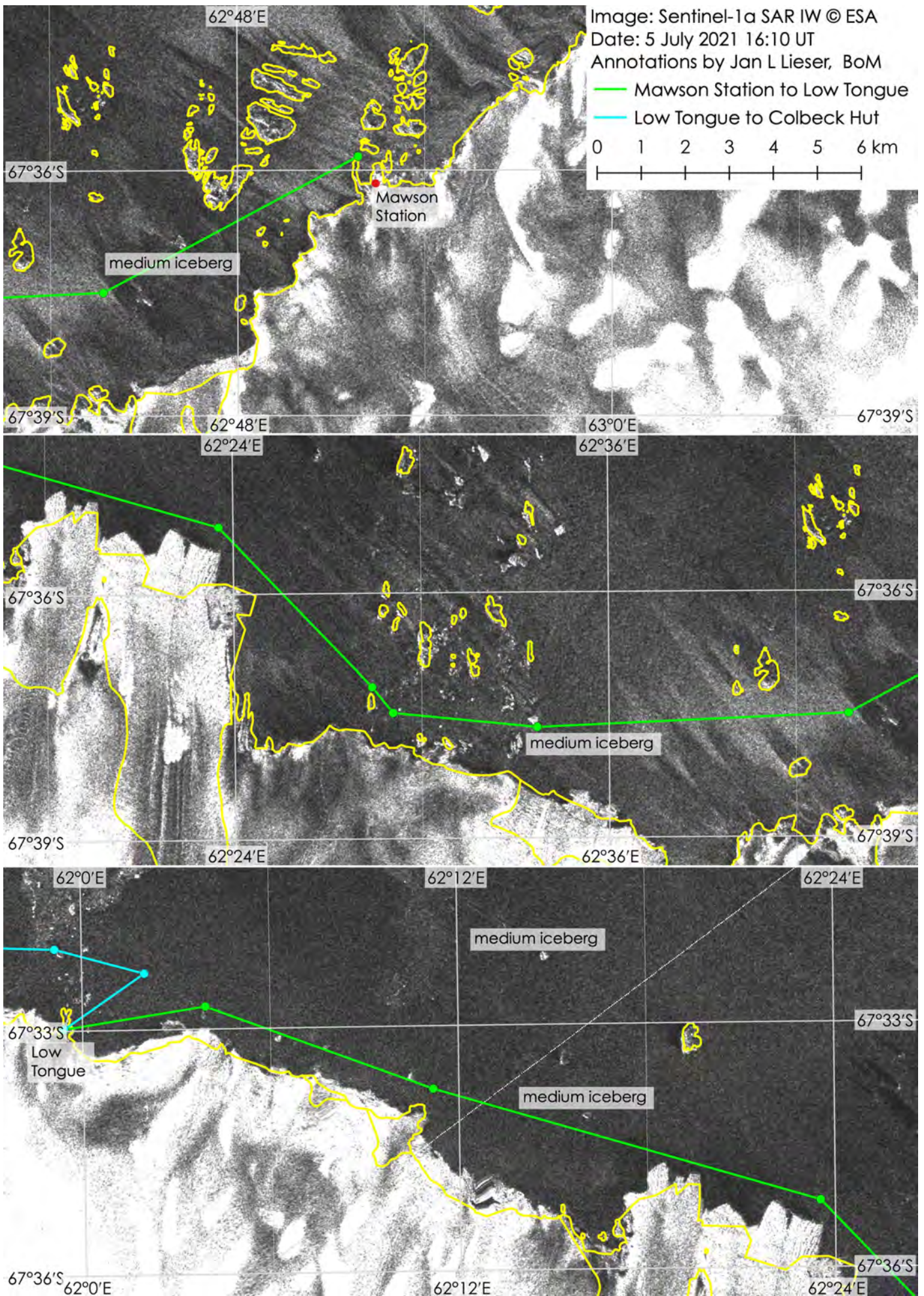


Figure 2: Sentinel-1a SAR IW data acquired 5 July 2021 at 16:10 UT and provided by PolarView.

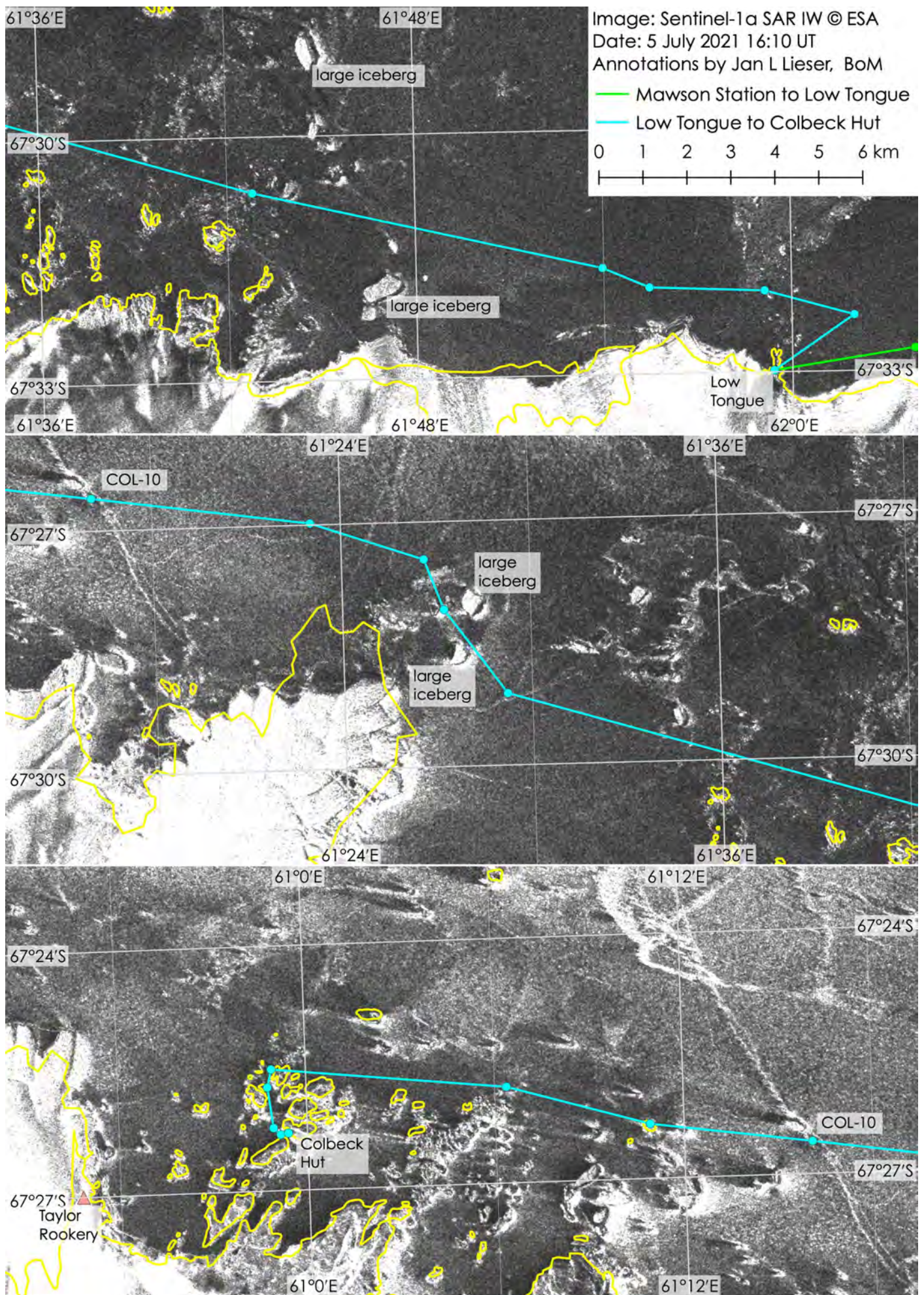


Figure 3: Sentinel-1a SAR IW data acquired 5 July 2021 at 16:10 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Tuesday 8th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line (dashed red line from 27 June 2021).

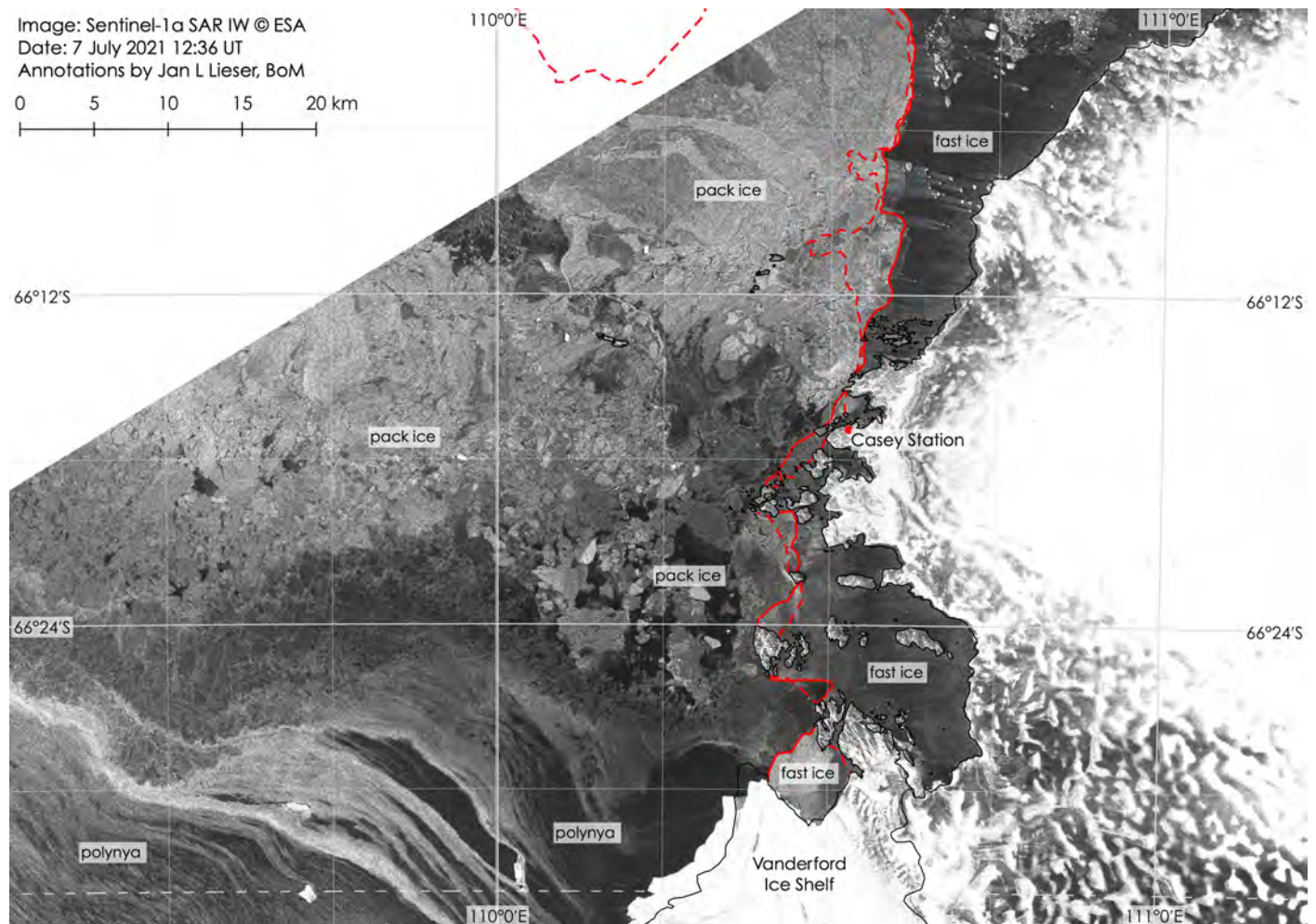


Figure 1: Sentinel-1a SAR IW data acquired 7 July 2021 at 12:36 UT and provided by PolarView.

North of the Vanderford Ice Shelf, a large polynya is still producing new sea ice. North of the polynya, pack ice has closed in on the fast-ice edge again.

The northern sea-ice edge (not shown in the figure) is up to 30 nautical miles north of the median sea-ice extent for July east of 106°0'E (including north of Law Dome).

Ice Bulletin: Antarctica

Issued: Friday 9th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

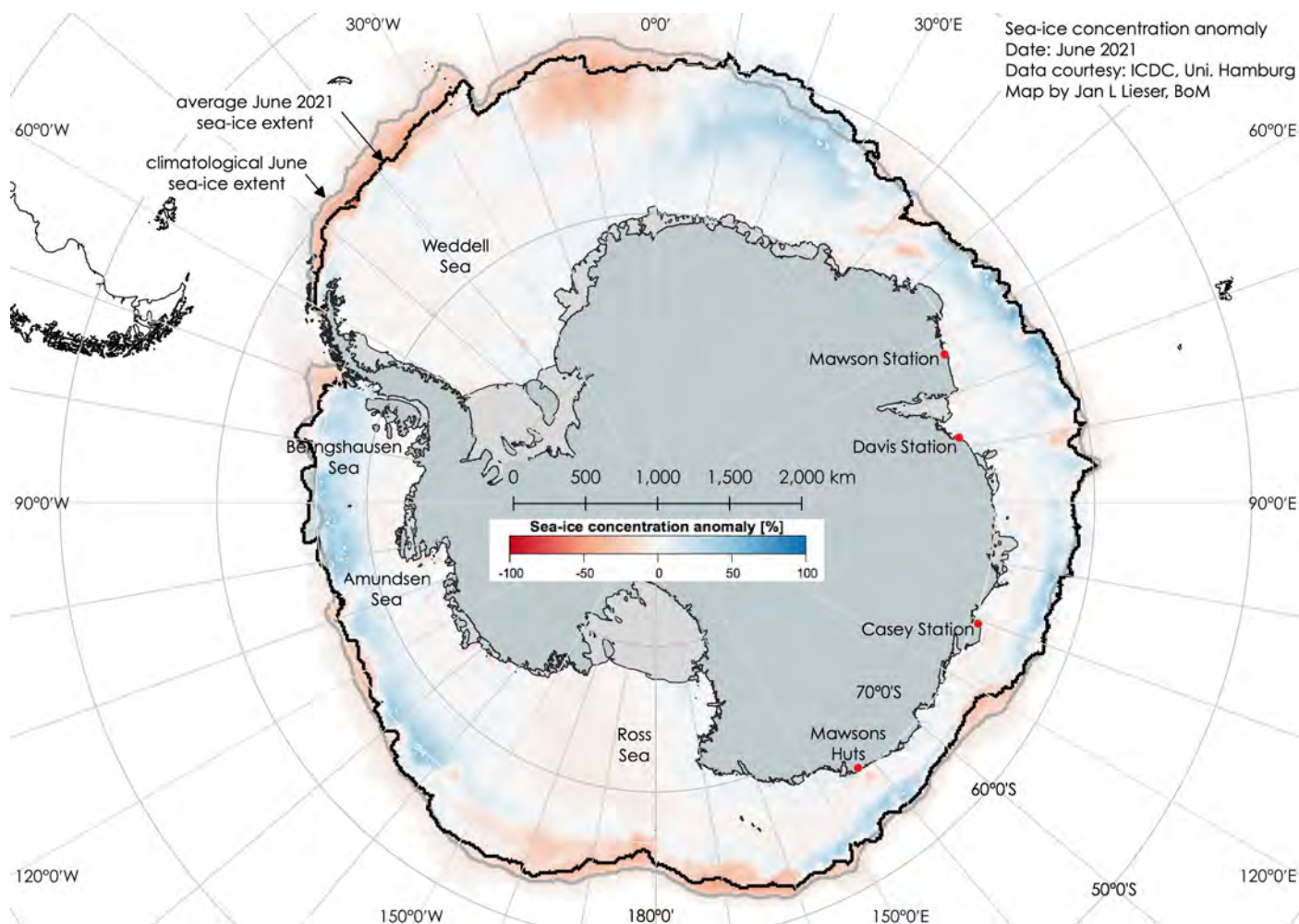


Figure 1: Sea-ice concentration anomaly for June 2021 provided by ICDC (Universität Hamburg).

In June 2021, pan-Antarctic sea-ice extent sat just below par with the climatological June average, but regionally sea-ice extent and associated concentration anomalies varied with a bi-modal pattern of positive anomalies off East and West Antarctica and negative anomalies in the Weddell Sea and Ross Sea.

In East Antarctica, roughly average extent was found and within the extent a slightly positive concentration anomaly spanning almost constantly between 30°0'E and 150°0'E (except between 115°0'E and 130°0'E).

In the Ross Sea, the April trend continued with lower-than-average sea-ice extent and associated negative concentration while the Amundsen Sea and western Bellingshausen Sea showed average conditions but again negative sea-ice extent and concentration between 105°0'W and 125°0'W and near the western side of the Antarctic Peninsula.

The Weddell Sea sea-ice extent continued to experience strongly below average conditions

Ice Bulletin: Davis Station

Issued: Friday 9th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and offshore. The fast-ice edge is marked by a red line (on 12 June 2021 as a dashed red line).

Off Davis Station, the fast-ice edge has been retreating slightly during the past weeks. Offshore, high pack-ice concentration of various types of sea ice is evident from the SAR data and some larger polynyas north of 68°0'S.

Off the station and Sørsdal Ice Shelf (south of the station), new sea ice is produced in the small polynya (as well as the polynyas further north).

The northern sea-ice edge (not shown in the figure) is at around the median sea-ice extent for June, which is about 80 nautical miles south of the July median extent.



Figure 1: Sentinel-1a SAR EW data acquired 8 July 2021 at 14:56 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Thursday 15th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data northeast of Mawson Station. The expected location of Auster Rookery is marked with a pink triangle (also in the inset).

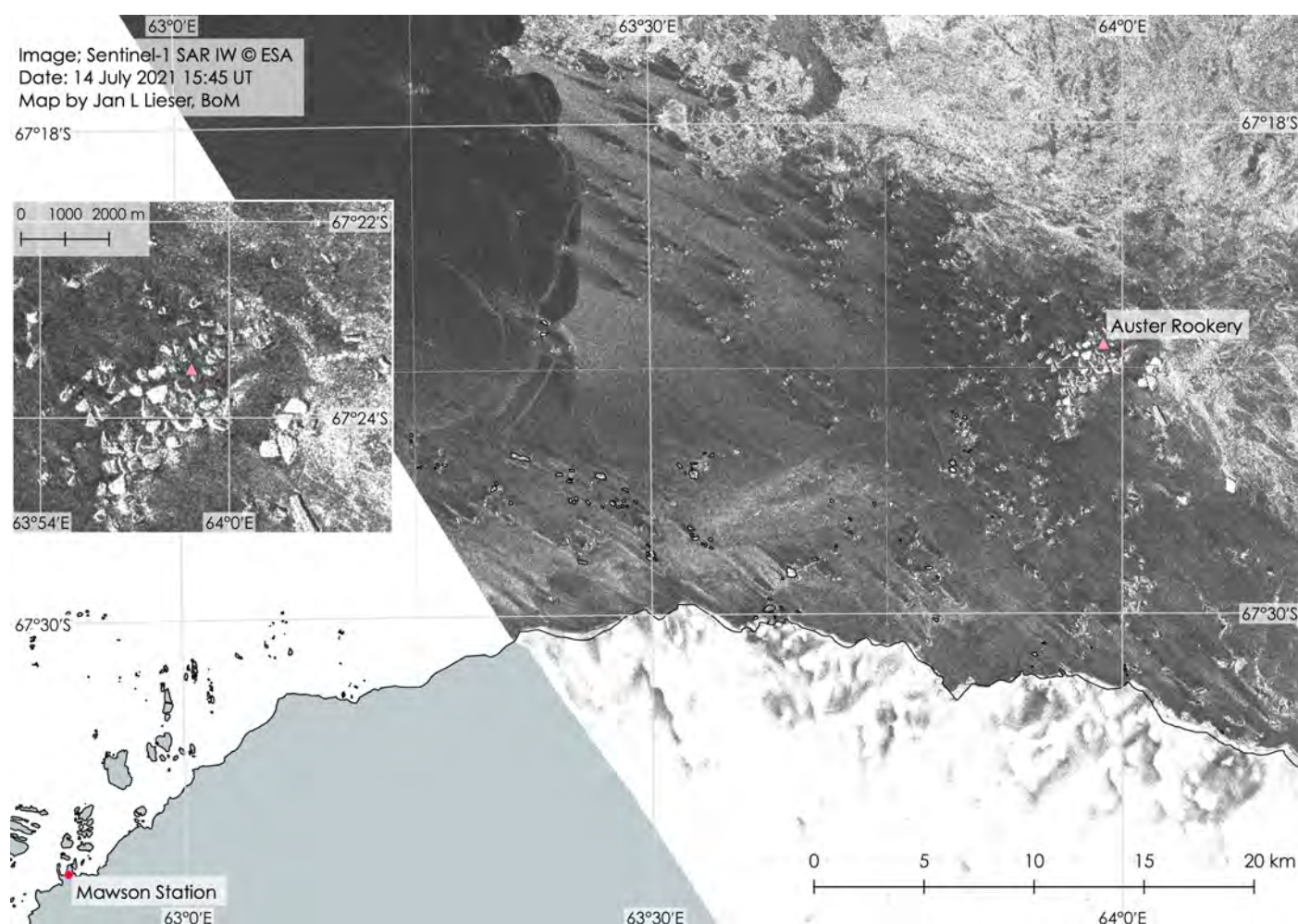


Figure 1: Sentinel-1a SAR IW data acquired 14 July 2021 at 15:45 UT and provided by PolarView.

Northeast of Mawson Station, three types of fast ice are present. West of 63°25'E, the newest fast ice appears dark grey in the SAR data. Further east along the coast, old fast ice appears in a lighter grey and is similarly smooth as the newest fast ice but is affected by wind scouring and snow dunes in southeast-northwest orientation behind near-shore islands and trapped icebergs. In the northeast, the bright tones are caused by rough ex-pack ice that accreted on the old fast-ice edge.

Auster Rookery is expected in an area of grounded and trapped icebergs (see Figure 1 inset).

Ice Bulletin: Casey Station

Issued: Friday 16th July 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

West of Casey Station, a large polynya is producing new sea ice. North of the station, fast ice, which has grown between icebergs grounded on Petersen Bank, has assumed its typical shape.

The northern sea-ice edge (not shown in the figure) has been compacted and is up to 15 nautical miles south of the median sea-ice extent for July east of 106°0'E (including north of Law Dome).

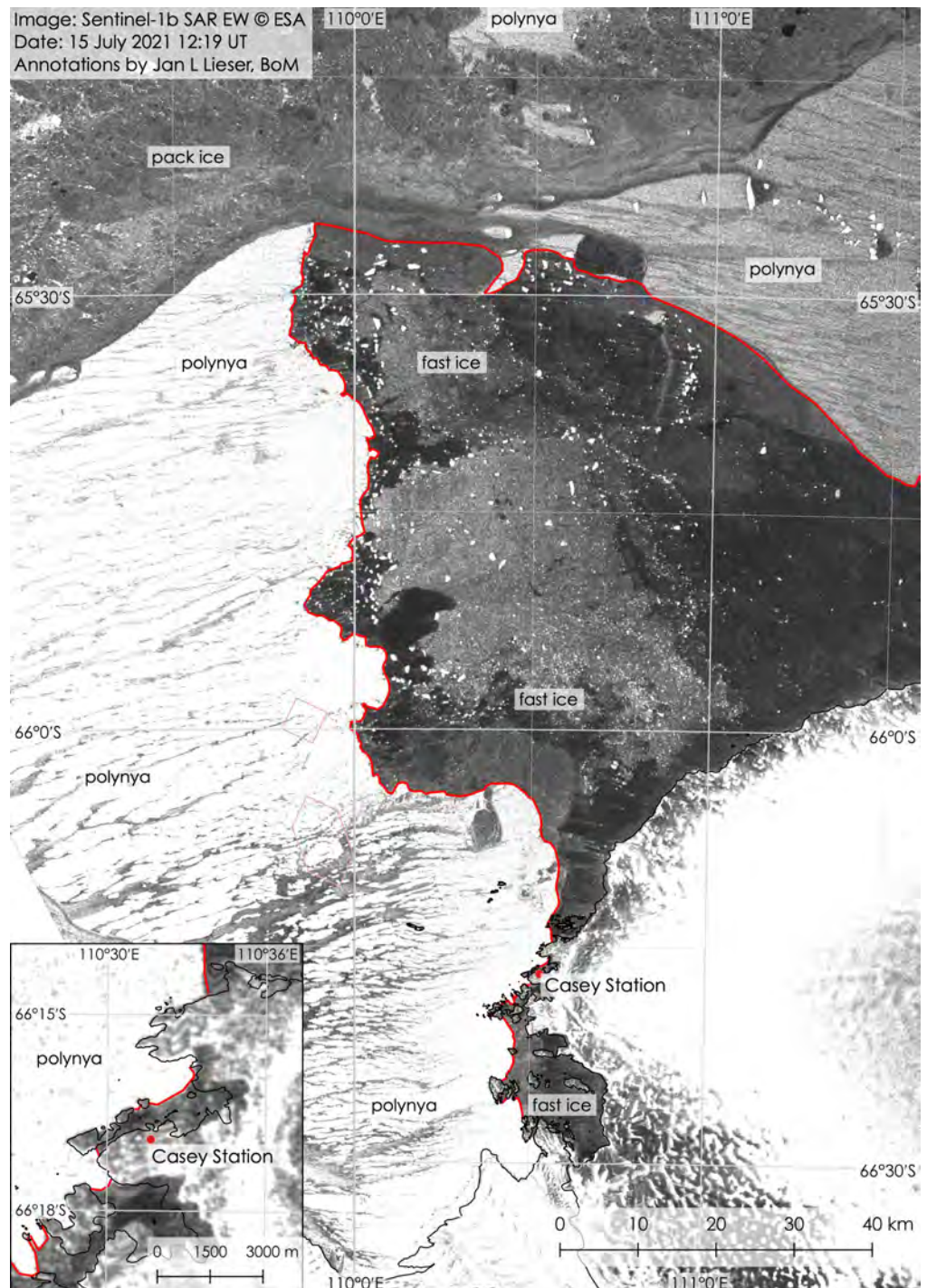


Figure 1: Sentinel-1a SAR EW data acquired 15 July 2021 at 12:19 UT and provided by PolarView.

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Ice Bulletin: Davis Station

Issued: Tuesday 20th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and offshore. The fast-ice edge on 8 July 2021 is marked by a dashed red line.

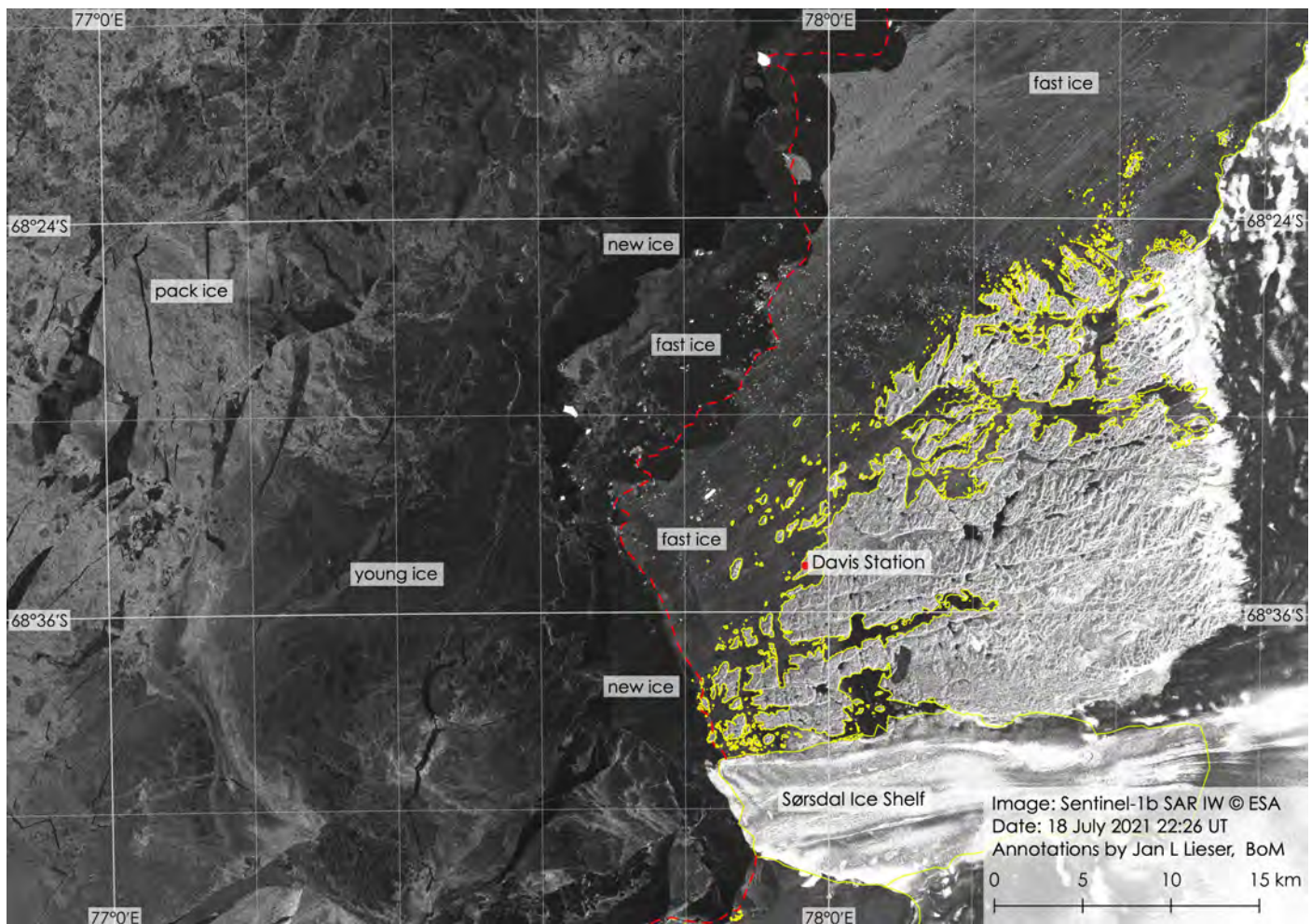


Figure 1: Sentinel-1b SAR IW data acquired 18 July 2021 at 22:26 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has been growing northward during the past two weeks. Offshore, high pack-ice concentration of various types of sea ice is evident from the SAR data.

Off the station and Sørsdal Ice Shelf (south of the station), the small polynya is closed by new sea ice.

The northern sea-ice edge (not shown in the figure) is about 50 nautical miles south of the July median extent.

Ice Bulletin: Mawson Station

Issued: Thursday 22nd July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data northeast of Mawson Station. The fast-ice edge is marked by a red line. The expected location of Auster Rookery is marked with a pink triangle.

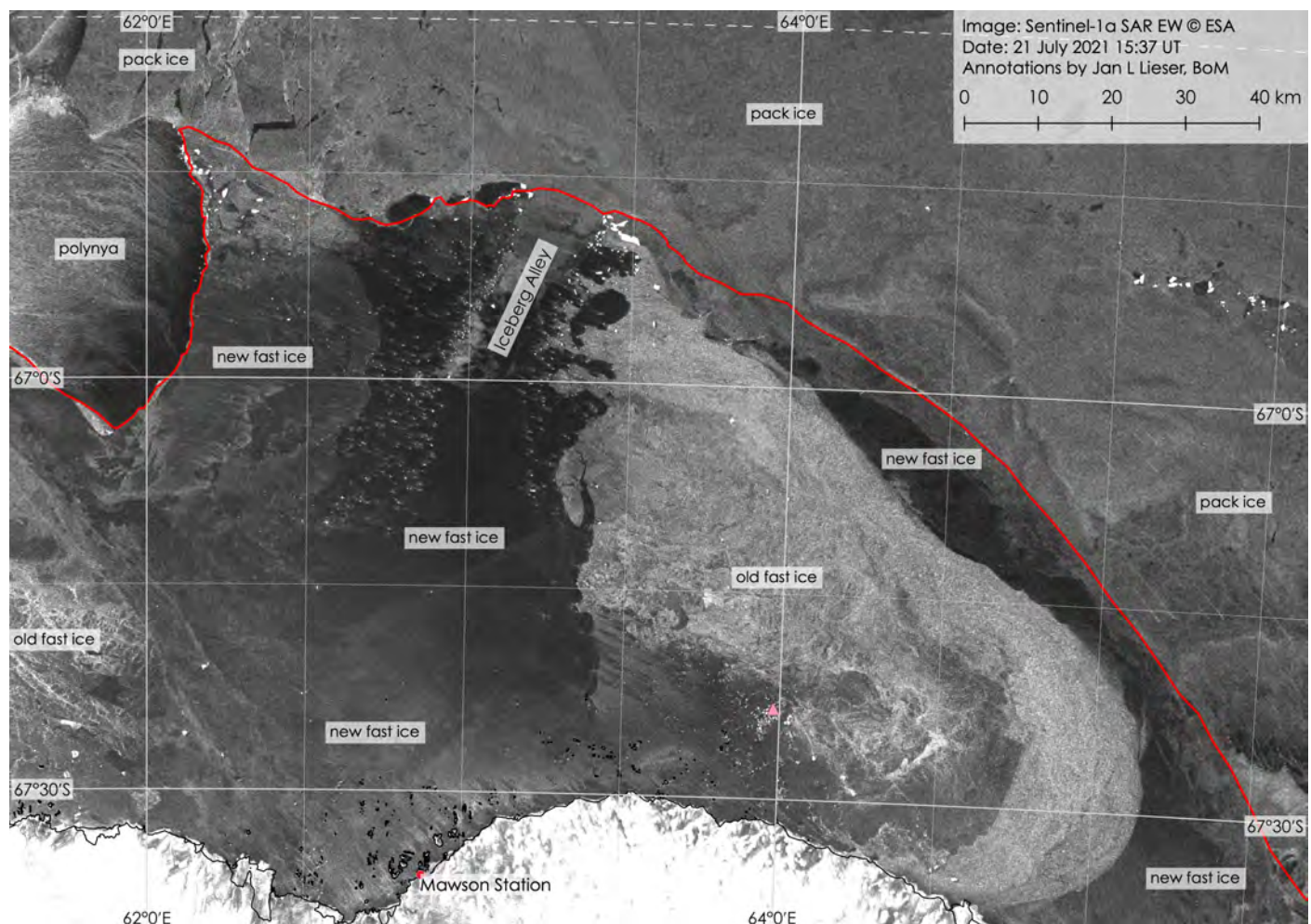


Figure 1: Sentinel-1a SAR EW data acquired 21 July 2021 at 15:37 UT and provided by PolarView.

Off Mawson Station, three types of fast ice are present. North of the station and to about 63°25'E, new (first-year) fast ice appears dark grey in the SAR data. Further east along the coast, old fast ice appears in a lighter grey and is similarly smooth as the newest fast ice but is affected by wind scouring and snow dunes in southeast-northwest orientation behind near-shore islands and trapped icebergs (including the icebergs in the vicinity of Auster Rookery). North of this old fast ice, the bright tones are caused by rough ex-pack ice that accreted on the old fast-ice edge.

Northwest of Mawson Station, a polynya is roughly 40 nautical miles away. Off the fast-ice edge, high concentration of first-year pack ice is drifting predominantly westward.

The northern sea-ice edge (not shown in the figure) is approaching the July median sea-ice extent for the region.

Ice Bulletin: Casey Station

Issued: Thursday 22nd July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line. The July median sea-ice extent is given by the light-blue line.

West of Casey Station, a large polynya is largely frozen over and covered by new sea ice. North of the station, fast ice, which has grown between icebergs grounded on Petersen Bank and further east, has assumed its typical shape.

The northern sea-ice edge has expanded northward and is north of the median sea-ice extent for July west of 110°0'E and south of the median east of 110°0'E.

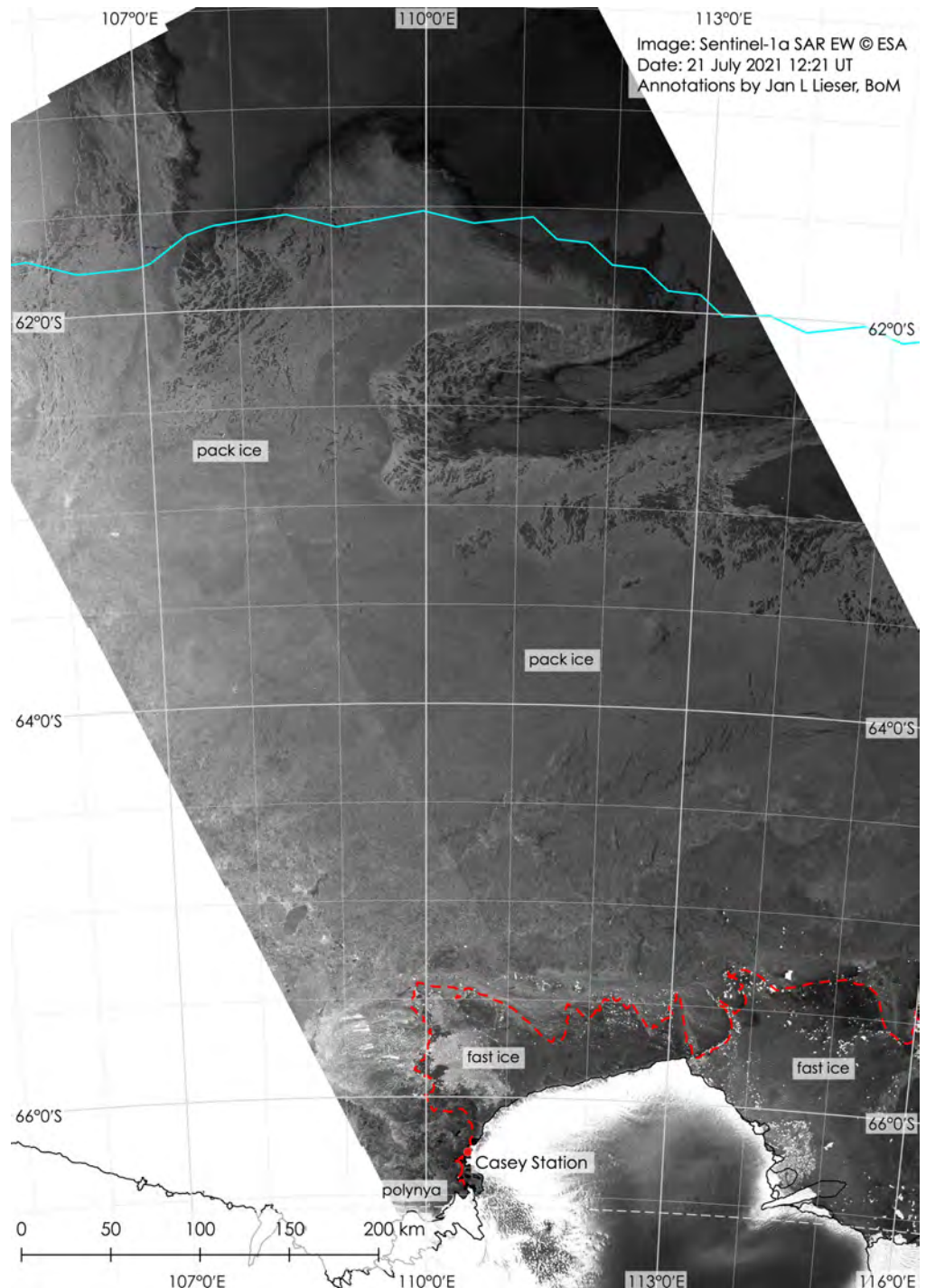


Figure 1: Sentinel-1a SAR EW data acquired 21 July 2021 at 12:21 UT and provided by PolarView.

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Ice Bulletin: D'Urville Sea

Issued: Friday 23rd July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data complemented by Day-Night-Band data of the southern D'Urville Sea. The fast-ice edge is marked by a red line.

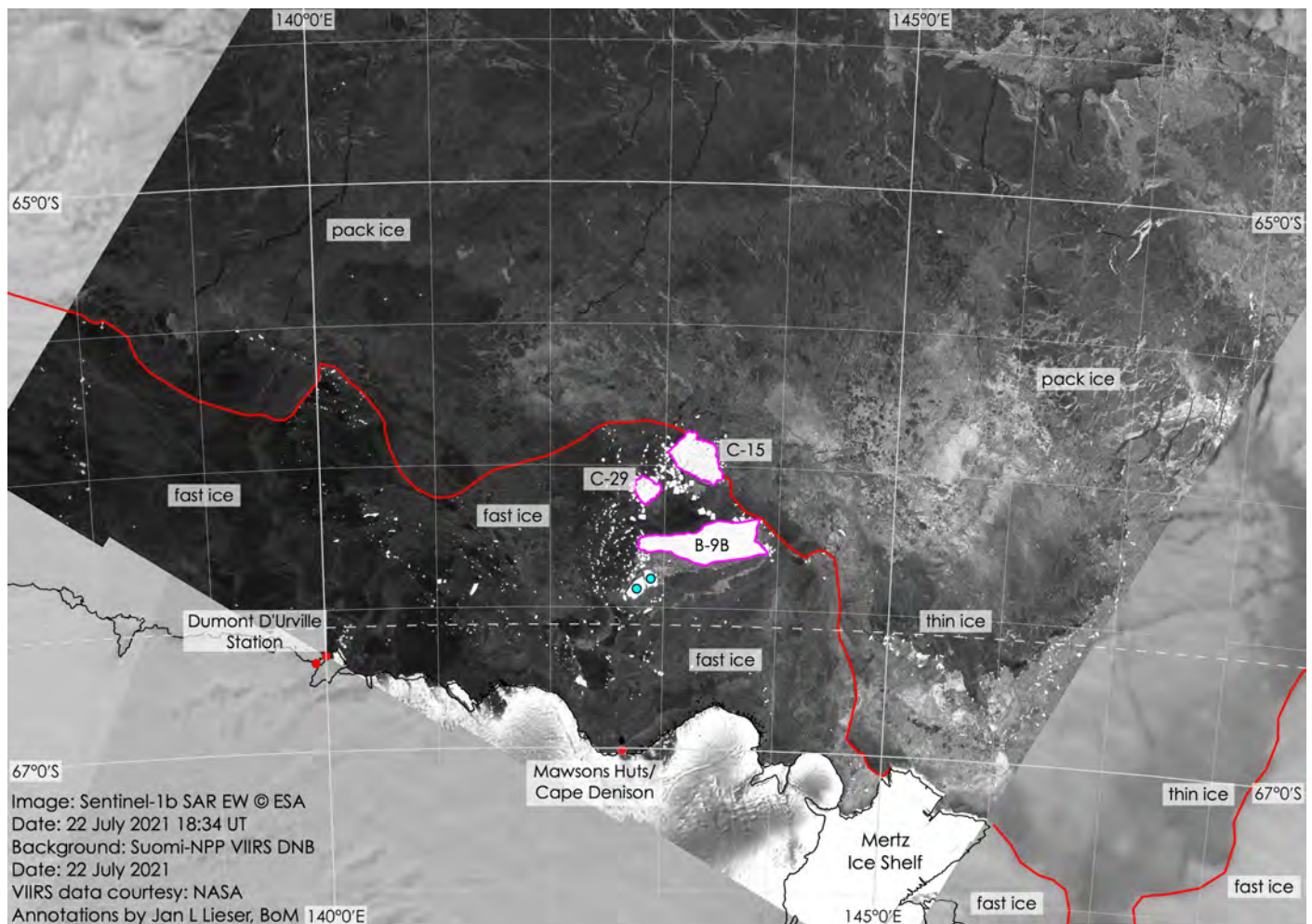


Figure 1: Sentinel-1b SAR EW data acquired 22 July 2021 at 18:34 UT and provided by PolarView;
 background: Suomi-NPP VIIRS DNB data acquired 22 July 2021 and provided by NASA.

North of Mawsons Huts, fast ice has grown around the large icebergs and many smaller grounded icebergs. South of the western edge of iceberg B-9B, two medium-sized icebergs (marked with blue dots) still show minimal movements and are maintaining a hole in the fast ice. Iceberg C-29 is wedged against a row of smaller but grounded icebergs along its western and northern edge.

Polynyas in the region are closed and frozen over. Only north and east of the Mertz Ice Shelf, some thin ice is present, which indicates the locations of previous open water.

The northern sea-ice edge (not shown in the figure) is roughly 40 nautical miles beyond (north of) at the median sea-ice extent for July.

Ice Bulletin: Cooperation Sea

Issued: Monday 26th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows mostly cloud-free Day-Night-Band data of the southern Cooperation Sea illuminated by the (near) full moon.

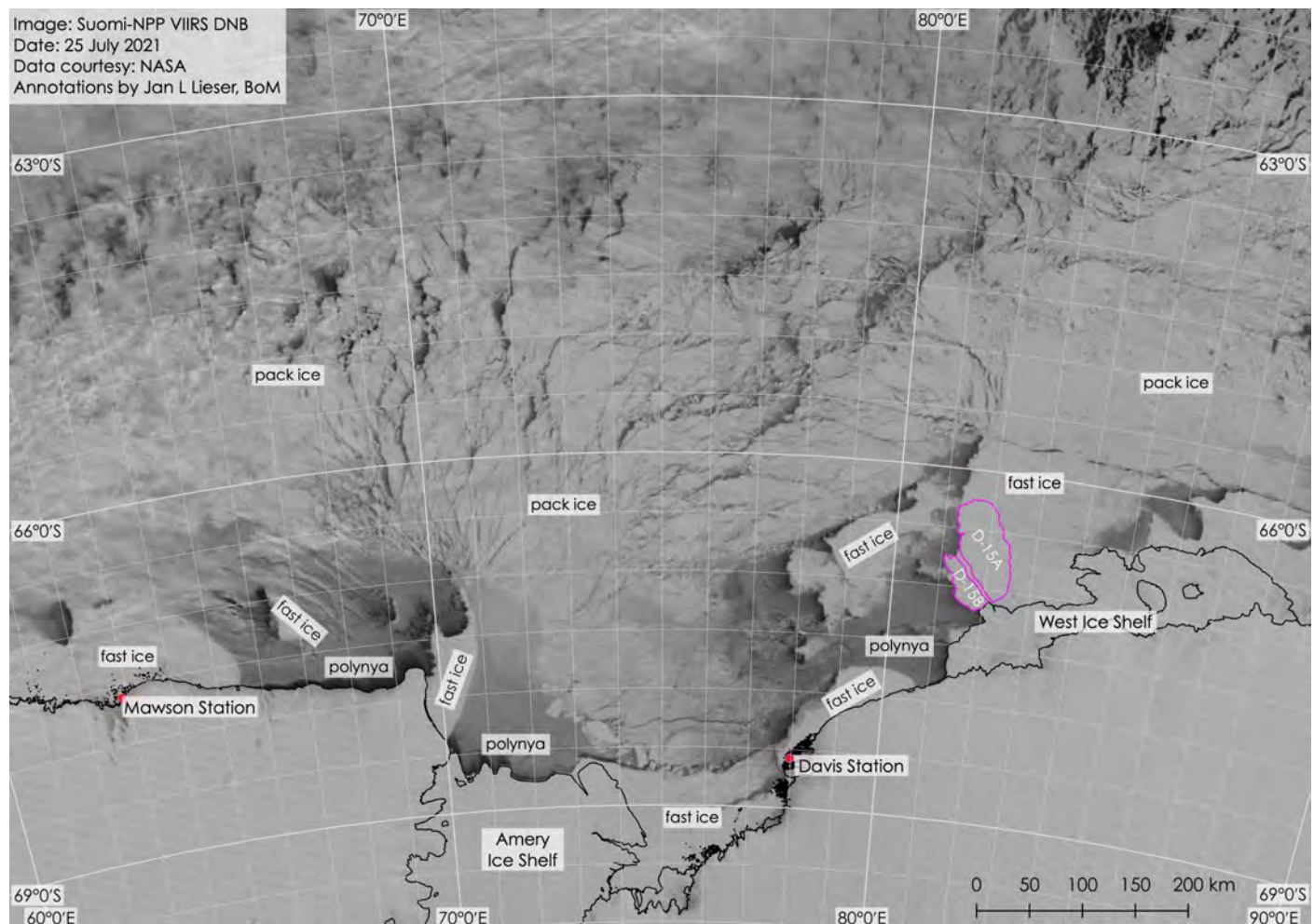


Figure 1: Suomi-NPP VIIRS DNB data acquired 25 July 2021 and provided by NASA.

The entire region is covered by some form of ice. Off Mawson Station, fast ice is present offshore and extending as far east as 65°30'E. Along the coast from there is a polynya that is actively producing new sea ice and a patch of fast ice offshore that is not attached to land. Northwest of the Amery Ice Shelf, coastal fast ice is off Cape Darnley and a polynya appears largely frozen over. Northeast of the Amery Ice Shelf, fast ice stretches almost continuously past Davis Station and towards the West Ice Shelf as far east as 80°45'E. West of the D-15 icebergs, fast ice has grown in large patches around grounded icebergs on Four Ladies Bank. North and east of iceberg D-15A, fast ice is north of the West Ice Shelf.

North of the fast-ice areas and polynyas, predominantly first-year sea ice is generally drifting westward turning south north of the D-15 icebergs and north again north of the Amery Ice Shelf. Some inclusions of old sea ice are to be expected within this pack ice.

Further north, the sea-ice edge (not shown in the figure) continues to be largely at the median sea-ice extent for July west of 74°0'E and slightly below (south of) the median east of 74°0'E.

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Ice Bulletin: Mawson Station

Issued: Tuesday 27th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data northeast of Mawson Station. The fast-ice edge is marked by a red line. The expected location of Auster Rookery is marked with a light-blue dot.

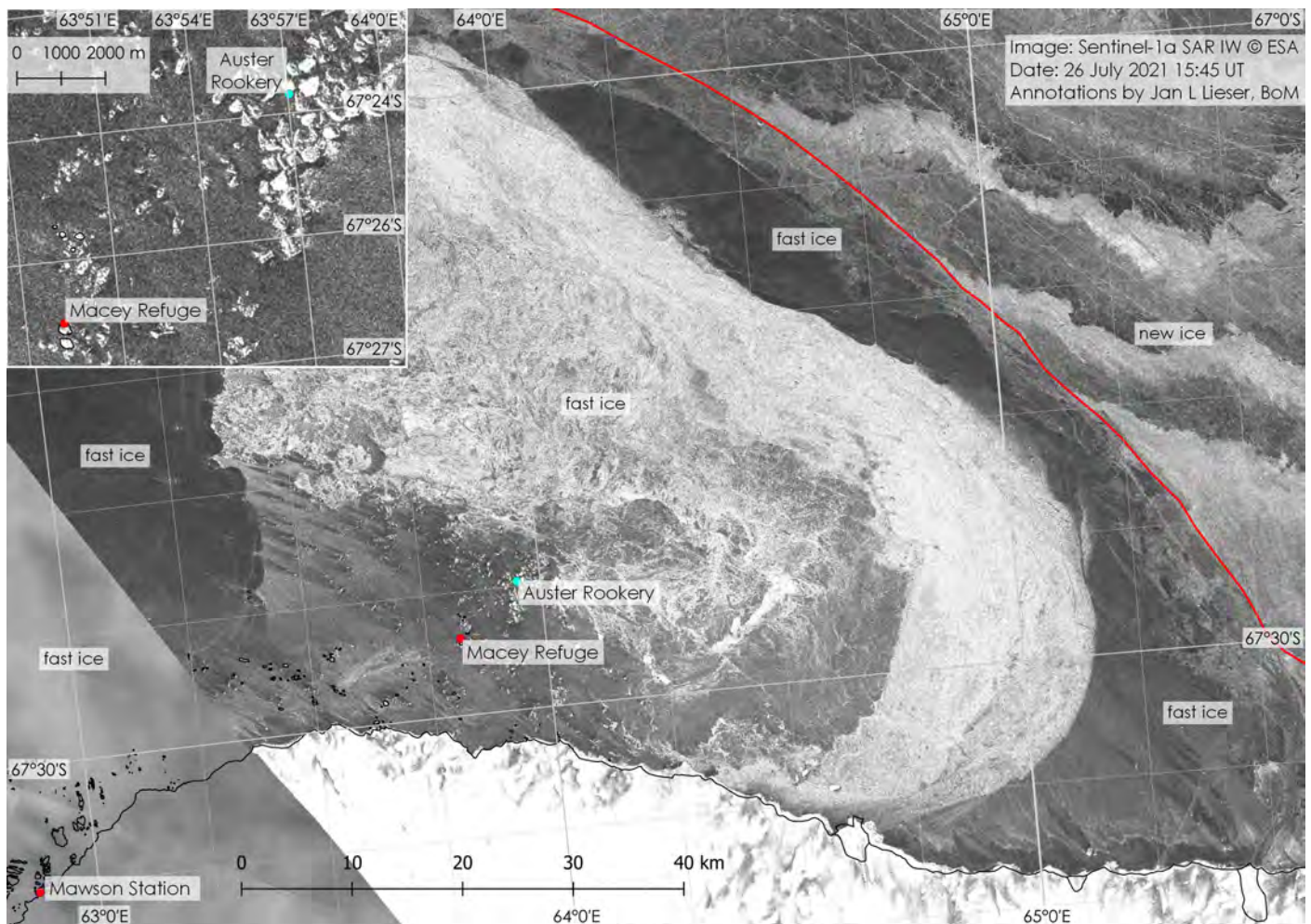


Figure 1: Sentinel-1a SAR IW data acquired 26 July 2021 at 15:45 UT and provided by PolarView; complemented by Suomi-NPP VIIRS DNB data acquired 26 July 2021 and provided by NASA.

Off Mawson Station, the fast-ice conditions are largely unchanged. Auster Rookery is expected between a group of grounded icebergs (see inset). Between Macey Refuge and the rookery, mostly homogeneous fast ice is present but around trapped icebergs the fast-ice surface may be broken due to tidal movement of the fast ice, the iceberg or both.

Off the fast-ice edge, new ice is drifting north-westward along the edge.

The northern sea-ice edge (not shown in the figure) is largely at the July median sea-ice extent for the region.

Ice Bulletin: Casey Station

Issued: Friday 30th July 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

The entire scene is covered by some form of ice. West of Casey Station, a large polynya is frozen over and covered by new sea ice. The fast-ice edge has progressed westward temporarily and encloses now all offshore islands.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for July.

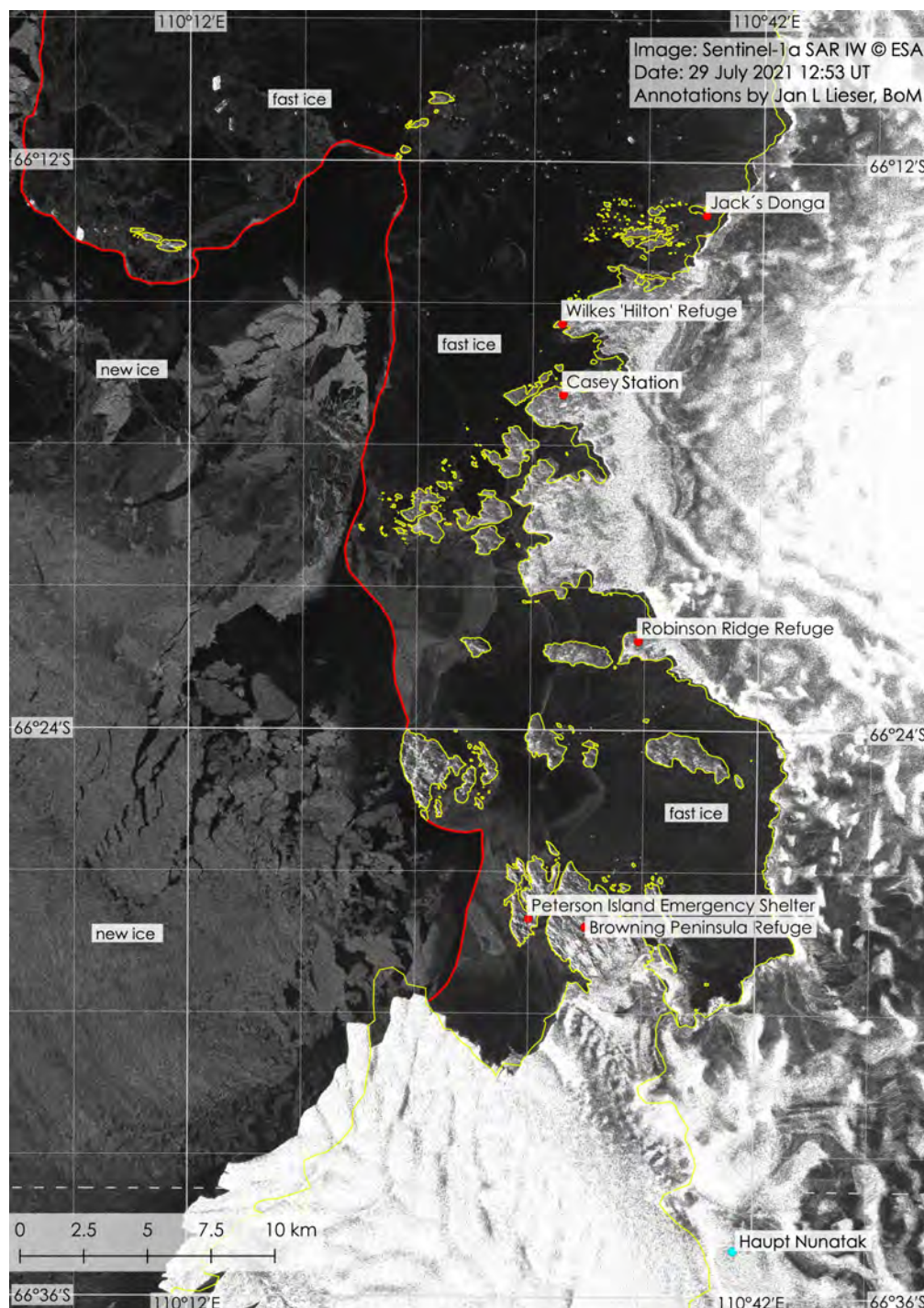


Figure 1: Sentinel-1a SAR IW data acquired 29 July 2021 at 12:53 UT and provided by PolarView.

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Ice Bulletin: Casey Station

Issued: Thursday 5th August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

The entire scene is covered by some form of ice. West of Casey Station, new sea ice and first-year pack ice has formed. The fast-ice edge is consolidated and encloses all offshore islands.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for July but north of the median extent for August between 105°0'E and 107°0'E.

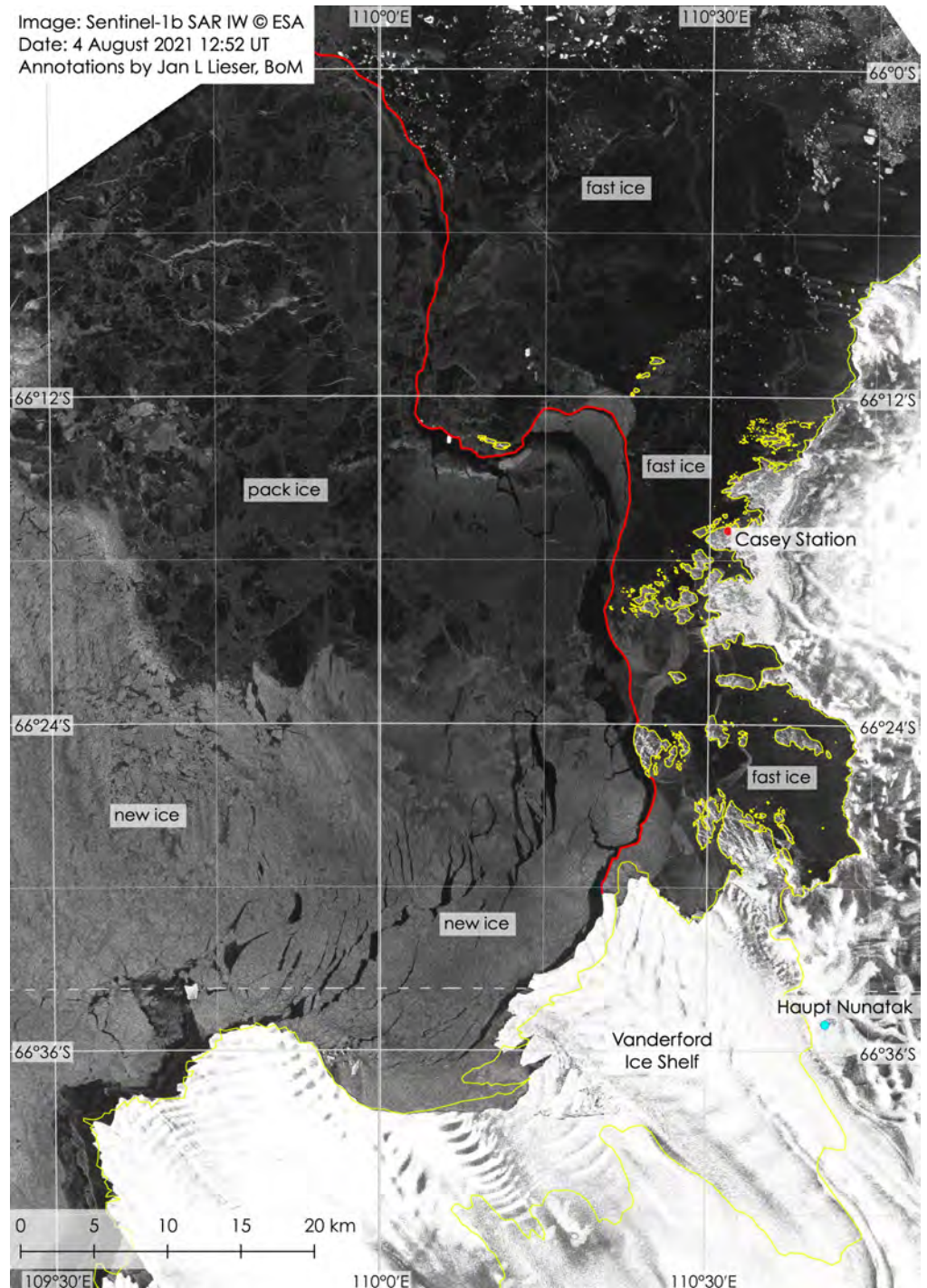


Figure 1: Sentinel-1b SAR IW data acquired 4 August 2021 at 12:52 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Thursday 5th August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and offshore. The fast-ice edge is marked by a red line.

The entire scene is covered by some form of ice. West of Davis Station, fast ice, new sea ice and first-year pack ice is present. The fast-ice edge has progressed westward further offshore.

The northern sea-ice edge (not shown in the figure) is meandering ± 40 nautical miles around the median sea-ice extent for July but remains currently south of the median extent for August.

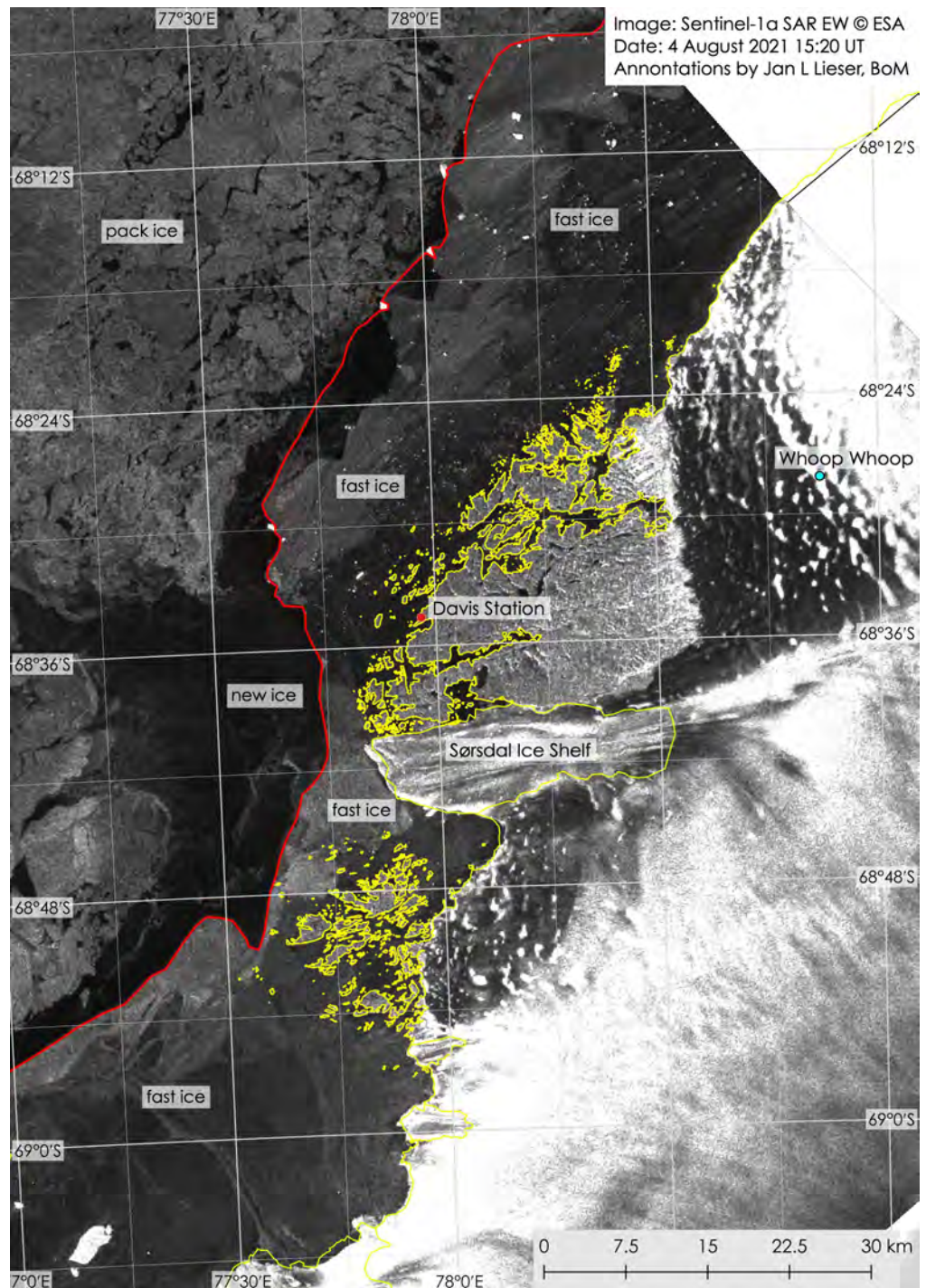


Figure 1: Sentinel-1a SAR EW data acquired 4 August 2021 at 15:20 UT and provided by PolarView.

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Ice Bulletin: Princess Astrid Coast

Issued: Monday 5th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Princess Astrid Coast. The positions of seven large icebergs are indicated by colour-coded shapes.

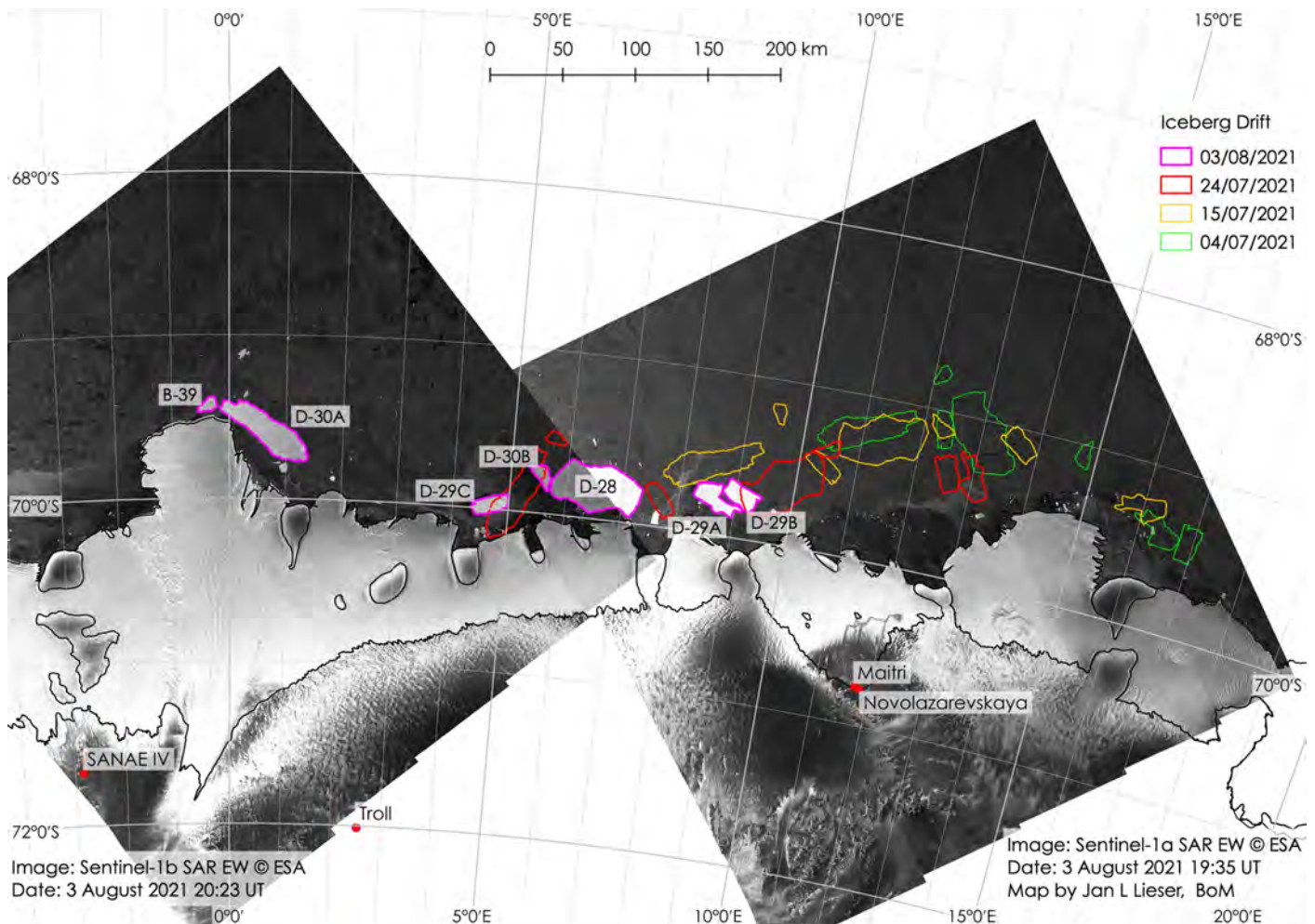


Figure 1: Sentinel-1 SAR EW data acquired 3 August 2021 and provided by PolarView.

All icebergs continued their westward journey tumbling along Princess Astrid Coast.

Their drift track varied slightly but was generally close to the coast roughly tracing the 1000 m bathymetry contour. Since 4 July 2021, iceberg B-39 drifted the furthest (270 nautical miles) and iceberg D-28 the least (144 nautical miles).

Ice Bulletin: Mawson Station

Issued: Friday 6th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Mawson Station. The fast-ice edge is marked by a red line. The locations of emperor penguin colonies are marked with a pink triangle.

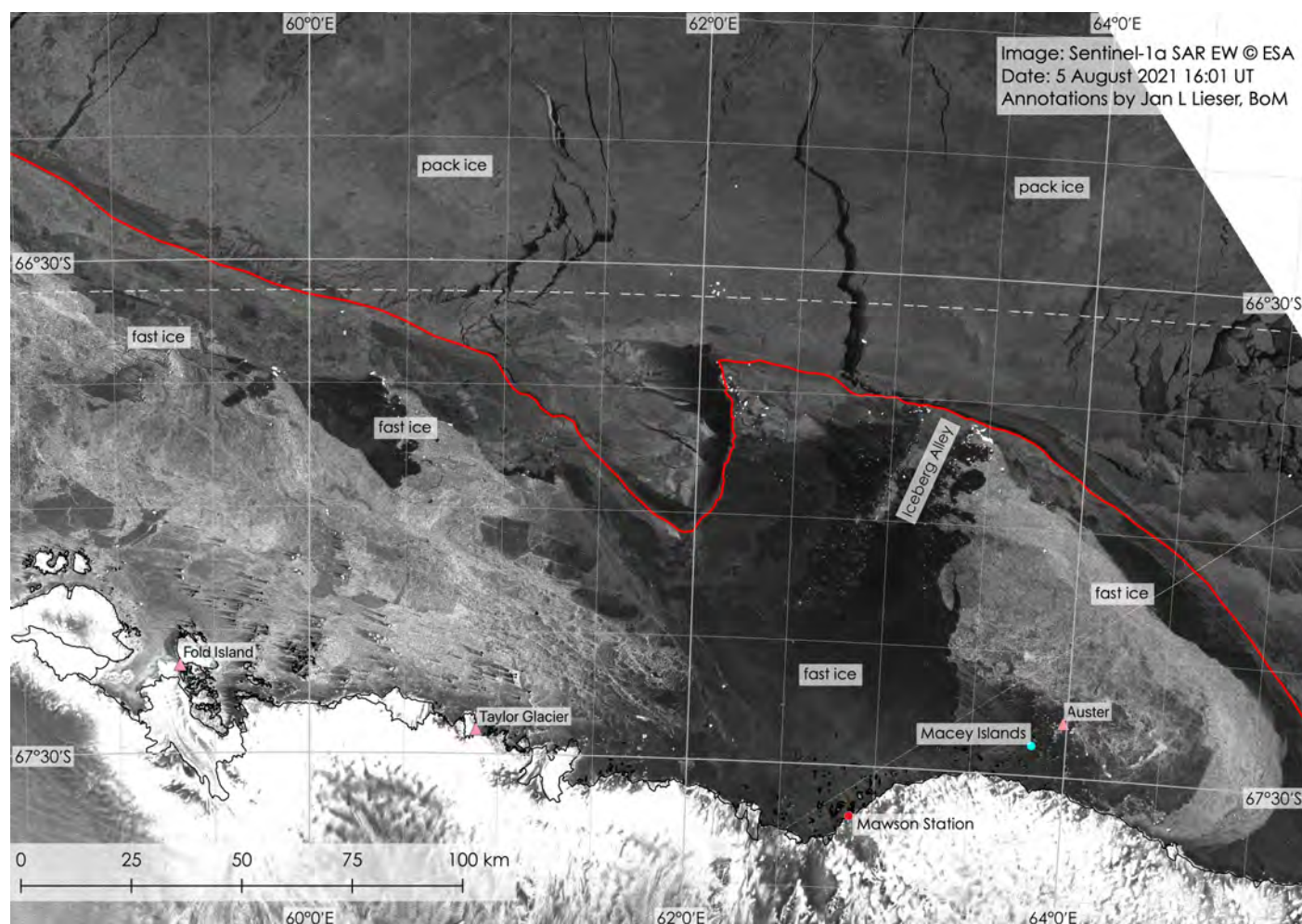


Figure 1: Sentinel-1a SAR EW data acquired 5 August 2021 at 16:01 UT and provided by PolarView.

Off Mawson Station, fast-ice conditions are largely unchanged. Northwest of the station, a large polynya is frozen over by thickening new sea ice. A secondary polynya (centred at 60°19'E and 66°50'S) is now part of the fast-ice matrix.

North of the fast-ice edge, first-year pack ice is generally drifting westward along the edge.

The northern sea-ice edge (not shown in the figure) is in between the respective July and August median sea-ice extent for the region.

Ice Bulletin: D'Urville Sea

Issued: Friday 6th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the southern D'Urville Sea. The fast-ice edge is marked by a red line (dashed orange for 22 July 2021).

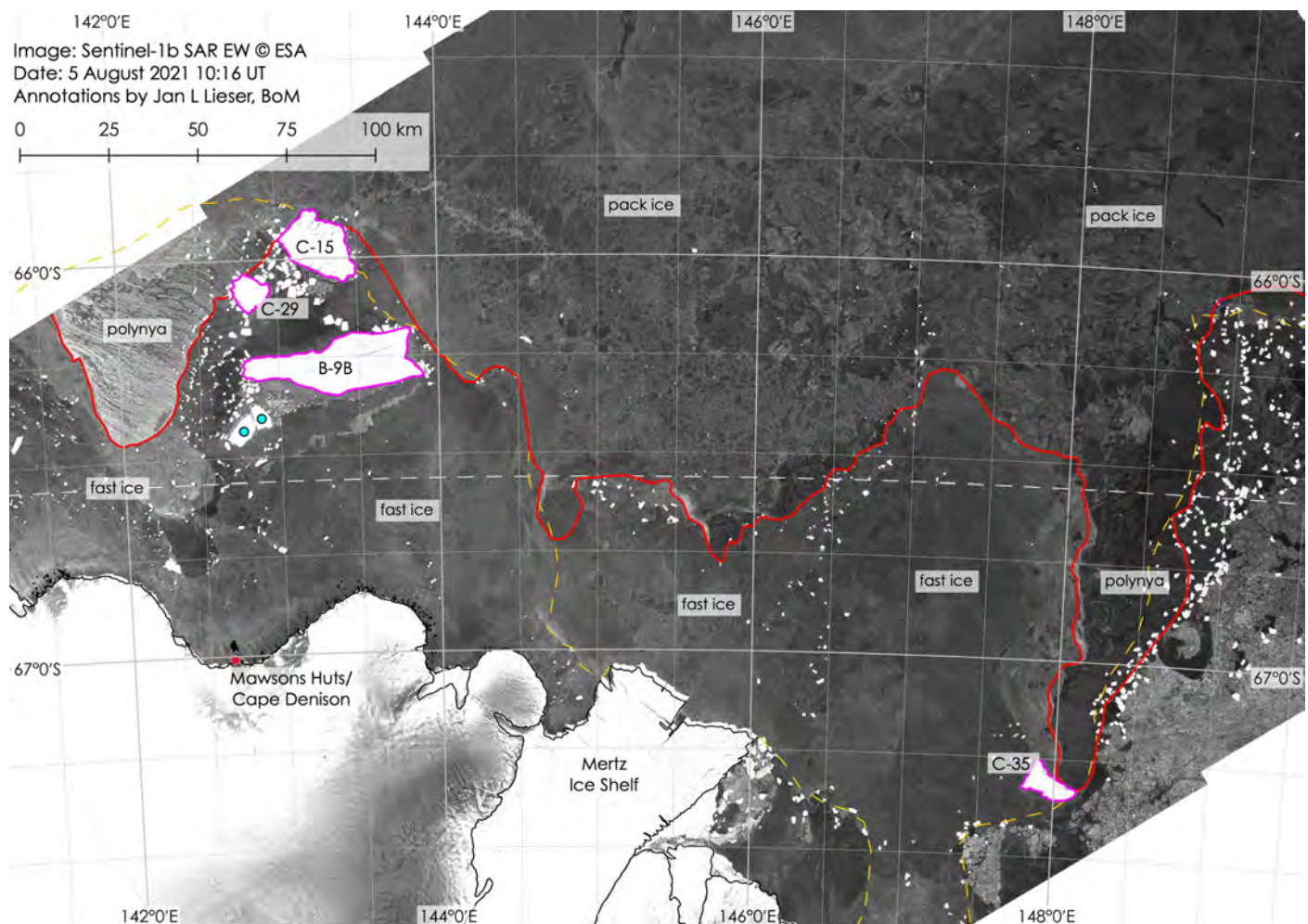


Figure 1: Sentinel-1b SAR EW data acquired 5 August 2021 at 10:16 UT and provided by PolarView.

The fast-ice edge has changed since 22 July 2021. North of the Mertz Ice Shelf, most of the area previously marked as new/thin sea ice is now fastened and consolidating. Only west of a row of grounded icebergs east of 148°0'E, a small polynya remains. West of the large-iceberg troika north of the Mawsons Huts, a different polynya is active. South of the western edge of iceberg B-9B, two medium-sized icebergs (marked with blue dots) still show minimal movements and are maintaining a hole in the fast ice. Iceberg C-29 remains wedged against a row of smaller but grounded icebergs along its western and northern edge.

The northern sea-ice edge (not shown in the figure) has been compacted recently and is now up to 100 nautical miles south of at the median sea-ice extent for July (up to 110 nautical miles south of at the median sea-ice extent for August).

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Ice Bulletin: Antarctica

Issued: Tuesday 10th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

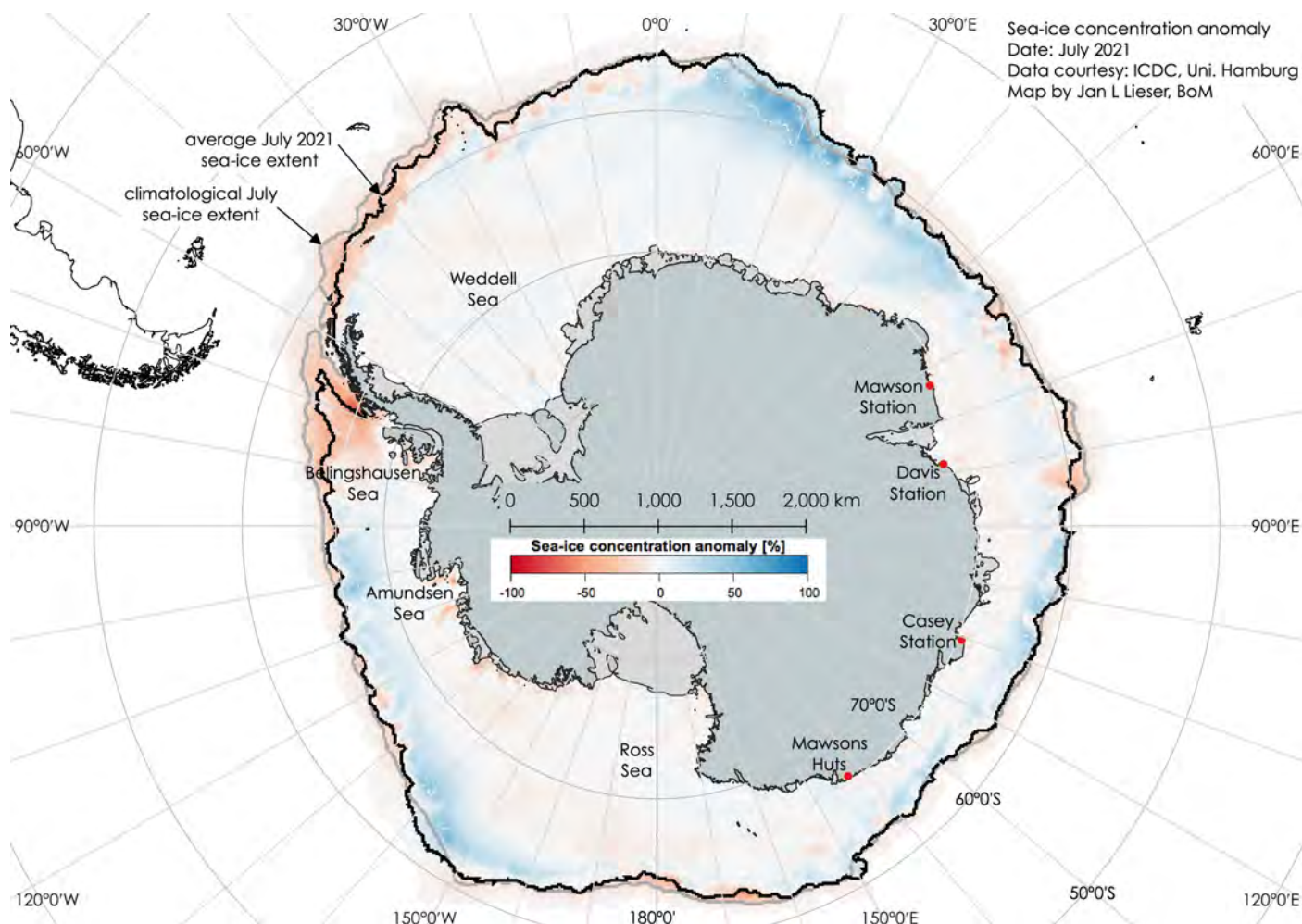


Figure 1: Sea-ice concentration anomaly for July 2021 provided by ICDC (Universität Hamburg).

In July 2021, pan-Antarctic sea-ice extent sat above the climatological July average for the first time (in July) since 2016. Regionally sea-ice extent and associated concentration anomalies varied slightly.

A bi-modal pattern continues to rotate clockwise around Antarctica with positive anomalies eastward of 10°0'E towards 160°0'E (with a small exception north of the West Ice Shelf between 80°0'E and 85°0'E) and in the eastern Ross Sea and the Amundsen Sea. Negative anomalies are present in the western Ross Sea and around the Antarctic Peninsula. The western Weddell Sea sea-ice extent continued to experience below average conditions.

Ice Bulletin: Mawson Station

Issued: Wednesday 11th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Mawson Station.

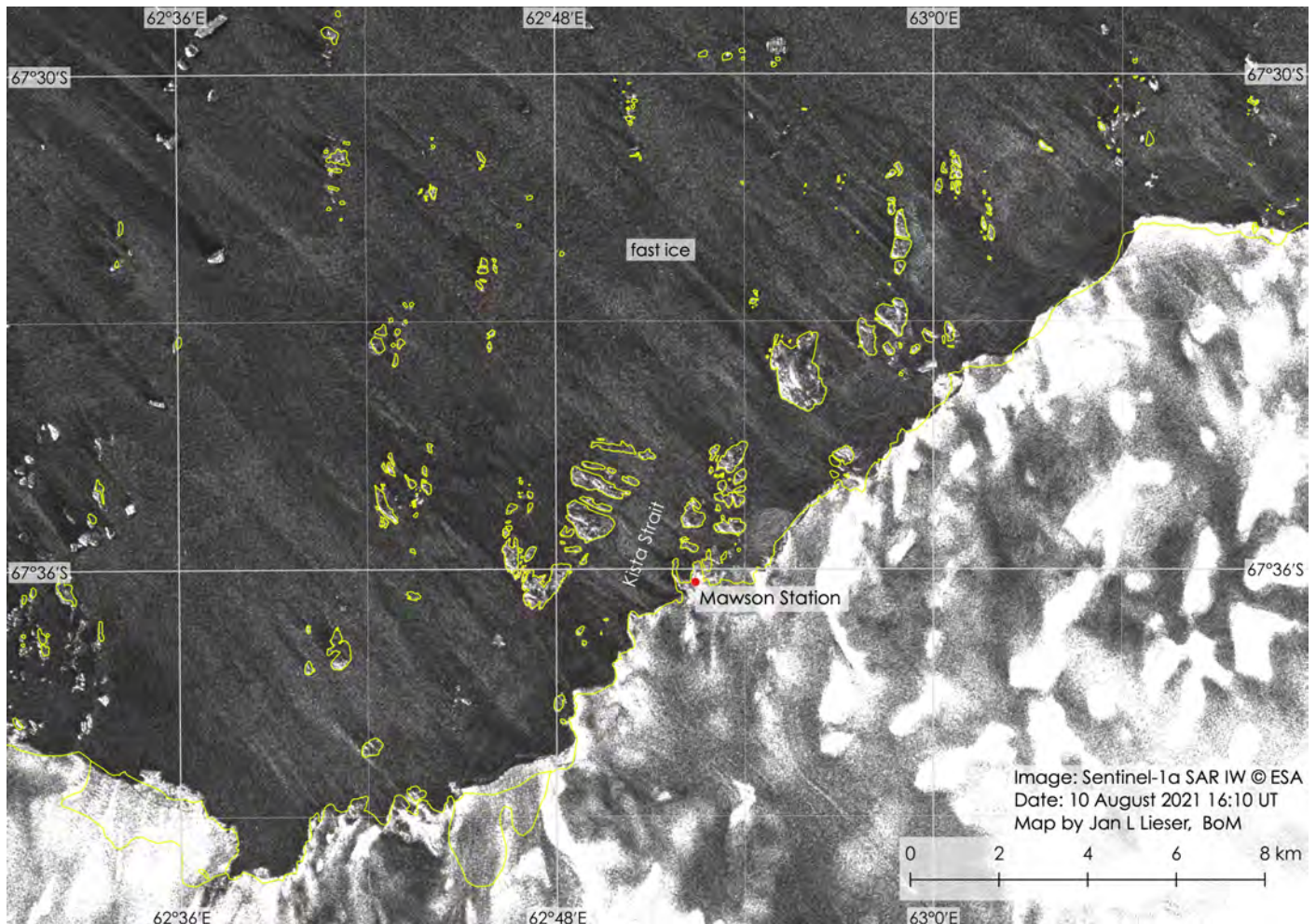


Figure 1: Sentinel-1a SAR IW data acquired 10 August 2021 at 16:10 UT and provided by PolarView.

Off Mawson Station, fast-ice conditions are largely homogenous. Some wind-blown streaks can be seen on the fast-ice surface in southeast-northwest direction.

The northern sea-ice edge (not shown in the figure) is approaching the August median sea-ice extent for the region.

Ice Bulletin: Davis Station

Issued: Thursday 12th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and offshore. The fast-ice edge is marked by a red line.

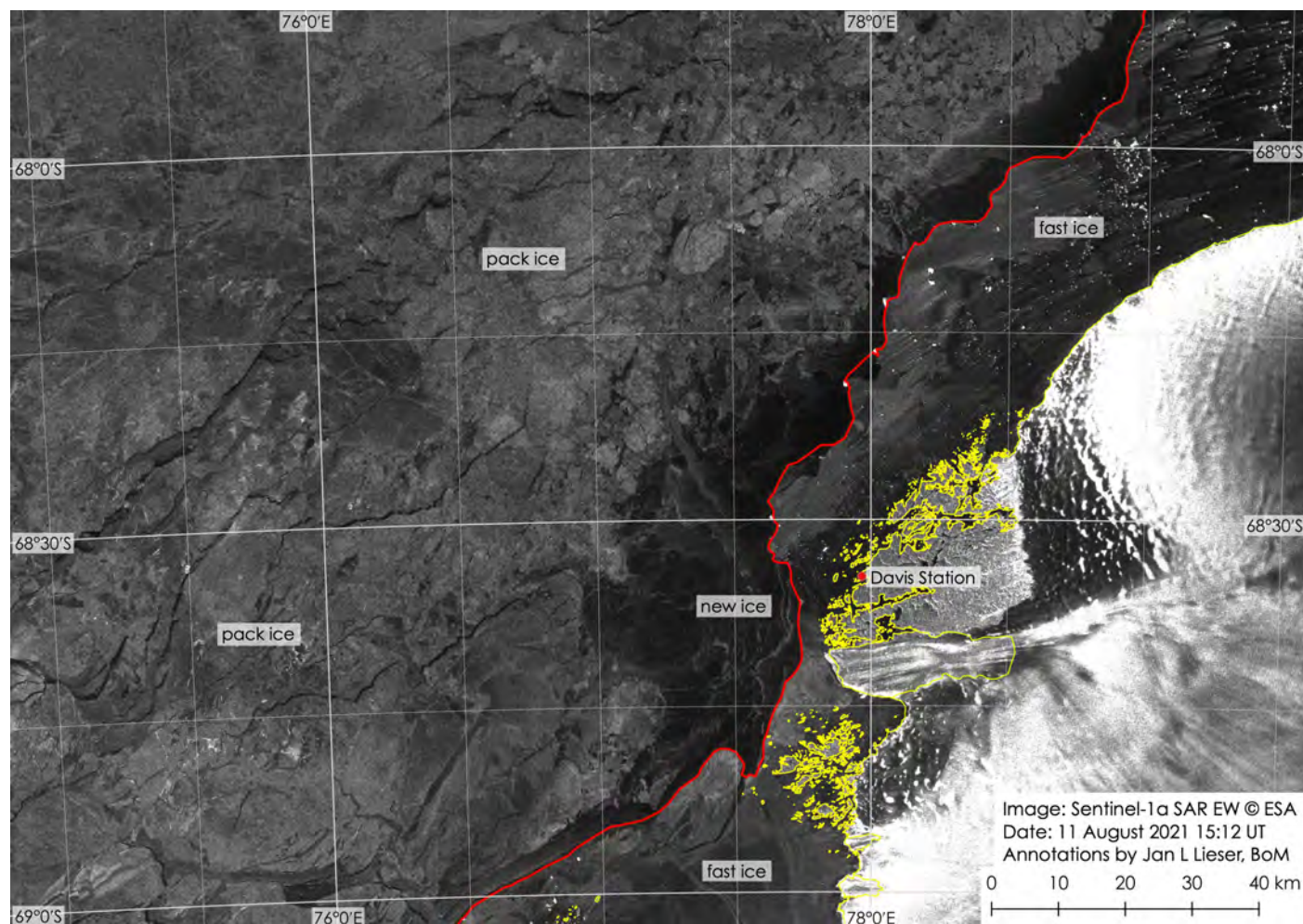


Figure 1: Sentinel-1a SAR EW data acquired 11 August 2021 at 15:12 UT and provided by PolarView.

Offshore, ice conditions have not changed significantly, and entire scene remains covered by some form of ice. West of Davis Station, fast ice, new sea ice and first-year pack ice are present.

The northern sea-ice edge (not shown in the figure) is at the median sea-ice extent for August west of 75°0'E and roughly 30 nautical miles south of the median extent for August east of 75°0'E.

Ice Bulletin: Casey Station

Issued: Friday 13th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line.

The entire scene is covered by some form of ice. West of Casey Station, fast ice stretches out roughly 7 km and a polynya is covered by new sea ice. The fast-ice edge still encloses all offshore islands.

The inset in the figure shows the Wilkins Aerodrome of the Casey Station hinterland, as seen by the SAR.

The northern sea-ice edge (not shown in the figure) is largely beyond (north of) the median sea-ice extent for August.

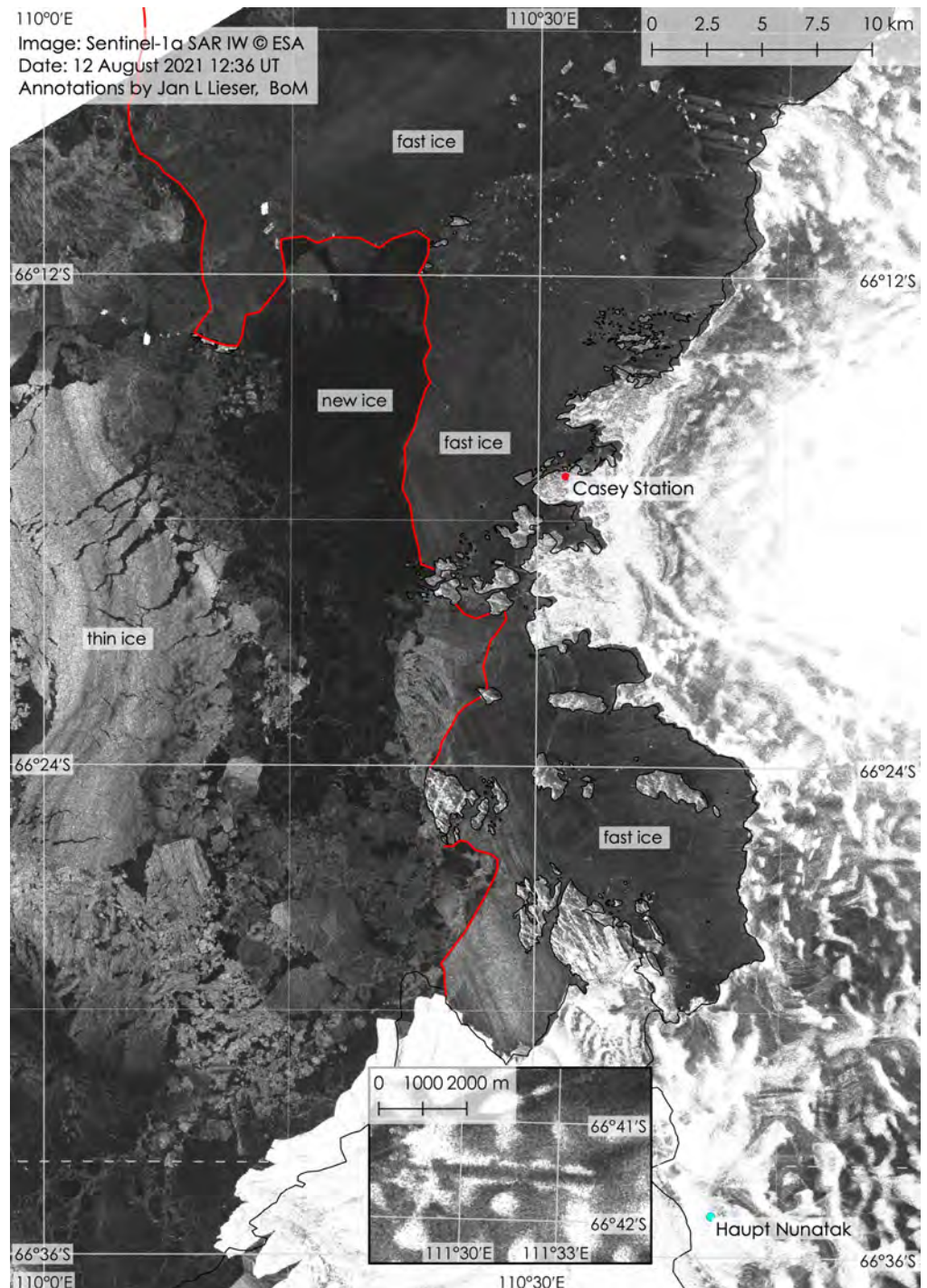


Figure 1: Sentinel-1a SAR IW data acquired 12 August 2021 at 12:36 UT and provided by PolarView.

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Ice Bulletin: Mawson Station

Issued: Monday 16th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The fast-ice edge is marked by a red line.

Nearshore off Mawson Station, fast-ice conditions are largely homogenous. Some wind-blown streaks can be seen on the fast-ice surface in southeast-northwest direction.

Northwest of the station, a polynya is present and producing new sea ice.

The northern sea-ice edge (not shown in the figure) is at the August median sea-ice extent for the region.

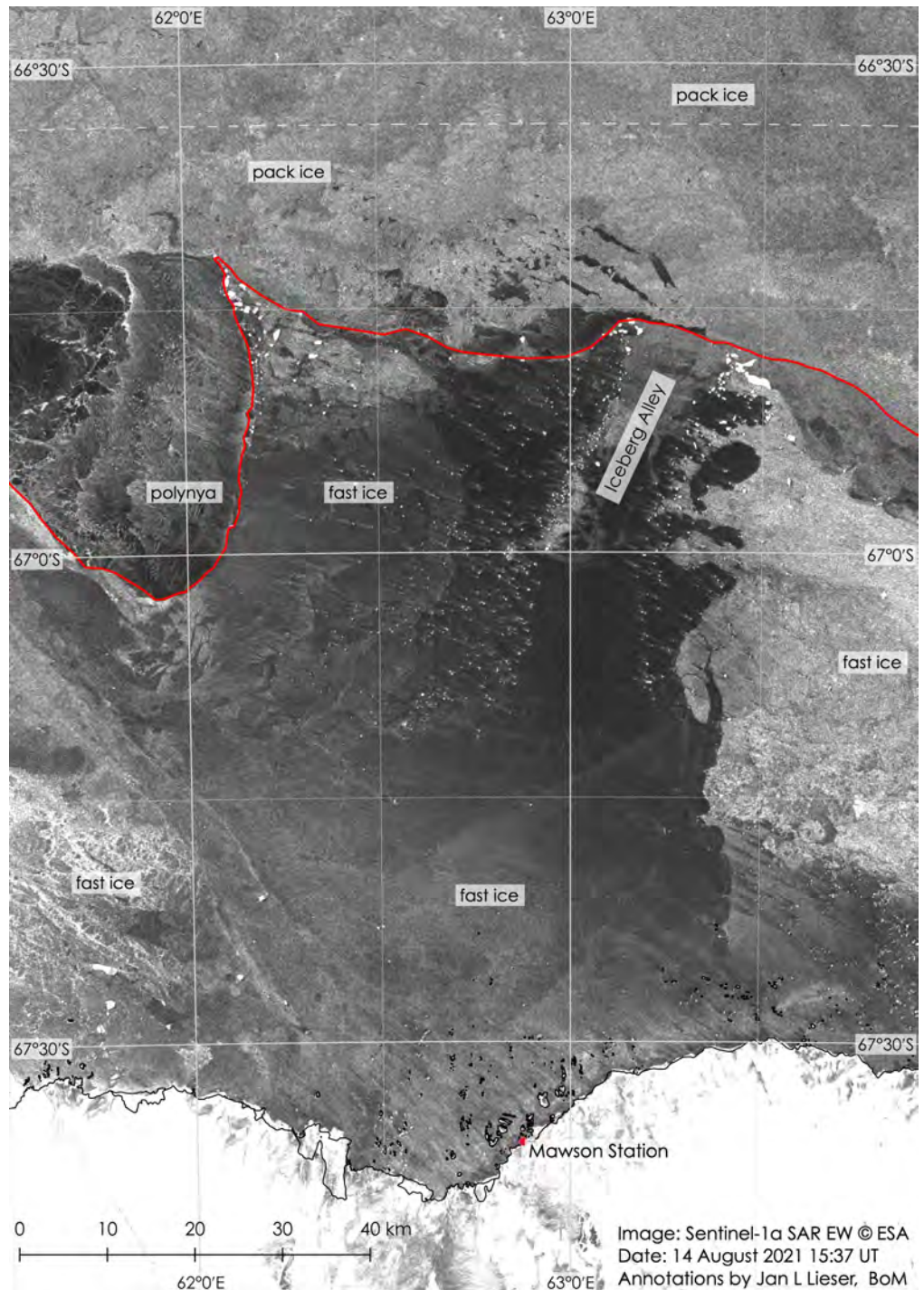


Figure 1: Sentinel-1a SAR EW data acquired 14 August 2021 at 15:37 UT and provided by PolarView.

Ice Bulletin: Iceberg A-77

Issued: Monday 16th August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the German Neumayer III Station.

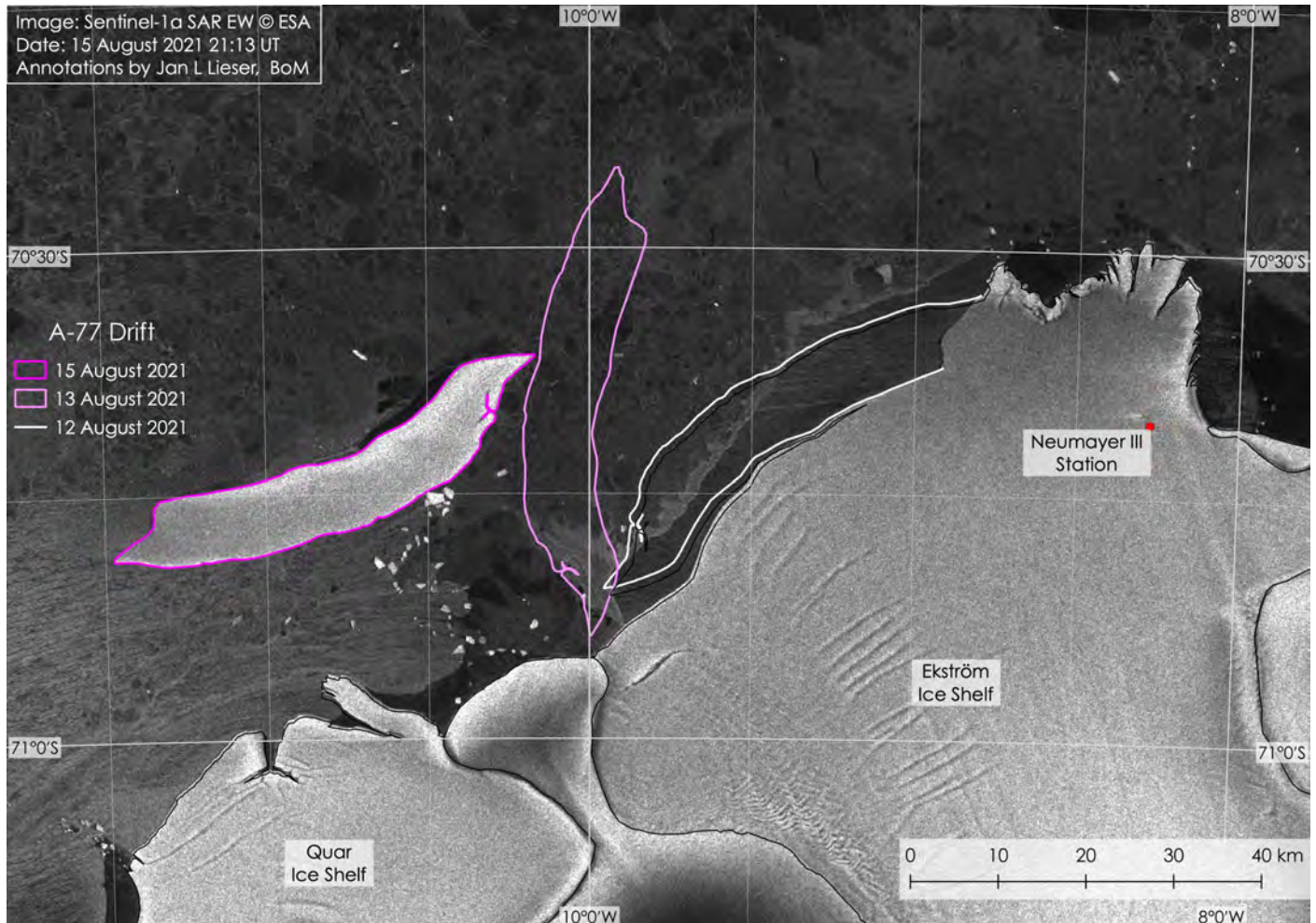


Figure 1: Sentinel-1a SAR EW data acquired 15 August 2021 at 21:13 UT and provided by PolarView.

On 13 August 2021, a new iceberg calved off the Ekström Ice Shelf located in the eastern Weddell Sea. This iceberg has a surface area of roughly 365 km² comparable to the Territory of Heard Island and McDonald Islands. Shortly after separating from the shelf, it started to spin around and has completed a 180-degree turn already with 48 hours.

Ice Bulletin: Neumayer III Station

Issued: Friday 20th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the German Neumayer III Station at the north-eastern edge of the Weddell Sea. The fast-ice edge is marked by a red line. The drift of two large icebergs since Monday 16 August 2021 is indicated by colour-coded shapes.

Northeast of Neumayer III Station, the location of an Emperor Penguin colony on the fast ice is marked by a pink triangle.

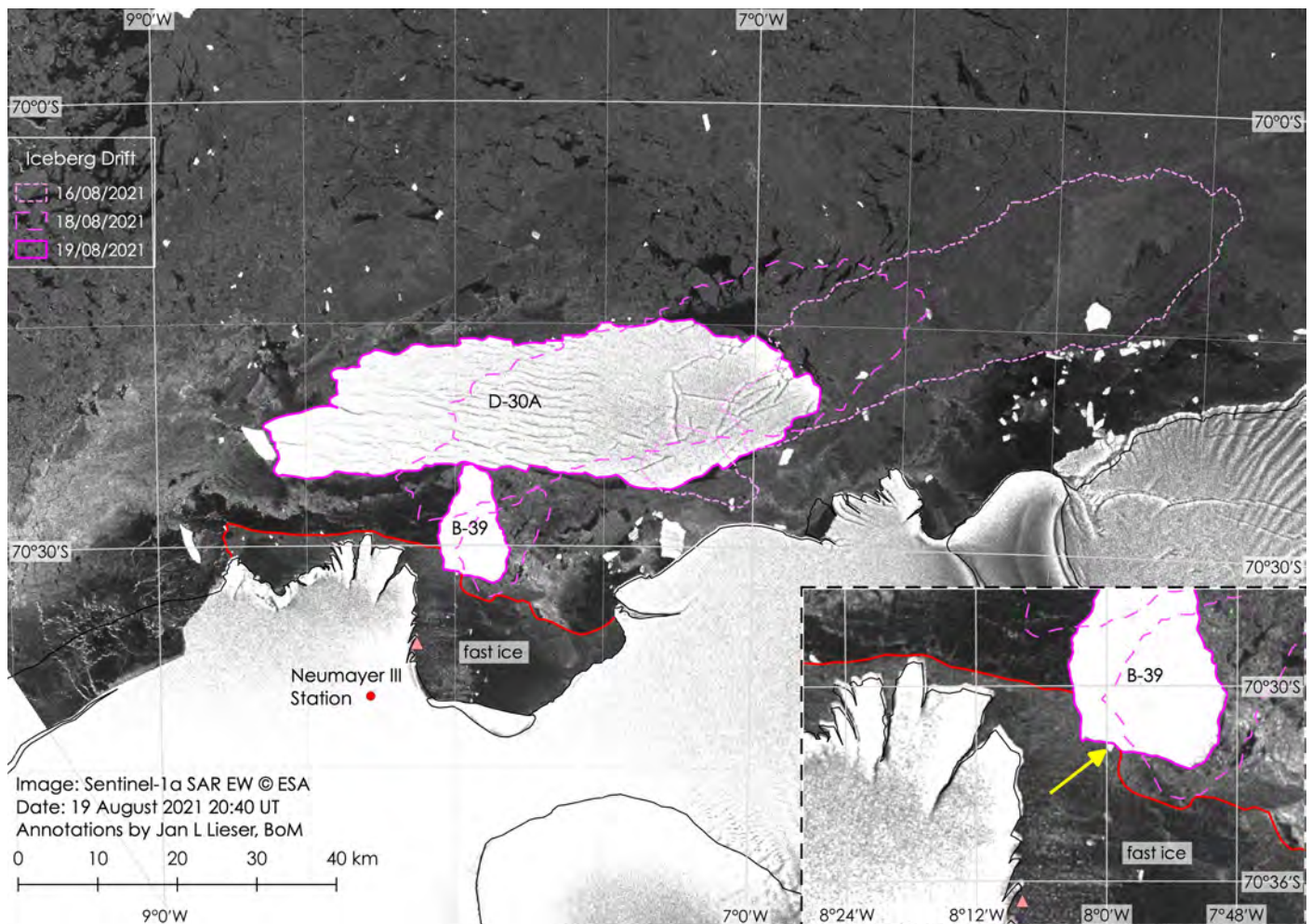


Figure 1: Sentinel-1a SAR EW data acquired 19 August 2021 at 20:40 UT and provided by PolarView.

East of Neumayer III Station, Atka Bay is covered by fast ice since the onset of autumn. A few smaller icebergs are incorporated in the fast ice mostly along 8°0'E. The shelf-ice edge north of the station (at the western side of Atka Bay) is used as wharf during resupply of the station.

Since Monday, two large icebergs were drifting towards Atka Bay. During the following two days, iceberg B-39 touched the fast-ice edge inside the bay and collided with a presumably grounded iceberg that is surrounded by fast ice (see yellow arrow in the inset). This iceberg served as an anchor to pivot iceberg B-39 anti-clockwise, which in turn diverted iceberg D-30A northward in its westward drift along the coast.

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Ice Bulletin: Casey Station

Issued: Monday 23rd August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Casey Station and offshore. The fast-ice edge is marked by a red line (dashed red line for 18 August 2021).

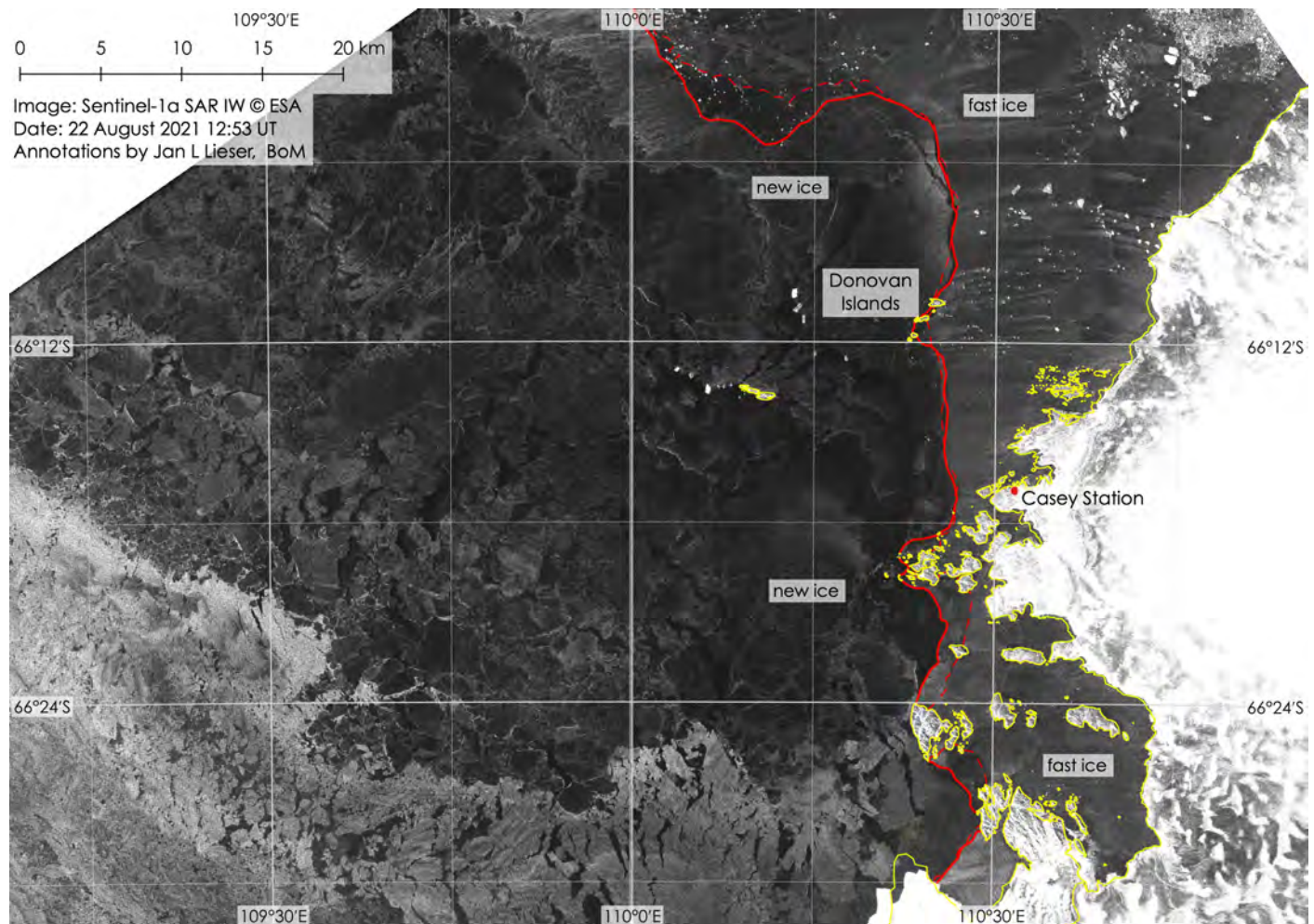


Figure 1: Sentinel-1a SAR IW data acquired 22 August 2021 at 12:53 UT and provided by PolarView.

The entire scene is covered by some form of ice. West of Casey Station, fast ice stretches out roughly 4 km and a polynya is covered by new sea ice. The fast-ice edge still encloses the Donovan Islands offshore.

The northern sea-ice edge (not shown in the figure) is largely below (south of) the median sea-ice extent for August with a compacted sea ice cover.

Ice Bulletin: Mawson Station

Issued: Monday 23rd August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Mawson Station and offshore. The fast-ice edge is marked by a red line.

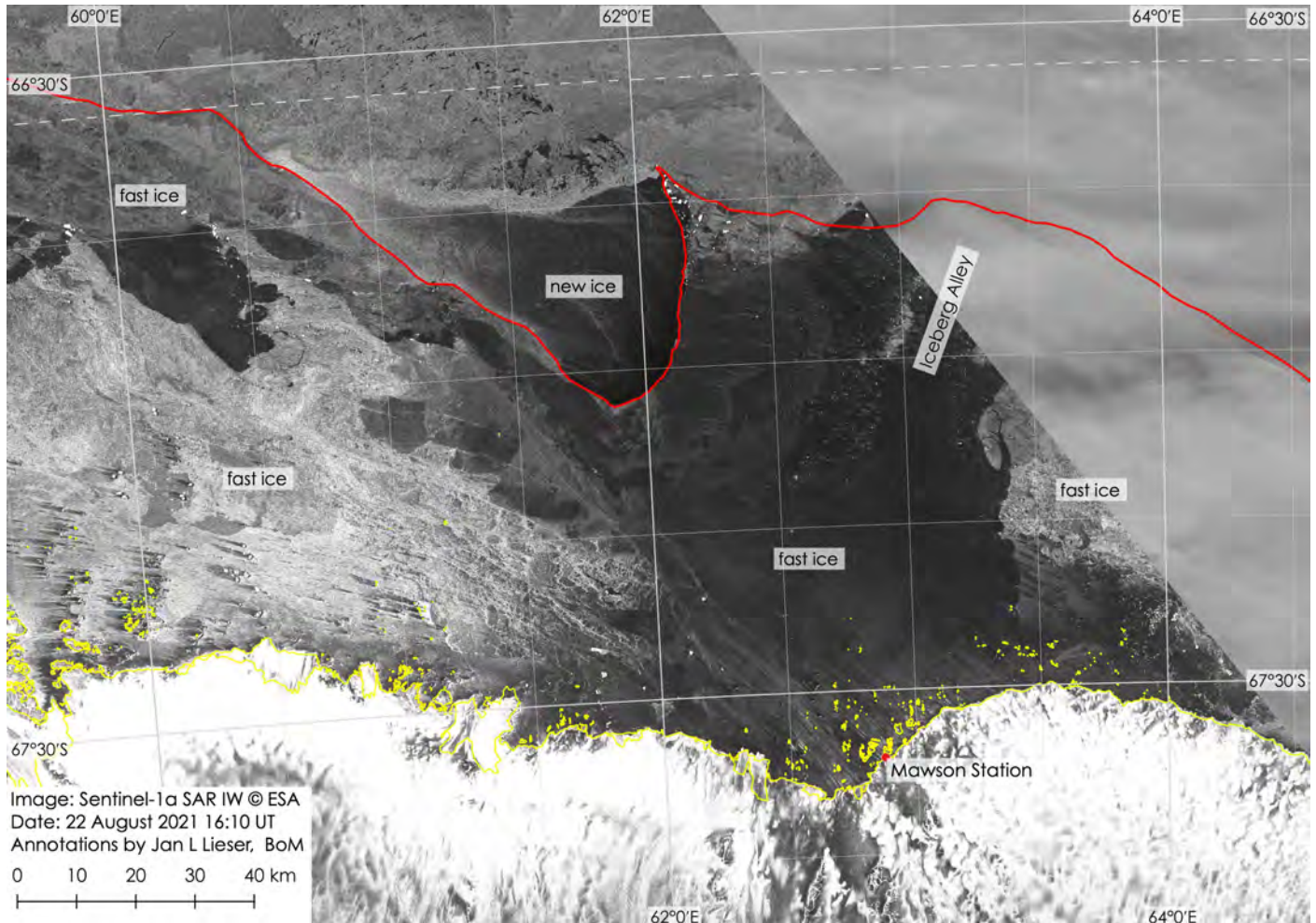


Figure 1: Sentinel-1a SAR IW data acquired 22 August 2021 at 12:53 UT and provided by PolarView; complemented by Suomi NPP VIIRS DNB data acquired 22 August 2021 and provided by NASA.

The entire scene is covered by some form of ice. Northwest of Mawson Station, the fast-ice edge of the polynya (currently covered by new sea ice) is roughly 40 nautical miles away.

The northern sea-ice edge (not shown in the figure) is largely at the median sea-ice extent for August.

Ice Bulletin: Davis Station

Issued: Tuesday 24th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge is marked by a red line.

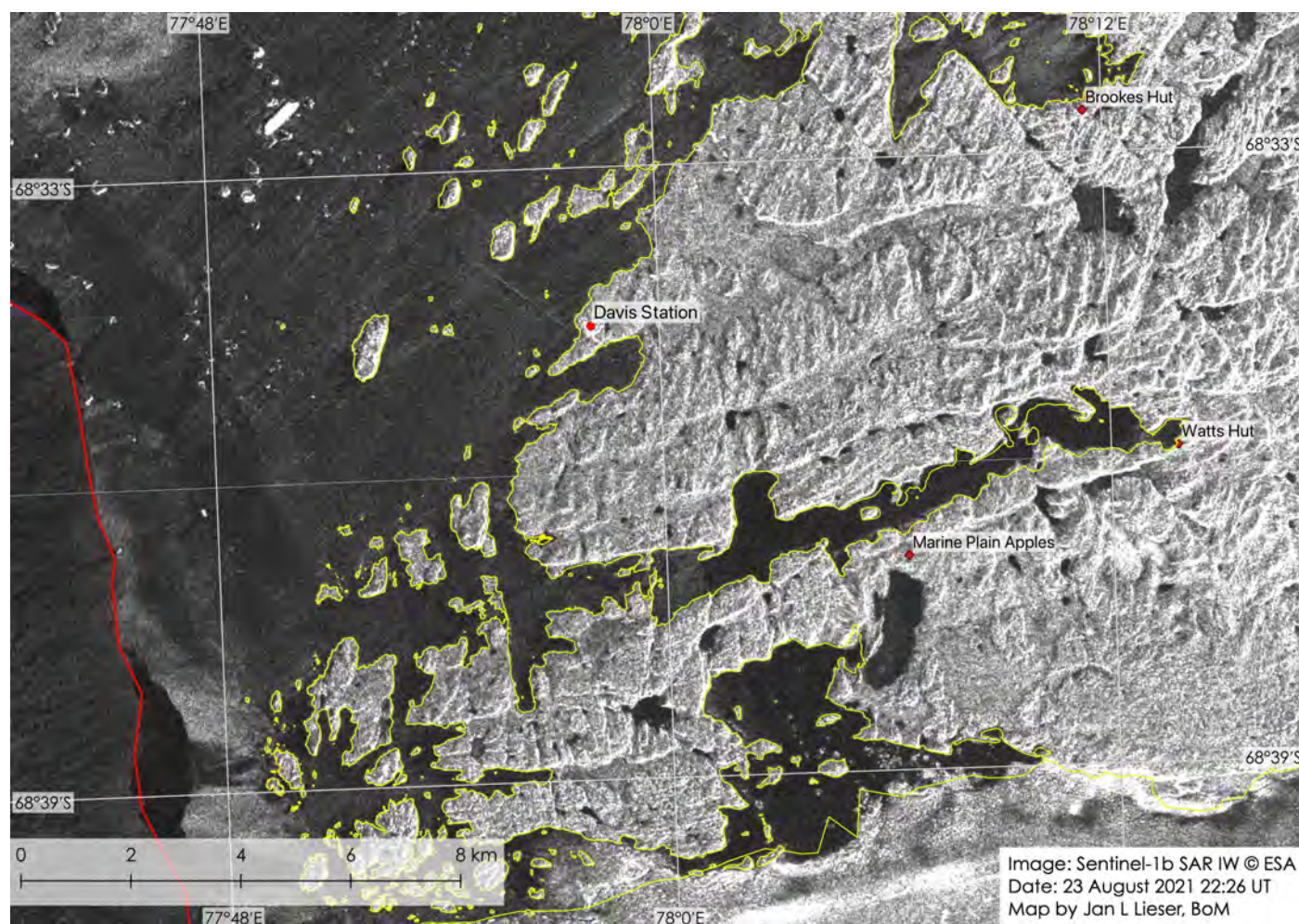


Figure 1: Sentinel-1a SAR IW data acquired 23 August 2021 at 22:26 UT and provided by PolarView.

Off the station, vehicle tracks can be seen heading northwest as bright lines on the fast-ice surface.

Figure 2 shows a larger overview of Prydz Bay. The fast-ice edge is marked by a red line.

The entire scene is covered by some form of ice. West of Davis Station, fast ice stretches out roughly 5 nautical miles and a polynya is covered by new sea ice. The fast-ice edge encloses all offshore islands.

The northern sea-ice edge (not shown in the figure) is largely close to the median sea-ice extent for August and up to 35 nautical miles below (south of) the median in some places.

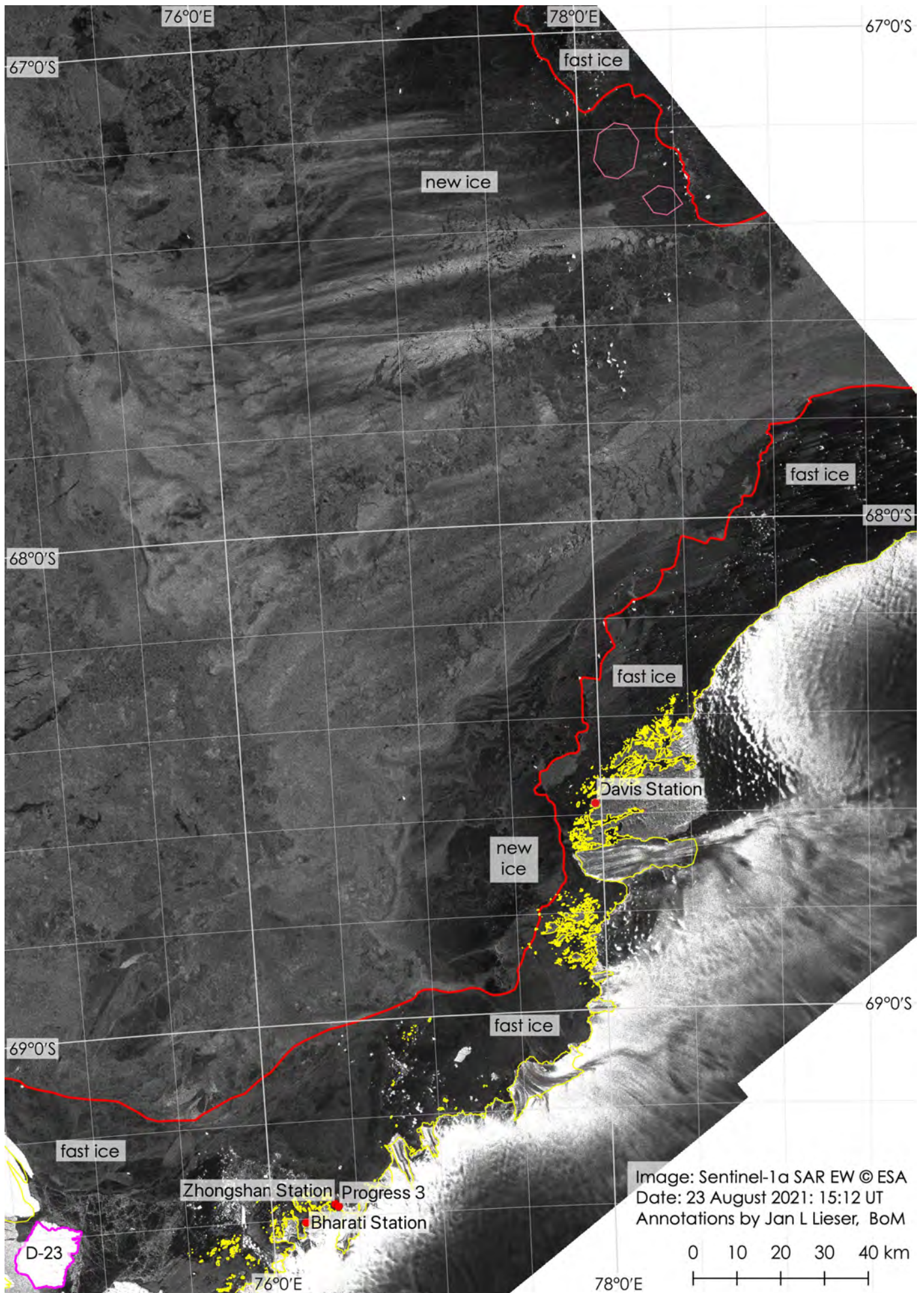


Figure 2: Sentinel-1a SAR EW data acquired 23 August 2021 at 15:12 UT and provided by PolarView.

Ice Bulletin: Princess Martha Coast

Issued: Tuesday 24th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows Day-Night-Band data off Princess Martha Coast, which is illuminated by the near full moon. The positions of eight large icebergs are indicated by pink shapes.

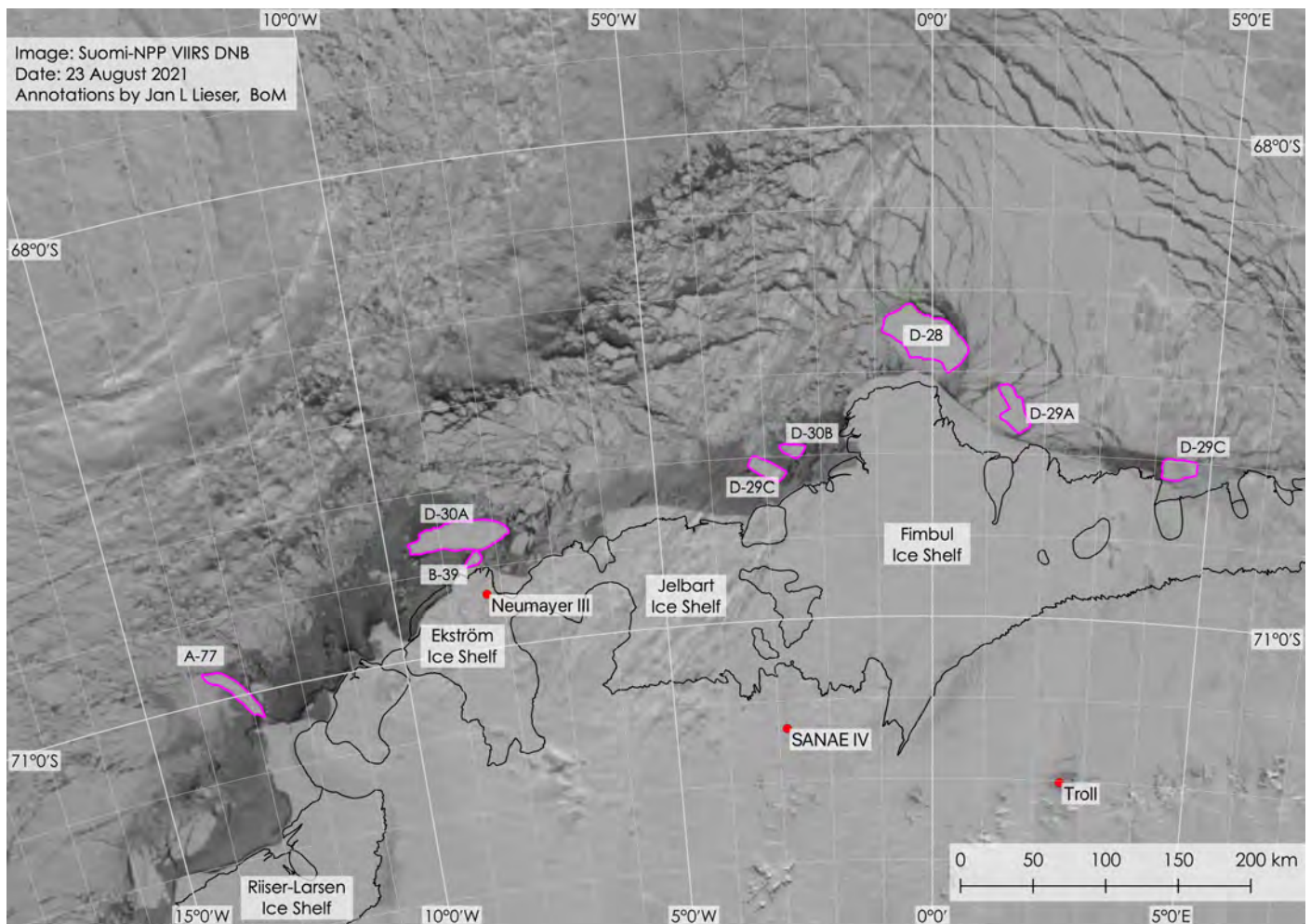


Figure 1: Suomi-NPP VIIRS Day-Night-Band data acquired 23 August 2021 and provided by NASA.

Along roughly 400 nautical miles of coastline, all icebergs continue their westward journey tumbling along Princess Martha Coast.

Their individual drift track varies slightly but remains generally close to the coast roughly tracing the 1000 m bathymetry contour.

Ice Bulletin: Iceberg A-78

Issued: Thursday 26th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Princess Martha Coast. The positions of large icebergs are indicated by pink shapes.

Image: Sentinel-1b SAR EW © ESA
Date: 25 August 2021 20:40 UT
Background: Suomi-NPP VIIRS DNB data
Date: 25 August 2021
DNB data courtesy: NASA
Annotations by Jan L. Lieser, BoM

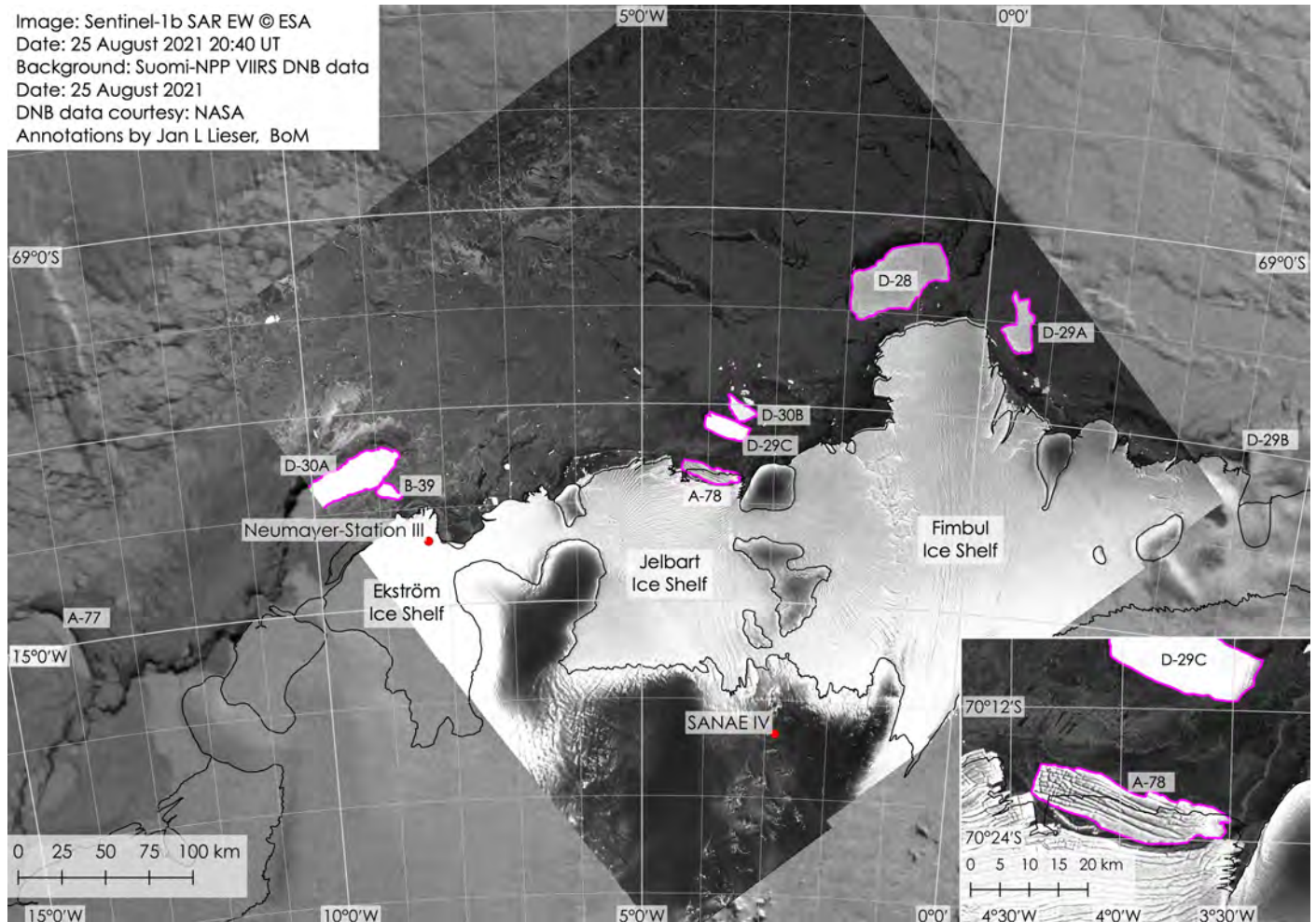


Figure 1: Sentinel-1b SAR EW data acquired 25 August 2021 at 20:40 UT and provided by PolarView; background of Suomi-NPP VIIRS Day-Night-Band data acquired 25 August 2021 and provided by NASA.

As reported previously, eight large icebergs are drifting westward along Princess Martha Coast.

Since 24 August 2021, a ninth iceberg (A-78) joined in, which calved off the Jelbart Ice Shelf (see inset). The new iceberg is roughly 235 km², which is almost the size of Bruny Island (off the east coast of Tasmania).

Ice Bulletin: D'Urville Sea

Issued: Monday 30th August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the southern D'Urville Sea. The fast-ice edge is marked by a red line (dashed red for 5 August 2021).

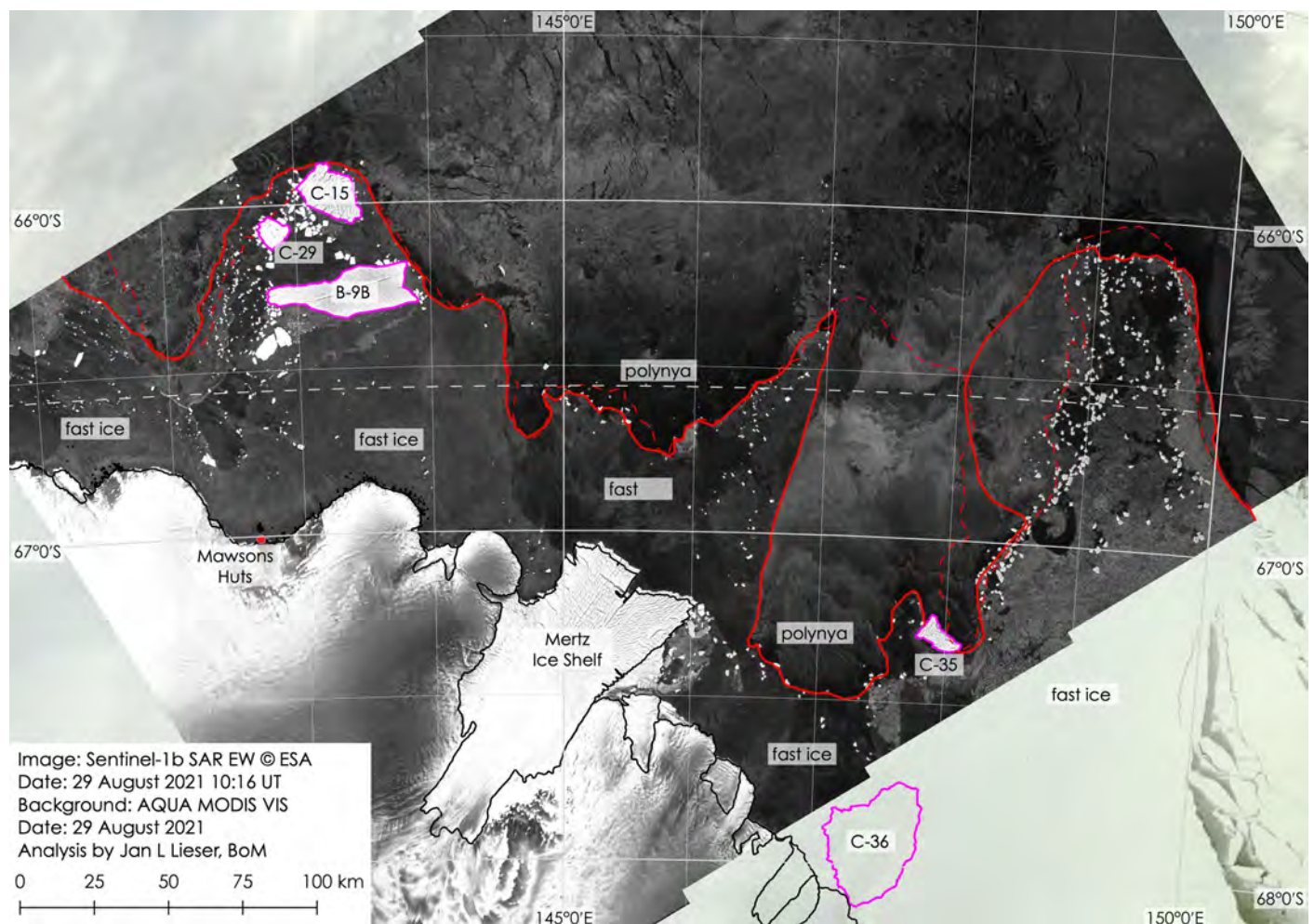


Figure 1: Sentinel-1b SAR EW data acquired 29 August 2021 at 10:16 UT and provided by PolarView; background: AQUA MODIS VIS data acquired 29 August 2021 and provided by NASA.

Since 5 August 2021, the fast-ice edge has changed substantially only in the region northeast of the Mertz Ice Shelf. West of 148°0'E, a small polynya appears to have minor activity (sea-ice production) as does a small polynya north of the fast-ice edge north of the Mertz Ice Shelf. West of the large-iceberg troika north of the Mawsons Huts, another small polynya is largely frozen over.

The northern sea-ice edge (not shown in the figure) has been expanding recently and is now roughly 60 nautical miles north of the median sea-ice extent for August.

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Ice Bulletin: Casey Station

Issued: Monday 30th August 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Casey Station. The fast ice is marked by a red line (dashed for 22 August 2021).

During the past week, the fast-ice edge has been retreating eastward (towards the coast). A large polynya is now present west of Law Dome.

The northern sea-ice edge (not shown in the figure) has been pushed southward, which in turn resulted in a compaction of the pack ice between the polynya off Casey Station and the open ocean. The northern sea-ice edge is now 50–90 nautical miles south of the median sea-ice extent for August.

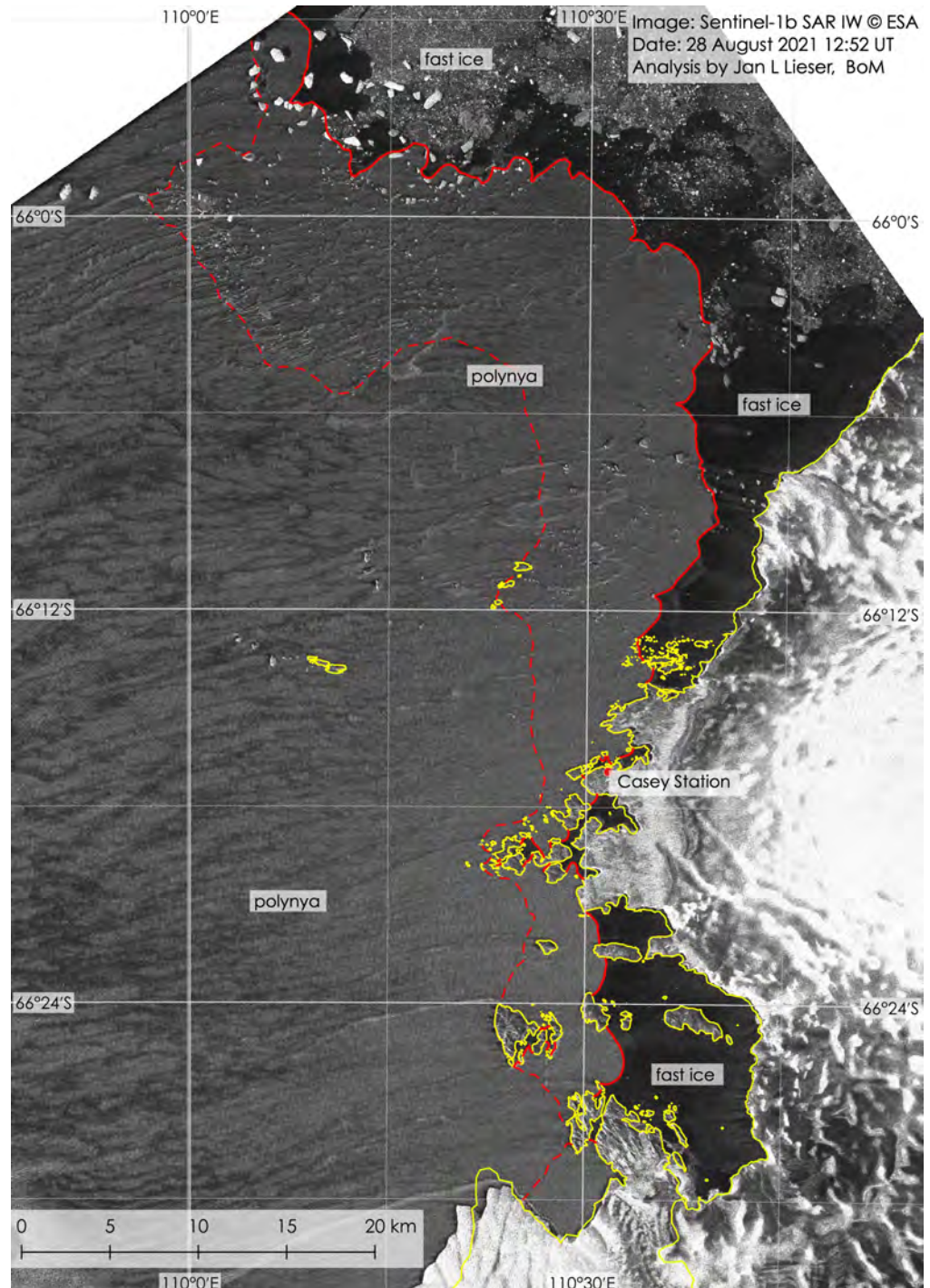


Figure 1: Sentinel-1b SAR IW data acquired 28 August 2021 at 12:52 UT and provided by PolarView.

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Ice Bulletin: Davis Station

Issued: Tuesday 31st August 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge on 23 August 2021 is marked by a dashed red line.

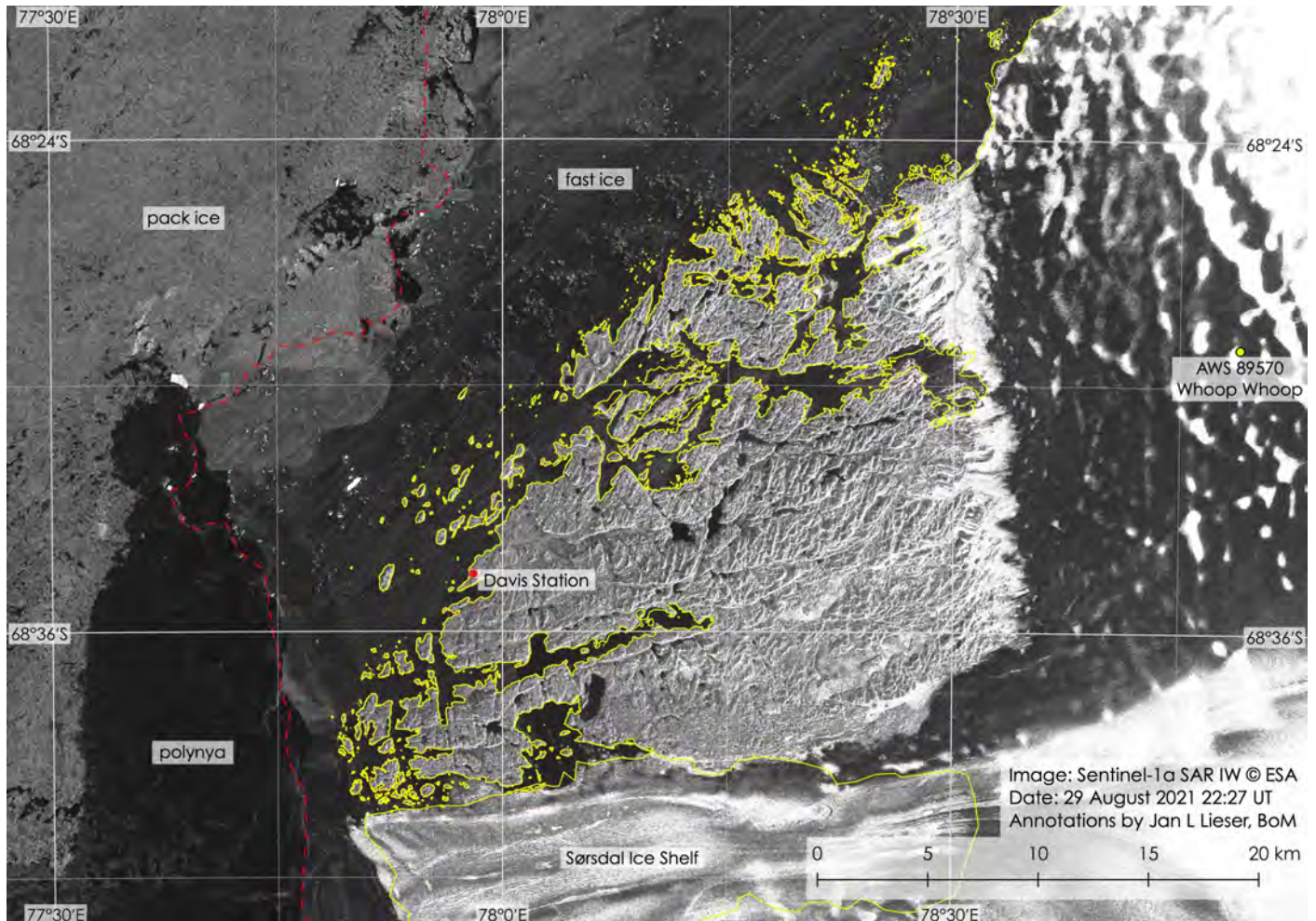


Figure 1: Sentinel-1a SAR IW data acquired 29 August 2021 at 22:27 UT and provided by PolarView.

The entire scene is covered by some form of ice. West of Davis Station, the fast-ice edge changed little, and a polynya is covered by new sea ice. Off the station, vehicle tracks can be seen heading northwest as bright lines on the fast-ice surface.

The northern sea-ice edge (not shown in the figure) is largely at the median sea-ice extent for August.

Ice Bulletin: Wilkins Aerodrome

Issued: Friday 3rd September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows a high-resolution (15 m horizontal) visible scene of Wilkins Aerodrome.



Figure 1: Landsat-8 pan-sharpened visible composite acquired 2 September 2021 at 01:26 UT and provided by USGS.

The blue-ice runway is clearly visible. North and south of the runway, snow dunes are left from clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Casey Station

Issued: Friday 3rd September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a high-resolution (15 m horizontal) visible scene of Casey Station and surrounds. The fast-ice edge is marked by a red line.

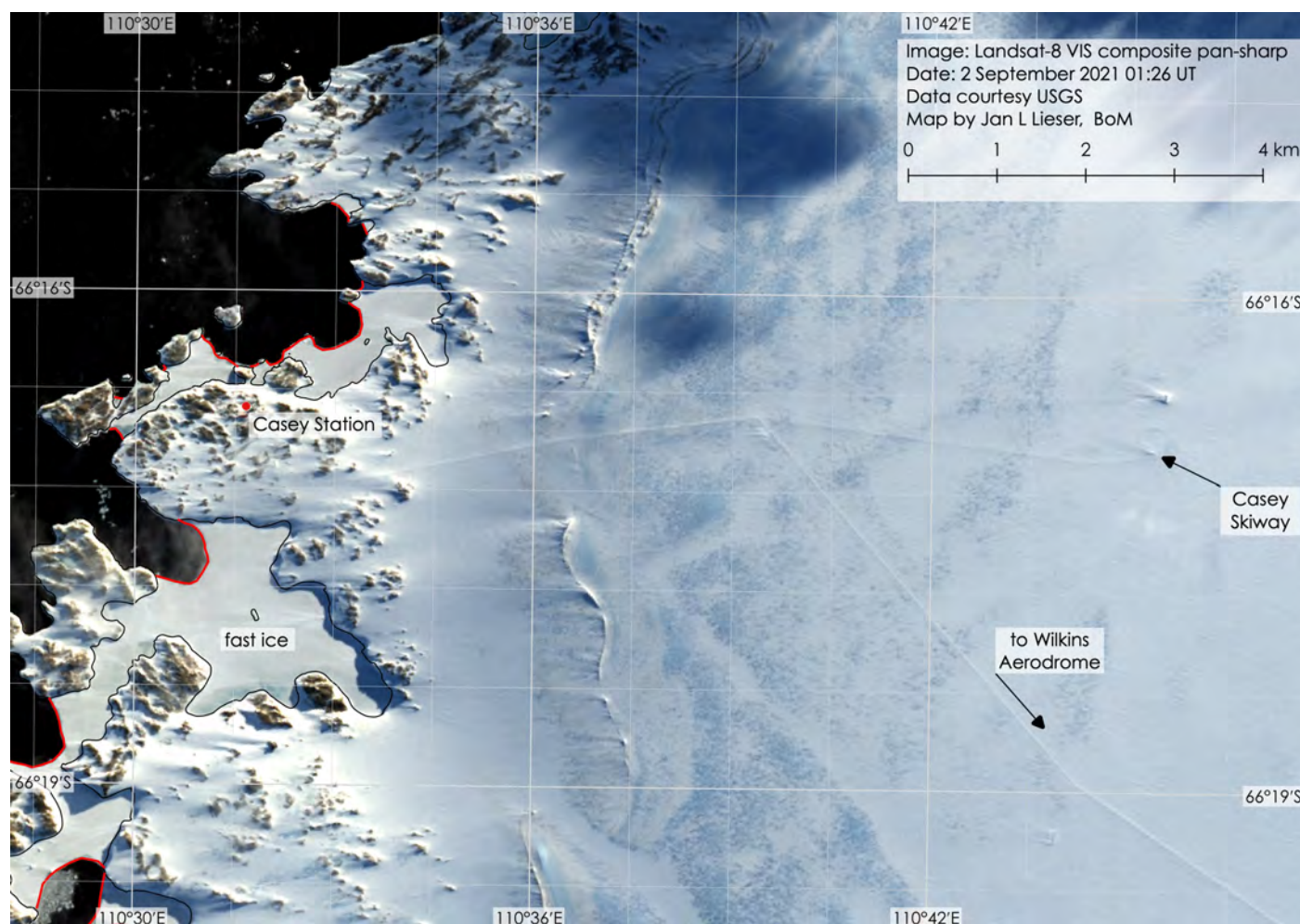


Figure 1: Landsat-8 pan-sharpened visible composite acquired 2 September 2021 at 01:26 UT and provided by USGS.

The routes into the Casey hinterland are clearly visible.

Figure 2 shows the same high-resolution data but a larger scene towards Vincennes Bay.

Fast ice has been breaking up offshore and a polynya is present off the fast-ice edge.

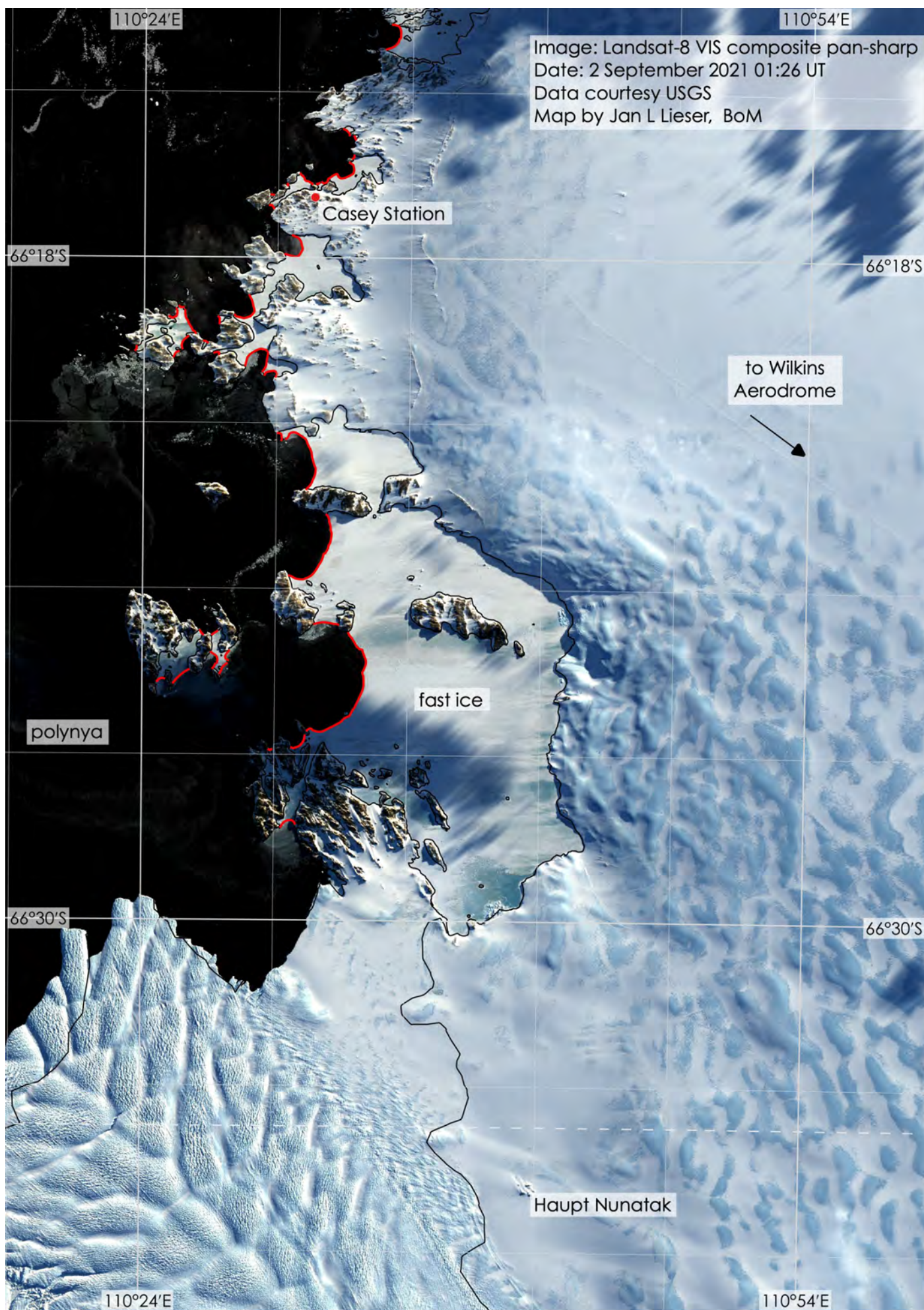


Figure 2: Landsat-8 pan-sharpened visible composite acquired 2 September 2021 at 01:26 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Monday 6th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge on 23 August 2021 is marked by a dashed red line.

The entire scene is covered by some form of ice. The current fast-ice edge is undetermined as pack ice has closed in on the fast ice and a previous polynya off the Sørsdal Ice Shelf is covered by consolidating new sea ice.

The northern sea-ice edge (not shown in the figure) remains largely at the median sea-ice extent for August and is in parts extending further northward.

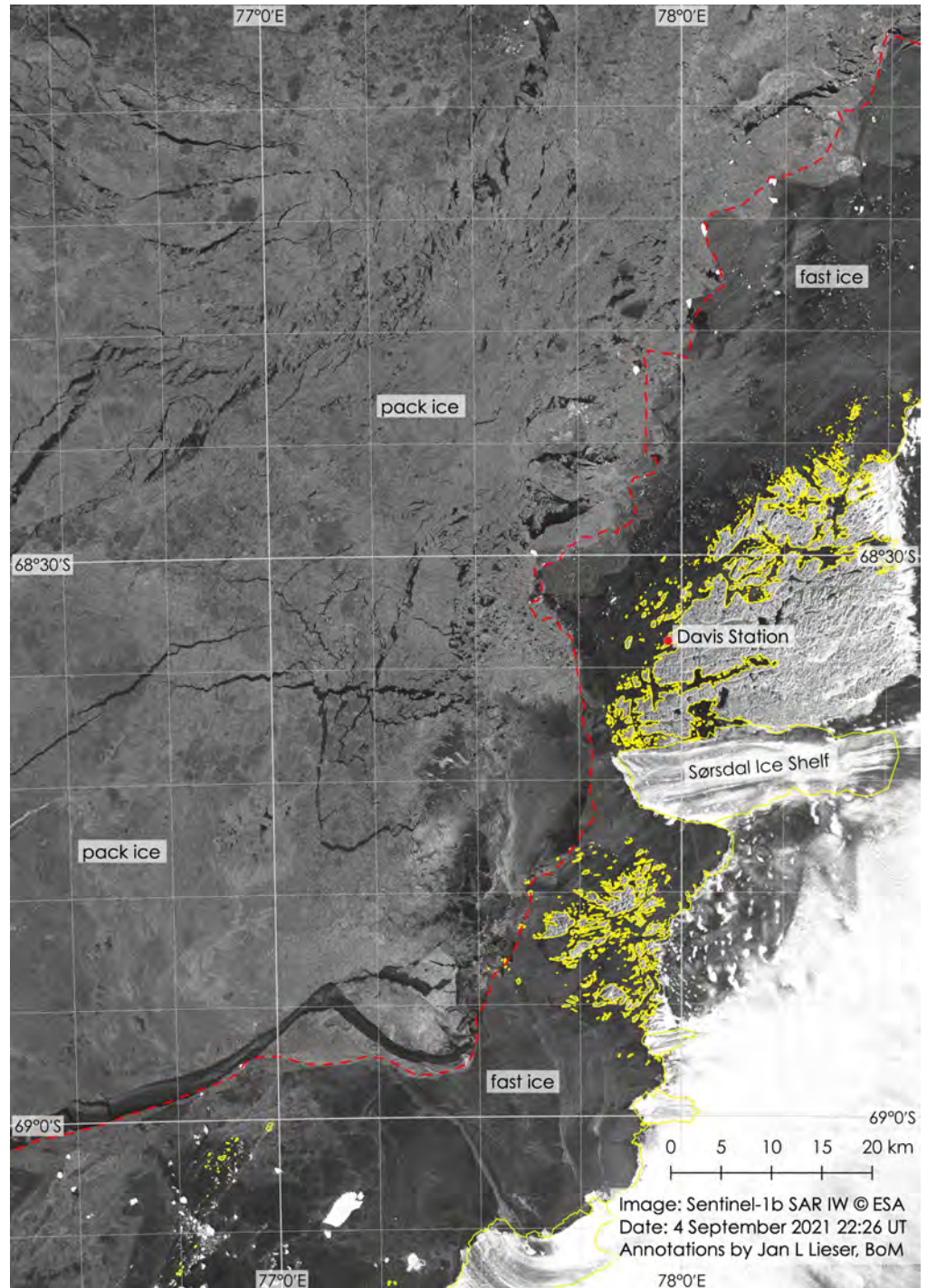


Figure 1: Sentinel-1a SAR IW data acquired 4 Sept. 2021 at 22:26 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Tuesday 7th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Mawson Station and offshore. The fast-ice edge on 22 August 2021 is marked by a dashed red line. The proposed route between Mawson Station and Ledingham Depot is marked in colour-coded segments.

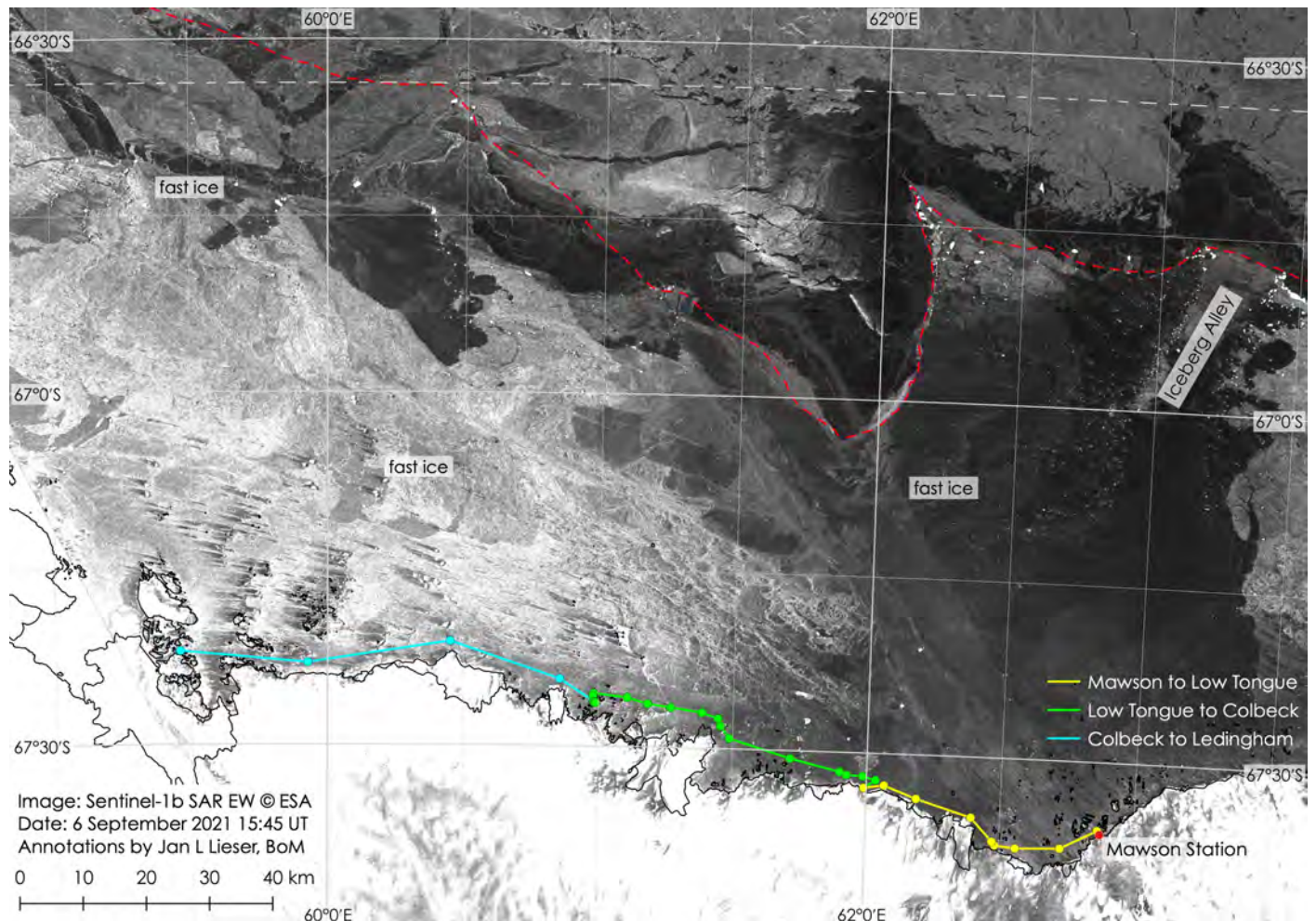


Figure 1: Sentinel-1b SAR EW data acquired 6 September 2021 at 15:45 UT and provided by PolarView.

The entire scene is covered by some form of ice. Northwest of Mawson Station, the polynya is currently covered by new sea ice and roughly 40 nautical miles away.

The northern sea-ice edge (not shown in the figure) is close to the median sea-ice extent for September.

Ice Bulletin: D'Urville Sea

Issued: Tuesday 7th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data of the southern D'Urville Sea.

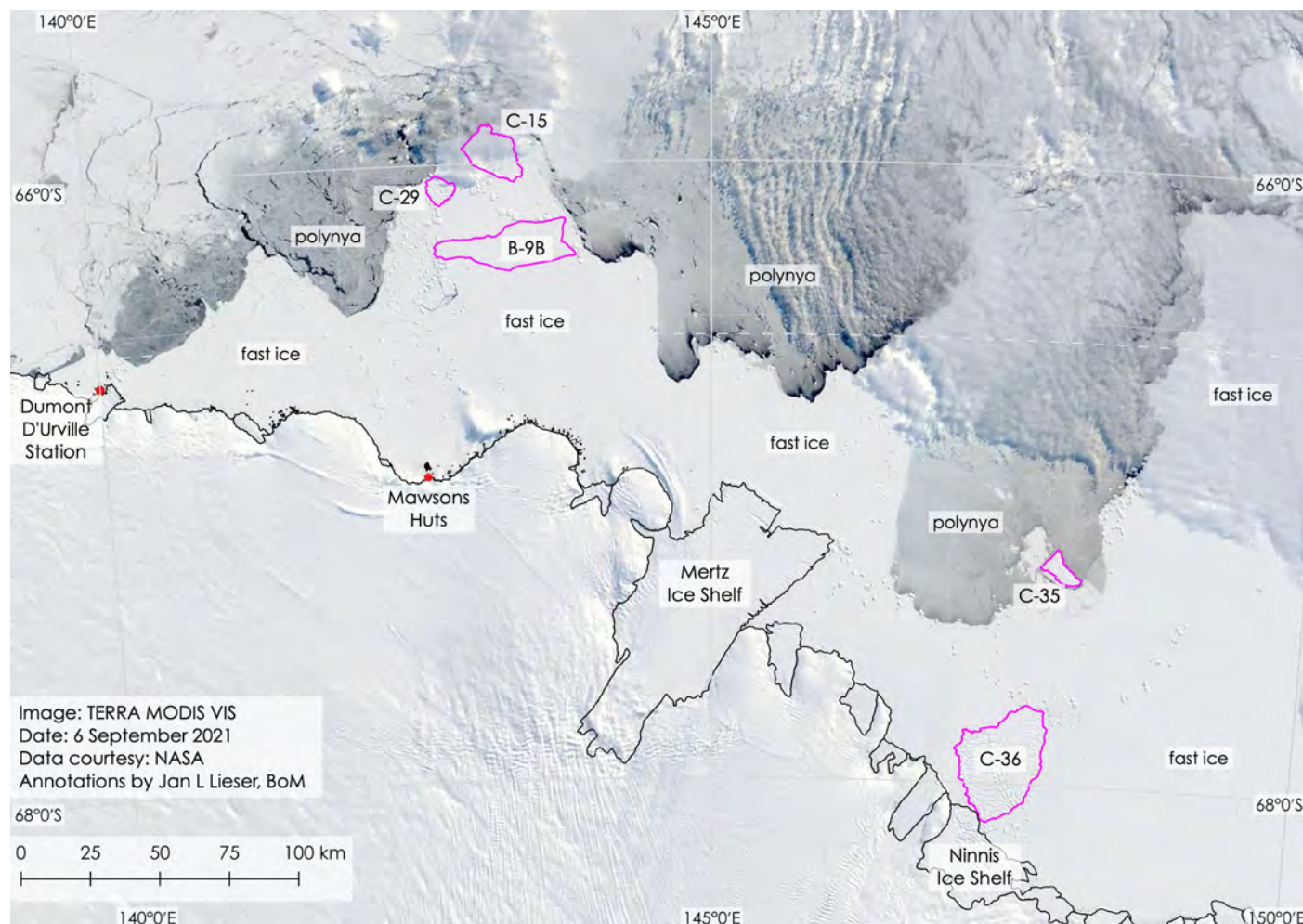


Figure 1: TERRA MODIS VIS data acquired 6 September 2021 and provided by NASA.

Since late August 2021, the fast-ice edge has not changed significantly. All polynyas in the region exhibit only minor activity (sea-ice production) and are largely frozen over.

The northern sea-ice edge (not shown in the figure) is close to the median sea-ice extent for September and up to roughly 70 nautical miles north of the September median sea-ice extent east of 150°E.

Figure 2 shows high-resolution (pan-sharpened) visible data of Cape Denison/Mawsons Huts.

Figure 3 shows SAR data of the coast between Dumont D'Urville Station and Cape Denison/Mawsons Huts and offshore. The fast-ice edge is marked by a red line.

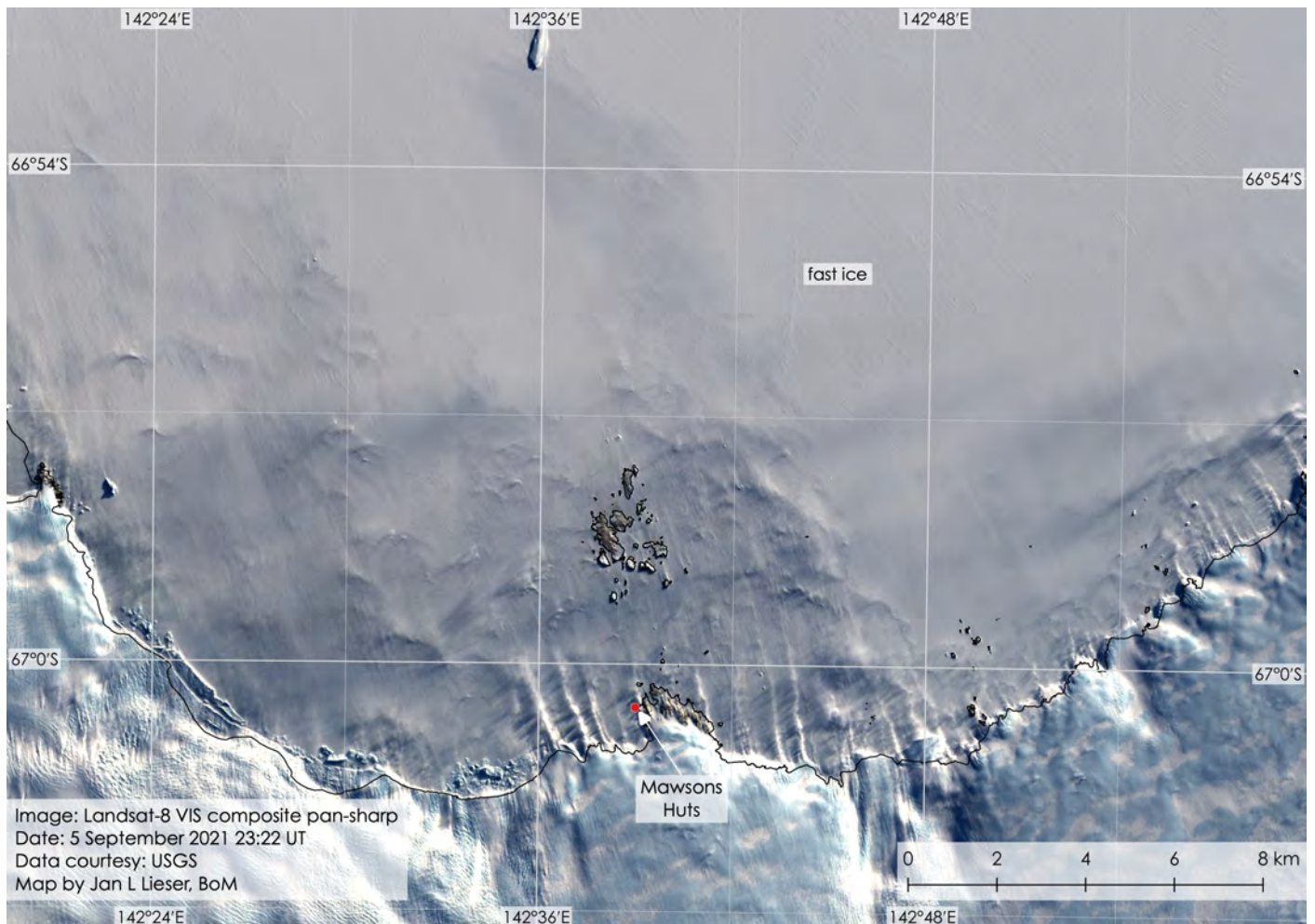


Figure 2: Landsat-8 pan-sharpened visible data acquired 5 September 2021 at 23:22 UT and provided by USGS.

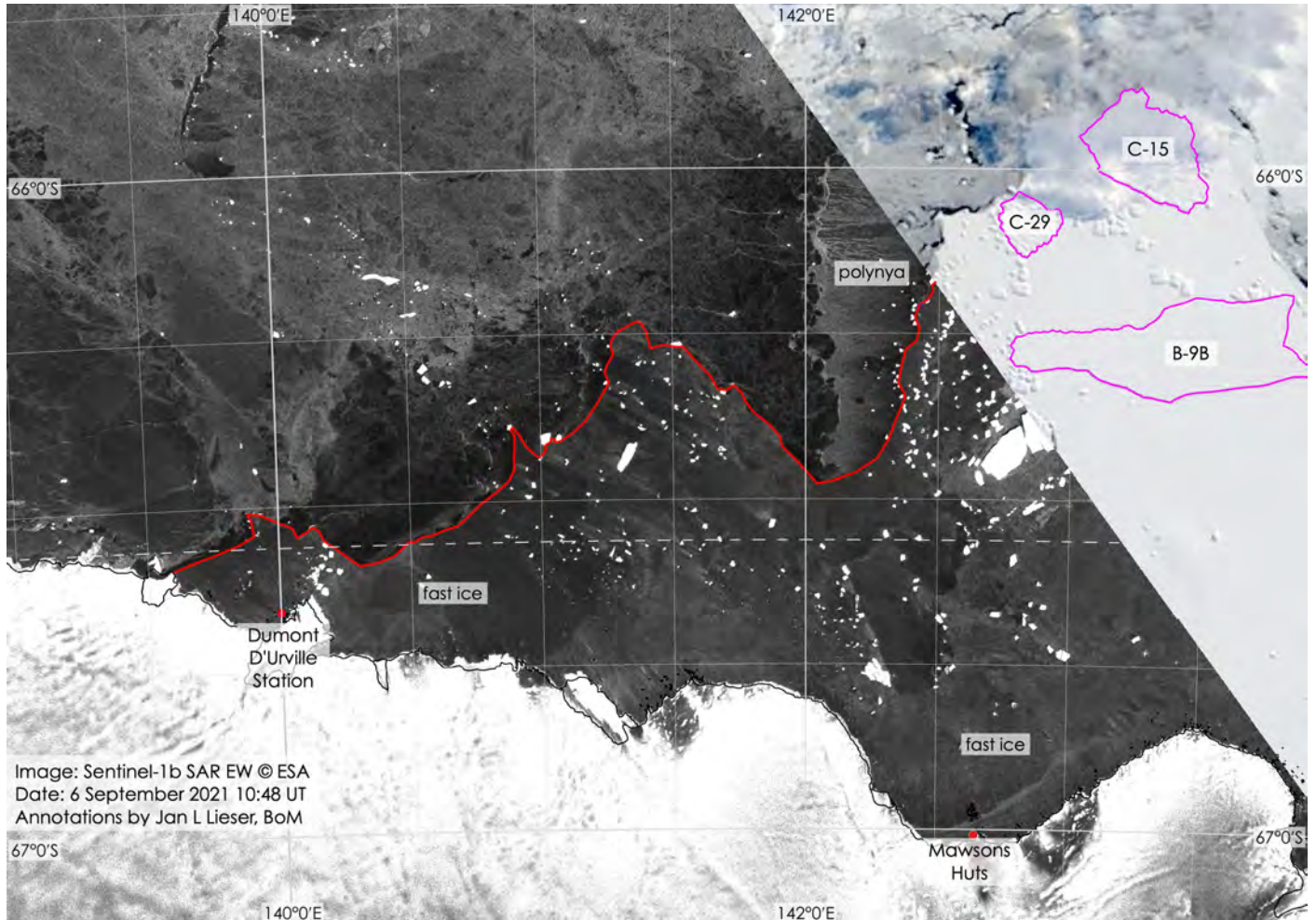


Figure 3: Sentinel-1b SAR EW data acquired 6 September 2021 at 10:48 UT and provided by PolarView.

Ice Bulletin: Princess Martha Coast

Issued: Thursday 9th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Princess Martha Coast. The positions of large icebergs are indicated by pink shapes. Fast-ice areas are outlined by a red line.

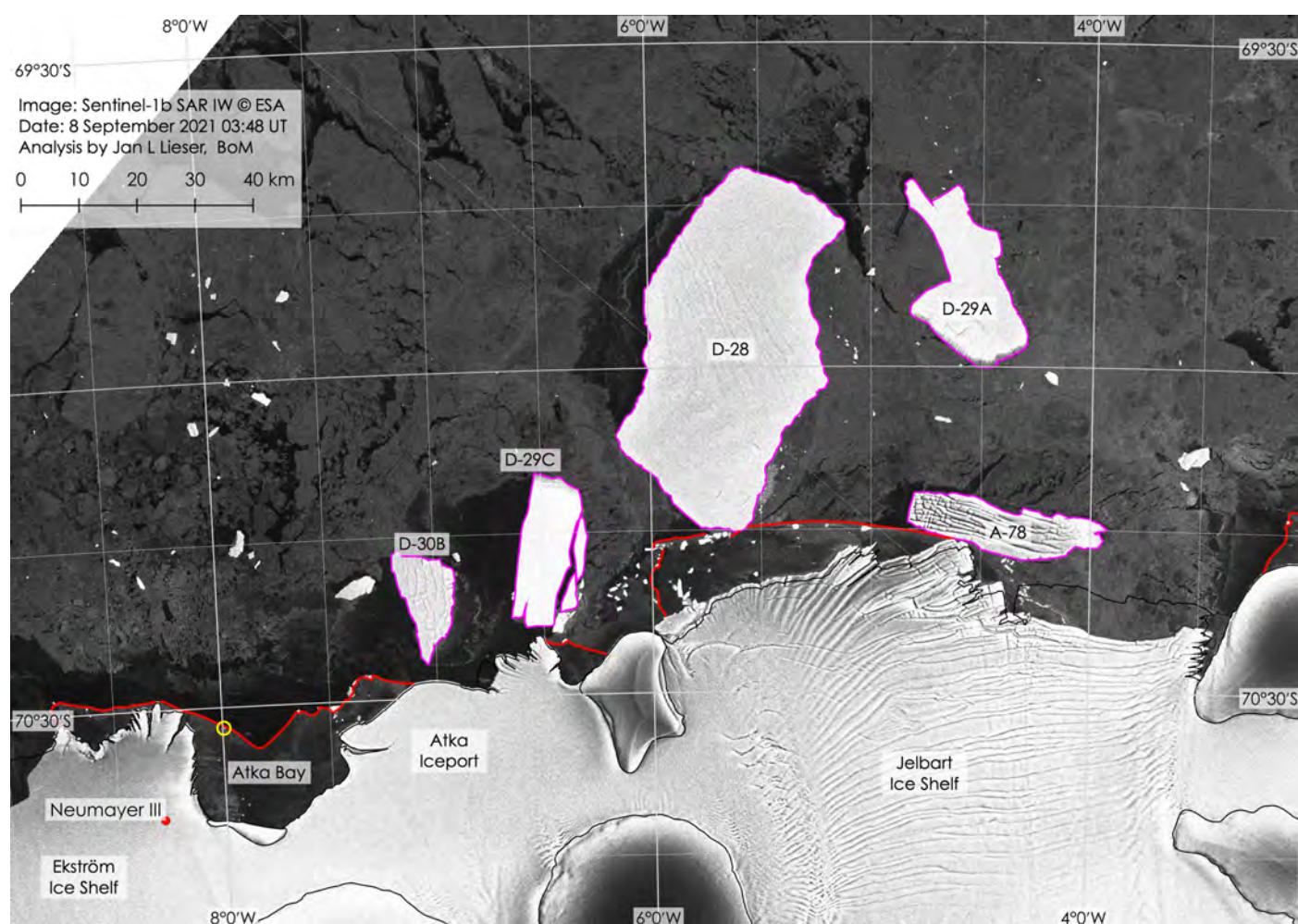


Figure 1: Sentinel-1b SAR IW data acquired 8 September 2021 at 03:48 UT and provided by PolarView.

All large icebergs continue their westward journey tumbling along Princess Martha Coast. Their individual drift track varies slightly but remains generally close to the coast roughly tracing the 1000 m bathymetry contour and the fast-ice edge.

While Atka Bay is still covered by fast ice, the north-eastern edge of the Ekström Ice Shelf has only minimal fast ice off the shelf-ice edge. One small iceberg that was instrumental in diverting iceberg B-39, which in turn was then diverting iceberg D-30A, when they drifted towards Atka Bay between 17 August 2021 and 23 August 2021 remains still local and is marked by a yellow circle in the Figure.

Iceberg D-29C is starting to break up as is indicated by multiple pink shapes along 006°30'W.

Ice Bulletin: Casey Station

Issued: Friday 10th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a high-resolution SAR data of Casey Station and surrounds. The fast-ice edge is marked by a red line (dashed red line for 2 September 2021).

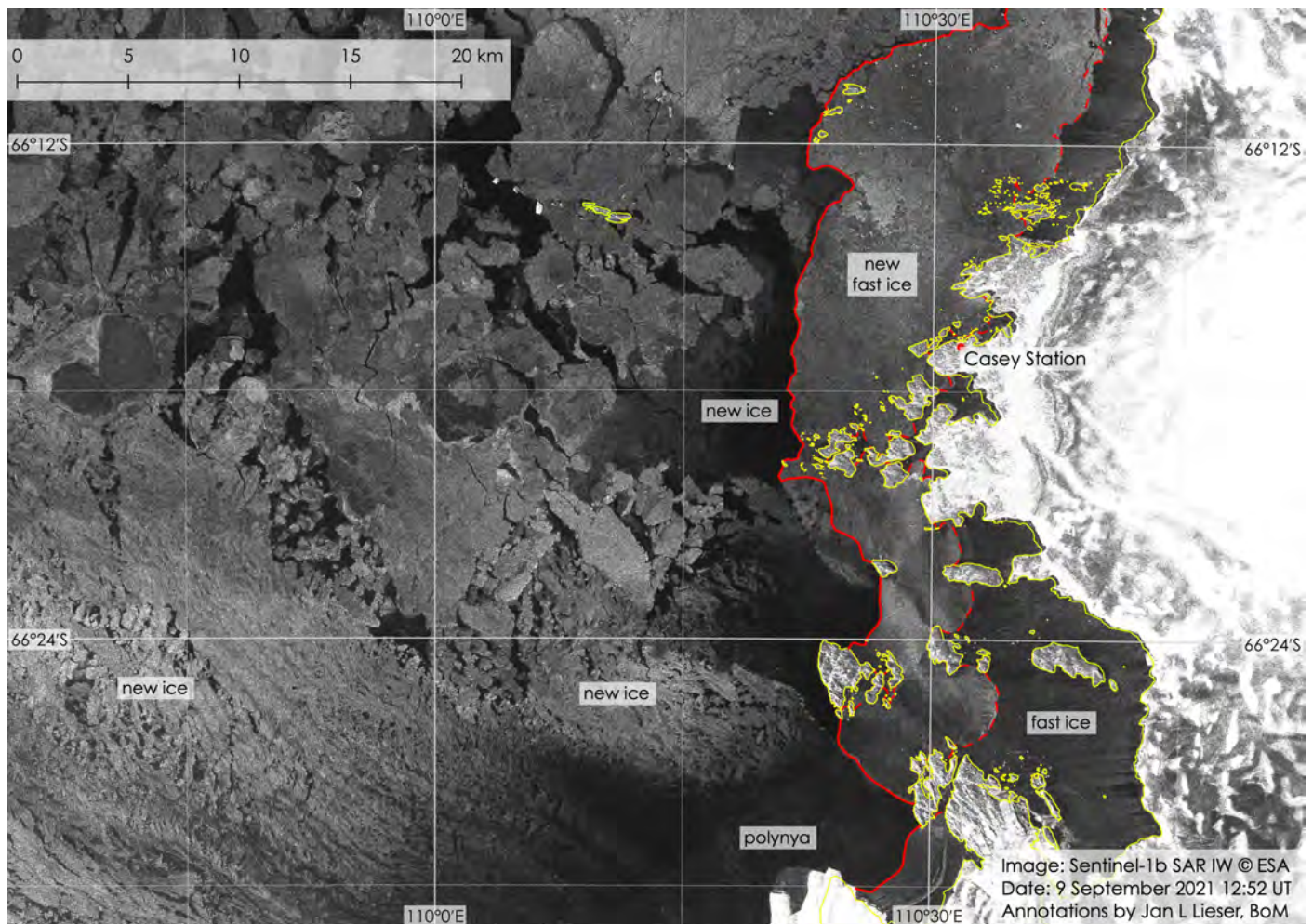


Figure 1: Sentinel-1b SAR IW data acquired 9 September 2021 at 12:52 UT and provided by PolarView.

During the past week, new fast ice has been growing off the fast-ice edge. The polynyas in the south and off the fast-ice edge off station are producing new sea ice that is transported north-westward.

Further north, the sea-ice edge (not shown in the figure) has been pushed southward and is currently up to 130 nautical miles south of the median sea-ice extent. At the same time, the pack ice between the polynya off Casey Station and the sea-ice edge has been compacted.

Ice Bulletin: Antarctica

Issued: Friday 10th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

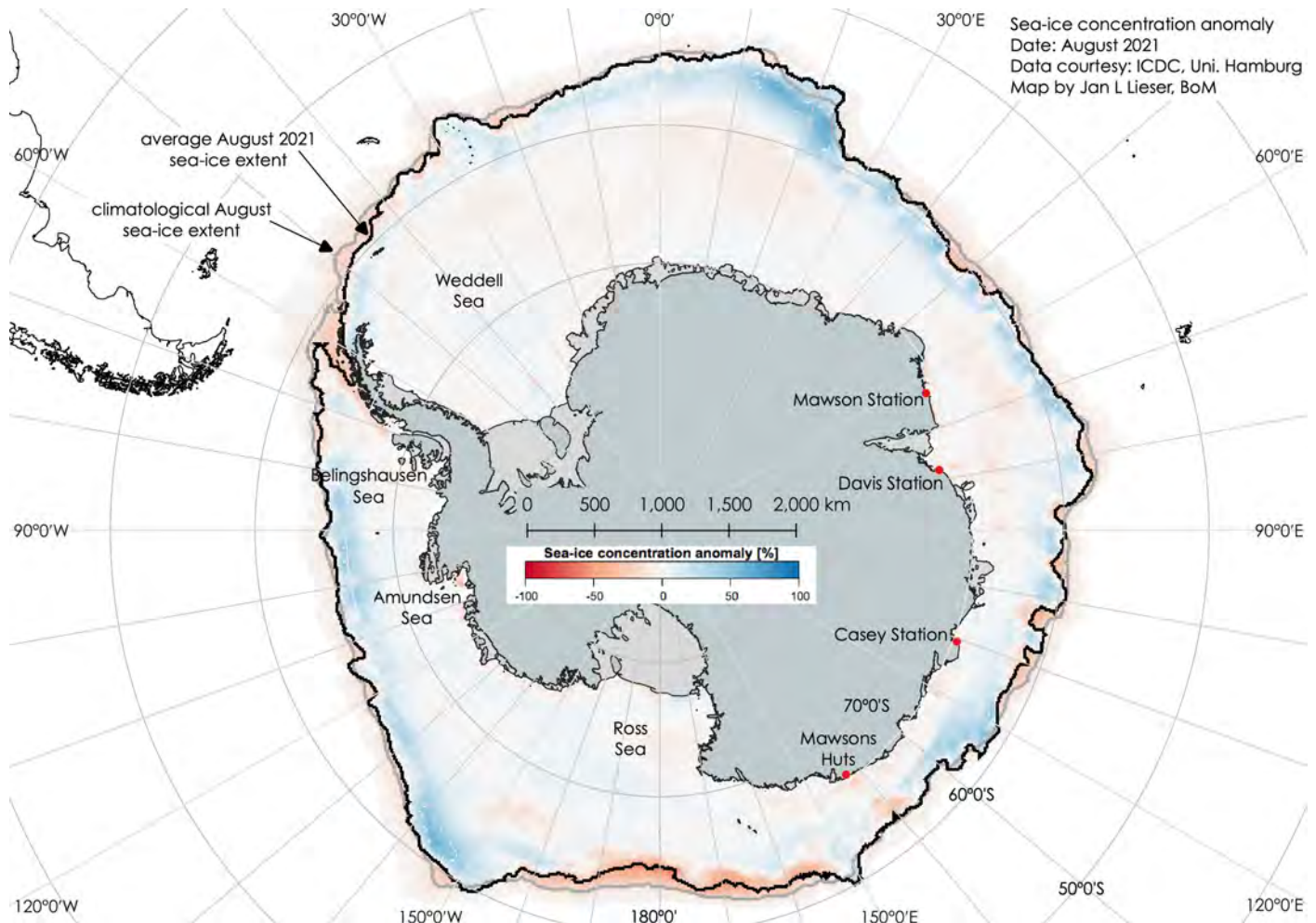


Figure 1: Sea-ice concentration anomaly for August 2021 provided by ICDC (Universität Hamburg).

In August 2021, pan-Antarctic sea-ice extent sat above the climatological August average for the first time (in August) since 2016 and was therefore continuing the July trend. Regionally sea-ice extent and associated concentration anomalies varied slightly.

A bi-modal pattern continues to be present around Antarctica with positive anomalies eastward of 10°0'E towards 150°0'E and in the eastern Ross Sea and the Amundsen Sea. Slight negative anomalies are present in the western Ross Sea and around the Antarctic Peninsula. North of the Antarctic Peninsula, sea-ice extent continued to be slightly below average conditions.

Ice Bulletin: Mawson Station

Issued: Monday 13th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (pansharpened) visible data of Auster Rookery and Mawson Station, respectively.

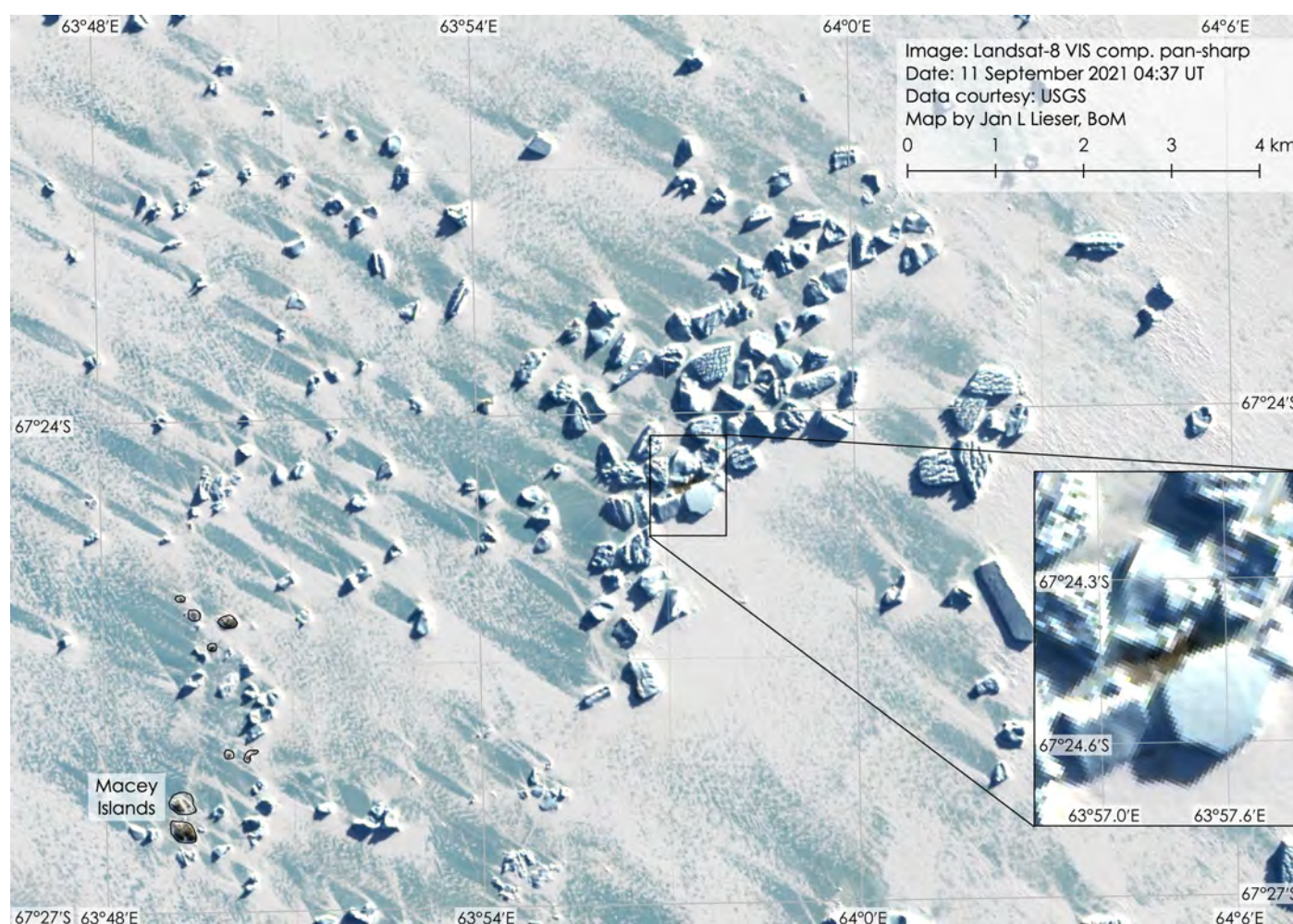


Figure 1: Landsat-8 pansharpened visible composite data acquired 11 September 2021 at 04:37 UT and provided by USGS.

Northeast of Macey Islands (which are located northeast of Mawson Station), the Auster emperor penguin rookery can be seen in the visible data nested between icebergs that are trapped by fast ice (see Figure 1 inset). The discolouration of the ice surface is due to accumulated excrement.

Figure 2 shows the same data as Figure 1 but around Mawson Station.

In Kista Strait (outside of Horseshoe Harbour off station), some surface discolouration can be seen mostly in southeast-northwest orientation. Here, the discolouration is due to rock dust that has been transported off the coast by the wind.

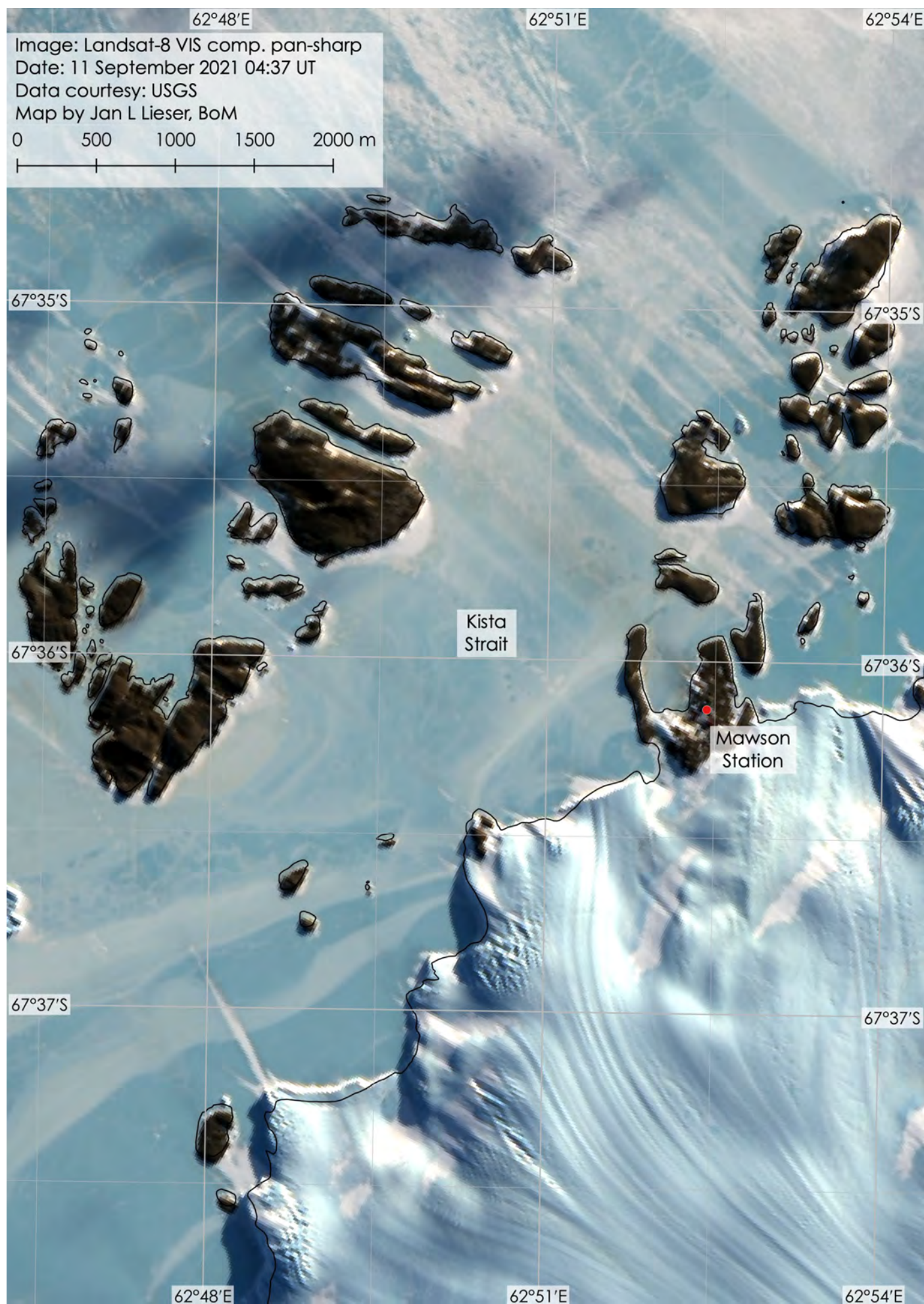


Figure 2: Landsat-8 pansharpened visible composite data acquired 11 September 2021 at 04:37 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Thursday 16th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 to 3 show SAR data along the western Mawson Coast. The proposed route between Mawson Station and Ledingham Depot/Fold Island is marked in colour-coded segments. Emperor penguin colonies are marked by orange triangles (Figure 3).

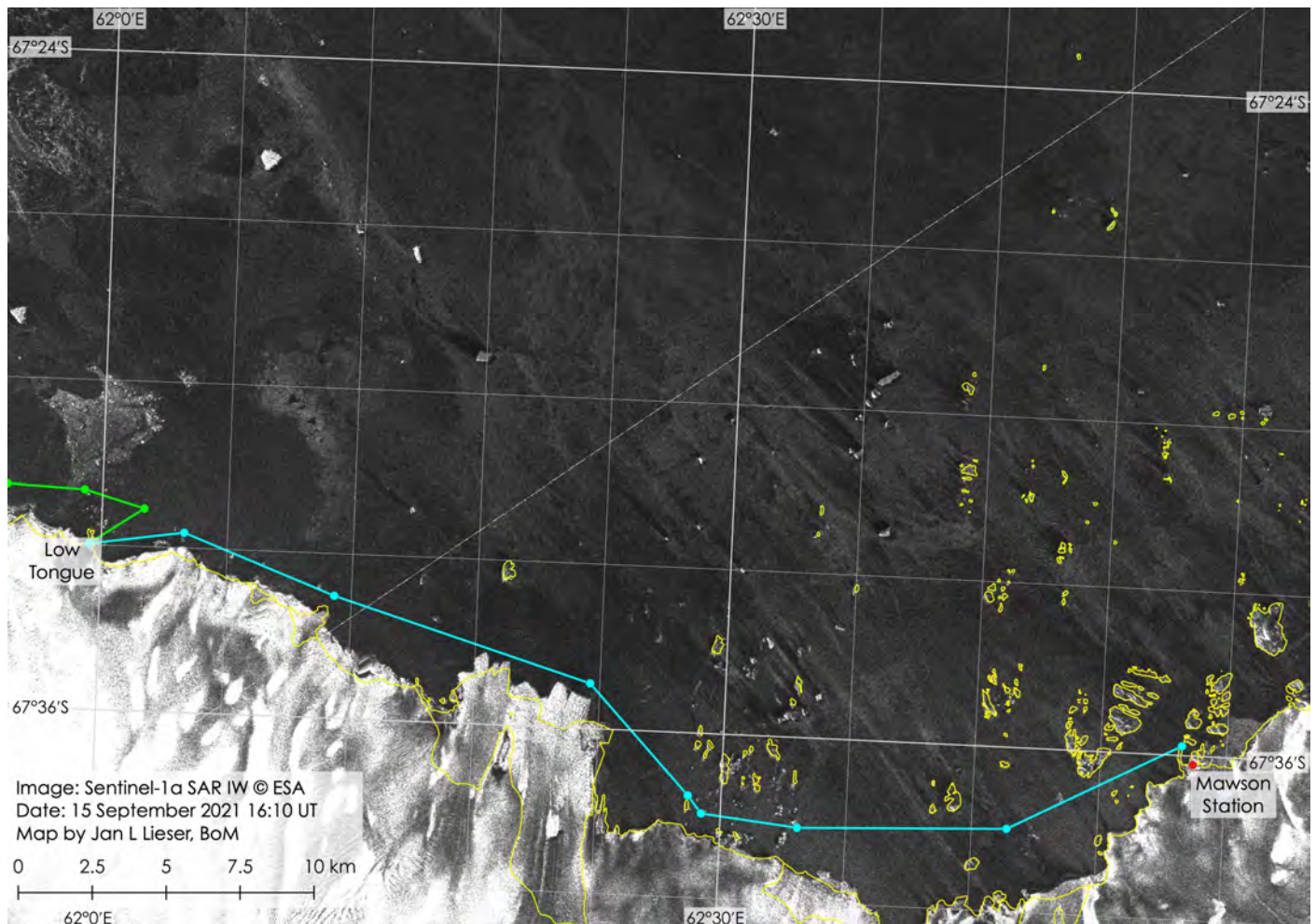


Figure 1: Sentinel-1a SAR IW data acquired 15 September 2021 at 16:10 UT and provided by PolarView
(a diagonal white line is a stitching artefact where two consecutive SAR scenes are joined together).

The route westward towards Low Tongue features a homogeneous fast-ice type. Only at around 62°30'E, a few grounded icebergs are detectable within the fast ice between the islands.

Between Low Tongue and Colbeck Hut (Figure 2), more and larger icebergs are enclosed by fast ice offshore and a few refrozen tide cracks are criss-crossing the fast ice.

Between Colbeck Hut and Ledingham Depot (Figure 3), the fast-ice surface exhibits predominantly east-west oriented wind-blown snow dunes and scouring behind small islands and icebergs.

Northwest of Mawson Station, a polynya (not shown in the figures) remains covered by new sea ice and roughly 41 nautical miles away.

The northern sea-ice edge (also not shown in the figures) is just south of the median sea-ice extent for September.

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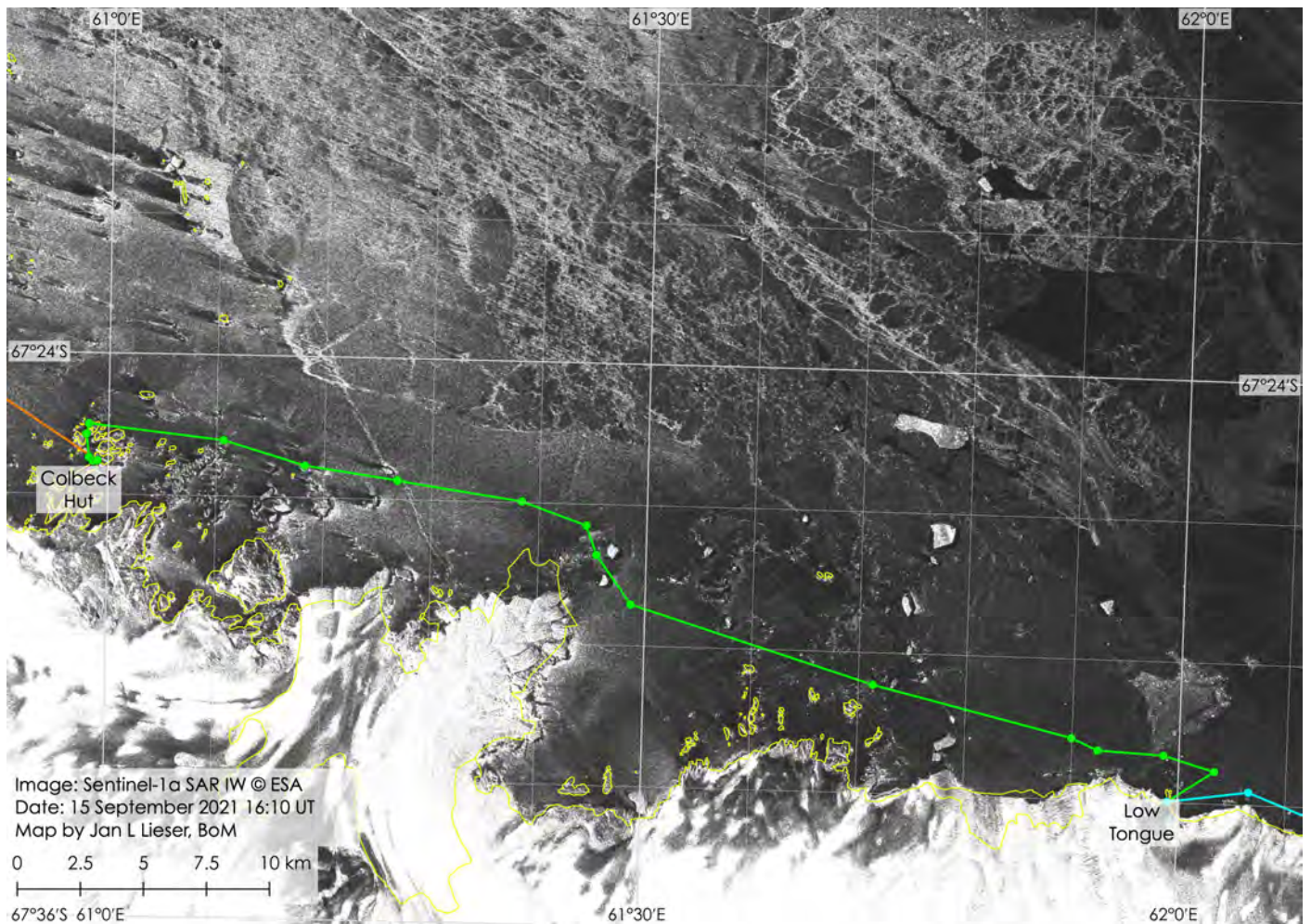


Figure 2: Sentinel-1a SAR IW data acquired 15 September 2021 at 16:10 UT and provided by PolarView

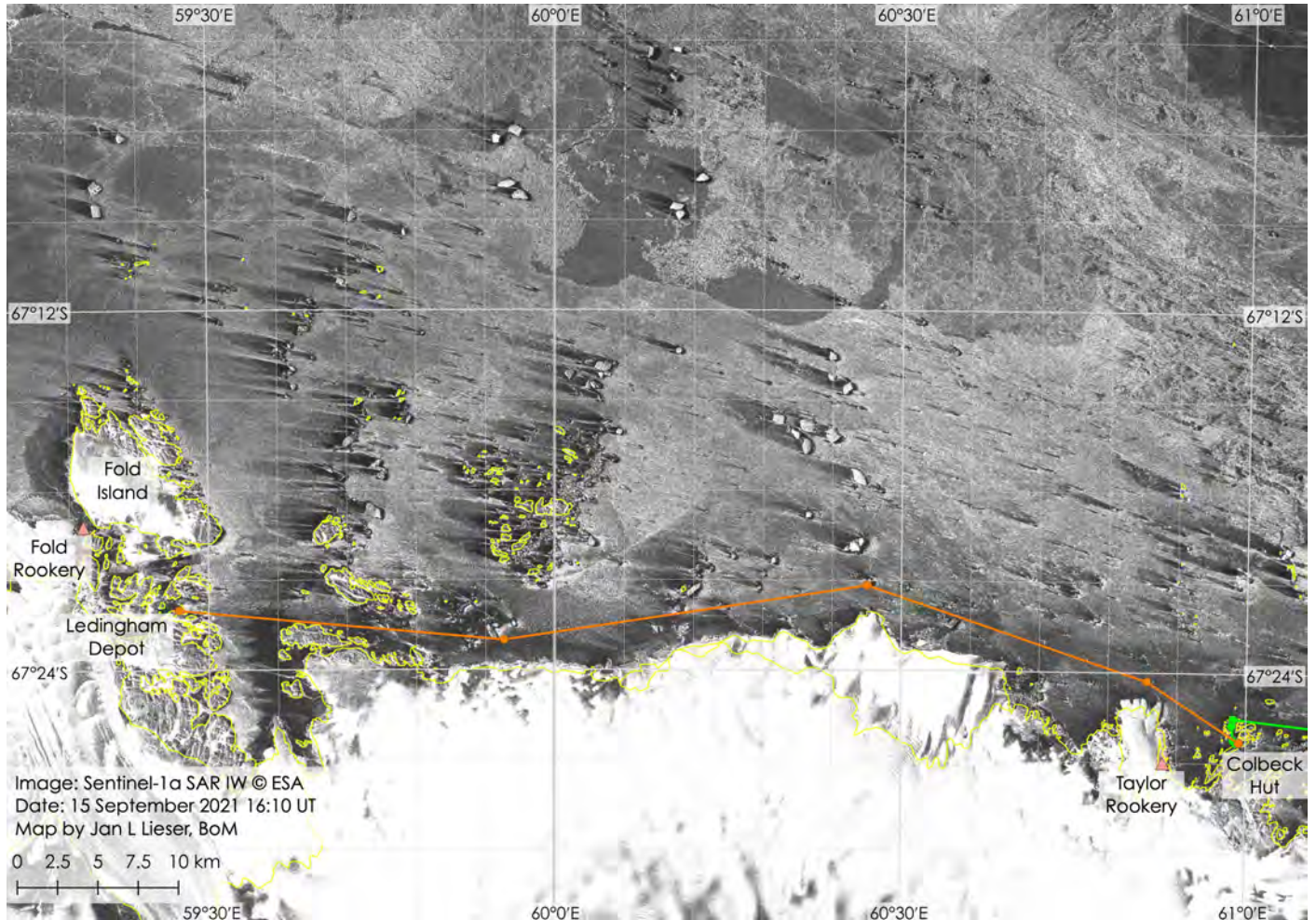


Figure 3: Sentinel-1a SAR IW data acquired 15 September 2021 at 16:10 UT and provided by PolarView

Ice Bulletin: Neumayer III Station

Issued: Friday 17th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the German Neumayer III Station at the north-eastern edge of the Weddell Sea. The fast-ice edge is marked by a red line. Northeast of Neumayer III Station, the location of an Emperor Penguin colony on the fast ice is marked by a pink triangle.

East of Neumayer III Station, Atka Bay is covered by fast ice since the onset of autumn. A few smaller icebergs are incorporated in the fast ice mostly along 8°0'E. The shelf-ice edge north of the station (at the western side of Atka Bay) is used as wharf during resupply of the station.

Four weeks ago, two large icebergs (B-39 and D-30A) drifted towards Atka Bay and were diverted by one small, grounded iceberg within the fast ice (marked by a yellow arrow).

This week, four large icebergs are drifting towards Atka Bay. The pink shapes in the figure mark their respective position on 13 September 2021.

Iceberg D-28 calved off the Amery Ice Shelf (between the Australian Mawson Station and Davis Station, East Antarctica) in September 2019 and travelled westward. In late May 2021, that iceberg bumped into the King Baudouin Ice Shelf and knocked about 950 km² of ice shelf off, which broke into three major pieces, namely D-29A, D-29B and D-29C. After creating the D-29 icebergs, D-28 travelled about 180 km further westward and knocked into the Borchgrevink Ice Shelf a week later, again removing 1240 km² off the shelf, which split immediately into two pieces creating icebergs D-30A and D-30B.

Last week, D-28 knocked into D-29C again and chipped two substantial pieces off (which are too small to be 'named').

For size comparison: iceberg D-28 is roughly 1510 km², which compares to Greater Hobart; iceberg D-29A is roughly 358 km², iceberg D-29C is roughly 207 km² and iceberg D-30B is roughly 128 km². The small iceberg that is marked by the yellow arrow in the figure is roughly 0.17 km².

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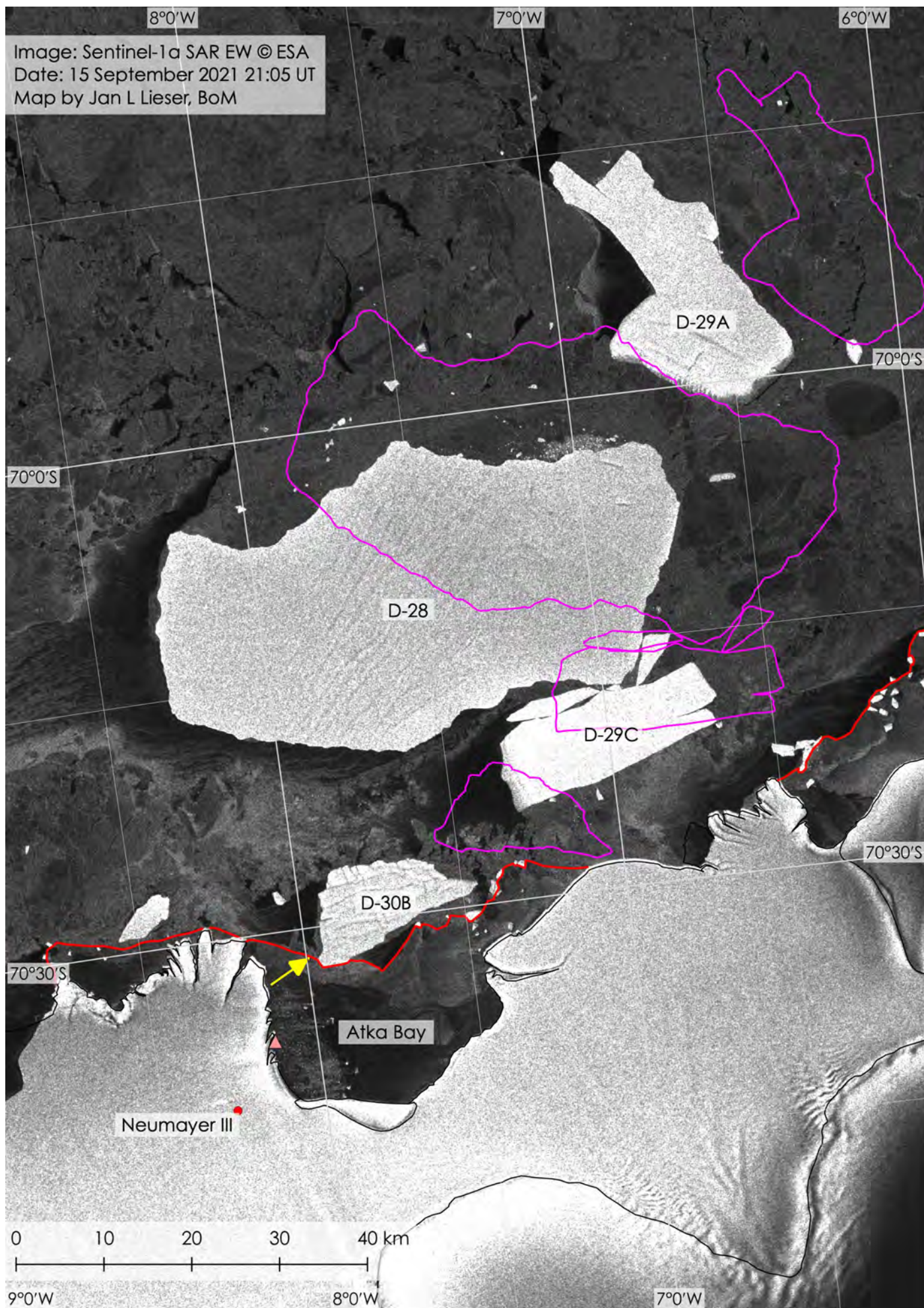


Figure 1: Sentinel-1a SAR EW data acquired 15 August 2021 at 21:05 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Friday 17th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge is marked by a red line (dashed red for 7 September 2021).

