



Australian Ocean Data Network

Australia's Interface to Open Access Marine Data

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<http://portal.aodn.org.au>

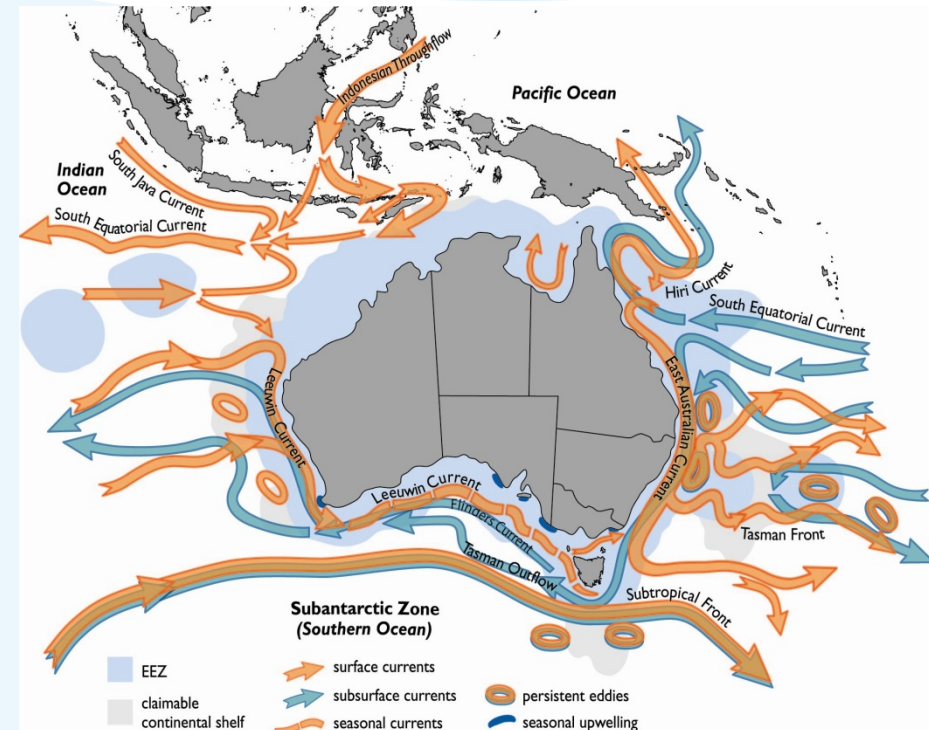


Australian Government
Department of Innovation
Industry, Science and Research



Australia – a marine nation:

- custodian of marine assets with **globally significant conservation value**, located from the high tropics to Antarctica
- extracting substantial **economic benefit** from ocean territory through industries such as fishing & aquaculture, shipping, oil & gas, and marine tourism
- **highly sensitive** to an ocean-influenced climate and extreme weather phenomena



Exclusive Economic Zone (EEZ) and Ocean Currents of Australia; image acknowledgement: CSIRO Australia

Marine observation in Australia:

- to understand how the ocean drives the climate system, **sustains biodiversity**, and provides resources for society

First Census of Marine Life 2010

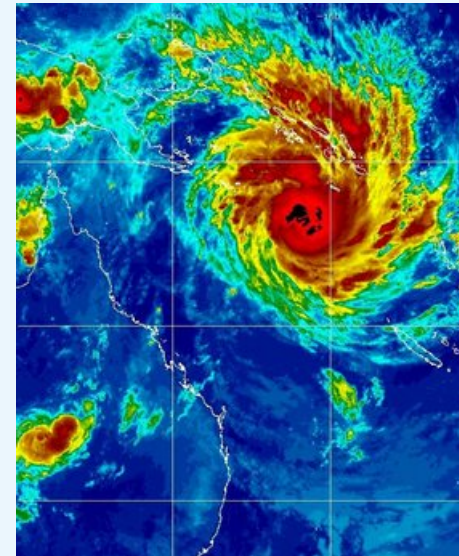
Marine observation in Australia:

- to understand how the ocean drives the climate system, **sustains biodiversity**, and provides resources for society
- to predict how ocean change will **affect society** across generations and to **improve decision-making** by governments, industries, and communities



*from the Queensland Government website:
“Significant flooding occurred in many areas of Queensland during late December 2010 and early January 2011, with three quarters of the state declared a disaster zone.”*

“Severe Tropical Cyclone Yasi crossed the Queensland coast about midnight Wednesday 2 February and moved inland on Thursday 3 February 2011. [...] Gale force winds, flooding rain and storm surges caused significant damage to areas in the storm's path.”



Keeping (ship-) track of marine data:



def. #1: an interoperable, online network of marine and coastal data resources

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Australian Ocean Data Network

def. #1: an interoperable, online network of marine and coastal data resources

- Australia's interface to large amounts of otherwise **undiscoverable marine data**
- infrastructure & visualisation tools for **free access to data and metadata**
- neither *generating*, nor *storing* data
- drawing together the **entire Australian marine community**
- interaction & integration with **numerous initiatives**

def. #2: an Australian data package for the IODE's Ocean Data Portal

Champions contributing data to the AODN:

signatory **Australian Ocean Data Centre Joint Facility** agencies

- Australian Antarctic Division
- Australian Institute of Marine Science
- Bureau of Meteorology
- CSIRO Marine and Atmospheric Research
- Geoscience Australia
- Royal Australian Navy – Hydrography and Metoc Branch