Since 7 September 2021, the fast-ice edge has been retreating towards the coast.

Southwest of the station, a polynya re-emerged and is covered by thin new sea ice.

The northern sea-ice edge (not shown in the figure) is roughly 40 nautical miles below (south of) the median sea-ice extent for September in the region.

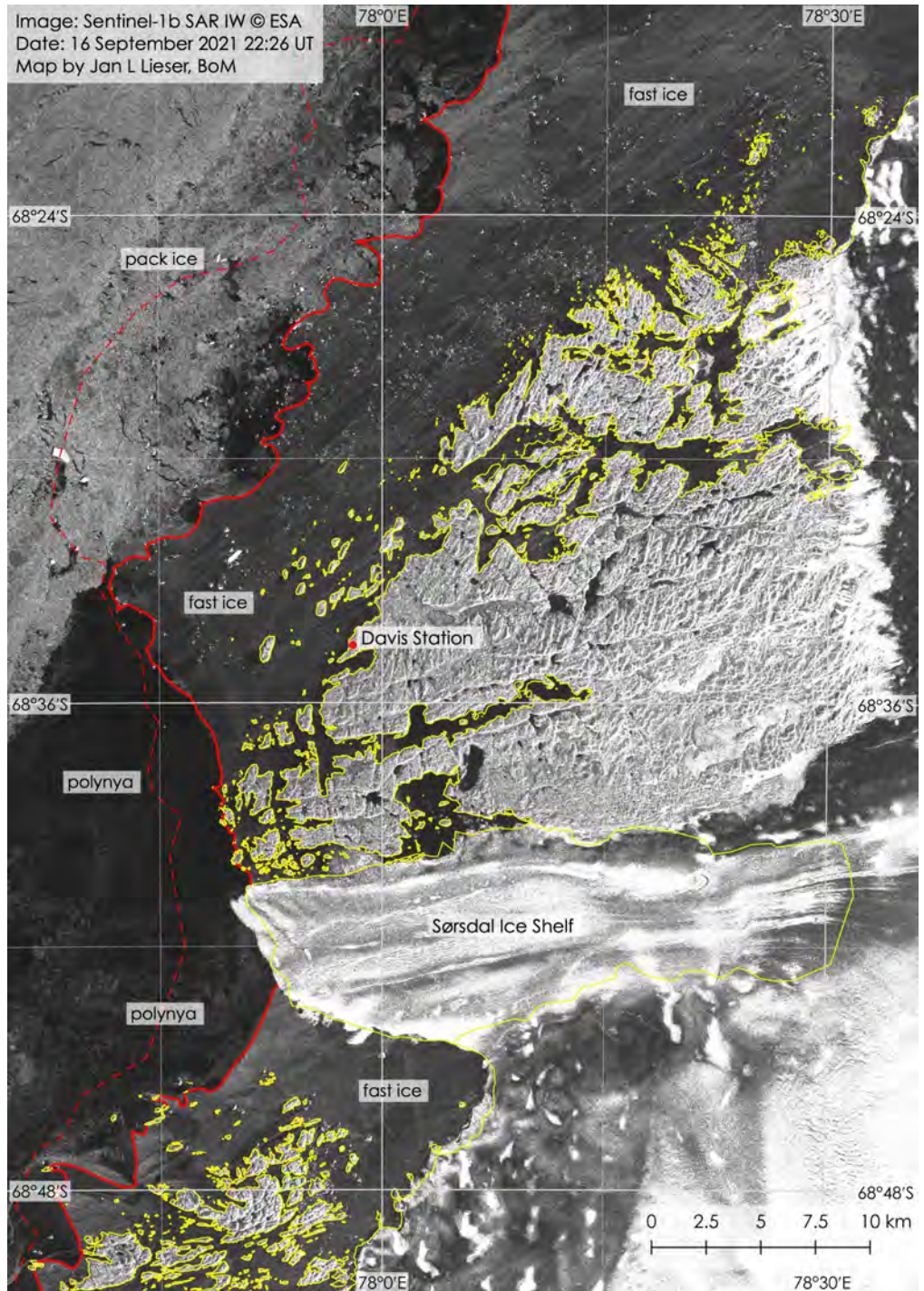


Figure 1: Sentinel-1b SAR IW data acquired 17 September 2021 at 22:26 UT and provided by PolarView.

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Ice Bulletin: Casey Station

Issued: Monday 20th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a SAR data of Casey Station and surrounds. The fast-ice edge on 9 September 2021 is marked by dashed red line.

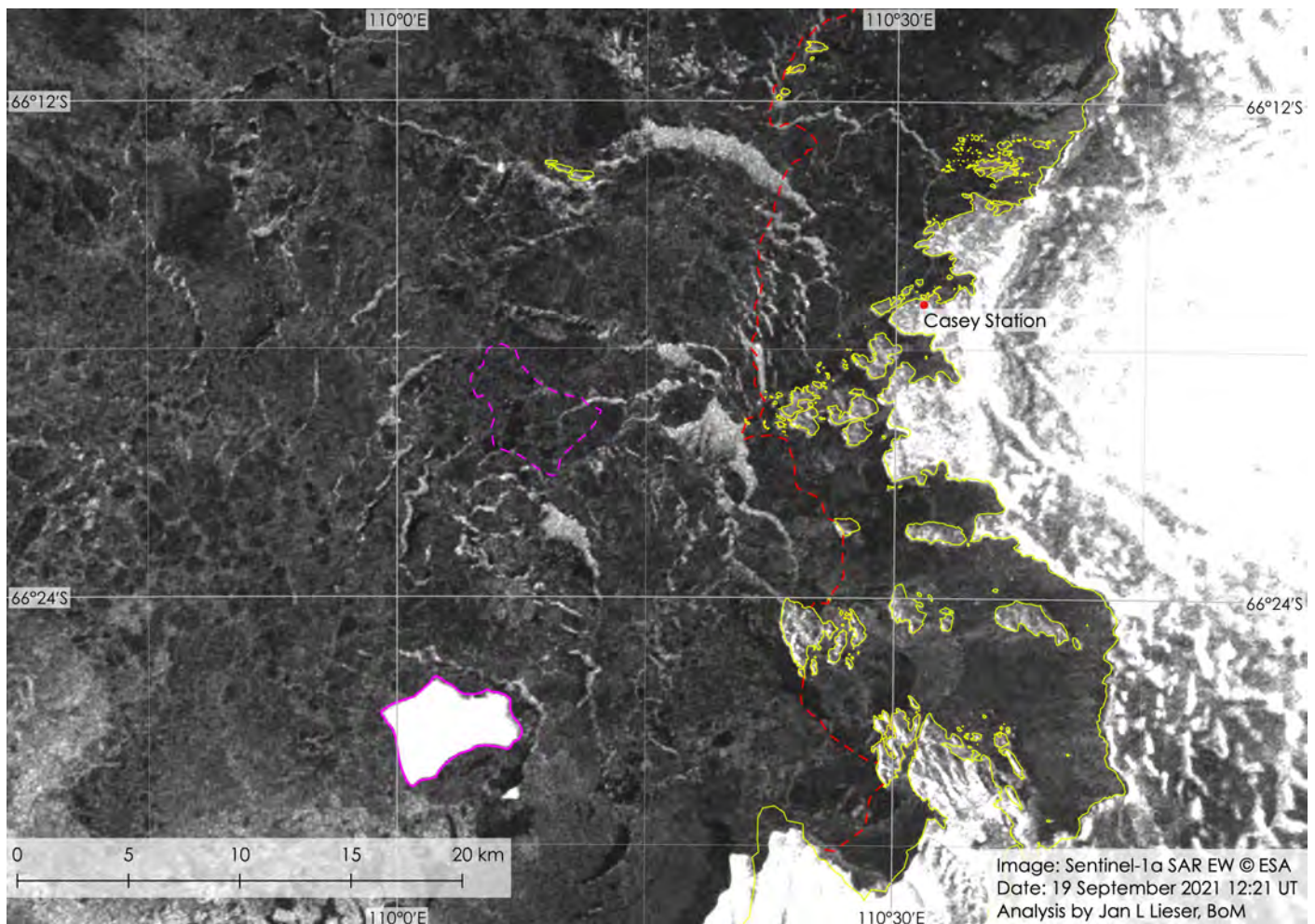


Figure 1: Sentinel-1a SAR EW data acquired 19 September 2021 at 12:21 UT and provided by PolarView.

During the weekend, a large iceberg drifted south in Vincennes Bay off Casey Station (marked by a pink shape, dashed pink shape for 18 September 2021). This iceberg is roughly 17.3 km² and was 18 km west of the station on 18 September 2021.

New fast ice that had been growing offshore earlier this month has now largely broken off and is transported south-westward.

Further north, the sea-ice edge (not shown in the figure) has been pushed southward and is currently up to 200 nautical miles south of the median sea-ice extent. At the same time, the pack ice between the polynya south of Casey Station and the sea-ice edge has been compacted.

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Ice Bulletin: Neumayer III Station

Issued: Monday 20th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off the German Neumayer III Station at the north-eastern edge of the Weddell Sea. The fast-ice edge is marked by a red line. Northeast of Neumayer III Station, the location of an Emperor Penguin colony on the fast ice is marked by a pink triangle.

East of Neumayer III Station, Atka Bay is covered by fast ice since the onset of autumn. A few smaller icebergs are incorporated in the fast ice mostly along 8°0'E. The shelf-ice edge north of the station (at the western side of Atka Bay) is used as wharf during resupply of the station.

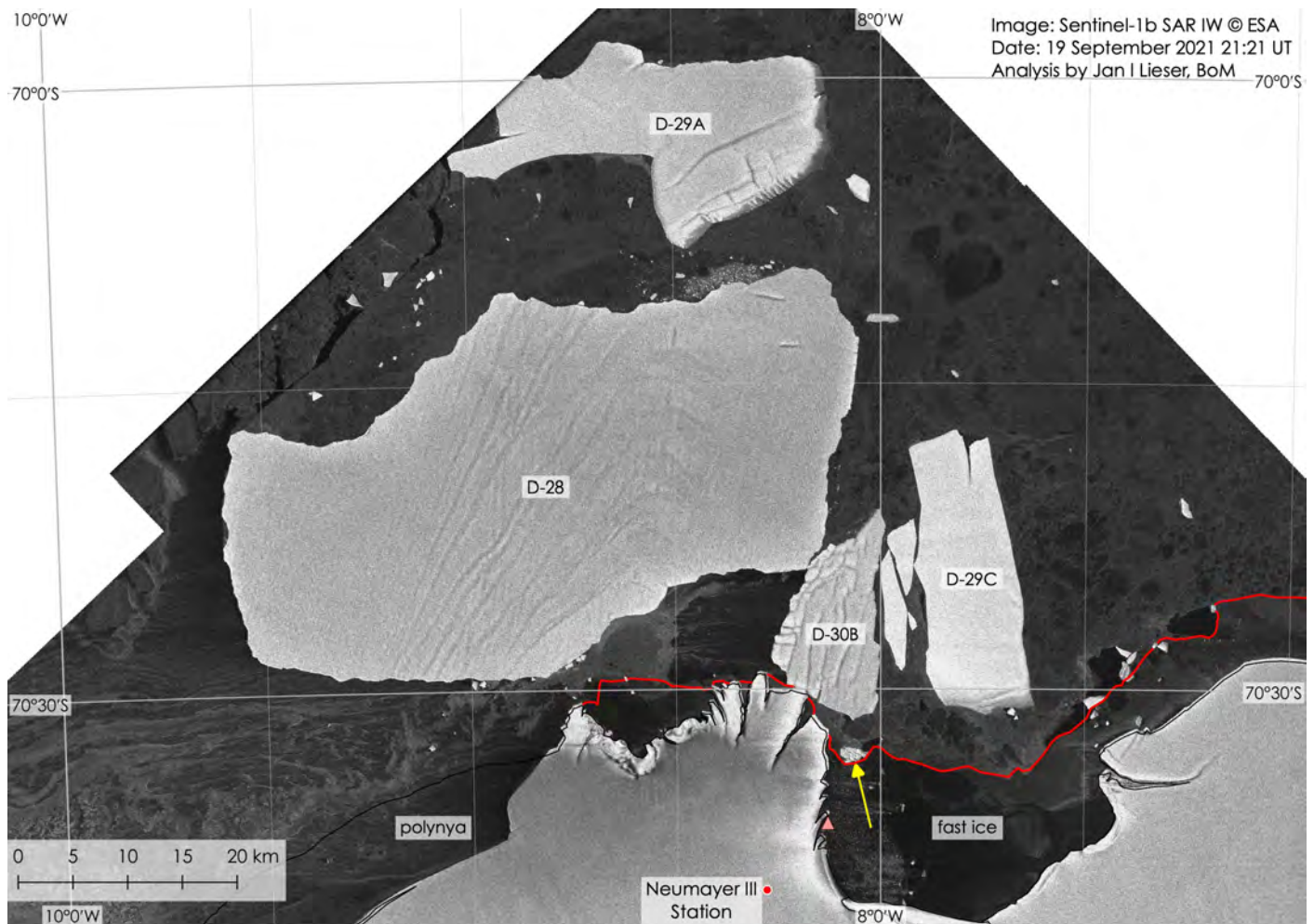


Figure 1: Sentinel-1b SAR IW data acquired 19 August 2021 at 21:21 UT and provided by ESA.

Iceberg D-30B is seen impacting on the shelf ice north of Neumayer III Station. South of the iceberg, a small piece of the iceberg has been sheared off (marked by a yellow arrow). The small iceberg that was diverting two other large icebergs previously (see Ice Bulletin from 17 September 2012) appears to have been moved further south into the fast ice of Atka Bay and can not be identified positively anymore.

Figure 2 shows SAR data of the same region 24-hours earlier, when two of the four large icebergs continued drifting into Atka Bay. Thinner/fainter shapes of all four large icebergs offshore mark their positions on 15 and 16 September 2021 colour-coded respectively.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

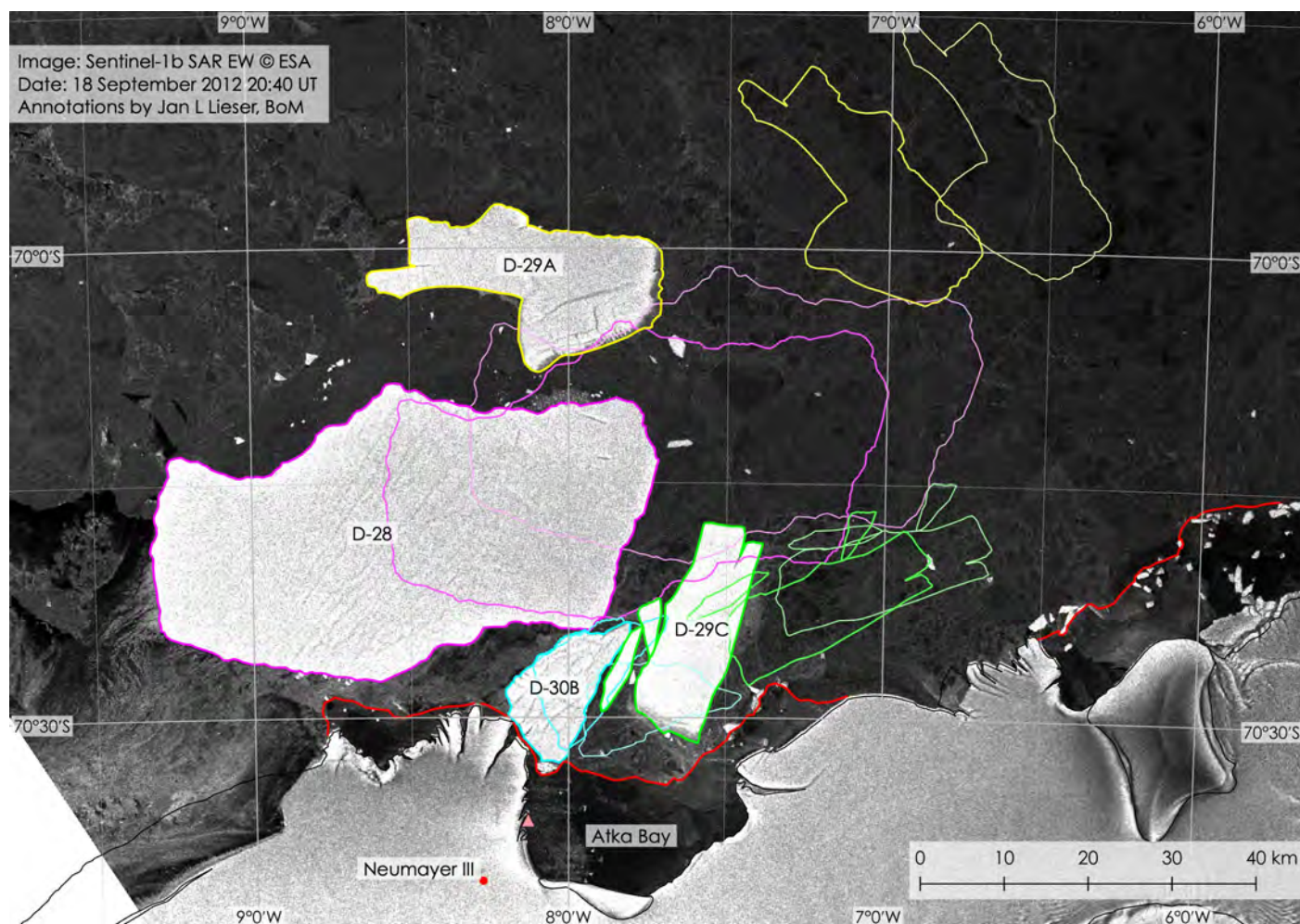


Figure 2: Sentinel-1b SAR EW data acquired 18 August 2021 at 20:40 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Wednesday 22nd September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station and surrounds. The fast-ice edge is marked by a red line.

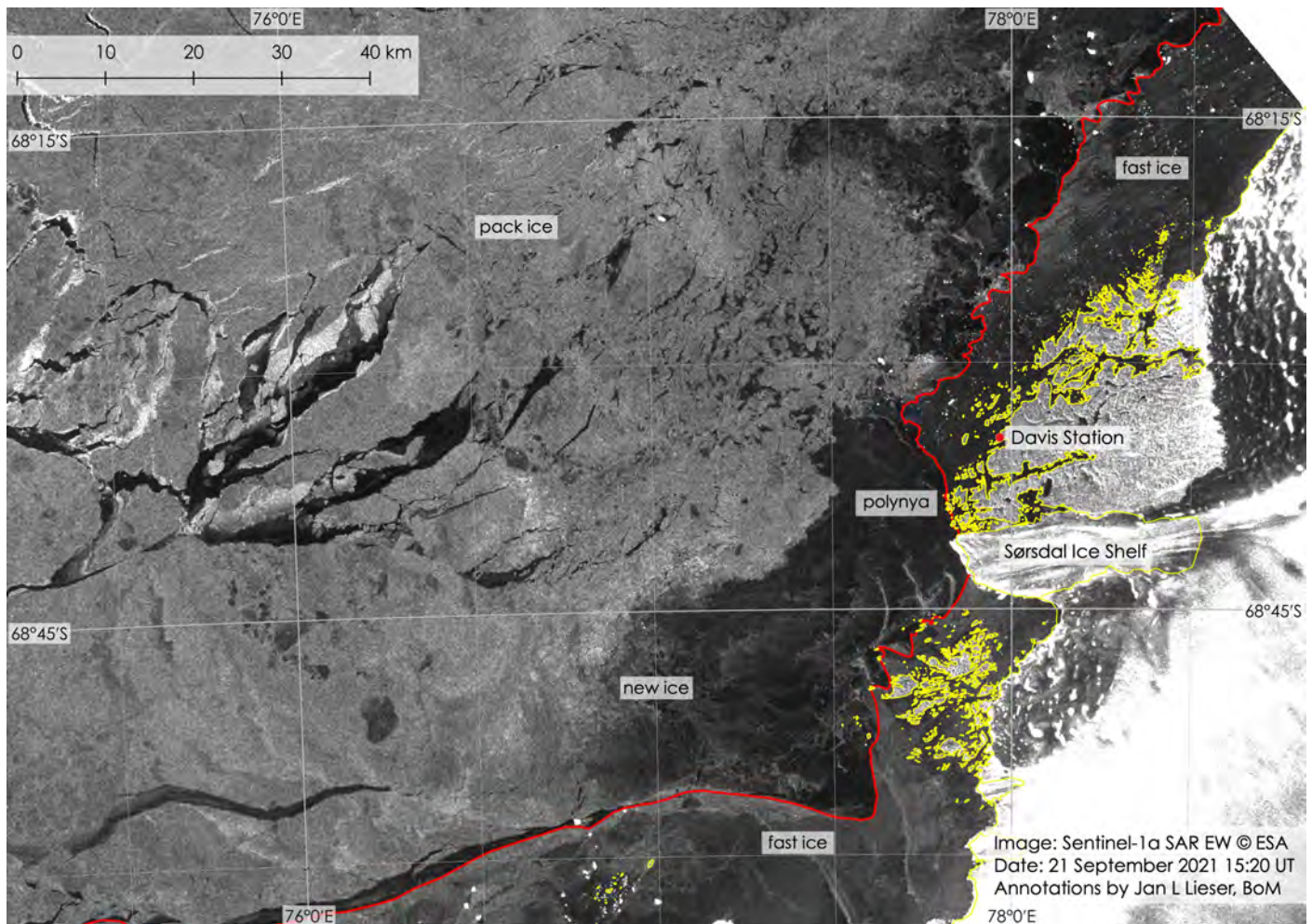


Figure 1: Sentinel-1a SAR EW data acquired 21 September 2021 at 15:20 UT and provided by PolarView.

Since mid-September, the fast-ice edge has been largely stable off the coast.

Southwest of the station, a polynya is covered by thin new sea ice.

The northern sea-ice edge (not shown in the figure) is roughly 20 nautical miles below (south of) the median sea-ice extent for September in the region.

Ice Bulletin: Mawson Station

Issued: Thursday 23rd September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data along the western Mawson Coast. The proposed route between Mawson Station and Ledingham Depot/Fold Island is marked by blue dots, the fast-ice edge is marked by a red line.

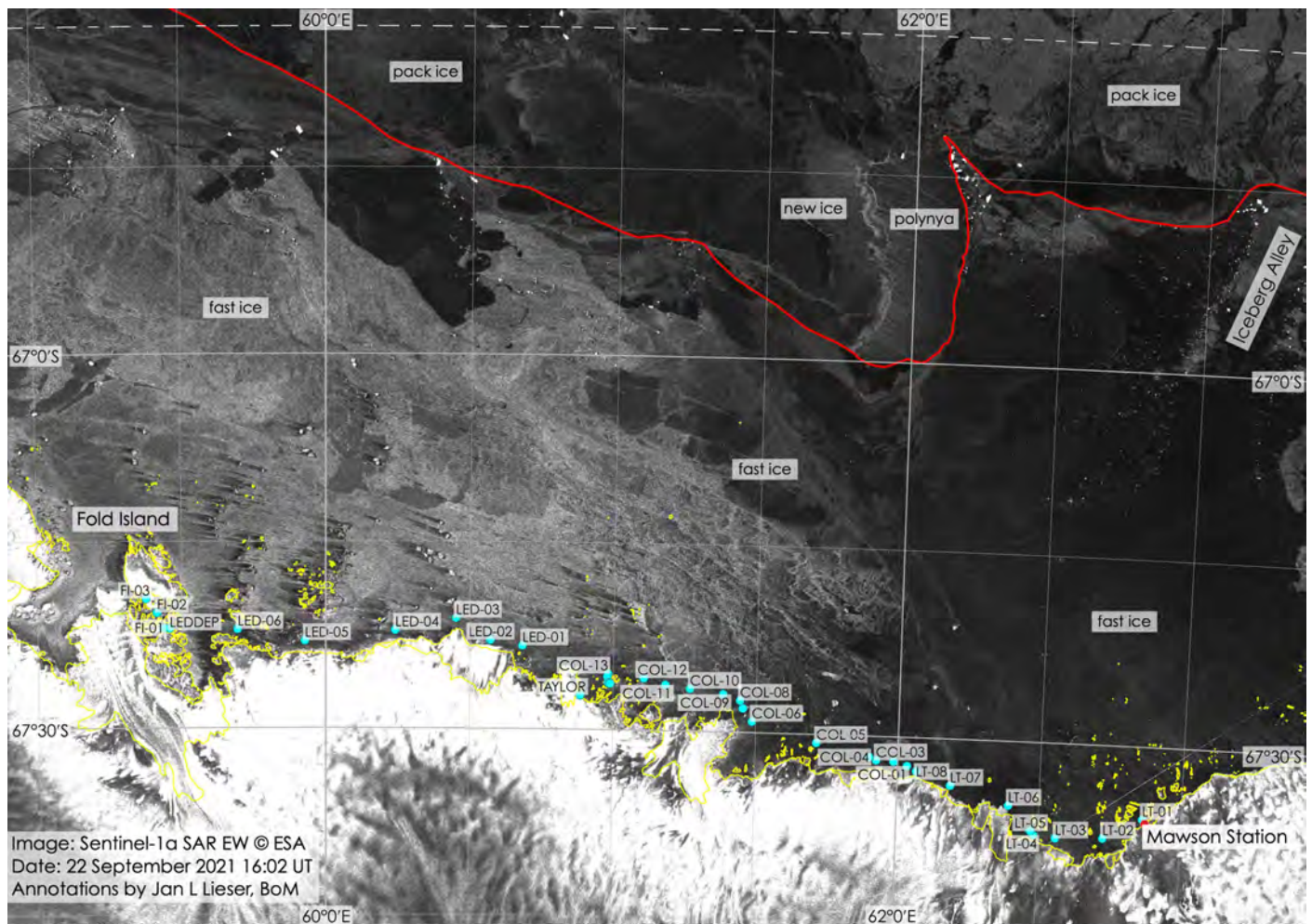


Figure 1: Sentinel-1a SAR EW data acquired 22 September 2021 at 16:02 UT and provided by PolarView
(a diagonal white line is a stitching artefact where two consecutive SAR scenes are joined together).

The ice conditions along the route have not changed significantly during the past week.

Northwest of Mawson Station, a polynya is actively producing new sea ice and remains roughly 41 nautical miles away.

The northern sea-ice edge (also not shown in the figures) is meandering around the median sea-ice extent for September.

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Ice Bulletin: Mawson Station

Issued: Monday 13th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (pansharpened) visible data around Fold Island west of Mawson Station. The scene is affected by clouds in the northeast and southwest corners. The westernmost waypoints of the route towards Ledingham Depot (LEDDEP) and further to Fold Island are marked by light-blue dots.

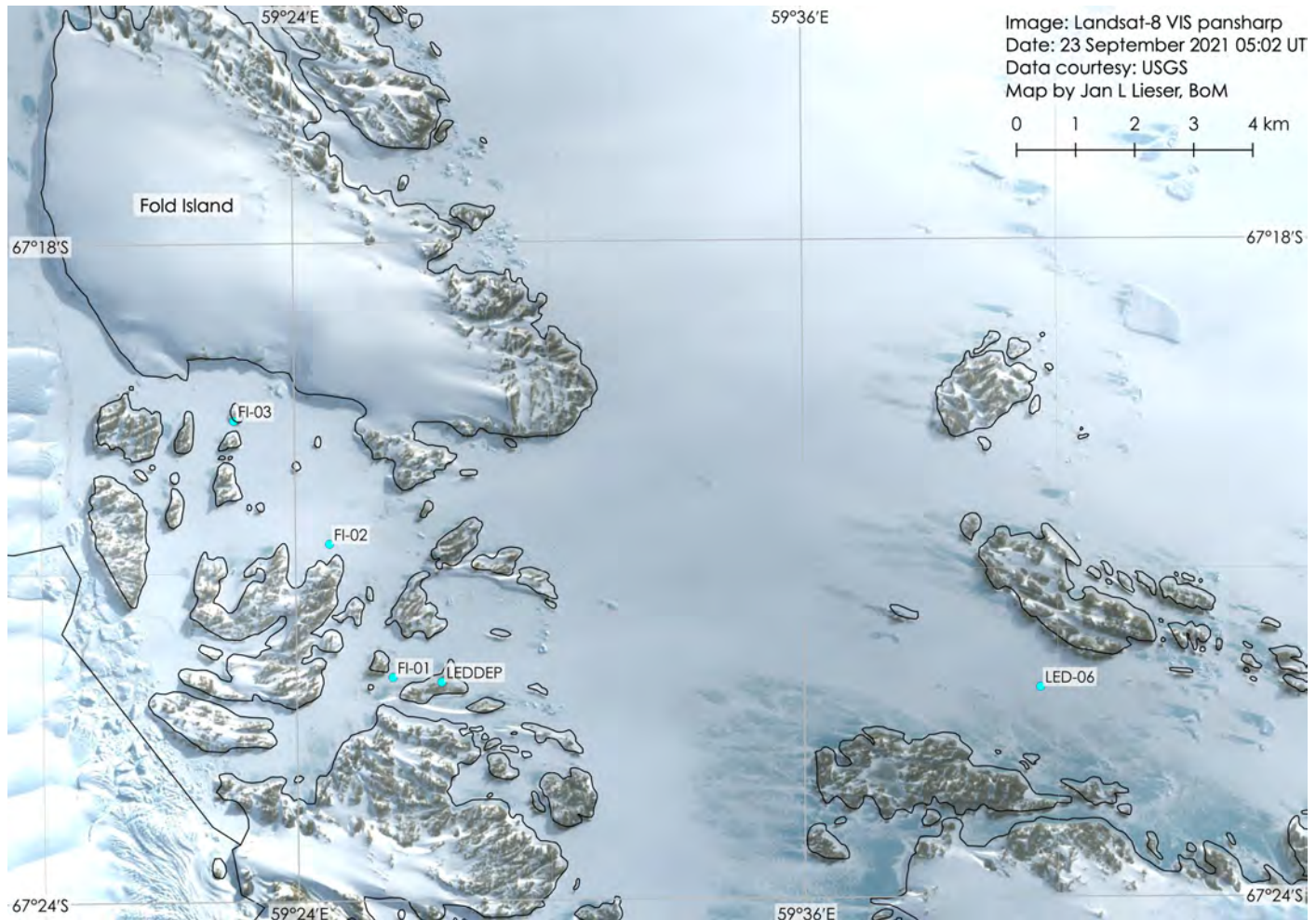


Figure 1: Landsat-8 pansharpened visible composite data acquired 23 September 2021 at 05:02 UT and provided by USGS.

Smooth and snow-covered old fast ice is present between the offshore island that have some exposed rock surface.

Figure 2 shows the same data as Figure 1 but an increased focus on the region south of Fold Island. Figure 3 shows the same data again but here, an increased focus on the southwestern edge of Fold Island and the north-eastern edge Dovers Ice Shelf. In Figures 2 and 3, the location of an expected penguin colony is marked by a pink triangle.

A fault zone in the fast ice is marked by orange triangles in Figure 3. Here, fast ice attached to Dovers Ice Shelf has been moved by the northward advancing shelf and created the crack in north-south orientation (along the movement direction of the shelf) and some finger rafting off the northern front of the ice shelf (parallel to the shelf front).

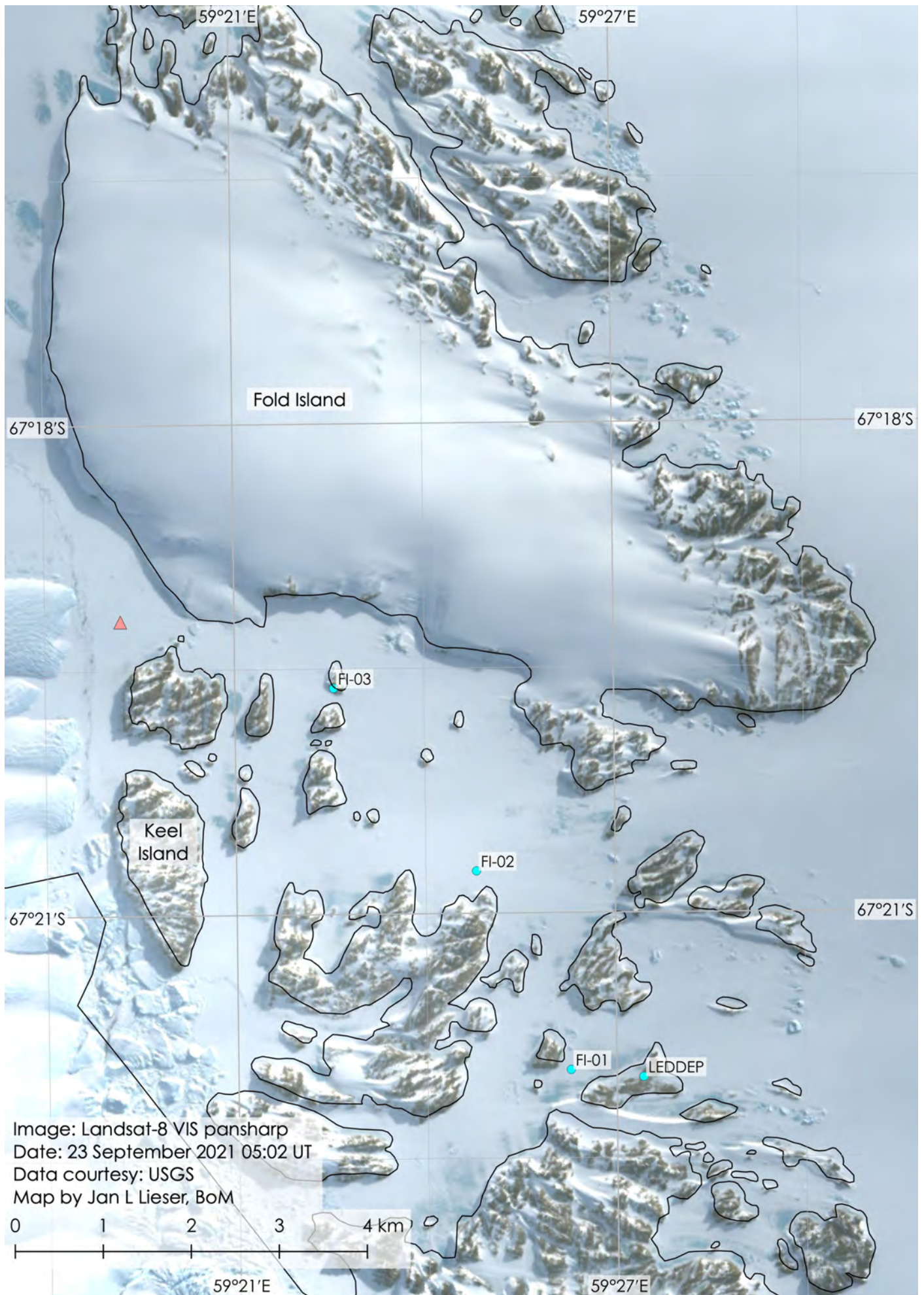


Figure 2: Landsat-8 pansharpened visible composite data acquired 23 September 2021 at 05:02 UT and provided by USGS.

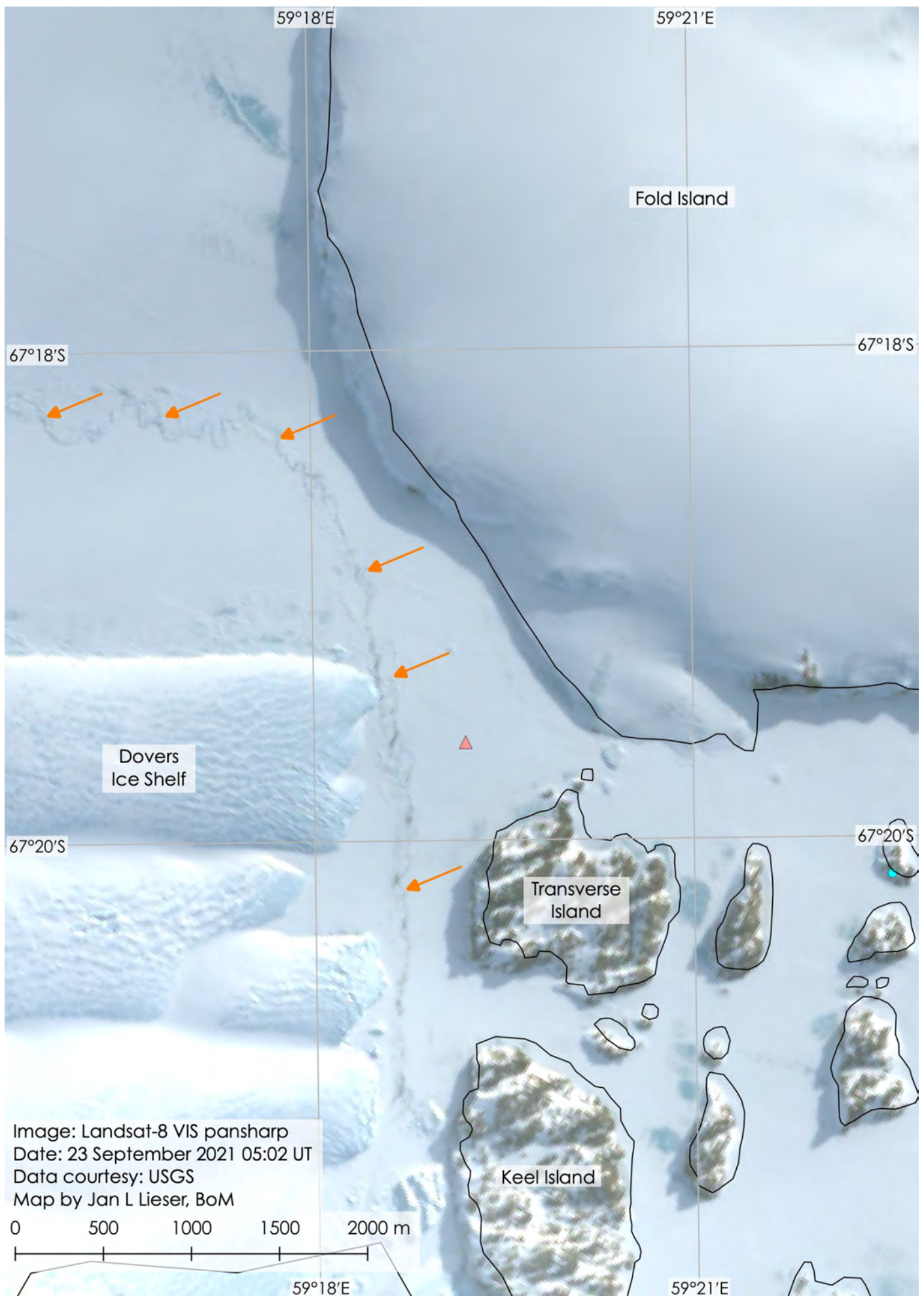


Figure 3: Landsat-8 pansharpened visible composite data acquired 23 September 2021 at 05:02 UT and provided by USGS.

Ice Bulletin: Neumayer III Station

Issued: Friday 24th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the German Neumayer III Station at the north-eastern edge of the Weddell Sea. The fast-ice edge is marked by a red line. Northeast of Neumayer III Station, the location of an Emperor Penguin colony on the fast ice is marked by a pink triangle.

Thinner/fainter shapes of all four large icebergs offshore mark their positions on 22, 20 and 19 September 2021 colour-coded respectively.

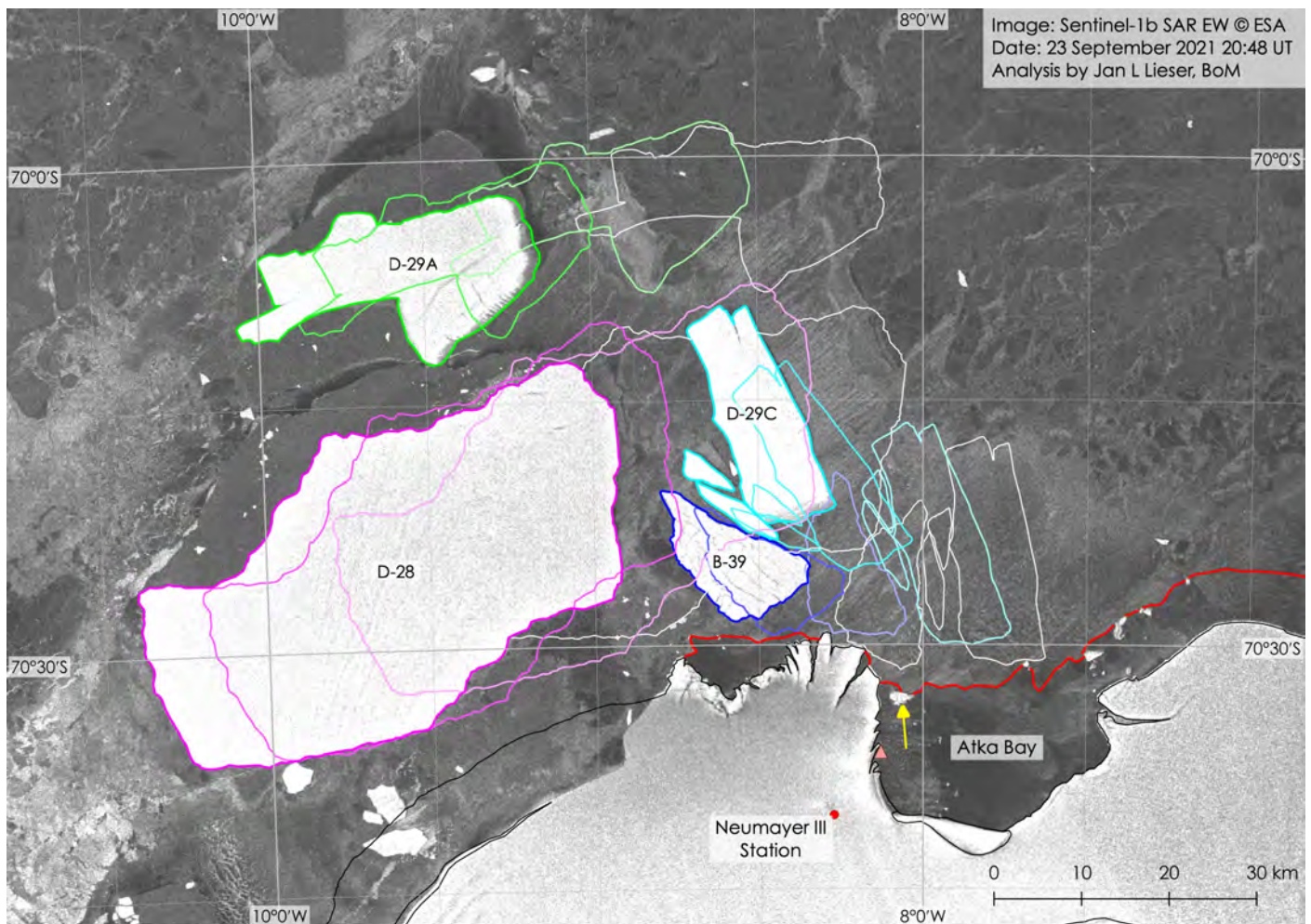


Figure 1: Sentinel-1b SAR EW data acquired 23 August 2021 at 20:48 UT and provided by ESA.

All four large icebergs continue their drift westward offshore. After impacting on the fast ice of Atka Bay and subsequently the shelf ice at the western edge of the bay, iceberg B-39 left behind a small piece of the iceberg that had been sheared off (marked by a yellow arrow). The shape of the north-eastern edge of the Ekström Shelf Ice (home of Neumayer III Station) appears largely unscathed after the impact of iceberg B-39 on 19 September 2021.

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Ice Bulletin: Mawson Station

Issued: Monday 27th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data west of Mawson Station. The proposed route between Mawson Station and Colbeck Hut is marked in colour-coded segments.

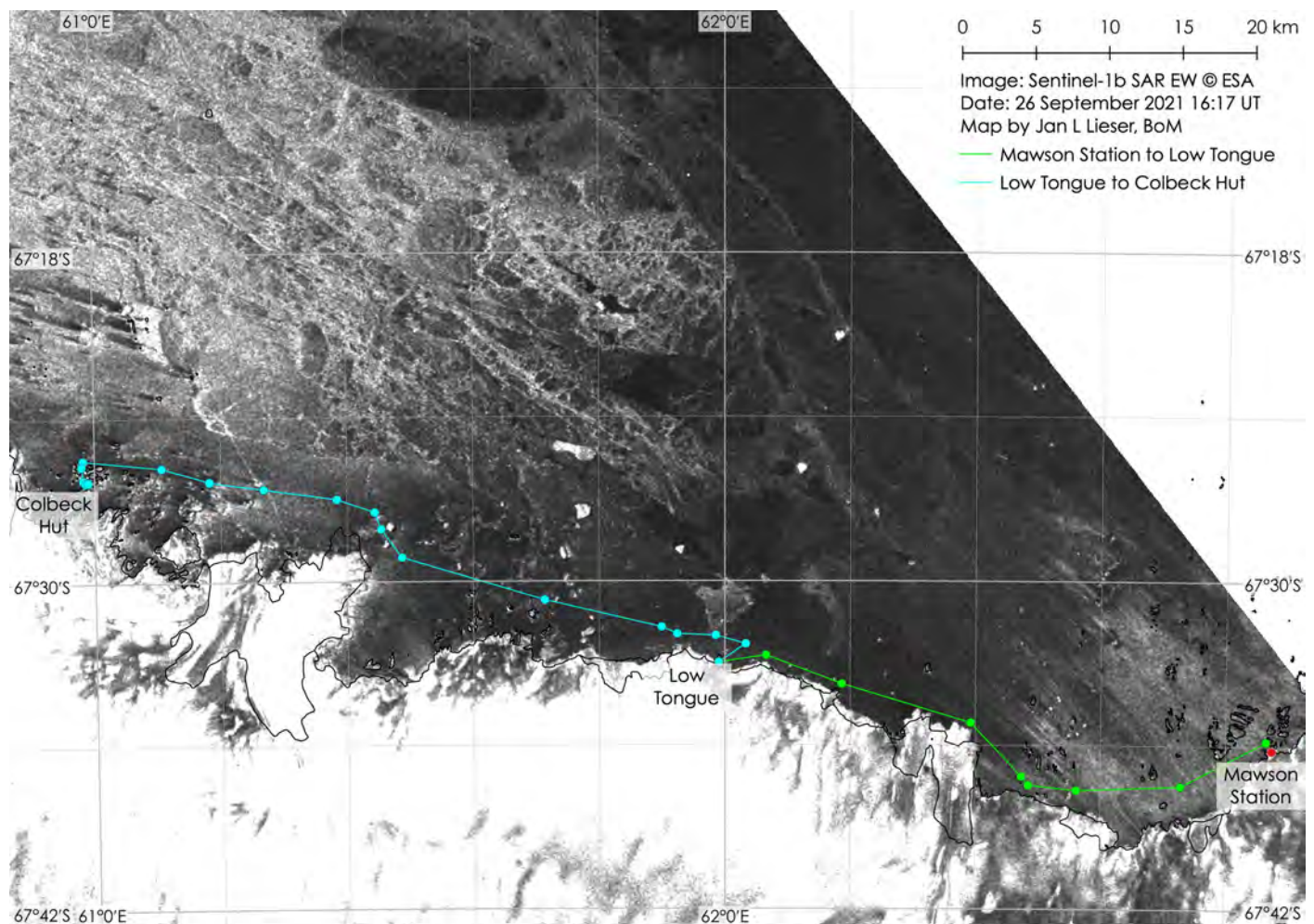


Figure 1: Sentinel-1b SAR EW data acquired 26 September 2021 at 16:17 UT and provided by PolarView.

The fast ice between Colbeck Hut and Mawson Station has not changed significantly during the past week. East of Low Tongue, largely homogeneous fast ice remains. Only at around 62°30'E, a few grounded icebergs are detectable within the fast ice between the islands.

Between Low Tongue and Colbeck Hut more and larger icebergs are enclosed by fast ice offshore and a few refrozen tide cracks are criss-crossing the fast ice.

The northern sea-ice edge (not shown in the figure) is up to 20 nautical miles south of the median sea-ice extent for September.

Ice Bulletin: Casey Station

Issued: Monday 27th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Casey Station and surrounds.

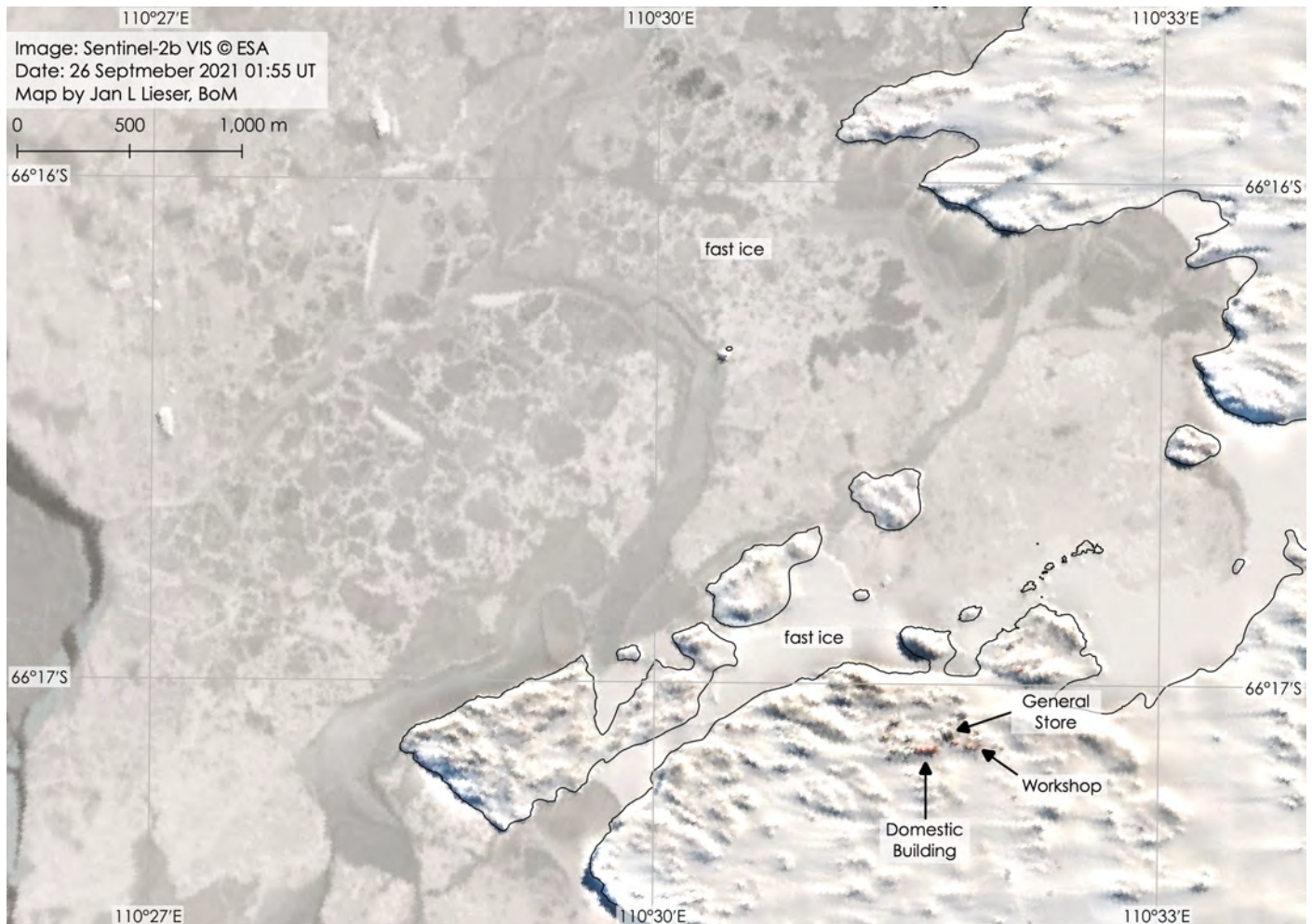


Figure 1: Sentinel-2b visible composite data acquired 26 September 2021 at 01:55 UT and provided by ESA.

Different types of fast ice can be seen offshore. The very-high resolution of the data allows for identification of individual buildings of the station.

Figure 2 provides a large overview of the same data shown in Figure 1.

A small polynya is present off the fast-ice edge. New sea ice can be seen forming in the open water of the polynya.

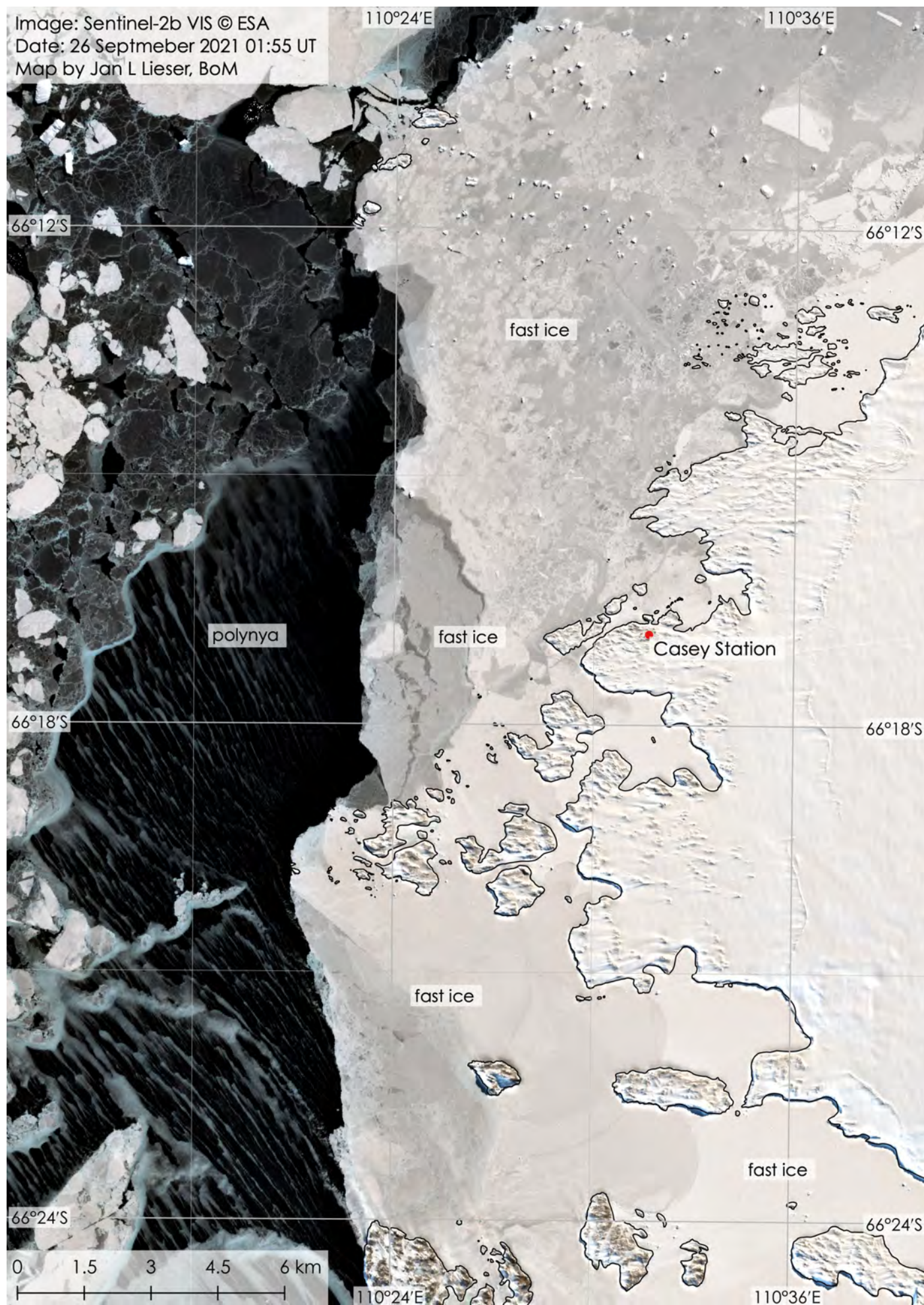


Figure 2: Sentinel-2b visible composite data acquired 26 September 2021 at 01:55 UT and provided by ESA.

Ice Bulletin: Wilkins Aerodrome

Issued: Monday 27th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Wilkins Aerodrome. Automatic Weather Stations (AWS) are marked by yellow dots.

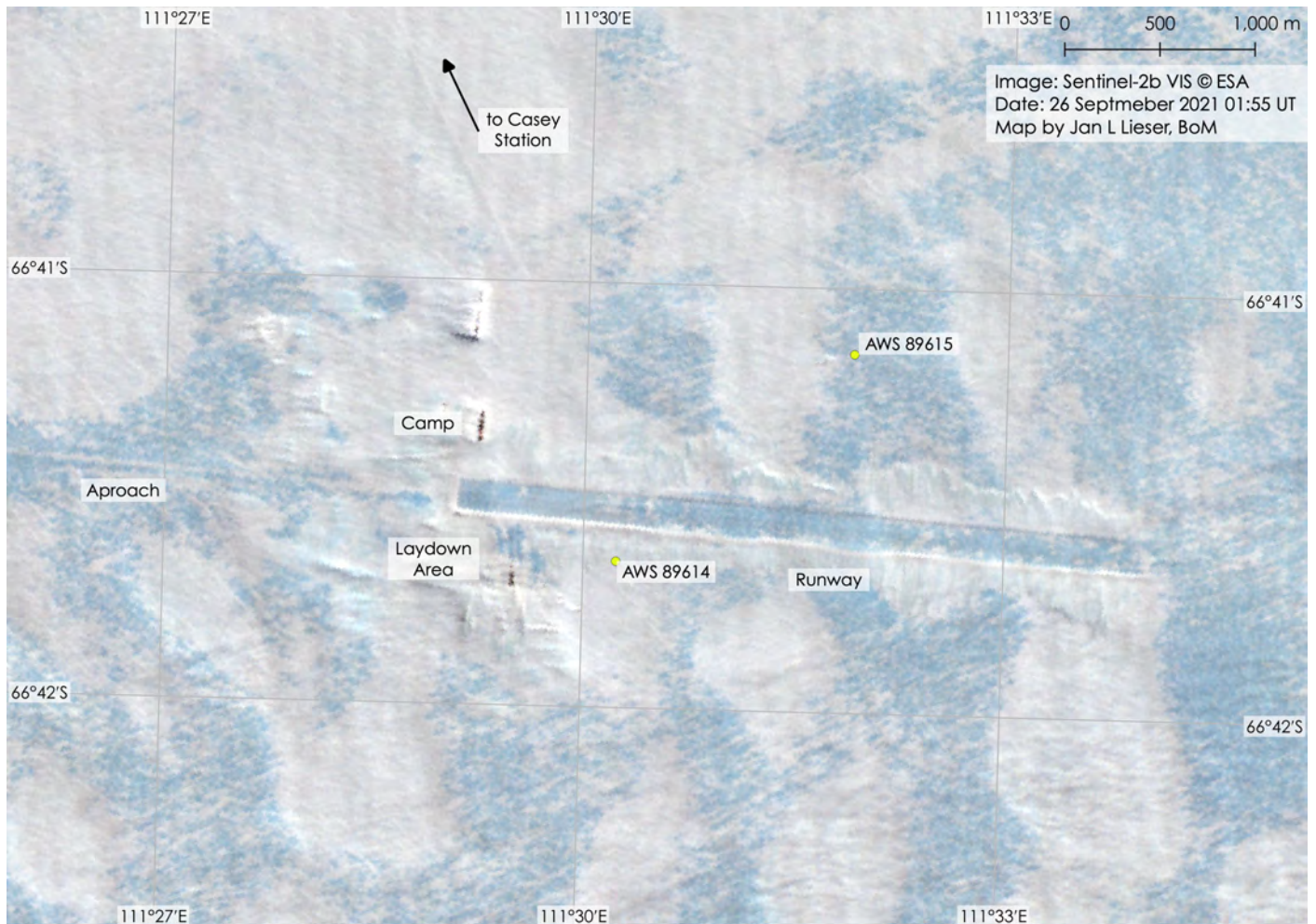


Figure 1: Sentinel-2b visible composite data acquired 26 September 2021 at 01:55 UT and provided by ESA.

The blue-ice runway is clearly visible. North and south of the runway, snow dunes are left from clearing the runway. Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: D'Urville Sea

Issued: Monday 27th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the southern D'Urville Sea. The fast-ice edge is marked by a red line.

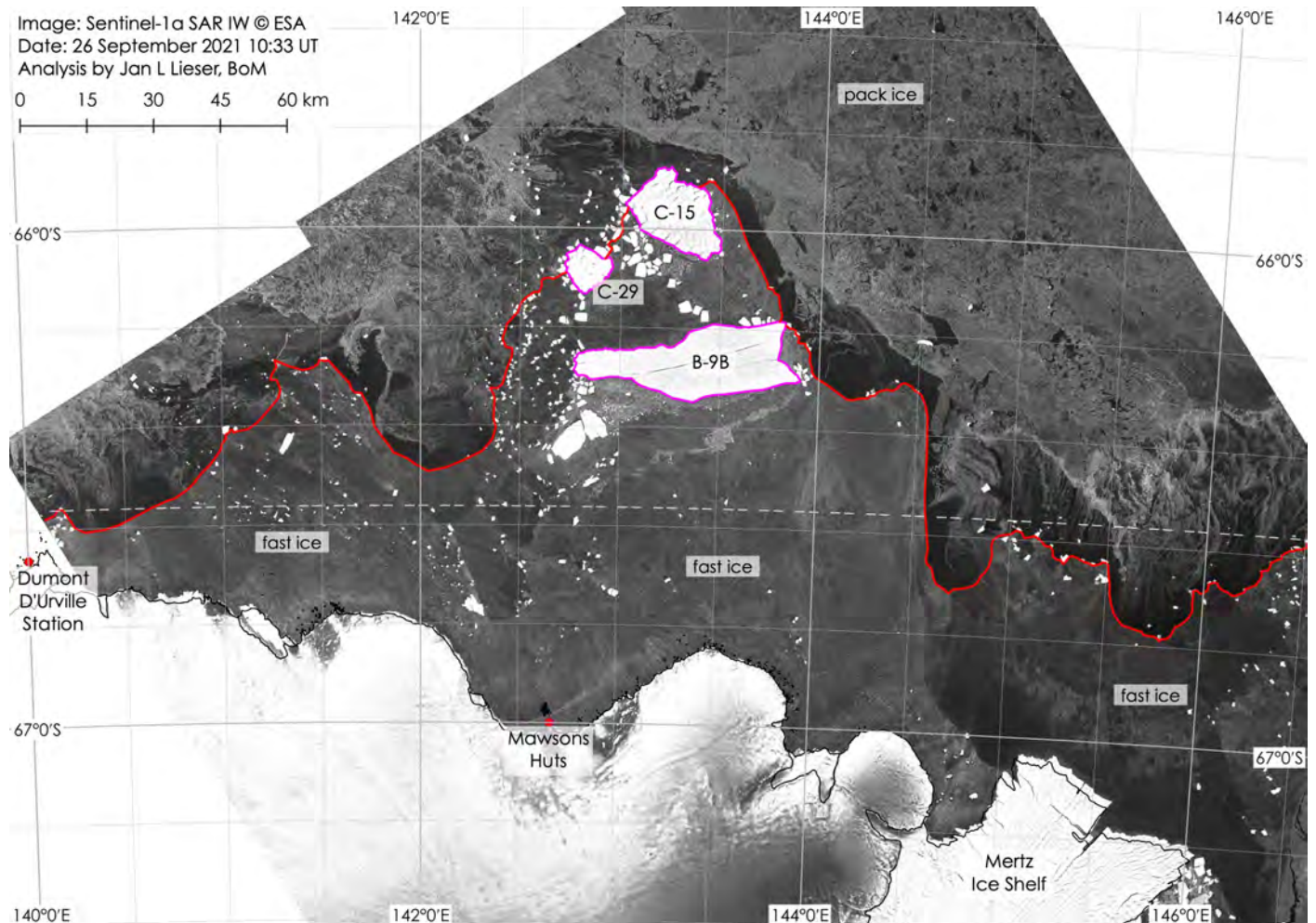


Figure 1: Sentinel-1a SAR IW data acquired 26 September 2021 at 10:33 UT and provided by PolarView.

The fast-ice edge in the region has not changed significantly during September. Off the Mertz Ice Shelf, fast ice has formed, and the polynya is largely closed.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for September.

Ice Bulletin: Bunger Hills

Issued: Monday 27th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (15 m horizontal) visible data of the Bunger Hills.

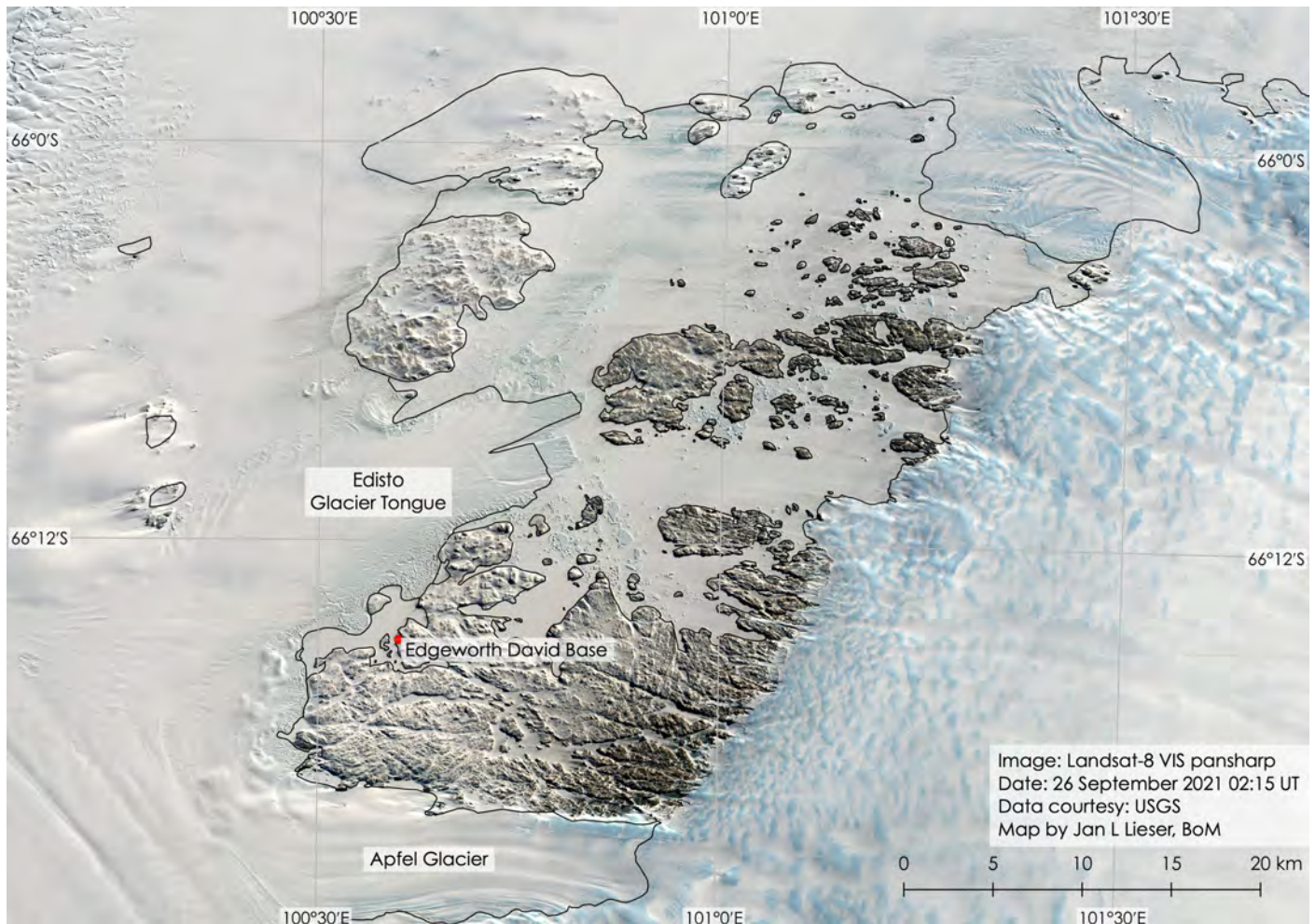


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 26 September 2021 at 02:15 UT and provided by USGS.

The Bunger Hills are partly snow covered, and all water bodies are covered by ice.

Around Edgeworth David Base, Figure 2 provides a zoomed-in view of the same data shown in Figure 1.

The surface of Transkriptii Gulf appears homogeneous and wind-blown scouring is evident in the lee of high orographic features.

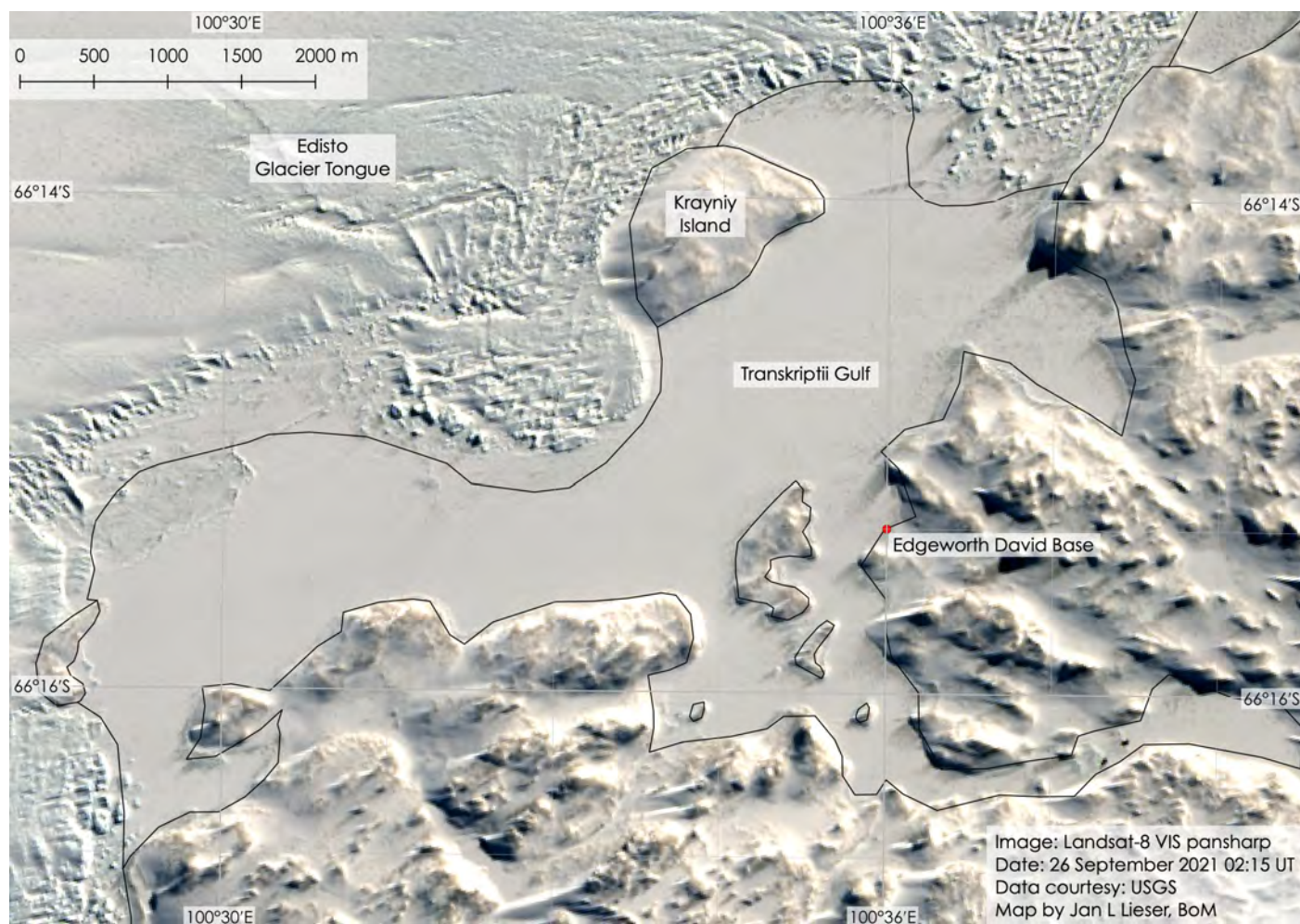


Figure 2: Landsat-8 visible composite pan-sharpened data acquired 26 September 2021 at 02:15 UT and provided by USGS.

Ice Bulletin: Brunt Ice Shelf

Issued: Tuesday 28th September 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the Brunt Ice Shelf in the south-eastern Weddell Sea.

Off the southern edge of the ice shelf, fast ice has grown between the shelf and a polynya. This has typically a stabilising effect on the ice-shelf front.

However during September, a newly opening rift (marked by a pink line) is manifesting in the northern part of the Brunt Ice Shelf between Chasm-1 and one of the larger cracks that were induced by the McDonald Ice Rumples.

When it connects and a new iceberg is formed west of Halley VI Station, it is estimated the new berg will be roughly 1700 km², which compares to the area of Greater Hobart, Tasmania.

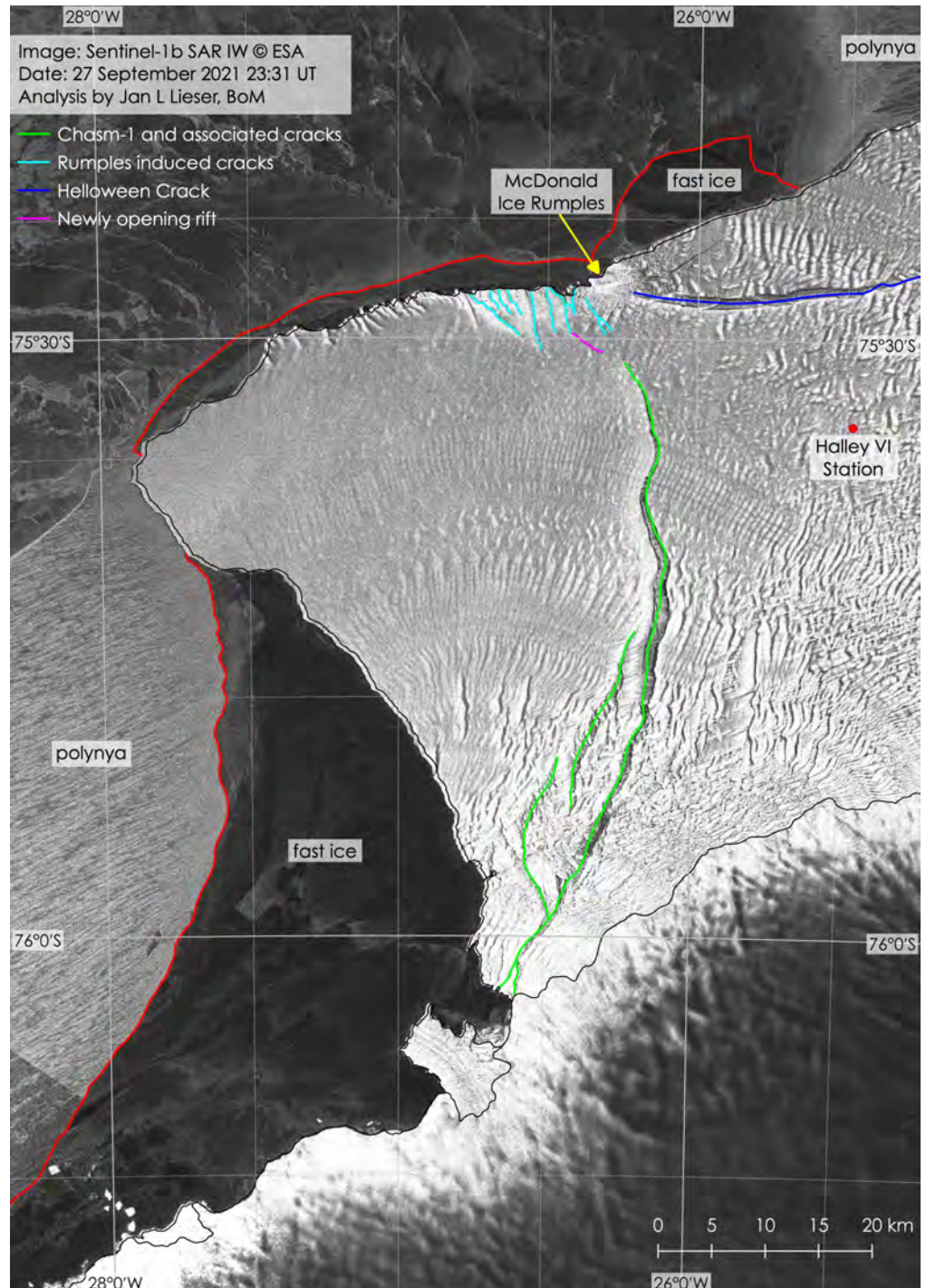


Figure 1: Sentinel-1b SAR IW data acquired 27 September 2021 at 23:31 UT and provided by PolarView.

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Ice Bulletin: Davis Station

Issued: Wednesday 29th September 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge on 21 September 2021 is marked by a dashed red line.

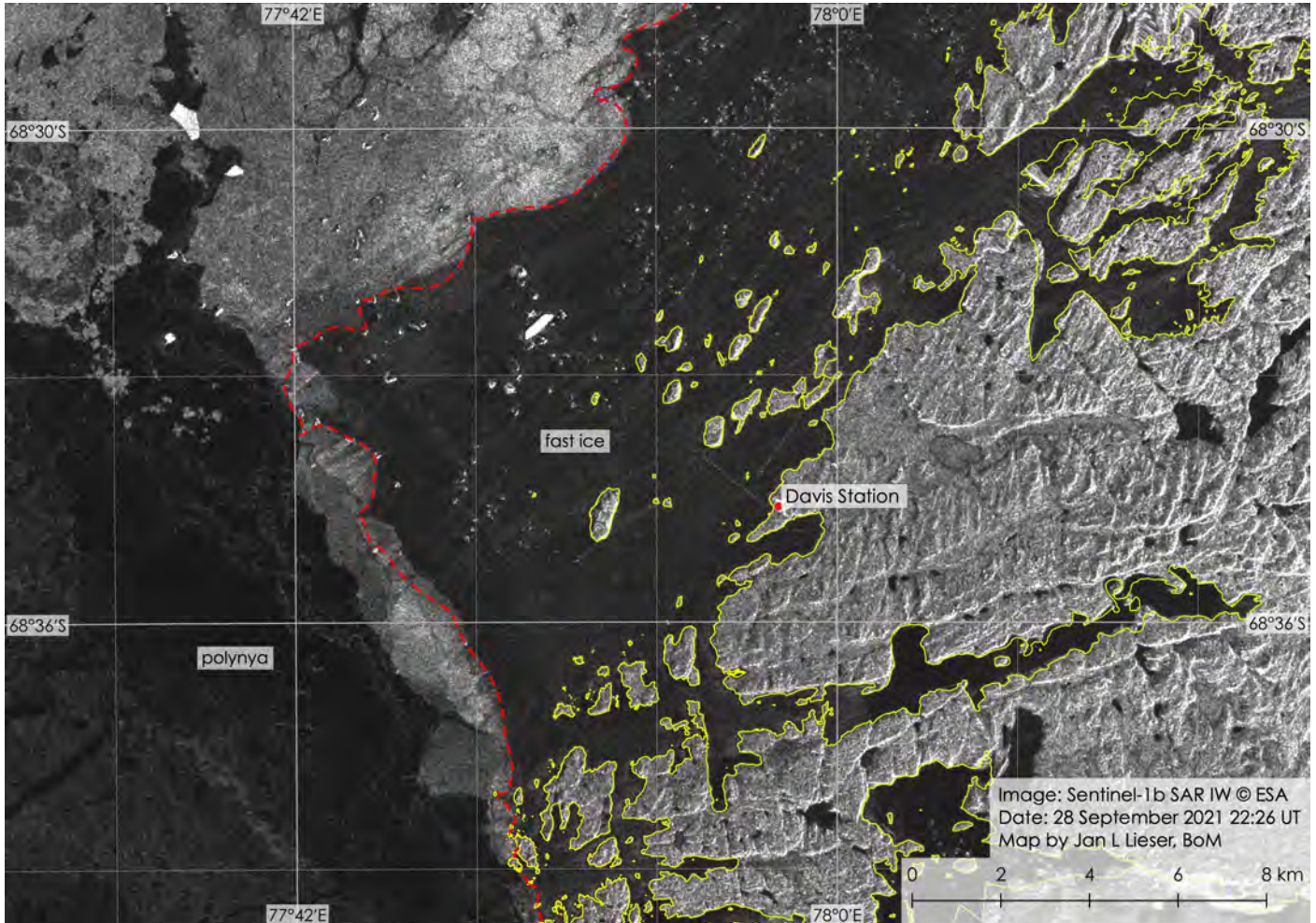


Figure 1: Sentinel-1a SAR IW data acquired 28 September 2021 at 22:26 UT and provided by PolarView.

During the past week, some new fast ice has attached itself to the fast-ice edge offshore.

Southwest of Davis Station, a polynya is covered by thin new sea ice.

With a north-westerly heading, a road on the fast ice can be identified off station. Perpendicular to that road, another straight line is heading northeast.

The northern sea-ice edge (not shown in the figure) is up to 60 nautical miles below (south of) the median sea-ice extent for September in the region.

Ice Bulletin: Davis Station

Issued: Tuesday 5th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station and surrounds. The fast-ice edge on 21 September 2021 is marked by a dashed red line.

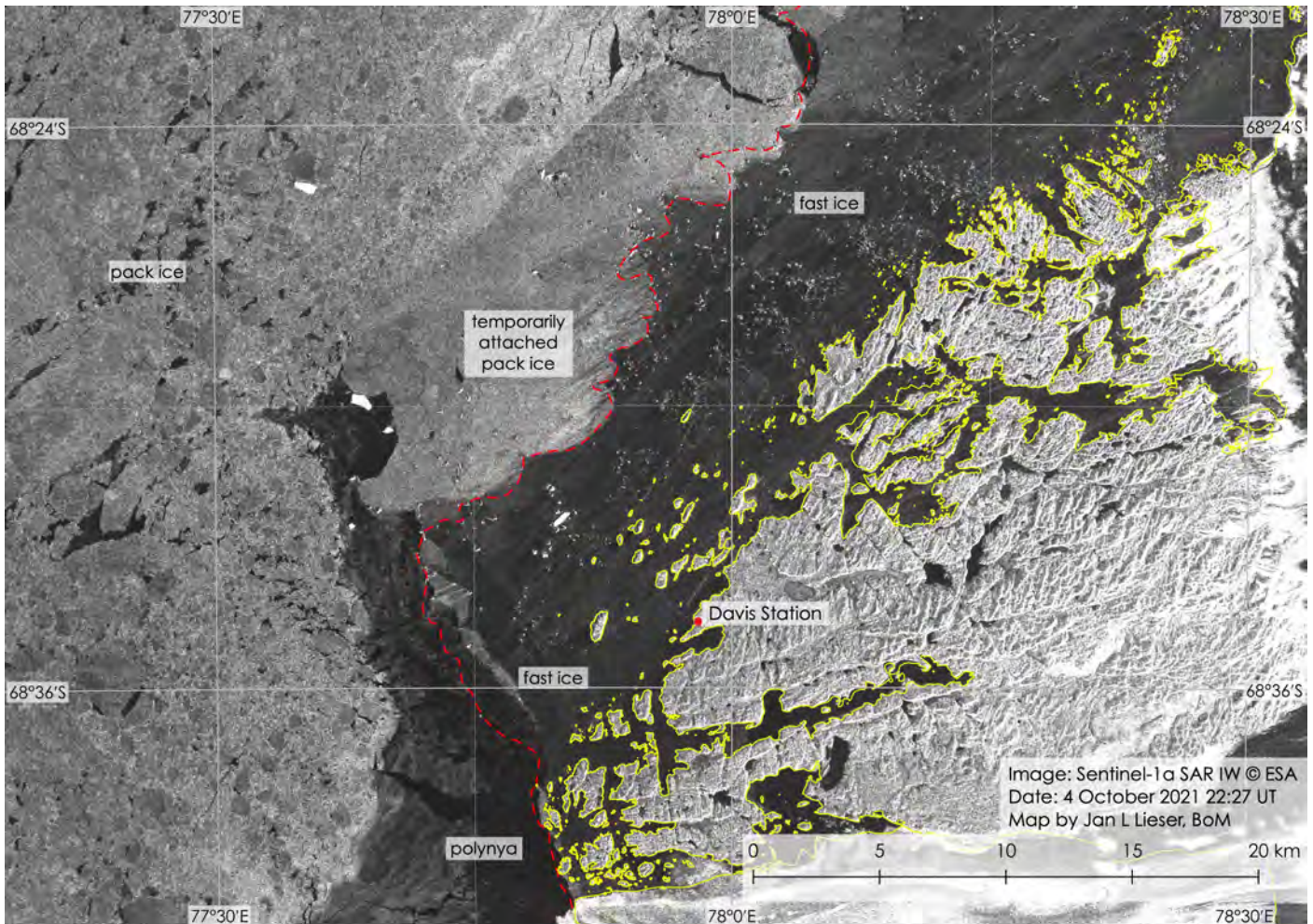


Figure 1: Sentinel-1a SAR IW data acquired 4 October 2021 at 22:27 UT and provided by PolarView.

During the past week, the southwest facing edge of the offshore fast ice retreated slightly towards the shore. The northwest facing edge of the fast ice has temporarily some pack ice attached that is not consolidated.

Southwest of Davis Station, a polynya remains covered by thin new sea ice.

While the northern sea-ice edge (not shown in the figure) is largely close to the median sea-ice extent for October between 70°0'E and 90°0'E, the pack ice south of the sea-ice edge already shows many holes in the sea-ice concentration chart between the northern edge and roughly 63°30'S.

Ice Bulletin: Iceberg D-15B

Issued: Tuesday 5th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off the West Ice Shelf northeast of Davis Station. The fast-ice edge surrounding iceberg D-15B is marked by a red line.

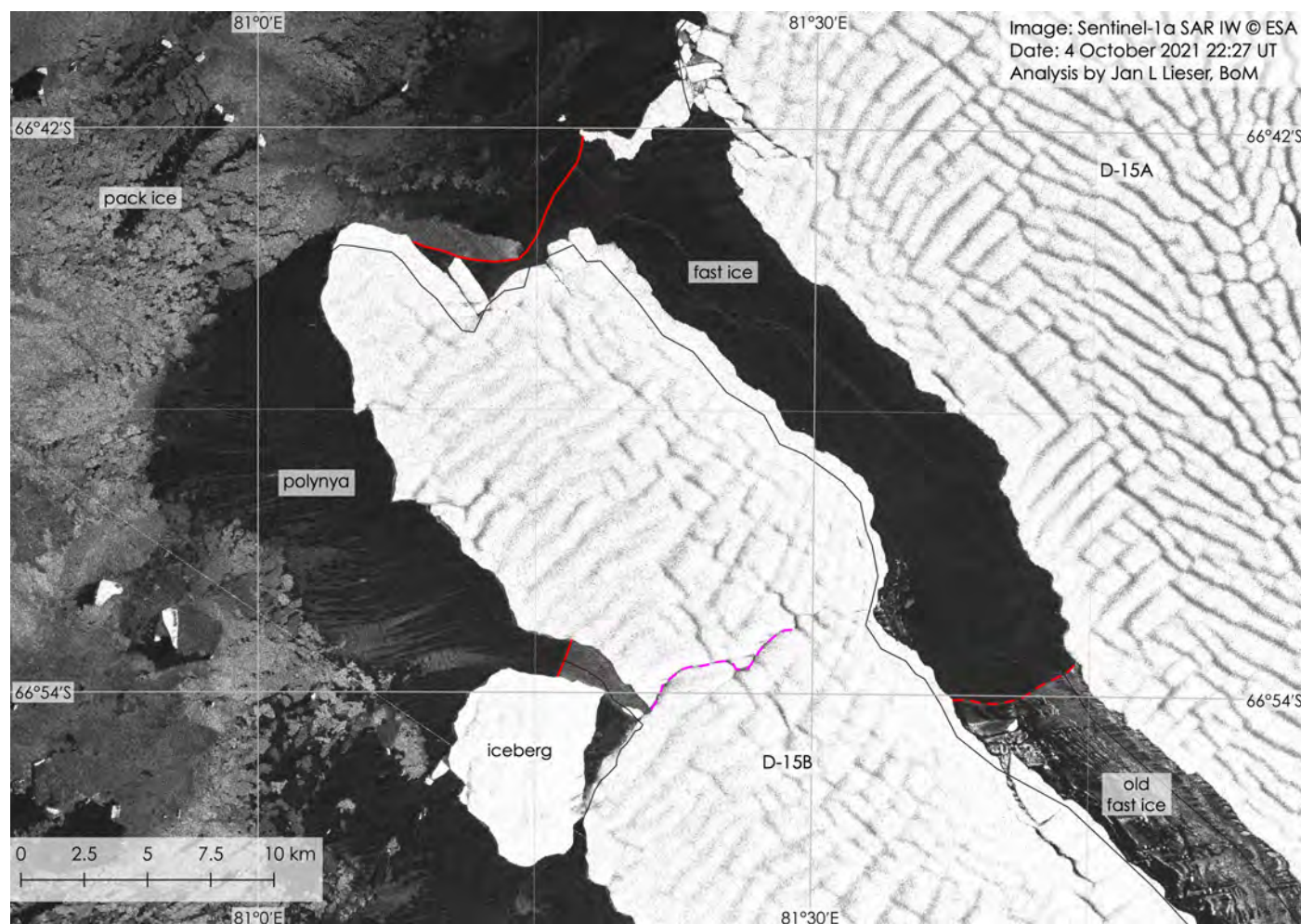


Figure 1: Sentinel-1a SAR IW data acquired 4 October 2021 at 22:27 UT and provided by PolarView.

During the past winter, a crack has been developing through the northern part of iceberg D-15B (marked by a dashed pink line). A smaller iceberg (roughly 34 km²; annotated 'iceberg') had separated earlier.

Currently, the gap between iceberg D-15A and D-15B is filled with fast ice that is likely stabilising the northern part of iceberg D-15B, but during last summer the northern part of that fast ice broke out down to the dashed red line, which marks the northern edge of the old fast ice in the south.

Ice Bulletin: D'Urville Sea

Issued: Friday 8th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the southern D'Urville Sea. The fast-ice edge is marked by a red line.

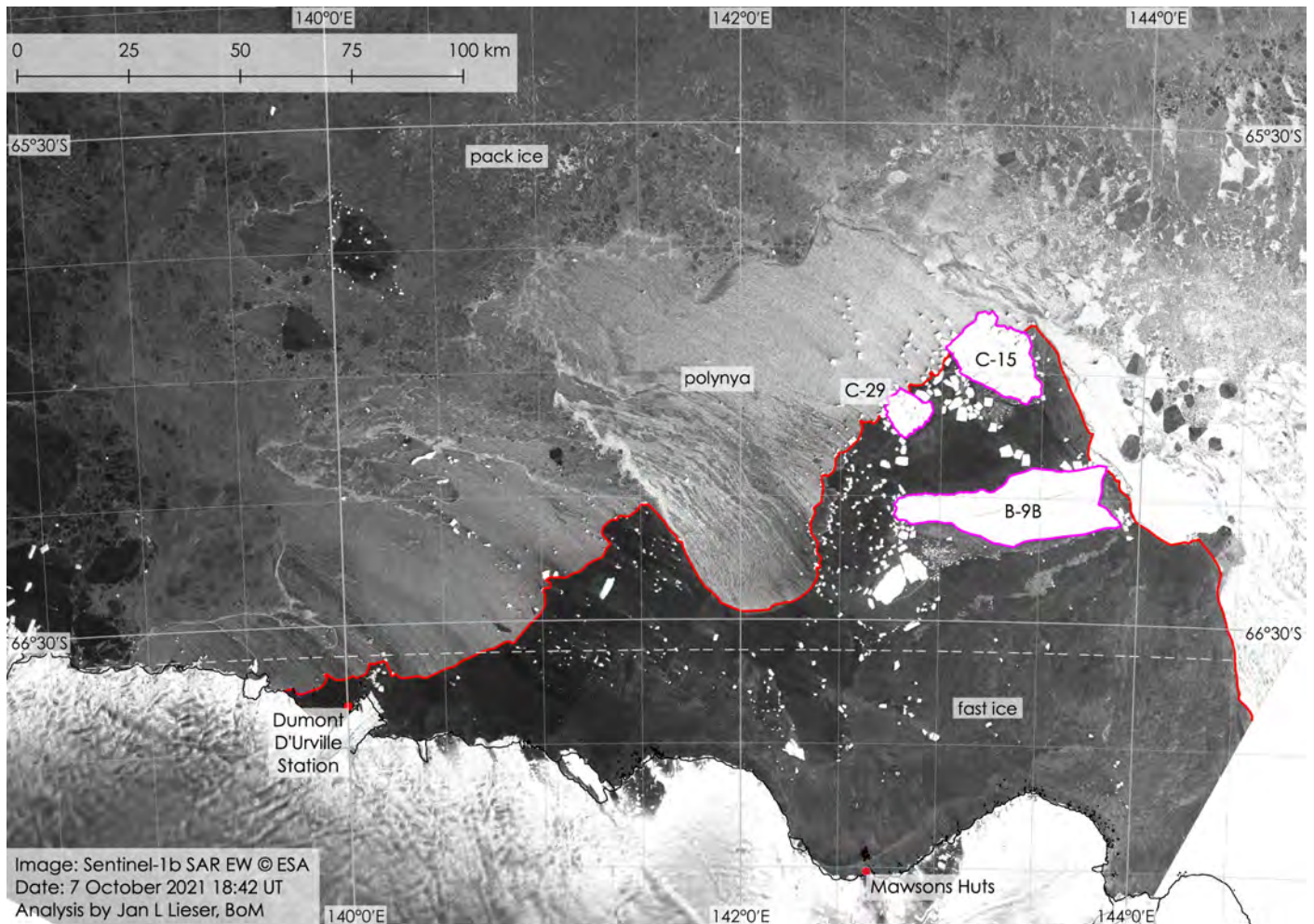


Figure 1: Sentinel-1b SAR EW data acquired 7 October 2021 at 18:42 UT and provided by PolarView.

The fast-ice edge in the region has not changed significantly during past two weeks. Off the fast-ice edge, a polynya is currently present.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for October in the region.

Ice Bulletin: Casey Station

Issued: Friday 8th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a SAR data of Casey Station and surrounds. The fast-ice edge is marked by red line.

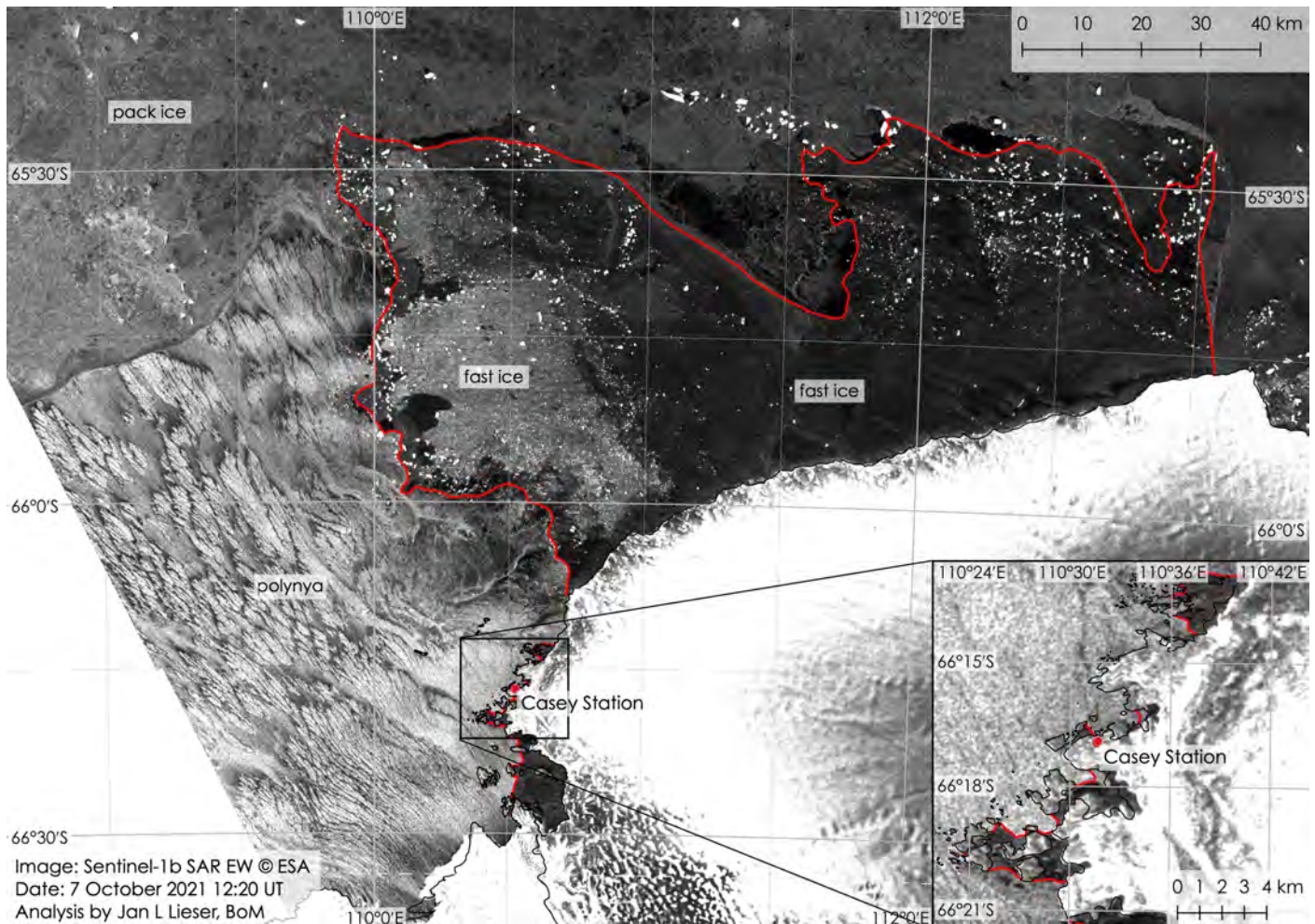


Figure 1: Sentinel-1b SAR EW data acquired 7 October 2021 at 12:20 UT and provided by PolarView.

West of the station, a large polynya is currently active, and strips and patches of new sea ice are transported north-westward. Along the north-western flank of Law Dome, the fast-ice edge shows its typical shape for the time of year.

Further north, the sea-ice edge (not shown in the figure) has been pushed southward and is currently 85 nautical miles south of the October median sea-ice extent. At the same time, the pack ice between the polynya off Casey Station and the sea-ice edge remains compacted.

Ice Bulletin: Antarctica

Issued: Monday 11th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

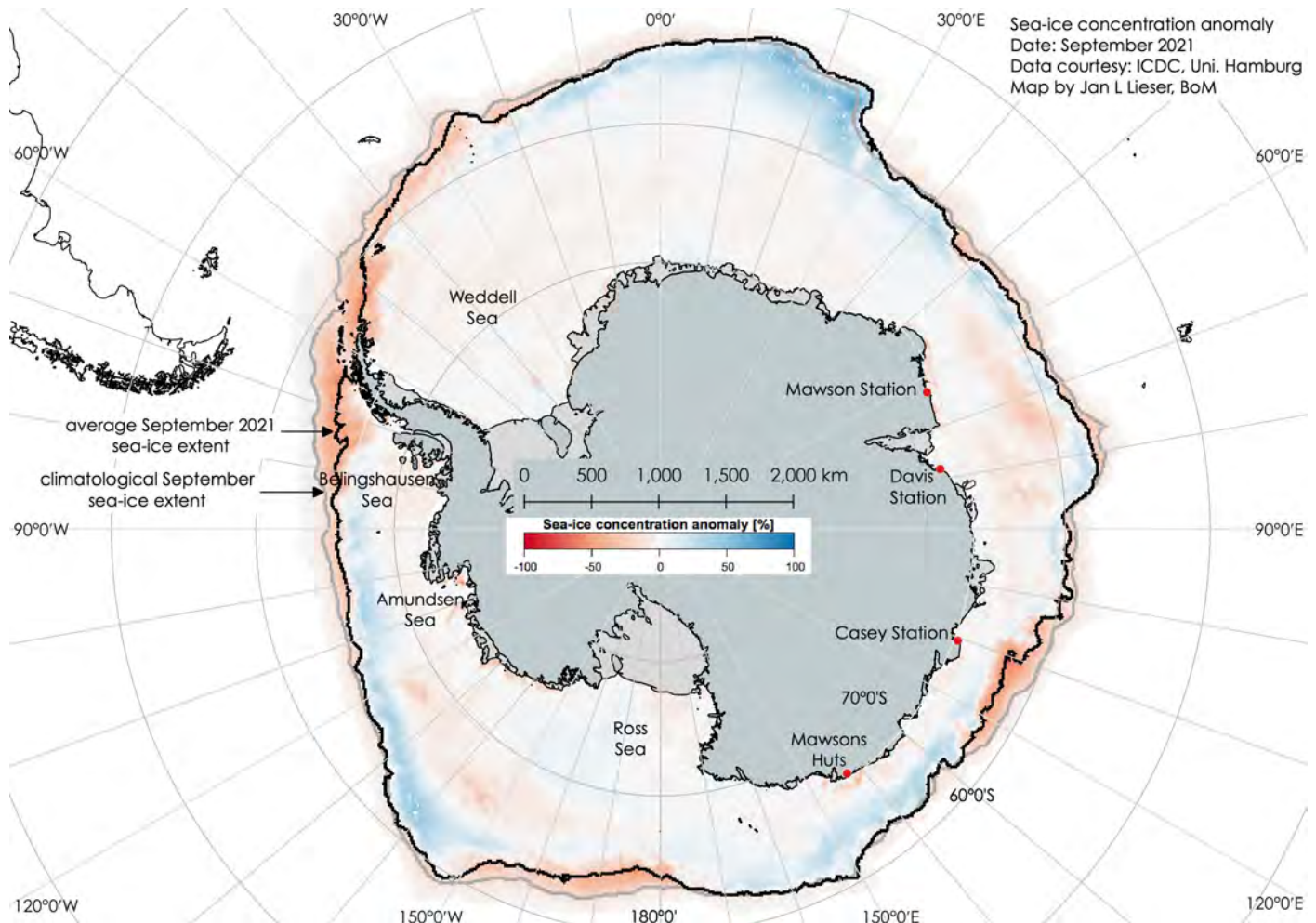


Figure 1: Sea-ice concentration anomaly for September 2021 provided by ICDC (Universität Hamburg).

The pan-Antarctic sea-ice extent reached its annual maximum on 30 August 2021, the second earliest maximum on record. During early September 2021, the sea-ice extent remained above the climatological September average continuing the winter trend however, the month ended with well below average conditions. Regionally, sea-ice extent and associated concentration anomalies varied.

A weak tri-modal pattern was present around Antarctica with positive sea-ice concentration anomalies in the western Weddell Sea, D'Urville Sea (130°0'E to 170°0'E) and in the eastern Ross Sea, but strong negative extent anomalies continued in the central Ross Sea and around the Antarctic Peninsula from July and August and another negative extent anomaly in East Antarctica between 100°0'E and 130°0'E.

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Ice Bulletin: Mawson Station

Issued: Wednesday 13th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data west of Mawson Station. The fast-ice edge is marked by a red line (dashed red line for 22 September 2021).

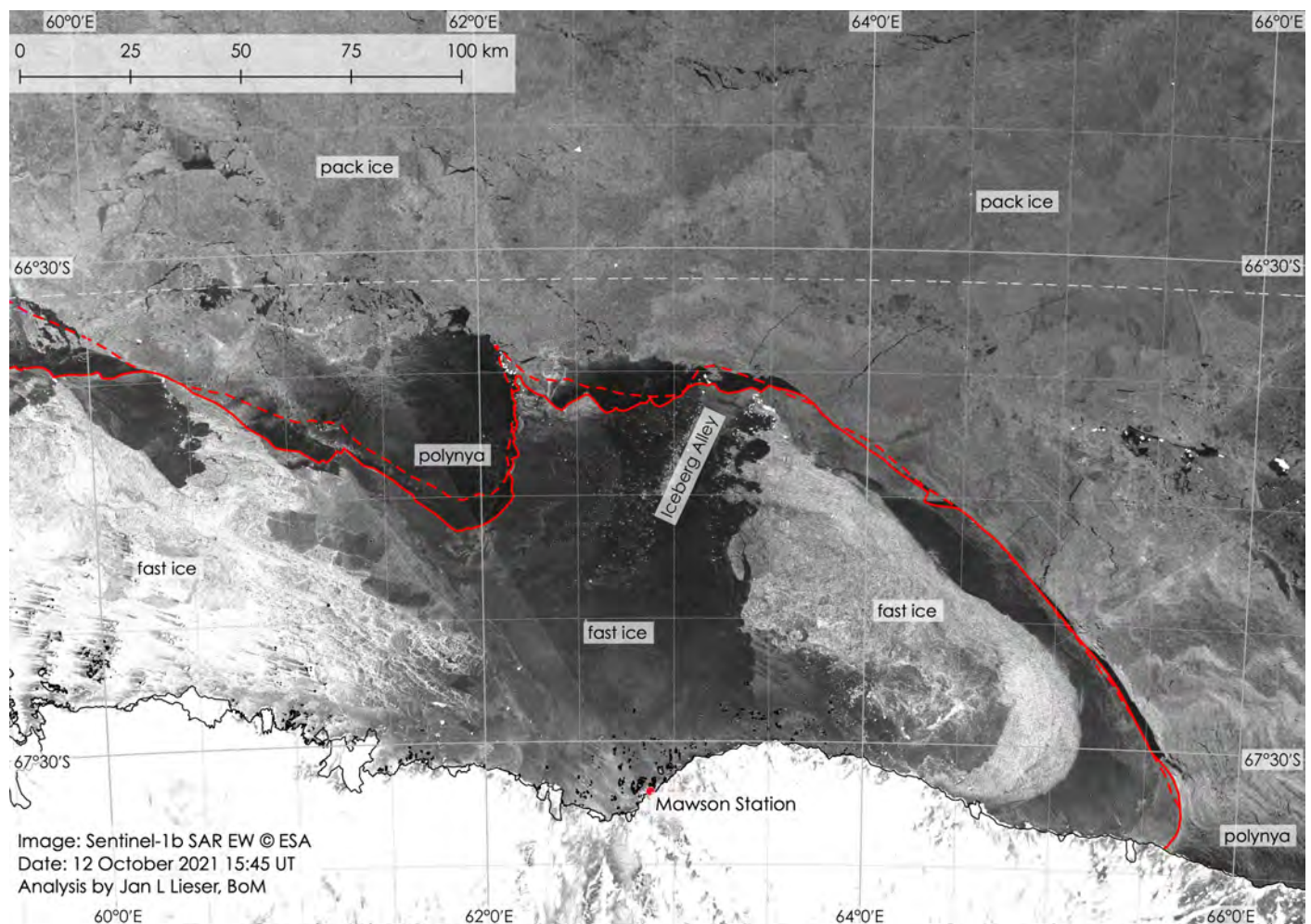


Figure 1: Sentinel-1b SAR EW data acquired 12 October 2021 at 15:45 UT and provided by PolarView.

The fast-ice edge has been retreating southward slightly in early October. The distance between the station and the nearest open water of the polynya northwest of the station is roughly 38.5 nautical miles.

The northern sea-ice edge (not shown in the figure) is meandering up to 50 nautical miles north and south of the median sea-ice extent for October.

Ice Bulletin: Davis Station

Issued: Wednesday 13th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data west of Davis Station. The fast-ice edge on 28 September 2021 is marked as a dashed red line north of the station.

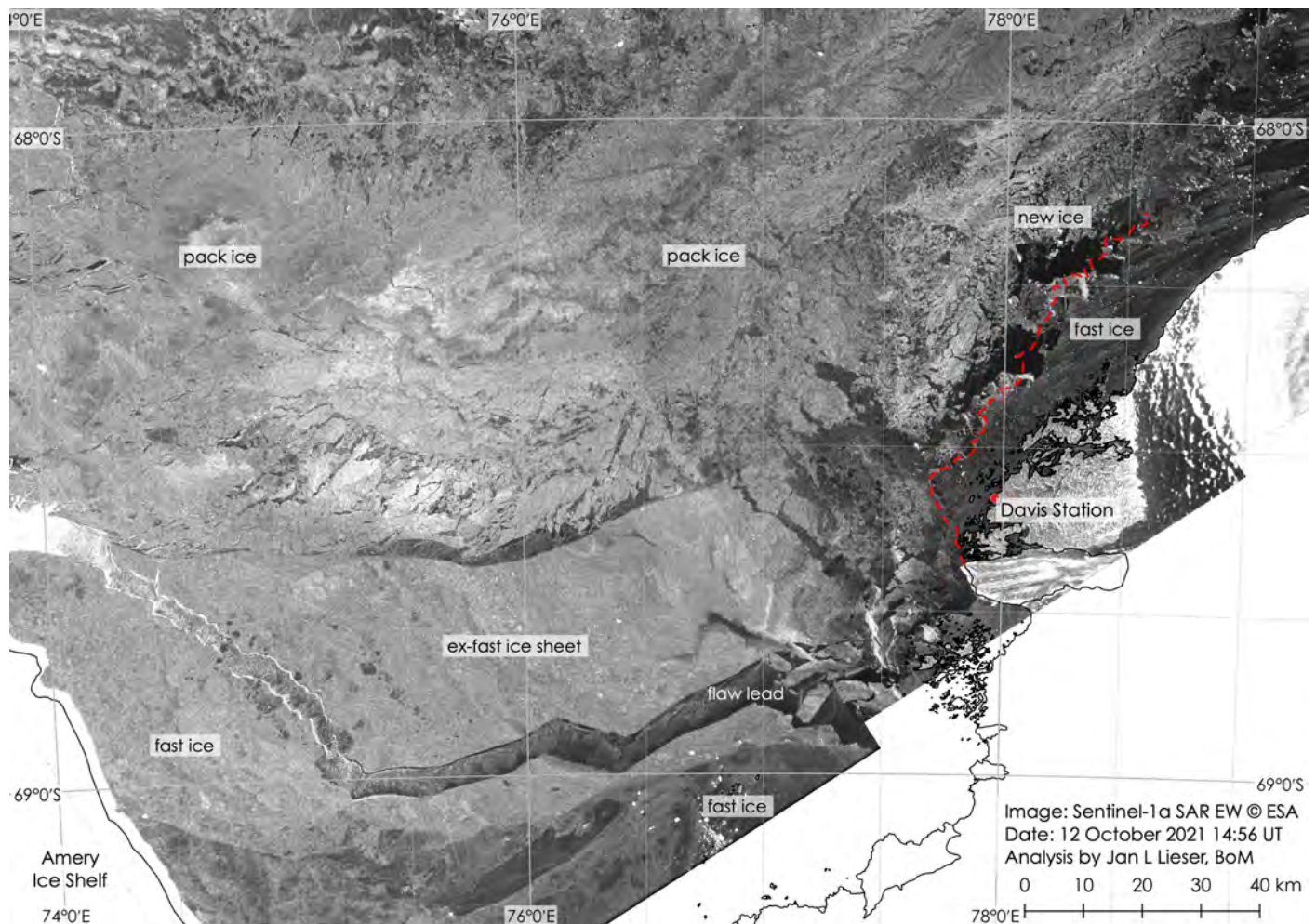


Figure 1: Sentinel-1a SAR EW data acquired 12 October 2021 at 14:56 UT and provided by PolarView.

West of Davis Station, a vast sheet of fast ice has broken off the fast ice in southern Prydz Bay. Off station, the fast-ice edge is not positively determined as pack ice and new sea ice has currently closed in on the fast ice offshore.

The northern sea-ice edge (not shown in the figure) is currently reaching up to the median sea-ice extent for October but the pack ice south of the sea-ice edge is patchy and broken up as far south as 61°0'S. Further east, the sea-ice edge is roughly 175 nautical miles south of the October median sea-ice extent along 90°0'E.

Ice Bulletin: Casey Station

Issued: Wednesday 13th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data west of Casey Station. The fast-ice edge is marked by red line.

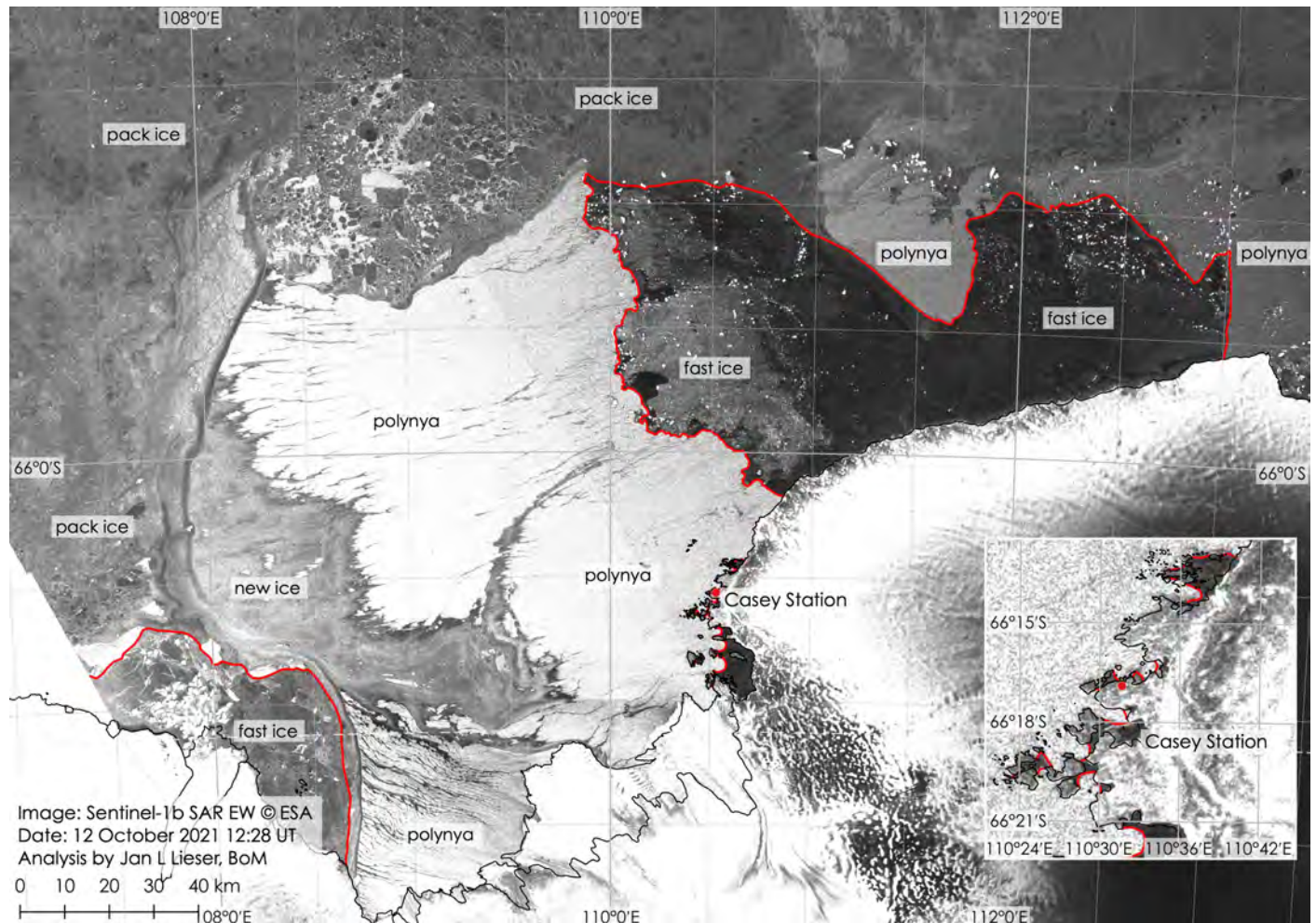


Figure 1: Sentinel-1b SAR EW data acquired 12 October 2021 at 12:28 UT and provided by PolarView.

West of Davis Station, a polynya is present in Vincennes Bay. The inset in the figure provides a closer view of fast-ice pockets around the bays north and south of Casey Station.

The northern sea-ice edge (not shown in the figure) is roughly 90 nautical miles below (south of) the October median sea-ice extent along 110°0E.

Ice Bulletin: Casey Station

Issued: Thursday 14th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (10 m horizontal) VIS data of Casey Station and the Wilkins Aerodrome, respectively. Off station, the fast-ice edge is marked by red line.

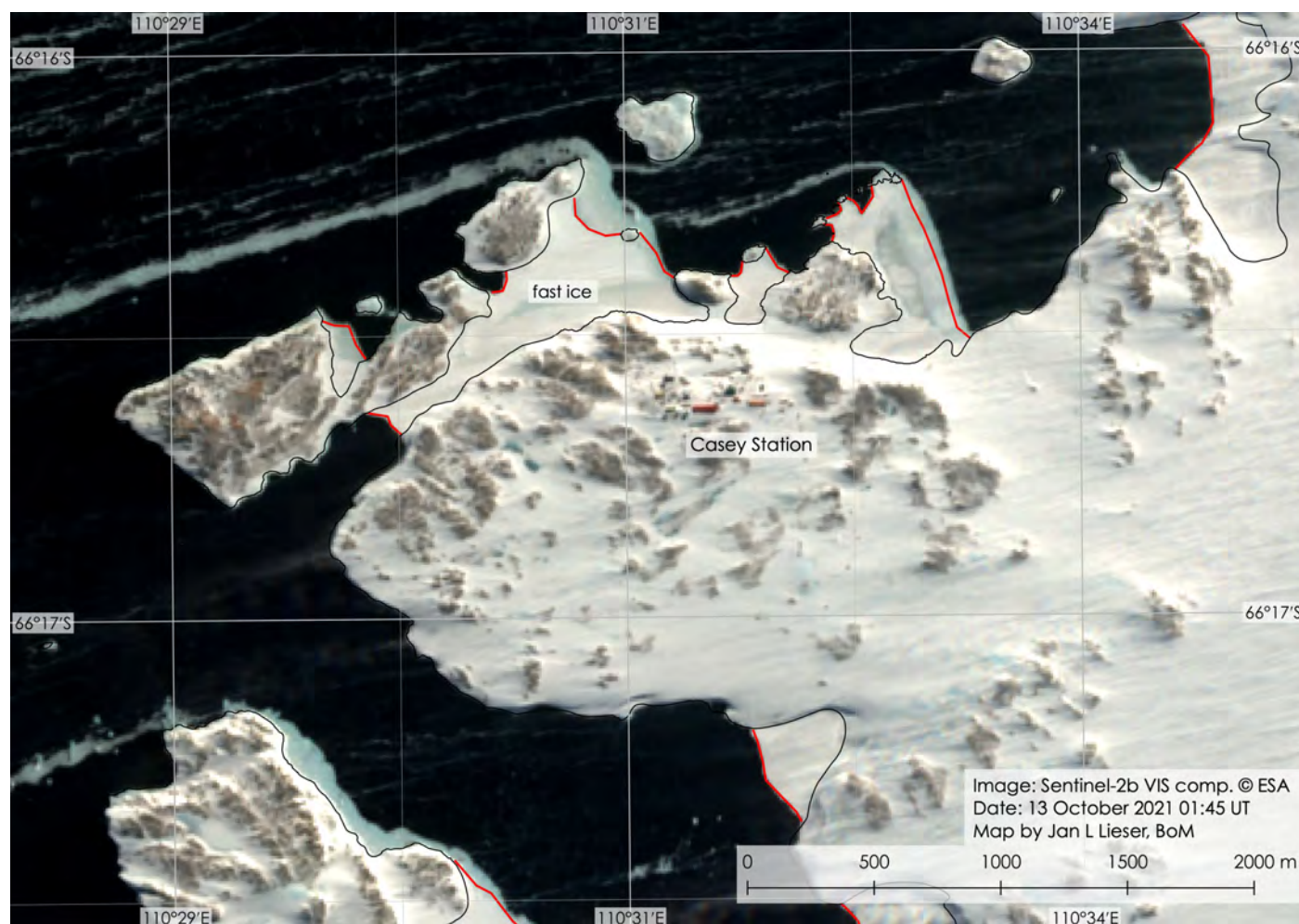


Figure 1: Sentinel-2b visible composite data acquired 13 October 2021 at 01:45 UT and provided by ESA.

The high resolution of the data allows for a more detailed assessment of the fast ice offshore and enables the identification of individual buildings of Casey Station.

While the hinterland (Figure 2) is slightly obscured by clouds, the blue-ice runway can be seen as a distinct feature beneath the cloud streaks.

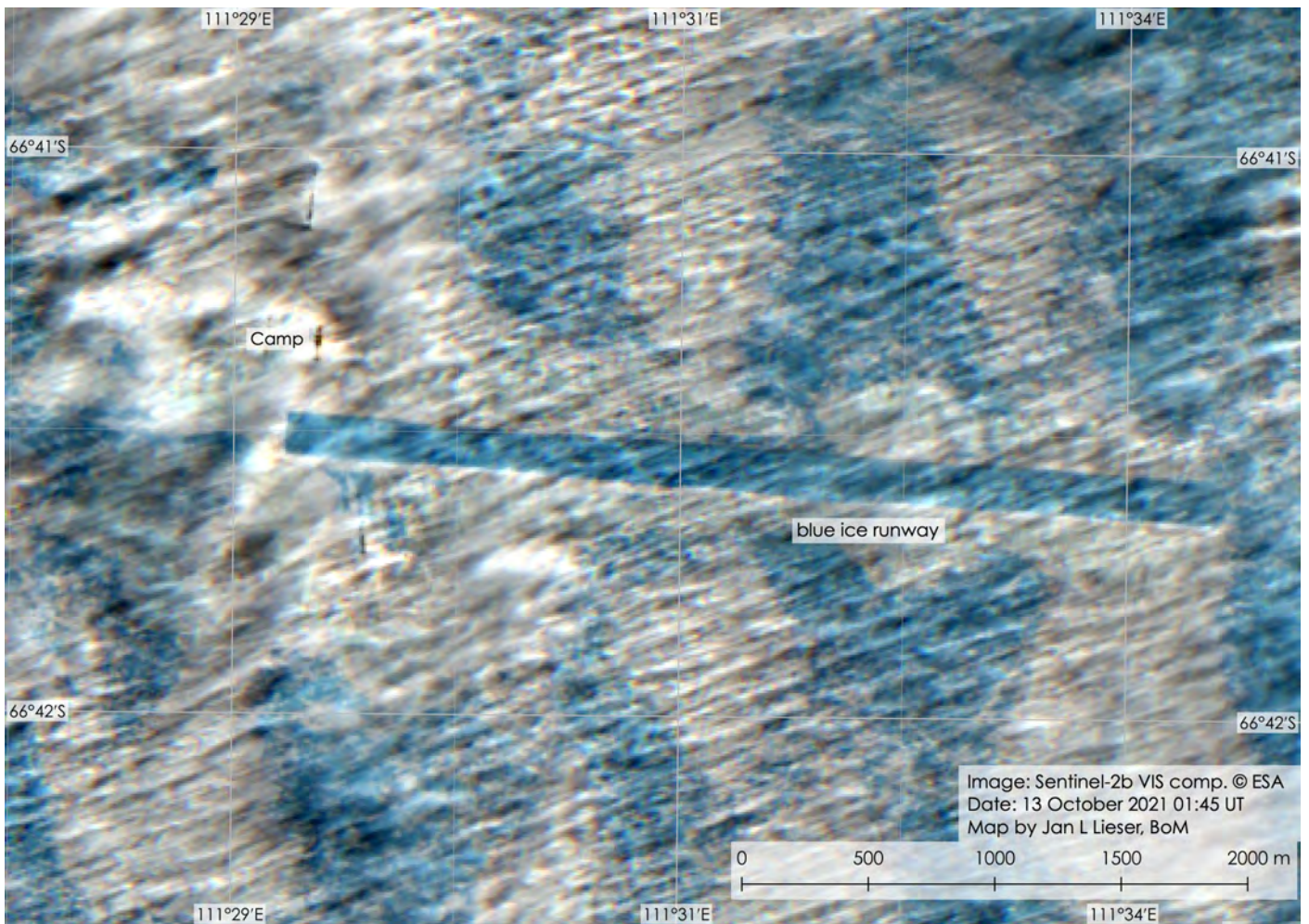


Figure 2: Sentinel-2b visible composite data acquired 13 October 2021 at 01:45 UT and provided by ESA.

Ice Bulletin: Mawson Station

Issued: Thursday 14th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (10 m horizontal) VIS data of Mawson Station and the Taylor Ice Shelf, respectively.

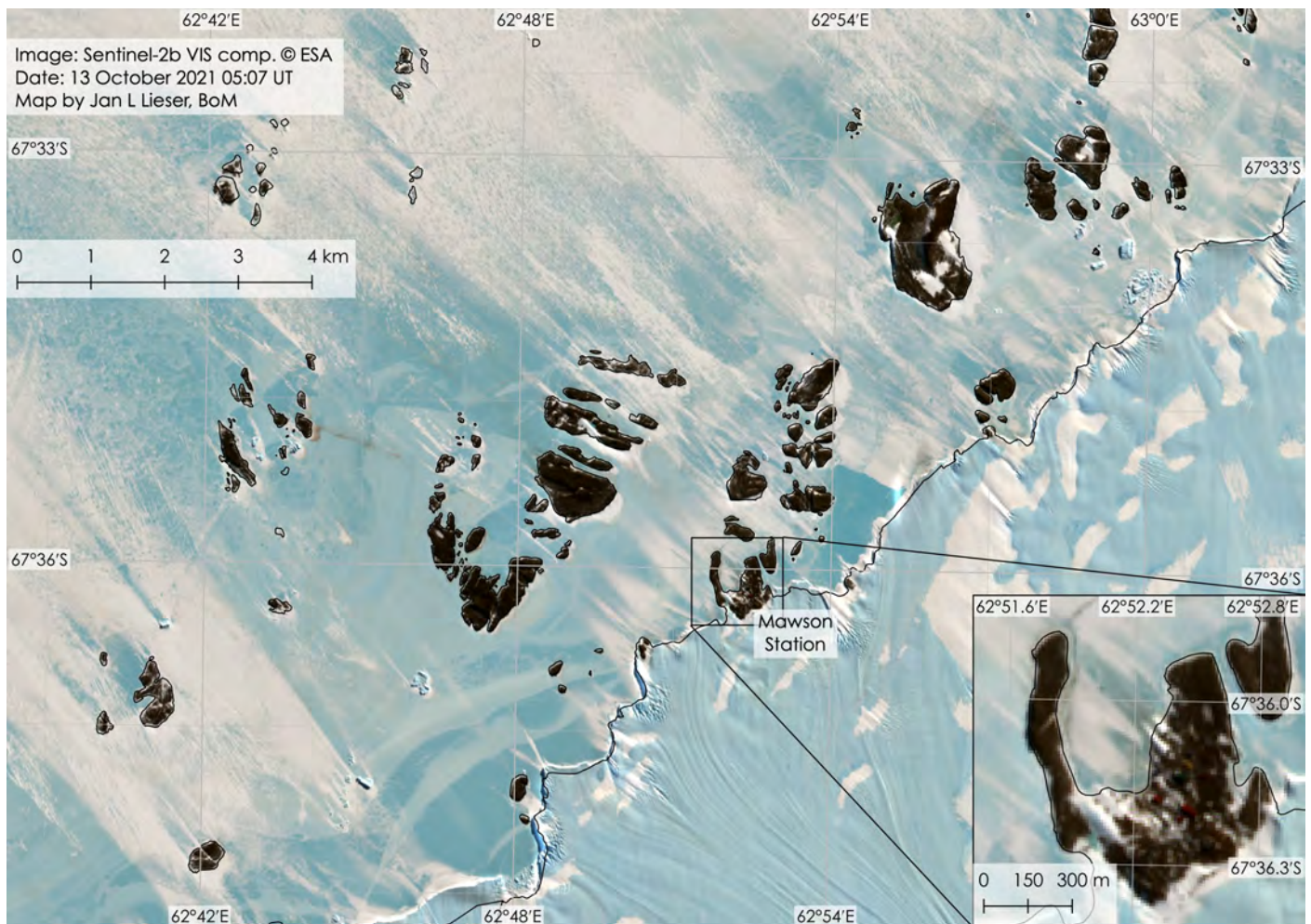


Figure 1: Sentinel-2b visible composite data acquired 13 October 2021 at 05:07 UT and provided by ESA.

The high resolution of the data allows for a more detailed assessment of the fast ice offshore and enables the identification of individual buildings of Mawson Station (see inset).

Figure 2 shows the area of Taylor Ice Shelf and the location of an Emperor Penguin rookery.

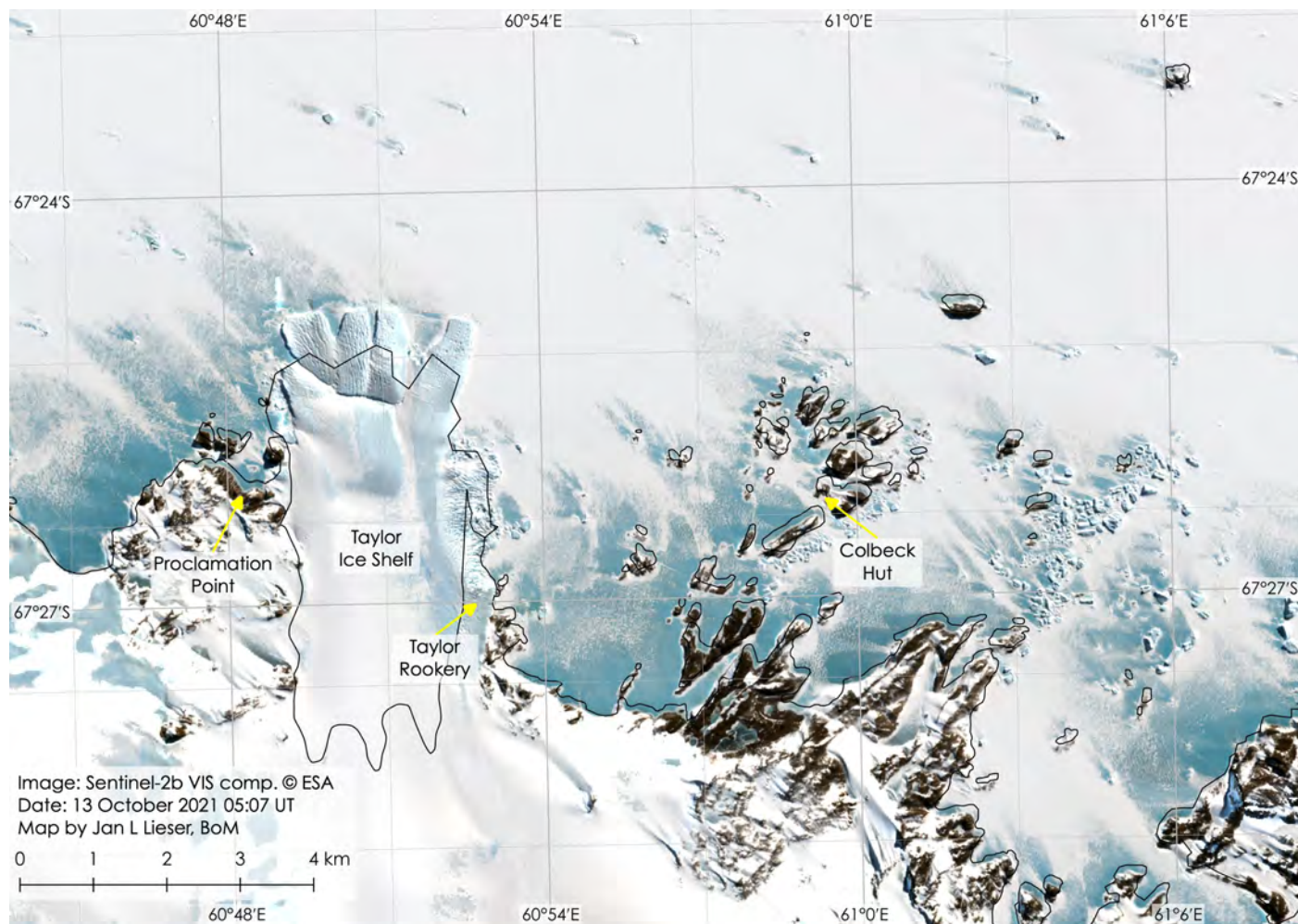


Figure 2: Sentinel-2b visible composite data acquired 13 October 2021 at 05:07 UT and provided by ESA.

Ice Bulletin: D'Urville Sea

Issued: Monday 18th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the southern D'Urville Sea. The fast-ice edge is marked by a red line.

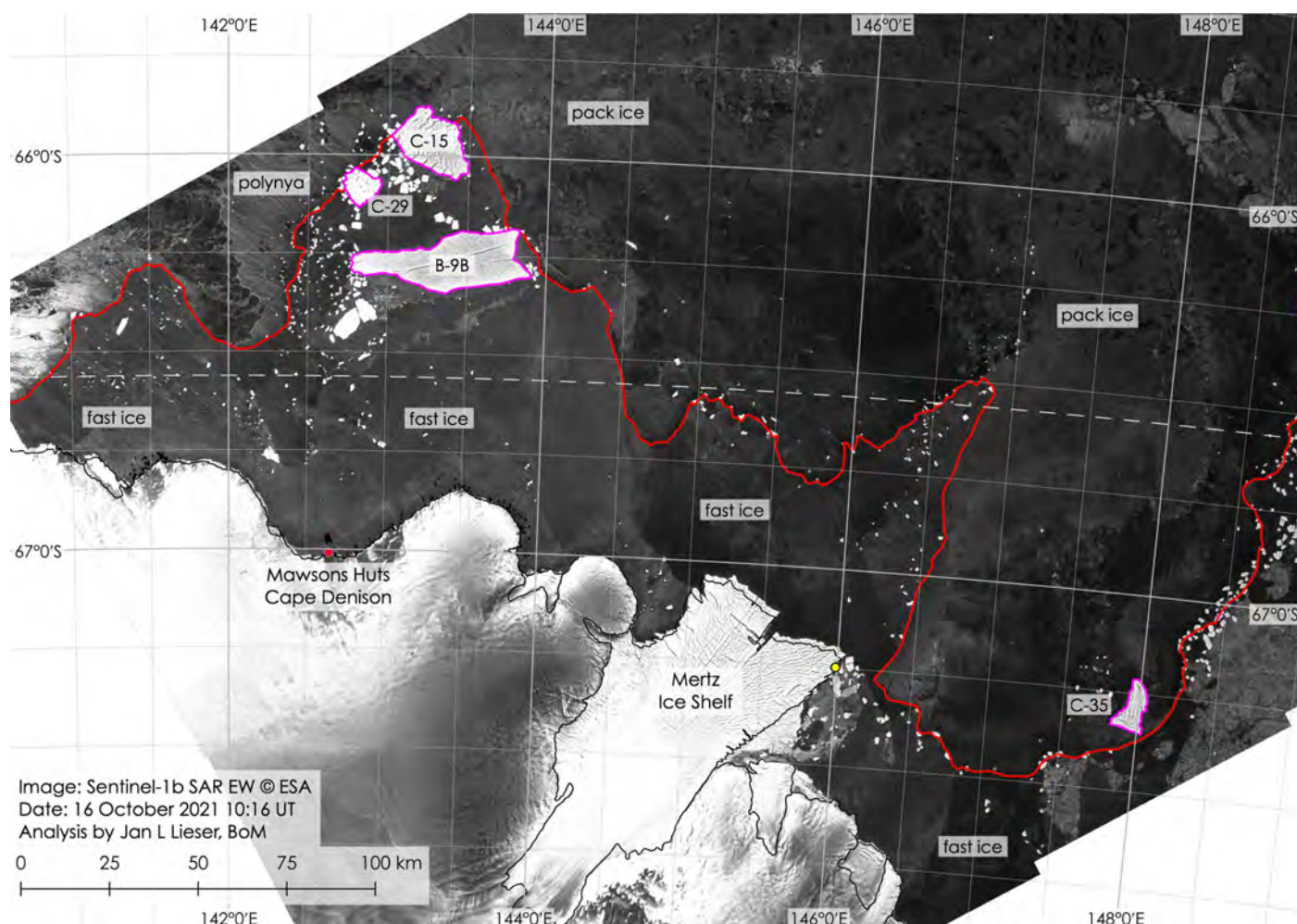


Figure 1: Sentinel-1b SAR EW data acquired 16 October 2021 at 10:16 UT and provided by PolarView.

The fast-ice edge in the region has not changed significantly during past ten days. North of Cape Denison, a polynya is currently present west of the three large icebergs.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for October in the region.

Figures 2 and 3 show very high-resolution (15 m horizontal) visible data of Mawsons Huts/Cape Denison and the eastern edge of the Mertz Ice Shelf (location marked by a yellow dot in Figure 1), respectively.

Off Cape Denison, the fast ice appears smooth and uniform. West of the cape, some glacial debris can be seen that has recently fallen off the face of the local ice shelf.

Figure 3 shows a discoloured patch of fast ice next to the Mertz Ice Shelf (see inset of Figure 3), which is believed to be the location of a penguin colony.



Figure 2: Landsat-8 pan-sharpened visible composite data acquired 16 October 2021 at 23:16 UT and provided by USGS.

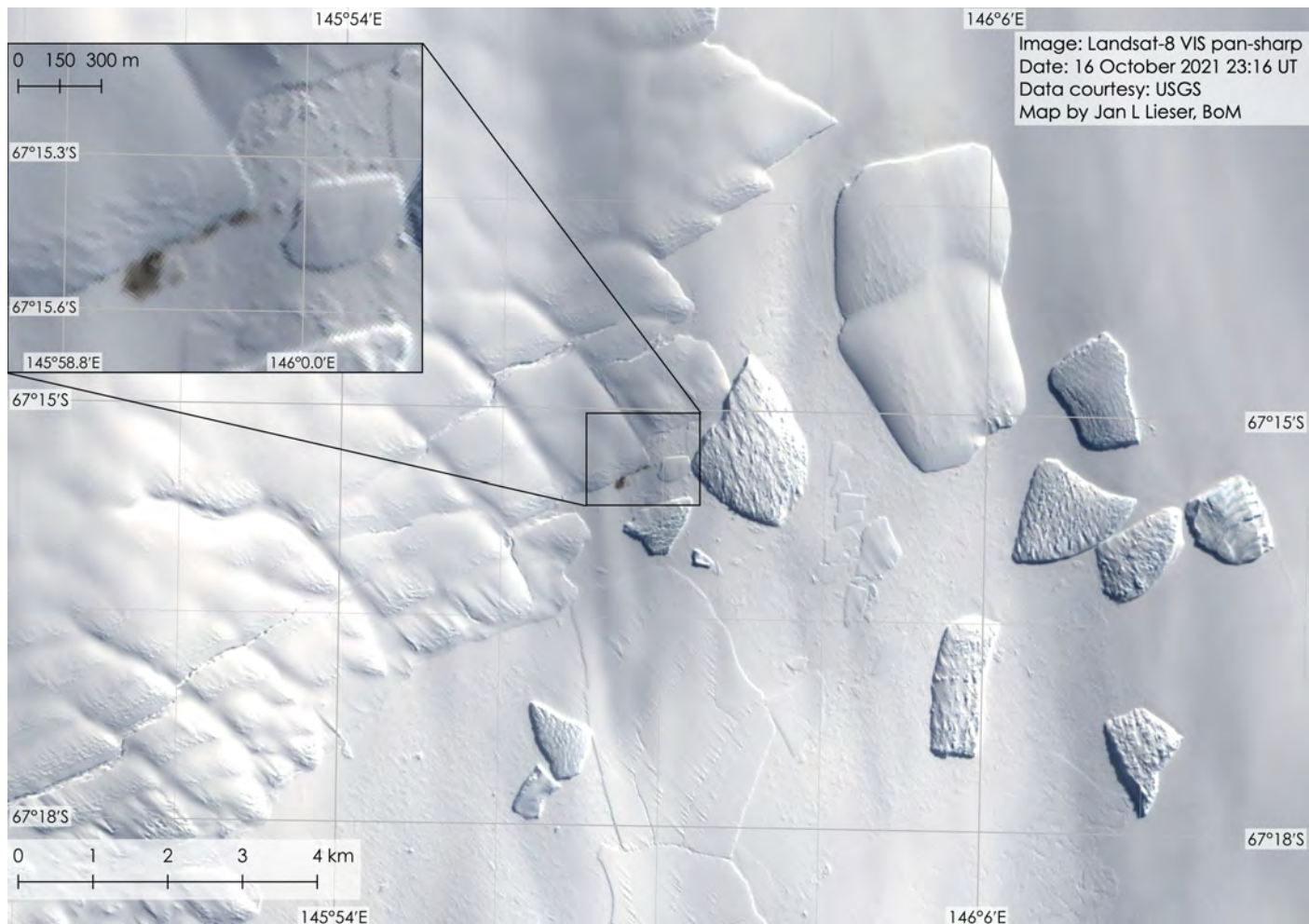


Figure 3: Landsat-8 pan-sharpened visible composite data acquired 16 October 2021 at 23:16 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Monday 18th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1, 2 and 3 show high-resolution (10 m horizontal) VIS data of western Mawson Coast, Mawson Station and the Auster penguin rookery, respectively.

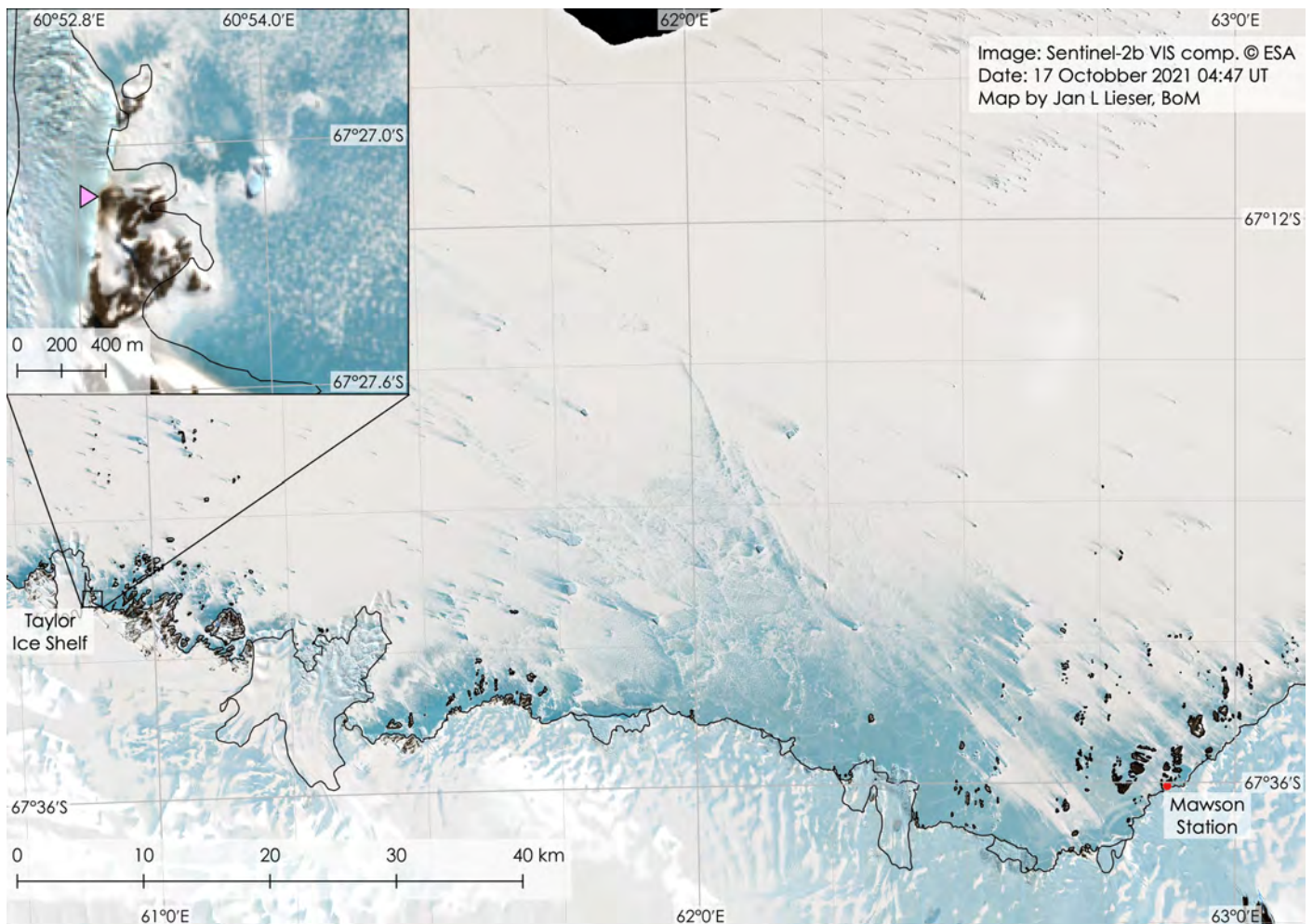


Figure 1: Sentinel-2b visible composite data acquired 17 October 2021 at 04:47 UT and provided by ESA.

The high resolution of the data allows for a more detailed assessment of the fast ice offshore and enables the positive identification of the Taylor penguin rookery (marked by a pink triangle).

Figure 2 shows individual buildings of Mawson Station.

Figure 3 shows the area of the Auster emperor penguin rookery (marked by a pink triangle).

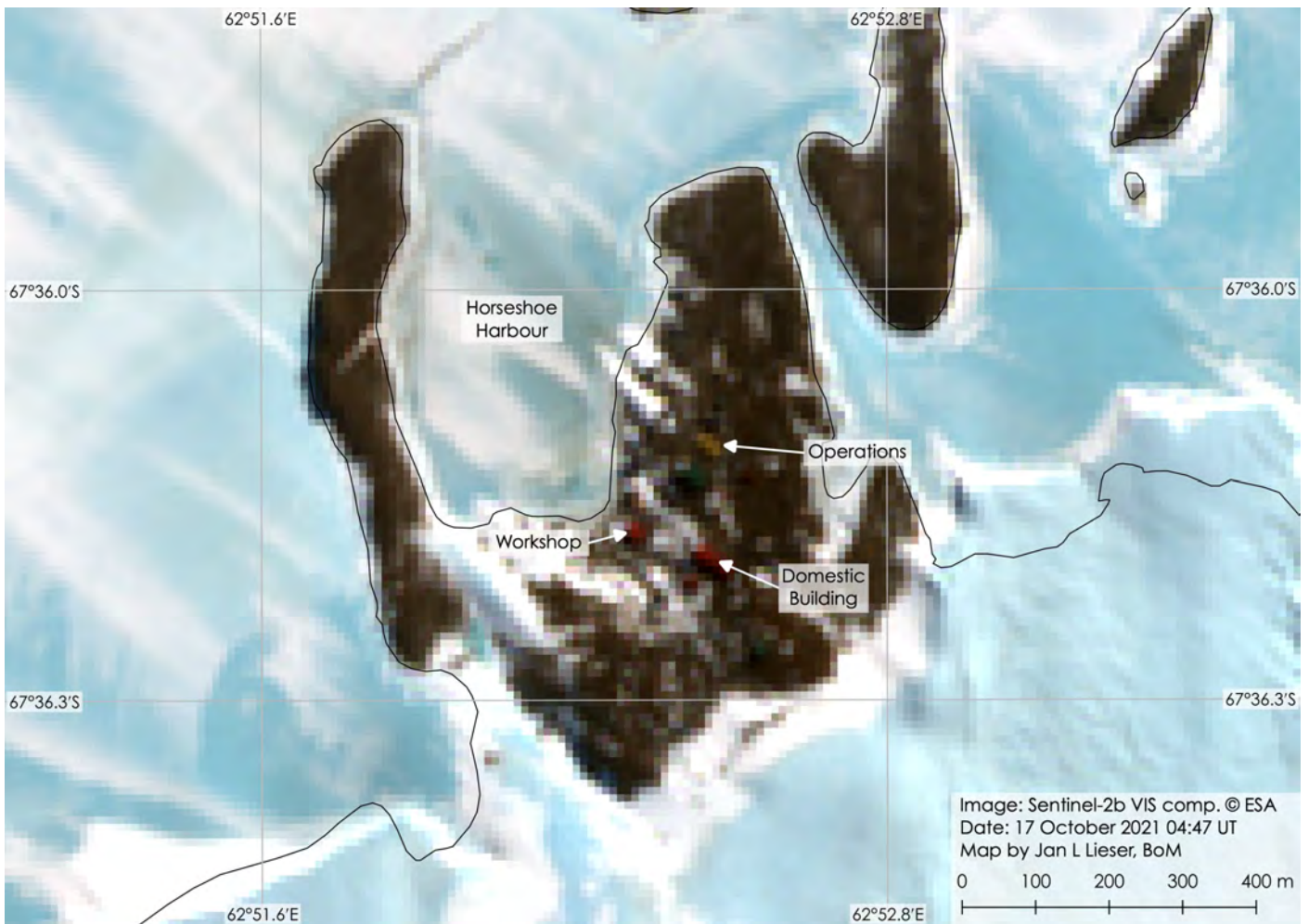


Figure 2: Sentinel-2b visible composite data acquired 17 October 2021 at 04:47 UT and provided by ESA.

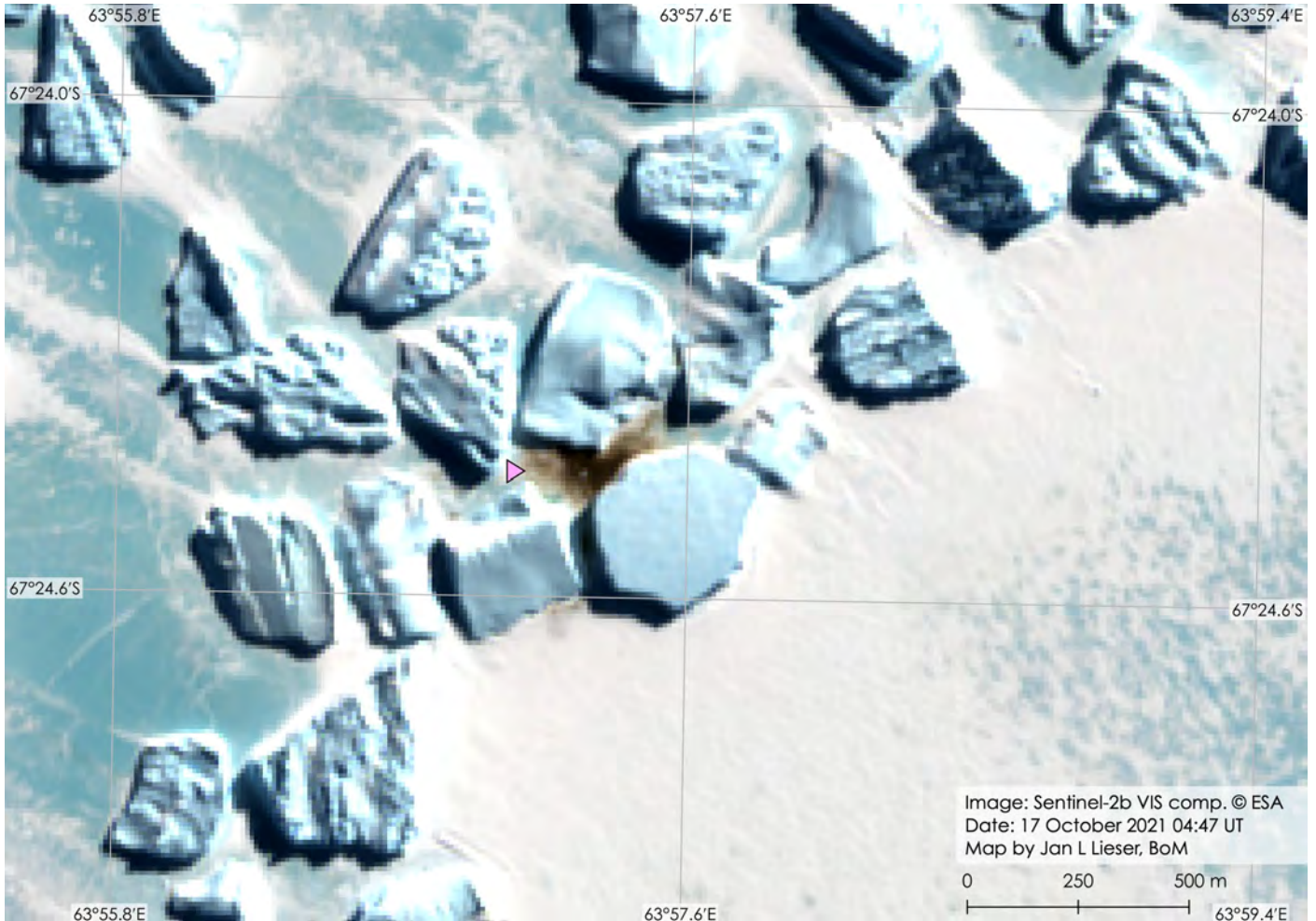


Figure 3: Sentinel-2b visible composite data acquired 17 October 2021 at 04:47 UT and provided by ESA.

Ice Bulletin: Davis Station

Issued: Monday 18th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Davis Station. The fast-ice edge is marked by a red line (as a dashed red line for 28 September 2021).

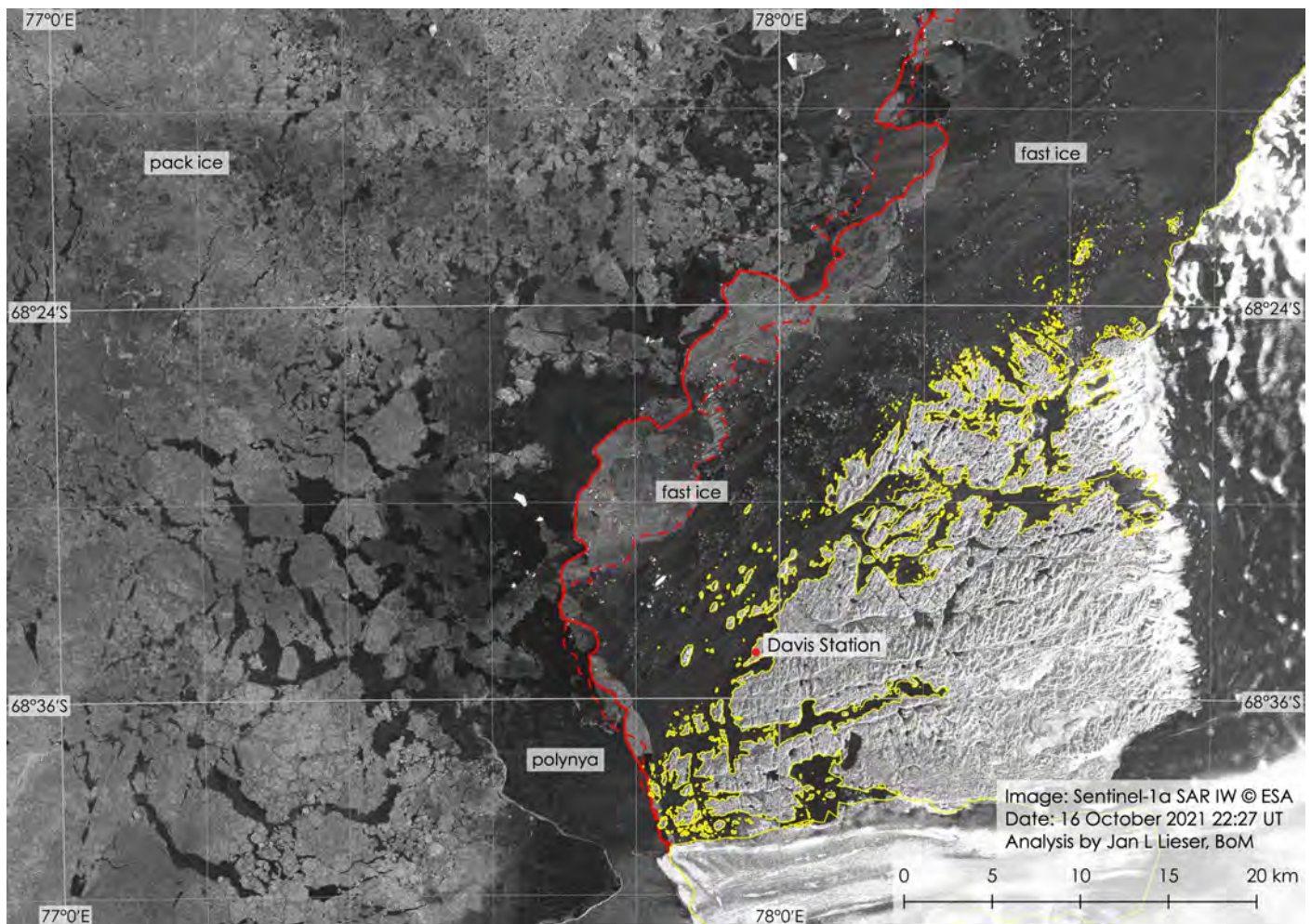


Figure 1: Sentinel-1a SAR IW data acquired 16 October 2021 at 22:27 UT and provided by PolarView.

Off Davis Station, some pack ice is temporarily attached to the old fast-ice edge. Further offshore, a small polynya is present south of the station and frozen over north of the station.

The northern sea-ice edge (not shown in the figure) is not reaching the median sea-ice extent for October anymore but the sea-ice edge is reaching 61°0'S and is therefore roughly 180 nautical miles south of the October median sea-ice extent along 78°0E.

Ice Bulletin: D'Urville Sea

Issued: Tuesday 19th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show very high-resolution (10 m horizontal resolution) visible data of the Cape Denison region, the location of Mawsons Huts, and the larger Commonwealth Bay region, respectively.

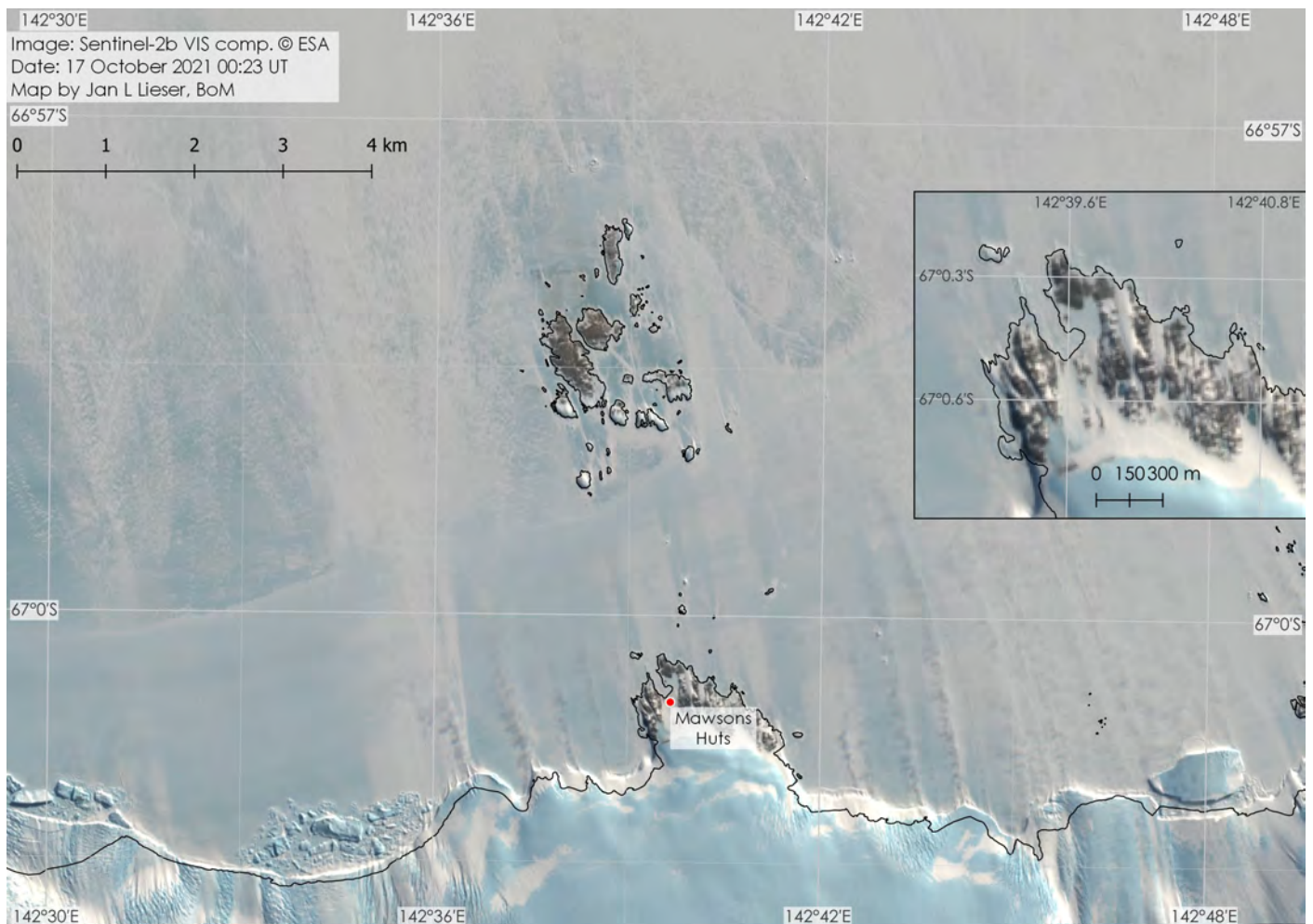


Figure 1: Sentinel-2b visible composite data acquired 17 October 2021 at 00:23 UT and provided by ESA.

Off Cape Denison, homogenous fast ice is present offshore.

Figure 2 shows the northern part of the scene slightly obscured by clouds. Three large tabular icebergs north of Cape Denison remain enclosed by the offshore fast ice (under the clouds). Currently, the open water northwest of Mawsons Huts is roughly 62 km (33.5 nautical miles) away from the huts.

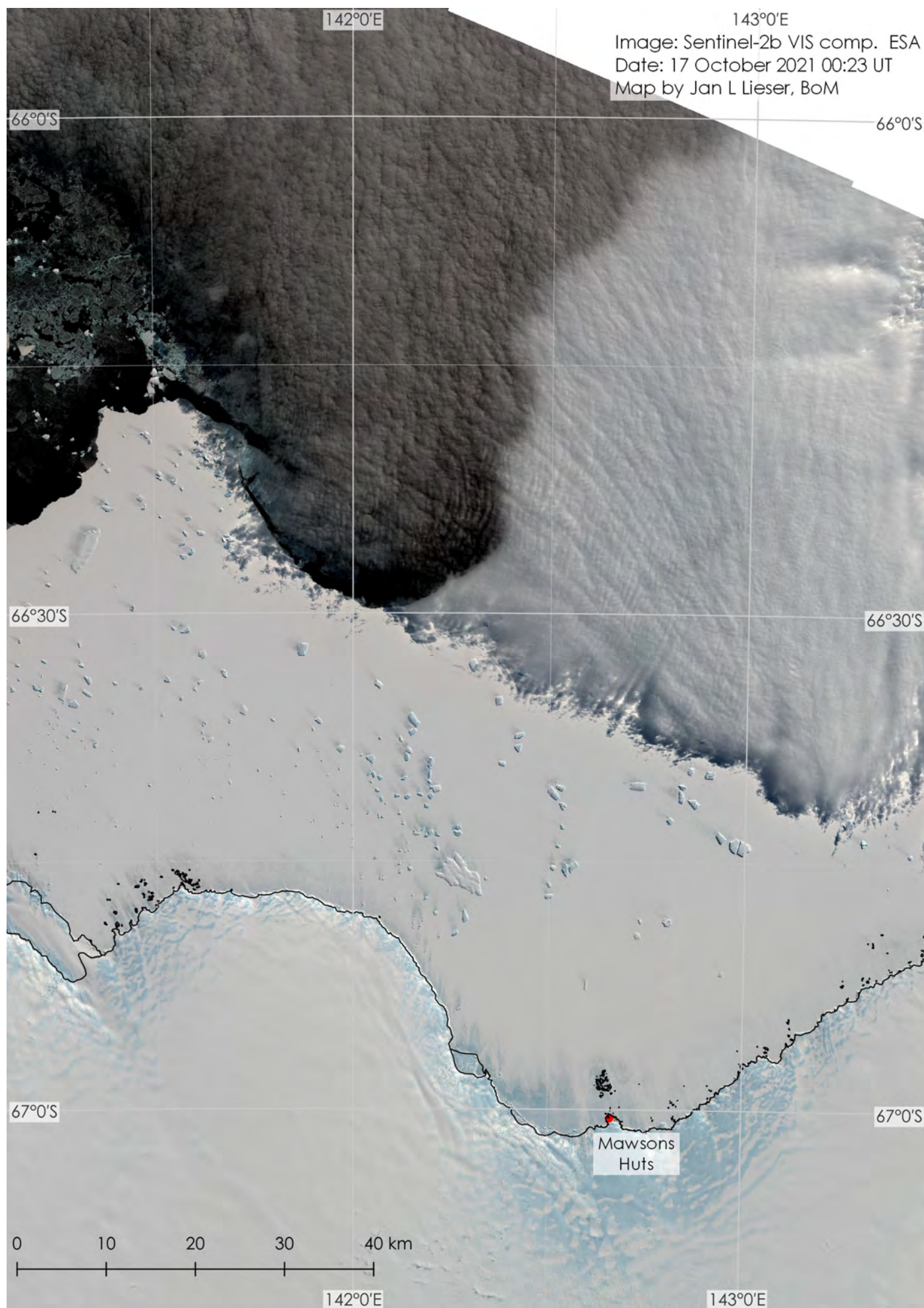


Figure 2: Sentinel-2b visible composite data acquired 17 October 2021 at 00:23 UT and provided by ESA.

Ice Bulletin: Casey Station

Issued: Wednesday 20th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Casey Station and offshore. Off Law Dome, the fast-ice edge is marked by red line.

Off station, a polynya is covered by broken new ice and brash ice.

Further north, a band of first-year sea ice is present off the fast-ice edge and a band of old sea ice is around 64°0'S (marked by two light blue lines). North of this band of old ice, the marginal ice zone is dominated by small ice floes, which are currently moved predominantly by small-scale oceanic surface eddies.

Throughout the entire sea-ice zone and to the north of the sea-ice edge, icebergs are drifting freely. Only in the vicinity of the fast ice, icebergs are mostly grounded.

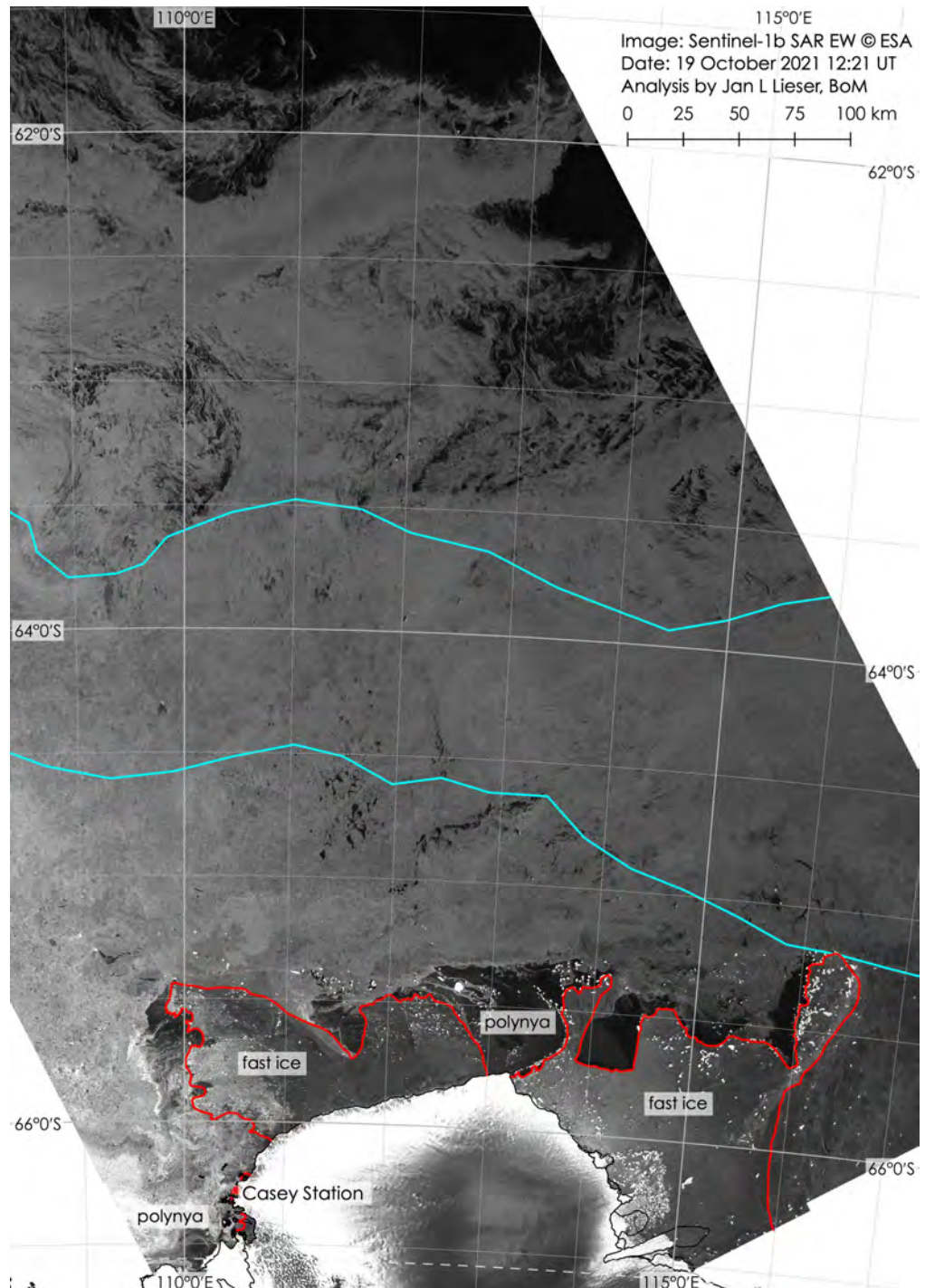


Figure 1: Sentinel-1a SAR EW data acquired 19 October 2021 at 12:21 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Friday 22nd October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data west of Mawson Station. A white diagonal line is a stitching artefact where two consecutive scenes are joined together.

The proposed route between Mawson Station and Taylor Ice Shelf (Colbeck Hut) is given by colour-coded segments. The location of a penguin colony is marked by a pink triangle. South of 67°18'S, some of the larger, fast ice-enclosed icebergs along the route are outlined by magenta shapes.

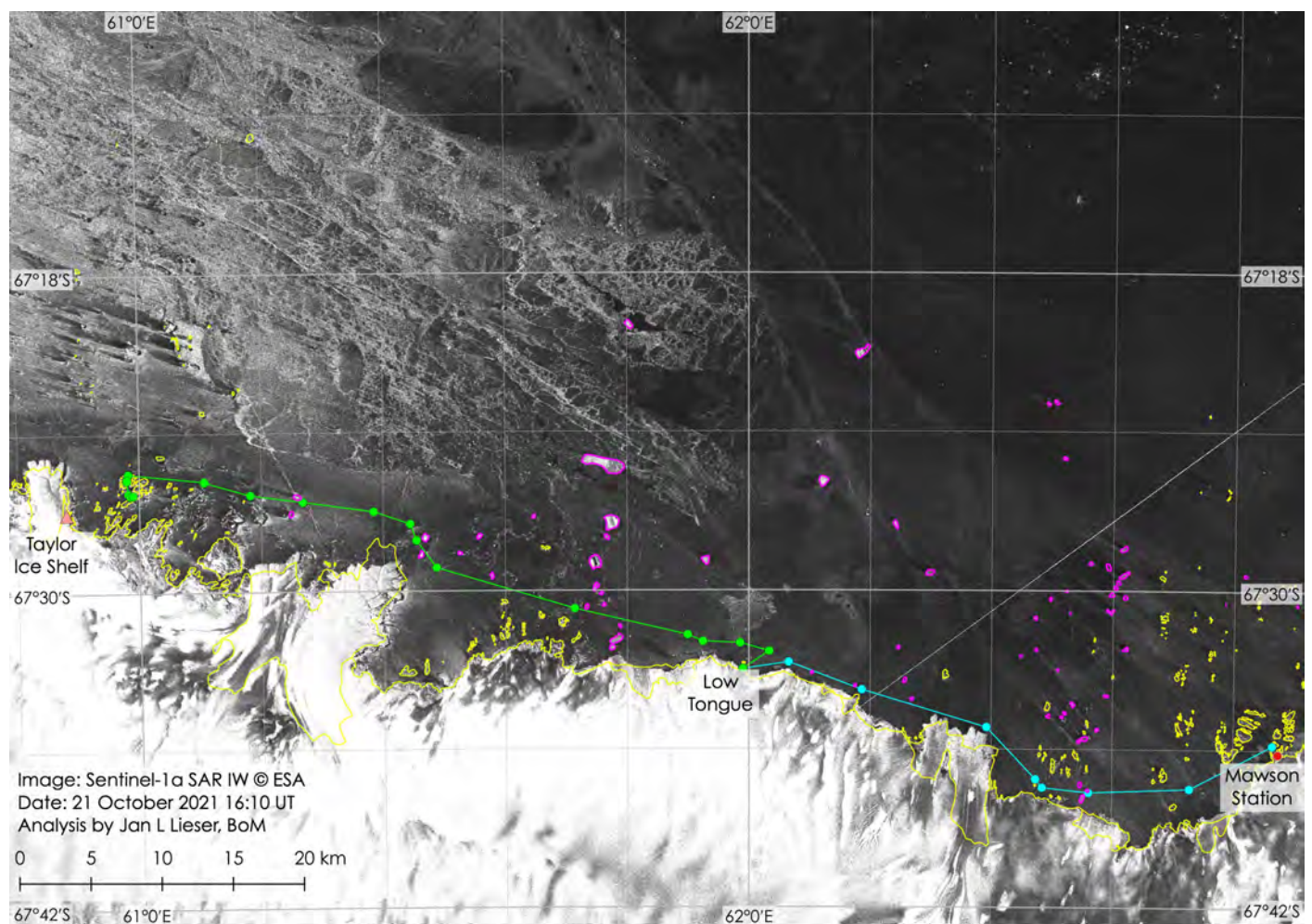


Figure 1: Sentinel-1a SAR IW data acquired 21 October 2021 at 16:10 UT and provided by PolarView.

The fast ice between Taylor Ice Shelf and Mawson Station has not changed significantly during the previous weeks. East of Low Tongue, largely homogeneous fast ice remains. At around 62°30'E, a few grounded icebergs are detected within the fast ice between the islands.

Between Low Tongue and Taylor Ice Shelf more and larger icebergs are enclosed by fast ice offshore and a few refrozen tide cracks are criss-crossing the fast ice.

The northern sea-ice edge (not shown in the figure) is meandering close to the median sea-ice extent for October.

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Ice Bulletin: McMurdo Sound

Issued: Friday 22nd October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

All figures of this Ice Bulletin show very high-resolution (10 m horizontal) visible composite data of McMurdo Sound in the south-western Ross Sea.

Figure 1 provides an overview of the sound with the southern tip of Ross Island. A small cloud shadow is in the central part of the figure.

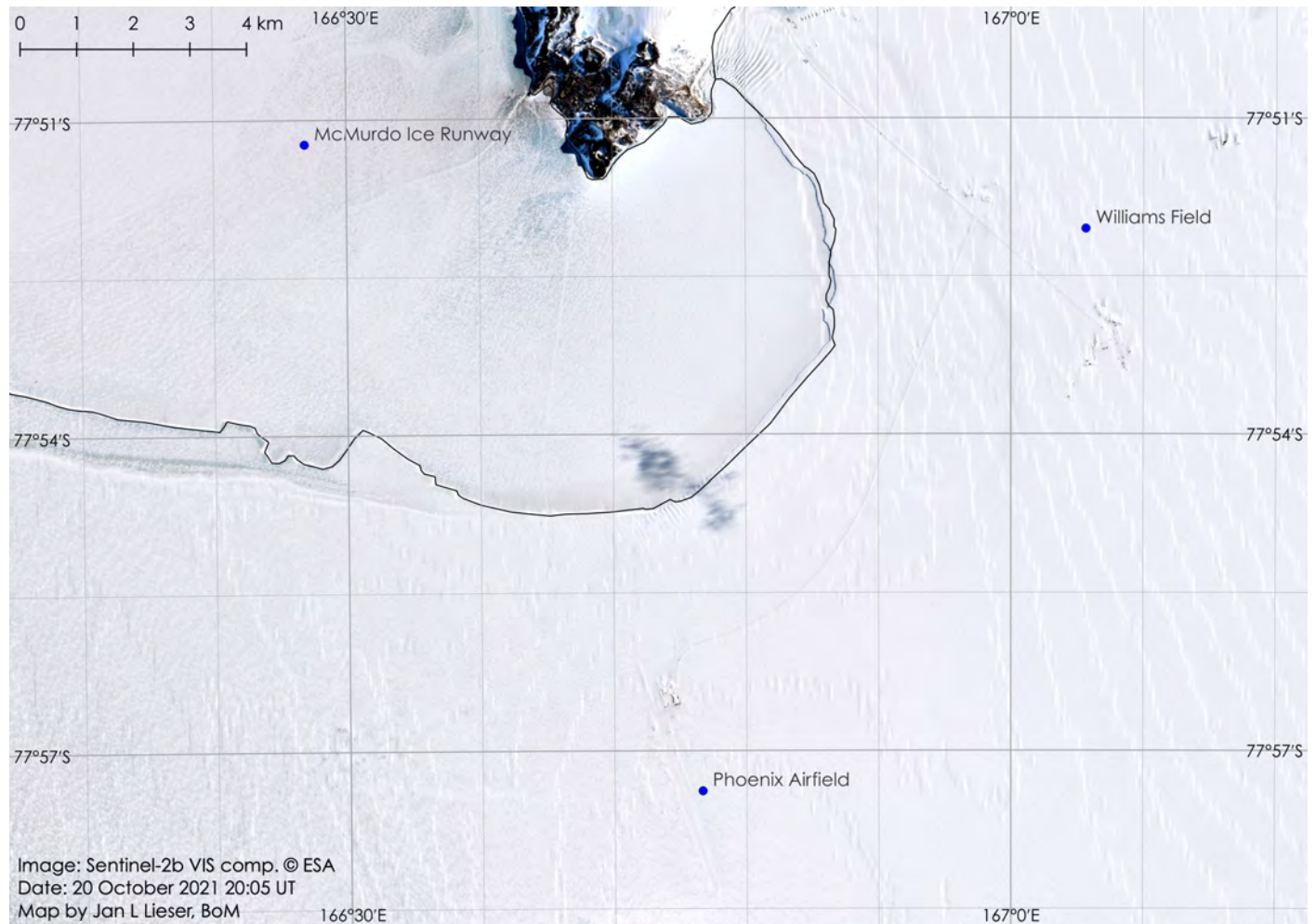


Figure 1: Sentinel-2b VIS composite data acquired 20 October 2021 at 20:05 UT and provided by ESA.

McMurdo Sound is covered by fast ice. The locations of three local airfields are marked with blue dots. The roads between the stations and the airfields can be identified across the south-western Ross Ice Shelf.

The northern sea-ice edge of the Ross Sea (not shown in the figure) is meandering close to the median sea-ice extent for October.

Figure 2 shows a close-up around the southern tip of Hut Point Peninsula, the southern part of Ross Island.

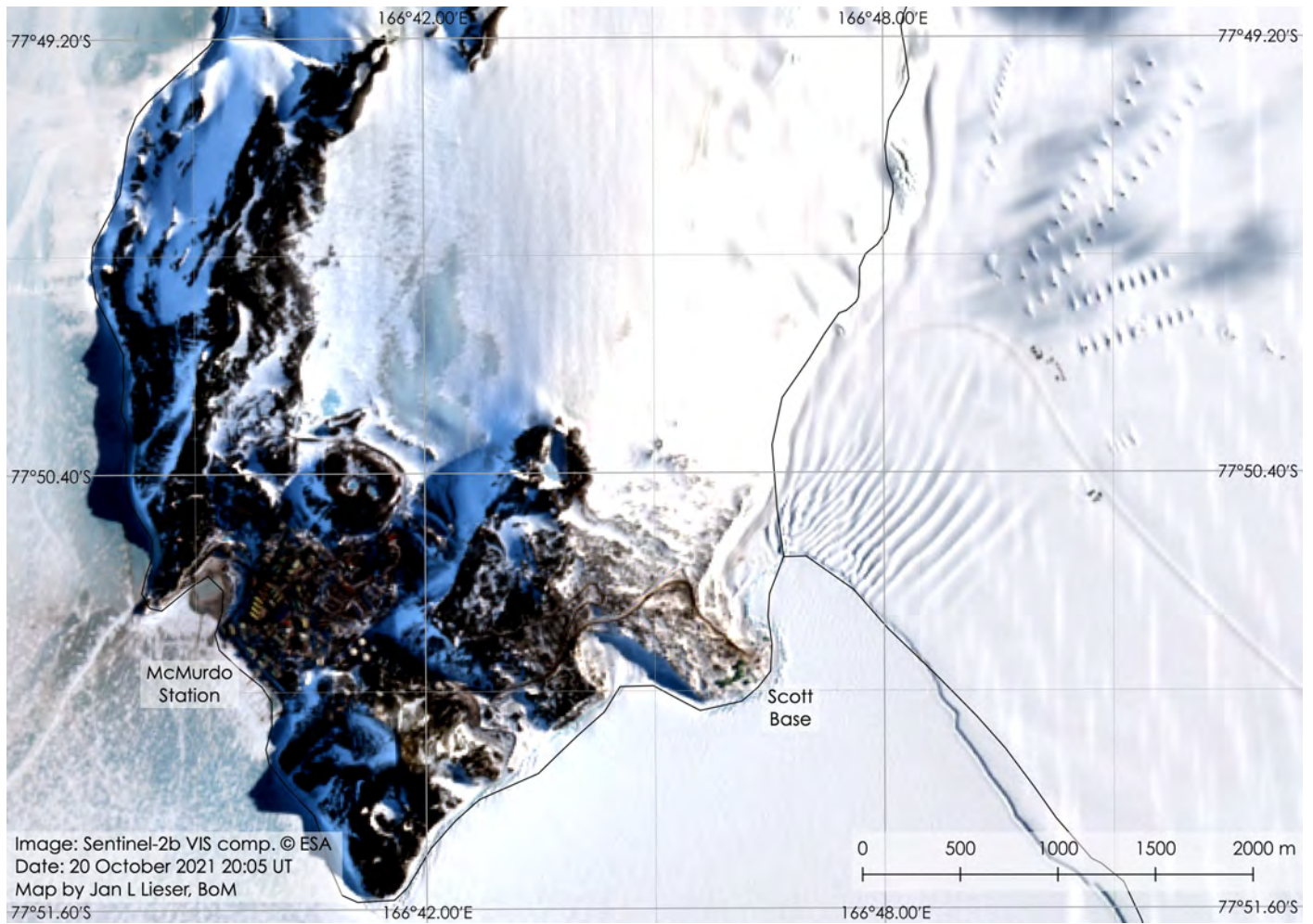


Figure 2: Sentinel-2b VIS composite data acquired 20 October 2021 at 20:05 UT and provided by ESA.

The very high-resolution of the data allows for the identification of individual buildings of both stations. The road towards the two airfields on the ice shelf can be seen heading southeast.

Figure 3 shows the region around Williams Field (NZWD). The junction towards Phoenix Airfield (NZFX) can be seen heading southwest.

Figure 4 shows Phoenix Airfield (NZFX) with the laydown area at the northern end of the runway.

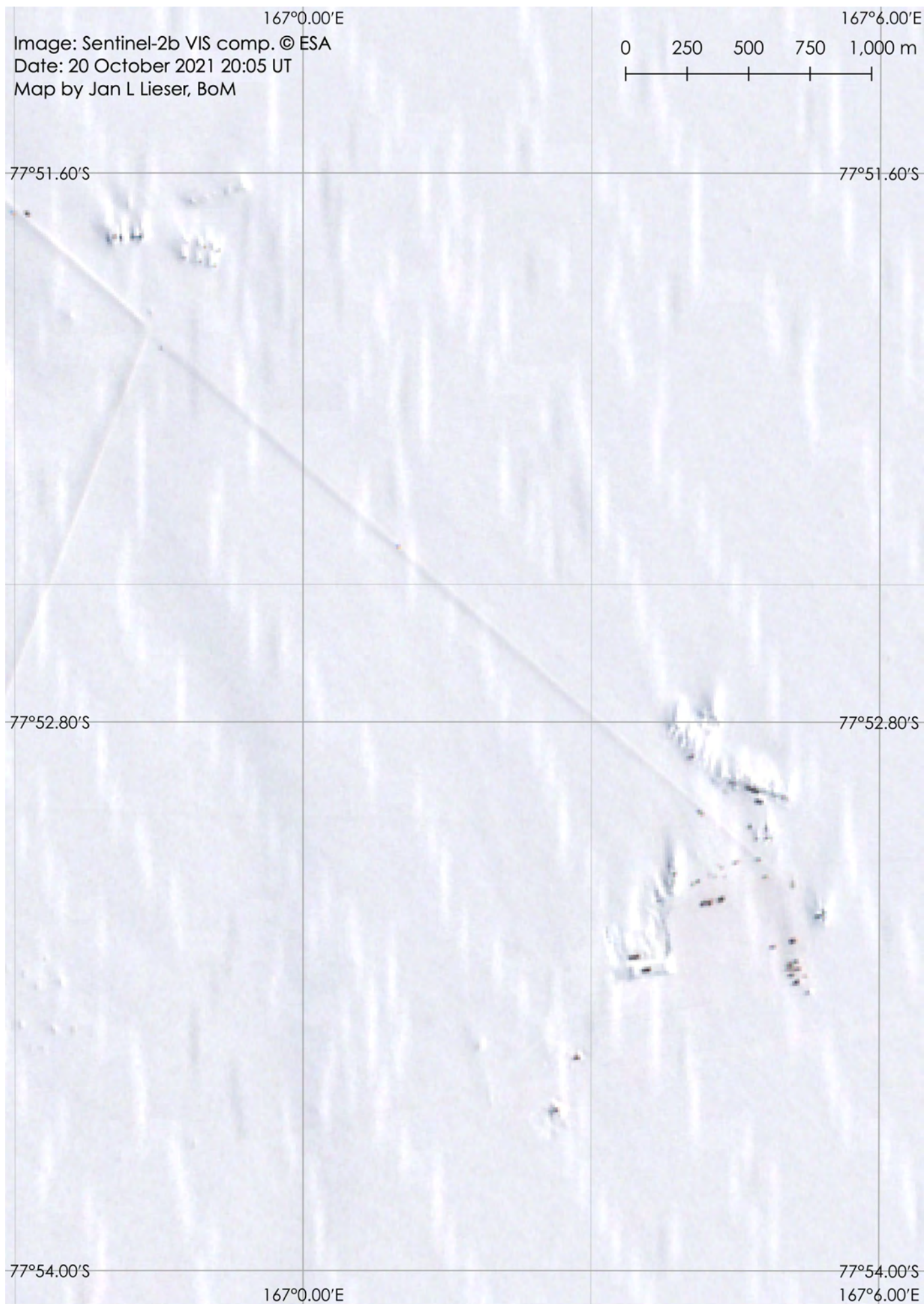


Figure 3: Sentinel-2b VIS composite data acquired 20 October 2021 at 20:05 UT and provided by ESA.



Figure 4: Sentinel-2b VIS composite data acquired 20 October 2021 at 20:05 UT and provided by ESA.

Ice Bulletin: D'Urville Sea

Issued: Monday 25th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show very high-resolution (10 m horizontal resolution) visible data of the coastline between Dumont D'Urville Station and Cape Denison.

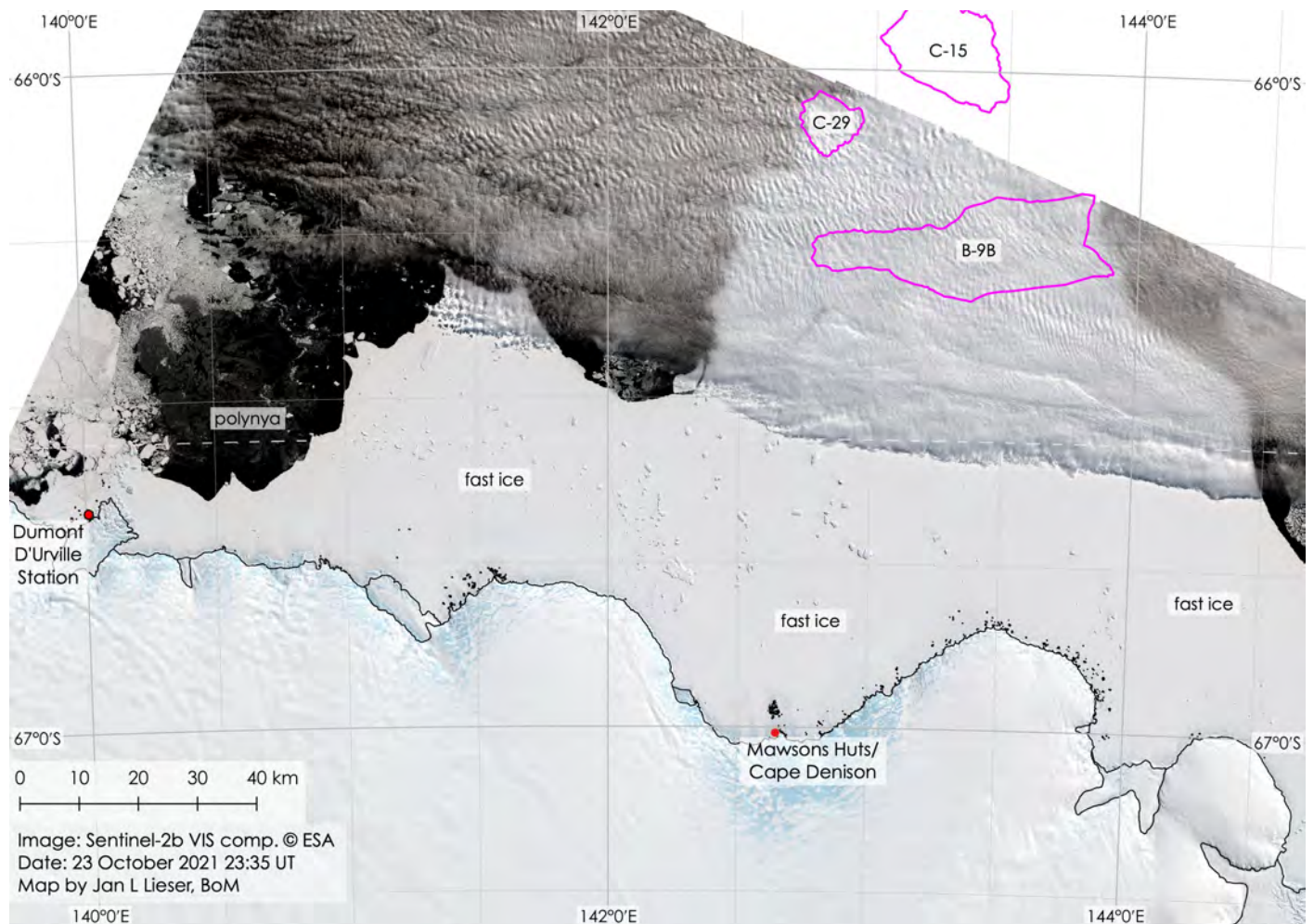


Figure 1: Sentinel-2b visible composite data acquired 23 October 2021 at 23:35 UT and provided by ESA.

Offshore, largely homogenous fast ice is present. Three large tabular icebergs north of Cape Denison remain enclosed by the offshore fast ice (under the clouds). Currently, the open water northwest of Mawsons Huts is roughly 60 km (32.5 nautical miles) away from the huts.

Figure 2 provides close-up views around Dumont D'Urville Station (upper panel) and Cape Denison (lower panel).

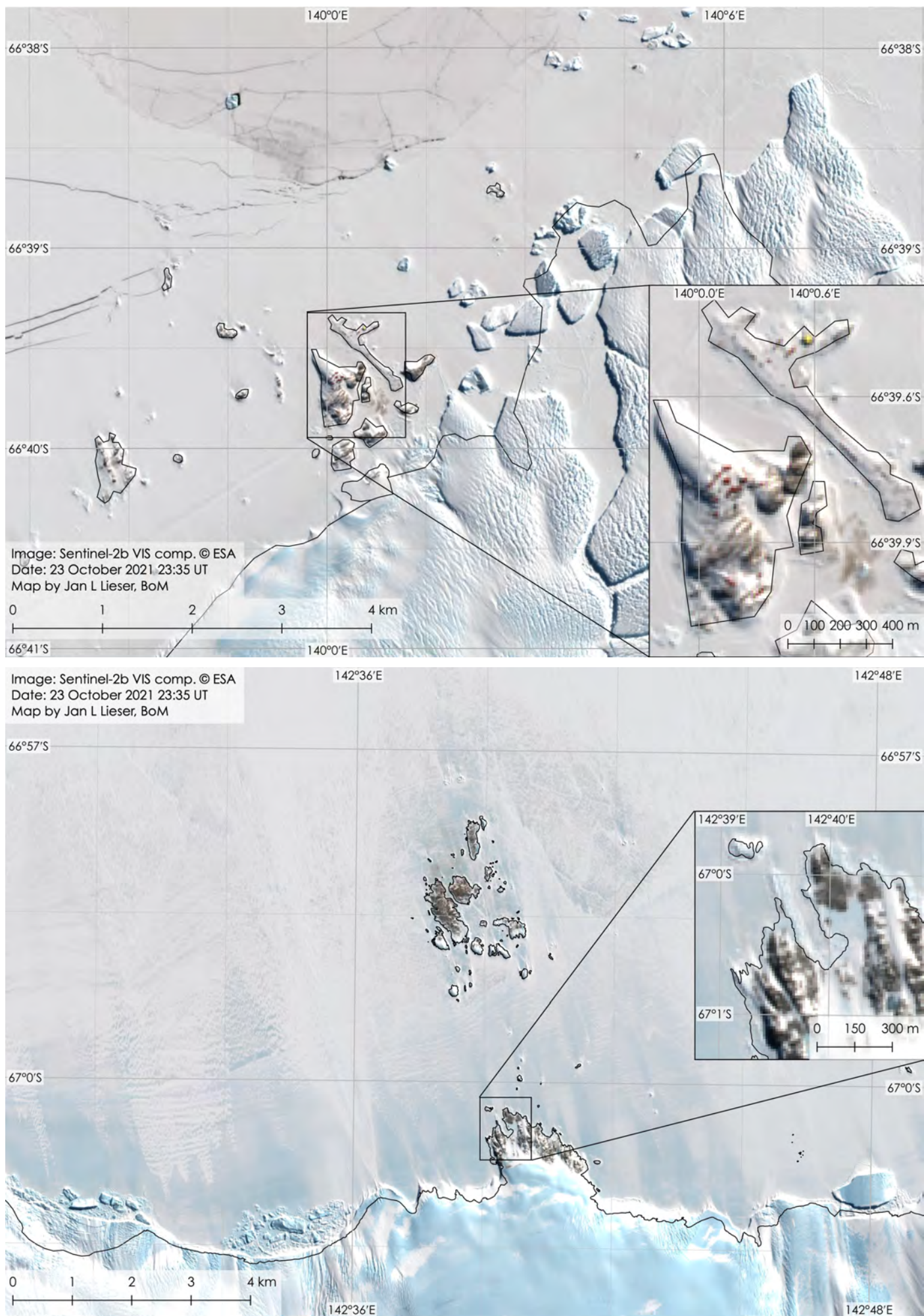


Figure 2: Sentinel-2b visible composite data acquired 23 October 2021 at 23:35 UT and provided by ESA.

Ice Bulletin: Davis Station

Issued: Monday 25th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data. Off Davis Station, the fast-ice edge is obscured by thin clouds.

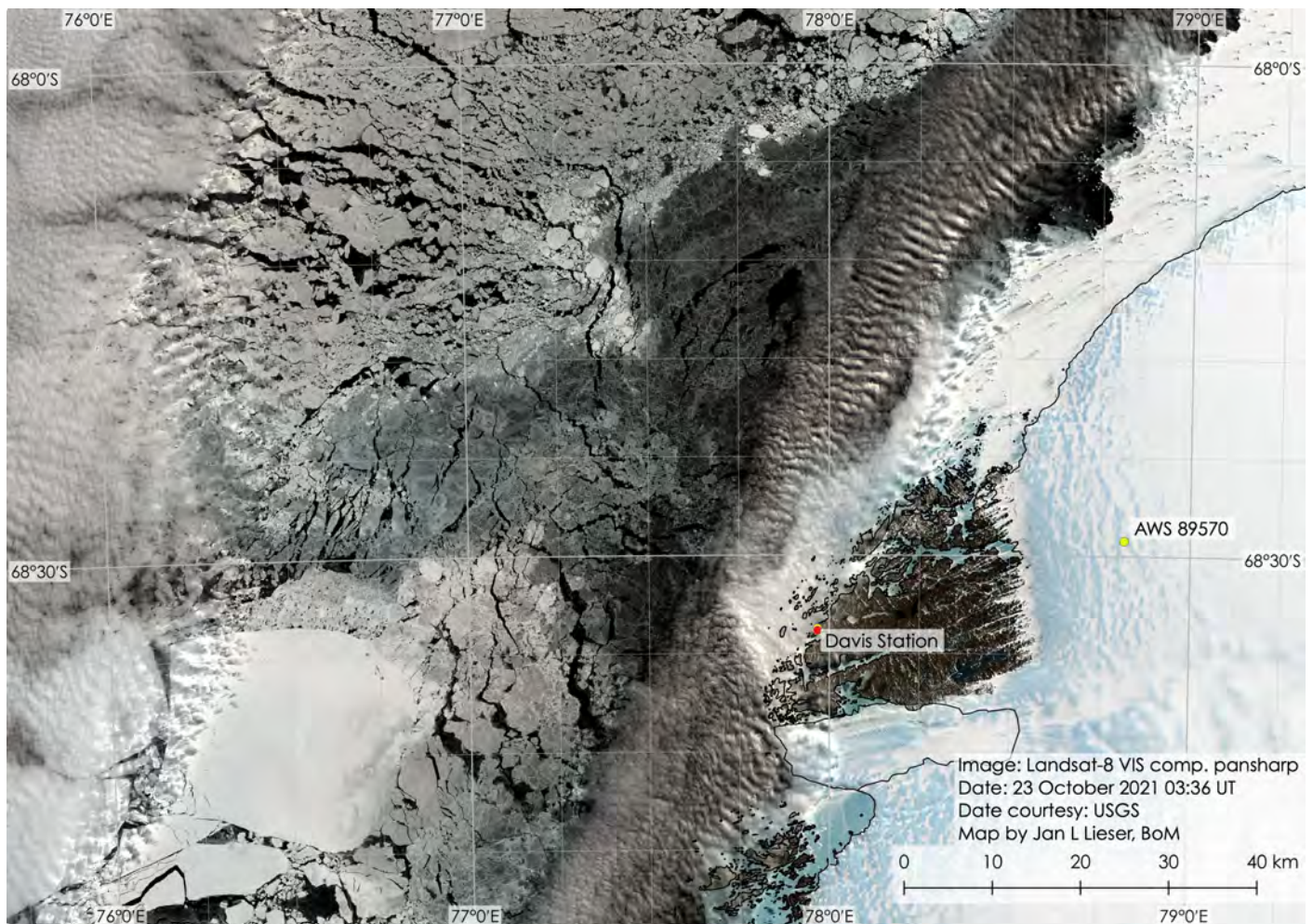


Figure 1: Landsat-8 pan-sharp VIS composite data acquired 23 October 2021 at 03:36 UT and provided by USGS.

Off Davis Station, some pack ice remains temporarily attached to the old fast-ice edge. Further offshore, a small polynya is frozen over by new sea ice.

The northern sea-ice edge (not shown in the figure) is not reaching the median sea-ice extent for October anymore and the sea-ice edge is roughly 160 nautical miles south of the October median sea-ice extent along 80°0E.

Figure 2 provides a close-up view of the Vestfold Hills of the Davis Station hinterland.

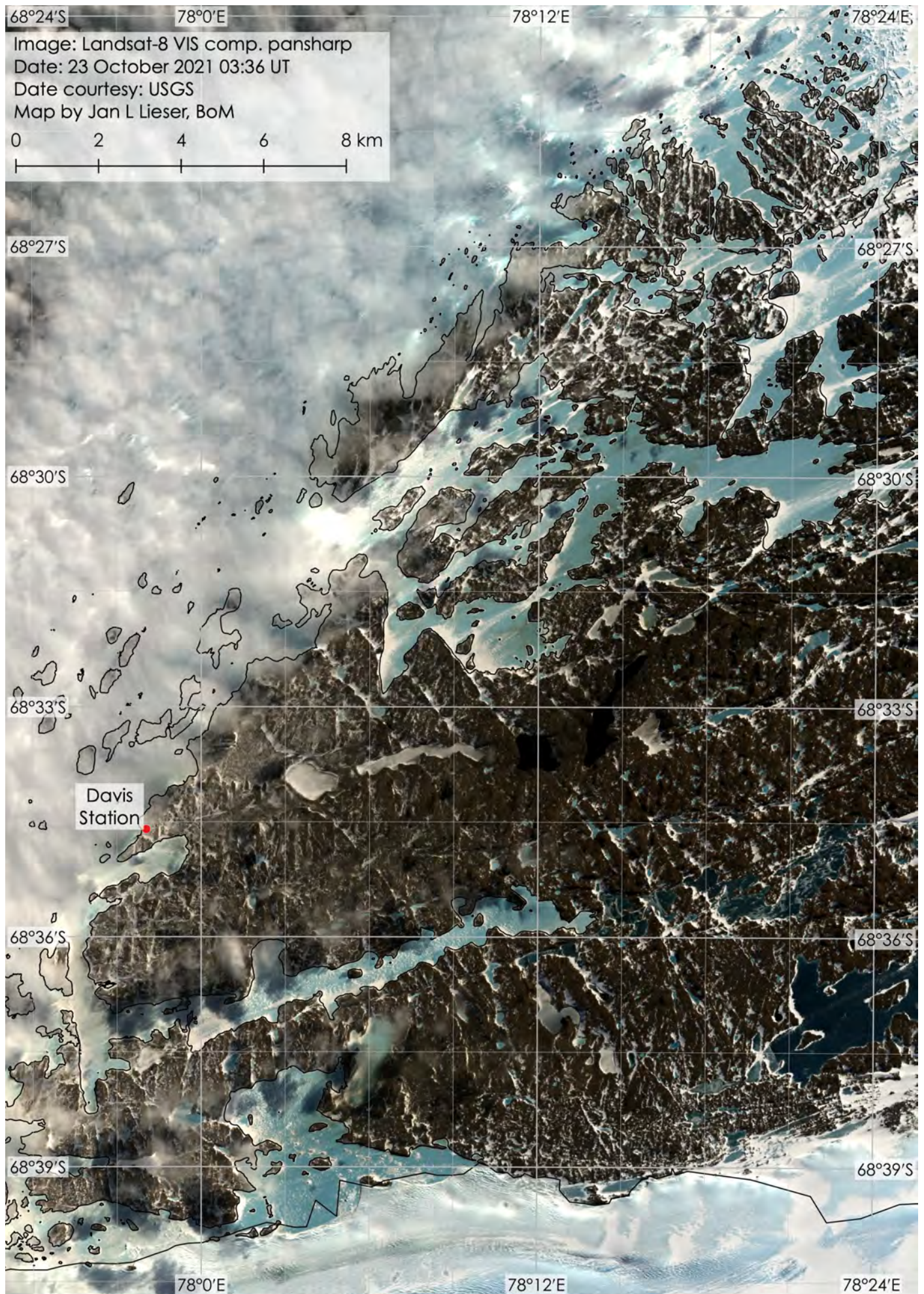


Figure 2: Landsat-8 pan-sharp VIS composite data acquired 23 October 2021 at 03:36 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Wednesday 27th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station, the fast-ice edge is marked by a red line (dashed red for 16 October 2021).

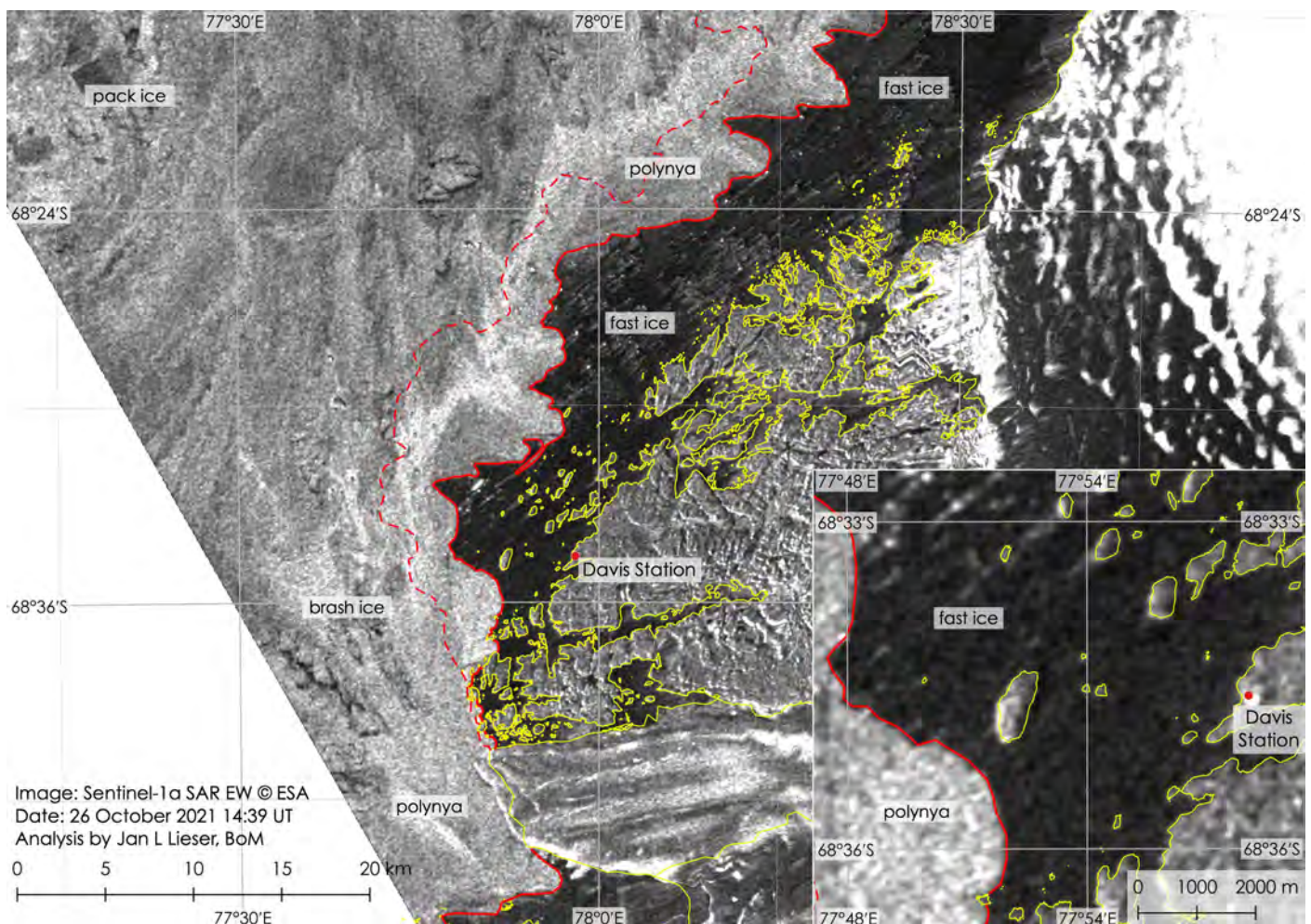


Figure 1: Sentinel-1a SAR EW data acquired 26 October 2021 at 14:39 UT and provided by PolarView.

Following the recent local weather, the fast-ice edge has retreated towards the shore. Off the fast ice, a small polynya is producing new sea ice and the pack ice has been pushed further north-westward. The inset in the figure provides a close-up view of the fast ice around the station's offshore islands.

The northern sea-ice edge (not shown in the figure) continues to progress southward.

Ice Bulletin: Casey Station

Issued: Wednesday 27th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very high-resolution (15 m horizontal) visible data of Law Dome/Casey Station. The fast-ice edge on 19 October 2021 is marked by a dashed red line.

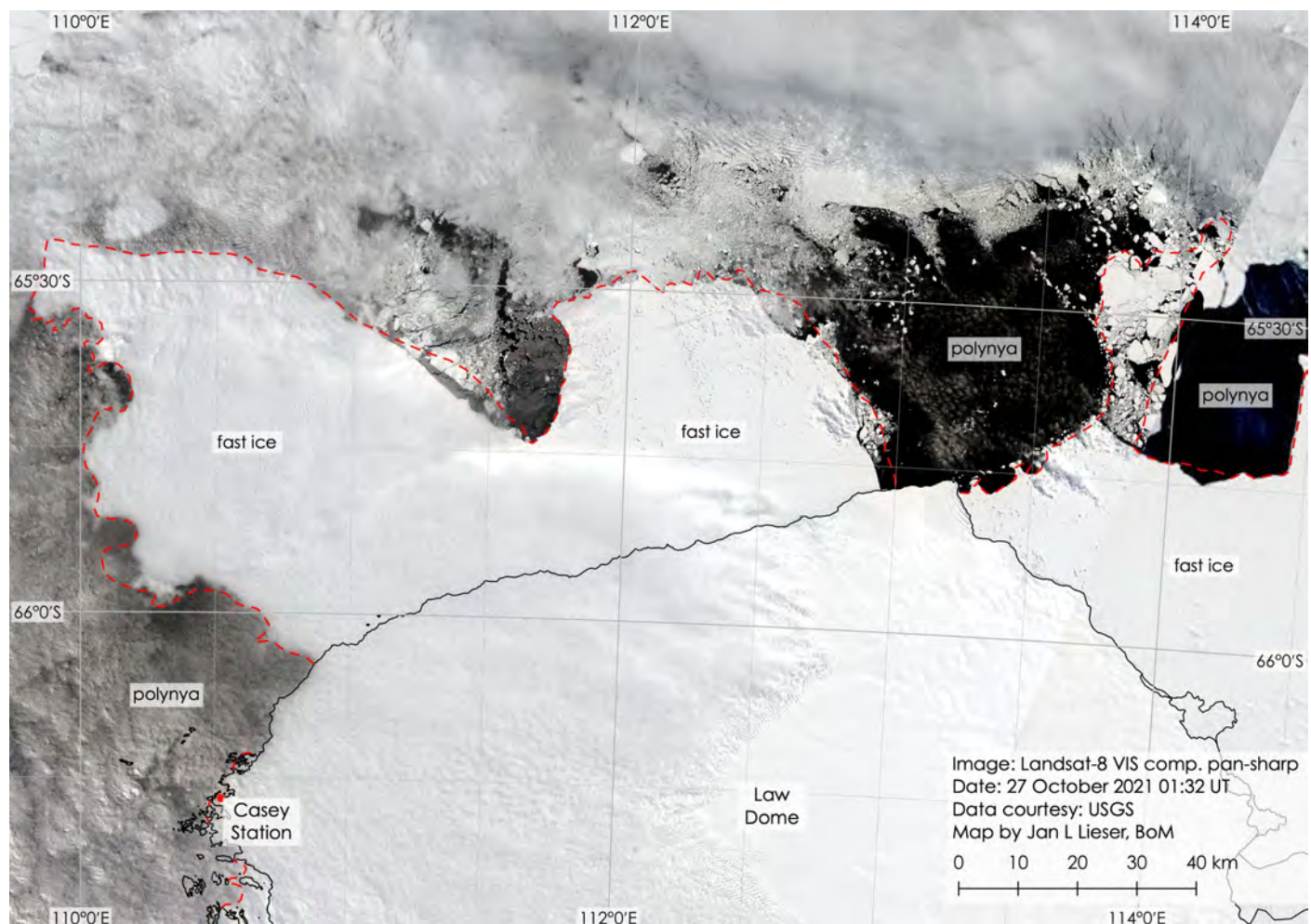


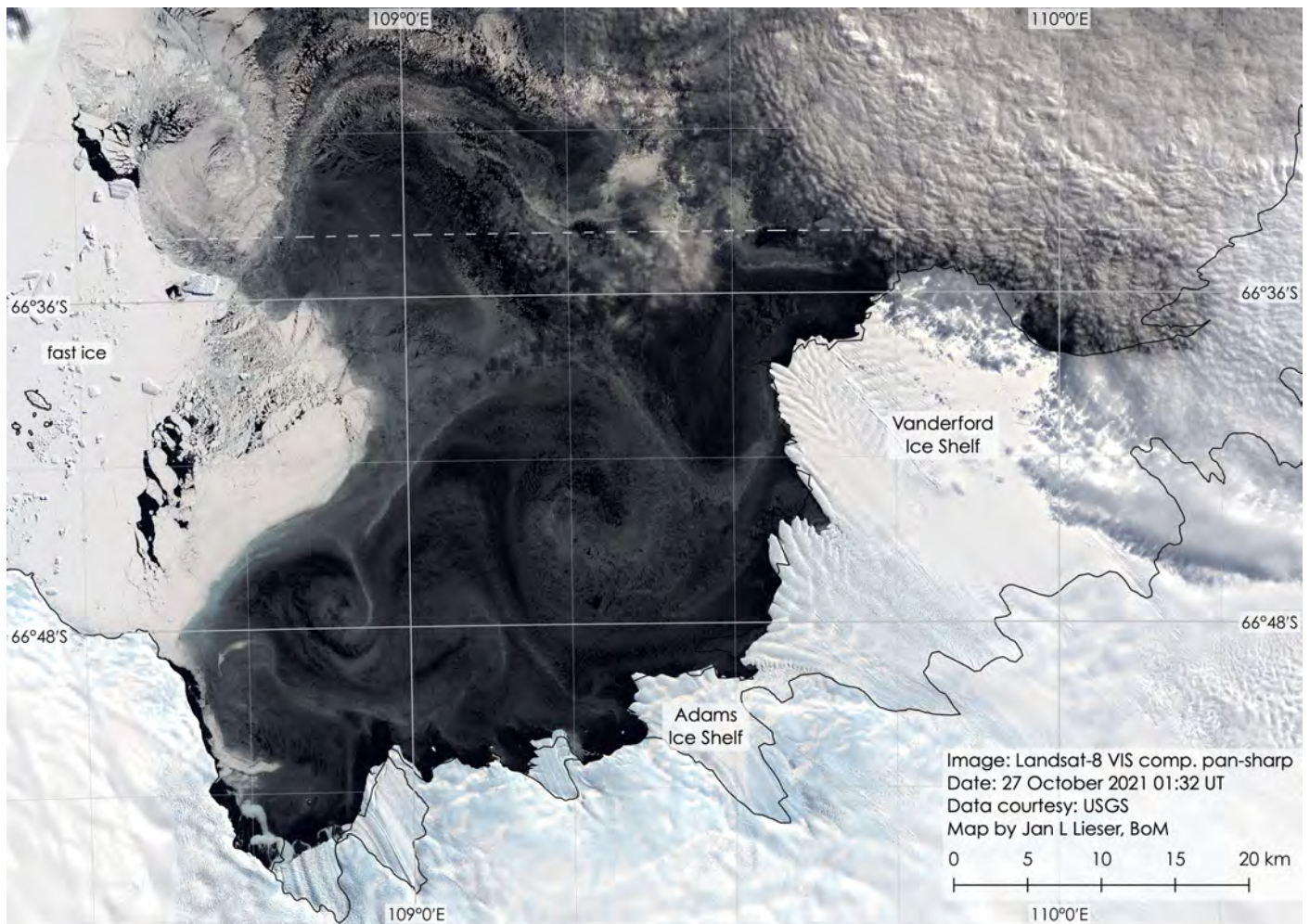
Figure 1: Landsat-8 pansharpened visible composite data acquired 27 October 2021 at 01:32 UT and provided by USGS; complemented by TERRA MODIS VIS data acquired 26 October 2021 and provided by NASA.

While the western flank of Law Dome and Casey Station are obscured by clouds, the northern and eastern parts of the dome are cloud-free, and the ice surface can be seen clearly.

West of 114°0'E, a fast-ice tongue shattered during the past two days and ex-fast ice floes are now drifting in the polynya east of the area because the western side of the area is essentially closed off by a row of grounded icebergs.

Figure 2 shows part of the south-western continuation of the same data that is shown in Figure 1.

Off Adams Ice Shelf, a polynya is present and new sea ice can be seen exposing the pattern of small-scale oceanic surface eddies, which are redistributing the sea ice locally.



Ice Bulletin: D'Urville Sea

Issued: Thursday 28th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show very high-resolution (10 m horizontal resolution) visible data off the coastline between Dumont D'Urville Station and the Mertz Ice Shelf. The fast-ice edge is marked by a red line (dashed yellow line for 16 October 2021). Dumont D'Urville Station is slightly obscured by clouds.

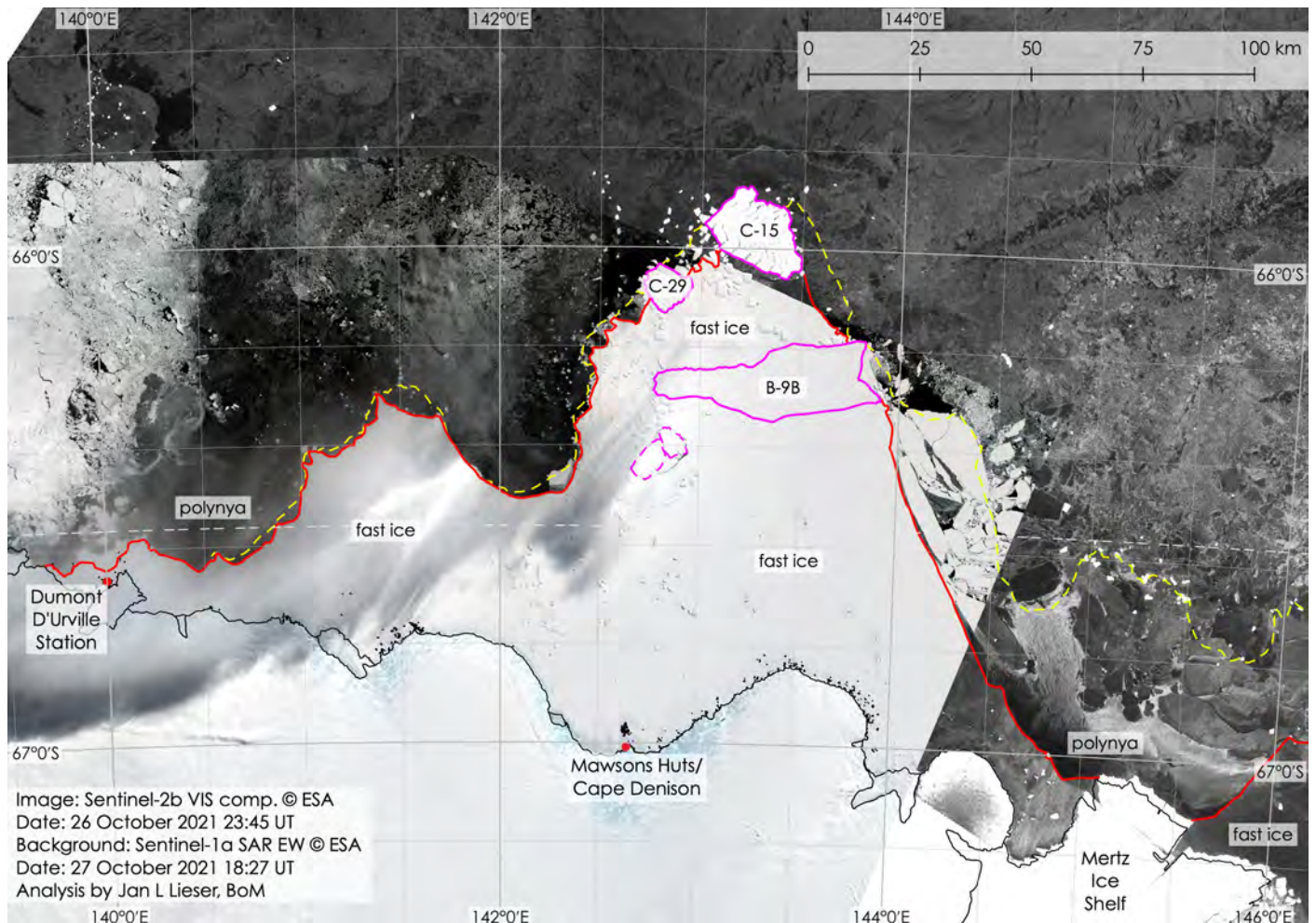


Figure 1: Sentinel-2b visible composite data acquired 26 October 2021 at 23:35 UT and provided by USGS; background: Sentinel-1a SAR EW data acquired 27 October 2021 at 18:27 UT and provided by PolarView.

Offshore, largely homogenous fast ice is still present. Three large tabular icebergs north of Cape Denison remain enclosed by the offshore fast ice.

Off the Mertz Ice Shelf, fast ice has broken up and the western half the shelf front is exposed to ocean again.

Figure 2 provides a closer view of the fast ice off Cape Denison. Two icebergs are marked by dashed pink lines. Those icebergs are not grounded but trapped when the fast ice grew in late-autumn and maintain a hole in the fast ice.

Currently, the open water northwest of Mawsons Huts remains roughly 60 km (32.5 nautical miles) away from the huts.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

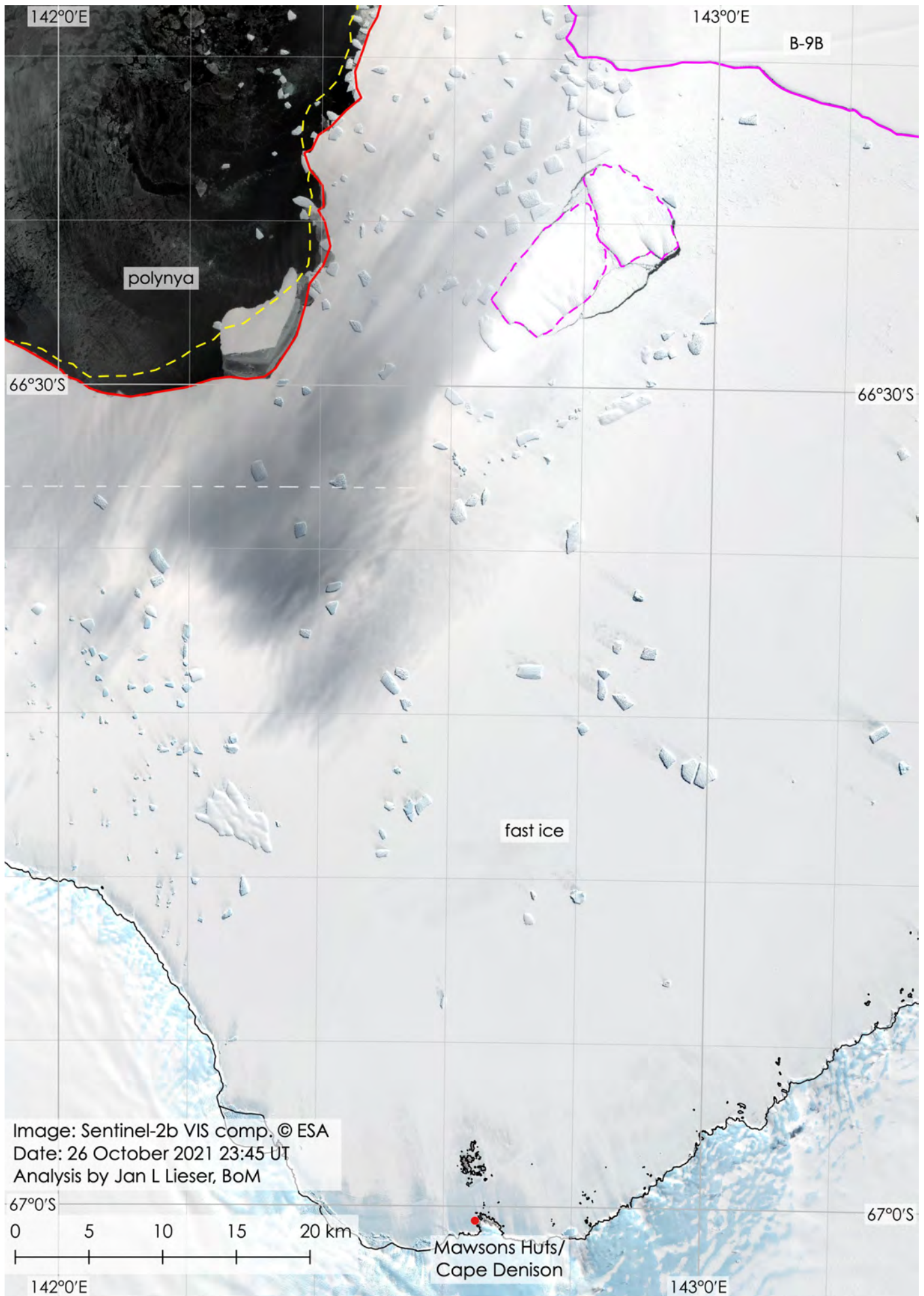


Figure 2: Sentinel-2b visible composite data acquired 26 October 2021 at 23:45 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Friday 29th October 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station, the fast-ice edge is marked by dashed red line for 26 October 2021.

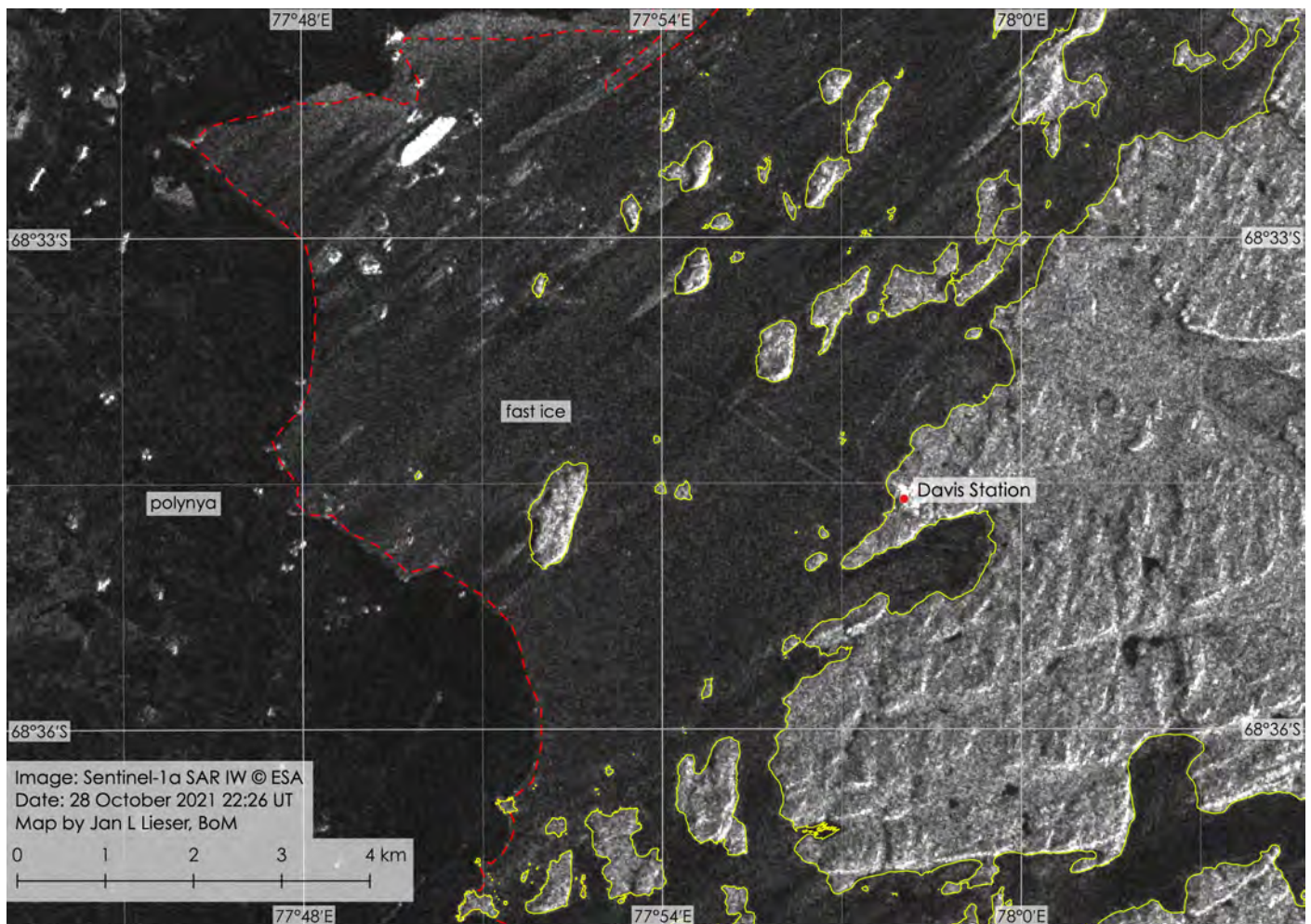


Figure 1: Sentinel-1a SAR IW data acquired 28 October 2021 at 22:26 UT and provided by PolarView.

During the past few days, the fast-ice edge has remained largely stable offshore. Off the fast ice, a small polynya is producing new sea ice and the pack ice has been pushed further westward.

Off Station, two ice roads can be seen heading northwest across the fast ice. At a right angle to those roads, another straight line (the Davis fast-ice skiway) can be seen near shore.

The northern sea-ice edge (not shown in the figure) continues to progress southward and is already south of the median sea-ice extent for November.

Ice Bulletin: Mawson Station

Issued: Friday 29th October 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data west of Mawson Station. A white diagonal line is a stitching artefact where two consecutive scenes are joined together.

The proposed route between Mawson Station and Taylor Ice Shelf (Colbeck Hut) is given by colour-coded segments.

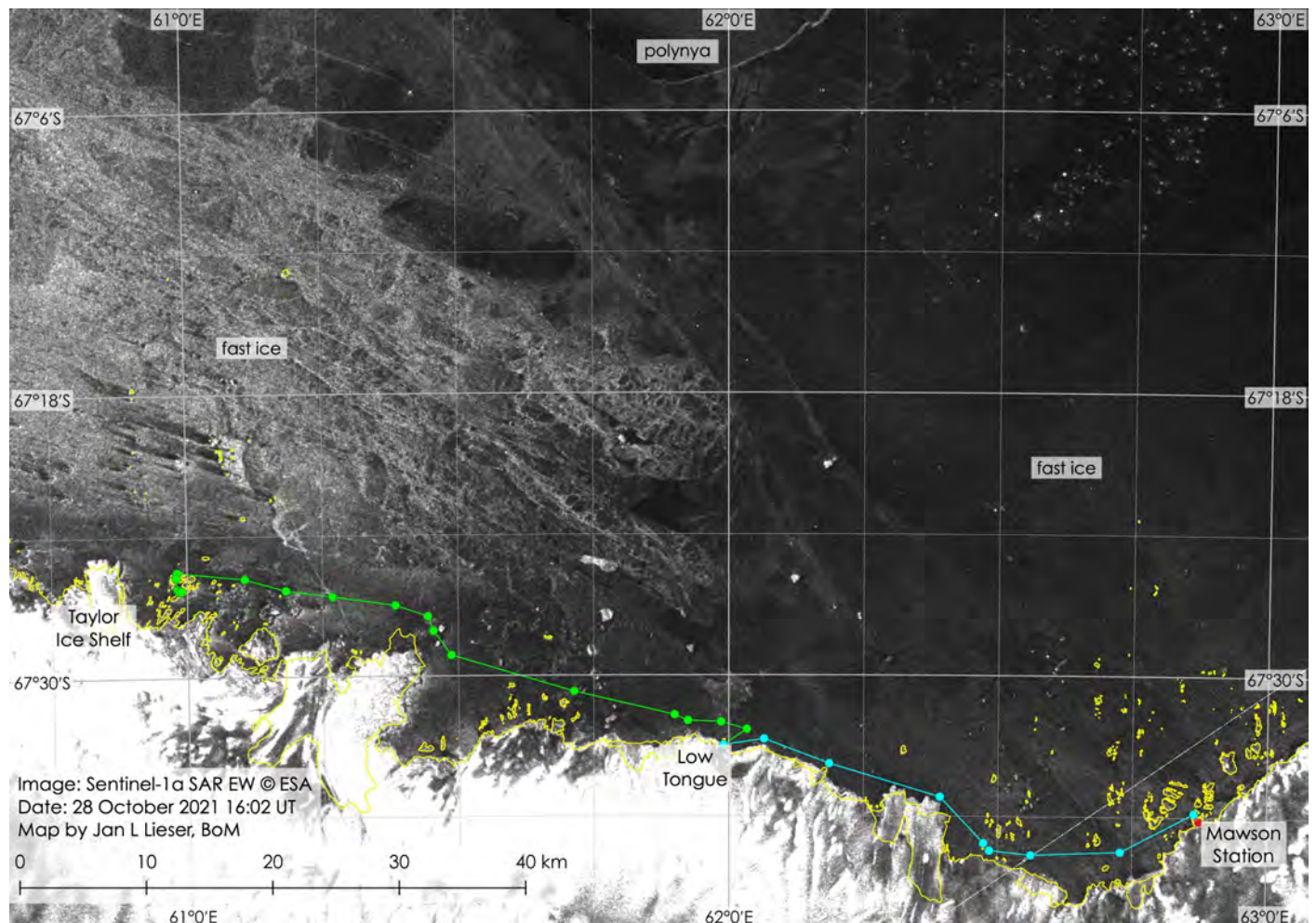


Figure 1: Sentinel-1a SAR EW data acquired 28 October 2021 at 16:02 UT and provided by PolarView.

The fast ice between Taylor Ice Shelf and Mawson Station has not changed significantly during the previous week. East of Low Tongue, largely homogeneous fast ice remains. At around 62°30'E, a few grounded icebergs are detected within the fast ice between the islands.

Between Low Tongue and Taylor Ice Shelf more and larger icebergs are enclosed by fast ice offshore and a few refrozen tide cracks are criss-crossing the fast ice.

The northern sea-ice edge (not shown in the figure) is roughly 25 nautical miles below (south of) the median sea-ice extent for November north of the station.

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Ice Bulletin: Casey Station

Issued: Wednesday 3rd November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Casey Station. The fast-ice edge is marked by a red line.

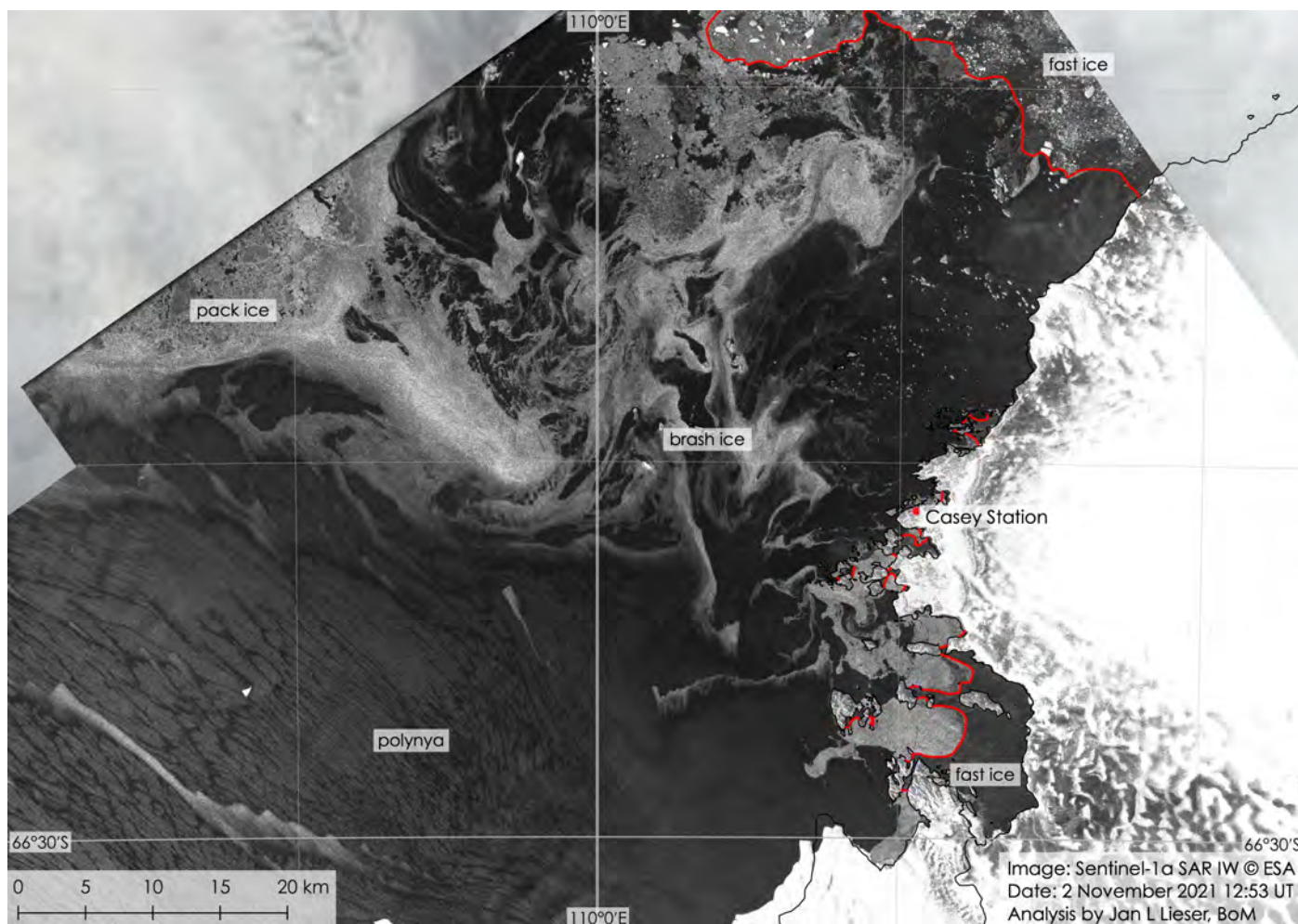


Figure 1: Sentinel-1a SAR IW data acquired 2 November 2021 at 12:53 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 2 November 2021 and provided by NASA.

In Vincennes Bay off Casey Station, a large polynya is present and new sea ice and brash ice is being produced in the polynya.

The northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for November north of the station.

Ice Bulletin: Mawson Station

Issued: Wednesday 3rd November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Mawson Station.

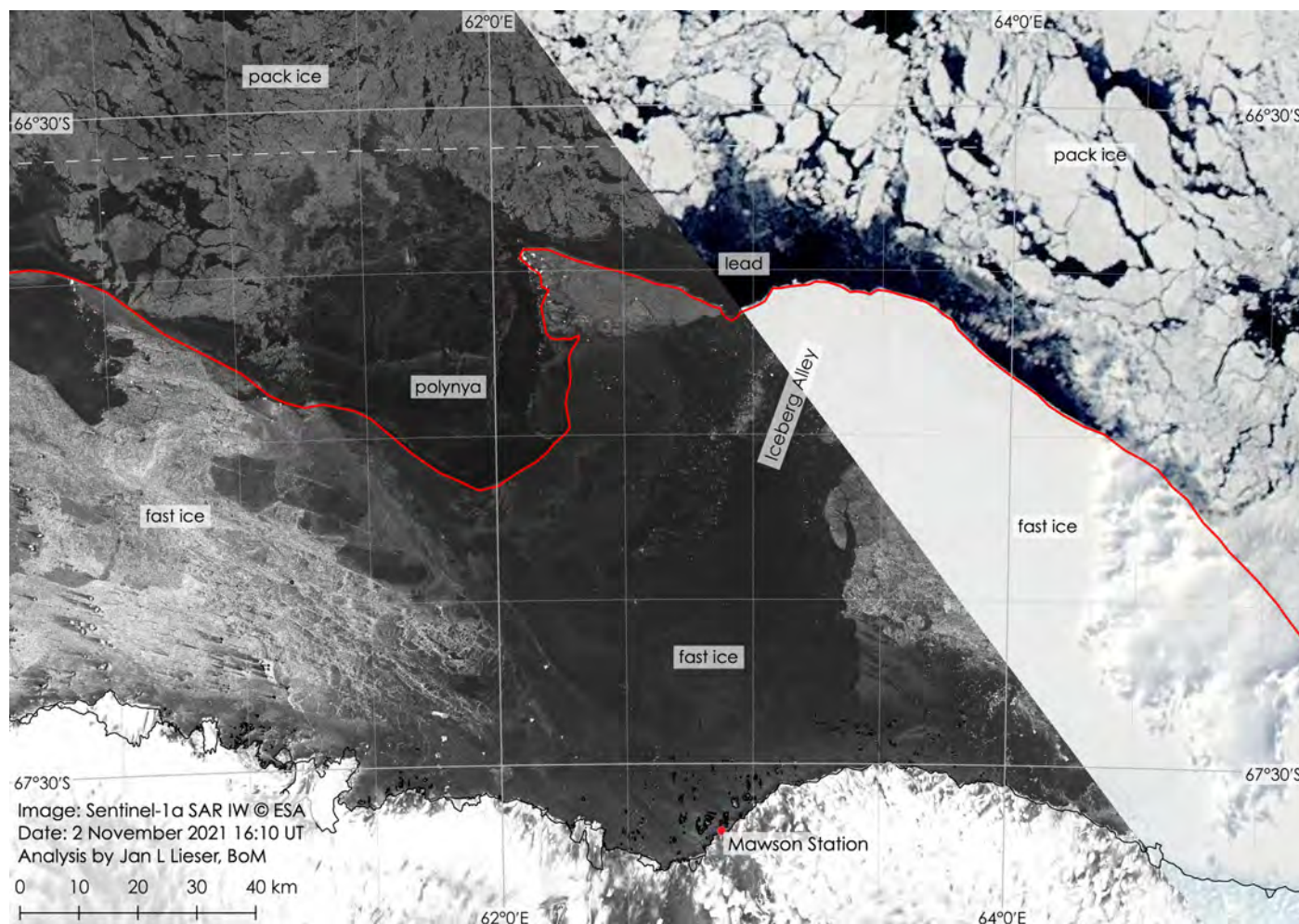


Figure 1: Sentinel-1a SAR IW data acquired 2 November 2021 at 16:10 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 2 November 2021 and provided by NASA.

North of Mawson Station, the fast-ice edge remains largely unchanged. A polynya northwest of the station is largely frozen over and roughly 38 nautical miles away.

The northern sea-ice edge (not shown in the figure) is meandering around 60°0'S and therefore roughly at or slightly below (south of) the median sea-ice extent for November north of the station.

Ice Bulletin: Mawson Station

Issued: Thursday 4th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (10 m horizontal) VIS data off Mawson Station.

The fast-ice surface appears largely homogeneous offshore but interspersed with icebergs north of 67°12'S.

Figure 2 shows a zoom around the station perimeter (upper panel) and individual buildings of Mawson Station (lower panel).

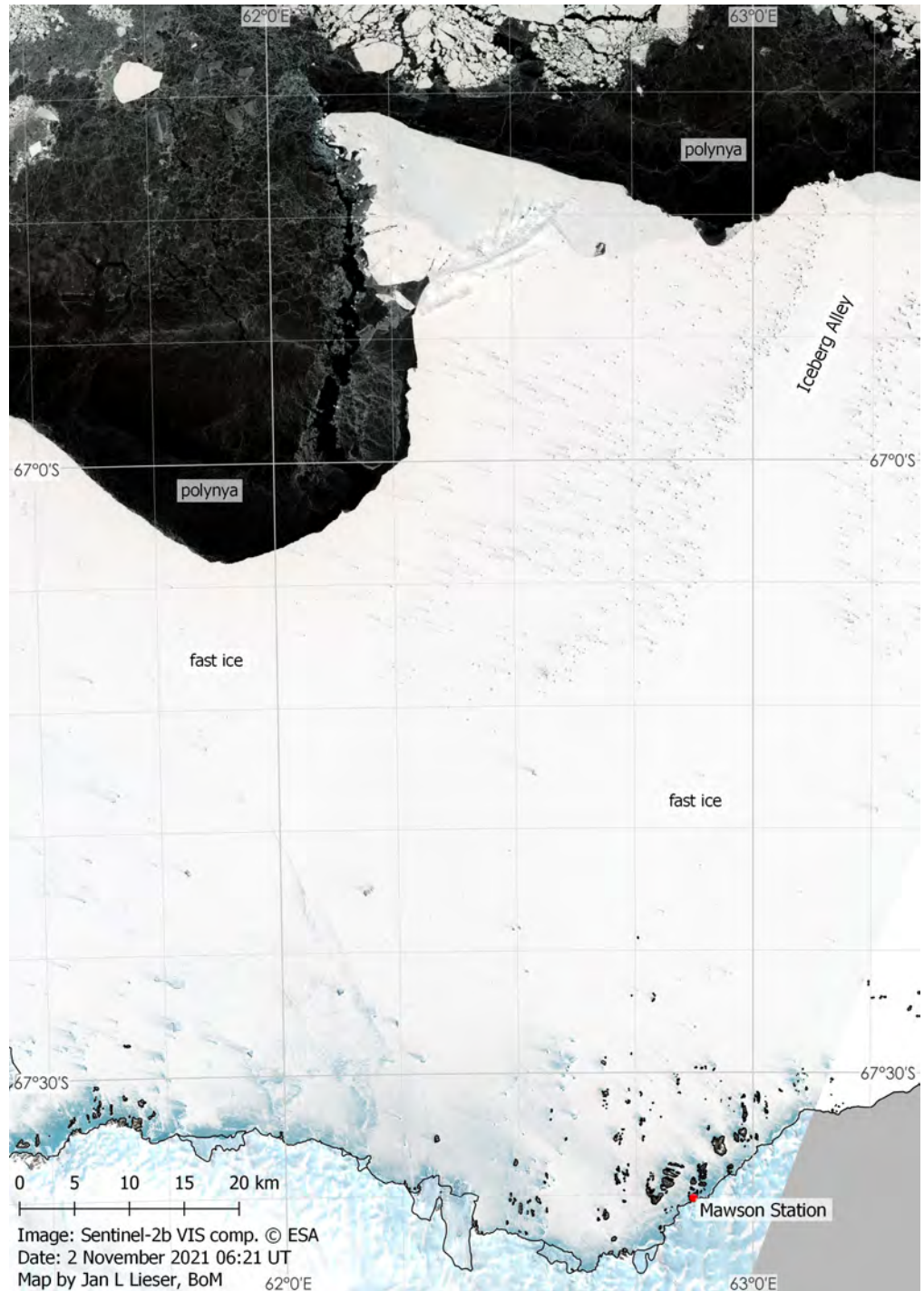


Figure 1: Sentinel-2b visible composite data acquired 2 November 2021 at 06:21 UT and provided by ESA.



Figure 2: Sentinel-2b visible composite data acquired 2 November 2021 at 06:21 UT and provided by ESA.

Ice Bulletin: Brunt Ice Shelf

Issued: Thursday 4th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the Brunt Ice Shelf in the south-eastern Weddell Sea. Fast-ice areas are marked with a red line.

Off the southern edge of the ice shelf, fast ice has grown between the shelf and a polynya. This has typically a stabilising effect on the ice-shelf front.

During September, a new rift developed in the northern part of the Brunt Ice Shelf between Chasm-1 (the major north-south oriented chasm across the shelf) and one of the larger cracks southwest of the McDonald Ice Rumples. This crack has progressed roughly 1 km south-eastward during October. The inset shows a close-up view highlighting now less than 1 km between the ends of both features.

When they connect and a new iceberg is formed west of Halley VI Station, it is estimated the new iceberg will be roughly 1700 km², which compares to the area of Greater Hobart, Tasmania.

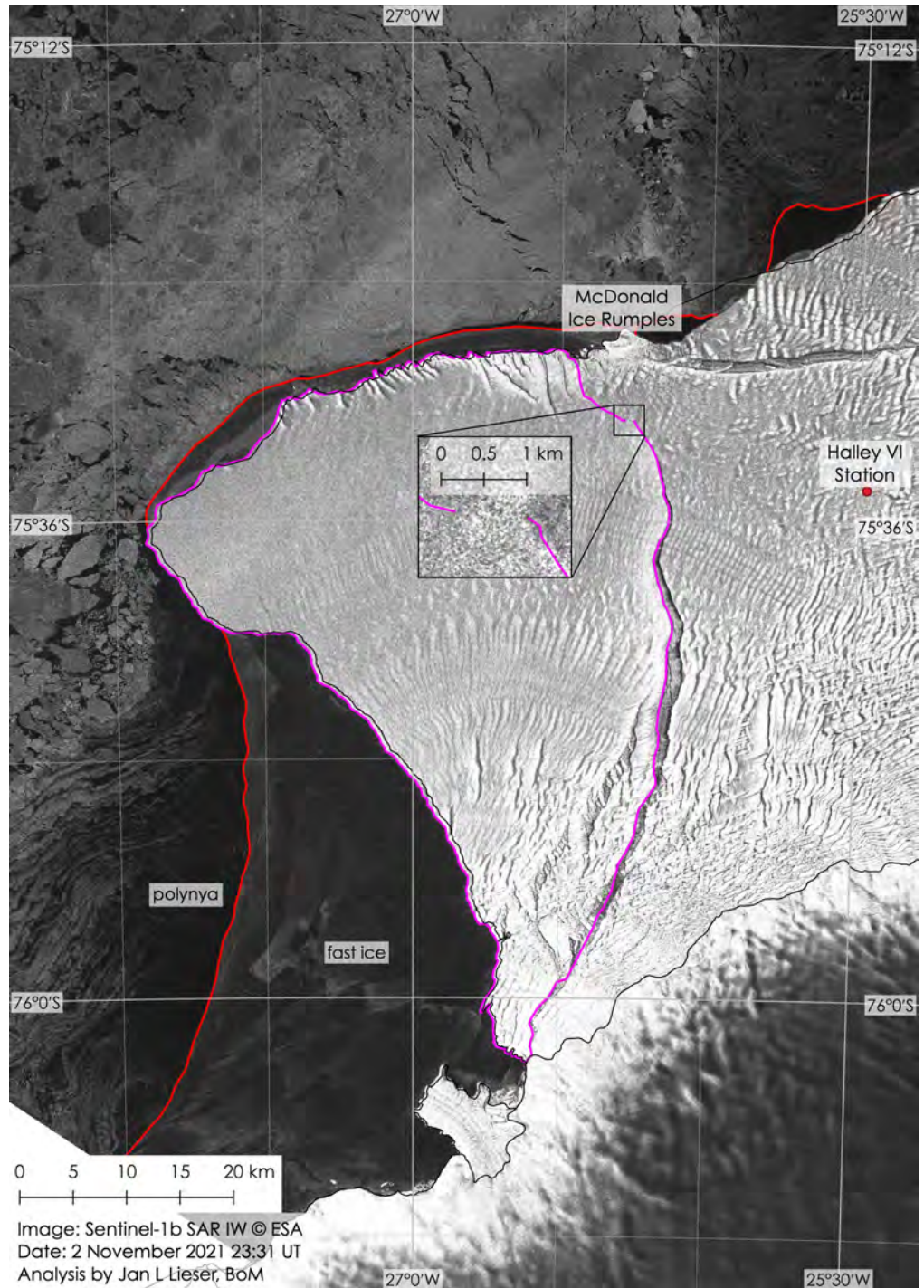


Figure 1: Sentinel-1b SAR IW data acquired 2 November 2021 at 23:31 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Friday 5th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station, the fast-ice edge on 26 October 2021 is marked by dashed red line.

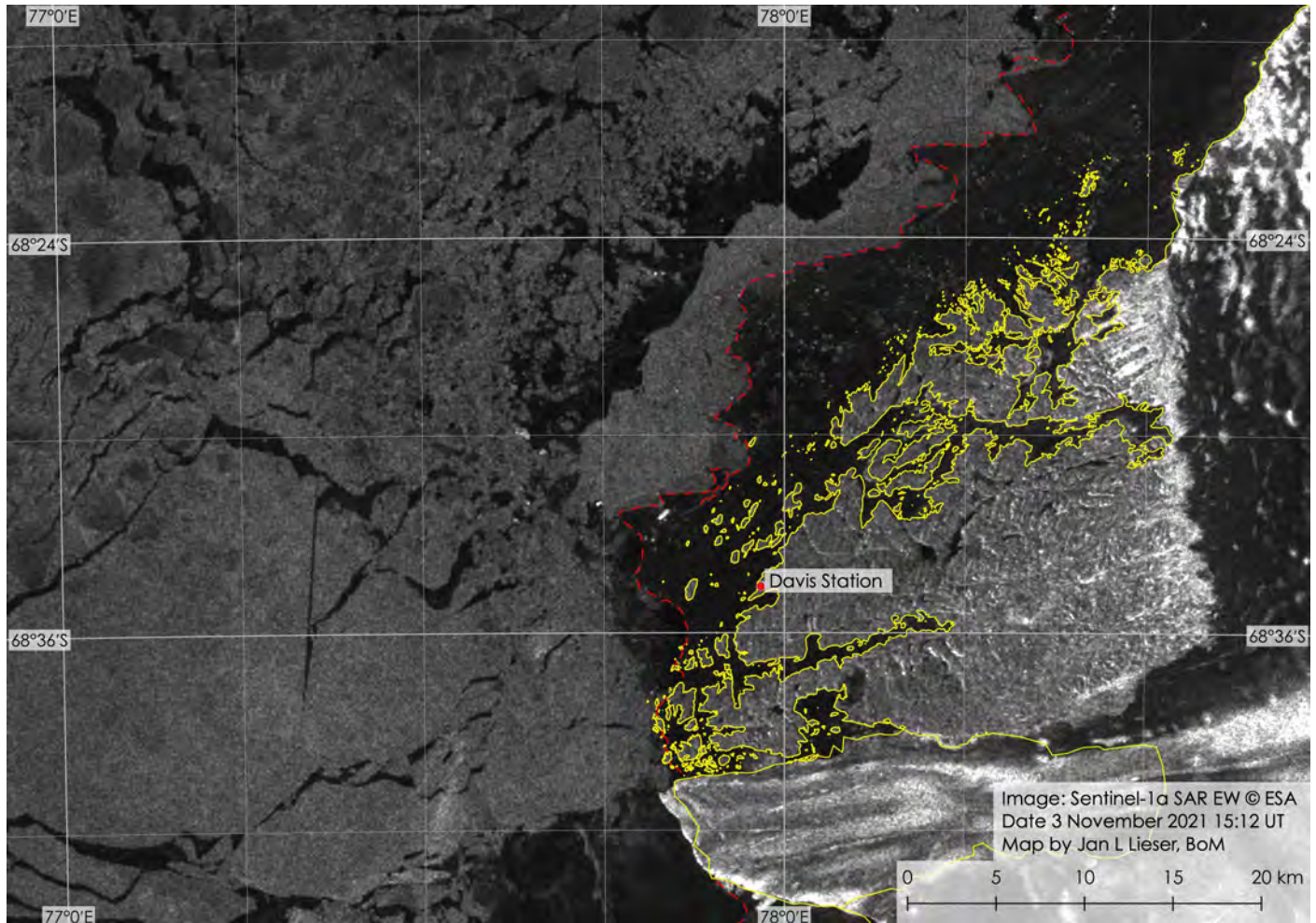


Figure 1: Sentinel-1a SAR EW data acquired 3 November 2021 at 15:12 UT and provided by PolarView.

During the past week, pack ice has closed in on the fast-ice edge and only minimal open water is present off the fast-ice edge.

South of the Vestfold Hills, Prydz Bay (not shown in the figure) is completely covered by fast ice. The edge this fast ice runs in an almost straight line from the northern end of the Rauer Group following largely along 68°45'S and connects to the Amery Ice Shelf at roughly 73°30'E (the northern tip of the so-called 'Loose Tooth').

The northern sea-ice edge (not shown in the figure) continues to be highly mobile but remains largely south of the median sea-ice extent for November.

Ice Bulletin: Bunger Hills

Issued: Saturday 6th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (15 m horizontal) visible data of the southwestern Bunger Hills.

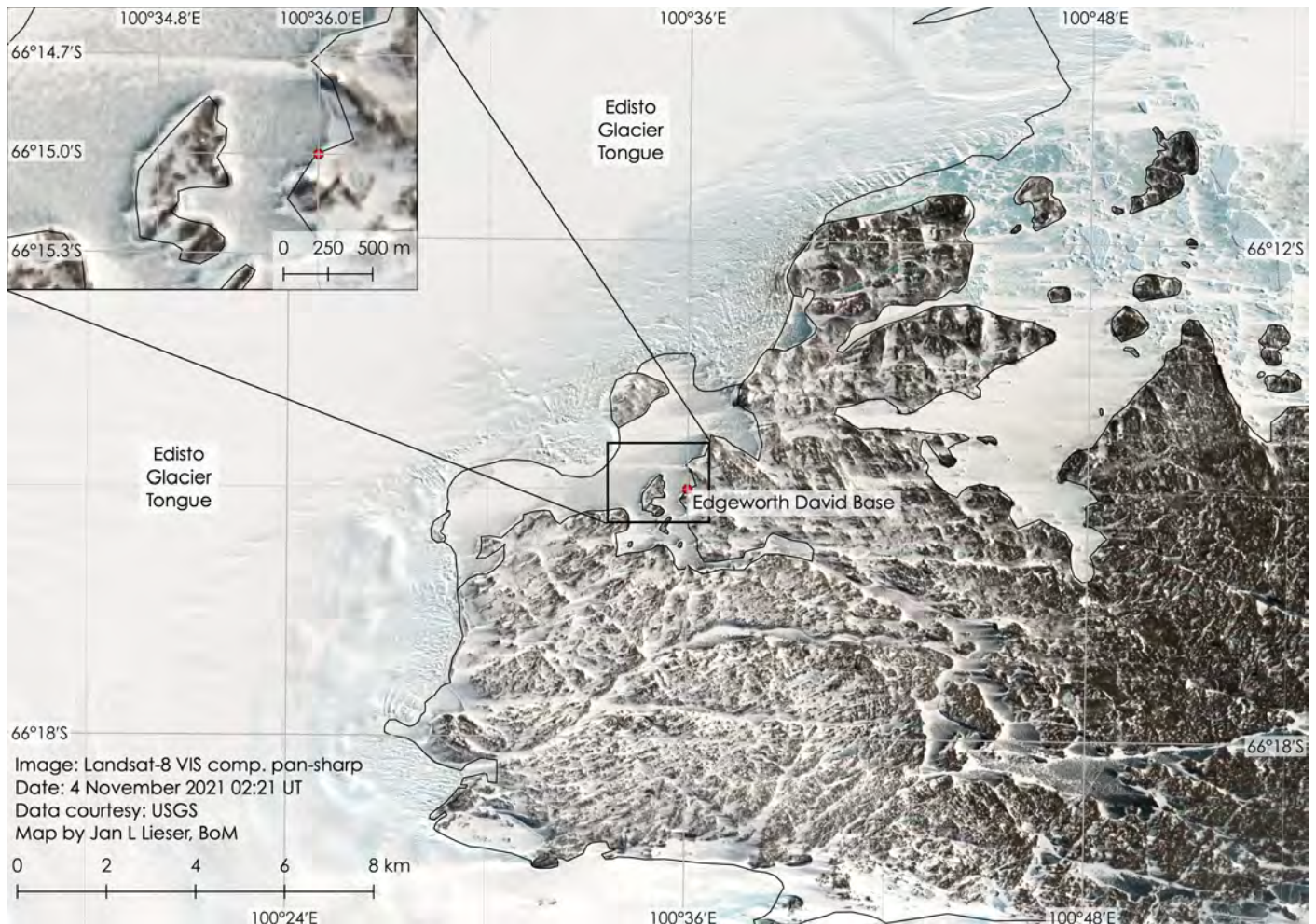


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 4 November 2021 at 02:21 UT and provided by USGS.

The Bunger Hills are partly snow covered, and all water bodies are covered by ice.

Off Edgeworth David Base, the surface of Transkriptii Gulf appears homogeneous and wind-blown scouring is evident in the lee of high orographic features. The inset provides a close-up view off the base.

Ice Bulletin: D'Urville Sea

Issued: Monday 8th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show very high-resolution visible data off the coastline between Dumont D'Urville Station and Mawsons Huts/Commonwealth Bay. The fast-ice edge on 27 October 2021 is marked by a dashed red line.

East of Dumont D'Urville Station, fast ice has been breaking up during the last week and coastline is starting to be exposed to the ocean again.

Off station, the break-up of fast ice allowed for the mobilisation of large icebergs that calved off the ice shelf immediately east of the station (see Figures 2 and 3).

Figure 4 provides a closer view of the fast ice east of Dumont D'Urville Station towards Cape Denison/Mawsons Huts.

Two icebergs southeast of iceberg B-9B remain not grounded but trapped by fast ice that grew around those bergs in late-autumn and maintain a hole in the fast ice.

Currently, the open water of the polynya northwest of Mawsons Huts is roughly 39 km (21 nautical miles) away from the huts.

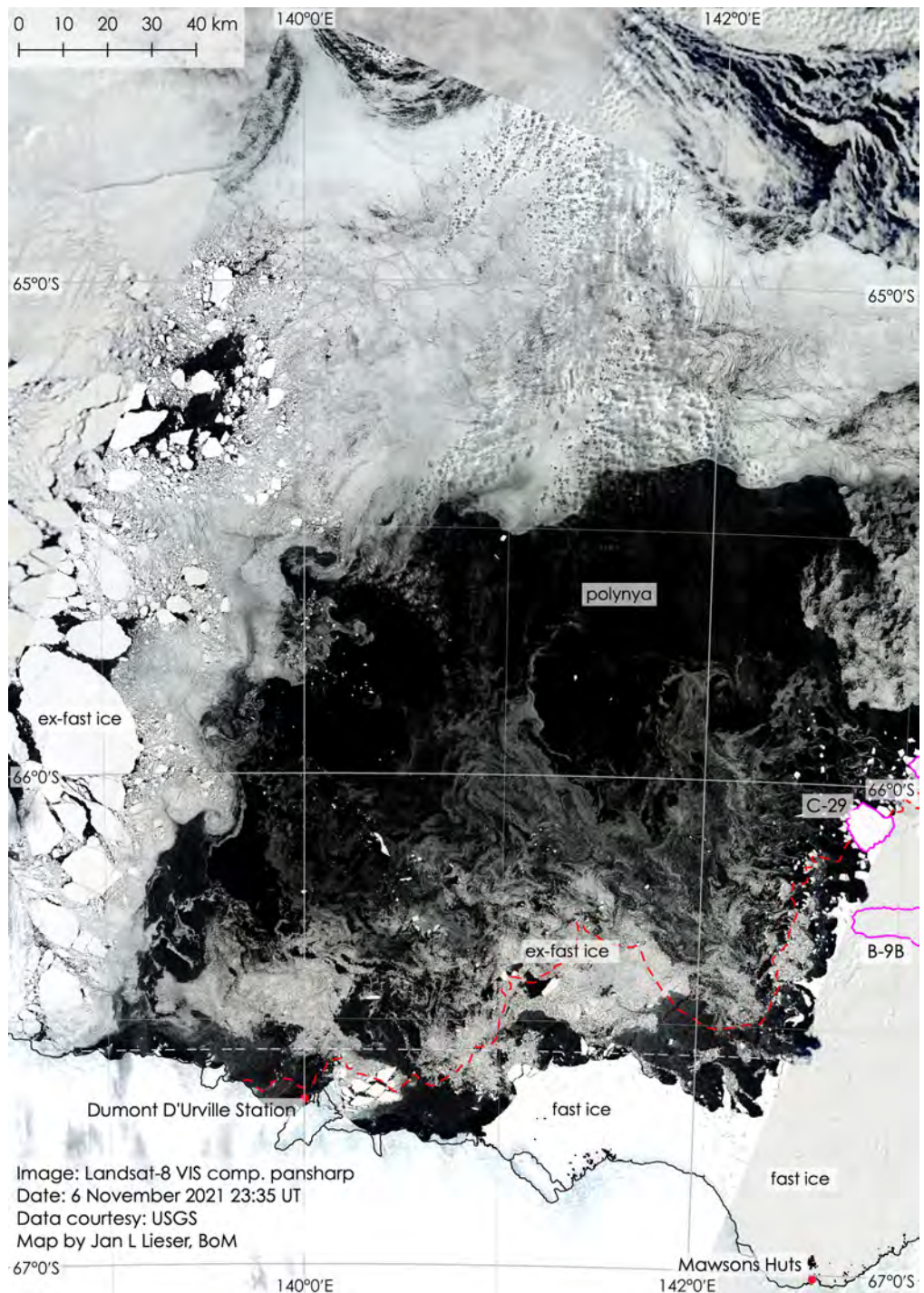


Figure 1: Landsat-8 visible composite data pan-sharpened acquired 6 November 2021 at 23:35 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 6 November 2021 and provided by NASA.

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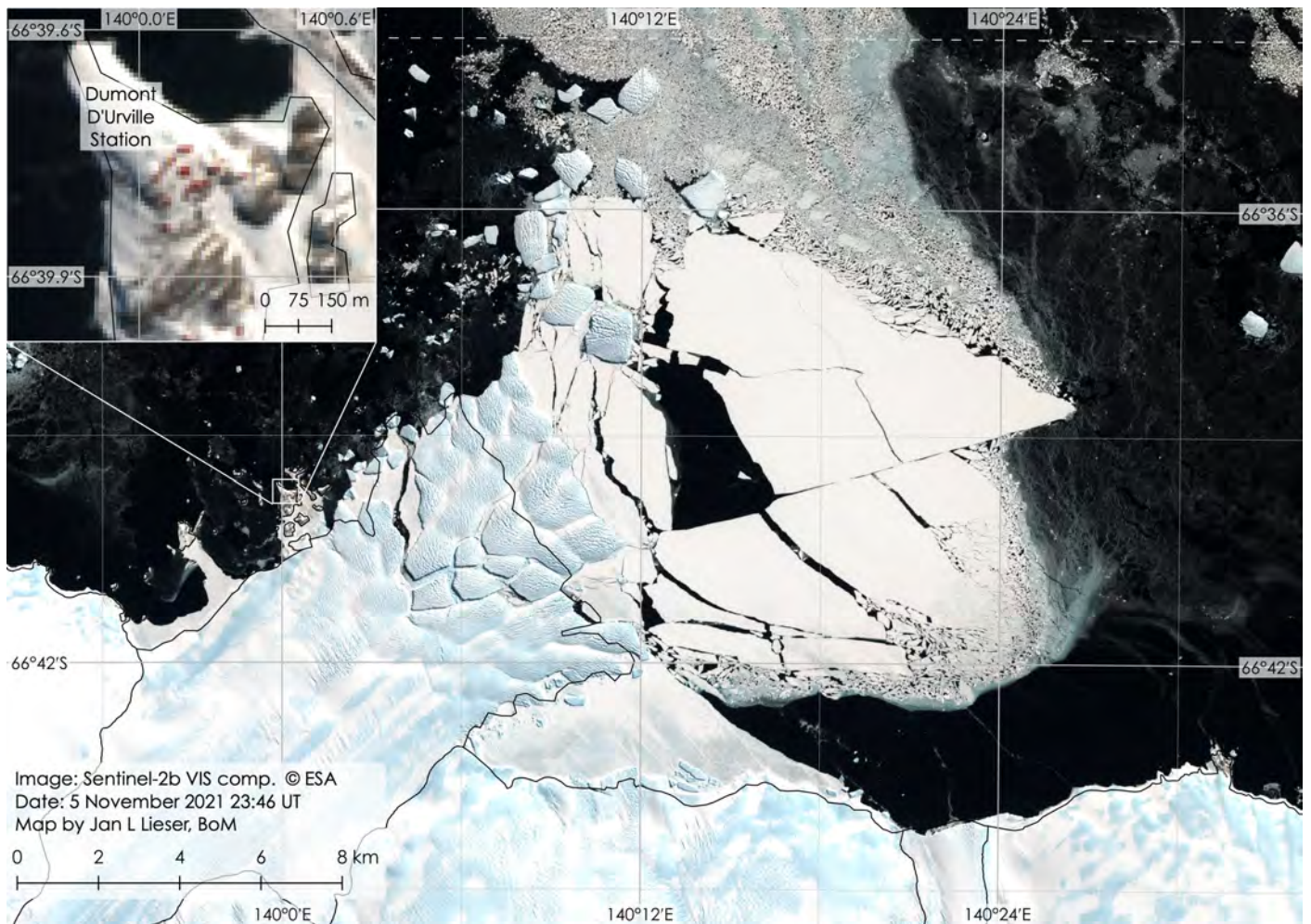


Figure 2: Sentinel-2b visible composite data acquired 5 November 2021 at 23:46 UT and provided by ESA.

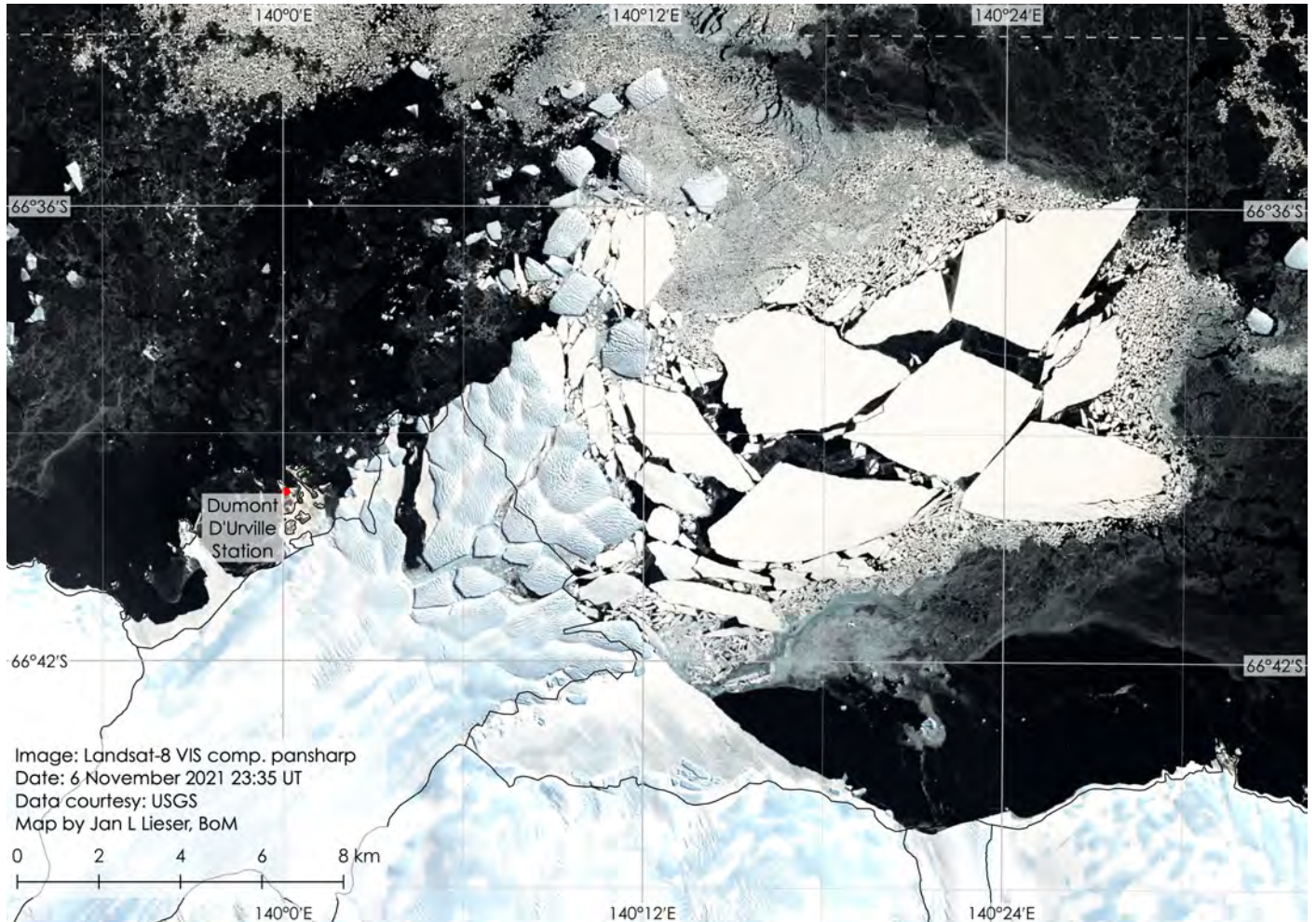


Figure 3: Landsat-8 visible composite data pan-sharpened acquired 6 November 2021 at 23:35 UT and provided by USGS.

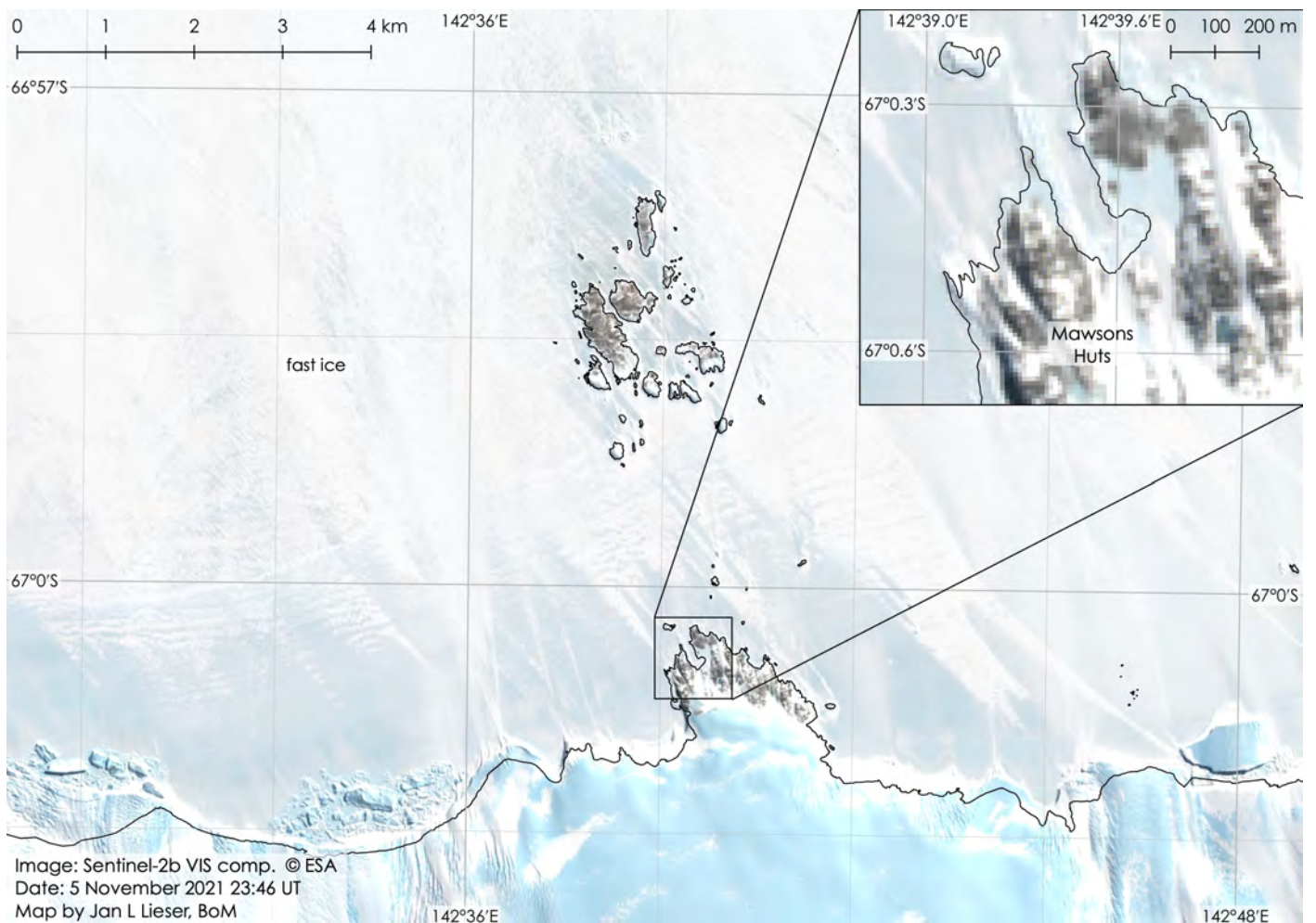
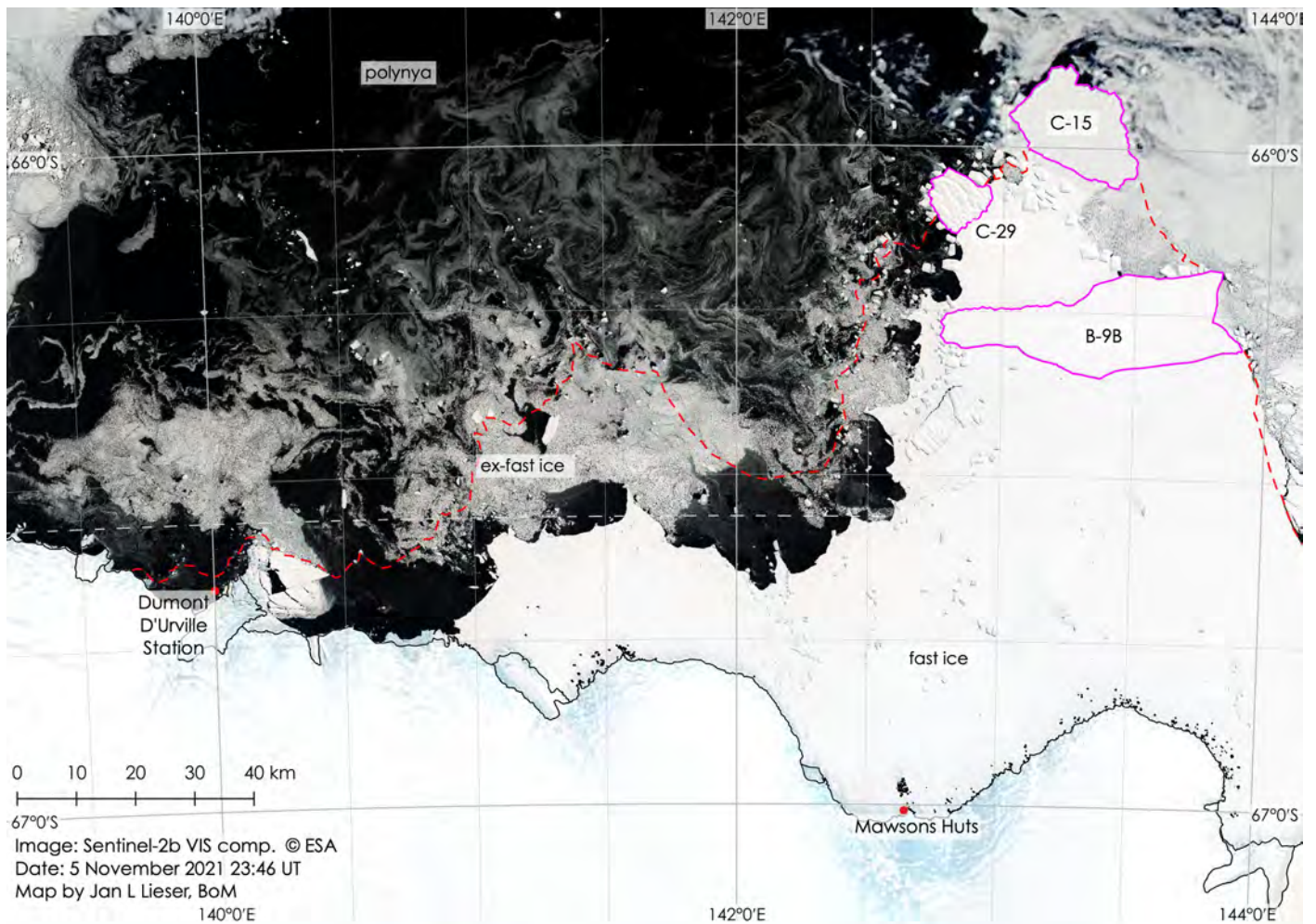


Figure 4: Sentinel-2b visible composite data acquired 5 November 2021 at 23:46 UT and provided by ESA.

Ice Bulletin: Davis Station

Issued: Tuesday 9th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very high-resolution (10 m horizontal) visible data off Davis Station.

North of the station, the Davis sea ice ski landing area can be seen and two parked aircraft. Individual buildings of the station can also be identified.

Figure 2 shows a larger frame the same high-resolution data.

Pack ice remains close to the fast-ice edge and only little open water is present off Davis Station.

South of the Vestfold Hills, Prydz Bay remains completely covered by fast ice. Off the eastern part of this vast body of fast ice, a large sheet has broken up on 6 November 2021.

The northern sea-ice edge (not shown in the figure) continues to be highly mobile but remains largely south of the median sea-ice extent for November.

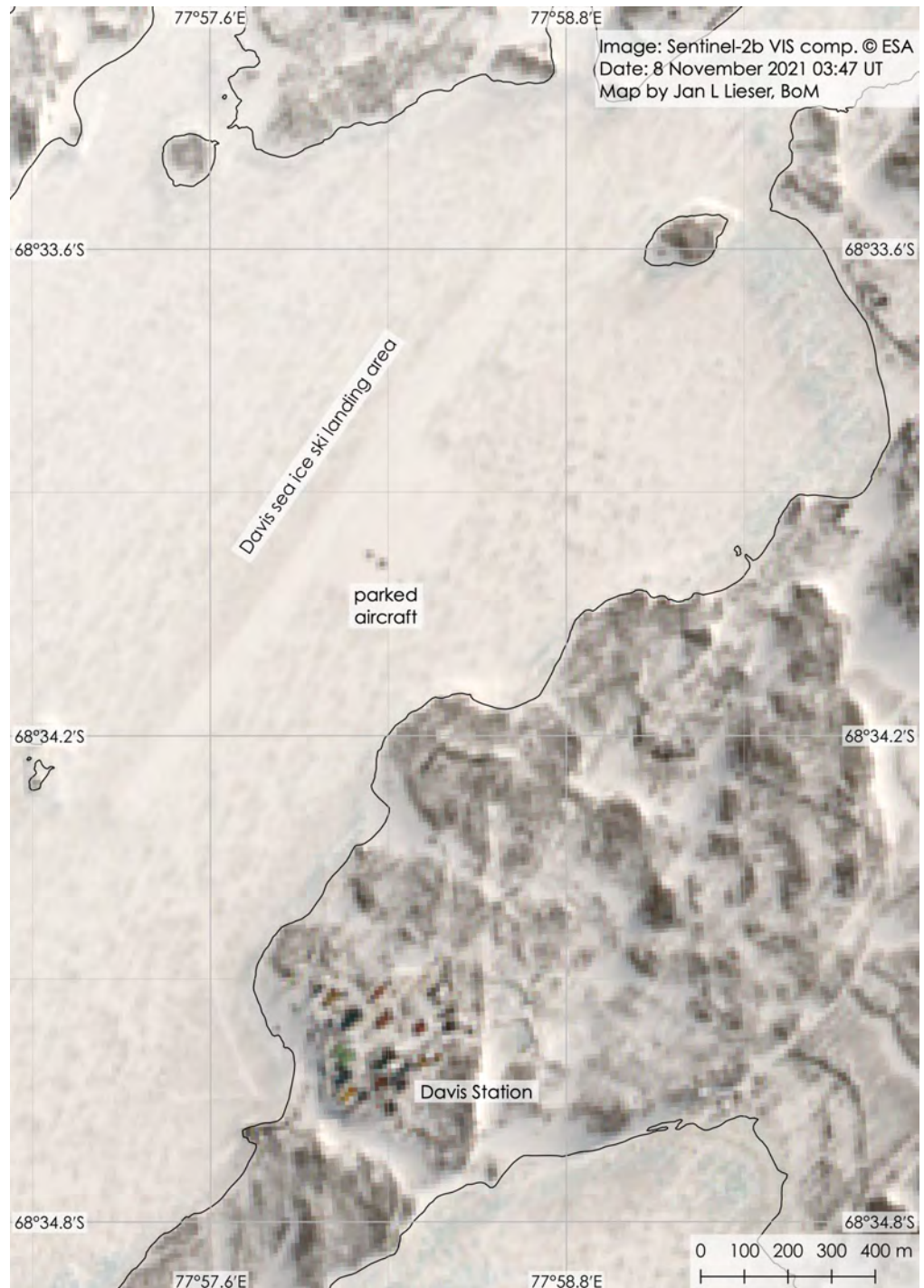


Figure 1: Sentinel-2b visible data composite acquired 8 November 2021 at 03:47 UT and provided by USGS.



Figure 2: Sentinel-2b visible data composite acquired 8 November 2021 at 03:47 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 8 November 2021 and provided by NASA.

Ice Bulletin: Antarctica

Issued: Wednesday 10th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

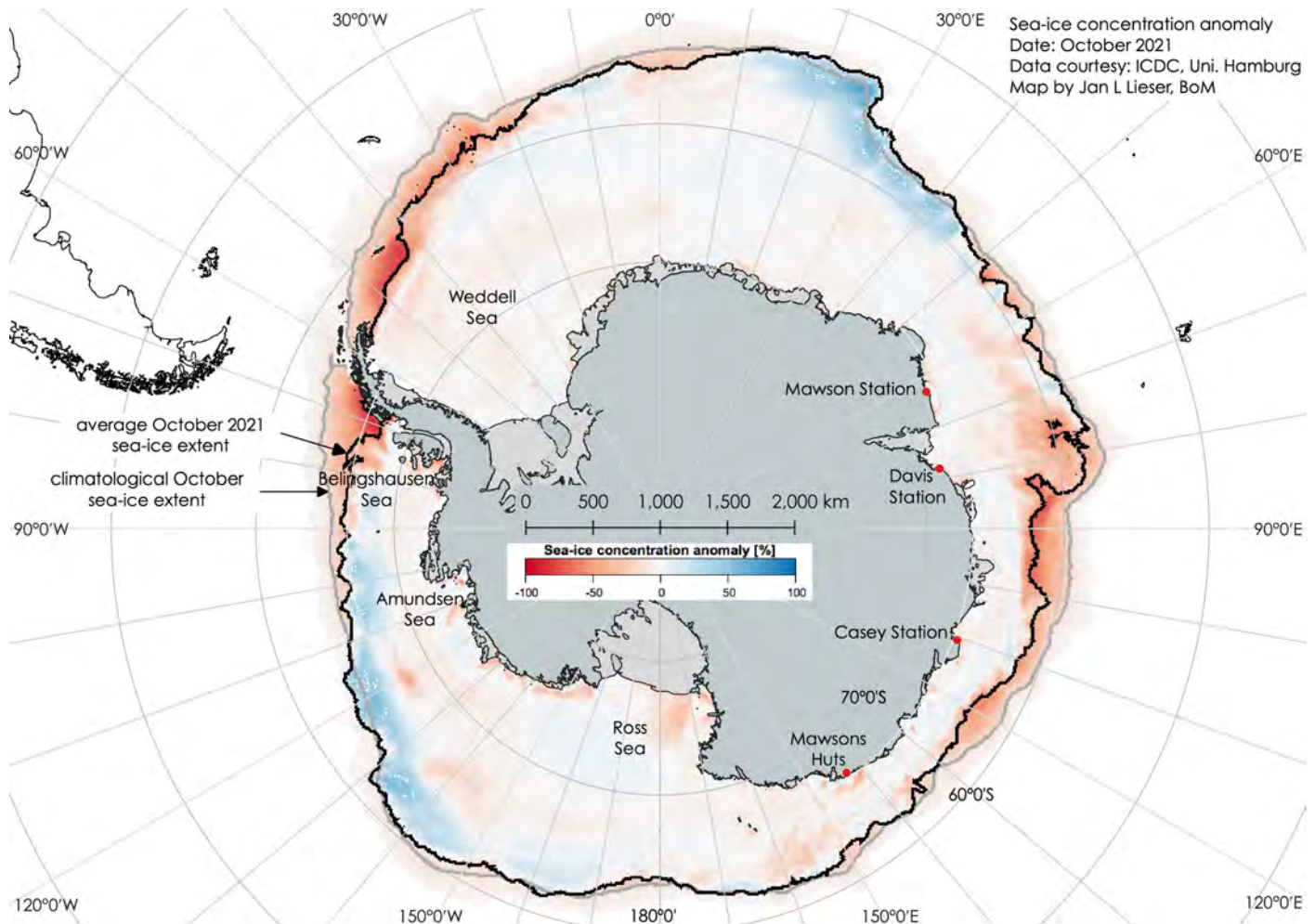


Figure 1: Sea-ice concentration anomaly for October 2021 provided by ICDC (Universität Hamburg).

In October 2021, pan-Antarctic sea-ice extent continued its downward trend that started mid-September and fell to third lowest daily levels by the end of October. Regionally sea-ice extent and associated concentration anomalies varied slightly.

A bi-modal pattern manifested around Antarctica with positive anomalies eastward of 10°E towards 50°E and in the eastern Ross Sea and the Amundsen Sea. Large negative anomalies are present in East Antarctica and around the Antarctic Peninsula (between 100°W and 20°E).

Some negative sea-ice concentration anomalies are also found near-shore for example, off Mawsons Huts, in the western Ross Sea and along the coast between the Ross Sea and the Amundsen Sea.

Ice Bulletin: Mawson Station

Issued: Wednesday 10th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The fast-ice edge is marked by a red line (dashed red line for 2 November 2021).

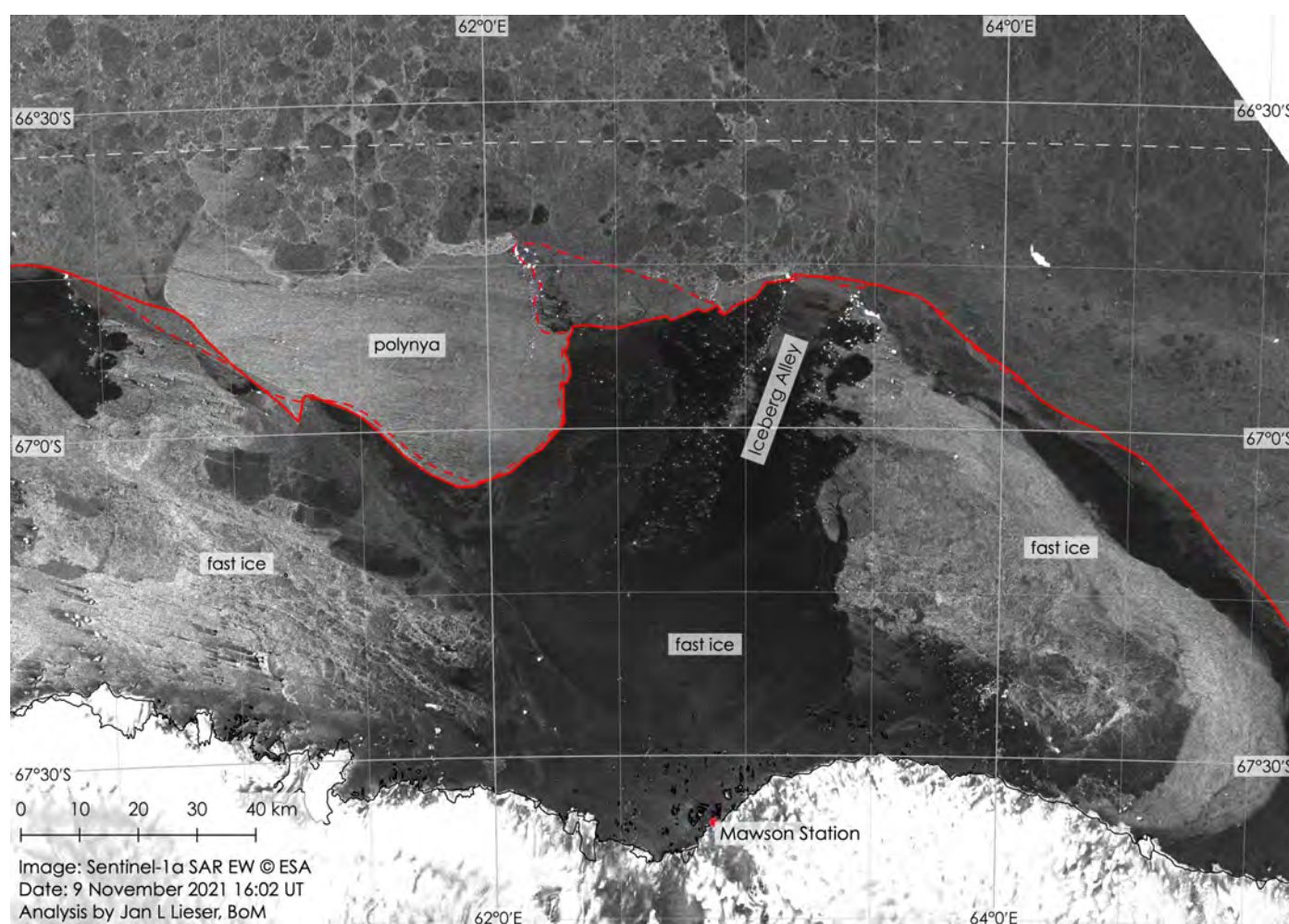


Figure 1: Sentinel-1a SAR EW data acquired 9 November 2021 at 16:02 UT and provided by PolarView.

North of Mawson Station, the fast-ice edge progressed southward on the north-eastern edge of the polynya however, open water remains roughly 38 nautical miles away. The northern part of Iceberg Alley is also starting to show some signs of fast-ice deterioration.

The northern sea-ice edge (not shown in the figure) has consolidated around 50 nautical miles south of the median sea-ice extent for November between 60°0'E and 68°0'E.

Ice Bulletin: Casey Station

Issued: Wednesday 10th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Casey Station. The fast-ice edge on 2 November 2021 is marked by a dashed red line.

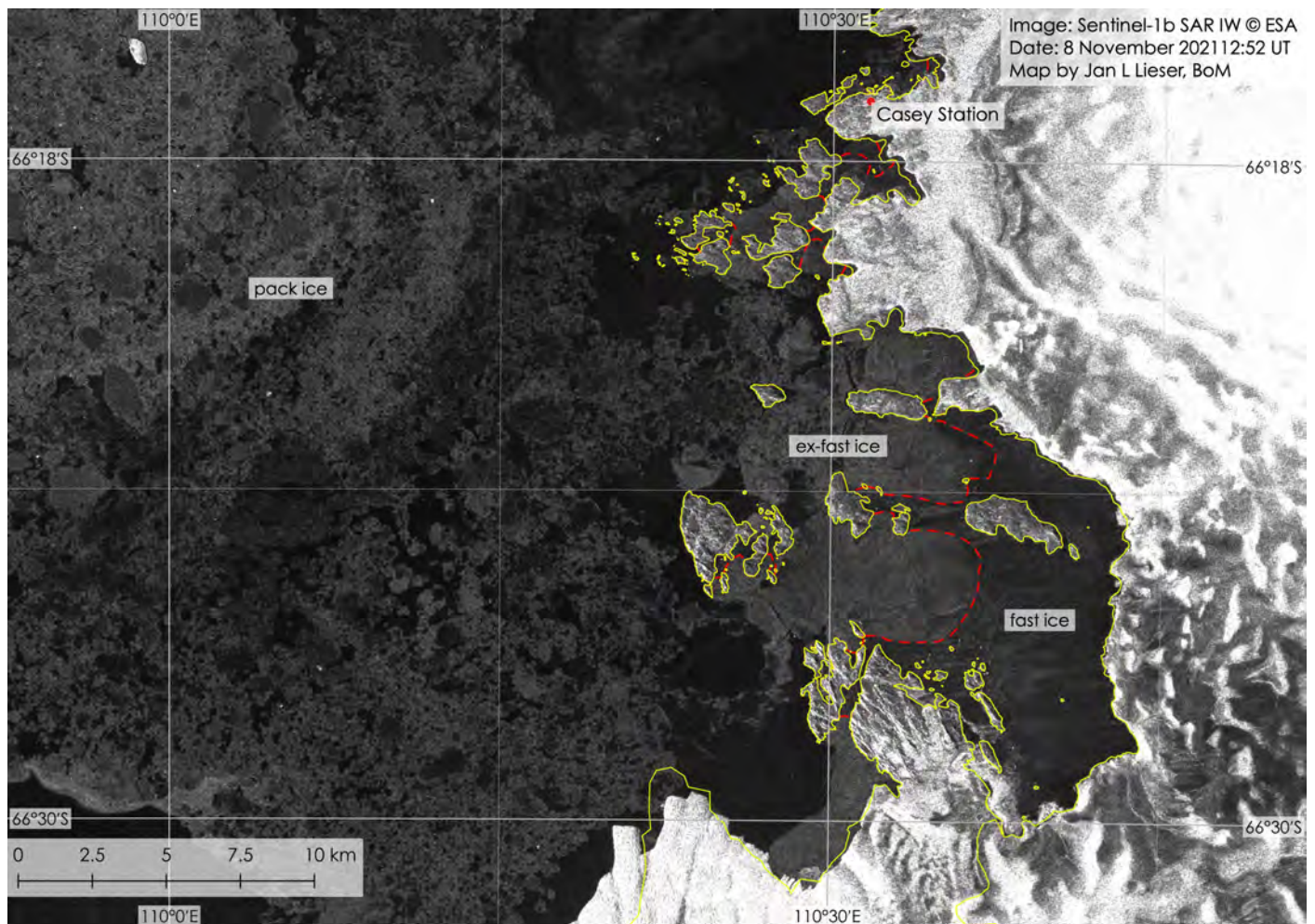


Figure 1: Sentinel-1b SAR IW data acquired 8 November 2021 at 12:52 UT and provided by PolarView.

The general fast-ice conditions south of Casey Station have not changed significantly during the past week. The current fast-ice edge is largely the same as on 2 November 2021 and off its edge, the ice cover continues to deteriorate.

In Vincennes Bay off Casey Station, a large polynya is covered by new sea ice and brash ice.

West of 110°15'E, the northern sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for November north of the station whereas east of that longitude, the sea-ice edge is roughly 40 nautical miles north of the median sea-ice extent.

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Ice Bulletin: Casey Station

Issued: Friday 12th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Casey Station. The fast-ice edge is marked by a red line.

The general fast-ice conditions around Casey Station have not changed significantly during the past week.

In Vincennes Bay off Casey Station, a large polynya is covered by new sea ice and brash ice.

North of the fast ice off Law Dome, predominantly first-year sea ice is present with some multi-year sea ice and ex-fast ice inclusion.

The northern sea-ice edge continues to meander around the median sea-ice extent for November (the light blue line in Figure 1) north of the station whereas east of that longitude, the sea-ice edge is roughly 40 nautical miles north of the median sea-ice extent (obscured by clouds).

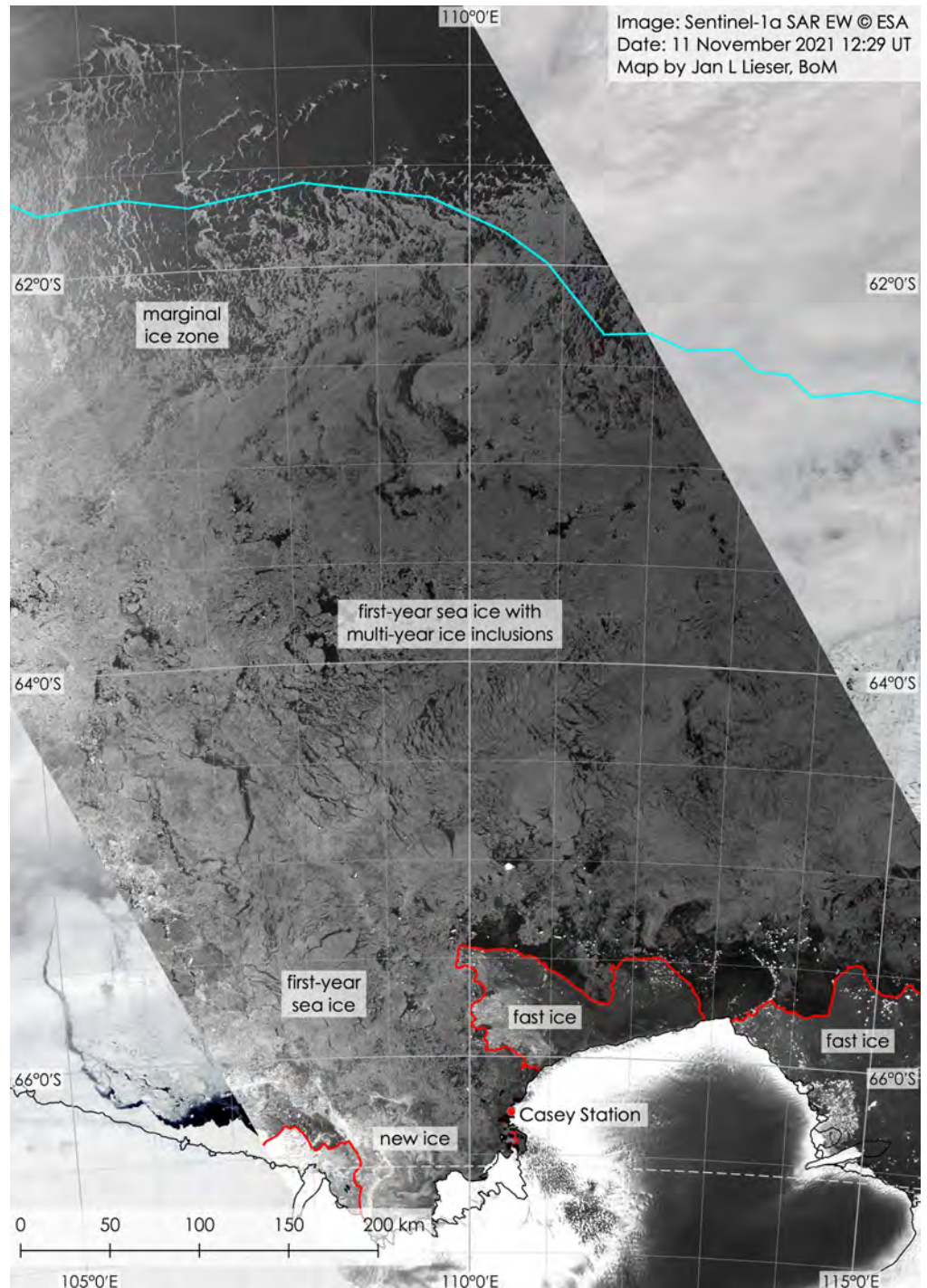


Figure 1: Sentinel-1a SAR EW data acquired 11 November 2021 at 12:29 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Saturday 13th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show high-resolution (15 m horizontal) visible data of Casey Station and the western Law Dome area. The fast-ice edge is marked by a red line.

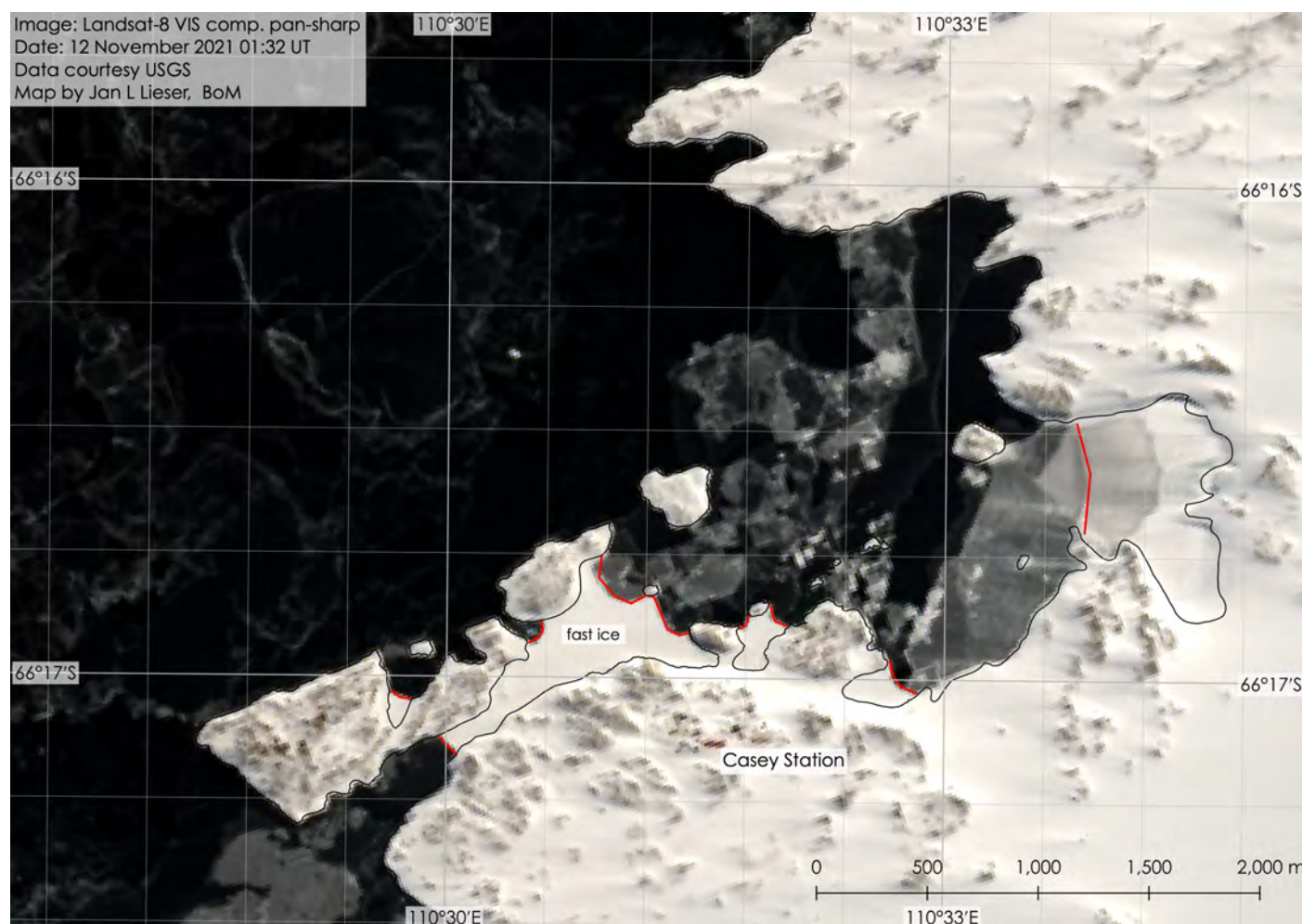


Figure 1: Landsat-8 pan-sharpened visible data composite acquired 12 November 2021 at 01:32 UT and provided by USGS.

Off Casey Station, some fast ice remains shore-fast, but the general fast-ice conditions around Casey Station have not changed significantly during the past week.

In Vincennes Bay off station, a polynya is covered by new sea ice and brash ice (see Figure 2).

Figure 3 provides close-up views of the Casey Ski Landing Area (YCSK) in the upper panel and Wilkins Aerodrome in the lower panel.

At the western end of YCSK, an aircraft (the large grey spot) can be seen parked north of the landing area.

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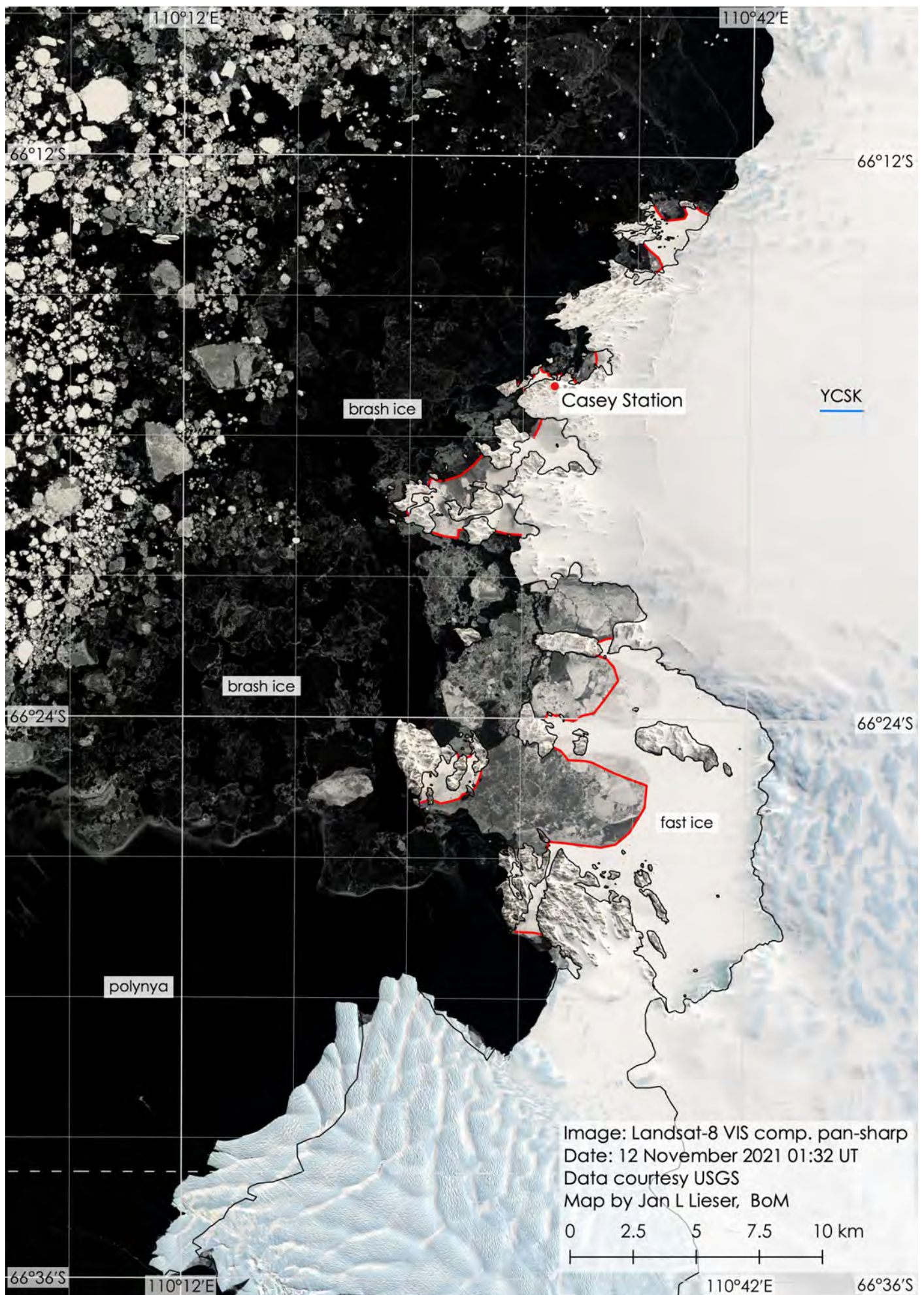


Figure 2: Landsat-8 pan-sharpened visible data composite acquired 12 November 2021 at 01:32 UT and provided by USGS.

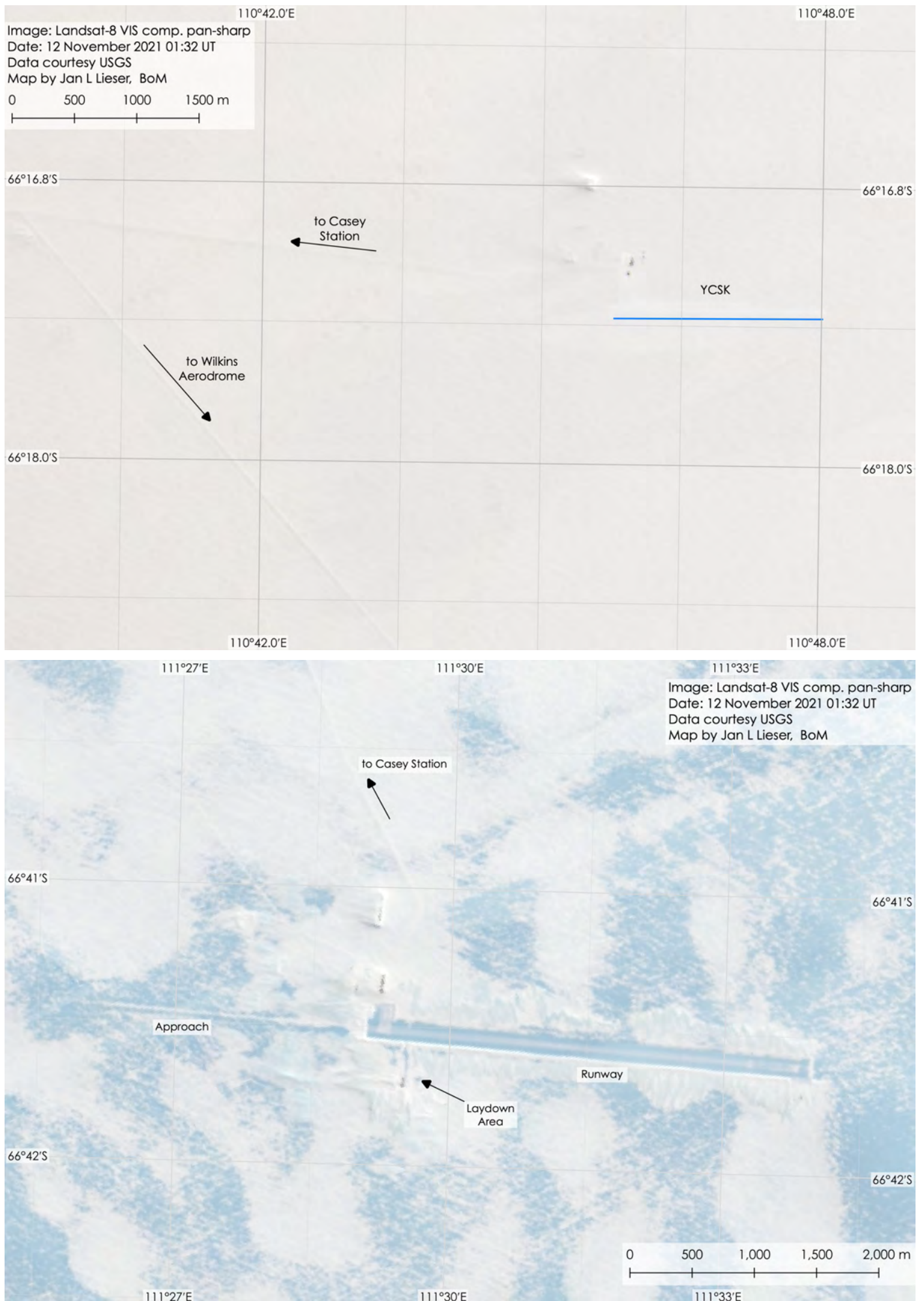


Figure 3: Landsat-8 pan-sharpened visible data composite acquired 12 November 2021 at 01:32 UT and provided by USGS.

Ice Bulletin: D'Urville Sea

Issued: Saturday 13th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the coastline between Dumont D'Urville Station and the Cape Denison/Mawsons Huts. The fast-ice edge is marked by a red line (dashed yellow line for 27 October 2021).

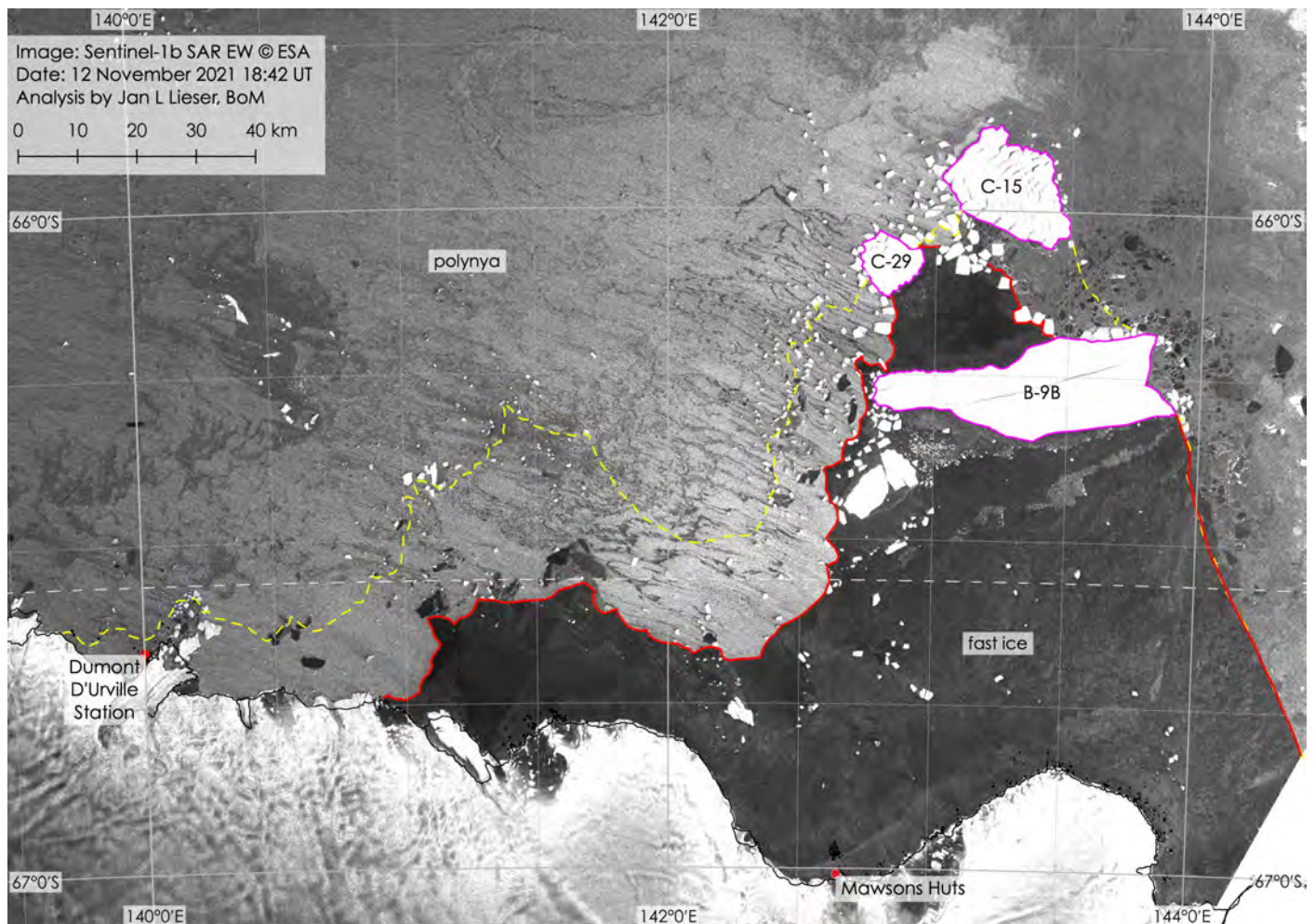


Figure 1: Sentinel-1b SAR EW data acquired 12 November 2021 at 18:42 UT and provided by PolarView.

Offshore Mawsons Huts, largely homogenous fast ice is still present. Two of the three large tabular icebergs north of the huts remain enclosed by the offshore fast ice. Currently, the open water of the polynya northwest of Mawsons Huts remains roughly 40 km (21 nautical miles) away from the huts.

Off Dumont D'Urville Station, no fast ice is present anymore and some larger icebergs that have calved off the ice shelf east of the station continue to slowly drift northward.

Ice Bulletin: Mawson Station

Issued: Monday 15th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Mawson Station. The fast-ice edge on 9 November 2021 is marked by a dashed red line.

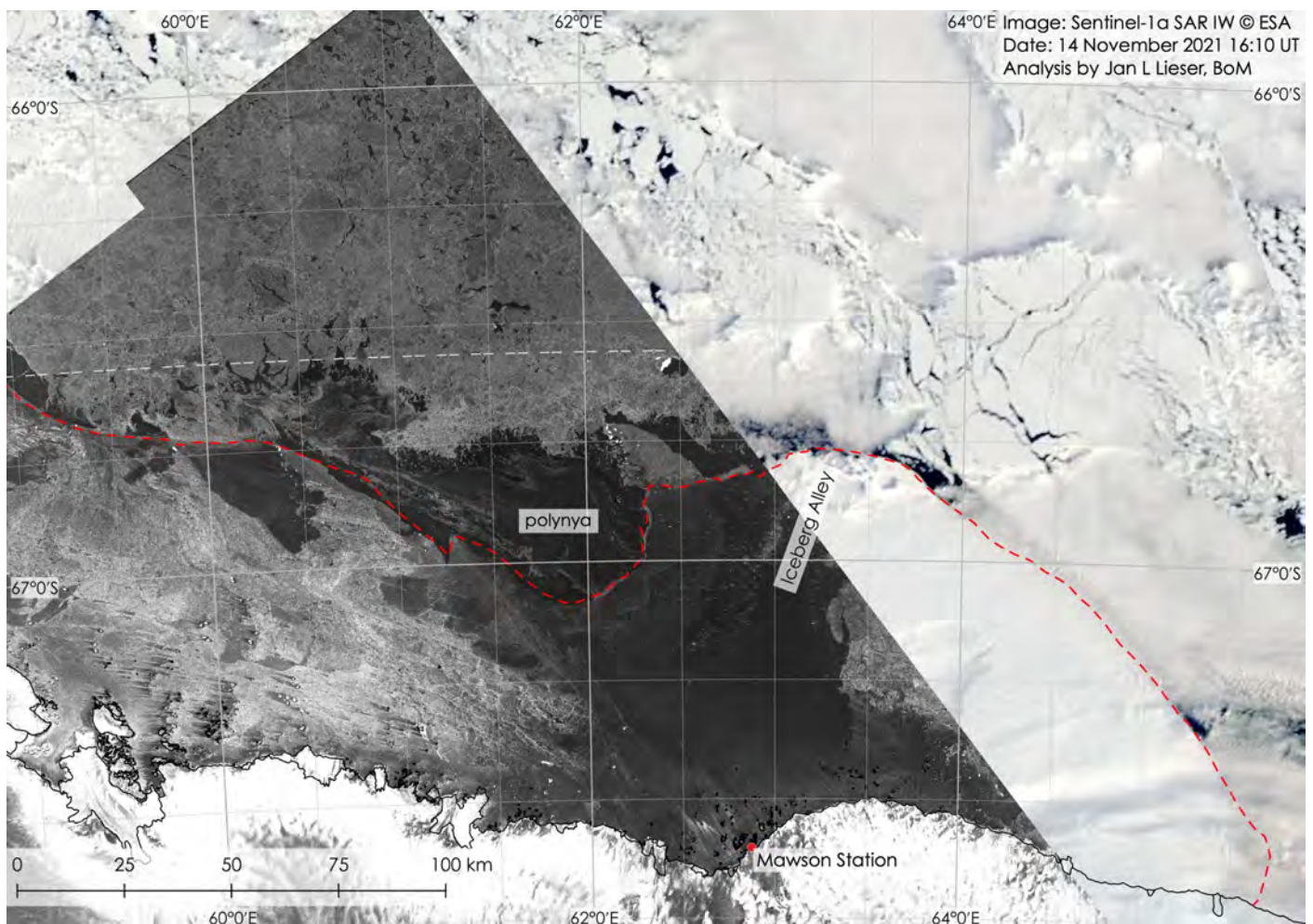


Figure 1: Sentinel-1a SAR IW data acquired 14 November 2021 at 16:10 UT and provided by PolarView; background of AQUA MODIS VIS data acquired 14 November 2021 and provided by NASA.

North of Mawson Station, the shape of the fast-ice edge has not changed significantly during the past week and open water of the polynya remains roughly 38 nautical miles away.

The northern sea-ice edge (not shown in the figure) has been pushed south and is roughly 100 nautical miles south of the November median sea-ice extent off Mawson Coast.

Ice Bulletin: Davis Station

Issued: Monday 15th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows sea-ice concentration data north of Davis Station. Large tabular icebergs are marked by pink shapes.

Off the station, only a minimal polynya is present and very high sea-ice concentration fills Prydz Bay from the eastern face of the Amery Ice Shelf towards Davis Station and north of the station.

The northern sea-ice edge continues to be highly mobile and remains south of the median sea-ice extent for November (shown as a light blue line in the figure).

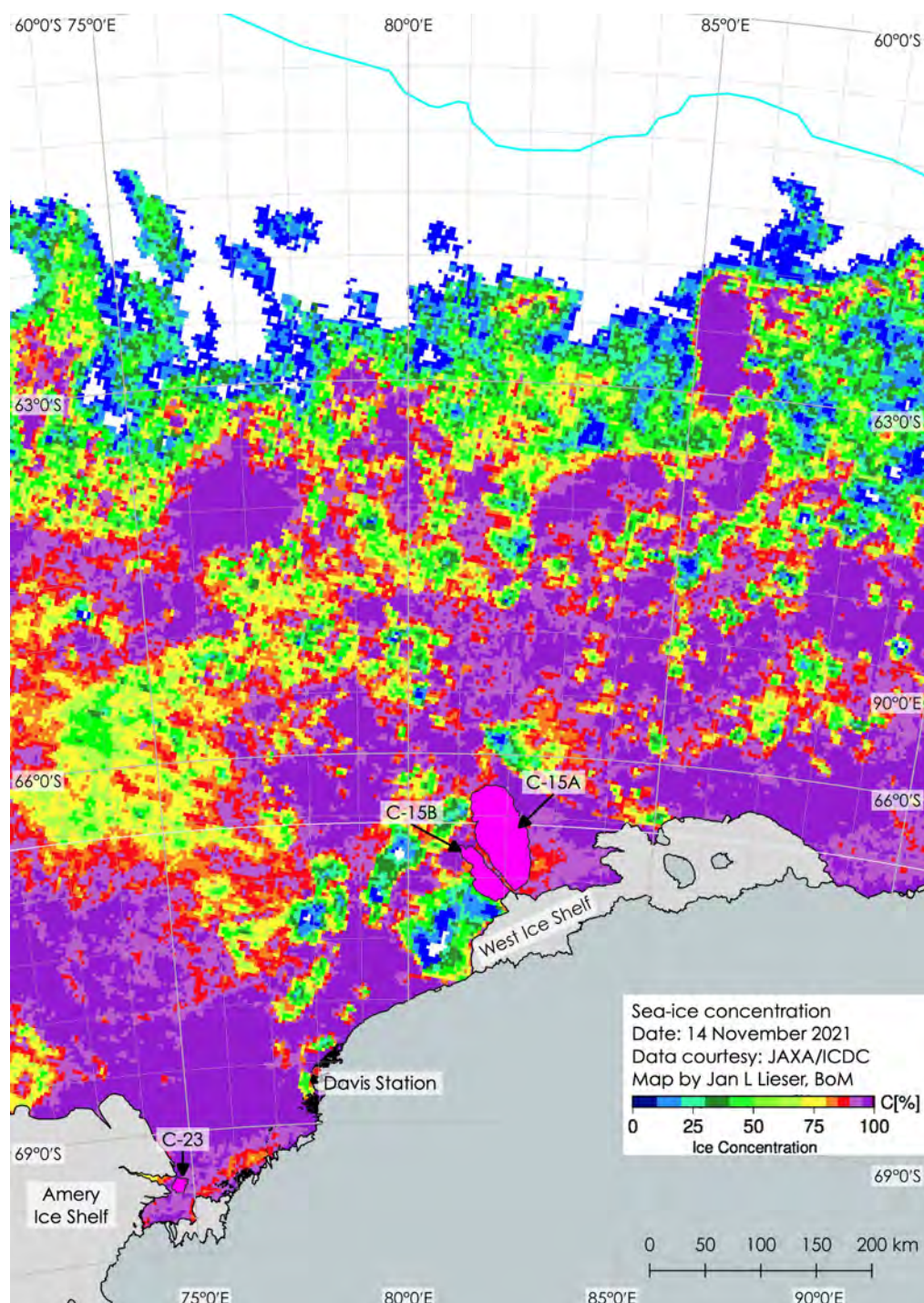


Figure 1: AMSR-2 sea-ice concentration data acquired 14 November 2021 and provided by JAXA/ICDC.

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Ice Bulletin: Davis Station

Issued: Tuesday 16th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station, the fast-ice edge is marked by red line.

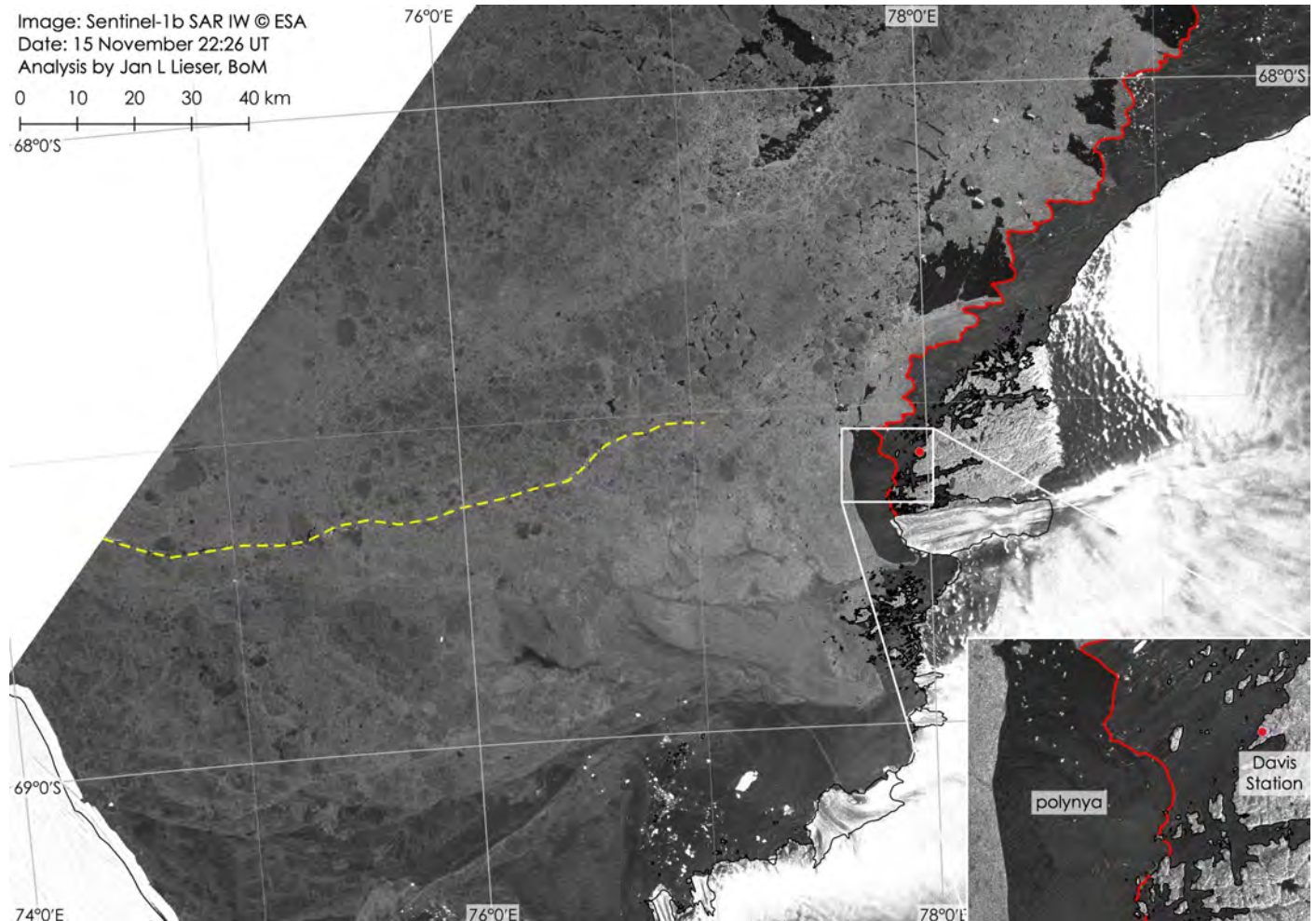


Figure 1: Sentinel-1b SAR IW data acquired 15 November 2021 at 22:26 UT and provided by PolarView.

Pack ice remains closed in on the fast-ice edge and only a small polynya is present off the fast-ice edge off station created by offshore winds.

Southwest of the Vestfold Hills, Prydz Bay is completely covered by fast ice. The edge of this fast ice is undetermined as high-concentration pack ice has closed in on the edge covering almost the entire scene shown in Figure 1.

A dashed yellow line marks a shear zone within 100% sea-ice concentration, where ice to the north of it appears to be drifting albeit only minimal and ice to the south of the line appears stationary (fastened between the Amery Ice Shelf in the west and the coast in the east).

Ice Bulletin: Mawson Station

Issued: Wednesday 17th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figures of this bulletin show high-resolution (10 m horizontal) VIS data off Mawson Station. The entire scene is slightly obscured by thin clouds and covered by opaque clouds in the northeast. The proposed route between Mawson Station and Colbeck Hut is marked by coloured lines.

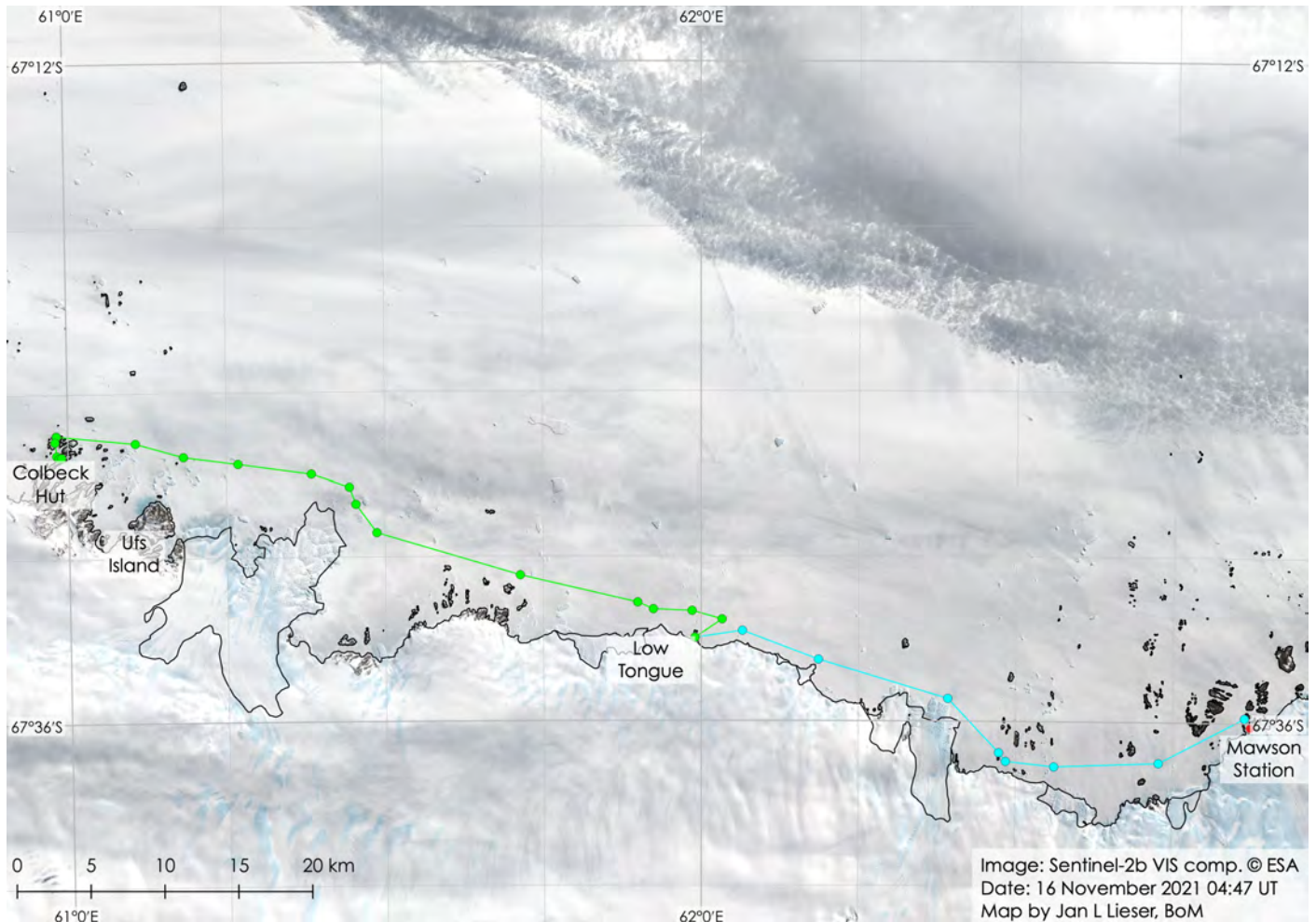


Figure 1: Sentinel-2b visible composite data acquired 16 November 2021 at 04:47 UT and provided by ESA.

The fast-ice surface appears largely unchanged. Off the north-western shore of Ufs Island, bare sea ice appears blue (see also Figure 3).

Figures 2, 3, 4 and 5 show zoomed areas around Colbeck Hut and the Taylor Ice Shelf, Ufs Island, Mawson Station and the Auster Rookery, respectively. Figure 2 additionally shows waypoints between Colbeck Hut and Proclamation Point as blue dots.

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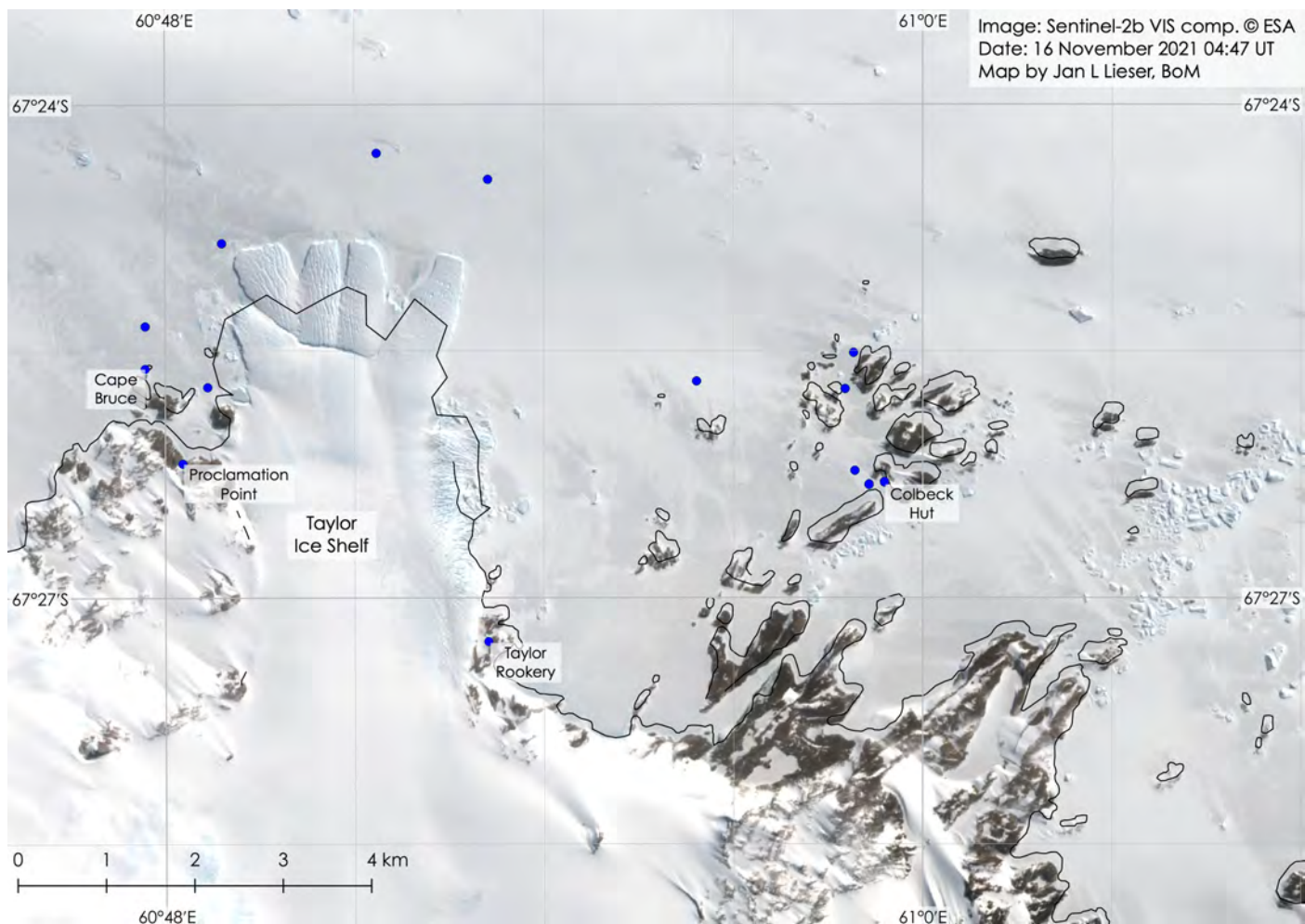


Figure 2: Sentinel-2b visible composite data acquired 16 November 2021 at 04:47 UT and provided by ESA.

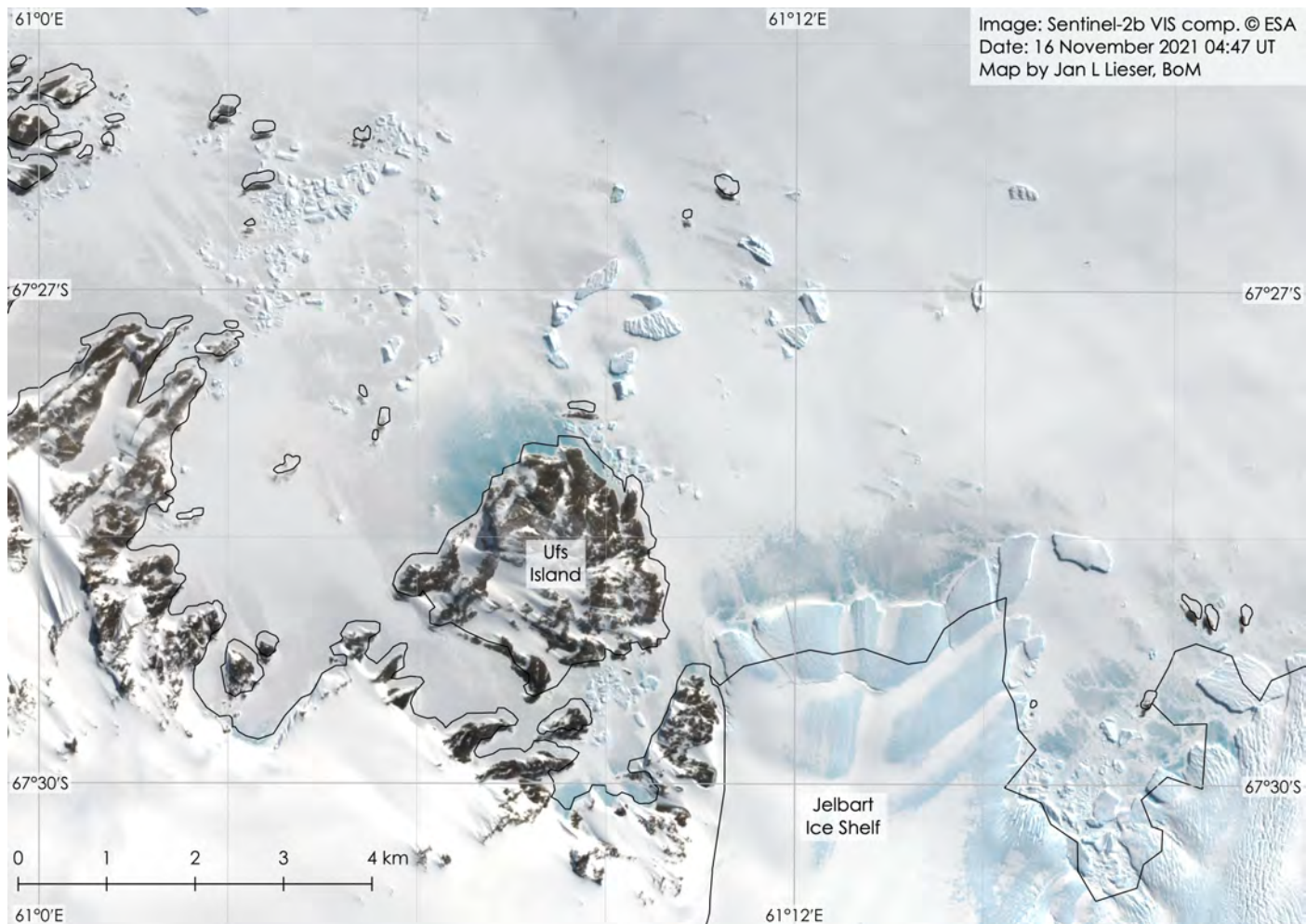


Figure 3: Sentinel-2b visible composite data acquired 16 November 2021 at 04:47 UT and provided by ESA.



Figure 4: Sentinel-2b visible composite data acquired 16 November 2021 at 04:47 UT and provided by ESA.

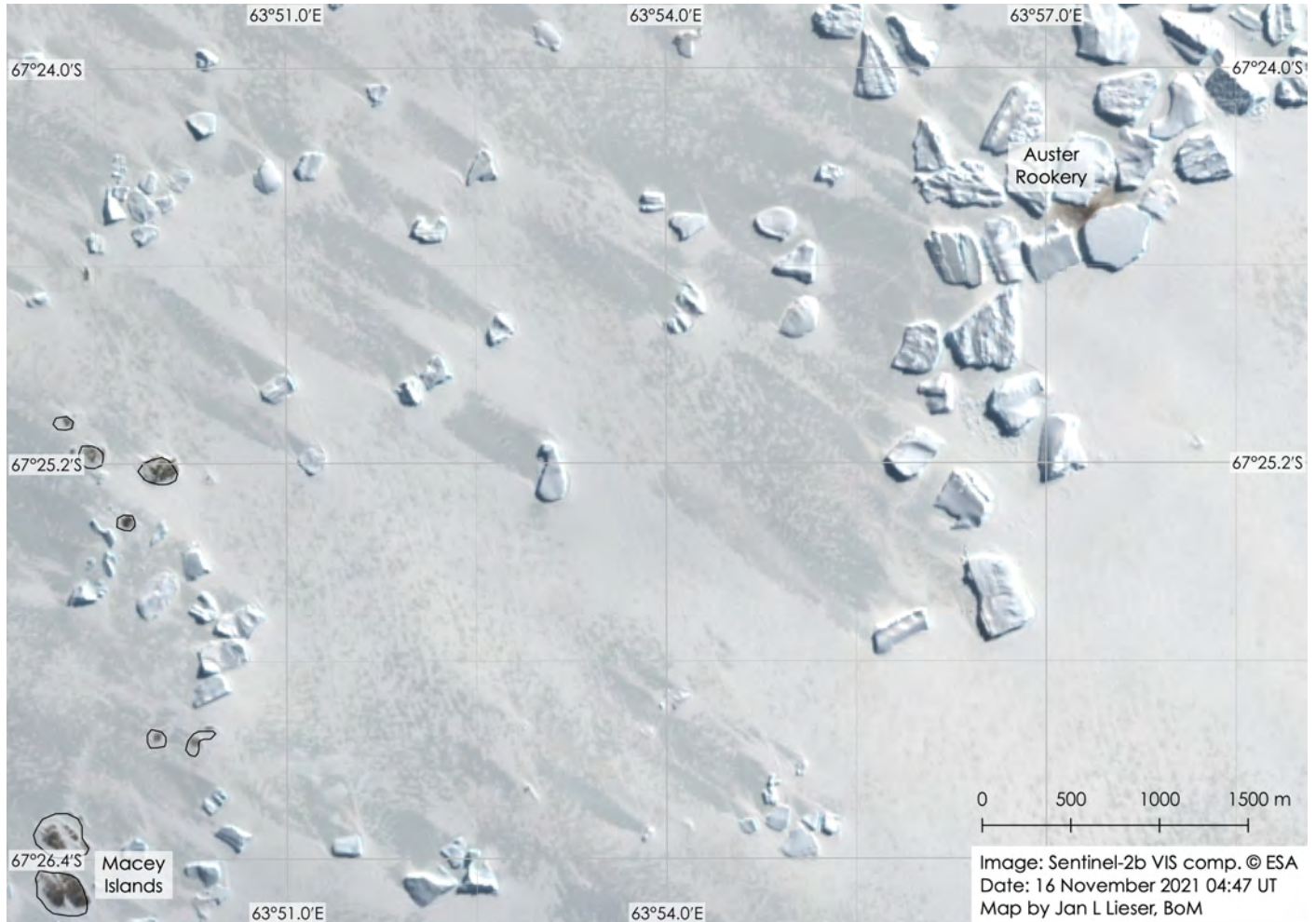


Figure 5: Sentinel-2b visible composite data acquired 16 November 2021 at 04:47 UT and provided by ESA.

Ice Bulletin: Casey Station

Issued: Wednesday 17th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Law Dome/Casey Station. The fast-ice edge on 12 November 2021 is marked by a dashed red line.

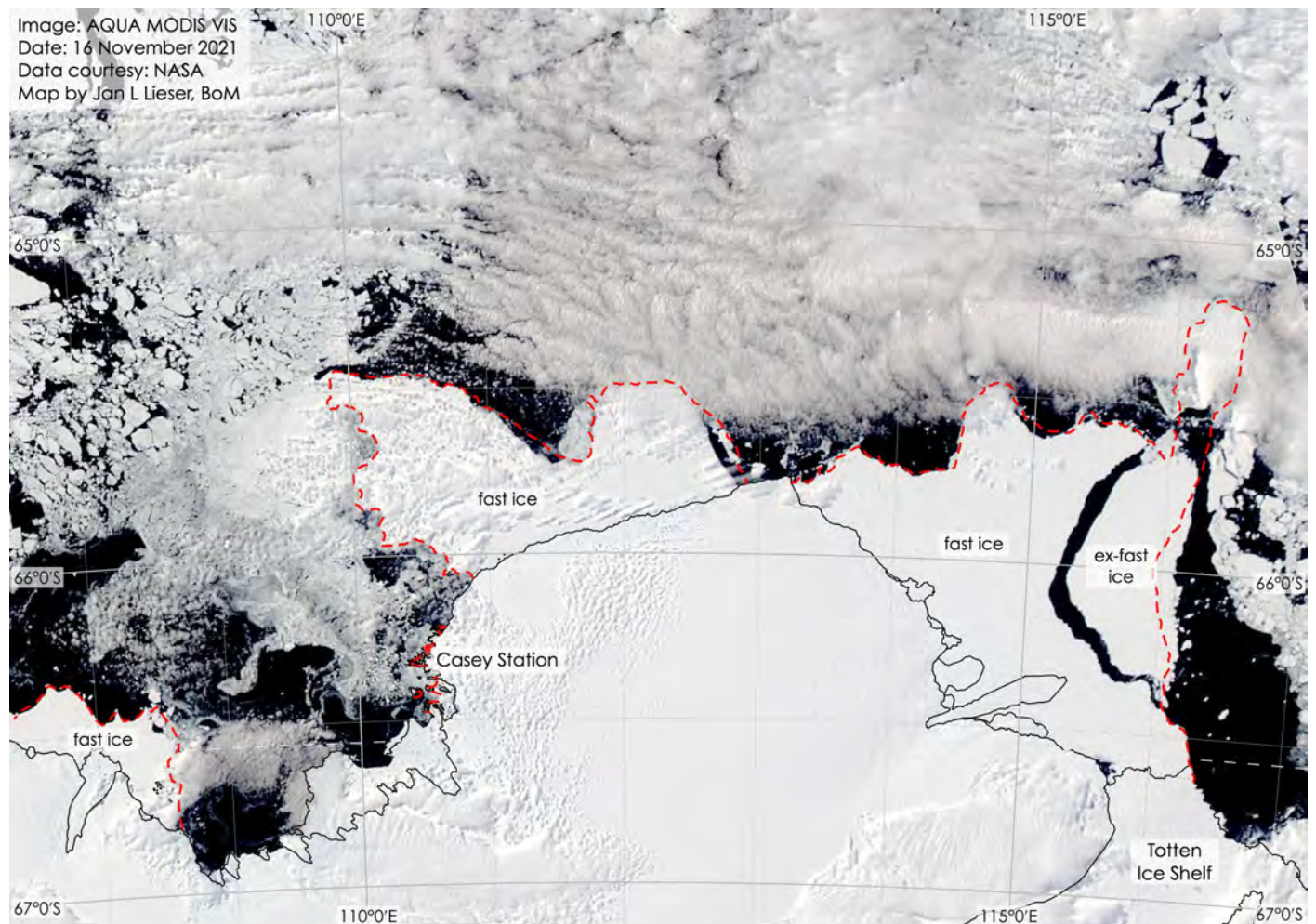


Figure 1: AQUA MODIS VIS data acquired 16 November 2021 and provided by NASA.

North of Casey Station, the fast-ice edge has not changed significantly during the past week, but a recent change in sea-ice drift direction has accumulated pack ice against the fast ice northwest of the station.

North of the Totten Ice Shelf, fast ice has been breaking up and a vast sheet (roughly 2170 km²) of ex-fast ice can be seen drifting eastward. Outside of the frame shown in the figure, similar large-scale fast-ice break-ups are also observed east and west of Law Dome for example, east of fast ice attached to Bowen Island, off the eastern side of the Shackleton Ice Shelf and east of the Dalton Iceberg Tongue.

Ice Bulletin: Davis Station

Issued: Thursday 18th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of Karelin Bay (marked with a red dot) northeast of Davis Station.

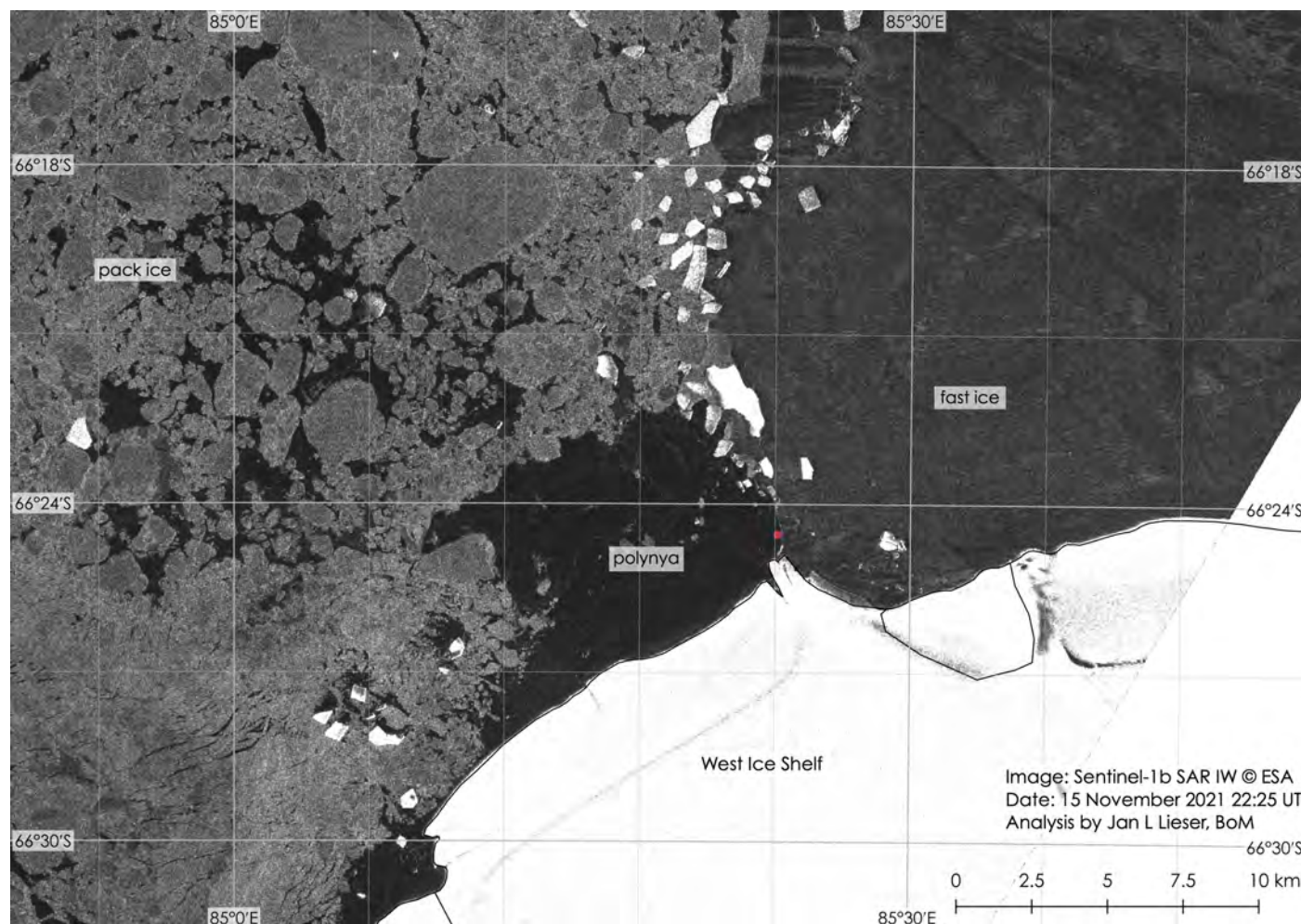


Figure 1: Sentinel-1b SAR IW data acquired 15 November 2021 at 22:25 UT and provided by PolarView.

East of the bay, fast ice has grown behind (east of) grounded icebergs north of the West Ice Shelf. West of this fast ice, a polynya is present and pack ice is drifting freely off the shelf-ice front.

Figure 2 shows high-resolution SAR data of Amanda Bay (marked with a red dot) between Hovde Ice Shelf and Flatnes Ice Tongue southwest of Davis Station.

The entire scene is covered by some form of ice, that is ice cap and shelf ice in the southeast and fast ice and icebergs offshore.

Figure 3 shows very high-resolution (15 m horizontal) visible data of the same frame as Figure 2.

The inset shows a region of discoloured ice northwest of Amanda Bay (marked by an orange circle), which indicates the presence of a penguin colony.

Figure 4 shows very high-resolution (15 m horizontal) visible data of Davis Station. Two aircraft can be seen parked off station on the fast ice next to the Davis Station ice ski landing area.

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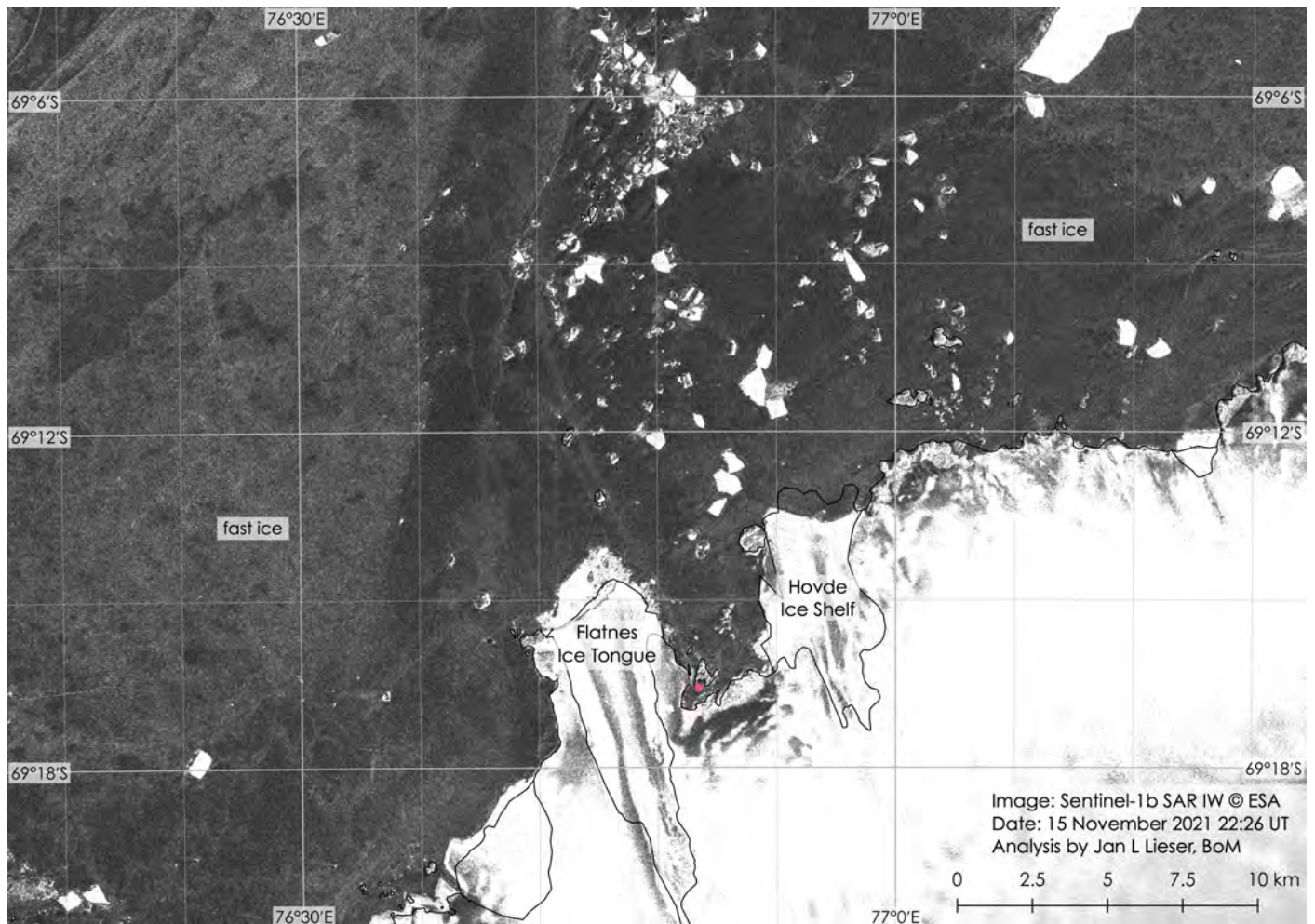


Figure 2: Sentinel-1b SAR IW data acquired 15 November 2021 at 22:26 UT and provided by PolarView.

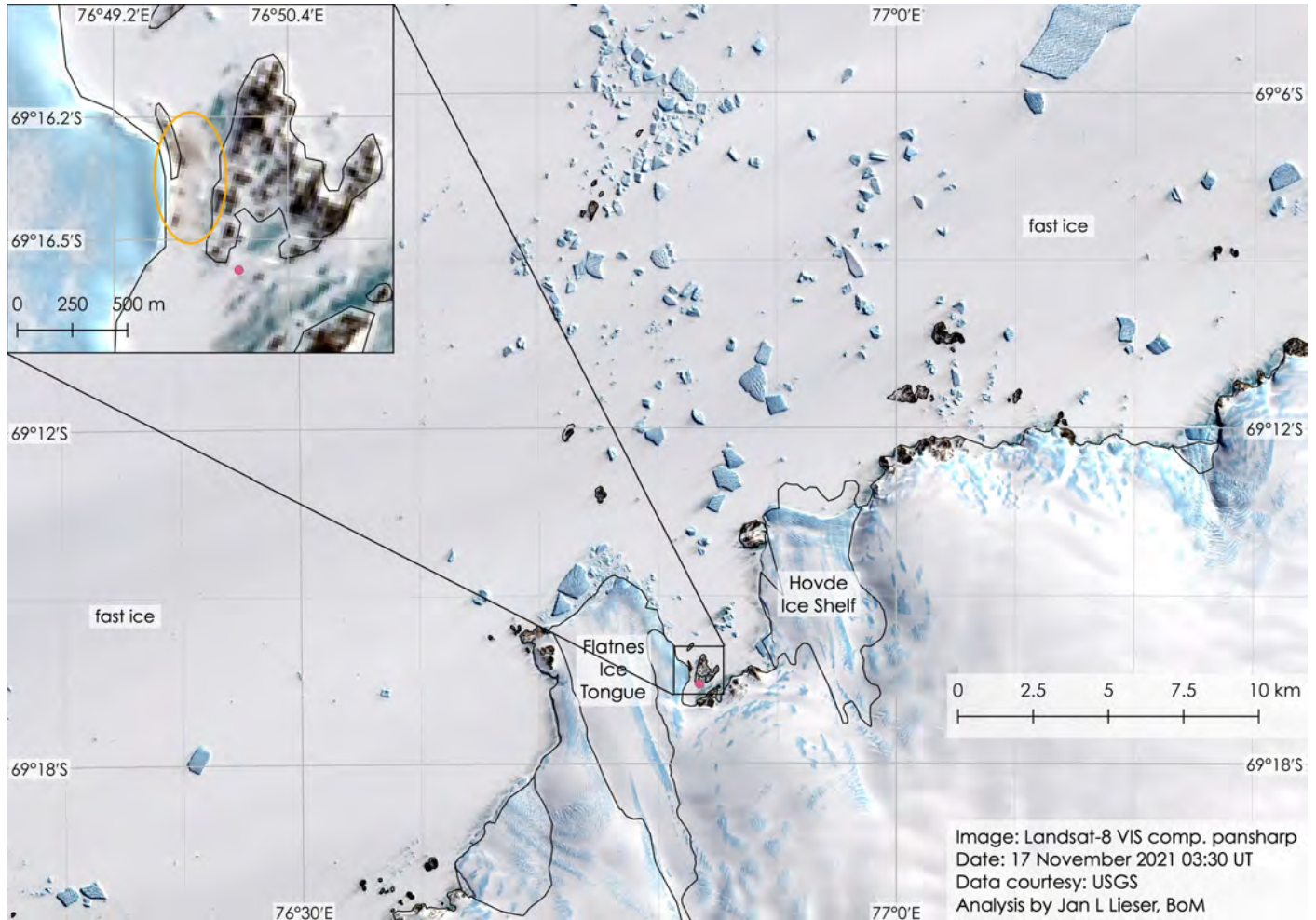


Figure 3: Landsat-8 pan-sharpened visible composite data acquired 17 November 2021 at 03:30 UT and provided by USGS.

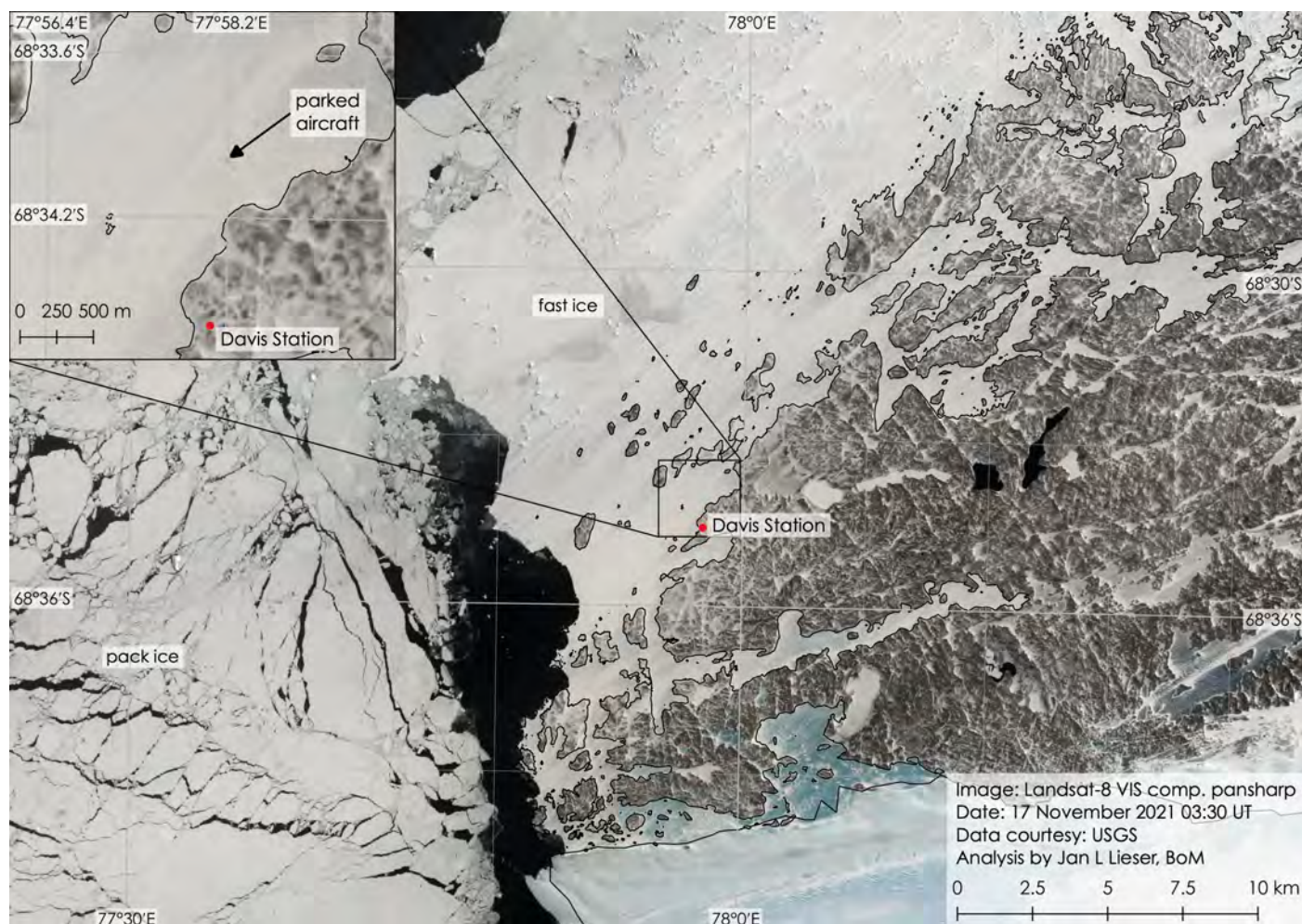


Figure 3: Landsat-8 pan-sharpened visible composite data acquired 17 November 2021 at 03:30 UT and provided by USGS.

Ice Bulletin: Casey Station

Issued: Friday 19th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show high-resolution (15 m horizontal) visible data of Casey Station and surrounds. The fast-ice edge is marked by a red line (dashed red line for 12 November 2021).

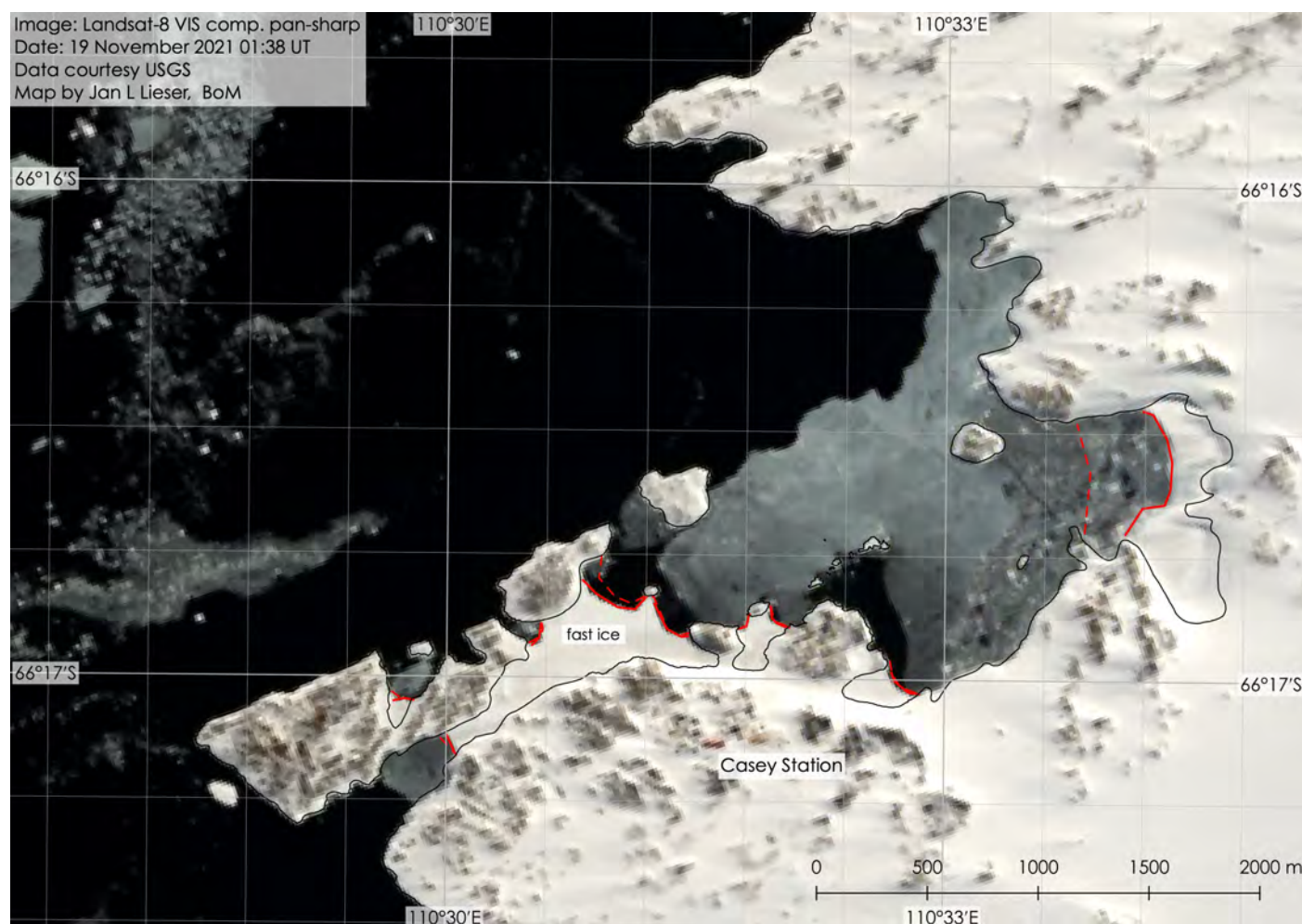


Figure 1: Landsat-8 pan-sharpened visible data composite acquired 19 November 2021 at 01:38 UT and provided by USGS.

Off Casey Station, some fast ice remains shore-fast, but the general fast-ice conditions around Casey Station have not changed significantly during the past week.

In Vincennes Bay south of the station, a polynya is largely ice free and only partly covered by brash ice (see Figure 2; the Casey Ski Landing Area, YCSK, is marked by a blue line).

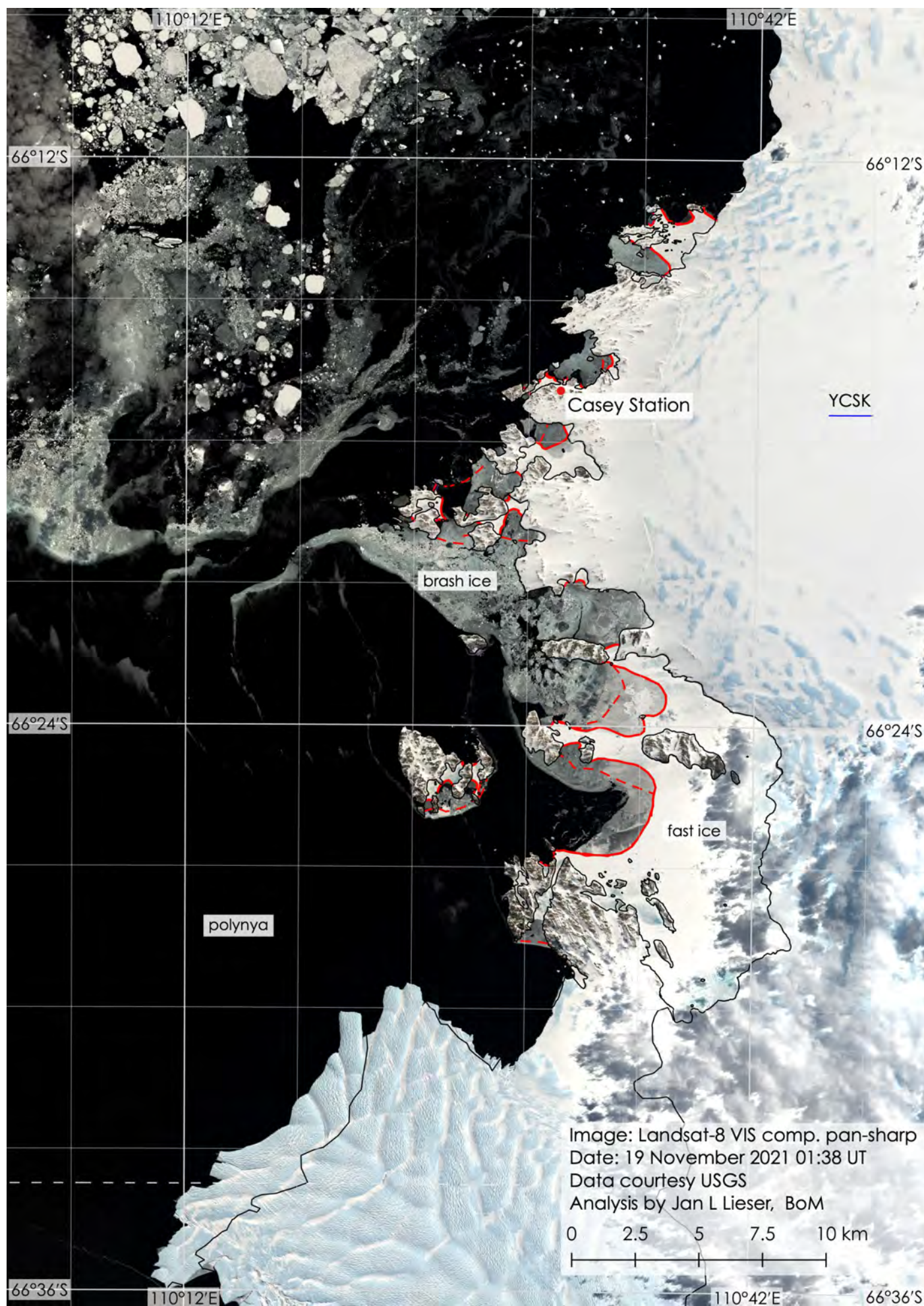


Figure 2: Landsat-8 pan-sharpened visible data composite acquired 19 November 2021 at 01:38 UT and provided by USGS.

Ice Bulletin: D'Urville Sea

Issued: Monday 22nd November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the coastline between Dumont D'Urville Station and Mawsons Huts/Cape Denison. The fast-ice edge is marked by a red line.

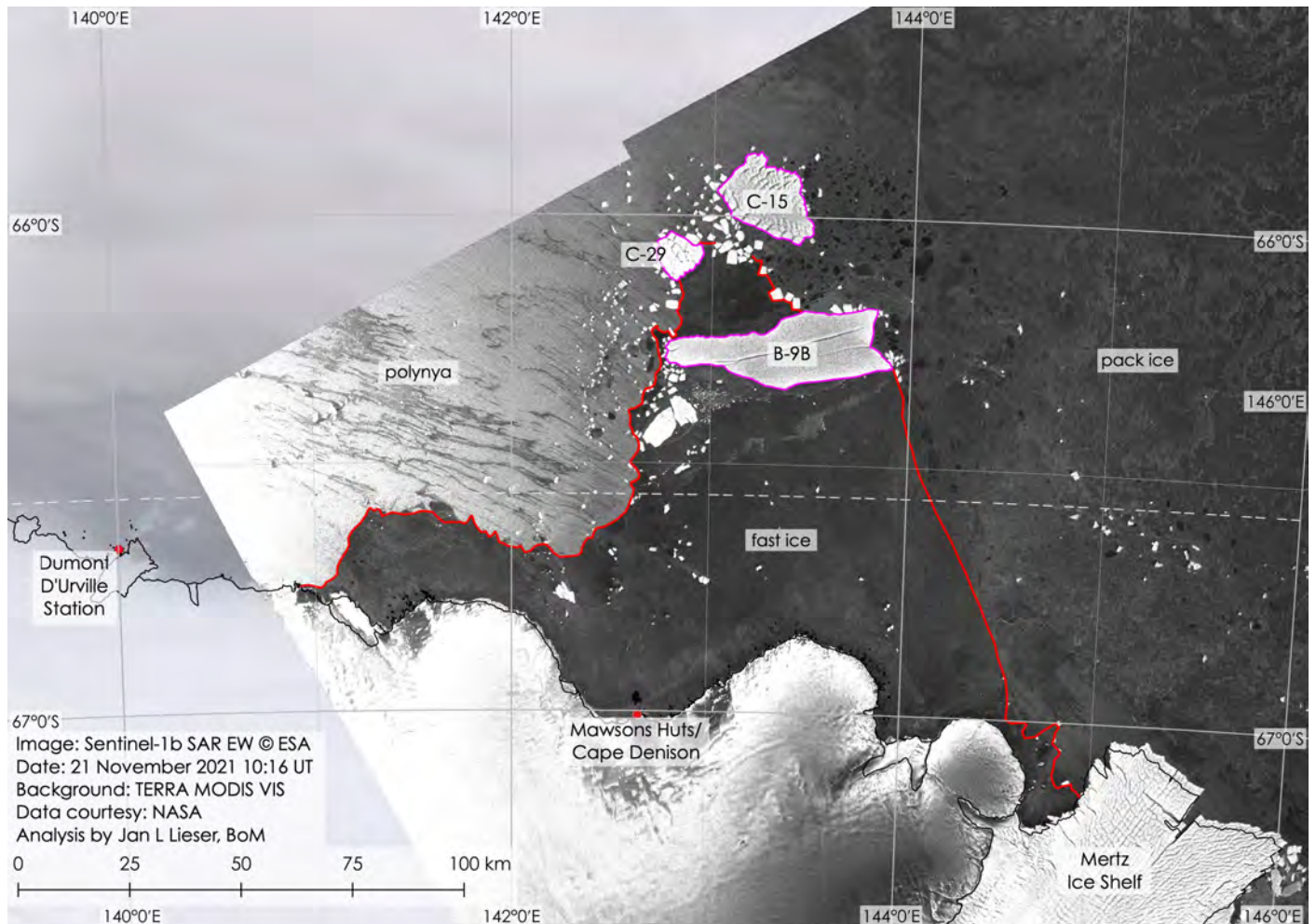


Figure 1: Sentinel-1b SAR EW data acquired 21 November 2021 at 10:16 UT and provided by PolarView;
background of TERRA MODIS VIS data acquired 21 November 2021 and provided by NASA.

Off Mawsons Huts, the fast-ice edge has not changed significantly during the past week and largely homogenous fast ice is still present. Two of the three large tabular icebergs north of the huts remain enclosed by the offshore fast ice and grounded small icebergs. The open water of the polynya northwest of Mawsons Huts remains roughly 40 km (21 nautical miles) away from the huts.

Off Dumont D'Urville Station, no fast ice is present anymore and some larger icebergs that have calved off the ice shelf east of the station continue to slowly drift north-eastward.

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Ice Bulletin: Davis Station

Issued: Monday 22nd November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station. The fast-ice edge is marked by red line.

Pack ice has been pushed westward off the fast-ice edge and a polynya is present off the fast-ice edge off station and is maintained by offshore winds.

Southwest of the Vestfold Hills, Prydz Bay remains largely covered by fast ice but off the Rauer Group (south of the Sørdsdal Ice Shelf), a fast-ice edge is now showing clearly, and the polynya separates fast ice and pack ice.

The inset shows a close-up around Davis Station and two parked aircraft are visible as bright (white) spots on the fast ice north of the station.

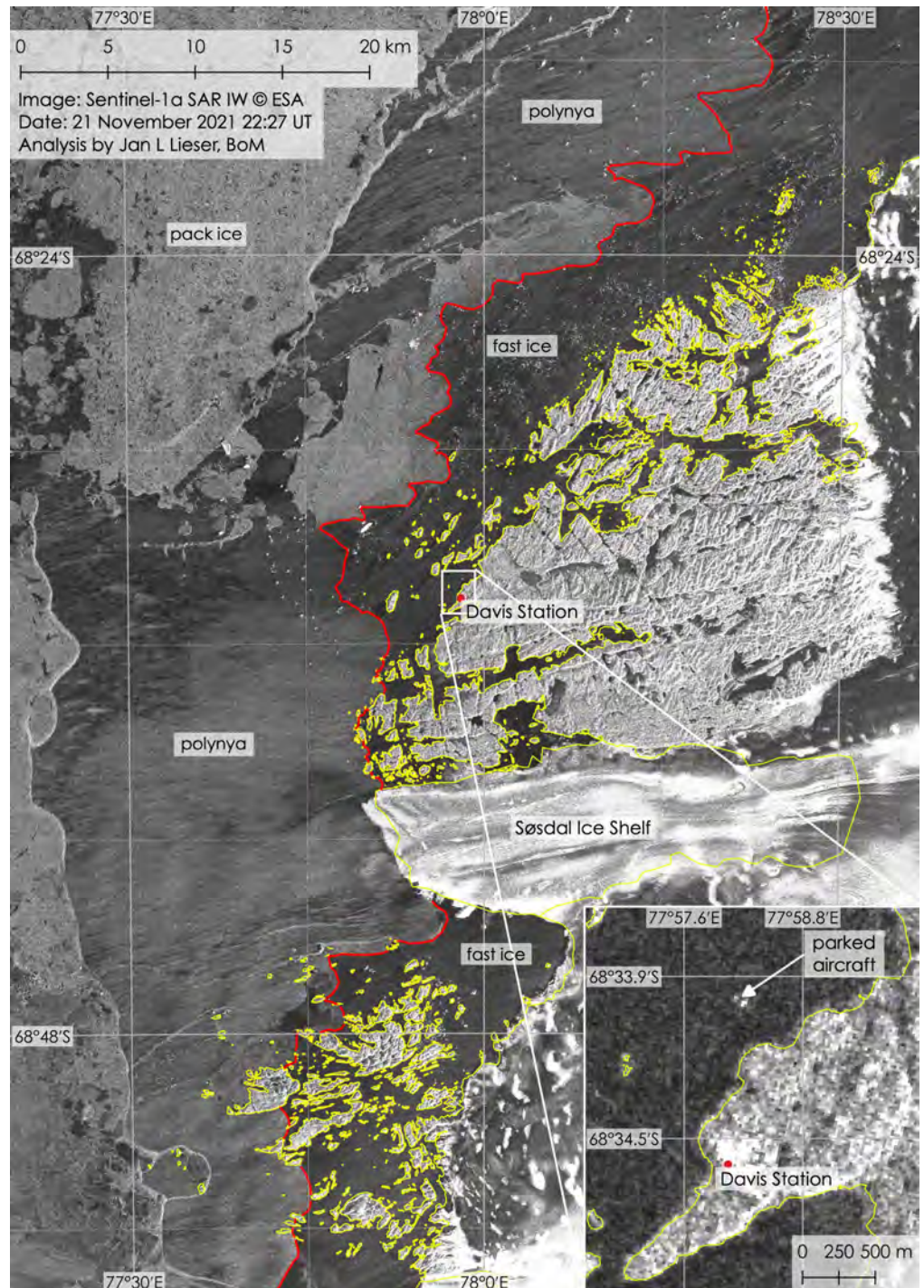


Figure 1: Sentinel-1a SAR IW data acquired 21 November 2021 at 22:27 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Wednesday 24th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data offshore Mawson Coast west of Mawson Station towards the Taylor Ice Shelf.

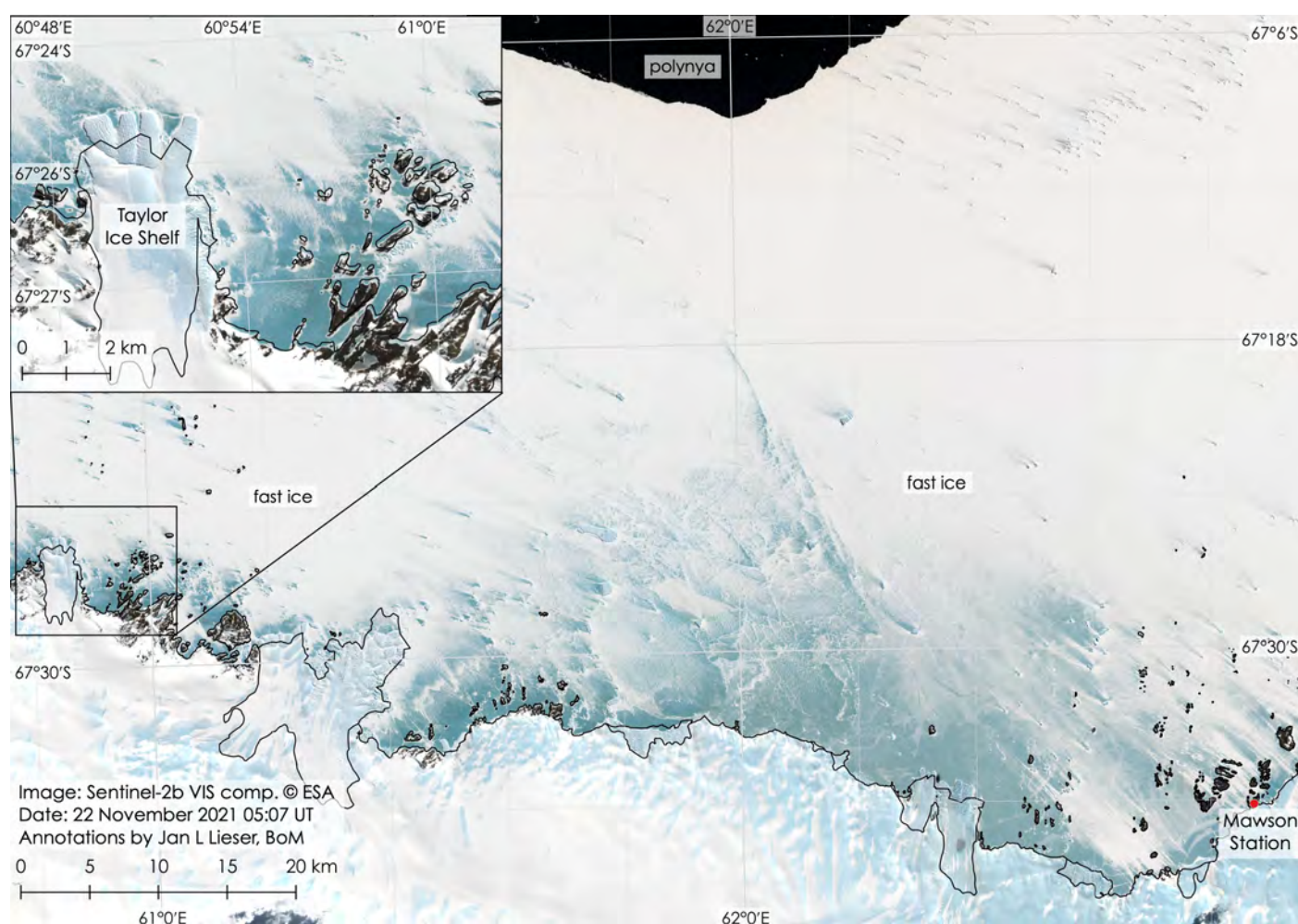


Figure 1: Sentinel-2b visible composite data acquired 22 November 2021 at 05:07 UT and provided by USGS.

The shortest distance between the station and the open water of the polynya northwest of the station is currently roughly 33.5 nautical miles.

Figures 2 and 3 show high-resolution (15 m horizontal) VIS data around Mawson Station and the Auster Rookery, respectively.

Generally, more bare fast ice appears to be present near the coastline east and west of Mawson Station.

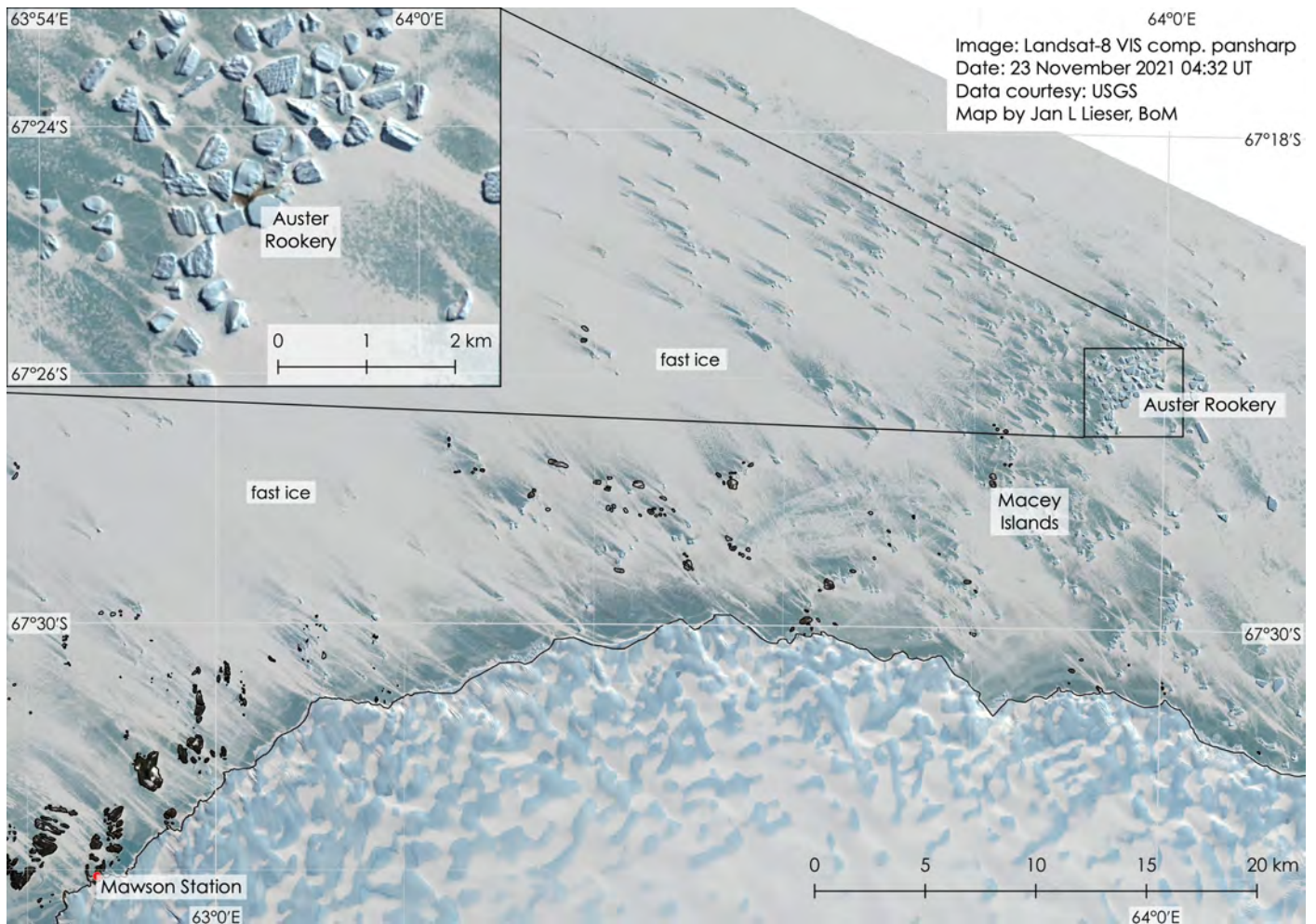


Figure 2: Landsat-8 visible composite pansharp data acquired 23 November 2021 at 04:32 UT and provided by USGS.

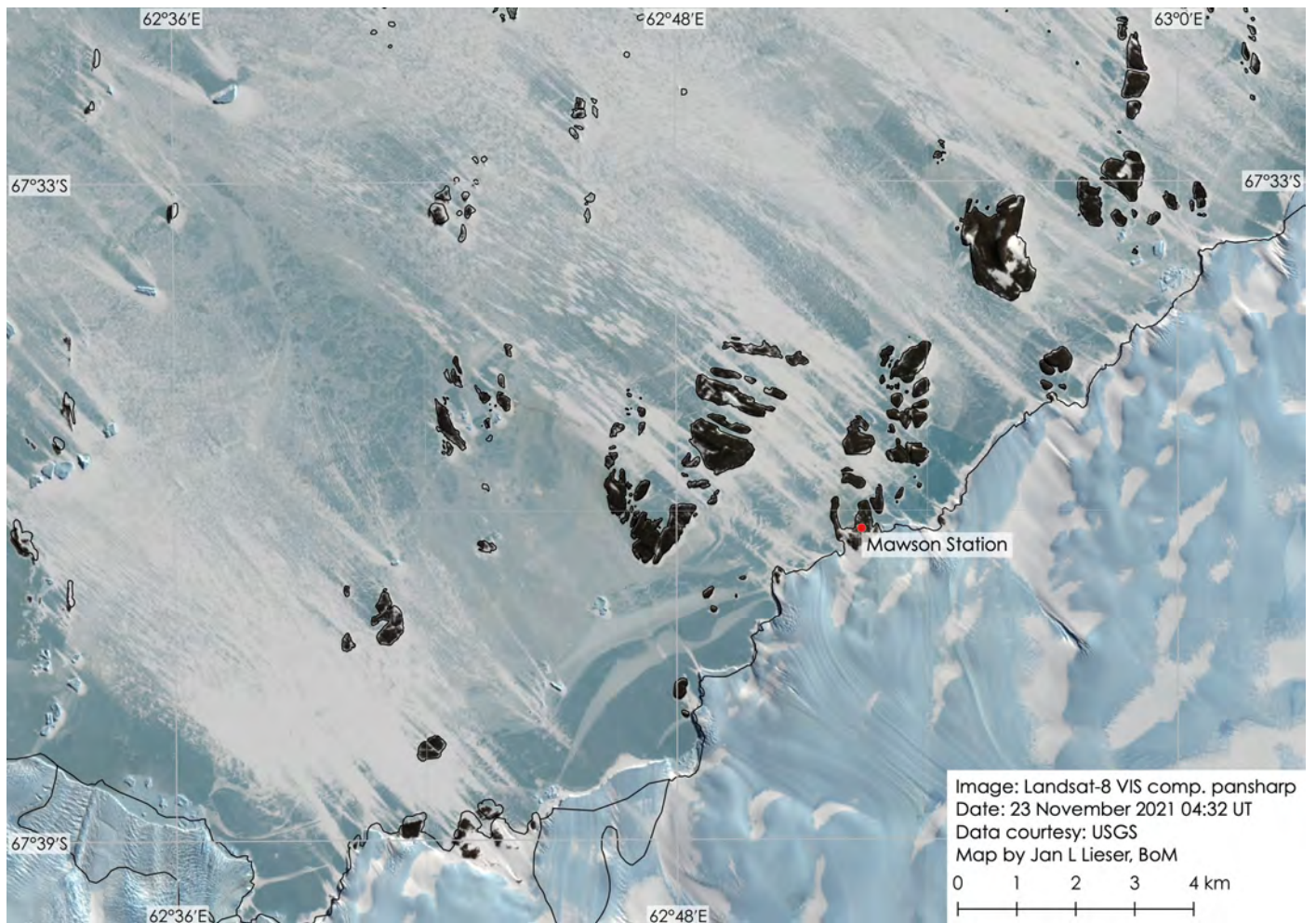


Figure 3: Landsat-8 visible composite pansharp data acquired 23 November 2021 at 04:32 UT and provided by USGS.

Ice Bulletin: Casey Station

Issued: Wednesday 24th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show high-resolution (10 m horizontal) visible data of Casey Station and surrounds. The fast-ice edge is marked by a red line.

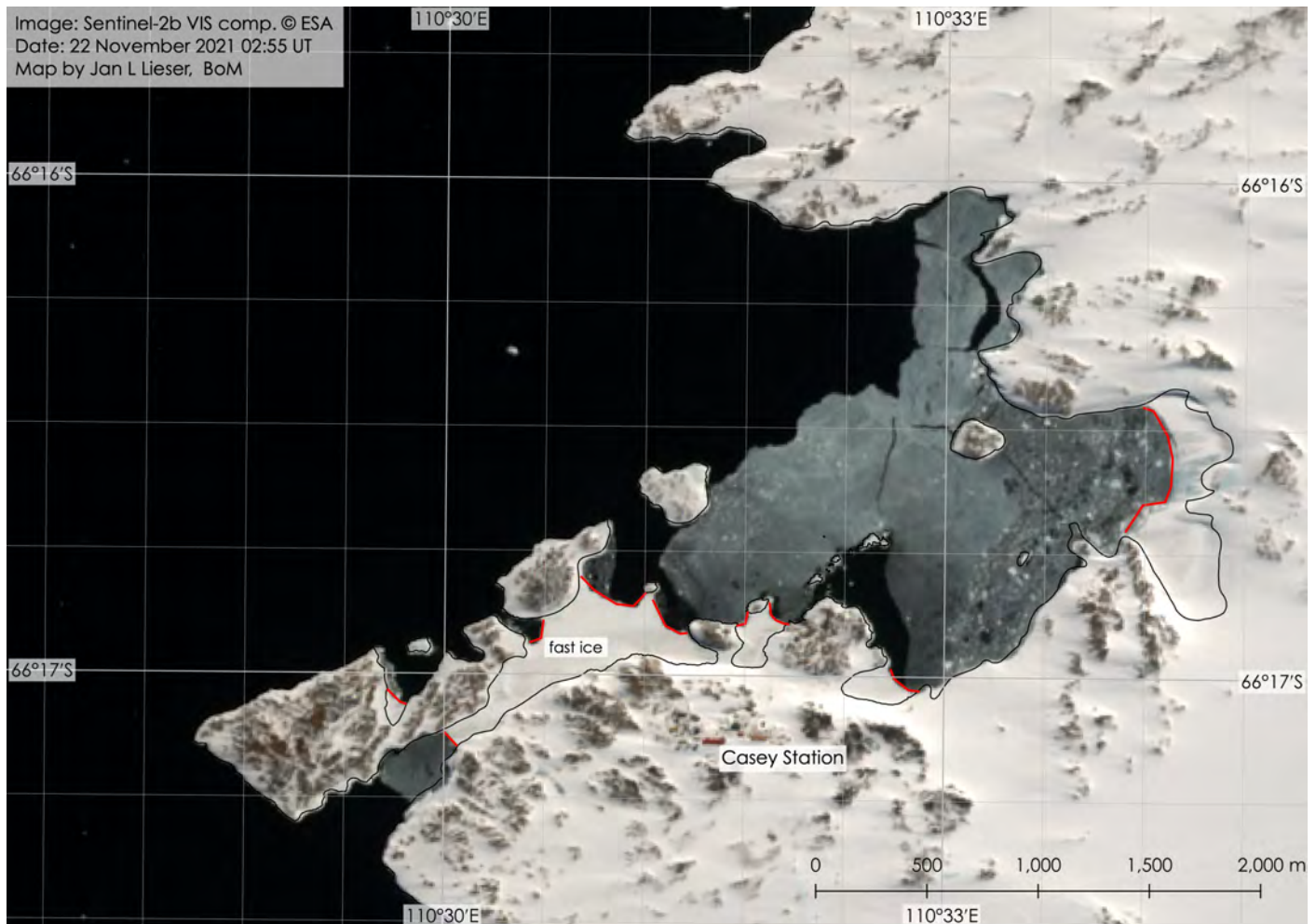


Figure 1: Sentinel-2b visible data composite acquired 22 November 2021 at 02:55 UT and provided by USGS.

Off Casey Station, the fast-ice edge has not changed significantly during the last week and some fast ice remains shore-fast.

In Vincennes Bay south of the station, a polynya is largely ice free and only partly covered by brash ice (see Figure 2; the Casey Ski Landing Area, YCSK, is marked by a blue line).

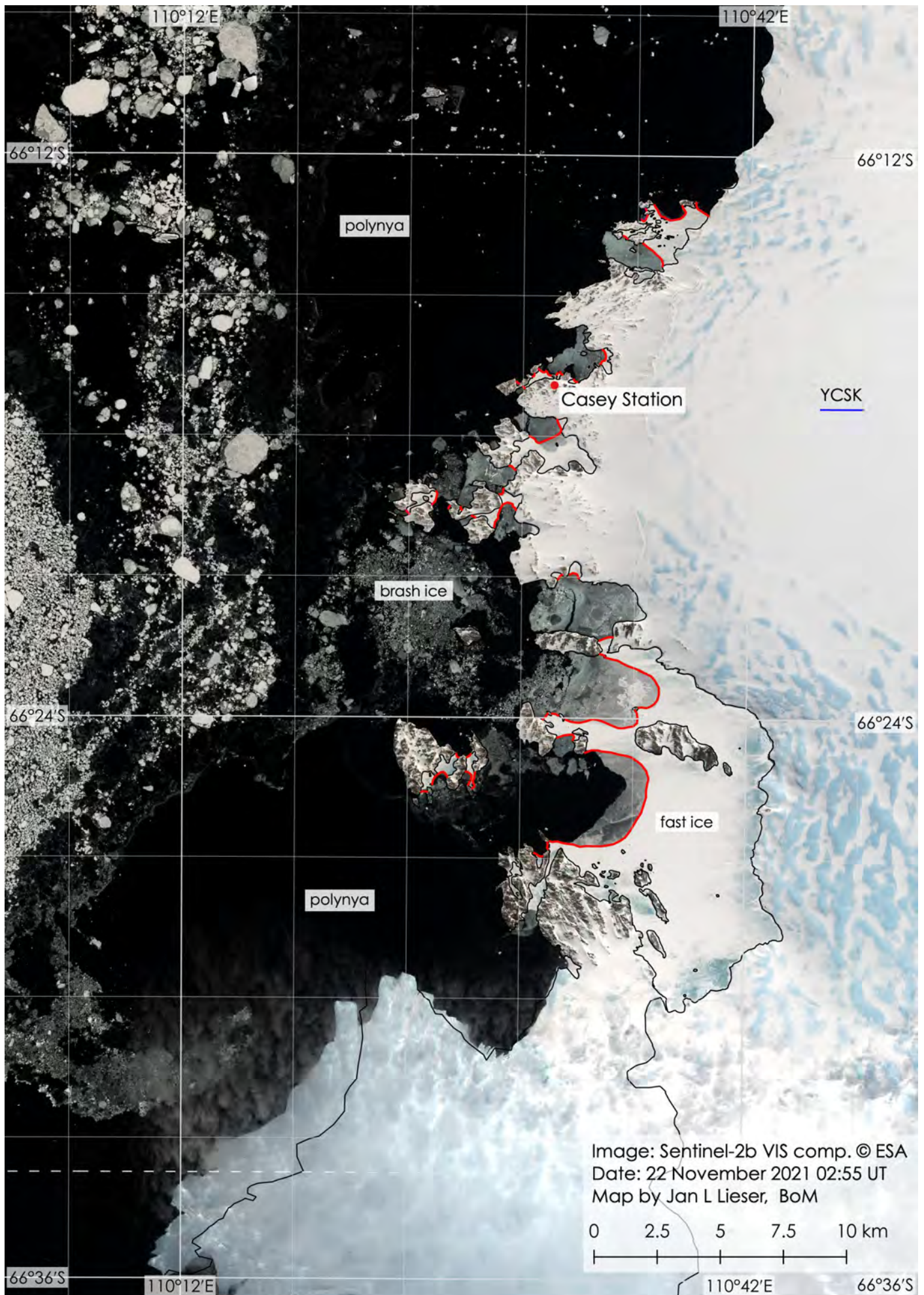


Figure 2: : Sentinel-2b visible data composite acquired 22 November 2021 at 02:55 UT and provided by USGS.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 24th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off the coastline between Dumont D'Urville Station and Mawsons Huts/Cape Denison. The fast-ice edge on 21 November 2021 is marked by a dashed red line.

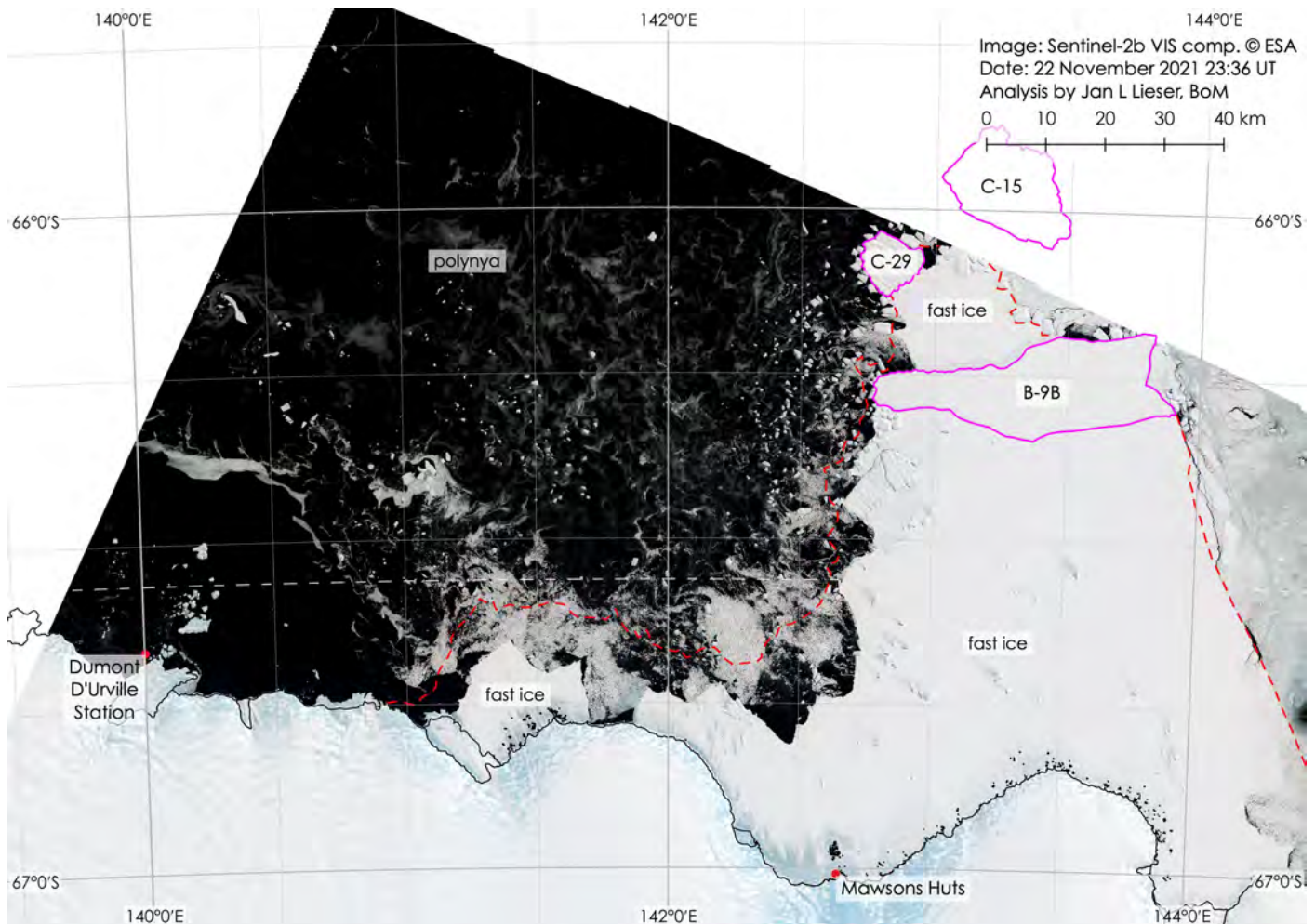


Figure 1: Sentinel-2b visible composite data acquired 22 November 2021 at 23:36 UT and provided by USGS.

Between 21 November 2021 and 22 November 2021, the fast-ice edge retreated southward but largely homogenous fast ice is still present off the huts. The open water of the polynya northwest of Mawsons Huts is now roughly 23.5 km (13 nautical miles) away from the huts. Two of the three large tabular icebergs north of the huts remain enclosed by the offshore fast ice and grounded small icebergs.

Further west towards Dumont D'Urville Station, more coastline is now free of fast ice and off station some larger icebergs that have calved off the ice shelf east of the station continue to slowly drift northward.

Figure 2 shows a close-up view around Mawsons Huts and the fast ice immediately offshore.

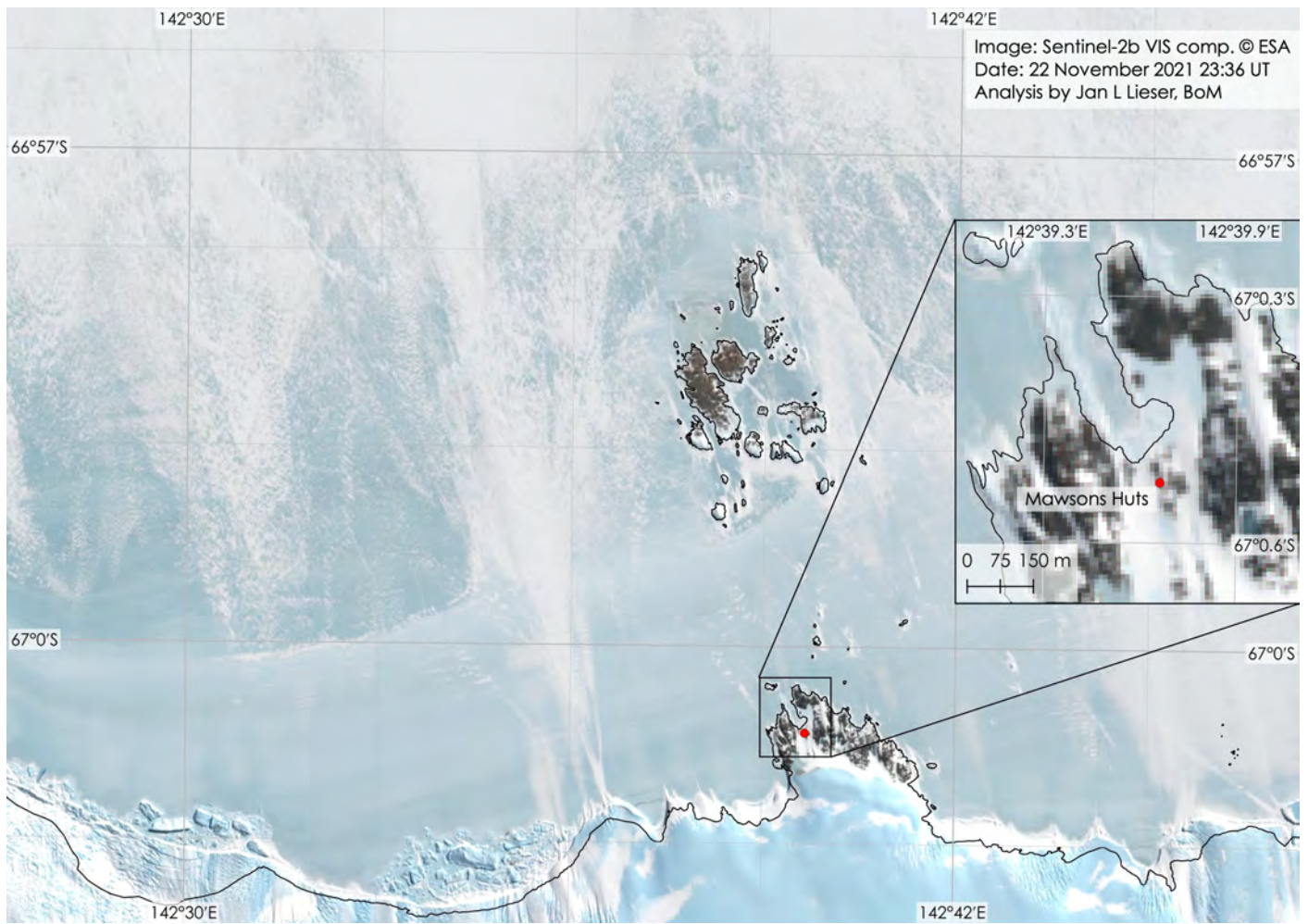


Figure 2: Sentinel-2b visible composite data acquired 22 November 2021 at 23:36 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Thursday 25th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Davis Station, the fast-ice edge on 21 November 2021 is marked by a dashed red line.

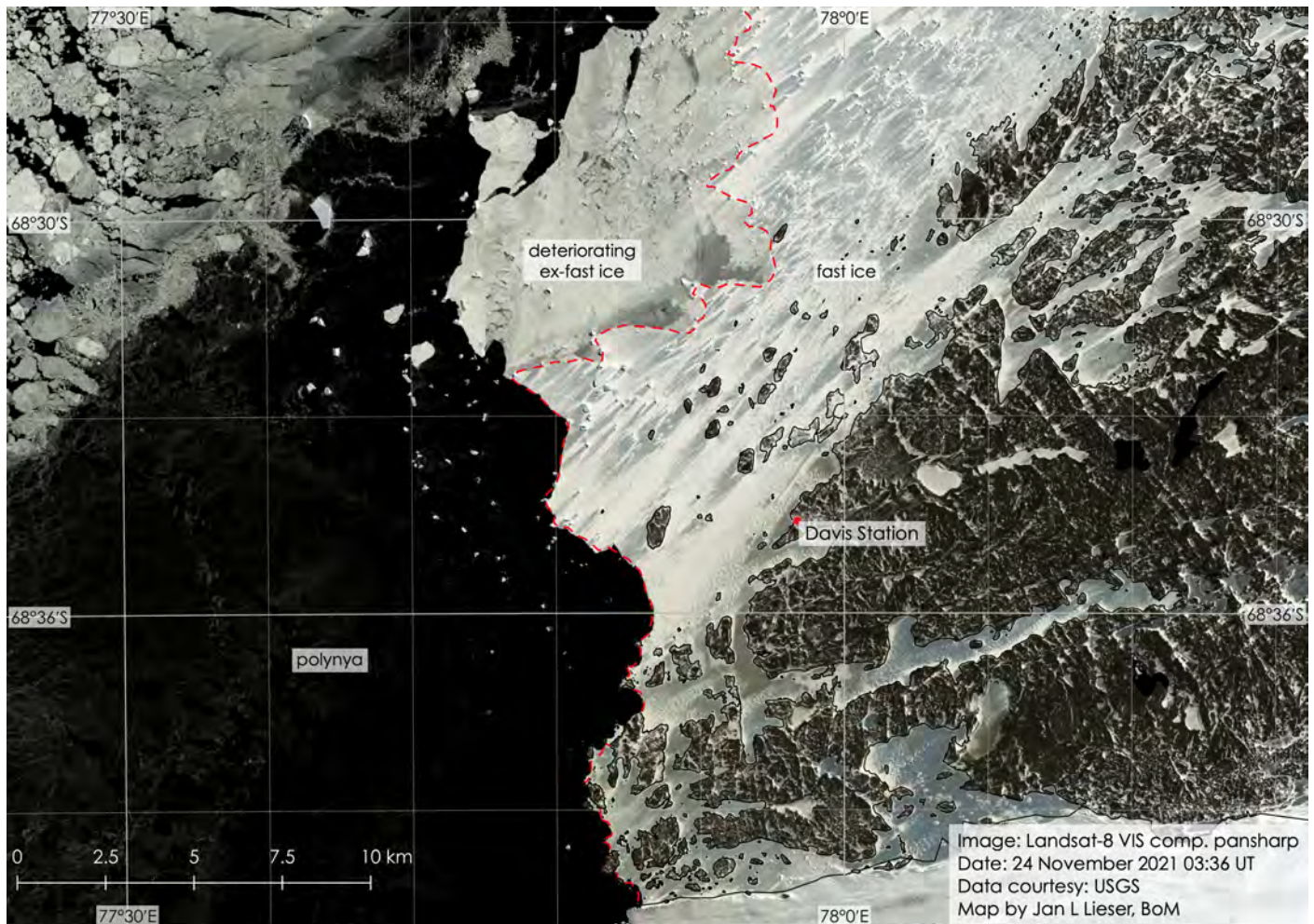


Figure 1: Landsat-8 pansharpened visible composite data acquired 24 November 2021 at 03:36 UT and provided by USGS.

North of Davis Station, a long straight line between the islands marks the Davis sea-ice ski-landing area.

In the west and south of the station, a polynya is present off the fast-ice edge created by offshore winds.

North of the fast-ice edge, deteriorating ex-fast ice shows holes in the ice surface and increased break-up around its edges.

Ice Bulletin: D'Urville Sea

Issued: Thursday 25th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off the coastline between Dumont D'Urville Station and Mawsons Huts/Cape Denison. The fast-ice edge on 21 November 2021 is marked by a dashed yellow line.

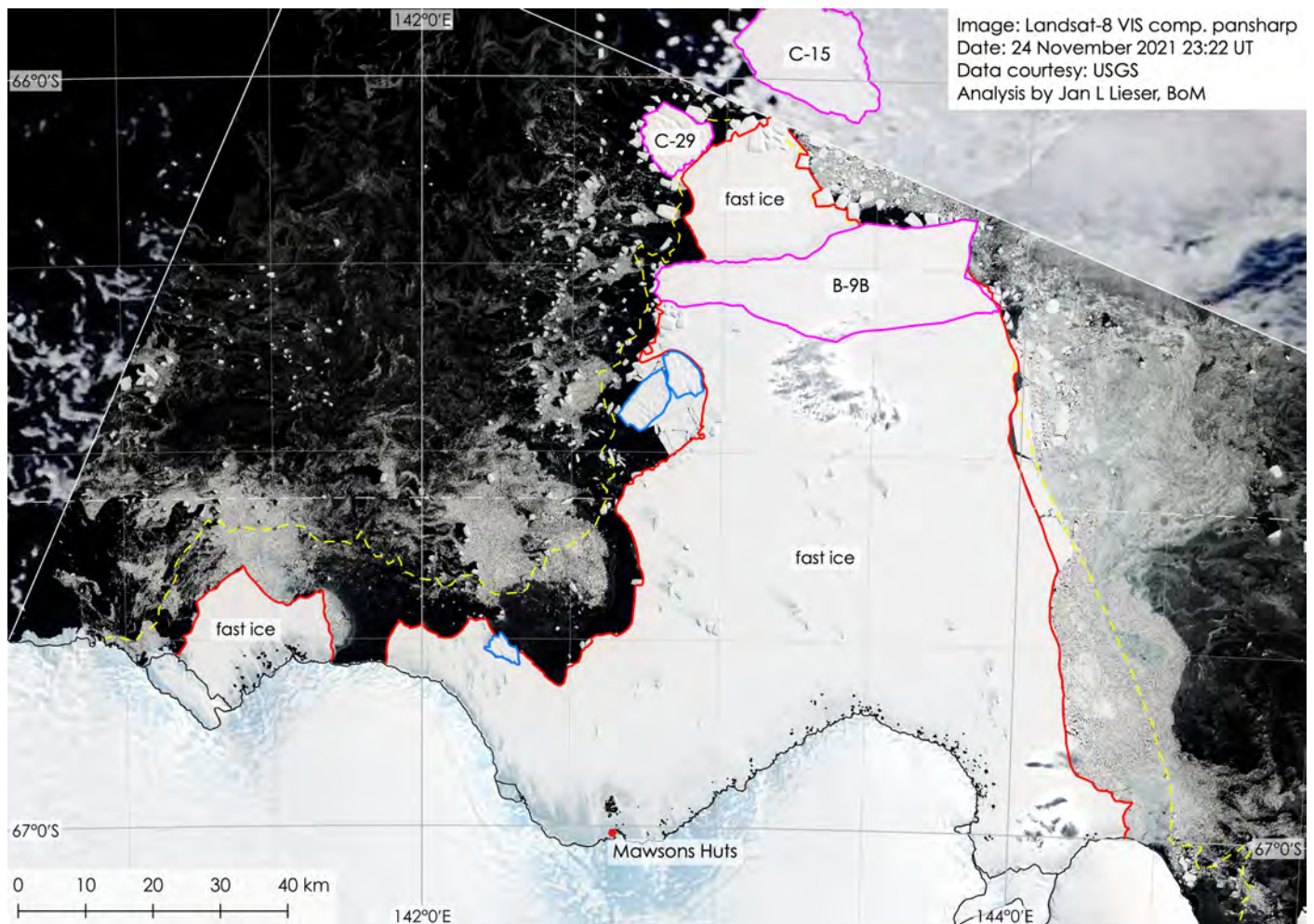


Figure 1: Landsat-8 pansharpened visible composite data acquired 24 November 2021 at 23:22 UT and provided by USGS.

The fast-ice edge continues to retreat but largely homogenous fast ice is still present off the huts. North of Mawsons Huts, iceberg B-9B remains enclosed by the offshore fast ice and grounded small icebergs while icebergs C-15 and C-29 are not enclosed by fast ice anymore but still grounded and trapped by smaller icebergs.

South of the western edge of iceberg B-9B, two icebergs (marked by blue shapes) that have been restless but enclosed by fast ice throughout winter appear to have freed themselves again and are moving westward.

The open water of the polynya northwest of Mawsons Huts is still roughly 23.5 km (13 nautical miles) away from the huts.

Ice Bulletin: Larsemann Hills

Issued: Friday 26th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Amanda Bay northeast of the Larsemann Hills.

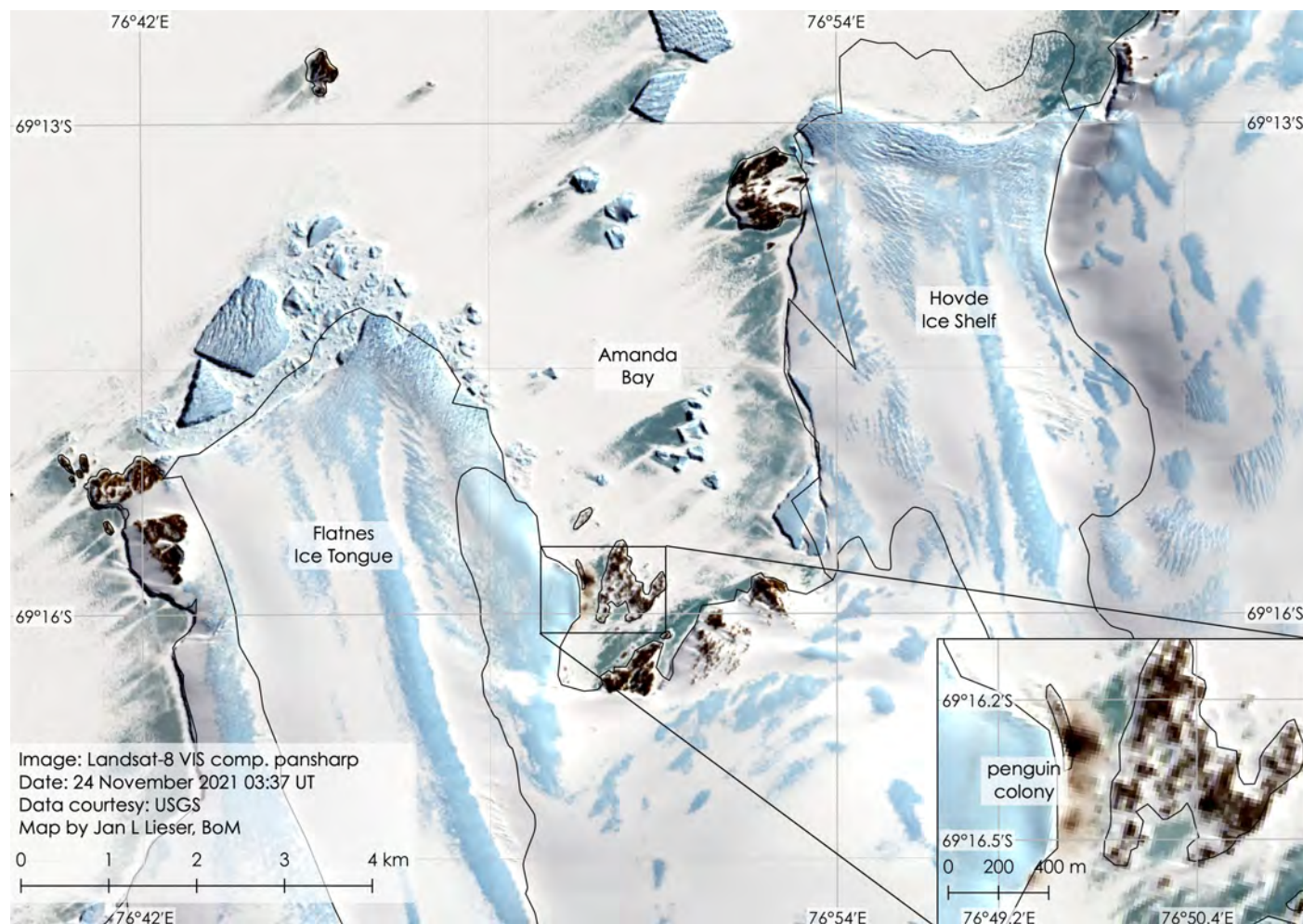


Figure 1: Landsat-8 pansharpened visible composite data acquired 24 November 2021 at 03:36 UT and provided by USGS.

The location of a penguin colony at the eastern side of Flatnes Ice Tongue can be identified by the discoloured ice surface.

Figures 2 and 3 show the larger vicinity of the Larsemann Hills and the fast ice to the north as seen in high-resolution visible data and SAR data, respectively. The SAR data were acquired 12 hours after the visible data.

A ship track can be seen in both data sets heading south towards Thala Fjord southwest of Bharati Station. The SAR data show two vessels in the fjord as bright spots.



Figure 2: Landsat-8 pansharpened visible composite data acquired 24 November 2021 at 03:36 UT and provided by USGS.

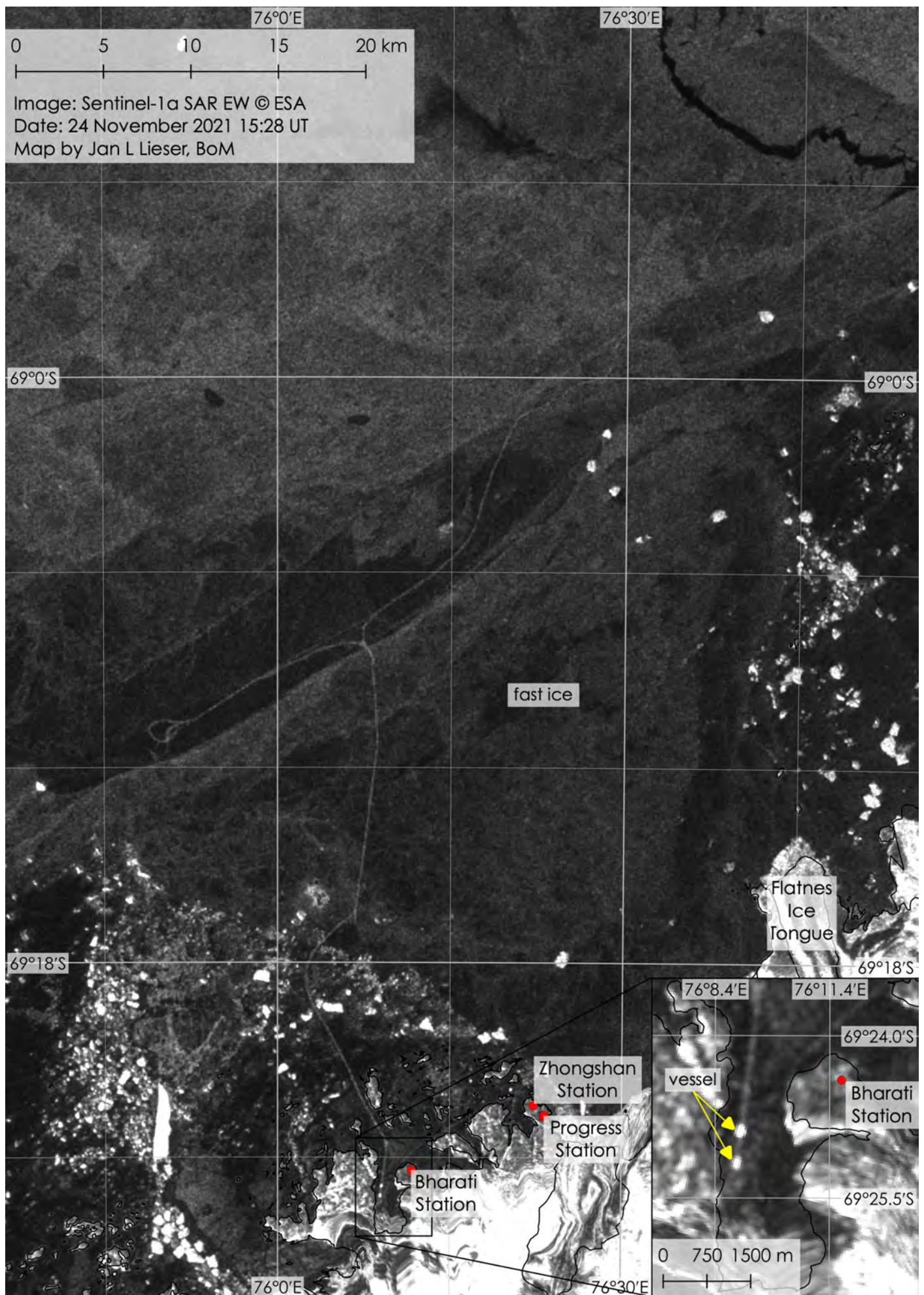


Figure 3: Sentinel-1a SAR EW data acquired 24 November 2021 at 15:28 UT and provided by PolarView.

Ice Bulletin: Cape Darnley

Issued: Friday 26th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Cape Darnley northwest of the Amery Ice Shelf.

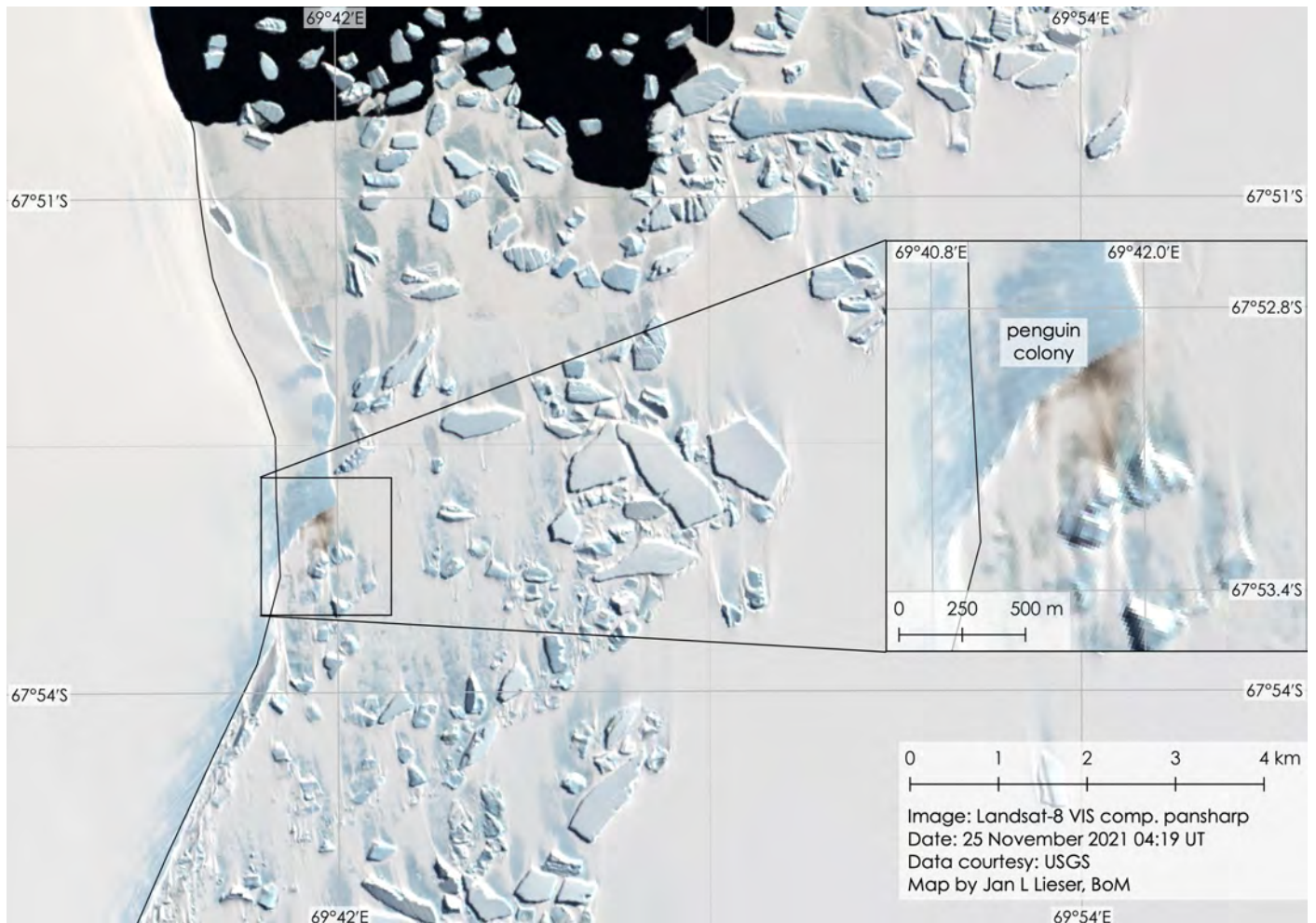


Figure 1: Landsat-8 pansharpened visible composite data acquired 25 November 2021 at 04:19 UT and provided by USGS.

The location of a penguin colony can be identified by the discoloured ice surface.

Ice Bulletin: Wilkins Aerodrome

Issued: Friday 26th November 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Wilkins Aerodrome.

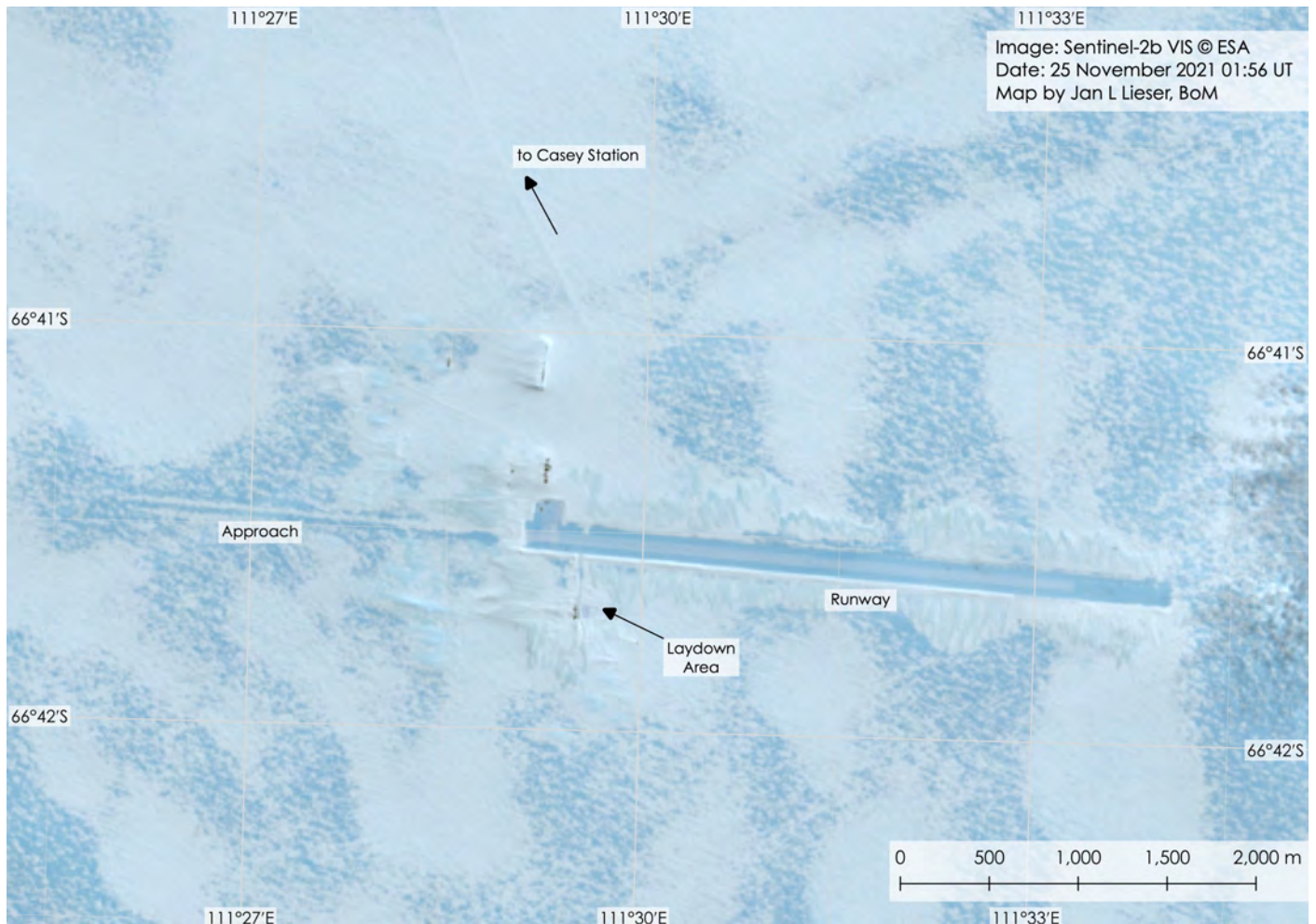


Figure 1: Sentinel-2b visible composite data acquired 25 November 2021 at 01:56 UT and provided by ESA.

The blue-ice runway is clearly visible. North and south of the runway, snow dunes are left from clearing the runway. Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Bunger Hills

Issued: Friday 26th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of the Bunger Hills.

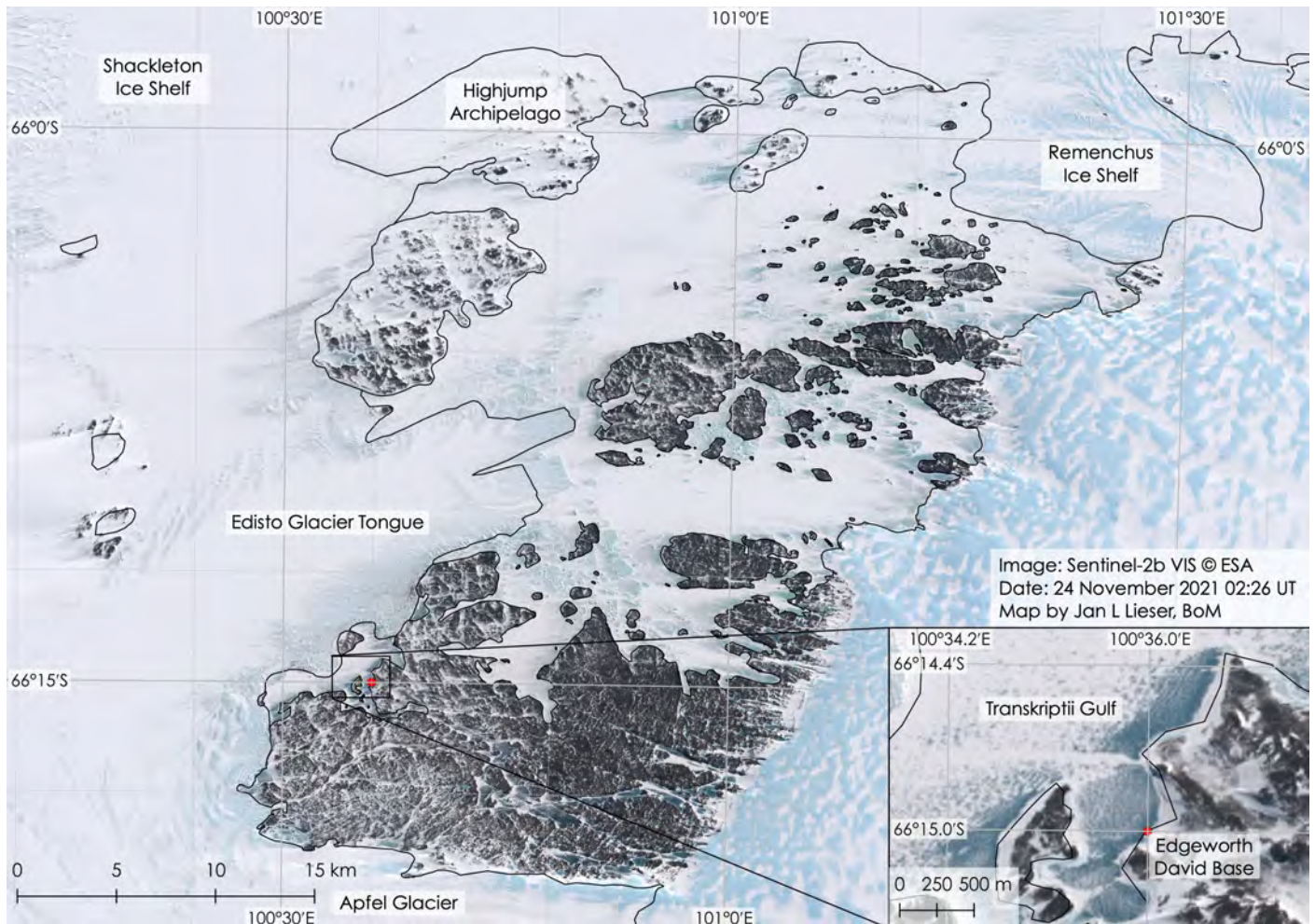


Figure 1: Sentinel-2b visible composite data acquired 24 November 2021 at 02:26 UT and provided by USGS.

The Bunger Hills are partly snow covered, and all water bodies are covered by ice.

Off Edgeworth David Base, the surface of Transkriptii Gulf appears homogeneous and wind-blown scouring is evident in the lee of high orographic features. The inset provides a close-up view off the base.

Ice Bulletin: Davis Station

Issued: Monday 29th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Davis Station, the fast-ice edge on 21 November 2021 is marked by a dashed red line.

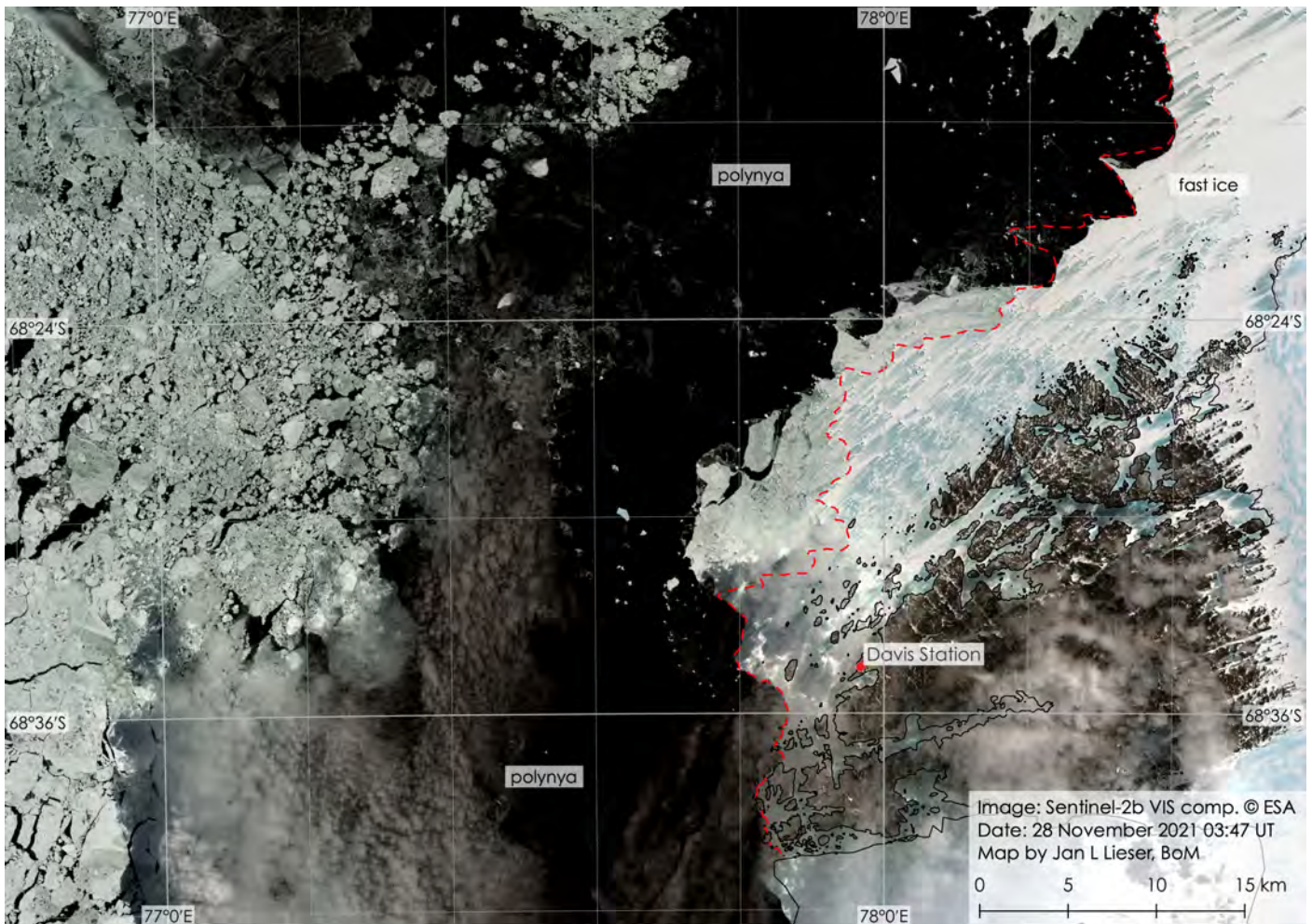


Figure 1: Sentinel-2b visible composite data acquired 28 November 2021 at 03:47 UT and provided by USGS.

The southern part of the Vestfold Hills and Davis Station are slightly obscured by clouds, but the fast-ice edge offshore has been largely stable offshore. Only north of the hills, some fast ice has broken off. West and south of the station, a polynya is present off the fast-ice edge created by offshore winds.

Figures 2 and 3 show high-resolution visible data of penguin colonies in Amanda Bay and off Cape Darnley, respectively. Both scenes are slightly obscured by clouds in their north-eastern part. Insets provide a closer view of the discoloured ice where penguins are present.

Figures 4 and 5 show high-resolution visible and SAR data, respectively, of the same geographical frame around the Larsemann Hills. A vessel remains anchored in Thala Fjord southwest of Bharati Station and an ice road can be seen in the SAR data heading towards Zhongshan Station and Progress 3 Station. (A black diagonal line through the SAR scene is a stitching artefact where two consecutive scenes are joint together.)

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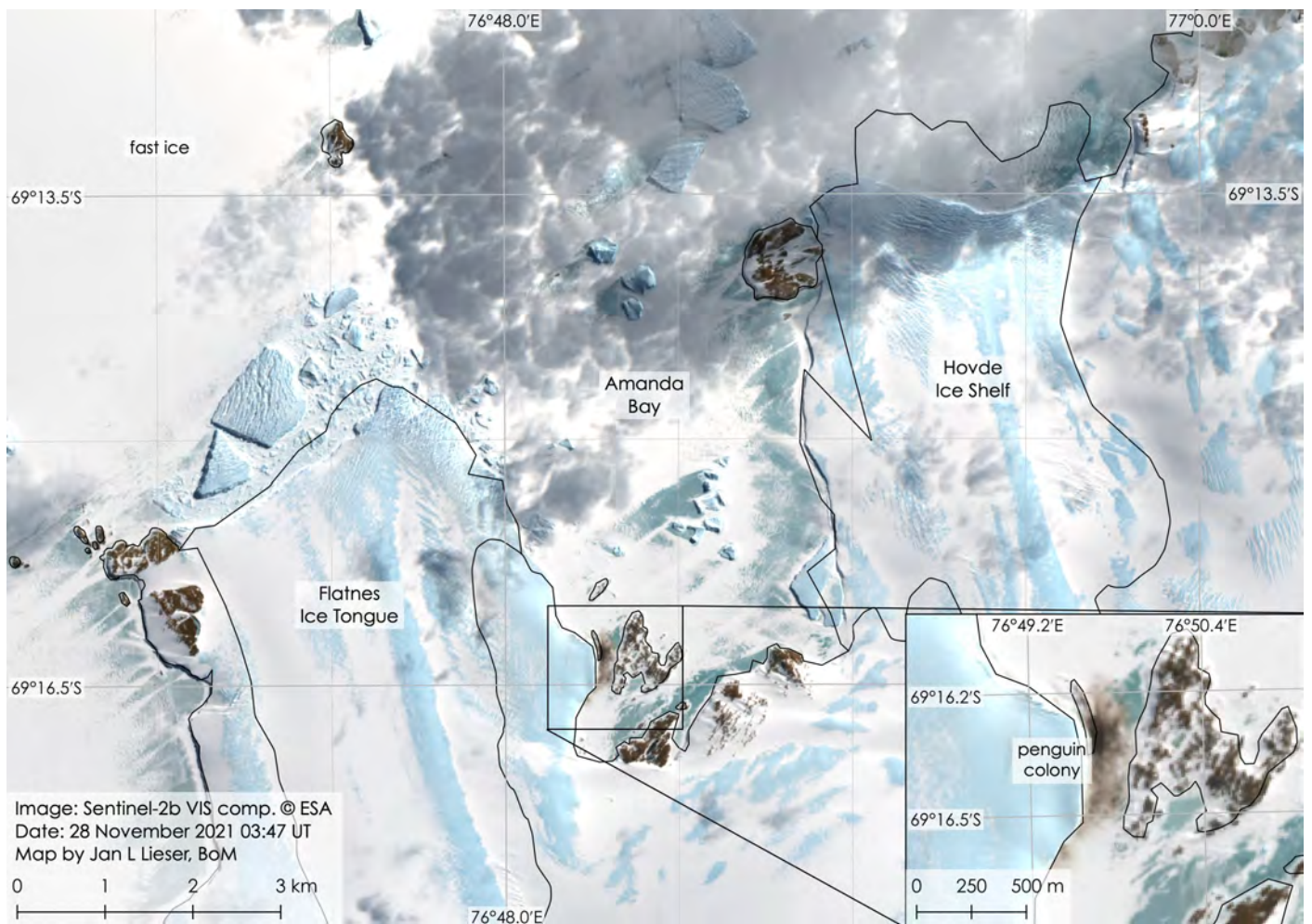


Figure 2: Sentinel-2b visible composite data acquired 28 November 2021 at 03:47 UT and provided by USGS.

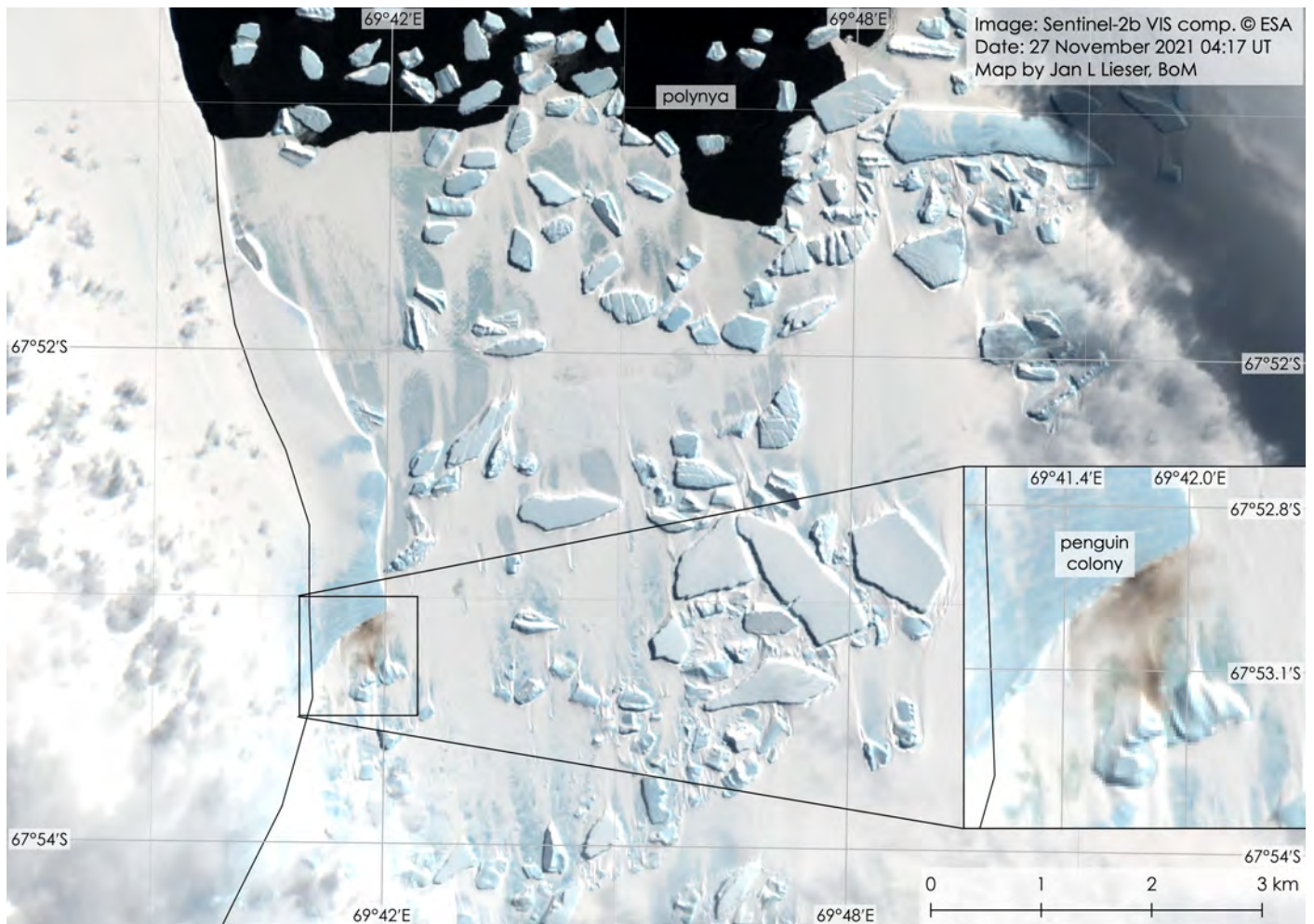


Figure 3: Sentinel-2b visible composite data acquired 27 November 2021 at 04:17 UT and provided by USGS.

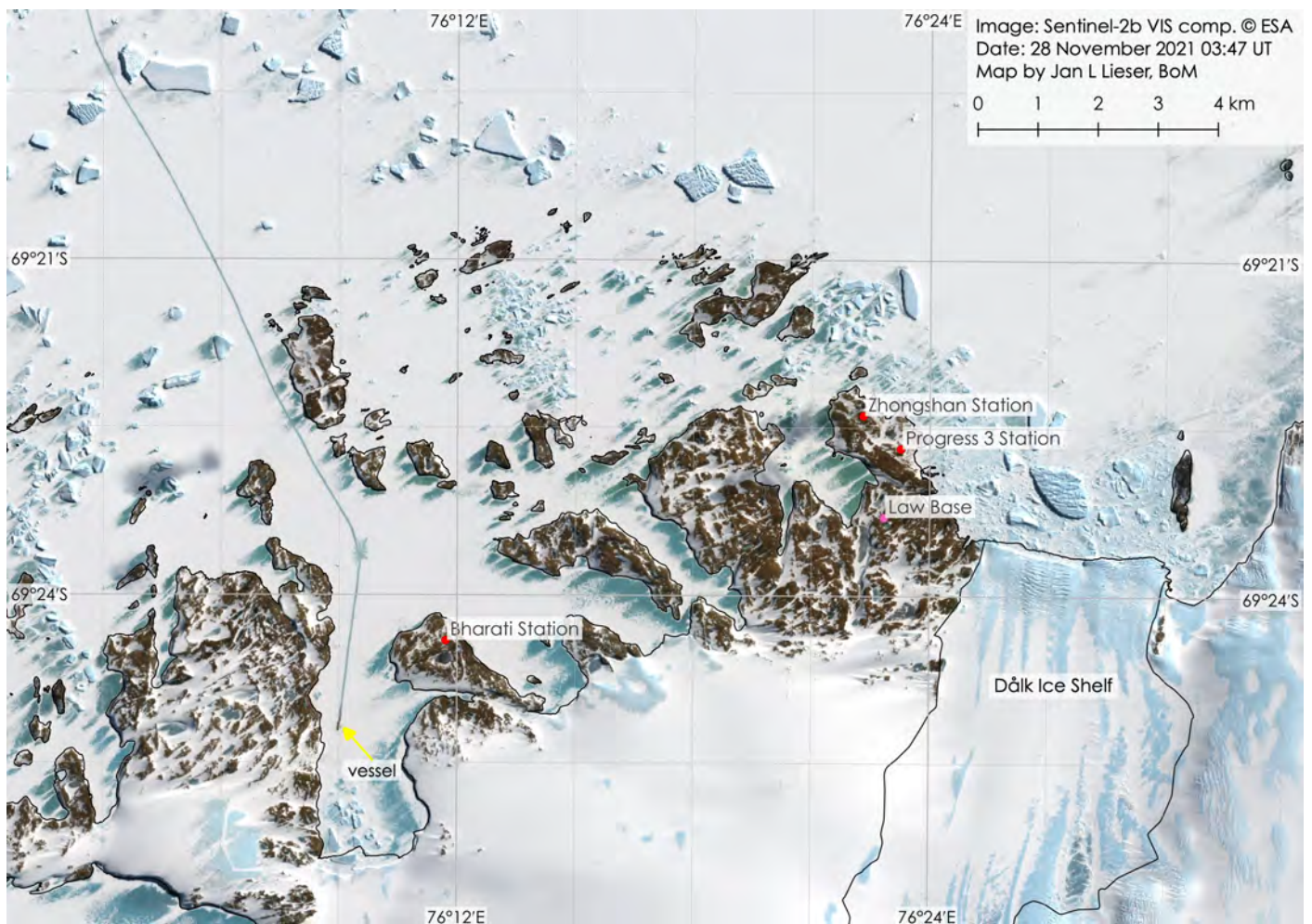


Figure 4: Sentinel-2b visible composite data acquired 28 November 2021 at 03:47 UT and provided by USGS.



Figure 5: Sentinel-1b SAR data acquired 27 November 2021 at 22:26 UT and provided by PolarView.

Ice Bulletin: D'Urville Sea

Issued: Monday 29th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Dumont D'Urville Station. The fast-ice edge on 24 November 2021 is marked by a dashed red line.

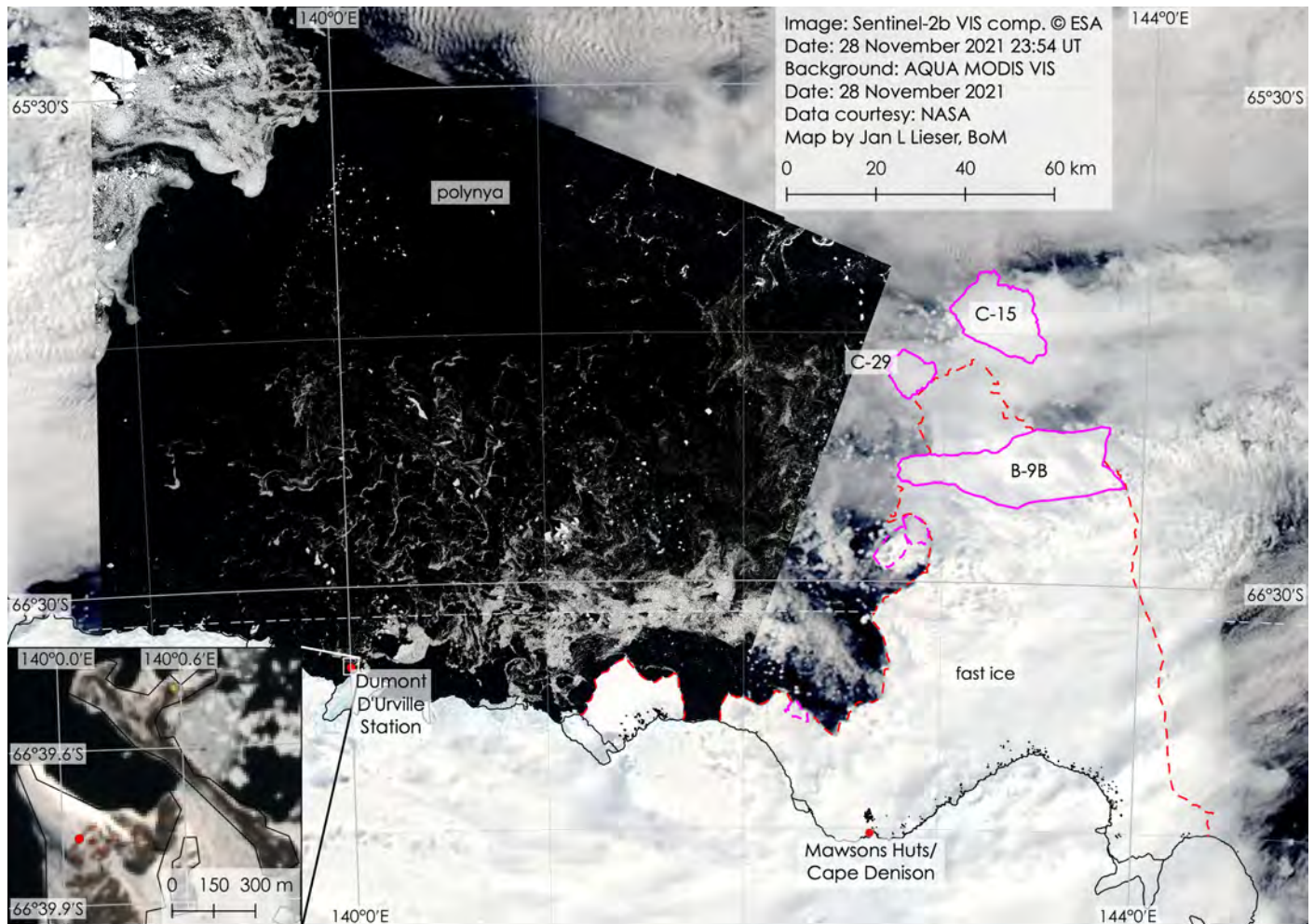


Figure 1: Sentinel-2b visible composite data acquired 28 November 2021 at 23:54 UT and provided by USGS; background of AQUA MODIS VIS data acquired 28 November 2021 and provided by NASA.

During the weekend, the fast-ice edge remained largely stable. North of Mawsons Huts, iceberg B-9B remains enclosed by the offshore fast ice and grounded small icebergs while icebergs C-15 and C-29 are not enclosed by fast ice anymore but still grounded and trapped by smaller icebergs.

Off Dumont D'Urville Station, one of the two larger icebergs that recently calved off the ice shelf east of the station appears to have disintegrated and created many smaller icebergs now floating in the polynya.

The open water of the polynya northwest of Mawsons Huts remains roughly 23.5 km (13 nautical miles) away from the huts.

Ice Bulletin: Davis Station

Issued: Tuesday 30th November 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data the southern Cooperation Sea between the Amery Ice Shelf and the West Ice Shelf. The locations of penguin colonies are marked by pink triangles.

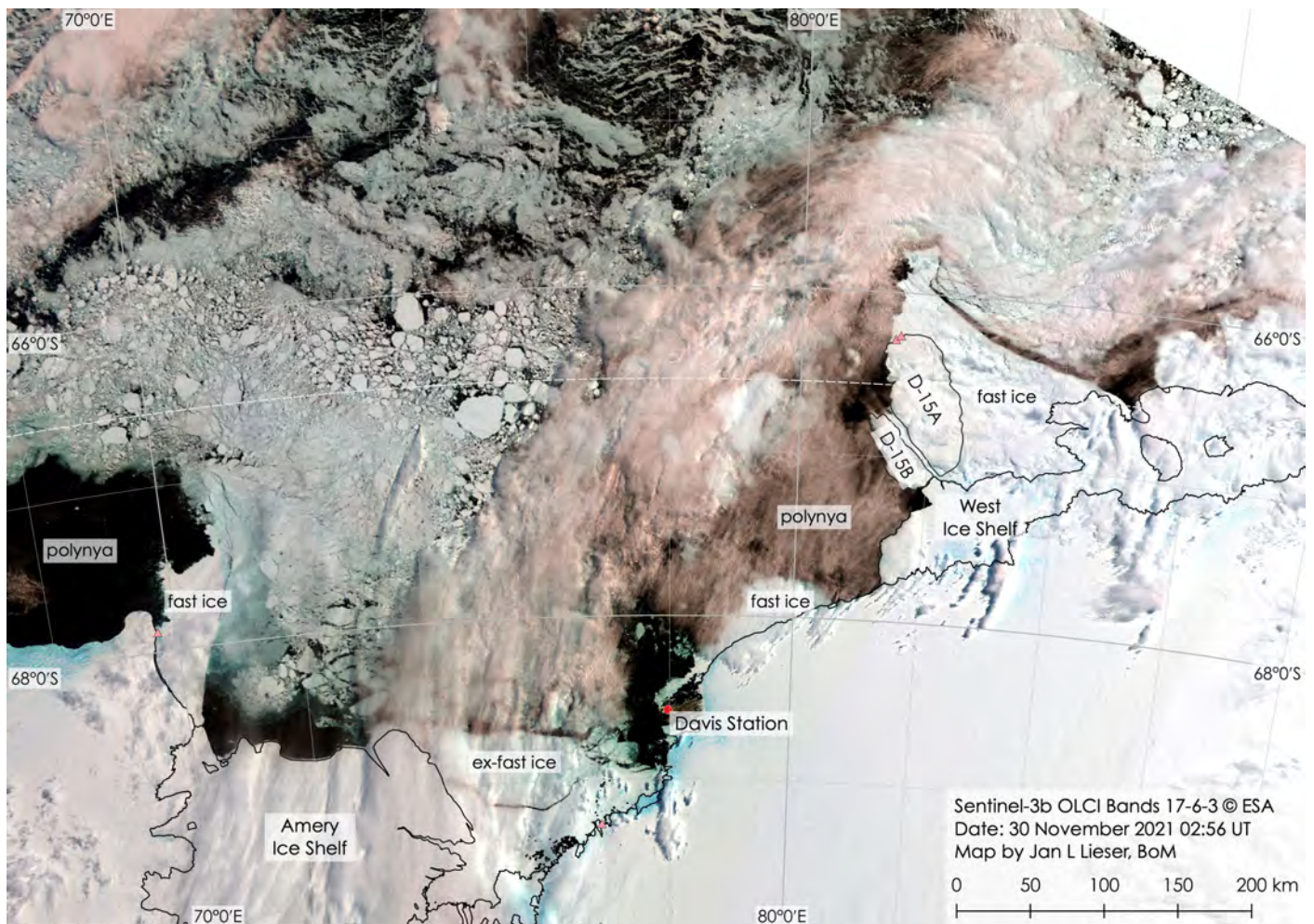


Figure 1: Sentinel-3b visible composite data acquired 30 November 2021 at 02:56 UT and provided by ESA.

Northeast of the Amery Ice Shelf, a vast sheet of ex-fast ice broke away off Prydz Bay and the crack is clearly visible through the thin clouds in the region.

Northwest of the Amery Ice Shelf, fast ice remains attached off Cape Darnley and north of the West Ice Shelf, fast ice is also attached to the shelf and east of iceberg D-15A.

Offshore, the southern Cooperation Sea is filled with decaying first-year sea ice that has some vast floes in the mix.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 1st December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Dumont D'Urville Station. The fast-ice edge marked by a red line (dashed red for 24 November 2021).

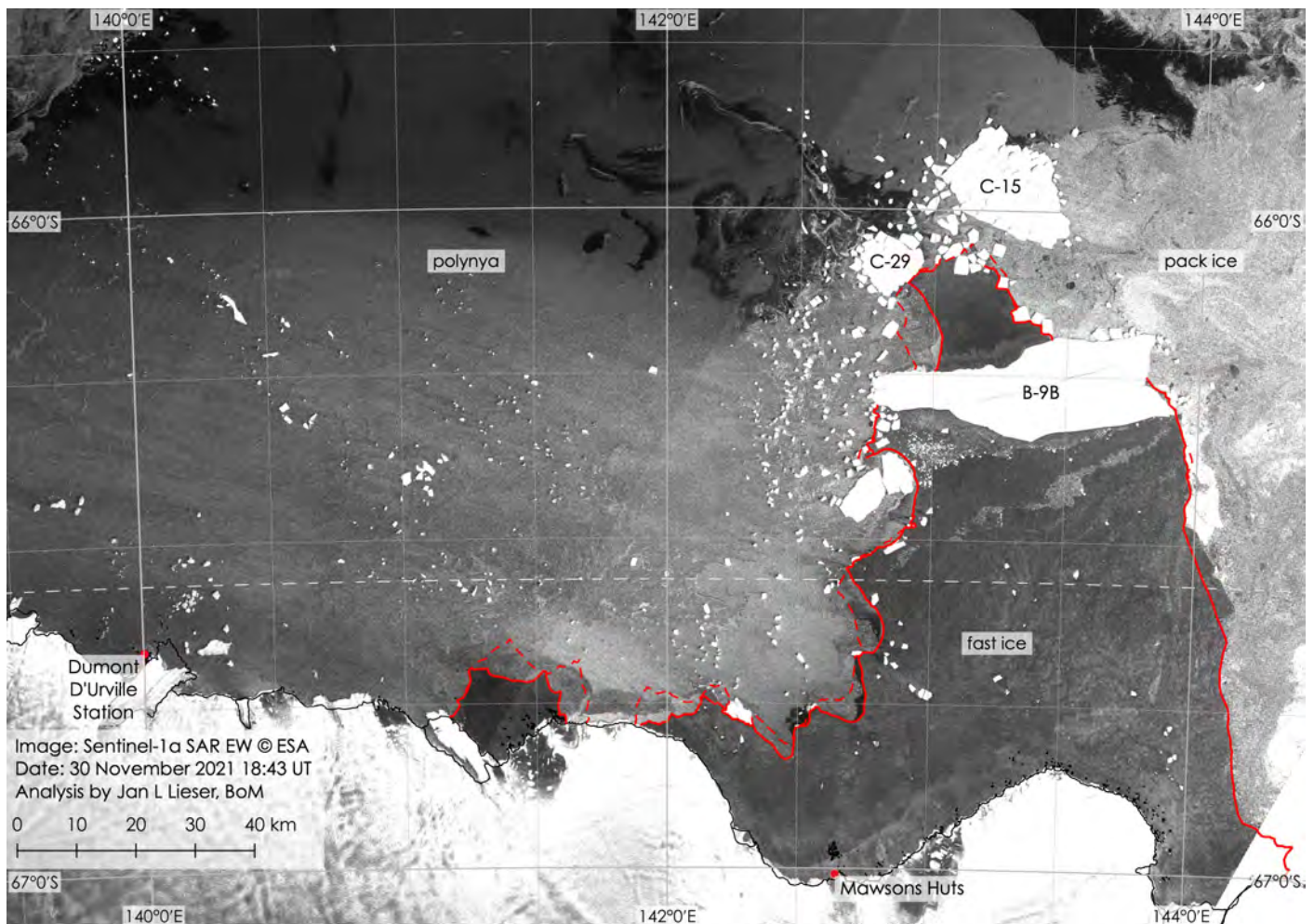


Figure 1: Sentinel-1a SAR EW data acquired 30 November 2021 at 18:43 UT and provided by PolarView.

During the past two days, the fast-ice edge retreated slightly. The open water of the polynya northwest of Mawsons Huts is now roughly 21 km (11.5 nautical miles) away from the huts.

North of Mawsons Huts, iceberg B-9B remains enclosed by the offshore fast ice and grounded small icebergs while icebergs C-15 and C-29 are not enclosed by fast ice anymore but still grounded and trapped by smaller icebergs.

Off Dumont D'Urville Station, one of the two larger icebergs that recently calved off the ice shelf east of the station has disintegrated and created many smaller icebergs now floating in the polynya.

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Ice Bulletin: Mawson Station

Issued: Wednesday 1st December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The fast-ice edge marked by a red line (dashed yellow line for 15 November 2021).

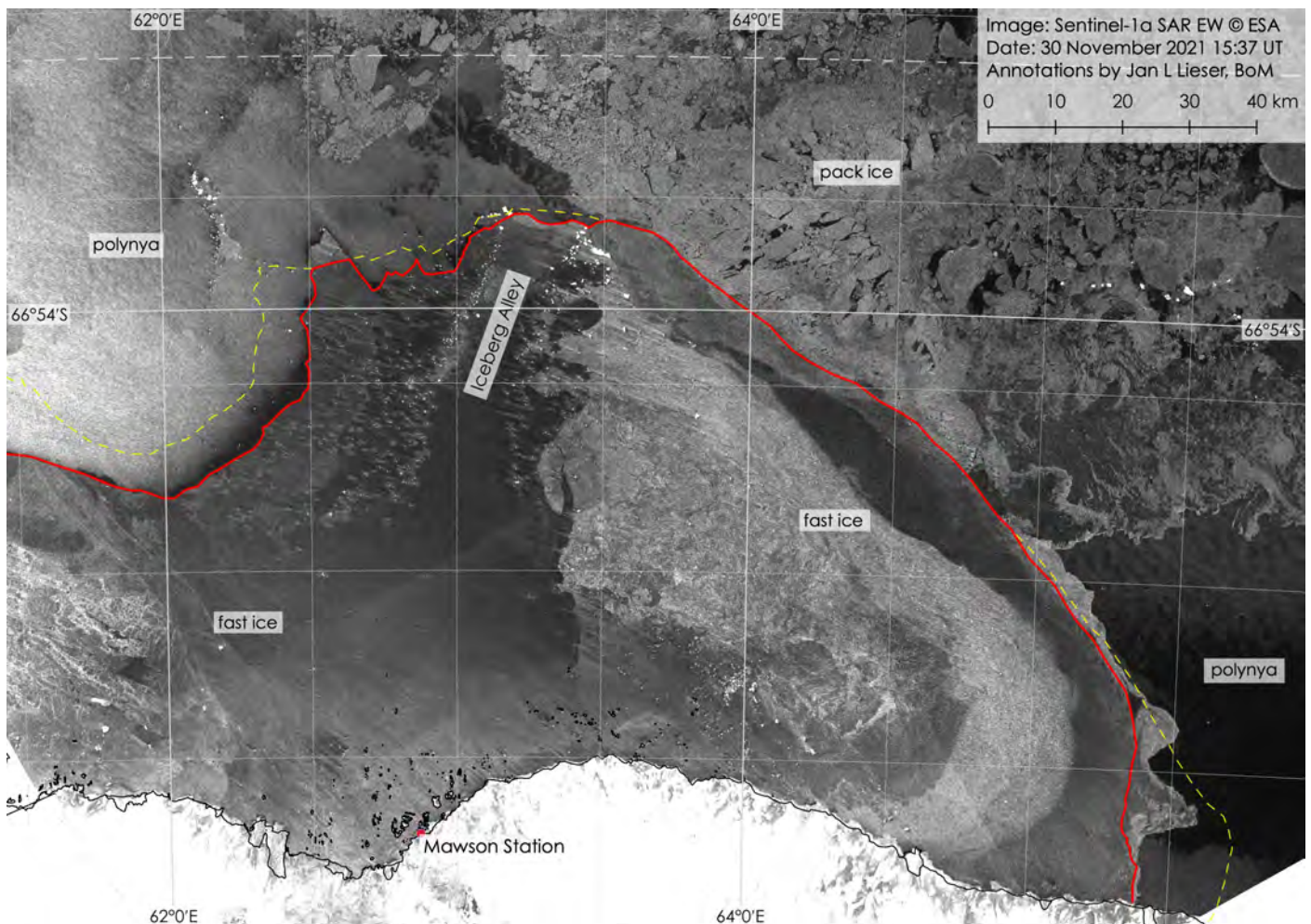


Figure 1: Sentinel-1a SAR EW data acquired 30 November 2021 at 15:37 UT and provided by PolarView.

Northwest of Mawson Station, the fast-ice edge retreated slightly since mid-November. The shortest distance between the station and the open water of the polynya northwest of the station is currently roughly 33 nautical miles.

North of the station, the sea-ice edge (not shown in the figure) is currently roughly 240 nautical miles below (south of) the median sea-ice extent for November and at the median sea-ice extent for December further west already (off Enderby Land).

Ice Bulletin: Davis Station

Issued: Thursday 2nd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures of this bulletin show high-resolution (15 m horizontal) visible composite data the south-eastern Cooperation Sea between the Amery Ice Shelf and the West Ice Shelf along Ingrid Christensen Coast.

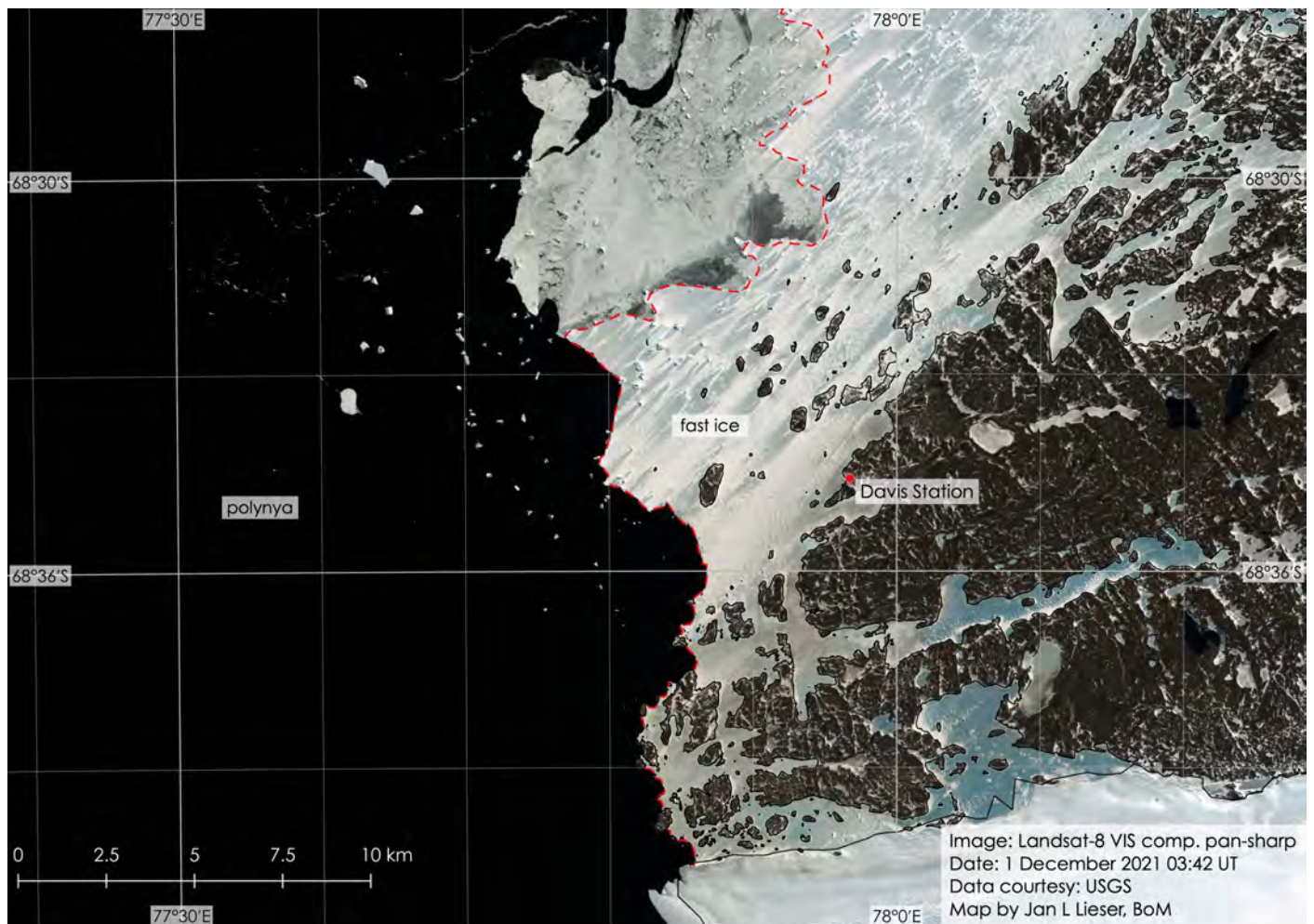


Figure 1: Landsat-8 pansharpened visible composite data acquired 1 December 2021 at 03:42 UT and provided by USGS.

Off Davis Station, the fast-ice edge has remained largely stable (a dashed red line in Figure 1 indicates the fast-ice edge on 21 November 2021).

Figure 2 shows the larger Larsemann Hills region southwest of Davis Station, where a vast sheet of ex-fast ice broke away off Prydz Bay and the widening crack is visible in the northern part of the figure. It appears that some portion of this crack developed along a ship track through the fast ice. More cracks are also radiating east and west from a ship track that is heading southward towards the hills (the inset highlights these developing features with blue lines).

Figure 3 shows more of the same satellite data along Ingrid Christensen Coast.

Offshore and west of the polynya, the southern Cooperation Sea is filled with decaying first-year sea ice that has some vast floes in the mix.

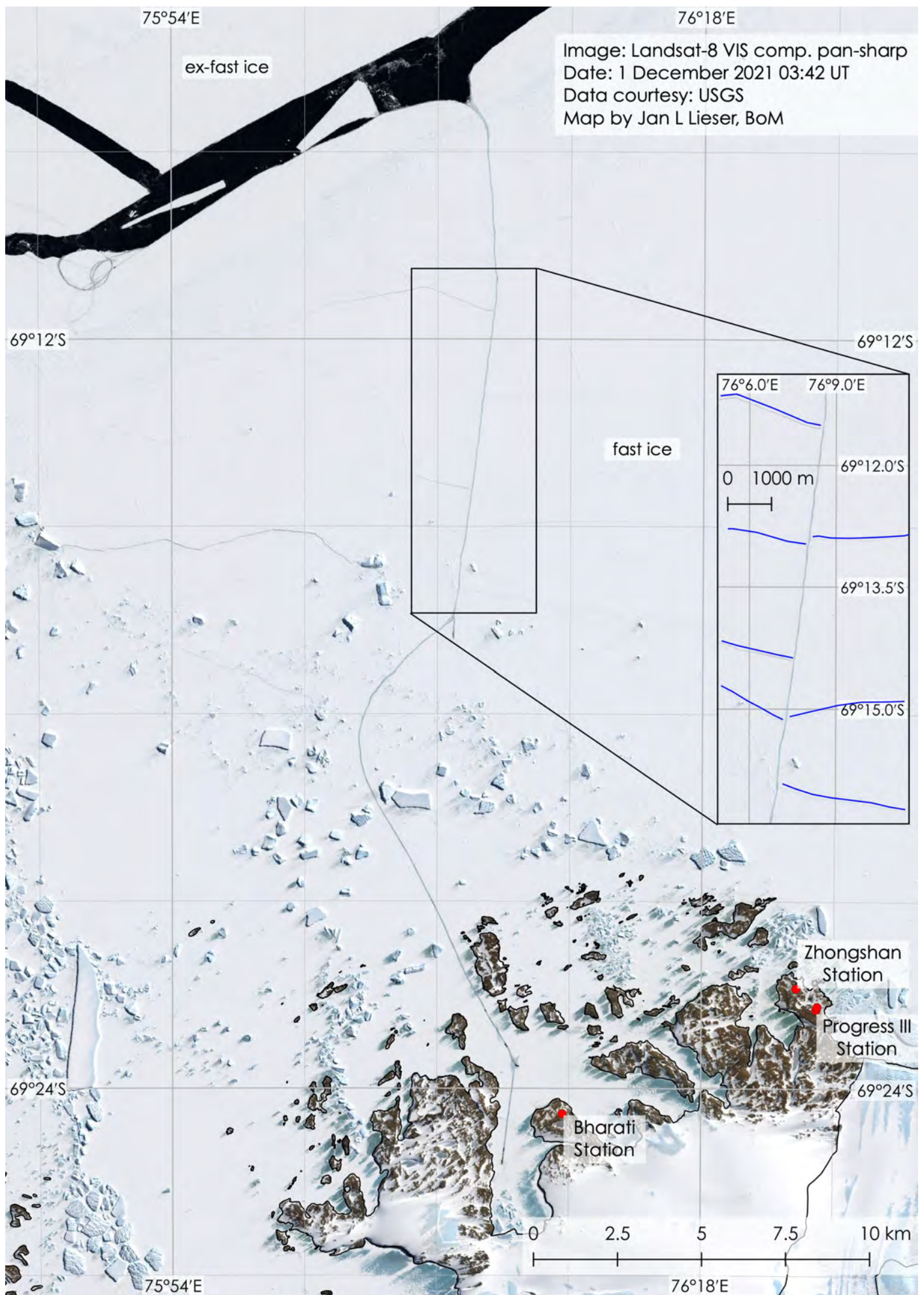


Figure 2: Landsat-8 pansharpened visible composite data acquired 1 December 2021 at 03:42 UT and provided by USGS.

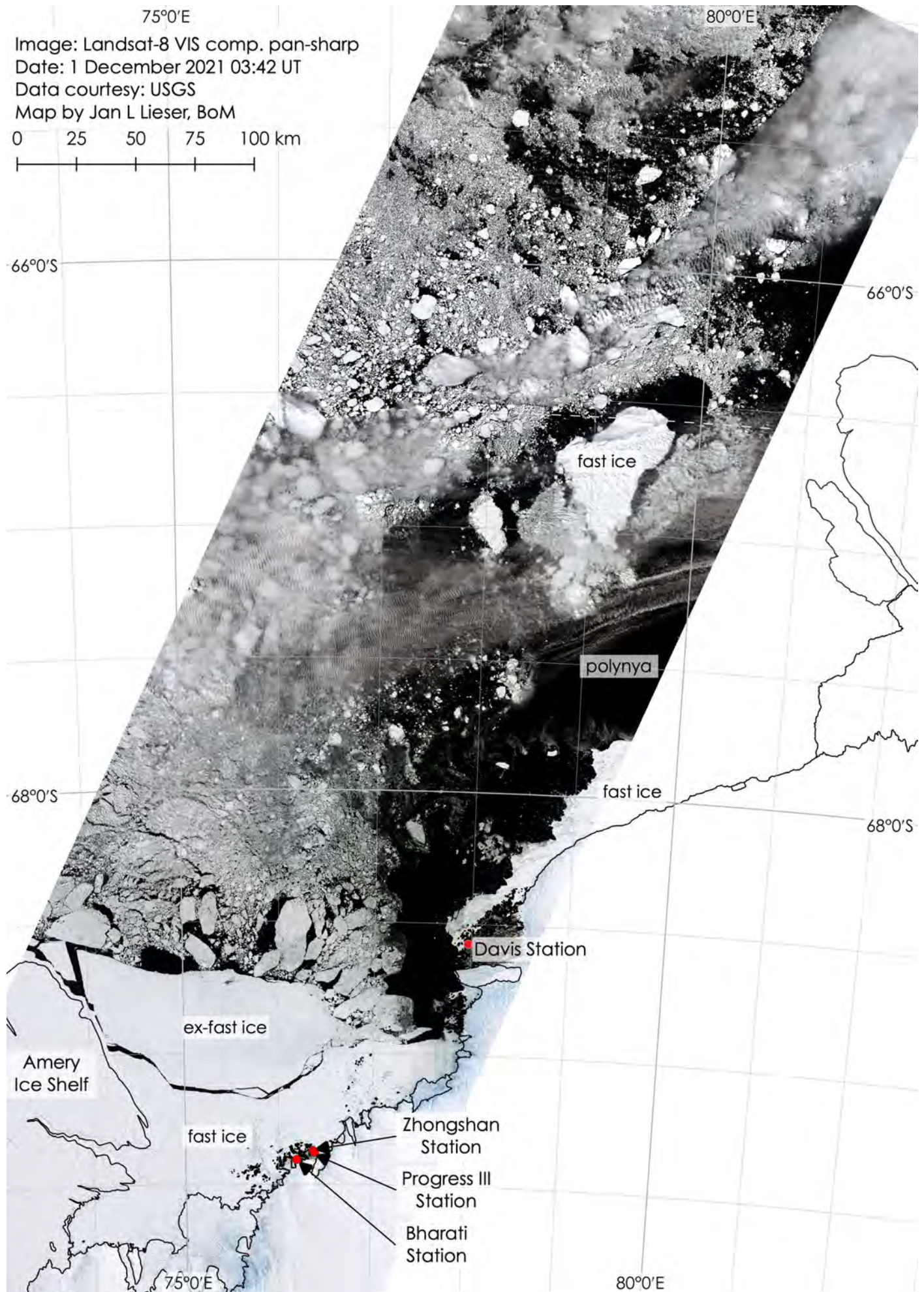


Figure 3: Landsat-8 pansharpened visible composite data acquired 1 December 2021 at 03:42 UT and provided by USGS.

Ice Bulletin: Casey Station

Issued: Friday 3rd December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (3.125 km horizontal) sea-ice concentration data north of Casey Station and offshore. The median sea-ice extent for December is marked by a black/white line.

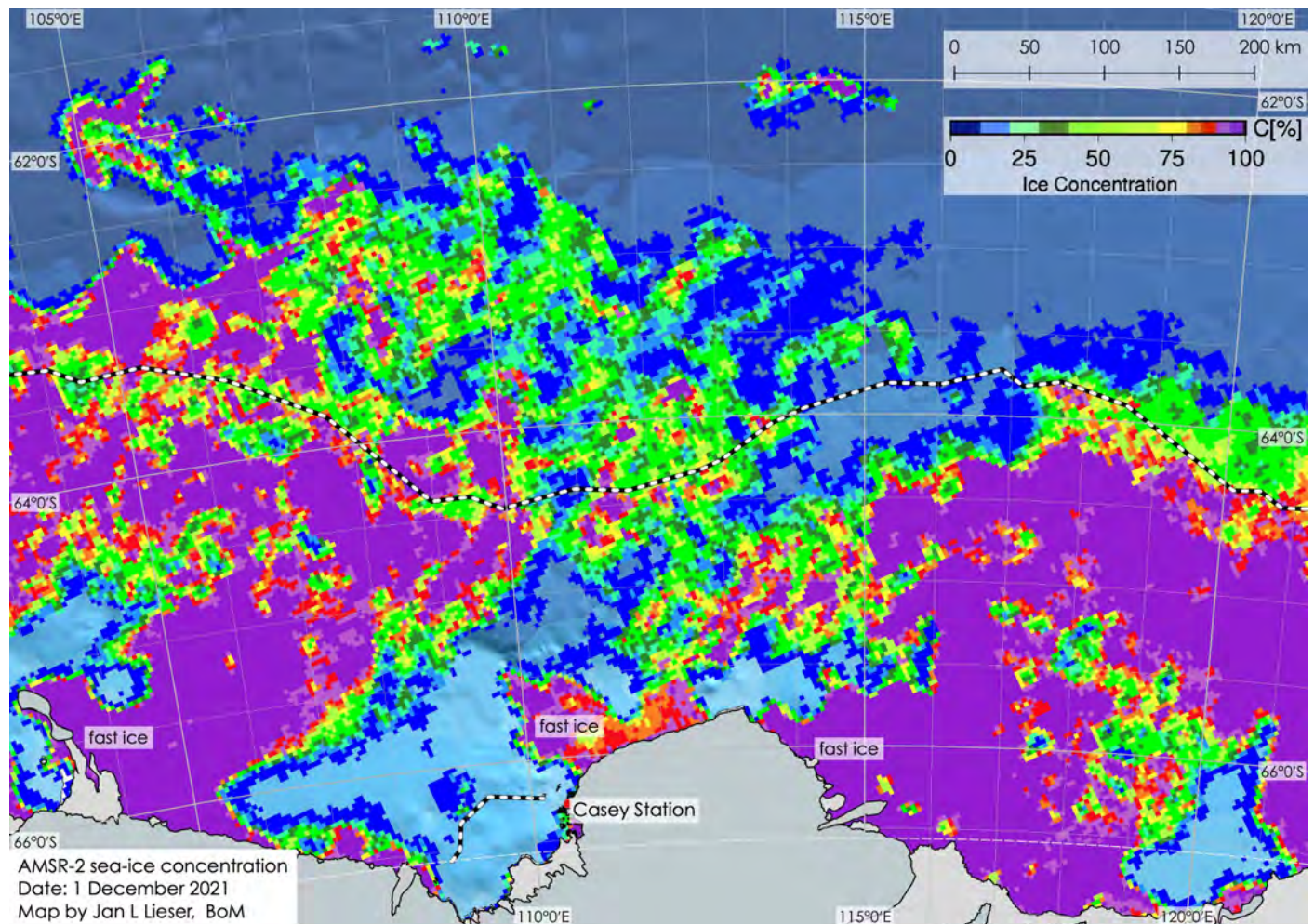


Figure 1: AMSR-2 sea-ice concentration acquired 1 December 2021 and provided by ICDC.

North of Casey Station/Law Dome, first-year sea ice is decaying off the fast-ice edge and patches of sea ice still reach 62°0'S.

Figure 2 shows high-resolution SAR data off Casey Station and surrounds.

Off station, the fast-ice edge has changed slightly during the last week and some fast ice remains shore-fast (the fast-ice edge on 25 November 2021 is marked by a dashed red line).

In Vincennes Bay south of the station, a polynya is largely ice free and only partly covered by brash ice and some icebergs.

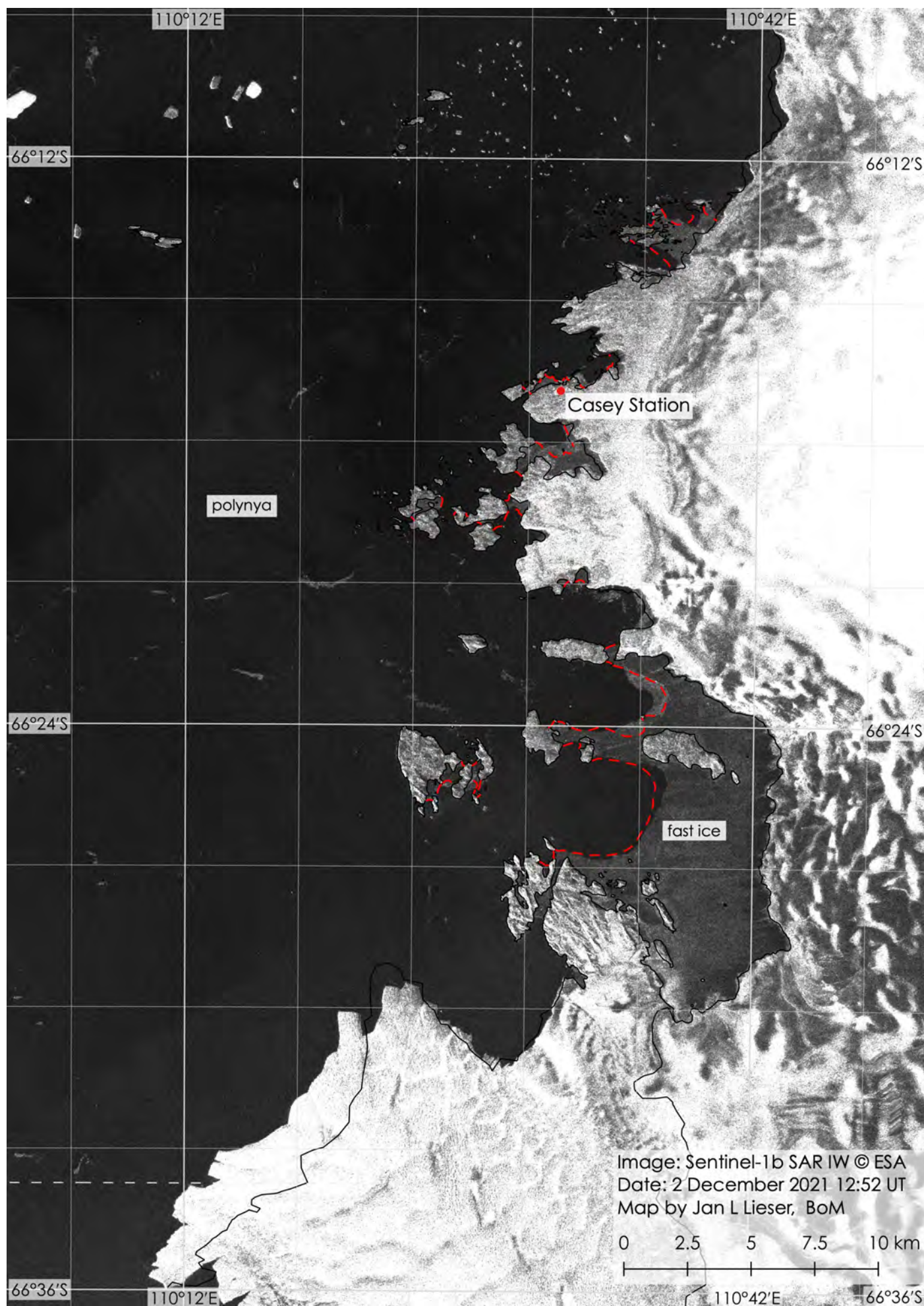


Figure 2: Sentinel-1b SAR IW data acquired 2 December 2021 at 12:52 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Friday 3rd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data north of Casey Station and offshore. The median sea-ice extent for December is marked by a black/white line.

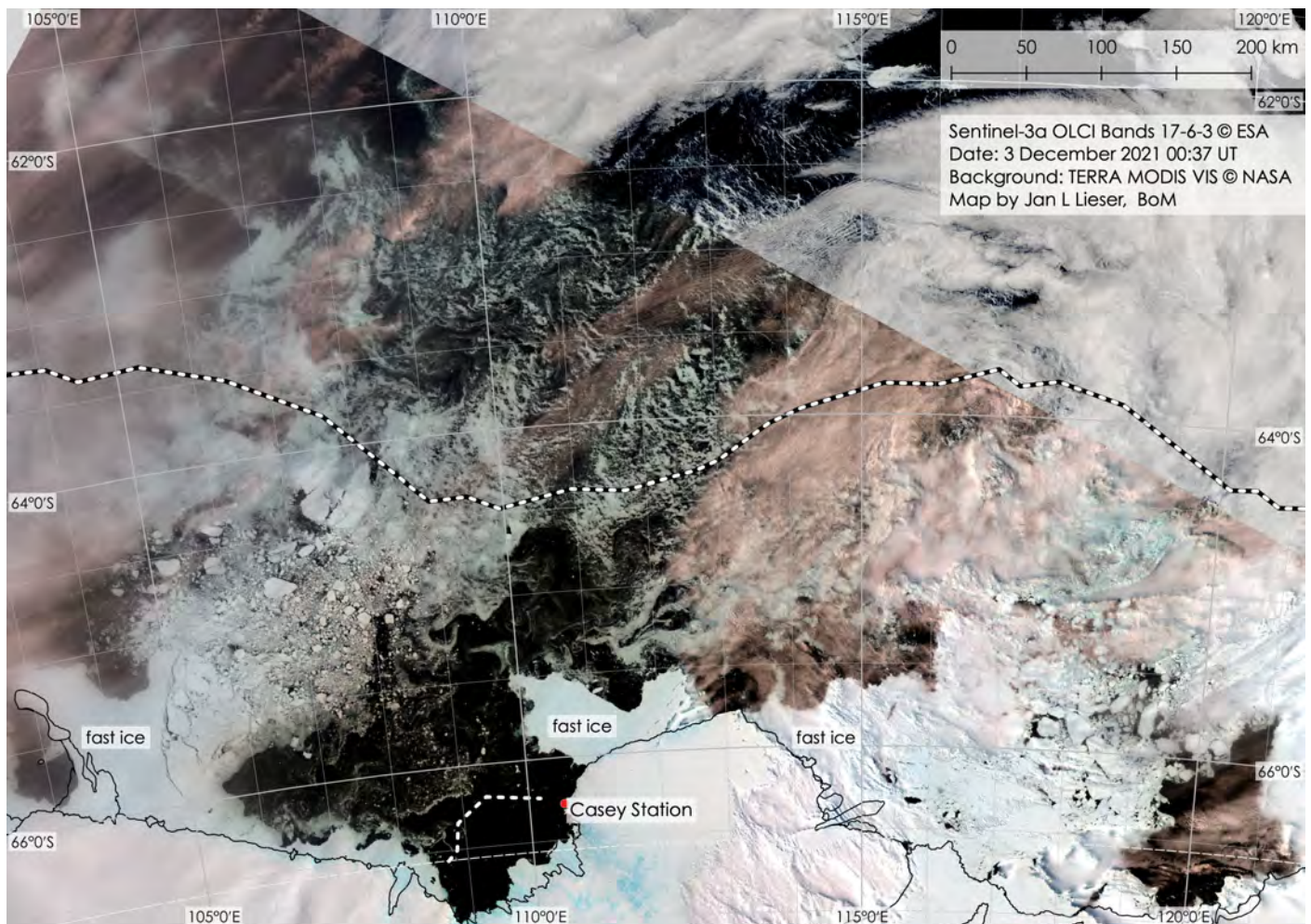


Figure 1: Sentinel-3a OLCI data acquired 3 December 2021 at 00:37 UT and provided by ESA; complemented by TERRA MODIS VIS data acquired 3 December 2021 and provided by NASA.

North of Casey Station/Law Dome, first-year sea ice is decaying, and patches of sea ice still reach north of 62°S.

In Vincennes Bay southwest of the station, a polynya is largely ice free and only partly covered by brash ice and some icebergs.

Ice Bulletin: D'Urville Sea

Issued: Sunday 5th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Dumont D'Urville Station. The fast-ice edge on 30 November 2021 is marked by a dashed red line.

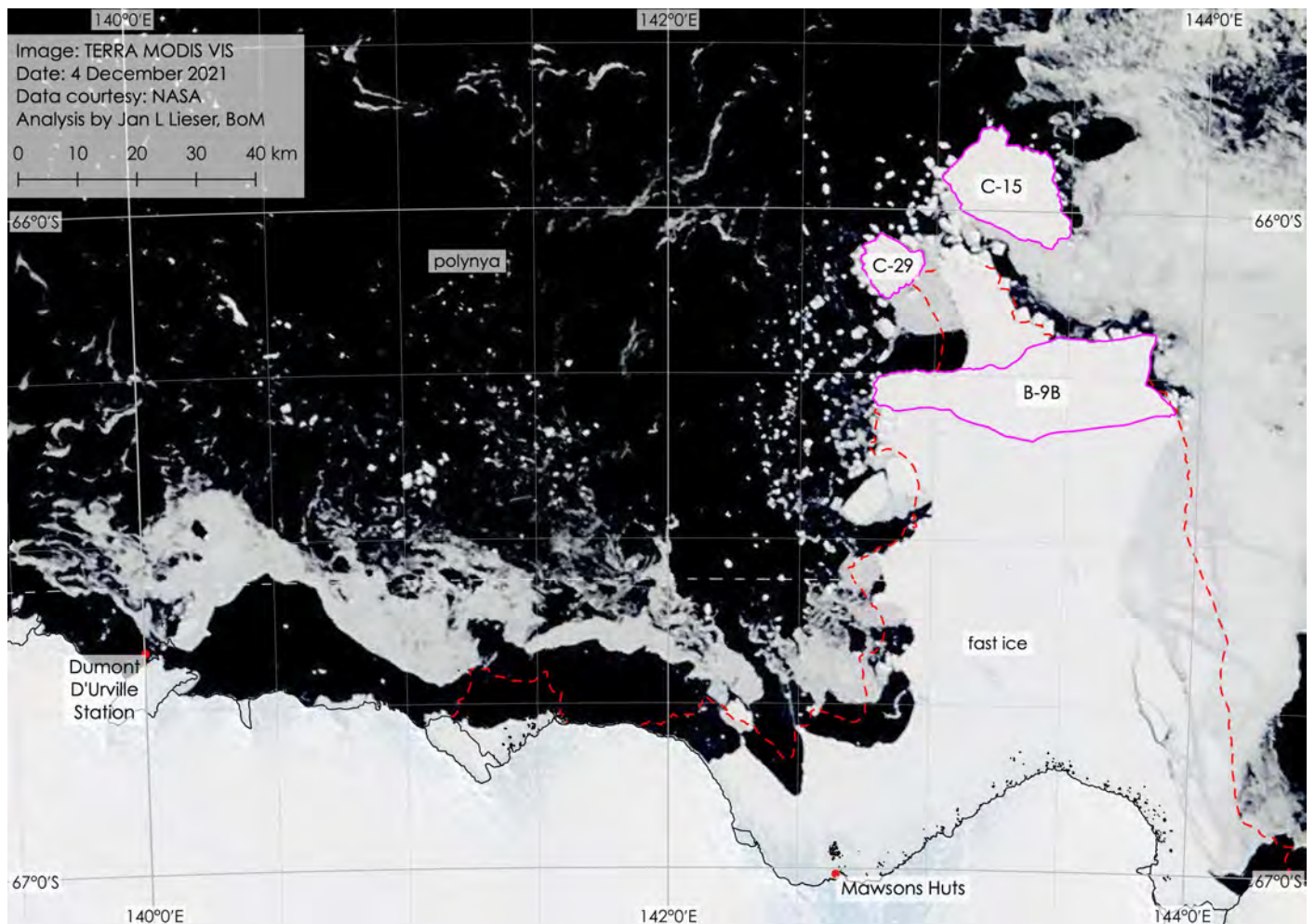


Figure 1: TERRA MODIS VIS data acquired 4 December 2021 and provided by NASA.

Since the start of December 2021, the fast-ice edge continues to retreat north of Mawsons Huts. The open water of the polynya northwest of the huts is now roughly 15 km (8 nautical miles) away.

Further north, iceberg B-9B remains enclosed by the offshore fast ice and grounded small icebergs but southeast of the iceberg, fast ice is also breaking up. Icebergs C-15 and C-29 are not enclosed by fast ice anymore but are still grounded and trapped by smaller icebergs.

Off the coast and Dumont D'Urville Station, broken ex-fast ice is being pushed north-westward. Off station, one of the two larger icebergs that recently calved off the ice shelf east of the station is drifting within this broken ex-fast ice together with many smaller icebergs.

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Ice Bulletin: Casey Station

Issued: Tuesday 7th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Casey Station and offshore. The fast-ice edge is marked as a red line, the sea-ice edge based on passive microwave data is given by a white line.

North of Casey Station/Law Dome, first-year sea ice is decaying off the fast-ice edge and patches of sea ice still reach north of 62°0'S.

Off station in Vincennes Bay, a polynya is largely ice free and only partly covered by brash ice and some icebergs.

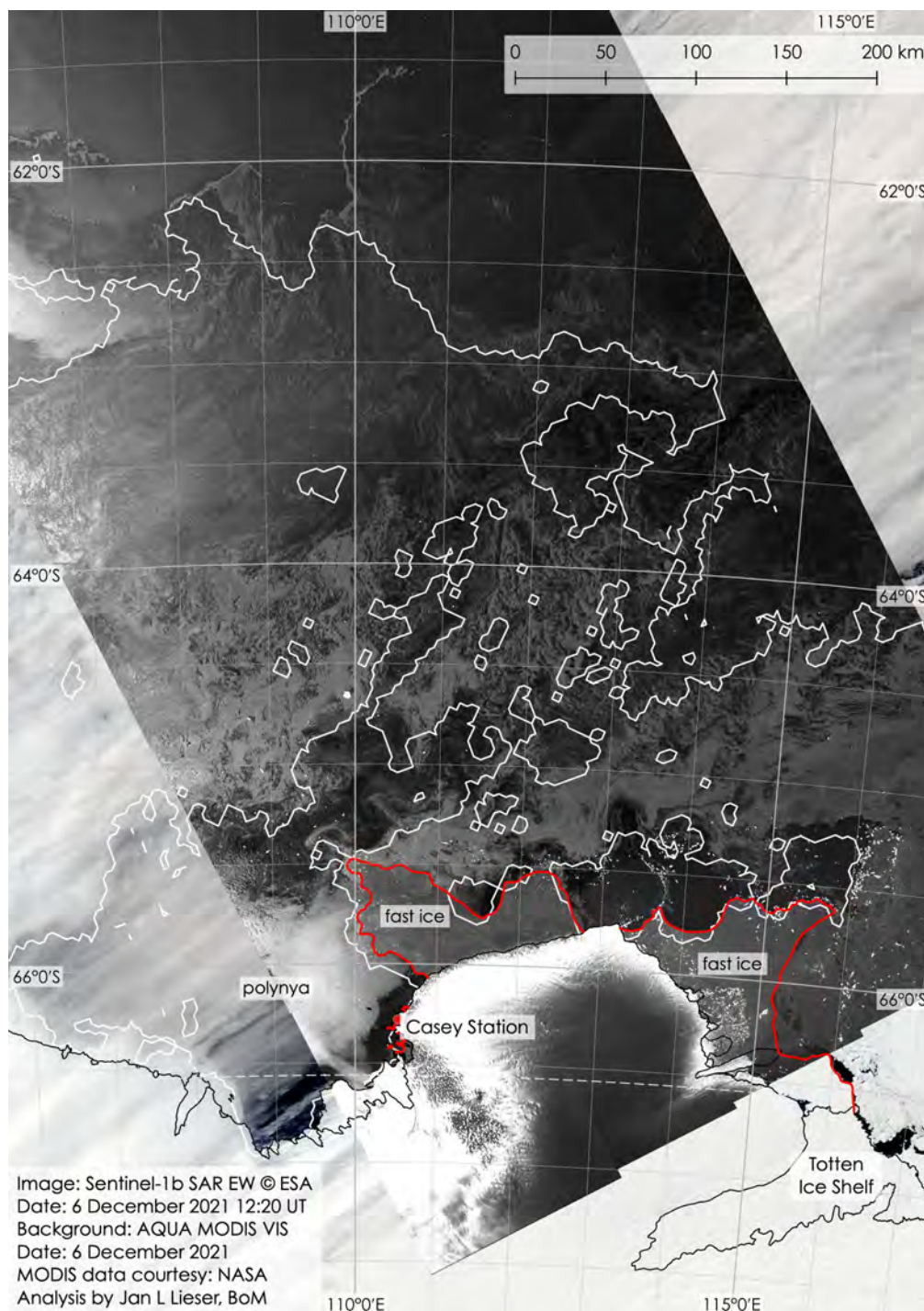


Figure 1: Sentinel-1b SAR EW data acquired 6 December 2021 at 12:20 UT and provided by PolarView; background of AQUA MODIS VIS data acquired 6 December 2021 and provided by NASA.

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Ice Bulletin: D'Urville Sea

Issued: Tuesday 7th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Dumont D'Urville Station. The fast-ice edge is marked by a red line.

Off Mawsons Huts, the open water of the polynya is roughly 15 km (8 nautical miles) away.

Further north, it appears that iceberg C-29 is getting restless within the confinement of surrounding smaller icebergs and moves with the currents and tides slightly, while iceberg B-9B remains enclosed by the offshore fast ice. Iceberg C-15 remains grounded.

North of Dumont D'Urville Station, only strips and patches of decaying sea ice separates the polynya from the open ocean further north. Centred roughly at 64°38'S and 140°36'E, an oceanic surface eddy is redistributing sea ice visible as a swirl pattern.

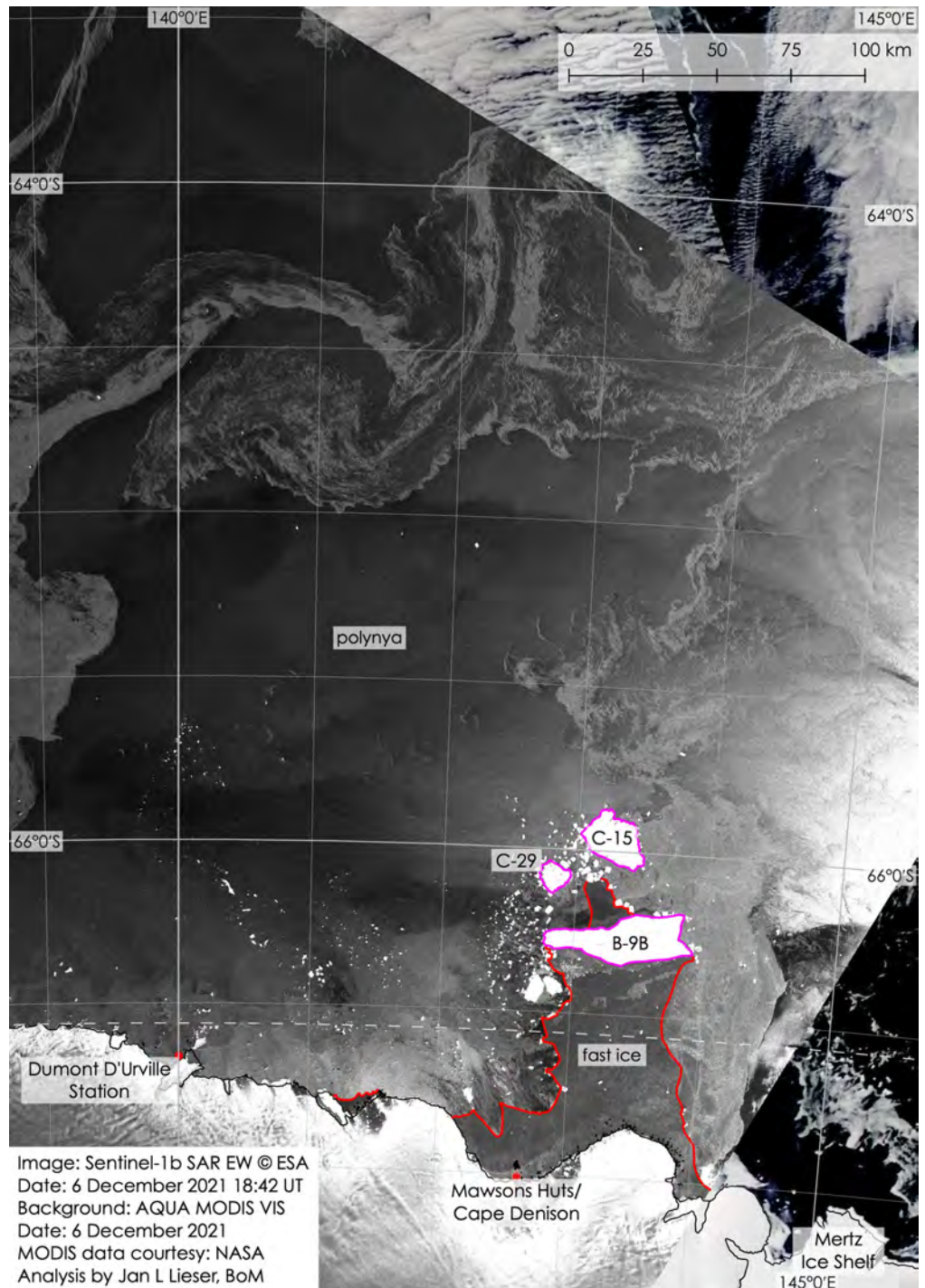


Figure 1: Sentinel-1b SAR EW data acquired 6 December 2021 at 18:42 UT and provided by PolarView; background of AQUA MODIS VIS data acquired 6 December 2021 and provided by NASA.

Image: Sentinel-1b SAR EW © ESA
Date: 6 December 2021 18:42 UT
Background: AQUA MODIS VIS
Date: 6 December 2021
MODIS data courtesy: NASA
Analysis by Jan L. Lieser, BoM

Ice Bulletin: Wilkins Aerodrome

Issued: Tuesday 7th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Wilkins Aerodrome. The scene is slightly obscured by clouds.

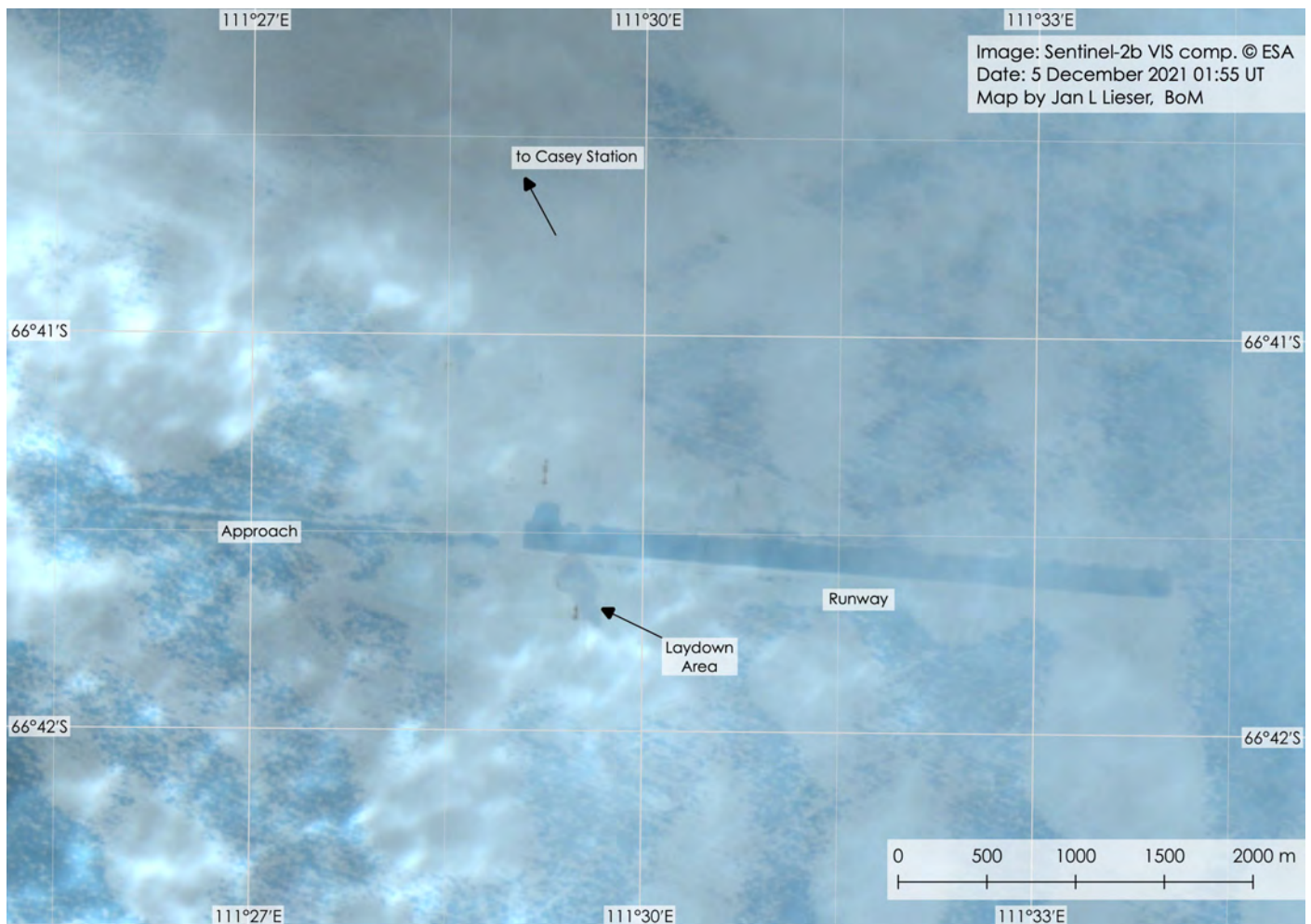


Figure 1: Sentinel-2b visible composite data acquired 5 December 2021 at 01:55 UT and provided by ESA.

The blue-ice runway is clearly visible. North and south of the runway, snow dunes are left from clearing the runway. Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Mawson Station

Issued: Tuesday 7th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Mawson Station. The fast-ice edge on 30 November 2021 is marked by a dashed red line.

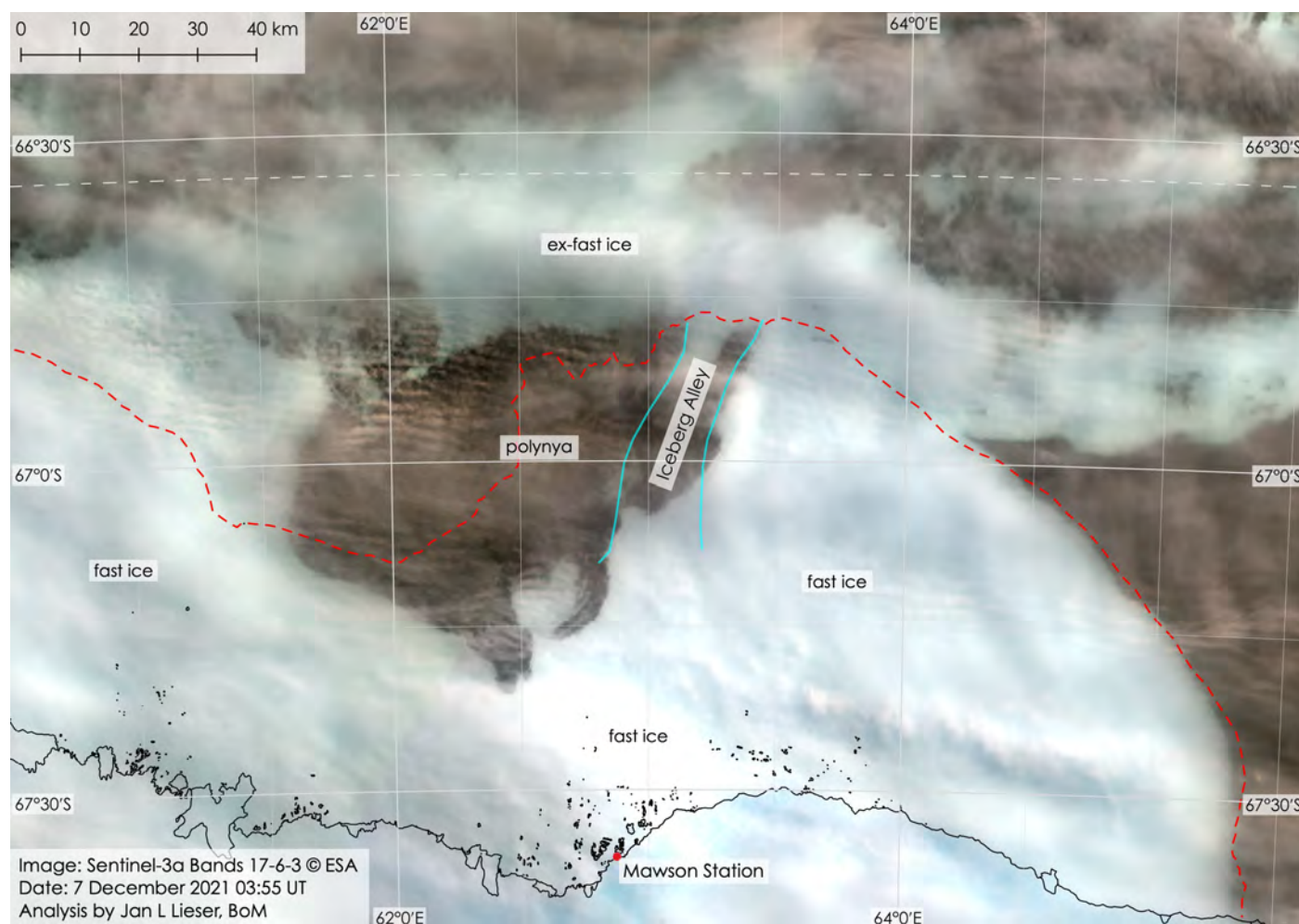


Figure 1: Sentinel-3a VIS composite data acquired 7 December 2021 at 03:55 UT and provided by ESA.

Northwest of Mawson Station, the fast-ice edge retreated south-eastward in early December. The shortest distance between the station and the open water of the polynya in the northwest is currently roughly 18 nautical miles.

The northern part of Iceberg Alley appears free of fast ice. North of the polynya and the fast-ice edge, broken ex-fast ice is drifting.

North of the station, the sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for December.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 8th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off southern D'Urville Sea. The fast-ice edge is marked by a red line. The cruise track of OPV l'Astrolable (FASB) is included as a light red line (up until 7 December 2021 22:00Z).

Off Mawsons Huts, the open water of the polynya remains roughly 15 km (8 nautical miles) away.

Further north, iceberg C-29 is restless within the confinement of surrounding smaller icebergs and moves with the currents and tides, while iceberg B-9B remains enclosed by the offshore fast ice. Iceberg C-15 remains grounded.

North of Dumont D'Urville Station, strips and patches of decaying sea ice separate the polynya from the open ocean further north. Centred roughly at 64°30'S and 141°0'E, an oceanic surface eddy is redistributing sea ice visible as a swirl pattern.

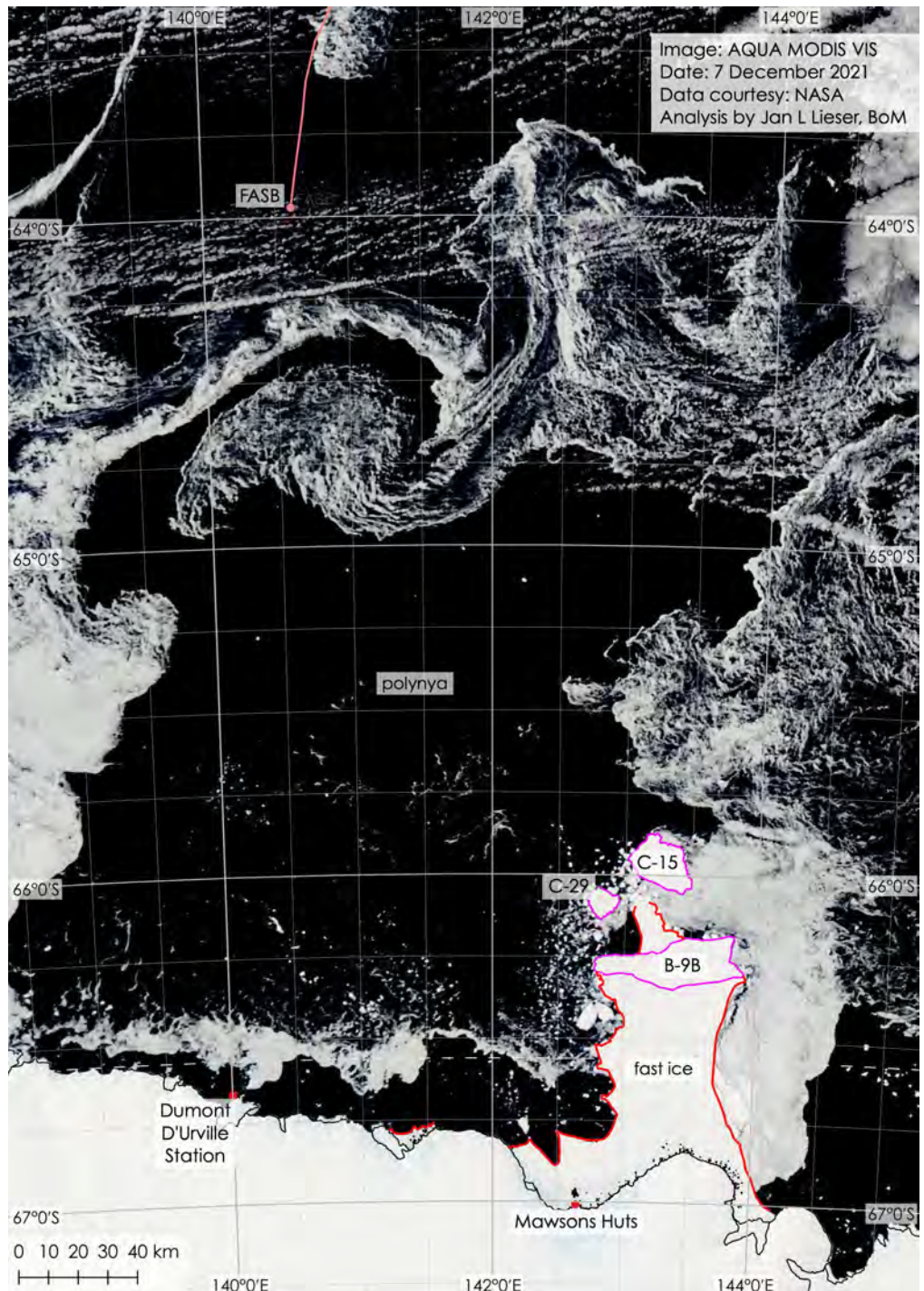


Figure 1: AQUA MODIS VIS data acquired 7 December 2021 and provided by NASA.

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Ice Bulletin: Mawson Station

Issued: Wednesday 8th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Mawson Station. The fast-ice edge is marked by a red line.

Northwest of Mawson Station, the fast-ice edge is retreating further southward. The shortest distance between the station and the open water of the polynya in the northwest is currently roughly 12 nautical miles.

The northern part of Iceberg Alley appears free of fast ice. North of the polynya and the fast-ice edge, broken ex-fast ice is drifting.

North of the station, the sea-ice edge (not shown in the figure) is meandering around the median sea-ice extent for December.

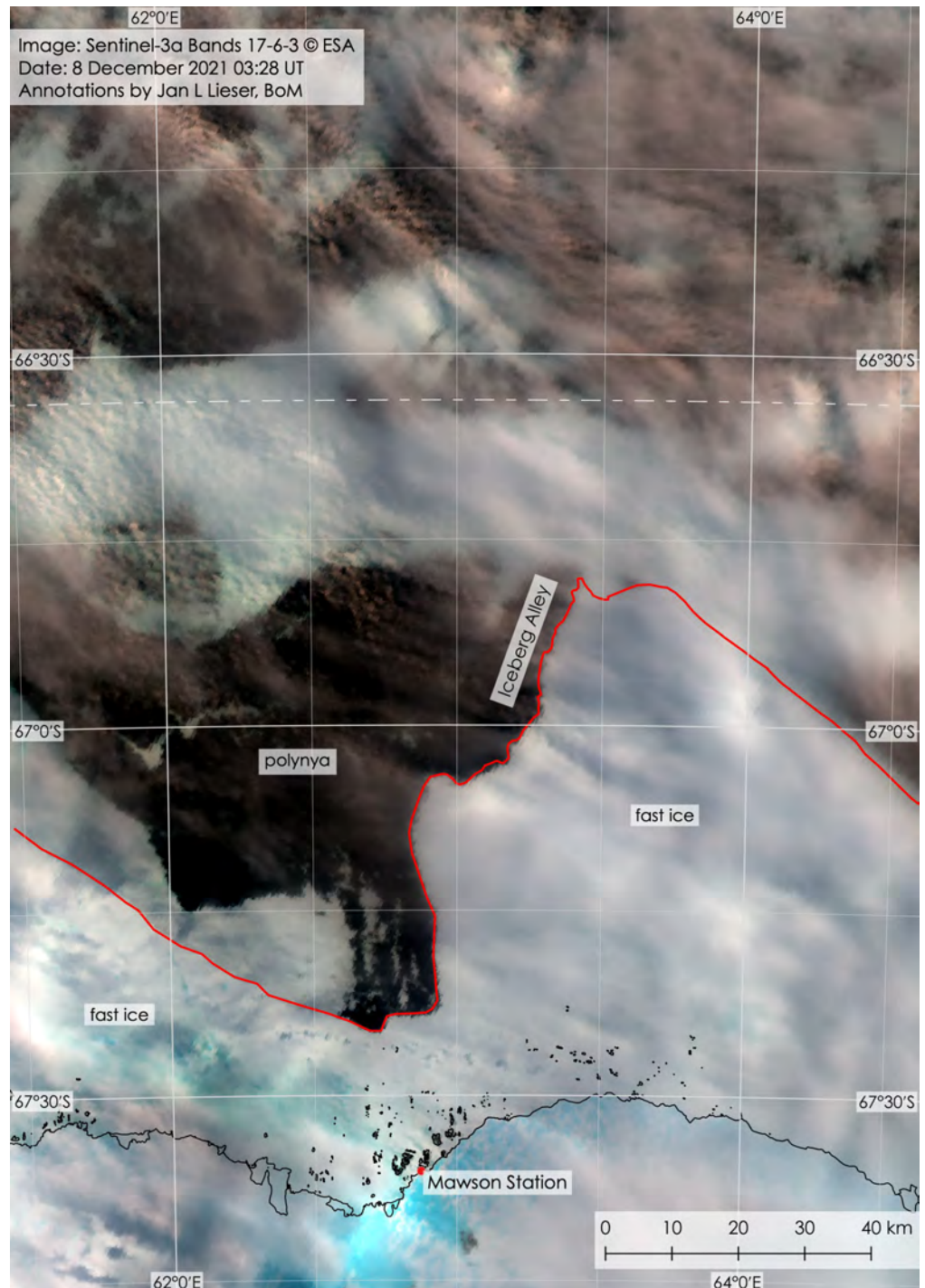


Figure 1: Sentinel-3a VIS composite data acquired 8 December 2021 at 03:28 UT and provided by ESA.

Ice Bulletin: D'Urville Sea

Issued: Thursday 9th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Dumont D'Urville Station. The cruise track of OPV l'Astrolable (FASB) is included as a light red line (up until 9 December 2021 08:00Z).

The ship has arrived at the station.

Off Mawsons Huts (not shown in the figure), the fast-ice conditions remain unchanged, and the open water of the polynya remains roughly 15 km (8 nautical miles) away.

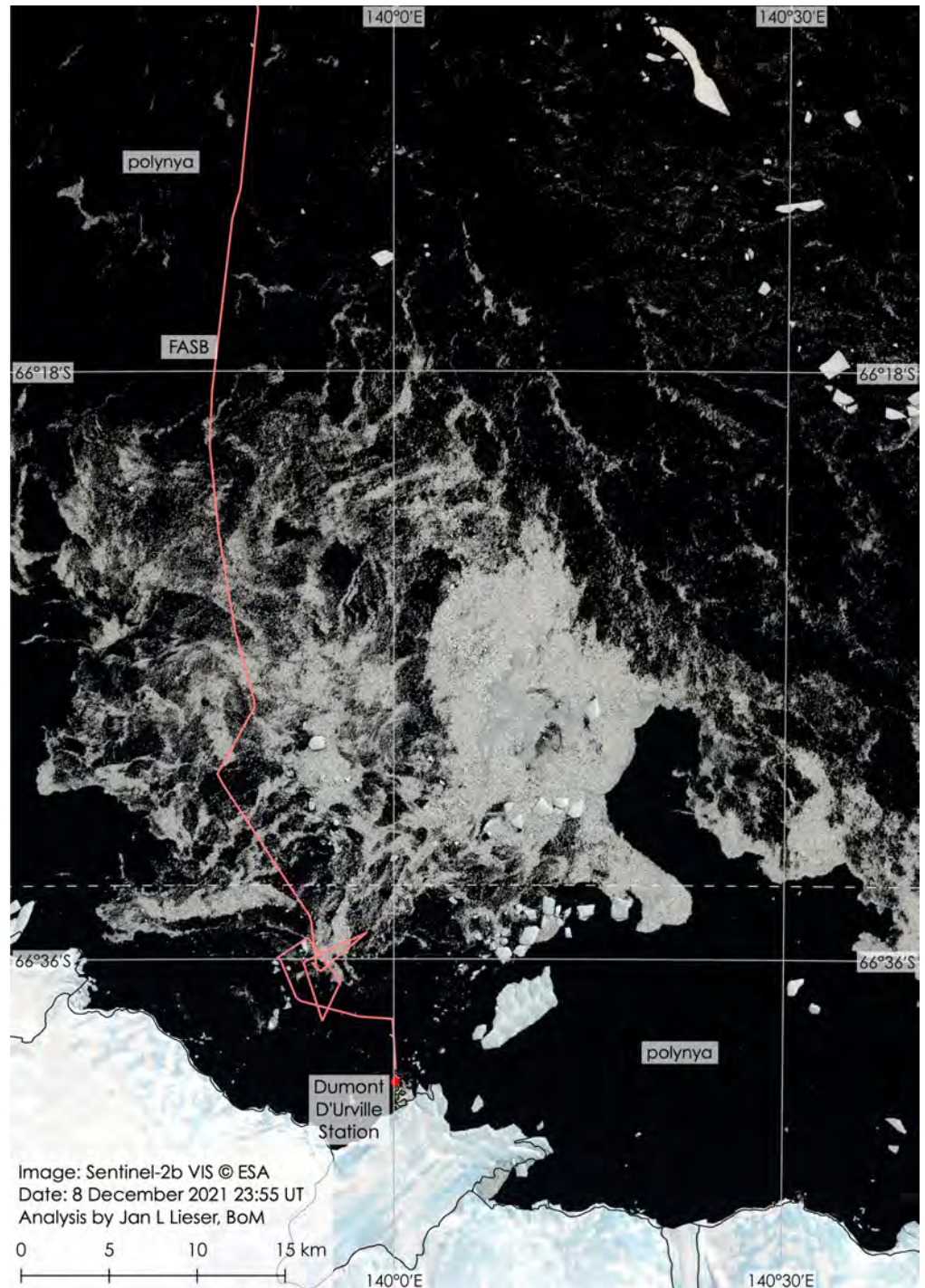


Figure 1: Sentinel-2b VIS composite data acquired 8 December 2021 at 23:55 UT and provided by USGS.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Friday 10th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge is marked by a red line (yellow dashed line for 1 December 2021).

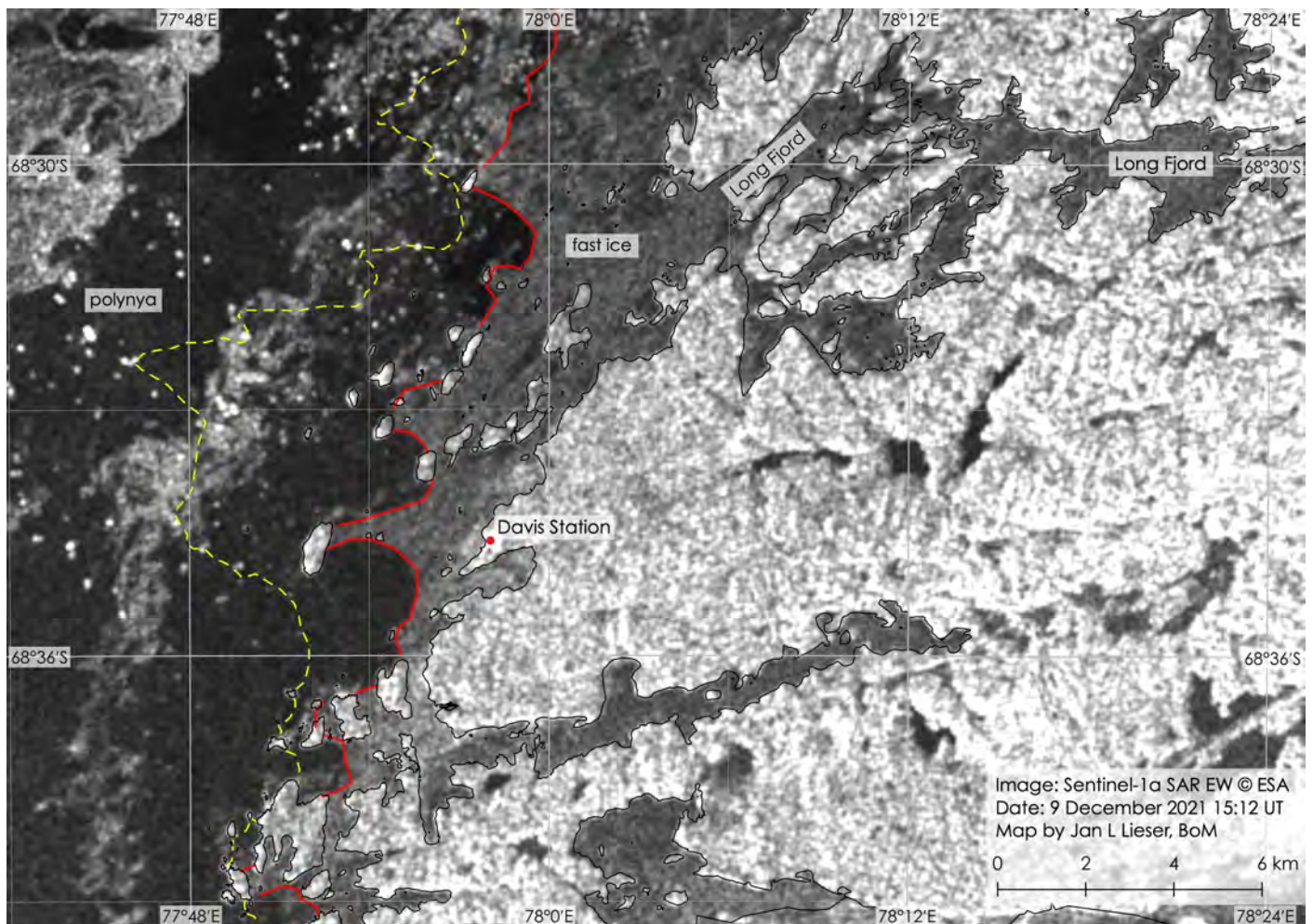


Figure 1: Sentinel-1a SAR EW data acquired 9 December 2021 at 15:12 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has retreated towards the shore. Further offshore, broken ex-fast ice is drifting in the polynya.

Further west, the southern Cooperation Sea is filled with decaying first-year sea ice that has some vast floes in the mix.

Ice Bulletin: Davis Station

Issued: Friday 10th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station. The fast-ice edge is marked by a red line (dashed light red line for 1 December 2021).

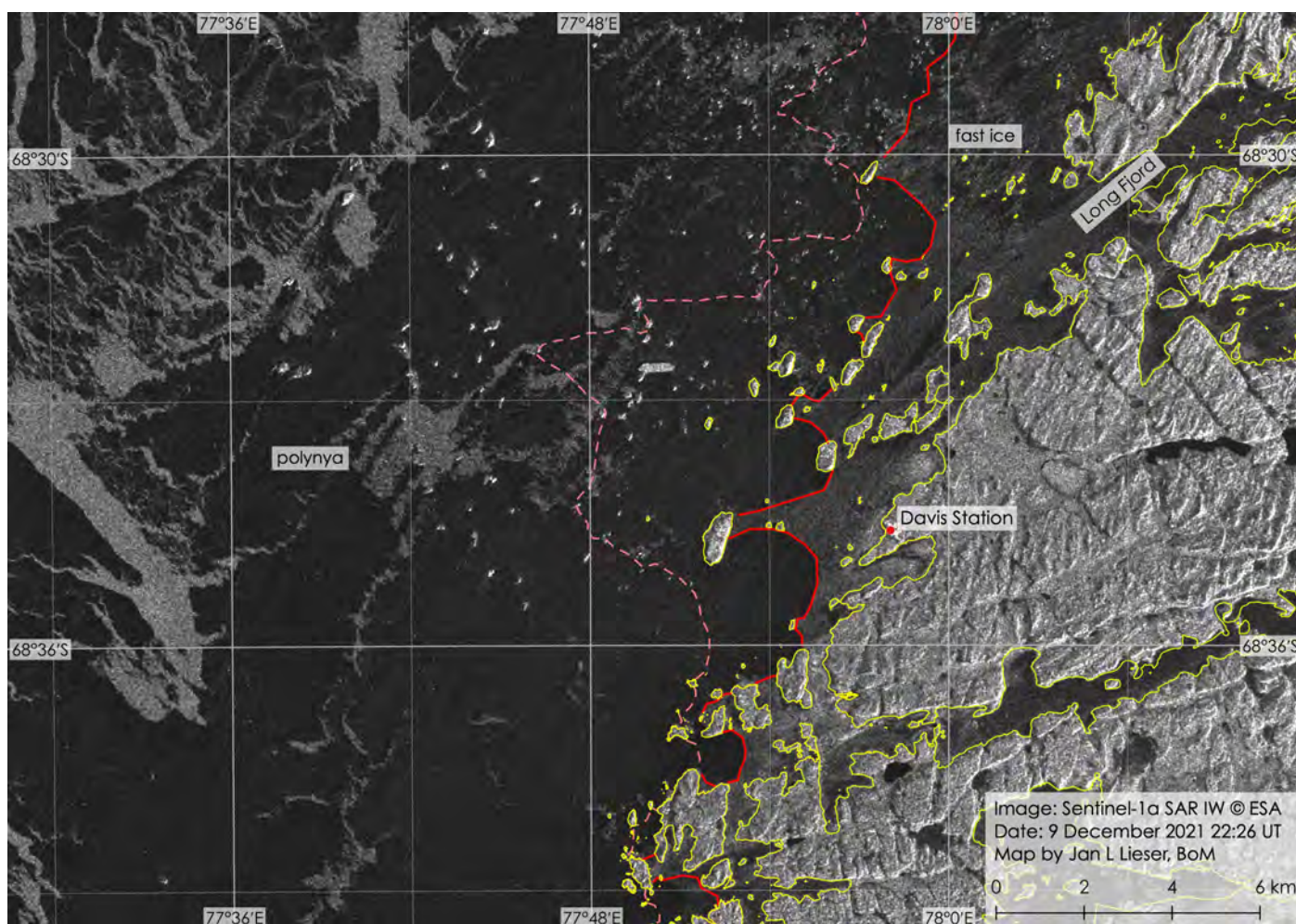


Figure 1: Sentinel-1a SAR IW data acquired 9 December 2021 at 22:26 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has retreated towards the shore. Further offshore, broken ex-fast ice is drifting in the polynya.

Figure 2 shows a larger scale overview of the offshore ice conditions further west with strips and patches of decaying ex-fast ice in the polynya. South of the polynya and even further west, the southern Cooperation Sea is filled with decaying first-year sea ice that has some vast floes in the mix.

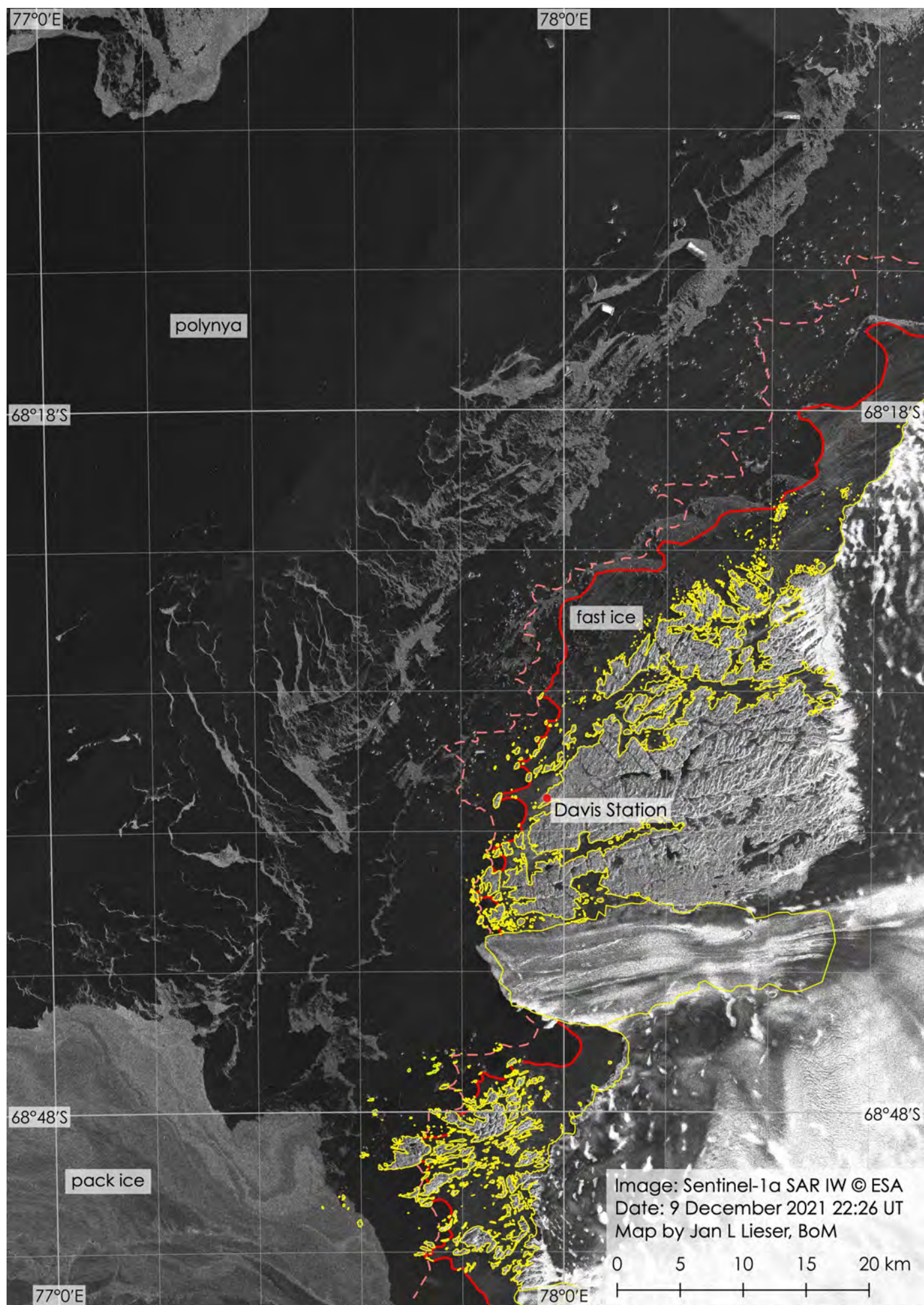


Figure 2: Sentinel-1a SAR IW data acquired 9 December 2021 at 22:26 UT and provided by PolarView.

Ice Bulletin: D'Urville Sea

Issued: Friday 10th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data off Dumont D'Urville Station. The cruise track of OPV l'Astrolable (FASB) is included as a light red line (up until 10 December 2021 00:00Z). The ship is at the station.

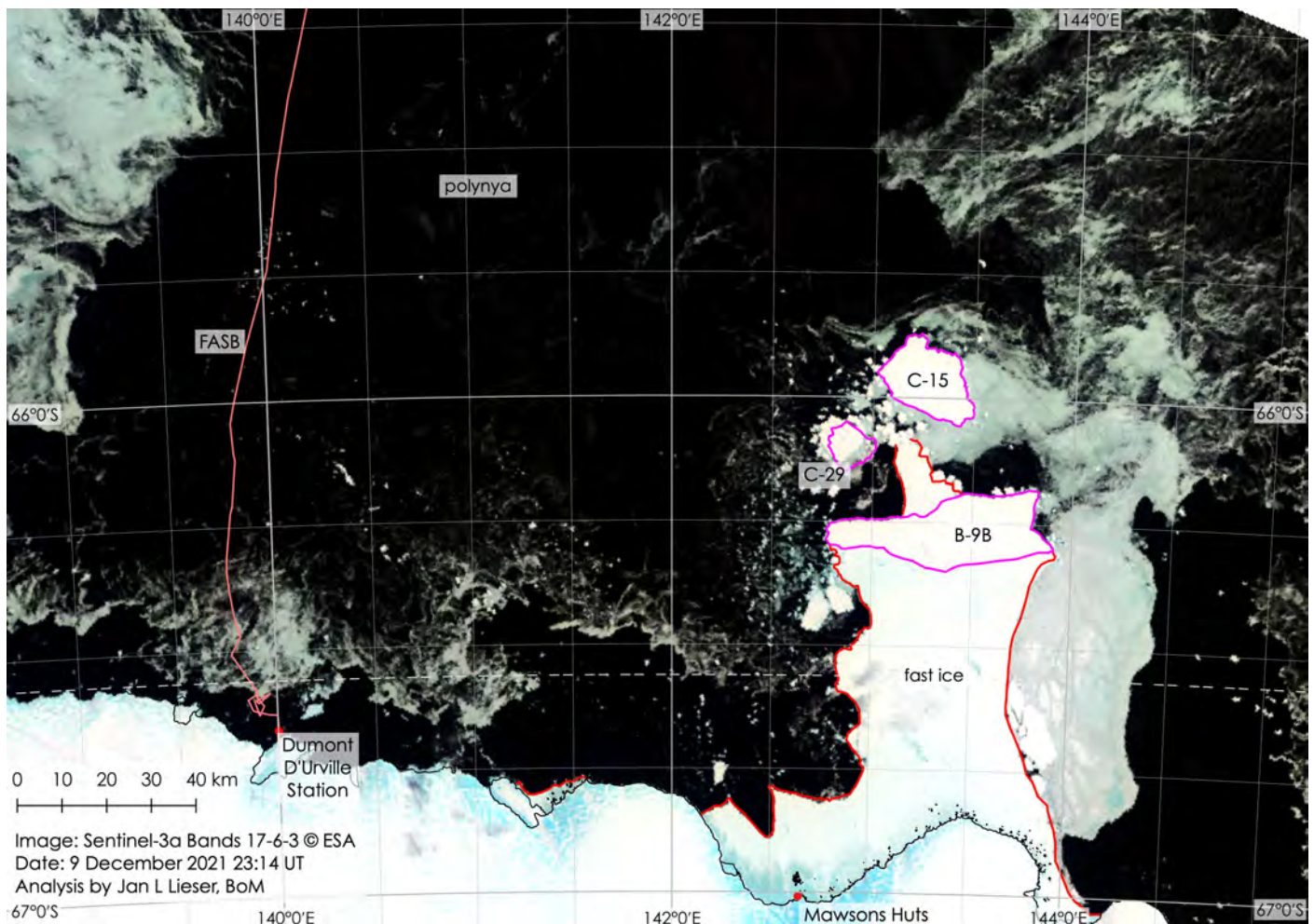


Figure 1: Sentinel-3a VIS composite data acquired 9 December 2021 at 23:14 UT and provided by ESA.

Off Mawsons Huts, the fast-ice conditions remain largely unchanged. The open water of the polynya remains roughly 15 km (8 nautical miles) away from the huts.

Iceberg C-29 is restless within the confinement of its surrounding grounded icebergs.

Ice Bulletin: Mawson Station

Issued: Friday 10th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Mawson Station. The fast-ice edge is marked by a red line.

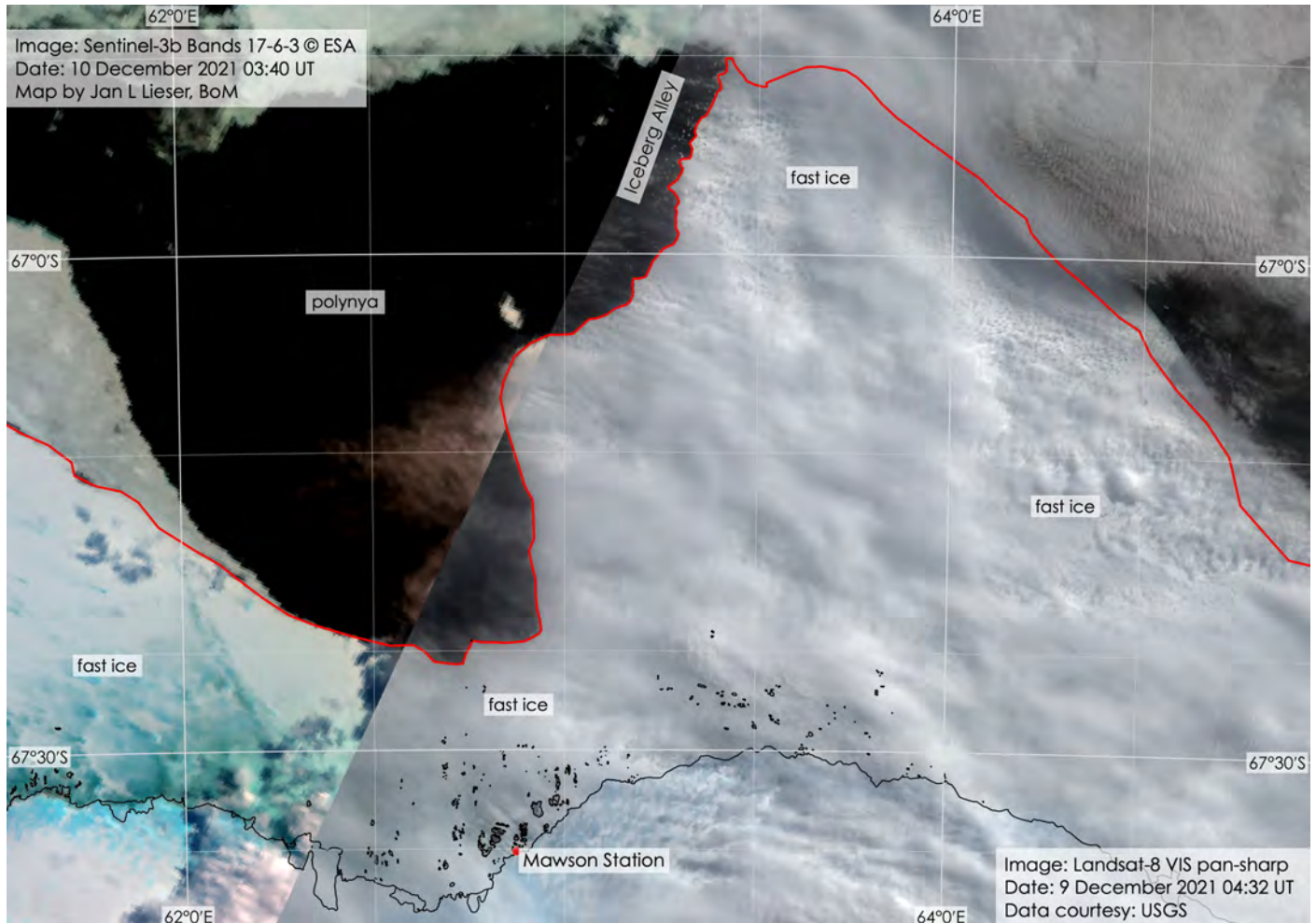


Figure 1: Sentinel-3b VIS composite data acquired 10 December 2021 at 03:40 UT and provided by ESA; overlay of Landsat-8 VIS pan-sharp data acquired 9 December 2021 at 04:32 UT and provided by USGS.

Northwest of Mawson Station, the fast-ice edge remained stable during the past three days. The shortest distance between the station and the open water of the polynya in the northwest remains roughly 12 nautical miles.

The northern part of Iceberg Alley appears free of fast ice. North of the polynya and the fast-ice edge, broken ex-fast ice is drifting.

North of the station, the sea-ice edge (not shown in the figure) is largely below (south of) the median sea-ice extent for December.

Ice Bulletin: Mawson Station

Issued: Monday 13th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Mawson Station. The fast-ice edge on 10 December 2021 is marked by a dashed red line. Iceberg Alley is outlined by blue lines.

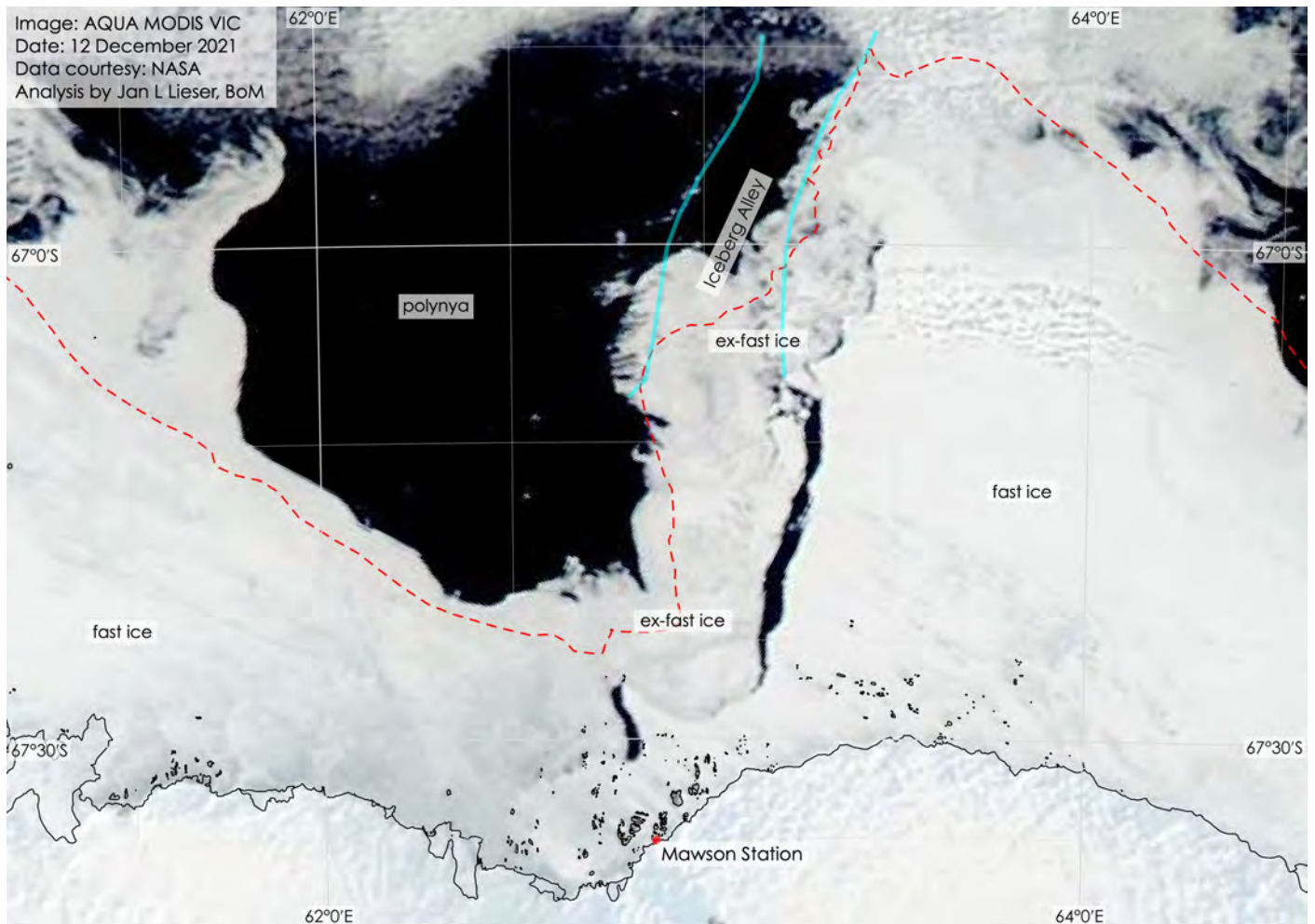


Figure 1: AQUA MODIS VIS data acquired 12 December 2021 and provided by NASA.

During the weekend, the fast-ice edge moved south-eastward northwest of Mawson Station. The shortest distance between the station and the open water of the polynya in the northwest is now roughly 5 nautical miles.

The northern part of Iceberg Alley is free of fast ice but some ex-fast ice remains between the grounded icebergs that make up the alley. North of the polynya, broken ex-fast ice and decaying pack ice is drifting.

Ice Bulletin: Casey Station

Issued: Monday 13th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Casey Station and offshore. The fast-ice edge is marked as a red line.

South of Casey Station, fast ice is breaking up along the shore.

Off station in Vincennes Bay, a polynya is largely ice free and only partly covered by brash ice and some icebergs.

Figures 2 and 3 show the larger region around Law Dome and further offshore.

North of the sea-ice edge, freely floating icebergs have been marked by pink dots in Figure 2.

Figure 3 shows the sea-ice concentration data of Figure 2 but with a different colour scheme.

A broad region of low sea-ice concentration is north of Law Dome. West of 110°0'E, some higher concentration of sea ice is present.

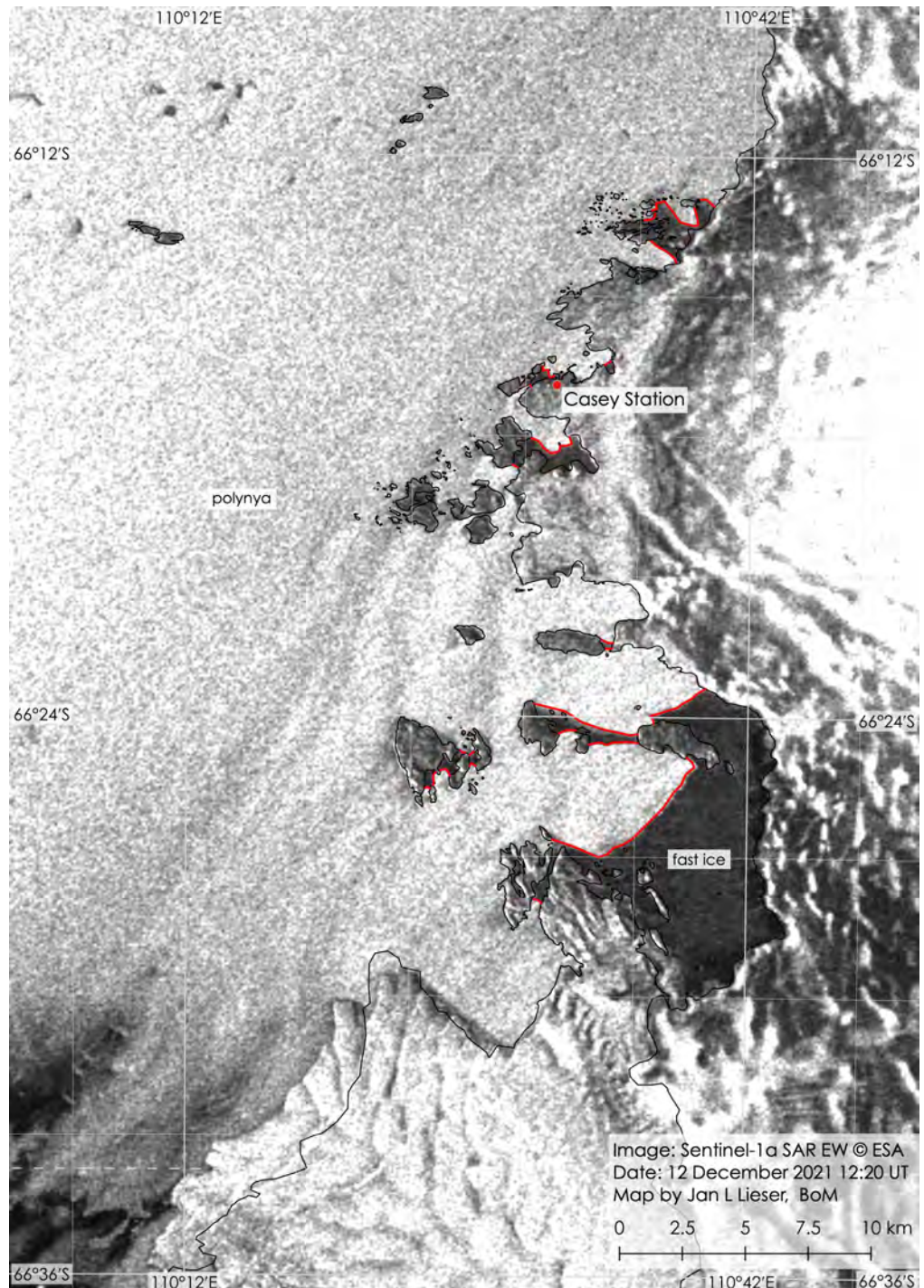


Figure 1: Sentinel-1a SAR EW data acquired 12 December 2021 at 12:20 UT and provided by ESA.

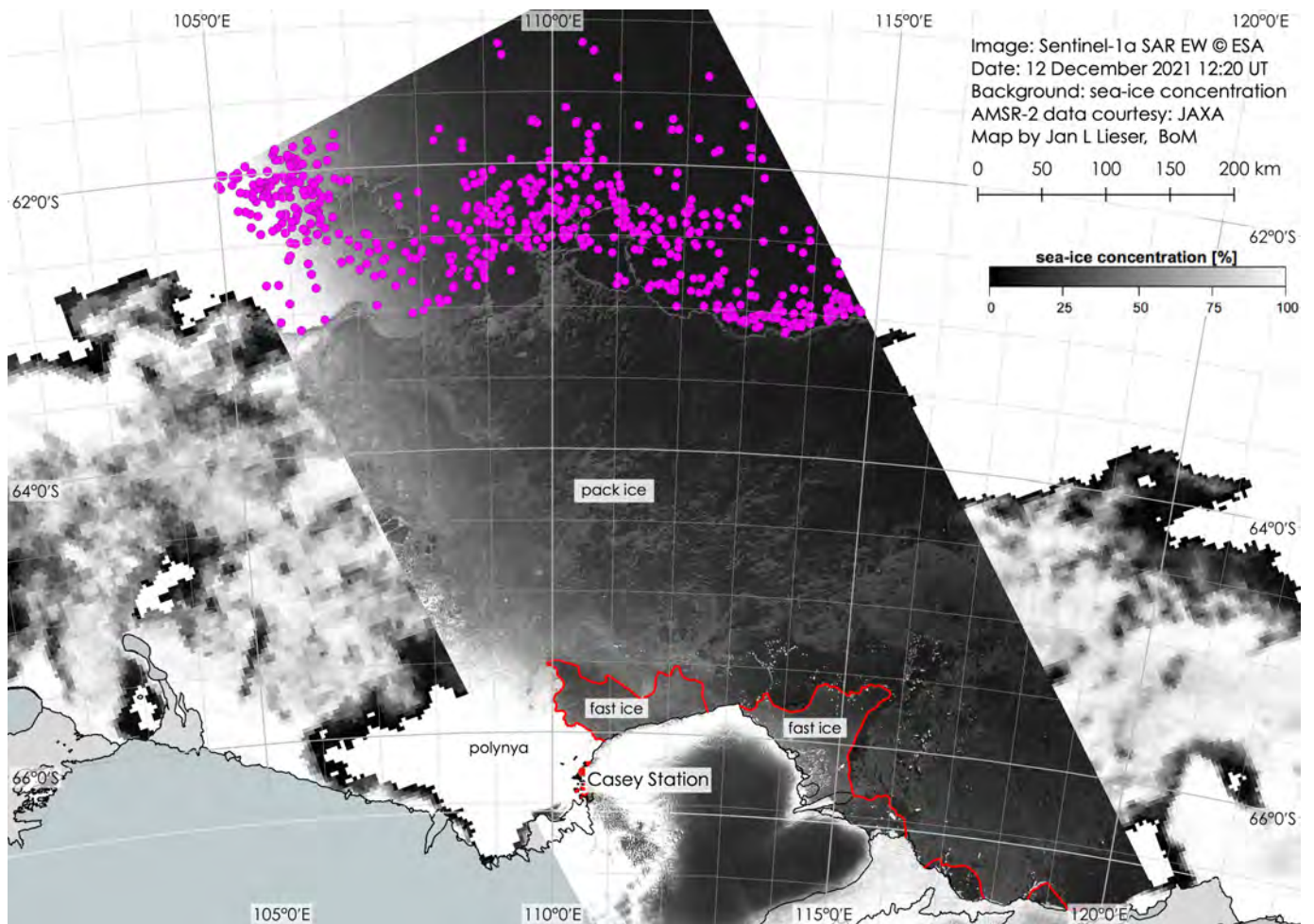


Figure 2: Sentinel-1a SAR EW data acquired 12 December 2021 at 12:20 UT and provided by PolarView;
 background of sea-ice concentration data acquired 11 December 2021 and provided by ICDC.

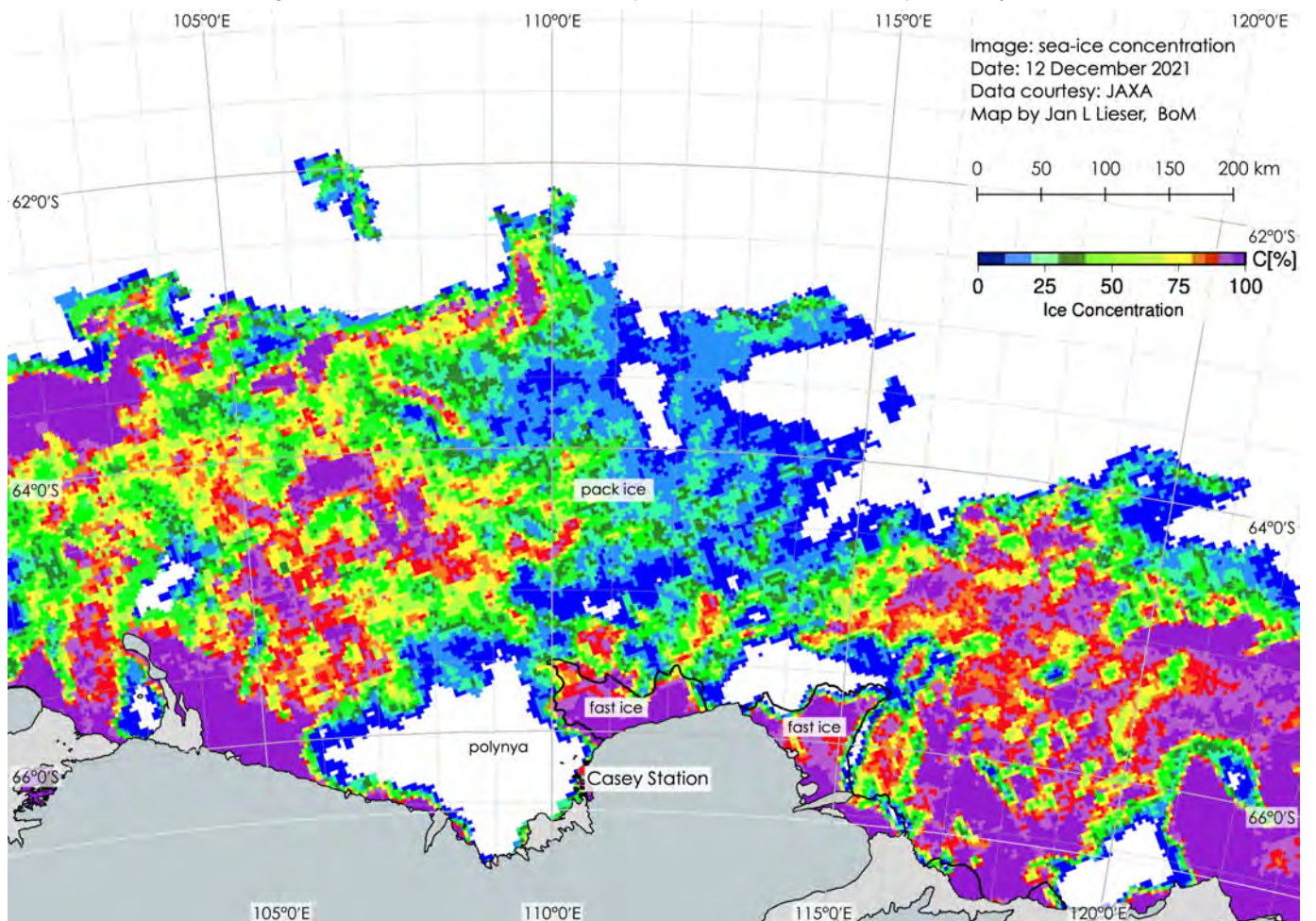


Figure 3: Sea-ice concentration data acquired 11 December 2021 and provided by ICDC.

Ice Bulletin: Mawson Station

Issued: Monday 13th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (10 m horizontal) visible data off Mawson Station. The fast-ice edge is marked by a red line.

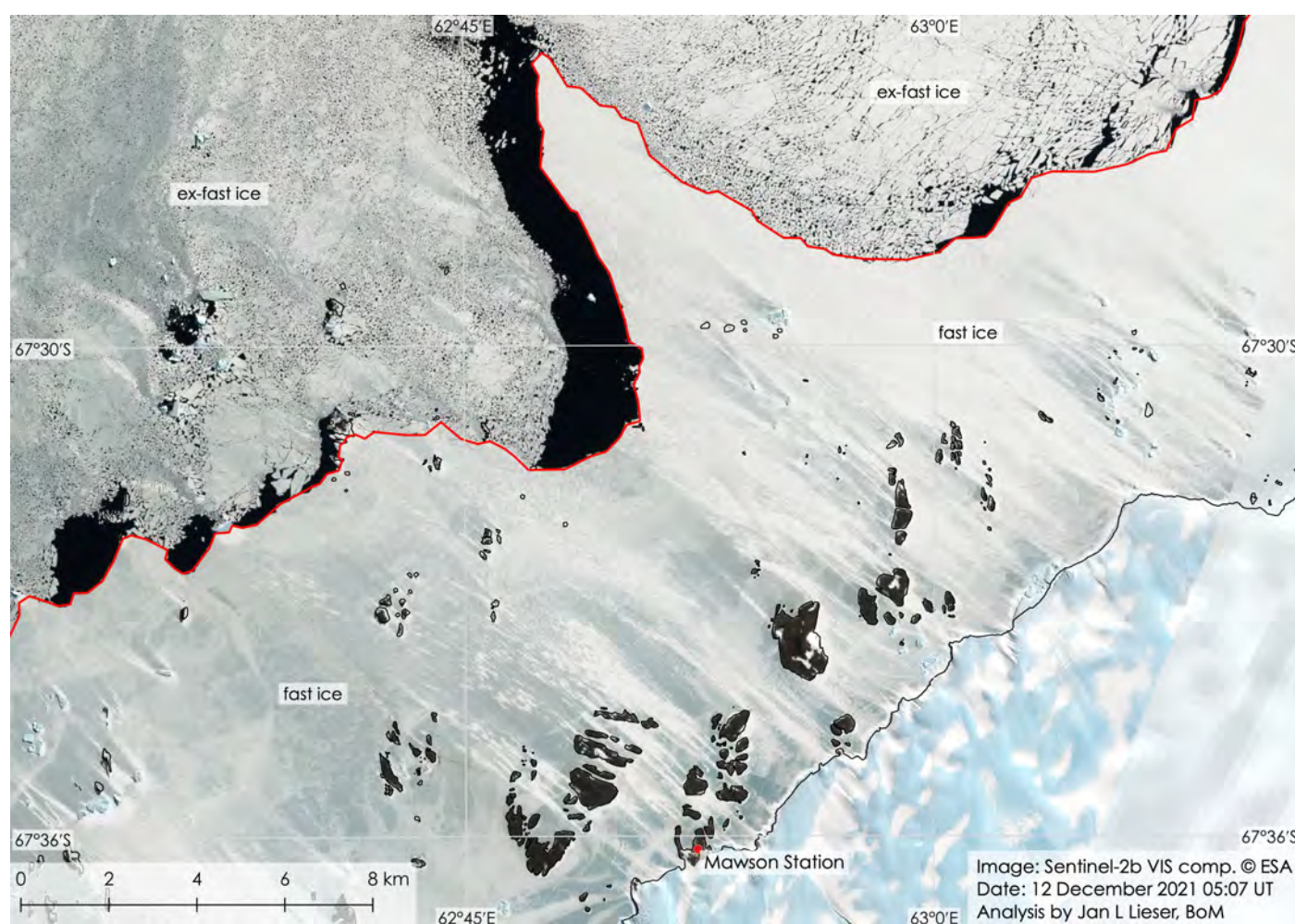


Figure 1: Sentinel-2b VIS composite data acquired 12 December 2021 at 05:07 UT and provided by USGS.

During the weekend, the fast-ice edge moved south-eastward northwest of Mawson Station. The shortest distance between the station and the open water of the polynya in the northwest is now 5 nautical miles.

Figure 2 shows Iceberg Alley free of fast ice, but some ex-fast ice remains between the grounded icebergs that make up the alley. North of the polynya, broken ex-fast ice and decaying pack ice (slightly obscured by thin clouds) is drifting.

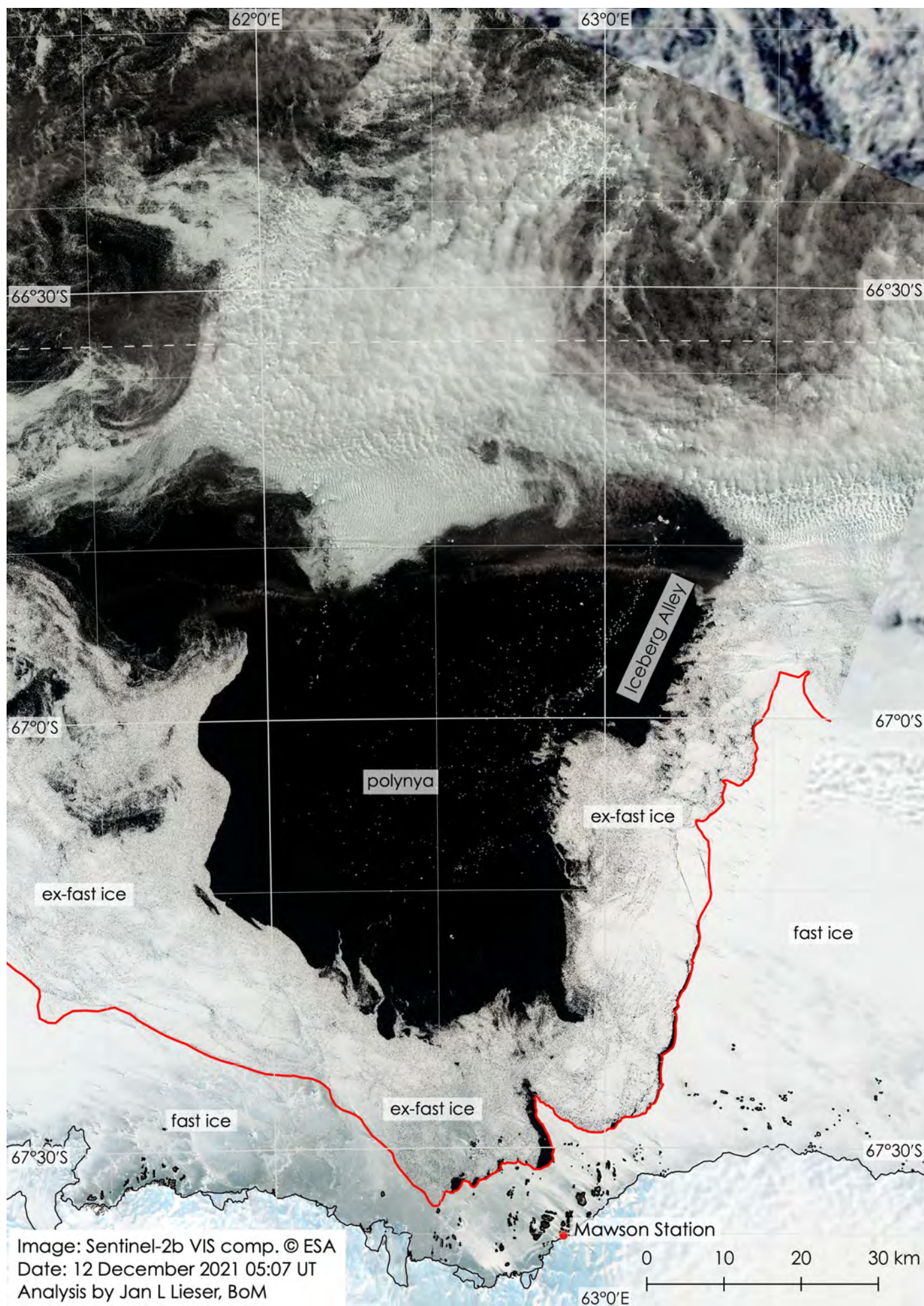


Figure 2: Sentinel-2b VIS composite data acquired 12 December 2021 at 05:07 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 12 December 2021 and provided by NASA.

Ice Bulletin: Antarctica

Issued: Monday 13th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

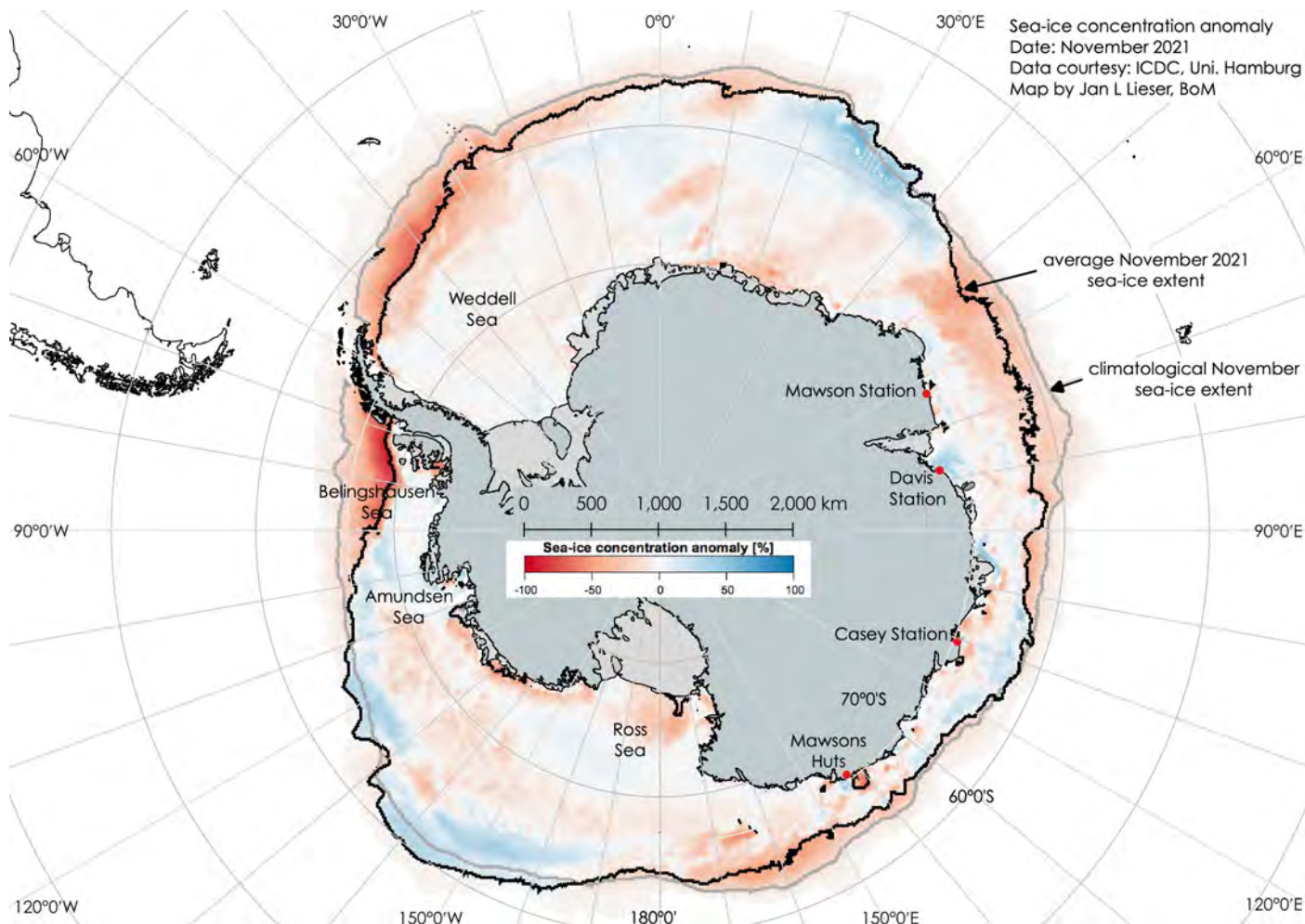


Figure 1: Sea-ice concentration anomaly for November 2021 provided by ICDC (Universität Hamburg).

In November 2021, pan-Antarctic sea-ice extent continued its downward trend that started mid-September and fell to fourth lowest daily levels for November. Regionally sea-ice extent and associated concentration anomalies varied slightly.

A bi-modal pattern remains around Antarctica with positive anomalies narrowing eastward of 20°0'E towards 45°0'E and in the eastern Ross Sea and the Amundsen Sea. Large negative anomalies are present in East Antarctica and west of the Antarctic Peninsula (Bellingshausen Sea) and into the western Weddell Sea (between 60°0'W and 20°0'E).

Some negative sea-ice concentration anomalies also remained near-shore for example, west of Mawsons Huts, in the western Ross Sea and along the coast between the Ross Sea and the Amundsen Sea.

Ice Bulletin: Oscar II Coast

Issued: Tuesday 14th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible (left panel) and high-resolution SAR (right panel) data off Oscar II Coast at the eastern side of the Antarctic Peninsula, the location of the former Larsen-B Ice Shelf.

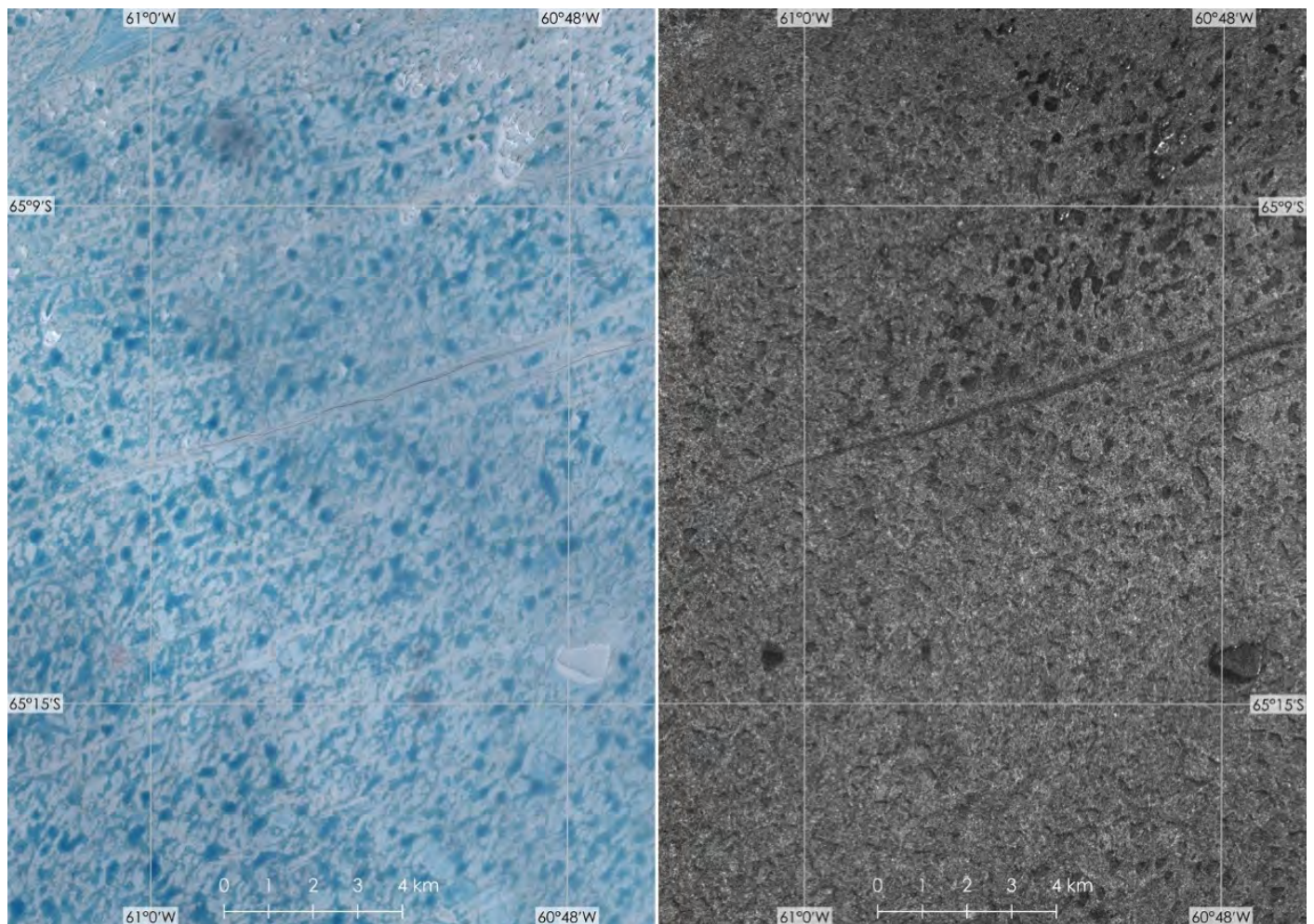


Figure 1: Left panel: Sentinel-2b VIS composite data (© ESA) acquired 12 December 2021 at 13:29 UT and provided by USGS; Right panel: Sentinel-1b SAR IW data (© ESA) acquired 12 December 2021 at 08:01 UT and provided by PolarView.

Both panels show the same geographical frame in the northern part of the former ice shelf where multi-year fast ice has formed. Large linear features are refrozen cracks and highlight the dynamic nature of the terrain. Dark blue spots in the visible data (left panel) show surface ponds of liquid water on the ice and the corresponding SAR signatures can be seen in the right panel.

Figure 2 shows the larger-scale overview of the visible data. The edge of multi-year fast ice is marked by a cyan line and the edge of younger fast ice is marked by a red line.

The old fast ice has almost assumed to shape that the former ice shelf had before it collapsed in late-February 2002. Similar surface ponding (possibly to a lesser extent though) was observed in the lead up to the sudden collapse back then.

Figure 3 shows the same geographical frame as Figure 2 but SAR data.

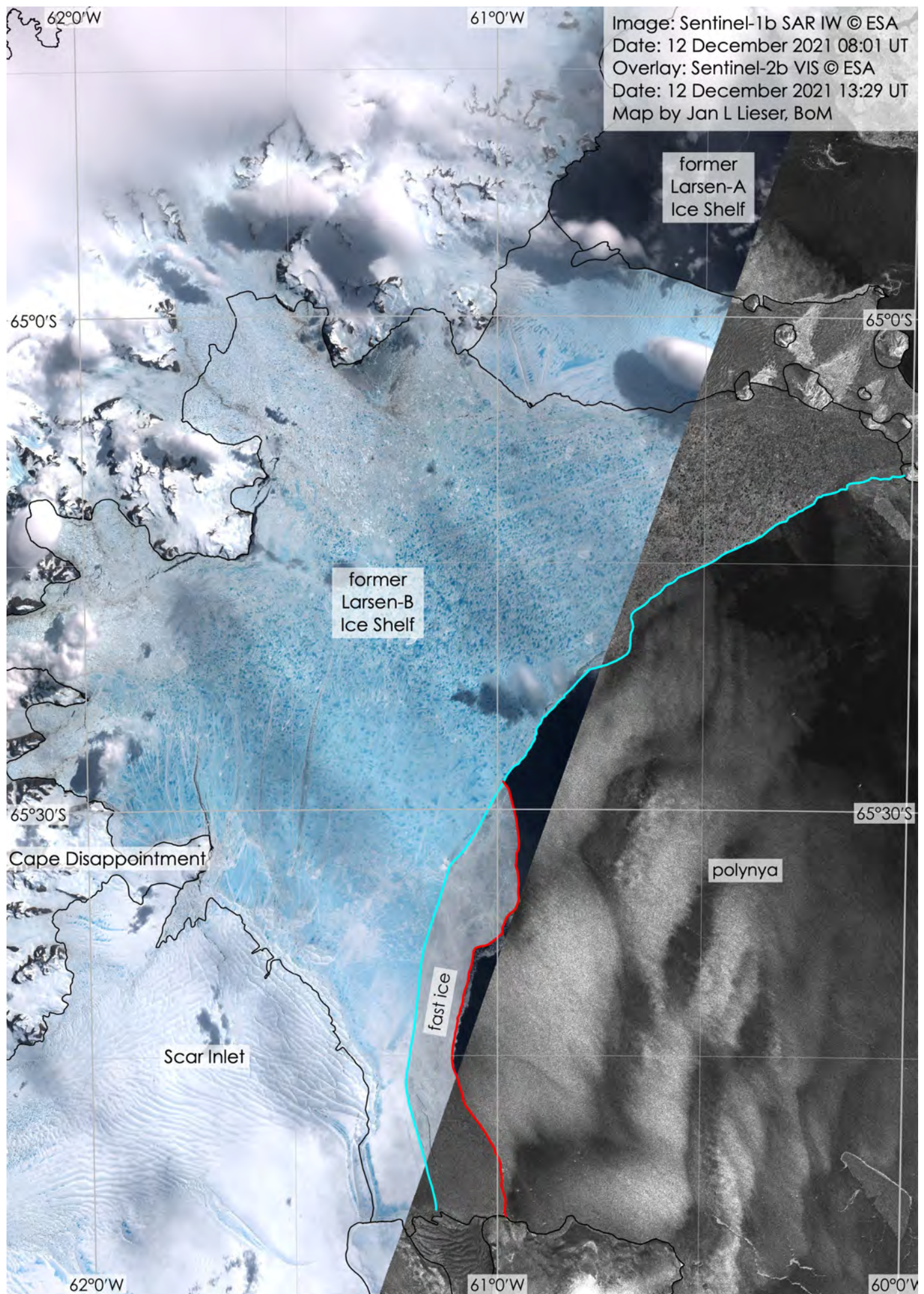


Figure 2: Sentinel-2b VIS composite data acquired 12 December 2021 at 13:29 UT and provided by USGS; background of Sentinel-1b SAR IW data acquired 12 December 2021 at 08:01 UT and provided by PolarView.

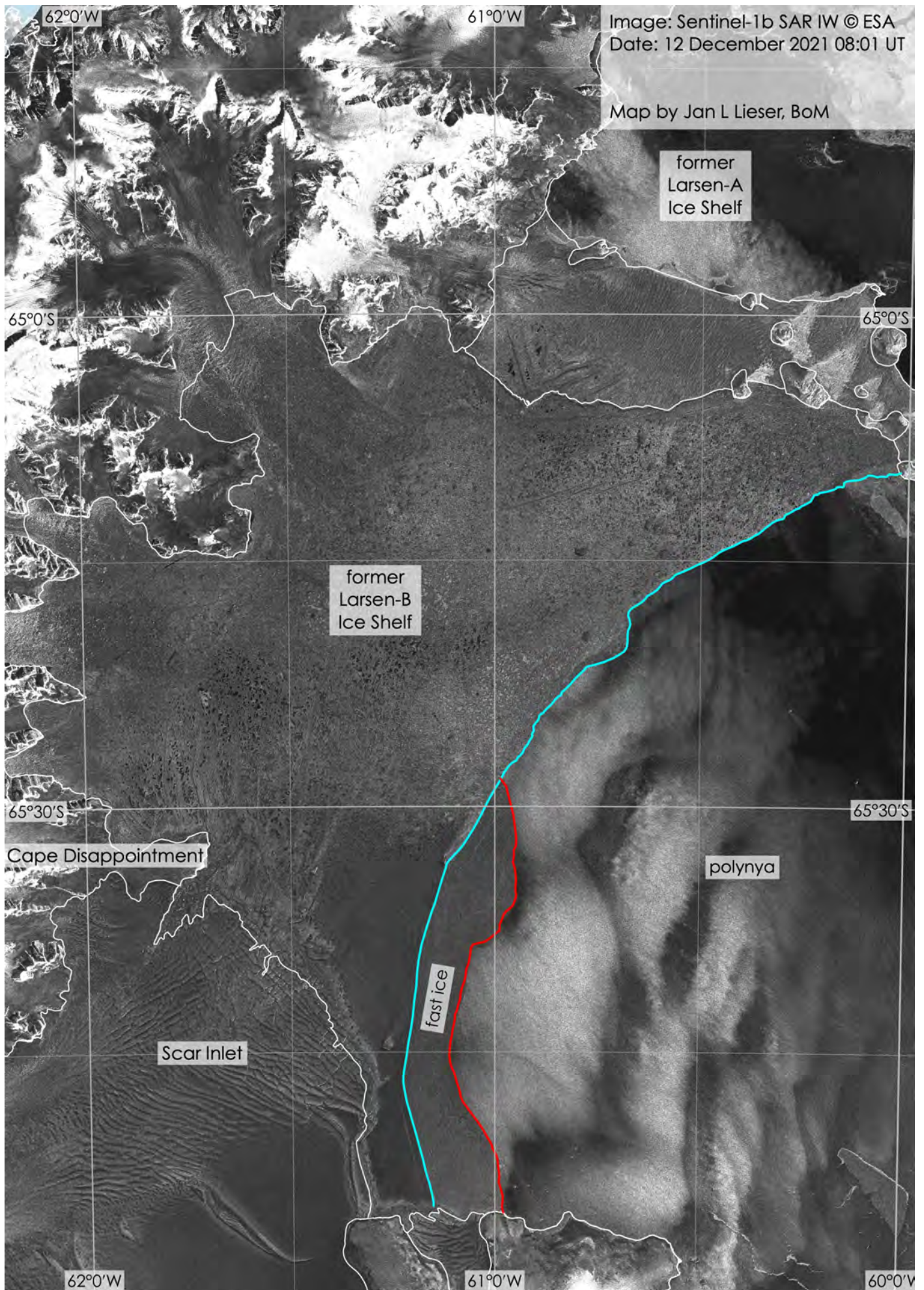


Figure 3: Sentinel-1b SAR IW data acquired 12 December 2021 at 08:01 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Wednesday 15th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge is marked by a red line.

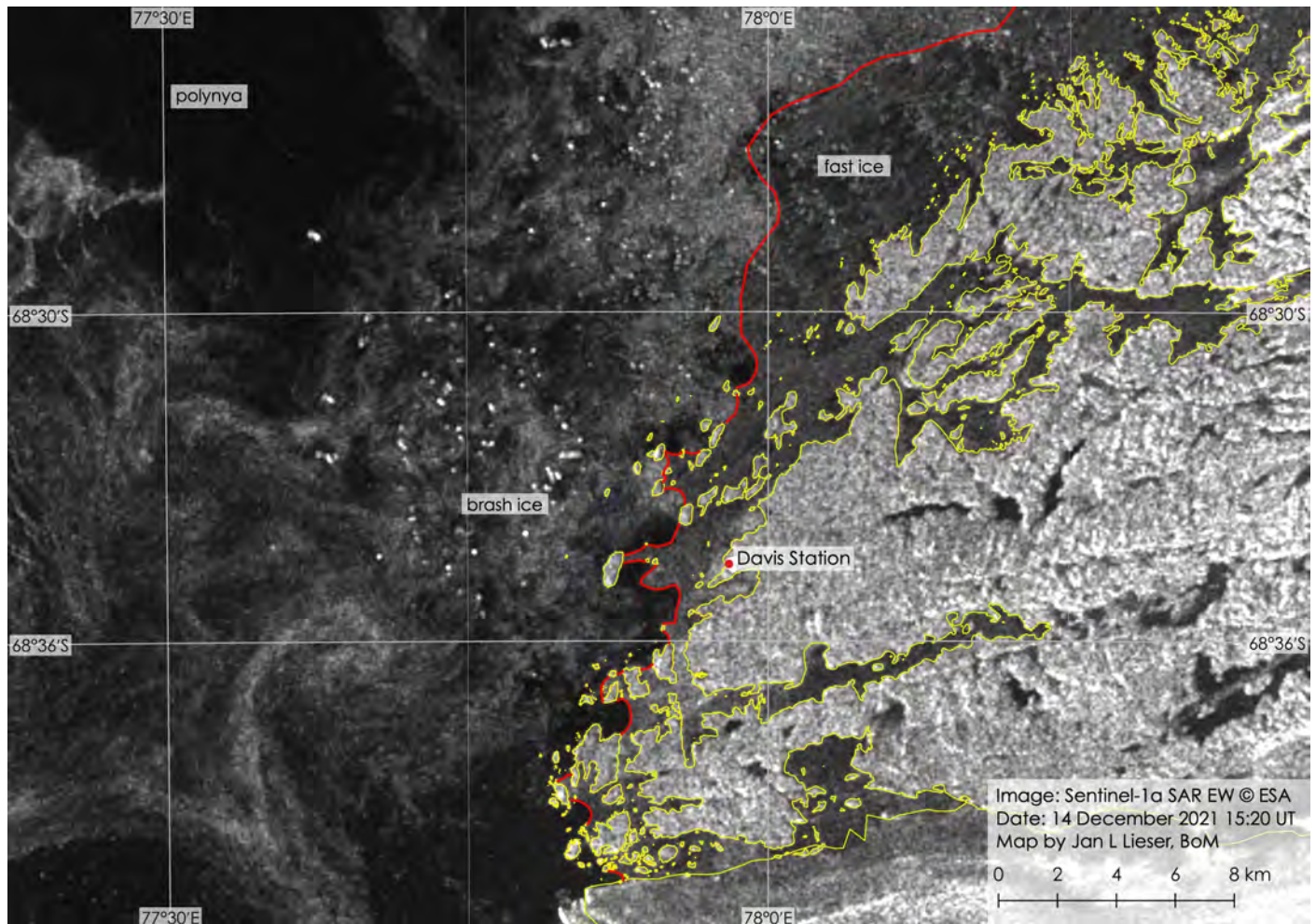


Figure 1: Sentinel-1a SAR EW data acquired 14 December 2021 at 15:20 UT and provided by PolarView.

Off Davis Station, the fast-ice edge has remained largely stable during the past five days. Further offshore, broken ex-fast ice is turning into brash and drifting in the polynya. Some icebergs are still present as well.

Figure 2 provides a large-scale overview of sea-ice concentration between the station and the open ocean in the north. The median sea-ice extent for December is included as a black/white line. The general drift direction of pack ice is indicated by light-blue arrows.

Sea ice is well below the median extent in the region, even though some patches of decaying pack ice are still drifting north of the median. From the east, first-year sea ice with some old ice inclusions and ex-fast ice floes in the mix is drifting south-westward around the D-15 icebergs.

North of the Amery Ice Shelf, a very similar mixture of ice types is drifting north-westward but with a higher fraction of ex-fast ice included as the fast ice northeast of the ice shelf is starting to break up.

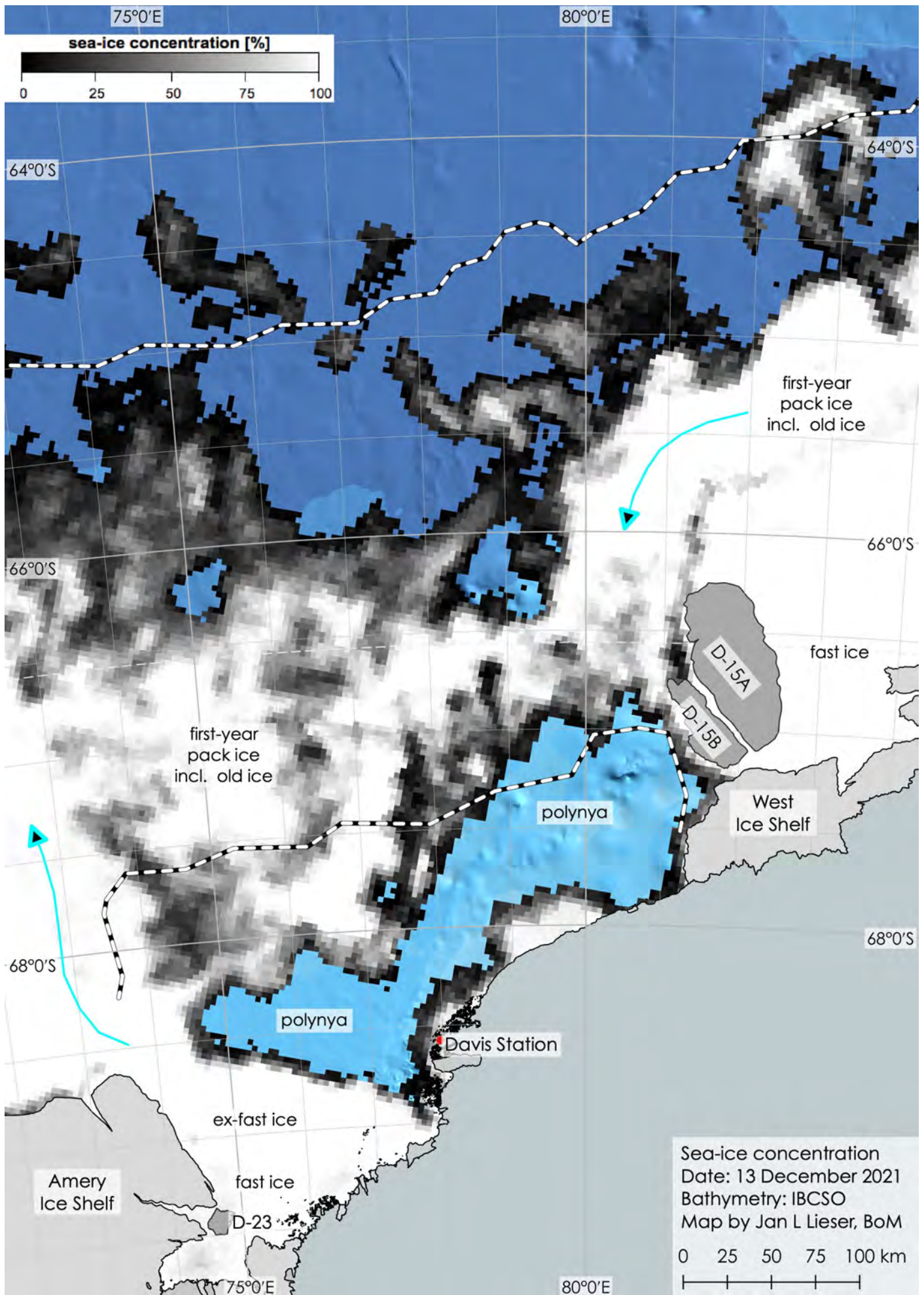


Figure 2: Sea-ice concentration data acquired 13 December 2021 and provided by ICDC.

Ice Bulletin: D'Urville Sea

Issued: Thursday 16th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR and visible data off Mawsons Huts. The fast-ice edge is marked by a red line (dashed yellow line for 9 December 2021).

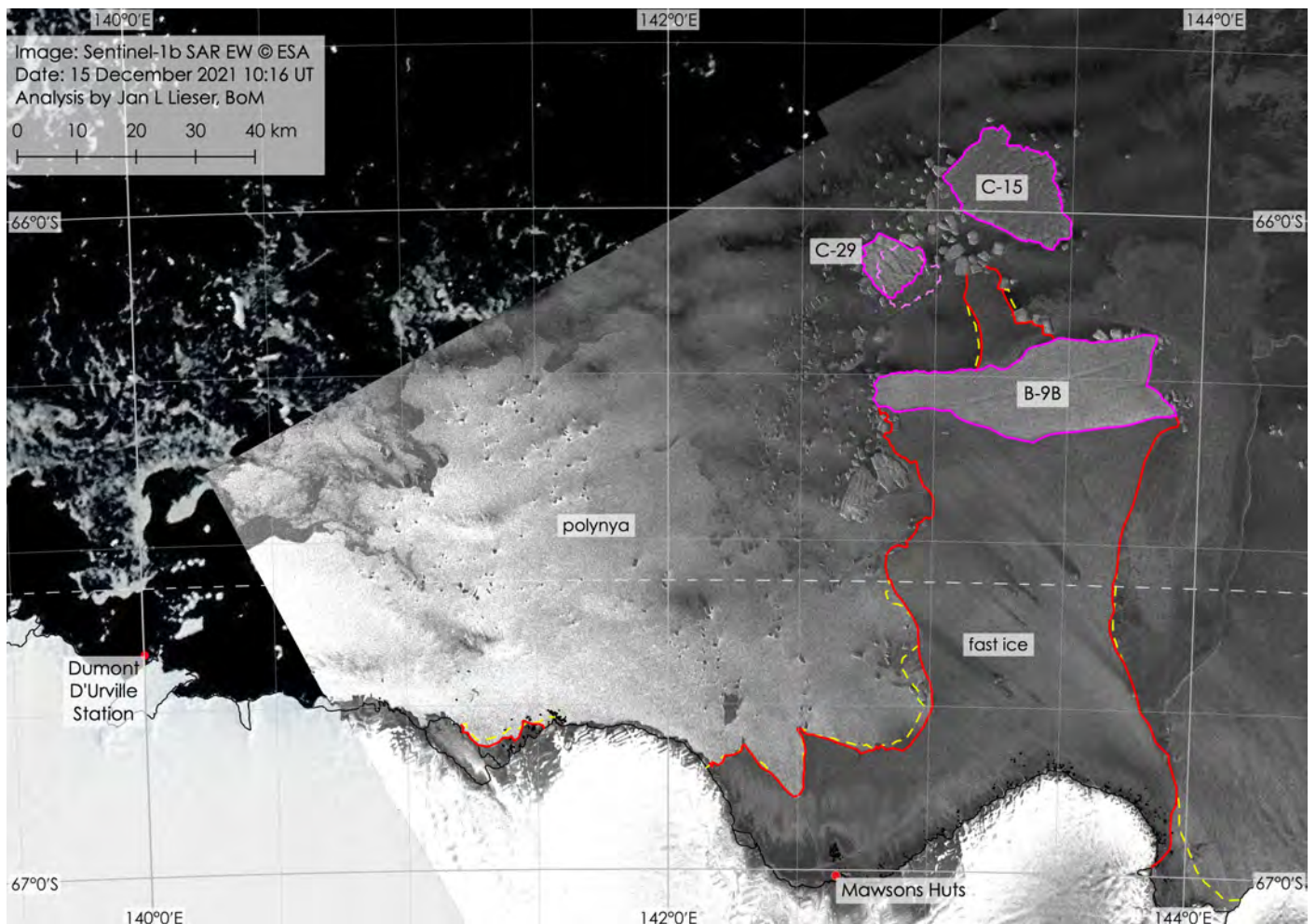


Figure 1: Sentinel-1b SAR composite data acquired 15 December 2021 at 10:16 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 15 December 2021 and provided by NASA.

Off Mawsons Huts, the fast-ice conditions remain largely unchanged. The open water of the polynya remains roughly 14 km (7.5 nautical miles) away from the huts.

Iceberg C-29 is restless within the confinement of its surrounding grounded icebergs.

Ice Bulletin: Davis Station

Issued: Thursday 16th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge is marked by a red line (dashed orange line for 14 December 2021).

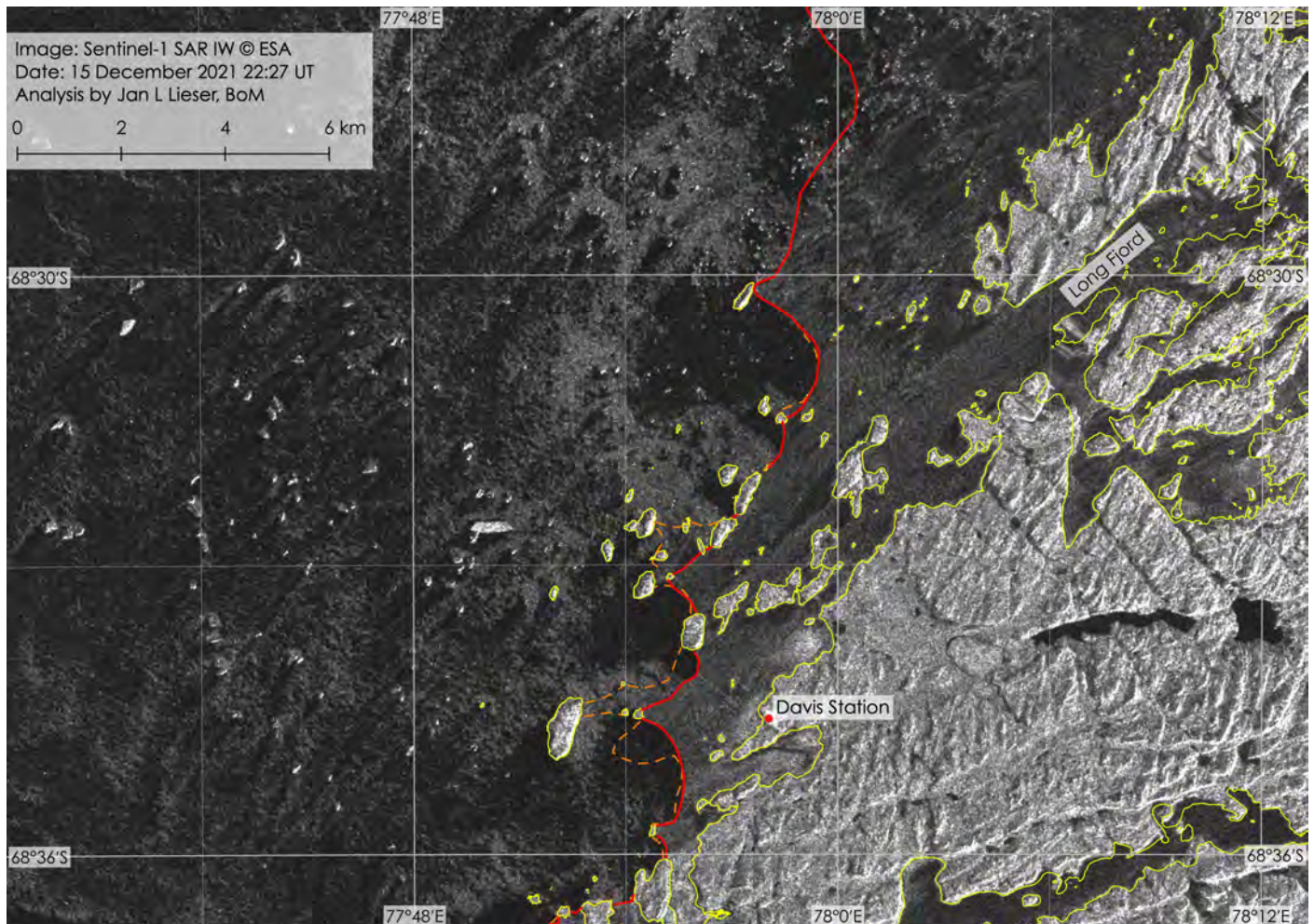


Figure 1: Sentinel-1a SAR IW data acquired 15 December 2021 at 22:27 UT and provided by PolarView.

West of Davis Station, the fast-ice edge retreated towards the shore during 15 December 2021. Further offshore, broken ex-fast ice is turning into brash and drifting in the polynya. Some icebergs are still present as well.

Further north, the sea-ice edge is largely below (south of) the median sea-ice extent. At the longitude of the station, the sea-ice edge is 65 nautical miles south of the median.

Ice Bulletin: Davis Station

Issued: Monday 20th December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data off Davis Station. The fast-ice edge is marked by a dashed red line for 14 December 2021.

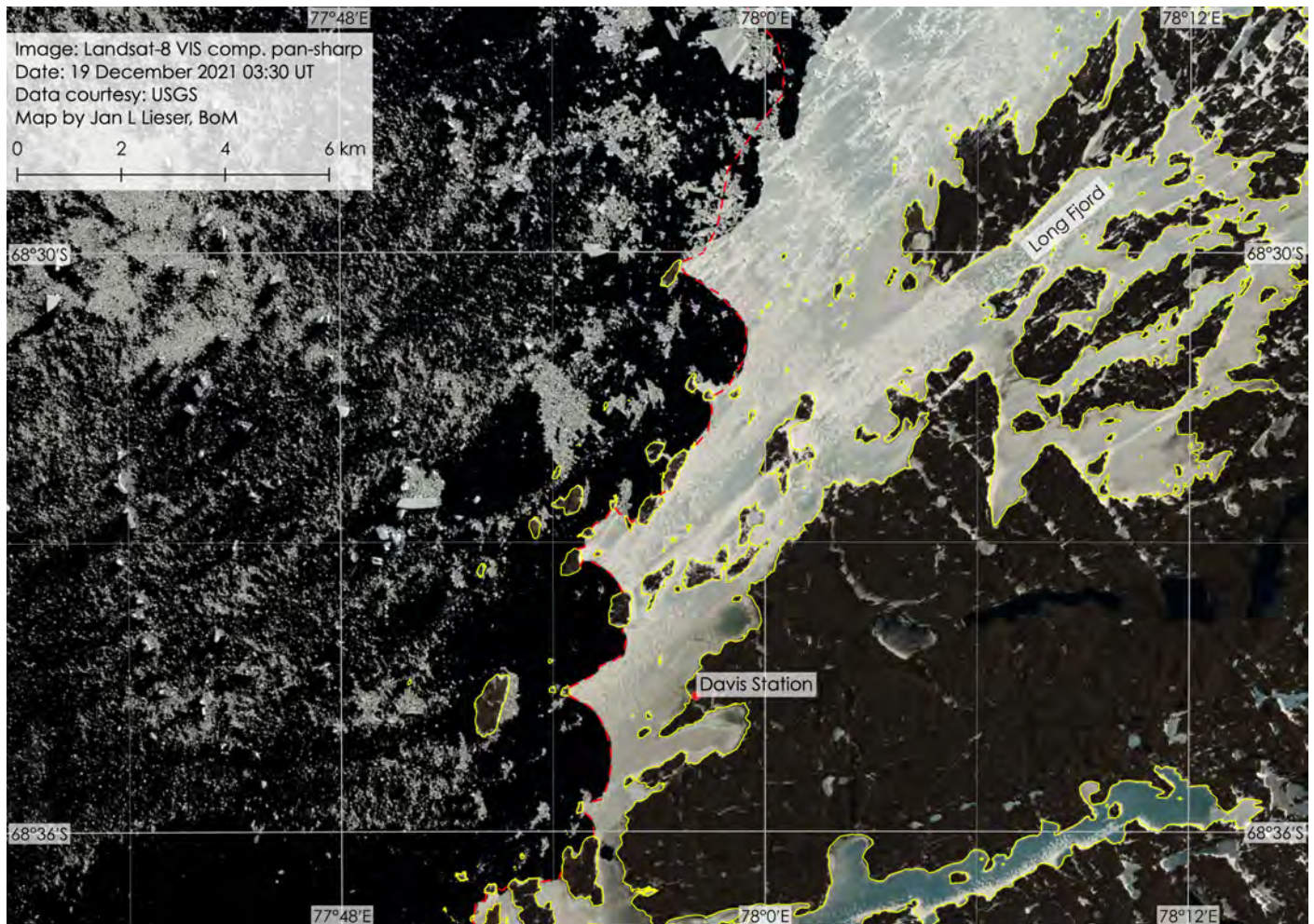


Figure 1: Landsat-8 pan-sharp visible data acquired 19 December 2021 at 03:30 UT and provided by USGS.

West of Davis Station, the fast-ice edge remained largely stable during the weekend. Further offshore, broken ex-fast ice is turning into brash and drifting in the polynya. Some icebergs are still present as well.

Further north, the sea-ice edge is highly mobile but largely below (south of) the December median sea-ice extent (see Figure 2; light blue arrows indicate the general drift direction of the pack ice).

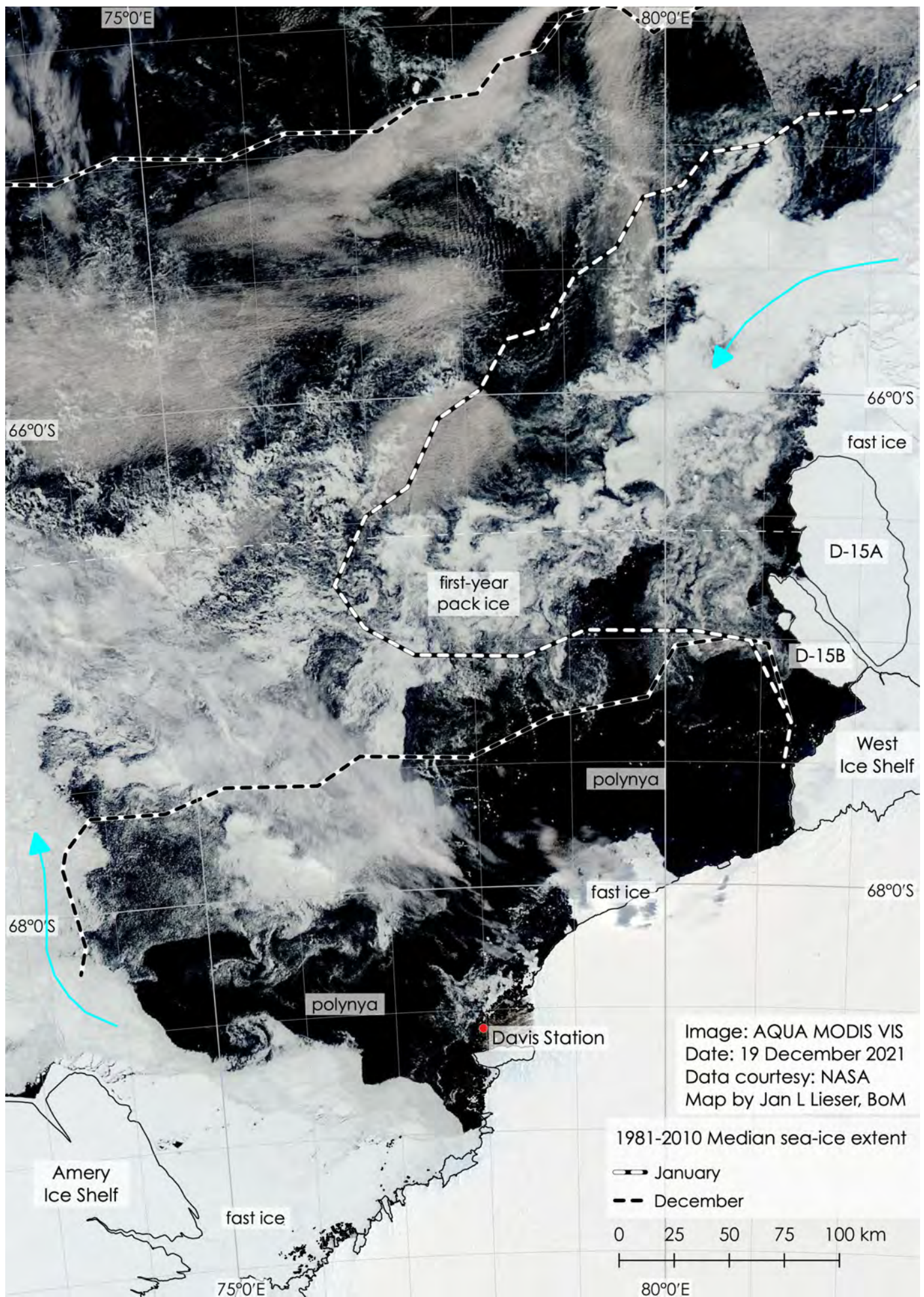


Figure 2: AQUA MODIS VIS data acquired 19 December 2021 and provided by NASA.

Ice Bulletin: Casey Station

Issued: Monday 20th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows sea-ice concentration data off Casey Station and offshore. The fast-ice edge on 12 December 2021 is marked as a dashed red line.

Off Casey Station, the fast-ice edge has been largely stable during the past week. In Vincennes Bay, the polynya is largely ice free and only partly covered by brash ice and some icebergs.

Off the fast ice attached to the north-western side of Law Dome, a wide band of ex-fast ice and pack ice is moving into the bay (as indicated by the blue arrow). West of 109°0'E, lower sea-ice concentration is present.

North of 65°0'S, the marginal ice zone shows largely strips and patches of very open pack ice (see Figure 2).

Within the entire frame shown in the figures and north of the sea-ice edge, freely floating icebergs can be expected.

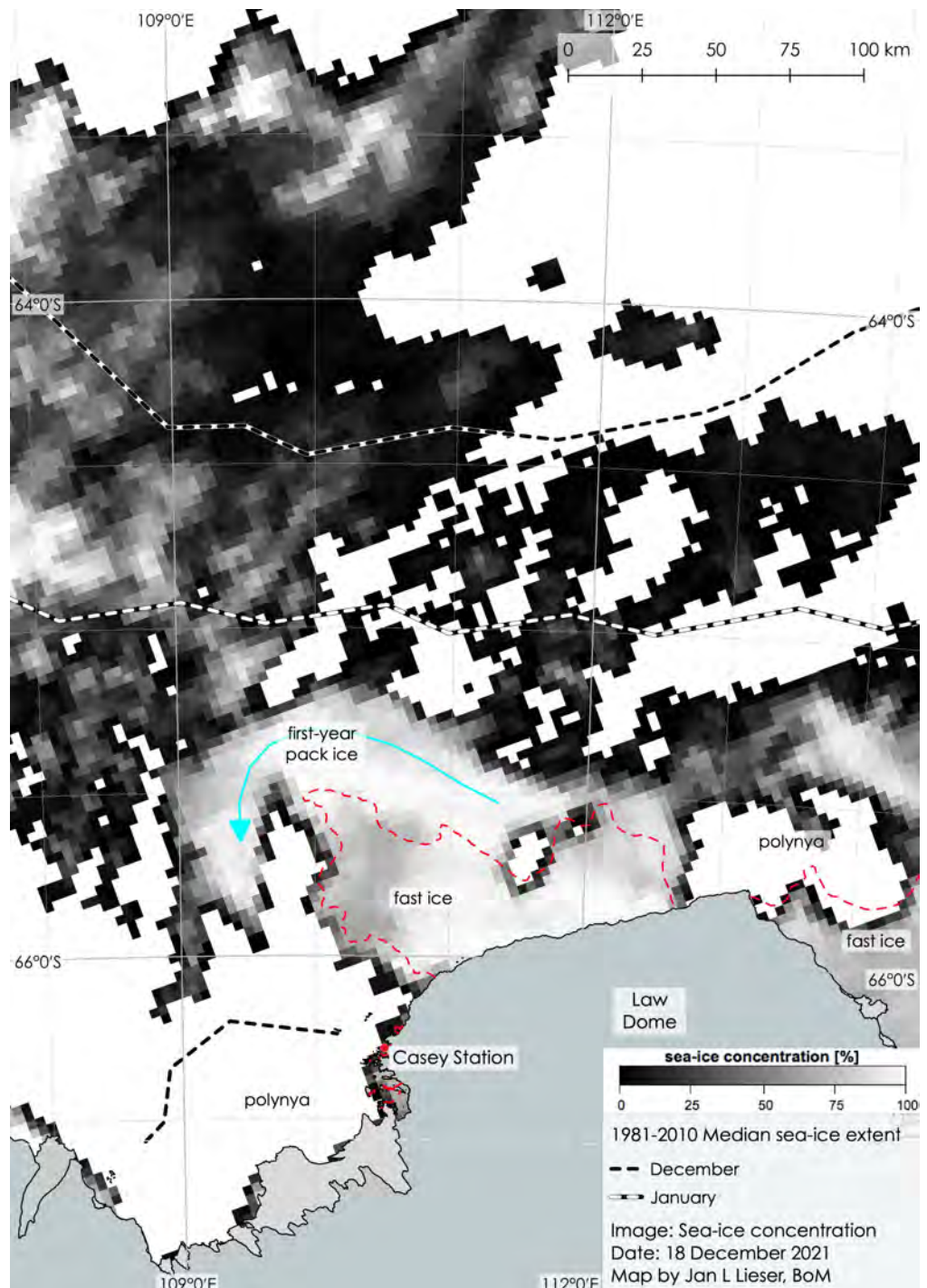


Figure 1: Sea-ice concentration data acquired 18 December 2021 and provided by ICDC.

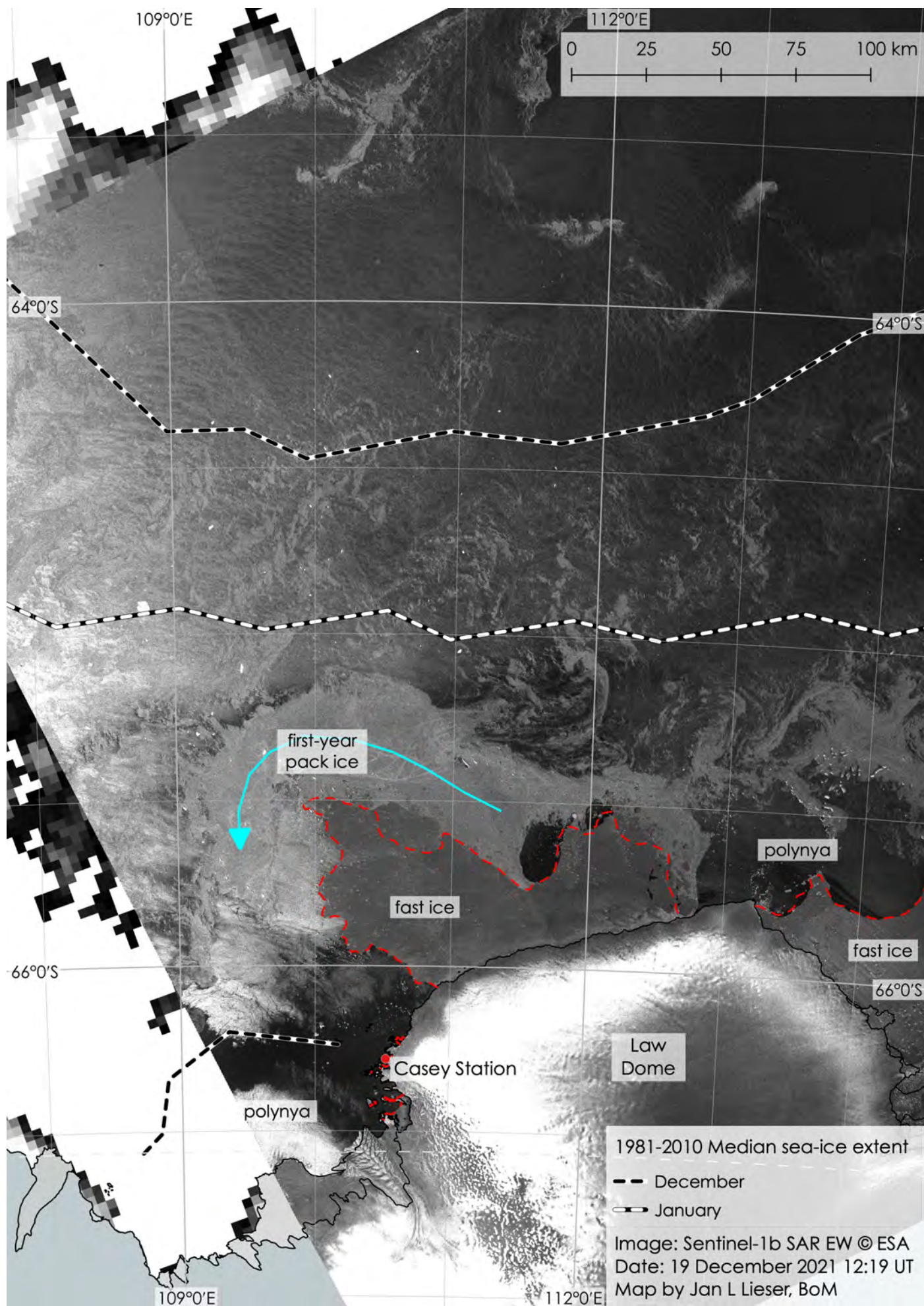


Figure 2: Sentinel-1b SAR EW data acquired 19 December 2021 at 12:19 UT and provided by PolarView.

Ice Bulletin: D'Urville Sea

Issued: Monday 20th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Dumont D'Urville Station. The fast-ice edge is marked by a red line.

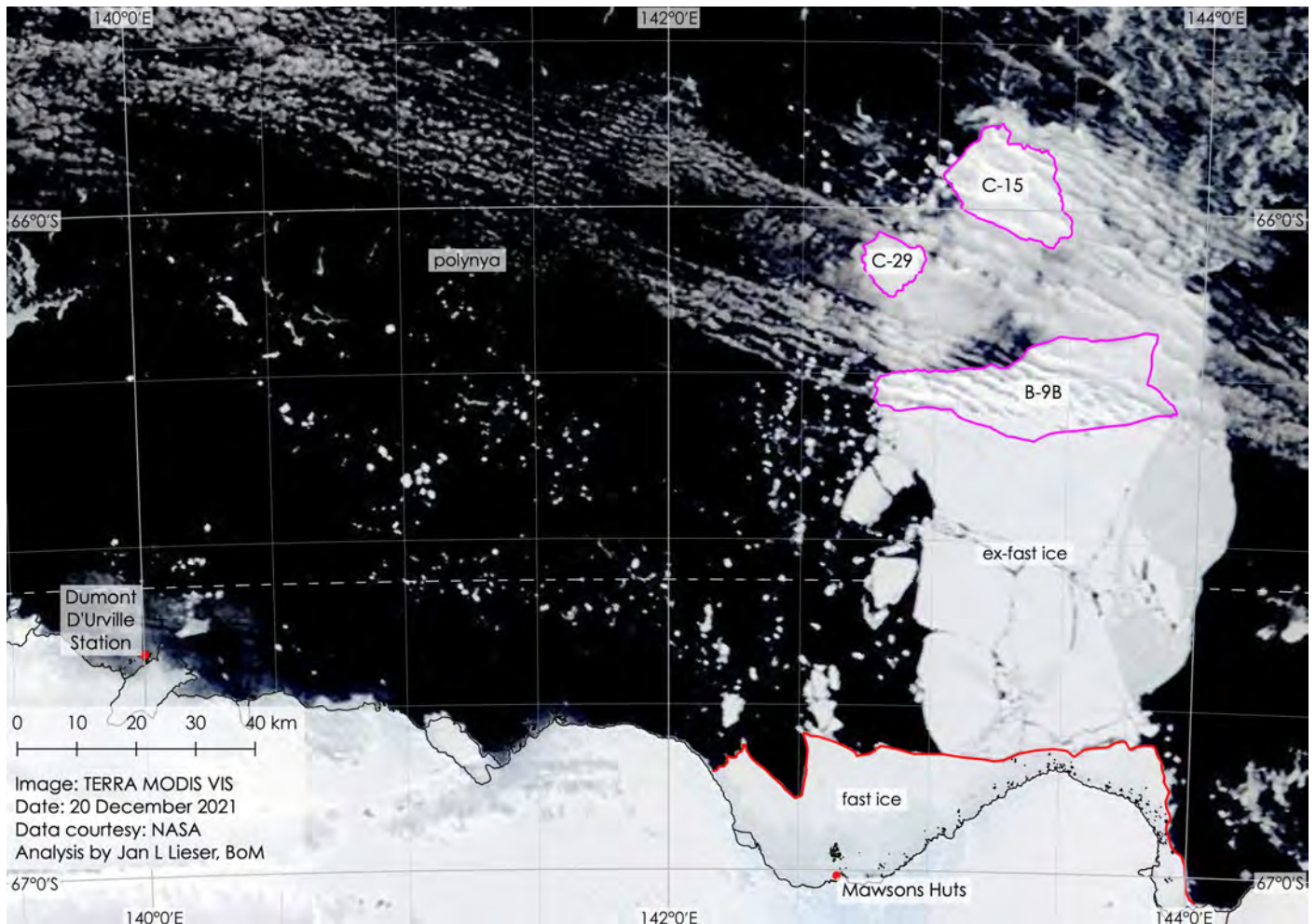


Figure 1: TERRA MODIS VIS data acquired 20 December 2021 and provided by NASA.

While off Mawsons Huts the fast-ice conditions remain largely unchanged and the open water of the polynya remains roughly 15 km (8 nautical miles) away from the huts, the fast ice south of iceberg B-9B has broken into large sheets and is crumbling further. North of iceberg B-9B, no more fast ice is present anymore.

Some now-released smaller icebergs and ex-fast ice floes are now drifting westward in the polynya.

Ice Bulletin: Brunt Ice Shelf

Issued: Monday 20th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the Brunt Ice Shelf in the south-eastern Weddell Sea. Fast ice is marked with a red line.

Off the southern edge of the ice shelf, some fast ice remains between the shelf and a large polynya. This has typically a stabilising effect on the ice-shelf front.

Since early November, a new rift between the northern part of Chasm-1 (the major north-south oriented chasm across the shelf) and one of the larger cracks southwest of the McDonald Ice Rumples has progressed further and appears to have now connected Chasm-1 and that crack. This dynamic also appears to have initiated a new crack extending north-eastward (indicated by a blue line).

During the same time, three of the large icebergs that are currently drifting southward into the Weddell Sea are close to the Brunt Ice Shelf now and continue to drift south.

While a new iceberg (outlined by a dashed pink shape) has not been recorded there yet once clearly separated it will be roughly 1700 km², which compares to the area of Greater Hobart, Tasmania.

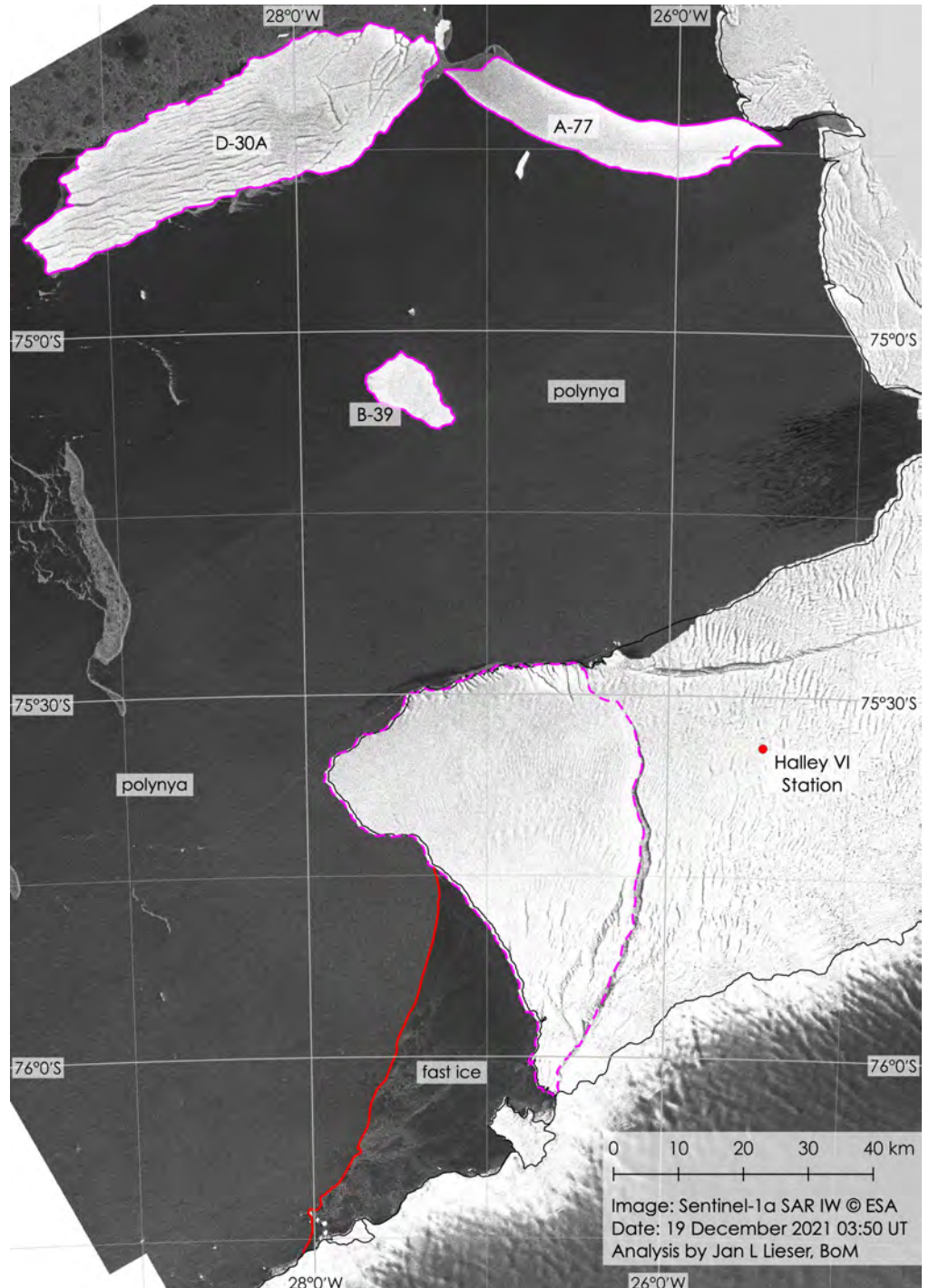


Figure 1: Sentinel-1a SAR IW data acquired 19 November 2021 at 03:50 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Tuesday 21st December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data off Casey Station and offshore. The fast-ice edge on 19 December 2021 is marked as a dashed red line.

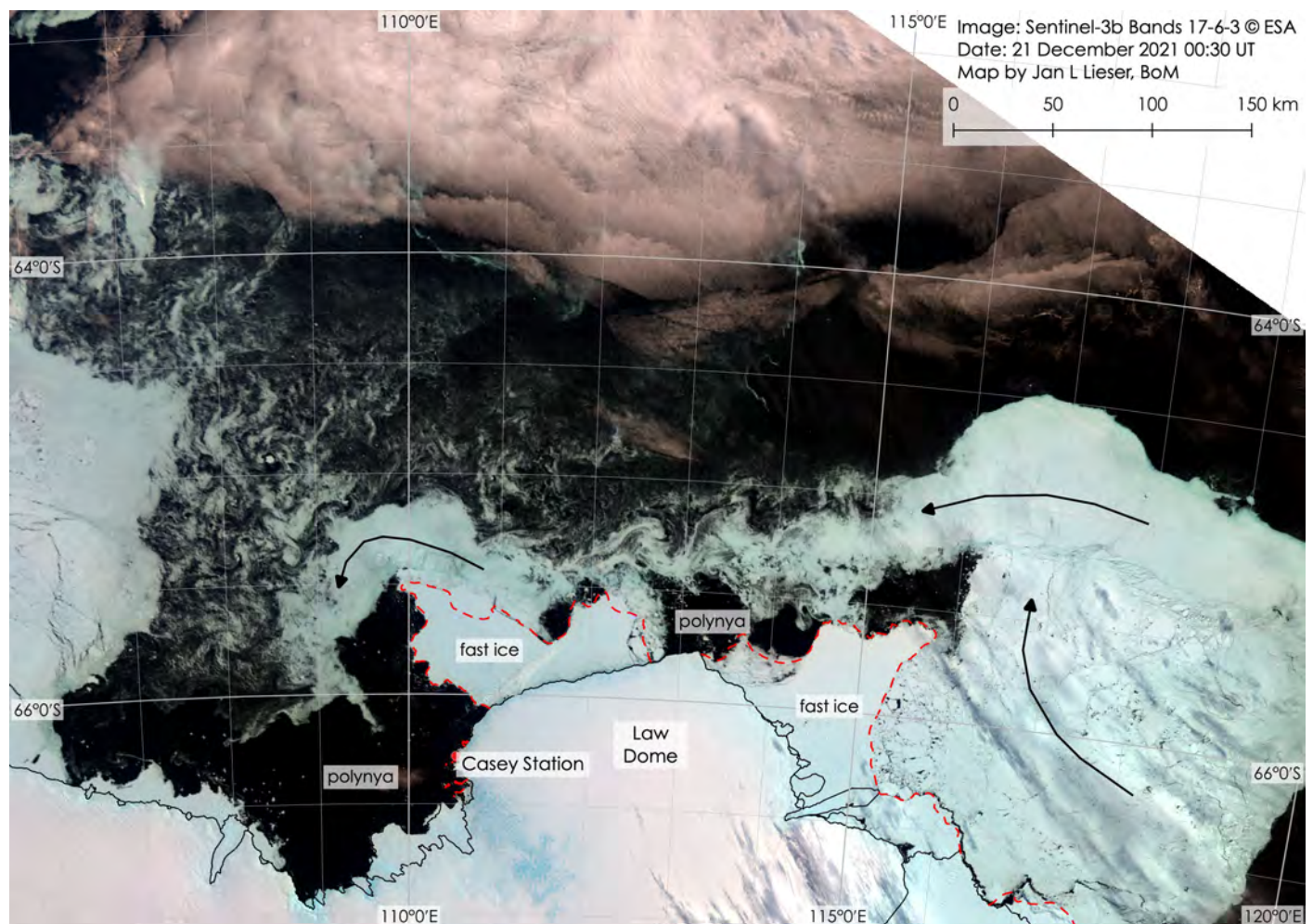


Figure 1: Sentinel-3b data acquired 21 December 2021 at 00:30 UT and provided by ESA.

Off Casey Station, the fast-ice edge has been largely stable during the past week. In Vincennes Bay, the polynya is largely ice free and only partly covered by brash ice and some icebergs.

Off Law Dome, fast ice continues to break up and discharges floes of ex-fast ice into the general westward drift of pack ice (as indicated by the black arrows). Between 108°0'E and 109°0'E, lower sea-ice concentration is present.

North of 65°0'S, the marginal ice zone consists largely of strips and patches of very open pack ice including one bigger patch of pack ice that can be seen centred roughly at 114°0'E and 63°54'S beneath the clouds (with a pink tint in the figure).

Within the entire frame shown in the figure and north of the sea-ice edge, freely floating icebergs can be expected.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Brunt Ice Shelf

Issued: Tuesday 21st December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the Brunt Ice Shelf in the south-eastern Weddell Sea. The fast-ice edge on 19 December 2021 is marked with a red/white line.

Yesterday, fast ice started breaking up at the southern edge of the ice shelf. Fast ice has typically a stabilising effect on the ice-shelf front.

Since early November, a new rift between the northern part of Chasm-1 (the major north-south oriented chasm across the shelf) and one of the larger cracks southwest of the McDonald Ice Rumples has progressed further and appears to have now connected Chasm-1 and that crack. This dynamic also appears to have initiated a new crack extending north-eastward (see inset; marked by a blue line).

During the 40 hours prior to the acquisition of the presented data, iceberg B-39 drifted roughly 12.5 nautical miles south-westward deeper into the Weddell Sea (the yellow shape for reference) and closer to the Brunt Ice Shelf. The SAR data also indicate ocean swell heading south-westward.

While a new iceberg (outlined by a dashed pink shape) has not been recorded there yet once clearly separated it will be roughly 1700 km², which compares to the area of Greater Hobart, Tasmania.

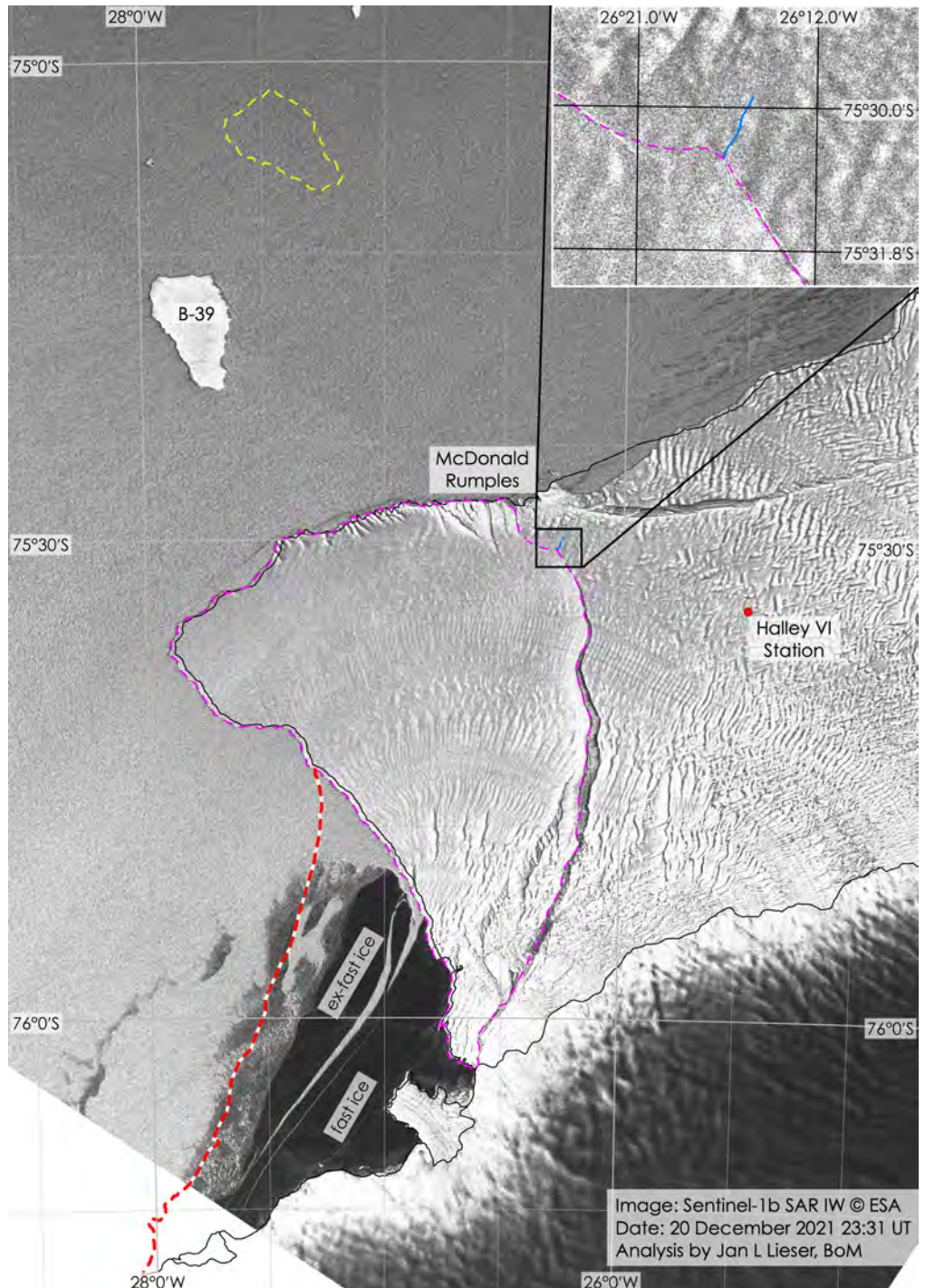


Figure 1: Sentinel-1b SAR IW data acquired 20 November 2021 at 23:31 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Wednesday 22nd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows sea-ice concentration data off Casey Station and offshore. The fast-ice edge is marked by a red line.

Off Law Dome, fast ice continues to break up and discharges floes of ex-fast ice into the general westward drift of pack ice (as indicated by a white arrow). Around 108°0'E, lower sea-ice concentration is present. At least one large iceberg (roughly 13.5 km²; roughly 14 km perimeter; marked by a pink shape) is also present in the northern part of that region of lower sea-ice concentration.

Further north, the marginal ice zone consists largely of strips and patches (below the detection limit of the sea-ice concentration algorithm) and open pack ice centred roughly along 63°50'S and up to 63°0'S at 112°0'E.

Figure 2 shows the same geographical frame as Figure 1, but with an overlay of SAR data. Small to medium-sized icebergs are marked by pink dots.

Within the entire frame shown in the figure and north of the sea-ice edge, freely floating icebergs can be expected.

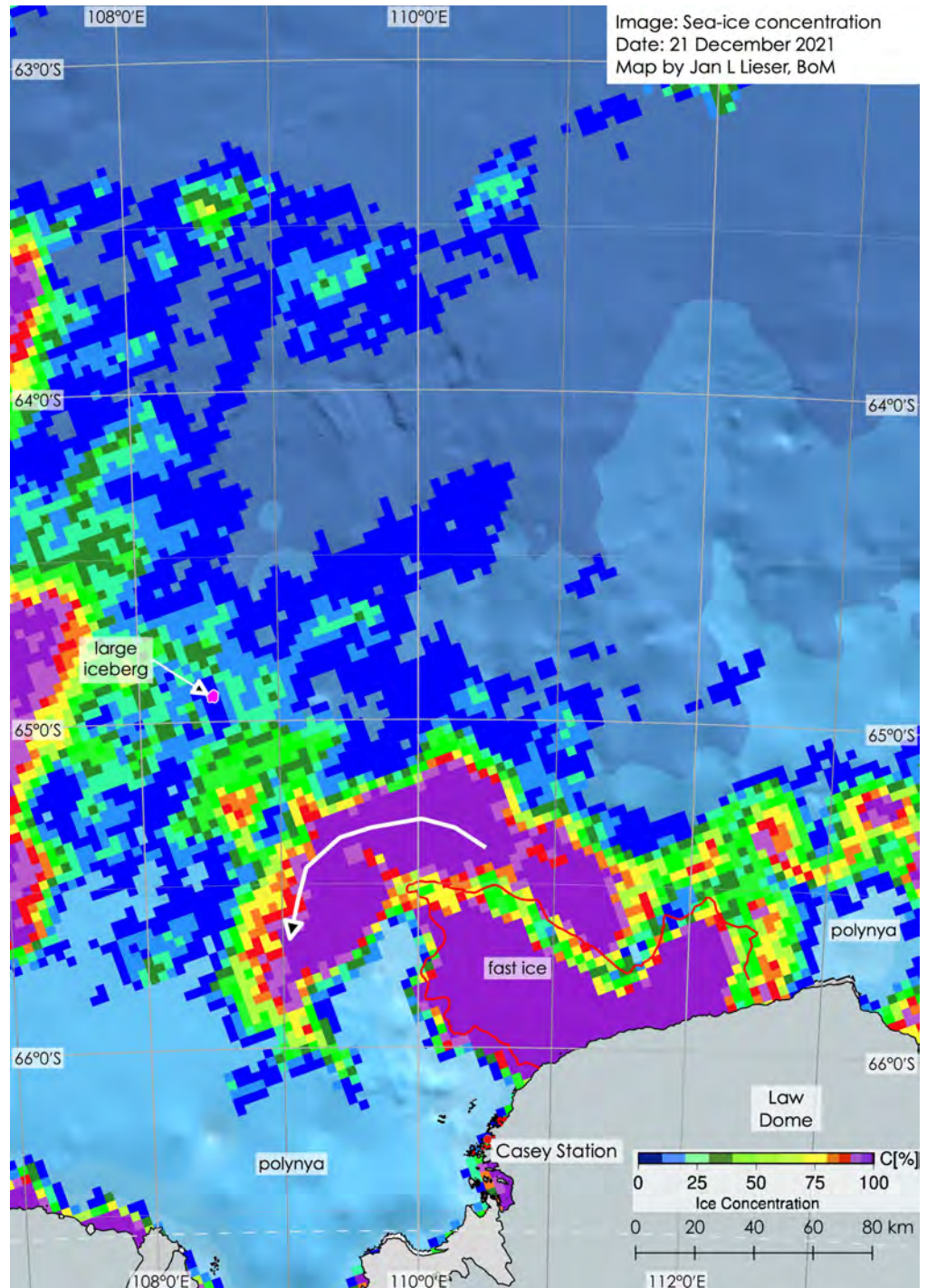


Figure 1: Sea-ice concentration data acquired 21 December 2021 and provided by ICDC; (Bathymetry: IBCSO).

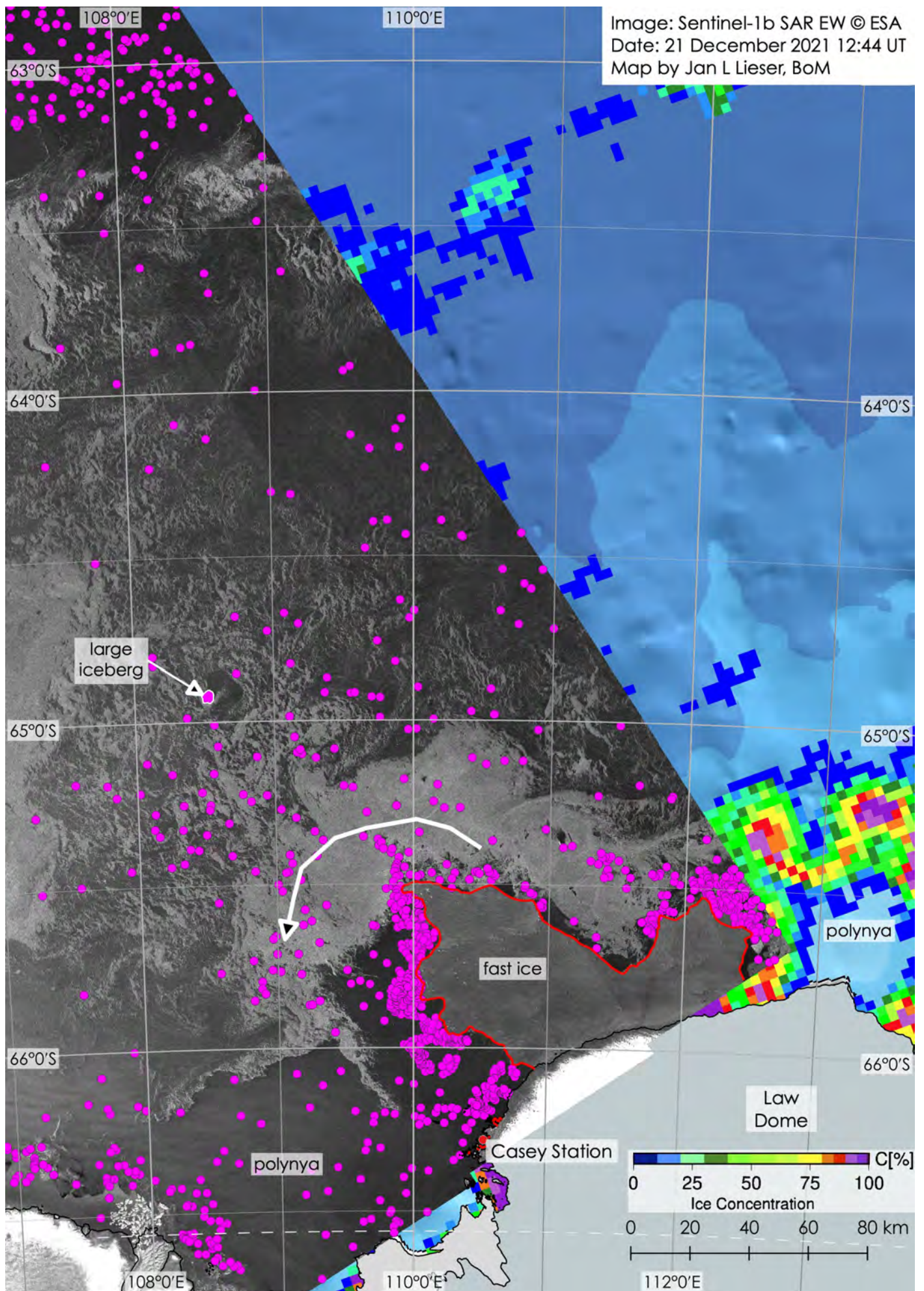


Figure 2: Sentinel-1b SAR EW data acquired 21 December 2021 at 12:44 UT and provided by PolarView (Bathymetry: IBCSO).

Ice Bulletin: Casey Station

Issued: Wednesday 22nd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data off Casey Station and offshore. The fast-ice edge is marked by a red line. The sea-ice edge based on passive microwave data from 21 December 2021 is included as a yellow line.

During the past 24 hours, the pack ice of the region has been pushed north-eastward against the typical westward drift (that is indicated by a white arrow). Around 108°30'E, lower sea-ice concentration is present but at least one large iceberg (roughly 13.5 km²; roughly 14 km perimeter) is also present at that longitude north of 65°0'S.

Further north, the sea-ice edge has also been pushed north-eastward. The marginal ice zone consists largely of strips and patches (obscured by clouds, which are represented with a red tint) and open pack ice.

Within the entire frame shown in the figure and north of the sea-ice edge, freely floating icebergs can be expected.

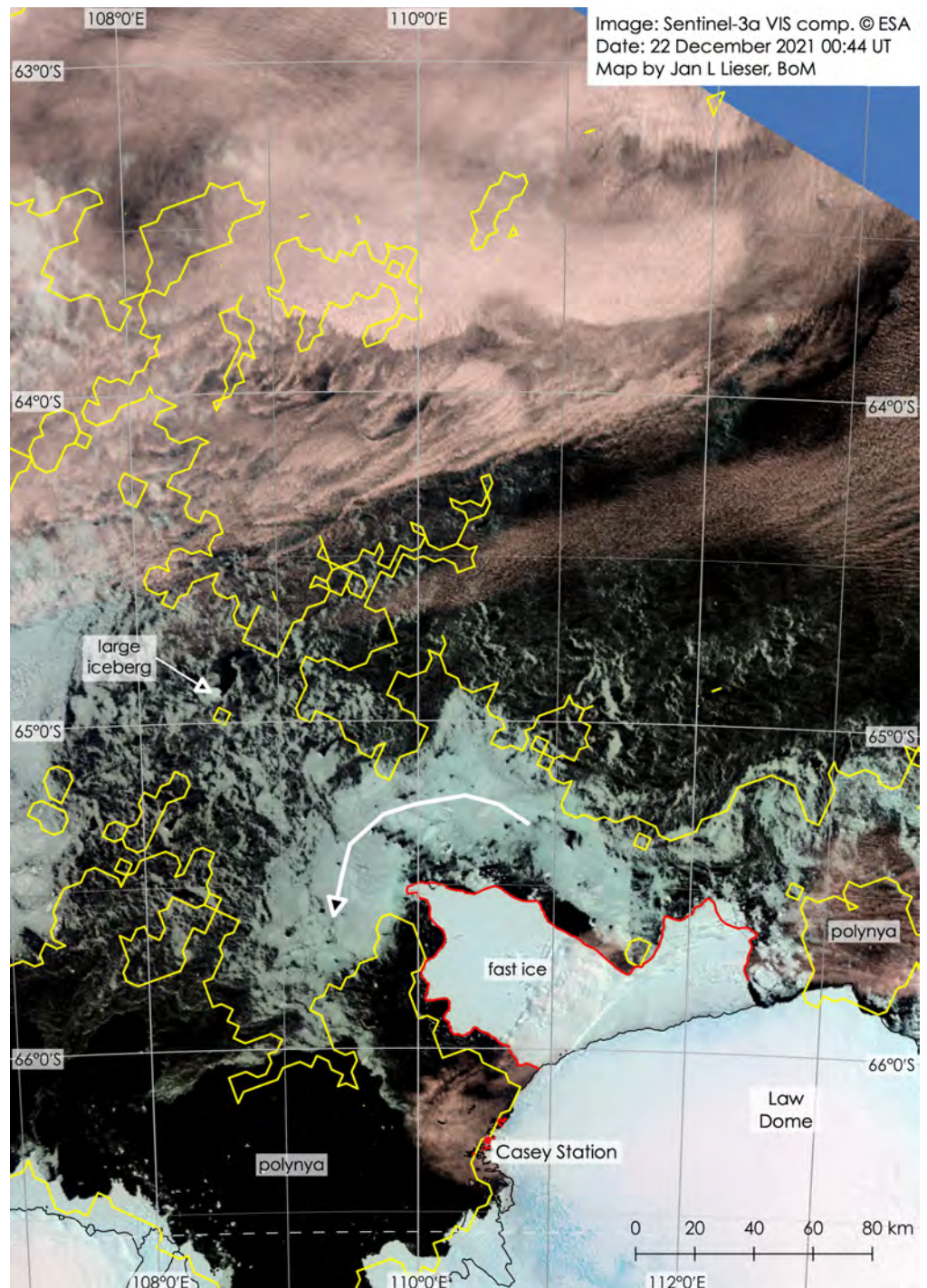


Figure 1: Sentinel-3a VIS composite data acquired 22 December 2021 at 00:44 UT and provided by ESA (Bathymetry: IBCSO).

Ice Bulletin: Casey Station

Issued: Thursday 23rd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10m horizontal) visible data off Casey Station and offshore. The fast-ice edge on 21 December 2021 is marked by a dashed red line. The recent track of Happy Dragon is included as a yellow line (up until 23 December 2021 01:30Z; the yellow dot).

Off Law Dome, fast ice continues to break up and discharges floes of ex-fast ice into the general westward drift of pack ice. West of 109°0'E, lower sea-ice concentration is present.

Within the entire frame shown in the figure and north of the sea-ice edge, freely floating icebergs can be expected.

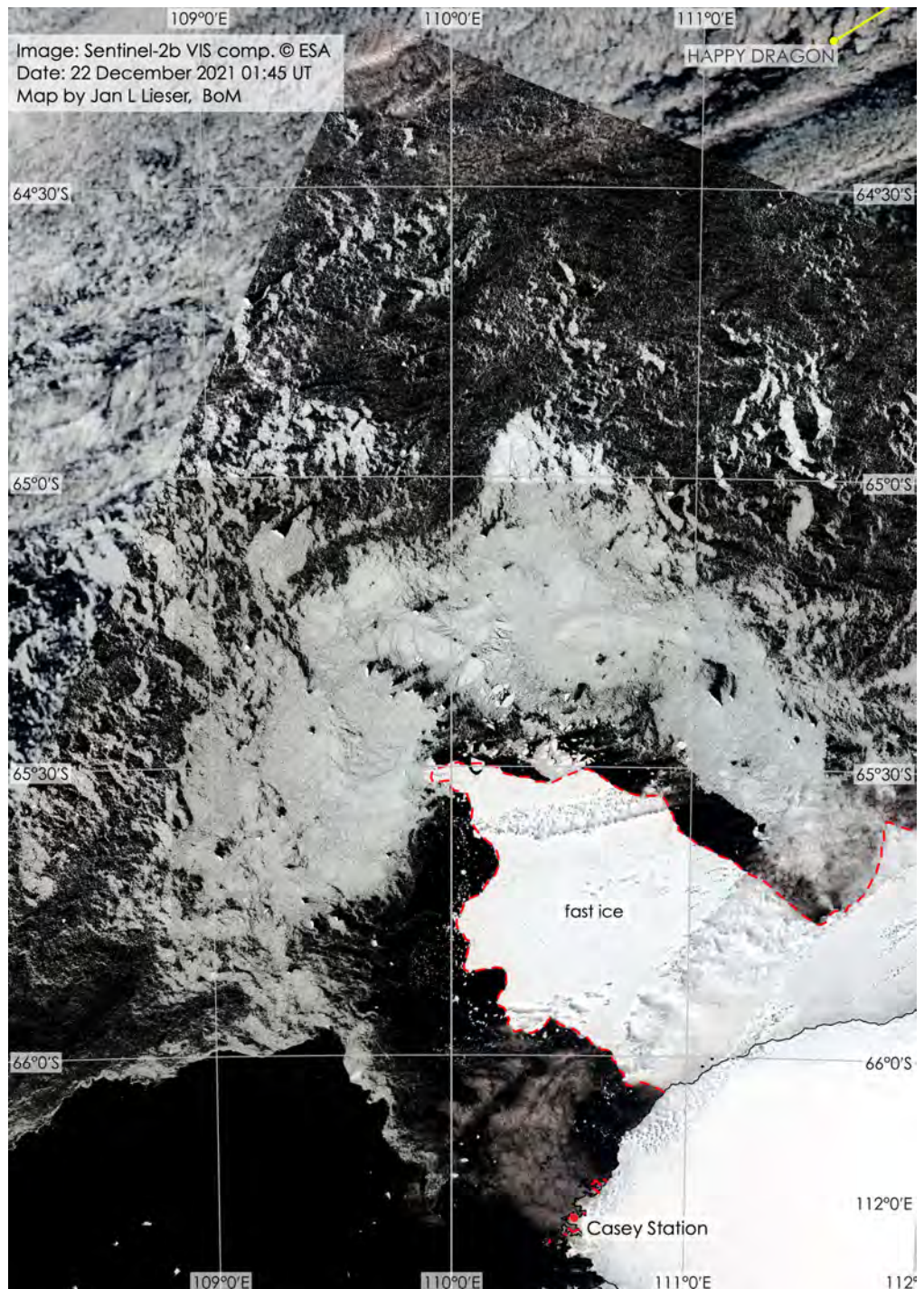


Figure 1: Sentinel-2b VIS composite data acquired 22 December 2021 at 01:45 UT and provided by USGS; Background: AQUA MODIS VIS data acquired 22 December 2021 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Thursday 23rd December 2021

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10m horizontal) visible data off Casey Station and offshore. The fast-ice edge is marked by a red line.

North and south of Casey Station, fast ice continues to break up. The immediate vicinity of the station is obscured by clouds and the current extent of fast ice is undetermined.

Figure 2 shows close-up views of the Casey Skiway (upper panel; marked as YCSK in Figure 1) and Wilkins Aerodrome (lower panel; southeast outside of the frame of Figure 1).

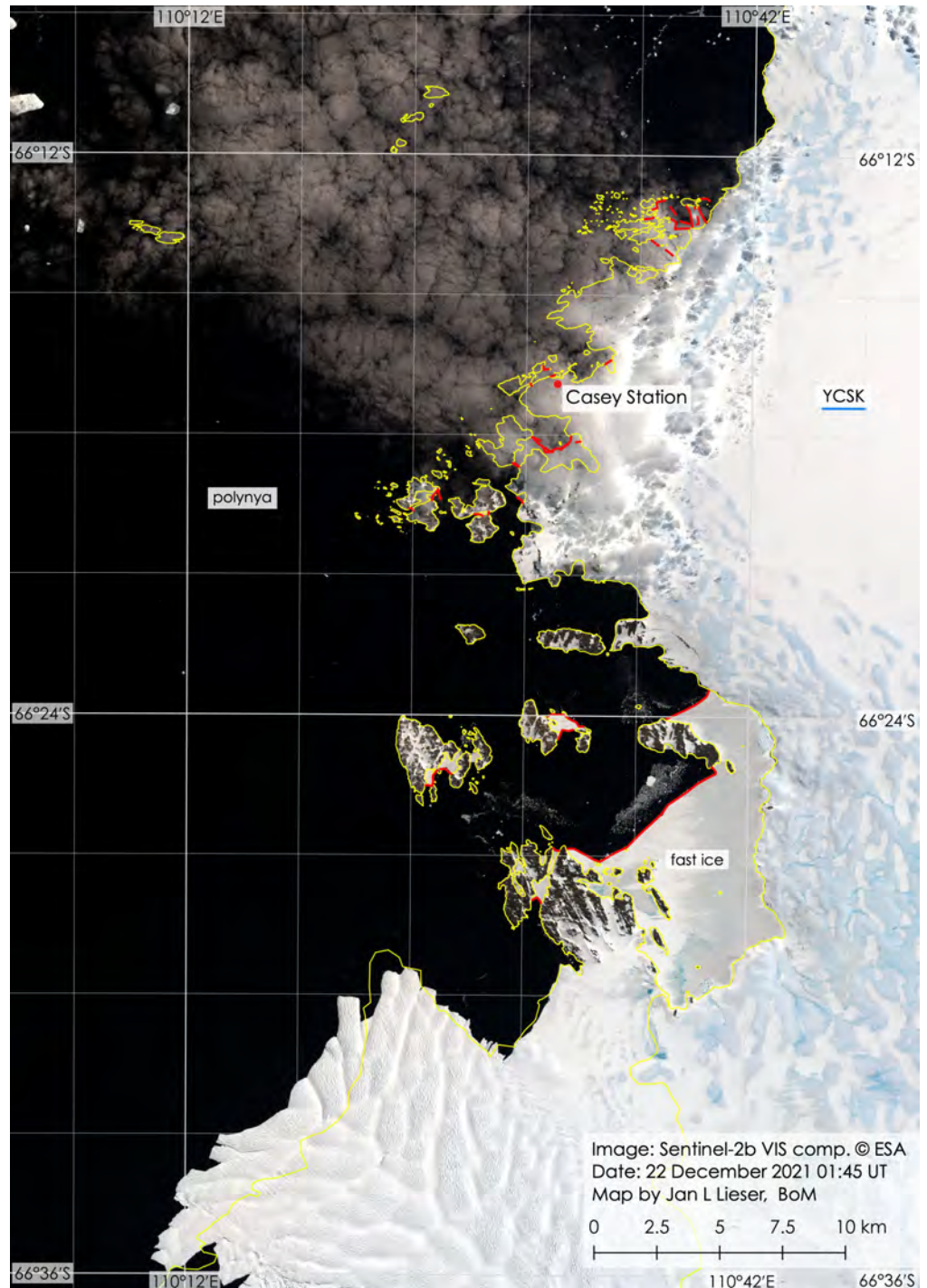


Figure 1: Sentinel-2b VIS composite data acquired 22 December 2021 at 01:45 UT and provided by USGS.

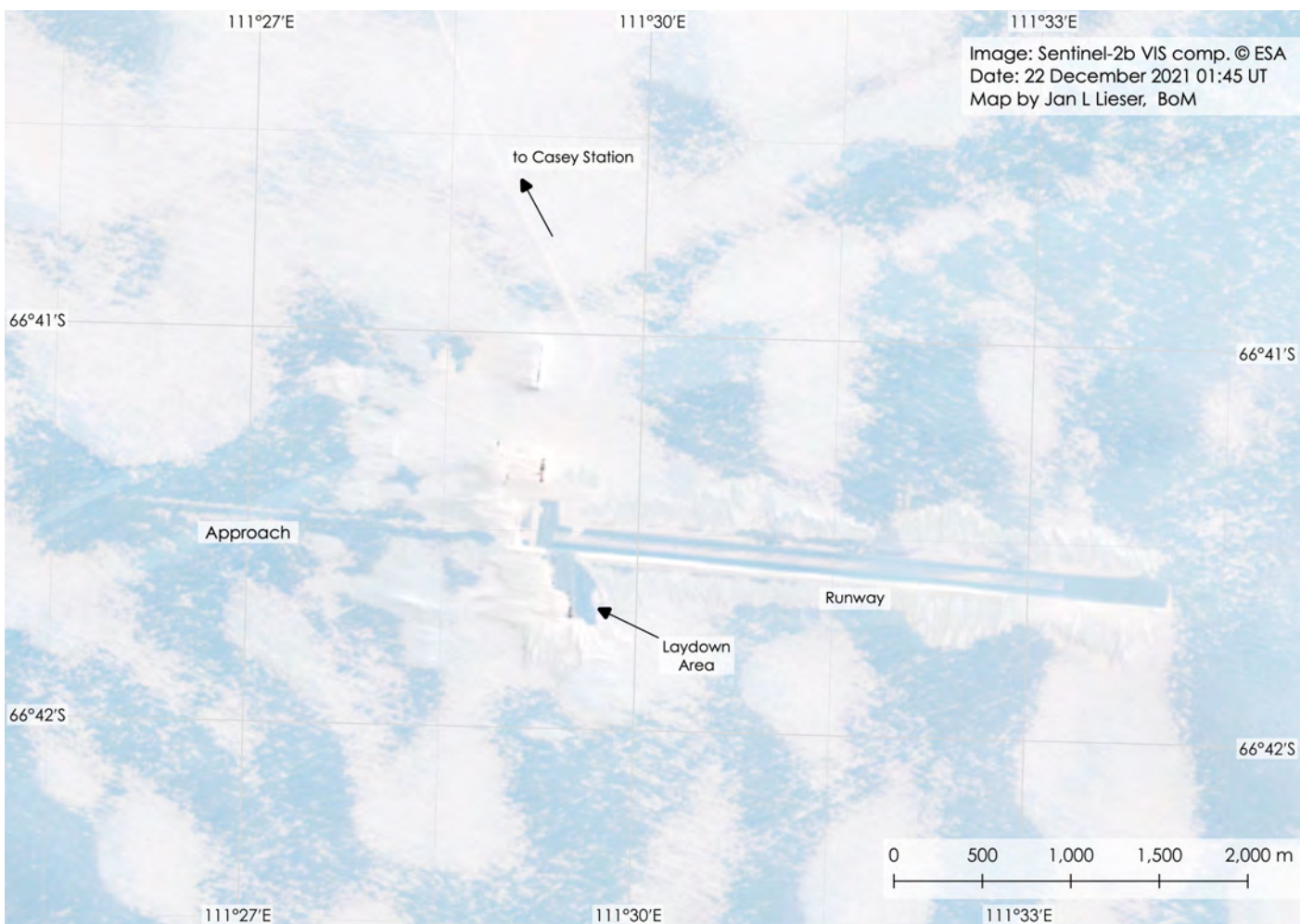
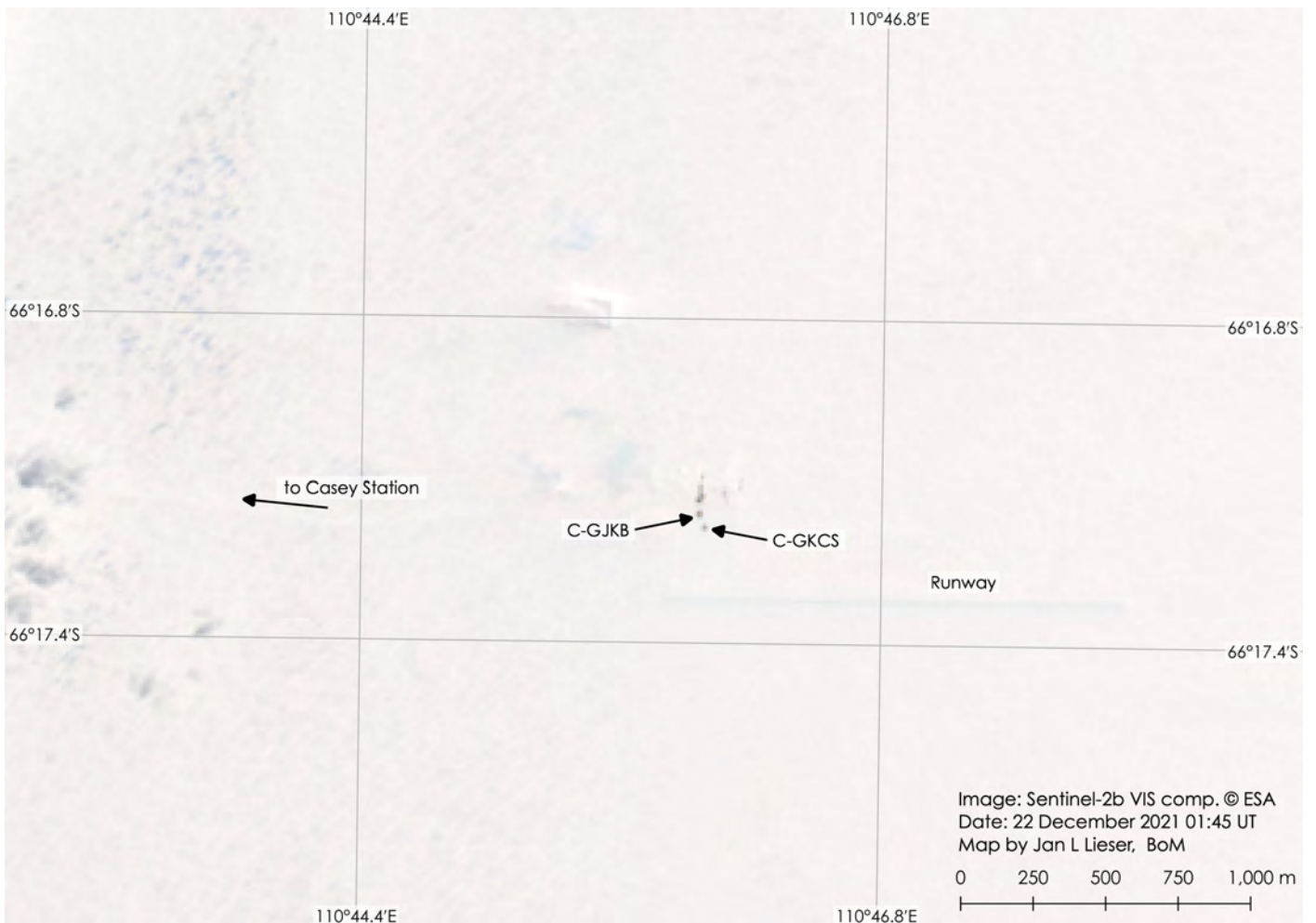


Figure 2: Sentinel-2b VIS composite data acquired 22 December 2021 at 01:45 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Thursday 23rd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Mawson Station.

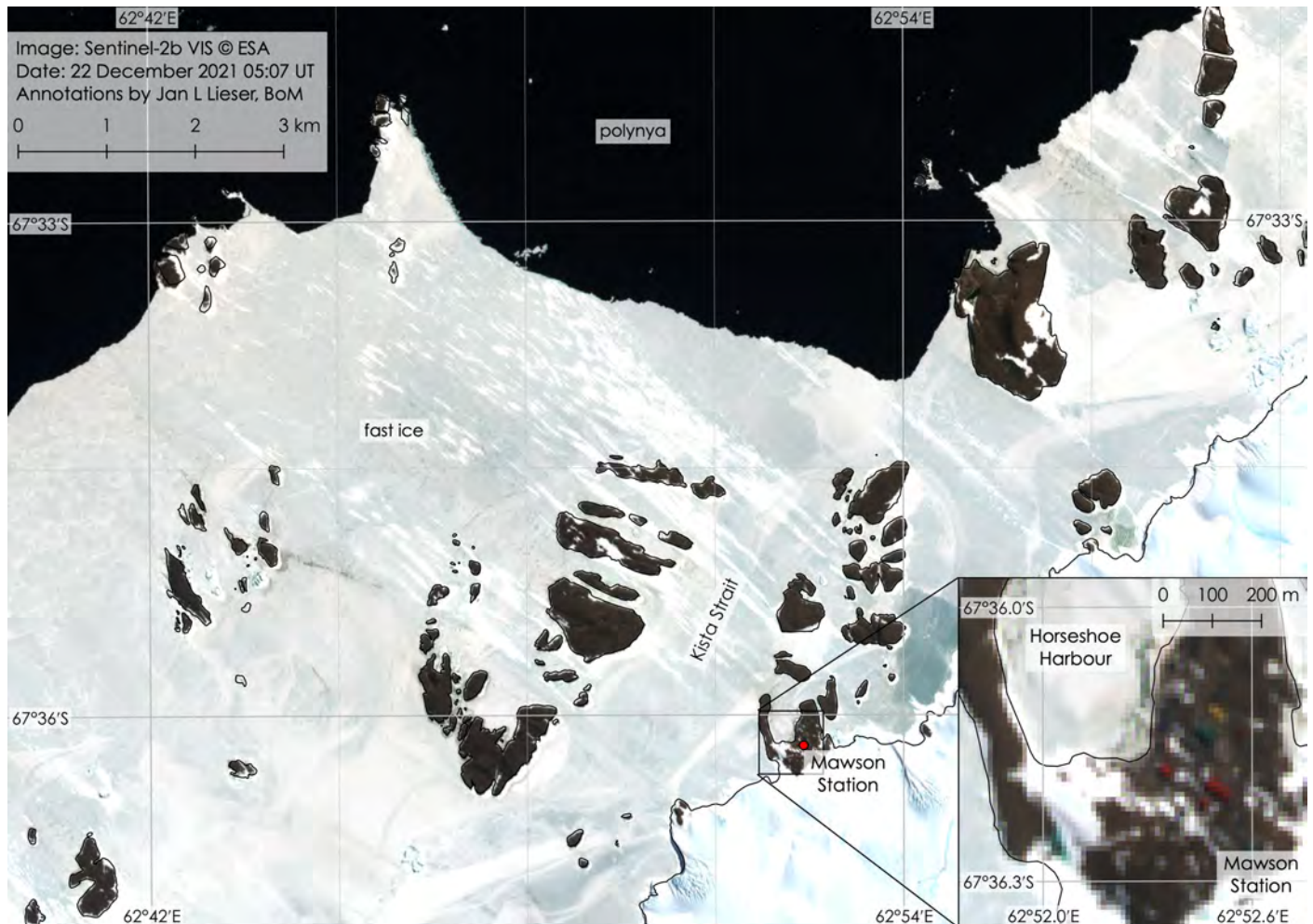


Figure 1: Sentinel-2b VIS composite data acquired 22 December 2021 at 05:07 UT and provided by USGS.

During this week, the fast-ice edge remained largely stable off Mawson Station. Kista Strait is still covered by fast ice and the shortest distance between the station and the open water of the polynya offshore is now roughly 2.5 nautical miles. In Horseshoe Harbour, some surface melt can be seen on top of the fast ice at the eastern side of the harbour (see inset).

Figure 2 shows the larger frame of the same data that are displayed in Figure 1.

The northern part of Iceberg Alley (marked by blue outlines in Figure 2) is free of fast ice but filled with ex-fast ice. This ex-fast ice is being pushed westward through the gaps between the grounded icebergs that make up the alley and northward out of the alley.

North of the polynya, broken ex-fast ice and decaying pack ice is drifting.

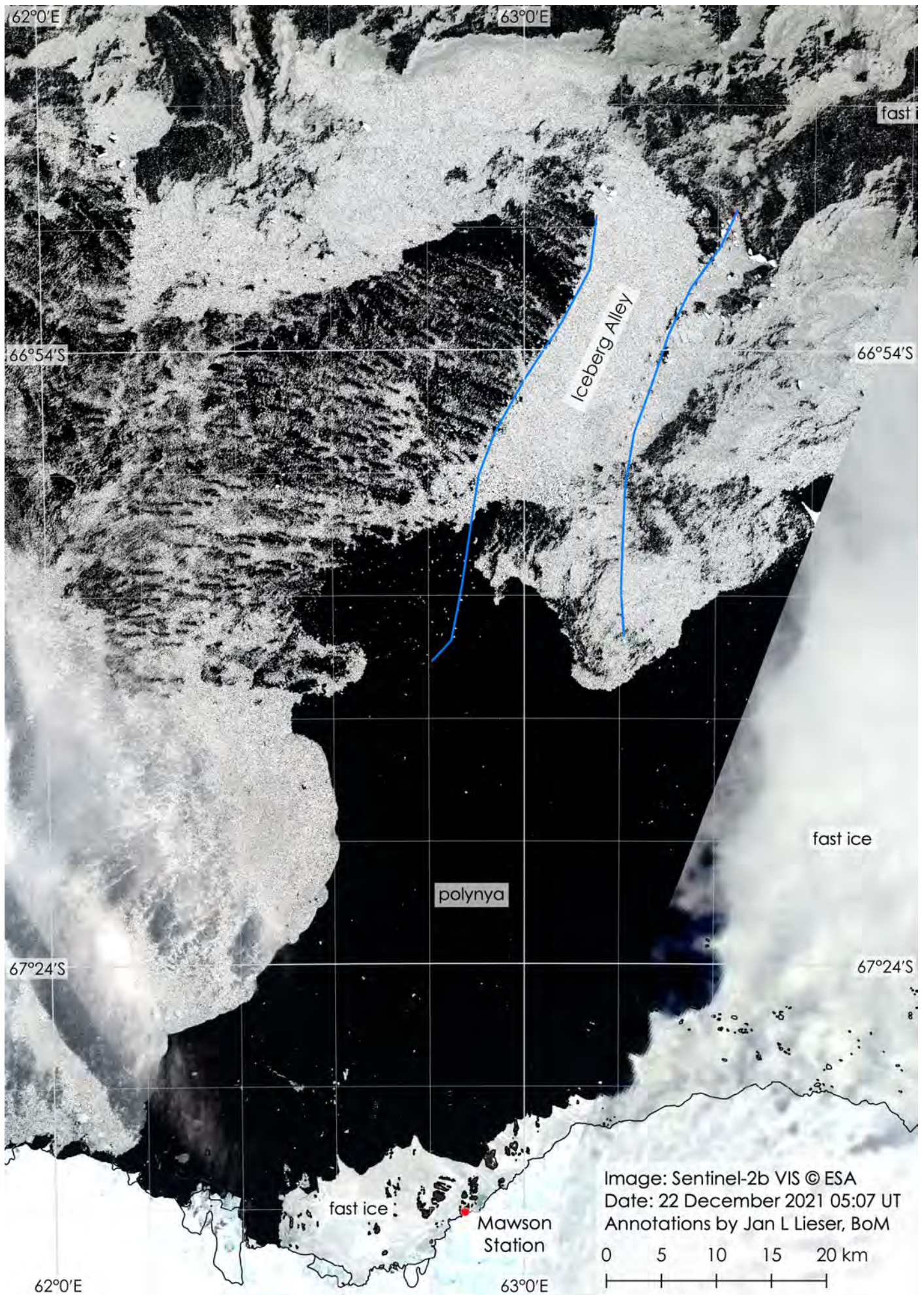


Figure 2: Sentinel-2b VIS composite data acquired 22 December 2021 at 05:07 UT and provided by USGS.

Ice Bulletin: Casey Station

Issued: Thursday 23rd December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Casey Station and further north. The fast-ice edge is marked by a red line. The recent cruise track of Happy Dragon is included as a yellow line (up until 23 December 2021 08:15Z; the yellow dot).

The scene is largely obscured by clouds (represented with a red tint).

The region west of 109°0'E appears to remain with lower sea-ice concentration as the pack ice continues its north-eastward drift in the general area.

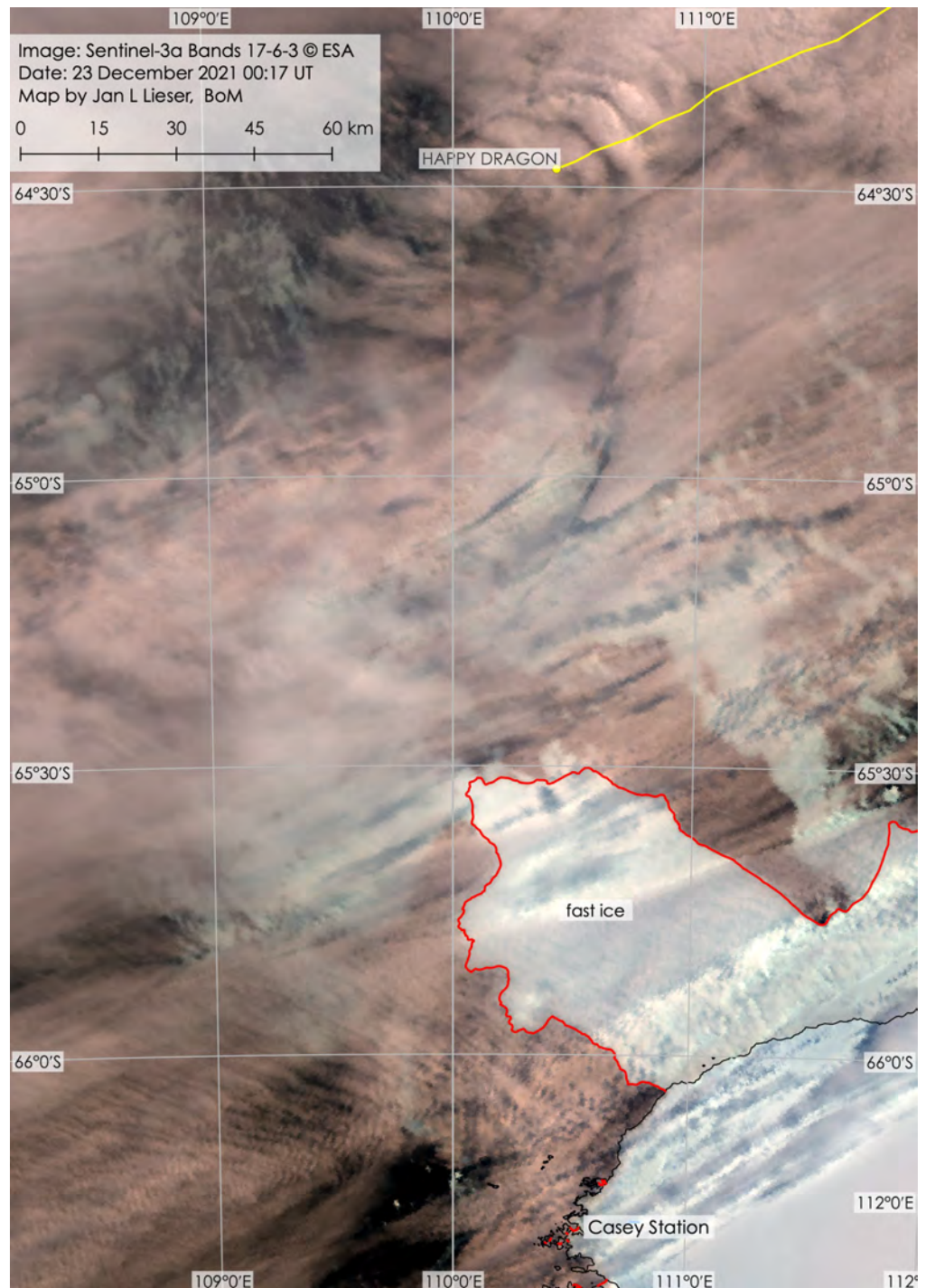


Figure 1: Sentinel-3a Bands 17-6-3 data acquired 23 December 2021 at 00:17 UT and provided by ESA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: D'Urville Sea

Issued: Friday 24th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

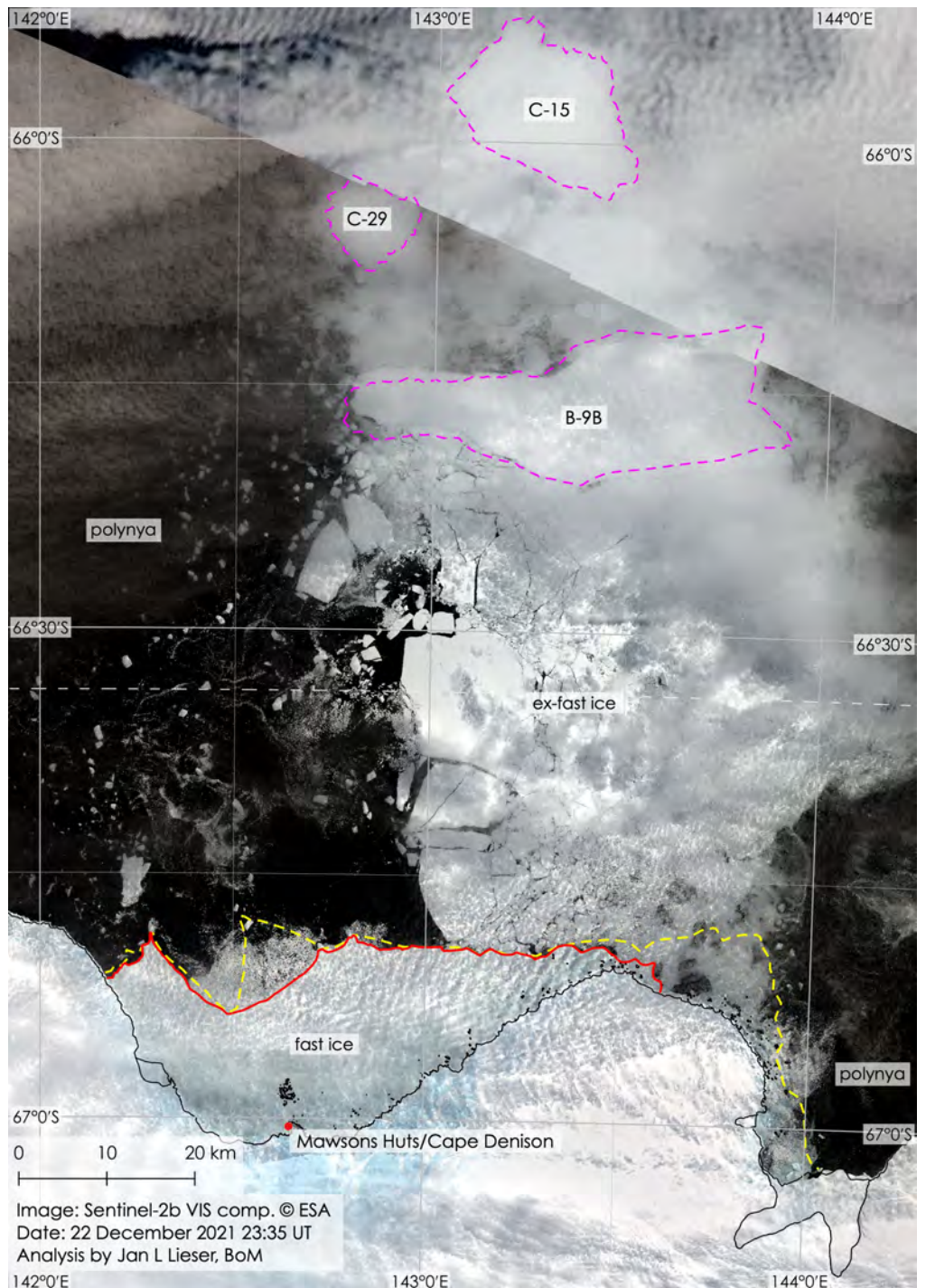
Figure 1 shows high-resolution (10 m horizontal) visible data off Mawsons Huts/Cape Denison. The fast-ice edge is marked by a red line (dashed yellow line for 20 December 2021). The positions of three large tabular icebergs on 15 December 2021 are marked by dashed pink shapes.

North of Mawsons Huts, fast ice has been breaking up during the week, but the open water of the polynya remains roughly 15 km (8 nautical miles) away from the huts.

South of iceberg B-9B, fast ice broke into large sheets earlier and continues crumbling further. North of the iceberg, no more fast ice is present anymore.

Iceberg B-9B has begun to get restless between the grounded small to medium-sized icebergs that surround it just like iceberg C-29 is since it was freed from its movement-restricting fast ice.

Some now-released smaller icebergs and ex-fast ice floes are drifting westward in the polynya.



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Ice Bulletin: Davis Station

Issued: Tuesday 28th December 2021

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station. The fast-ice edge is marked by a dashed red line for 15 December 2021.

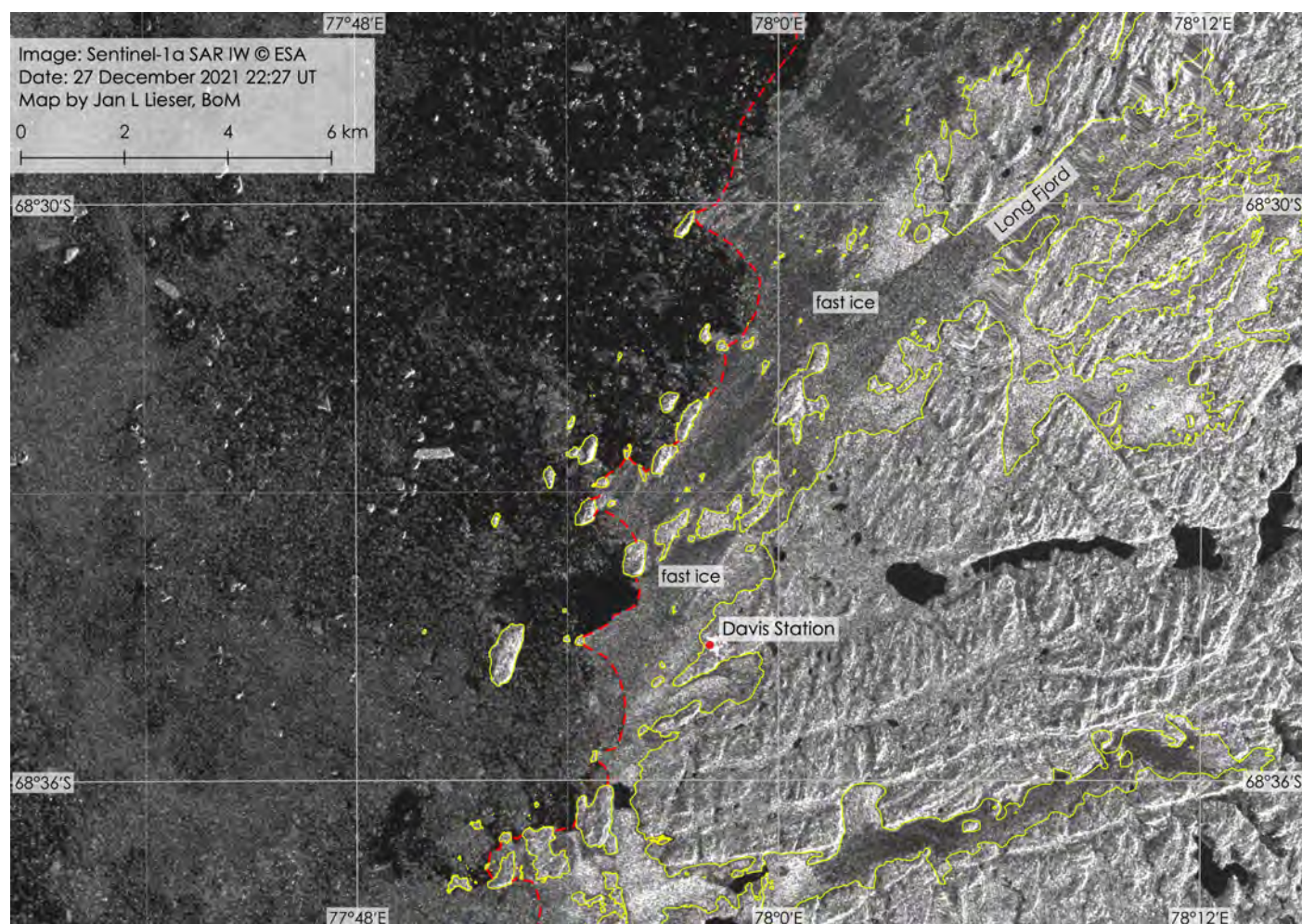


Figure 1: Sentinel-1a SAR IW data acquired 27 December 2021 at 22:27 UT and provided by PolarView.

West of Davis Station, the fast-ice edge remained largely stable since mid-December. Further offshore, broken ex-fast ice is turning into brash and drifting in the polynya. Some icebergs are still present as well.

Further north, the sea-ice edge is largely below (south of) the January median sea-ice extent east of 77°0'E (see Figure 2; black arrows indicate the general drift direction of the pack ice).

The pack ice of the region consists predominantly of decaying first-year sea ice but includes some multi-year sea ice as well as ex-fast ice floes.

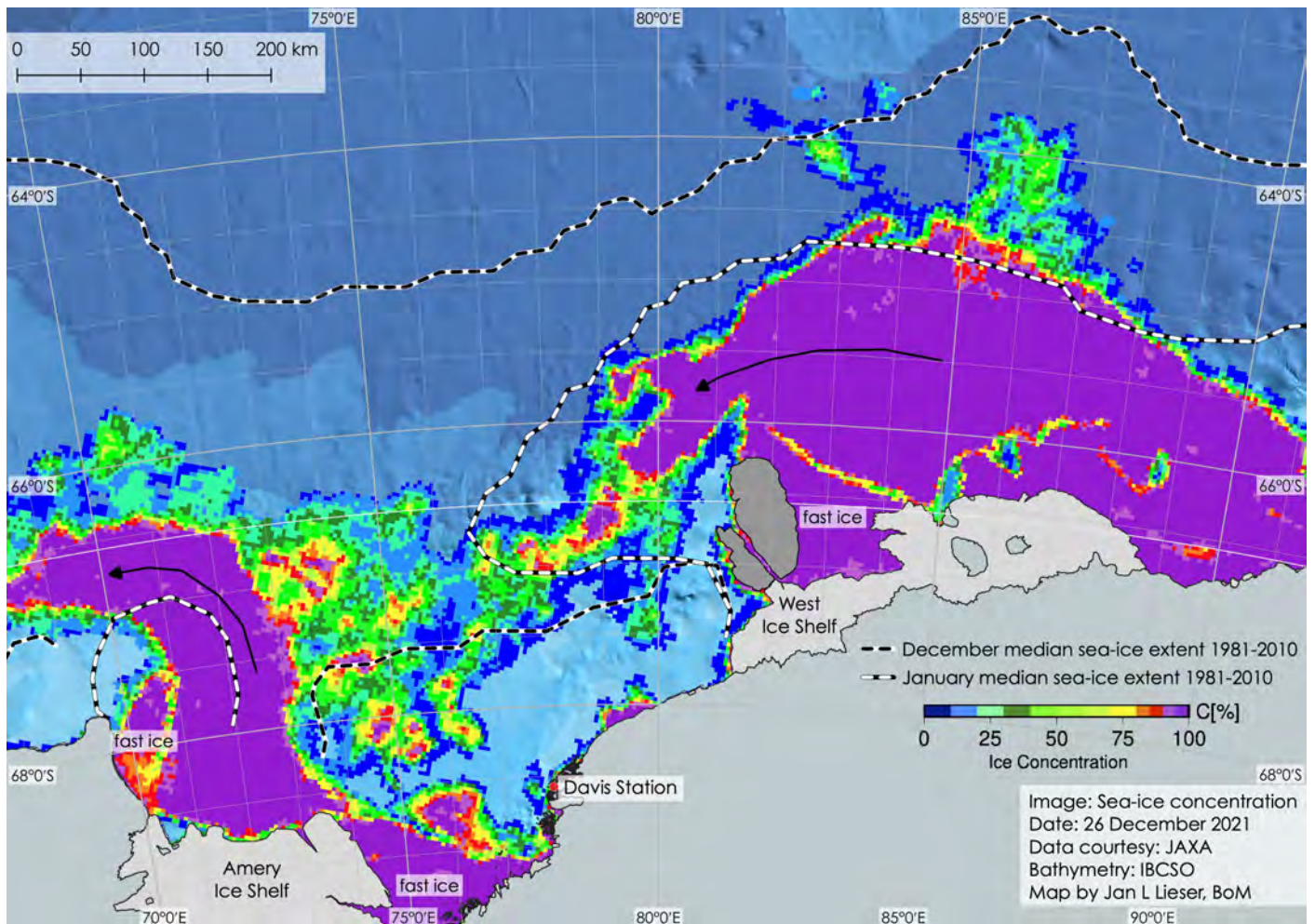


Figure 2: Sea-ice concentration data acquired 26 December 2021 and provided by ICDC.

Ice Bulletin: Wilkins Aerodrome

Issued: Sunday 2nd January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Wilkins Aerodrome. The scene is slightly obscured by clouds.

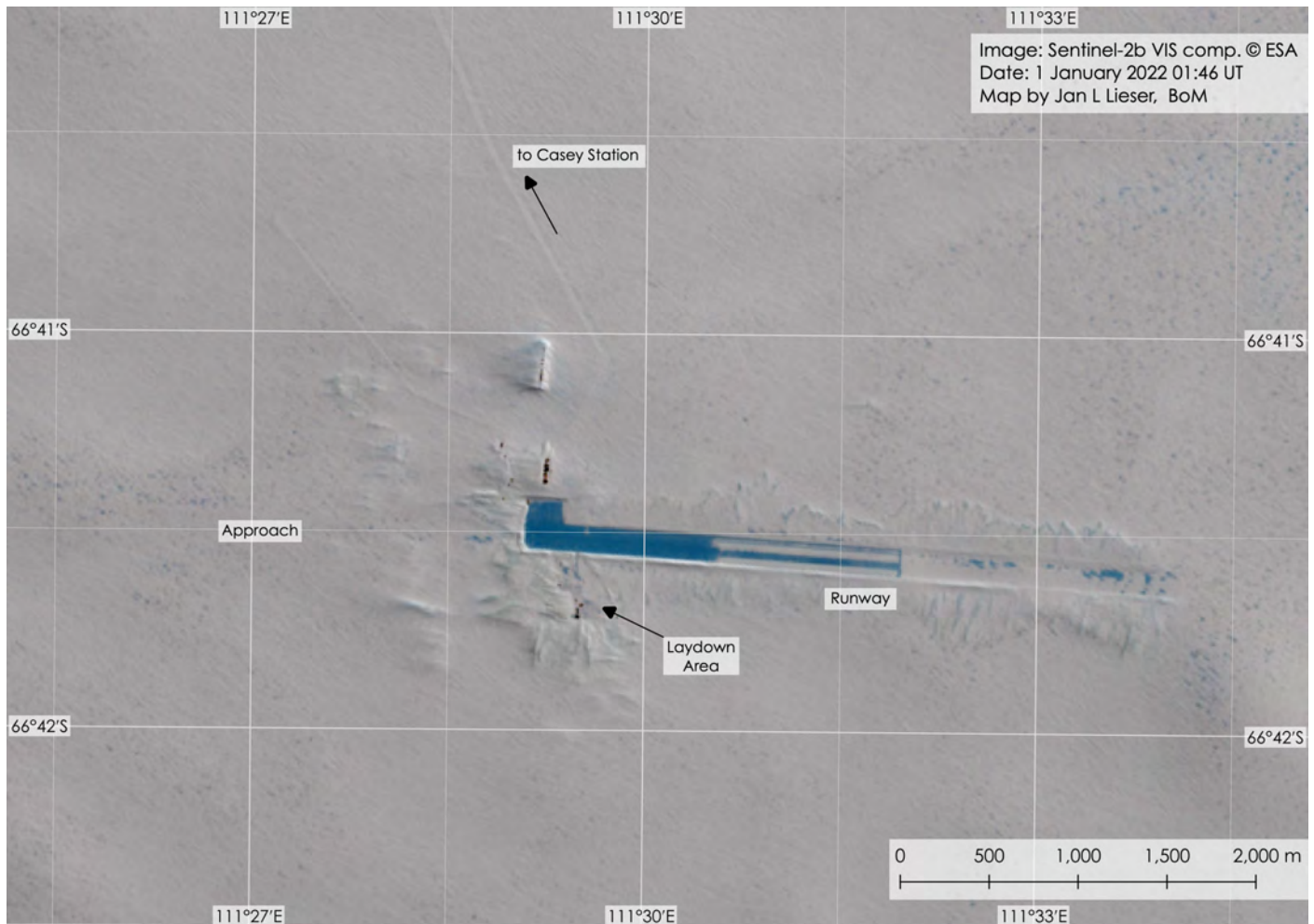


Figure 1: Sentinel-2b visible composite data acquired 1 January 2022 at 01:46 UT and provided by ESA.

The ice runway is clearly visible; the western part of the runway is covered by surface meltwater. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Mawson Station

Issued: Sunday 2nd January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Mawson Station. The fast-ice edge on 20 December 2021 is included as a dashed red line.

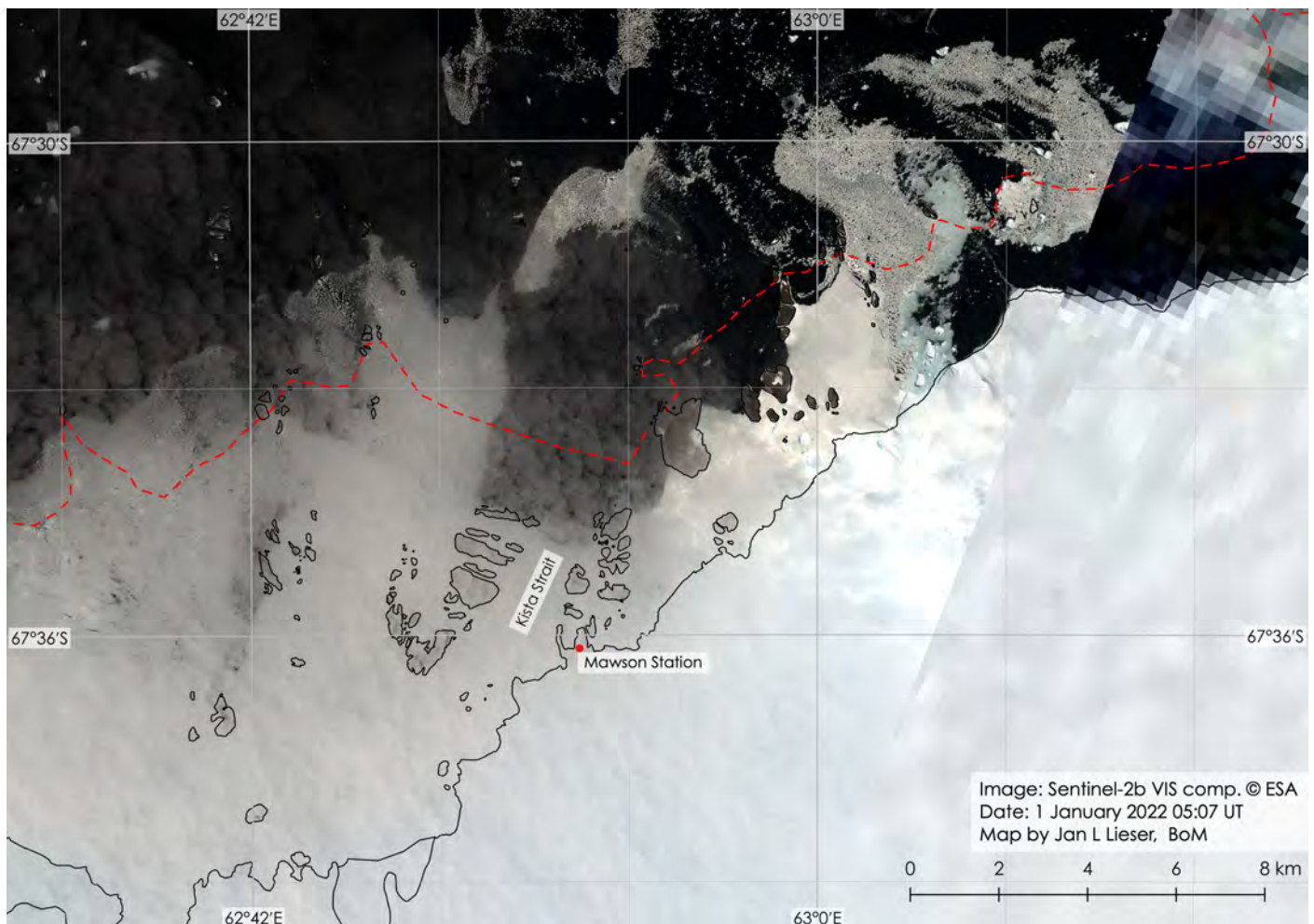


Figure 1: Sentinel-2b VIS composite data acquired 1 January 2022 at 05:07 UT and provided by USGS; complemented by AUQA MODIS VIS data acquired 1 January 2022 and provided by NASA.

During the past week, the fast-ice edge retreated south towards Mawson Station. Kista Strait is still partly covered by fast ice and the shortest distance between the station and the open water of the polynya offshore is roughly 1 nautical mile. Horseshoe Harbour remains covered by fast ice.

Figure 2 shows the larger frame of the same data that are displayed in Figure 1.

Iceberg Alley (marked by blue outlines in Figure 2) is free of fast ice and only little ex-fast ice remains between the grounded icebergs that make up the alley.

North of the alley and the offshore polynya, broken ex-fast ice and decaying pack ice is drifting.

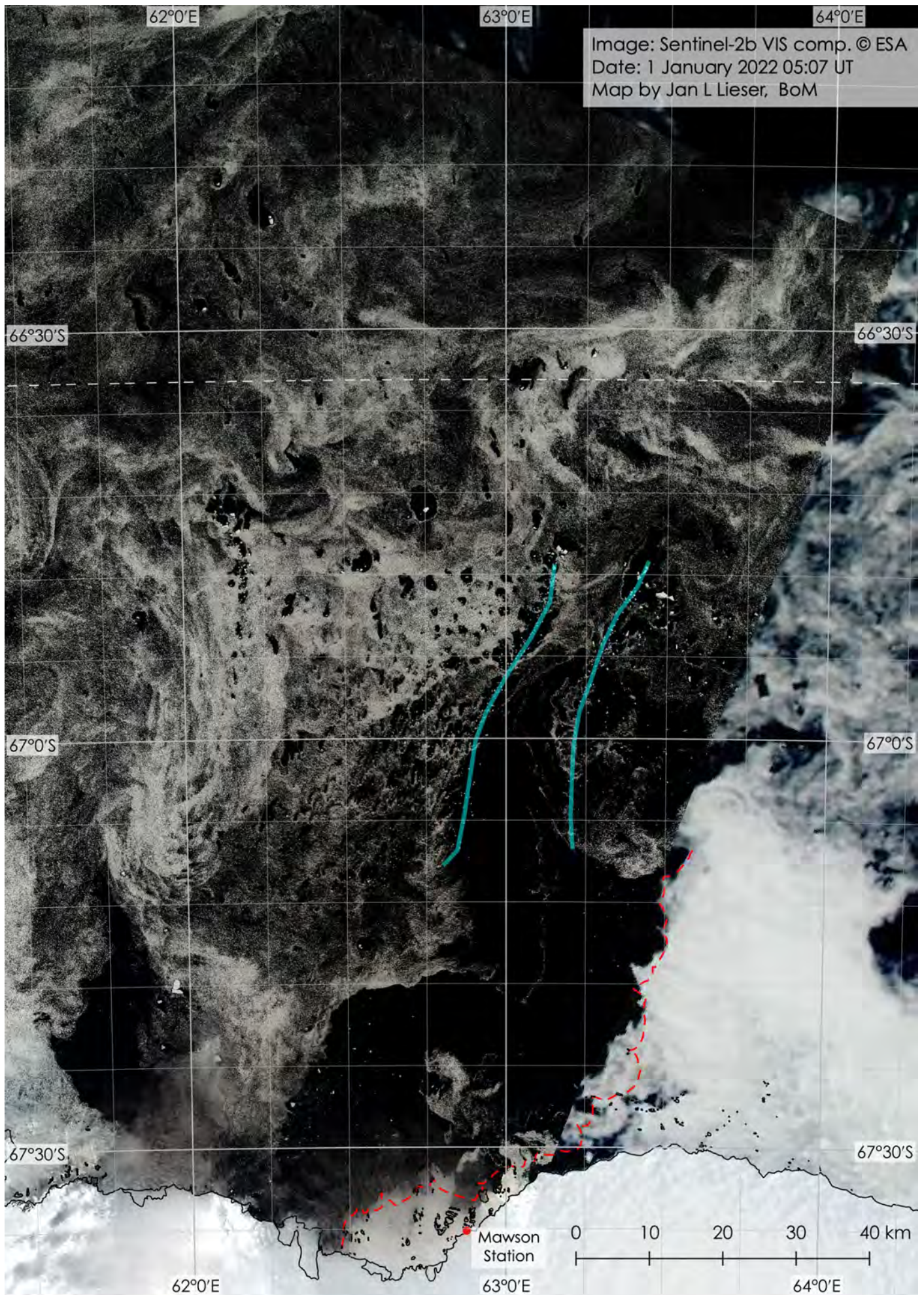


Figure 2: Sentinel-2b VIS composite data acquired 1 January 2022 at 05:07 UT and provided by USGS; complemented by AUQA MODIS VIS data acquired 1 January 2022 and provided by NASA.

Ice Bulletin: D'Urville Sea

Issued: Monday 3rd January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of southern Dumont D'Urville Sea. The fast-ice edge is marked by a red line (dashed red line for 23 December 2021). The positions of three large tabular icebergs on 15 November 2021 are marked with dashed pink shapes and three medium-sized icebergs are outlined with solid pink shapes.

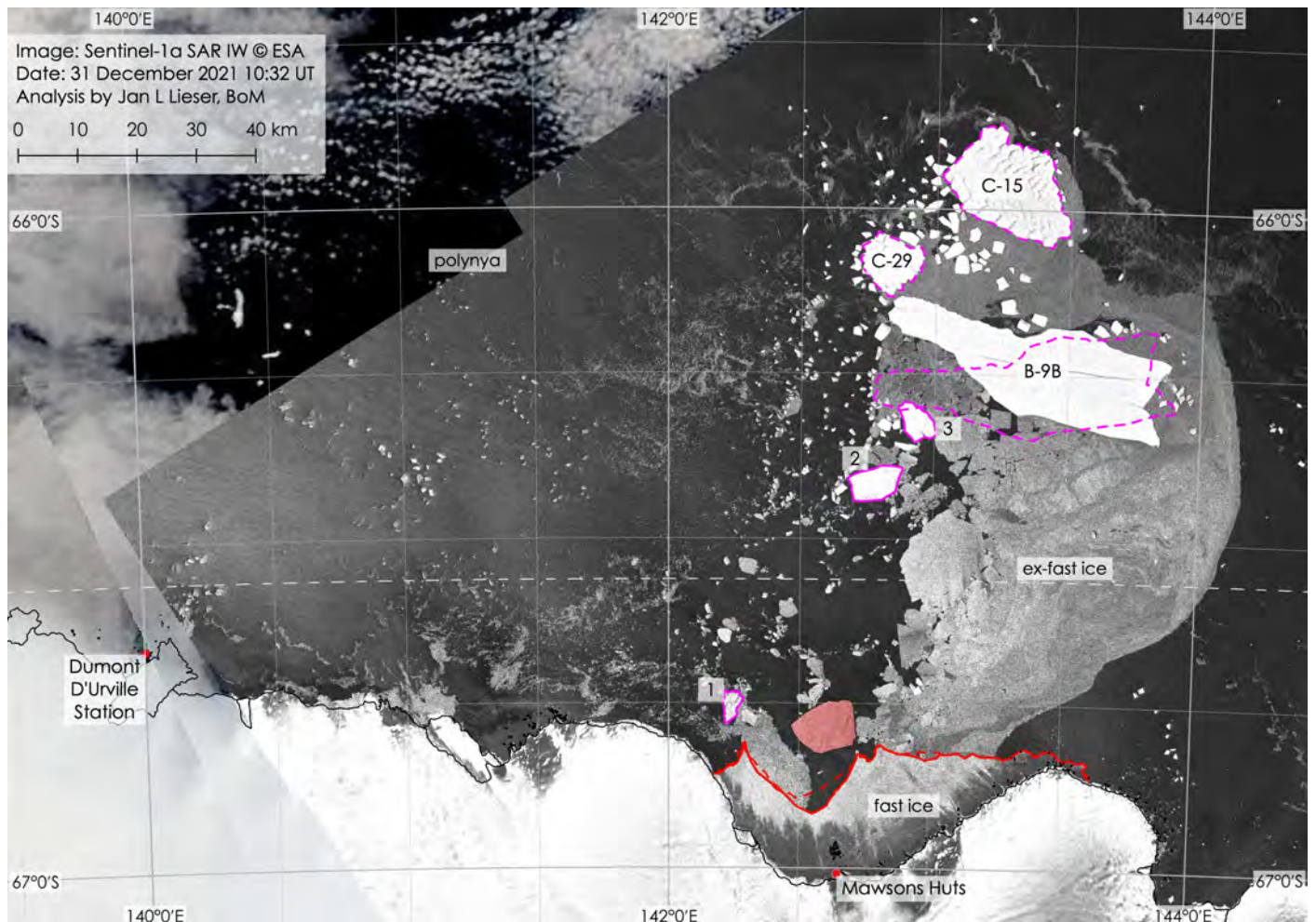


Figure 1: Sentinel-1a SAR IW data acquired 31 December 2021 at 10:32 UT and provided by PolarView;
complemented by AQUA MODIS VIS data acquired 01 January 2022 and provided by NASA.

During the past week, some fast ice broke off north of Mawsons Huts and the open water of the polynya is now roughly 11 km (6 nautical miles) away from the huts. South of iceberg B-9B, ex-fast ice continues to break up. One large sheet of old ex-fast ice can be seen north of the Commonwealth Bay (roughly 73 km²; marked with a red shaded shape) and is drifting westward. North of iceberg B-9B, no fast ice is present anymore.

Along 66°45'S, one medium-sized iceberg remains local (marked with '1'). Further north, two marked icebergs ('2' and '3') are mobile but trapped in their westward drift behind smaller grounded icebergs. Since mid-December, iceberg B-9B rotated roughly 20 degrees clockwise but its movements remain limited by surrounding smaller grounded icebergs. Iceberg C-29 is similarly limited in drift. Iceberg C-15 remains grounded.

Smaller icebergs and ex-fast ice floes are drifting westward in the polynya.

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Ice Bulletin: Casey Station

Issued: Tuesday 4th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows sea-ice concentration data off Casey Station and offshore. A 400 nautical miles radius around the station is marked by a light-blue arc.

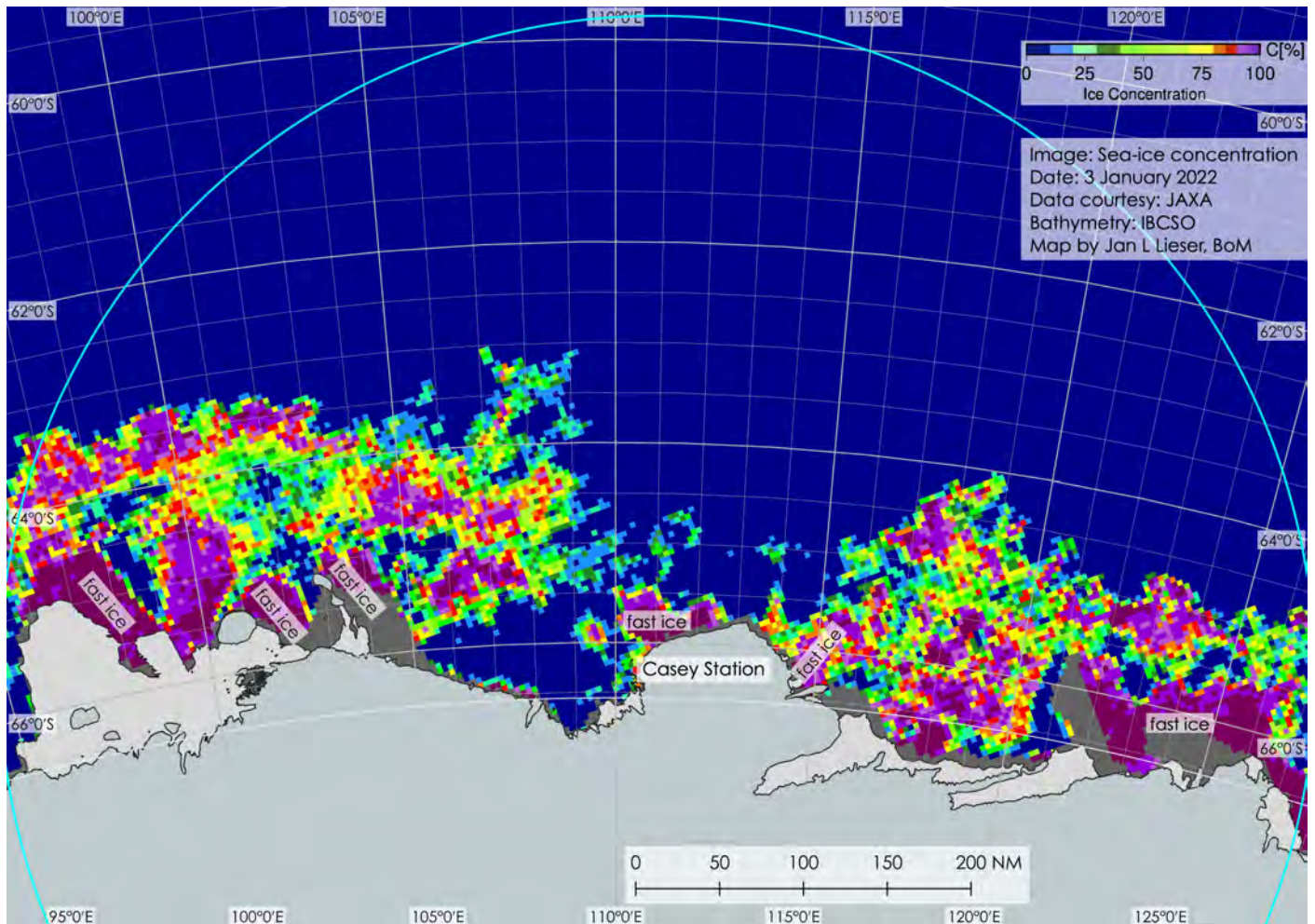


Figure 1: Sea-ice concentration data acquired 3 January 2022 and provided by PolarView.

Off Law Dome, fast ice continues to break up and discharges floes of ex-fast ice into the general westward drift of pack ice. East 109°0'E and north of 65°30'S, lower sea-ice concentration is present.

Figure 2 shows high-resolution SAR data off Casey Station; the position of M/V Happy Dragon is seen as a bright spot offshore (marked by an orange arrow).

Offshore winds have pushed pack ice westward. A few larger icebergs can be seen a bit clearer as brighter spots in the Intensity (lower) panel.

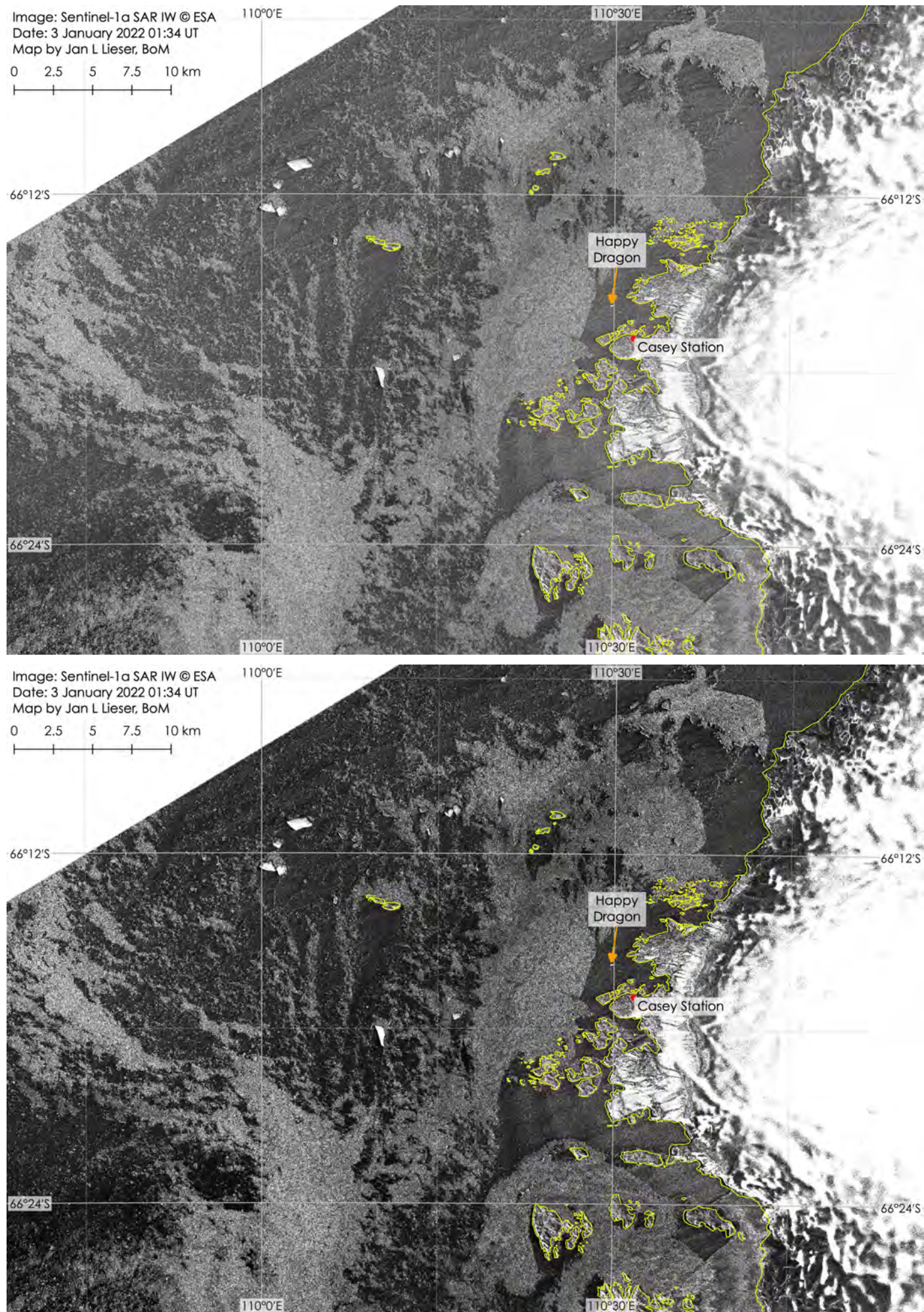


Figure 2: Sentinel-1a SAR IW data (upper panel: Amplitude; lower panel: Intensity) acquired 3 January 2022 at 01:34 UT and provided by ESA.

Ice Bulletin: Davis Station

Issued: Tuesday 4th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data off Davis Station. The fast-ice edge is marked by a red line (dashed red line for 15 December 2021).

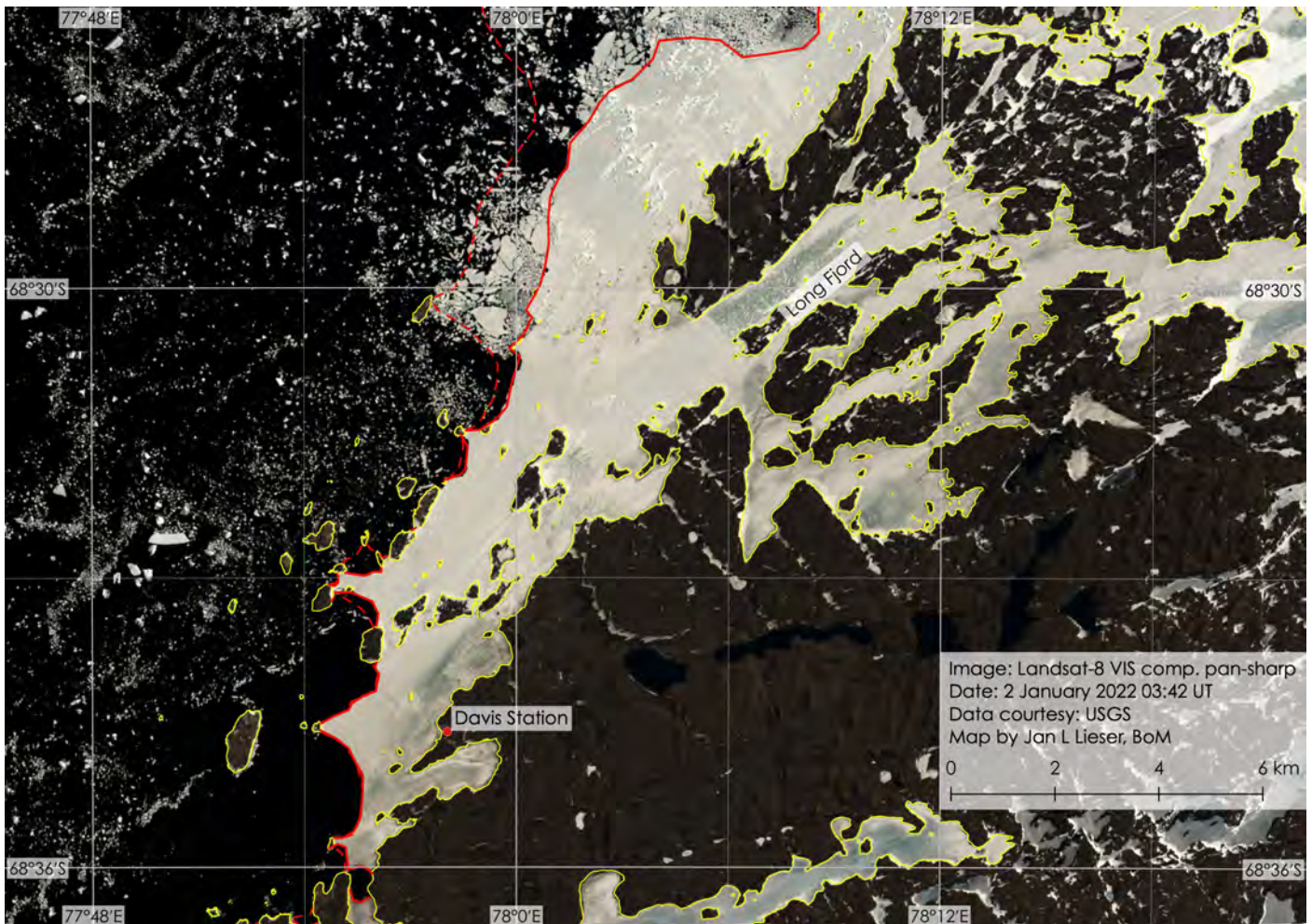


Figure 1: Landsat-8 pan-sharpened visible data composite acquired 2 January 2022 at 03:42 UT and provided by USGS.

Immediately west of Davis Station, the fast-ice edge has been largely stable during the past week but further north the edge is retreating closer to shore west of Long Fjord and further north (see Figure 2).

Further north of the station, the sea-ice edge is well below (south of; within the envelope) of the January median sea-ice extent (the black/white line in Figure 3) of the region and only minimal sea ice is detectable between 76°0'E and 78°0'E while west of 76°0'E more sea ice than what'd be the median extent is still present.

The pack ice of the region consists predominantly of decaying first-year sea ice but includes some multi-year sea ice and ex-fast ice floes as well.

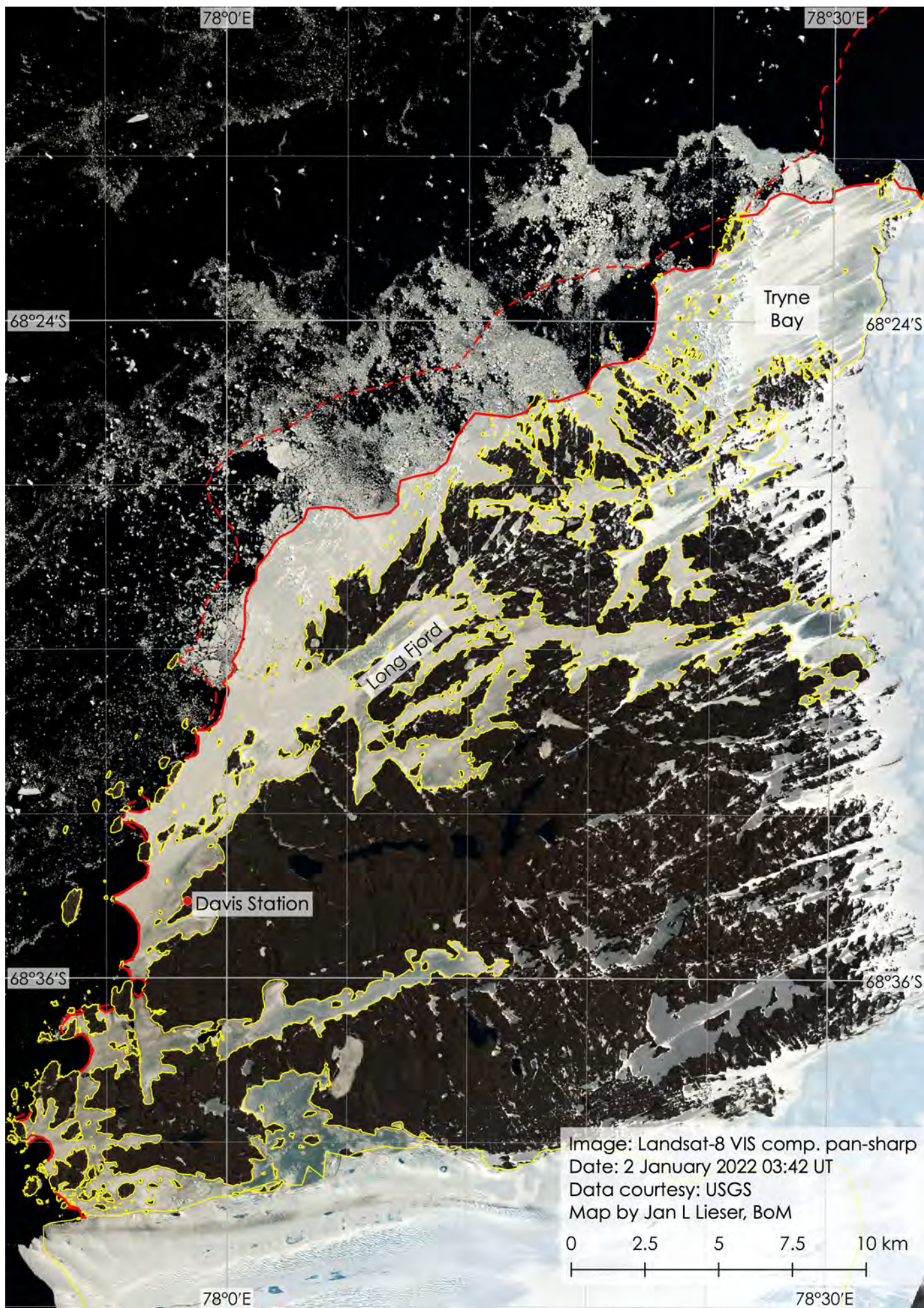


Figure 2: Landsat-8 pan-sharpened visible data composite acquired 2 January 2022 at 03:42 UT and provided by USGS.

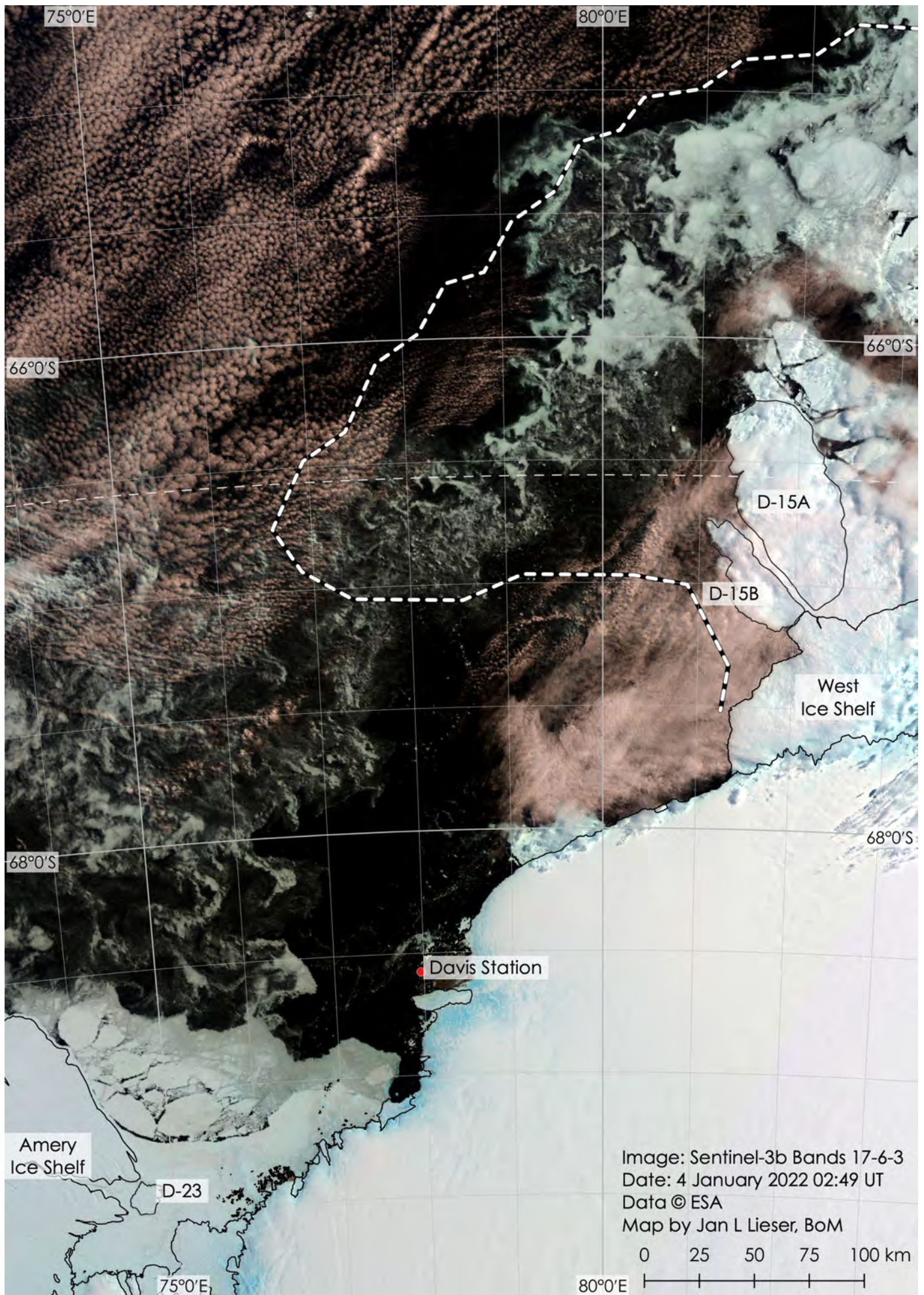


Figure 3: Sentinel-3b visible data composite acquired 4 January 2022 at 02:49 UT and provided by ESA.

Ice Bulletin: D'Urville Sea

Issued: Tuesday 4th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data of southern Dumont D'Urville Sea. The fast-ice edge on 31 December is marked by a dashed red line. The positions of three large tabular icebergs on 31 December 2021 are marked with dashed pink shapes and three medium-sized icebergs on 31 December 2021 are outlined with dashed pink shapes as well.

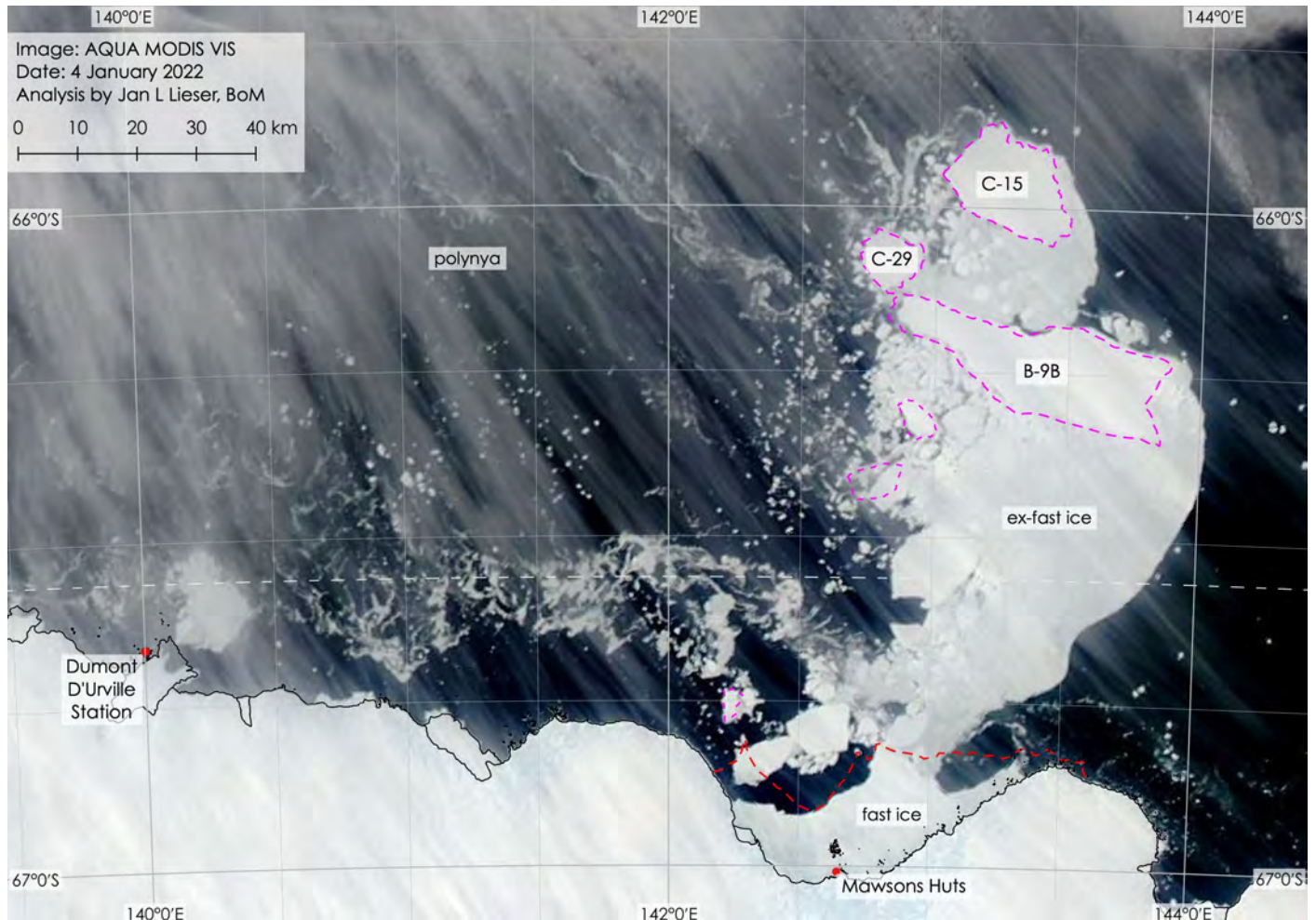


Figure 1: AQUA MODIS VIS data acquired 4 January 2022 and provided by NASA.

Since the beginning of the new year, more fast ice broke off north of Mawsons Huts, but the open water of the polynya remains roughly 11 km (6 nautical miles) away from the huts. South of iceberg B-9B, ex-fast ice continues to break into smaller floes and north of the iceberg no fast ice is present anymore.

Since 1 January, iceberg B-9B drifted less than 1 nautical mile eastward as its movements remain limited by surrounding smaller grounded icebergs. During the same time, iceberg C-29 did not drift and iceberg C-15 remains grounded.

Smaller icebergs and ex-fast ice floes are drifting westward in the polynya.

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Ice Bulletin: Davis Station

Issued: Wednesday 5th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Davis Station. The fast-ice edge is marked by a red line.

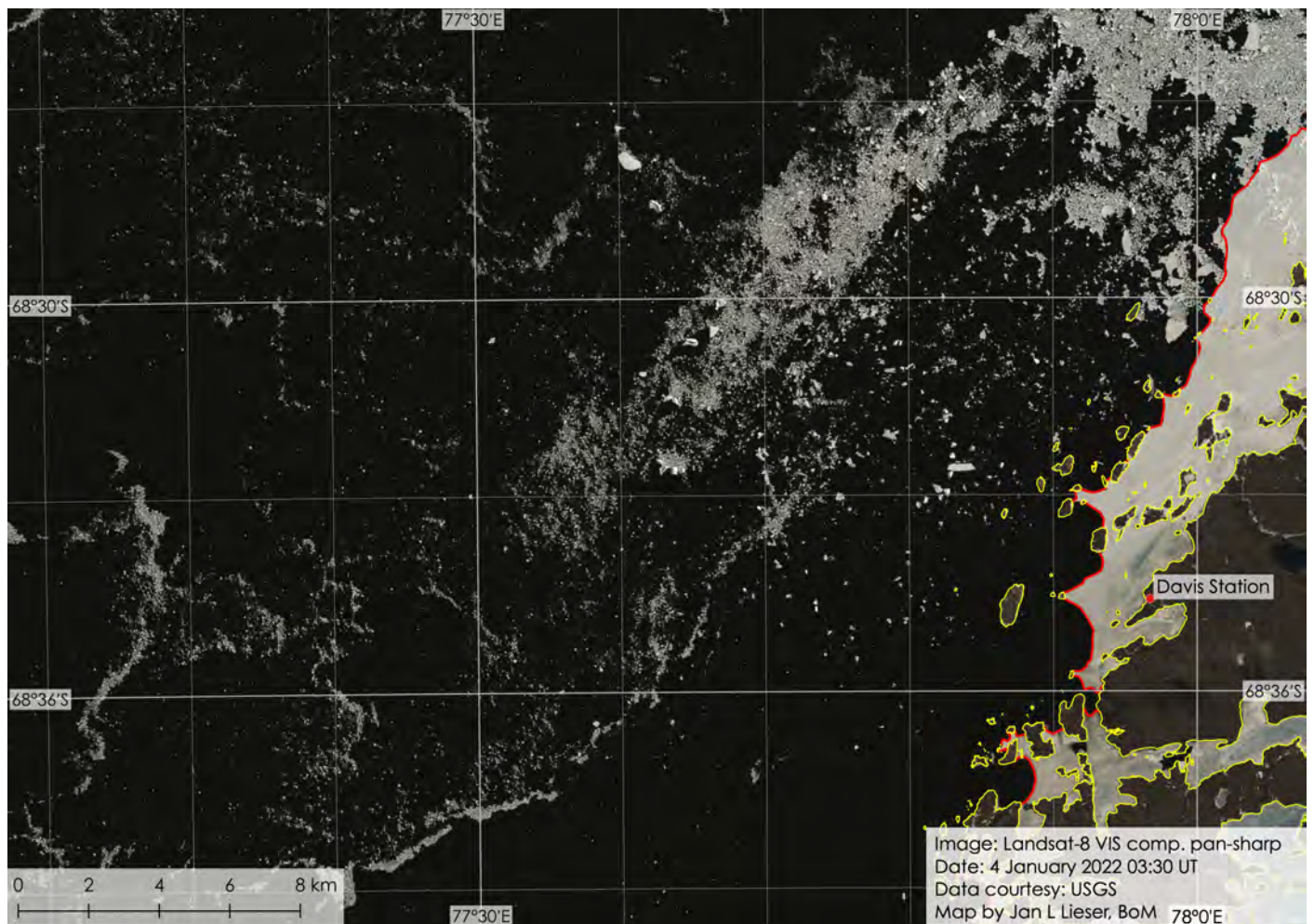


Figure 1: Landsat-8 pan-sharpened visible data composite acquired 4 January 2022 at 03:30 UT and provided by USGS.

Immediately west of Davis Station, the fast-ice edge has been largely stable during the past week but further north the edge continues to break up.

Figure 2 provides a larger view of the data shown in Figure 1 and includes the recent cruise track of RSV Nuyina in the region (up until 4 January 2022 18:00 UT) as an orange line.

The high-resolution data shows the pack ice of the region consists predominantly of decaying small to medium-sized first-year sea-ice floes that enter the southern Cooperation Sea and Prydz Bay from the east (around the D-15 icebergs) but inclusion of some multi-year sea ice and ex-fast ice floes can be expected.

Figure 3 shows the same geographical frame as Figure 2 but sea-ice concentration data.

Between 76°0'E and 79°0'E, the concentration of sea ice is largely below the detection limit of the instrument/algorithm.

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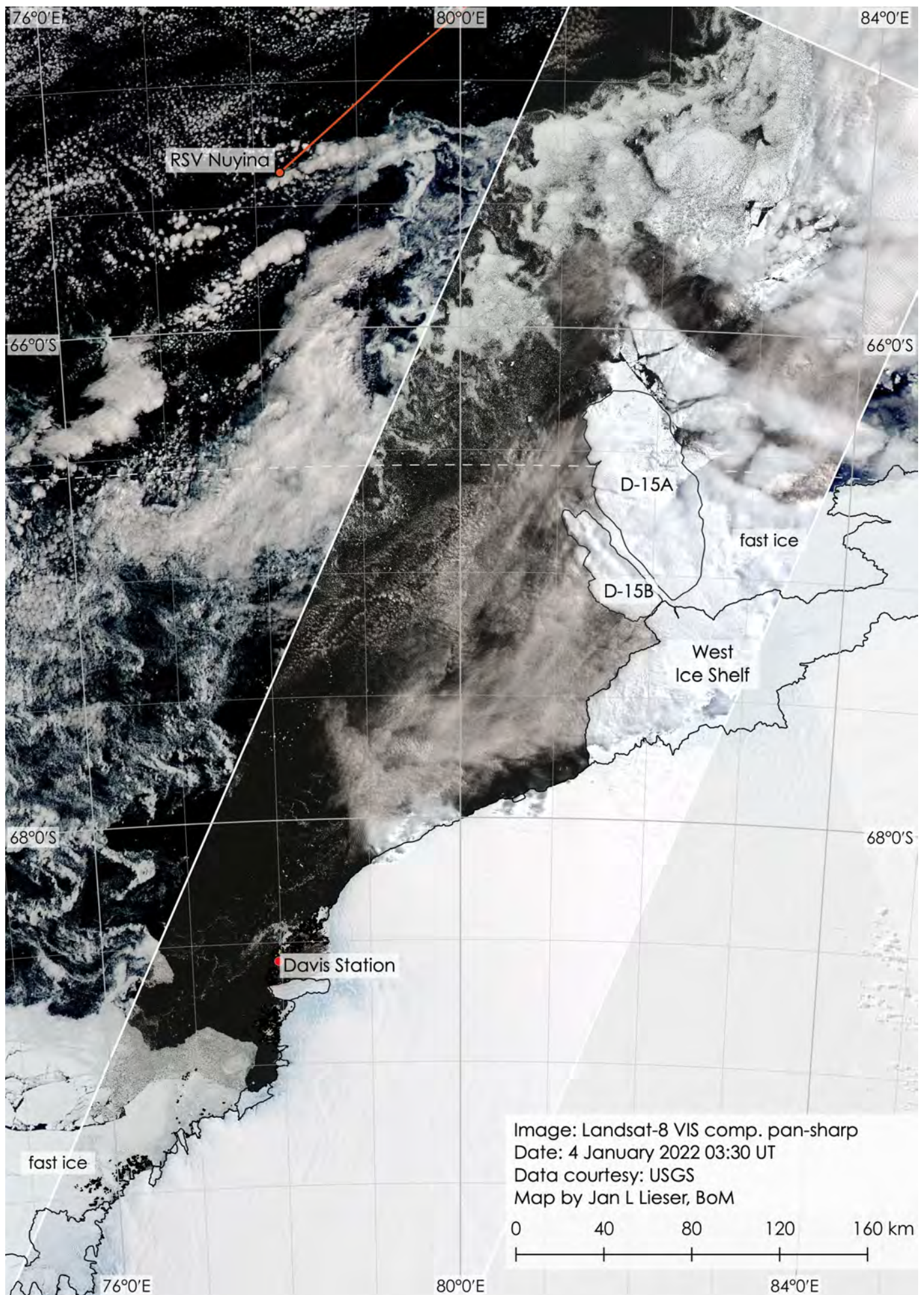


Figure 2: Landsat-8 pan-sharpened visible data composite acquired 4 January 2022 at 03:30 UT and provided by USGS; background of AQUA MODIS VIS data acquired 4 January 2022 and provided by NASA.

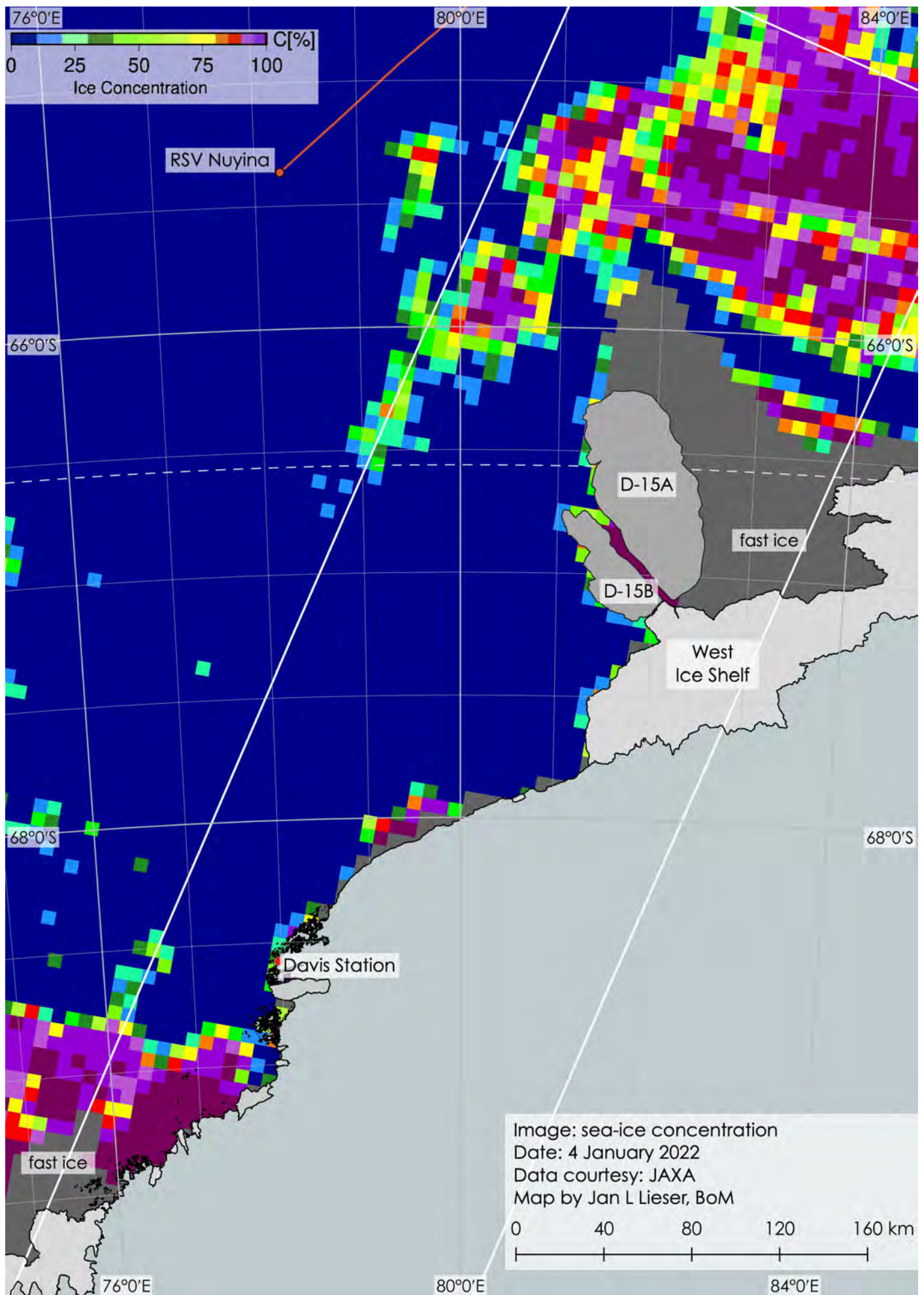


Figure 3: Sea-ice concentration data acquired 4 January 2022 and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Wednesday 5th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station and the wider Prydz Bay region. A white frame references the extent of high-resolution visible data (Landsat-8 from 4 January 2022 03:30 UT provided in the previous Ice Bulletin). The cruise track of RSV Nuyina (up until 05 January 2022 00:30 UT) is also included as an orange line.

Between 76°0'E and 79°0'E, the concentration of sea ice is largely below the detection limit of the passive microwave instrument/algorithm, but the SAR data reveals very low sea-ice concentration of small decaying floes in the region.

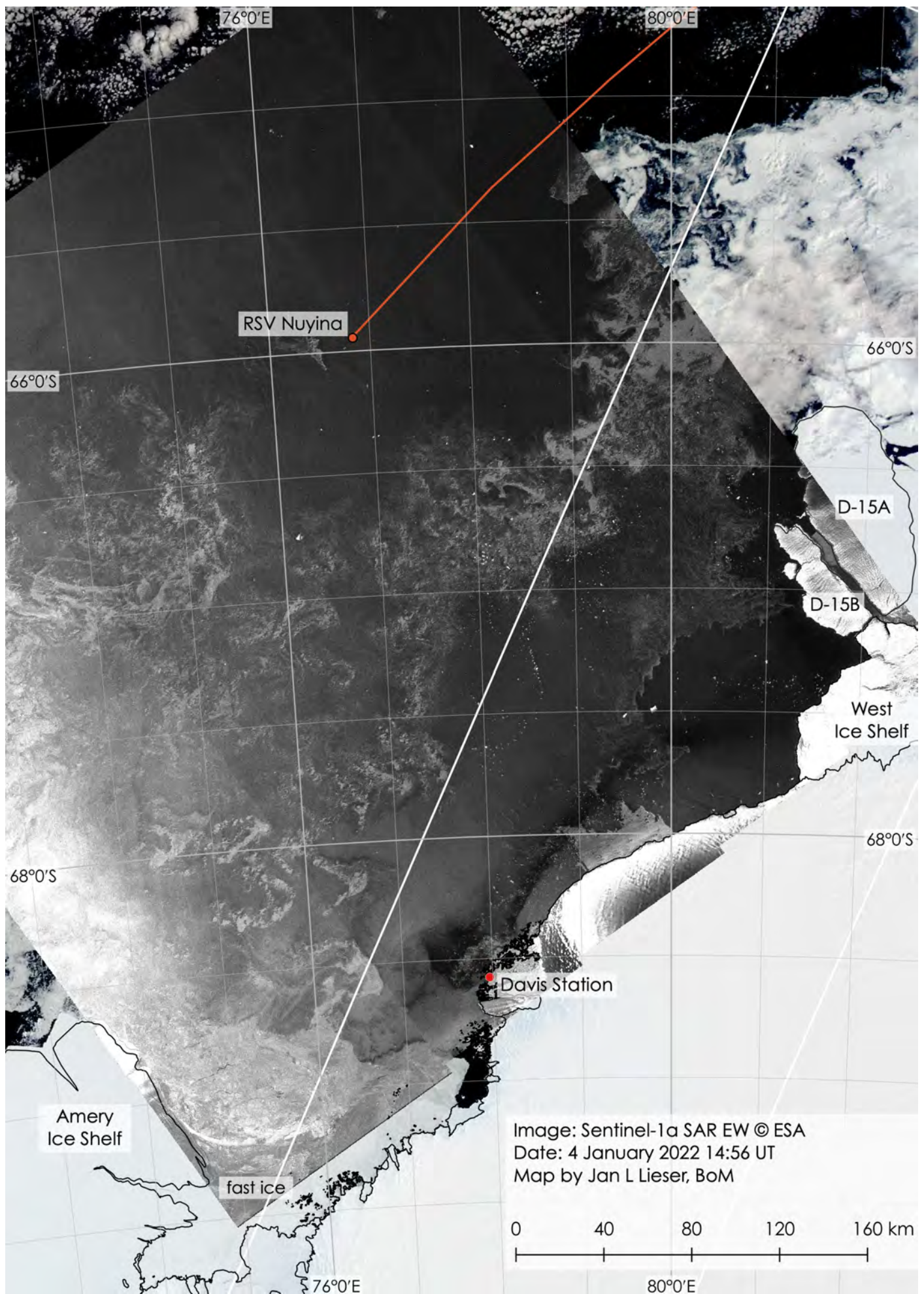


Figure 1: Sentinel-1a SAR EW data acquired 4 January 2022 at 14:56 UT and provided by PolarView;
background of AQUA MODIS VIS data acquired 4 January 2022 and provided by NASA.

Ice Bulletin: Wilkins Aerodrome

Issued: Wednesday 5th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows very-high resolution (10 m horizontal) visible data of Wilkins Aerodrome. The scene is slightly obscured by clouds.

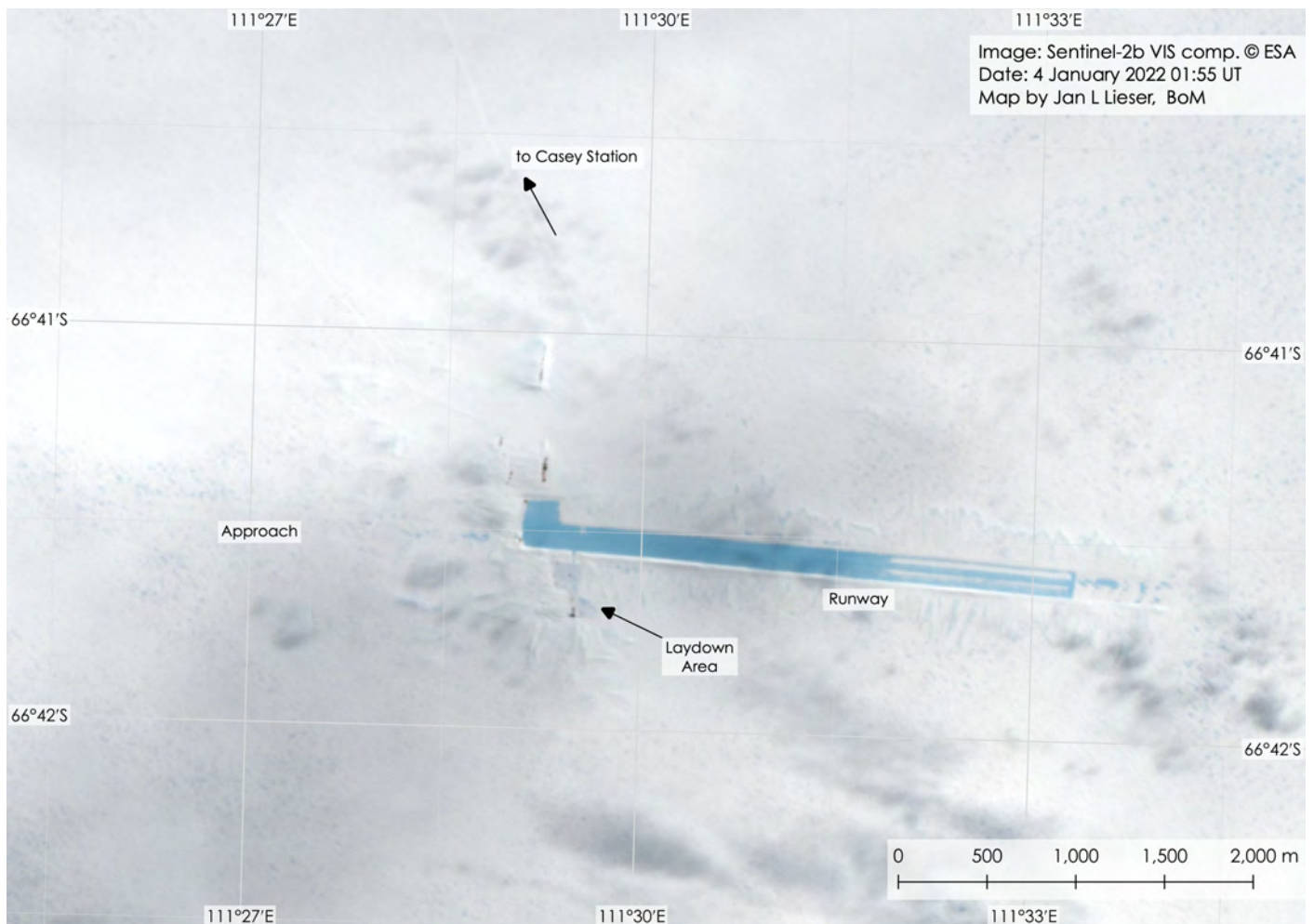


Figure 1: Sentinel-2b visible composite data acquired 4 January 2022 at 01:55 UT and provided by USGS.

The ice runway is clearly visible; the western part of the runway is covered by surface meltwater. The area covered by meltwater has roughly doubled in size since 1 January 2022.

North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 5th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Commonwealth Bay. The fast-ice edge is marked by a red line. Newly emerging cracks in the offshore fast ice are marked by purple lines.

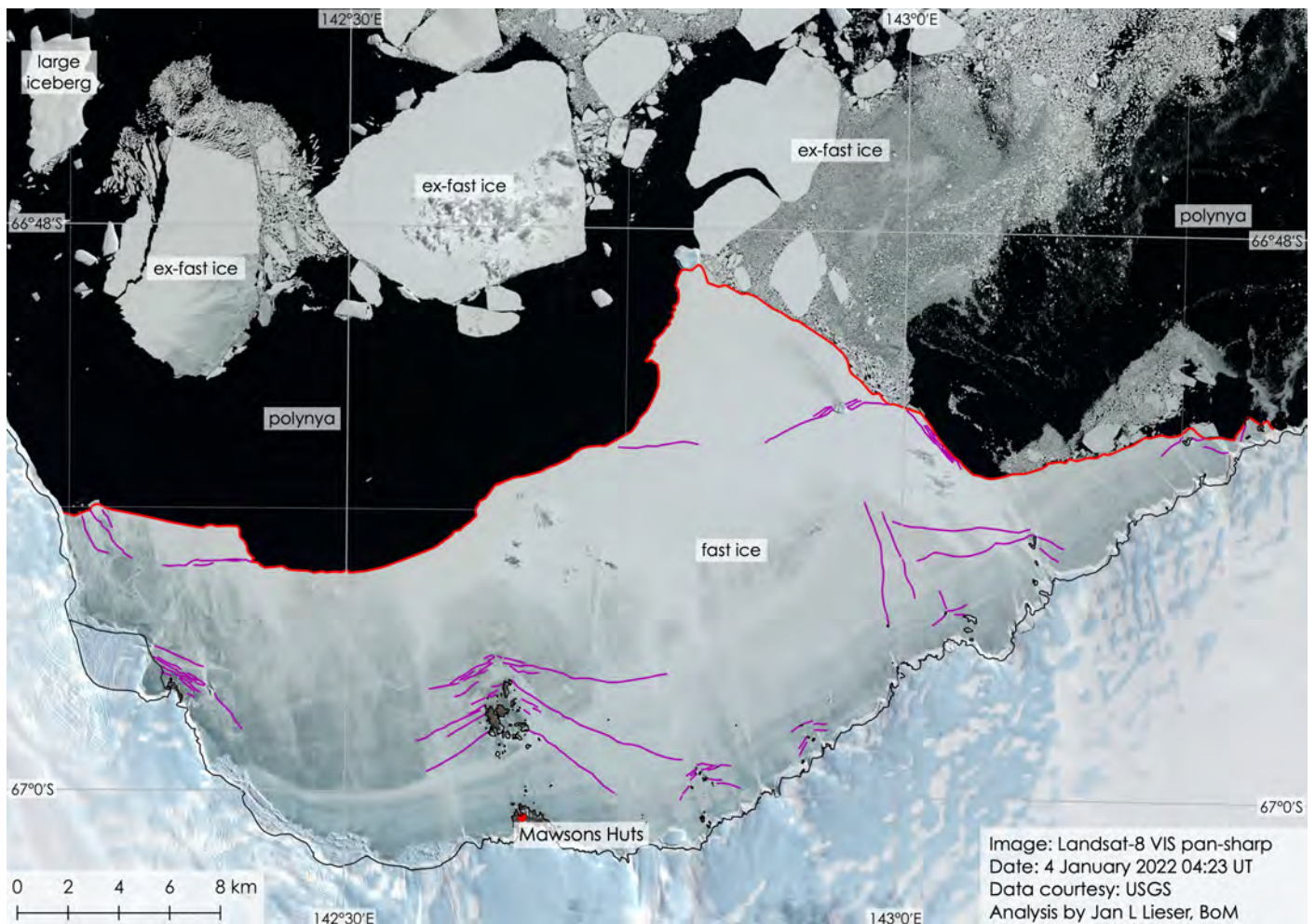


Figure 1: Landsat-8 VIS composite pan-sharpened data acquired 4 January 2022 at 04:23 UT and provided by USGS.

The offshore fast ice is criss-crossed by many newly emerging cracks that radiate typically around weak points in the fast ice such as small islands or icebergs. The open water of the polynya remains roughly 11 km (6 nautical miles) away from the huts.

Figure 2 provides a larger overview of the data shown in Figure 1.

Smaller icebergs and ex-fast ice floes continue drifting westward in the polynya.

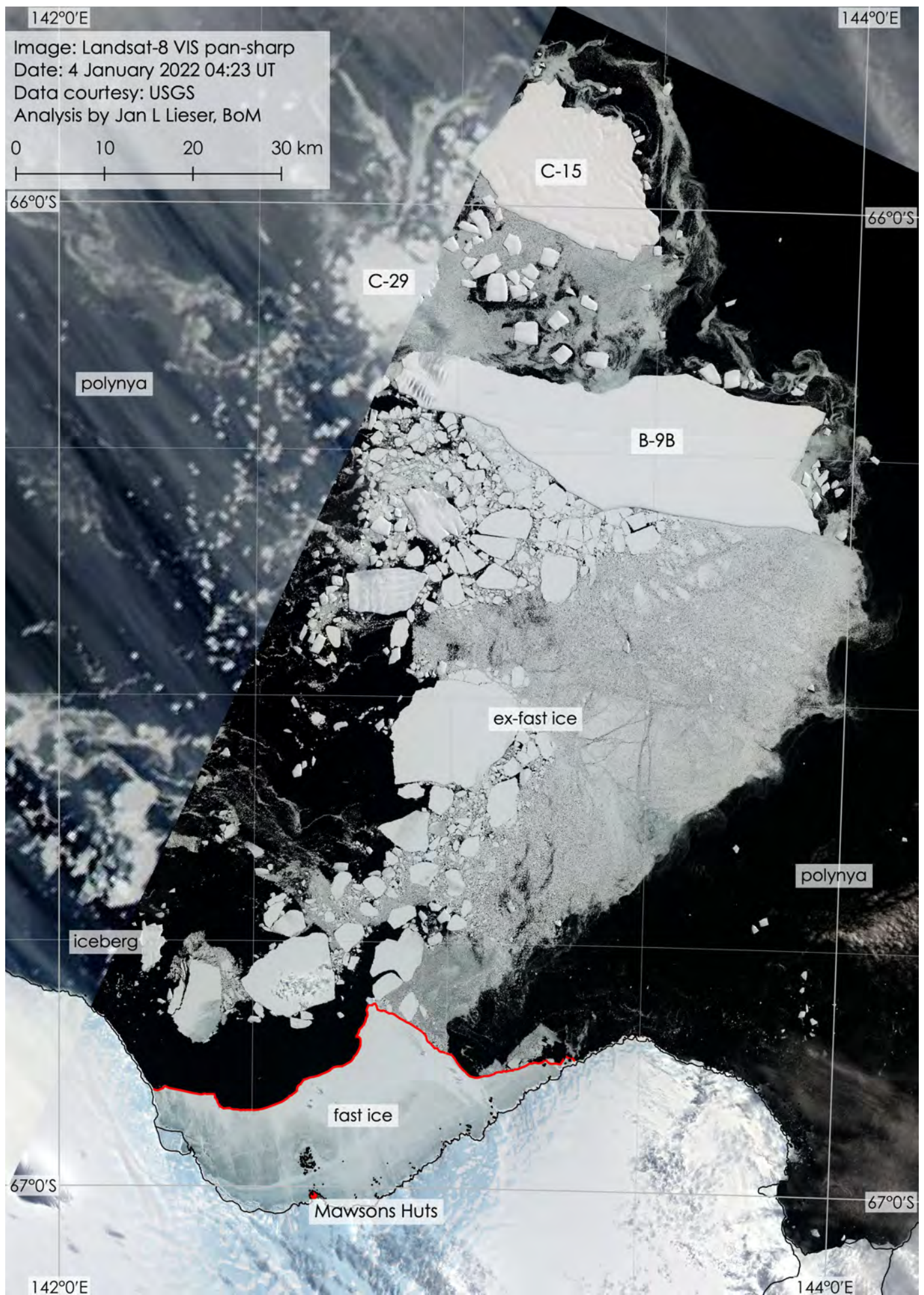


Figure 2: Landsat-8 VIS composite pan-sharpened data acquired 4 January 2022 at 04:23 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 4 January 2022 and provided by NASA.

Ice Bulletin: Davis Station

Issued: Wednesday 5th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Davis Station and the wider Prydz Bay region. The cruise track of RSV Nuyina (up until 5 January 2022 07:00 UT) is also included as an orange line.

Some sea ice remains between 76°0'E and 78°0'E but the concentration of sea ice is largely below the detection limit of the passive microwave instrument/algorithm. The pack ice consists predominantly of small decaying floes with occasional icebergs.

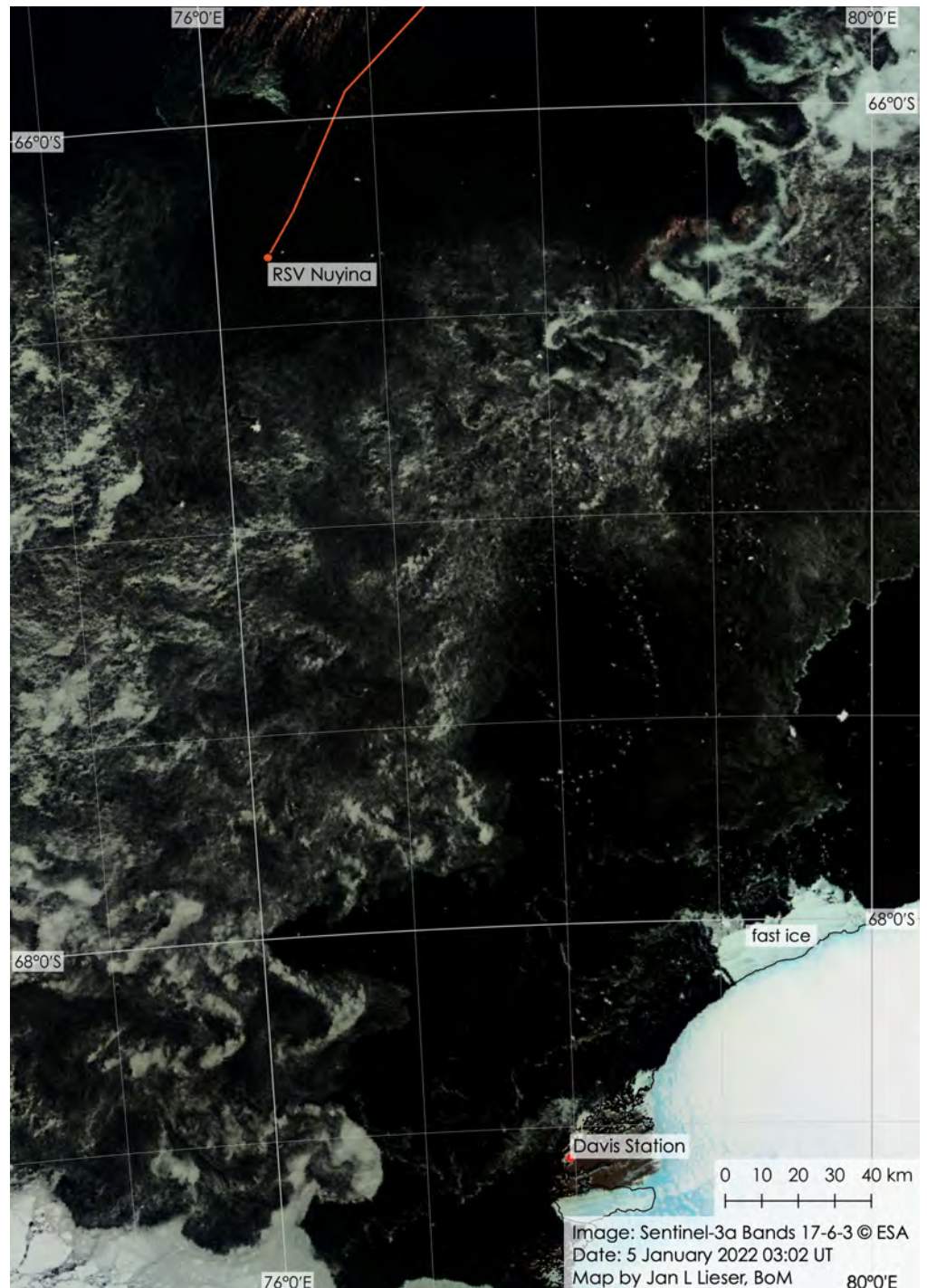


Figure 1: Sentinel-3a visible composite (Bands 17-6-3) data acquired 5 January 2022 at 03:02 UT and provided by ESA.

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Ice Bulletin: Casey Station

Issued: Thursday 6th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Casey Station and offshore. The fast-ice edge is marked by a red line. The recent cruise track of MV Happy Dragon is included as an orange line (up until 5 January 2022 15:00UT). A white diagonal line is a stitching artefact where two consecutive scenes join.

West of Law Dome, pack ice has been pushed north-westward by the recent offshore winds. Off the northern flank, fast ice continues to break up and discharges floes of ex-fast ice into the general westward drift of pack ice. Northeast of that fast ice, bergy water remains.

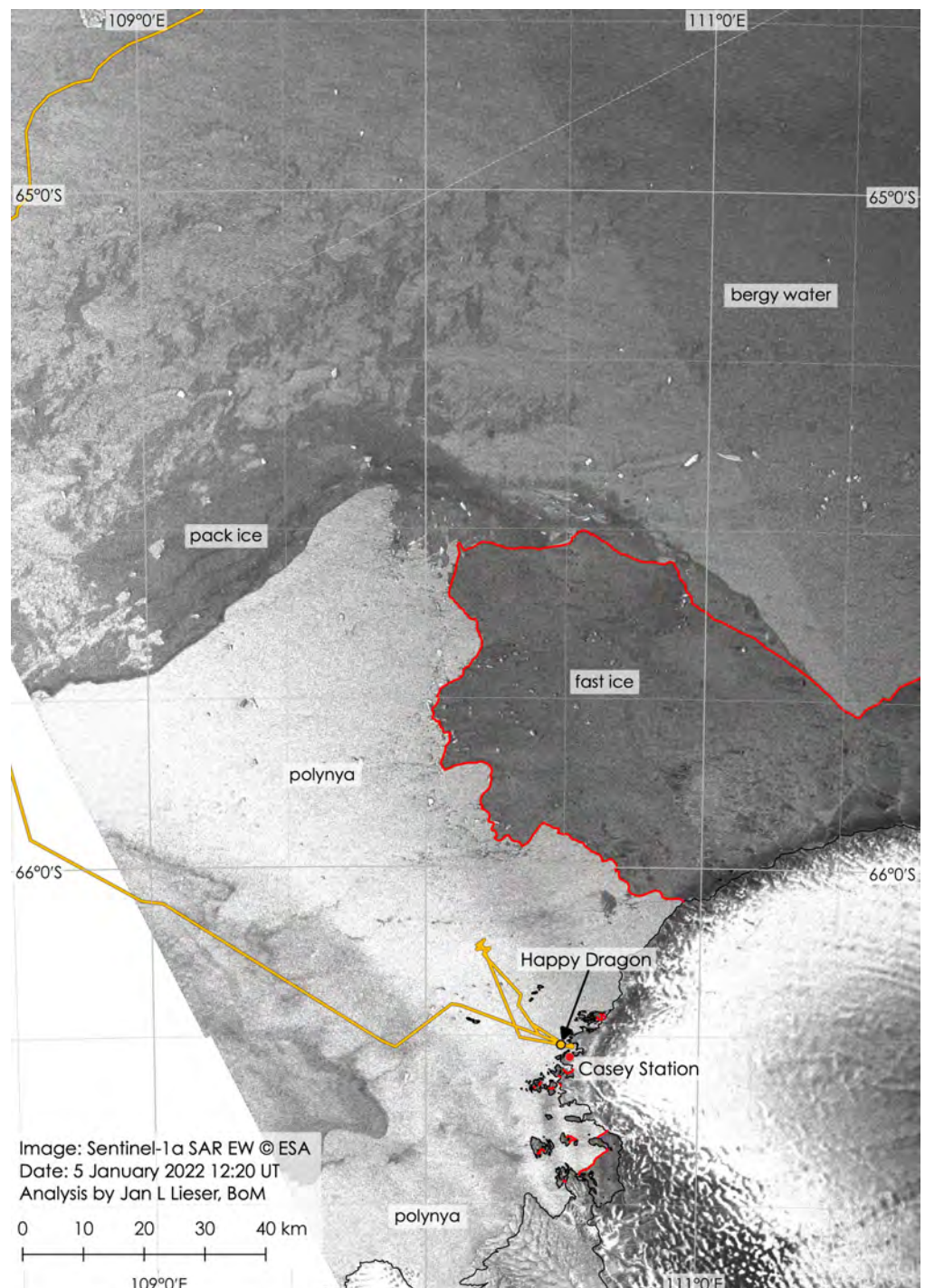


Figure 1: Sentinel-1a SAR EW data acquired 5 January 2022 at 15:20 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: West Ice Shelf

Issued: Thursday 6th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the West Ice Shelf. The sea-ice edge based on passive microwave data is included as a light blue line. The SAR scene was analysed for iceberg presence and more than 6,500 features are marked by pink dots.

The SAR and MODIS data show that the sea-ice edge is underestimated by the passive microwave data.

The region north of the sea-ice zone is bergy water.

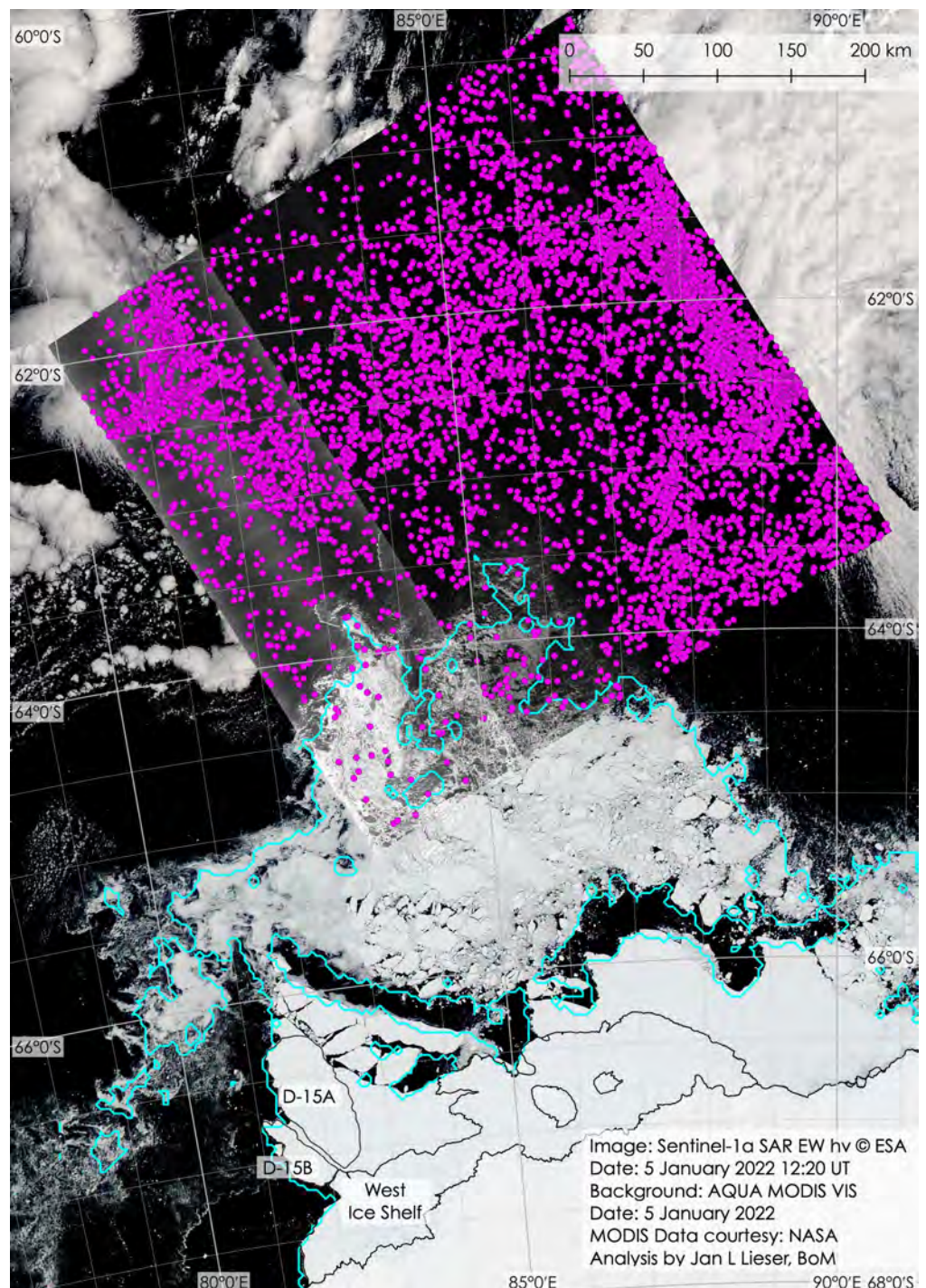


Figure 1: Sentinel-1a SAR EW data acquired 5 January 2022 at 12:20 UT and provided by ESA; background: AQUA MODIS VIS data acquired 5 January 2022 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Thursday 6th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data of the southern Cooperation Sea and off Davis Station. The recent cruise track of RSV Nuyina is included as an orange line (up until 6 January 2022 05:30 UT; the orange dot off station). The sea-ice edge based on passive microwave data is also shown as a light-blue line.

Since the southward passage of the vessel, the pack-ice conditions have not changed significantly in the area.

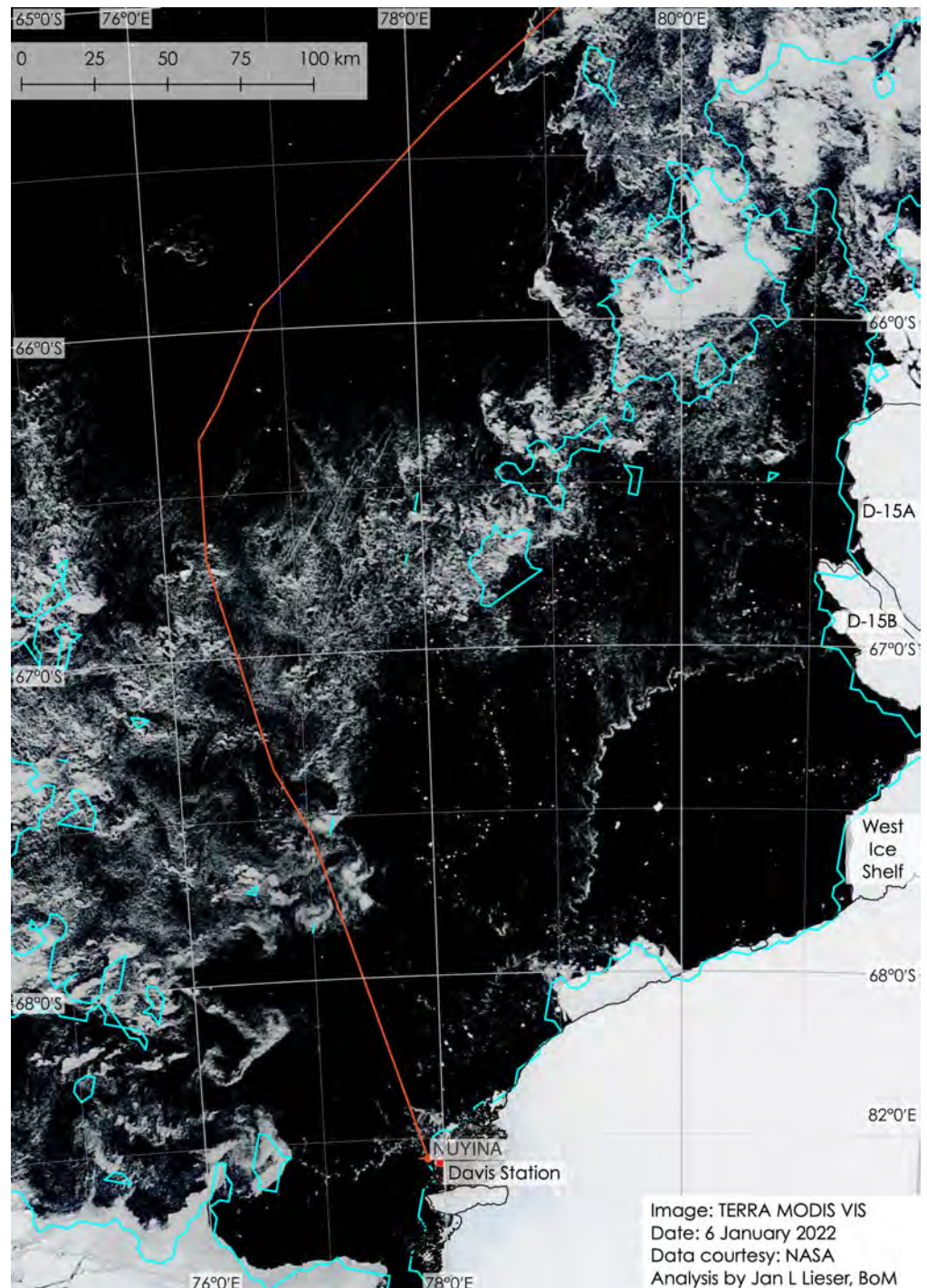


Figure 1: TERRA MODIS VIS data acquired 6 January 2022 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Friday 7th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the south-eastern Cooperation Sea and north of Davis Station. The recent cruise track of RSV Nuyina is included as an orange line (up until 7 January 2022 02:30 UT, the orange dot).

The pack ice that enters the region from the east (around the D-15 icebergs) consists predominantly of decaying first-year sea ice and ex-fast ice. Icebergs are floating freely in the region.

The region north of the sea-ice zone is bergy water.

The inset shows RSV Nuyina (as a white spot) at the time of data acquisition.

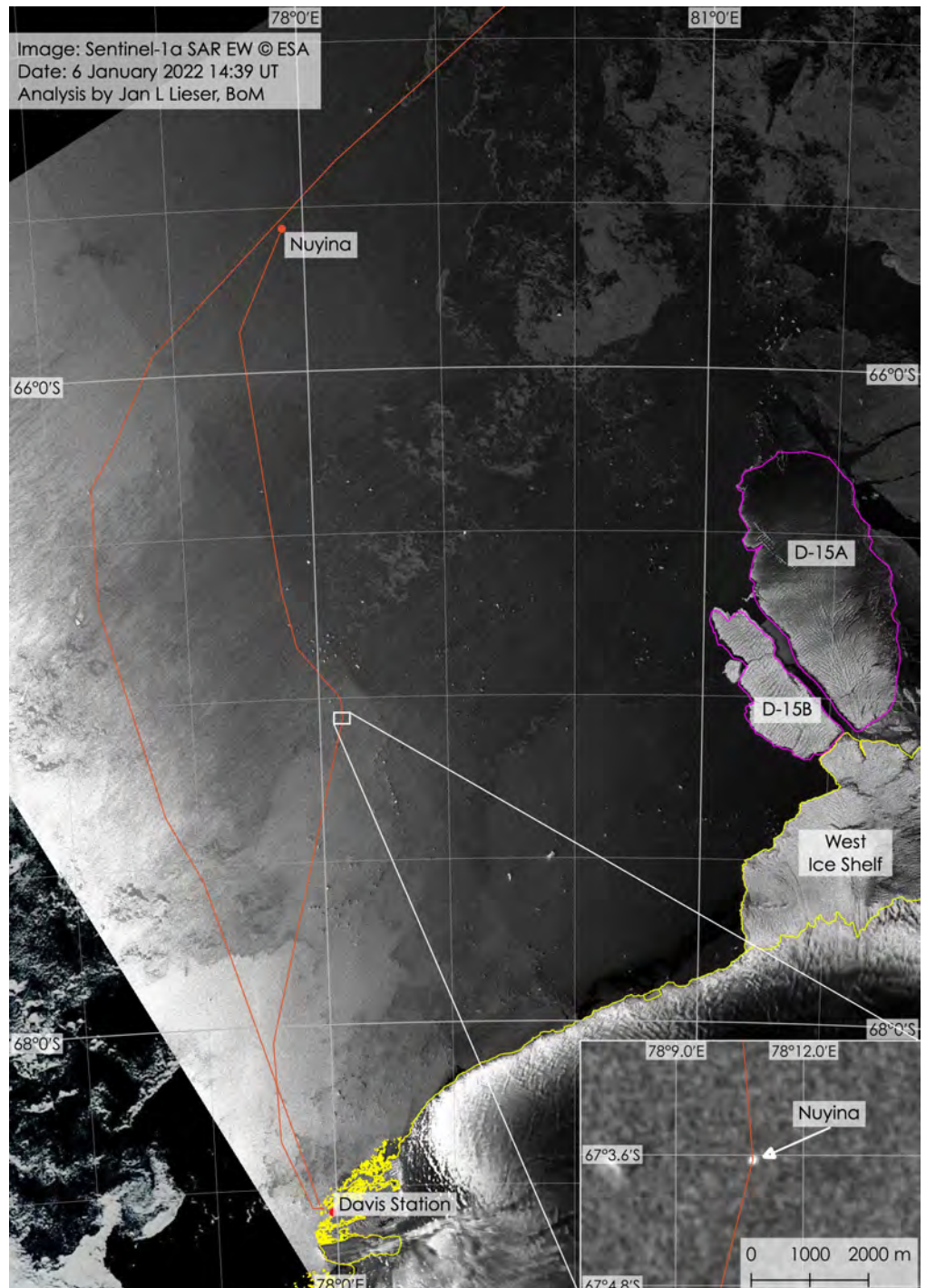


Figure 1: Sentinel-1a SAR EW data acquired 6 January 2022 at 14:39 UT and provided by PolarView; background: AQUA MODIS VIS data acquired 6 January 2022 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Friday 7th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Mawson Station.

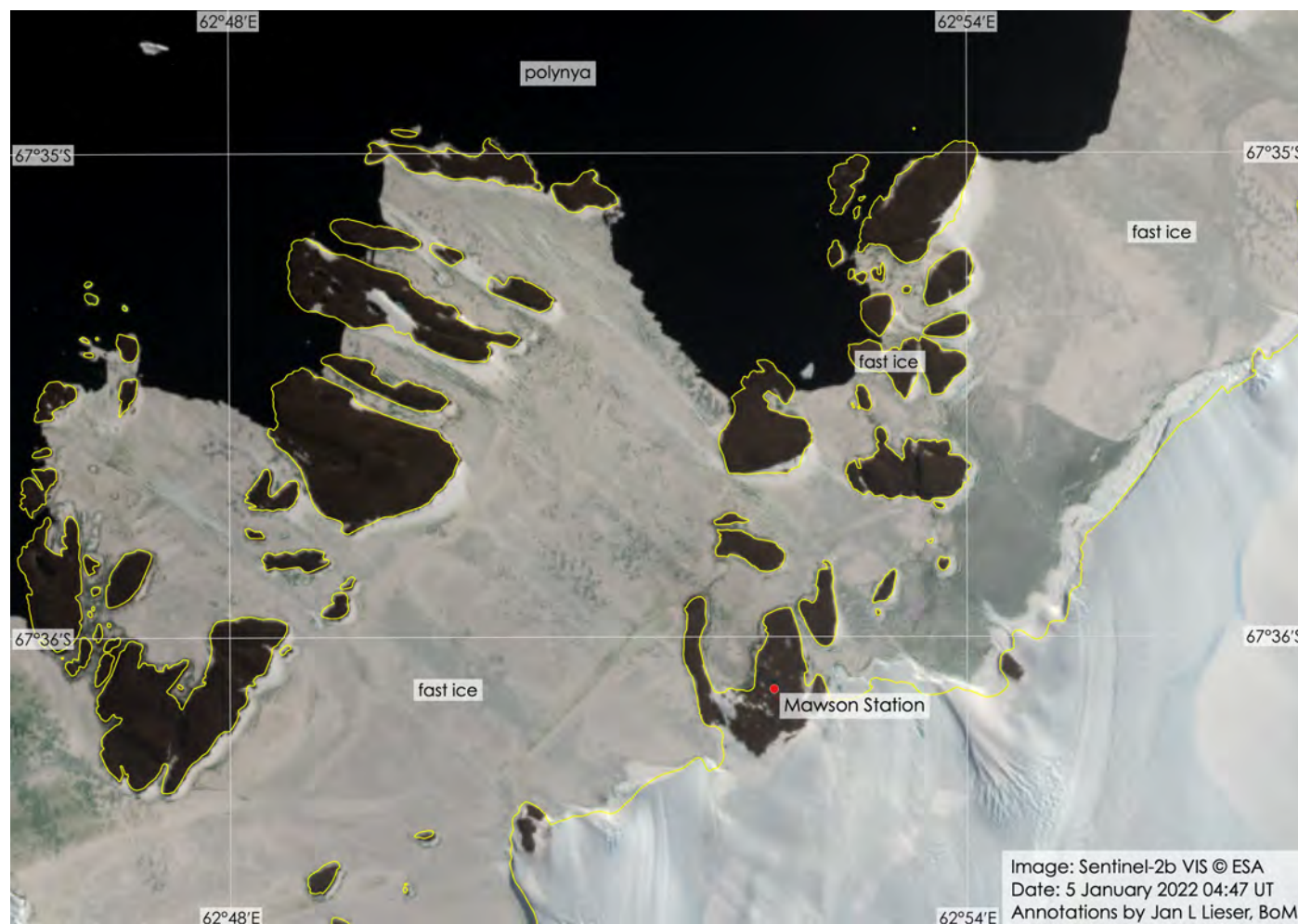


Figure 1: Sentinel-2b VIS composite data acquired 5 January 2022 at 04:47 UT and provided by USGS.

During this week, the fast-ice edge remained largely stable off Mawson Station. Kista Strait is still partly covered by fast ice and the shortest distance between the station and the open water of the polynya offshore is roughly 1 nautical mile. Horseshoe Harbour remains covered by fast ice.

Figure 2 shows larger frames of the same data that are displayed in Figure 1. The upper panel shows the region eastwards towards Auster colony and the lower panel includes Iceberg Alley (marked by blue outlines).

Around the colony, fast ice is breaking up from both the outer edge and the shore. Cracks and holes are also visible around icebergs and islands.

The alley is free of fast ice and only very little ex-fast ice remains between the grounded icebergs that make up the alley. North of the alley and the offshore polynya, broken ex-fast ice and decaying pack ice is drifting.

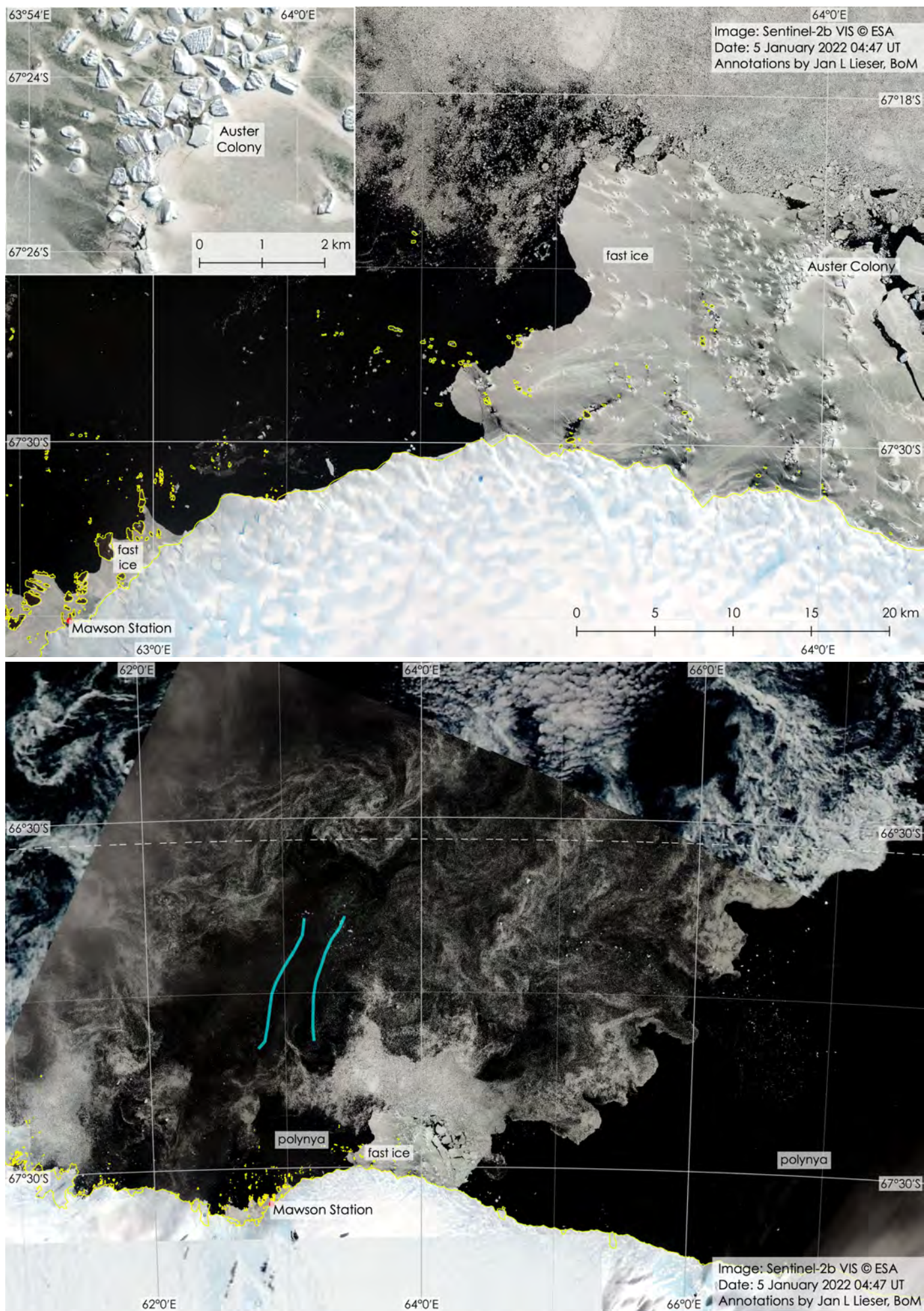


Figure 2: Sentinel-2b VIS composite data acquired 5 January 2022 at 04:47 UT and provided by USGS; lower panel complemented by AUQA MODIS VIS data acquired 5 January 2022 and provided by NASA.

Ice Bulletin: Shackleton Ice Shelf

Issued: Friday 7th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of the Shackleton Ice Shelf. The sea-ice edge based on passive microwave data is included as a lightly blue line. The SAR data have been analysed for iceberg presence north of the sea-ice edge. More than 1500 features have been detected and are marked by pink dots.

The pack ice consists predominantly of decaying first-year sea ice and ex-fast ice. Icebergs are floating freely in the region.

The region north of the sea-ice zone is bergy water.

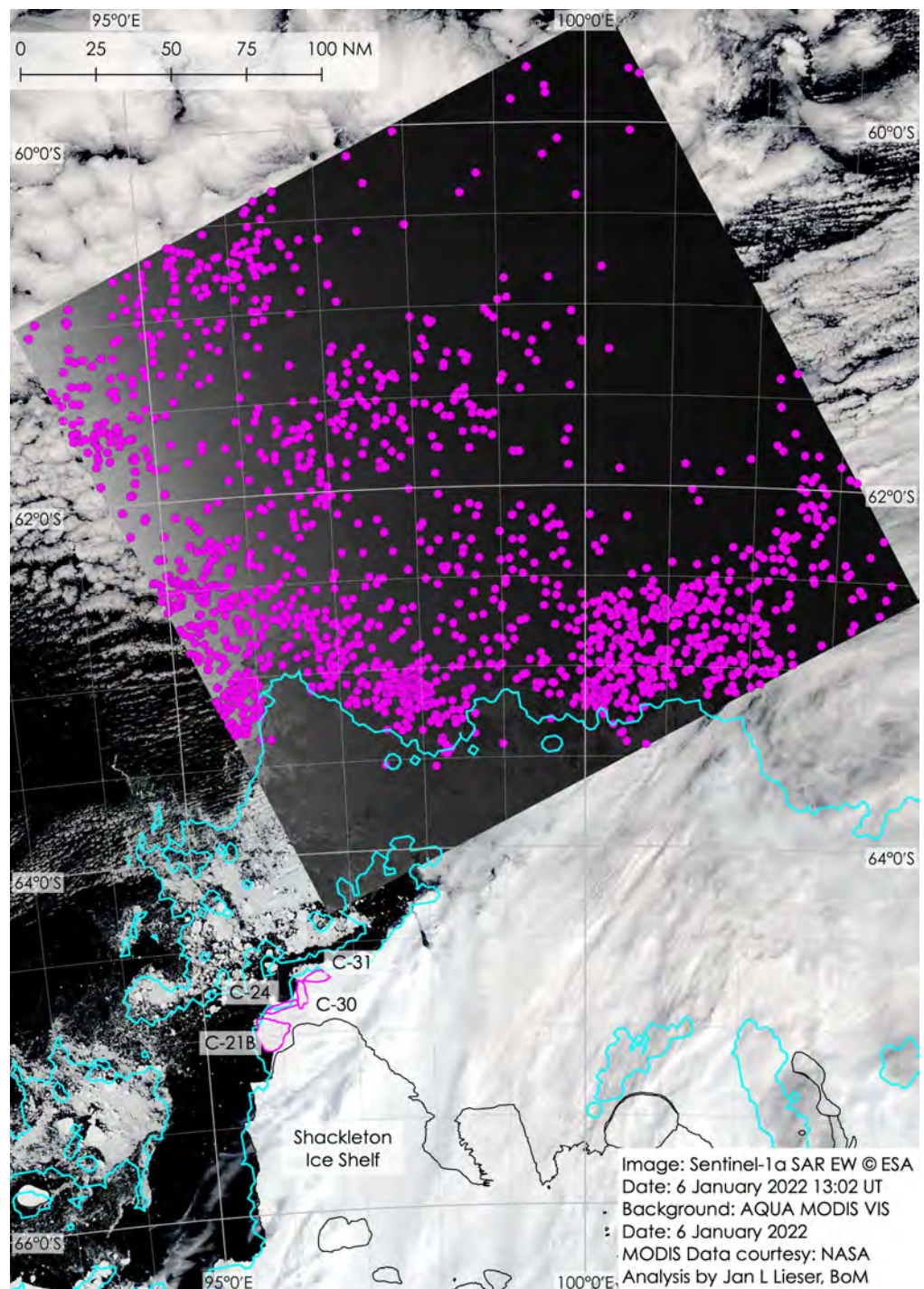


Figure 1: Sentinel-1a SAR EW data acquired 6 January 2022 at 13:02 UT and provided by ESA; background: AQUA MODIS VIS data acquired 6 January 2022 and provided by NASA.

Image: Sentinel-1a SAR EW © ESA
Date: 6 January 2022 13:02 UT
Background: AQUA MODIS VIS
Date: 6 January 2022
MODIS Data courtesy: NASA
Analysis by Jan L. Lieser, BoM

Ice Bulletin: Davis Station

Issued: Saturday 8th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) data off Davis Station. The fast-ice edge on 4 January 2022 is marked by a dashed red line.

During the past three days, the fast-ice edge has been largely stable offshore. Long Fjord and Tryne Bay remain covered by fast ice.

Off the fast ice edge, ex-fast ice floes and icebergs are drifting. Some icebergs are grounded offshore.

Figure 2 shows the wider region of the same data shown in Figure 1.

North of the station, the pack ice is of low concentration and consists of decaying first-year sea ice with old ice inclusion and ex-fast ice floes.

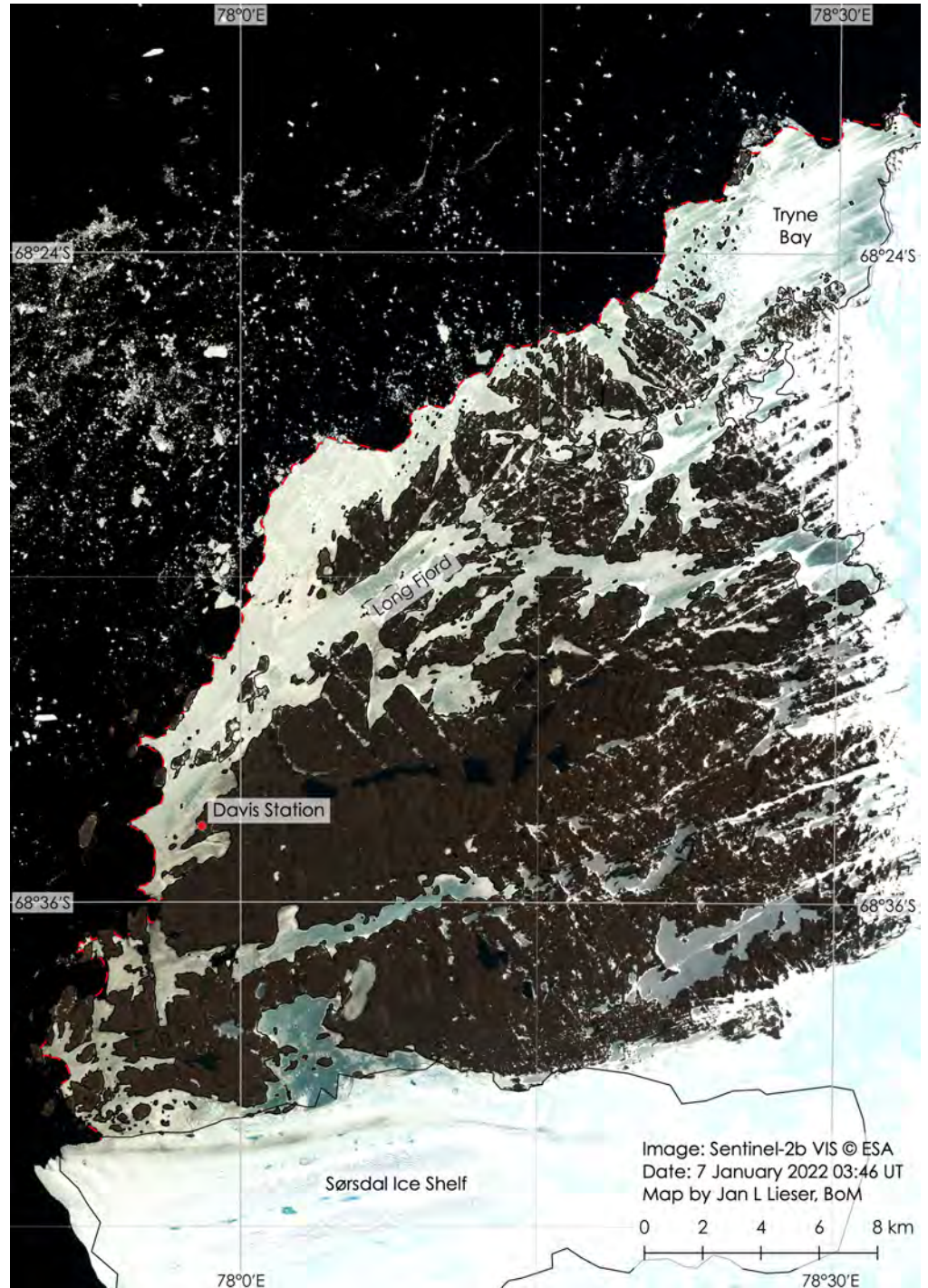


Figure 1: Sentinel-2b VIS data acquired 7 January 2022 at 03:46 UT and provided by USGS.

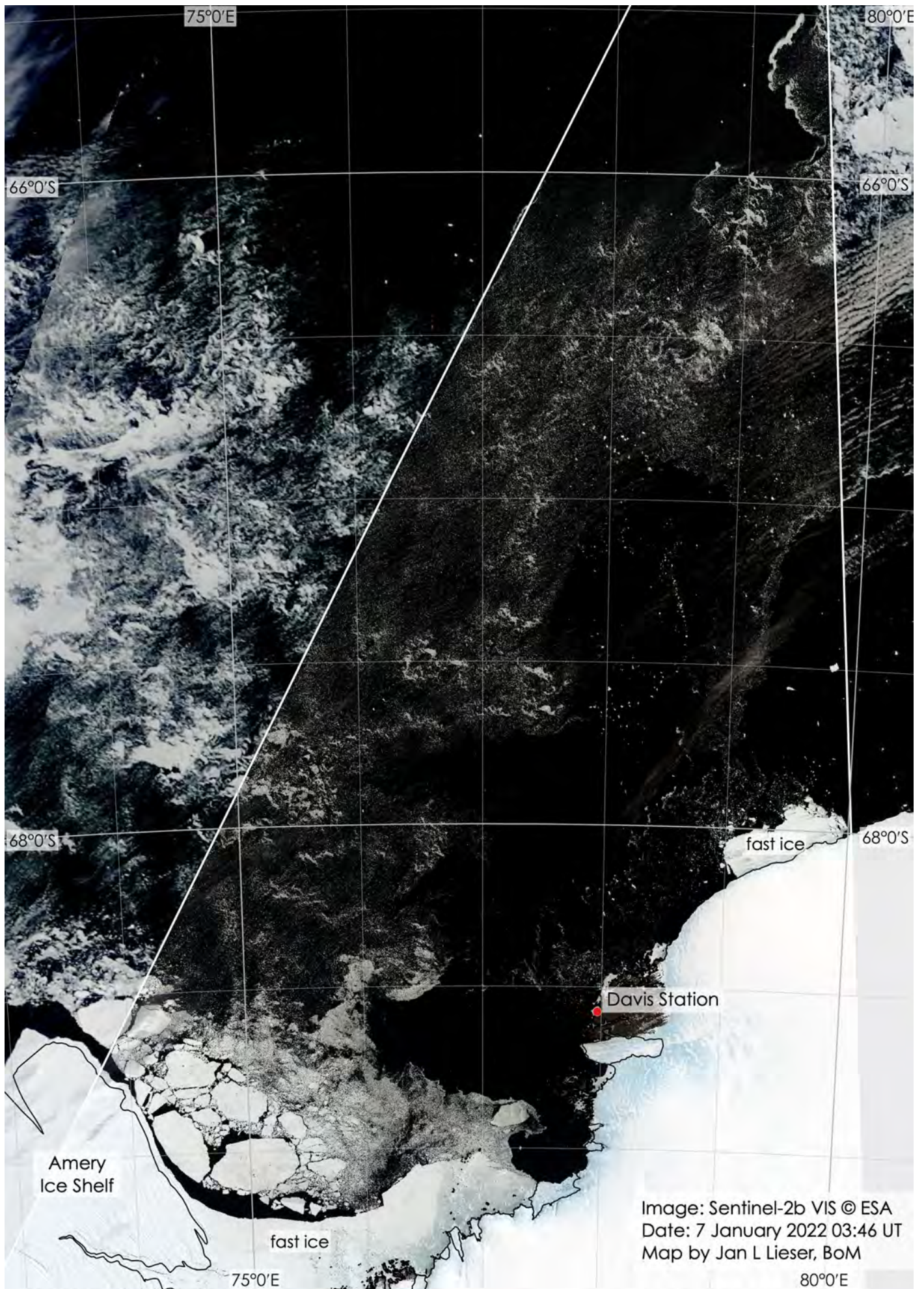


Figure 2: Sentinel-2b VIS data acquired 7 January 2022 at 03:46 UT and provided by USGS;
background: AQUA MODIS VIS data acquired 7 January 2022 and provided by NASA.

Ice Bulletin: Casey Station

Issued: Sunday 9th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Casey Station and further offshore (Figure 2). The fast-ice edge is marked with a red line. The recent cruise track of MV Happy Dragon is included a yellow line (up until 8 January 2022 23:30 UT).



Figure 1: Landsat-8 pan-sharpened visible composite data acquired 8 January 2022 at 01:26 UT and provided by USGS.

Off Casey Station and further south in Vincennes Bay, only limited fast ice remains in sheltered bays.

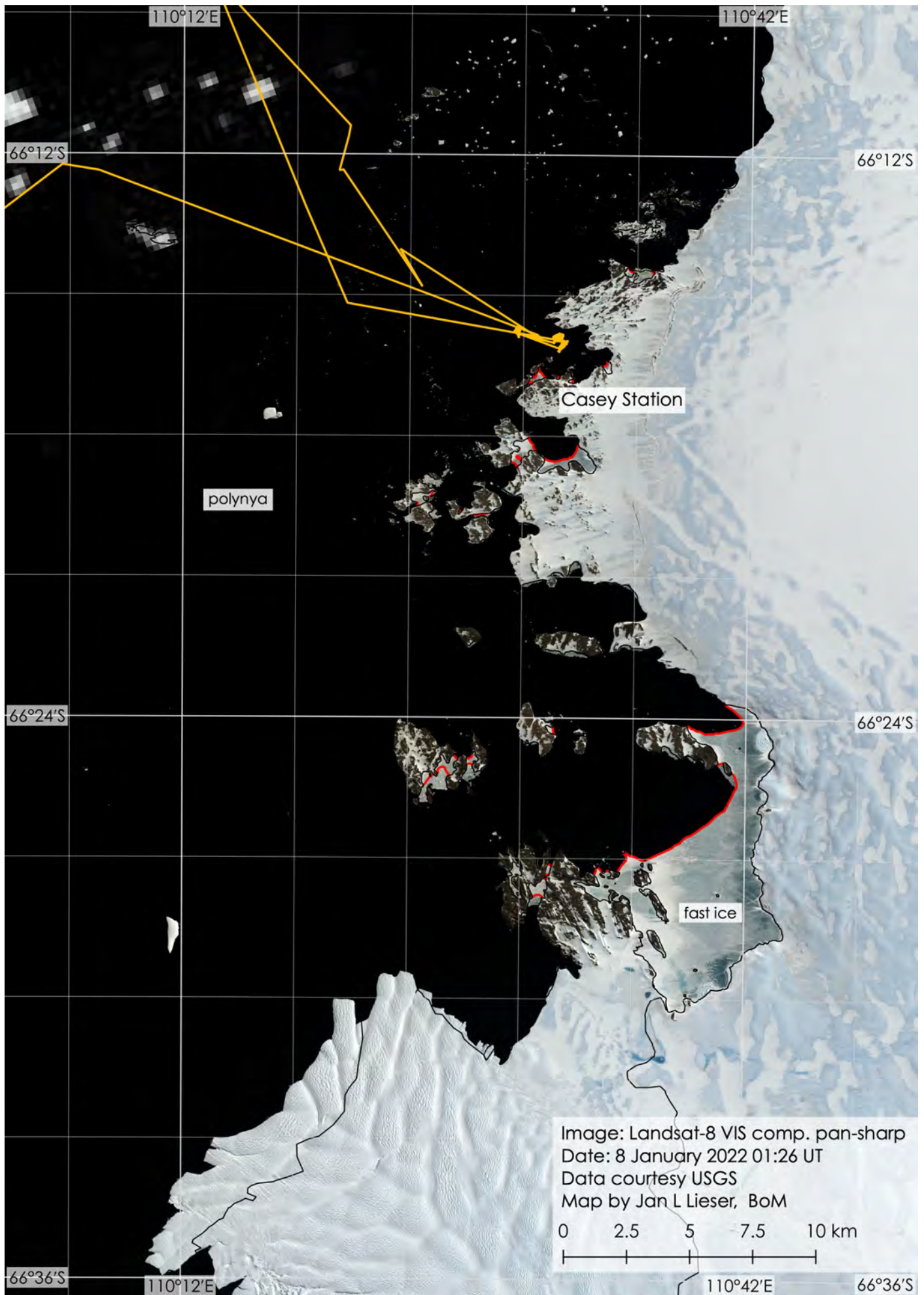


Figure 2: Landsat-8 pan-sharpened visible composite data acquired 8 January 2022 at 01:26 UT and provided by USGS.

Ice Bulletin: Wilkins Aerodrome

Issued: Sunday 9th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Wilkins Aerodrome.

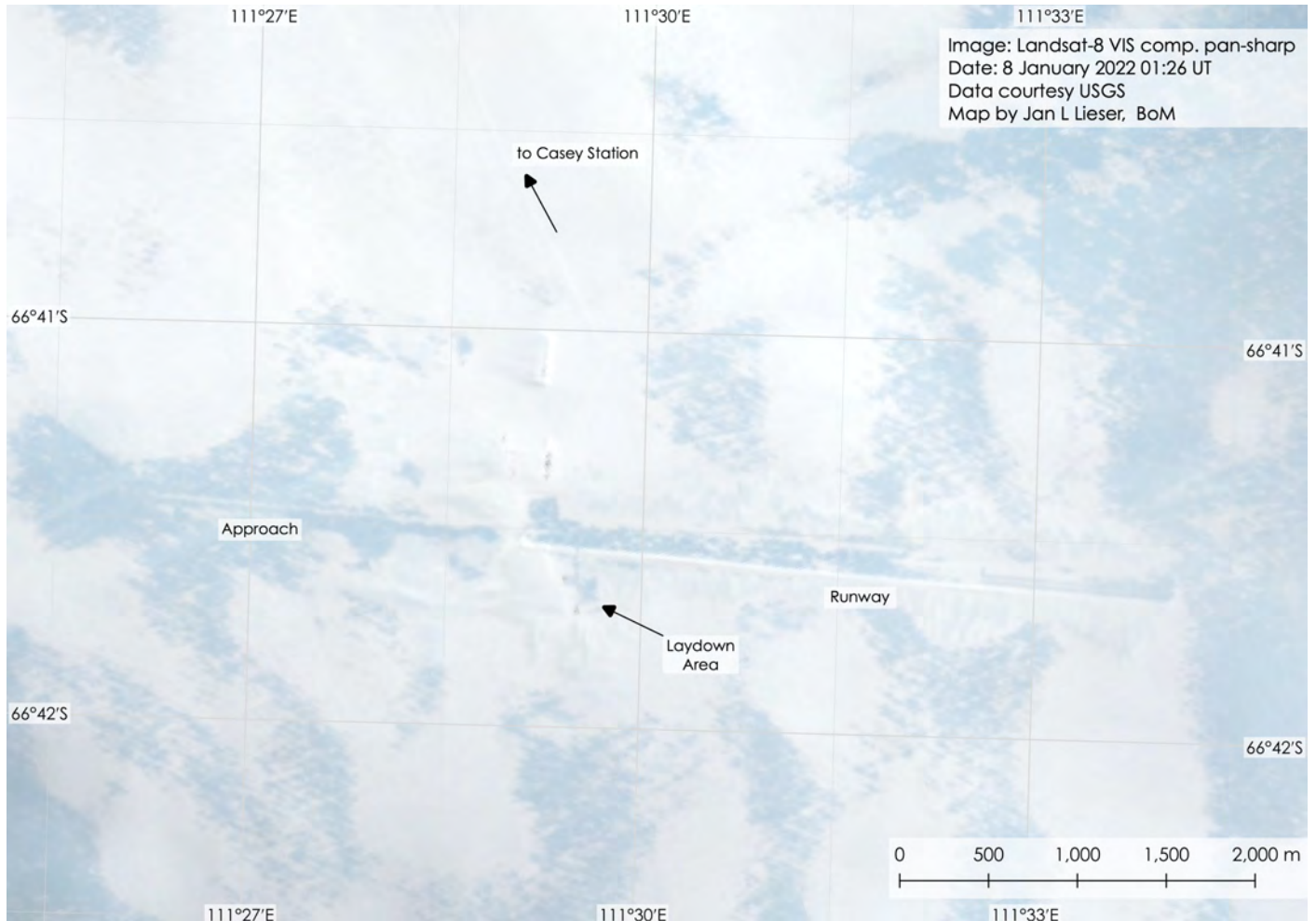


Figure 1: Landsat-8 pan-sharpened visible composite data acquired 8 January 2022 at 01:26 UT and provided by USGS.

The ice runway is clearly visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Davis Station

Issued: Monday 10th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) data off Davis Station. The fast-ice edge is marked by a red line (dashed line for 4 January 2022).

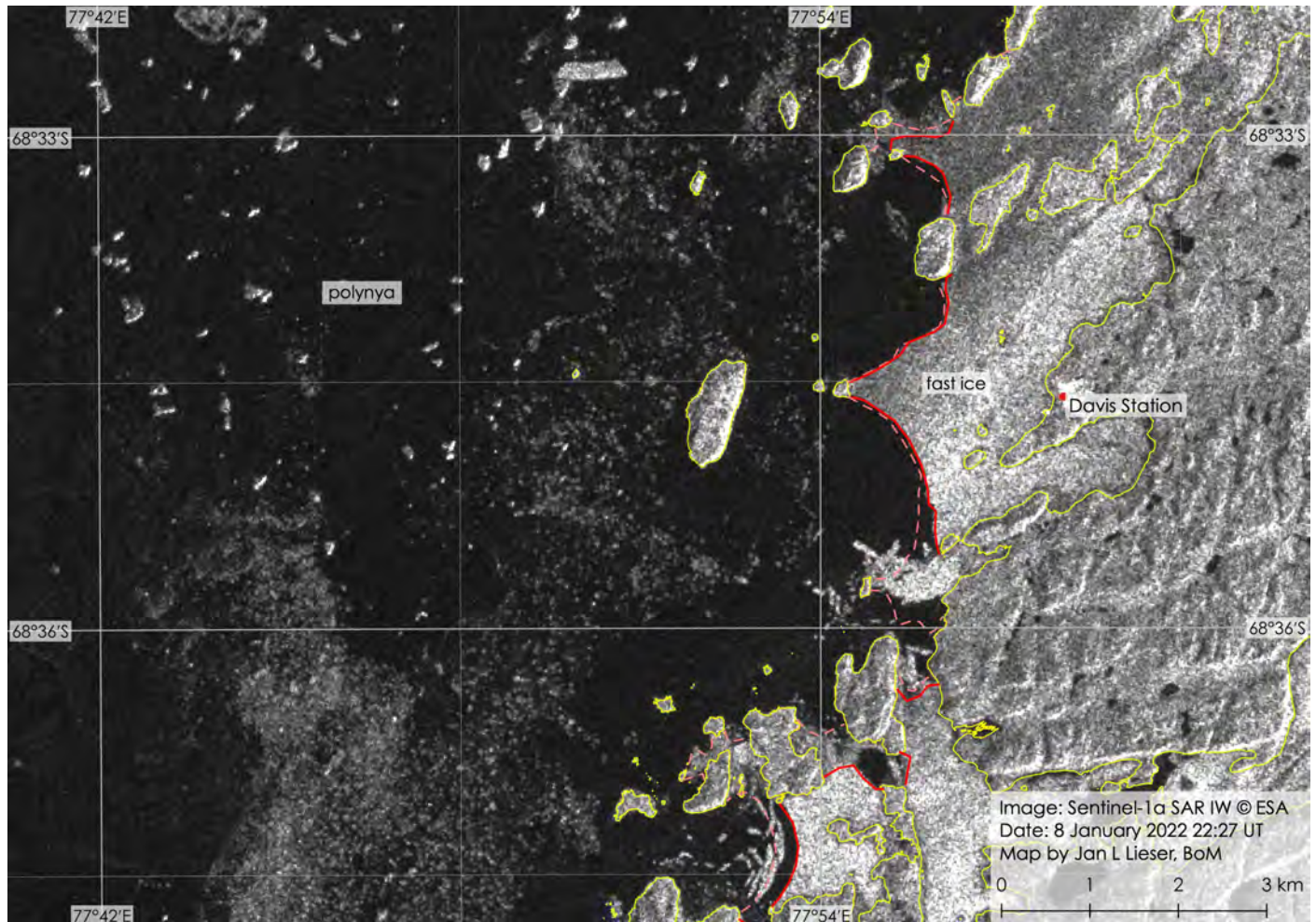


Figure 1: Sentinel-1a SAR IW data acquired 8 January 2022 at 22:27 UT and provided by PolarView.

During the weekend, some fast ice has been breaking off north and south of the station. Long Fjord and Tryne Bay remain covered by fast ice.

Off the fast-ice edge, ex-fast ice floes and icebergs are drifting. Some icebergs are grounded offshore.

Figure 2 shows the wider region along Ingrid Christensen Coast between the Amery Ice Shelf and the West Ice Shelf. The sea-ice edge based on passive microwave data is included as a light blue line.

North of the station, the pack ice is of low concentration and consists of decaying first-year sea ice with old ice inclusion and ex-fast ice floes.

Between 76°0'E and 77°0'E, sea-ice concentration is largely below the detection limit of the passive microwave instrument/ algorithm.

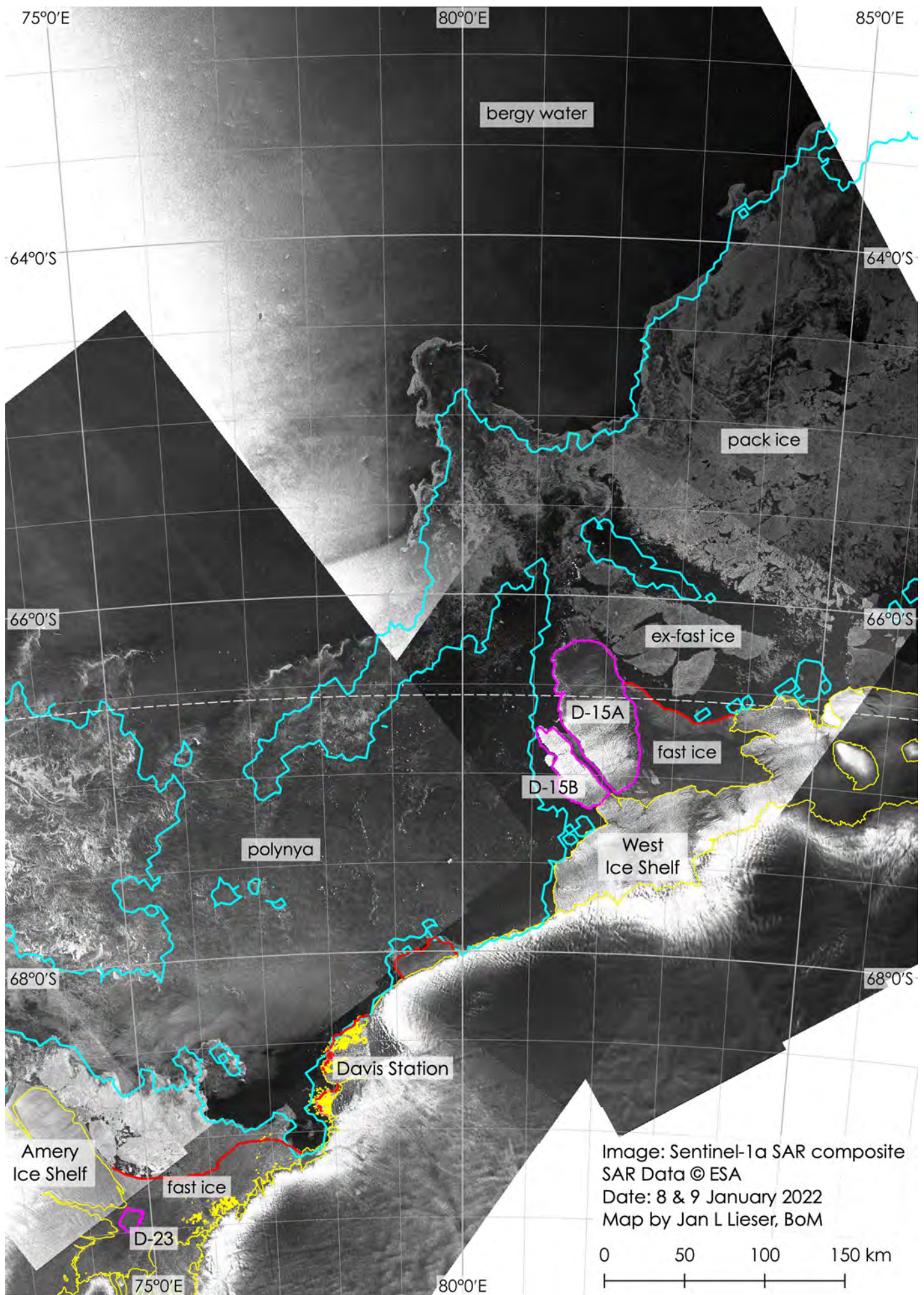


Figure 2: Sentinel-SAR data composite acquired 8 and 9 January 2022 and provided by PolarView;
 Sentinel-1a EW data acquired 8 January 2022 at 14:24 UT off the West Ice Shelf; Sentinel-1a IW acquired 8 January 2021 at 22:27 UT along Ingrid Christensen Coast; Sentinel-1a EW data acquired 9 January 2022 at 15:04 UT off the Amery Ice Shelf.

Ice Bulletin: Shackleton Ice Shelf

Issued: Monday 10th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of the Shackleton Ice Shelf. The cruise track of MPOV Aiviq is included as a blue line (up until 10 January 2022 07:45 UT).

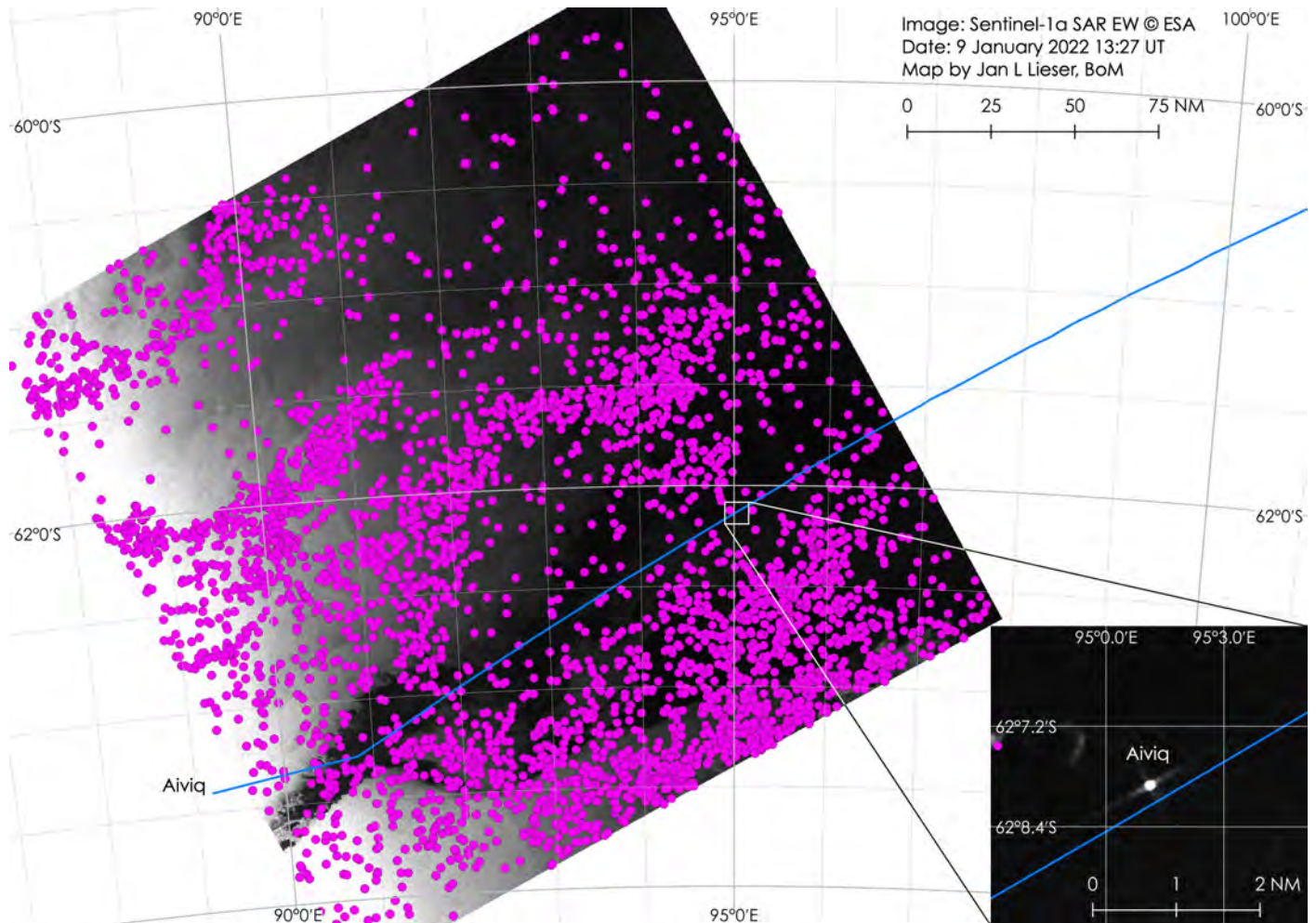


Figure 1: Sentinel-1a SAR EW data acquired 9 January 2022 at 13:27 UT and provided by ESA.

The data have been analysed for iceberg presence and more than 4000 features have been detected and marked by pink dots. The region can be regarded as bergy water.

The inset shows the good ship Aiviq at the time of data acquisition as a star-shaped reflection of the space-borne RADAR pulse.

Ice Bulletin: Casey Station

Issued: Monday 10th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data (300 m horizontal) off Casey Station and further offshore. Clouds appear with a red tint.

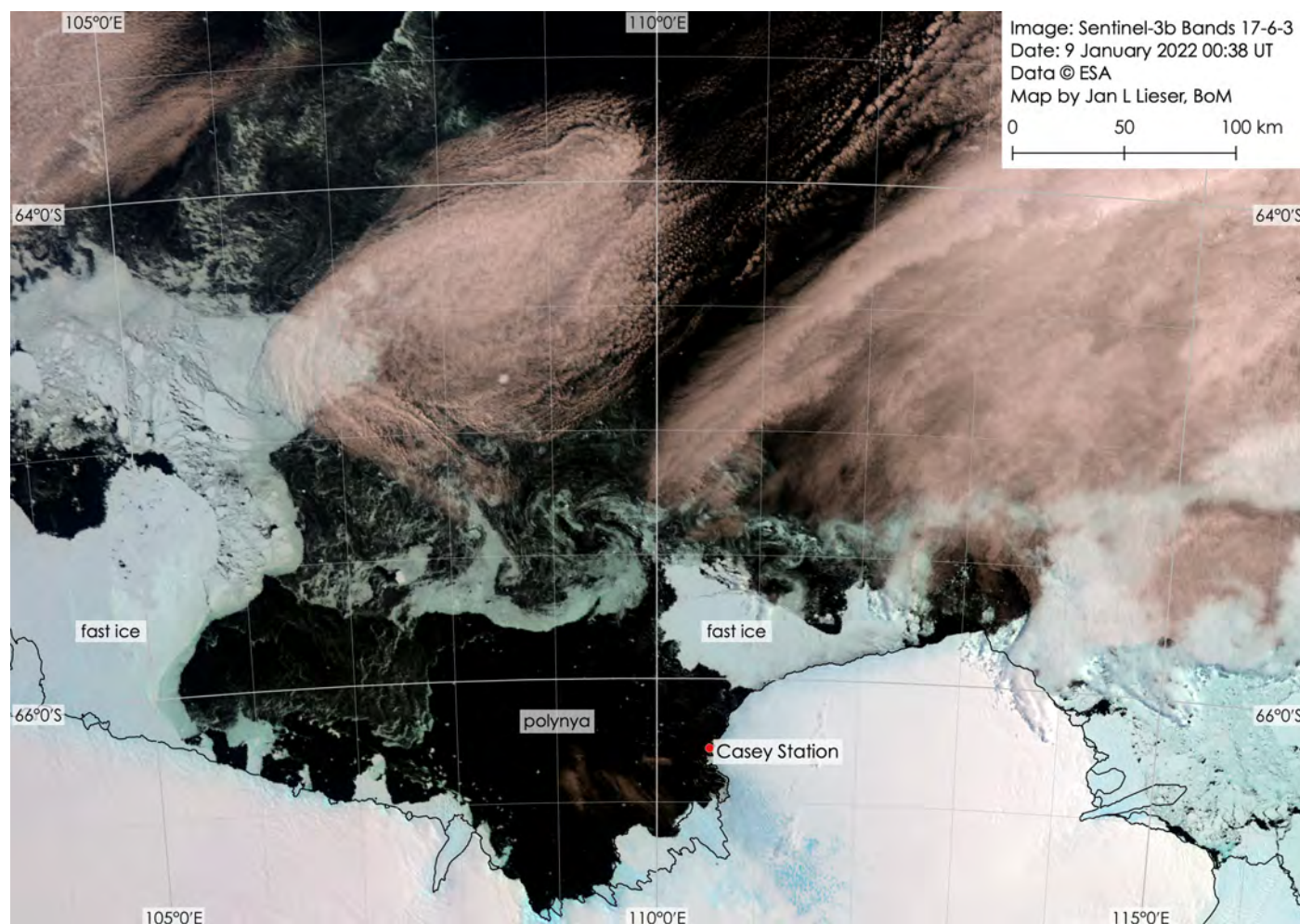


Figure 1: Sentinel-3b visible composite data acquired 9 January 2022 at 00:38 UT and provided by ESA.

Off Casey Station, a large polynya is present west of Law Dome. This polynya is separated from the open ocean further north by a band of decaying first-year pack ice with ex-fast ice inclusions north of 65°30'S.

West of 108°0'E, strips and patches of decaying first-year sea ice reach as far northward as 63°0'S (outside of the frame of Figure 1) and partly even further.

Ice Bulletin: Antarctica

Issued: Tuesday 11th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

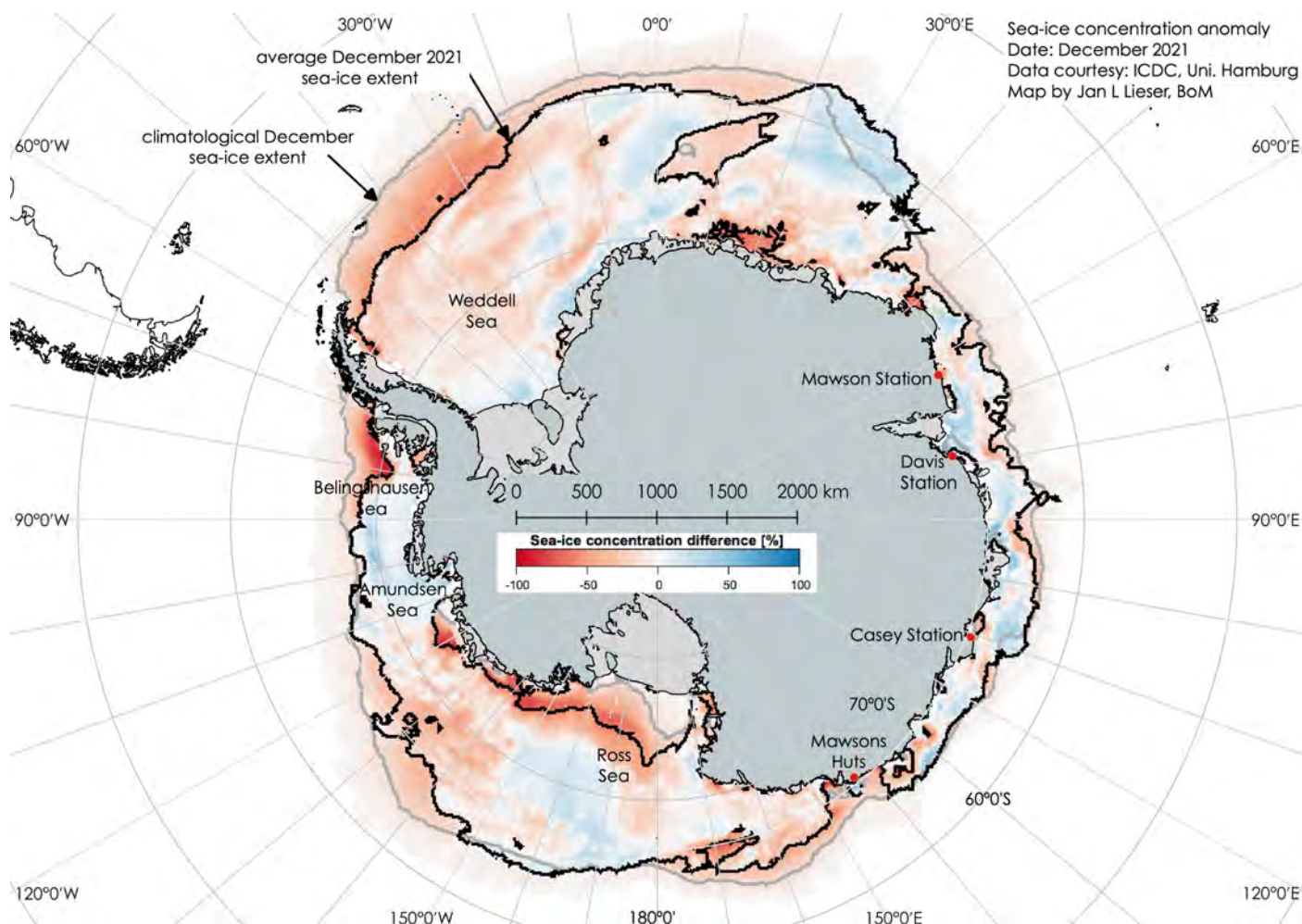


Figure 1: Sea-ice concentration anomaly for December 2021 provided by ICDC (Universität Hamburg).

In December 2021, pan-Antarctic sea-ice extent continued its rapid downward trend that started mid-September and fell to sixth lowest level for December. Regionally sea-ice extent and associated concentration anomalies varied slightly.

A weak bi-modal pattern remains around Antarctica with positive anomalies continue to narrow eastward of 20°0'E towards 40°0'E and in the eastern Ross Sea and the Amundsen Sea.

However, a large negative anomaly is spreading eastward from Maud Rise (66°0'S, 3°0'E). Negative anomalies are also present in East Antarctica, where coastline is exposed west of Enderby Land (west of Mawson Station) and in the southern D'Urville Sea (east and west of Mawsons Huts). Large negative anomalies are found in the southern Ross Sea, west of the Antarctic Peninsula (Bellingshausen Sea) and almost the entire western Weddell Sea (between 60°0'W and 20°0'E).

Ice Bulletin: Mawson Station

Issued: Tuesday 11th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Mawson Station. The sea-ice edge based on passive microwave data is included as a light blue line.

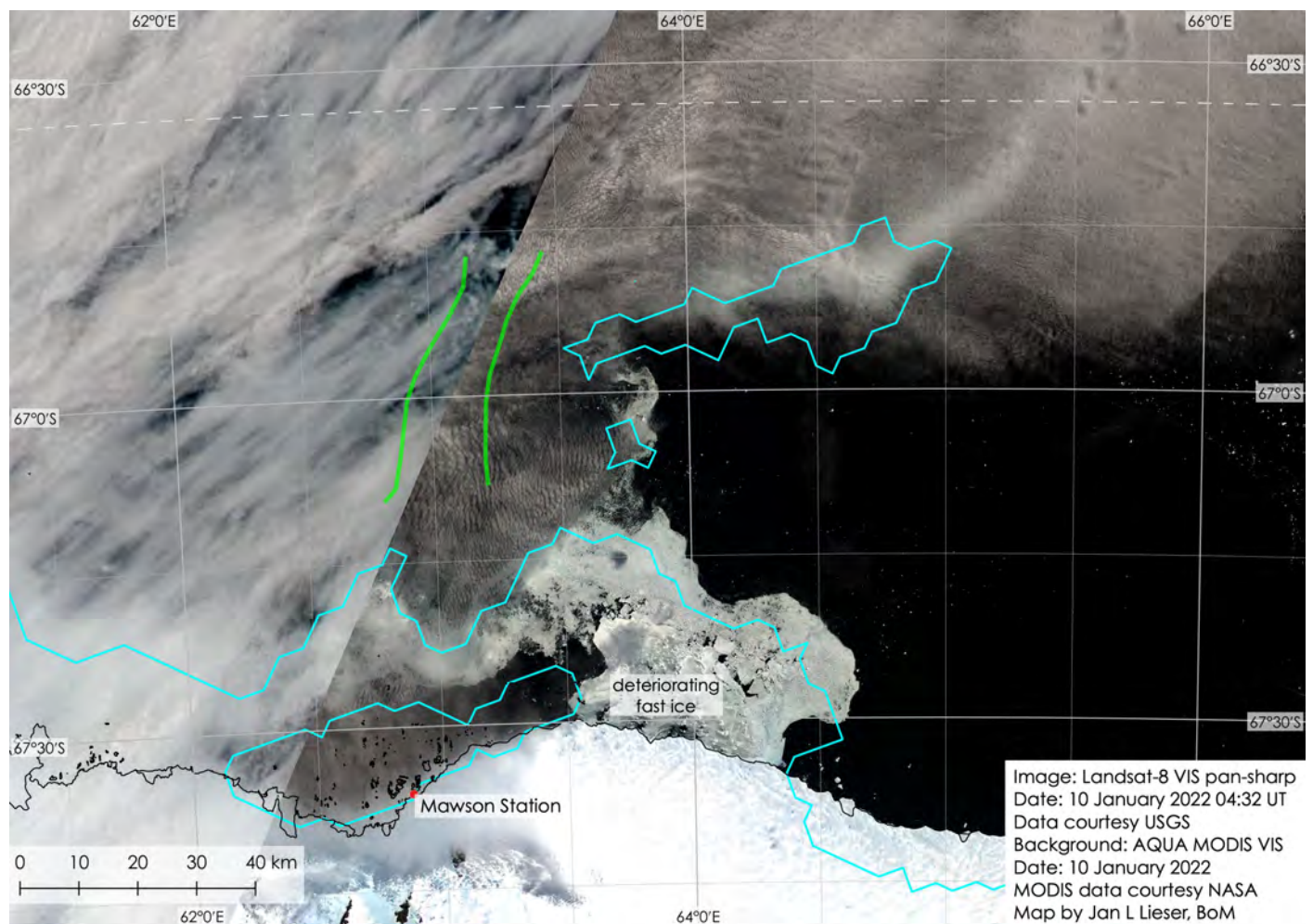


Figure 1: Landsat-8 pan-sharpened VIS composite data acquired 10 January 2022 at 04:32 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 10 January 2022 and provided by NASA.

East of Mawson Station, the remaining fast ice along Mawson Coast continues to deteriorate. The bulk of the ex-fast ice is carried by the coastal currents westward but some of it is also distributed northward in a large spit-like feature.

Iceberg Alley (marked by green outlines) remains free of fast ice and only very little ex-fast ice is still between the grounded icebergs that make up the alley.

Ice Bulletin: Davis Station

Issued: Wednesday 12th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) data off Davis Station. The fast-ice edge is marked by a red line (dashed line for 10 January 2022).

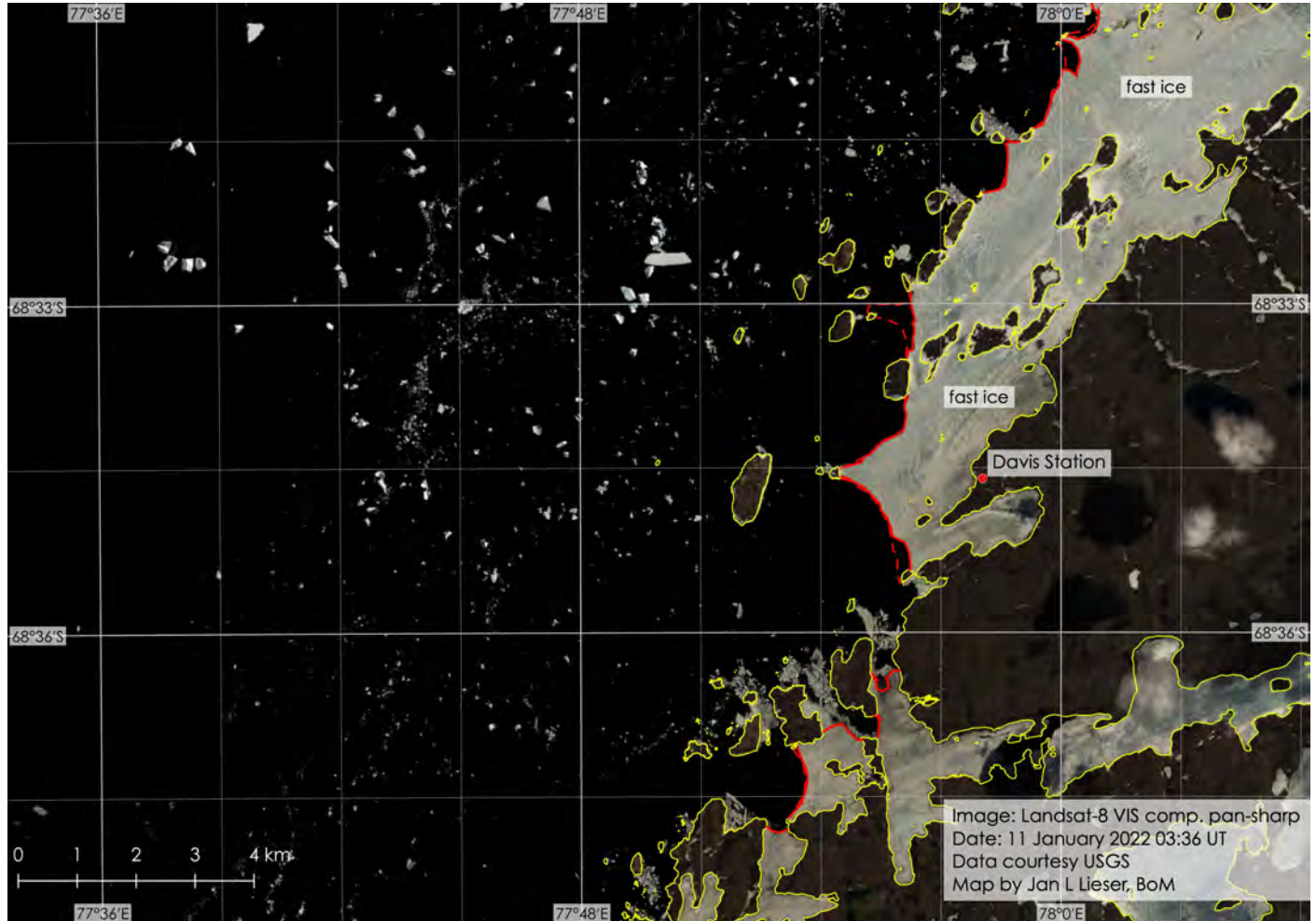


Figure 1: Landsat-8 VIS composite data acquired 11 January 2022 at 03:36 UT and provided by USGS.

Fast ice continues breaking off north and south of the station. Long Fjord and Tryne Bay (not shown in the figure) remain covered by fast ice.

Off the fast-ice edge, ex-fast ice floes and icebergs are drifting. Some icebergs are grounded offshore.

Figure 2 shows the wider region along Ingrid Christensen Coast north of the station. Clouds appear with a red tint over the ocean.

North of the station, pack ice is of low concentration and consists of decaying first-year sea ice with old ice inclusion and ex-fast ice floes.

Along 77°30'E, minimal sea ice is present south of 67°0'S. Icebergs are present throughout the region.

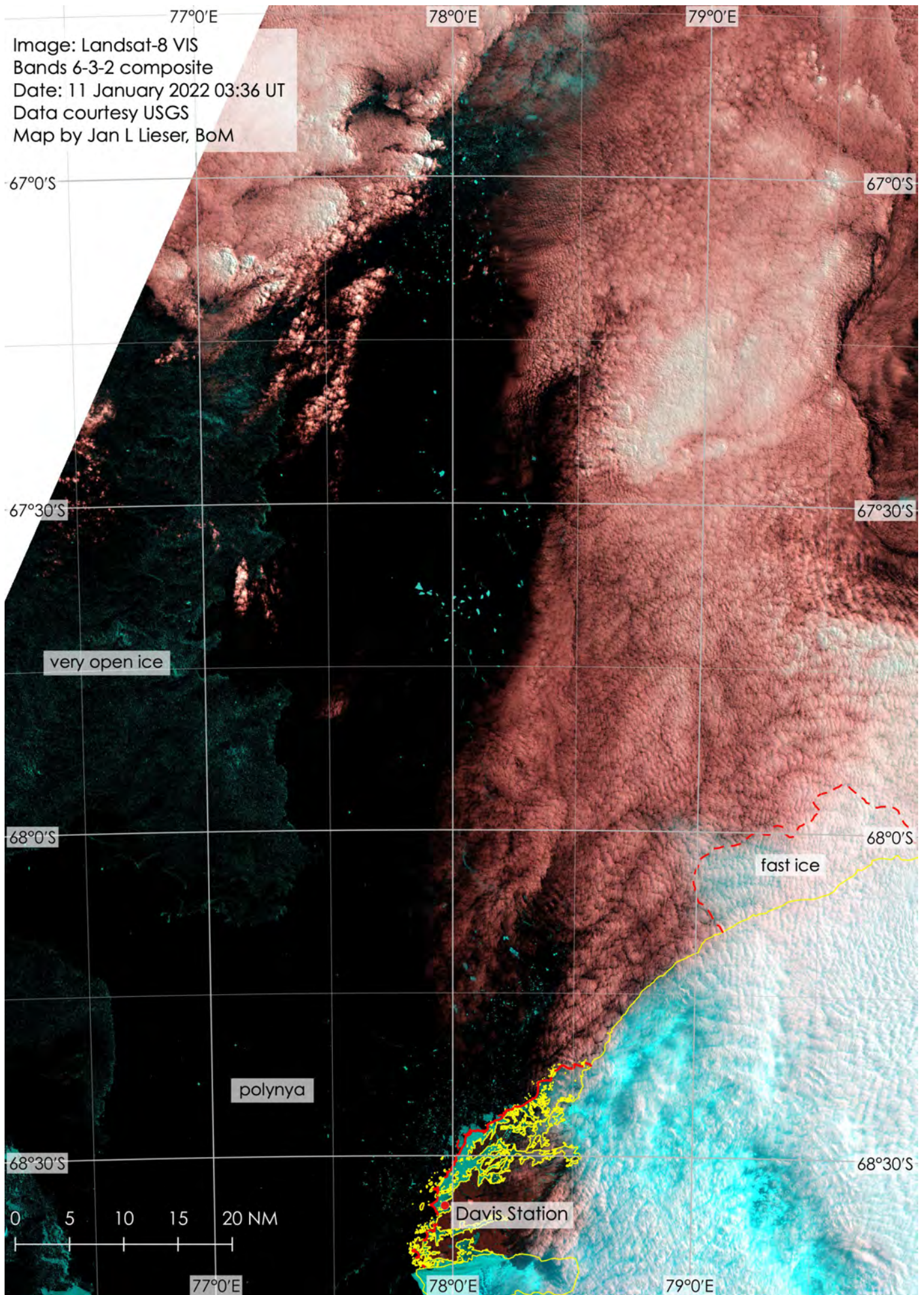


Figure 2: Landsat-8 Bands 6-3-2 composite data acquired 11 January 2022 at 03:36 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Wednesday 12th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Mawson Station. The fast-ice edge is marked with a red line.

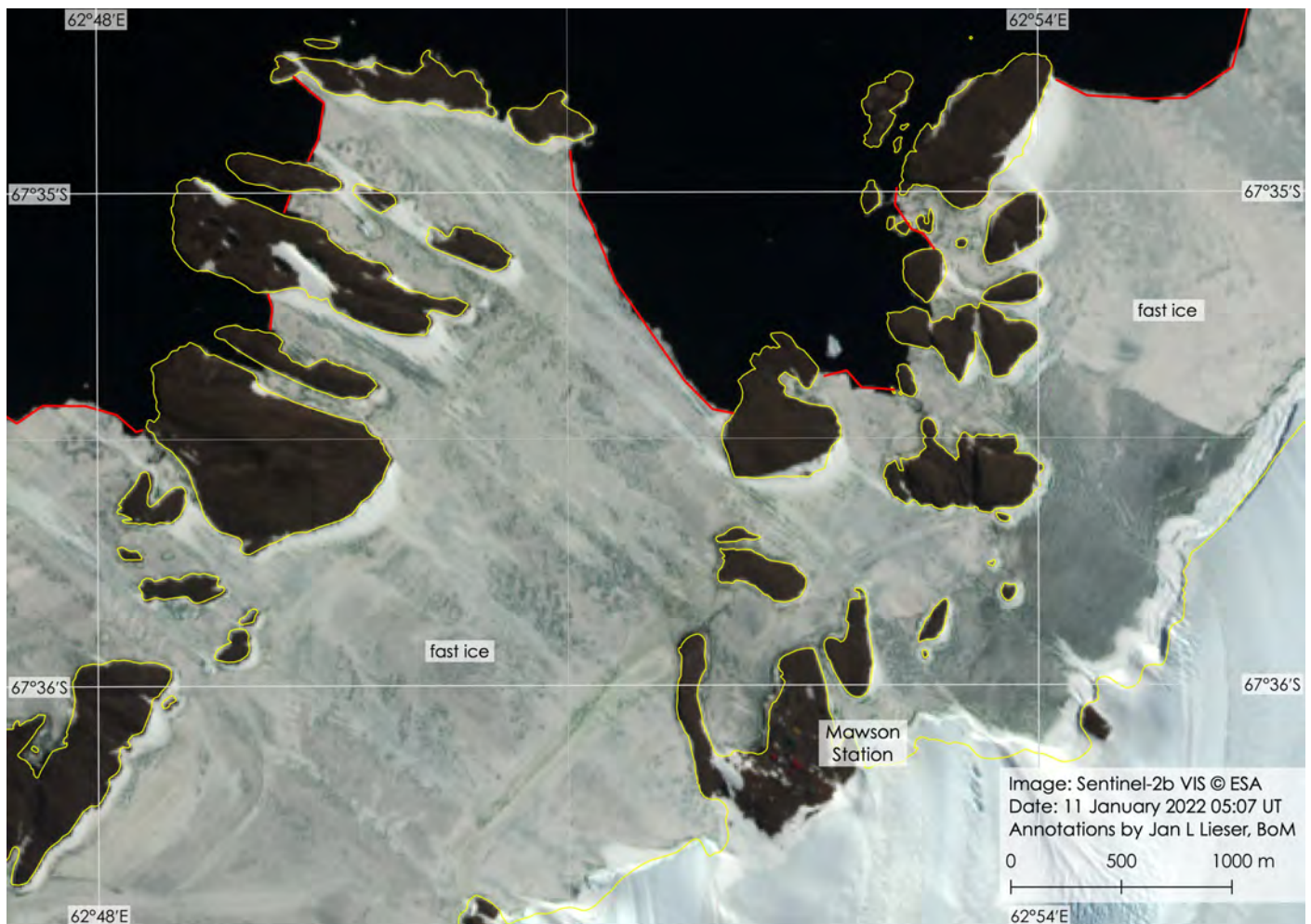


Figure 1: Sentinel-2b VIS composite data acquired 11 January 2022 at 05:07 UT and provided by USGS.

Off Mawson Station, the remaining fast ice continues to deteriorate.

Figure 2 provides a larger overview of the region north of the station. Iceberg Alley is outlined by green boundaries.

East of Mawson Station, fast ice is deteriorating, and the bulk of the ex-fast ice is carried westward by the coastal currents but some of it is also distributed northward in a large spit-like feature (not shown in the figure).

Iceberg Alley is free of fast ice and only very little ex-fast ice is still between the grounded icebergs that make up the alley.

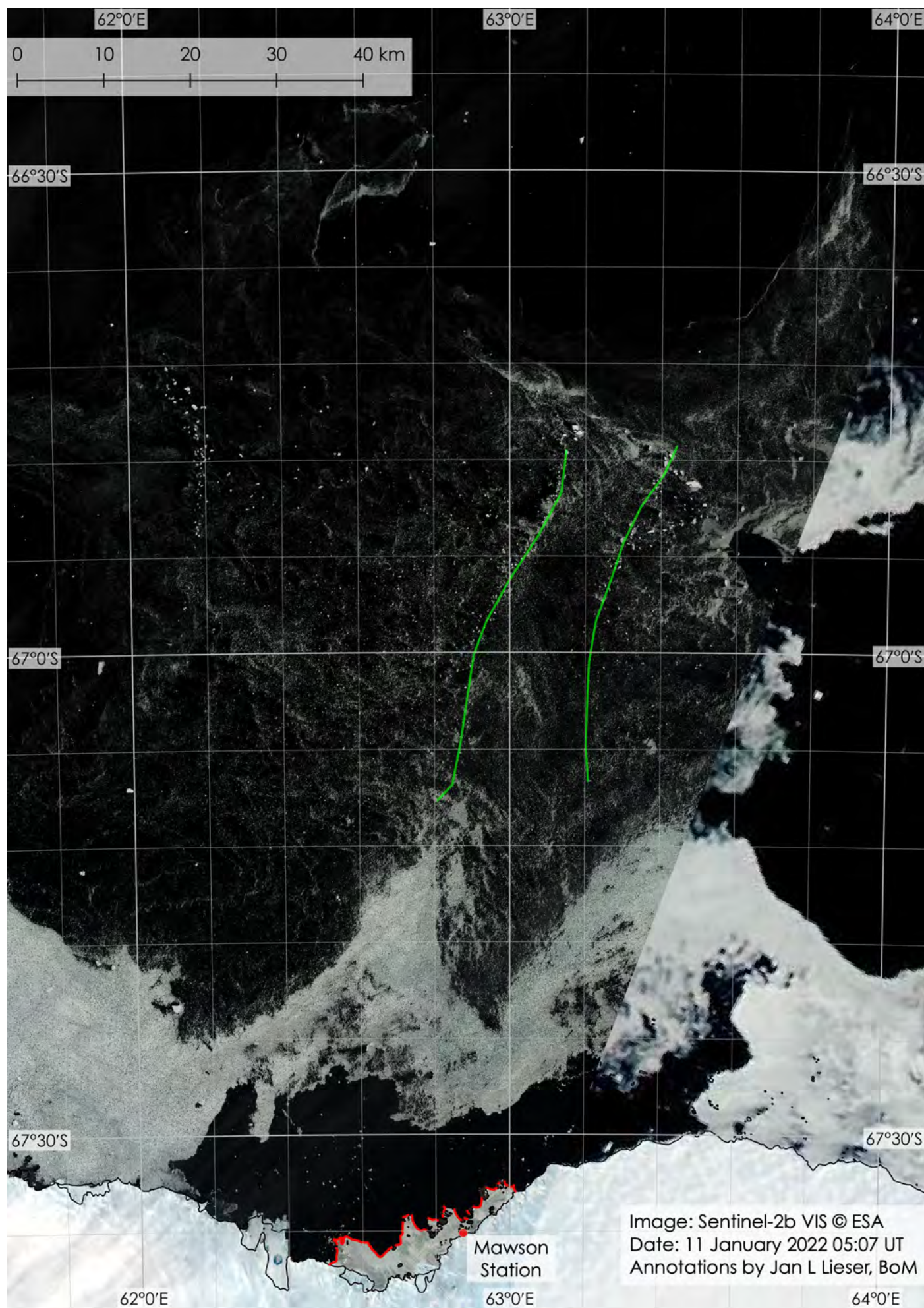


Figure 2: Sentinel-2b VIS composite data acquired 11 January 2022 at 05:07 UT and provided by USGS;
complemented by AUQA MODIS VIS data acquired 11 January 2022 and provided by NASA.

Ice Bulletin: D'Urville Sea

Issued: Thursday 13th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Commonwealth Bay. The fast-ice edge is marked by a red line (dashed red line for 4 January 2022). The positions of three large tabular icebergs north of the bay are marked by colour-coded shapes.

Off Mawsons Huts, fast ice has been retreating south during the past week. The open water of the polynya is roughly 5.5 km (3 nautical miles) away northwest of the huts and less than 3 km (1.5 nautical miles) northeast of the huts.

Since mid-December, iceberg B-9B is moving again as the surrounding fast ice is now detached. However, the iceberg's movements are still confined by some grounded icebergs close by.

Iceberg C-29 has been slightly restless as well while iceberg C-15 is not moving.

Smaller icebergs and ex-fast ice floes continue drifting generally westward in the polynya.

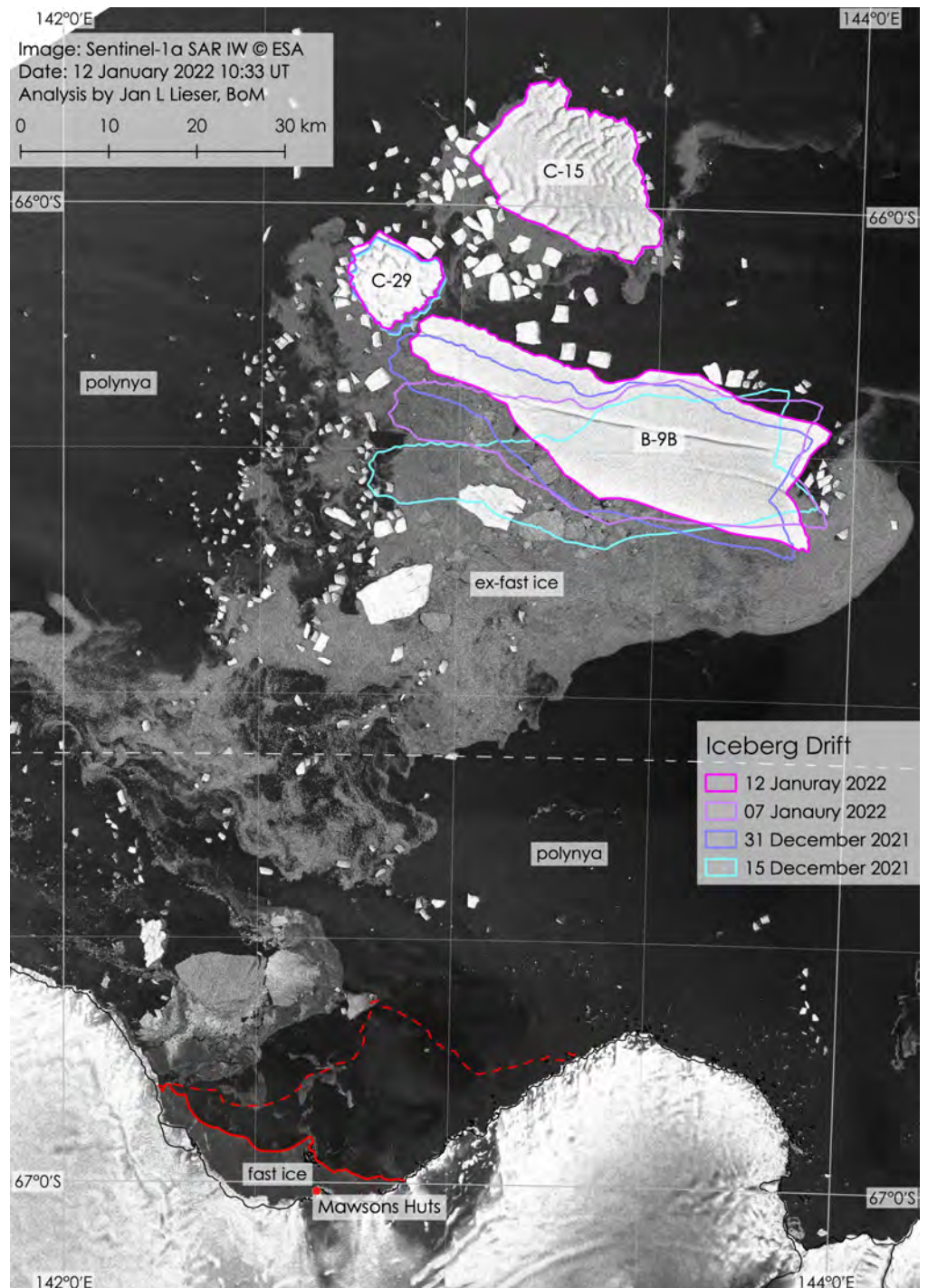


Figure 1: Sentinel-1 SAR IW data acquired 12 January 2022 at 10:33 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Friday 14th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data (15 m horizontal) off Casey Station. Fast ice areas are marked with a red line.

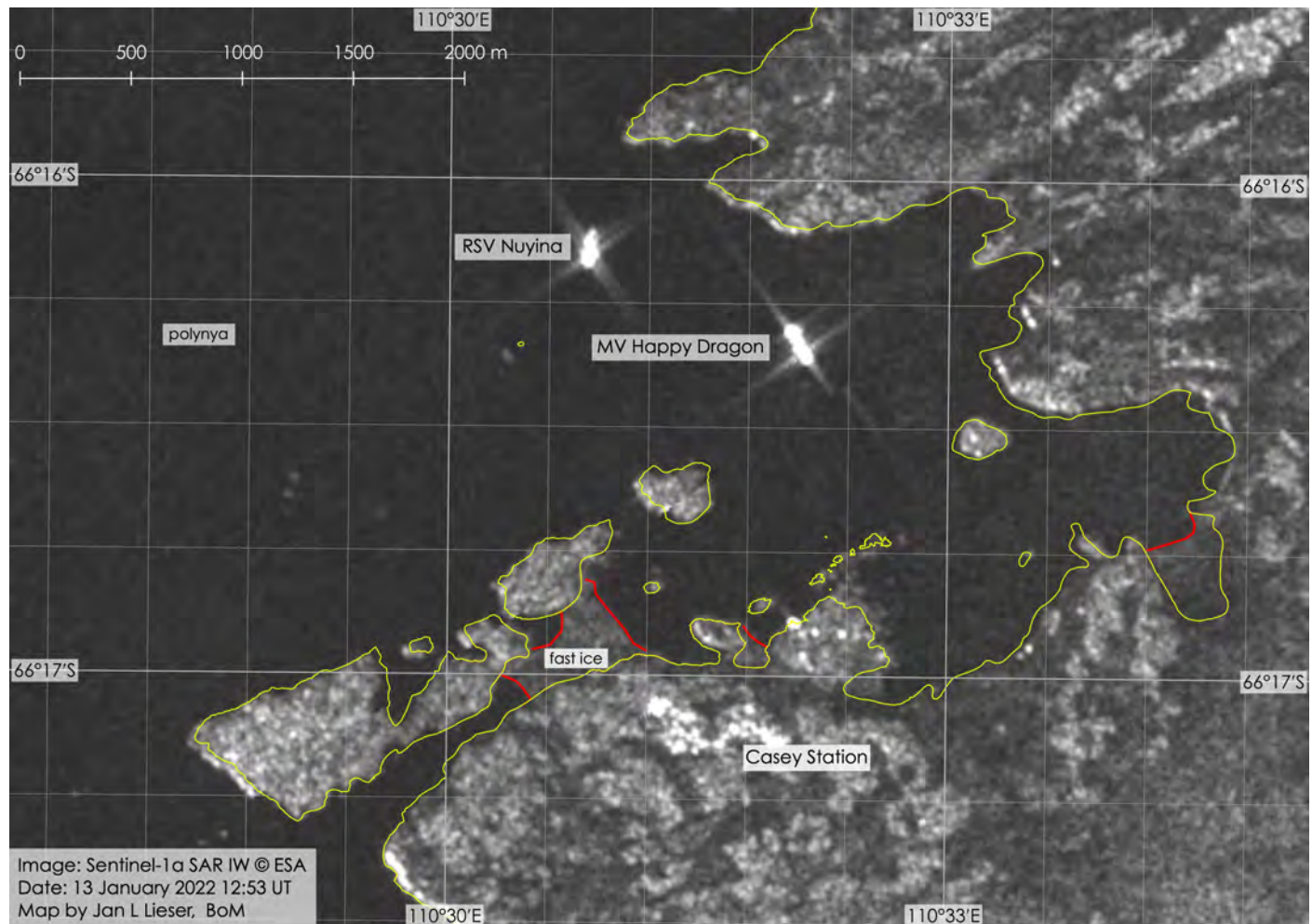


Figure 1: Sentinel-1a SAR IW data acquired 13 January 2022 at 12:53 UT and provided by ESA.

Off Casey Station, a large polynya is present west of Law Dome. Two vessels in Newcomb Bay are showing as star-shaped reflections of the space-borne RADAR pulse at the time of data acquisition.

Figure 2 shows visible data off the north-western flank of Law Dome.

North of the fast ice attached to the dome, ex-fast ice and decaying first-year sea ice is present and drifting generally westward. Some of that ice melange is distributed by small-scale oceanic surface eddies further afield (north of 65°25'S and into the polynya south of 66°0'S).

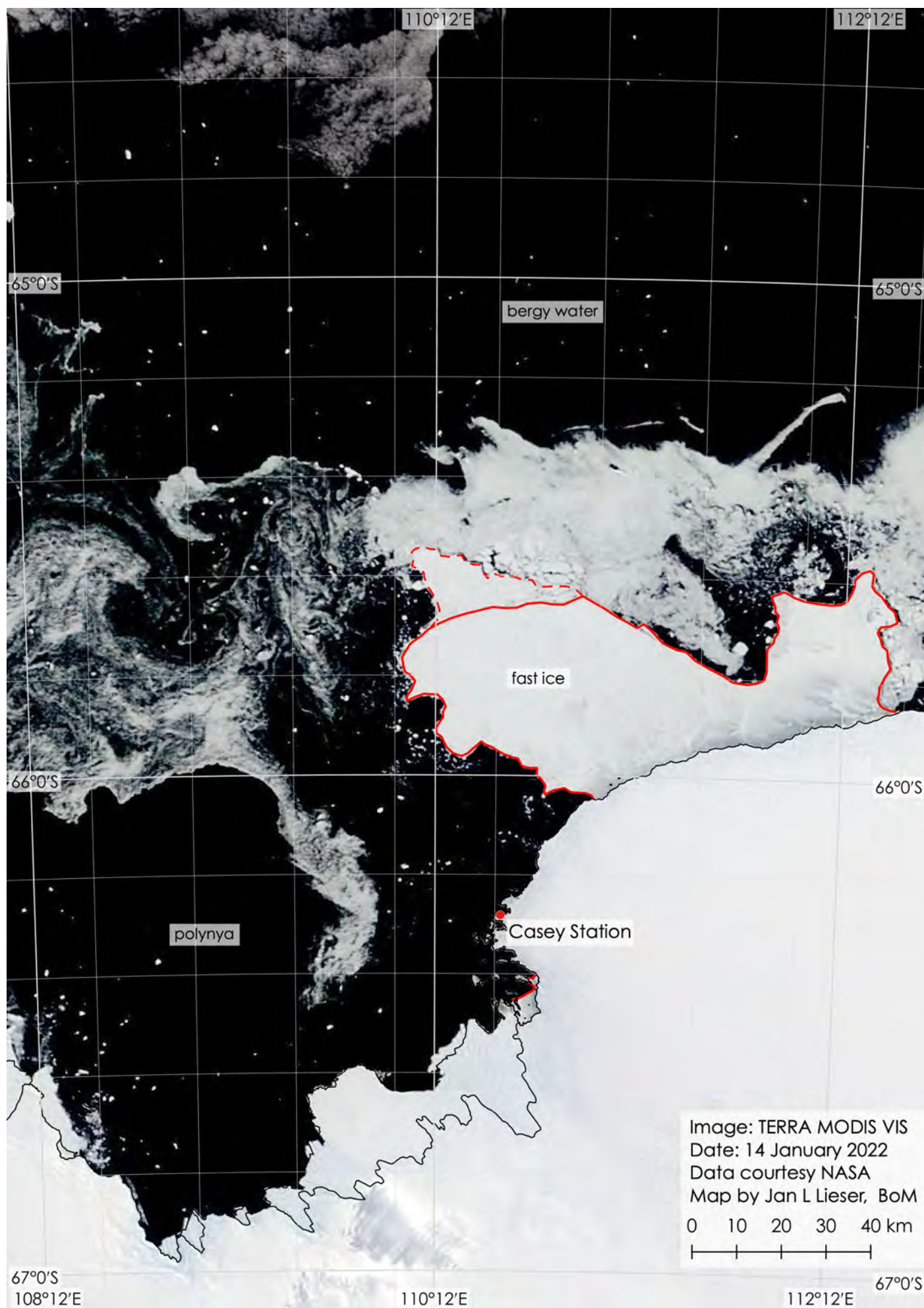


Figure 2: TERRA MODIS VIS data acquired 14 January 2022 and provided by NASA.

Ice Bulletin: Casey Station

Issued: Saturday 15th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data (10 m horizontal) off Casey Station. Fast ice areas are marked with a red line.

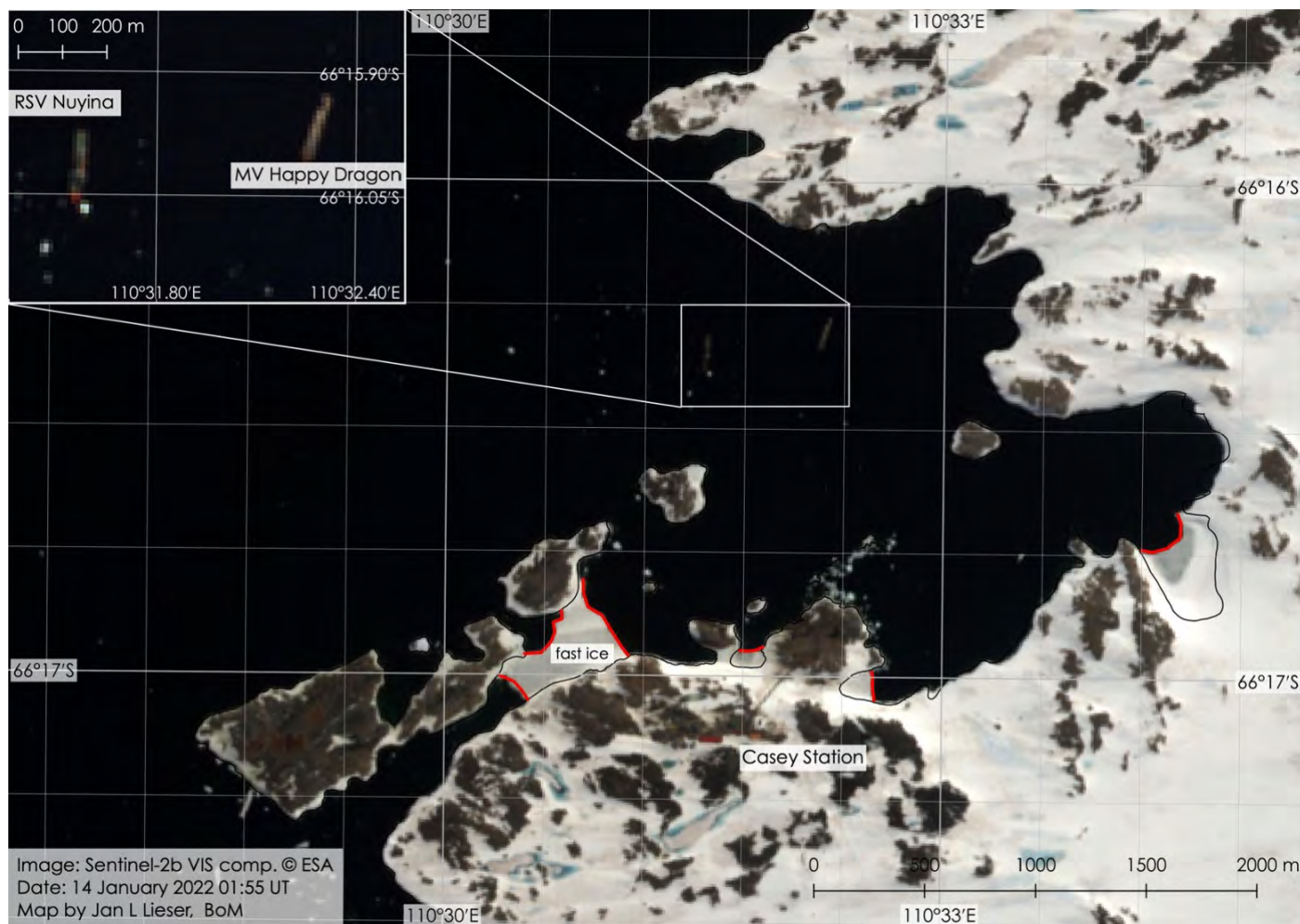


Figure 1: Sentinel-2b VIS composite data acquired 14 January 2022 at 01:55 UT and provided by USGS.

Off Casey Station, a large polynya is present. Two vessels in Newcomb Bay can be seen in the visible data off station (see inset of the figure).

Ice Bulletin: Davis Station

Issued: Saturday 15th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Davis Station. The sea-ice edge based on passive microwave data is shown in light blue. The recent cruise track of MPOV Aiviq is included as a blue line.

North of the West Ice Shelf, fast ice continues to break up and floes of ex-fast ice are discharged into the generally westward pack-ice drift further north.

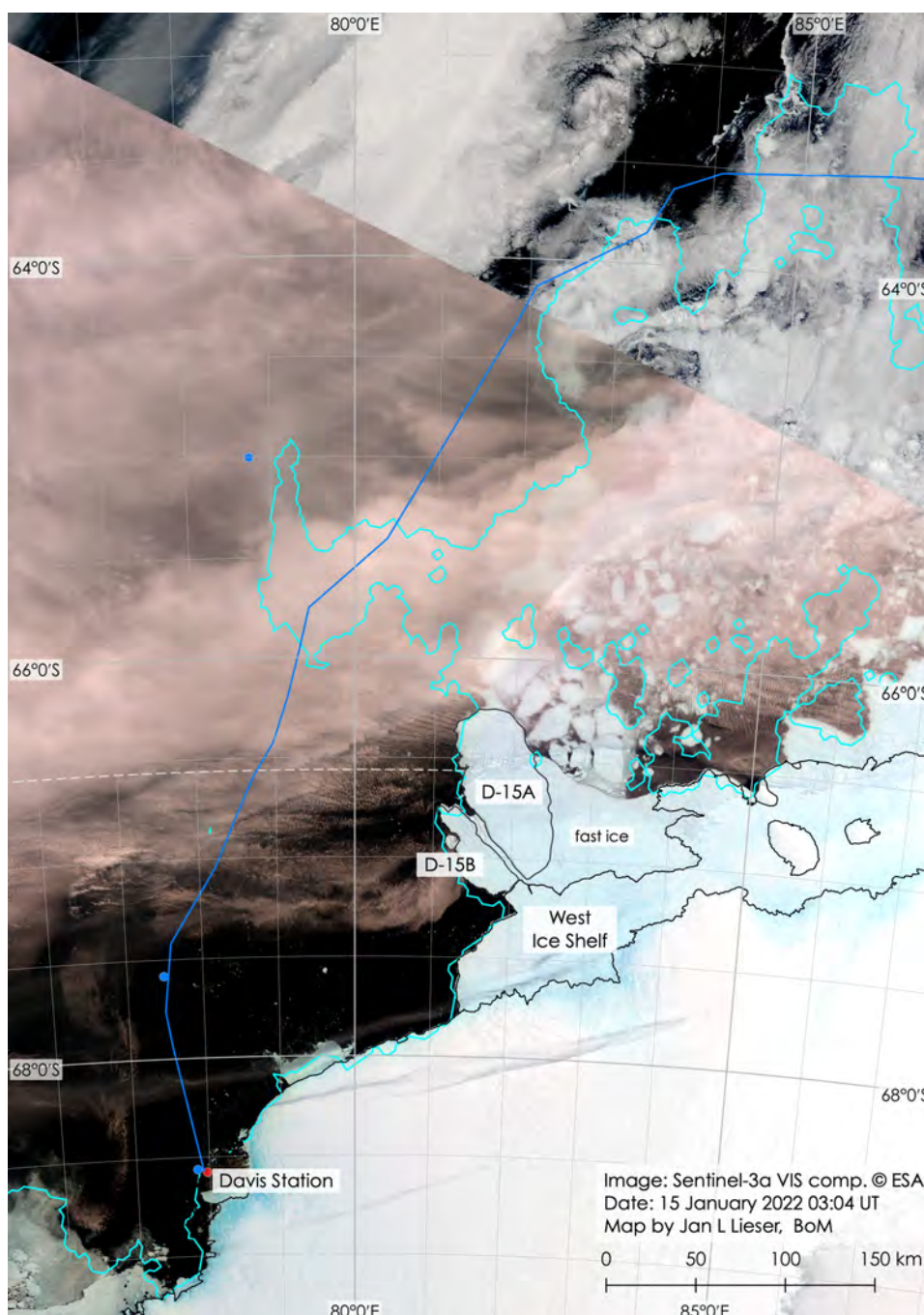


Figure 1: Sentinel-3a Bands 17-6-3 composite data acquired 15 January 2022 at 03:04 UT and provided by ESA; complemented by TERRA MODIS VIS data acquired 14 January 2022 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: D'Urville Sea

Issued: Saturday 15th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off southern D'Urville Sea. The recent cruise track of OPV l'Astrolabe is marked by a red line (the vessel is currently off Dumont D'Urville Station).

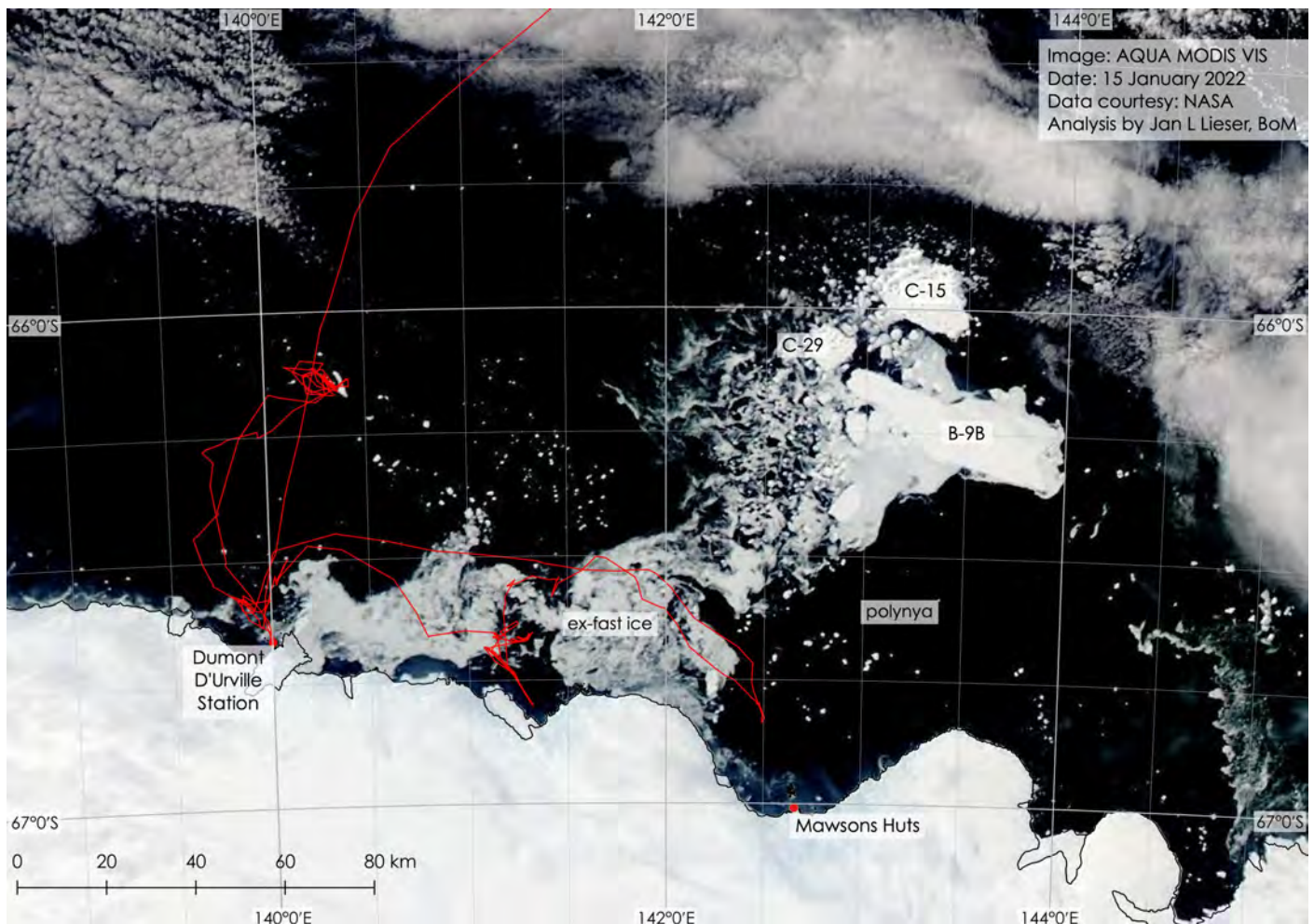


Figure 1: AQUA MODIS VIS data acquired 15 January 2022 and provided by NASA.

Off Mawsons Huts, fast ice has completely broken out during the past two days. Ex-fast ice floes and some icebergs are drifting generally westward nearshore.

Iceberg B-9B continues to wiggle back and forth confined by some grounded icebergs close by. Iceberg C-29 has been slightly restless as well while iceberg C-15 is not moving.

Ice Bulletin: Casey Station

Issued: Sunday 16th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data (15 m horizontal) off Casey Station. (Note, the geo-reference of the data is off by about 80m in east-west direction.)

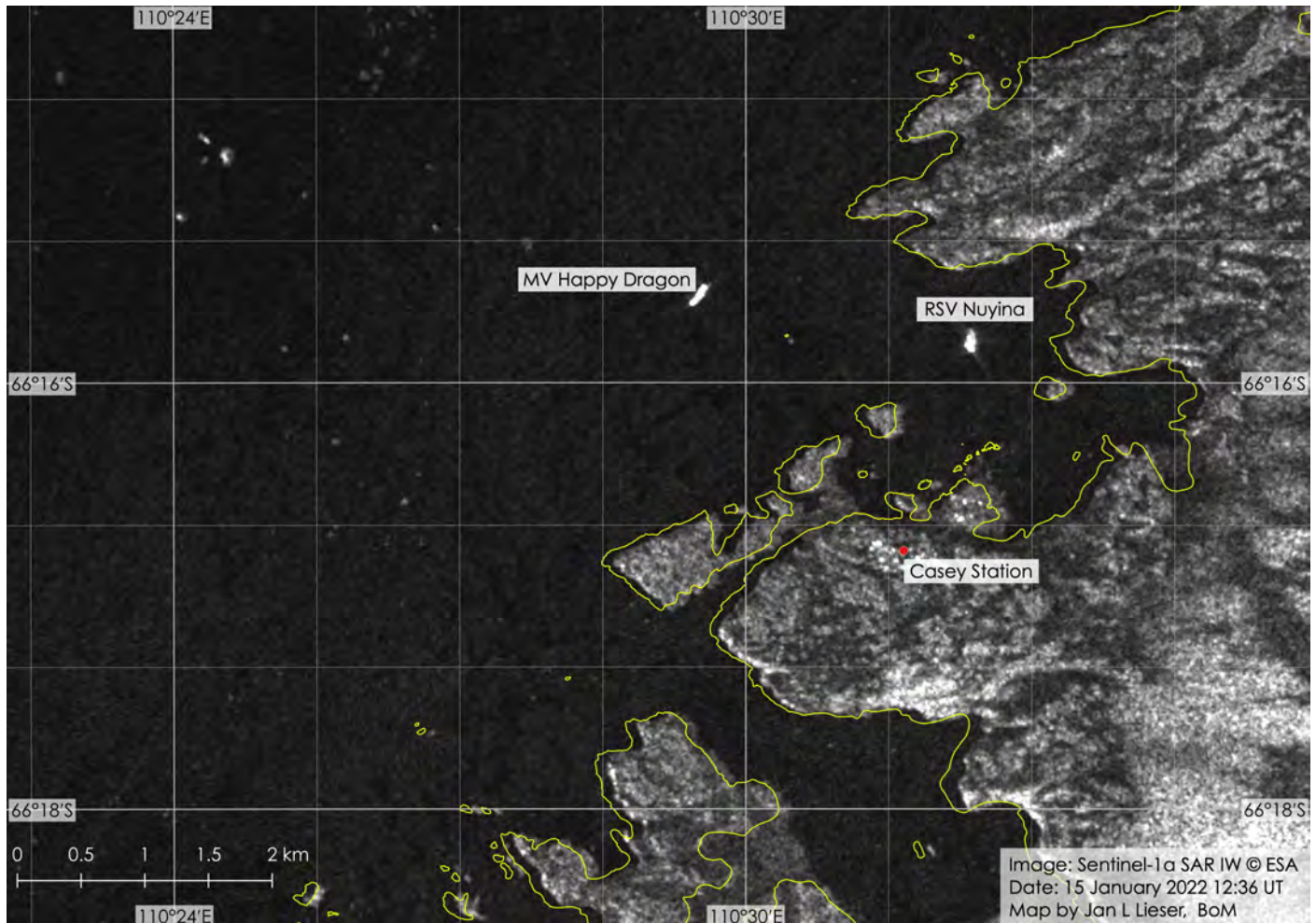


Figure 1: Sentinel-1a SAR IW data acquired 15 January 2022 at 12:36 UT and provided by ESA.

Off Casey Station, a large polynya is present. In Newcomb Bay, two vessels can be seen in the SAR data as bright reflections off station.

Ice Bulletin: Davis Station

Issued: Monday 17th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. Fast ice areas are marked with a red outline. The recent cruise track of MPOV Aiviq is included as a blue line (up until 16 January 2022 at 18:00 UT).

Northwest of the D-15 icebergs, floes of decaying first-year sea ice and ex-fast ice are circulating north of 66°0'S.

This ex-fast ice originates from the region east of the D-15 icebergs and is discharged into the generally westward pack-ice drift further north.

MPOV Aiviq has been captured at the time of data acquisition as a bright reflection of the space-borne RADAR pulses (see inset; the blue dot marks her position at 14:54 UT on 16 January 2022). The wake of the vessel can also be seen as the ship is heading northward.

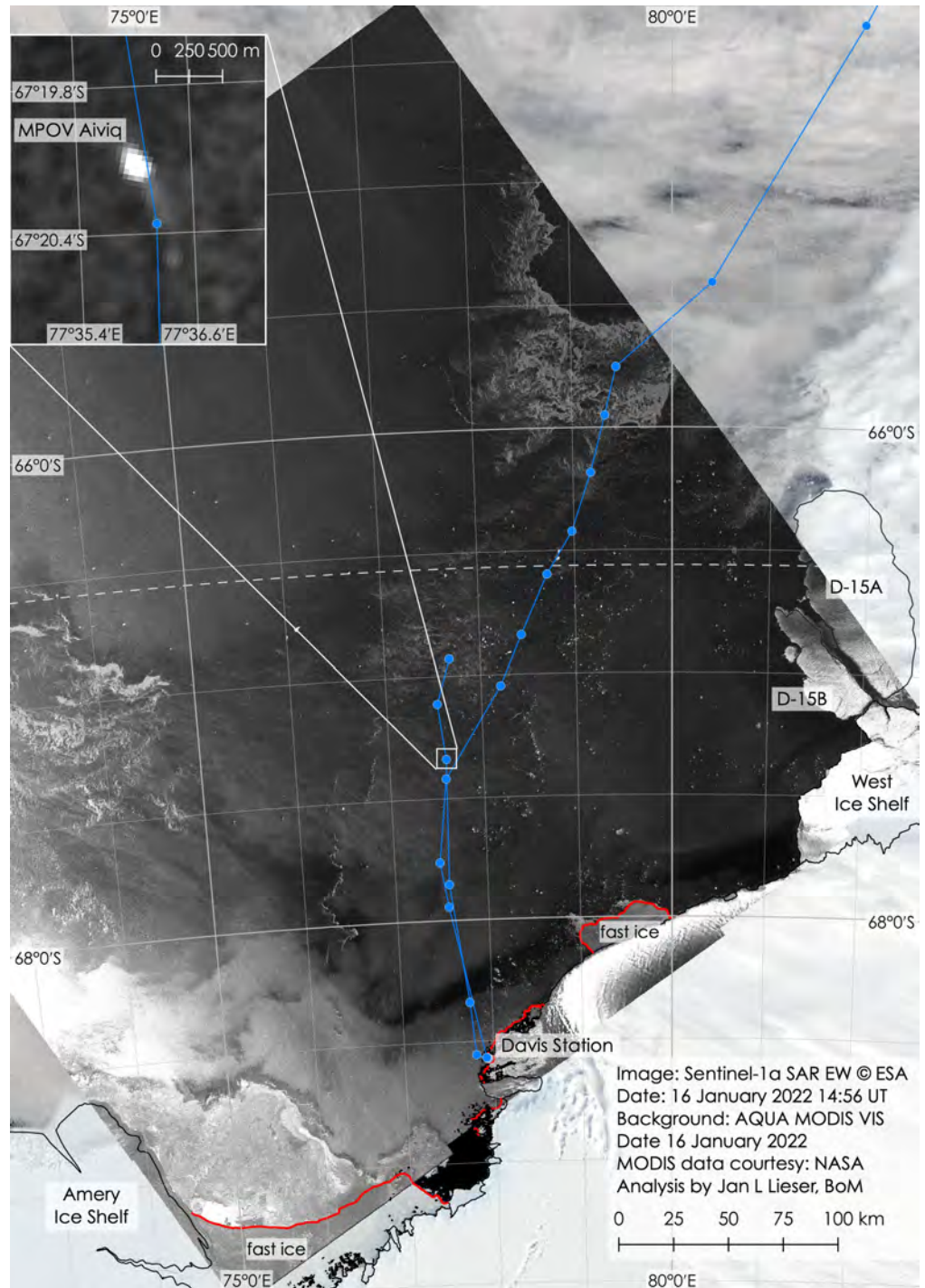


Figure 1: Sentinel-1a SAR EW data acquired 16 January 2022 at 14:56 UT and provided by ESA; complemented by AQUA MODIS VIS data acquired 16 January 2022 and provided by NASA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: West Ice Shelf

Issued: Tuesday 18th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data (upper panel: co-polarised; lower panel: cross-polarised) off the West Ice Shelf, northeast of Davis Station. The recent cruise track of MPOV Aiviq (call sign WDG2524) is included as a blue line (up until 17 January 2022 at 16:00 UT, the red dot).

The vessel is transiting through bergy water and some strips and patches of decaying pack ice. The distribution of icebergs in the area is better recognised in the cross-polarised data, where icebergs show as bright spots in the ocean. The entire scene shows a high density of icebergs throughout.

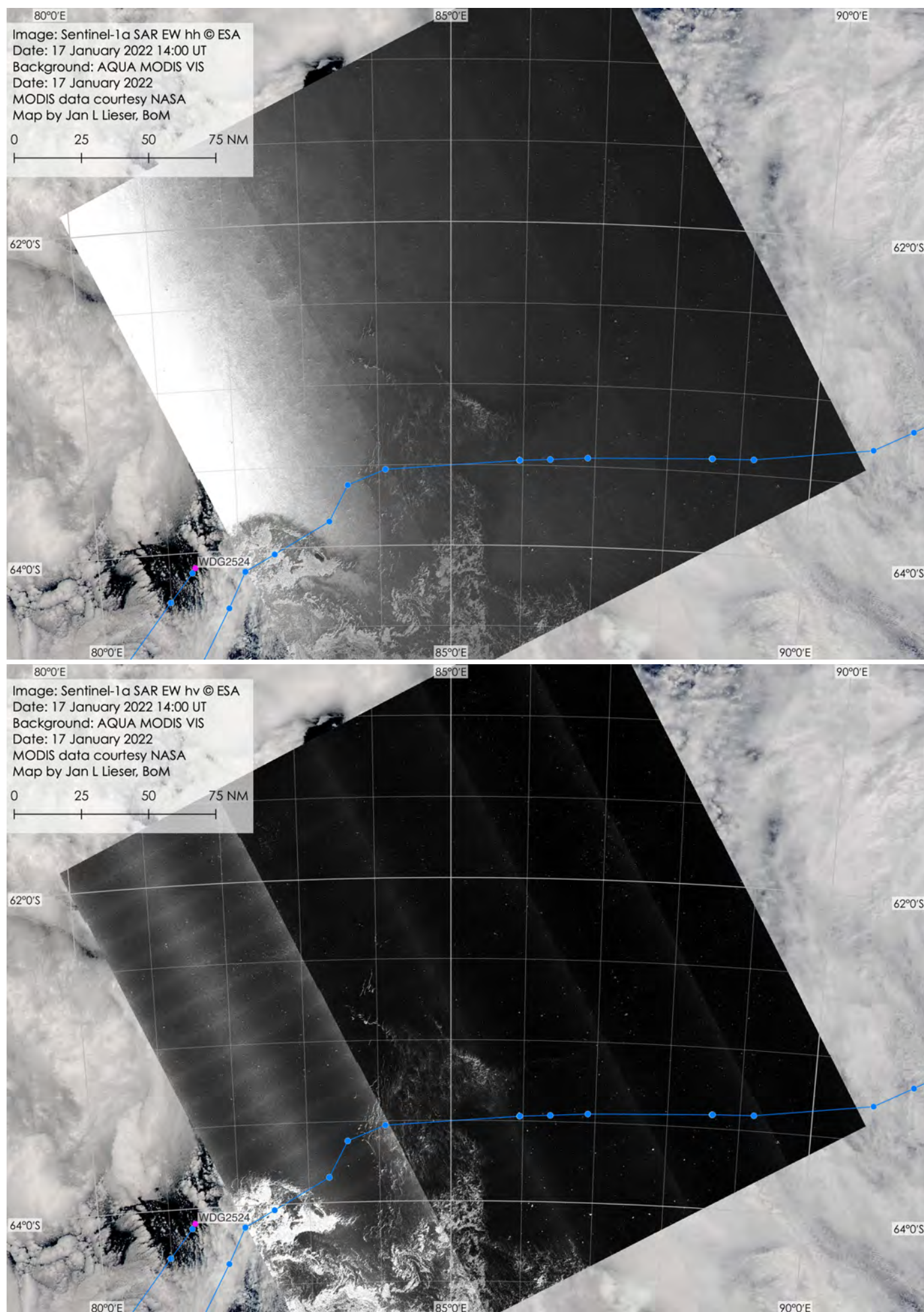


Figure 1: Sentinel-1a SAR data acquired 17 January 2022 at 14:00 UT and provided by ESA; complemented by AQUA MODIS VIS data acquired 17 January 2022 and provided by NASA.

Ice Bulletin: Davis Station

Issued: Tuesday 18th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10m horizontal) visible data off Davis Station. The fast-ice edge is marked by a red line.

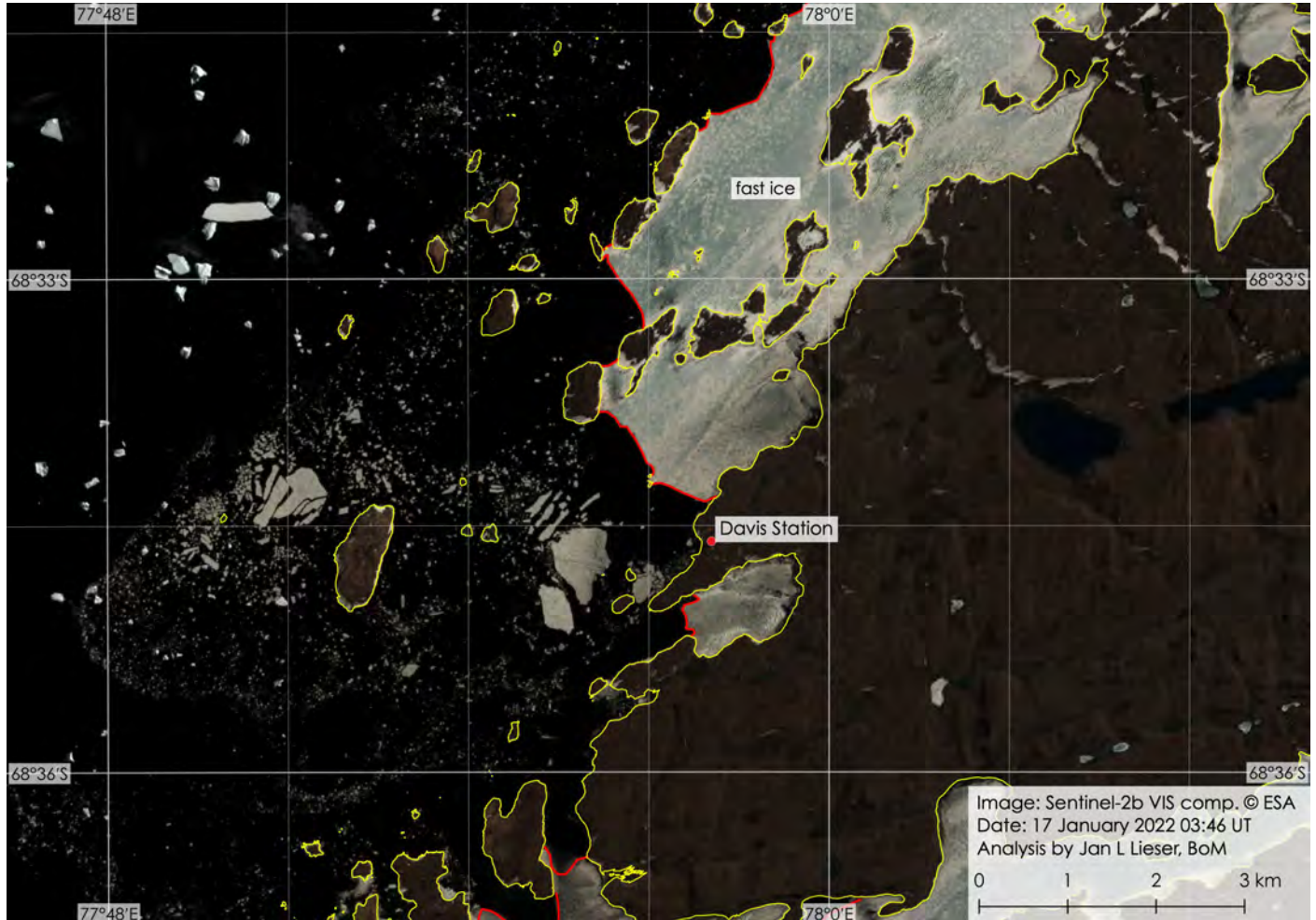


Figure 1: Sentinel-2b VIS composite data acquired 17 January 2022 at 03:46 UT and provided by ESA.

Off station, fast ice has broken off.

Figure 2 shows the larger scale overview of the Vestfold Hills.

Long Fjord and Tryne Bay remain covered by fast ice. Some fast ice in the hills' hinterland is starting to melt through and open water can be found there.

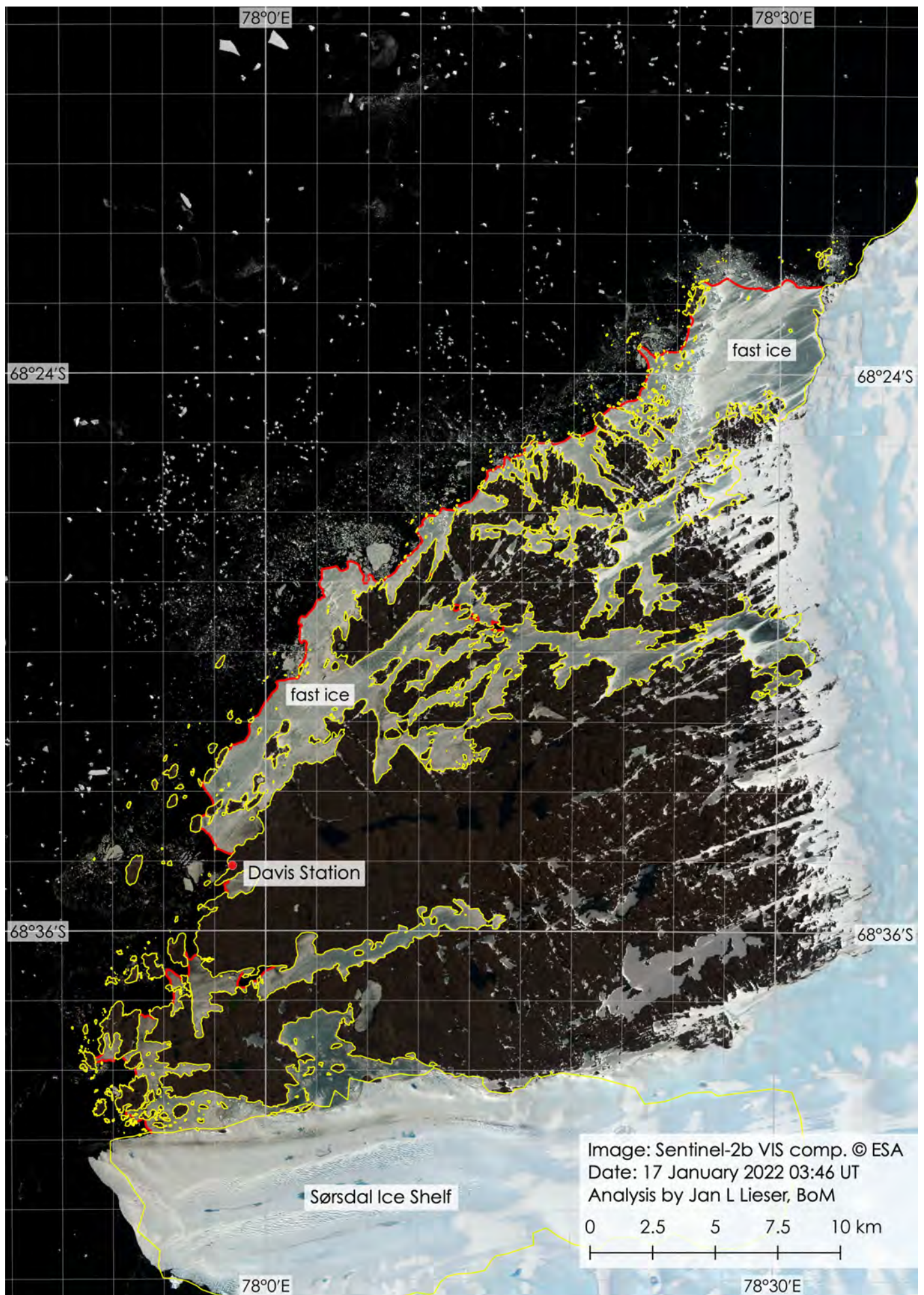


Figure 2: Sentinel-2b VIS composite data acquired 17 January 2022 at 03:46 UT and provided by ESA.

Ice Bulletin: West Ice Shelf

Issued: Tuesday 18th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the West Ice Shelf, northeast of Davis Station. The sea-ice edge based on passive microwave data is included as a light blue line. The recent cruise track of MPOV Aiviq (call sign WDG2524) is included as a blue line (up until 18 January 2022 at 04:15 UT, the yellow dot).



Figure 1: Sentinel-1a SAR data acquired 17 January 2022 at 14:00 UT and provided by ESA.

The scene has been analysed for iceberg presence and more than 5500 features have been identified and marked with pink dots as the vessel continues transiting through bergy water and some strips and patches of decaying pack ice.

Ice Bulletin: Mawson Station

Issued: Tuesday 18th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Mawson Station. The fast-ice edge on 11 January 2022 is marked with a dashed red line.

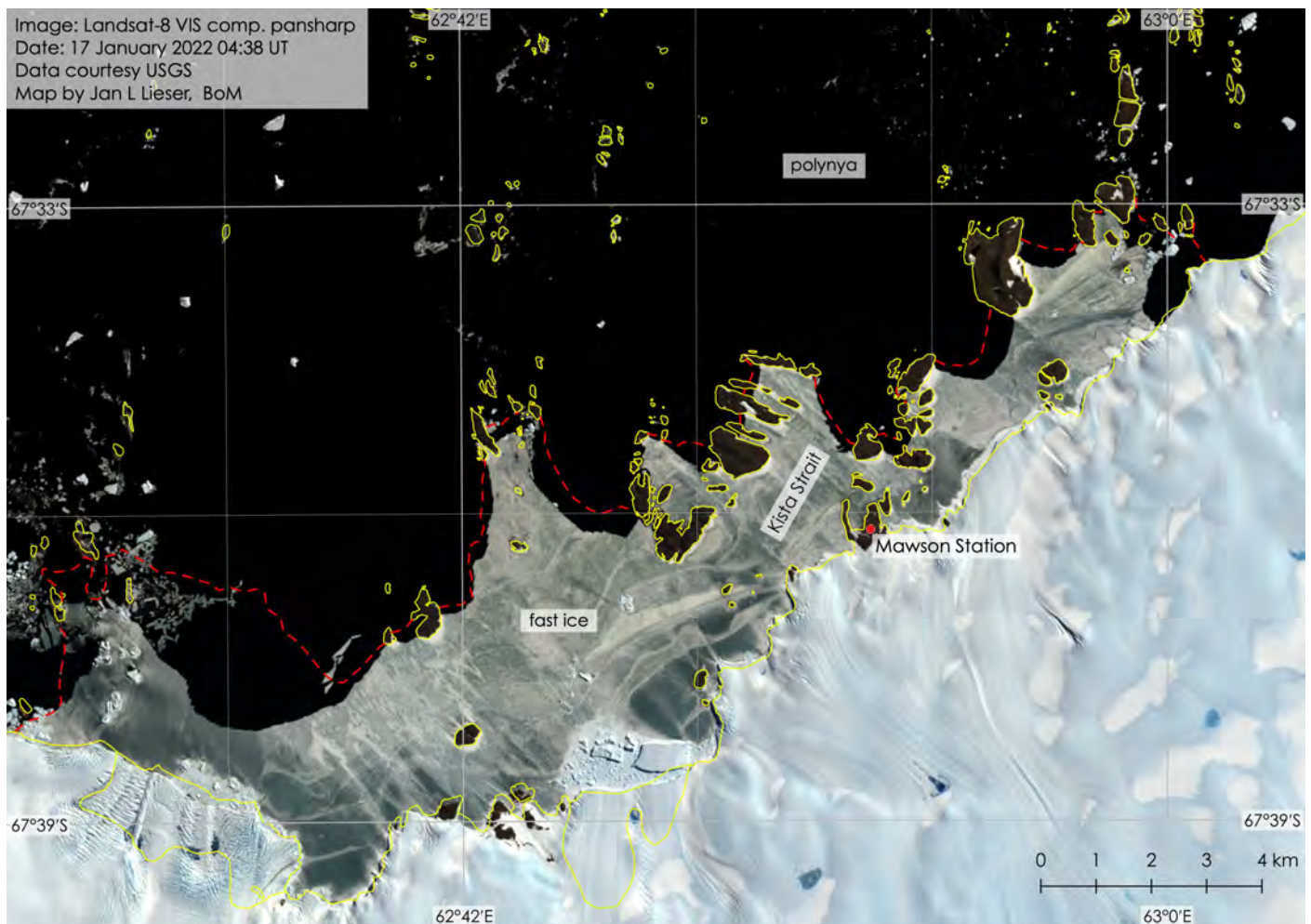


Figure 1: Landsat-8 VIS composite pan-sharpened data acquired 17 January 2022 at 04:38 UT and provided by USGS.

Off Mawson Station, the remaining fast ice continues to deteriorate and is retreating slightly southward.

Figure 2 provides a larger overview of the region north of the station. Iceberg Alley is outlined by green boundaries. East of Mawson Station, fast ice is deteriorating, and the bulk of the ex-fast ice is carried westward by the coastal currents.

Iceberg Alley is free of fast ice and only little ex-fast ice is still between the grounded icebergs that make up the alley.

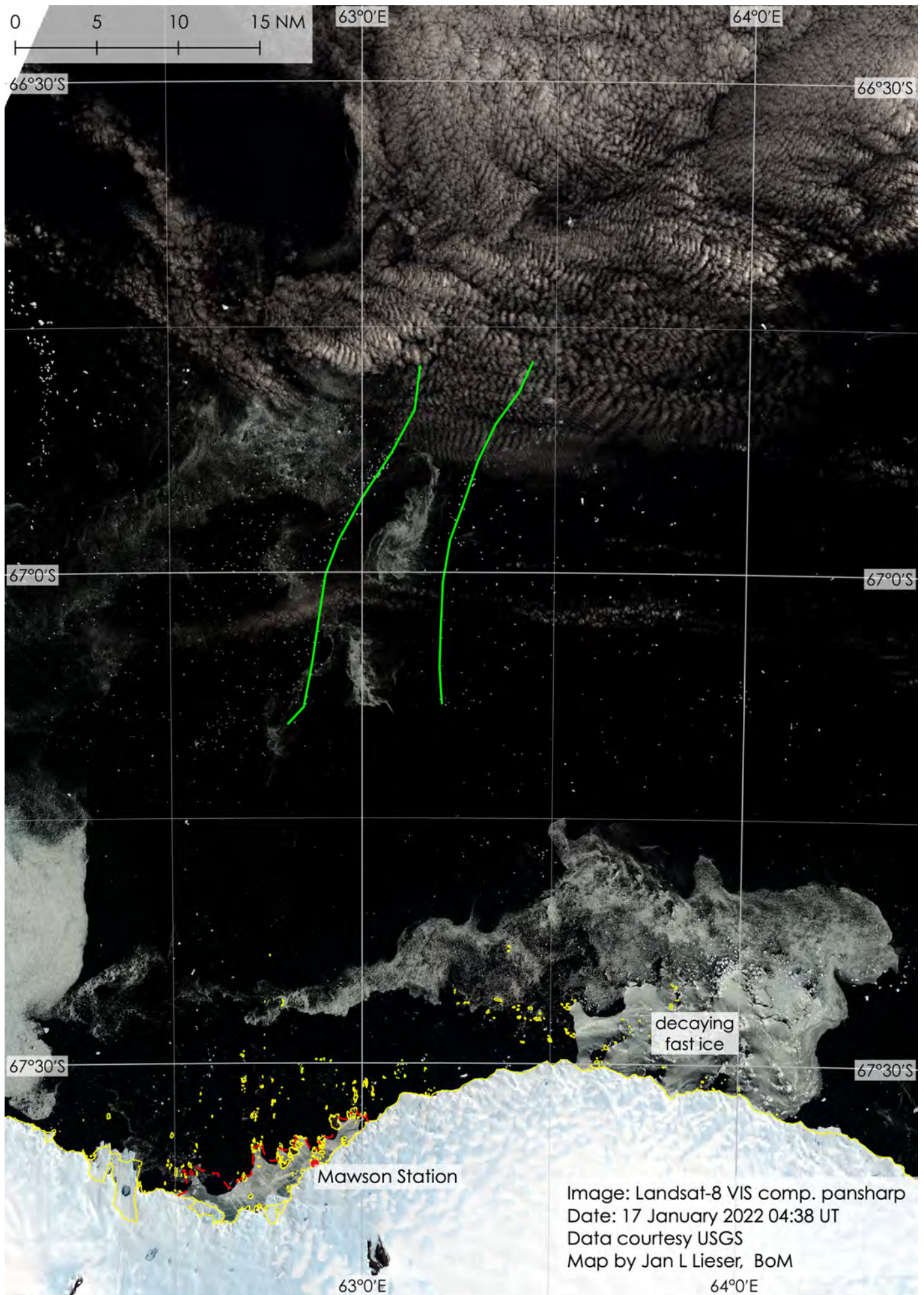


Figure 2: Landsat-8 VIS composite pan-sharpened data acquired 17 January 2022 at 04:38 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Wednesday 19th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15m horizontal) visible data off Davis Station. The fast-ice edge is marked by a red line.

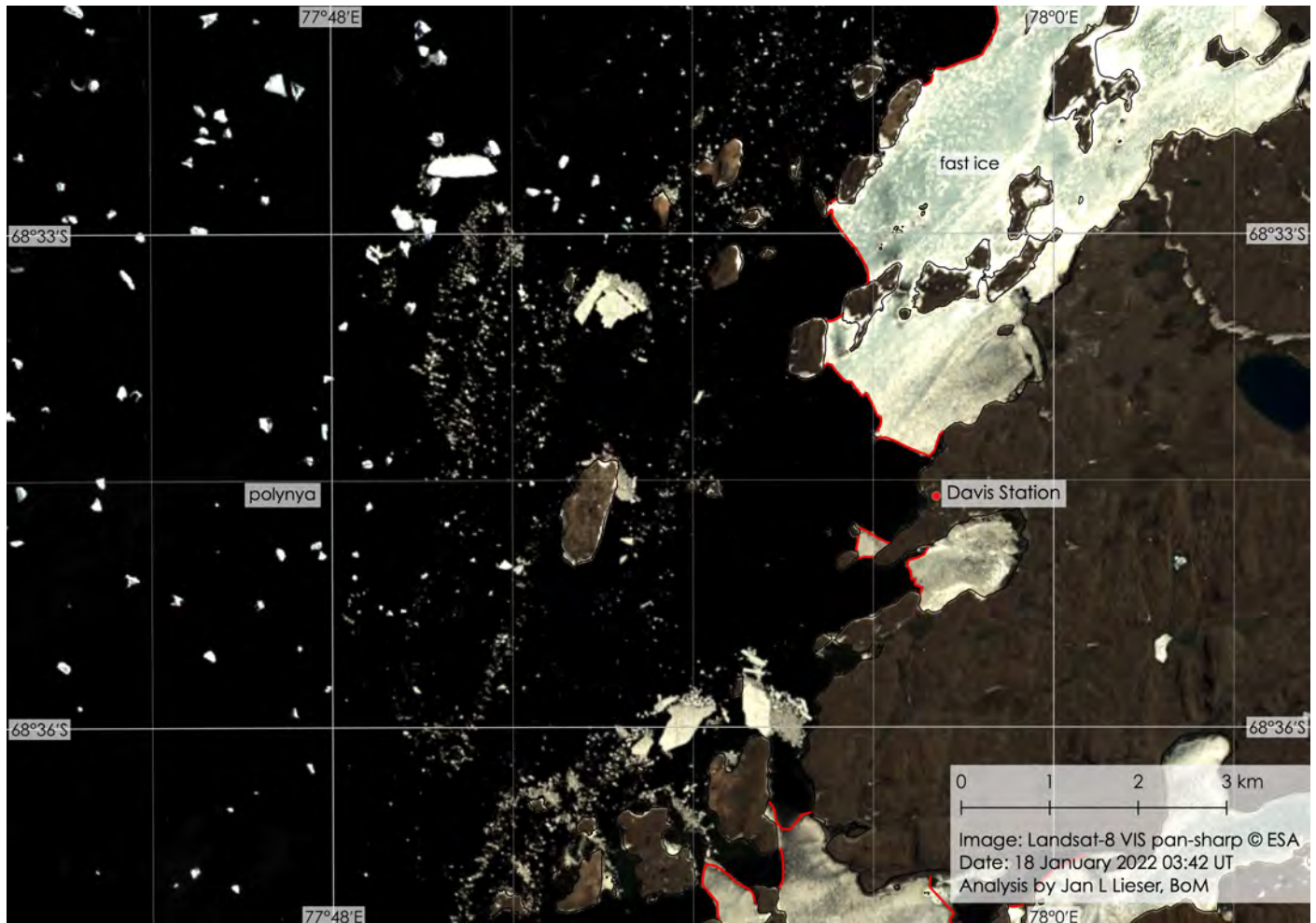


Figure 1: Landsat-8 VIS composite pan-sharpened data acquired 18 January 2022 at 03:42 UT and provided by USGS.

Off station, small pieces of fast ice keep breaking off.

Long Fjord and Tryne Bay (not shown in the figure) remain covered by fast ice. Some fast ice in the hills' hinterland is melting through and open water can be found there.

Ice Bulletin: Cape Darnley

Issued: Thursday 20th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data between Mawson Station and Davis Station. The fast-ice edge is marked by a red line. Additionally, the sea-ice edge based on passive microwave data is included as a light blue line.

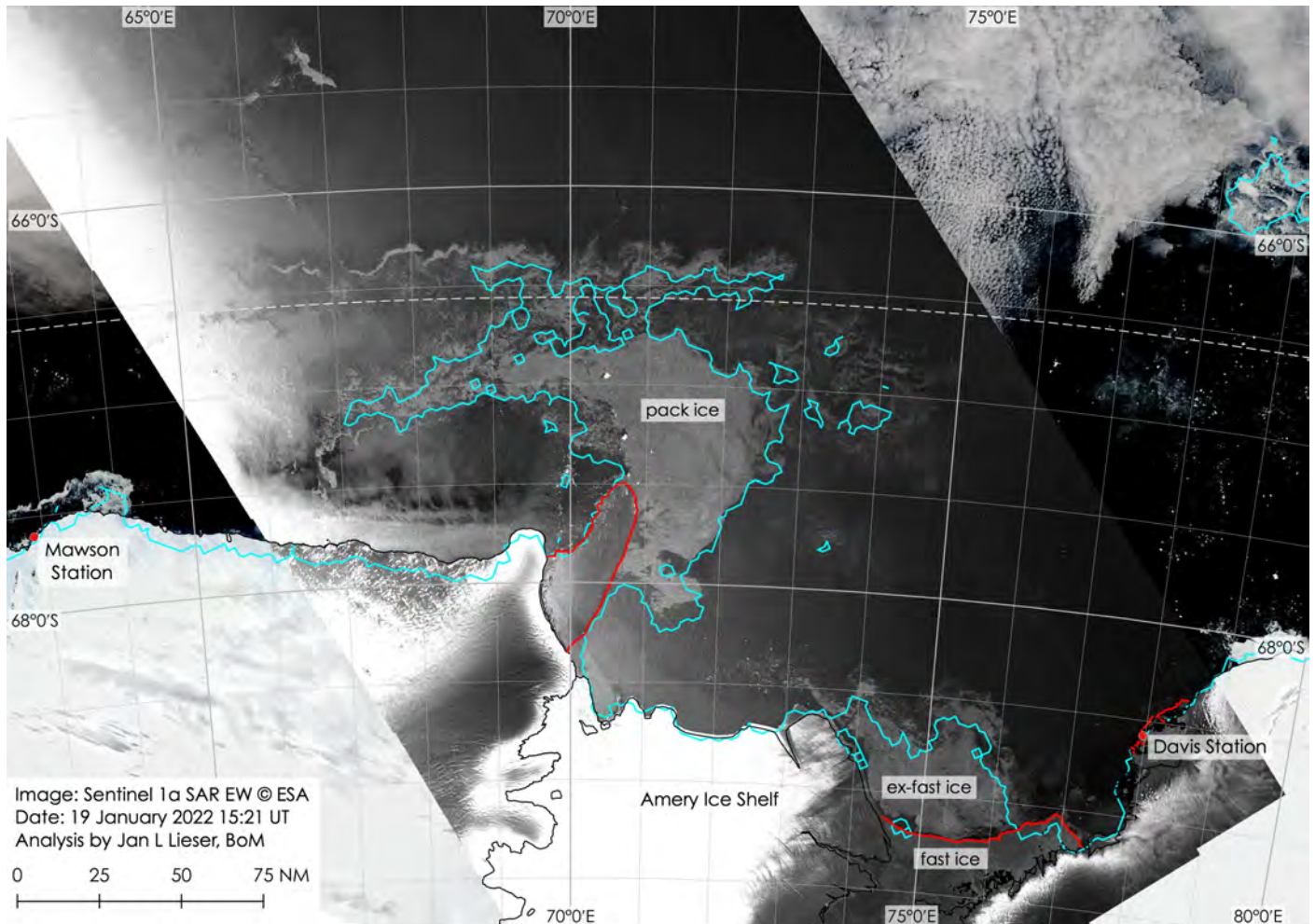


Figure 1: Sentinel-1a SAR EW data acquired 19 January 2022 at 15:21 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 19 January 2022 and provided by NASA.

Off Cape Darnley, fast ice is slowly breaking up and discharging ex-fast ice into the pack-ice melange that continues to drift north-westward along Mawson Coast.

Northeast of the Amery Ice Shelf, the fast-ice edge is slowly retreating southward, and ex-fast ice is drifting westward in front of the ice shelf.

West of 75°0'E, only strips and patches of decaying pack ice are drifting north of 66°30'S. North of that, one spit-like patch is west of 67°0'E.

Ice Bulletin: D'Urville Sea

Issued: Thursday 20th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data off southern D'Urville Sea. The north-western part of the scene is slightly obscured by thin clouds.

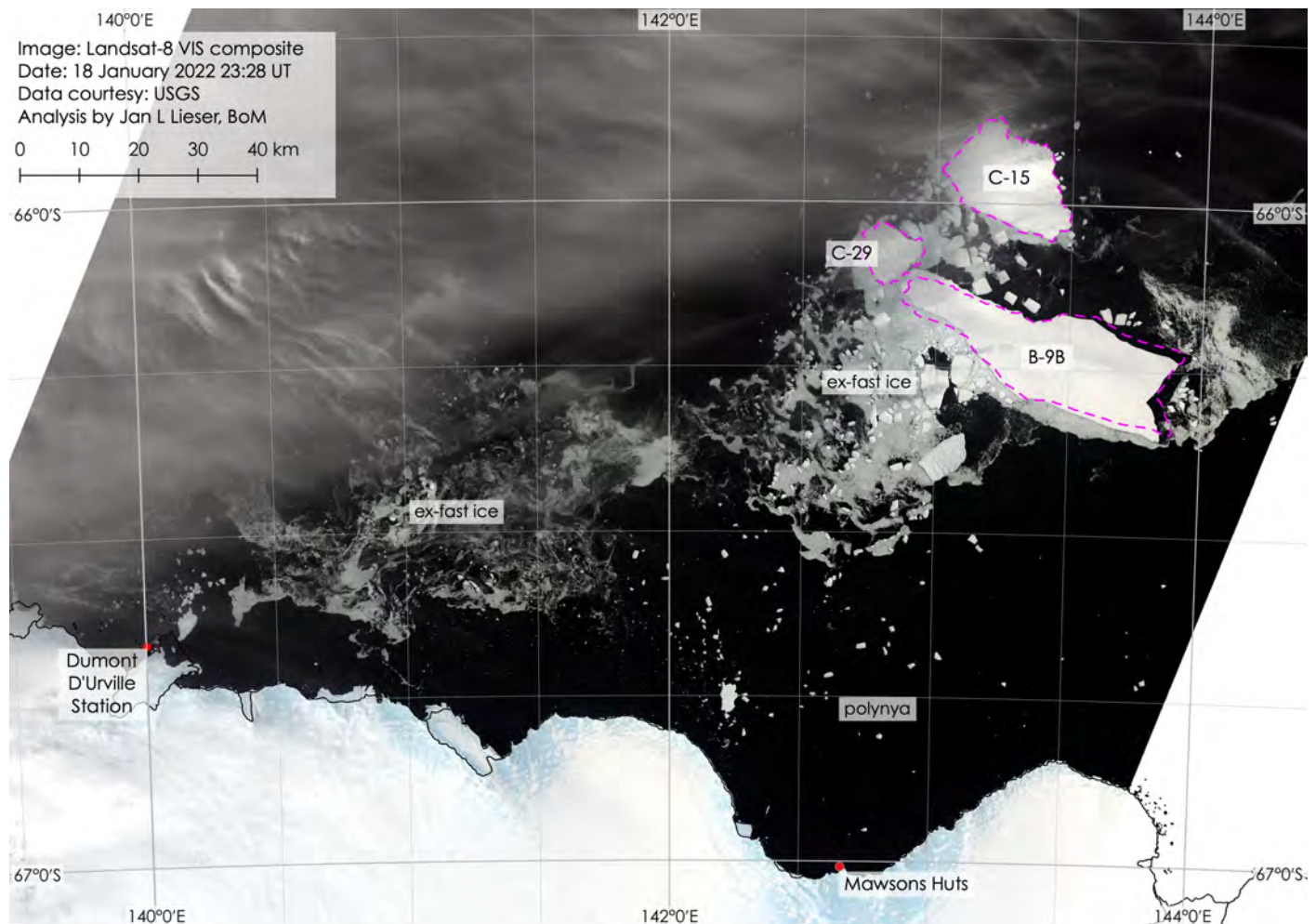


Figure 1: Landsat-8 VIS composite data acquired 18 January 2022 at 23:28 UT and provided by USGS.

Off Mawsons Huts, ex-fast ice floes and some icebergs are drifting generally westward offshore.

Iceberg B-9B continues to wiggle back and forth confined by some grounded icebergs close by. Iceberg C-29 has been slightly restless as well while iceberg C-15 is not moving. Dashed pink shapes indicate their respective positions on 12 January 2022.

Ice Bulletin: Casey Station

Issued: Friday 21st January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data (10 m horizontal) of Casey Station and to the south (note: the imagery presented here was acquired last week on 14 January 2022). Fast ice areas are marked with a red line.

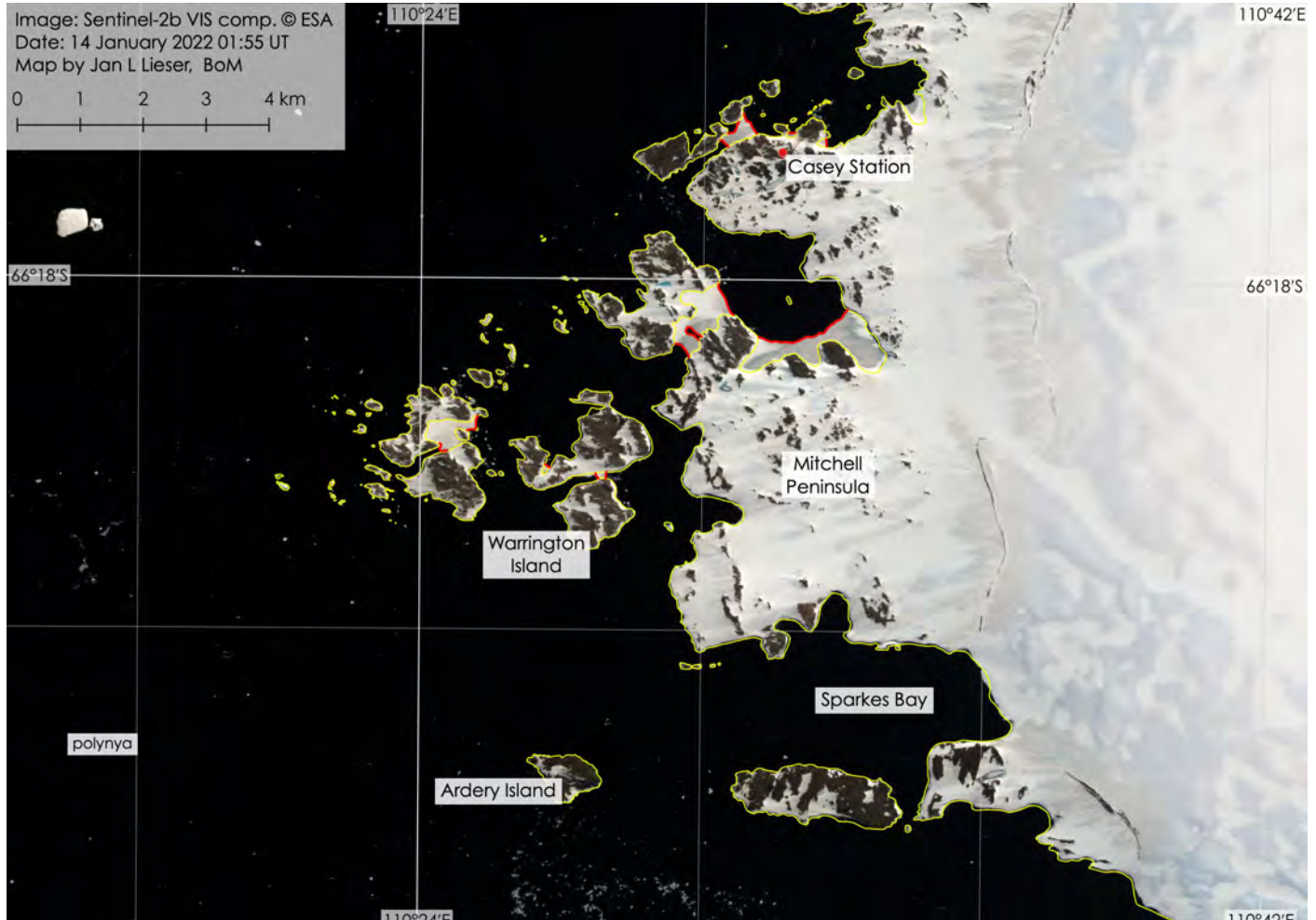


Figure 1: Sentinel-2b VIS composite data acquired 14 January 2022 at 01:55 UT and provided by USGS.

The image presents the latest cloud-free data of the region.

South of Casey Station, some fast ice remains in sheltered bays. Between Mitchell Peninsula and Warrington Island, Robertson Channel is free of fast ice. It is expected that this has not changed since the image was acquired.

Ice Bulletin: Davis Station

Issued: Friday 21st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station. The fast-ice edge is marked by a red line.

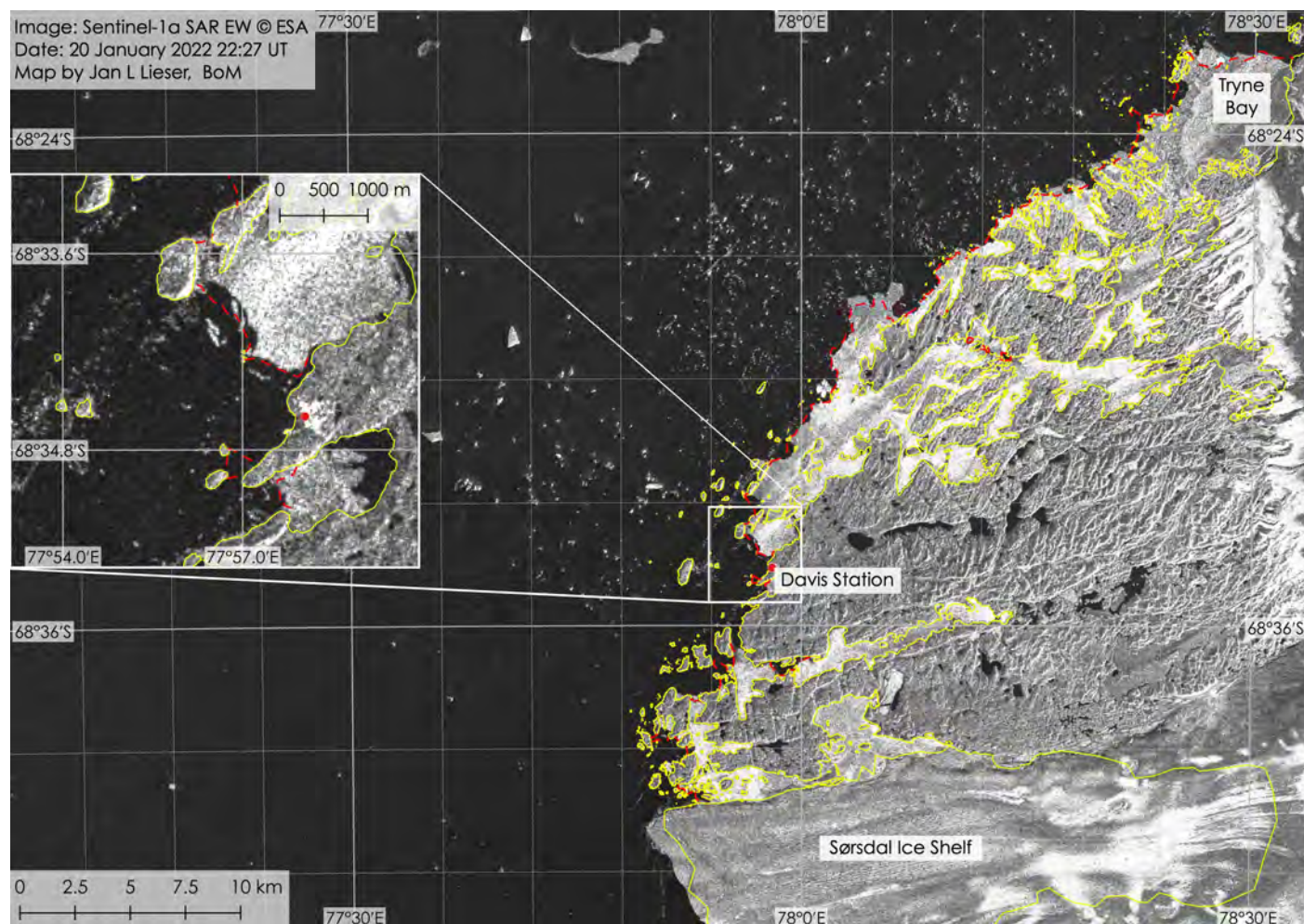


Figure 1: Sentinel-1a SAR IW data acquired 20 January 2022 at 22:27 UT and provided by PolarView.

Off station, small pieces of fast ice keep breaking off. South of the station, the fast ice of Heidemann Bay is detached from the shore (see inset).

Long Fjord and Tryne Bay remain covered by fast ice. Some fast ice in the hills' hinterland is melting through and open water can be found there (including Ellis Narrows south of the station).

Ice Bulletin: Casey Station

Issued: Friday 21st January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data off Casey Station; clouds appear with a red tint. The recent cruise track of MV Happy Dragon is included as an orange line (up until 21 January 2022 06:00 UT, the orange dot).

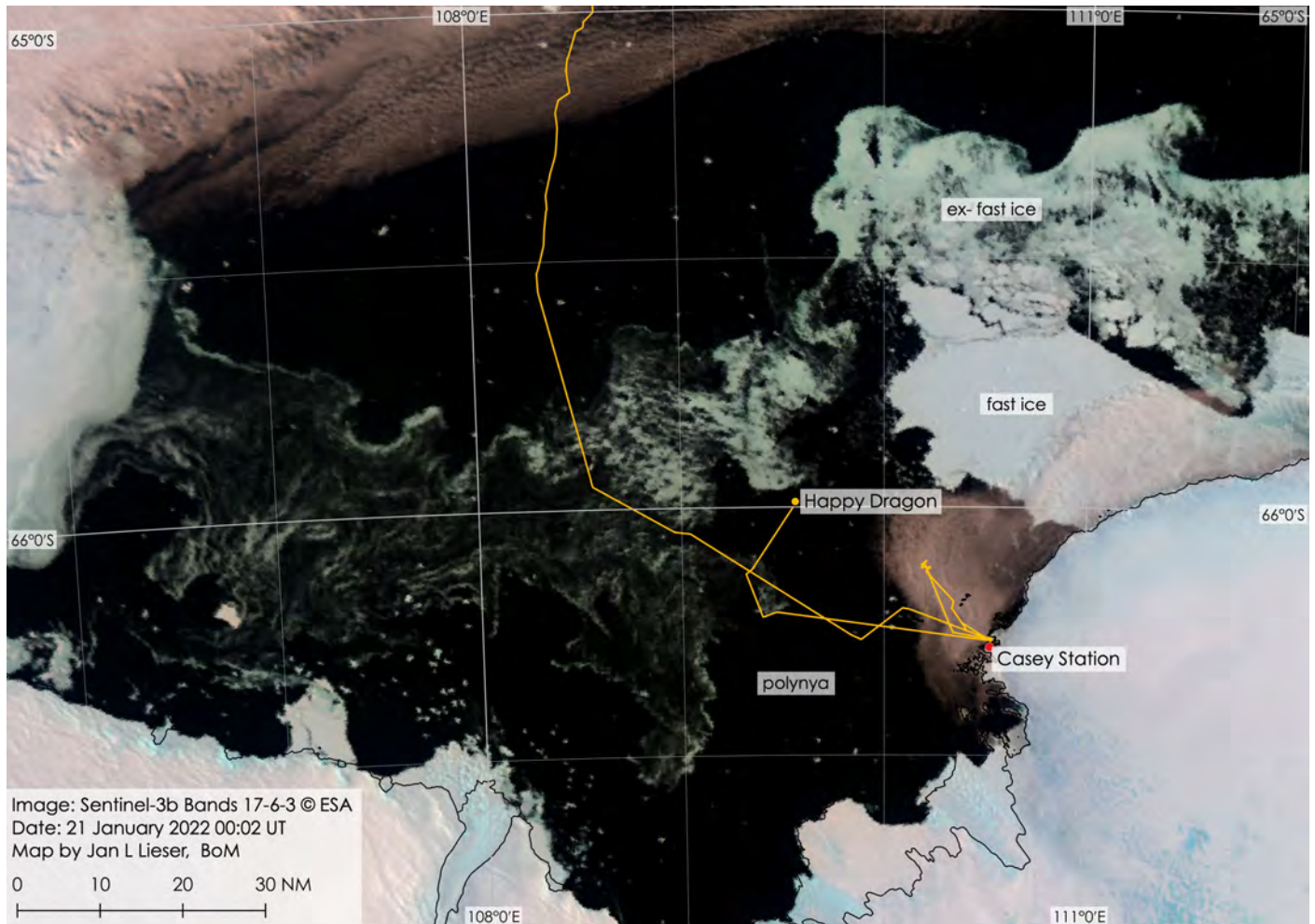


Figure 1: Sentinel-3b VIS composite data acquired 21 January 2022 at 00:02 UT and provided by ESA.

Off Casey Station, a large polynya is present.

North of the fast ice attached to the north-western flank of Law Dome, a melange of decaying first-year sea ice and ex-fast ice is drifting westward before turning south west of 110°0'E into the polynya off station.

North of the northern sea-ice edge, freely drifting icebergs are present in bergy water.

Ice Bulletin: Mawson Station

Issued: Friday 21st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The fast-ice edge is marked by a red line (dashed red for 11 January 2022).

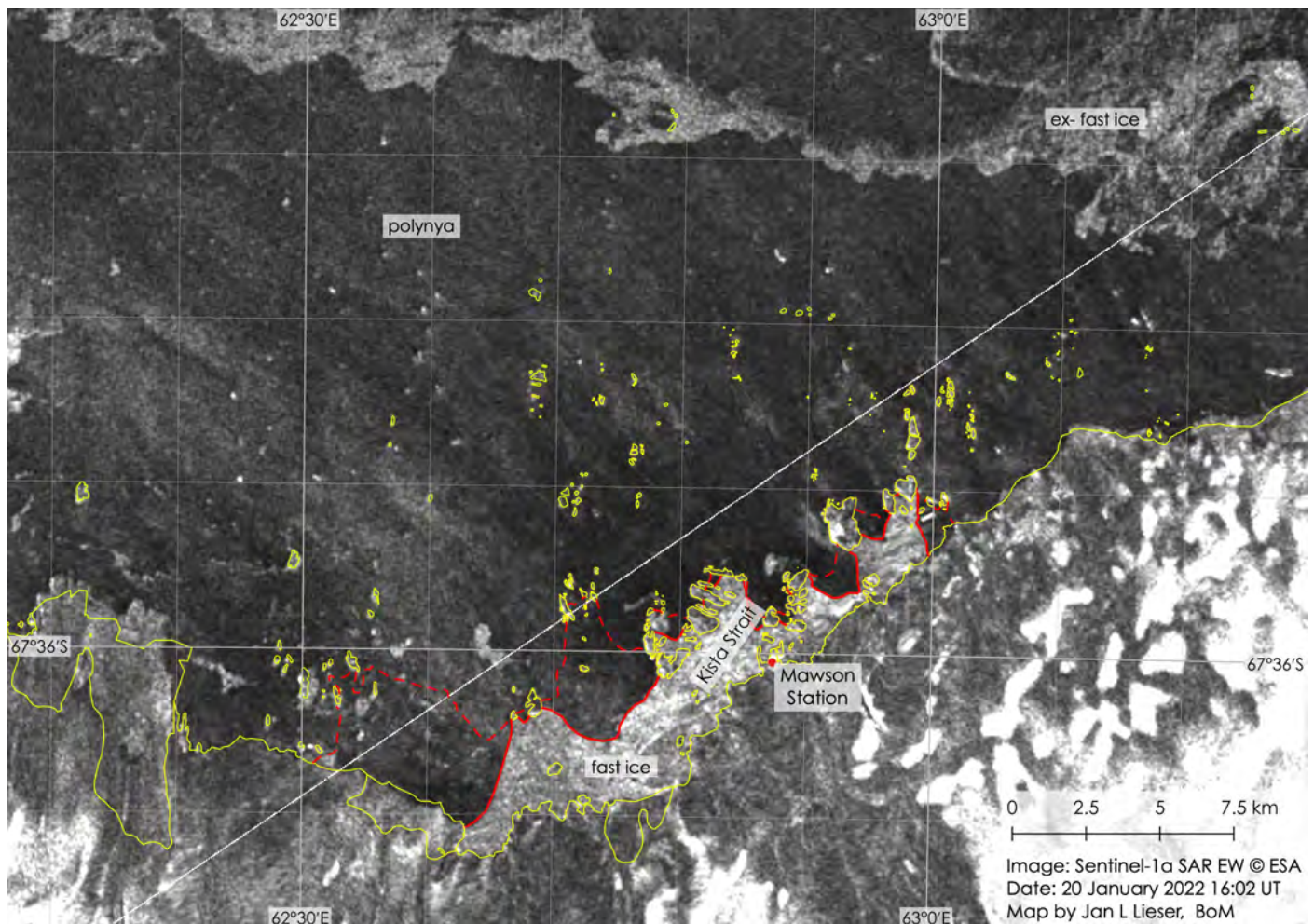


Figure 1: Sentinel-1a SAR EW data acquired 20 January 2022 at 16:02 UT and provided by PolarView.

Off Mawson Station, the remaining fast ice continues to deteriorate and is retreating slightly southward.

East of Mawson Station, fast ice is breaking up, and the bulk of the ex-fast ice is carried westward by the coastal currents as seen in the northern part of the figure.

Iceberg Alley (not shown in the figure) is free of fast ice and only little ex-fast ice is still between the grounded icebergs that make up the alley.

Ice Bulletin: Mawson Station

Issued: Monday 24th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Mawson Station. The fast-ice edge is marked by a red line (dashed red on 21 January 2022 and dotted red on 20 January 2022).

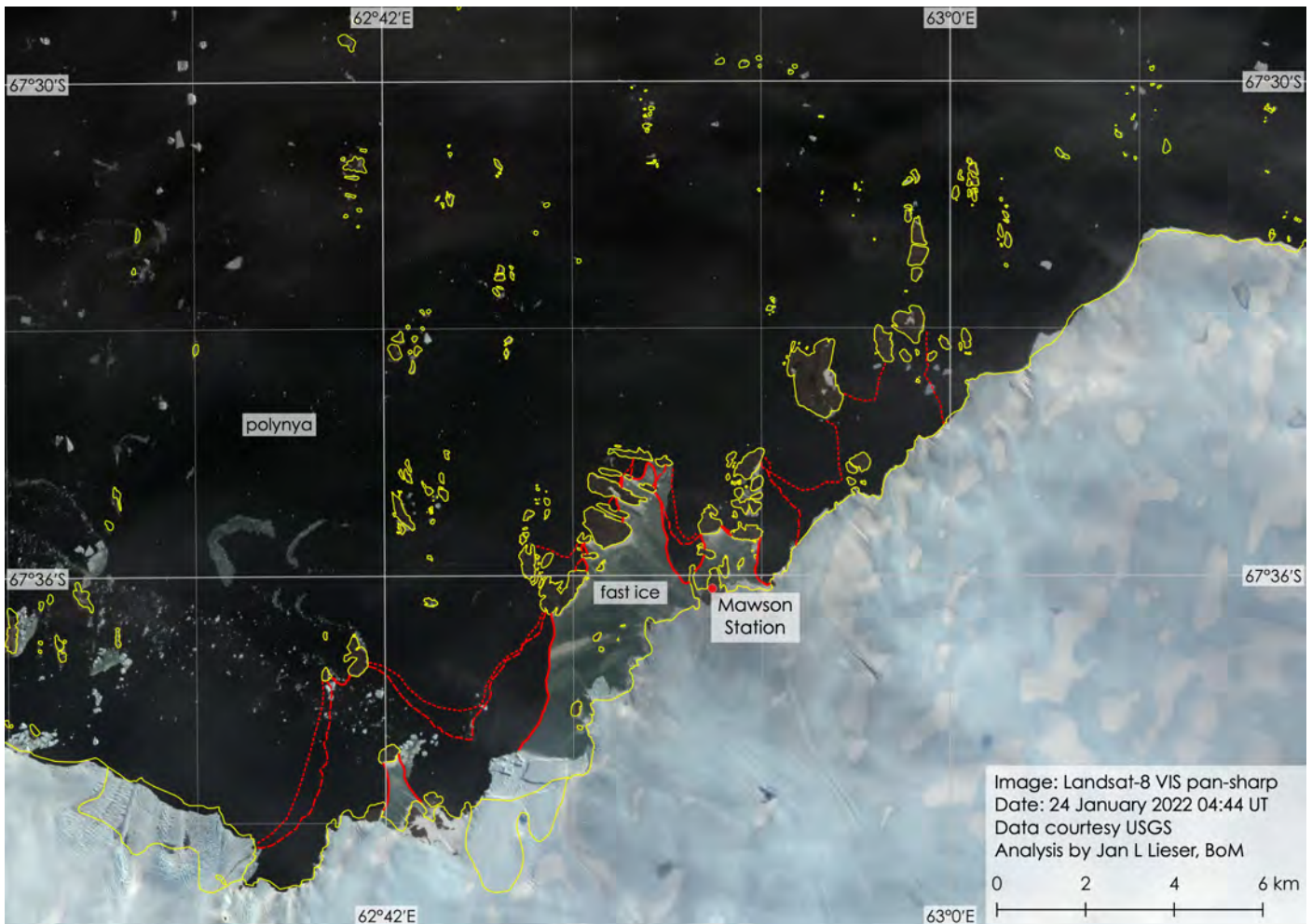


Figure 1: Landsat-8 VIS composite pan-sharpened data acquired 24 January 2022 at 04:44 UT and provided by USGS.

Off Mawson Station, the remaining fast ice continues to deteriorate and is retreating. The northern end of West Arm is free of fast ice.

Figure 2 provides a larger overview of the region north of the station.

East of Mawson Station, no more fast ice is present, and the bulk of the ex-fast ice is carried westward by the coastal currents.

Iceberg Alley is free of pack ice.

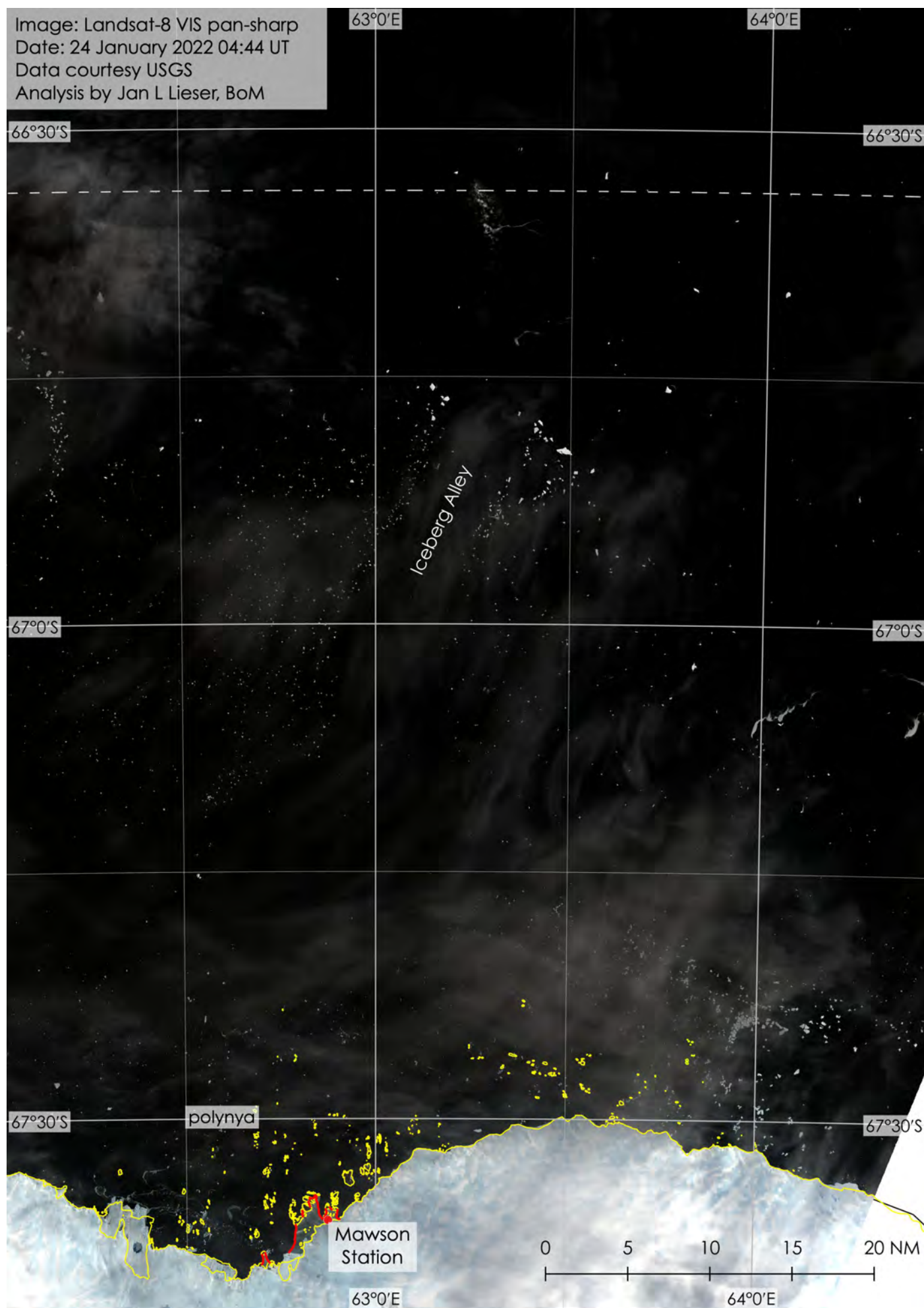


Figure 2: Landsat-8 VIS composite pan-sharpened data acquired 24 January 2022 at 04:44 UT and provided by USGS.

Ice Bulletin: D'Urville Sea

Issued: Tuesday 25th January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off southern D'Urville Sea.

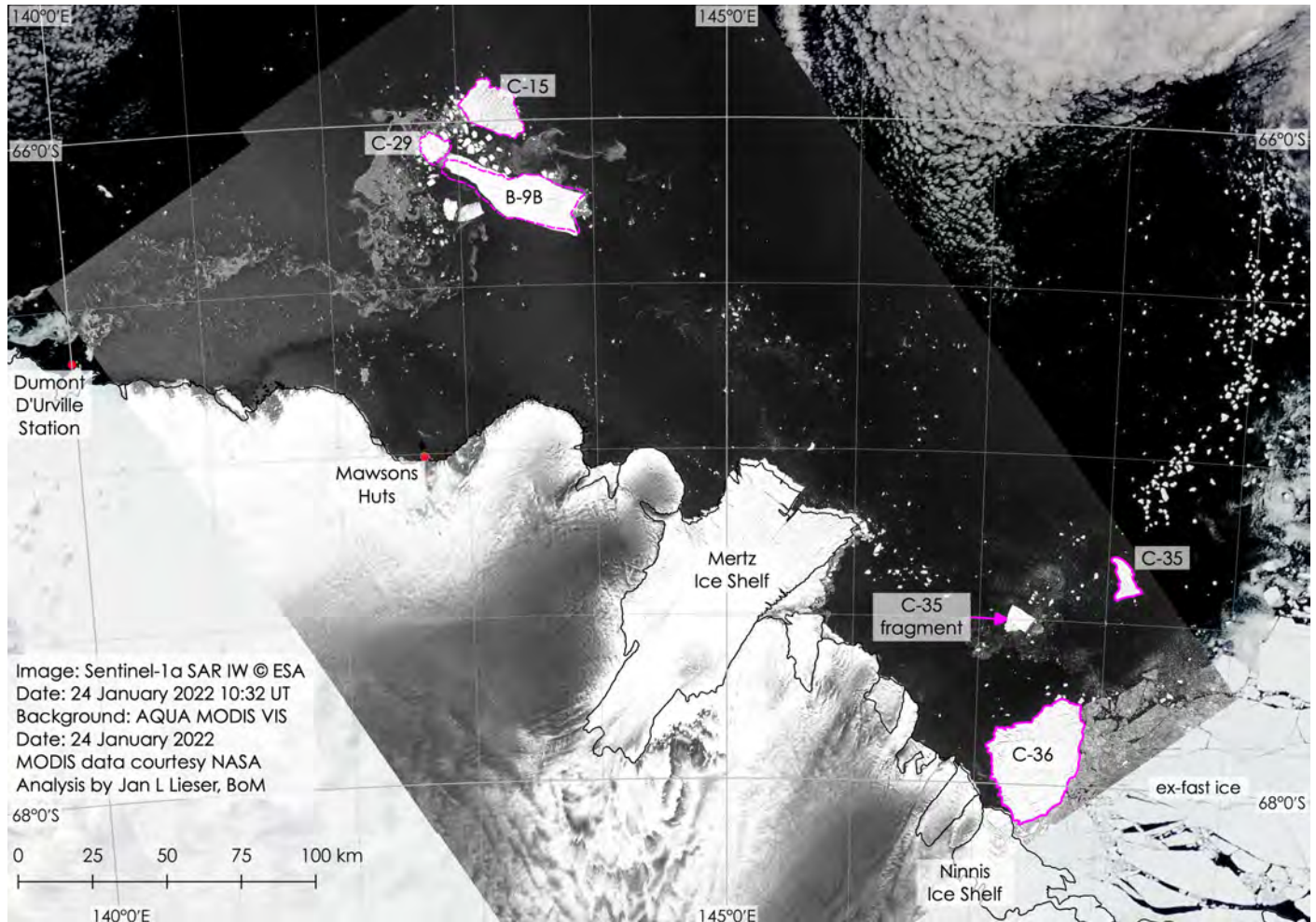


Figure 1: Sentinel-1 SAR IW data acquired 24 January 2022 at 10:32 UT and provided by ESA; complemented by AQUA MODIS VIS data acquired 24 January 2022 and provided by NASA.

Between Dumont D'Urville Station and the Ninnis Ice Shelf, only little pack ice remains. This drifting pack ice consists predominantly of ex-fast ice.

Iceberg B-9B continues to wiggle back and forth confined by some grounded icebergs close by. Iceberg C-29 has been slightly restless as well while iceberg C-15 is not moving. Dashed pink shapes indicate their respective positions on 12 January 2022.

North of the Ninnis Ice Shelf, iceberg C-35 and another substantial fragment of that iceberg are going around in circles locally. Iceberg C-36 is very slowly turning anti-clockwise and being pushed northward by the ice shelf at the same time.

Ice Bulletin: Mawson Station

Issued: Wednesday 26th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) SAR data off Mawson Station. The fast-ice edge is marked by a red line (dashed orange on 24 January 2022).

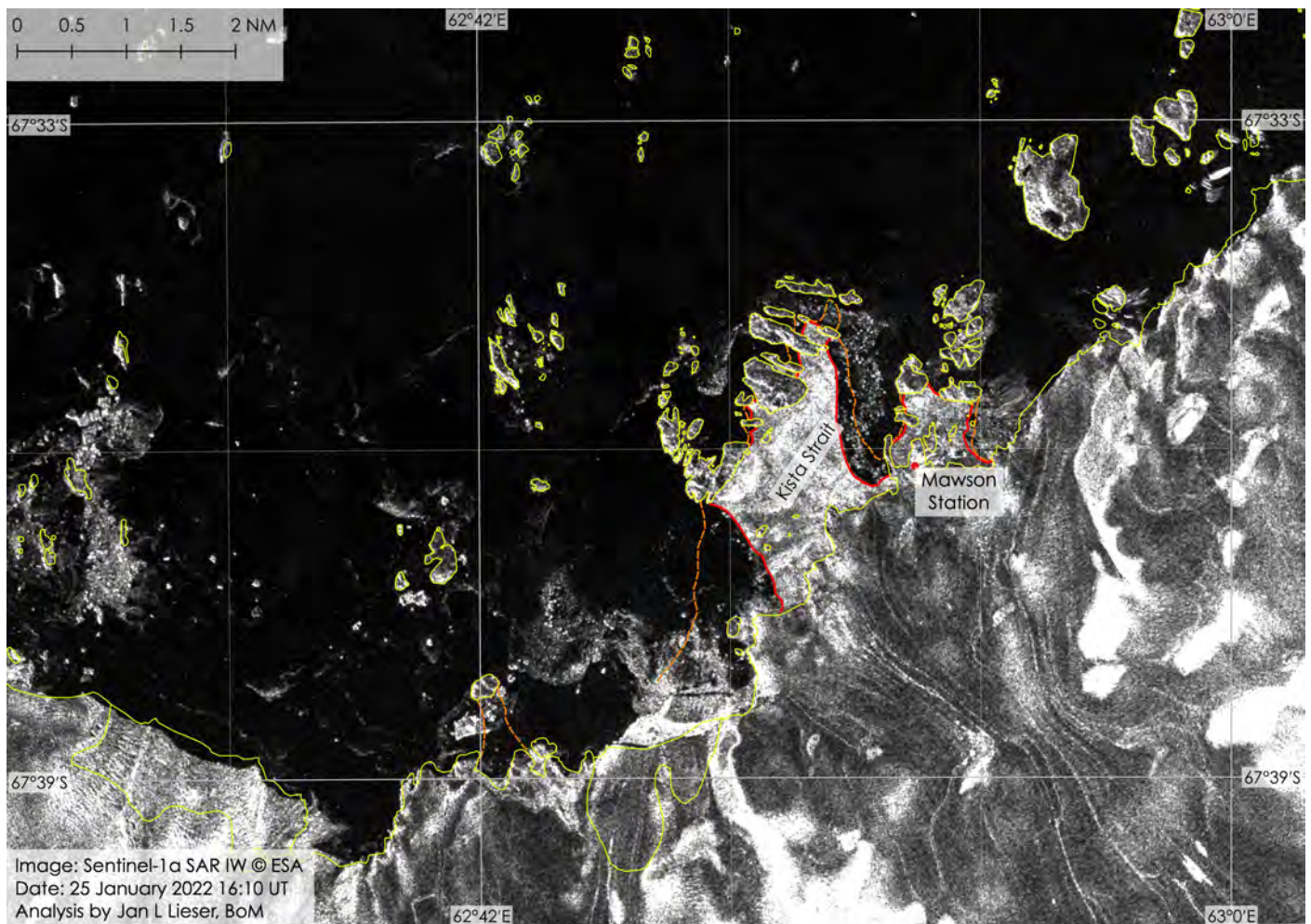


Figure 1: Sentinel-1a SAR IW data acquired 25 January 2022 at 16:10 UT and provided by PolarView.

Off Mawson Station, the remaining fast ice continues to deteriorate and is retreating further during the past 24 hours. The western shore of West Arm is now free of fast ice.

Ice Bulletin: Davis Station

Issued: Thursday 27th January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge on 18 January 2022 is marked by a dashed red line.

Offshore, fast ice keeps breaking off. South of the station, Heidemann Bay appears cleared of any sea ice.

Further north, Long Fjord and Tryne Bay remain covered by fast ice, but the fringes of both regions are also breaking up now. Some fast ice in the hills' hinterland is melting through and open water can be found there (including Ellis Narrows south of the station).

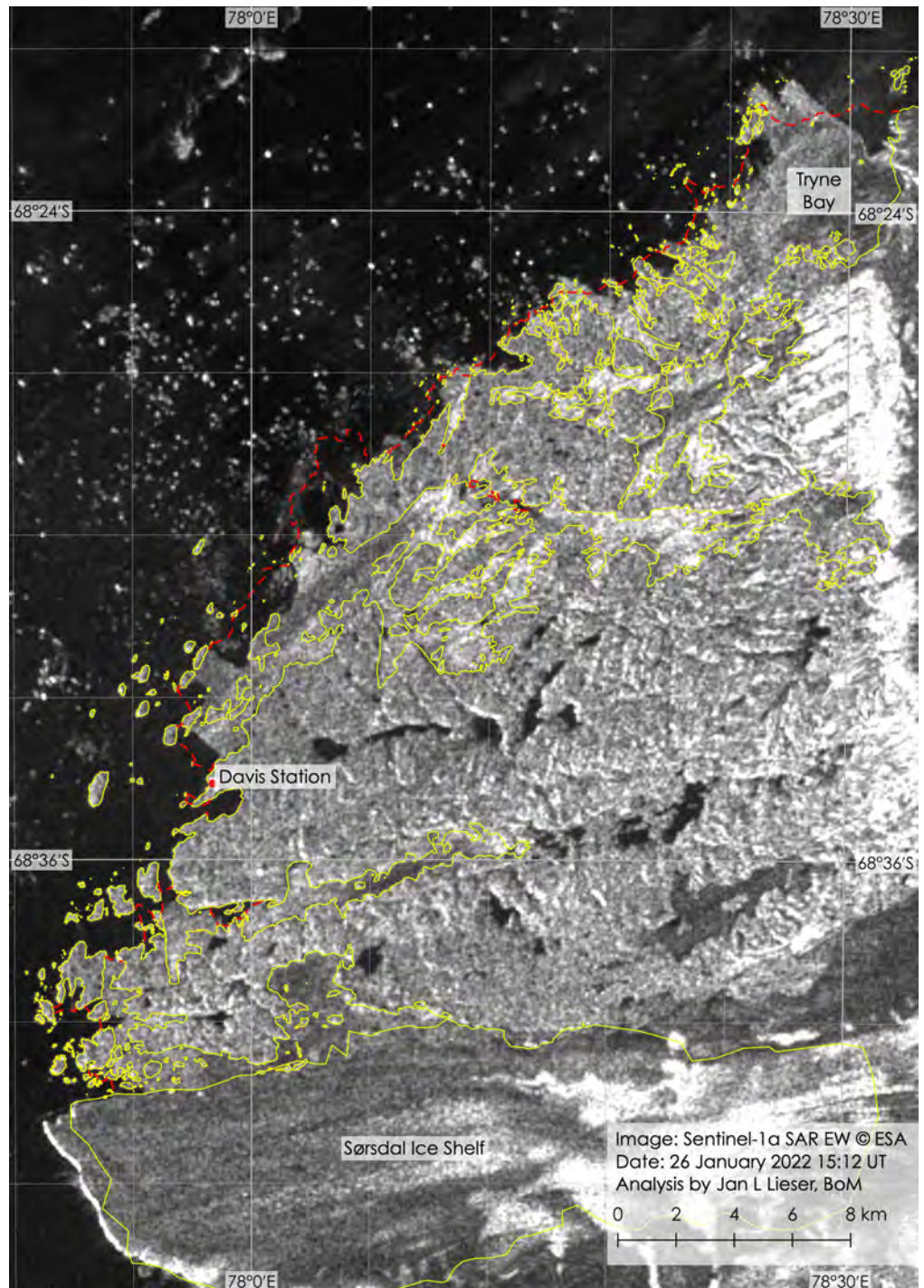


Figure 1: Sentinel-1a SAR EW data acquired 26 January 2022 at 15:12 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Monday 31st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station.

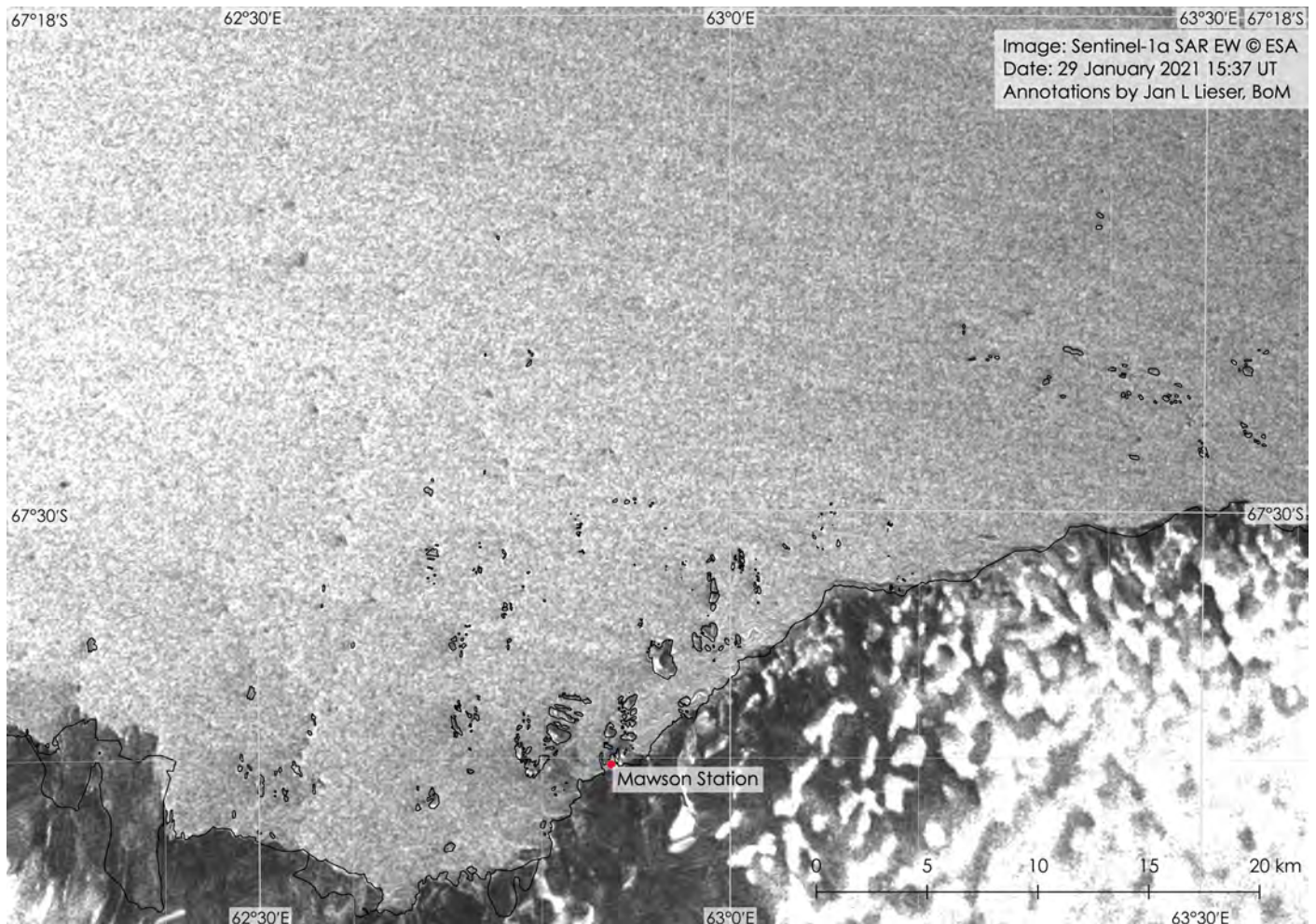


Figure 1: Sentinel-1a SAR EW data acquired 29 January 2022 at 15:37 UT and provided by PolarView.

Off Mawson Station, no fast ice remains outside of Horseshoe Harbour. The southern part of Kista Strait still shows some ex-fast ice drifting.

Figure 2 provides a larger overview towards the east from the station. Additionally, the sea-ice edge based on passive microwave data is included as a light-blue line and Iceberg Alley is outlined by green lines.

Between the Mawson Station and Cape Darnley, no fast ice remains but some fast ice remains shore-fast off Cape Darnley. Broken ex-fast ice spills north-westward around the cape and is drifting along 67°0'S.

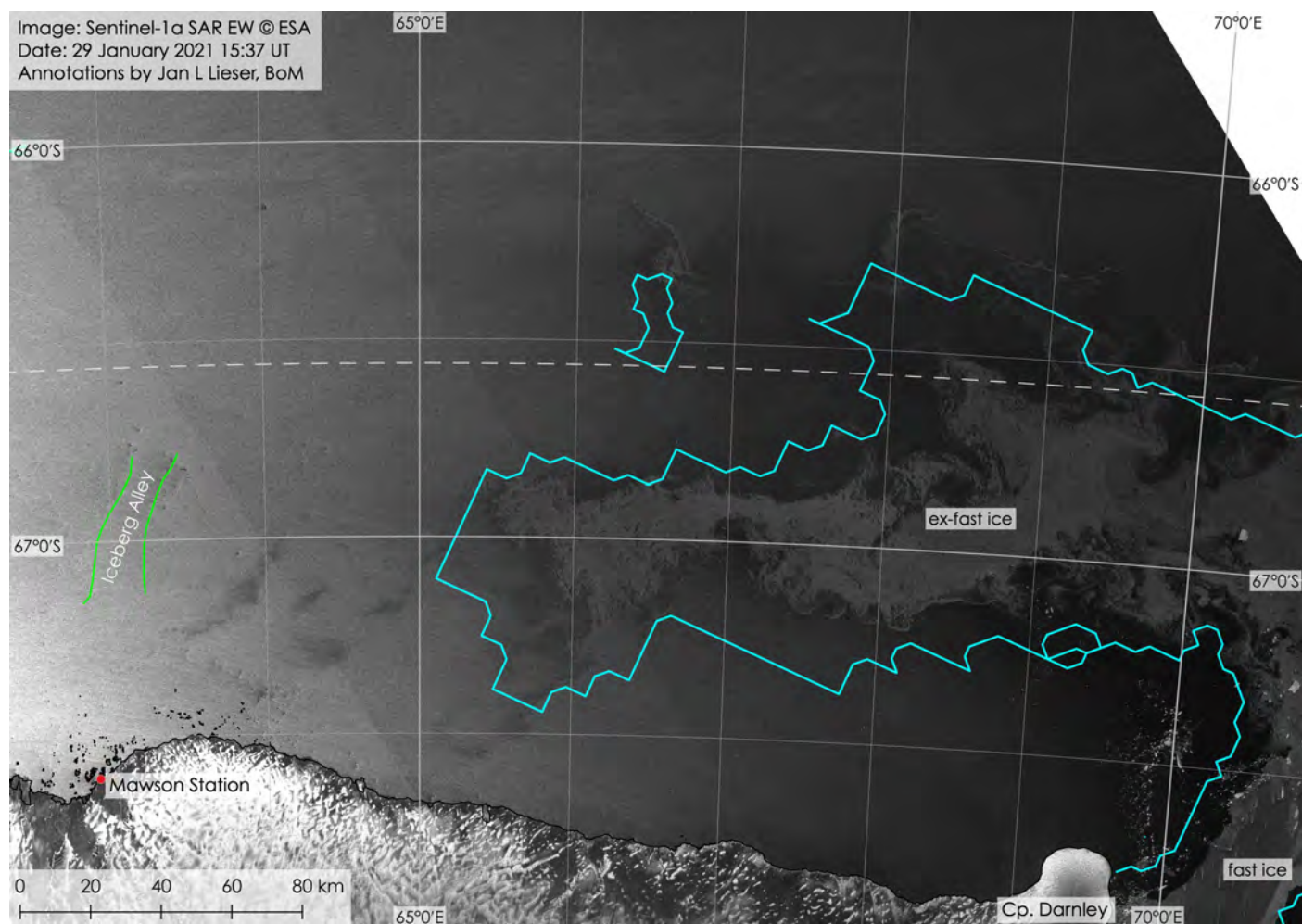


Figure 2: Sentinel-1a SAR EW data acquired 29 January 2022 at 15:37 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Monday 31st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge on 18 January 2022 is marked by a dashed red line.

Offshore, fast ice keeps breaking off. North and south of the station, Abatus Bay and Heidemann Bay, respectively, are clear of any sea ice.

Further north, Long Fjord and Tryne Bay remain covered by fast ice, but the fringes of both regions continue breaking up. Some fast ice in the hills' hinterland is melting through and open water can be found there (including Ellis Narrows south of the station).

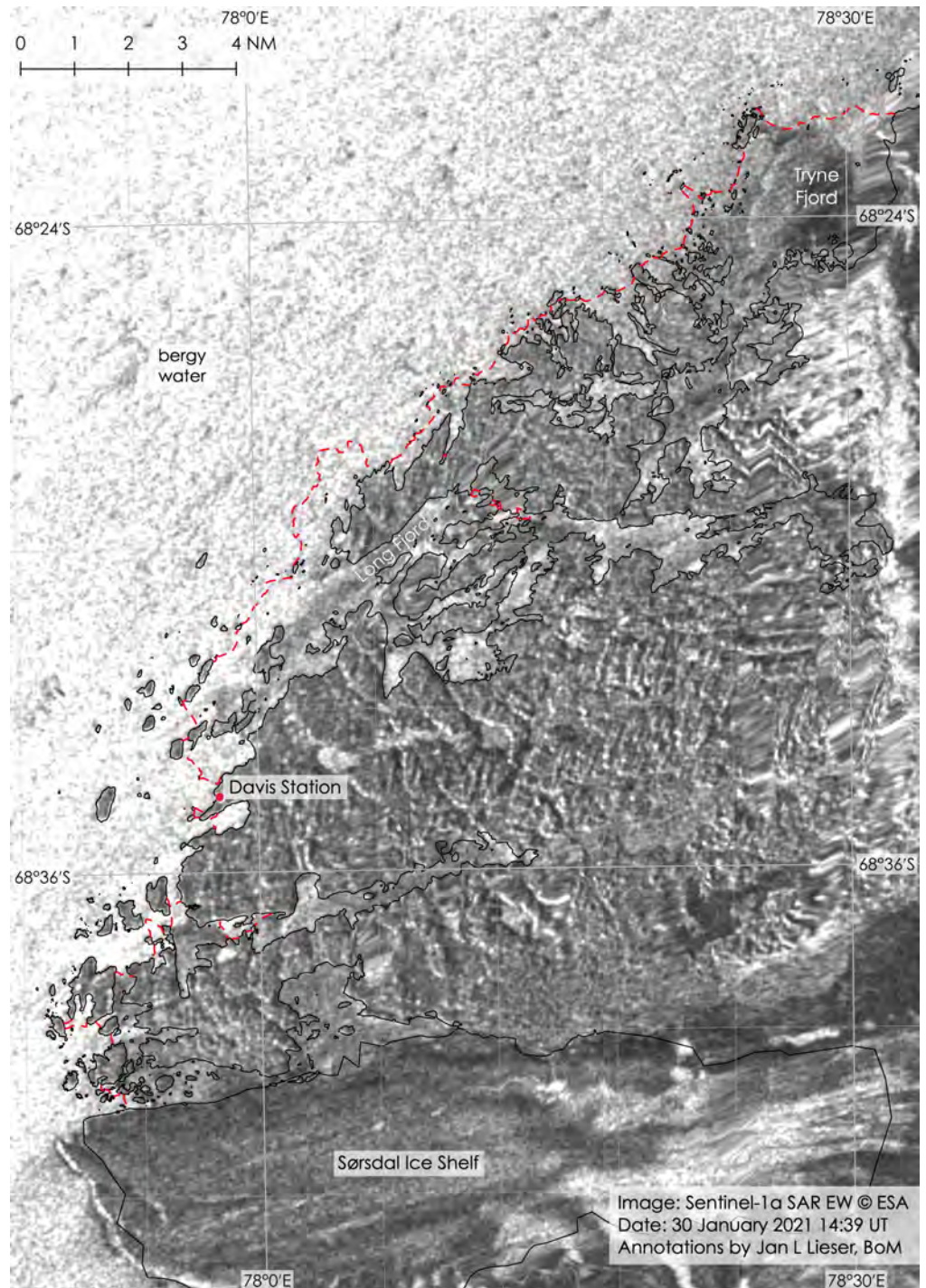


Figure 1: Sentinel-1a SAR EW data acquired 30 January 2022 at 14:39 UT and provided by PolarView.

Image: Sentinel-1a SAR EW © ESA
Date: 30 January 2021 14:39 UT
Annotations by Jan L. Lieser, BoM

Ice Bulletin: Wilkins Aerodrome

Issued: Monday 31st January 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Wilkins Aerodrome.

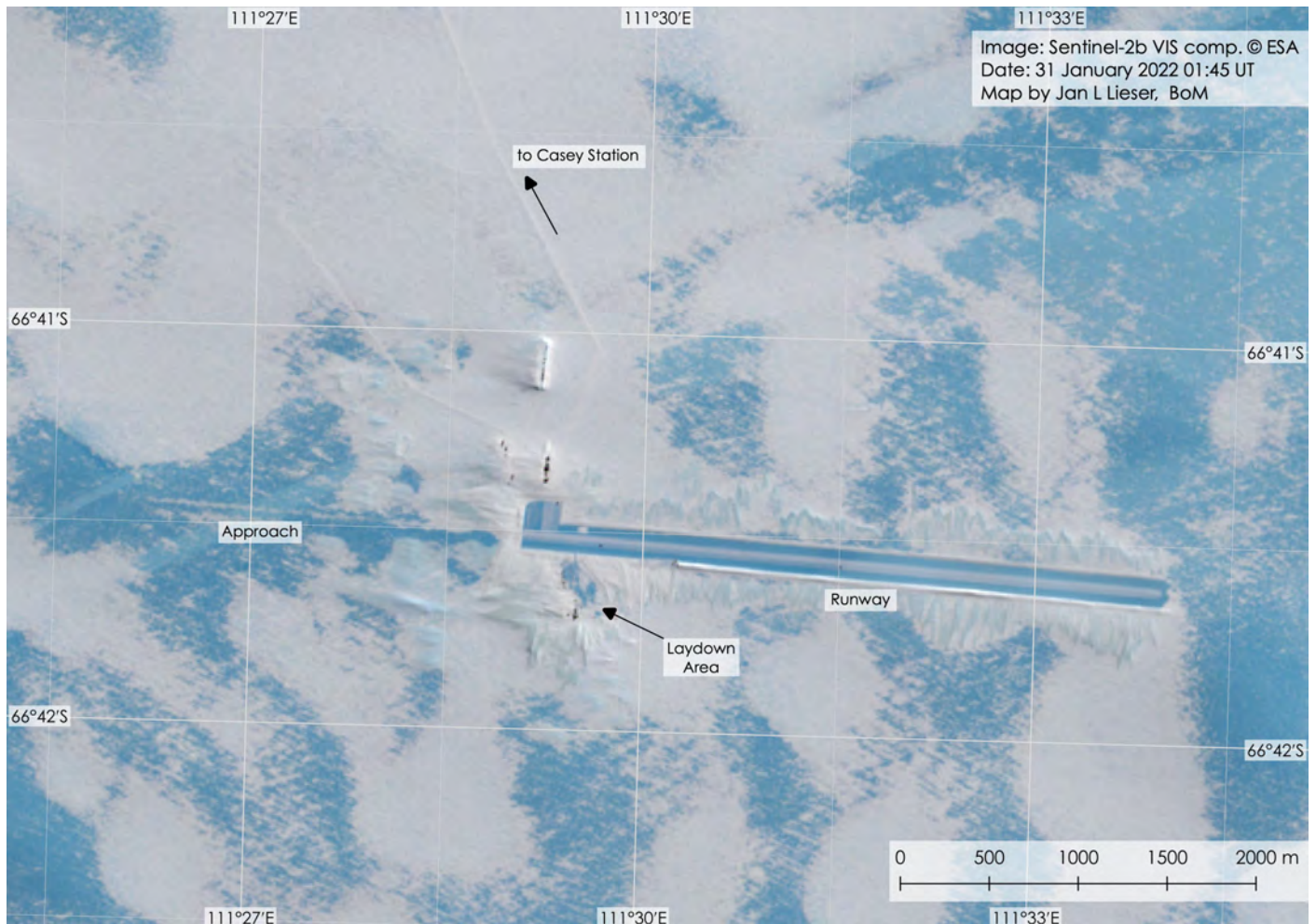


Figure 1: Sentinel-2b visible composite data acquired 31 January 2022 at 01:45 UT and provided by USGS.

The ice runway is clearly visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Casey Station

Issued: Monday 31st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data (15 m horizontal) off Casey Station and further south. Fast ice areas are marked with a red line.

Off the Mitchell Peninsula south of Casey Station, only minimal remnants of ex-fast ice remain in the northern bays of the peninsula. Some of the channels between the continent and offshore islands are under clouds and their respective ice cover cannot be determined from the imagery.

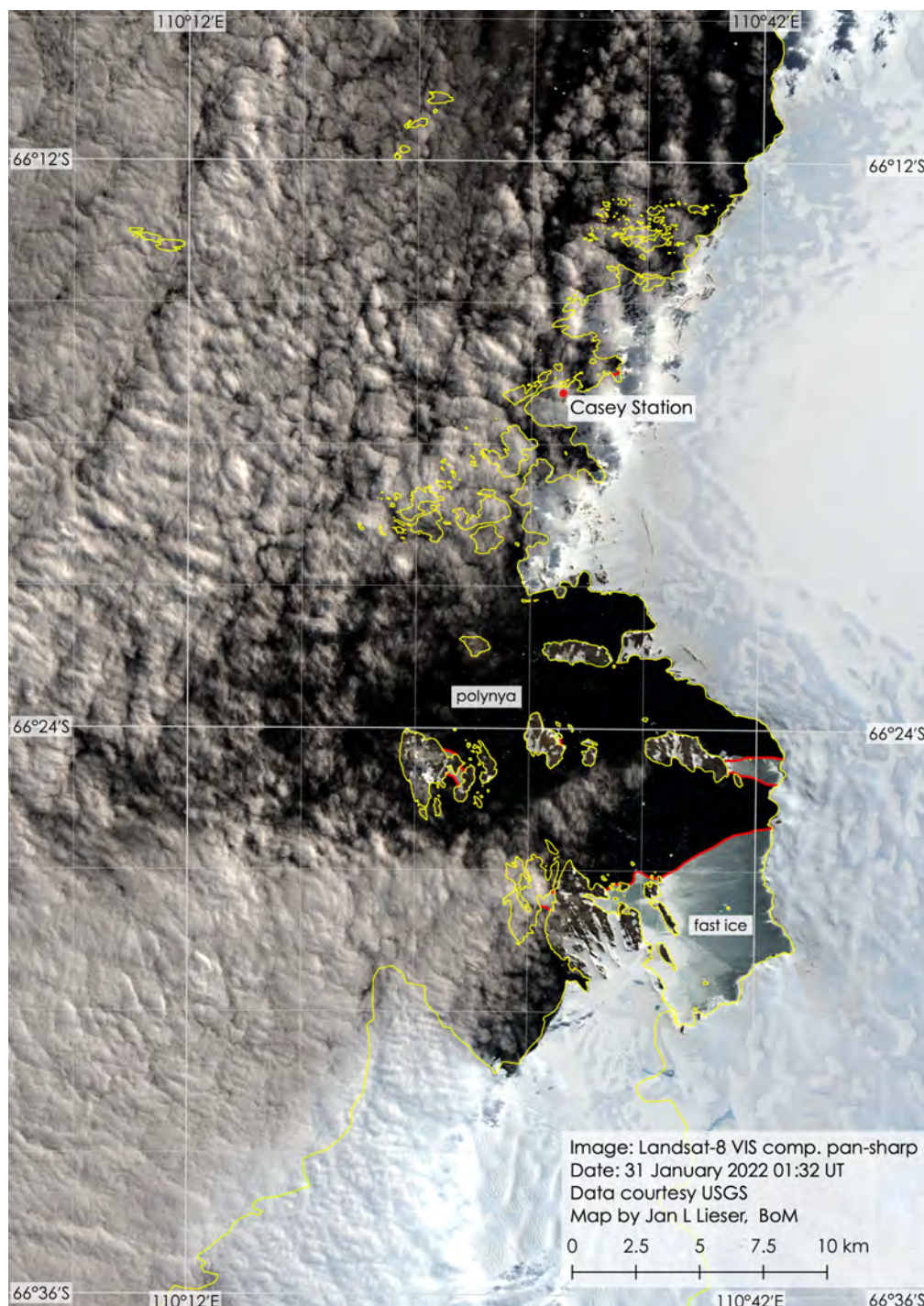


Figure 1: Landsat-8 VIS composite data pan-sharpened acquired 31 January 2022 at 01:32 UT and provided by USGS.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Monday 31st January 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station.

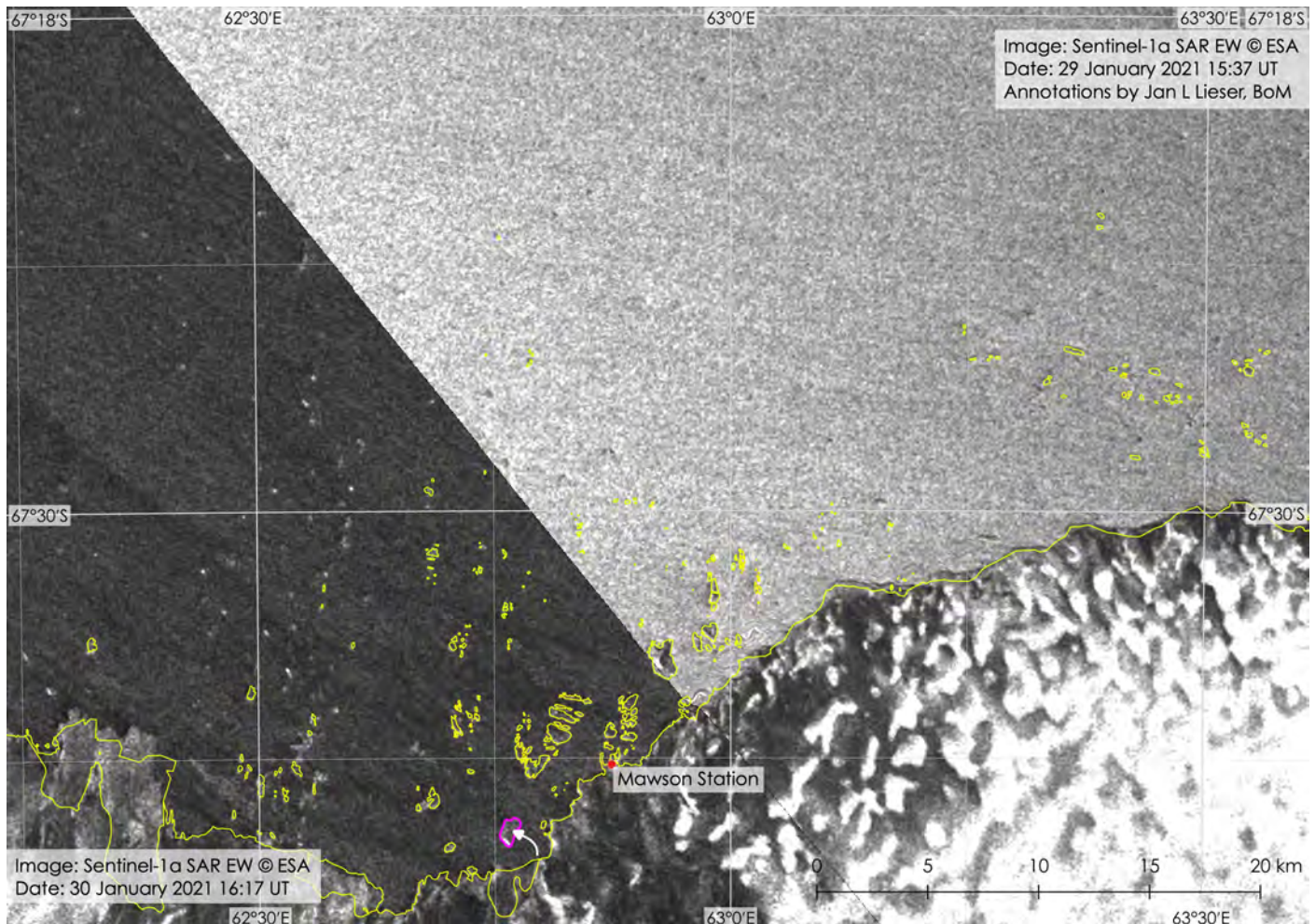


Figure 1: Sentinel-1a SAR EW data acquired 29 January 2022 at 15:37 UT and 30 January 2022 at 16:17 UT; both provided by PolarView.

Off Mawson Station, fast ice has broken out of Horseshoe Harbour. Kista Strait is cleared of drifting ex-fast ice.

South of the station, a 0.73 km² (73 ha) iceberg (pink shape) that had separated previously is now freed from surrounding ice and drifting westward (as indicated by the white arrow).

Ice Bulletin: Brunt Ice Shelf

Issued: Tuesday 1st February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Brunt Ice Shelf in the south-eastern Weddell Sea.

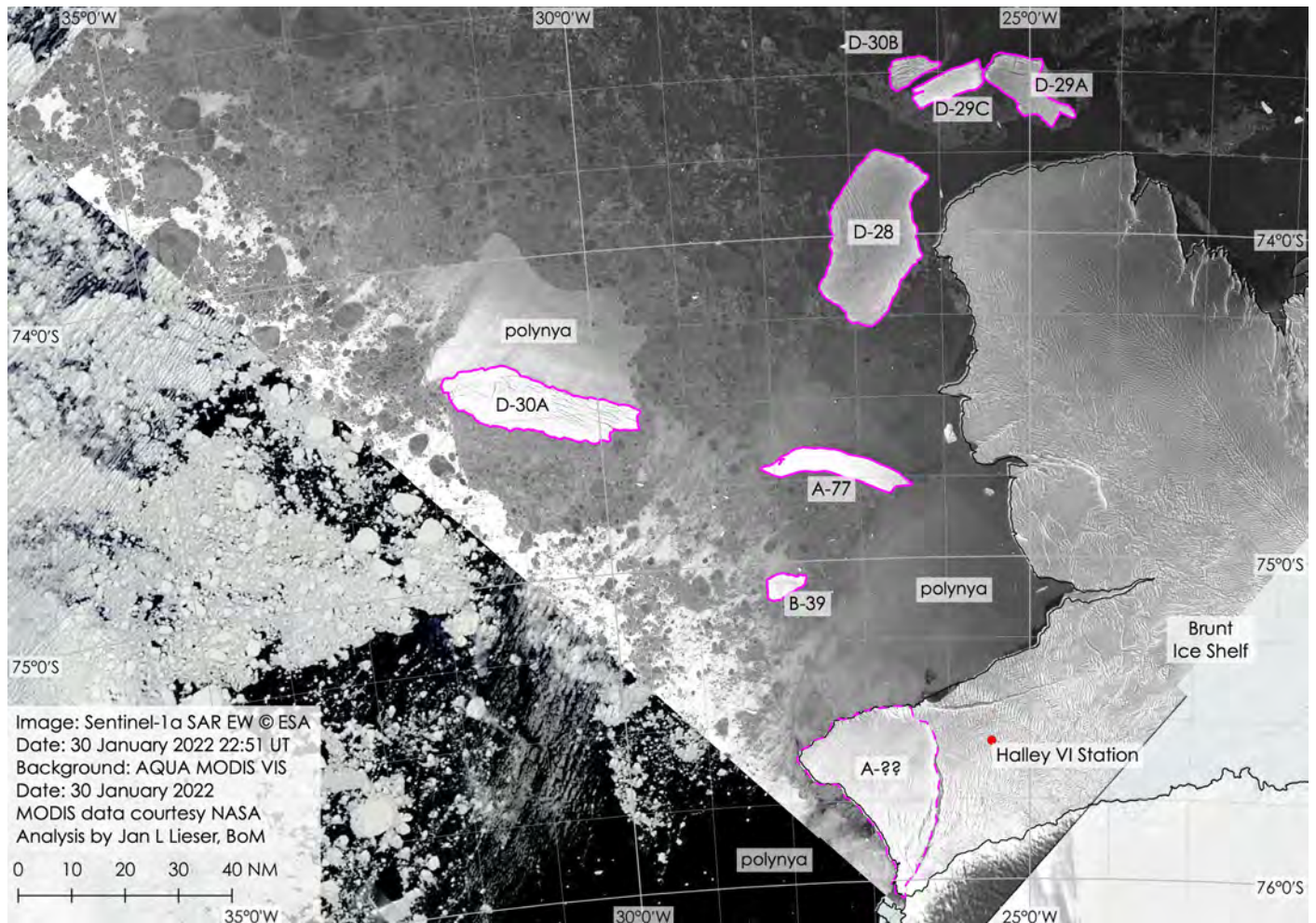


Figure 1: Sentinel-1a SAR EW data acquired 30 January 2022 at 22:51 UT and provided by PolarView; complemented by AQUA MODS VIS data acquired 30 January 2022 and provided by NASA.

For the last four months, seven large tabular icebergs (outlined by pink shapes) drifted roughly 750 km southward along Princess Martha Coast and are now off the Brunt Ice Shelf.

A potential new iceberg (A-??; outlined by a dashed pink shape) has not yet clearly separated from the ice shelf but may be roughly 1700 km² when it does, which compares to the area of Greater Hobart, Tasmania.

Ice Bulletin: Davis Station

Issued: Wednesday 2nd February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. The fast-ice edge on 18 January 2022 is marked by a dashed red line.

Long Fjord and Tryne Bay remain covered by some fast ice, but the fringes of both regions continue breaking up. Offshore, streams of ex-fast ice are drifting south-westward between the islands and grounded icebergs. Fast ice in the hills' hinterland is melting through and open water can be found there (including Ellis Narrows south of the station).

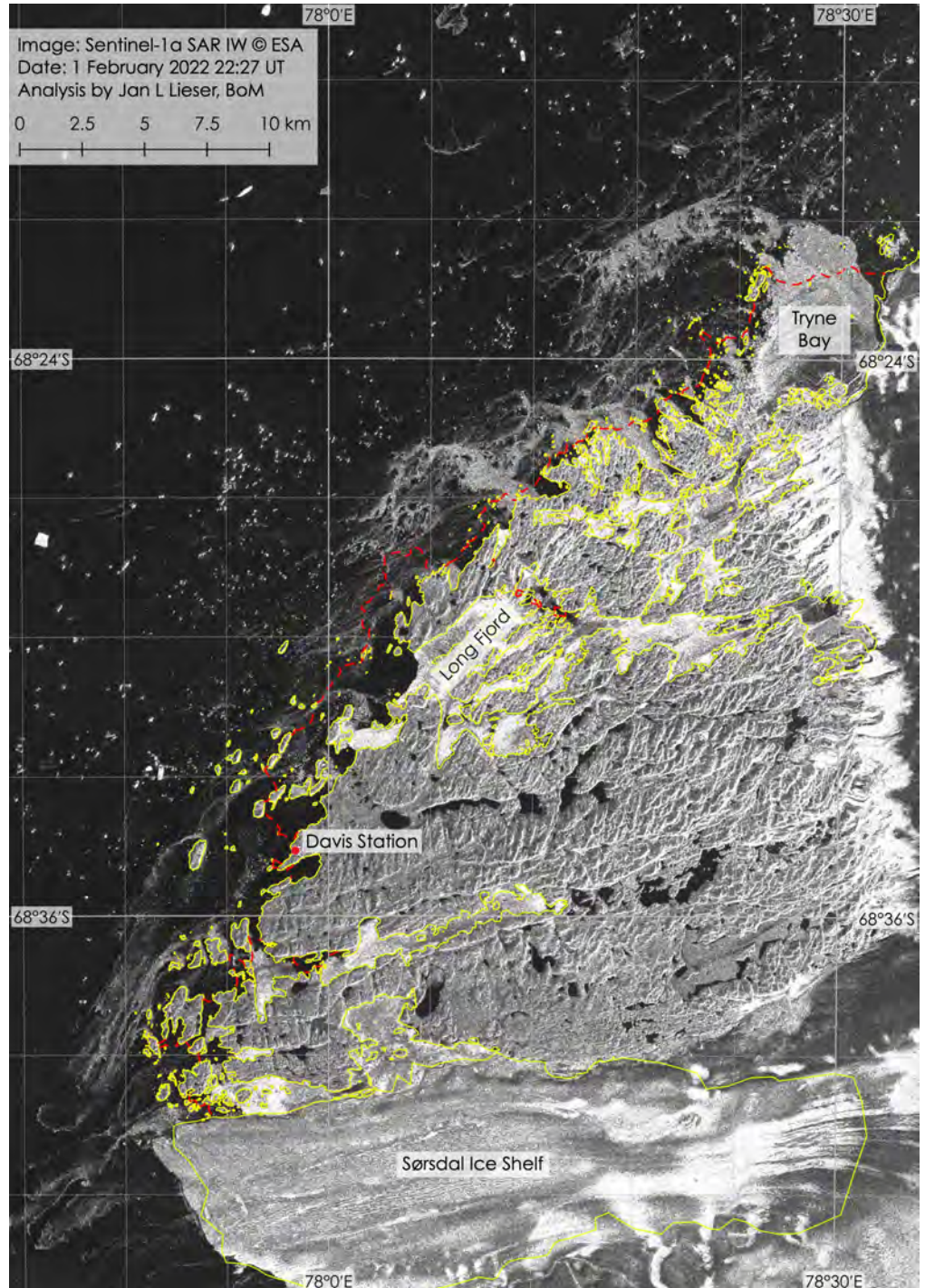


Figure 1: Sentinel-1a SAR IW data acquired 1 February 2022 at 22:27 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Oscar II Coast

Issued: Wednesday 2nd February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Oscar-II Coast, the embayment of the former Larsen-B Ice Shelf at the eastern side of the Antarctic Peninsula.

Since 2011, multi-year fast ice had grown in the Larsen-B embayment to the extent that is indicated by the dashed red line (on 16 January 2022).

In late January 2022, this multi-year fast ice shattered, which also released more than 250 km² of shelf ice (the pink shape) off the Scar Inlet. This has not been recorded as a singular iceberg because it immediately broke into many small to medium-sized icebergs that are now drifting eastward into the western Weddell Sea.

The current seaward fronts of tributary glaciers flowing off the Antarctic Peninsula into the embayment are marked by light-blue lines.

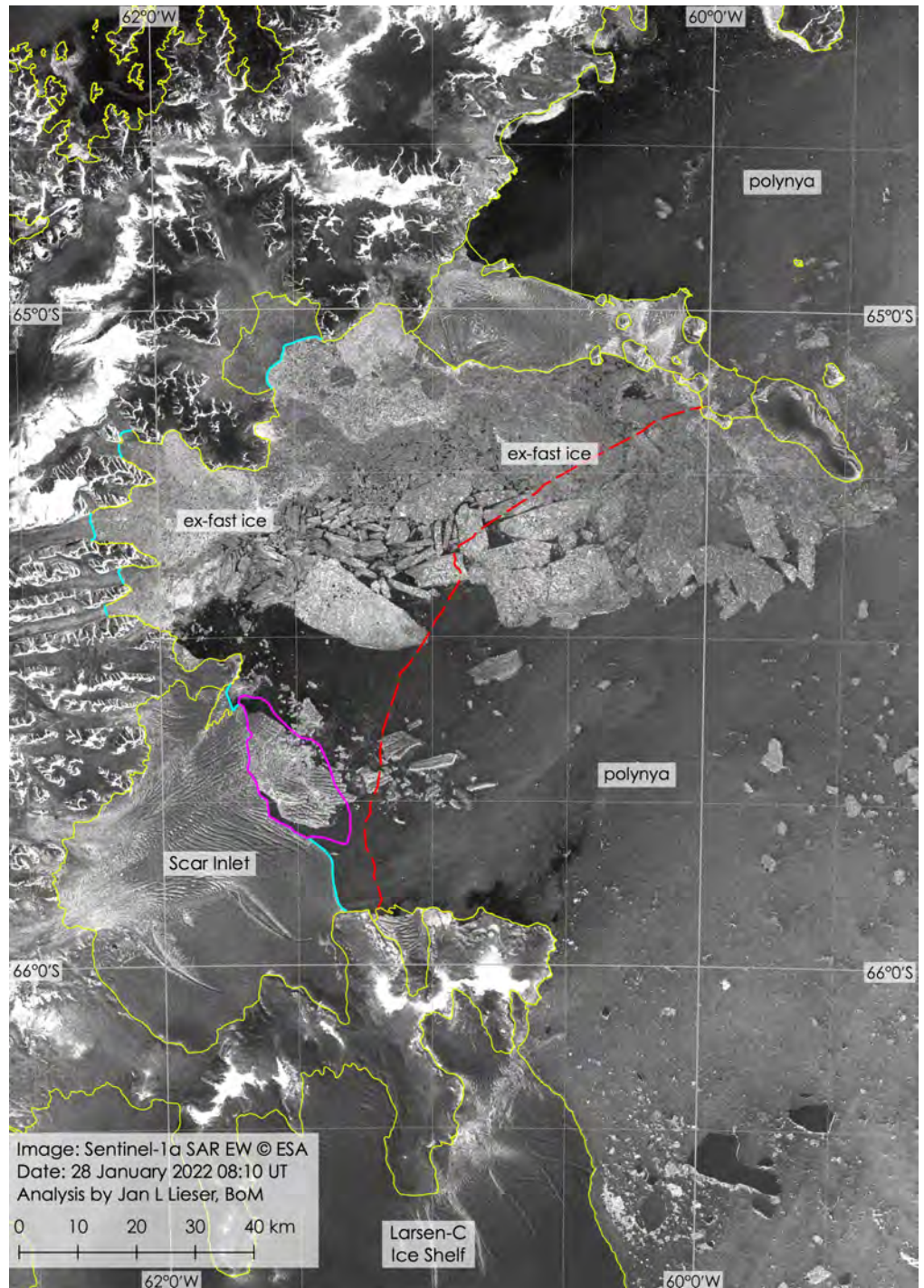


Figure 1: Sentinel-1a SAR EW data acquired 28 January 2022 at 08:10 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Friday 4th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Casey Station. Fast ice areas are marked with a red line.

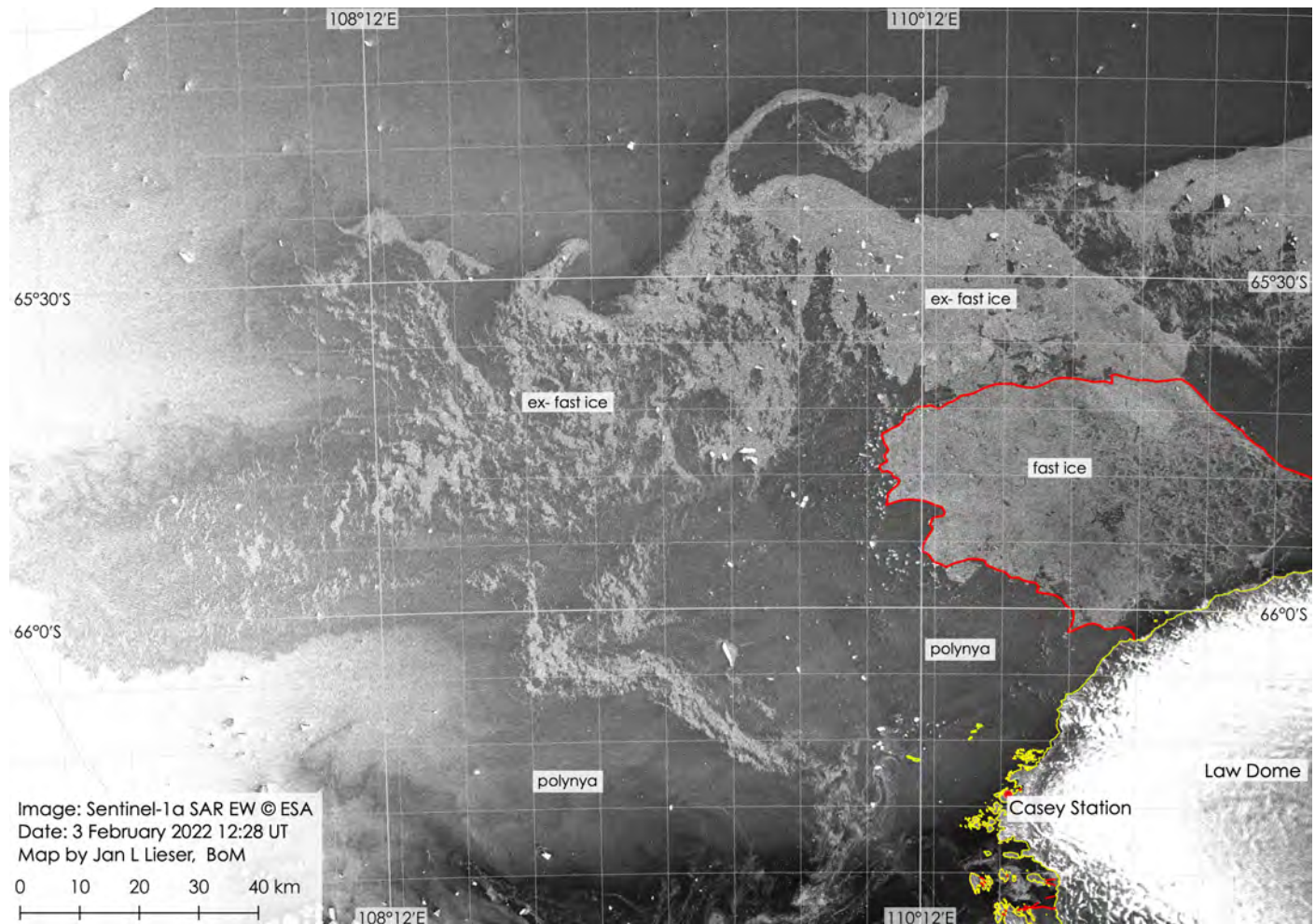


Figure 1: Sentinel-1a SAR data acquired 3 February 2022 at 12:28 UT and provided by PolarView.

Off Law Dome, fast ice continues to break up and discharges ex-fast ice floes and released icebergs into the generally westward drift. Strips and patches of ex-fast ice spread north- and southward, including into Vincennes Bay southwest of Casey Station.

Figure 2 shows a close-up view south of Casey Station.

Between the islands south of the station, fast ice continues to break up as well. East of Herring Island, no more sea ice is fastened and south of that region fast ice is shrinking. Ex-fast ice floes are drifting westward into the polynya of Vincennes Bay carried by surface eddies that manifest in swirls of broken ice.

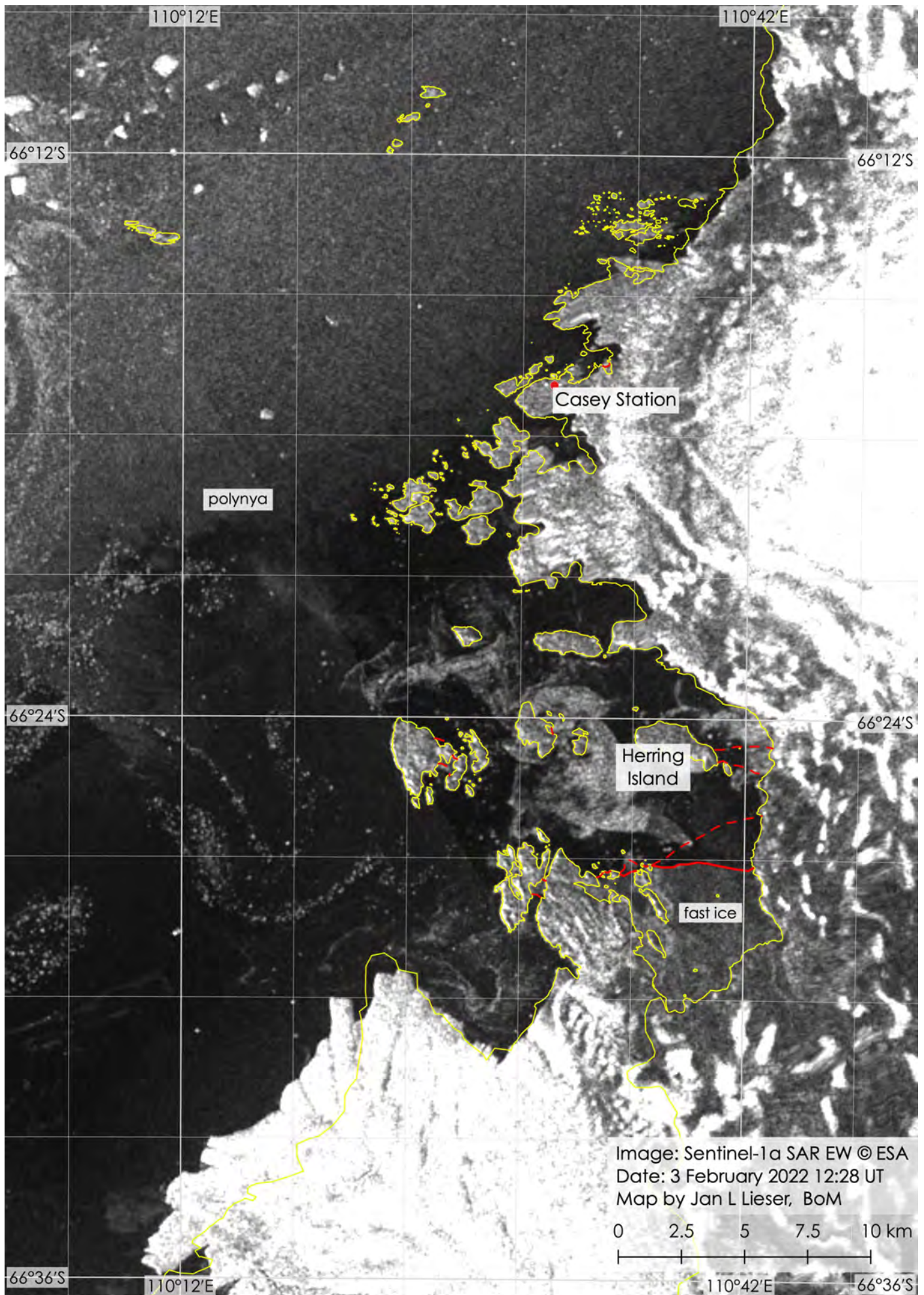


Figure 2: Sentinel-1a SAR data acquired 3 February 2022 at 12:28 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Friday 4th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data east of Mawson Station. Iceberg Alley is marked by green outlines.

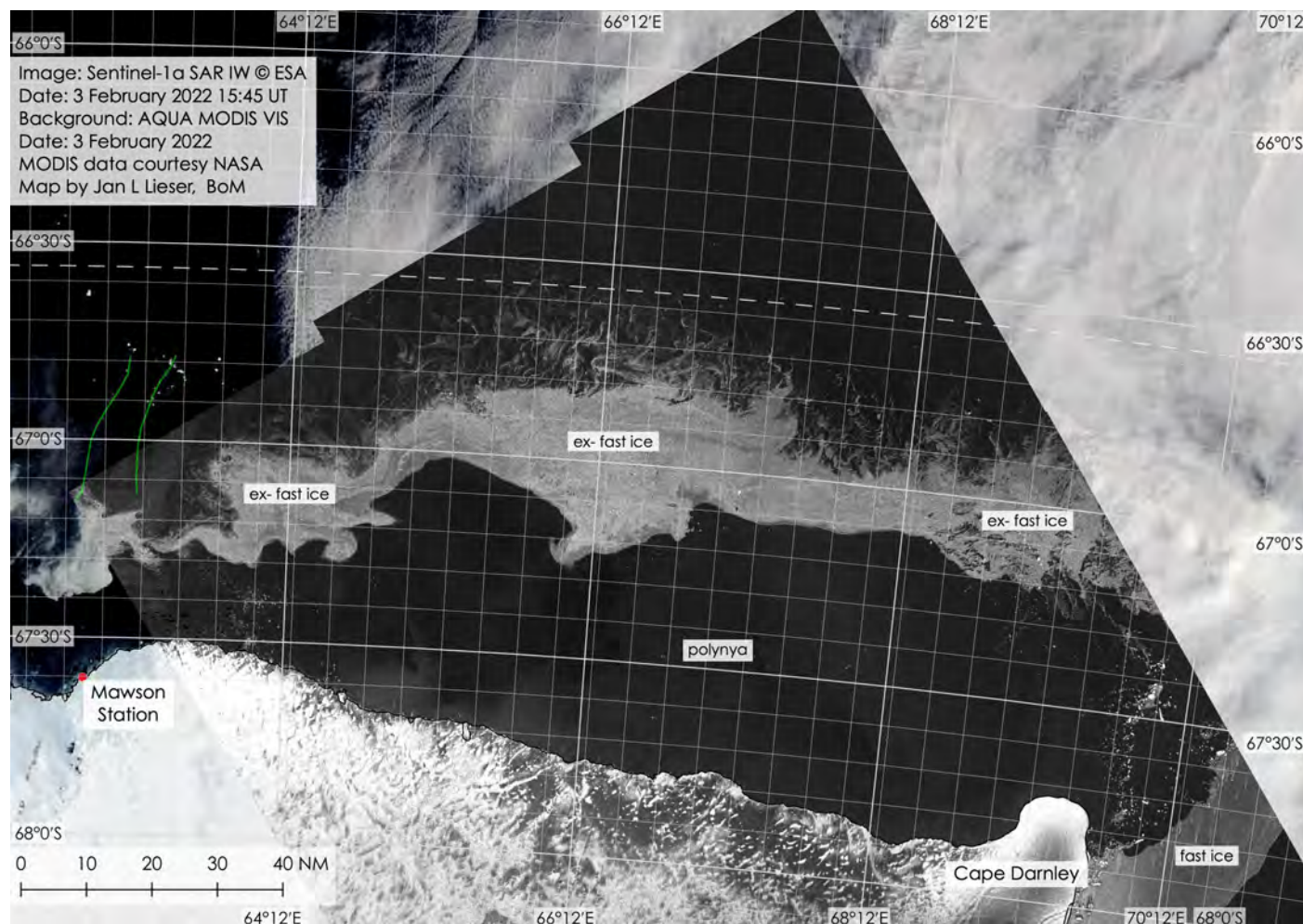


Figure 1: Sentinel-1a SAR IW data acquired 3 February 2022 at 15:45 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 3 February 2022 and provided by NASA.

North of Mawson Station, ex-fast ice spills westward originating off Cape Darnley and is drifting roughly along 67°0'S. The southern end of Iceberg Alley is currently occupied by a large patch of this ex-fast ice.

Ice Bulletin: Casey Station

Issued: Monday 7th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Haupt Nunatak/Browning Peninsula south of Casey Station. Fast ice areas are marked with a red line.

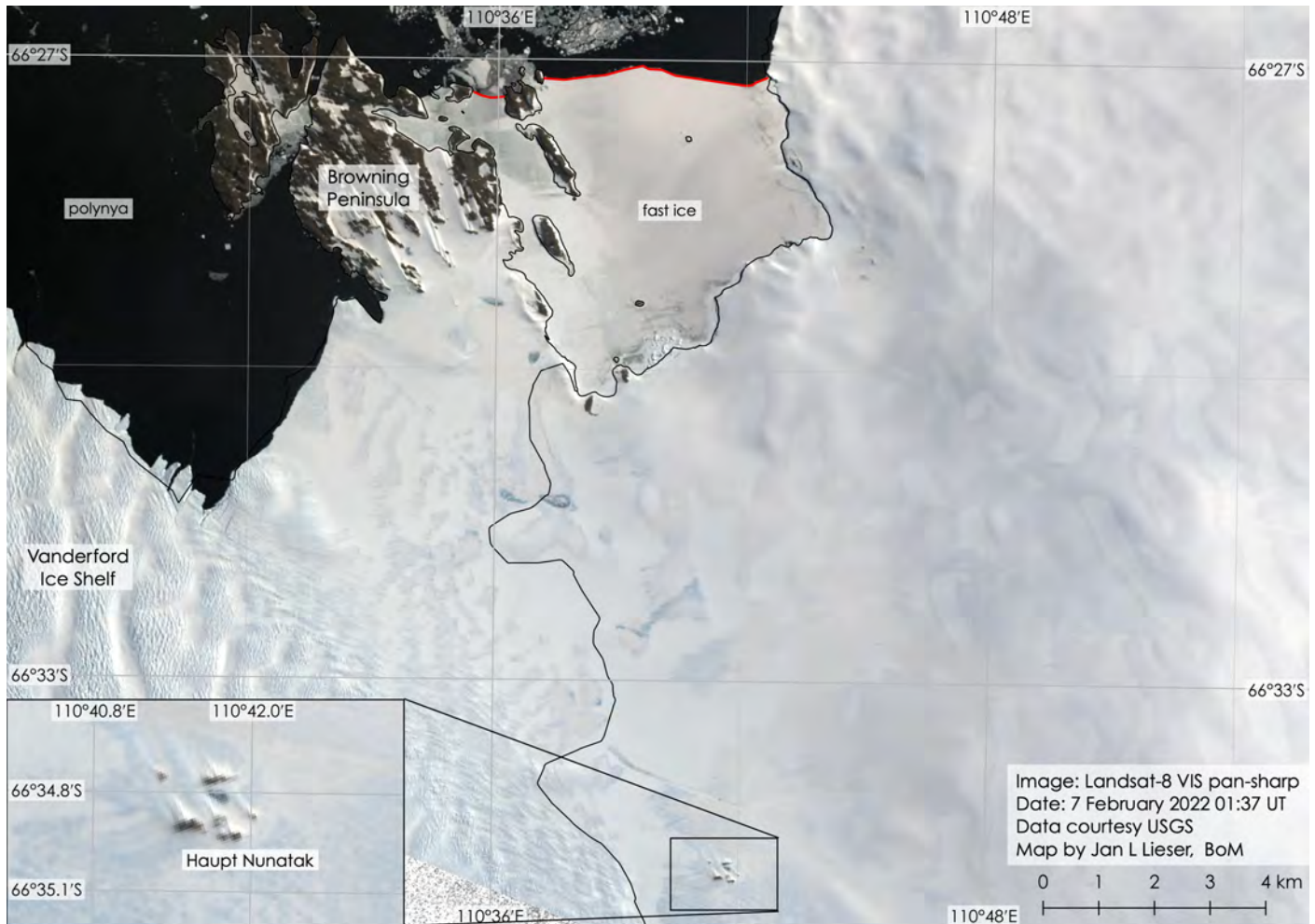


Figure 1: Landsat-8 VIS composite data pan-sharpened acquired 7 February 2022 at 01:37 UT and provided by USGS.

Some fast ice remains between Browning Peninsula and the continent.

Figure 2 shows a larger overview south of Casey Station.

Between the islands south of the station, little fast ice remains, and ex-fast ice is drifting locally and into the polynya of Vincennes Bay. Farther offshore, icebergs are drifting in the polynya.

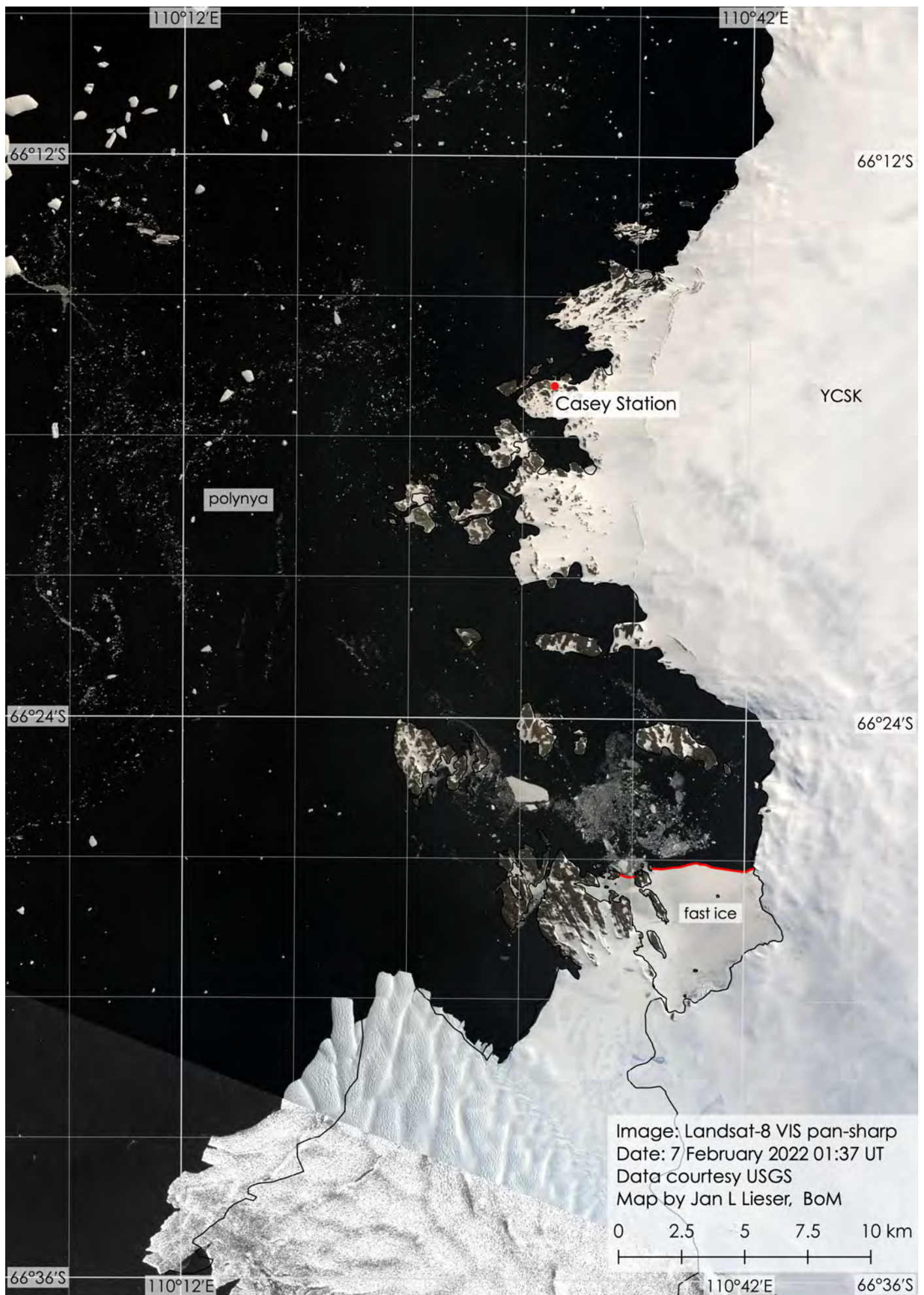


Figure 2: Landsat-8 VIS composite data pan-sharpened acquired 7 February 2022 at 01:37 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Tuesday 8th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data east of Mawson Station. Iceberg Alley is marked by blue outlines.

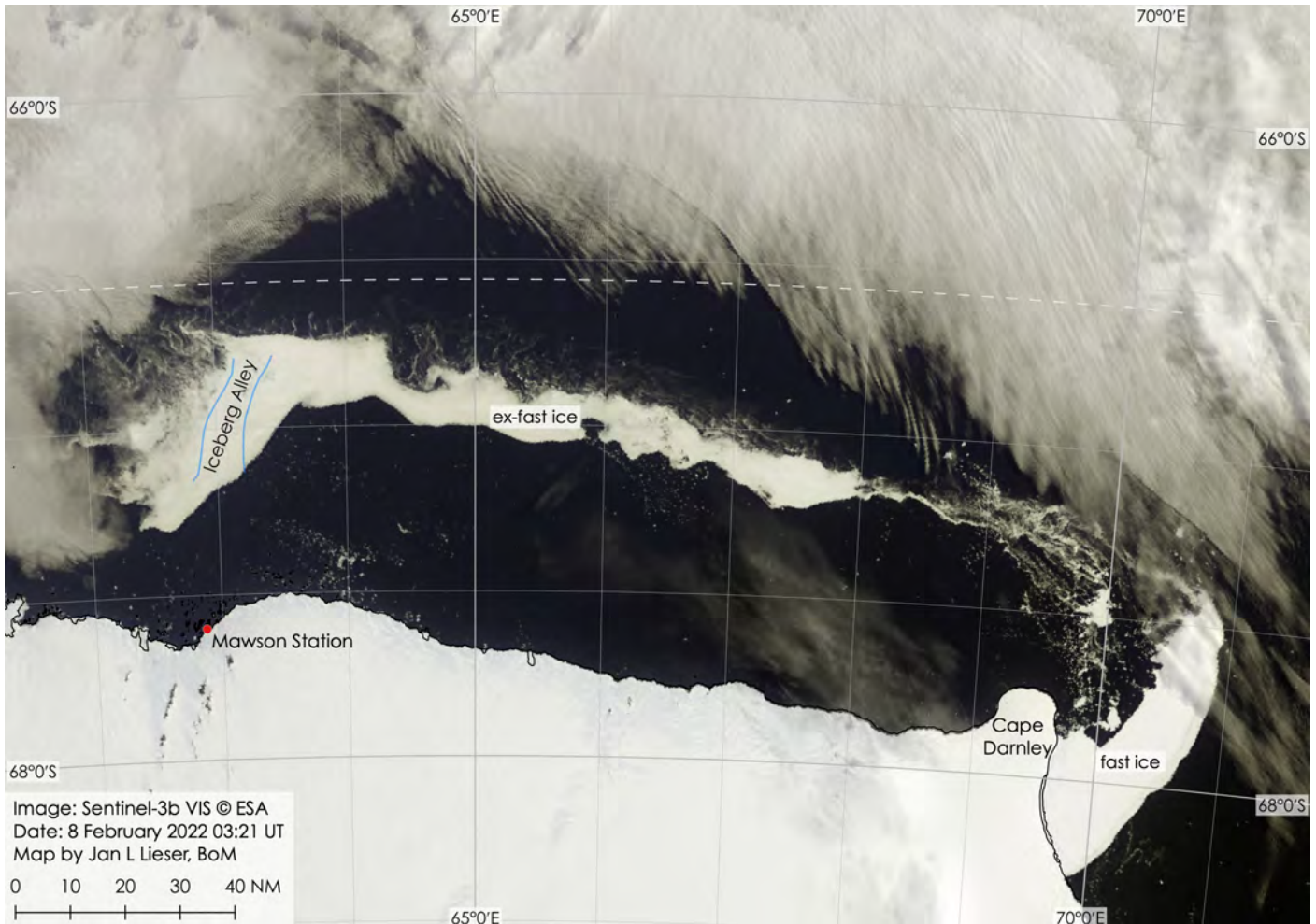


Figure 1: Sentinel-3b VIS composite data acquired 8 February 2022 at 03:21 UT and provided by ESA.

North of Mawson Station, ex-fast ice is drifting westward roughly along 67°0'S. This ice originates from fast ice off Cape Darnley. Recent offshore winds have pushed this ex-fast ice further north- and westward. The patch appears currently detached from its source off the cape.

Iceberg Alley is currently filled by this ex-fast ice, which is pushing through the rows of icebergs that make up both sides of the alley. While this process slows the ice drift down it also forces the ice to further break up when it leaves the alley westward.

Ice Bulletin: Davis Station

Issued: Tuesday 8th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Davis Station. The sea-ice edge based on passive microwave data is marked by a light blue line.

North of Davis Station, ex-fast ice is drifting south-westward. This ice consist of old fast ice and old sea ice originating from the eastern side of the D-15 icebergs.

At the height of summer, this pack ice is still decaying and breaking up.

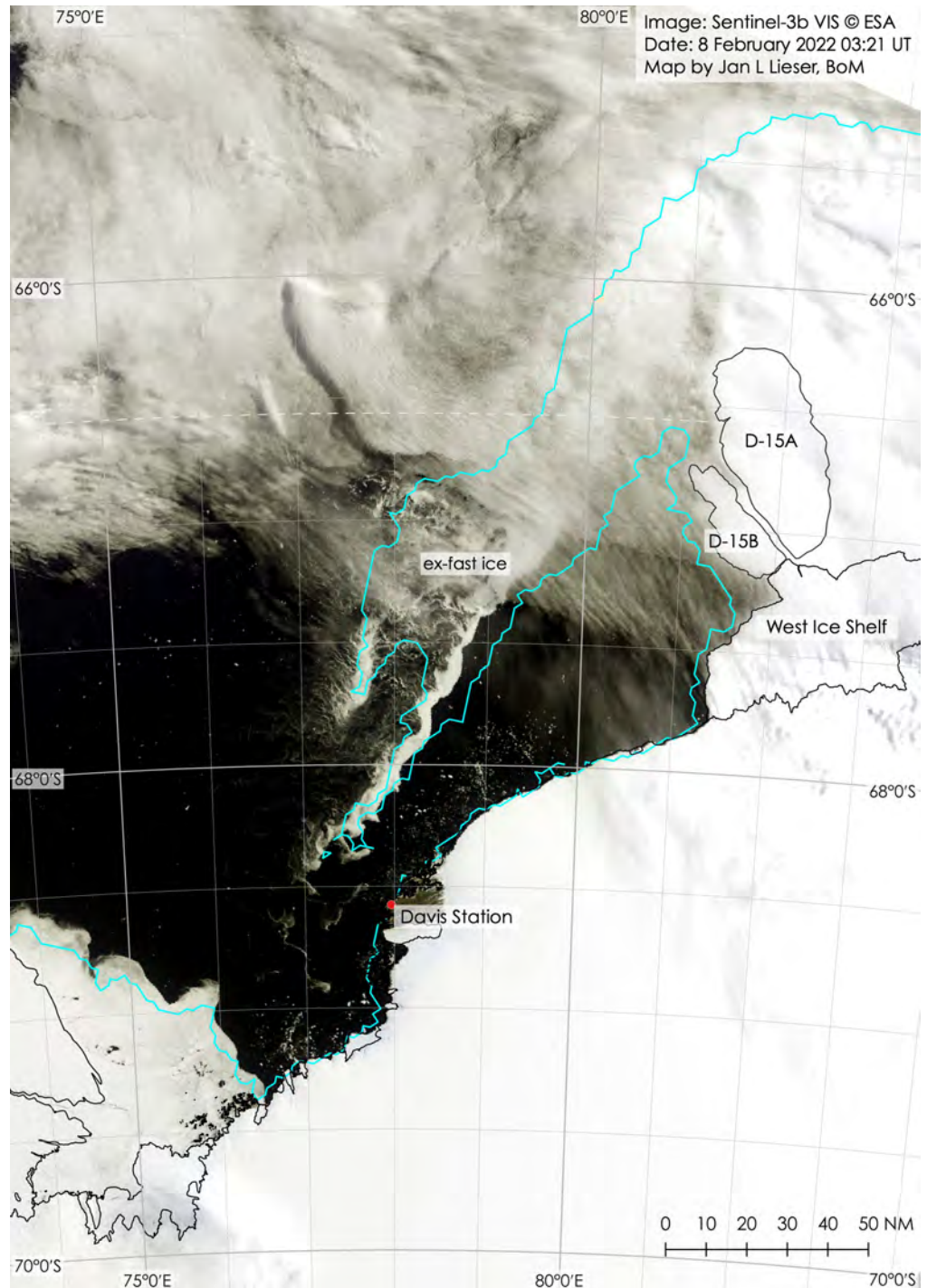


Figure 1: Sentinel-3b VIS data acquired 8 February 2022 at 03:21 UT and provided by ESA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Wednesday 9th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows two panels of high-resolution SAR data off Casey Station. Some iceberg drift tracks have been marked by pink arrows.

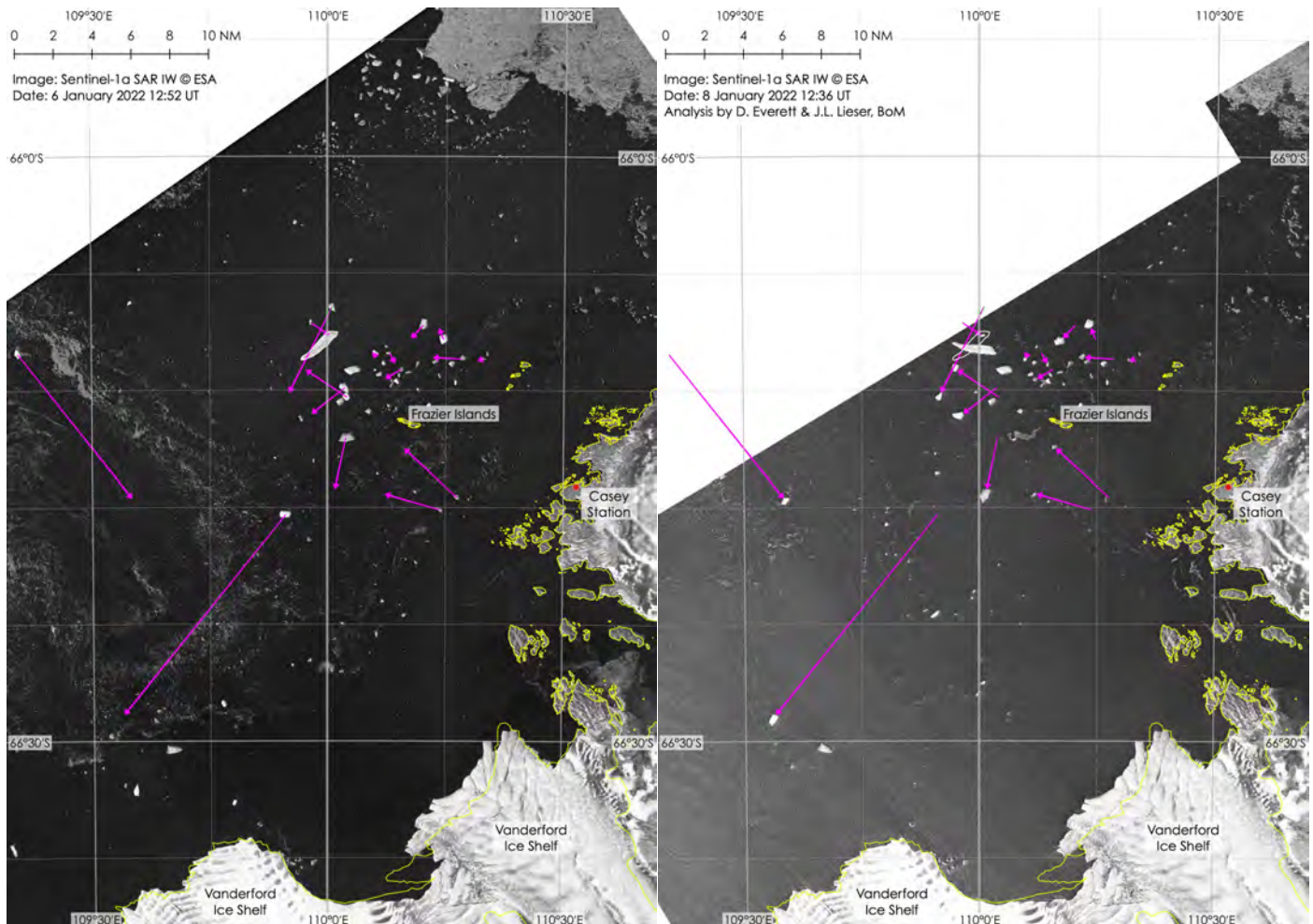


Figure 1: Sentinel-1a SAR IW data acquired roughly 48 hours apart and provided by PolarView.

Around Frazier Islands, some icebergs are grounded while others are drifting. Centred at 110°0'E and 66°10'S, the largest iceberg is pivoting around its centre (as indicated by the white shape in the right panel of the figure). The pack ice (predominantly ex-fast ice) has largely been pushed north-westward out of Vincennes Bay (off Vanderford Ice Shelf), but non-grounded icebergs have been drifting in various directions driven predominantly by ocean currents.

Between the islands south of Casey Station, strips and patches of ex-fast ice are drifting locally and into the polynya of Vincennes Bay.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 9th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data Of Cape Denison in southern D'Urville Sea.

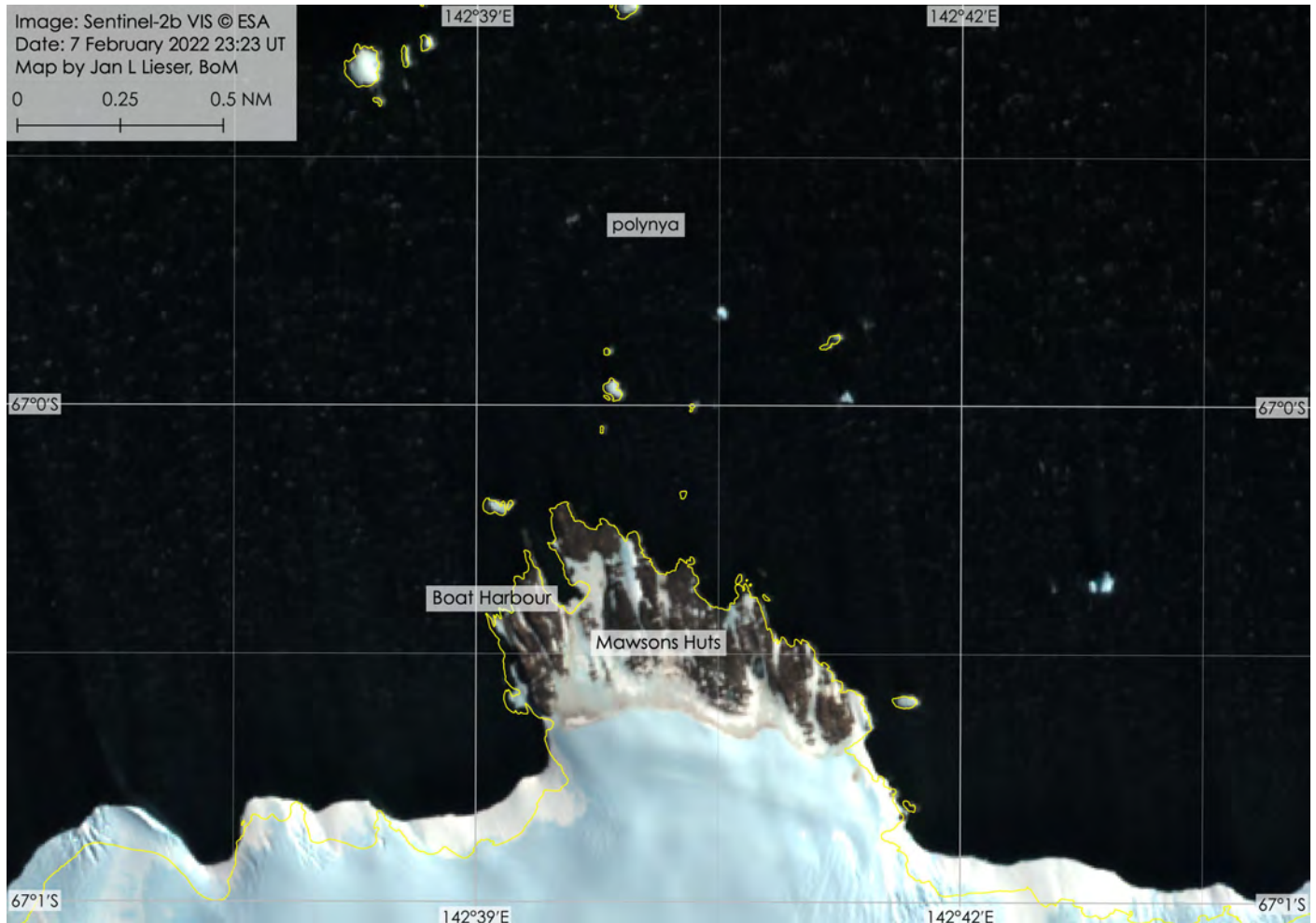


Figure 2: Sentinel-2b VIS composite data acquired 7 February 2022 at 23:23 UT and provided by ESA.

Only very few icebergs are the only ice offshore Cape Denison/Mawsons Huts. Boat Harbour is ice free.

Figure 2 shows a larger overview of the region.

The area is largely free of any sea ice. Iceberg B-9B continues to wiggle back and forth confined by some grounded icebergs close by. Iceberg C-29 has been slightly restless as well while iceberg C-15 appears firmly grounded.

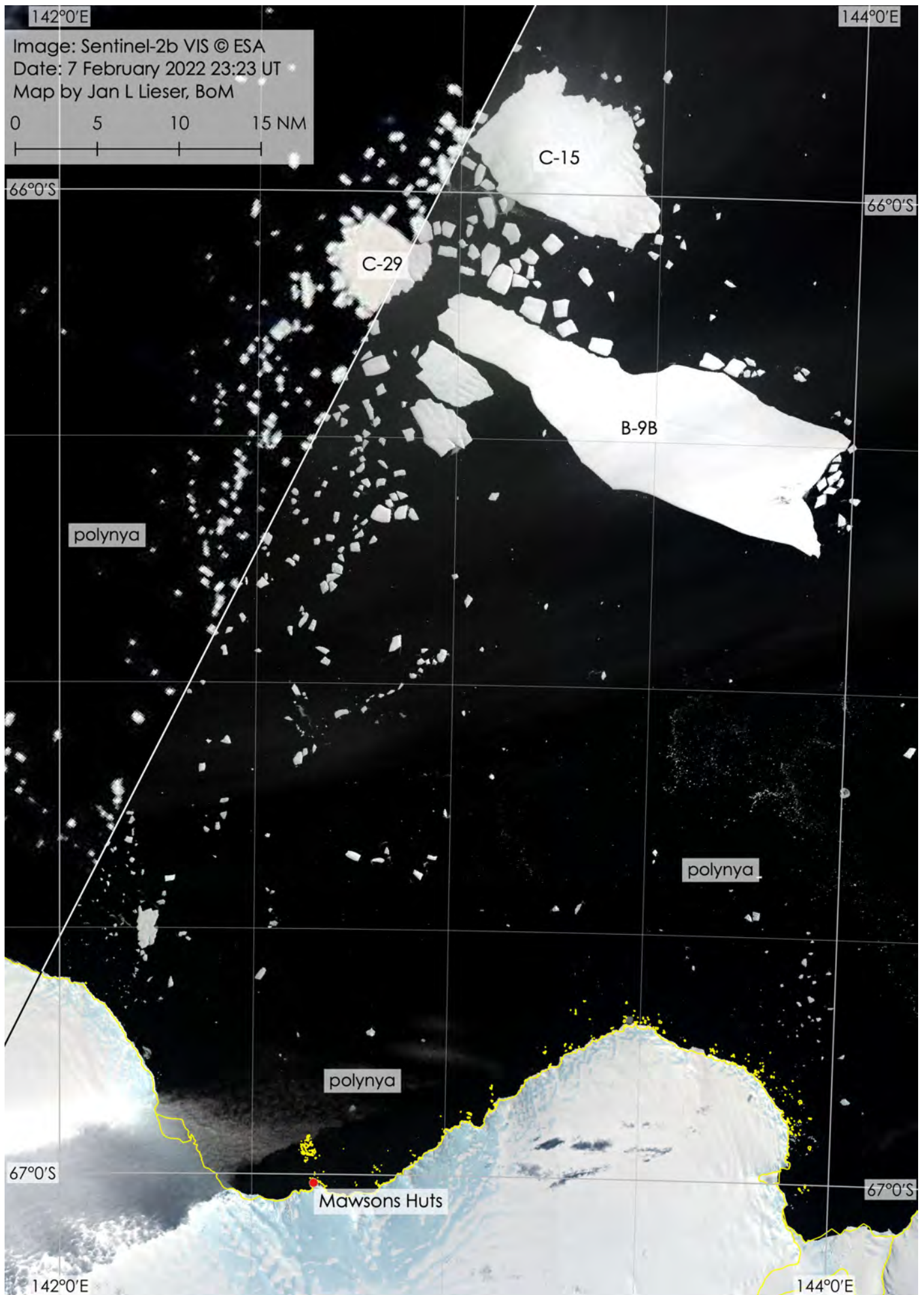


Figure 2: Sentinel-2b VIS composite data acquired 7 February 2022 at 23:23 UT and provided by ESA; complemented by AQUA MODIS VIS data acquired 7 February 2022 and provided by NASA.

Ice Bulletin: Mawson Station

Issued: Wednesday 9th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Mawson Station.

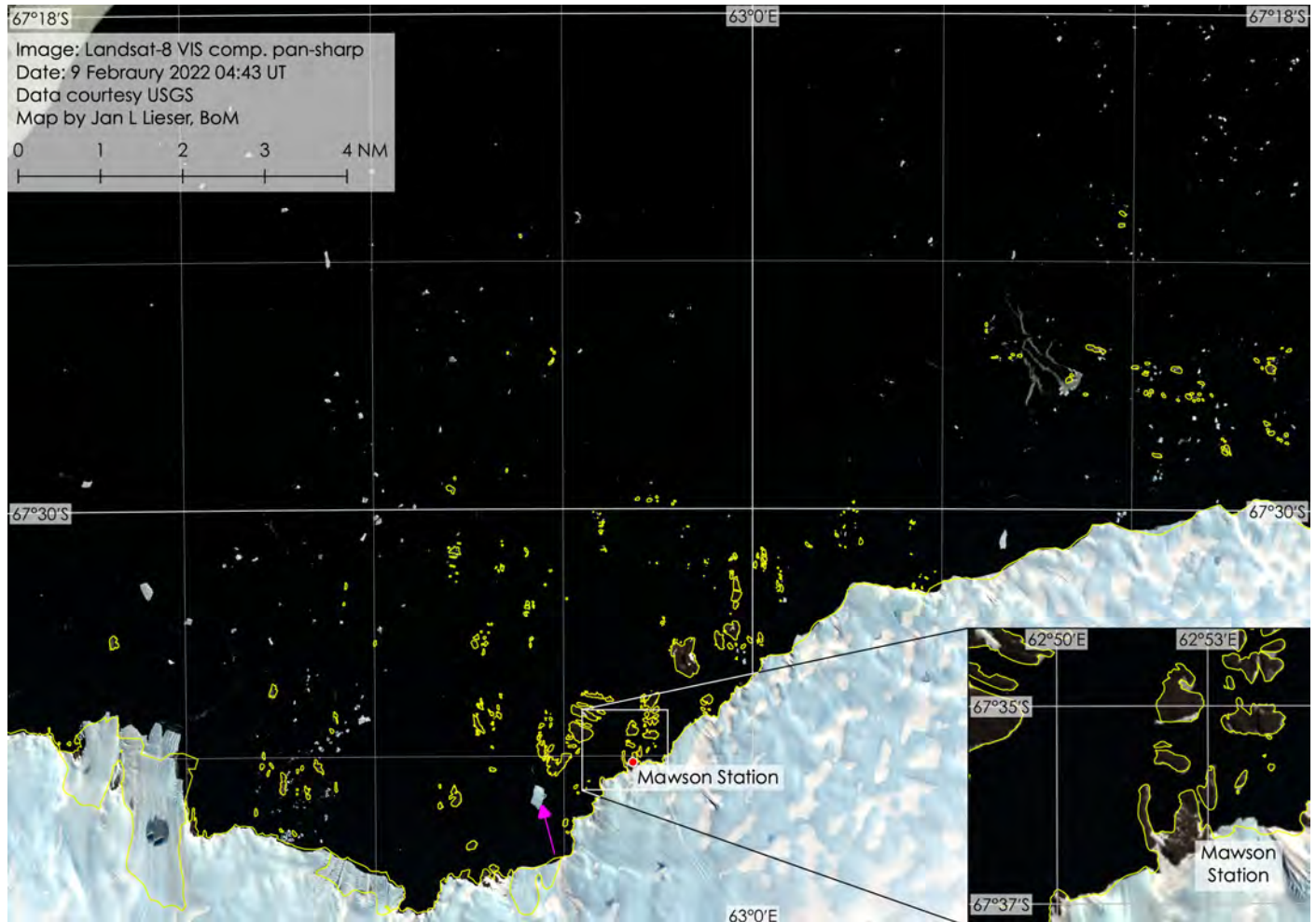


Figure 1: Landsat-8 VIS composite pan-sharpened data acquired 9 February 2022 at 04:43 UT and provided by USGS.

Off Mawson Station, no ice is present in Horseshoe Harbour or Kista Strait (see inset). Southwest of the station, one larger iceberg is drifting slowly in north-westerly direction (as indicated by the pink arrow).

Figure 2 shows the same data as Figure 1 but further north. Iceberg Alley is marked by blue outlines.

Iceberg Alley is currently filled by ex-fast ice, which is pushing through the rows of icebergs that make up both sides of the alley. While this process slows the sea-ice drift down it also forces the ice to further break up when it leaves the alley westward. The ex-fast ice originates from fast ice off Cape Darnley (not shown in the figure) and is drifting westward roughly along 67°0. Recent offshore winds have pushed this ex-fast ice further north- and westward.

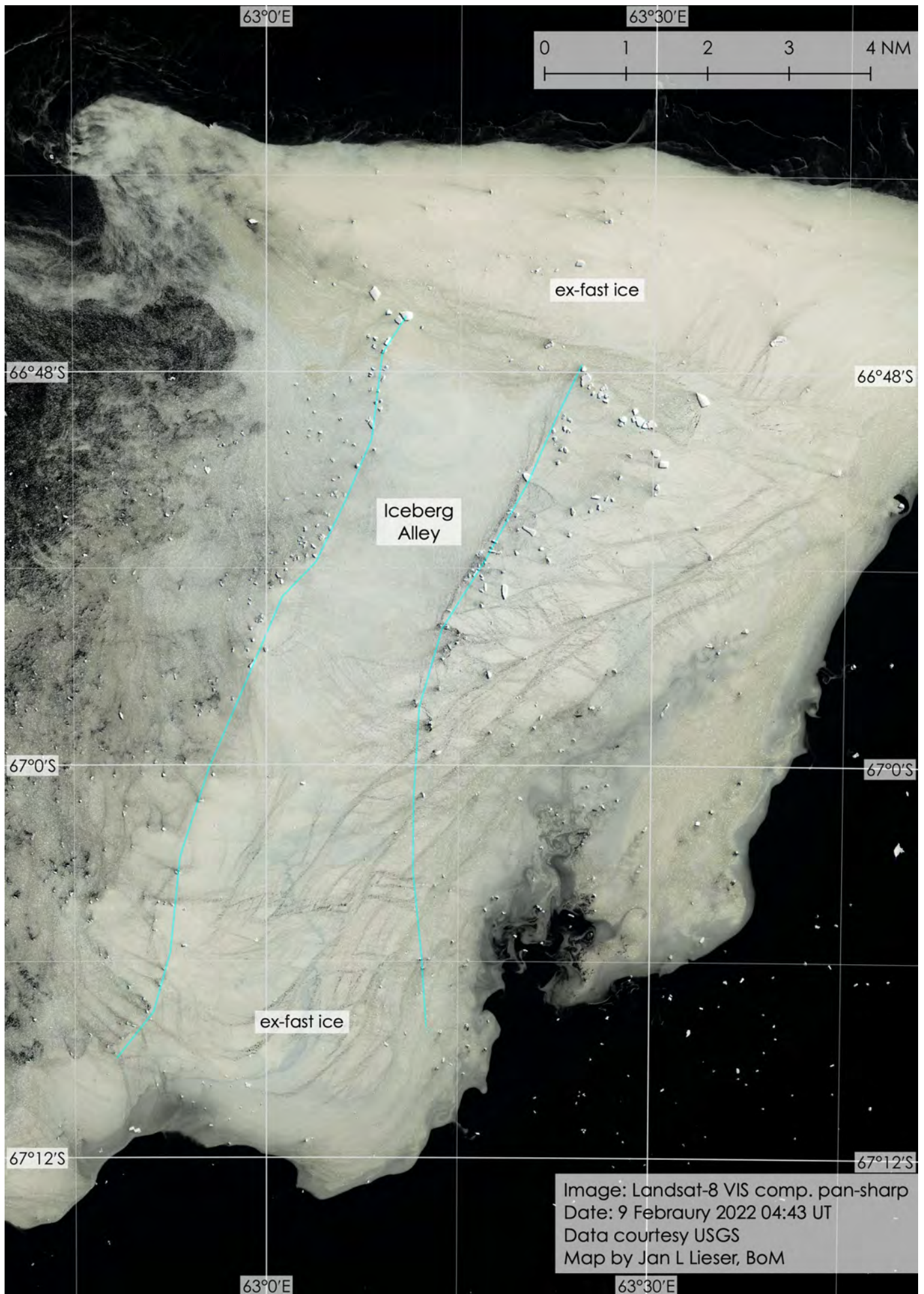


Figure 2: Landsat-8 VIS composite pan-sharpened data acquired 9 February 2022 at 04:43 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Thursday 10th February 2022

Analyst: Damien Everett



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Davis Station extending well offshore and to the north.

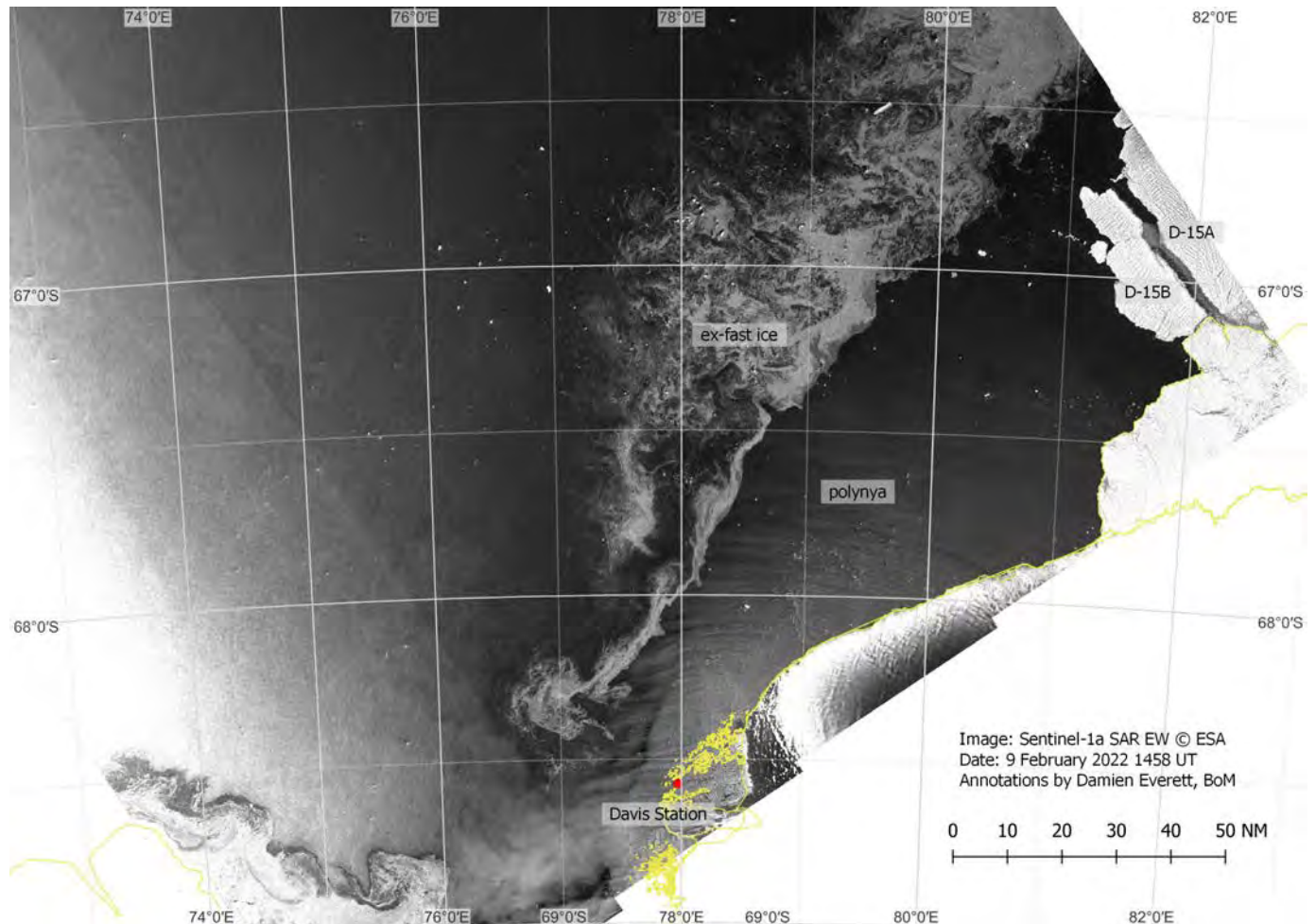


Figure 1: Sentinel-1a SAR EW data acquired 9 February 2022 at 14:58 UT and provided by Polar View.

North of Davis Station, extensive ex-fast ice is drifting south-westward. This ice consists of both old fast ice and sea ice originating from waters east of icebergs D-15A and D-15B. At this time of year, this tongue of pack ice continues to decay, break up and thin out to the south.

Off Davis Station, mostly open water prevails with numerous icebergs of varying size littering coastal waters to the north of the station. The streaky appearance of the sea surface near the coast is due to radar backscatter from waves produced by the moderate to strong offshore wind flow.

Ice Bulletin: Shackleton Ice Shelf

Issued: Thursday 10th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of the Shackleton Ice Shelf.

The data have been analysed for iceberg presence north of the sea-ice edge and more than 4600 features have been detected and marked by pink dots.

Icebergs have been detected as far north as 58°45'S and the region north of the sea-ice edge can be regarded as bergy water.

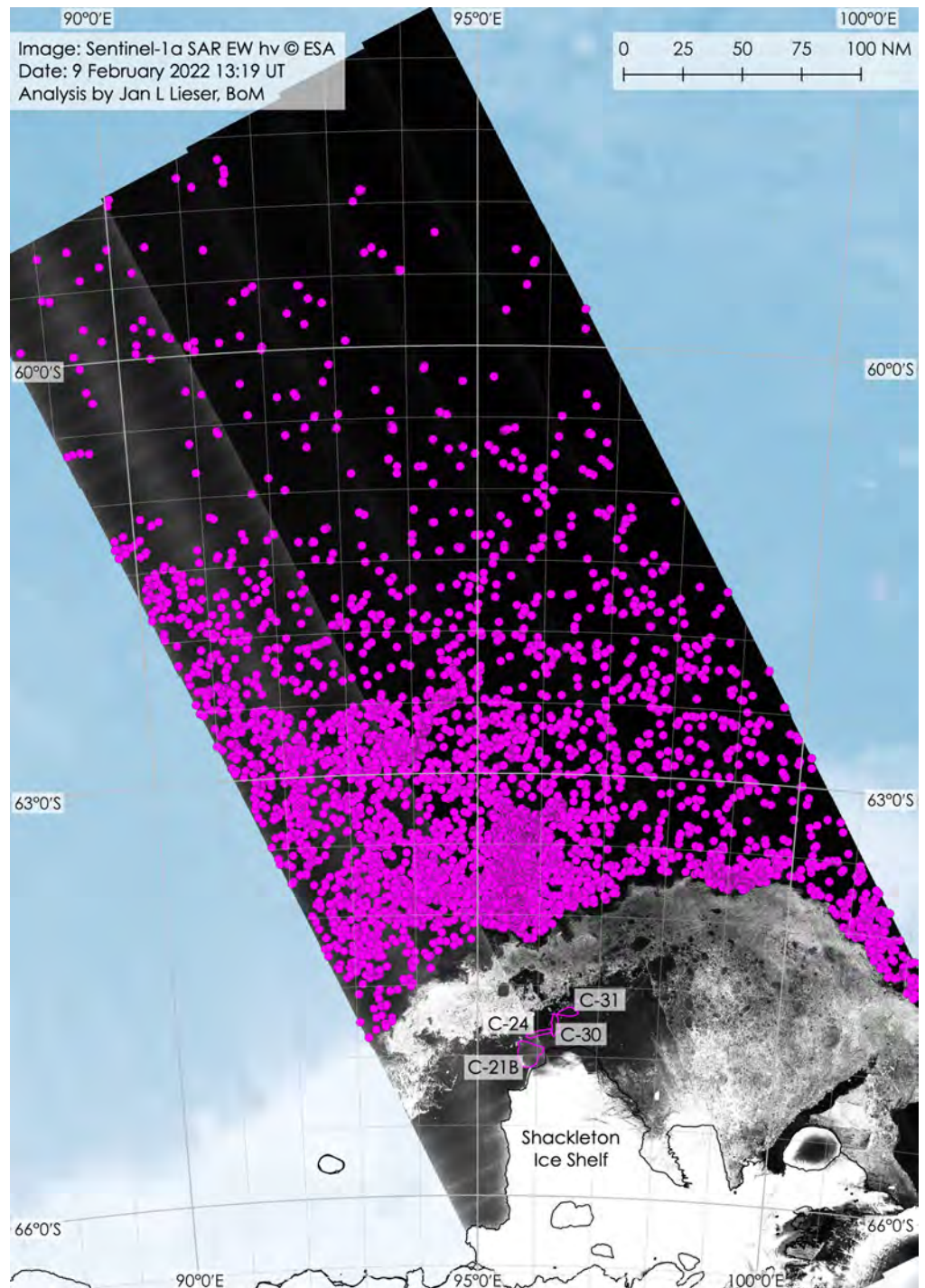


Figure 1: Sentinel-1a SAR EW hv data acquired 9 February 2022 at 13:19 UT and provided by ESA.

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Ice Bulletin: Antarctica

Issued: Friday 11th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

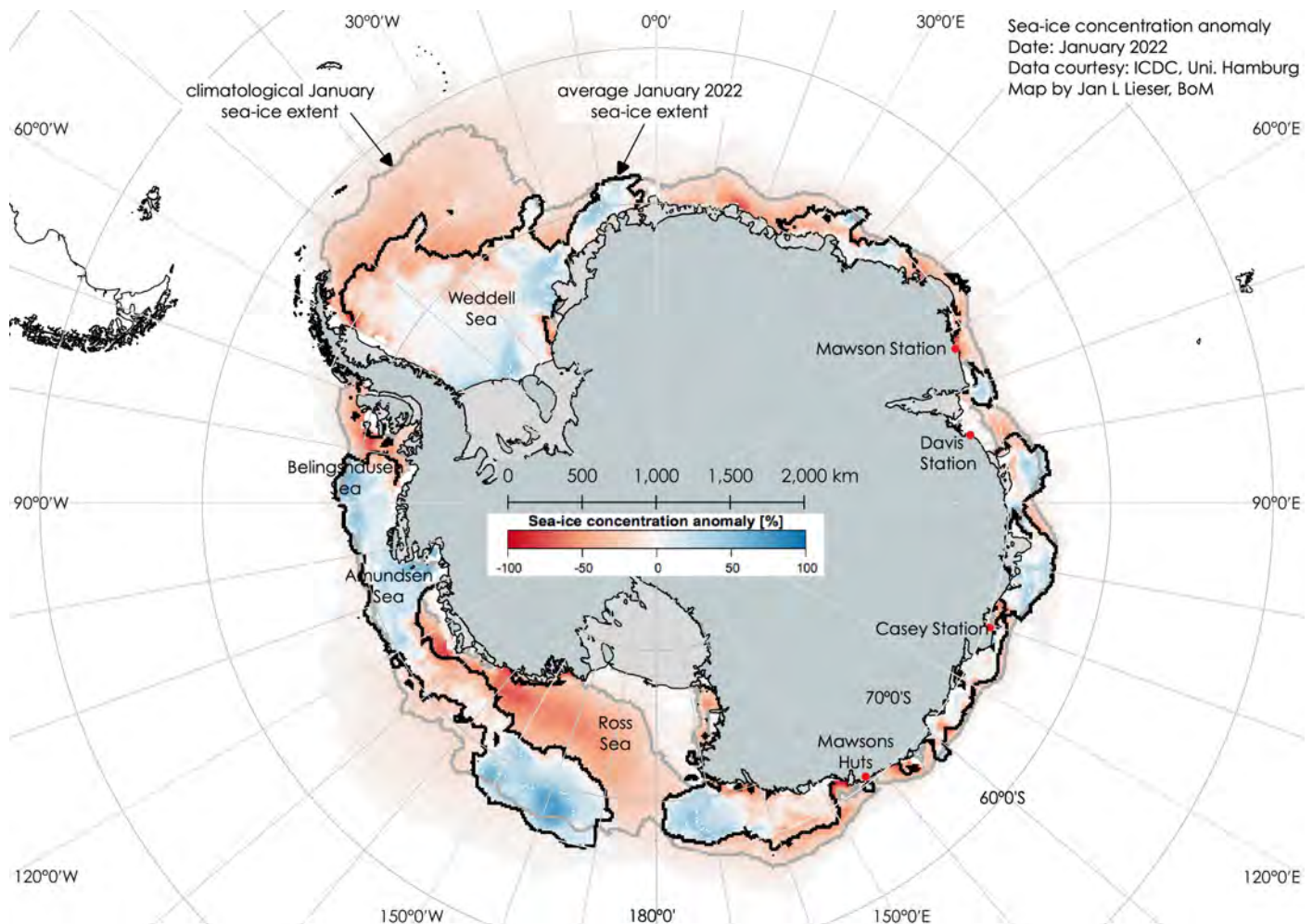


Figure 1: Sea-ice concentration anomaly for January 2022 provided by ICDC (Universität Hamburg).

In January 2022, pan-Antarctic sea-ice extent continued its rapid downward trend that started mid-September and fell to fourth lowest level for January. Regionally sea-ice extent and associated concentration anomalies varied.

A further weakened bi-modal pattern is still around Antarctica with narrowly positive anomalies east and west of 90°0'E and in the Amundsen Sea and western Bellingshausen Sea. In the eastern Ross Sea, a positive anomaly persists roughly 1000 km offshore.

However, large negative anomalies are widespread around the continent including coast exposed to the sea off Dronning Maud Land (0°0'E to 25°0'E) and parts of East Antarctica, including off Enderby Land (west of Mawson Station), off Mawson Station and in the D'Urville Sea (east and west of Mawsons Huts). Large negative anomalies are also found nearshore in the Ross Sea, west of the Antarctic Peninsula (Bellingshausen Sea) and almost the entire western Weddell Sea (between 60°0'W and 10°0'W).

Ice Bulletin: Wilkins Aerodrome

Issued: Friday 11th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Wilkins Aerodrome.

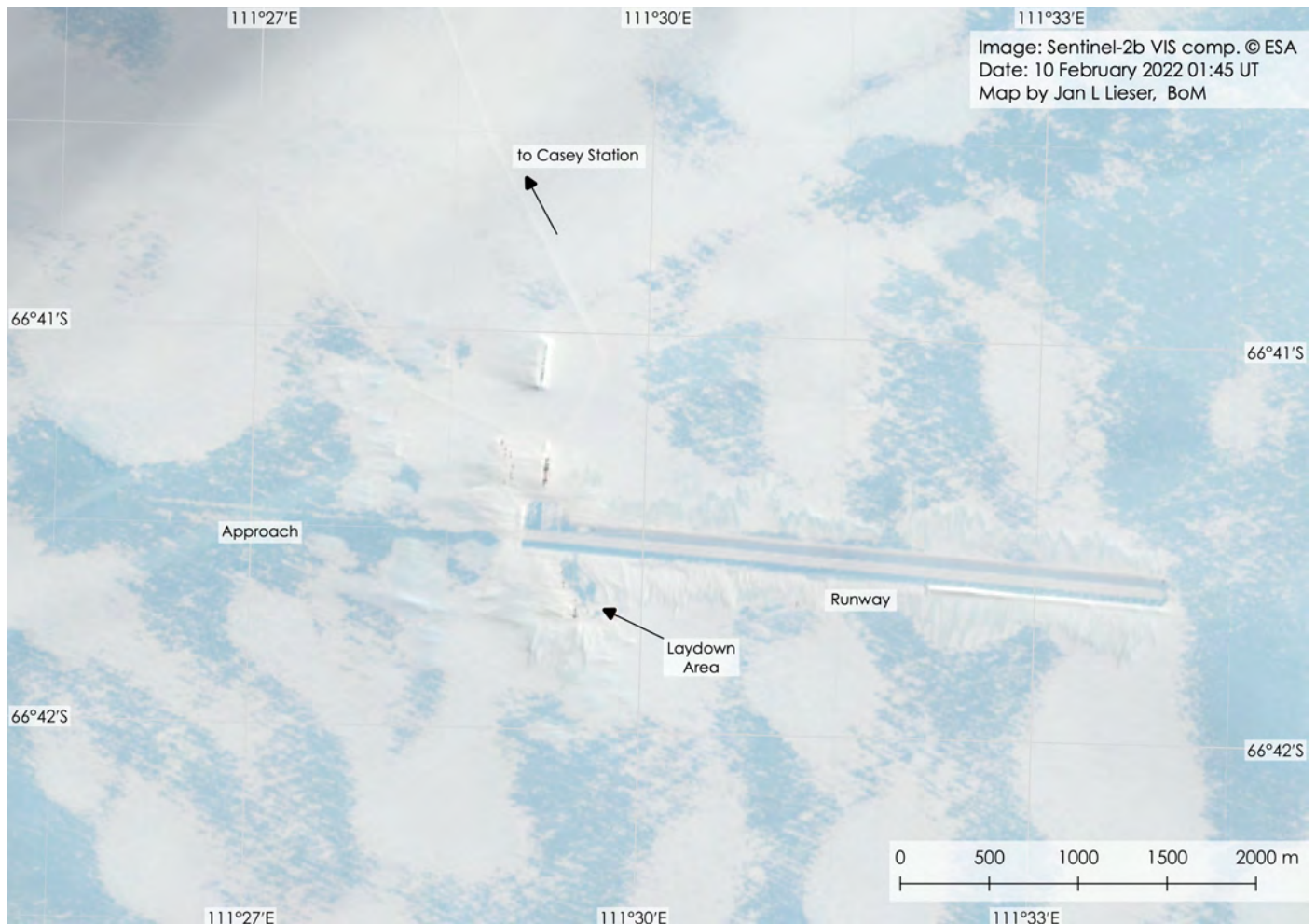


Figure 1: Sentinel-2b visible composite data acquired 10 February 2022 at 01:45 UT and provided by USGS.

The ice runway is clearly visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Casey Station

Issued: Friday 11th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Casey Station.

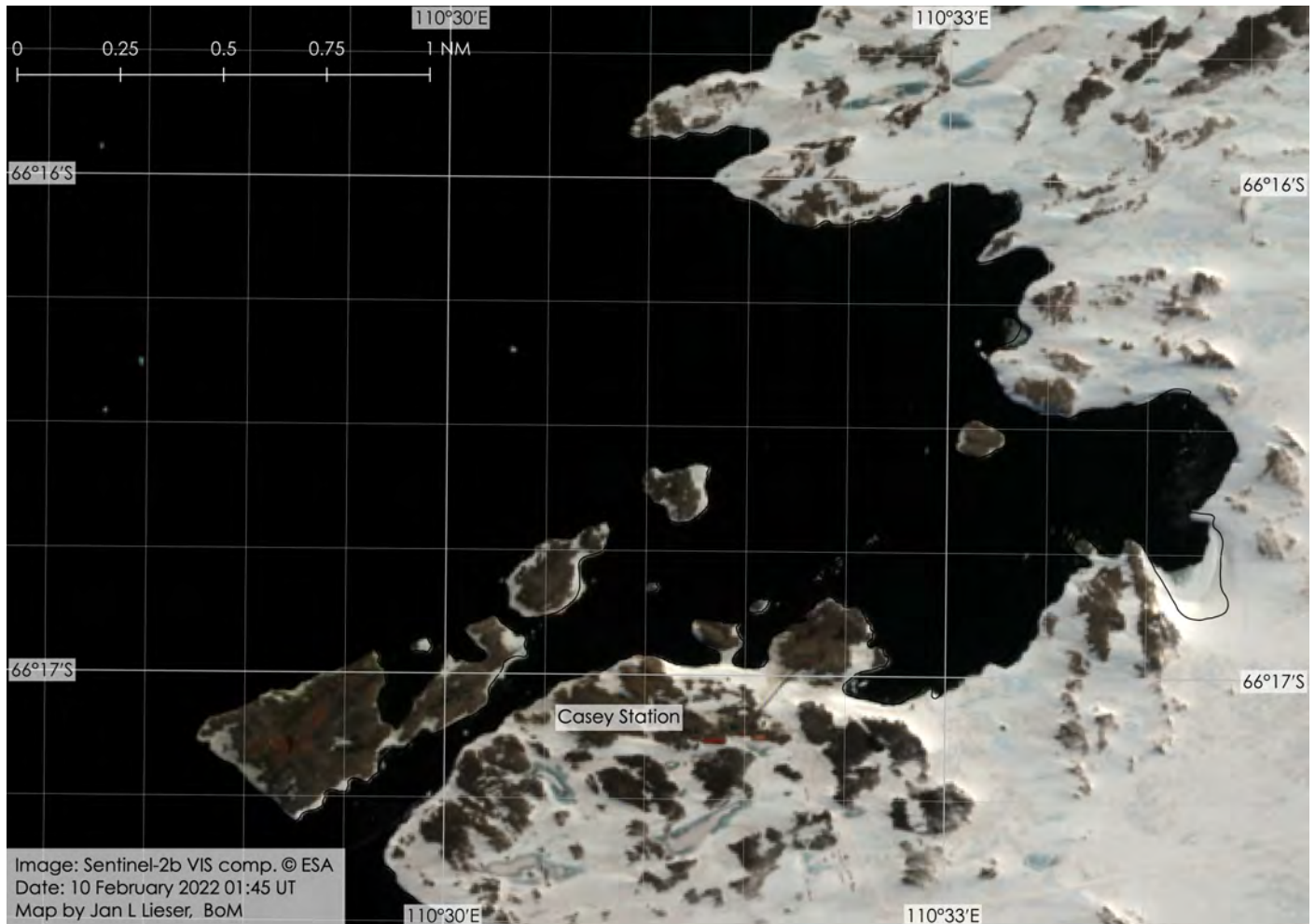


Figure 1: Sentinel-2b VIS composite data acquired 10 February 2022 at 01:45 UT and provided by USGS.

Only minimal sea ice remains off the station.

Figure 2 shows a larger overview south off Casey Station and further north.

Ex-fast ice and icebergs are drifting freely in the polynya. The fast ice of Petersen Bank continues to break up around its edges. The pack ice north of this patch of fast ice consists predominantly of ex-fast ice and old pack ice, both of which is melting and breaking up further currently.

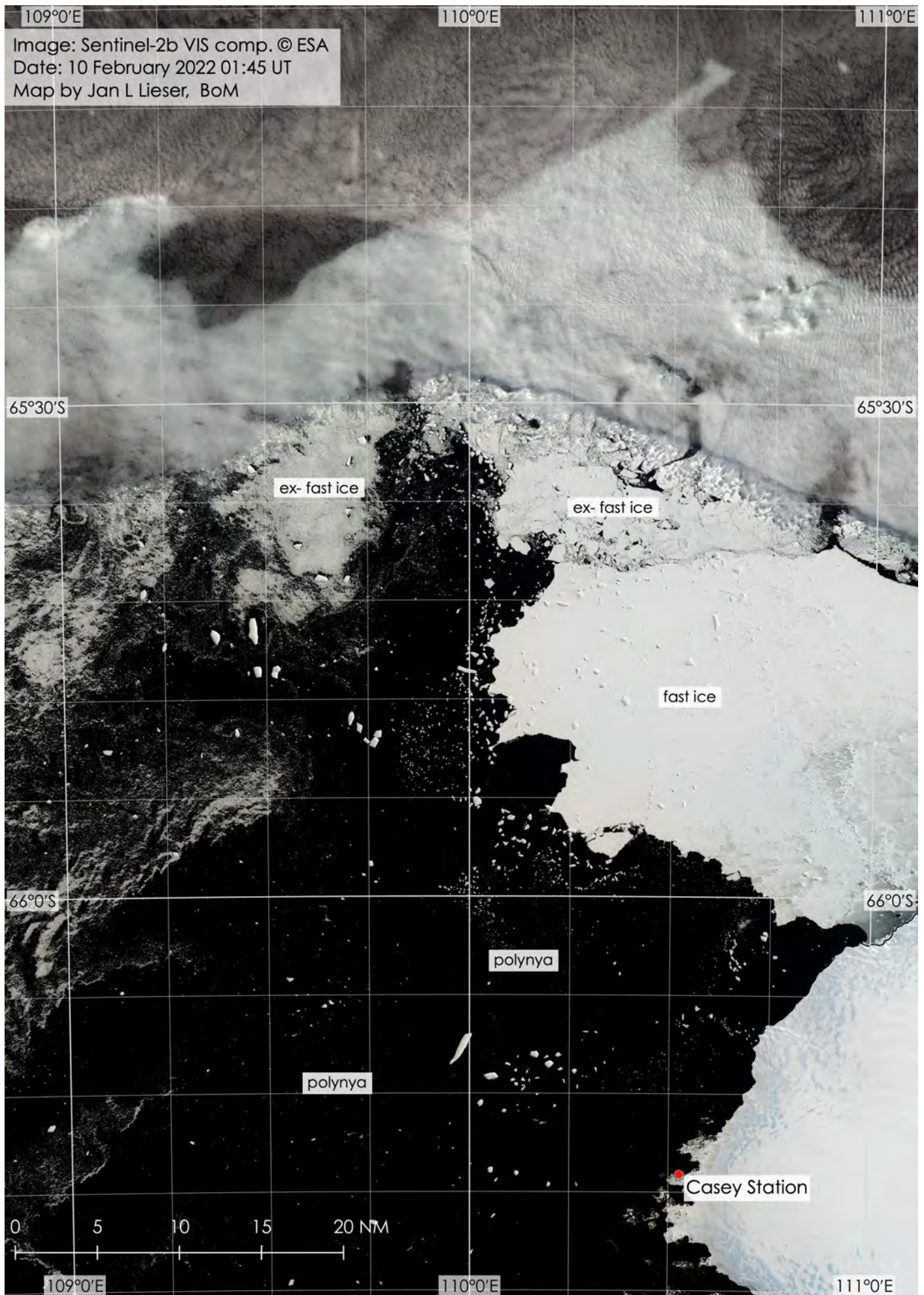


Figure 2: Sentinel-2b VIS composite data acquired 10 February 2022 at 01:45 UT and provided by USGS.

Ice Bulletin: Mawson Station

Issued: Friday 11th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Mawson Station.

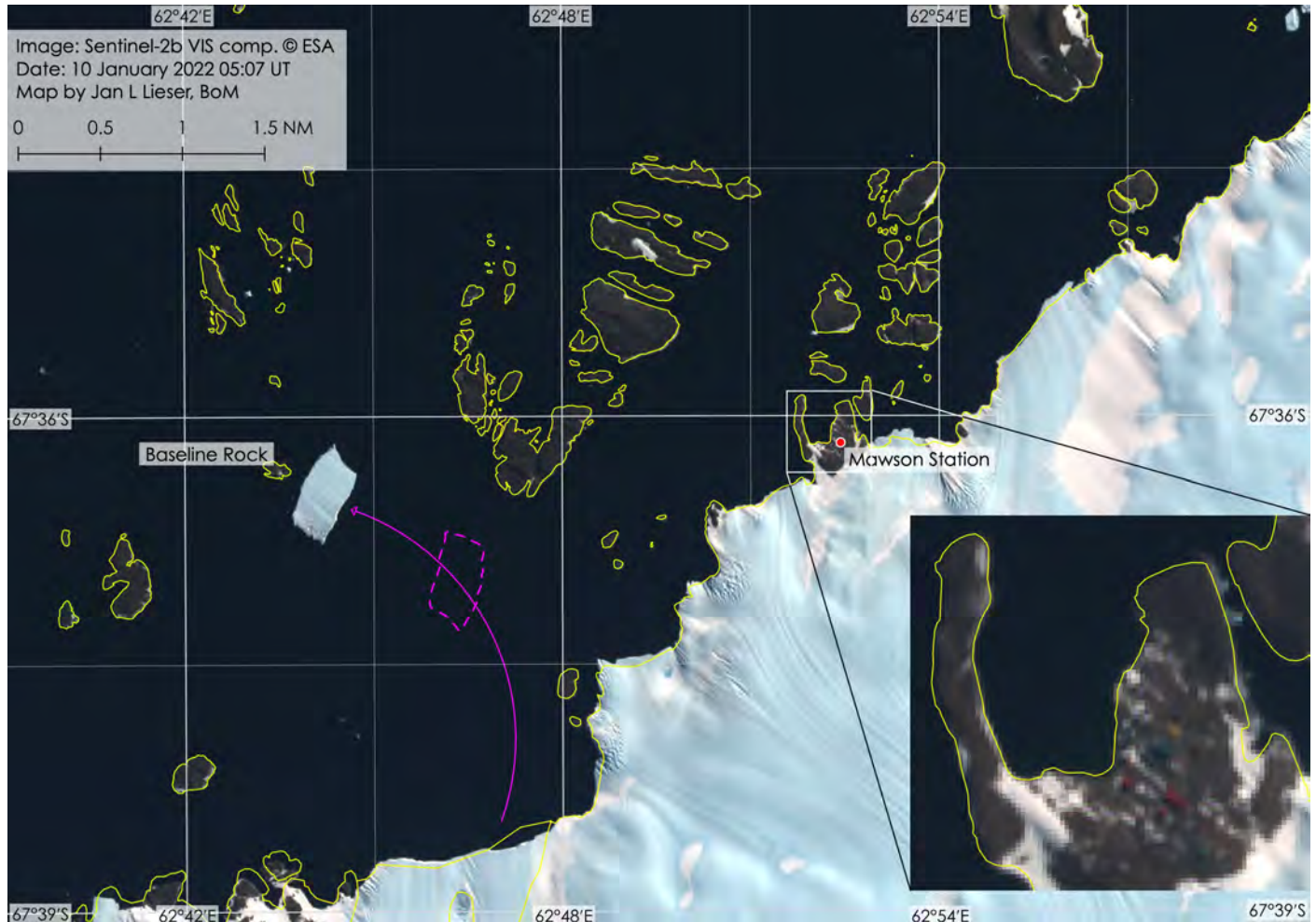


Figure 1: Sentinel-2b VIS composite data acquired 10 February 2022 at 05:07 UT and provided by USGS.

Off Mawson Station, no ice is present in Horseshoe Harbour or Kista Strait (see inset). Southwest of the station, one larger iceberg is drifting in north-westerly direction (as indicated by the pink arrow) and turned 180 degrees since yesterday (the pink shape).

Figure 2 shows the same data as Figure 1 but further north. Iceberg Alley is marked by blue outlines.

Iceberg Alley is currently filled by ex-fast ice, which is pushing through the rows of icebergs that make up both sides of the alley. While this process slows the sea-ice drift down it also forces the ice to further break up when it leaves the alley westward.

Figure 3 shows one of the first publicly available data sets for the recently launched Landsat-9. This data set was captured 30 minutes before the Sentinel-2 overpass (figure 1 and 2). Figure 4 shows an even larger overview of eastern Mawson Coast.

The ex-fast ice offshore originates from fast ice off Cape Darnley and is drifting westward roughly along 67°0. Recent offshore winds have pushed this ex-fast ice further north- and westward and it appears detached from the cape now.

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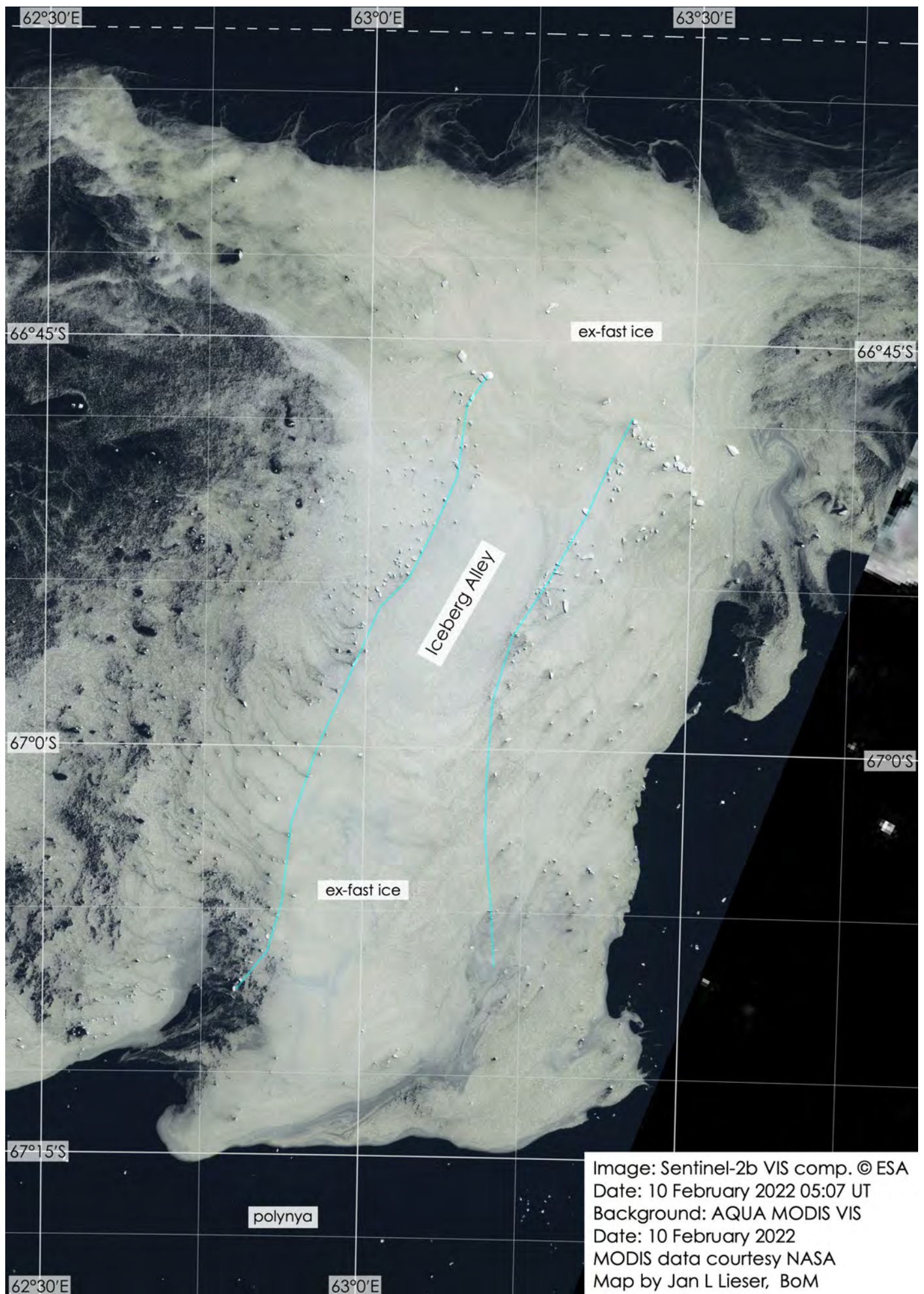


Figure 2: Sentinel-2b VIS composite data acquired 10 February 2022 at 05:07 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 10 February 2022 and provided by NASA.

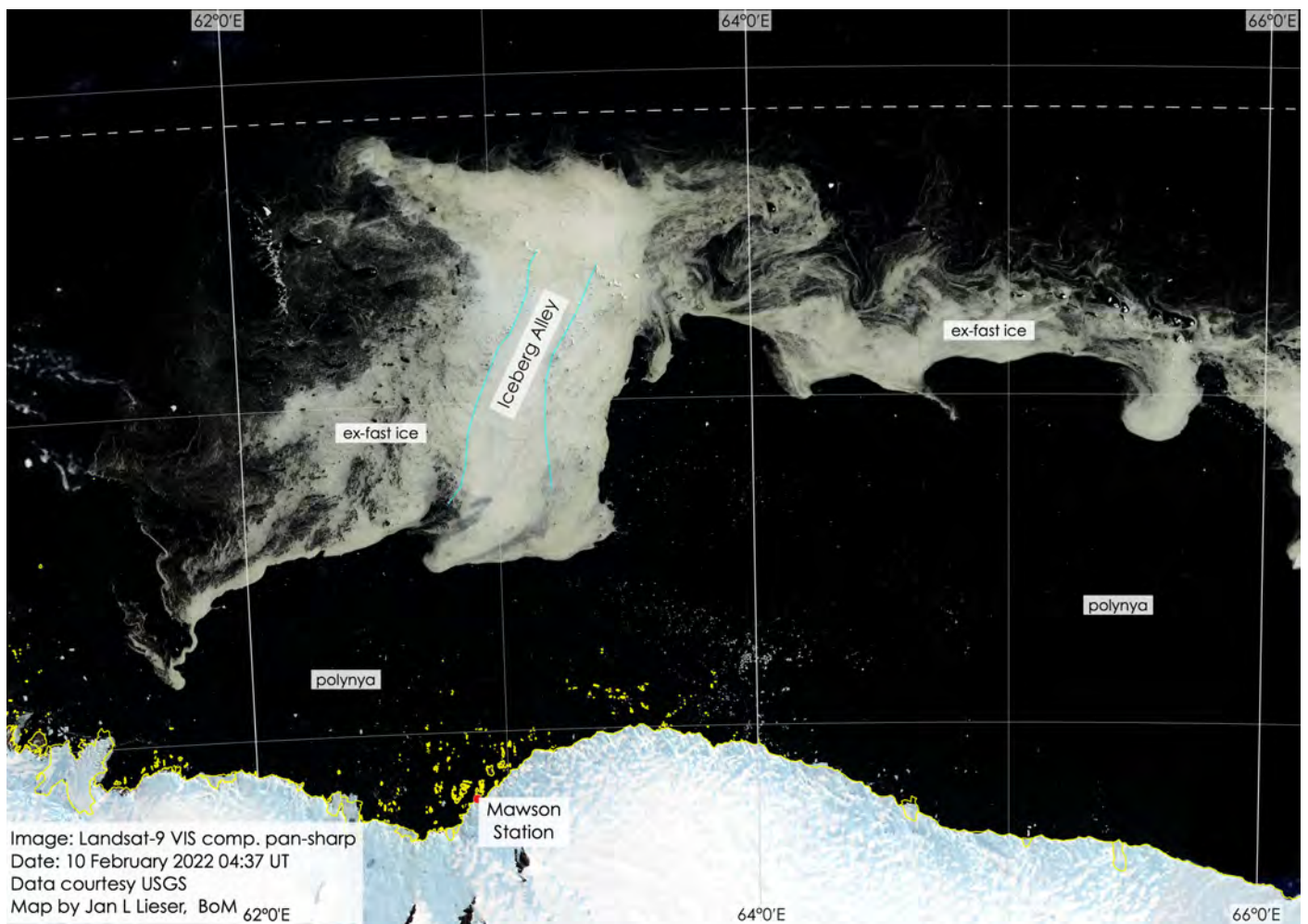


Figure 3: Landsat-9 VIS composite pan-sharpened data acquired 10 February 2022 at 04:37 UT and provided by USGS.

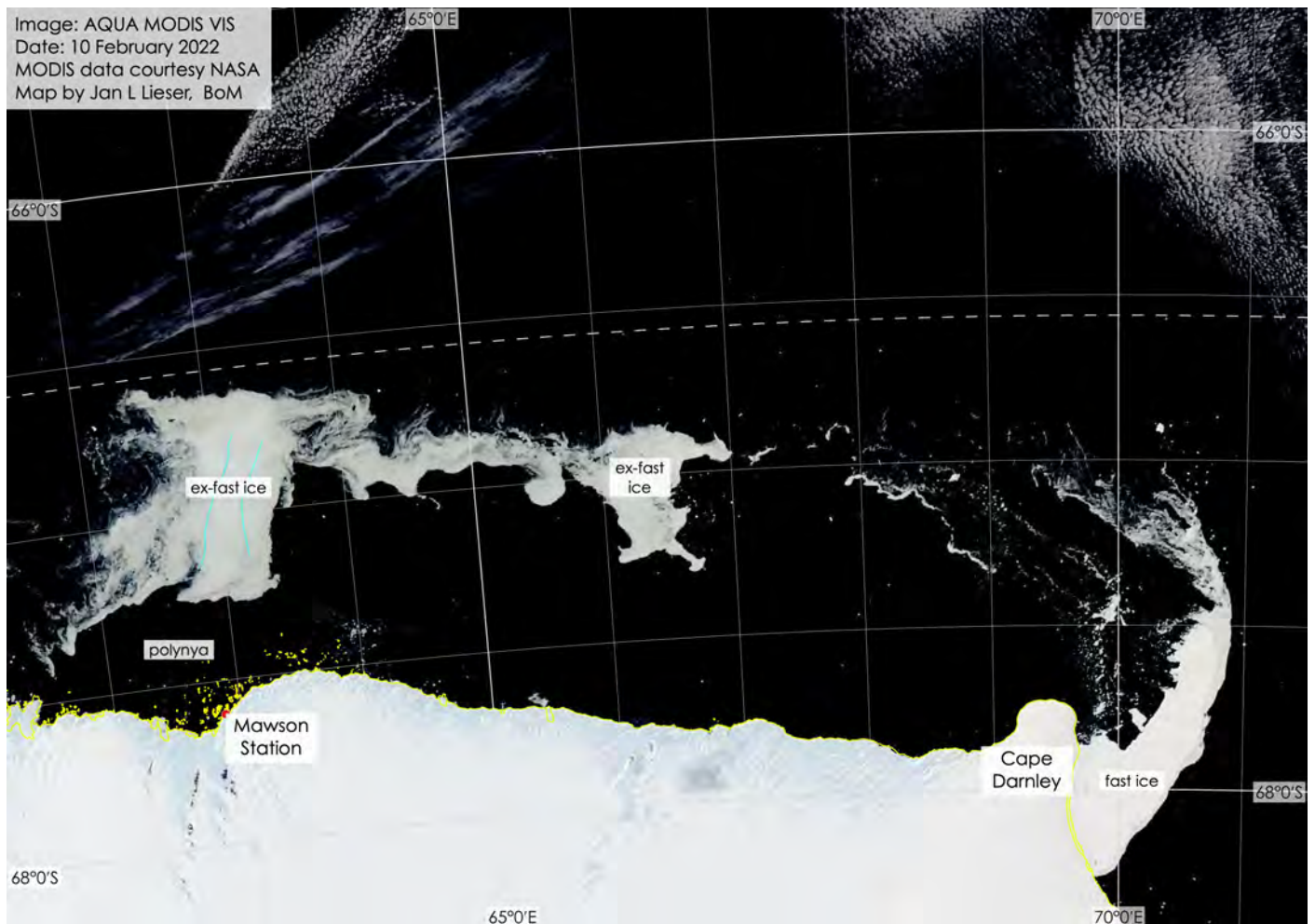


Figure 4: AQUA MODIS VIS composite data acquired 10 February 2022 and provided by NASA.

Ice Bulletin: Mawson Station

Issued: Saturday 12th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Mawson Station.

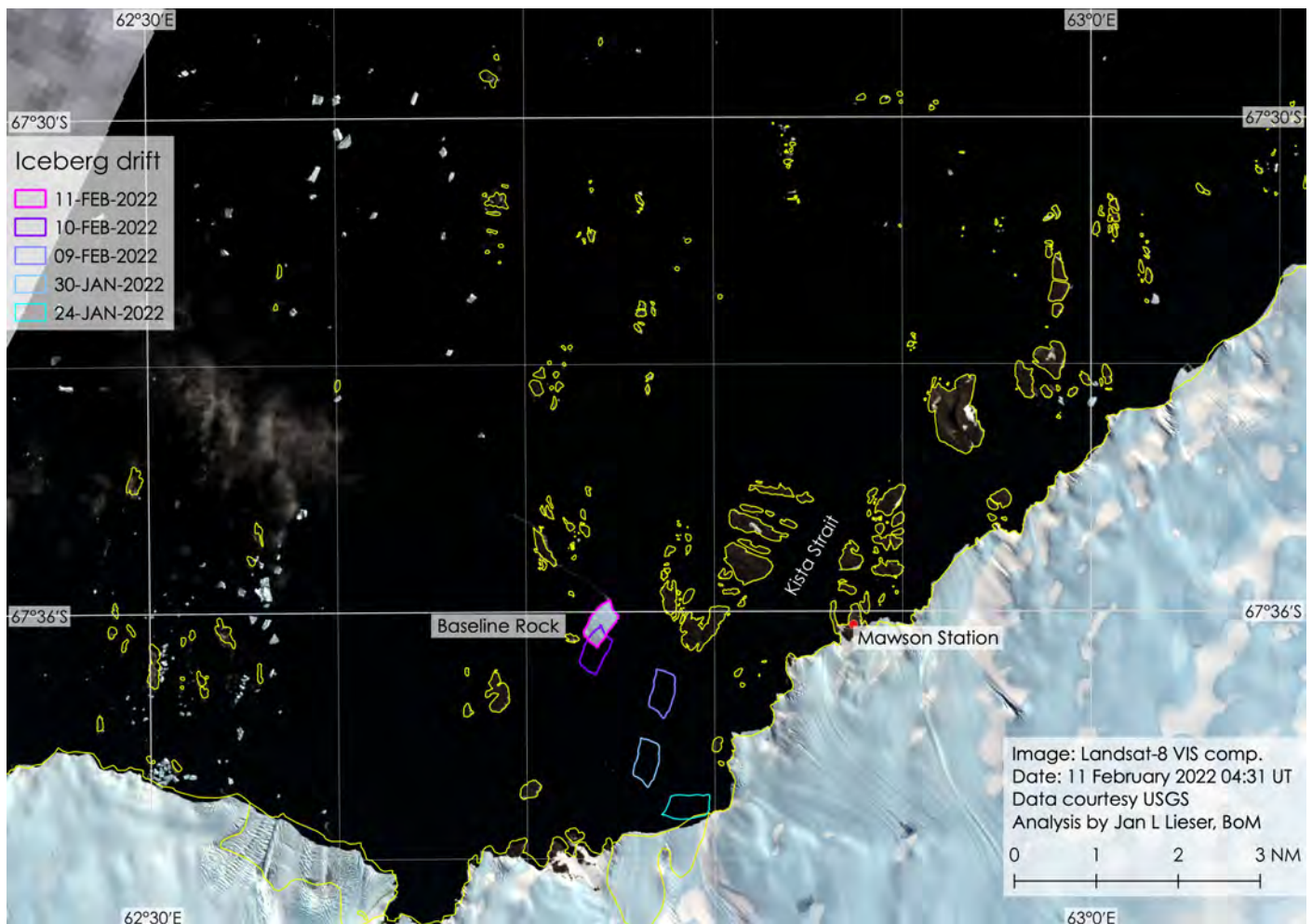


Figure 1: Landsat-8 VIS composite pansharp data acquired 11 February 2022 at 04:31 UT and provided by USGS.

Off Mawson Station, no ice is present in Horseshoe Harbour or Kista Strait. Southwest of the station, an iceberg of 439,000 m² (43.9 ha) is drifting in northerly direction (as indicated by colour-coded shapes), turned 180 degrees between 9th January and 10th January and narrowly avoided Baseline Rock in the past 24 hours.

Figure 2 shows the same data as Figure 1 but further north and eastward. Iceberg Alley is marked by blue outlines.

Iceberg Alley remains filled by ex-fast ice, which is pushing through the rows of icebergs that make up both sides of the alley. This process slows the sea-ice drift down but also forces the ice to further break up when it leaves the alley westward. The ex-fast ice originates from fast ice off Cape Darnley (not shown) and is drifting westward roughly along 67°0.

Figure 3 shows the same frame as Figure 2, but high-resolution data 24 hours earlier for comparison.

Currently, calmer conditions allow for redistribution of the pack ice (ex-fast ice) predominantly by surface ocean currents and smaller-scale eddies, which is particularly evident east of Iceberg Alley.

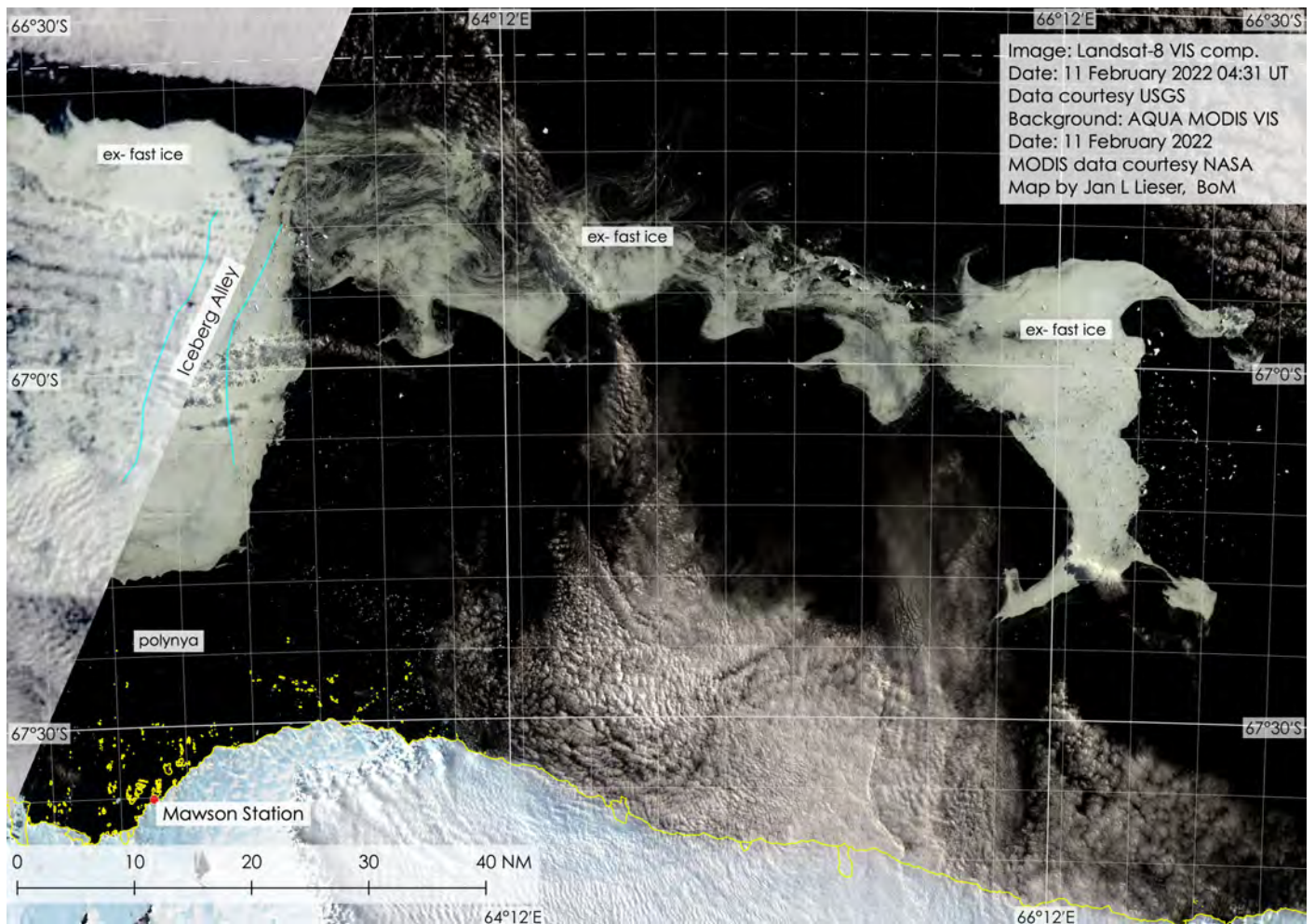


Figure 2: Landsat-8 VIS composite pan-sharpened data acquired 11 February 2022 at 04:31 UT and provided by USGS.

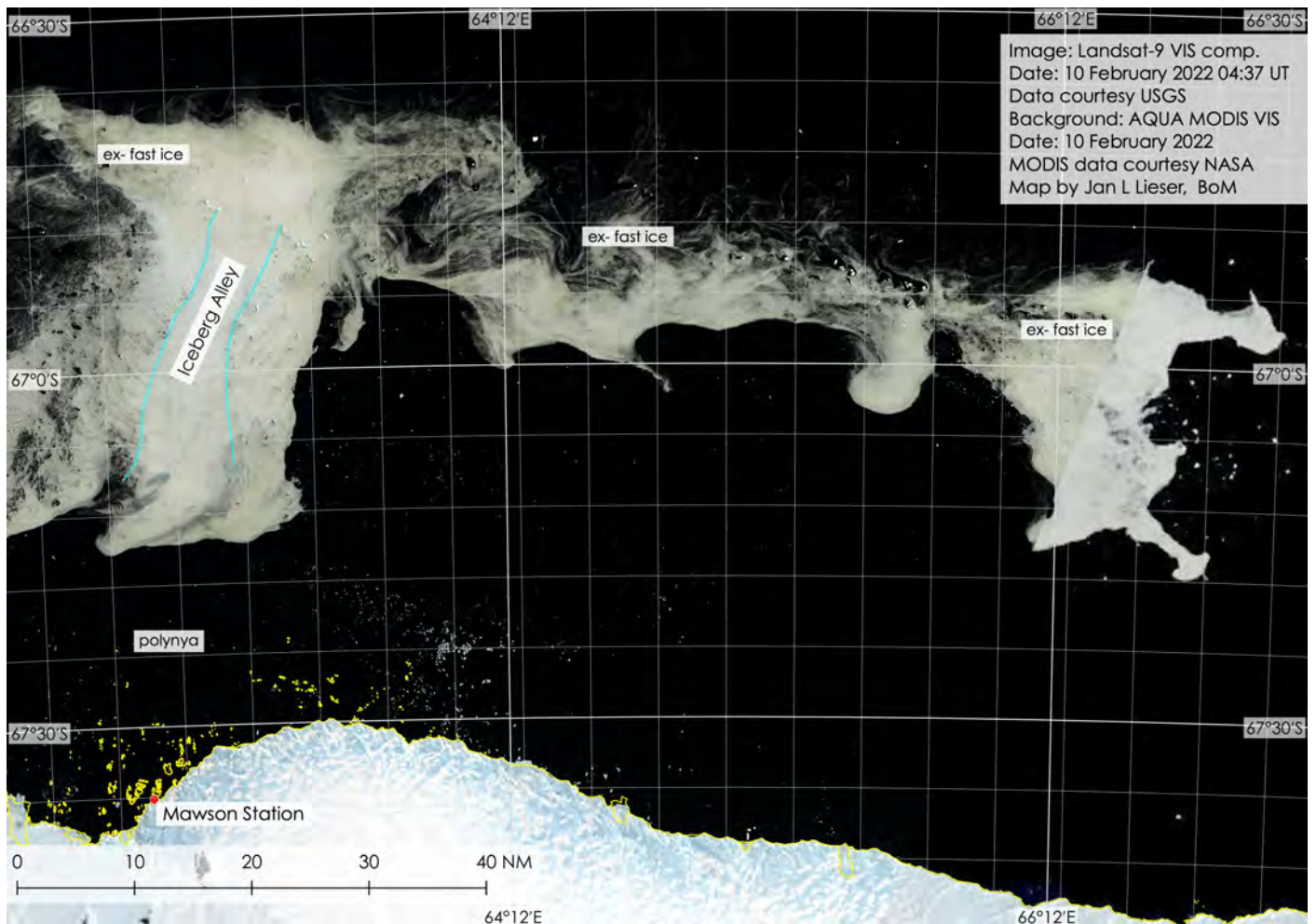


Figure 3: Landsat-9 VIS composite pan-sharpened data acquired 10 February 2022 at 04:37 UT and provided by USGS.

Ice Bulletin: Davis Station

Issued: Sunday 13th February 2022

Analyst: Jan L Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Davis Station. In the Vestfold Hills, the fast-ice edge is marked in red.

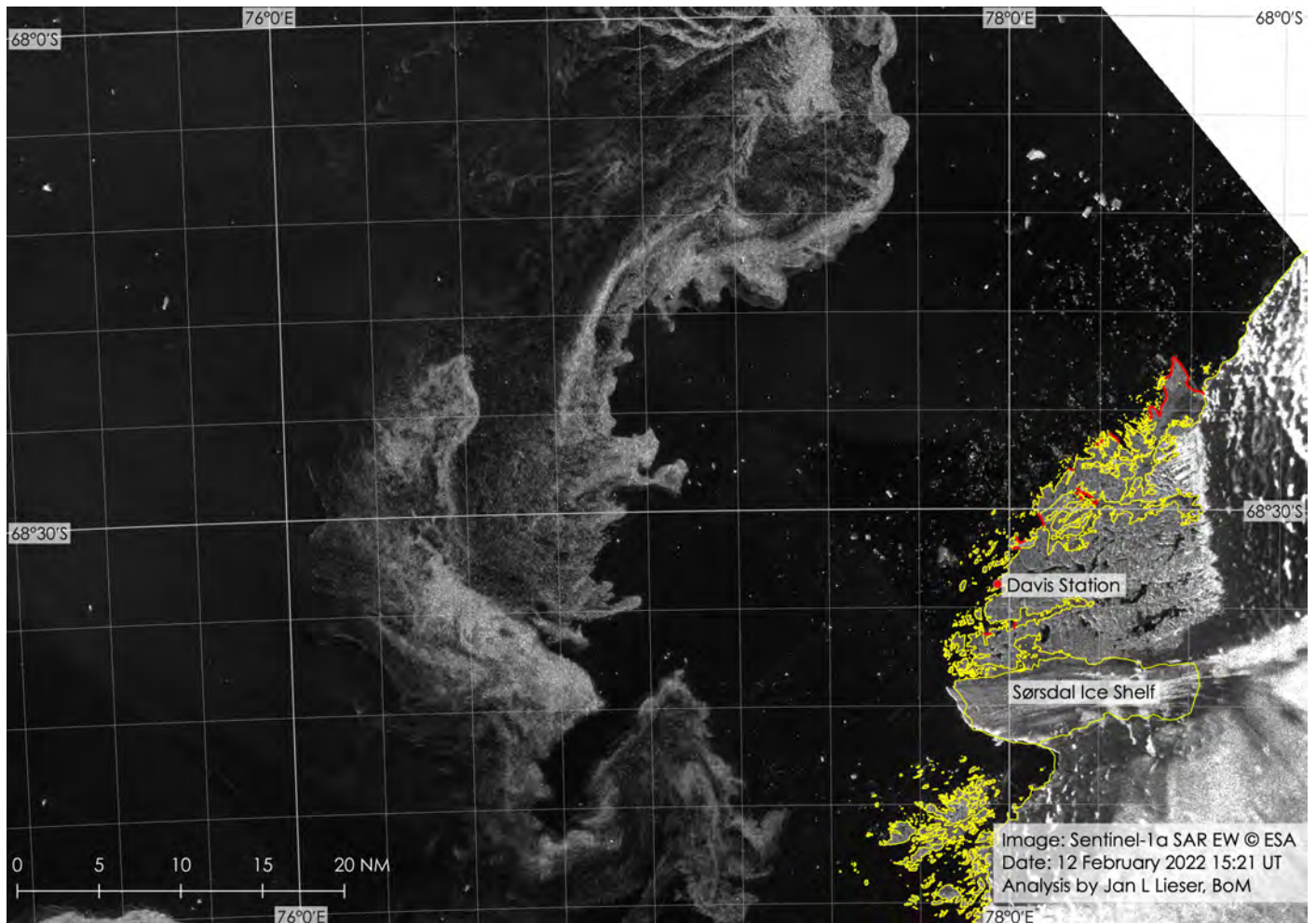


Figure 1: Sentinel-1a SAR EW data acquired 12 February 2022 at 15:21 UT and provided by PolarView.

Off Davis Station, ex-fast ice is drifting generally south-westward and currently dispersed by small-scale oceanic surface currents and eddies. This pack ice consists of a melange of old sea ice and ex-fast ice originating from east of the D-15 icebergs north of the West Ice Shelf (not shown in the figure).

Figure 2 shows a closer zoom of Davis Station/the Vestfold Hills.

North of the station, the entrance to Long Fjord appears now free of fast ice and the fast ice of Tryne Bay is also breaking up. Offshore, icebergs of varying size are present of which some are grounded, while others are drifting.

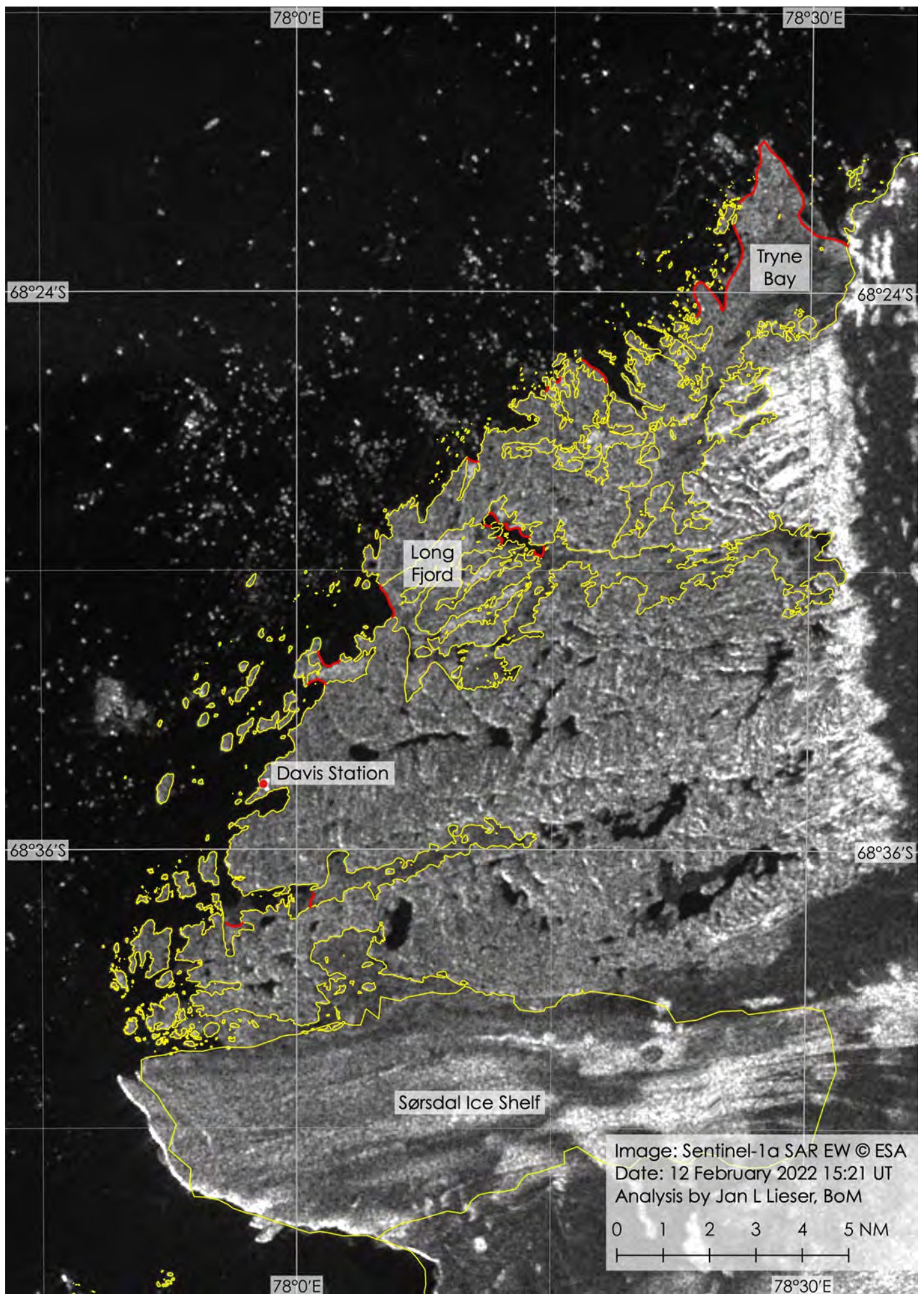


Figure 2: Sentinel-1a SAR EW data acquired 12 February 2022 at 15:21 UT and provided by PolarView.

Ice Bulletin: Casey Station

Issued: Monday 14th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data north of Casey Station.

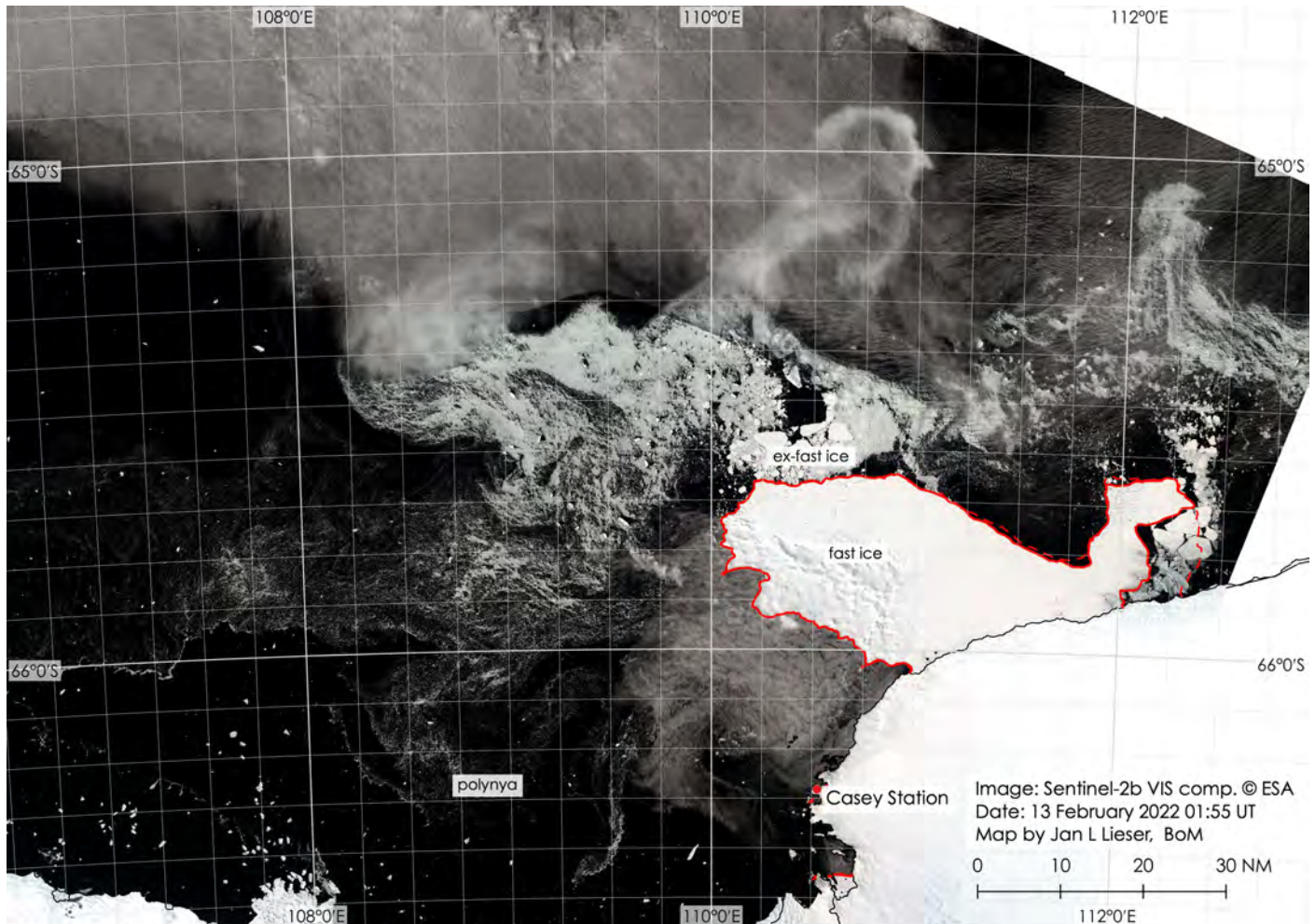


Figure 1: Sentinel-2b VIS composite data acquired 13 February 2022 at 01:55 UT and provided by USGS.

North of Casey Station, fast ice continues to break up and releases some vast ex-fast ice floes into the generally westward sea-ice drift. Those vast floes are accompanied by smaller ex-fast ice floes and decaying pack ice. Along 108°0'E, only minimal sea ice is present.

Figure 2 shows a closer view south off Casey Station and further north.

Only minimal sea ice remains off the station. Ex-fast ice and icebergs are drifting freely in the polynya.

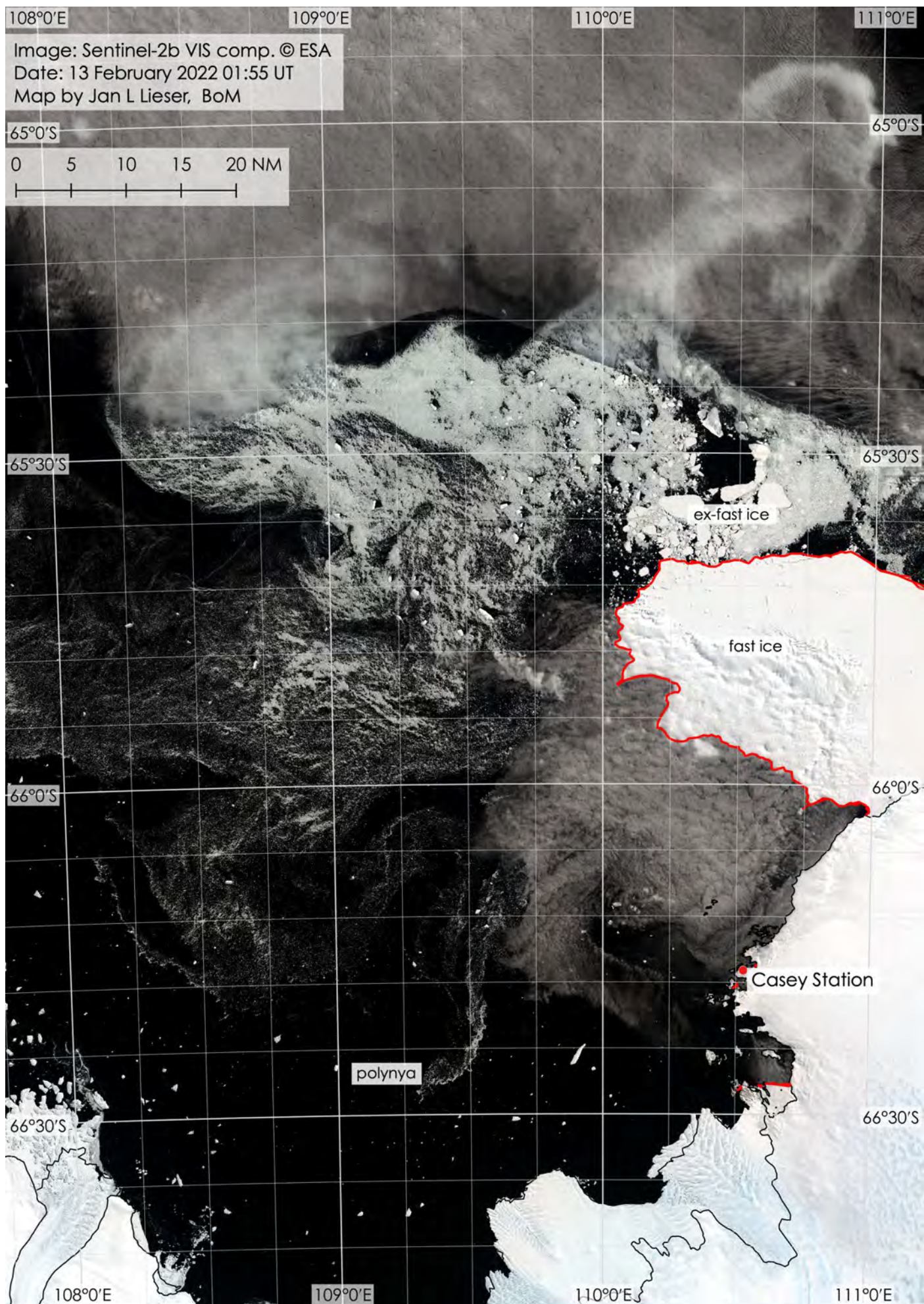


Figure 2: Sentinel-2b VIS composite data acquired 13 February 2022 at 01:55 UT and provided by USGS.

Ice Bulletin: Wilkins Aerodrome

Issued: Monday 14th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Wilkins Aerodrome.

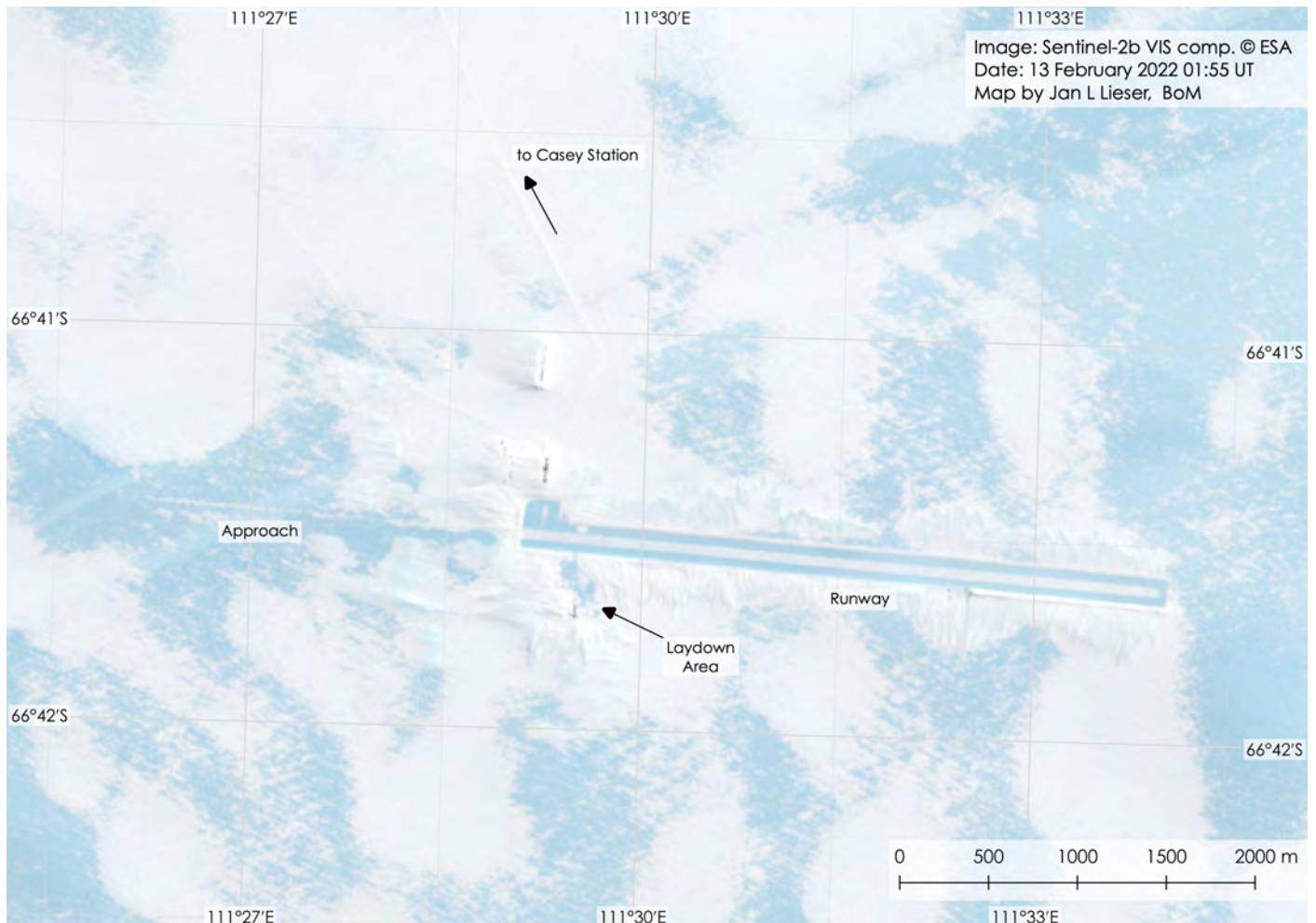


Figure 1: Sentinel-2b visible composite data acquired 13 February 2022 at 01:55 UT and provided by USGS.

The ice runway is clearly visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Mawson Station

Issued: Monday 14th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Mawson Station. North of the station, Iceberg Alley is marked by blue outlines.

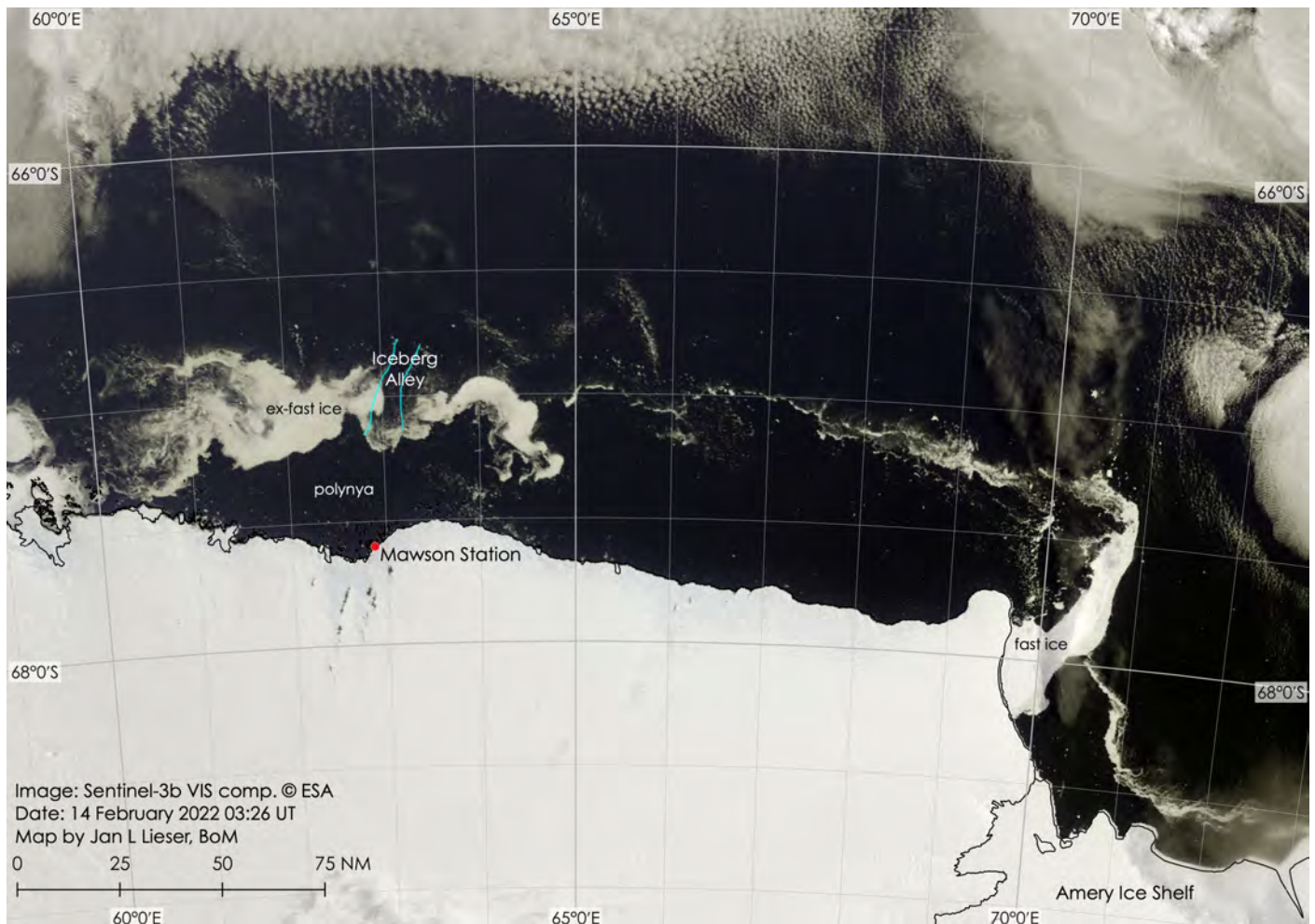


Figure 1: Sentinel-3b VIS composite data acquired 14 February 2022 at 03:26 UT and provided by ESA.

During the weekend, most of the ex-fast ice that occupied Iceberg Alley cleared westward. As a result, only in the southern part the alley some pack ice remains.

The ex-fast ice offshore Mawson Coast originates from a shrinking patch of fast ice northwest of the Amery Ice Shelf. The streak of ex-fast ice is thinning out as it is drifting westward roughly south of and along 67°0. Winds and ocean surface eddies and currents redistribute the pack ice generally further westward.

Ice Bulletin: Davis Station

Issued: Monday 14th February 2022

Analyst: Jan L Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Davis Station.

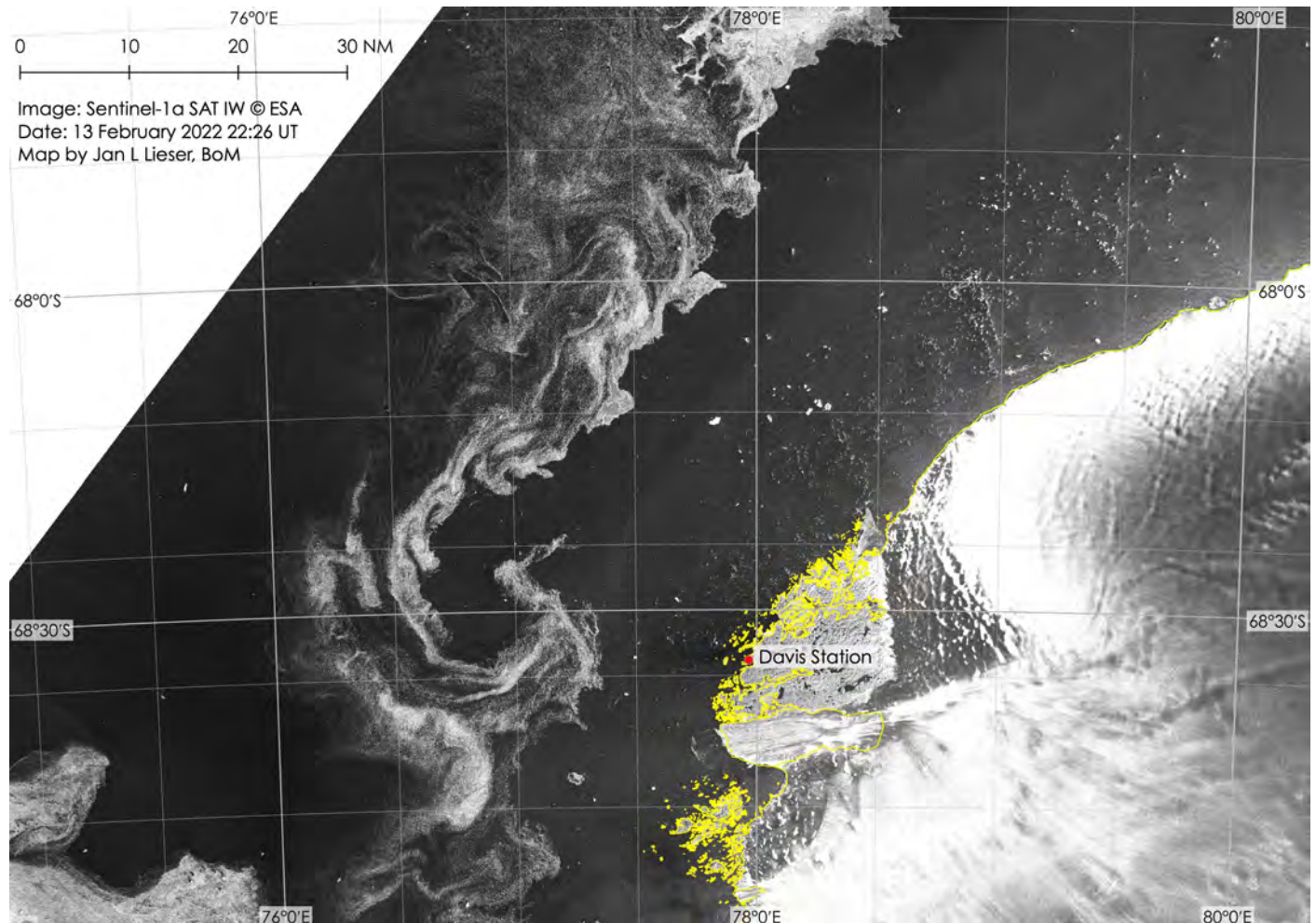


Figure 1: Sentinel-1a SAR IW data acquired 13 February 2022 at 22:26 UT and provided by PolarView.

Off Davis Station, ex-fast ice is drifting generally south-westward and continues to be redistributed by small-scale oceanic surface currents and eddies. This pack ice consists of a melange of old sea ice and ex-fast ice originating from east of the D-15 icebergs north of the West Ice Shelf (not shown in the figure).

Figure 2 shows a closer zoom of Davis Station/the Vestfold Hills.

North of the station, the entrance to Long Fjord is now free of fast ice and the fast ice of Tryne Bay is also breaking up and pushed westward against grounded icebergs. Off the Vestfold Hills, icebergs of varying size are present of which some are grounded, while others are drifting.

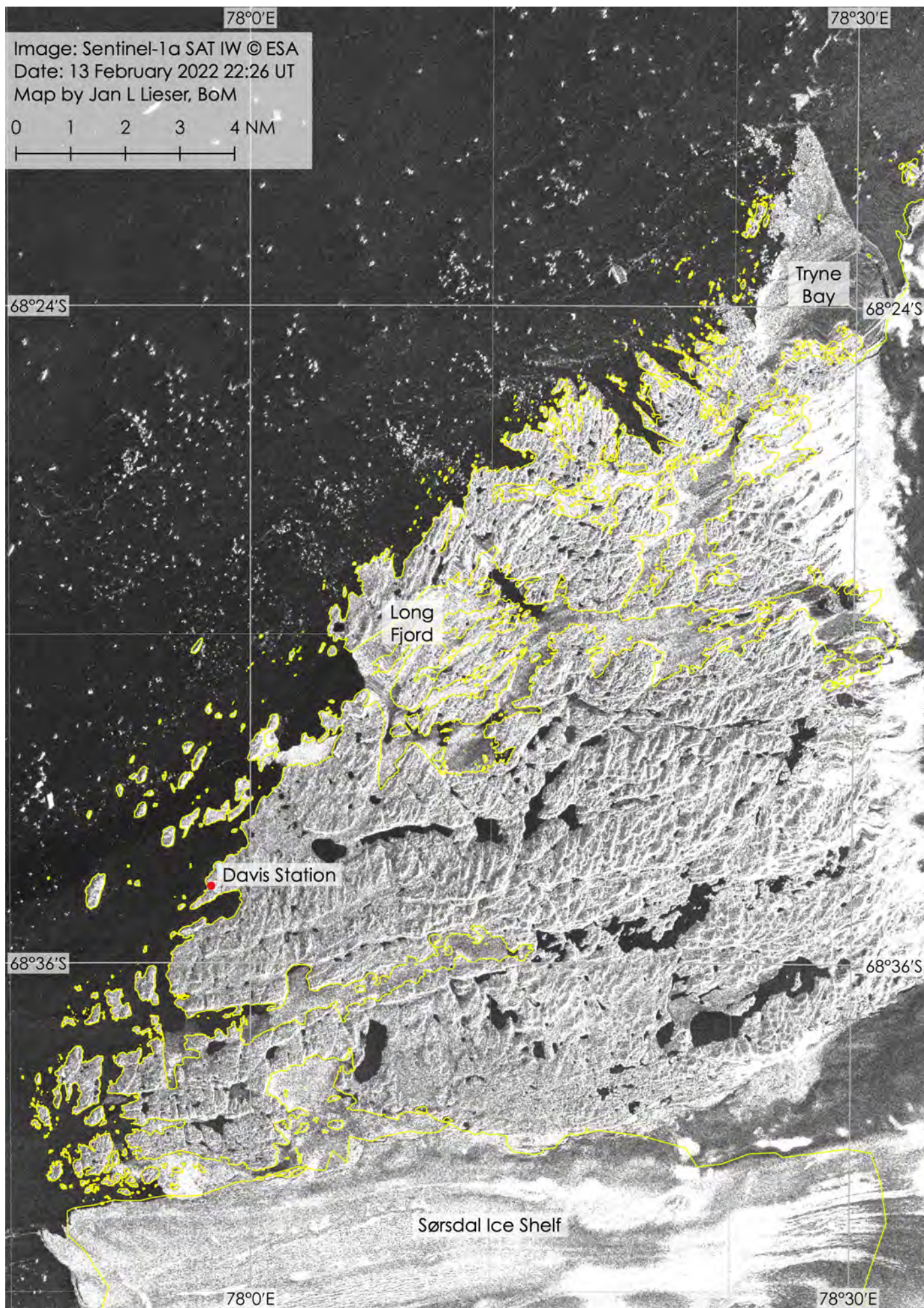


Figure 2: Sentinel-1a SAR IW data acquired 13 February 2022 at 22:26 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Tuesday 15th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data of Iceberg Alley (marked by blue outlines) north of Mawson Station.

Most of the ex-fast ice that occupied Iceberg Alley cleared westward. Only in the south-western part of the alley some pack ice remains.

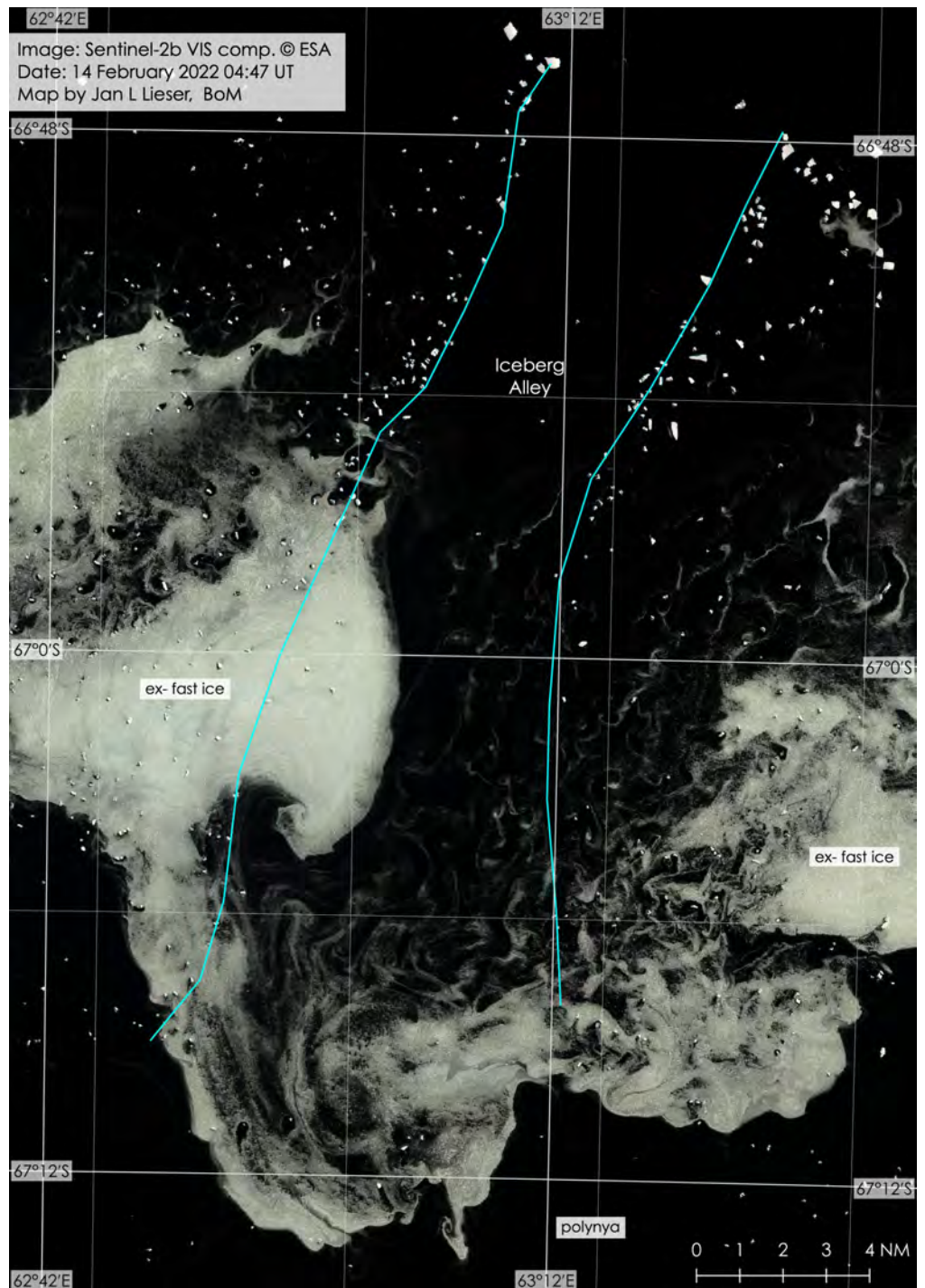
West of the south-western part of the alley, some apparent iceberg tracks indicate the drift direction of the pack ice, even though the icebergs did not move through the pack but rather the pack ice around the icebergs creating a wake.

Figure 2 provides a larger overview of eastern Mawson Coast in the upper panel and a close-up view of Mawson Station and surrounds in the lower panel.

The ex-fast ice north of Mawson Station originates from a shrinking patch of fast ice northwest of the Amery Ice Shelf (not shown in the figure). The streak of ex-fast ice continues thinning out while it is drifting westward. Winds and ocean surface eddies and currents redistribute the pack ice generally further westward, and a close inspection of the pack ice also shows some swell penetrating the pack.

West of Mawson Station, a large iceberg continues its northward drift through the islands (as indicated by the colour-coded shapes).

Figure 1: Sentinel-2b VIS composite data acquired 14 February 2022 at 04:47 UT and provided by USGS.



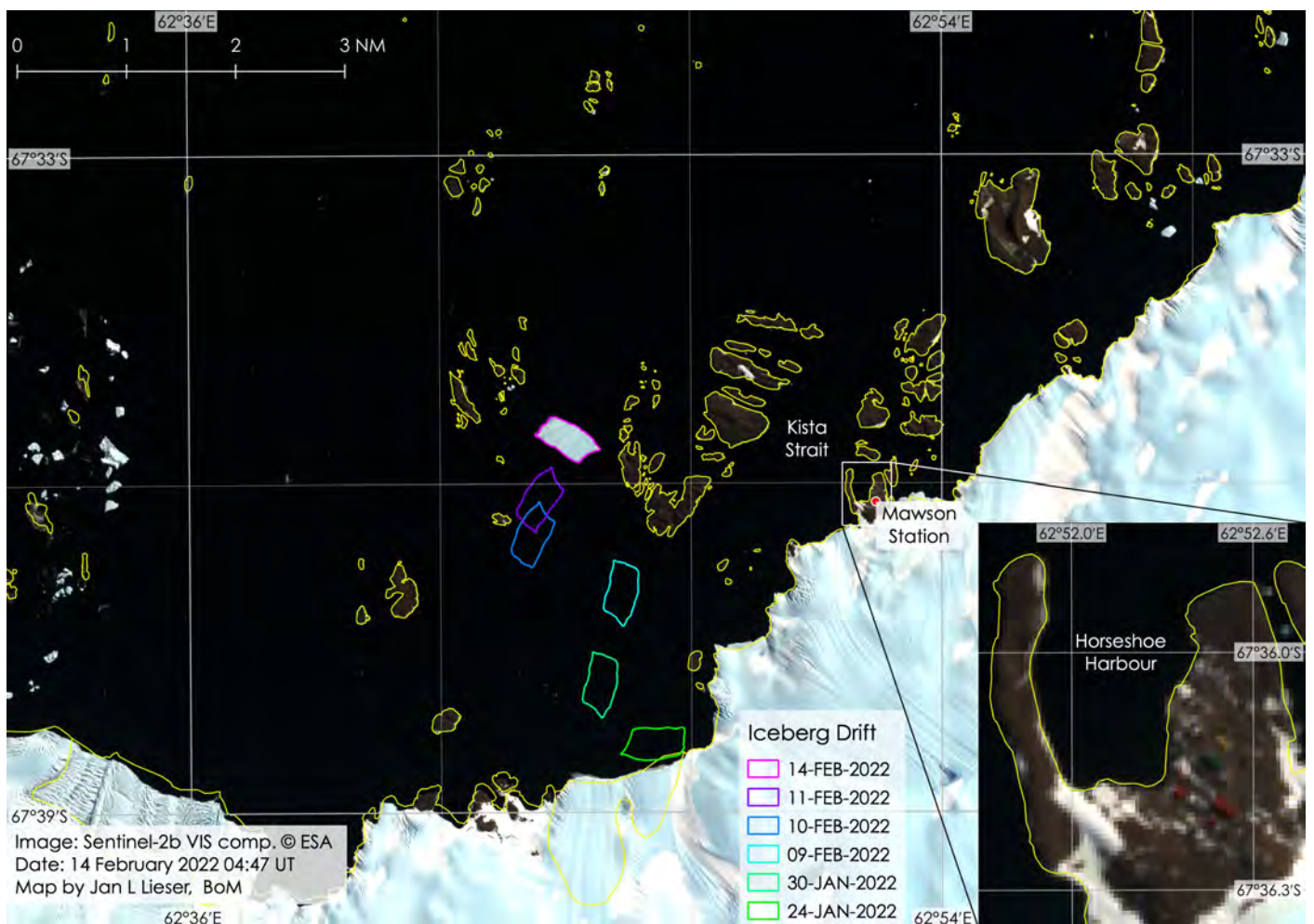
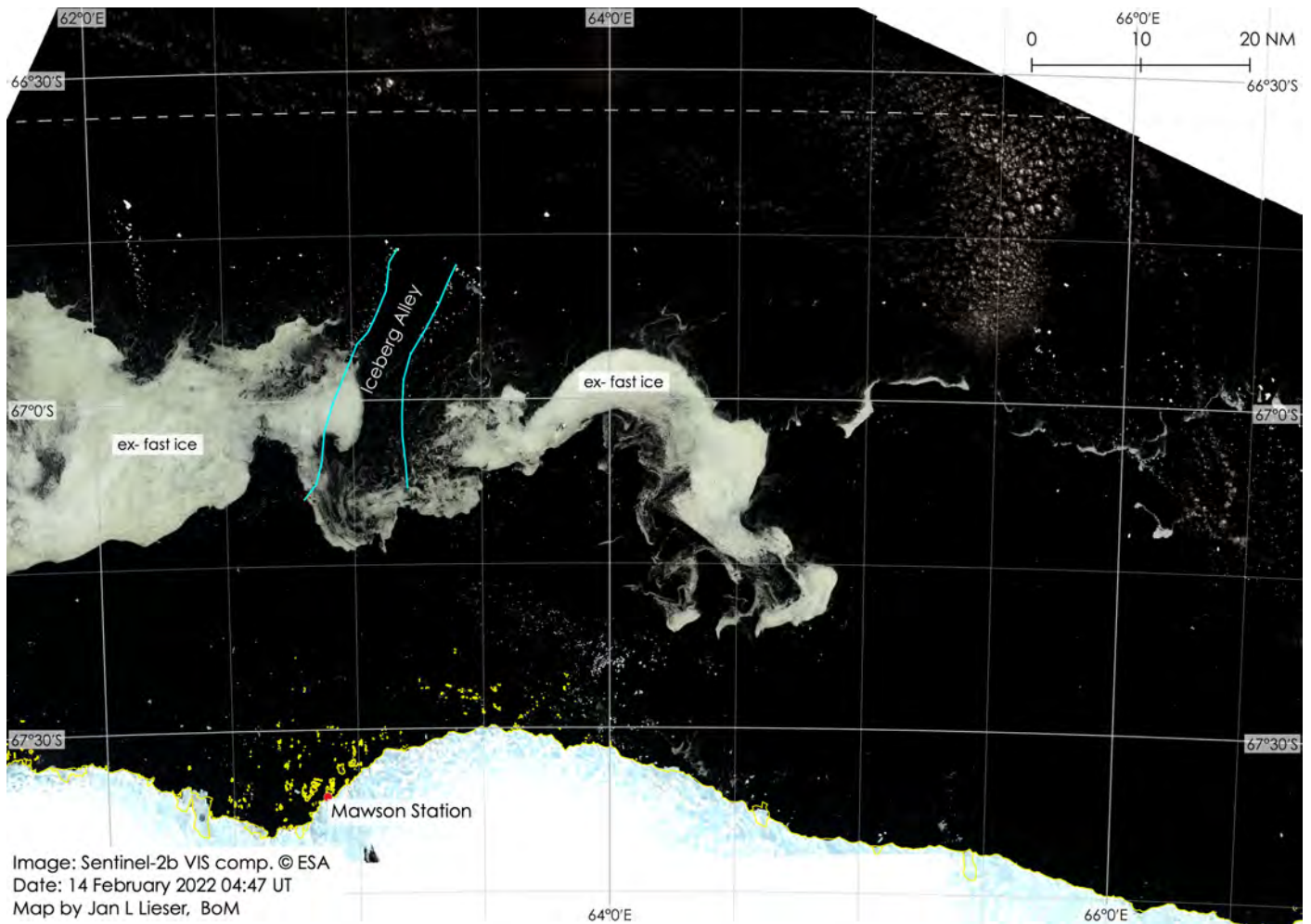


Figure 2: Sentinel-2b VIS composite data acquired 14 February 2022 at 04:47 UT and provided by USGS.

Ice Bulletin: Shackleton Ice Shelf

Issued: Tuesday 15th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of the Shackleton Ice Shelf. Four large tabular icebergs that are grounded north of the ice shelf are annotated.

The dataset was analysed for iceberg presence north of the sea-ice edge and more than 4600 features have been detected and marked by pink dots.

Icebergs have been detected as far north as 58°20'S and the region north of the sea-ice edge can be regarded as bergy water.

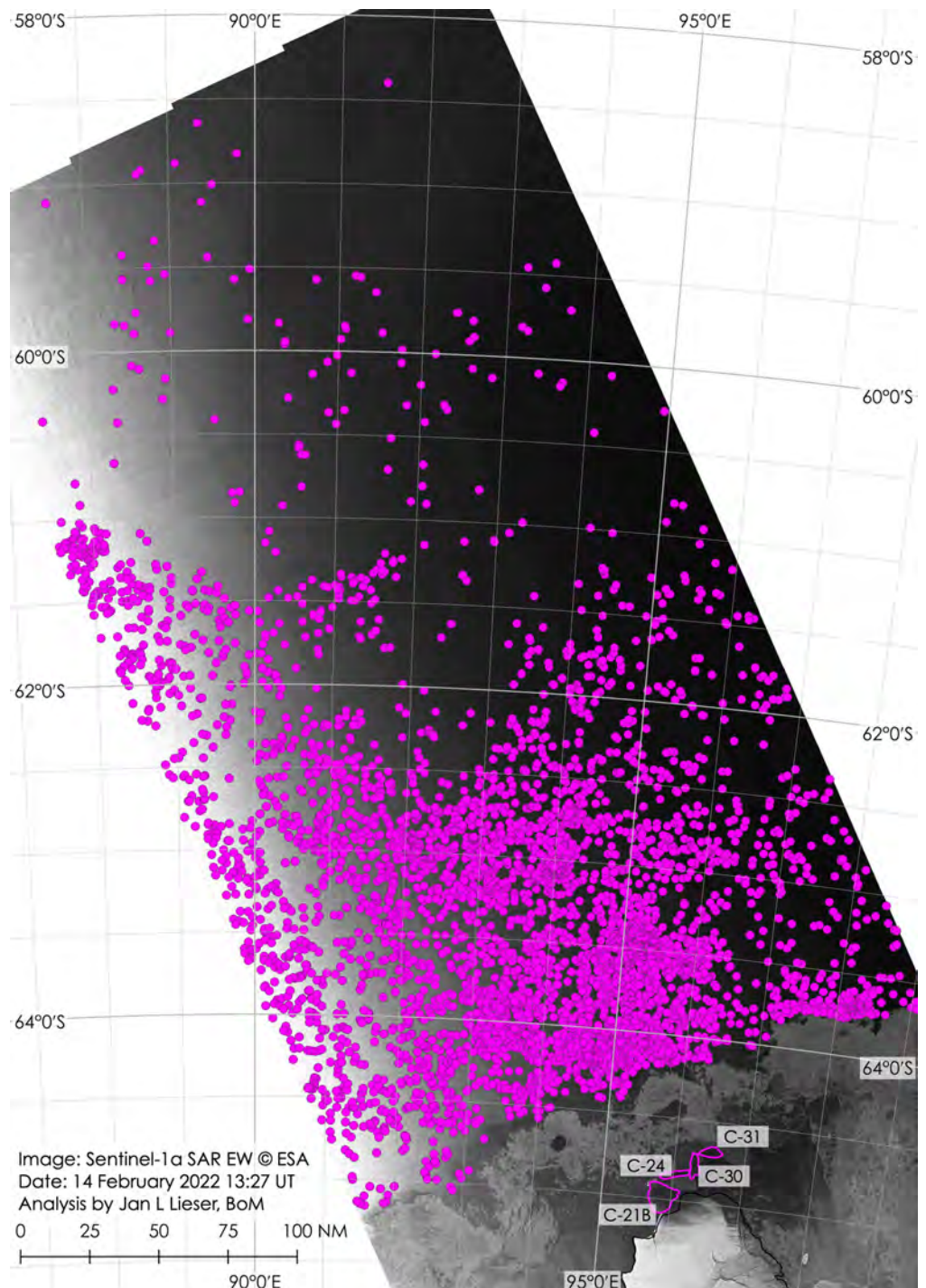


Figure 1: Sentinel-1a SAR EW data acquired 14 February 2022 at 13:27 UT and provided by ESA.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Casey Station

Issued: Wednesday 16th February 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Casey Station.

The dataset was analysed for iceberg presence north of Casey Station and more than 1800 features have been detected and marked by pink dots.

Icebergs have been detected as far north as 60°S and the region north of the pack-ice edge can be regarded as bergy water.

To the north and east of Casey Station, fast ice (outlined in red) continues to break up forming extensive ex-fast ice floes which are generally drifting westward.

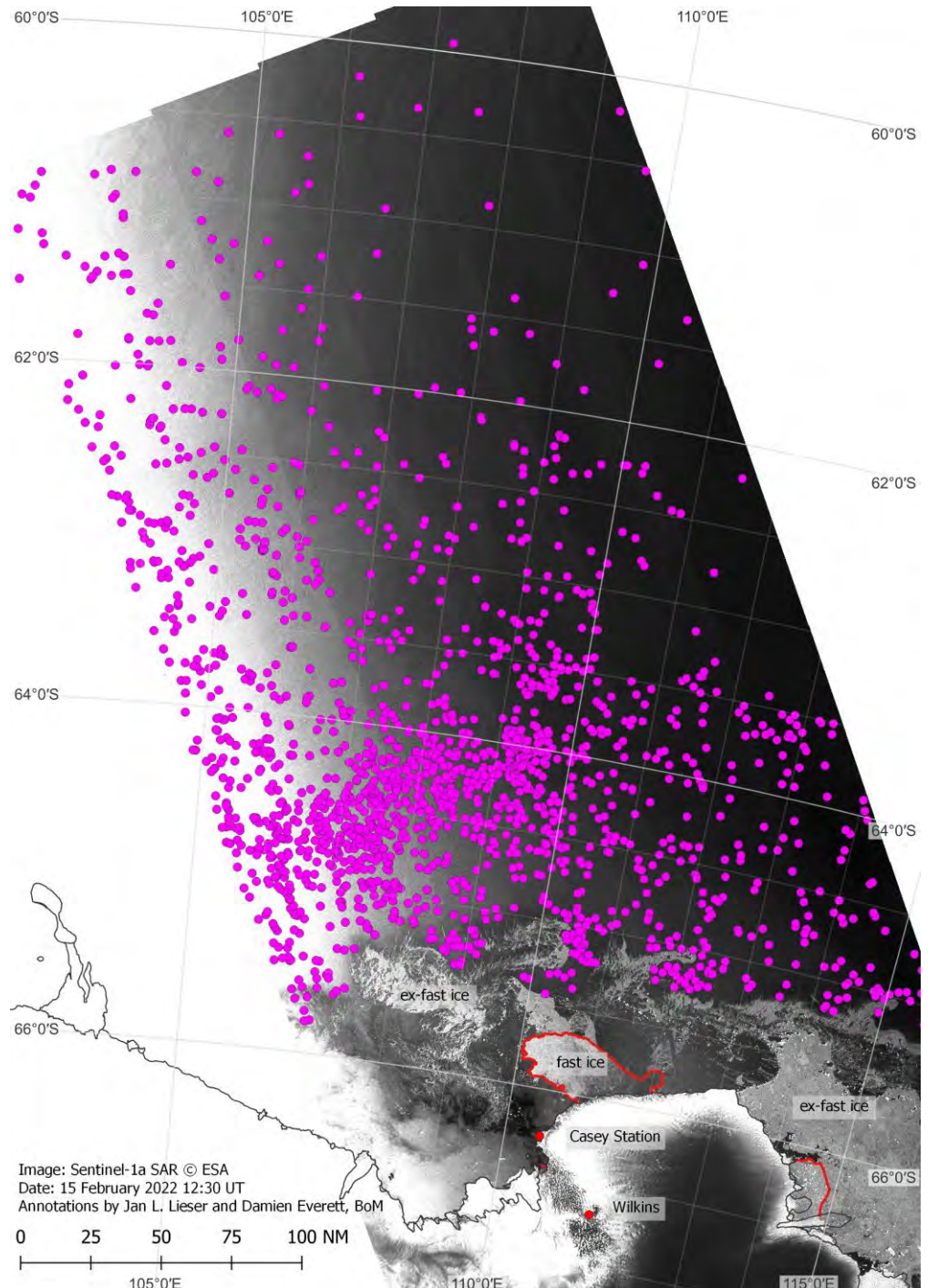


Figure 1: Sentinel-1a SAR EW data acquired 15 February 2022 at 12:30 UT and provided by Polar View.

Ice Bulletin: Wilkins Aerodrome

Issued: Wednesday 16th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Wilkins Aerodrome.

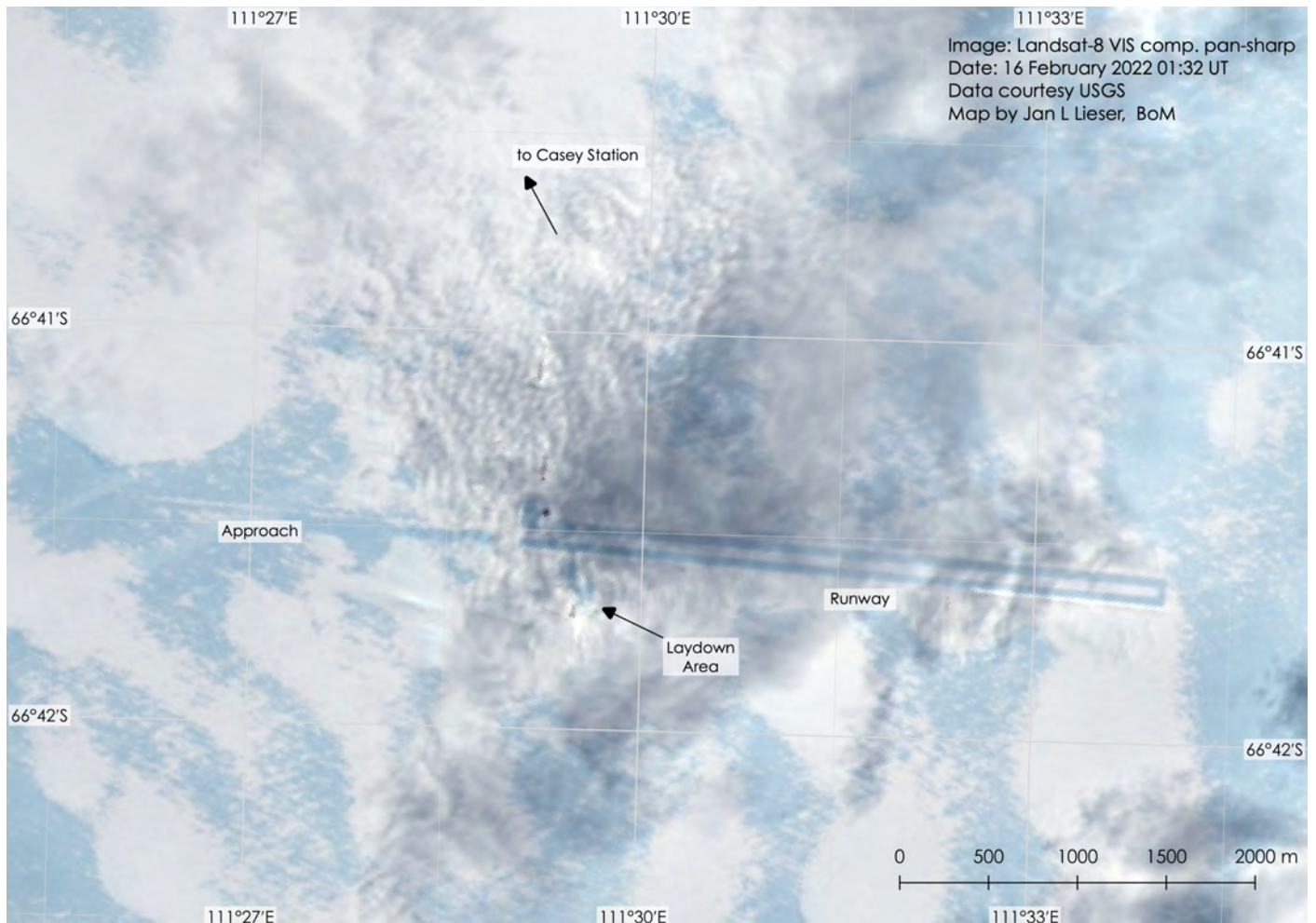


Figure 1: Landsat-8 visible composite data pansharpended acquired 16 February 2022 at 01:32 UT and provided by USGS.

The ice runway is slightly obscured by thin clouds. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Casey Station

Issued: Wednesday 16th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Casey Station.



Figure 1: Landsat-8 visible composite data pansharpened acquired 16 February 2022 at 01:32 UT and provided by USGS.

East of Casey Station, fast ice broke up in the southern part of McGrady Cove and ex-fast ice is now spilling into Newcomb Bay off station.

Ice Bulletin: Mawson Station

Issued: Wednesday 16th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Cape Darnley northwest of the Amery Ice Shelf (not shown). The fast-ice edge on 14 February 2022 is included as a dashed red line.

During the past 24 hours, the northern part (more than 550 km²) of the fast ice off Cape Darnley has shattered.

Figure 2 shows a larger overview of the high-resolution SAR data north and east of Mawson Station. Iceberg Alley marked by blue outlines.

The dataset was analysed for iceberg presence and more than 3700 features have been marked by pink dots.

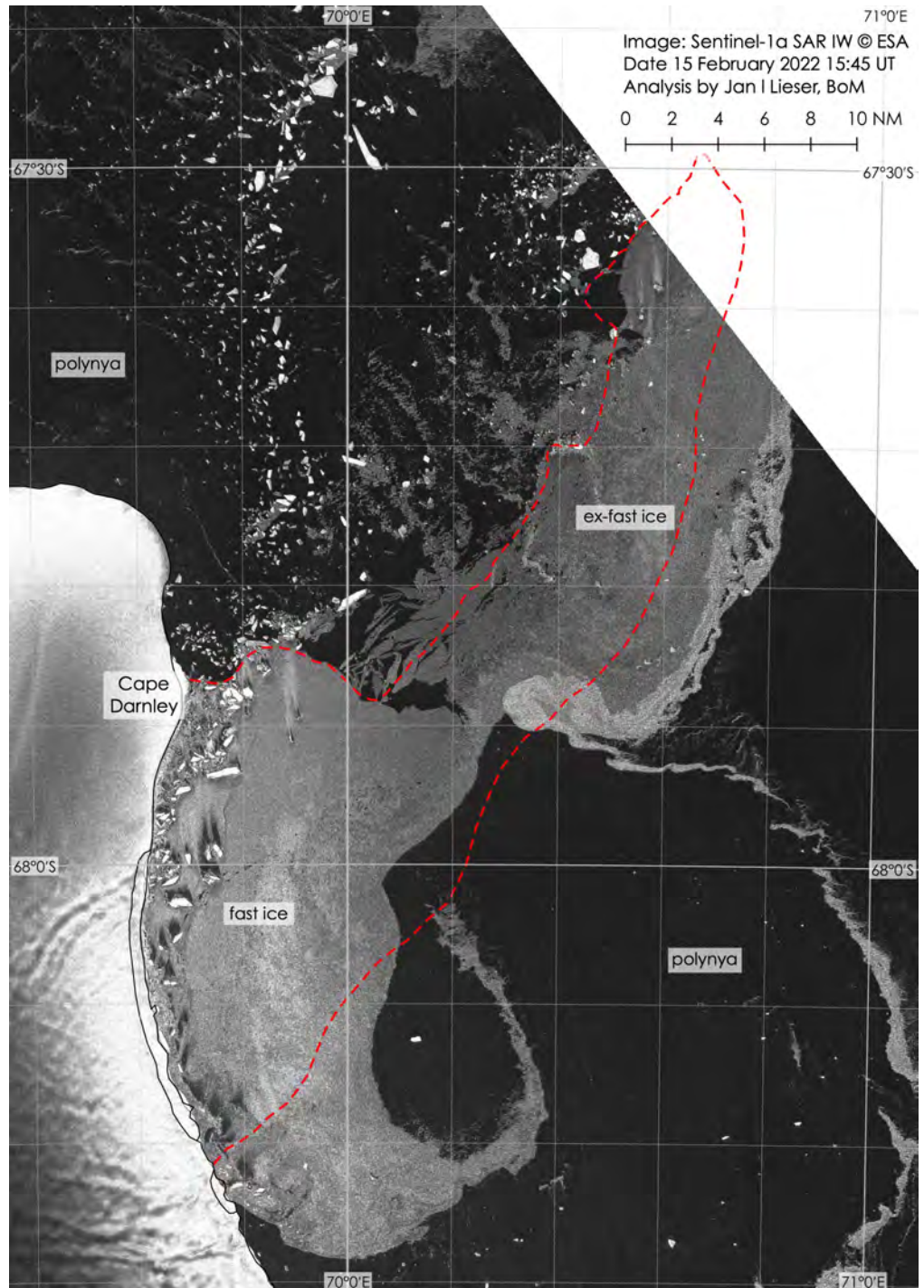


Figure 1: Sentinel-1a SAR IW data acquired 15 February 2022 at 15:45 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

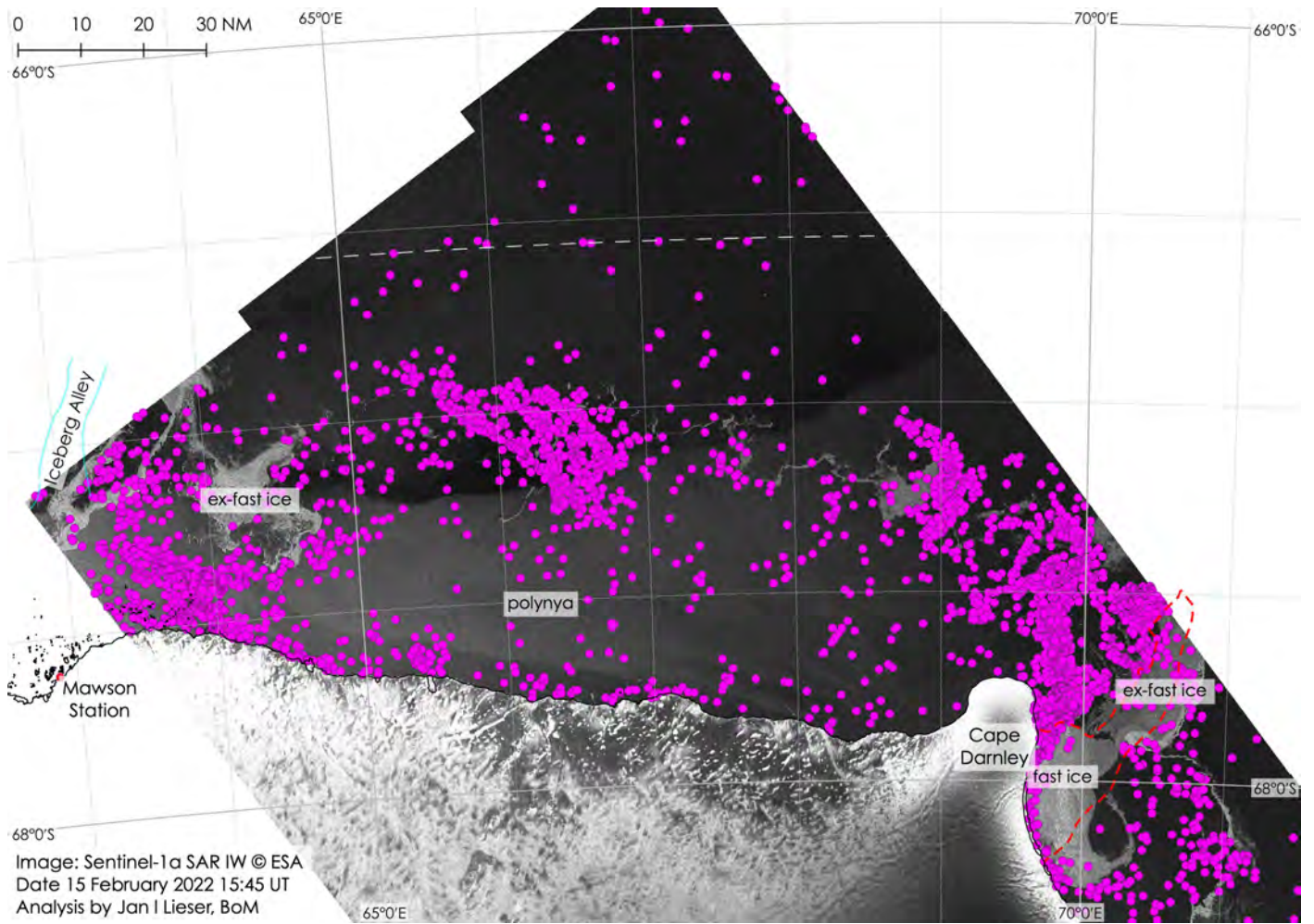


Figure 2: Sentinel-1a SAR IW data acquired 15 February 2022 at 15:45 UT and provided by PolarView.

Ice Bulletin: Shackleton Ice Shelf

Issued: Thursday 17th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of the Shackleton Ice Shelf. Four large tabular icebergs that are grounded north of the ice shelf are annotated.

The dataset was analysed for iceberg presence north of the sea-ice edge and more than 2400 features have been detected and marked by pink dots. The iceberg analysis from 14 February 2022 is included in the figure for comparison/reference (light rose dots).

The region north of the sea-ice edge can be regarded as bergy water.

One curiously shaped iceberg (see inset) was recognised on 9 February 2022. Its new position is now 11 nautical miles further north, which may not be representative for the general iceberg drift in the region as this one is notably larger than the other icebergs in the vicinity.

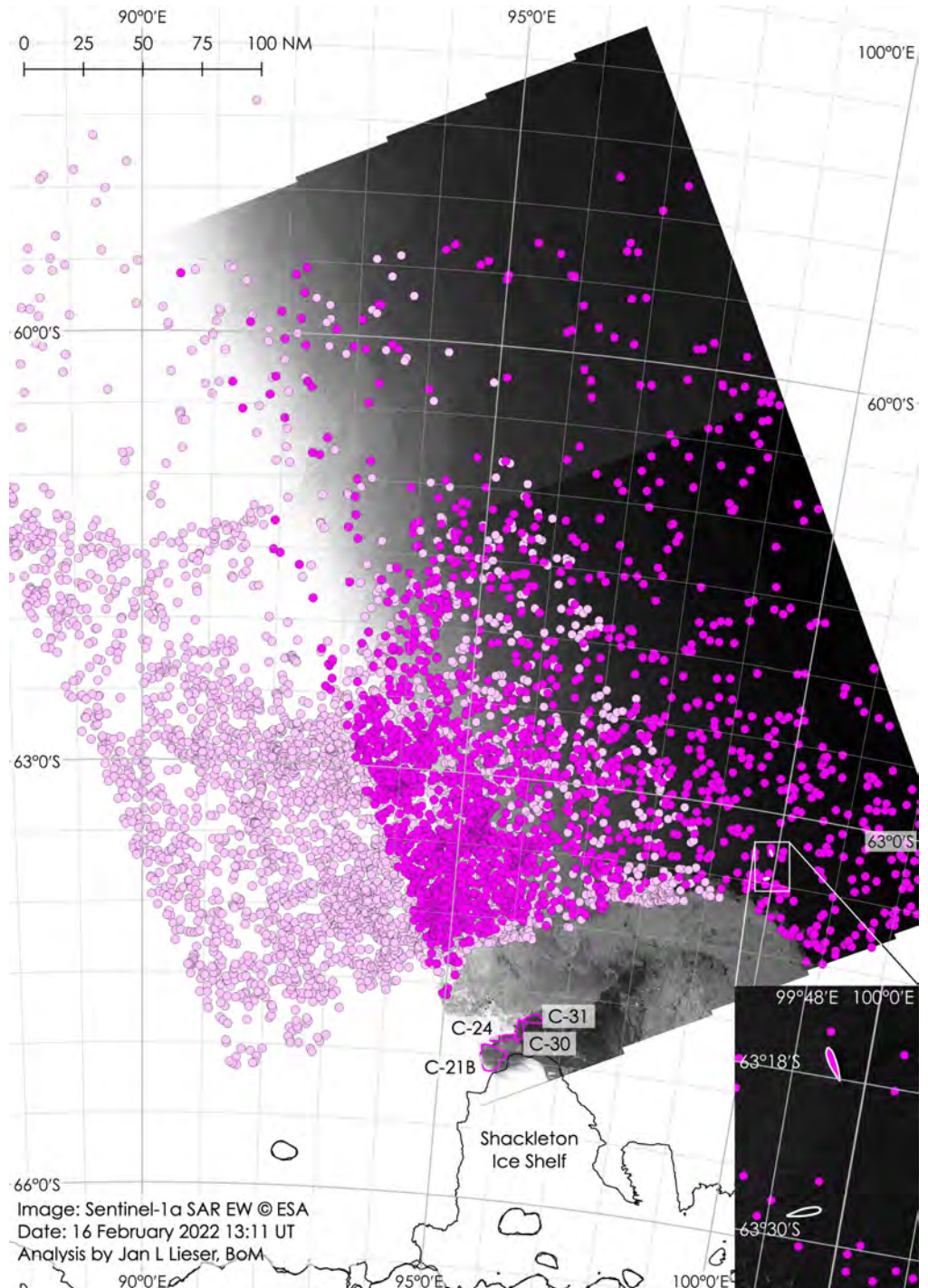


Figure 1: Sentinel-1a SAR EW data acquired 16 February 2022 at 13:11 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Prydz Bay

Issued: Friday 18th February 2022

Analyst: Jan L Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Prydz Bay southwest of Davis Station towards Sansom Island. The fast-ice edge is marked by a red line.

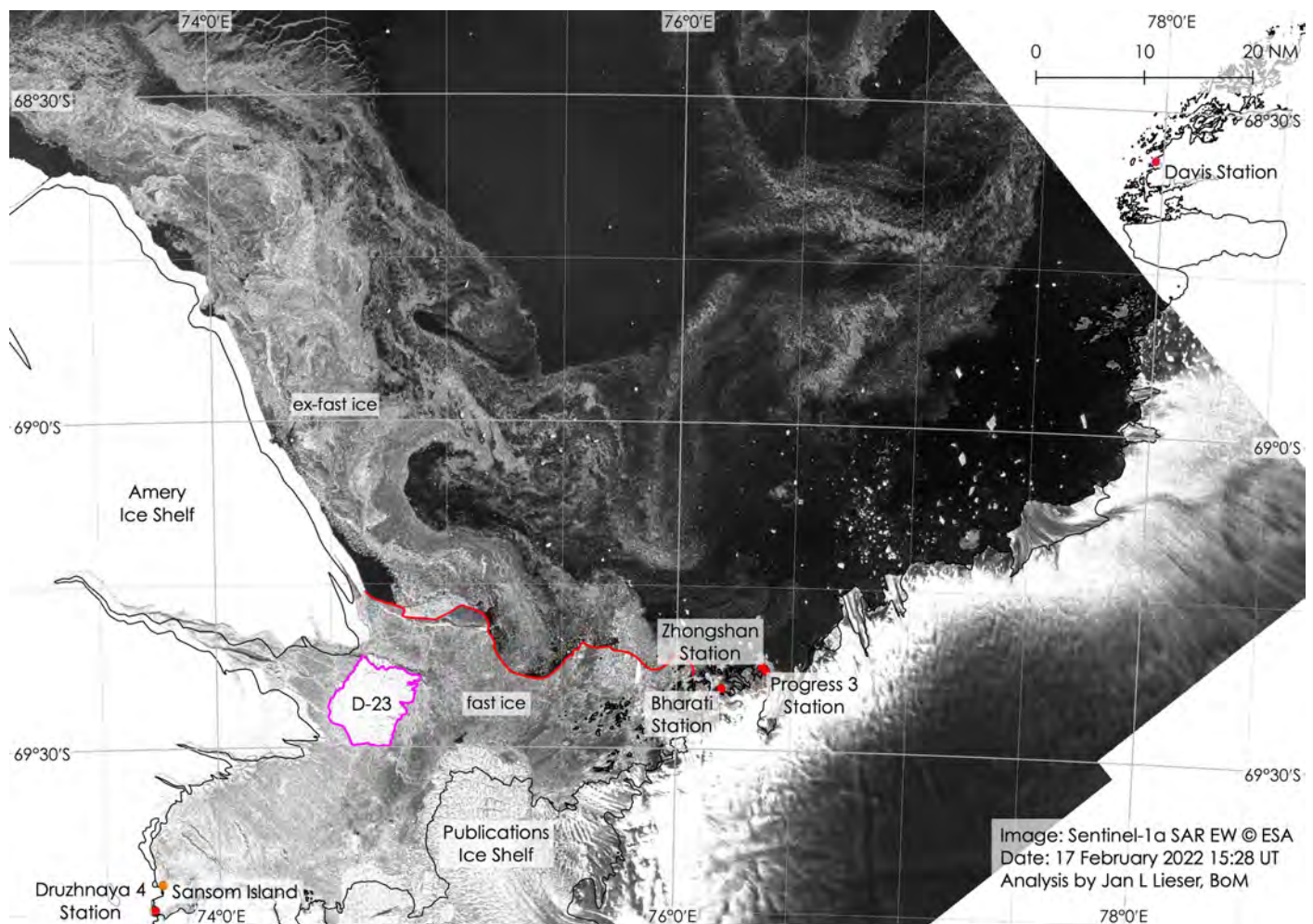


Figure 1: Sentinel-1a SAR EW data acquired 17 February 2022 at 15:28 UT and provided by PolarView.

East of the Amery Ice Shelf, southern Prydz Bay remains covered by old fast ice. Off the fast-ice edge ex-fast ice is drifting north-westward along the shelf-ice edge of the Amery Ice Shelf. Off Davis Station, the pack ice is generally drifting south-westward and consisting predominantly of ex-fast ice originating from east of the D-15 icebergs north of the West Ice Shelf (not shown).

While the pack ice is currently redistributed by small-scale oceanic eddies, the ex-fast ice from the two different origins is mixing in Prydz Bay.

Ice Bulletin: Mawson Station

Issued: Friday 18th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off eastern Mawson Coast. The fast-ice edge is included as a red line.

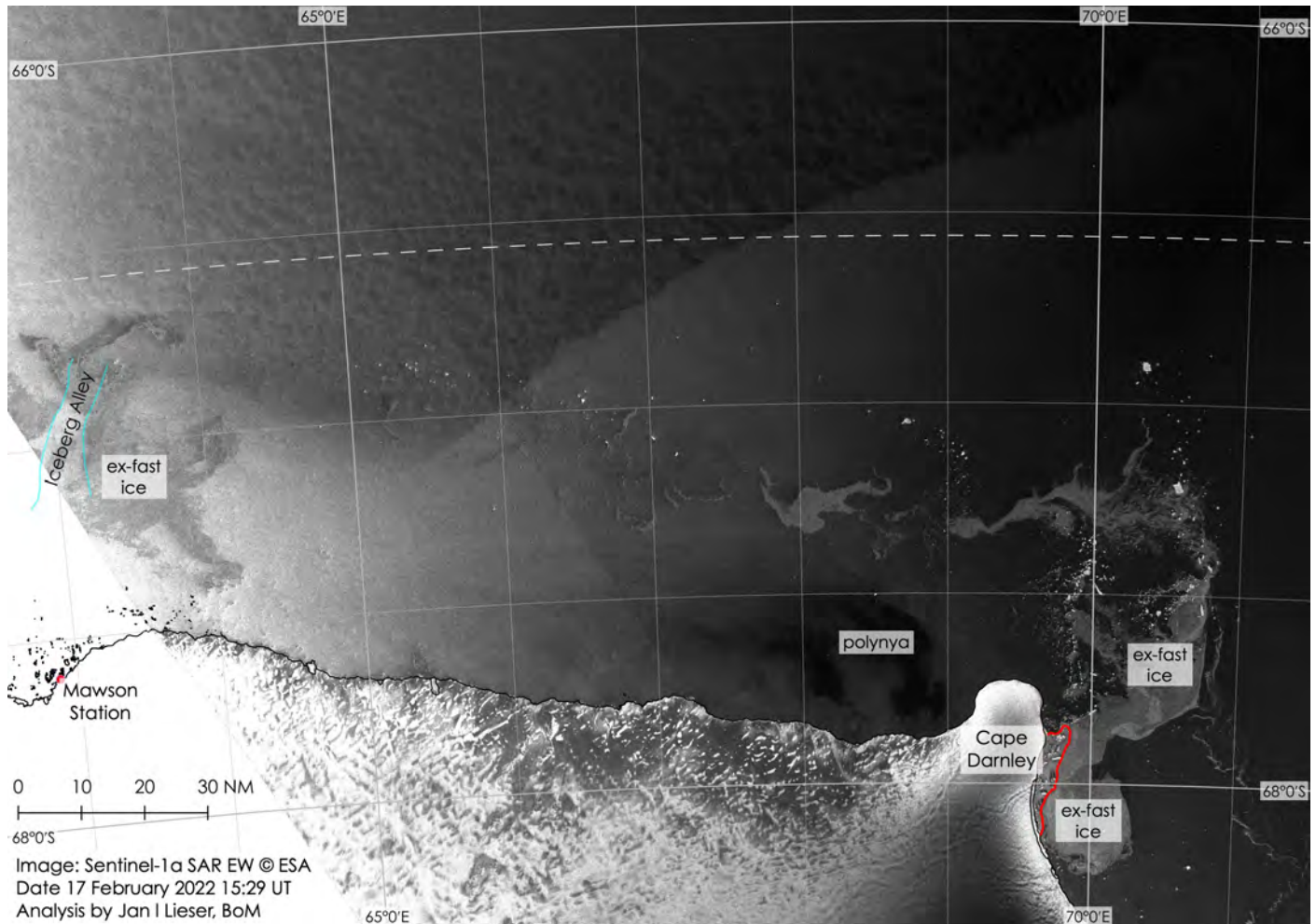


Figure 1: Sentinel-1a SAR EW data acquired 17 February 2022 at 15:29 UT and provided by PolarView.

East of Cape Darnley, fast ice continues to break up and spill into the waters further offshore while generally drifting northward around grounded icebergs northeast of the cape.

Figure 2 shows high-resolution (15 m horizontal) visible data of Mawson Station and Iceberg Alley. Off station, the drift of one larger iceberg is marked by a pink arrow in the upper panel and by colour-coded shapes in the lower panel.

North of Mawson Station, ex-fast ice is currently drifting westward through the icebergs of the northern part of Iceberg Alley. The SAR data (Figure 1) was acquired roughly 11 hours after the visible data (Figure 2) and the southern edge of the patch of ex-fast ice occupying the northern end of Iceberg Alley has progressed south-westward roughly 4.5 nautical miles during that time.

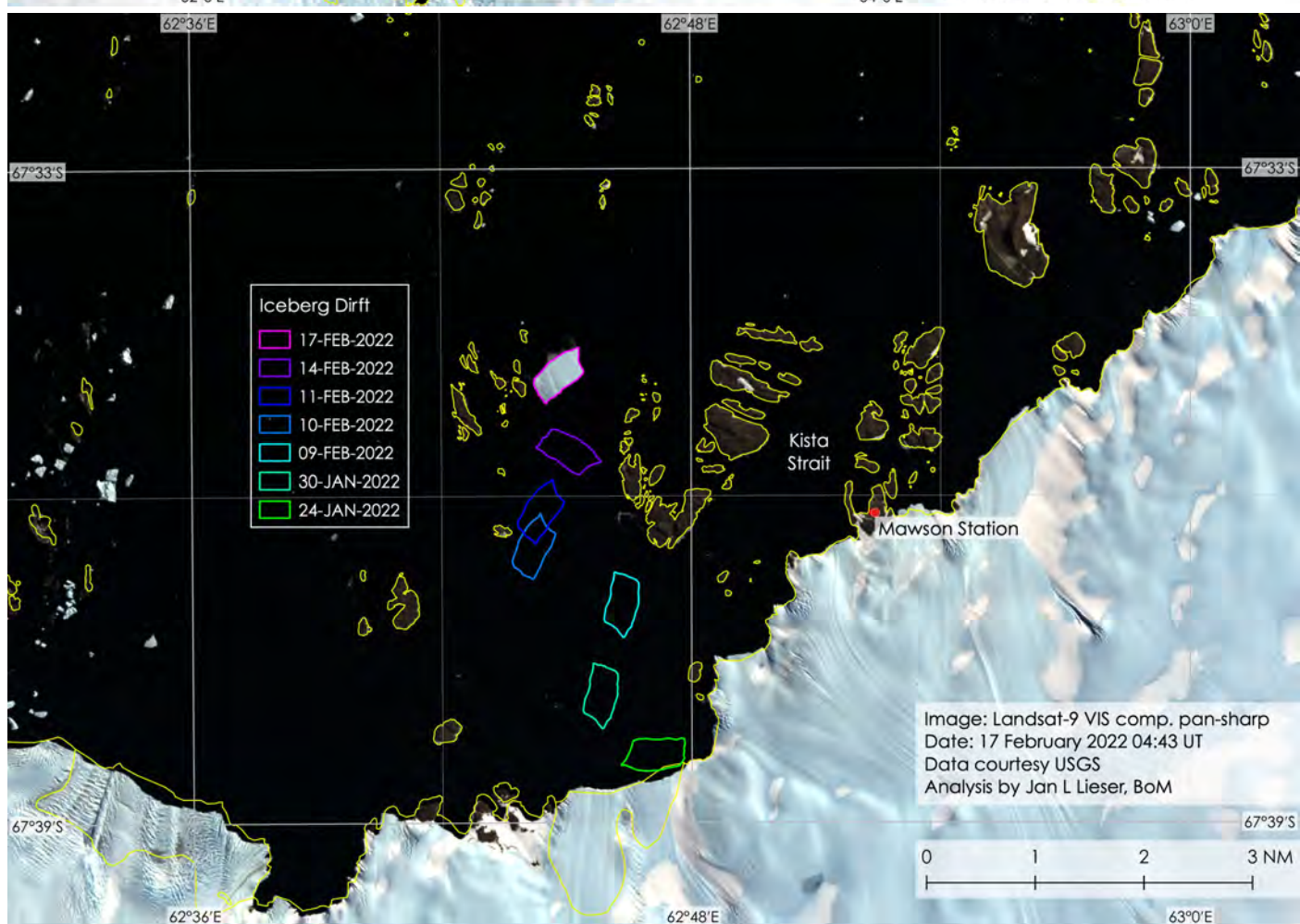
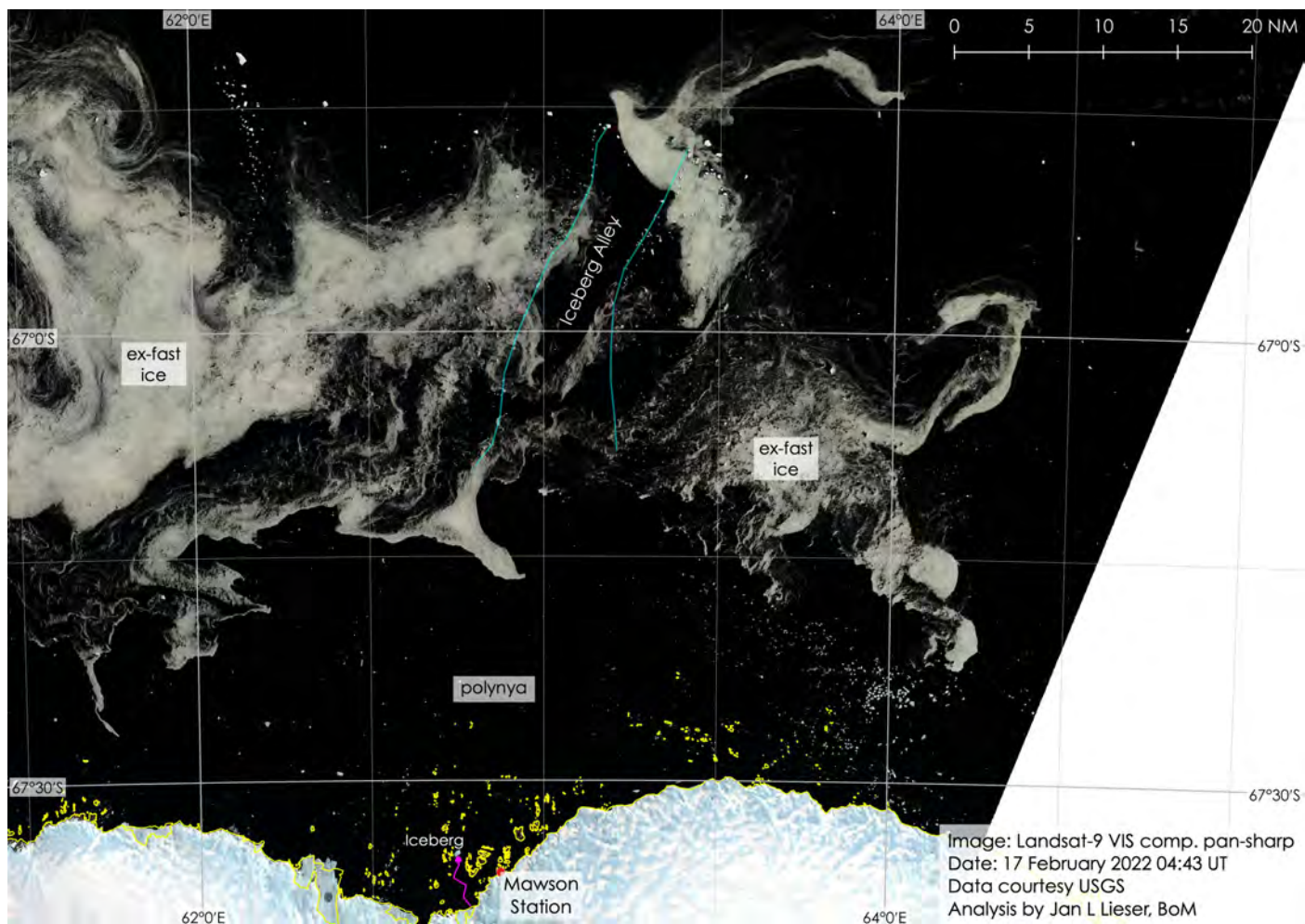


Figure 2: Landsat-9 VIS composite data pansharpned acquired 17 February 2022 at 04:43 UT and provided by USGS.

Ice Bulletin: Wilkins Aerodrome

Issued: Friday 18th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Wilkins Aerodrome.

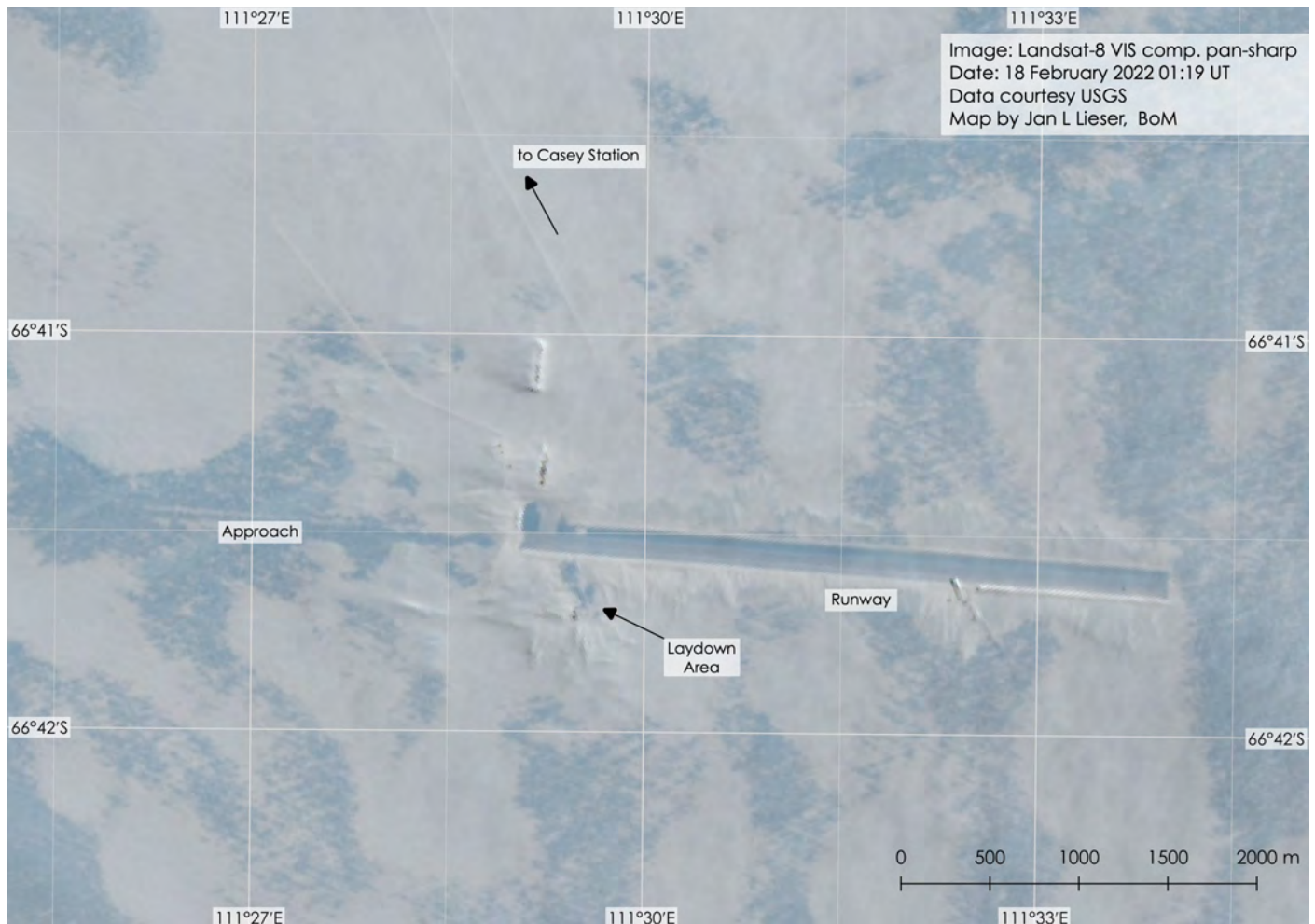


Figure 1: Landsat-8 visible composite data pansharpened acquired 18 February 2022 at 01:19 UT and provided by USGS.

The ice runway is slightly obscured by thin clouds. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Davis Station

Issued: Saturday 19th February 2022

Analyst: Jan L Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of the Vestfold Hills and Davis Station.

North of the station, the entrance to Long Fjord is free of fast ice but the location of a mooring (blue dot) in the southern part of the fjord remains under fast ice. However, further into the fjord open water (ow) is found in the narrows and between islands (see inset).

Off the Vestfold Hills, icebergs of varying size are present of which some are grounded, while others are drifting.

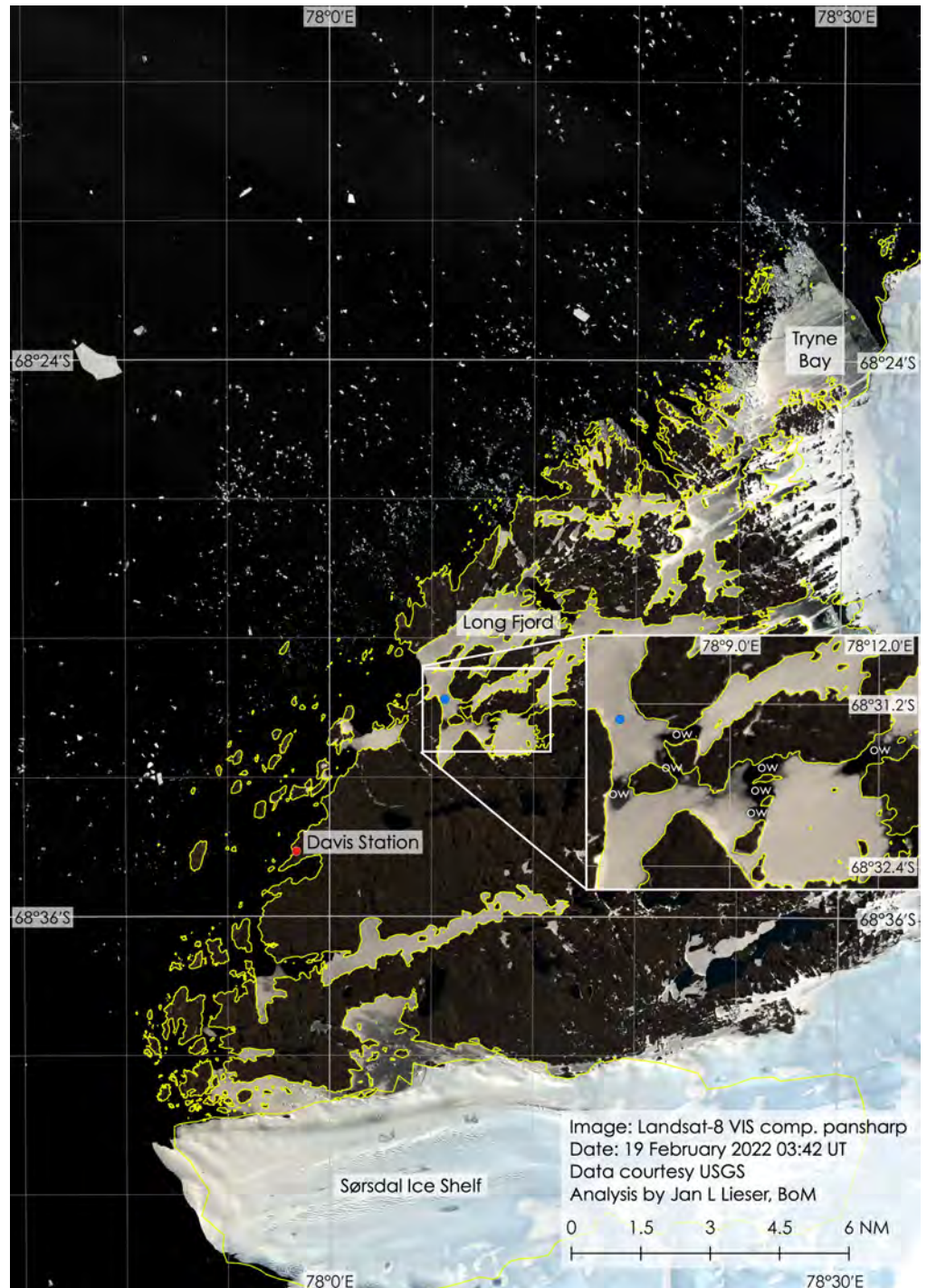


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 19 February 2022 at 03:42 UT and provided by USGS.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Mawson Station

Issued: Sunday 20th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off eastern Mawson Coast. The recent cruise track of MV Happy Dragon (up until 0700Z on 20 February 2022) is marked by an orange line.

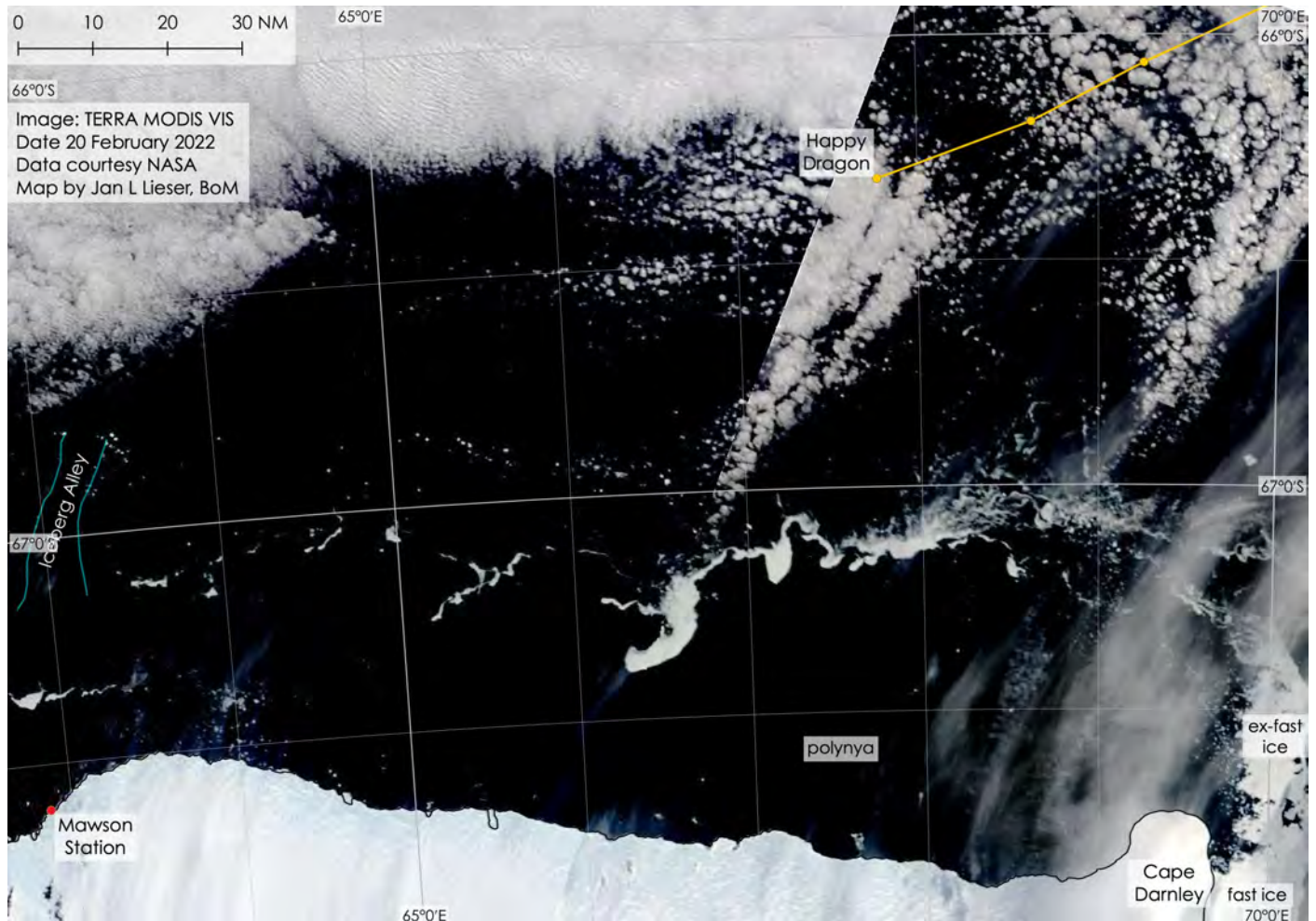


Figure 1: TERRA MODIS VIS data acquired 20 February 2022 and provided by NASA.

North of Mawson Station, ex-fast ice has cleared westward through the icebergs of the northern part of Iceberg Alley and the alley appears to be largely free of pack ice currently. Between the southern exit of the alley and the station, a few patches of pack ice (ex-fast ice) are drifting westward.

East of Cape Darnley, fast ice continues to break up and spill into the waters further offshore while generally drifting northward around grounded icebergs northeast of the cape. Once this pack ice is north of grounded icebergs it enters the westward drift south of 67°0'S.

Ice Bulletin: Mawson Station

Issued: Monday 21st February 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Mawson Station and offshore.

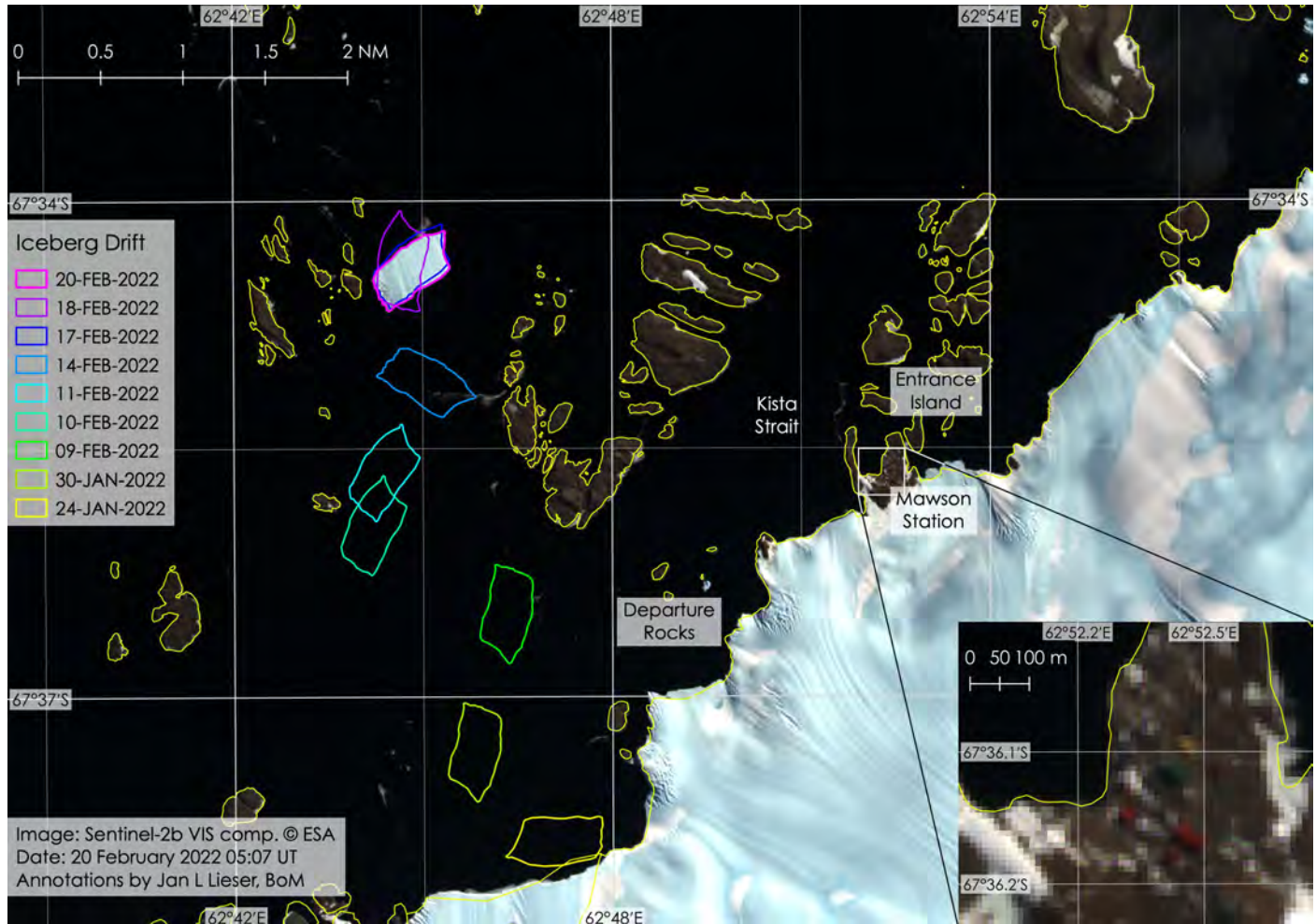


Figure 1: Sentinel-2b VIS composite data acquired 20 February 2022 at 05:07 UT and provided by USGS.

Near Mawson Station, waters generally remain clear of ice, however a strip of grease ice can be seen forming just offshore of West Arm and Entrance Island. West of Mawson Station, a large iceberg continues its northward drift through the islands (as indicated by the colour-coded shapes) but appears temporarily grounded now. A smaller iceberg can also be seen in the vicinity of Departure Rocks.

Figure 2 provides a larger overview off Mawson Station extending north to Iceberg Alley. The position of MV Happy Dragon is from 18:02 UT 20th February 2022.

The ex-fast ice that previously occupied Iceberg Alley lies well west, with a strip of ex-fast ice also extending east to west along 67°20'S.

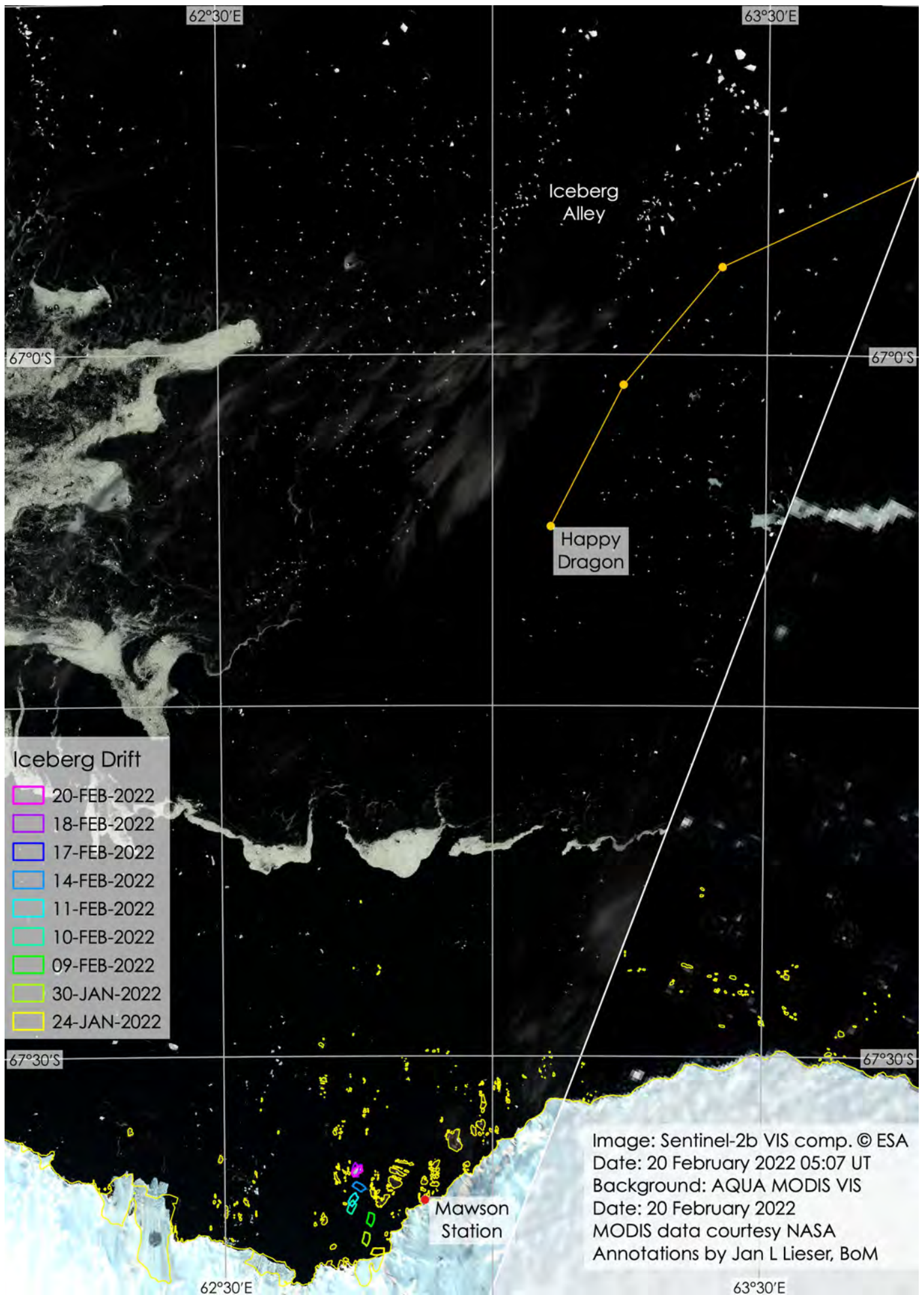


Figure 2: Sentinel-2b VIS composite data acquired 20 February 2022 at 05:07 UT and provided by USGS; complemented by AQUA MODIS VIS data acquired 20 February 2022 and provided by NASA.

Ice Bulletin: Davis Station

Issued: Tuesday 22nd February 2022

Analyst: Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the Vestfold Hills and Davis Station.

North of the station, the entrance to Long Fjord is free of fast ice but the location of a mooring (green dot) in the southern part of the fjord remains under fast ice. However, further into the fjord open water is found in the narrows and between islands. Further north, fast ice persists in Tryne Bay.

Off the Vestfold Hills, icebergs of varying size are present of which some are grounded, while others are drifting.

Figure 2 shows a broader scale view of Davis Station, extending well offshore to the north.

Off Davis Station, ex-fast ice is drifting generally south-westward and currently dispersed by small-scale oceanic surface currents and eddies. This pack ice consists of a melange of old sea ice and ex-fast ice originating from east of the D-15 icebergs north of the West Ice Shelf.

Icebergs of varying size can be seen drifting to the west of the pack ice.

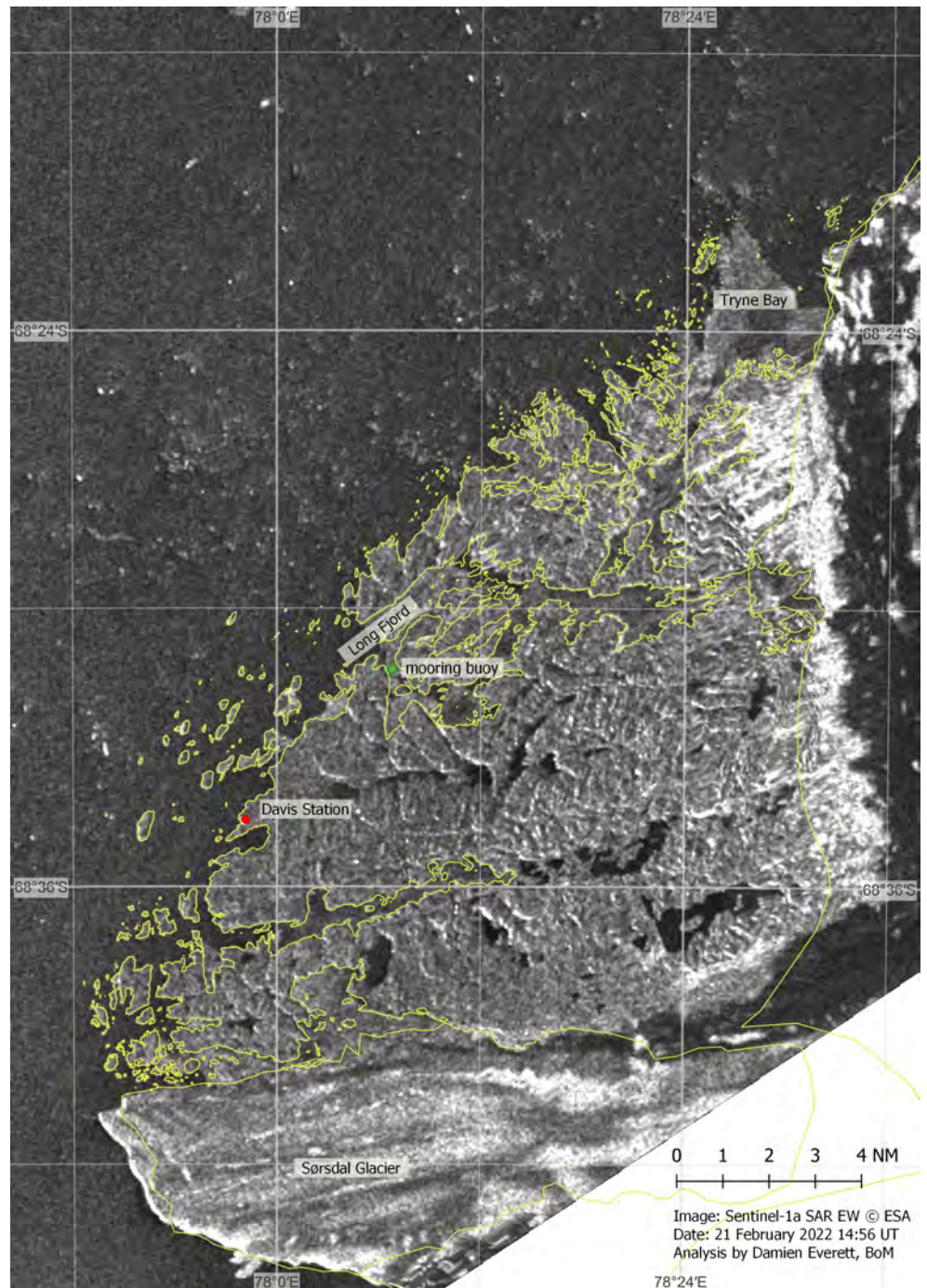


Figure 1: Sentinel-1a SAR EW data acquired 21 February 2022 at 14:56 UT and provided by Polar View.

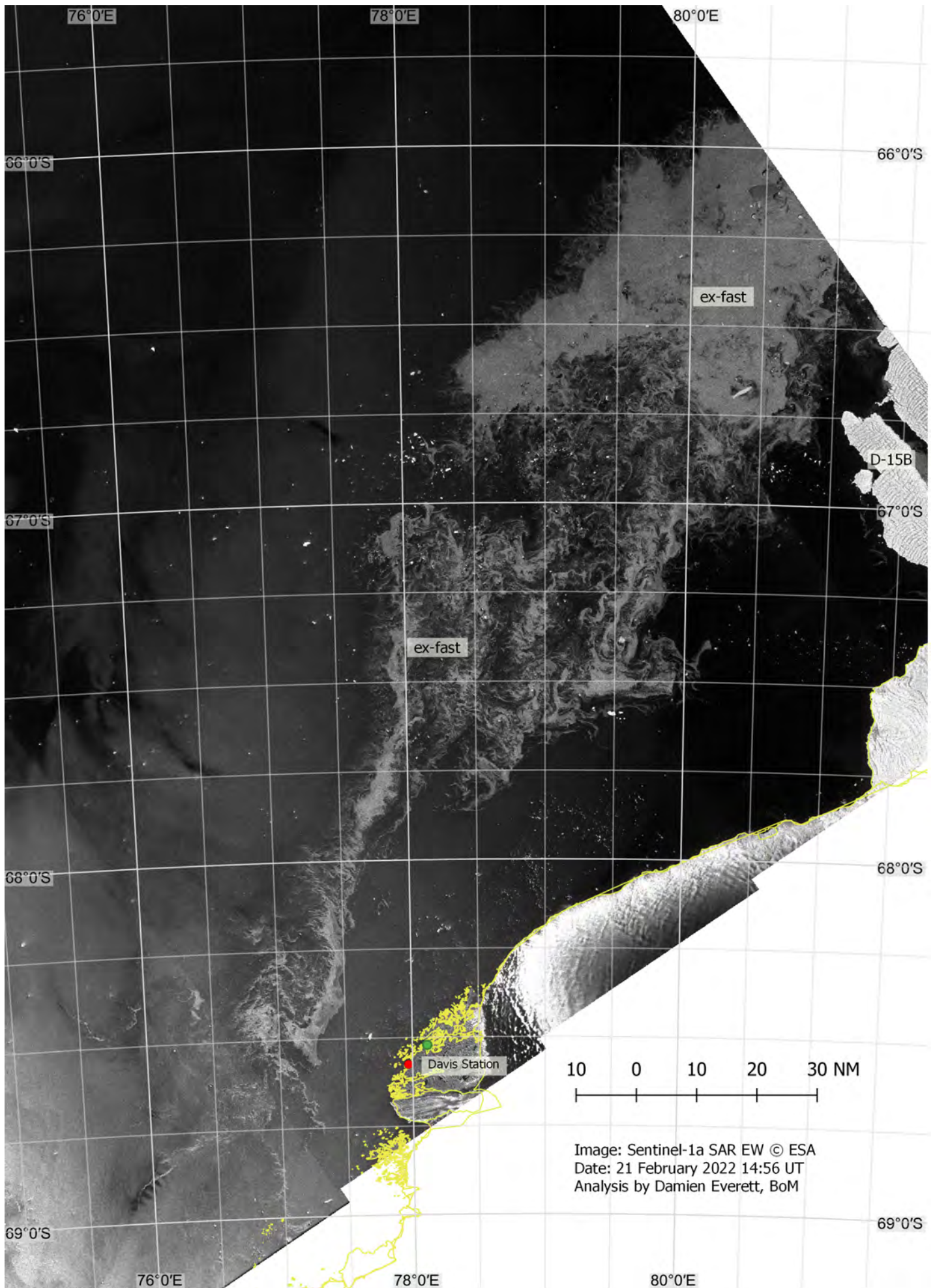


Figure 2: Sentinel-1a SAR EW data acquired 21 February 2022 at 14:56 UT and provided by Polar View.

Ice Bulletin: Davis Station

Issued: Wednesday 23rd February 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data of the Vestfold Hills excluding Davis Station and west of the coastal fringe.

North of the station, the entrance to Long Fjord is free of fast ice but the location of a mooring (green dot) in the southern part of the fjord remains under fast ice. Further into the fjord, open water is found in the narrows and between islands. In the north, fast ice persists in the western part of Tryne Bay.

The entrance to Ellis Fjord remains clear but fast ice persists east of the Ellis Narrows.

Near the Davis coast, waters generally remain clear of sea ice with a larger iceberg (marked on map) drifting south-westward.

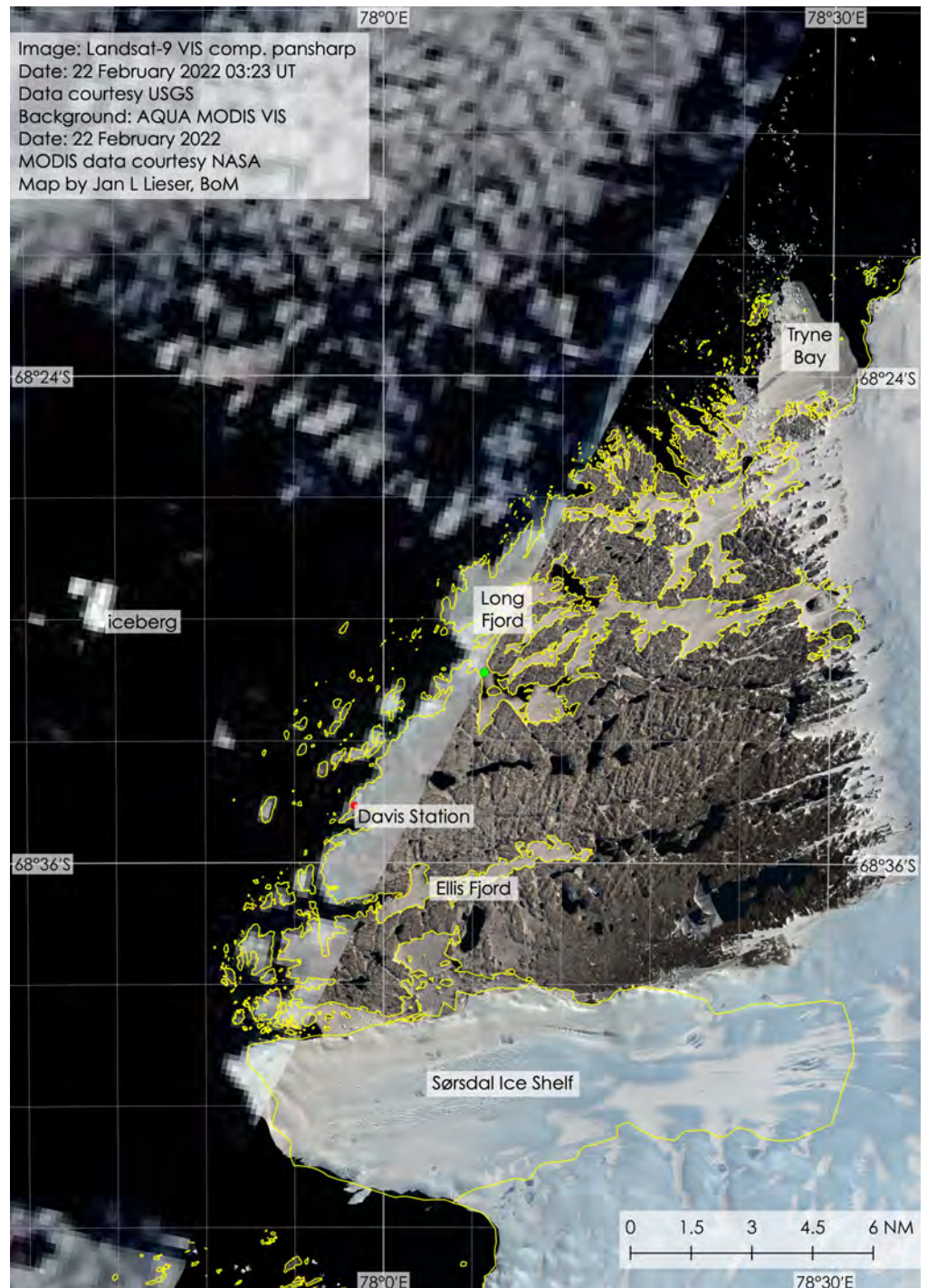


Figure 1: Landsat-9 VIS composite data acquired 22 February 2022 at 03:23 UT and provided by USGS; Background: AQUA MODIS VIS data acquired 22 February 2022 and provided by NASA.

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Ice Bulletin: Mawson Station

Issued: Wednesday 23rd February 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station and east towards Cape Darnley. MV Happy Dragon's route into Mawson Station is marked on the map and she is currently positioned in Horseshoe Harbour.

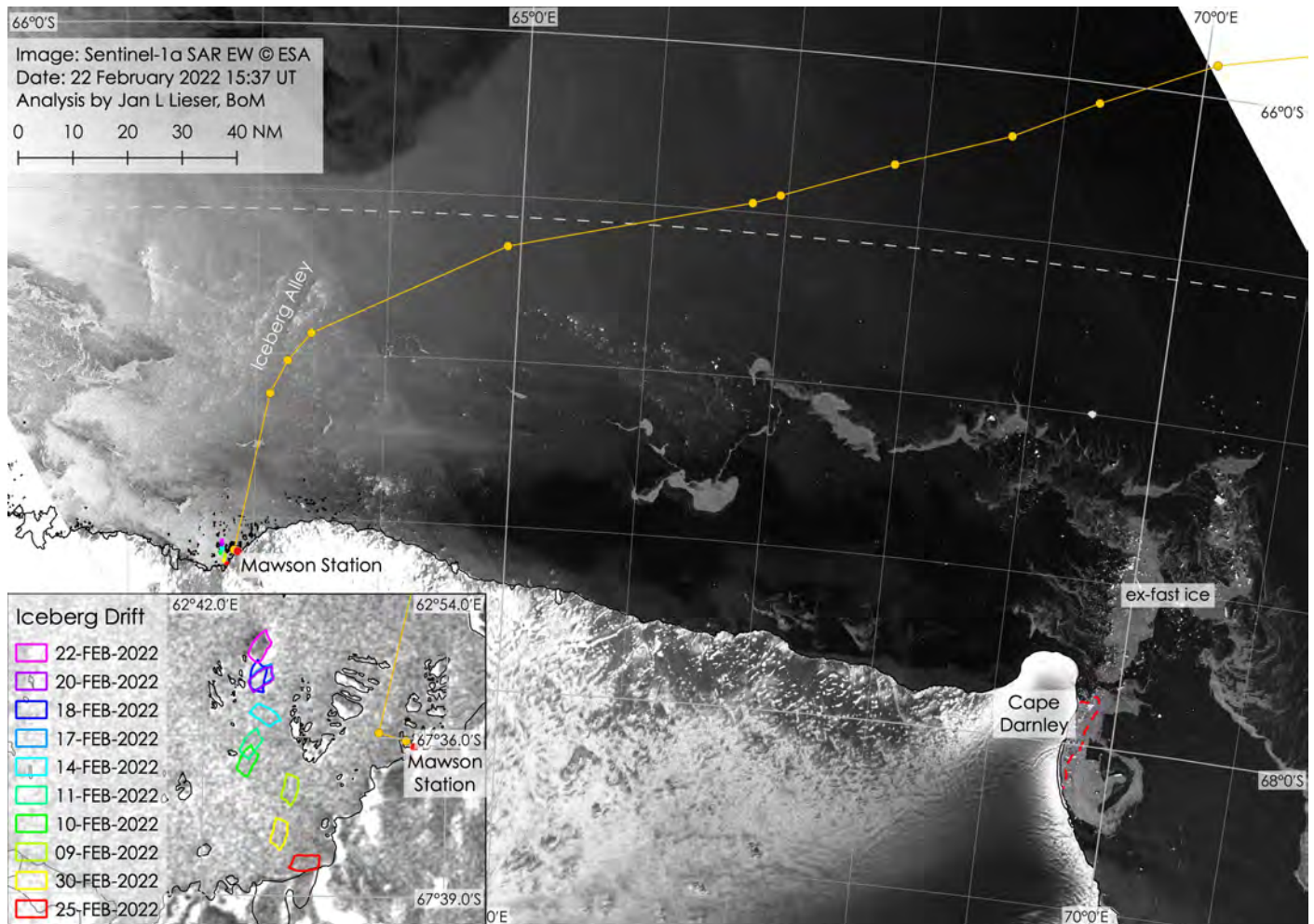


Figure 1: Sentinel-1a SAR EW data acquired 22 February 2022 at 15:37 UT and provided by Polar View.

West of Mawson Station, a large iceberg continues its northward drift through the islands (indicated by the colour-coded shapes on the inset) after grounding temporarily on 17 February 2022.

The ex-fast ice north of Mawson Station originates from a shrinking patch of fast ice on the eastern side of Cape Darnley. The red dashed line shows the fast-ice extent from the 17 February 2022. The streak of ex-fast ice continues thinning out while it drifts westward. Wind, ocean surface eddies and currents redistribute this pack ice generally westward.

Ice Bulletin: Casey Station

Issued: Wednesday 23rd February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Casey Station. The composite of different bands results in clouds showing with a red tint and ice with a blue.

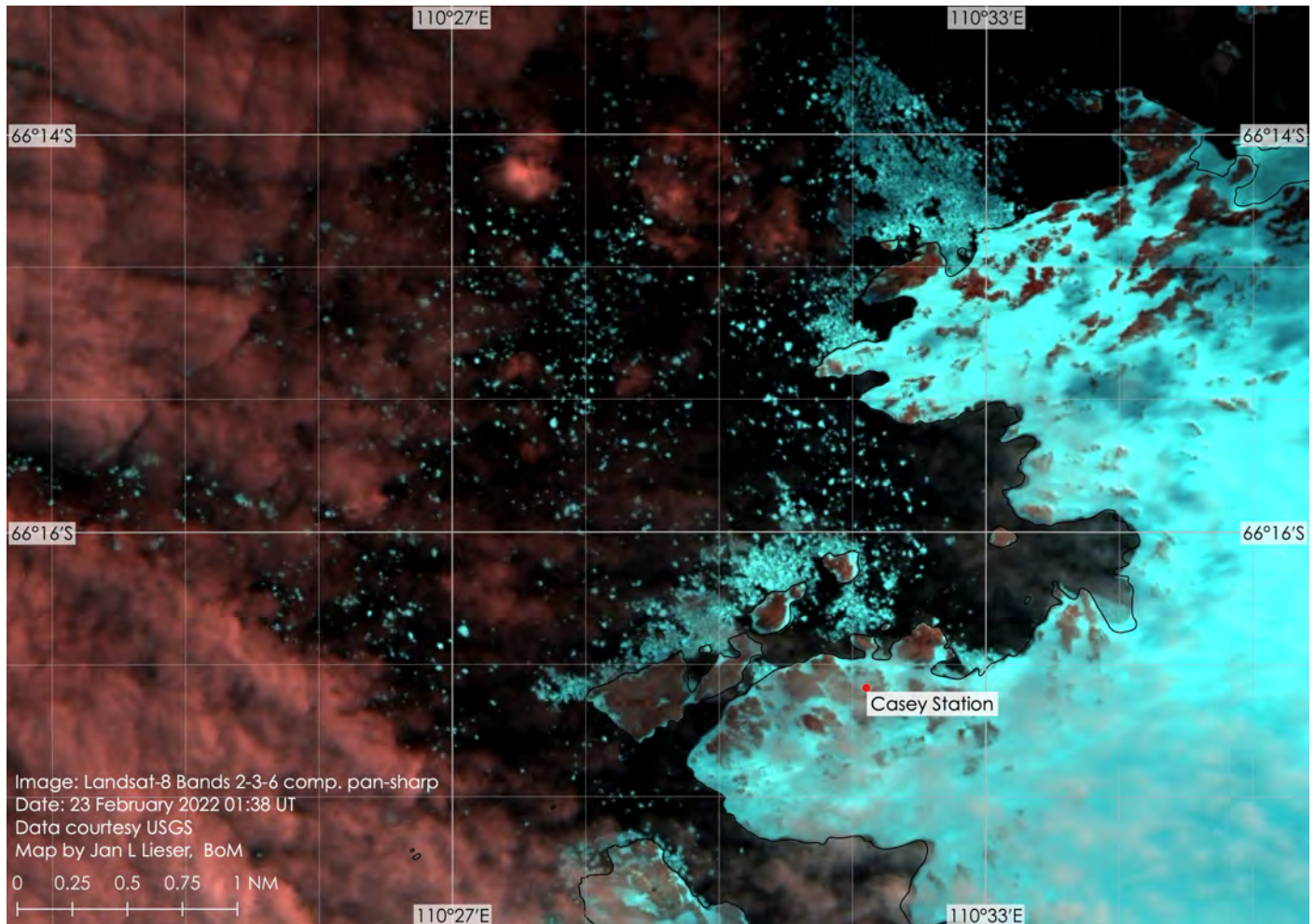


Figure 1: Landsat-8 Bands 2-3-6 composite data acquired 23 February 2022 at 01:38 UT and provided by USGS.

The station and hinterland are under thin clouds.

Off Casey Station, pack ice accumulates west of the offshore island. This pack ice consists of a melange of ex-fast ice and newly forming sea ice.

Further afield, pack ice and icebergs are drifting freely in the polynya.

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Ice Bulletin: Mawson Station

Issued: Thursday 24th February 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. MV Happy Dragon's route is marked on the map in orange, and she is currently positioned off station in Horseshoe Harbour. The bright star-like radar reflection in the harbour is the result of the vessel's superstructure acting as a near-perfect reflector of the satellite's RADAR pulse.

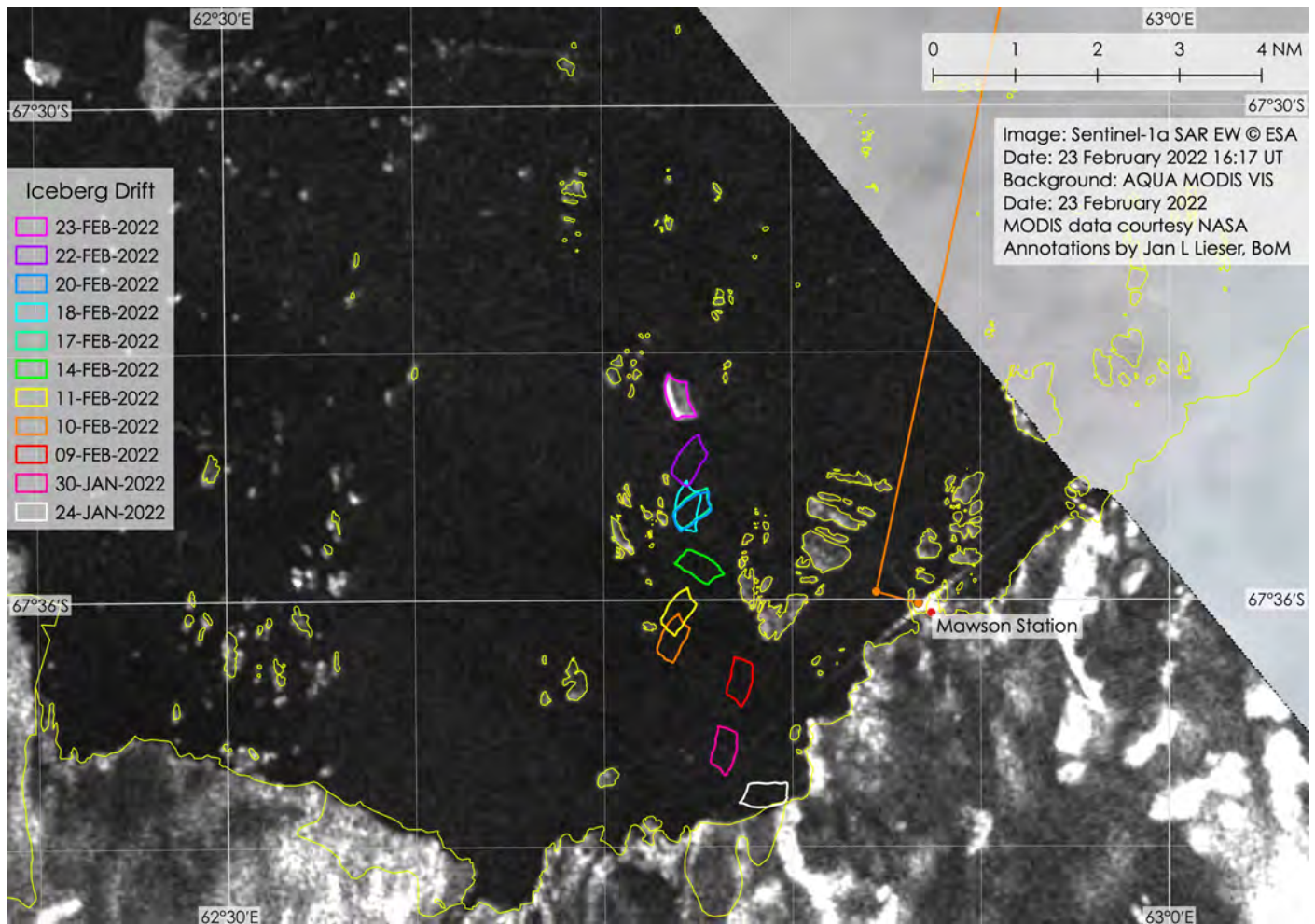


Figure 1: Sentinel-1a SAR EW data acquired 23 February 2022 at 16:17 UT and provided by Polar View;
background: AQUA MODIS VIS data acquired 23 February 2022 and provided by NASA.

West of the station, a large iceberg continues drifting northward through the islands (indicated by the colour-coded shapes) after grounding temporarily on the 17 February 2022.

Otherwise, waters near Mawson Station generally remain clear of ice.

Ice Bulletin: Davis Station

Issued: Friday 25th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of the Vestfold Hills and Davis Station.

North of the station, the entrance to the southern part of Long Fjord appears to be breaking up however, ice over at the location of a mooring (green dot; see inset) remains marginal. Further into the fjord, open water is found in the narrows and between islands. In the north of the hills, fast ice persists in the western part of Tryne Bay.

Off Davis Station, waters generally remain clear of sea ice with one larger iceberg (marked on map) appearing to be temporarily grounded since 23 February 2022.

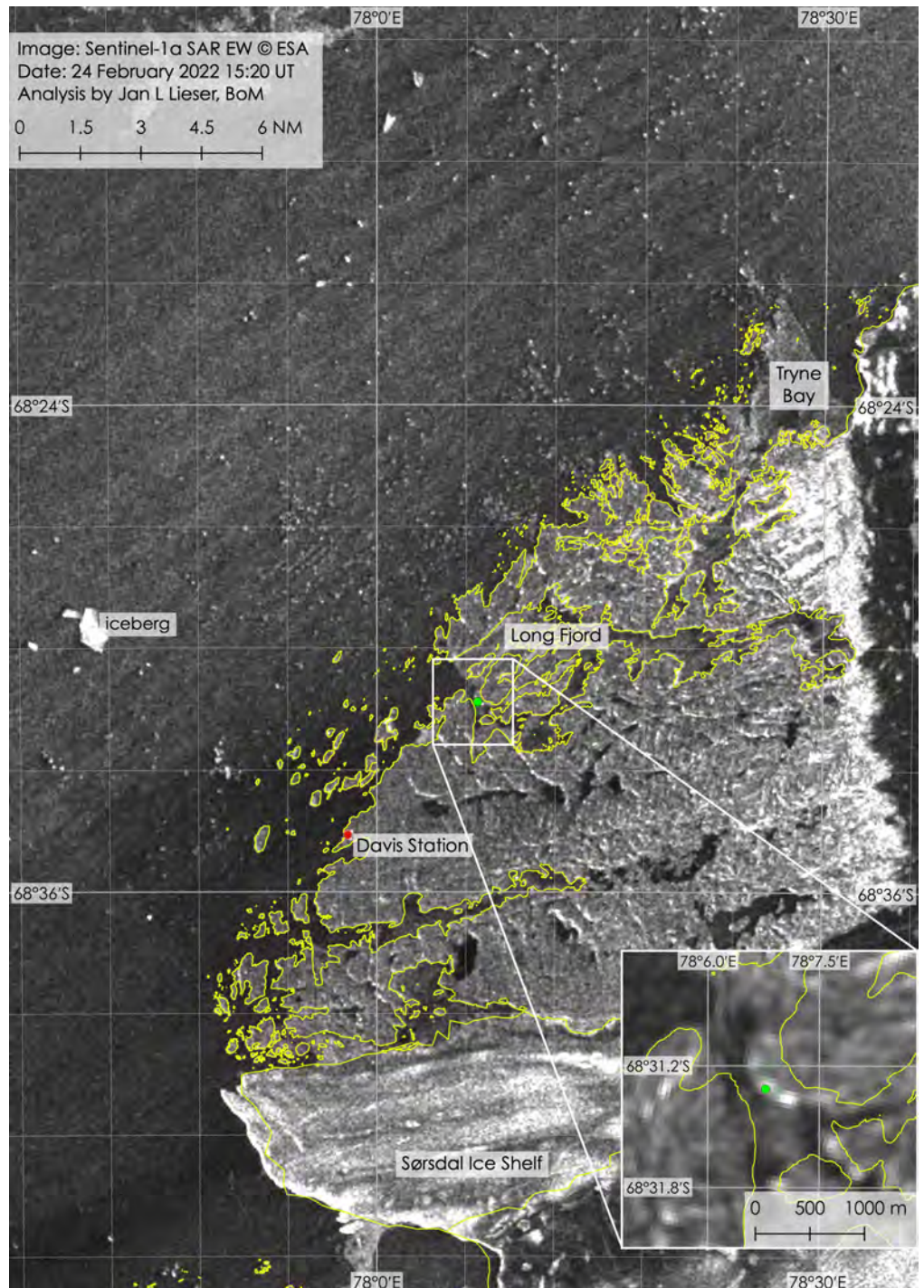


Figure 1: Sentinel-1a SAR EW data acquired 24 February 2022 at 15:20 UT and provided by PolarView.

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Ice Bulletin: Mawson Station

Issued: Friday 25th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data off Mawson Station. MV Happy Dragon can be seen in Horseshoe Harbour off station (see inset).

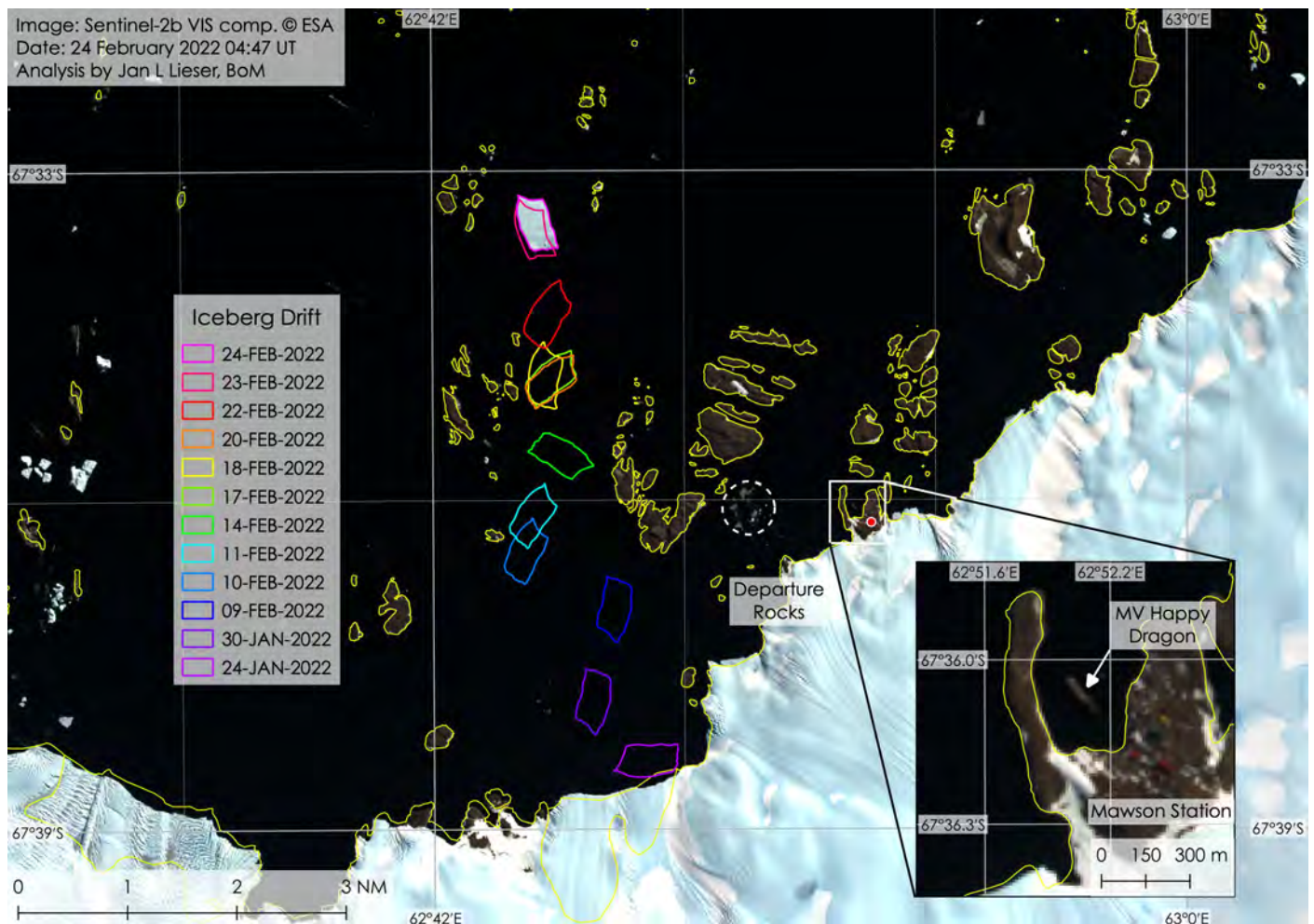


Figure 1: Sentinel-2b VIS composite data acquired 24 February 2022 at 04:47 UT and provided by USGS.

West of the station, a large iceberg continues drifting northward through the islands (indicated by the colour-coded shapes) after grounding temporarily on the 17 February 2022. A previously identified smaller iceberg that was in the vicinity of the Departure Rocks (see Ice Bulletin: Mawson Station from 21 February 2022) has now drifted north of the rocks (see dashed white circle) and appears to be decaying, which results in glacial debris at the location.

Figure 2 shows a larger scale overview of the region north of Mawson Station.

The cloud-free part of the figure exhibits minimal drifting pack ice but many icebergs, of which some are grounded (for example along Iceberg Alley) and some are drifting freely.

Figure 3 shows SAR data north of the Amery Ice Shelf and around Cape Darnley east of Mawson Station.

New sea ice is forming nearshore and mixing with predominantly ex-fast ice further offshore.

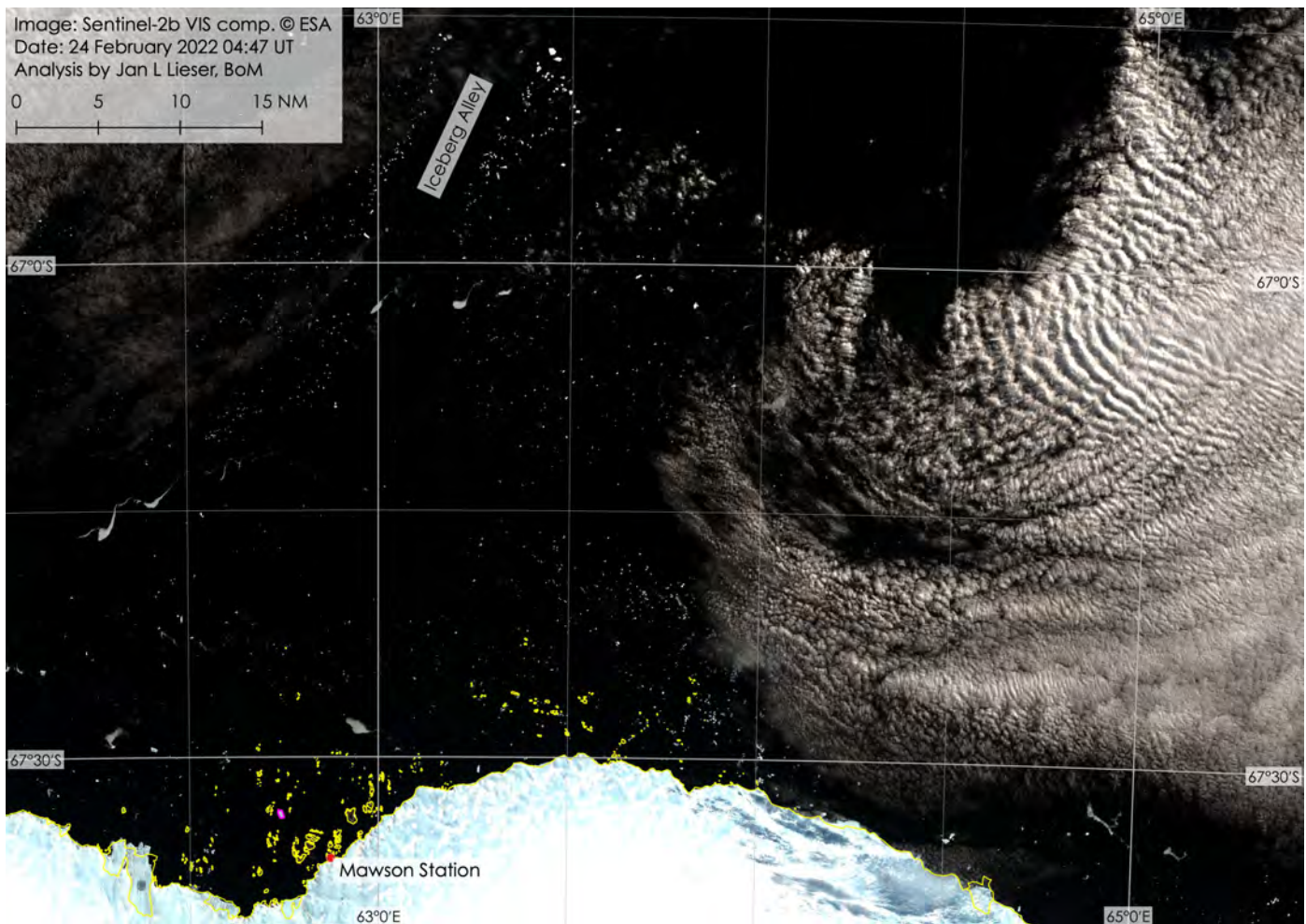


Figure 2: Sentinel-2b VIS composite data acquired 24 February 2022 at 04:47 UT and provided by USGS.

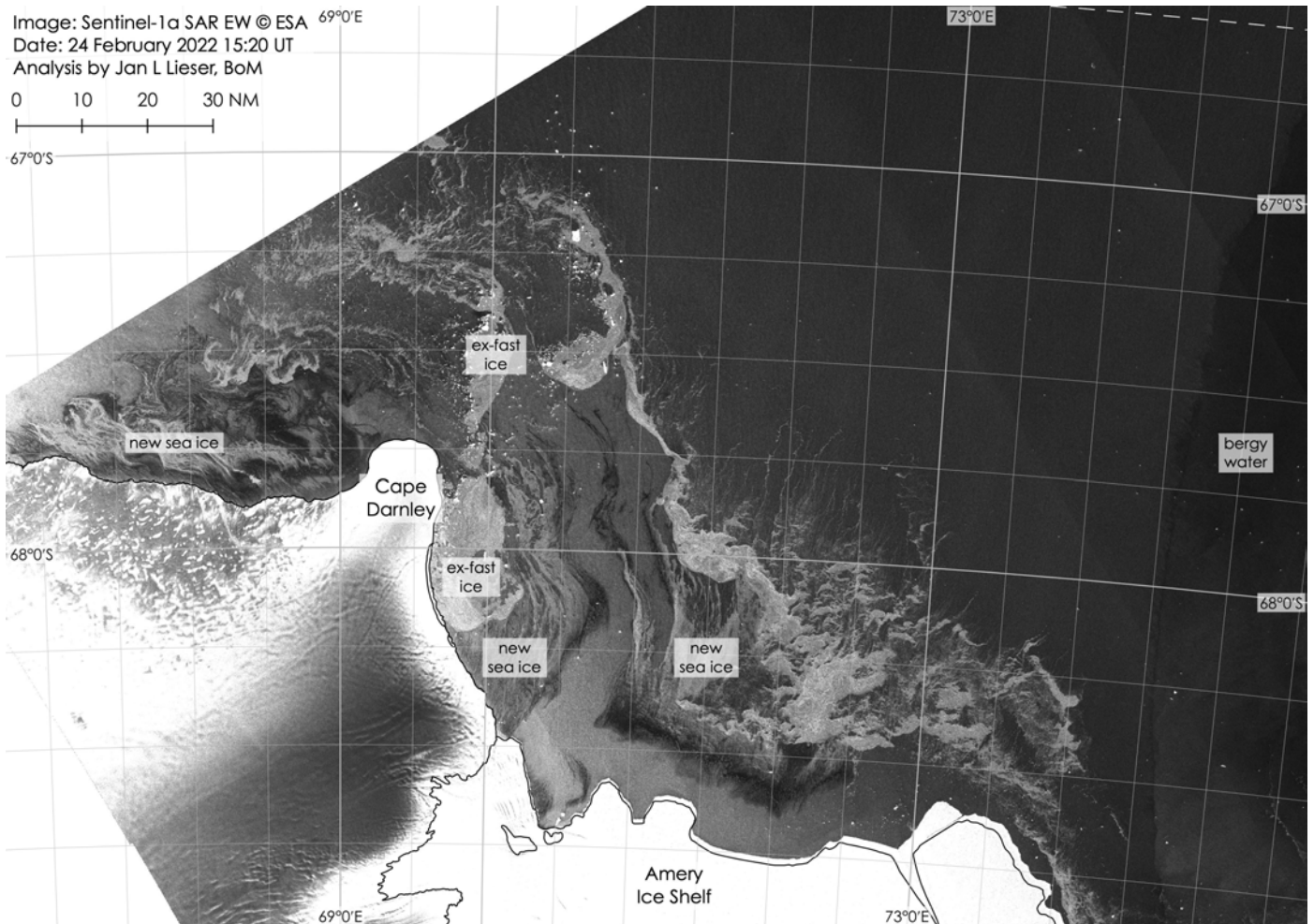


Figure 3: Sentinel-1a SAR EW data acquired 24 February 2022 at 15:20 UT and provided by PolarView.

Ice Bulletin: Bunger Hills

Issued: Friday 25th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of the Bunger Hills.

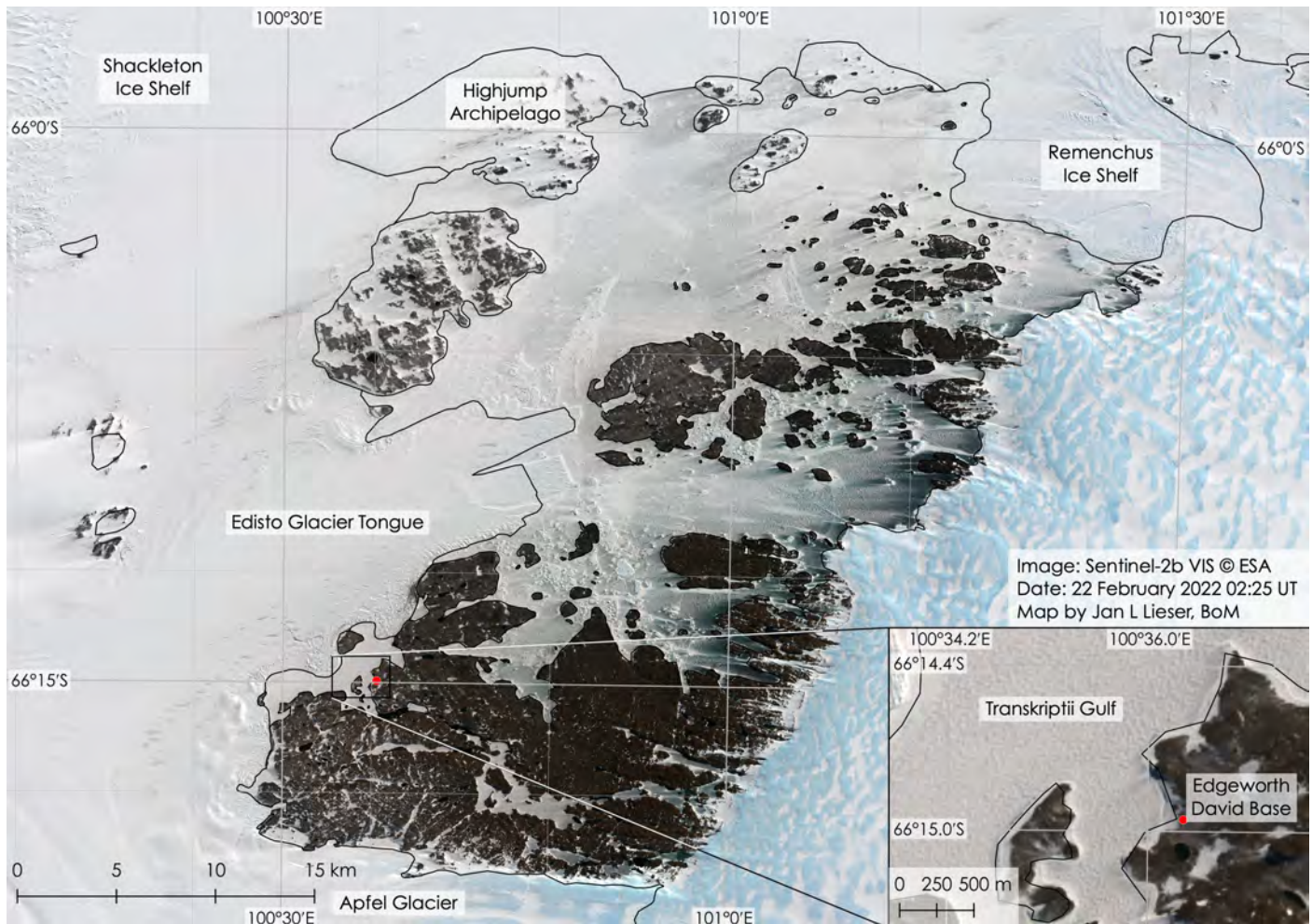


Figure 1: Sentinel-2b VIS composite data acquired 22 February 2022 at 02:25 UT and provided by USGS.

Off Edgeworth David Base, a fresh snow cover can be seen on Transkriptii Gulf (see inset)

Figure 2 shows a larger scale overview of the region north of Bunger Hills. The Denman Ice Shelf and Scott Ice Shelf both form part of the Shackleton Ice Shelf.

North and east of Mill Island and east of Bowman Island, multi-year fast ice is present offshore while Milovzorova Bay is a polynya. North of the fast ice and the polynya, pack ice that is including some vast sea-ice floes is present at this end of the summer season. This pack ice is expected to survive into the coming autumn and winter season.

West of Mill Island, Malygincev Bay exhibits still a high sea-ice concentration of predominantly ex-fast ice and partly still vast floes that are also expected to remain for the rest of the summer as well and into the coming winter.

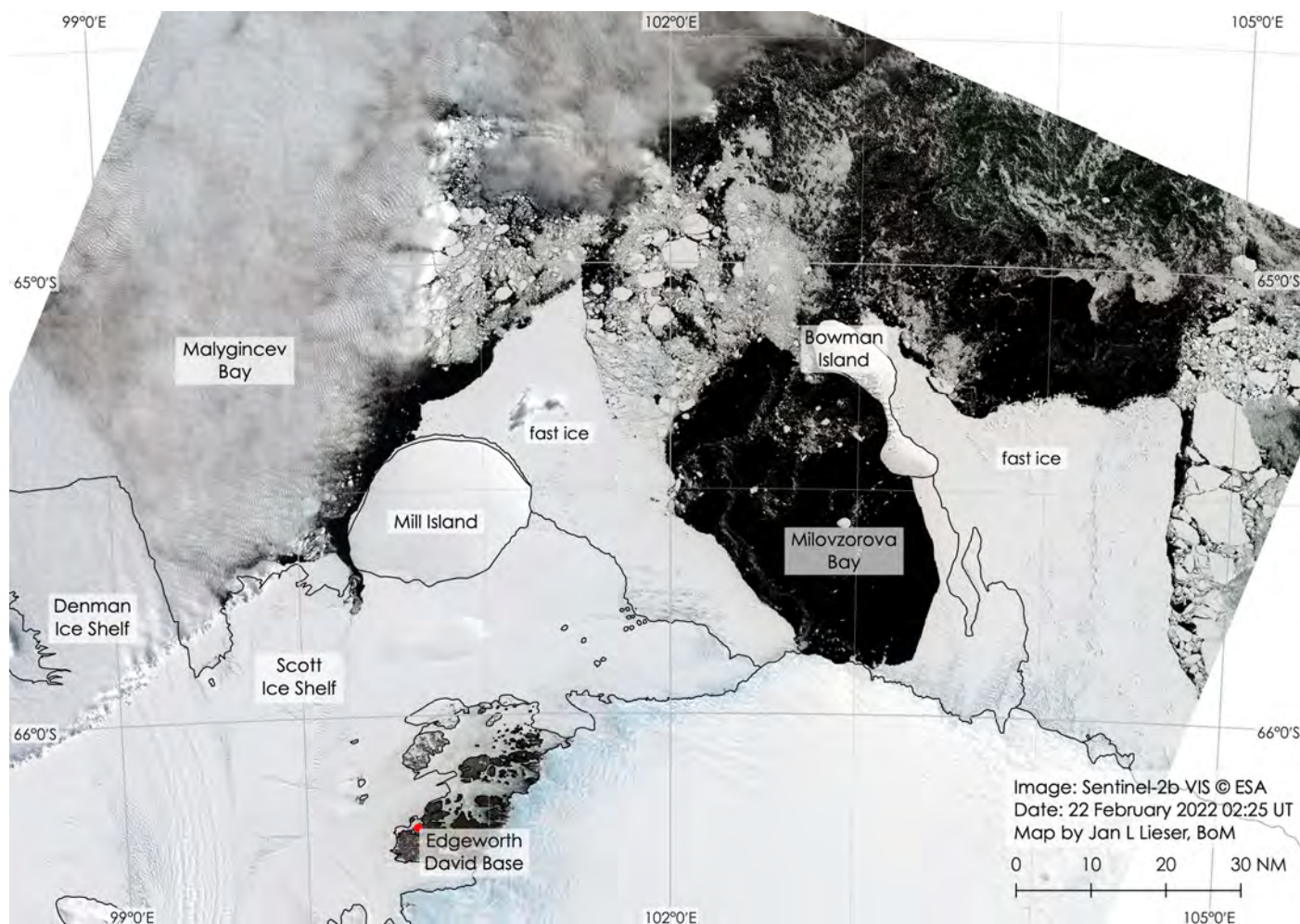


Figure 2: Sentinel-2b VIS composite data acquired 24 February 2022 at 04:47 UT and provided by ESA.

Ice Bulletin: D'Urville Sea

Issued: Friday 25th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data between Dumont D'Urville Station and the Mertz Ice Shelf.

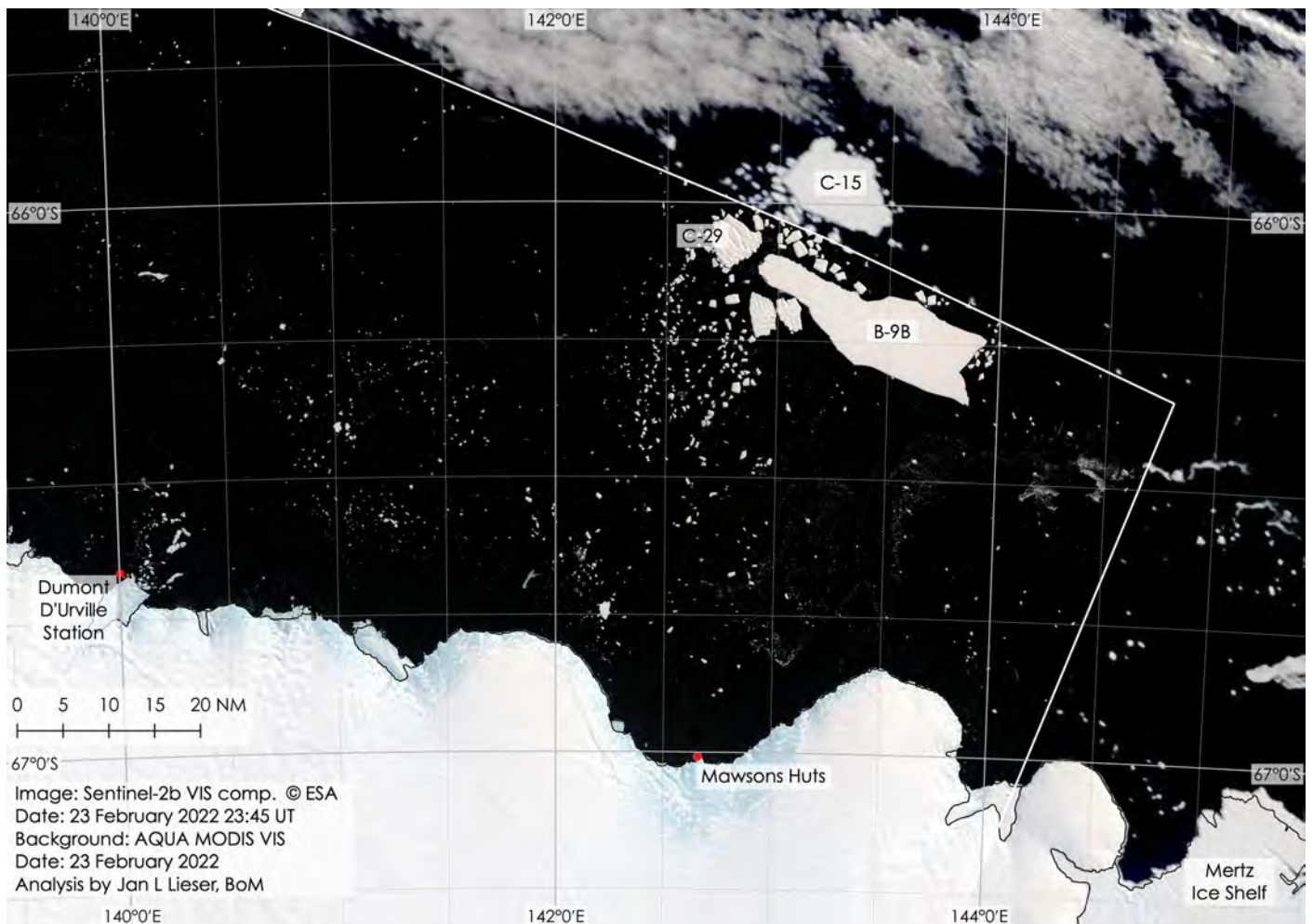


Figure 1: Sentinel-2b VIS composite data acquired 23 February 2022 at 23:45 UT and provided by USGS.

Offshore, many small to medium-sized icebergs can be identified in the high-resolution image. Only north of the Mertz Ice Shelf, some old sea ice (ex-fast ice) is presently drifting westward.

Icebergs B-9B and C-29 appear not grounded but remain trapped by surrounding smaller icebergs that are grounded. Iceberg C-15 is still grounded.

Ice Bulletin: Mawson Station

Issued: Saturday 26th February 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Mawson Station. The recent cruise track of MV Happy Dragon is included as an orange line (the vessel is currently in Horseshoe Harbour off station) and the recent cruise track of MPOV Aiviq is included as a blue line (up until 25 February 2022 18:50 UT).

West of the station, a large iceberg (marked by a pick shape) continues drifting generally northward through the islands but moved only slightly westward during the past 36 hours.

Between the station and Iceberg Alley, many icebergs are present of which some are grounded (for example the ones that make up the alley) and some are drifting.

Some pack ice (ex-fast ice) is drifting northeast of the station and with new sea ice starting to form elsewhere it can be expected that new ice is also present nearshore.

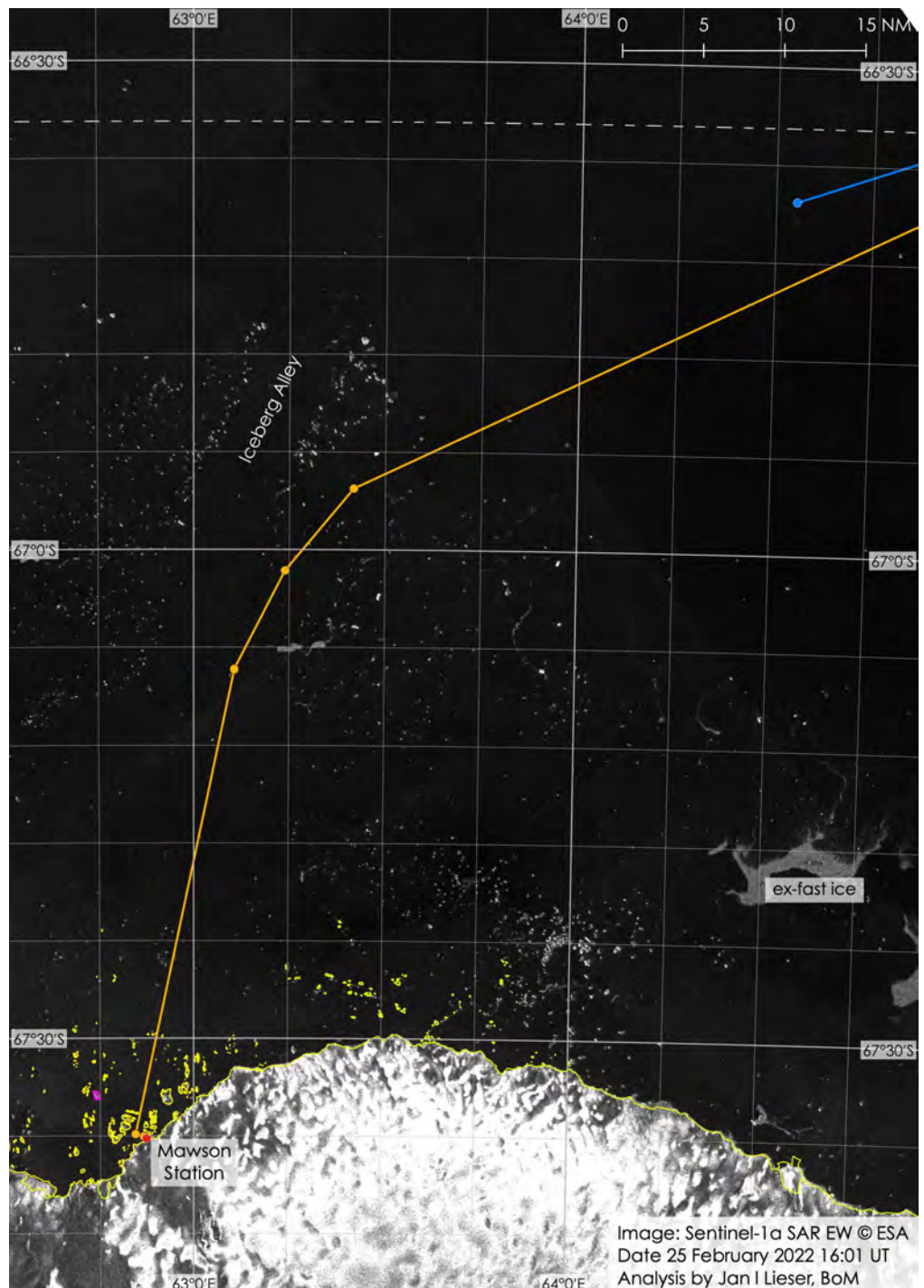


Figure 1: Sentinel-1a SAR EW data acquired 25 February 2022 at 16:01 UT and provided by PolarView.

Image: Sentinel-1a SAR EW © ESA
Date 25 February 2022 16:01 UT
Analysis by Jan I Lieser, BoM

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Saturday 26th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data of the Vestfold Hills and Davis Station.

North of the station, the entrance of Long Fjord continues to break up however, ice over at the location of a mooring (green dot; see inset) remains marginal. Further into the fjord, open water is found in the narrows and between islands. In the north of the hills, fast ice persists in the western part of Tryne Bay.

Between the islands off Davis Station, waters generally remain clear of sea ice with one larger iceberg (marked on map) appearing to be temporarily grounded since 23 February 2022.

Figure 2 shows a larger scale overview north of the station.

Offshore, a melange of ex-fast ice and new sea ice is drifting freely predominantly redistributed by small-scale oceanic surface eddies.

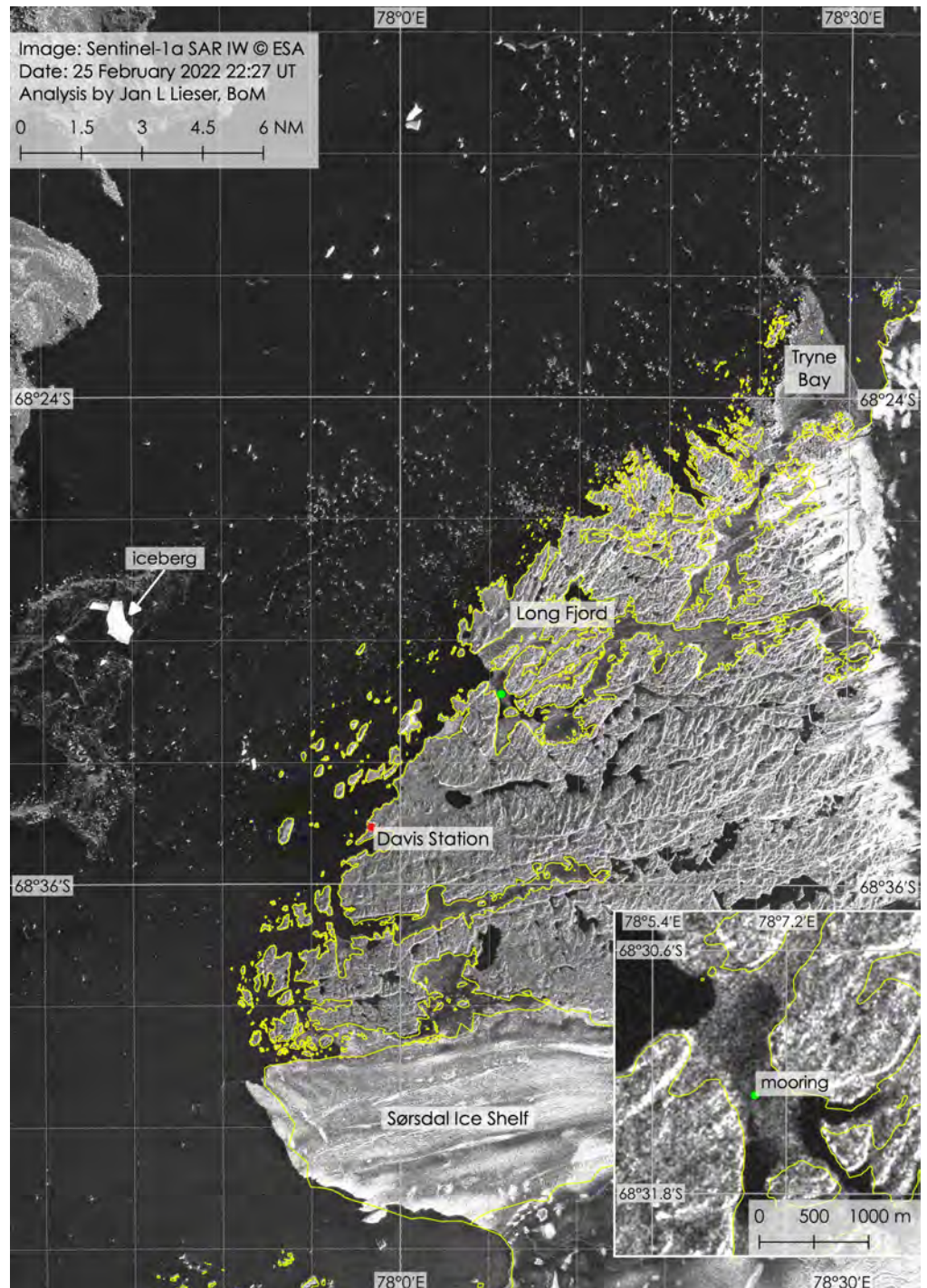


Figure 1: Sentinel-1a SAR IW data acquired 25 February 2022 at 22:27 UT and provided by PolarView.

Image: Sentinel-1a SAR IW © ESA
Date: 25 February 2022 22:27 UT
Analysis by Jan L Lieser, BoM

0 10 20 NM
|-----|
67°0'S

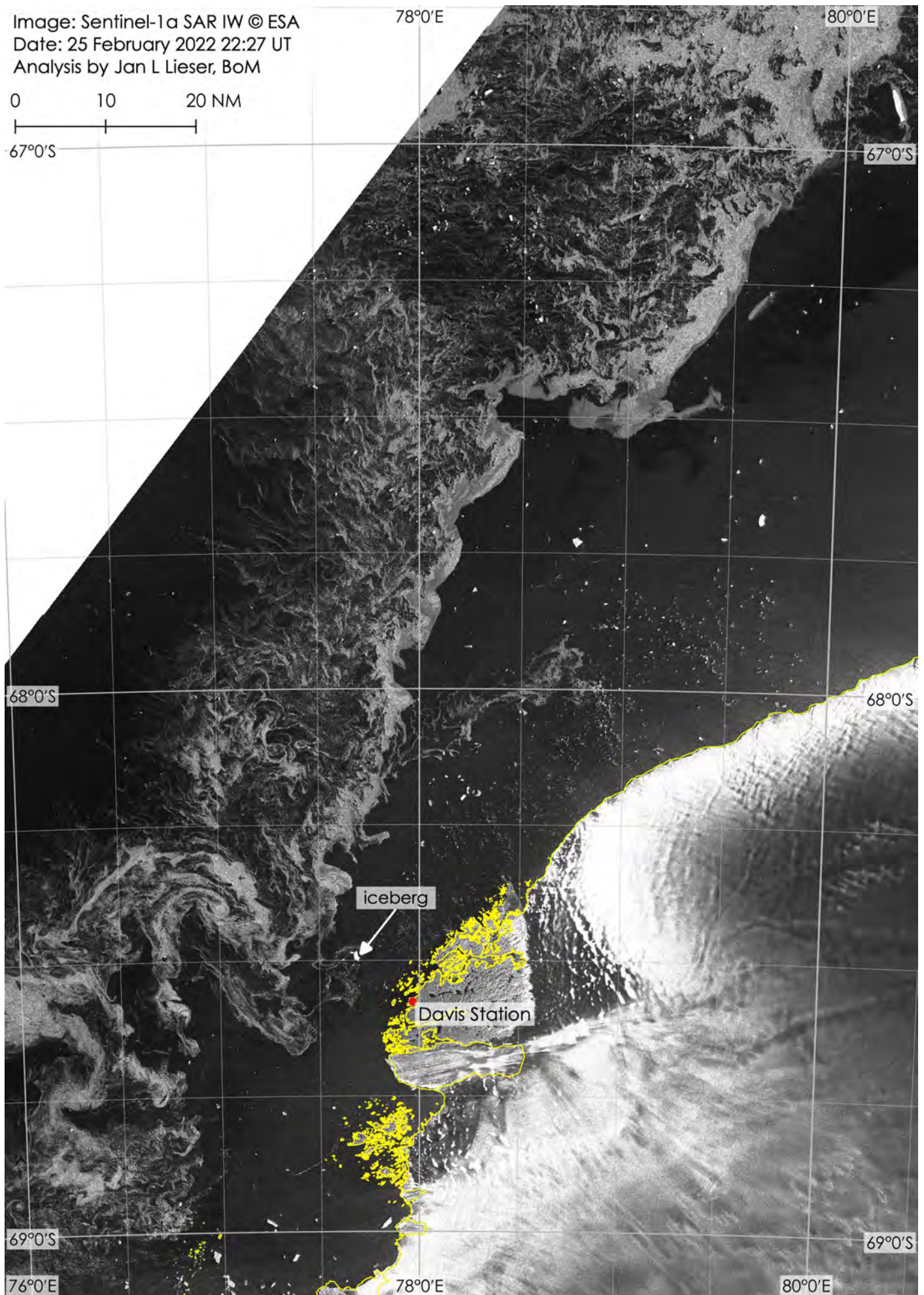


Figure 2: Sentinel-1a SAR IW data acquired 25 February 2022 at 22:27 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Sunday 27th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Mawson Station. Two vessels can be seen off station at the time of the data acquisition (see inset).

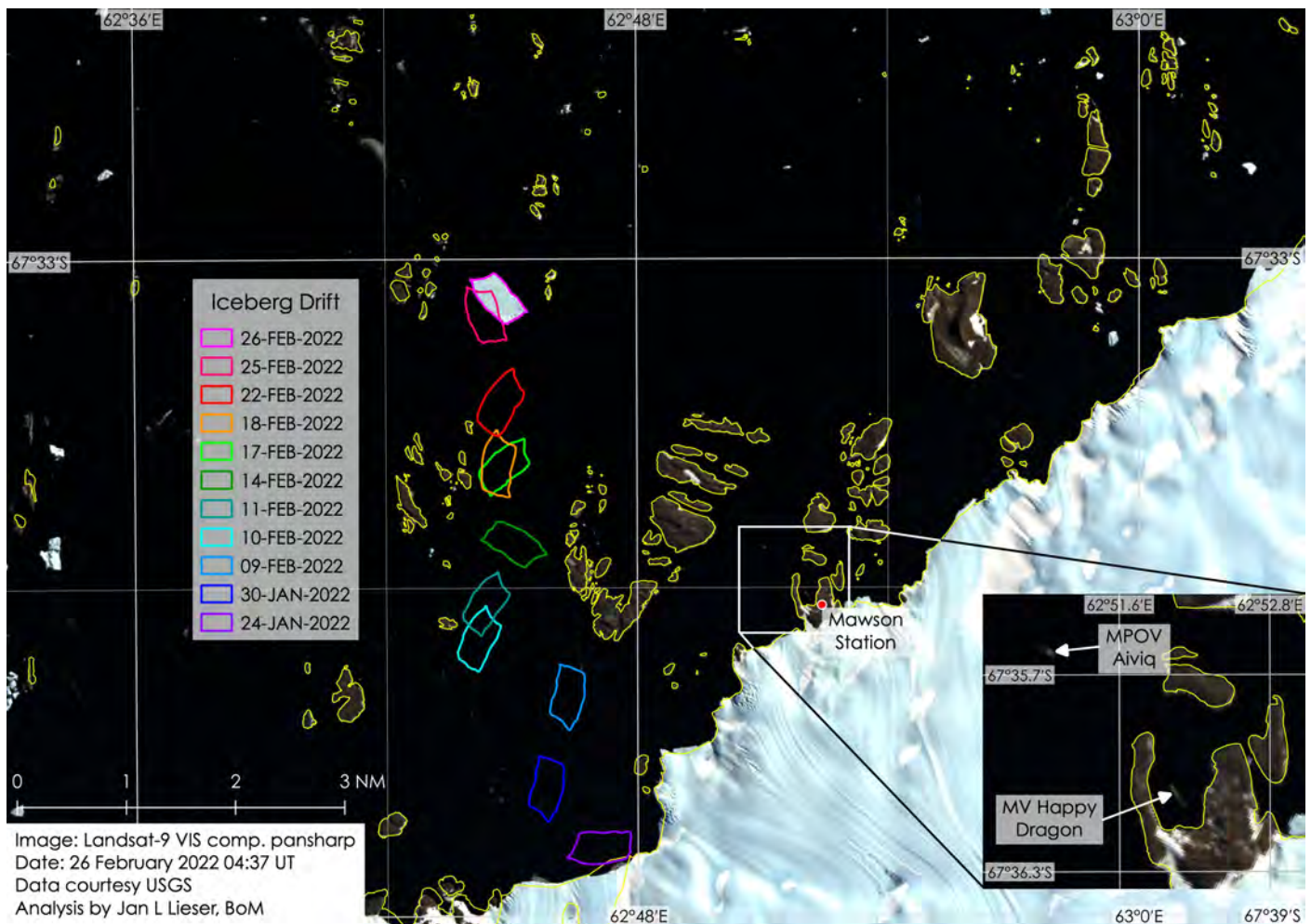


Figure 1: Landsat-9 VIS composite pan-sharpened data acquired 26 February 2022 at 04:37 UT and provided by USGS.

West of the station, a large iceberg continues drifting northward through the islands (indicated by the colour-coded shapes).

New sea ice may be forming nearshore and between the islands and drifting further offshore.

Ice Bulletin: Davis Station

Issued: Monday 28th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of the Vestfold Hills and Davis Station.

North of the station, the ice conditions of Long Fjord and Tryne Bay remain largely unchanged with ice still over the location of a mooring in the southern part of Long Fjord (green dot).

Between the islands off Davis Station, waters generally remain clear of sea ice with one larger iceberg still local.

Figure 2 shows RSV Nuyina heading south towards Davis Station (upper panel; the ship's wake can be seen as well.) and a larger scale overview north and west of the station (lower panel). The recent cruise track of RSV Nuyina is included as an orange line. The vessel is currently off station.

Offshore, a melange of ex-fast ice and new sea ice is drifting freely predominantly redistributed by small-scale oceanic surface eddies.

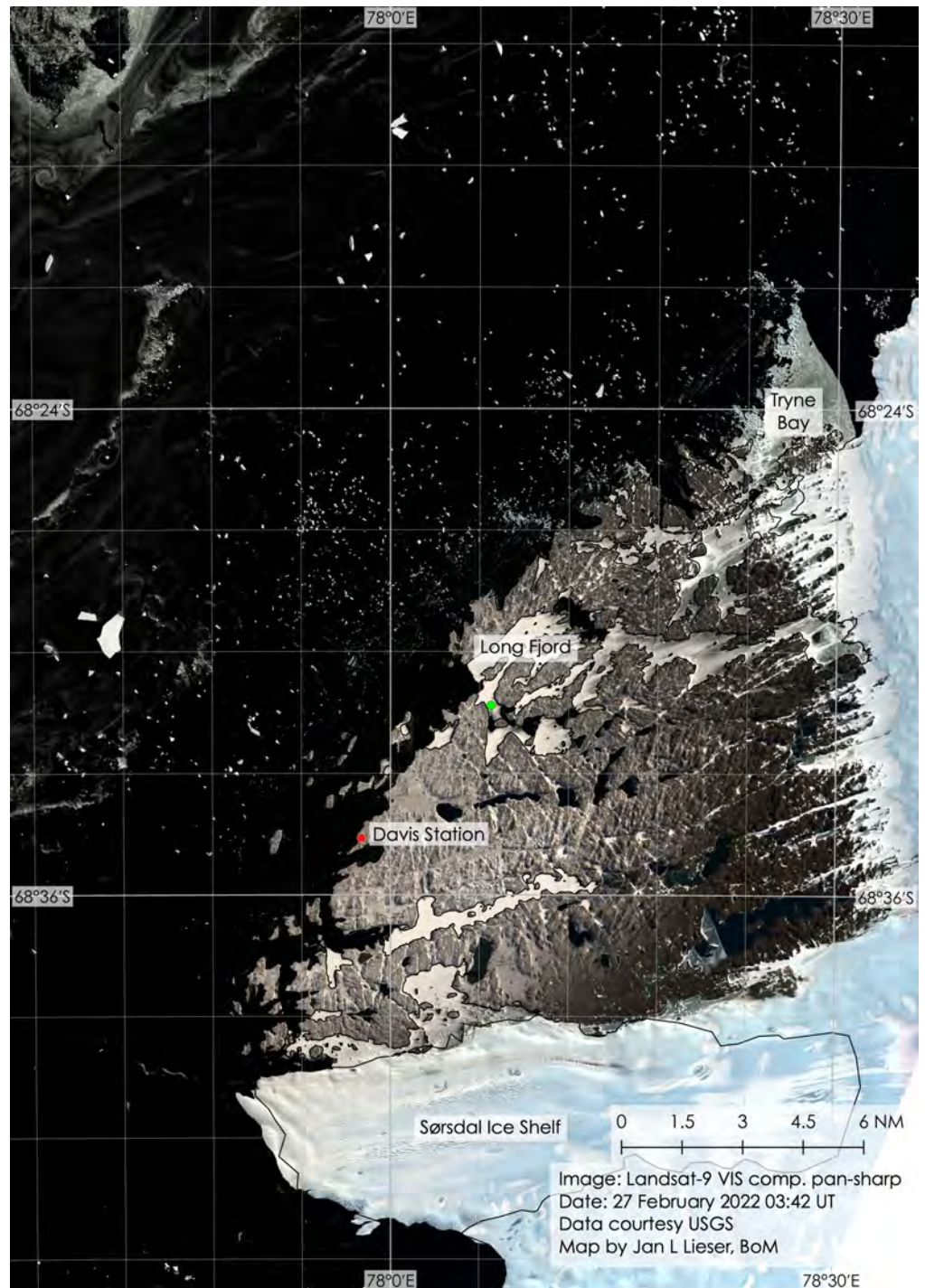


Figure 1: Landsat-9 visible composite pan-sharpened data acquired 27 February 2022 at 03:42 UT and provided by USGS.

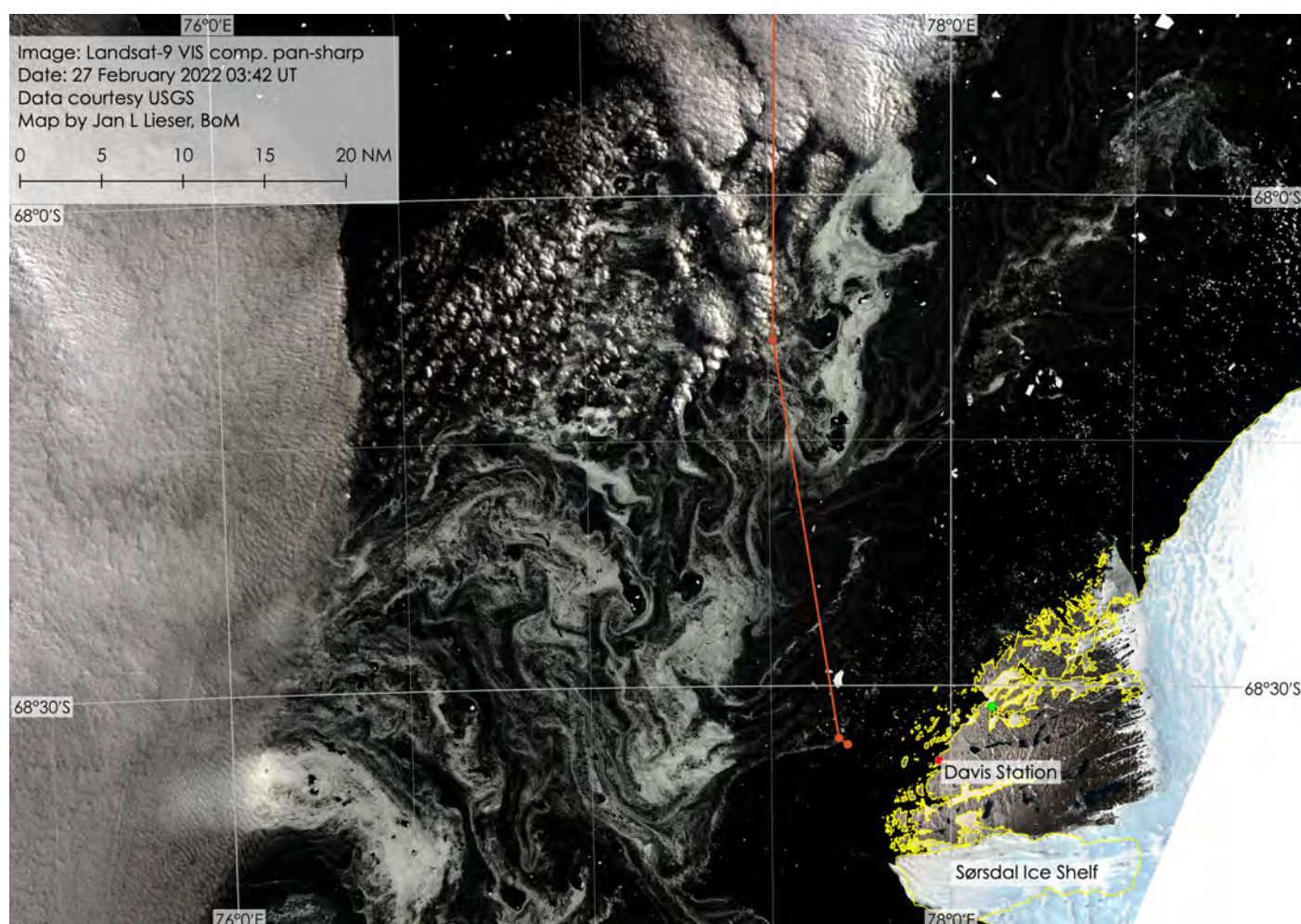


Figure 2: Landsat-9 visible composite pan-sharpened data acquired 27 February 2022 at 03:42 UT and provided by USGS..

Ice Bulletin: Casey Station

Issued: Monday 28th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off Casey Station.

Off Casey Station, new sea ice is starting to form nearshore and between the offshore islands.

North of the station, old fast ice shows breaks criss-crossing the ice, but it will generally remain local and re-freeze soon.

Further afield, pack ice and icebergs are drifting freely in the polynya. The pack ice consists of a melange of ex-fast ice and newly forming sea ice.

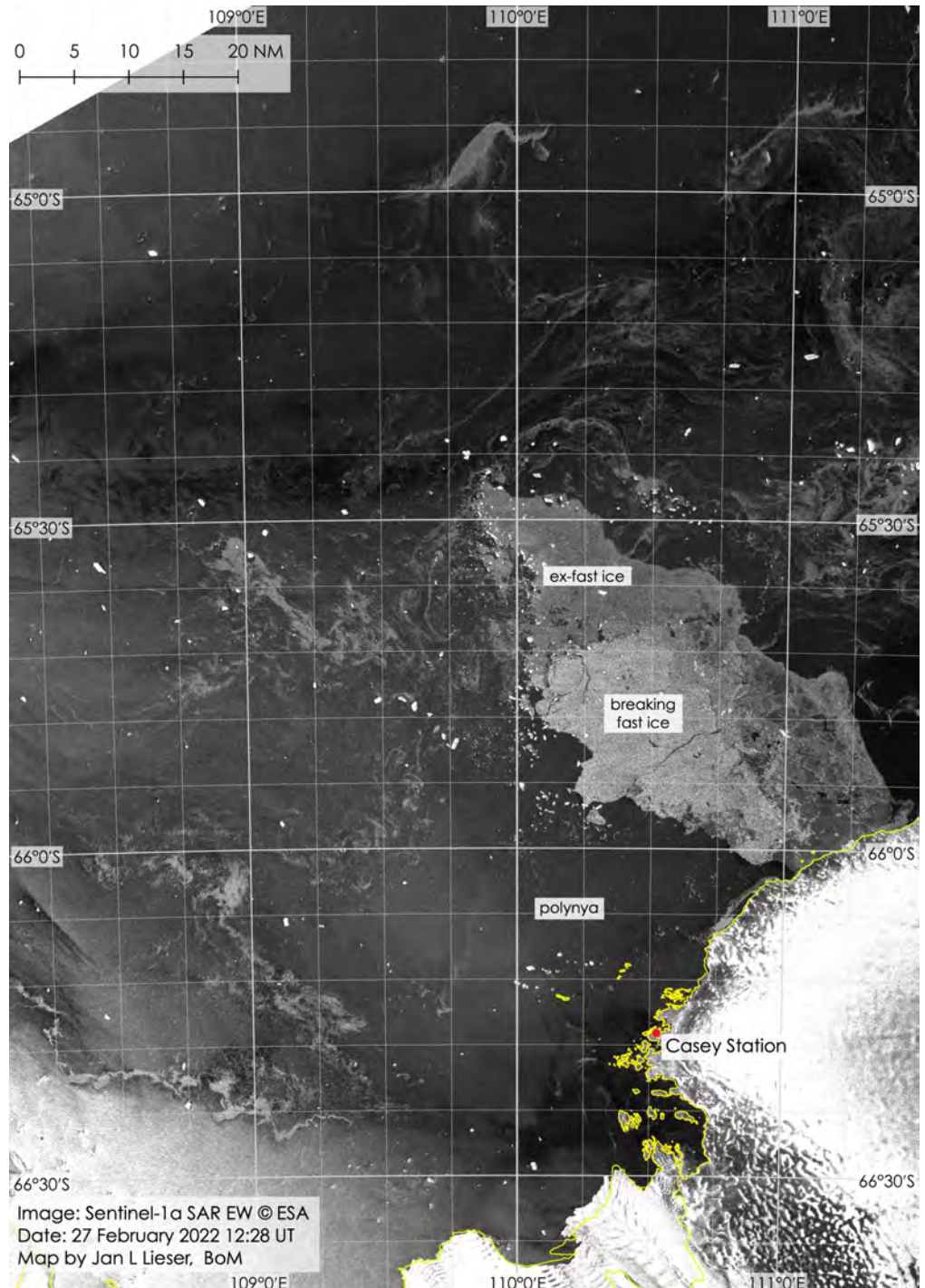


Figure 1: Sentinel-1a SAR EW data acquired 27 February 2022 at 12:28 UT and provided by PolarView.

Ice Bulletin: Davis Station

Issued: Monday 28th February 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Casey Station. The composite of different bands results in clouds showing with a red tint and ice with a blue. The recent cruise track of RSV Nuyina is included as a white line. The ship's position at the time of data acquisition is obscured at the edge of clouds. A previously identified large iceberg is also under clouds.

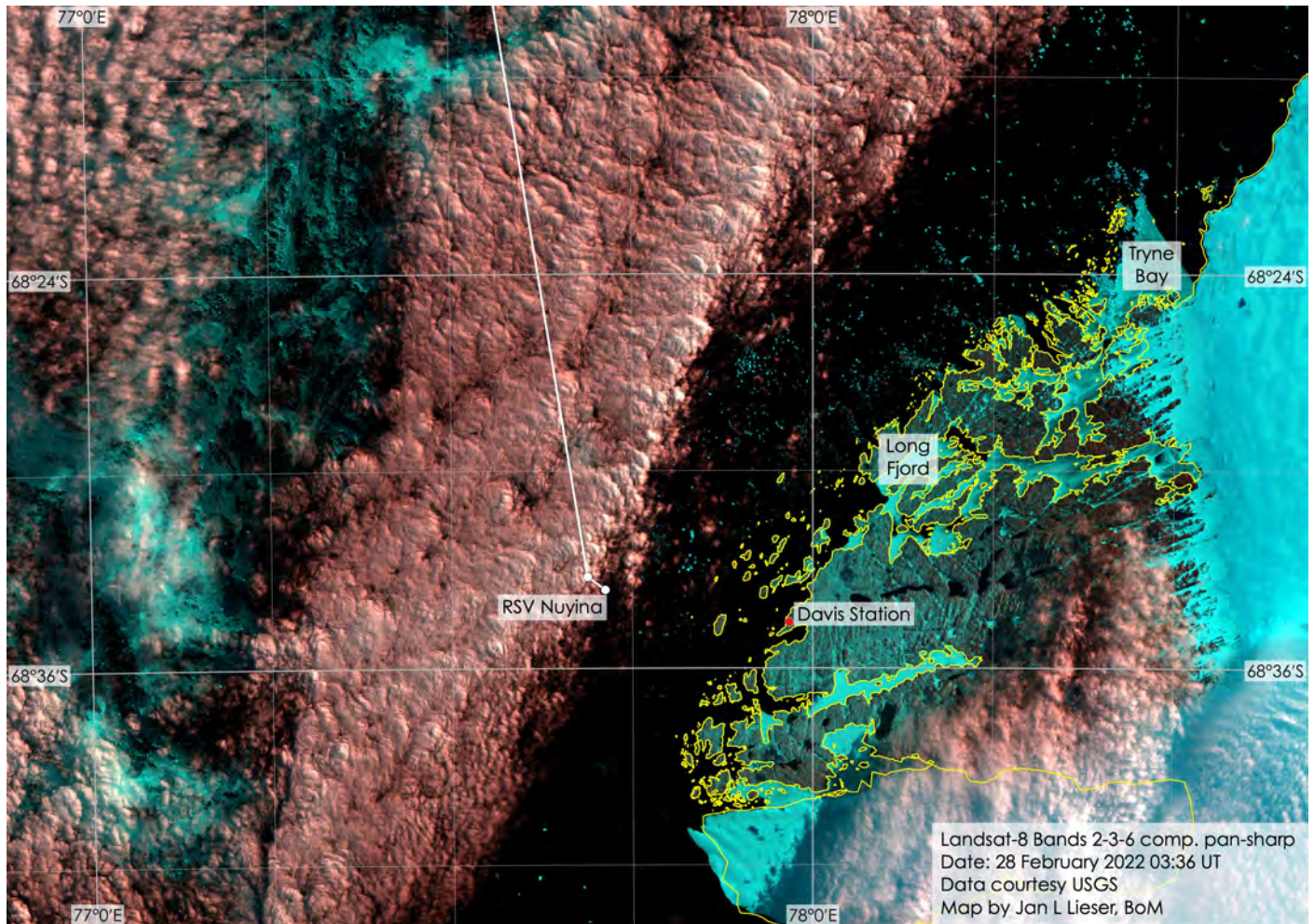


Figure 1: Landsat-8 Bands 2-3-6 composite data acquired 28 February 2022 at 03:36 UT and provided by USGS.

The station is cloud-free with only minimal sea ice offshore between the islands.

Farther afield, a melange of ex-fast ice and new sea ice is drifting freely predominantly redistributed by small-scale oceanic surface eddies.

Ice Bulletin: Mawson Station

Issued: Wednesday 2nd March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data east of Mawson Station.

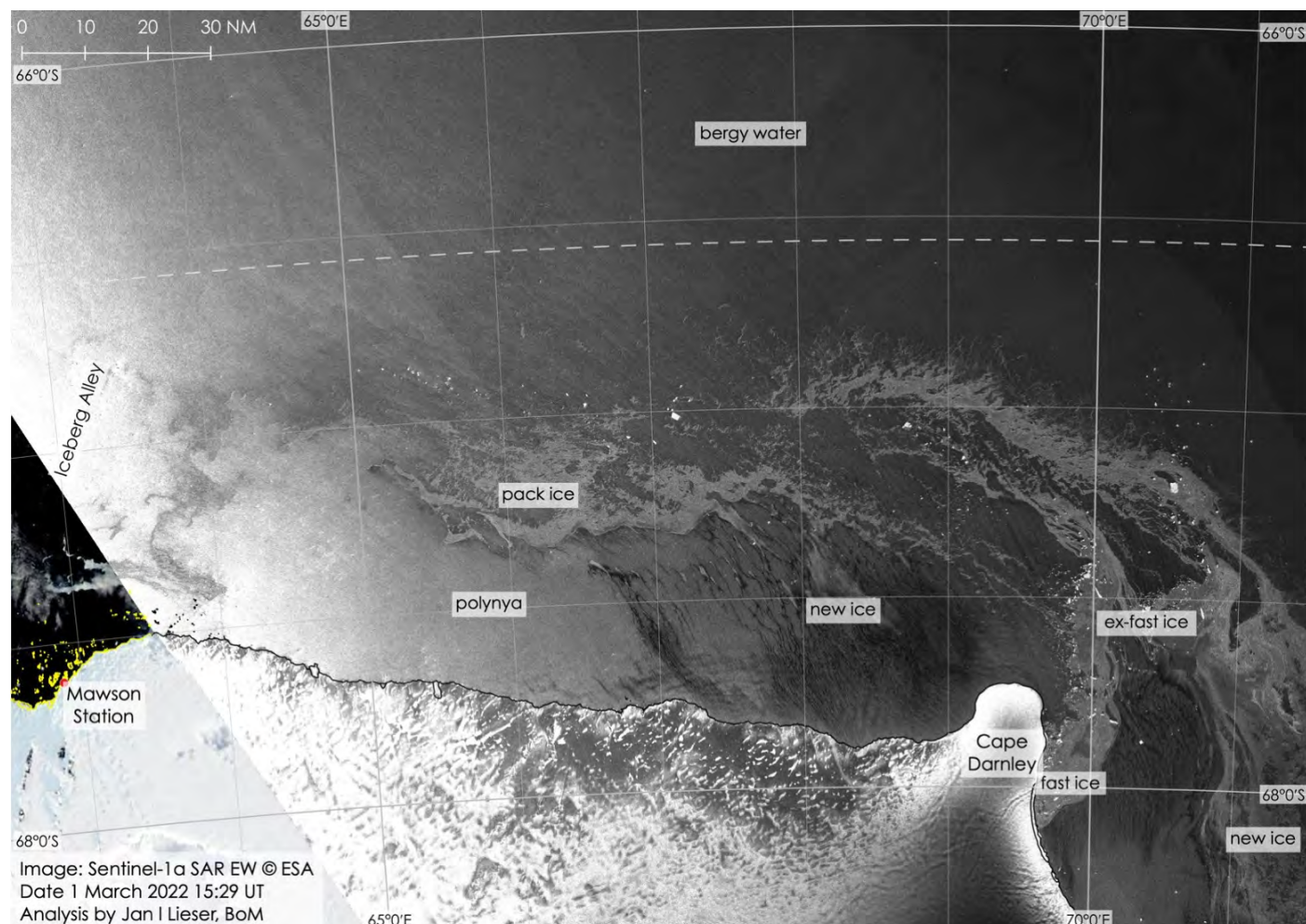


Figure 1: Sentinel-1a SAR EW data acquired 1 March 2022 at 15:29 UT and provided by PolarView; complemented by AQUA MODIS VIS data acquired 1 March 2022 and provided by NASA.

Northwest and southeast of Cape Darnley, new sea ice is forming and mixing with ex-fast ice further offshore. This melange of new and old pack ice is generally drifting westward parallel to the coast.

West of the station, a large iceberg (refer to earlier Ice Bulletins from February 2022) continues drifting northward through the islands.

New sea ice can be expected to form nearshore and between the islands and drifting further offshore.

Ice Bulletin: Casey Station

Issued: Wednesday 2nd March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible data off Law Dome and Casey Station. Fast-ice areas are marked with a red outline.

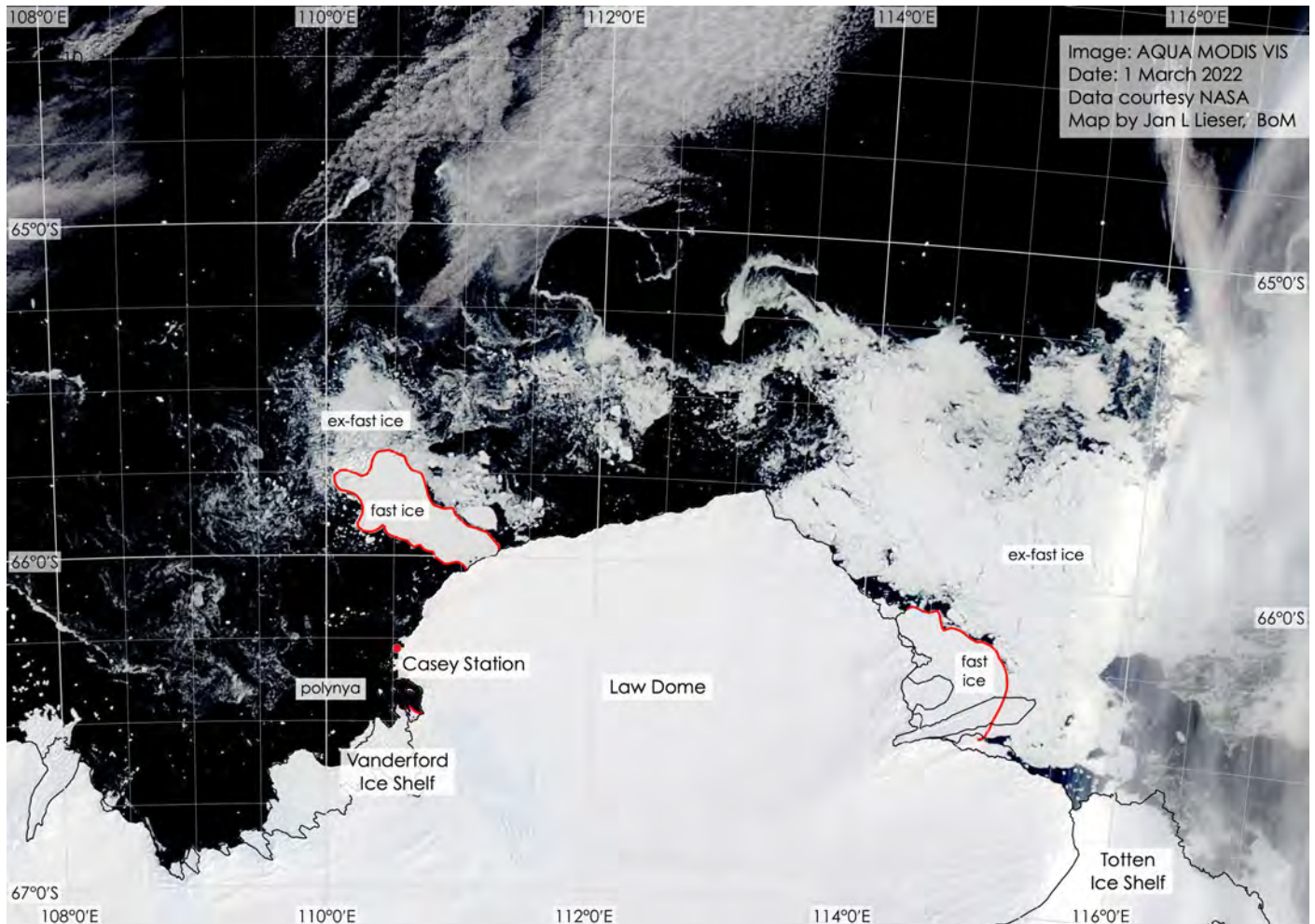


Figure 1: AQUA MODS VIS data acquired 1 March 2022 and provided by NASA.

South of Casey Station, only minimal fast ice remains north of the Vanderford Ice Shelf. Northwest of Law Dome, the fast ice on Petersen Bank has likely reached its minimum extent for the season. East of the dome, a vast expanse of ex-fast ice is locally trapped behind rows of grounded icebergs offshore.

North of the Totten Ice Shelf, a polynya is present extending east to the Dalton Iceberg Tongue (not shown in the figure). The offshore pack ice consists of a melange of ex-fast ice and newly forming sea ice.

Further afield, pack ice and icebergs are drifting freely, including in the polynya off Casey Station.

Ice Bulletin: D'Urville Sea

Issued: Wednesday 2nd March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data between Dumont D'Urville Station and the Ninnis Ice Shelf.

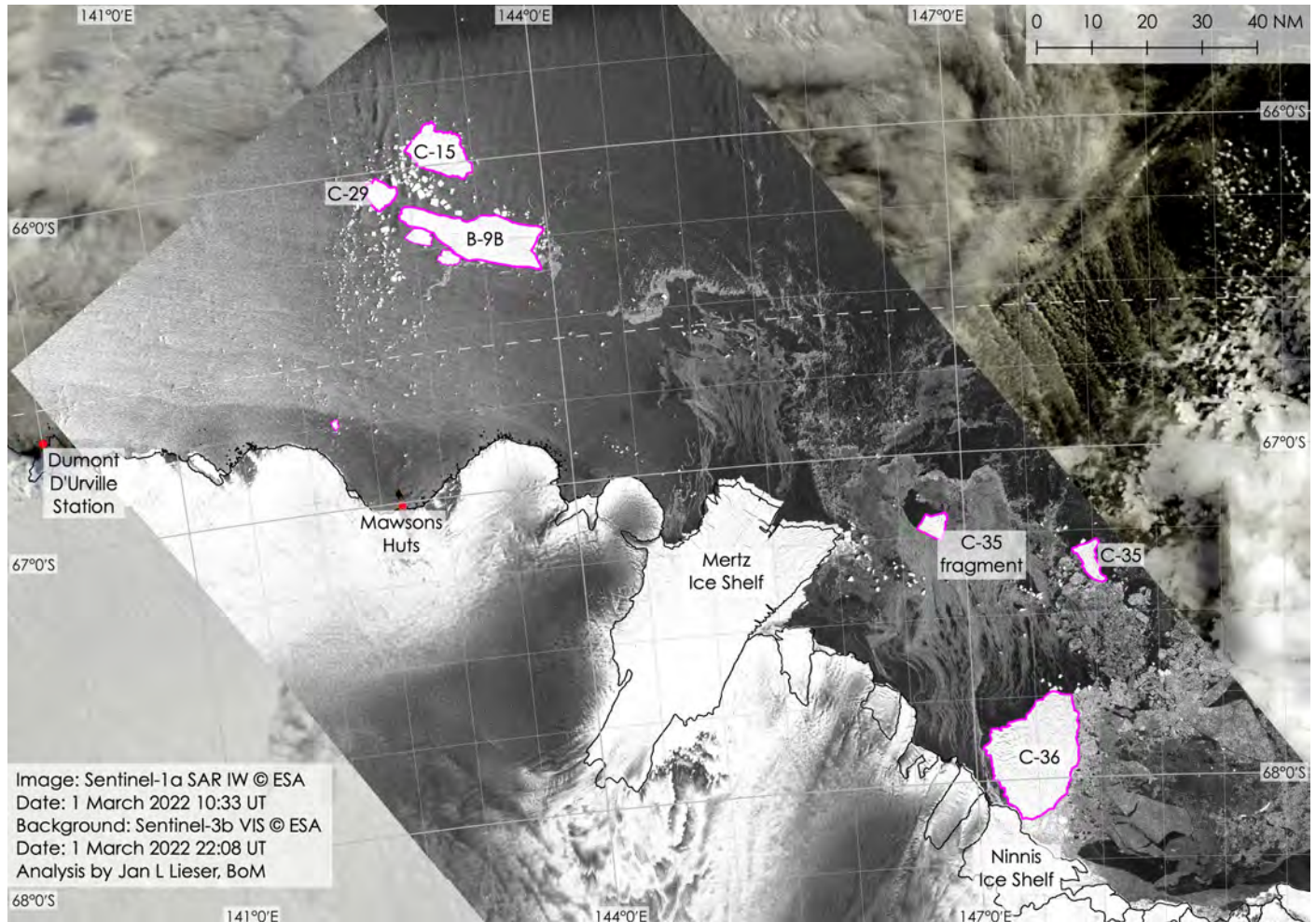


Figure 1: Sentinel-1a SAR IW data acquired 1 March 2022 at 10:33 UT and provided by PolarView;
 background of Sentinel-3b VIS composite data acquired 1 March 2022 at 22:08 UT and provided by ESA.

North and east of the Mertz Ice Shelf, new sea ice is forming nearshore, mixing with ex-fast ice and drifting northward. Offshore, many small to medium-sized icebergs can be identified.

North of Mawson's Huts, icebergs B-9B and C-29 are not grounded but remain trapped by surrounding smaller icebergs that are grounded. Iceberg C-15 is still grounded. Three larger but unnamed icebergs are additionally marked pink outlines. The two icebergs just south of iceberg B-9B are mobile but not able to escape the area.

North of the Ninnis Ice Shelf, iceberg C-36 is grounded but wiggling slightly, while iceberg C-35 and a substantial (but unnamed) fragment of the iceberg are drifting in loops locally predominantly forced by local currents.

Ice Bulletin: Mawson Station

Issued: Thursday 3rd March 2022

Analyst: Jan L. Lieser and Damien Everett



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Mawson Station. MV Happy Dragon and MPOV Aiviq ship positions are marked.

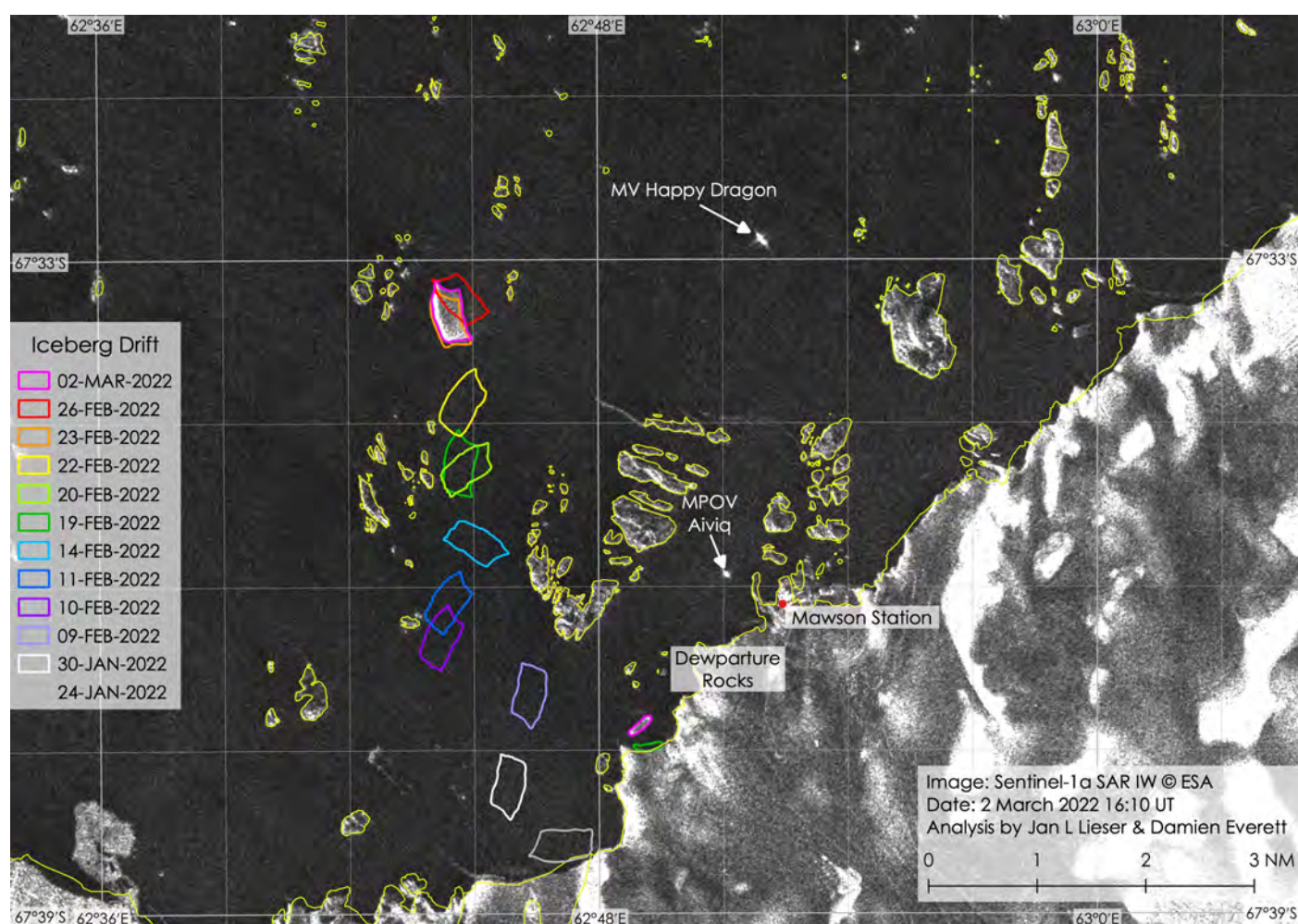


Figure 1: Sentinel-1a SAR IW data acquired 2 March 2022 at 16:10 UT and provided by Polar View.

West of the station, a large iceberg continues drifting northward through the islands (indicated by the colour-coded shapes). South of Departure Rocks, a smaller iceberg calved on 19 February 2022 (green outline) and drifted north to its current position outlined in pink.

New sea ice is forming nearshore and between the islands and drifting offshore. Areas of glacial debris are also present nearshore.

Further offshore (not shown on map) new sea ice is forming, and some is mixing with the ex-fast ice. This melange of new and old pack ice is generally drifting westward parallel to the coast.

Ice Bulletin: Wilkins Aerodrome

Issued: Thursday 3rd March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of Wilkins Aerodrome. The scene is partly obscured by clouds.

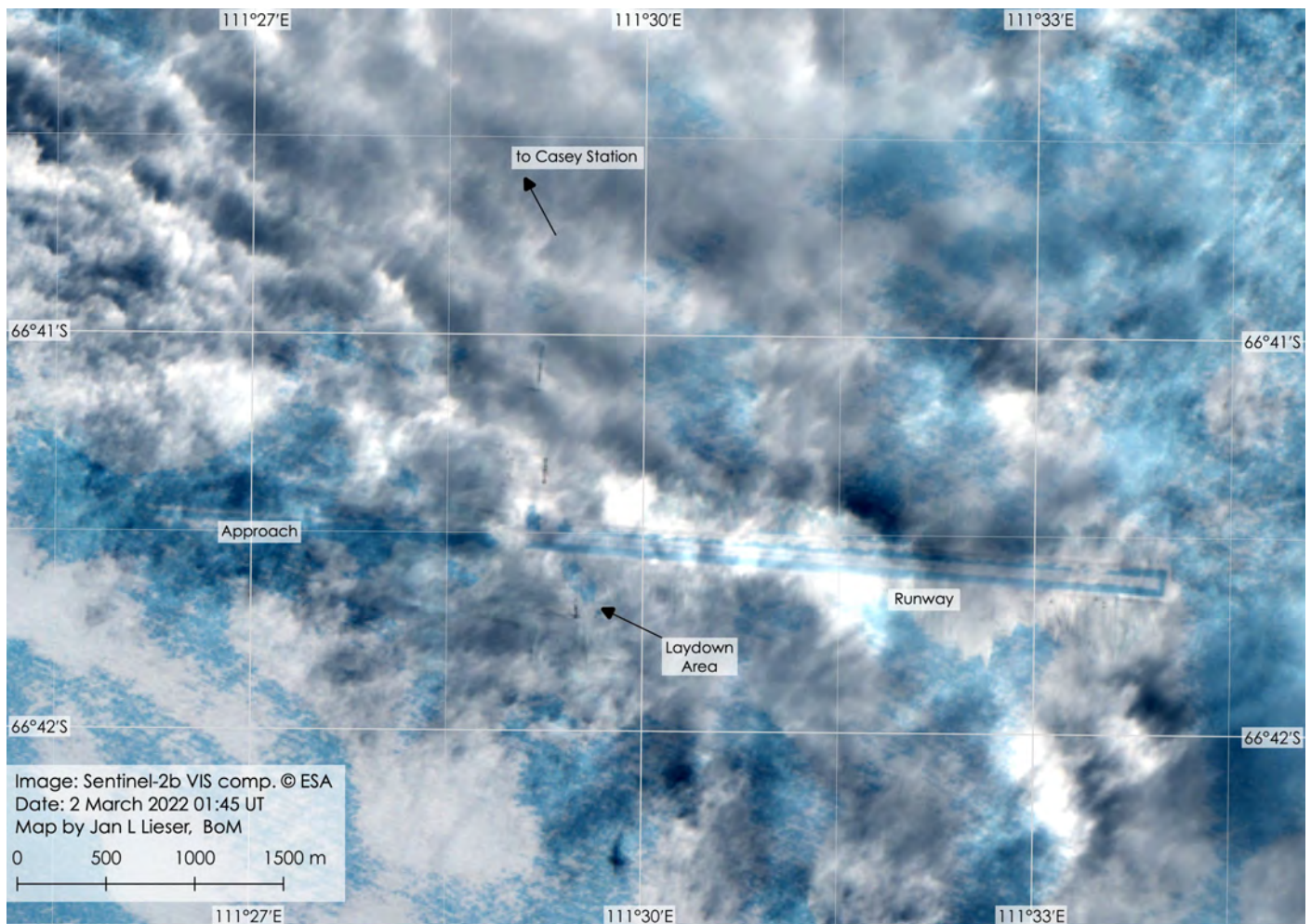


Figure 1: Sentinel-2b visible composite data acquired 2 March 2022 at 01:45 UT and provided by USGS.

The ice runway is visible beneath the clouds. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Davis Station

Issued: Friday 4th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Vestfold Hills and Davis Station. Fast-ice areas are outlined with a red line.

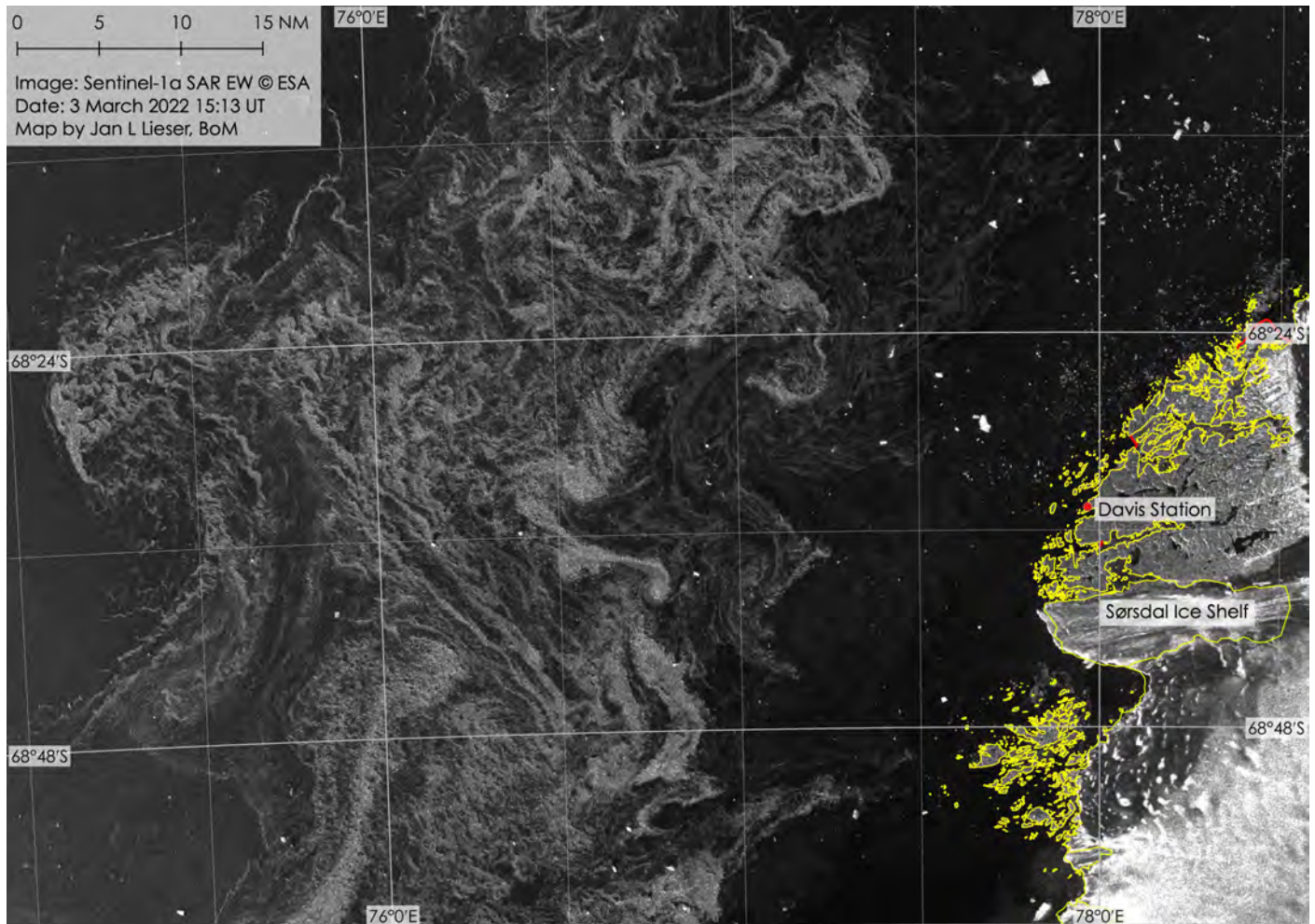


Figure 1: Sentinel-1a SAR EW data acquired 3 March 2022 at 15:13 UT and provided by PolarView.

Off the Vestfold Hills, a melange of ex-fast ice and new ice is predominantly redistributed by small-scale oceanic eddies and surface currents. Nearshore, waters generally remain clear of sea ice off Davis Station with one larger iceberg still local roughly 8 nautical miles northwest of the station.

Figure 2 shows a larger scale overview west of the station and towards Mawson Station. Fast-ice areas are outlined with a red line. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq (both tracks up until 4 March 2022 02:00 UT) are included as an orange and blue line, respectively. MPOV Aiviq is currently off Mawson Station.

Offshore, a melange of ex-fast ice and new sea ice is drifting westward east of Mawson Station. New sea ice is forming northwest and southeast of Cape Darnley. This new sea ice shows a green discolouration in the visible data due to the presence of biological activity near the sea surface.

East of the Amery Ice Shelf, fast ice has reached its minimal extent for the season after remaining in-situ towards the Larsemann Hills (off the coast between iceberg D-23 and Davis Station) for a long time this summer.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

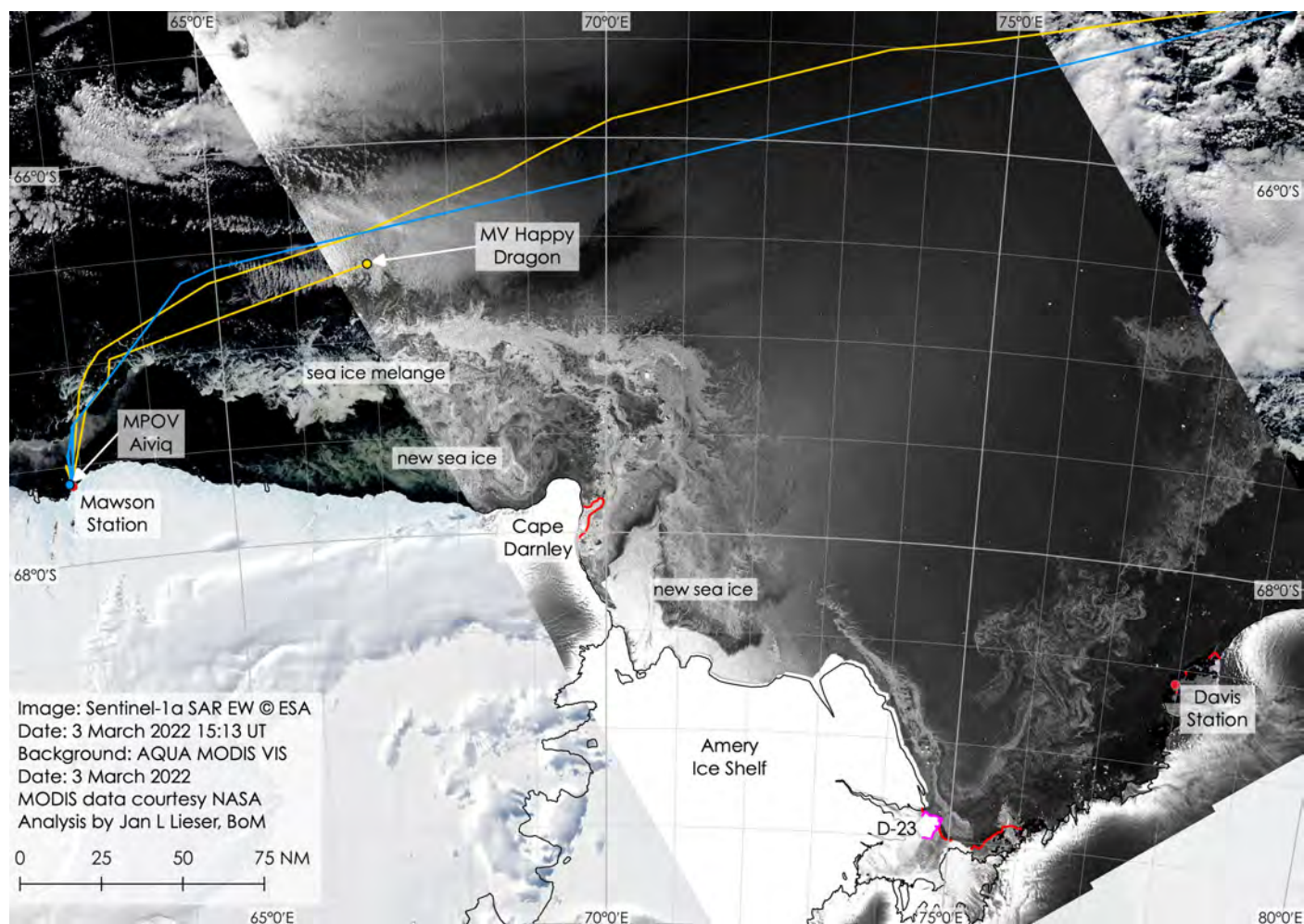


Figure 2: Sentinel-1a SAR EW data acquired 3 March 2022 at 15:13 UT and provided by PolarView; background of AQUA MODIS VIS data acquired 3 March 2022 and provided by NASA.

Ice Bulletin: Wilkins Aerodrome

Issued: Friday 4th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of high-resolution visible data of Wilkins Aerodrome. The scene is partly obscured by clouds.

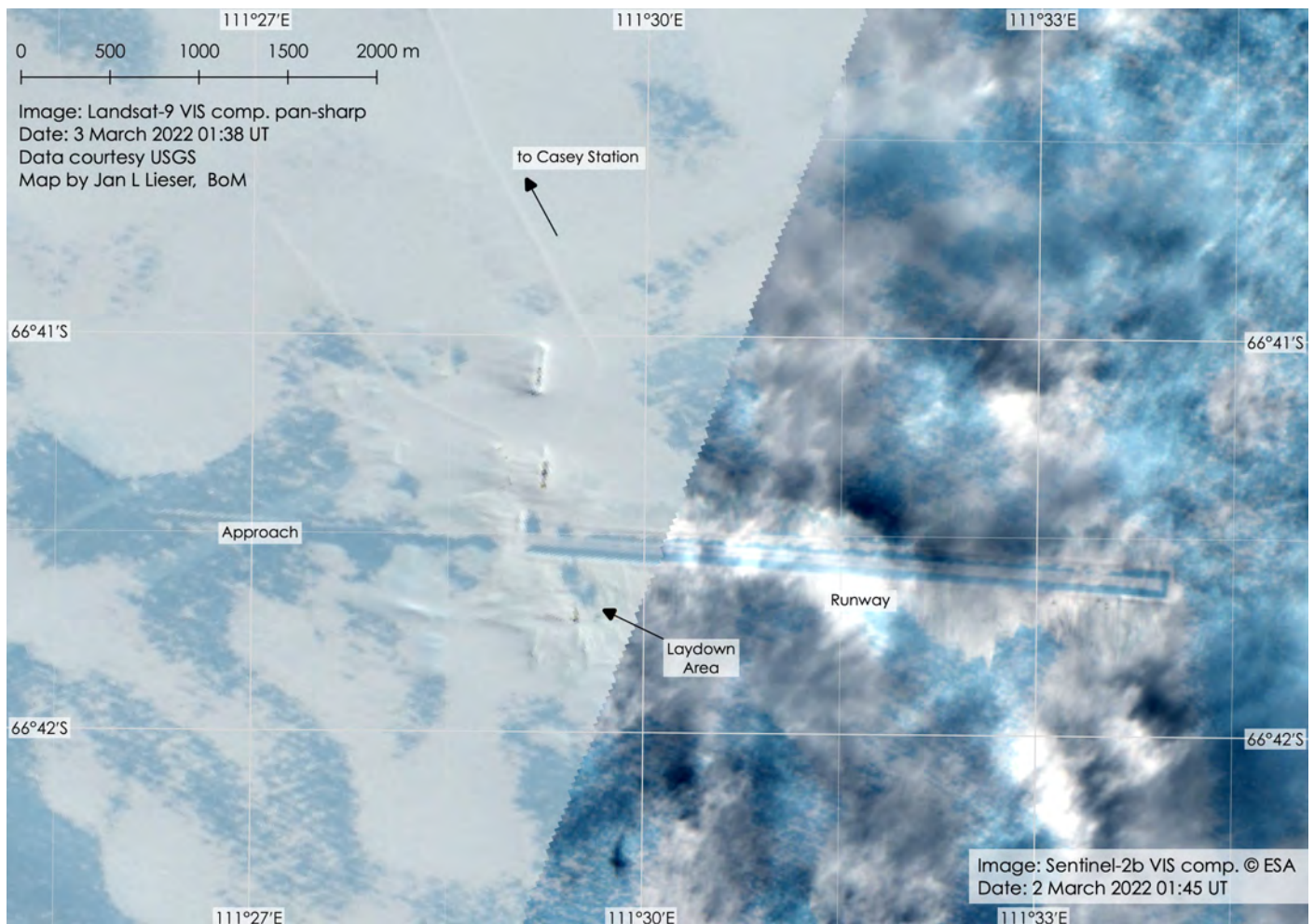


Figure 1: Landsat-9 visible composite pan-sharpened data acquired 3 March 2022 at 01:38 UT; complemented by Sentinel-2b visible composite data acquired 2 March 2022 at 01:45 UT; both data sets provided by USGS.

The ice runway is clearly visible in the Landsat data. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Cooperation Sea

Issued: Friday 4th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows a large-scale overview of Cooperation Sea between Mawson Station and Davis Station. Fast-ice areas are outlined with a red line. The false-colour image displays clouds with a red tint and ice with a blue-green tint. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq (both tracks up until 4 March 2022 04:30 UT) are included as a yellow and blue line, respectively. MPOV Aiviq is currently off Mawson Station.

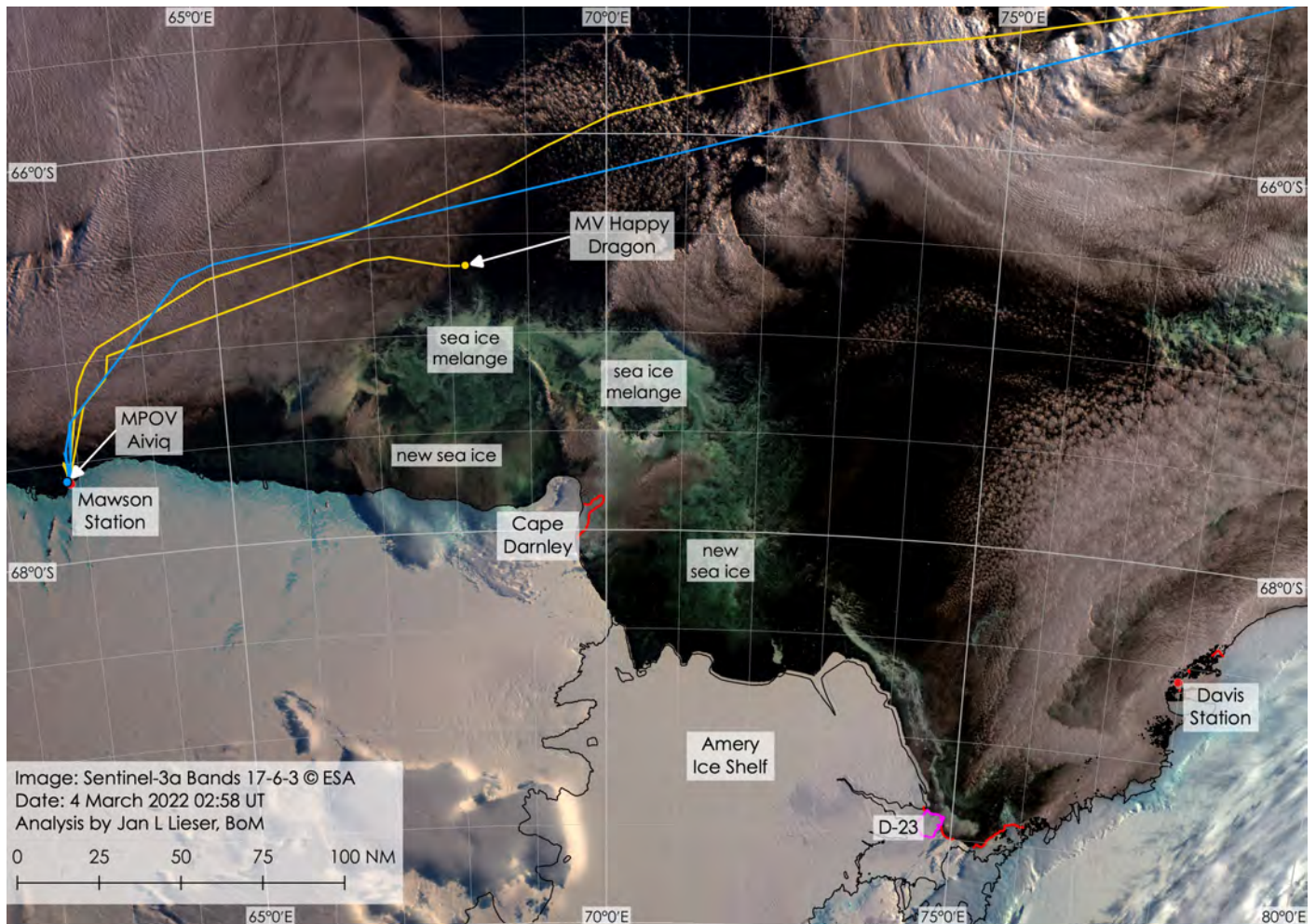


Figure 1: Sentinel-3a Bands 17-6-3 data acquired 4 March 2022 at 02:58 UT and provided by ESA.

Offshore, a melange of ex-fast ice and new sea ice is drifting westward east of Mawson Station. New sea ice is forming northwest and southeast of Cape Darnley. (The blue-green discolouration of sea ice in this false-colour dataset is not due to the presence of biological activity near the sea surface.)

Off Davis Station, opaque clouds obscure the view of the Earth's surface.

Ice Bulletin: Davis Station

Issued: Sunday 6th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Vestfold Hills and Davis Station. The sea-ice edge based on passive microwave data is shown in cyan. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq are included as yellow and blue lines (up until 5 March 2022 18:20 UT), respectively.

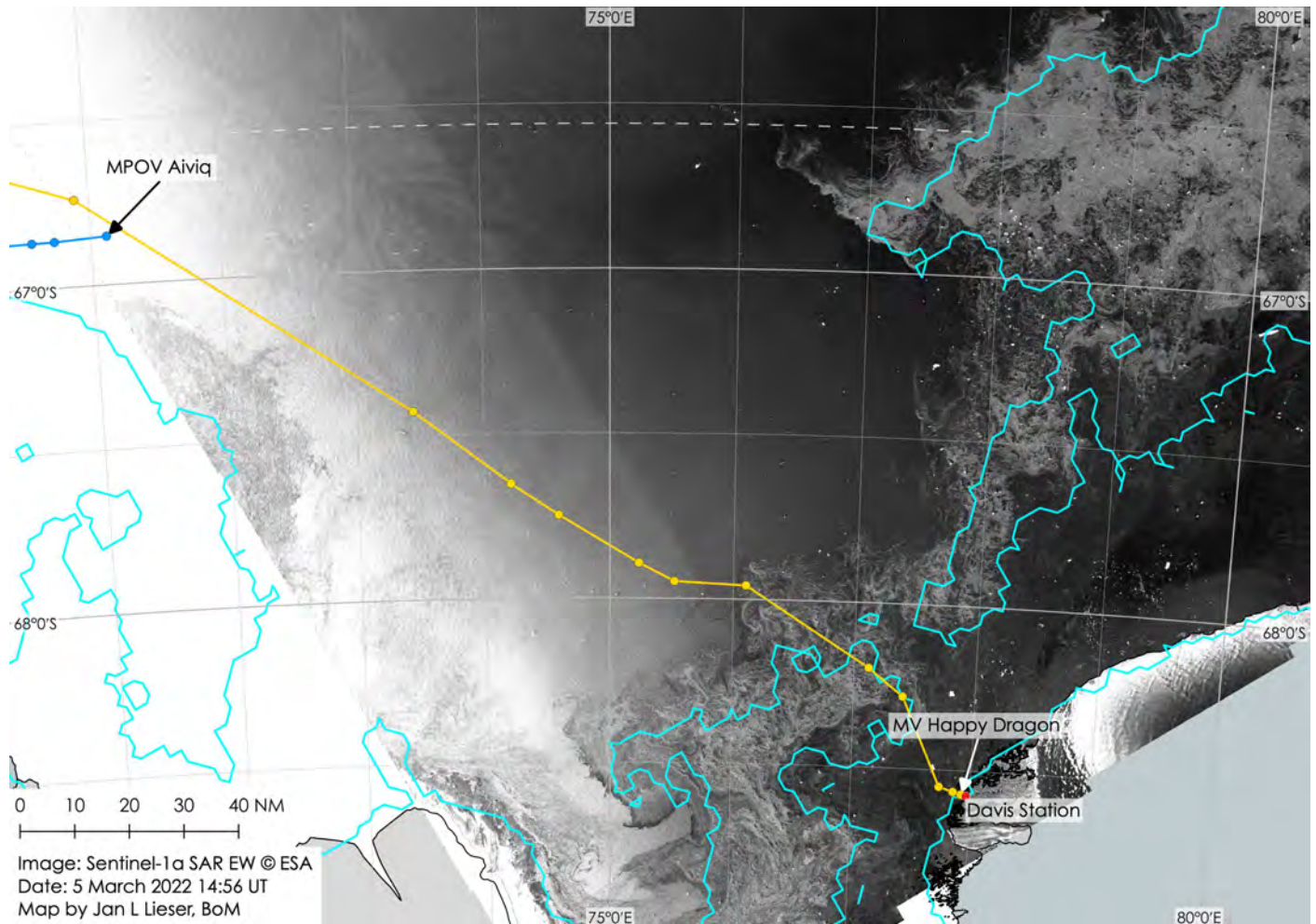


Figure 1: Sentinel-1a SAR EW data acquired 5 March 2022 at 14:56 UT and provided by PolarView.

Off the Vestfold Hills, a melange of ex-fast ice and new ice is growing, expanding northward and increasing in concentration. Off Davis Station, one larger iceberg still local roughly 8 nautical miles northwest of the station.

Within the entire scene, icebergs are drifting freely, nearshore some are grounded.

New sea-ice growth can be expected nearshore and between the islands off the Vestfold Hills.

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Ice Bulletin: D'Urville Sea

Issued: Monday 7th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data between Dumont D'Urville Station and Commonwealth Bay/Mawson's Huts. The positions of three large icebergs on 1 March 2022 are indicated by dashed pink shapes and the positions of three smaller icebergs on the same day as dashed blue shapes.

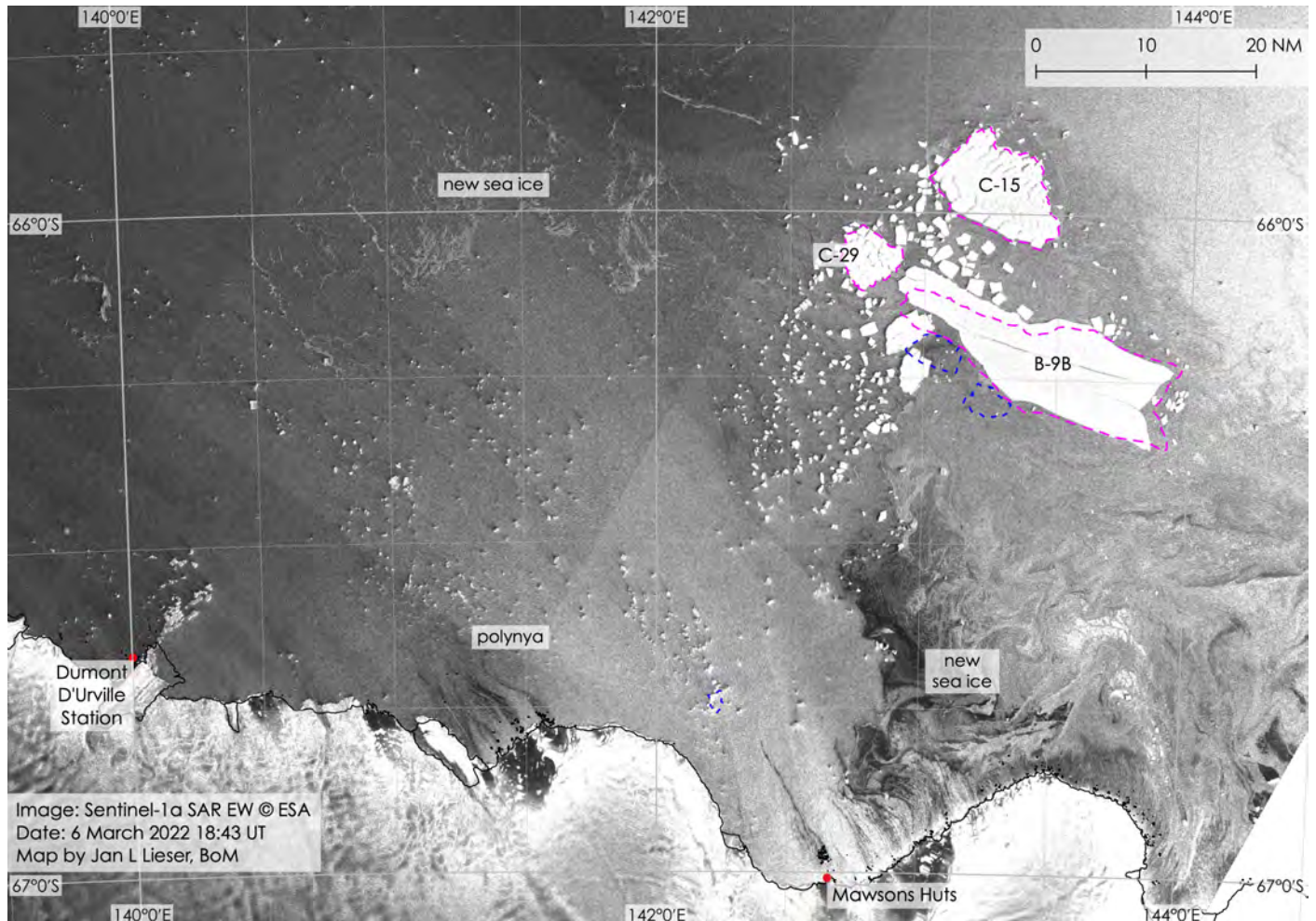


Figure 1: Sentinel-1a SAR EW data acquired 6 March 2022 at 18:43 UT and provided by PolarView.

Nearshore, new sea ice is forming and seen as streaks and patches accumulating further offshore.

North of Mawson's Huts, icebergs B-9B and C-29 are not grounded but remain trapped by surrounding smaller icebergs that are grounded. Iceberg C-15 is still grounded.

The two icebergs just south of iceberg B-9B are mobile but not able to escape the area. Since 1 March 2022, another iceberg that was grounded roughly 19 nautical miles northwest of Mawson's Huts has broken up and spawned new icebergs that are now drifting north-westward.

The large icebergs that calved off the l'Astrolabe Glacier Tongue east of Dumont D'Urville Station in early November 2021 have also broken up and some of the resulting smaller icebergs are grounded northeast of the station.

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Ice Bulletin: Mawson Station

Issued: Monday 7th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data off Mawson Station.

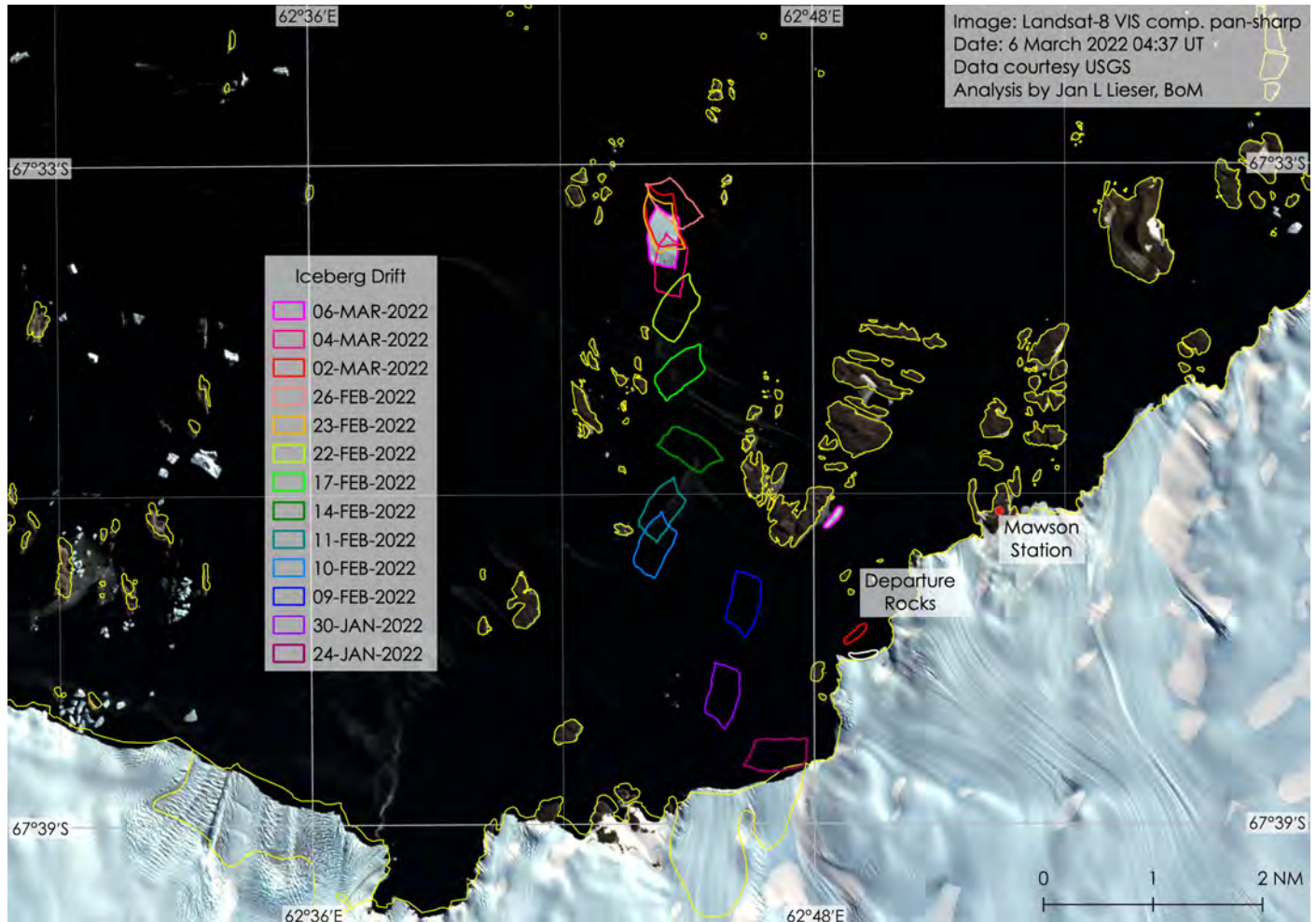


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 6 March 2022 at 04:37 UT and provided by USGS.

Since 24 January 2022, a large iceberg was drifting generally northward through the islands (indicated by the colour-coded shapes) west of the station, but since 23 February it entered a bit of a yo-yo drift pattern.

A smaller iceberg that calved on 19 February 2022 (white outline south of Departure Rocks) has drifted north around Departure Rocks to its current position outlined in pink.

New sea ice is forming nearshore and between the islands and drifting offshore. Areas of glacial debris are also present nearshore.

Further offshore (not shown on map) new sea ice is forming, and some is mixing with the ex-fast ice. This melange of new and old pack ice is generally drifting westward parallel to the coast.

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Ice Bulletin: Davis Station

Issued: Tuesday 8th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Vestfold Hills and Davis Station. The sea-ice edge based on passive microwave data is shown in cyan. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq are included as yellow and blue lines (up until 8 March 2022 00:00 UT), respectively. Both vessels are off Davis Station.

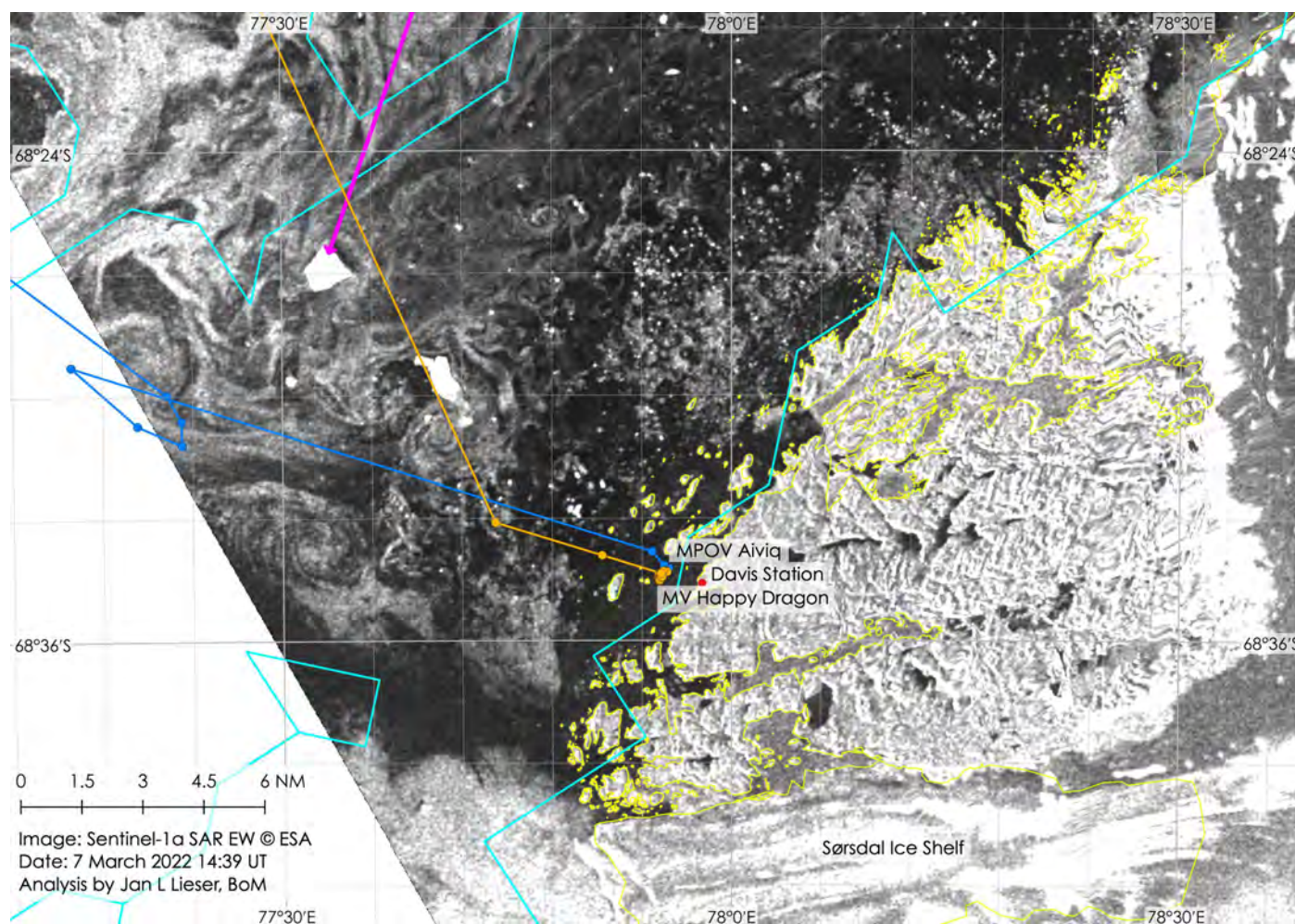


Figure 1: Sentinel-1a SAR EW data acquired 7 March 2022 at 14:39 UT and provided by PolarView.

Off the Vestfold Hills, a melange of ex-fast ice and new ice is growing and expanding westward while increasing in concentration. Off Davis Station, one larger iceberg still local roughly 8 nautical miles northwest of the station and a second one is drifting south (as indicated by the pink arrow; roughly 19 nautical miles since 3 March 2022; see also Figure 2).

Figure 2 shows a larger scale overview between the station and the West Ice Shelf and offshore.

Within the entire scene, icebergs are drifting freely but nearshore and on Four Ladies Bank some are grounded.

New sea-ice growth can be seen nearshore and within the marginal ice zone. This new sea ice is mixing with ex-fast ice that has survived the recent summer melt season and will be consolidating.

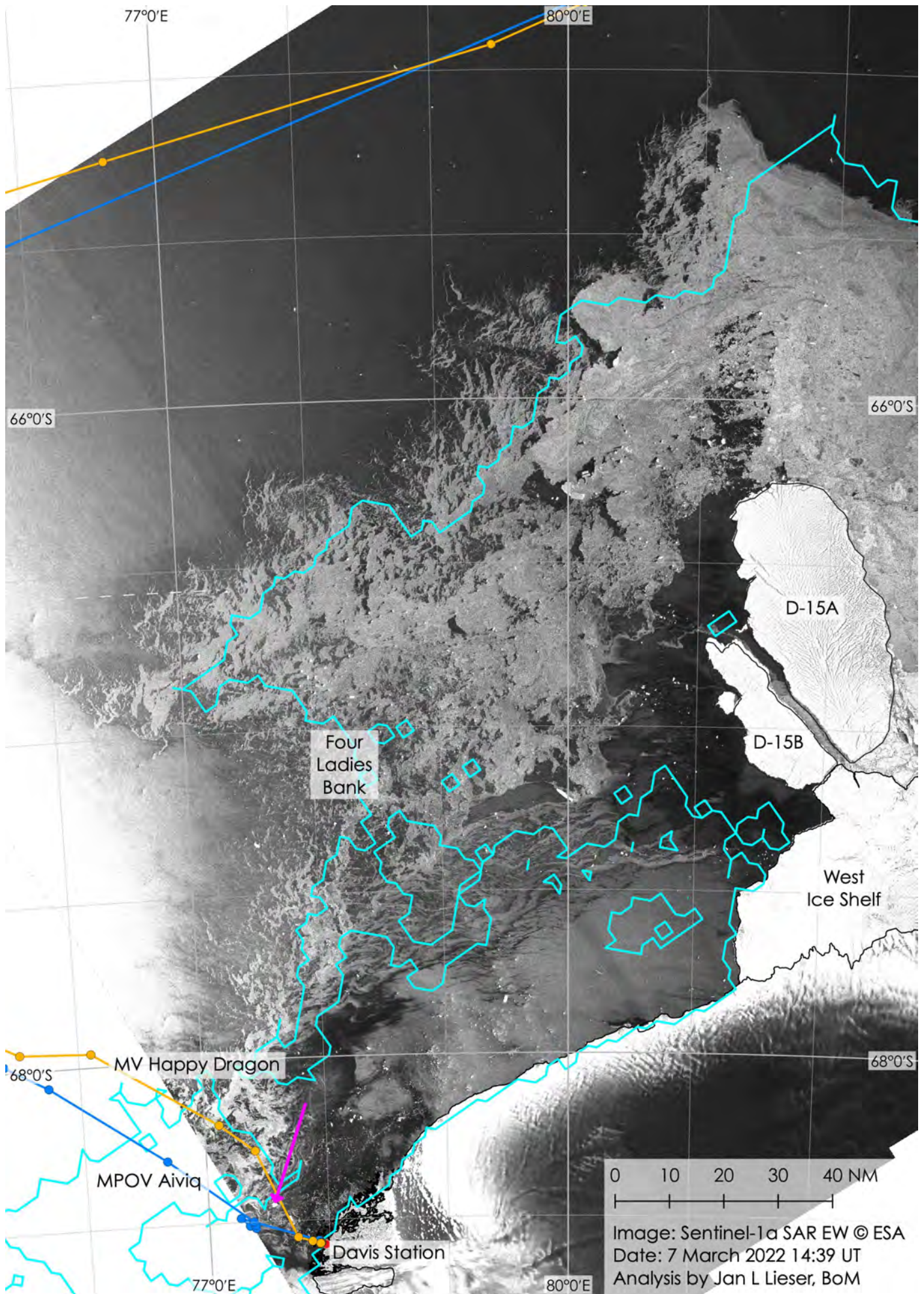


Figure 2: Sentinel-1a SAR EW data acquired 7 March 2022 at 14:39 UT and provided by PolarView.

Ice Bulletin: Cooperation Sea

Issued: Tuesday 8th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data of the eastern Cooperation Sea north of Davis Station. The composition of channels results in clouds appearing with a red tint over water and sea ice with a slight green tint underneath.

The sea-ice edge based on passive microwave data is shown in cyan. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq are included as yellow and blue lines (up until 8 March 2022 06:00 UT), respectively. Both vessels are off Davis Station.

Offshore, the melange of ex-fast ice and new ice is growing and expanding westward while increasing in concentration and consolidating.

Within the entire scene, icebergs are drifting freely but nearshore and on Four Ladies Bank some are grounded.

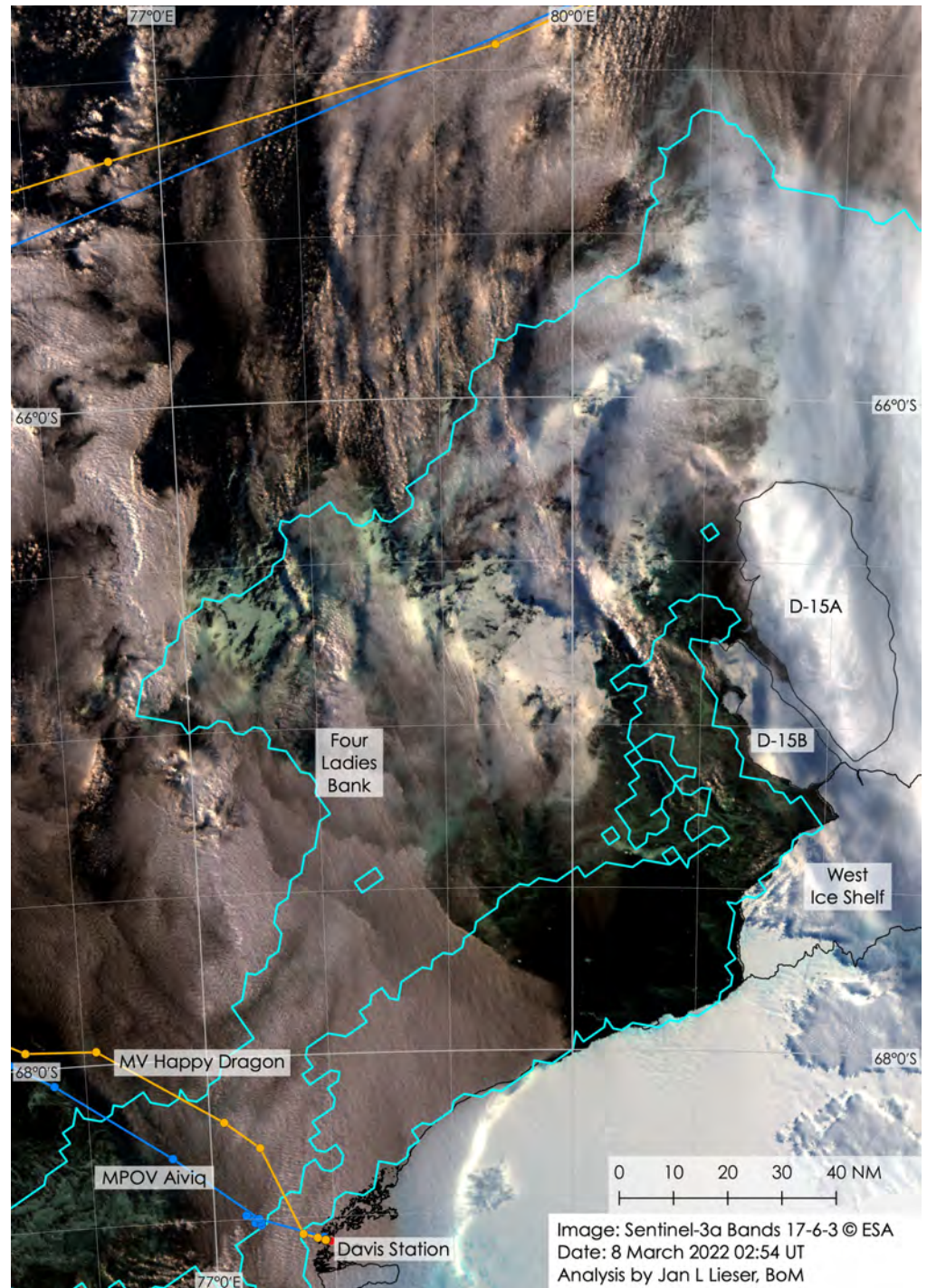


Figure 1: Sentinel-3a Bands 17-6-3 data acquired 8 March 2022 at 02:54 UT and provided by ESA.

Image: Sentinel-3a Bands 17-6-3 © ESA
Date: 8 March 2022 02:54 UT
Analysis by Jan L. Lieser, BoM

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Davis Station

Issued: Wednesday 9th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data north of Davis Station. The recent cruise tracks of MV Happy Dragon and MPOV Aiviq are included as yellow and blue lines (up until 8 March 2022 17:45 UT), respectively. Both vessels have left Davis Station and the inset shows the two vessels as bright star-shaped reflections at the time of data acquisition.

Offshore, the melange of ex-fast ice and new ice continues growing and expanding north- and westward while increasing in concentration. However, it is still predominantly redistributed by small-scale oceanic eddies and surface currents.

Within the entire scene, icebergs are drifting freely but nearshore and on Four Ladies Bank (not shown in the figure) some are grounded.

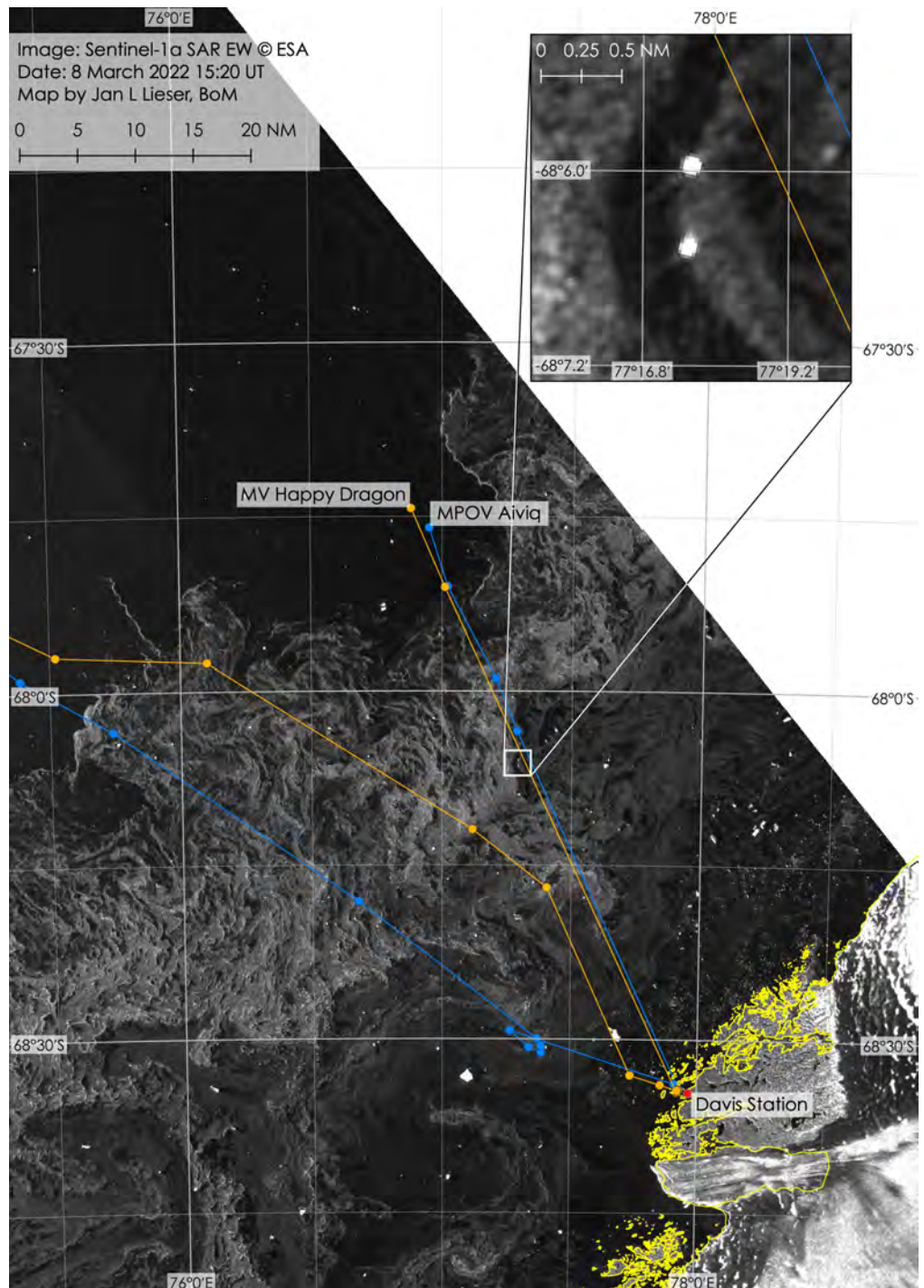


Figure 1: Sentinel-1a SAR EW data acquired 8 March 2022 at 15:20 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Antarctica

Issued: Wednesday 9th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows the pan-Antarctic sea-ice concentration anomaly based on passive microwave remote sensing data.

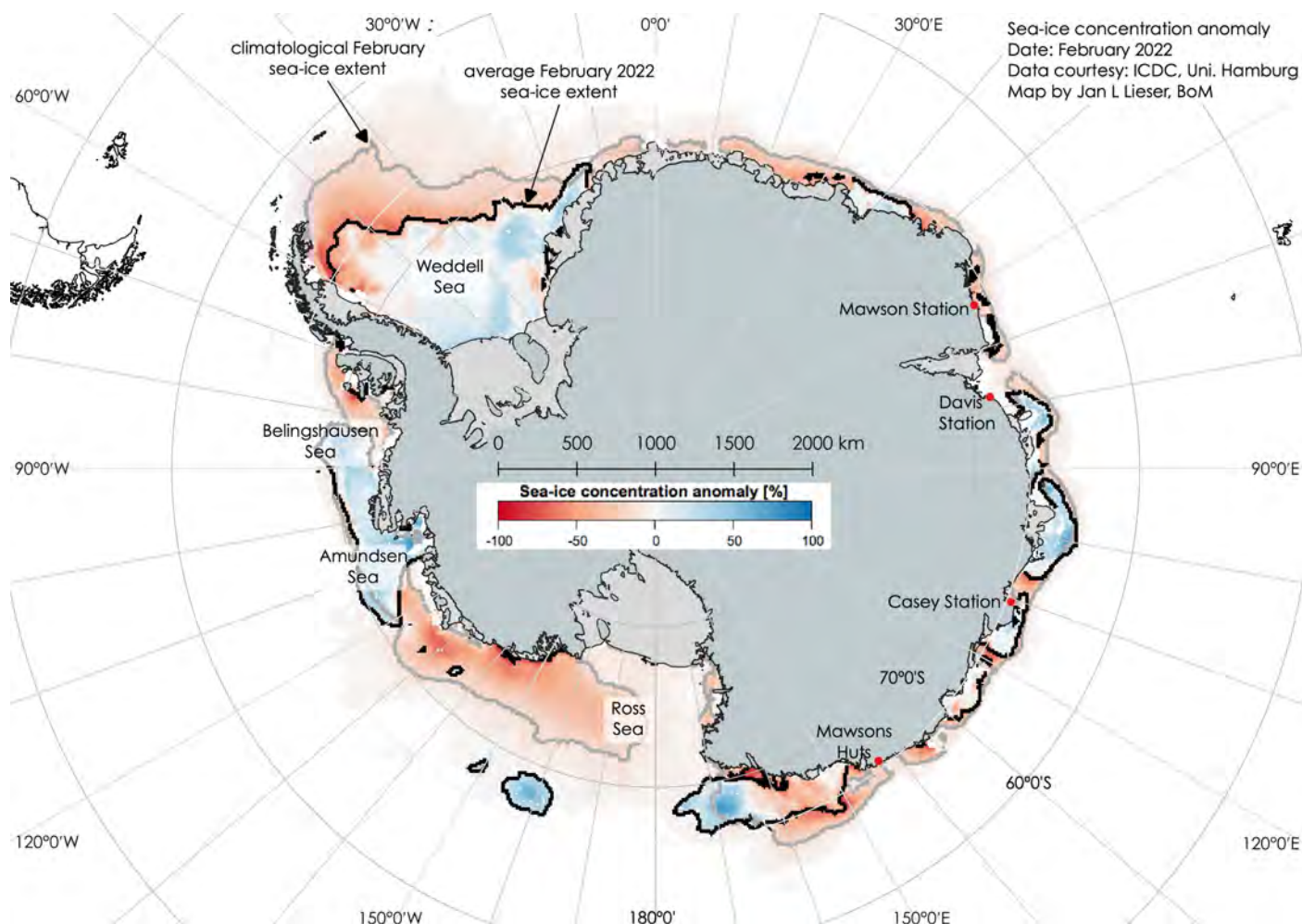


Figure 1: Sea-ice concentration anomaly for February 2022 provided by ICDC (Universität Hamburg).

In February 2022, pan-Antarctic sea-ice conditions fell to record low conditions and reached daily minimum extent on 21 February 2022 at $1.91 \times 10^6 \text{ km}^2$, which is one third below the average and for the first time since records began in 1979 below $2 \times 10^6 \text{ km}^2$. While regionally sea-ice extent and associated concentration anomalies varied it is noted that this summer's conditions were breaking many daily negative records before reaching their seasonal minimum.

Only in parts of the eastern Amundsen Sea and western Bellingshausen Sea, near average conditions prevailed through summer. In the eastern Ross Sea, a small positive anomaly patch persisted roughly 500 nautical miles offshore and another small positive anomaly was also present in the western Ross Sea.

However, large negative anomalies were widespread around the continent including exposed coast to the sea off Dronning Maud Land (10°E to 30°E) and parts of East Antarctica, including off Enderby Land (west of Mawson Station), off Mawson Station and in the D'Urville Sea (east and west of Mawsons Huts). Large negative anomalies were also found nearshore in the eastern Ross Sea, west of the Antarctic Peninsula (Bellingshausen Sea) and almost the entire western Weddell Sea (between 60°W and 10°W).

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Shackleton Ice Shelf

Issued: Wednesday 9th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data northwest of the Shackleton Ice Shelf. Fast-ice areas off the ice shelf have been marked with a red line. The sea-ice edge based on passive microwave data is also included as a cyan line.

The data has been analysed for iceberg presence and more than 7000 features were identified and marked by pink dots.

Isolated icebergs are found as far north as 58°30'S and there may be more present even further north.

North of the sea-ice edge, the entire area of the figure can be regarded as bergy water.

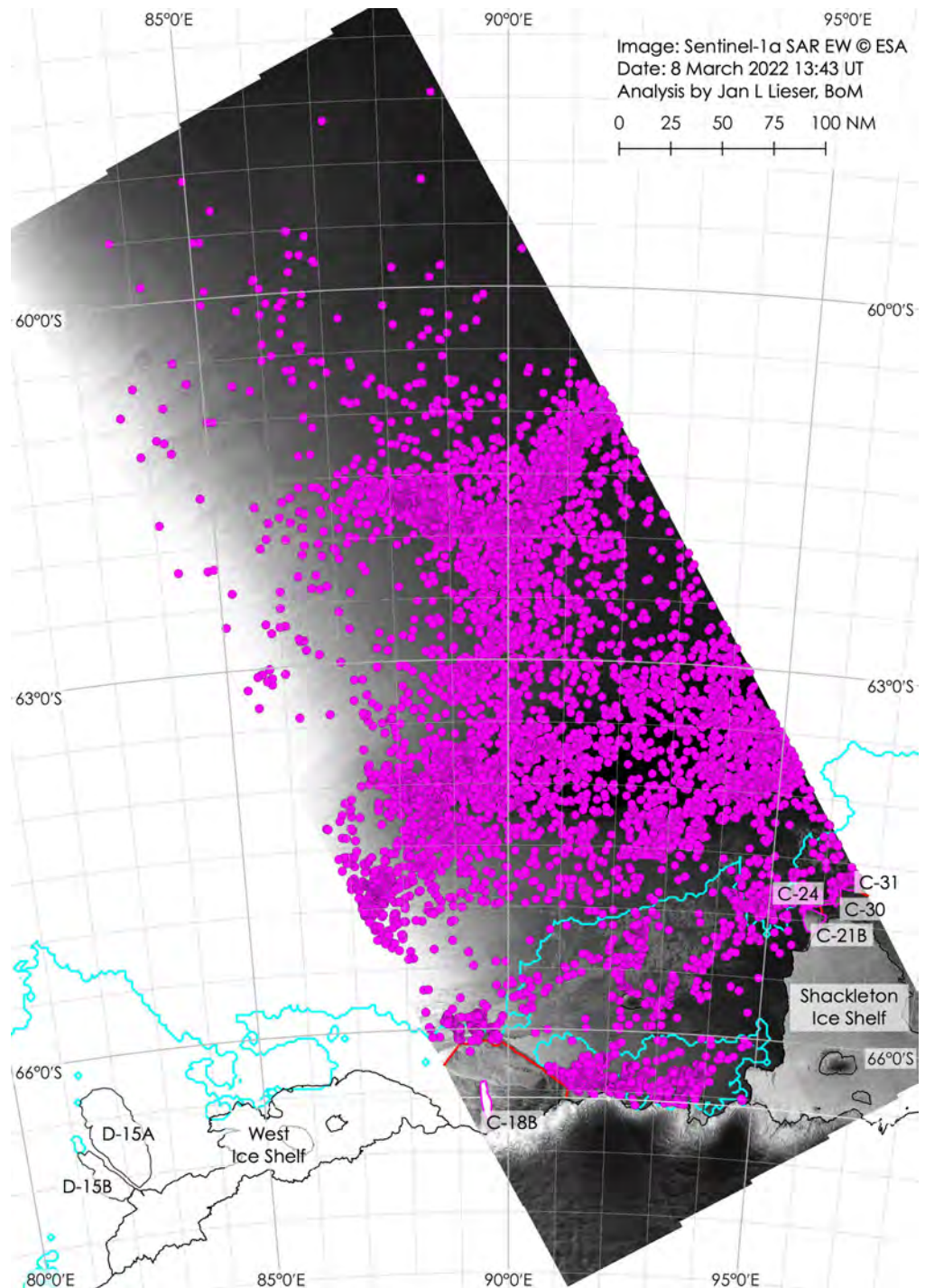


Figure 1: Sentinel-1a SAR EW data acquired 8 March 2022 at 13:43 UT and provided by PolarView.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Iceberg C-37

Issued: Friday 11th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Bunger Hills, Mill Island and Bowman Island. Fast ice areas are marked with a red outline.

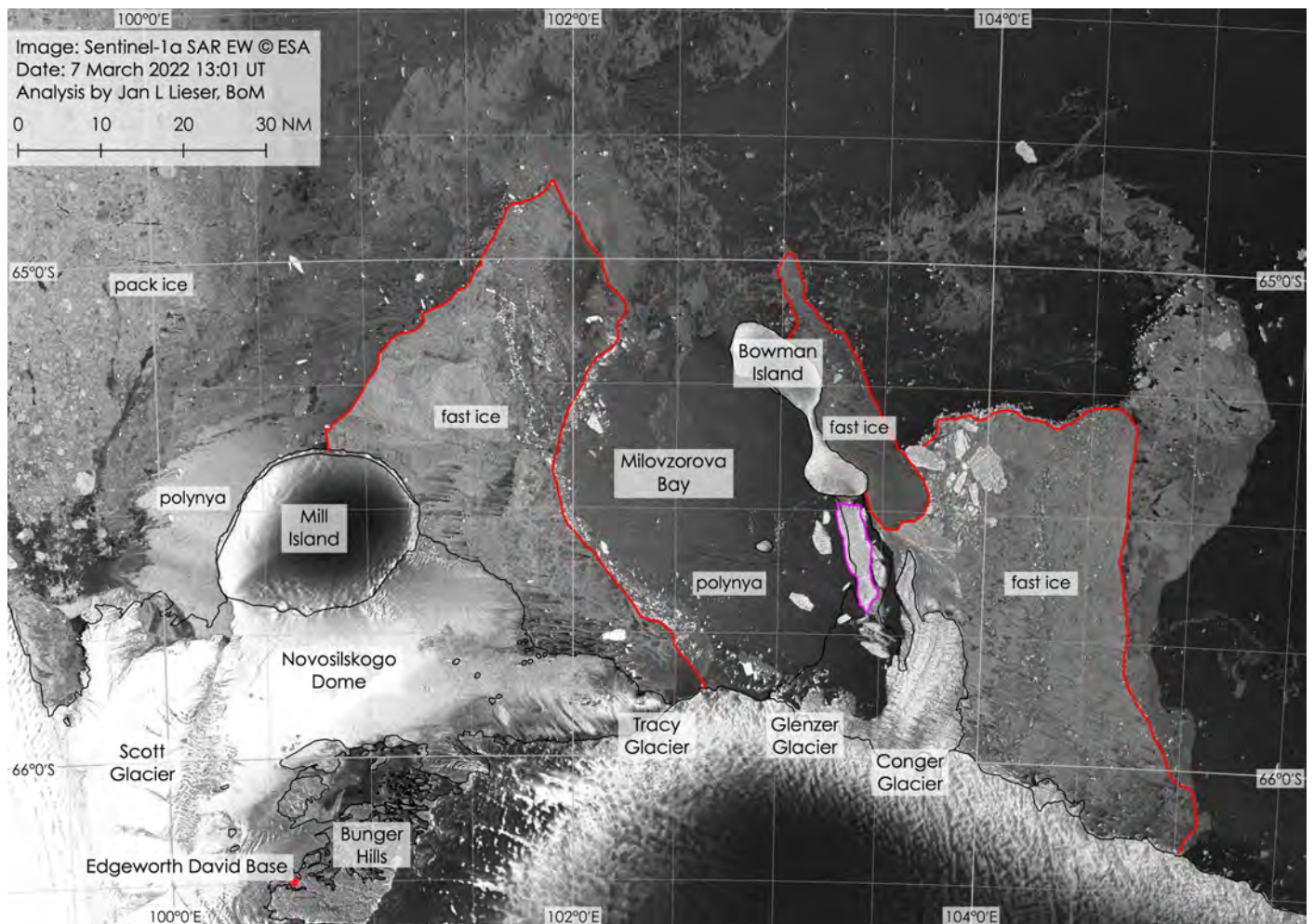


Figure 1: Sentinel-1a SAR EW data acquired 7 March 2022 at 13:01 UT and provided by PolarView.

South of Bowman Island, the Glenzer Ice Shelf (the offshore floating part of Glenzer Glacier) was buttressing against the island for many years. During 2021, the southern part of the shelf started to break away into many smaller icebergs that drifted into Milovzorova Bay and northwest out of the area. Some of the fragments can still be identified locally.

During the last week, the northern part finally broke away as one new large tabular iceberg (the pink shape) and is expected to be named C-37. This new iceberg is roughly 113 km² (about 10% larger than Maria Island off eastern Tasmania). The iceberg is roughly 24 km long and about 5.5 km wide.

The Conger Ice Shelf (off Conger Glacier) appears still intact and surrounded by fast ice, particularly the northern part of the ice shelf shows multi-year fast ice that has formed between the shelf and many grounded icebergs further north. However, the shelf has lost its stabilising western side when the Glenzer Ice Shelf disintegrated.

More recent data (not shown) indicate that the new iceberg is moving south-westward quickly (about 10 km in 12 hours) and multi-year fast ice from north of Conger Ice Shelf is starting to flake away in large sheets.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Shackleton Ice Shelf

Issued: Friday 11th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data northwest of the Shackleton Ice Shelf. The recent cruise track of MV Happy Dragon and MPOV Aiviq is included as an orange and blue line/dot, respectively, up until 11 March 2022 02:30 UT.

MV Happy Dragon can be seen as a bright reflection at the time of data acquisition (see inset).

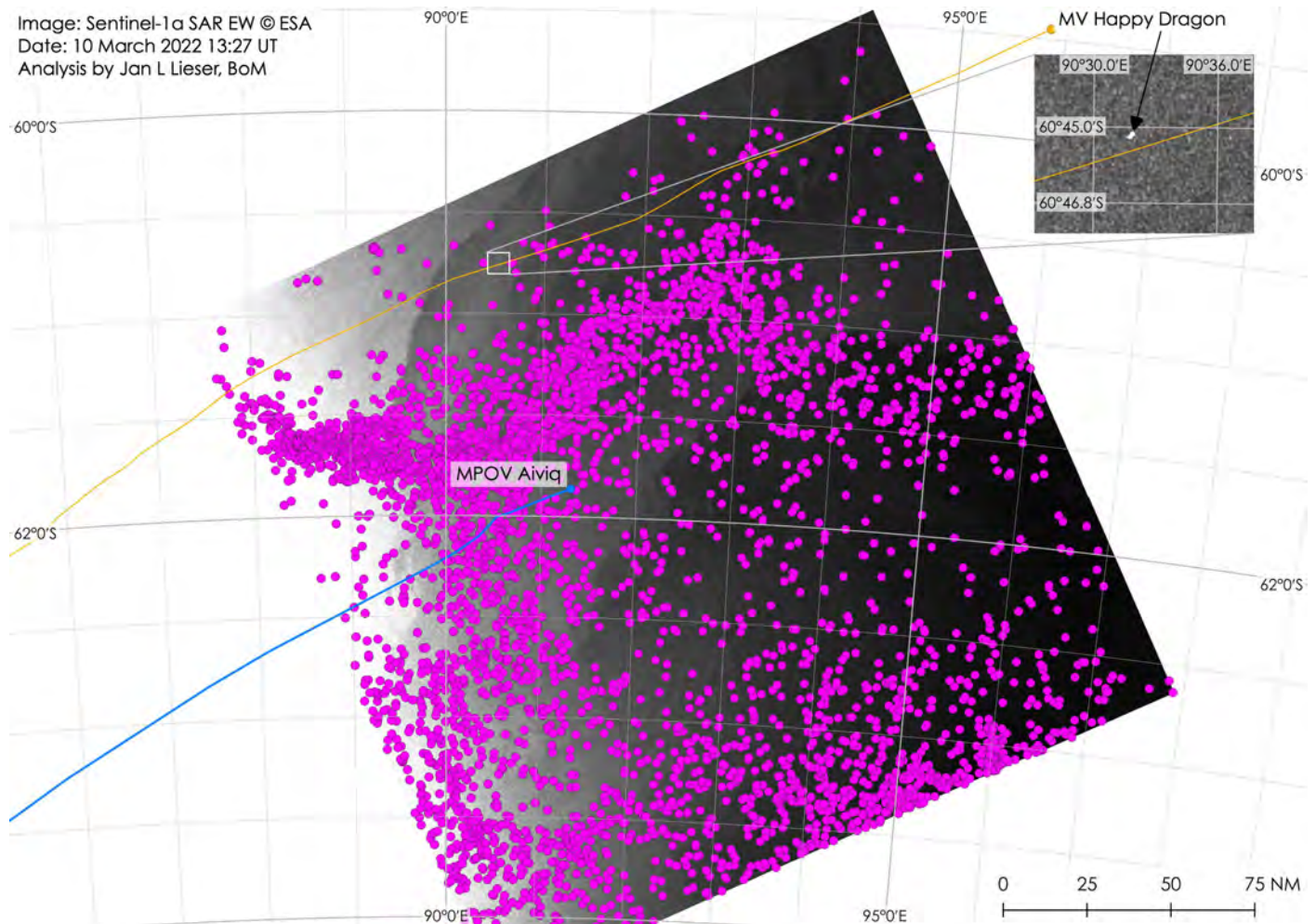


Figure 1: Sentinel-1a SAR EW data acquired 10 March 2022 at 13:27 UT and provided by PolarView.

The data has been analysed for iceberg presence and more than 4300 features were identified and marked by pink dots.

Isolated icebergs are found north of 60°00'S and there may be more present even further north.

The entire area of the figure can be regarded as bergy water.

Ice Bulletin: Wilkins Aerodrome

Issued: Monday 14th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figures 1 and 2 show high-resolution (10 m horizontal and 15 m horizontal, respectively) visible data of Wilkins Aerodrome.

The ice runway is visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

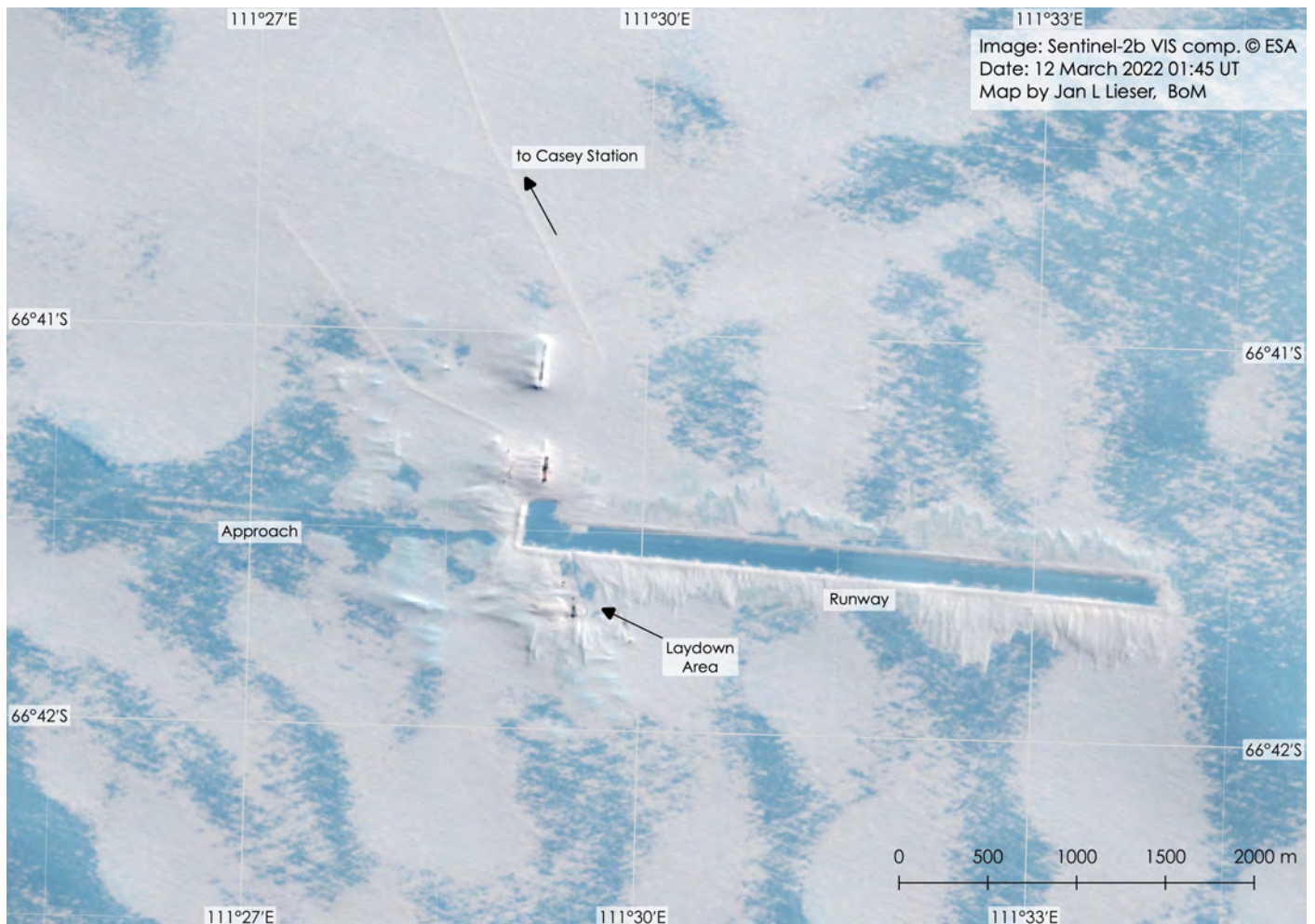


Figure 1: Sentinel-2b visible composite data acquired 12 March 2022 at 01:45 UT and provided by USGS.

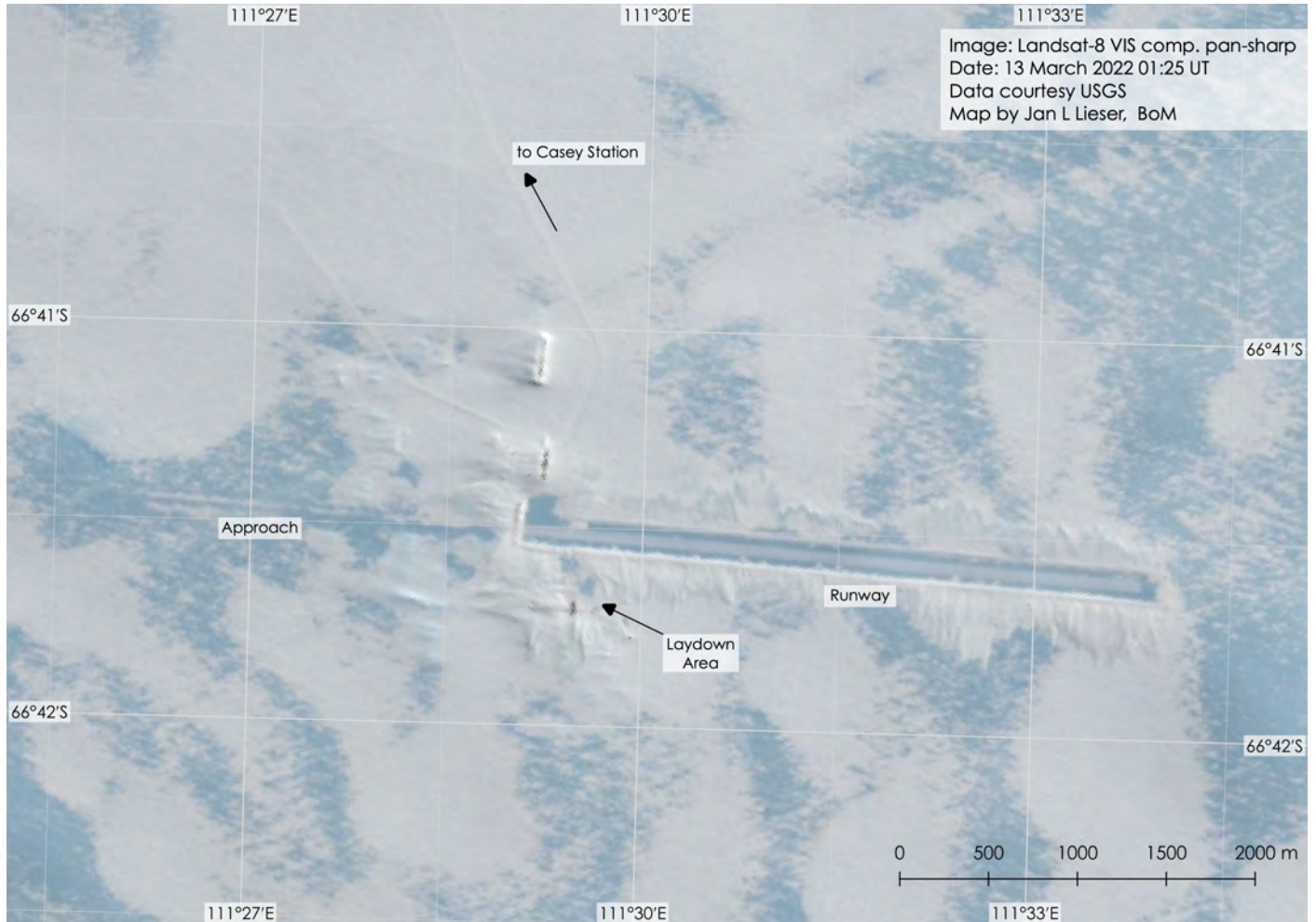


Figure 2: Landsat-8 visible composite pan-sharpened data acquired 13 March 2022 at 01:25 UT and provided by USGS.

Ice Bulletin: Iceberg C-37

Issued: Tuesday 15th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off the Bunger Hills, Mill Island and Bowman Island. Fast ice areas are marked with a red outline (dashed orange line for 7 March 2022).

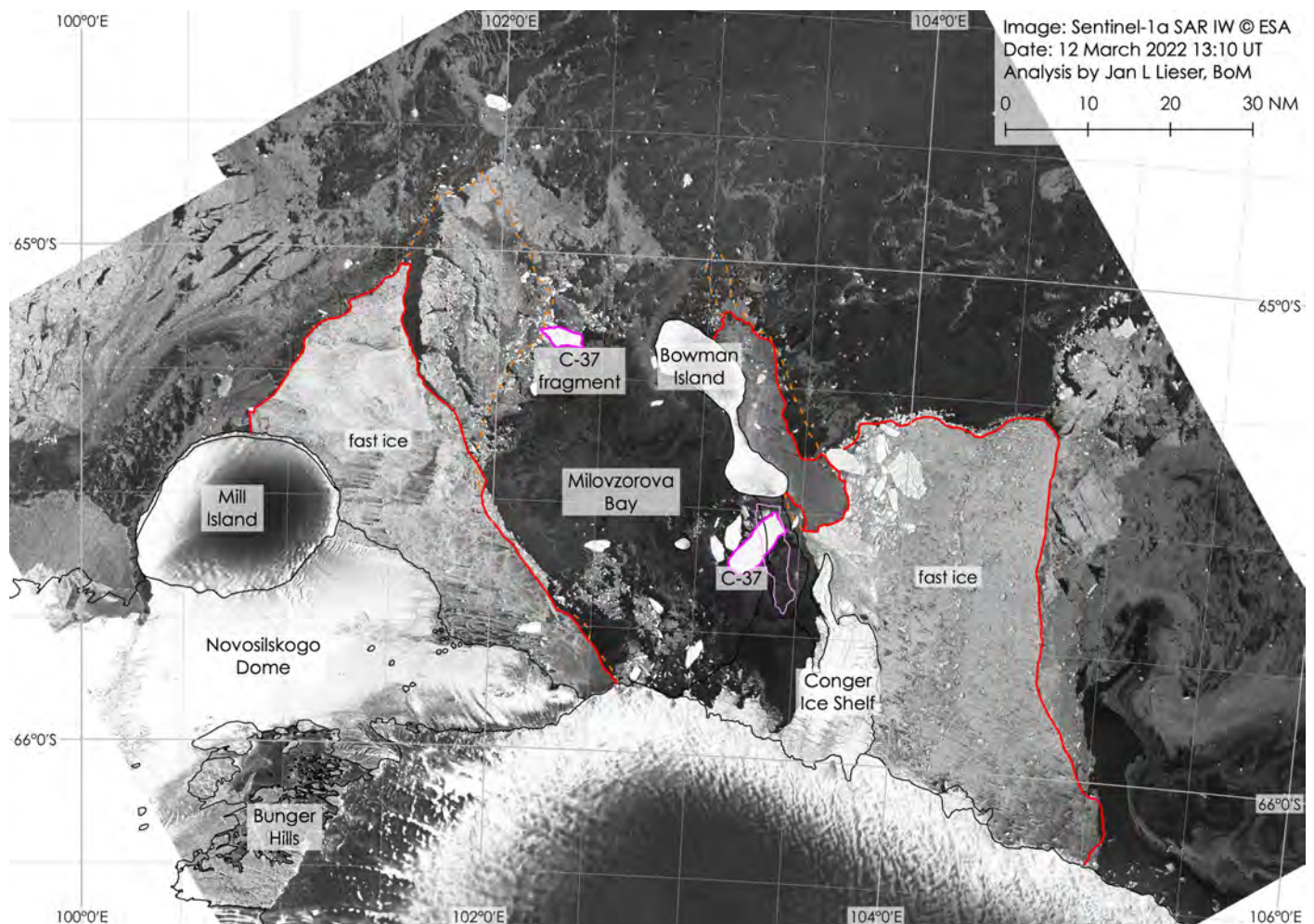


Figure 1: Sentinel-1a SAR IW data acquired 12 March 2022 at 13:10 UT and provided by PolarView.

After the almost complete disintegration of Glenzer Ice Shelf, which was immediately west of the Conger Ice Shelf, the new iceberg C-37 has lost already a substantial piece during the past few days (the pink shapes). While the main part of the iceberg is still local, the broken-off piece that is not big enough to be named has drifted northwest through Milovzorova Bay and is about to exit the area. Other fragments of the former ice shelf can still be seen locally.

Iceberg C-37 is now roughly 81 km² (about the size of Clarke Island of the Furneaux Group in Bass Strait) after being reduced by roughly 9 km in length to 15 km now but remains roughly 5.5 km wide.

Northeast of Mill Island and east of Bowman Island, fast ice continues to break up and drift off.

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Ice Bulletin: Casey Station

Issued: Tuesday 15th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution SAR data off Casey Station. Fast-ice areas are marked with a red line.

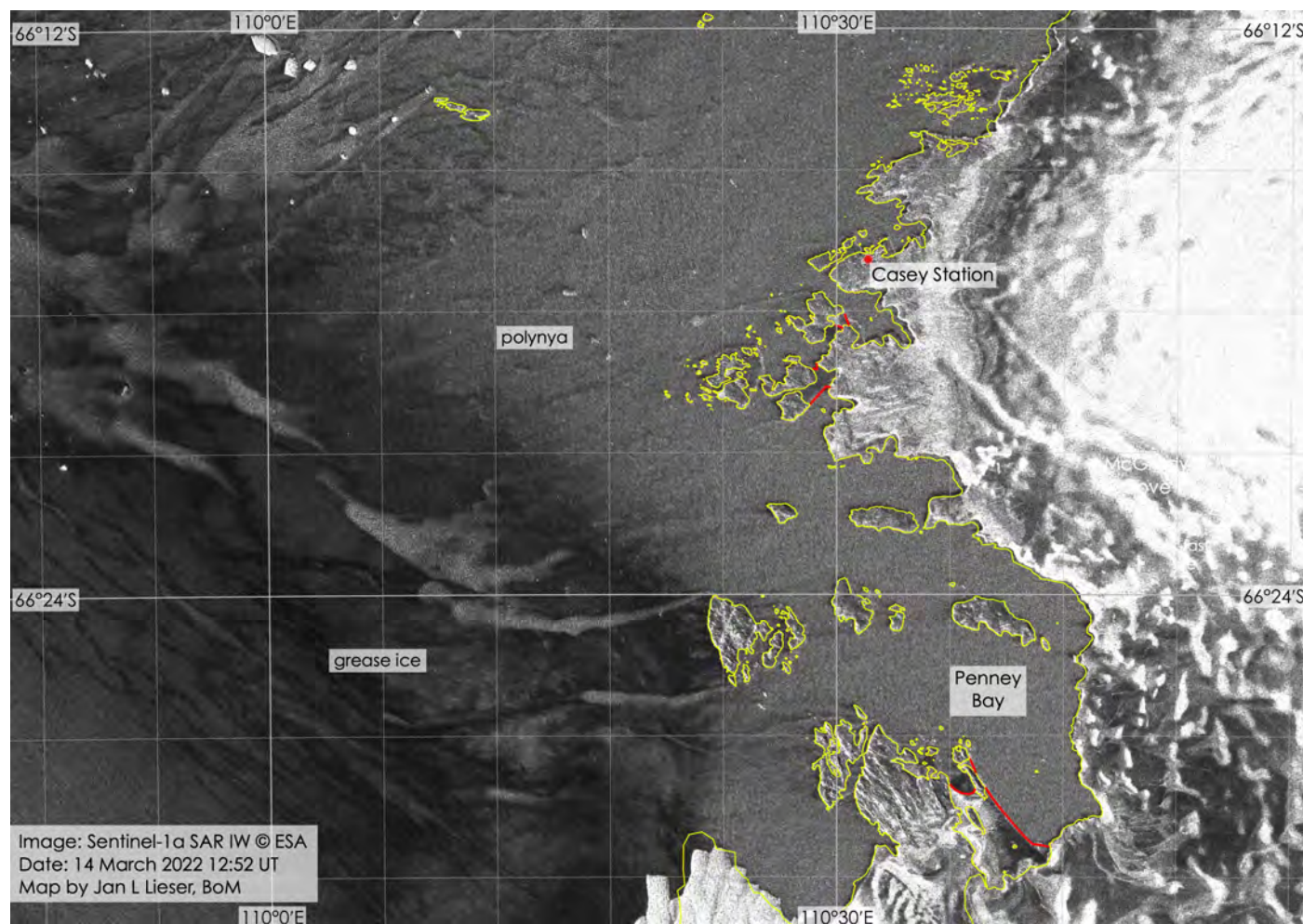


Figure 1: Sentinel-1a SAR IW data acquired 14 March 2022 at 12:52 UT and provided by PolarView.

Off Casey Station, new sea ice is transported from nearshore and between the offshore islands into the polynya westward. Only minimal fast ice has survived the summer, mostly in southern Penney Bay.

Figure 2 shows high-resolution SAR data north of the Banzare Ice Shelf a bit further west.

Streams of new sea ice are accumulating against barriers in the westward drift. Surface wave ripple pattern show clearly where grease ice has a sufficient thickness. Those ripples penetrate roughly 500 m to 1000 m into the forming new ice sheet before they are dampened out due to the thickness of the new ice (see inset in Figure 2).

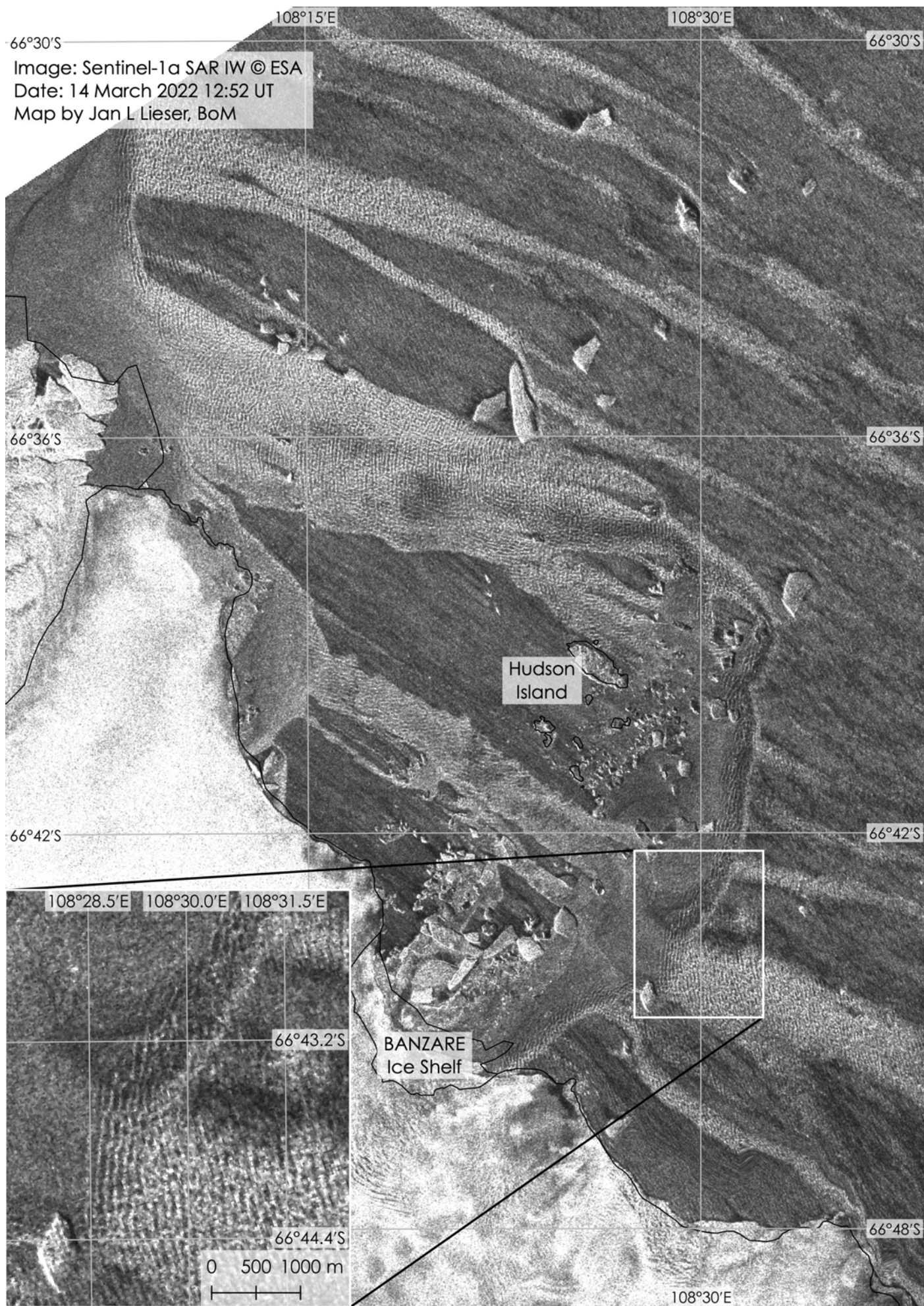


Figure 2: Sentinel-1a SAR IW data acquired 14 March 2022 at 12:52 UT and provided by PolarView.

Ice Bulletin: Mawson Station

Issued: Wednesday 16th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Mawson Station.

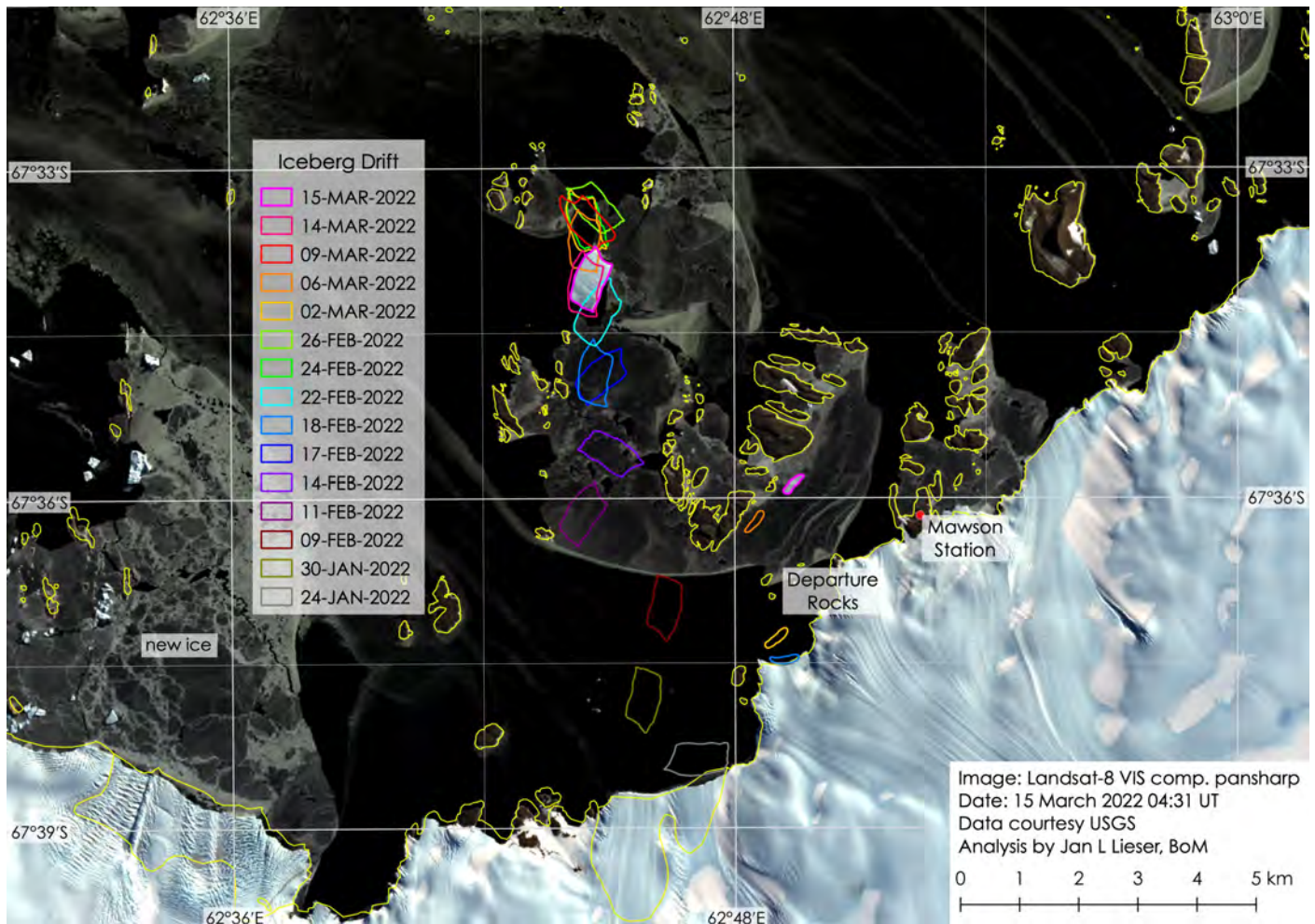


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 15 March 2022 at 04:31 UT and provided by USGS.

Since 24 January 2022, a large iceberg was drifting generally northward through the islands (indicated by the colour-coded shapes) west of the station but entered a yo-yo drift pattern since 23 February 2022.

A smaller iceberg that calved in mid-February 2022 (blue outline south of Departure Rocks) has drifted north around Departure Rocks, turned 180 degrees and is currently west of Mawson Station.

New sea ice is starting to form sheets upstream of nearshore islands and more new ice is drifting offshore.

Ice Bulletin: Davis Station

Issued: Wednesday 16th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Davis Station.

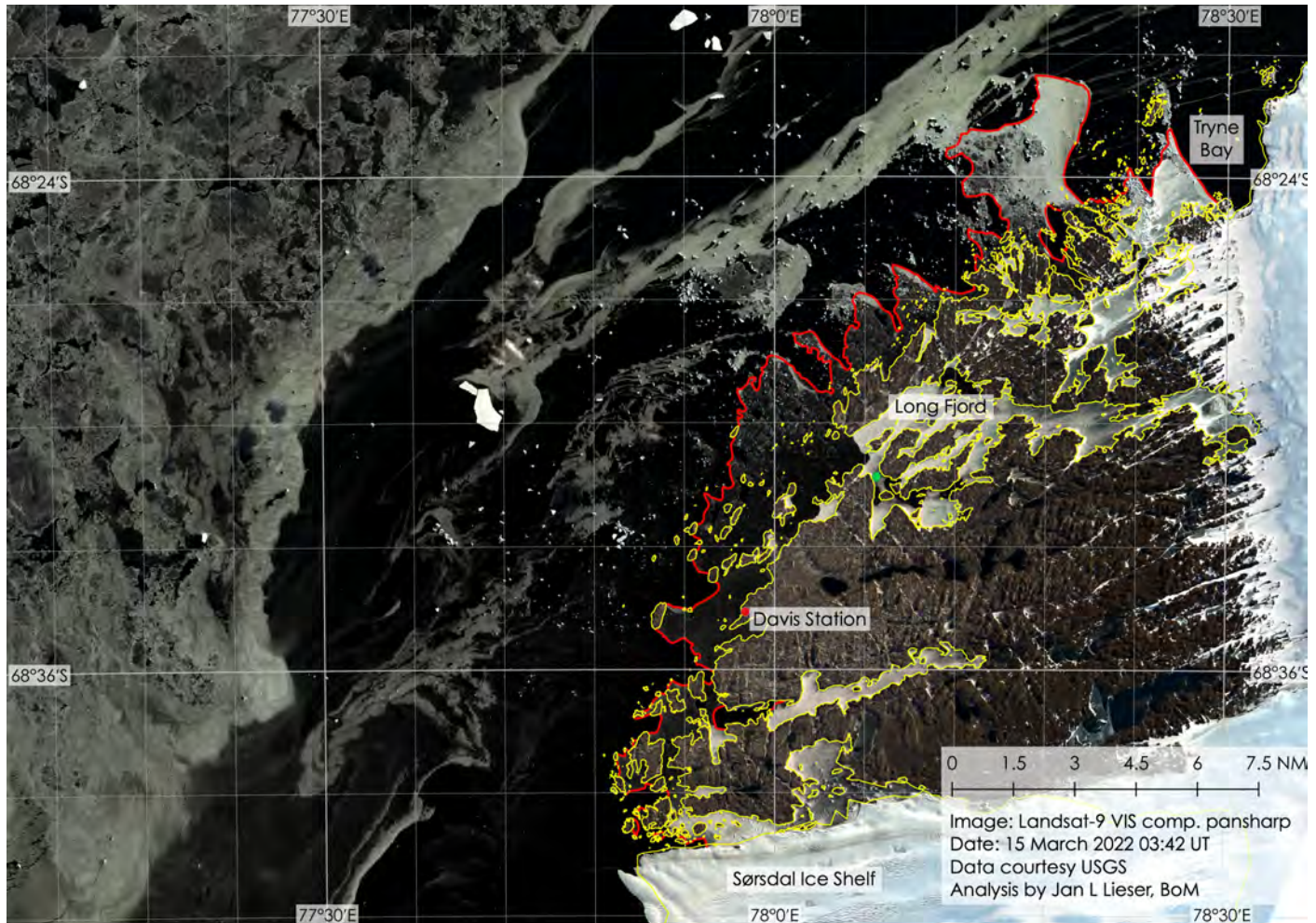


Figure 1: Landsat-9 visible composite pan-sharpened data acquired 15 March 2022 at 03:42 UT and provided by USGS.

New fast ice is forming offshore and the between the islands. The current extent is marked by a red line but it is likely to change again substantially when the environmental conditions change temporarily (for example, with a passing storm system).

Further offshore, new sea ice is forming and accumulating into floes and assemblages.

One larger iceberg remains local roughly 8 nautical miles northwest of Davis Station at 68°29'S and 77°41'E.

A mooring in southern Long Fjord (marked by a green dot) remained under fast ice during summer.

Ice Bulletin: Iceberg C-38

Issued: Thursday 17th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of visible data of Bowman Island and surrounds. Fast ice areas on 12 March 2022 are marked with a dashed red outline.

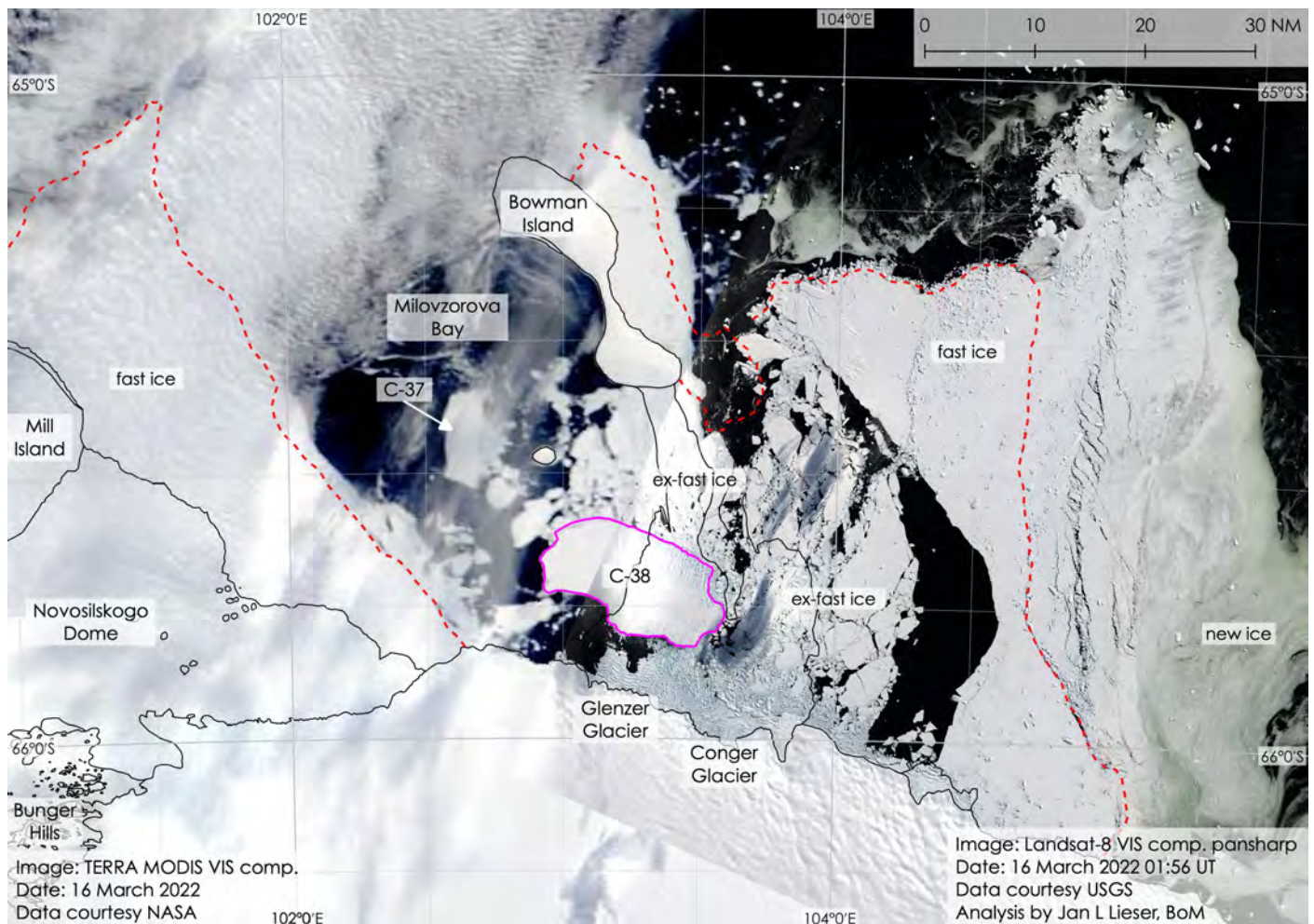


Figure 1: VIS composite data acquired 16 March 2022:
eastern part Landsat-8 pan-sharpened VIS composite acquired at 01:56 UT and provided by USGS;
complemented by TERRA MODIS VIS provided by NASA.

After the almost complete disintegration of the Glenzer Ice Shelf earlier this month, the Conger Ice Shelf collapsed yesterday and produced one new large tabular iceberg, C-38 (the pink shape). This new iceberg is roughly 415 km², which is about 10% smaller than Cape Barren Island of the Furneaux Group in Bass Strait. At the same time, roughly 2200 km² of partly multi-year fast ice has shattered into partly vast floes and released a few large (but unnamed) icebergs from its northern fringe.

Iceberg C-37 is identified drifting northwest through Milovzorova Bay. Other fragments of the two former ice shelves and the ex-fast ice are also drifting westward quickly.

Within the course of little more than a week, both ice shelves that were buttressing against Bowman Island are gone now. This has significantly changed the ice scape of the region and is expected to have de-stabilising effects on the Glenzer Glacier and the Conger Glacier, which can lead to more small to medium-sized icebergs discharged from those glaciers.

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Ice Bulletin: Iceberg C-38

Issued: Friday 18th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Bowman Island and surrounds. Fast ice areas on 16 March 2022 are marked with a dashed red outline.

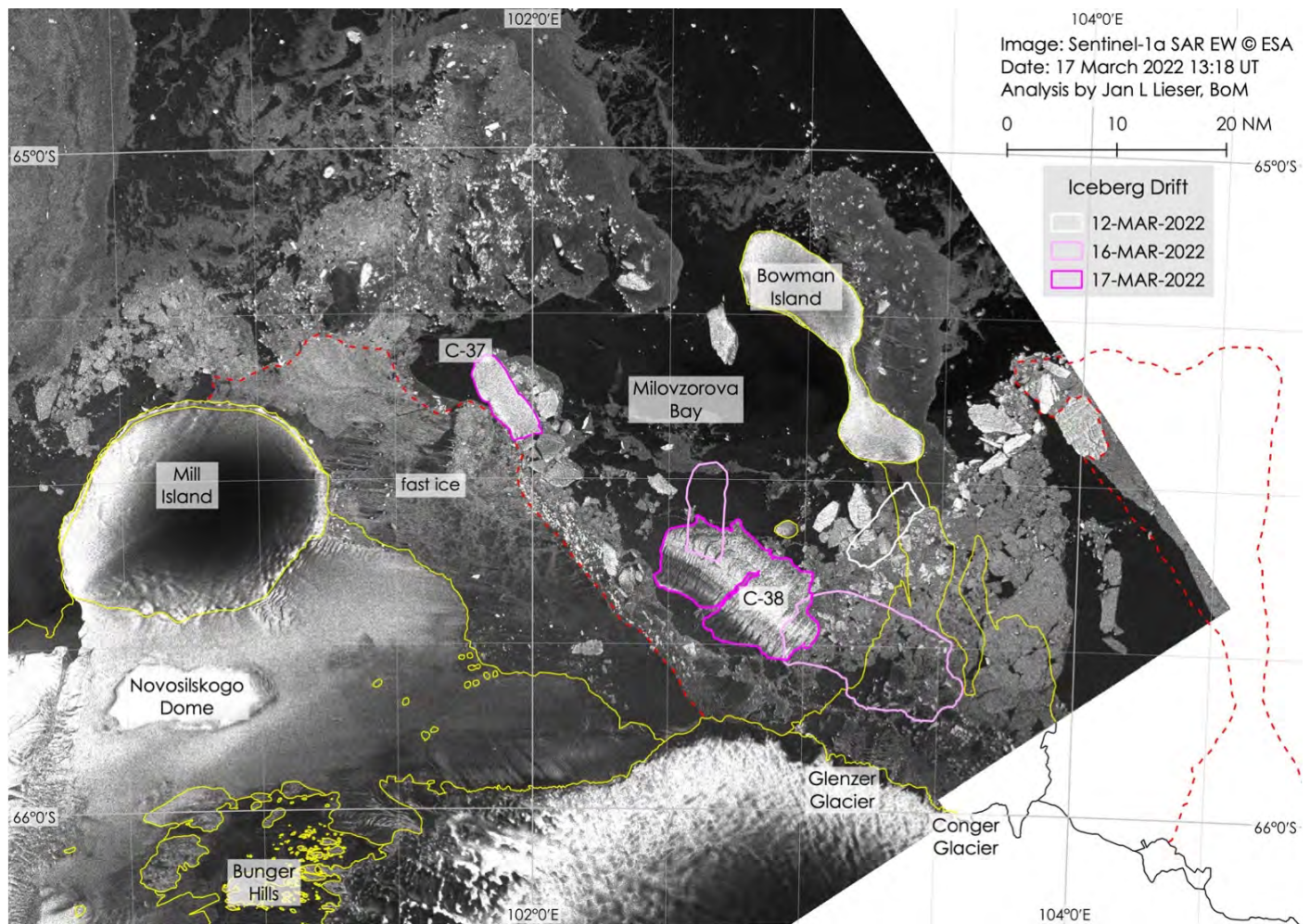


Figure 1: Sentinel-1a SAR EW data acquired 17 March 2022 at 13:18 UT provided by ESA.

The ice conditions in Milovzorova Bay are dynamic at the moment. Icebergs C-37 and C-38 are currently drifting north-westward at roughly 0.5 kn. Iceberg C-38 exhibits in a large new rift through the middle of the berg, which will create at least two new icebergs when it continues to cut through. Both of these potential new icebergs would be large enough to be named C-38A and C-38B.

Since a vast part of old fast ice southeast of Bowman Island (roughly 2200 km²) shattered, which released a few large (but unnamed) icebergs from its northern fringe, more fast ice can be seen breaking away from the new western edge of the roughly hourglass shaped remnant of the original old fast-ice sheet.

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Ice Bulletin: Bowman Island

Issued: Monday 21st March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data of Bowman Island and surrounds. Fast ice areas are marked by a red outline (dashed light red for 16 March 2022).

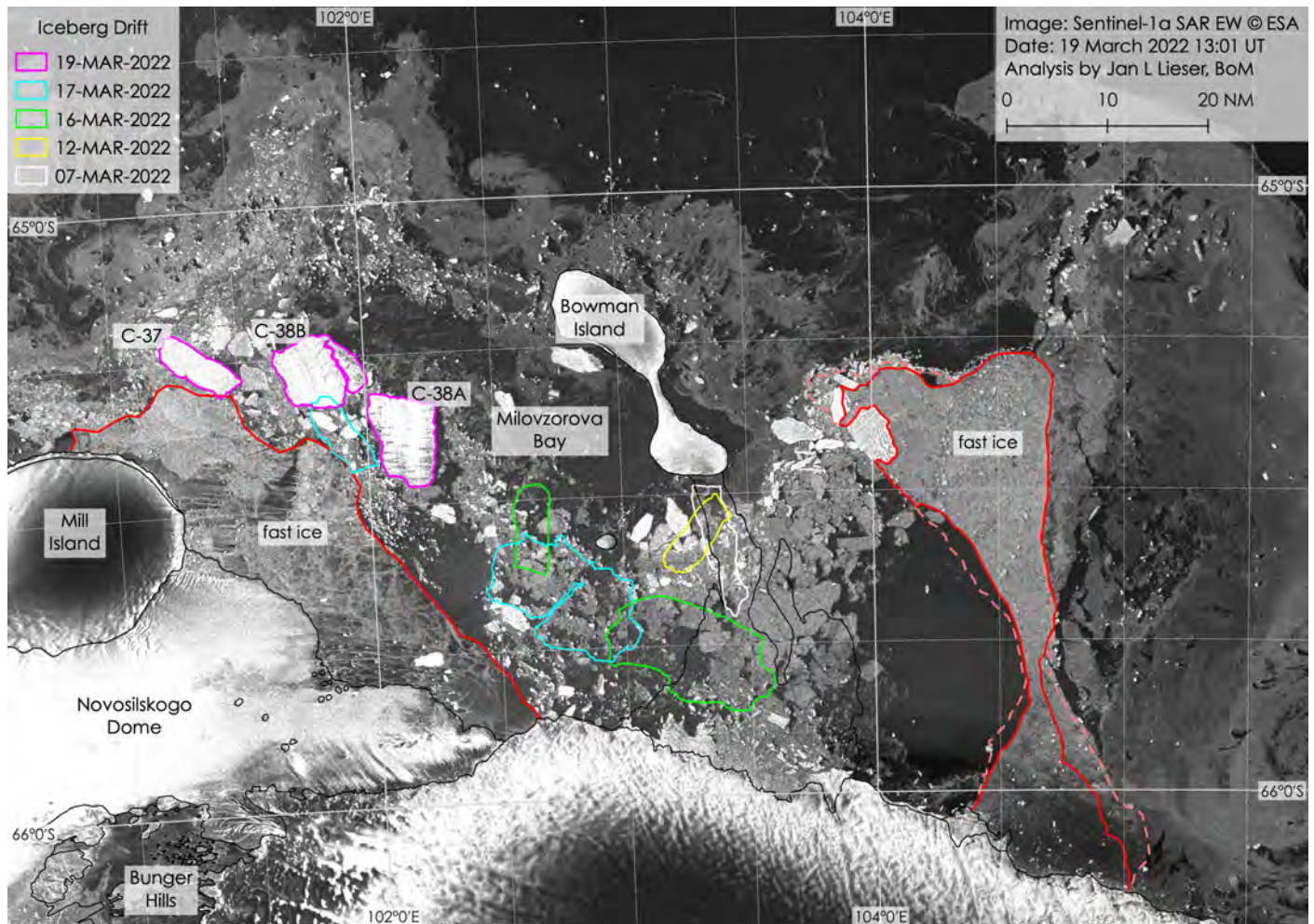


Figure 1: Sentinel-1a SAR EW data acquired 19 March 2022 at 13:01 UT provided by PolarView.

The ice conditions in Milovzorova Bay are very dynamic at the moment.

Only three days after breaking free, iceberg C-38 has broken into two substantial pieces, which was anticipated as a large rift that was noticed on 17 March 2022. The new fragments will be named C-38A and C-38B in descending order of size. Iceberg C-38A is roughly 162 km² and iceberg C-38B is roughly 159 km². Iceberg C-38B shows a big rift itself and will spawn a roughly 30 km² piece when the rift snaps.

The icebergs continue drifting north-westward at about 0.5 kn.

Southeast of Bowman Island, fast ice continues to break away from the western edge of the roughly hour-glass shaped remnant of the old fast-ice sheet that lost roughly 2200 km² when the Conger Ice Shelf broke off, which formed iceberg C-38.

Subsequent imagery (not shown) indicates that the hourglass shaped old fast ice has also shattered and partly vast floes are now drifting freely.

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Ice Bulletin: Knox Coast

Issued: Monday 21st March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows visible composite data of western Knox Coast, Bowman Island and surrounds. Fast ice areas are marked by a dashed red outline for 19 March 2022.

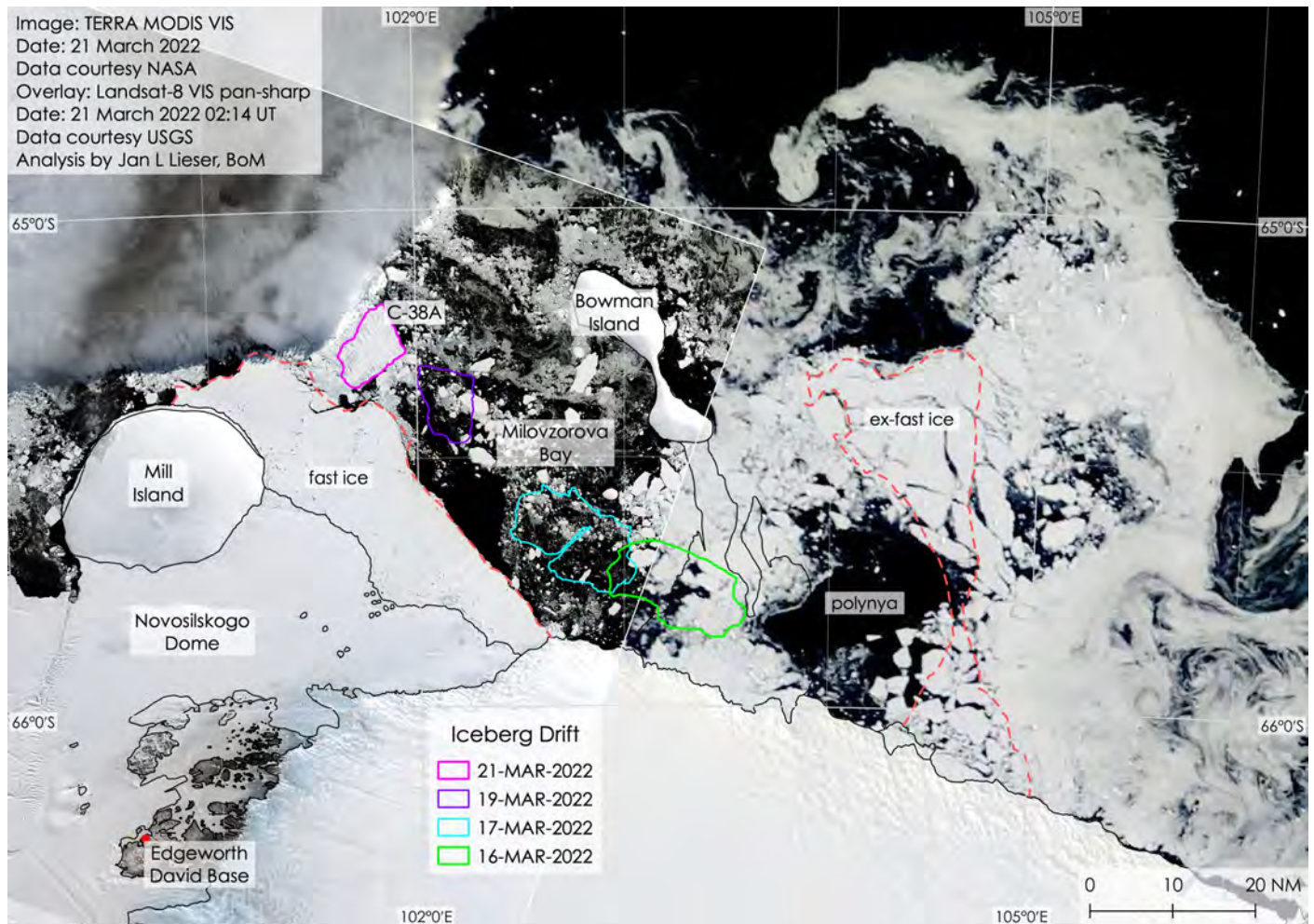


Figure 1: VIS composite data acquired 21 March 2022: TERRA MODIS VIS provided by NASA; western overlay Landsat-8 pan-sharpened VIS composite acquired at 02:14 UT and provided by USGS.

The ice conditions in Milovzorova Bay remain very dynamic. Iceberg C-38A has been identified northeast of Mill Island and iceberg C-38B and iceberg C-37 are expected close by under the clouds north of the fast-ice edge. These large icebergs continue drifting generally north-westward.

Southeast of Bowman Island, the hourglass shaped old fast ice is confirmed as shattered and partly vast floes are now drifting freely. A polynya has formed where multi-year fast ice was next to the Conger Ice Shelf, which broke off as iceberg C-38 shortly before 16 March 2022.

Ice Bulletin: Bunger Hills

Issued: Tuesday 22nd March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (10 m horizontal) visible data of south-western Bunger Hills.

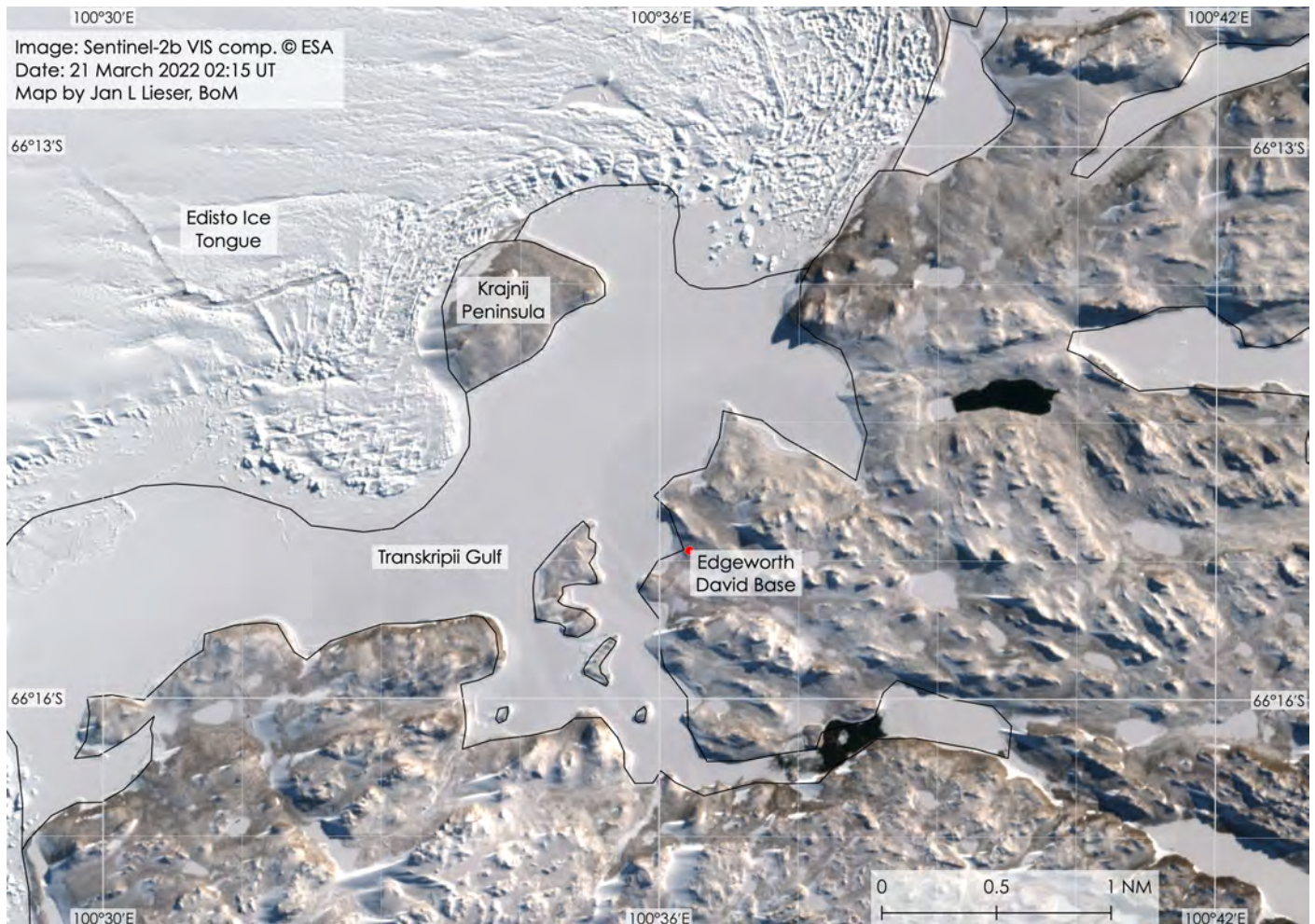


Figure 1: Sentinel-2b VIS composite data acquired 21 March 2022 acquired at 02:15 UT and provided by USGS.

Figure 2 provides a larger-scale overview around Bowman Island and surrounds. Fast ice areas are marked by a red line (dashed red for 12 March 2022). The extent of both, Glenzer Ice Shelf and Conger Ice Shelf, which were off the respective glaciers, is indicated by the red shaded area (more than 1200 km²).

The ice conditions in Milovzorova Bay remain very dynamic. Three named large tabular icebergs are northeast of Mill Island and have slowed down in their generally north-westward drift after traversing the bay quickly.

Southeast of Bowman Island, the old fast ice has shattered, and partly vast floes are now drifting freely. A polynya has formed where multi-year fast ice was previously.

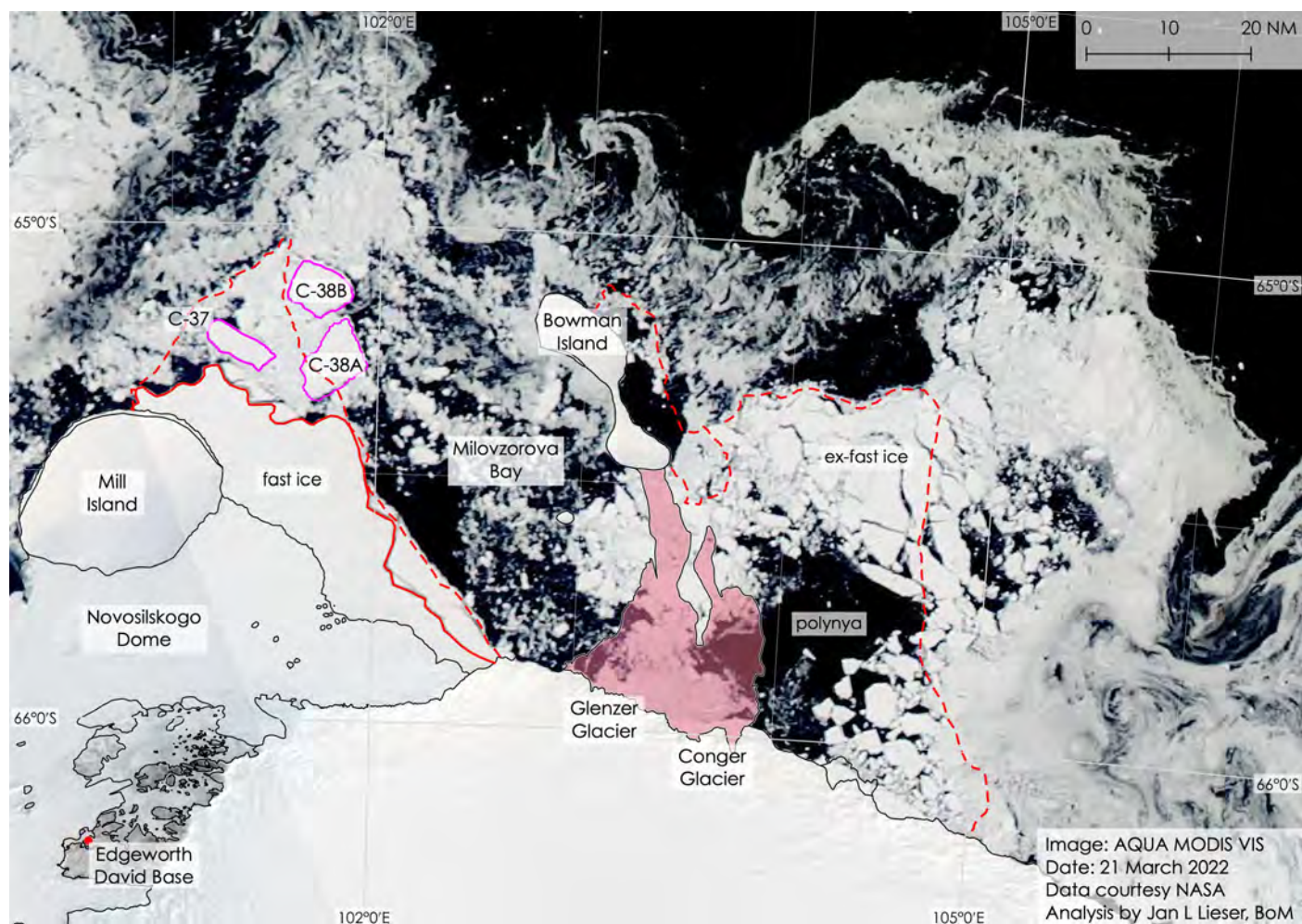


Figure 2: AQUA MODIS VIS data acquired 21 March 2022 and provided by NASA.

Ice Bulletin: Wilkins Aerodrome

Issued: Wednesday 23rd March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data of Wilkins Aerodrome.



Figure 1: Landsat-8 visible composite pan-sharpened data acquired 22 March 2022 at 01:19 UT and provided by USGS.

The ice runway is clearly visible. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Brunt Ice Shelf

Issued: Thursday 24th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows SAR data off the Brunt Ice Shelf in the south-eastern Weddell Sea.

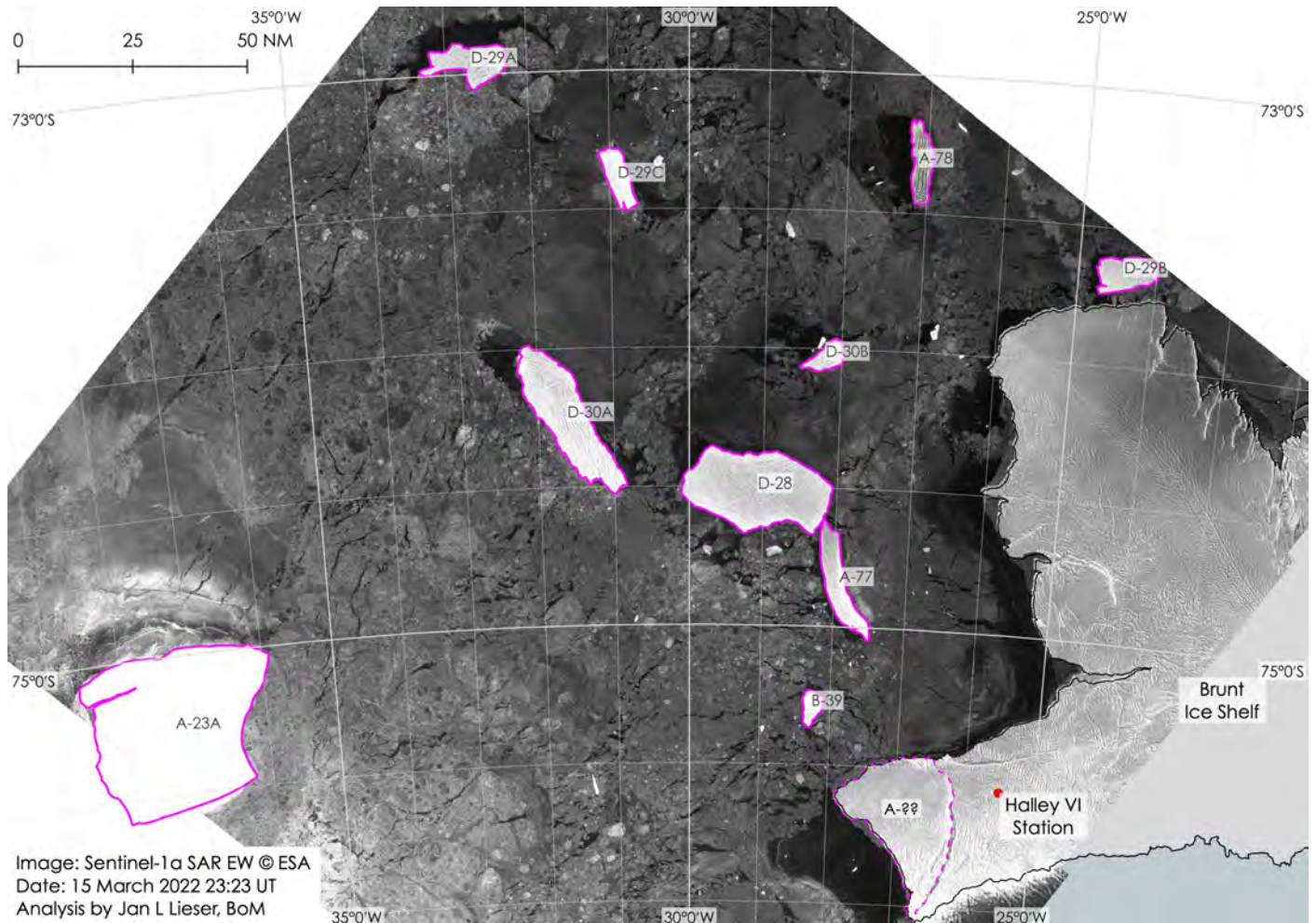


Figure 1: Sentinel-1a SAR EW data acquired 15 March 2022 at 23:23 UT and provided by PolarView.

During summer, all the large tabular icebergs (outlined by pink shapes) that were drifting southward along Princess Martha Coast deeper into the Weddell Sea have now gathered off the Brunt Ice Shelf. Additionally iceberg A-23A, currently Antarctica's (and therefore Earth's) largest iceberg, refloated after being stuck on the sea floor for decades and moved slowly north-eastward.

With the arrival of iceberg D-28 in the region, this iceberg has now navigated around roughly a third of the Antarctic continent after it calved from the Amery Ice Shelf in September 2019. Iceberg B-39 however, has travelled more than three-quarters around the continent as it originated from the eastern Ross Sea region. Iceberg B-39 was roughly 25 nautical miles off Casey Station in mid-April 2019.

A potential new iceberg (A-??; outlined by a dashed pink shape west of Halley-VI Station) has not yet separated from the Brunt Ice Shelf but may be roughly 1700 km² when it does, which compares to the area of Greater Hobart, Tasmania.

Ice Bulletin: Bowman Island

Issued: Friday 25th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of SAR and visible data of Bowman Island and surrounds. East of Mill Island, fast ice areas on 21 March 2022 are marked by a dashed red outline. (The gap between the SAR scenes is corresponding to the distance the satellite travels while switching acquisition modes from IW to EW.)

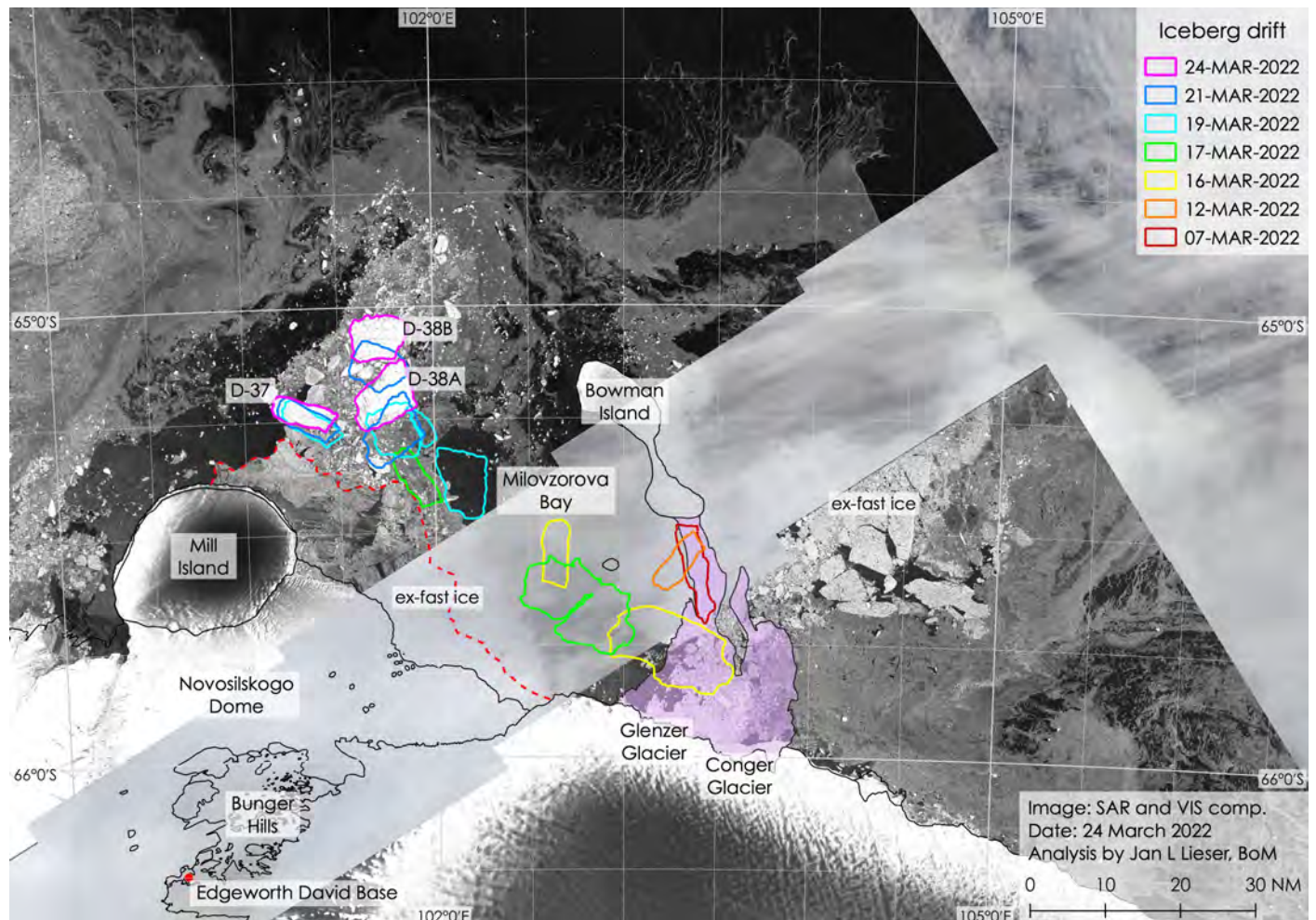


Figure 1: South-eastern part: Sentinel-1a SAR IW acquired 24 March 2022 at 13:09 UT;
north-western part: Sentinel-1a SAR EW data acquired 24 March 2022 at 13:10 UT; both SAR scenes provided by PolarView;
background: TERRA MODIS VIS data acquired 24 March 2022 and provided by NASA.

The ice conditions in Milovzorova Bay remain dynamic but the drift of three large named icebergs and associated glacial debris and ex-fast ice has slowed in the north-western part of the bay where several small to medium-sized icebergs are grounded. However, the icebergs are still pushing on.

As anticipated before, iceberg C-38B spawned a roughly 30 km² piece when a large rift snapped and is now roughly 128 km². Iceberg C-38A remains roughly 162 km².

Southeast of Bowman Island, fast ice has completely disintegrated and there are vast floes of multi-year ex-fast ice (that may have iceberg-like characteristics) in the mix of ice debris that is now what used to be a solid sheet of multi-year fast ice east of the Glenzer Ice Shelf and Conger Ice Shelf (off the respective glaciers), which occupied the area marked by the pink shaded shape in the figure. Those vast floes are partly big enough to be named (like icebergs) if they were glacial ice.

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Ice Bulletin: Davis Station

Issued: Monday 28th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) visible data off Davis Station.

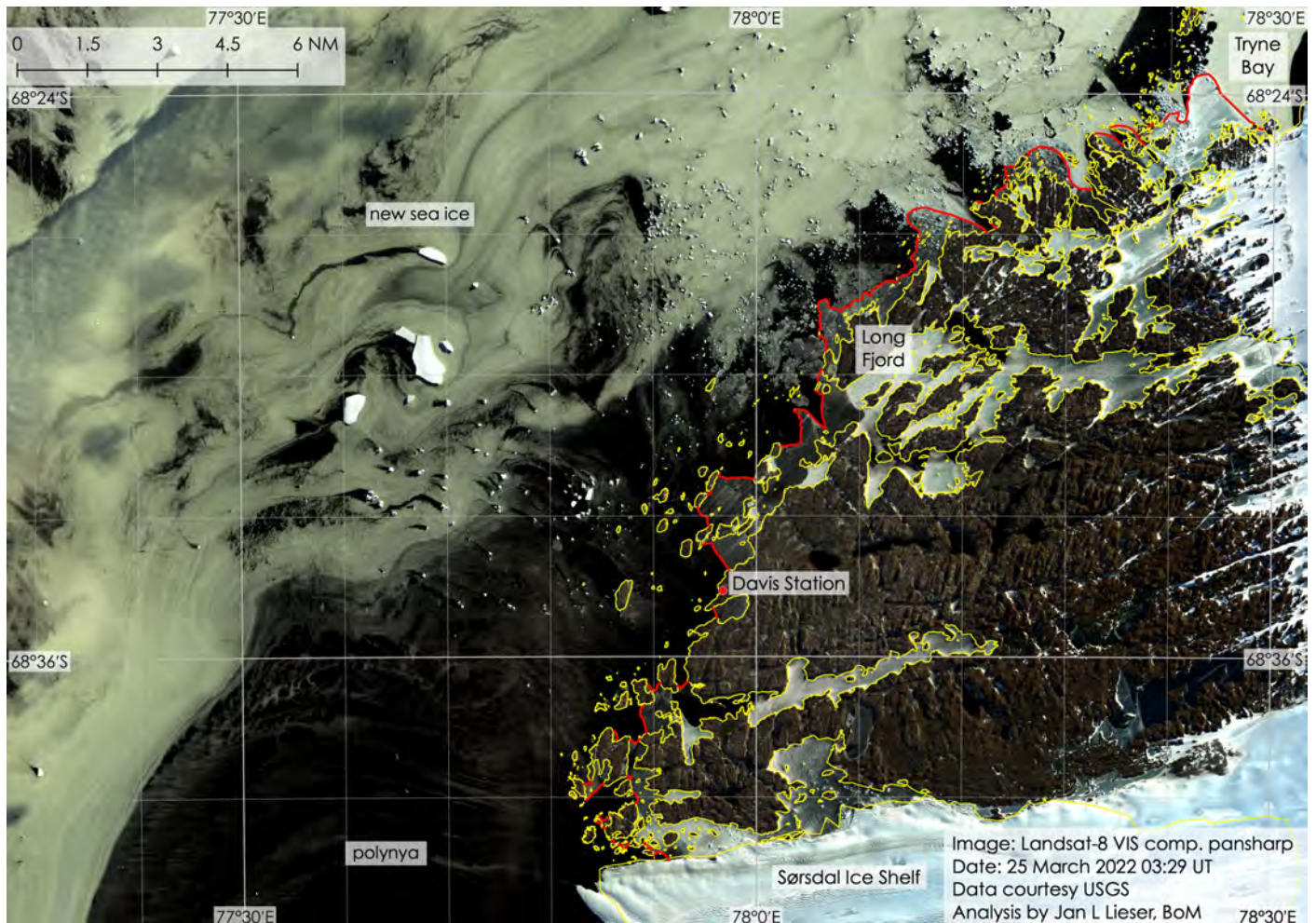


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 25 March 2022 at 03:29 UT and provided by USGS.

New fast ice is forming offshore and the between the islands. The current extent is marked by a red line, but it is likely to change again when the environmental conditions change temporarily (for example, with a passing storm system).

Further offshore, new sea ice (shown slightly discoloured due to sun angle and remaining micro-biological activity) is forming and accumulating into floes.

One larger iceberg remains local roughly 8 nautical miles northwest of Davis Station at 68°29'S and 77°41'E.

Ice Bulletin: Mawson Station

Issued: Monday 28th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution (15 m horizontal) SAR data off Mawson Station.

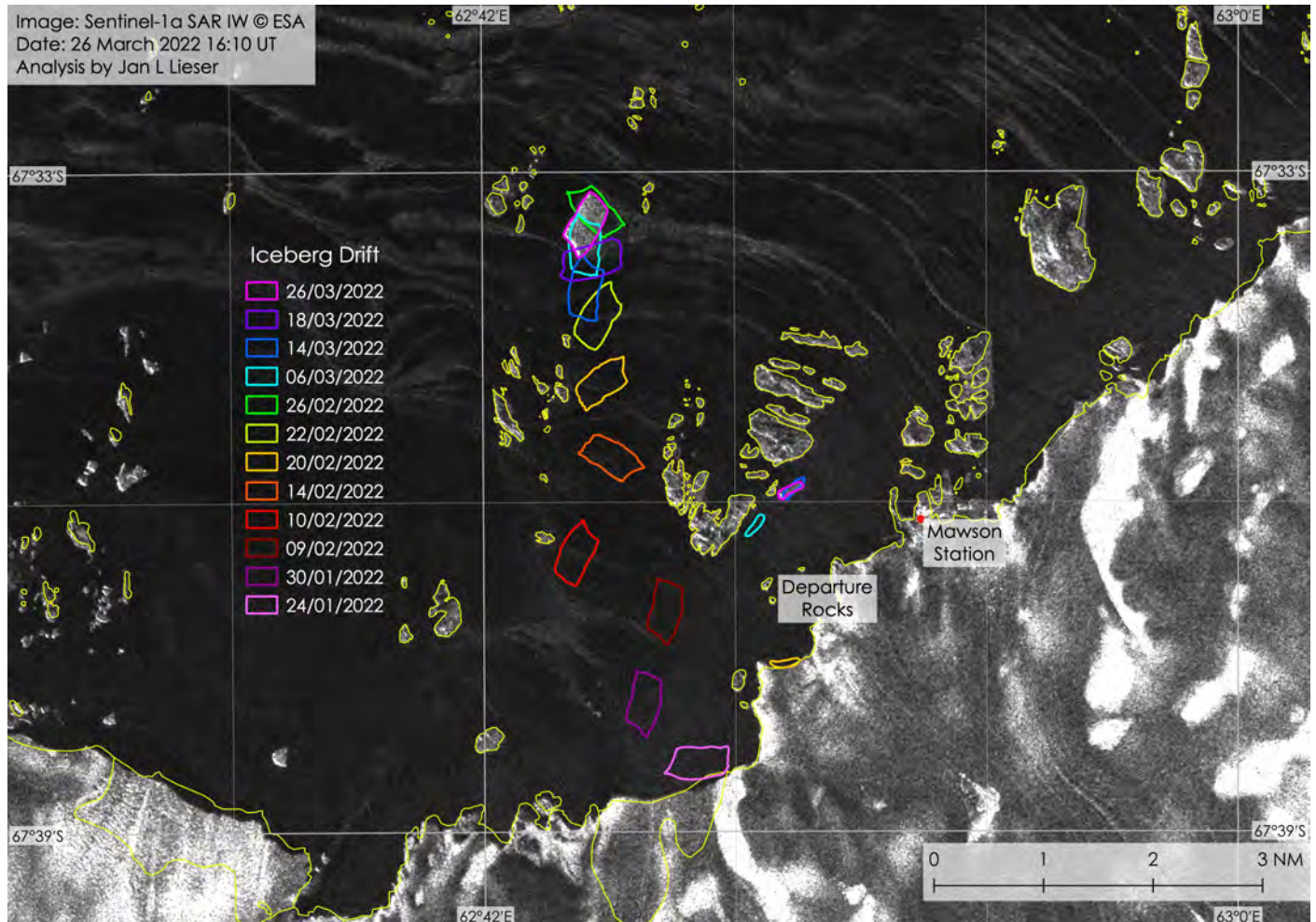


Figure 1: Sentinel-1 SAR IW data acquired 26 March 2022 at 16:10 UT and provided by PolarView.

Since 24 January 2022, a large iceberg was drifting generally northward through the islands (indicated by the colour-coded shapes) west of the station but entered a yo-yo drift pattern since late-February 2022.

A smaller iceberg that calved in mid-February 2022 (orange outline south of Departure Rocks) has drifted north around Departure Rocks, turned 180 degrees and is currently west of Mawson Station.

Both icebergs appear to be not grounded but locally trapped by bathymetry and near-surface currents at the moment.

New sea ice has been blown out recently and new streaks of frazil ice are starting to form nearshore and between the islands and is drifting westward.

Figure 2 shows high-resolution (15 m horizontal) SAR data further west of Mawson Station. Fast ice areas have been outlined by a red line.

Westward from Mawson Station, the closest fast ice that survived the summer is some patches around the Law Promontory but beyond that there's coast exposed again. A little more fast ice remains south of Crooked Island, where it was stabilised by grounded icebergs but further westward, there's more open water until the next patch south of Borg Island and Sirius Island and north-westward from there.

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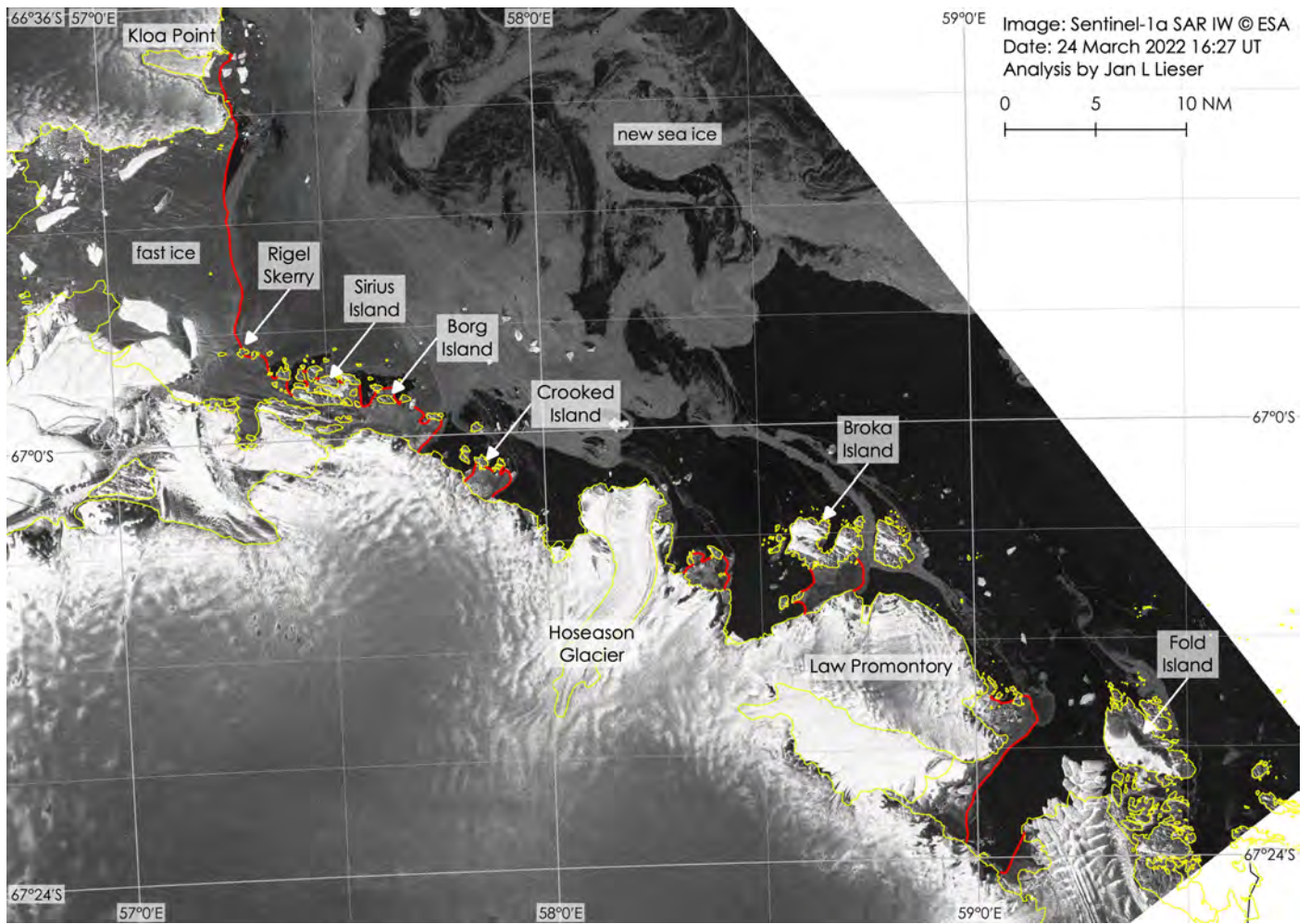


Figure 2: Sentinel-1 SAR IW data acquired 24 March 2022 at 16:27 UT and provided by PolarView.

Ice Bulletin: Bowman Island

Issued: Tuesday 29th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of visible data of Bowman Island and surrounds. East of Mill Island, fast ice areas are marked by a red outline.

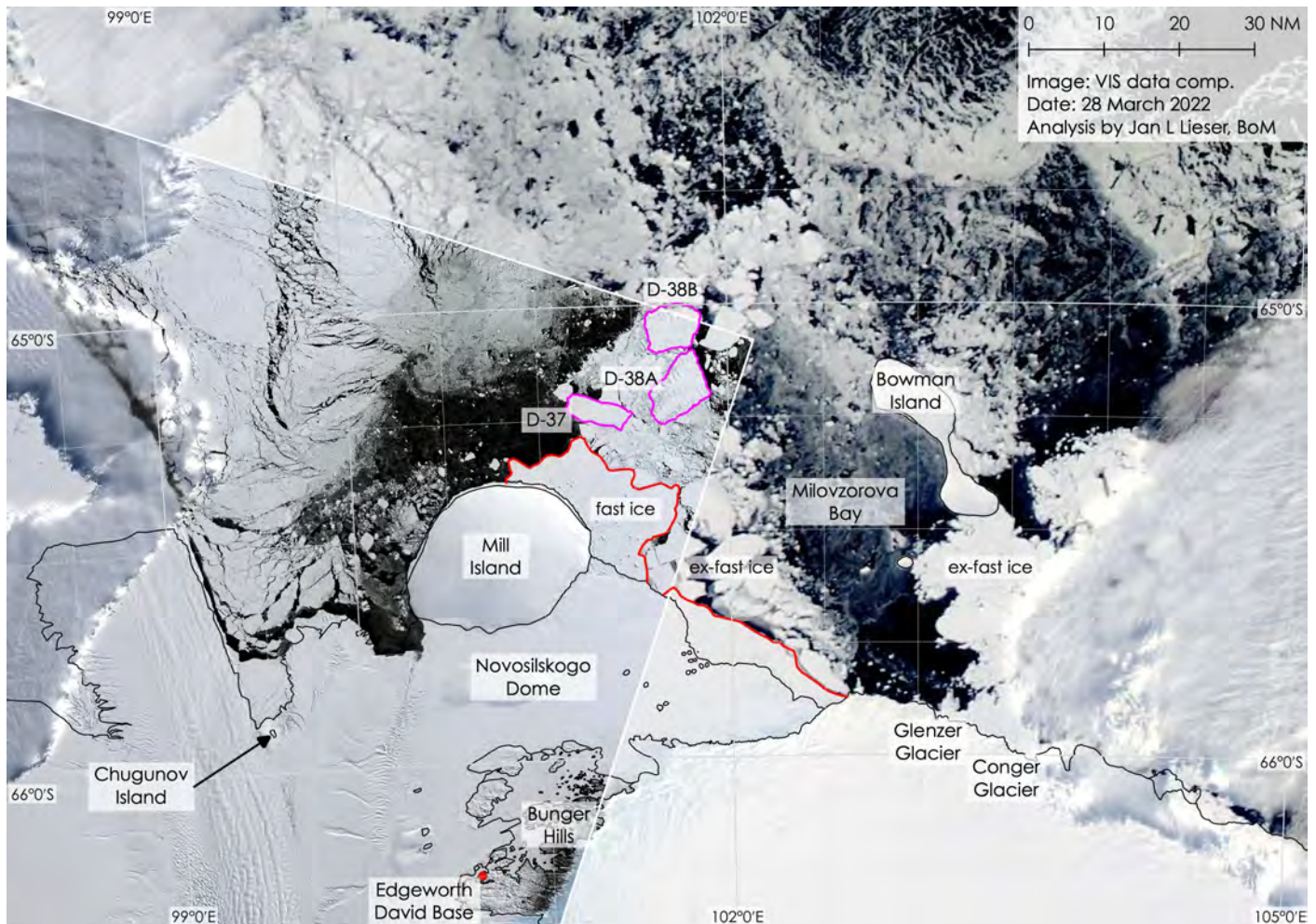


Figure 1: AQUA MODIS VIS data acquired 28 March 2022 and provided by NASA;
overlay: Landsat-8 pan-sharpened VIS composite data acquired 28 March 2022 at 02:21 UT and provided by USGS.

East of Mill Island, ice conditions in Milovzorova Bay remain dynamic and more fast ice has been breaking up.

Iceberg C-37 appears grounded while icebergs C-38A and C-38B continue drifting slightly northward and travelled a little more than 1 nautical mile during the last four days.

Southeast of Bowman Island, fast ice had completely disintegrated, and it appears some of the ex-fast ice reforms locally between the Glenzer Glacier and Conger Glacier and the island.

Ice Bulletin: Wilkins Aerodrome

Issued: Wednesday 30th March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows high-resolution visible data of Wilkins Aerodrome. The scene is partly shadowed by clouds.

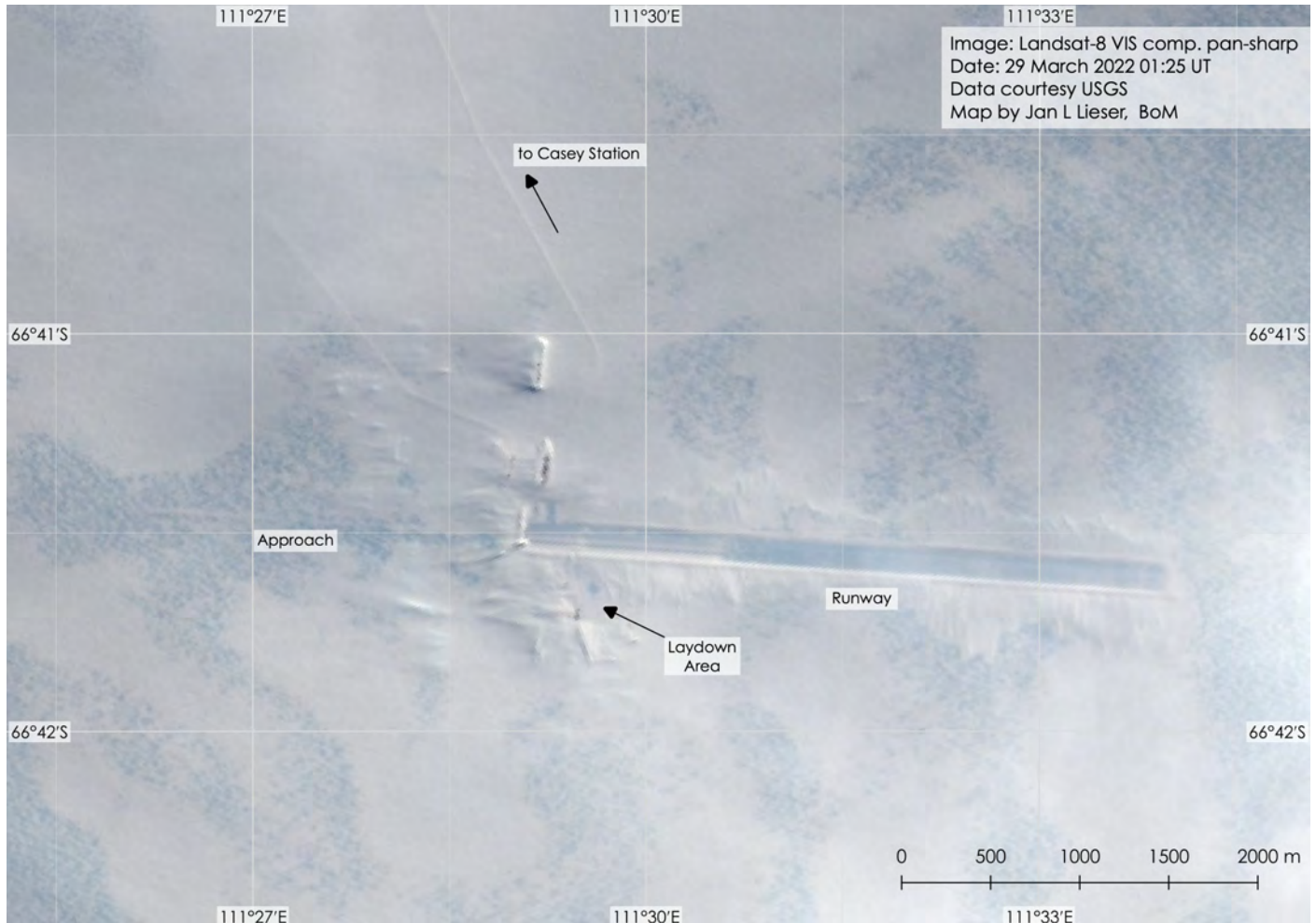


Figure 1: Landsat-8 visible composite pan-sharpened data acquired 29 March 2022 at 01:25 UT and provided by USGS.

The ice runway is clearly visible in the Landsat data. North and south of the runway, snow dunes are left from previous clearing the runway.

Snow dunes have also accumulated in the lee of the camp and other structures.

Ice Bulletin: Casey Station

Issued: Wednesday 30th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows composite of visible data off Casey Station. Fast-ice areas are marked with a red line.

North of the station, the large patch of fast ice on Petersen Bank has shrunk to a minimal extent as large cracks are criss-crossing the ice and only about 4 km of fast ice remain fastened to the shore.

Figure 2 shows the high-resolution VIS data around the Casey Station a further south.

Between the station and Browning Peninsula, new sea ice is transported from nearshore and between the offshore islands into the polynya westward. In O'Brien Bay south of the station, new sea ice appears to start consolidating into early stages of (not-yet) fast ice. East of Browning Peninsula, only minimal fast ice has survived the summer, mostly in southern Penney Bay.

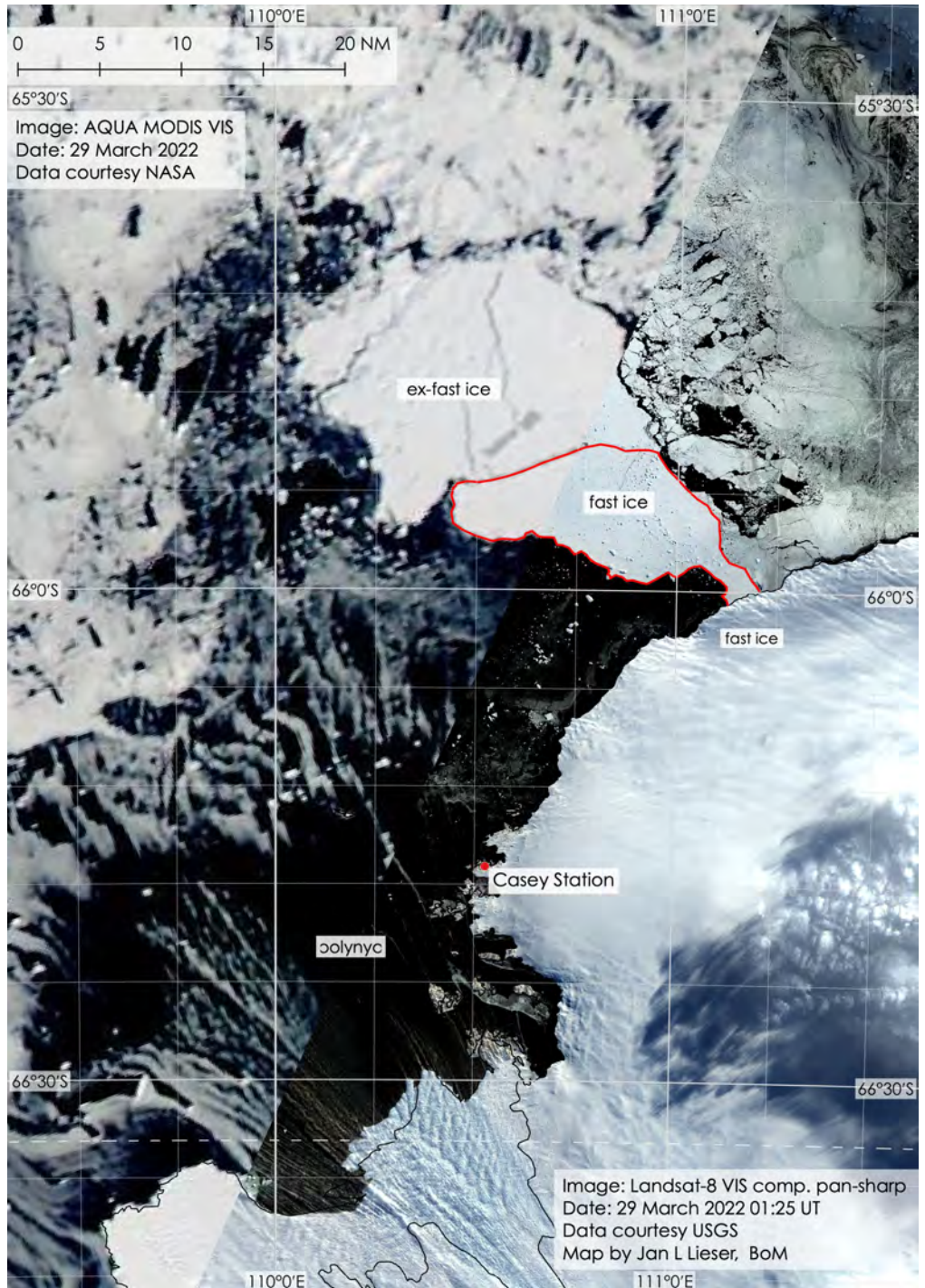


Figure 1: AQUA MODIS VIS data acquired 29 March 2022 and provided by NASA; overlay of Landsat-8 pan-sharpened VIS data acquired 29 March 2022 at 01:25 UT and provided by USGS.

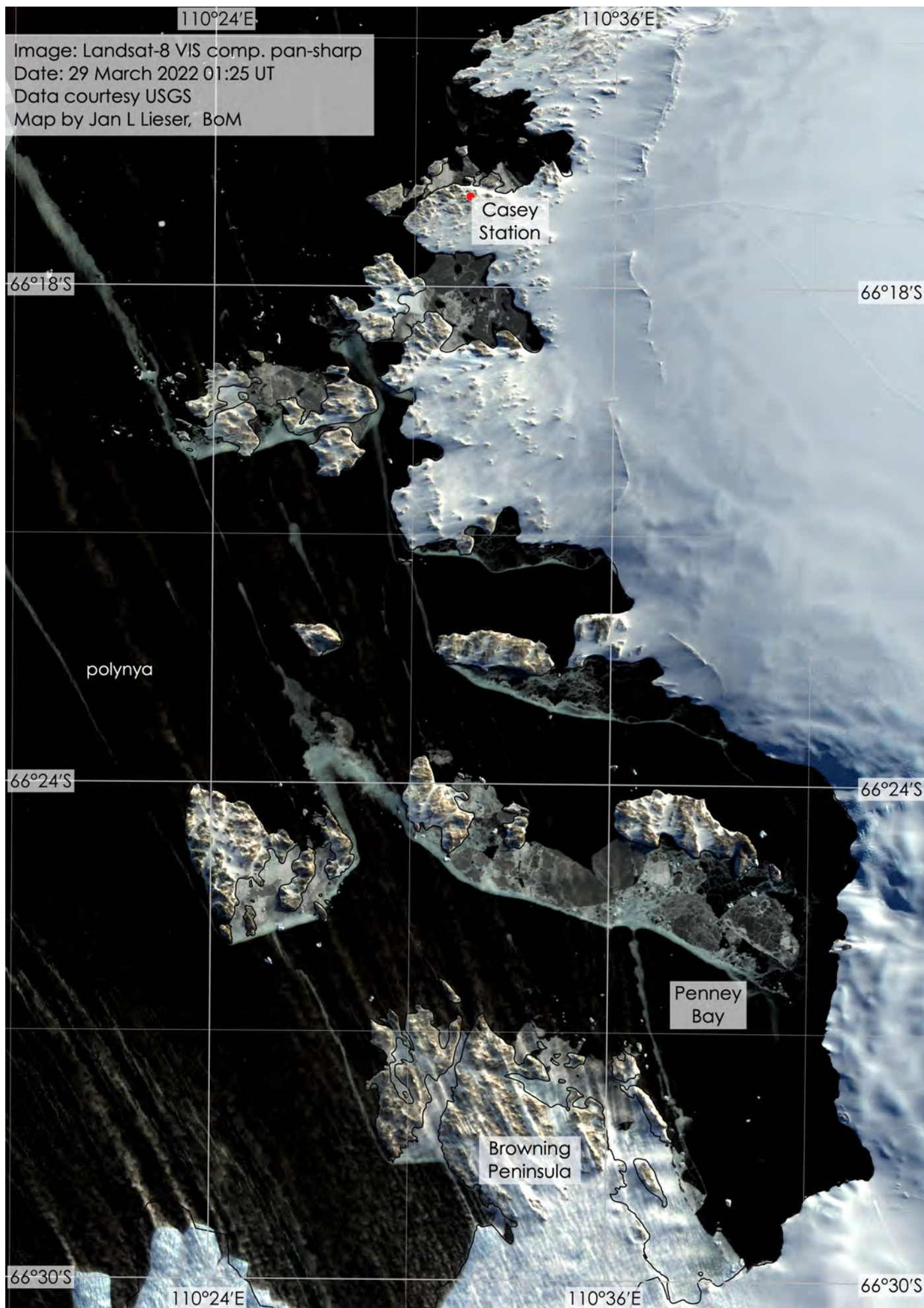


Figure 2: Landsat-8 pan-sharpened VIS data acquired 29 March 2022 at 01:25 UT and provided by USGS.

Ice Bulletin: Mill Island

Issued: Wednesday 30th March 2022

Analyst: Jan L. Lieser



Australian Government

Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of visible data of Mill Island and surrounds. East of Mill Island, fast ice areas are marked by a red outline.

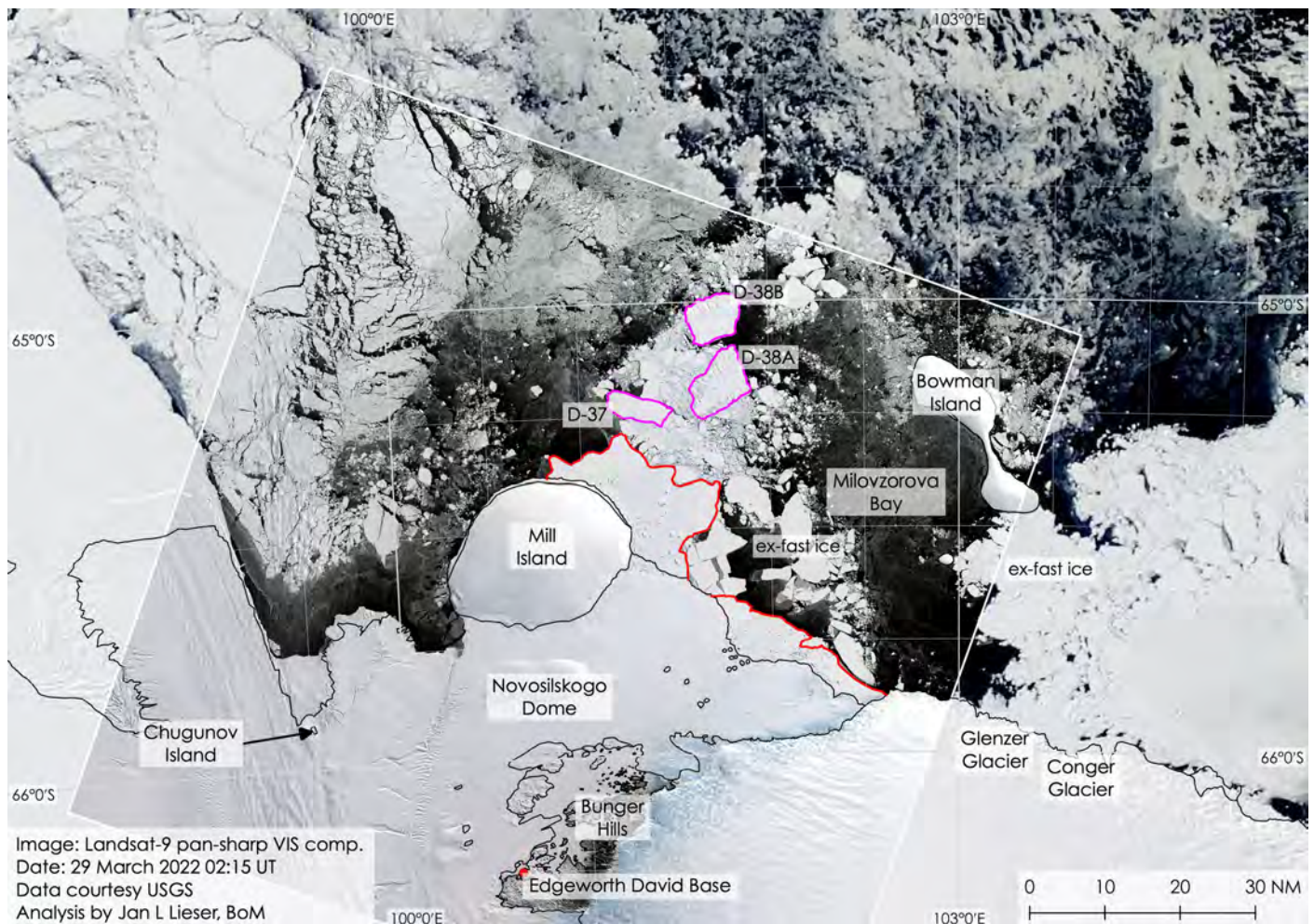


Figure 1: AQUA MODIS VIS data acquired 29 March 2022 and provided by NASA;
overlay: Landsat-9 pan-sharpened VIS composite data acquired 28 March 2022 at 02:15 UT and provided by USGS.

East of Mill Island, ice conditions in Milovzorova Bay remain dynamic and fast ice continues breaking up.

Iceberg C-37 appears significantly slowed down but has moved roughly 300 m westward during the past 24 hours. During the same time, iceberg C-38A continued northward roughly 400 m and iceberg C-38B drifted about 800 m northward including a slight 15 degrees anti-clockwise rotation.

Southeast of Bowman Island, fast ice did completely disintegrate, and it appears some of the ex-fast ice reforms locally between the Glenzer Glacier and Conger Glacier and the island.

Disclaimer: Every effort is made to ensure the data provided in this bulletin is accurate at the date of publication; however, the bulletin is provided without warranty of any kind. The figures and charts provided in this bulletin are intended only as a guide to ice conditions and are not suitable for navigation.

Ice Bulletin: Bowman Island

Issued: Thursday 31st March 2022

Analyst: Jan L. Lieser



Australian Government
Bureau of Meteorology

Ice Situation:

Figure 1 shows a composite of visible data of Mill Island and surrounds. East of Mill Island, fast ice areas are marked by a red outline.

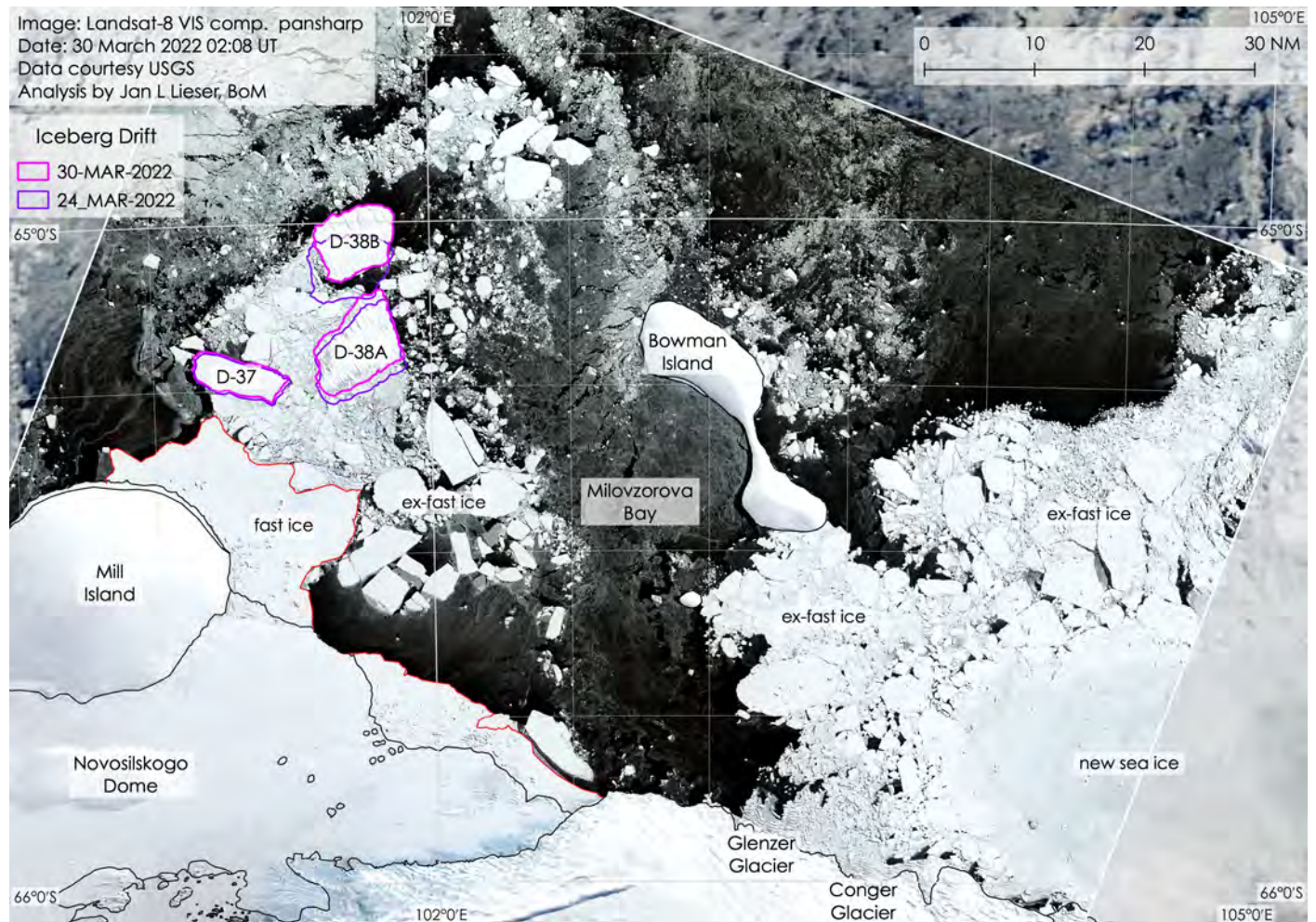


Figure 1: AQUA MODIS VIS data acquired 30 March 2022 and provided by NASA;
overlay: Landsat-8 pan-sharpened VIS composite data acquired 30 March 2022 at 02:08 UT and provided by USGS.

East of Mill Island, ice conditions in Milovzorova Bay remain dynamic and fast ice continues breaking up.

During the past week, iceberg C-37 has moved only 500 m north-westward overall. During the same time, iceberg C-38A continued northward roughly 1600 m and iceberg C-38B drifted about 4500 m northward including an overall 20 degrees anti-clockwise rotation.

Southeast of Bowman Island, ex-fast ice and new sea ice appears to reform new fast ice locally between the island and Glenzer Glacier and Conger Glacier.

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About the authors:

Jan L Lieser

Dr Jan L Lieser is a meteorologist and marine glaciologist with the Antarctic Meteorology Section at the Australian Bureau of Meteorology.

Jan is the leader of the Ice Service that is provided by the Bureau of Meteorology. Besides his operational duties he maintains a research interest in polar remote sensing. He has also collected on-site polar meteorological observations and sea-ice geophysical measurements, and has researched numerical modelling of Arctic sea ice and Antarctic subglacial Lake Vostok. He was a wintering scientist at the German Neumayer Station and has participated in several field research programs in both Antarctica and the Arctic Ocean, conducted by the Australian Antarctic Division and the German Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research. Jan has spent more than 450 days at sea, on-board icebreakers.



Damien Everett

Damien Everett is a meteorologist stationed in Hobart with the Australian Bureau of Meteorology (BoM), currently attached to the Antarctic Meteorology Section.

Damien performed forecasting duties for Defence based in the Northern Territory before relocating to Hobart and providing public weather and aviation forecast services for Tasmania. Prior to joining BoM, he served in the Royal Australian Navy navigating various ships before becoming a meteorologist and posted to the Fleet Weather and Oceanographic Centre. Damien has spent a summer at Davis Station providing forecasting services and has also wintered on the continent as a Weather Observer, completing over 500 days of continuous service. He is currently enjoying the challenge of learning to become an Ice Analyst and hopes to continue supporting Antarctic Operations.