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- Australian Institute of Marine Science leading tropical marine science research
- Bureau of Meteorology national meteorological authority
- CSIRO Marine and Atmospheric Research leading climate change research
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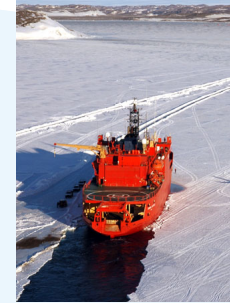
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status: >7800 metadata records harvested since July 2010

Publishing interoperable data:

achievements & discussions of the AODN

- automated real-time **Research Vessel Underway Data** from AODC-JF agencies, funded by the Australian National Data Service (ANDS)
- **identifying requirements** for interoperability (Marine Community Profile, “CTD use case”)



Research Vessels Aurora Australis (l) and Southern Surveyor (r); image acknowledgements: ABC Australia, CSIRO Australia

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- facilitation & promotion of **one common cross-sector infrastructure** in marine research



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→ *incentive for agencies to get organised*

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AODN data access & visualisation tools based on the **Integrated Marine Observing System** (IMOS) eMarine Information Infrastructure

Data diversity in the AODN:

marine research sectors

- Government, universities, private industry, not-for-profit organisations

marine science disciplines

- physical & chemical oceanography, biology, biogeochemistry, modelling

marine data sources

- observation data, model output, data products

marine data delivery

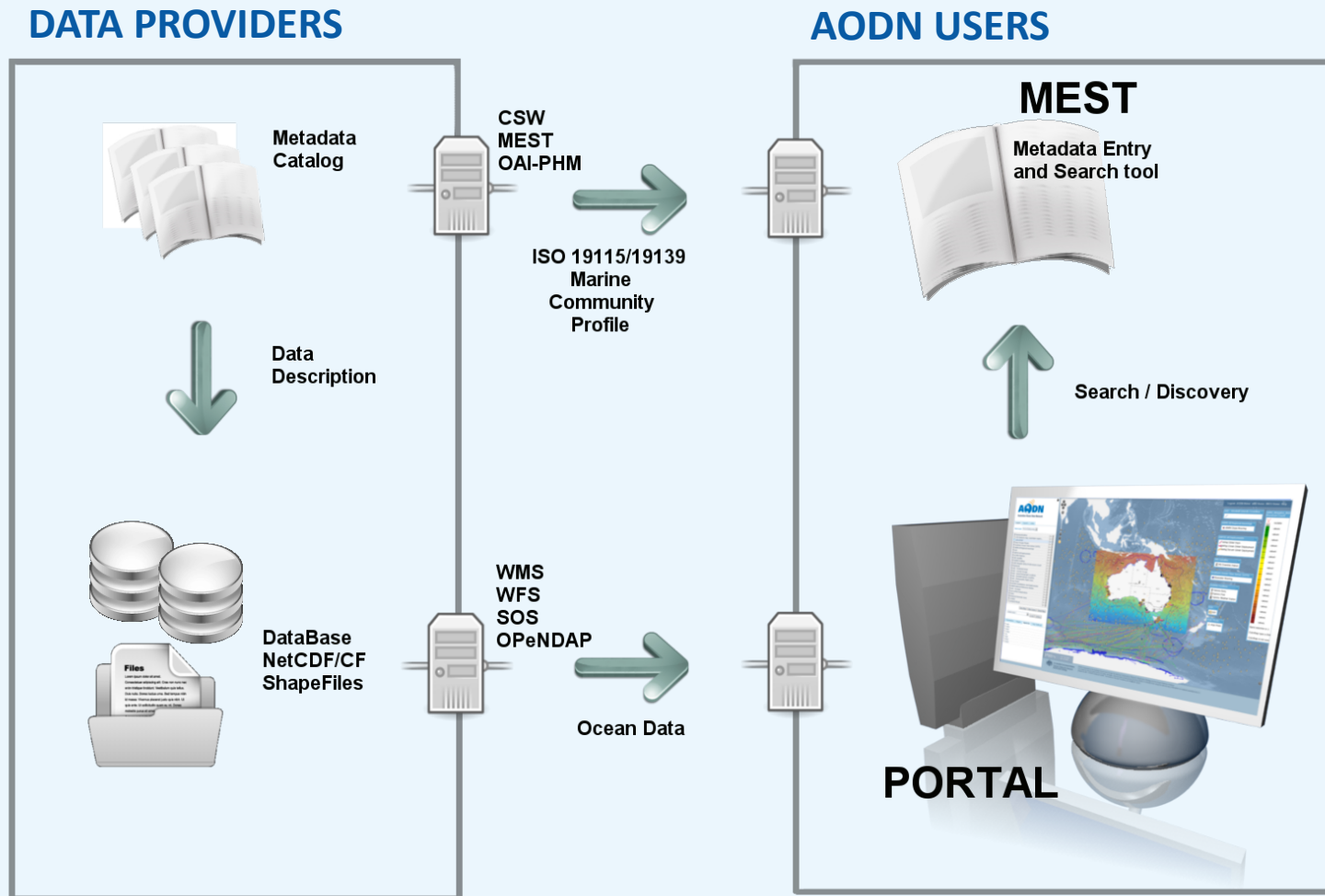
- real-time (e.g. tide gauges, tsunami buoys), delayed mode, archived / historic

marine data formats

- gridded data (e.g. satellites, HF radar), image data, time series

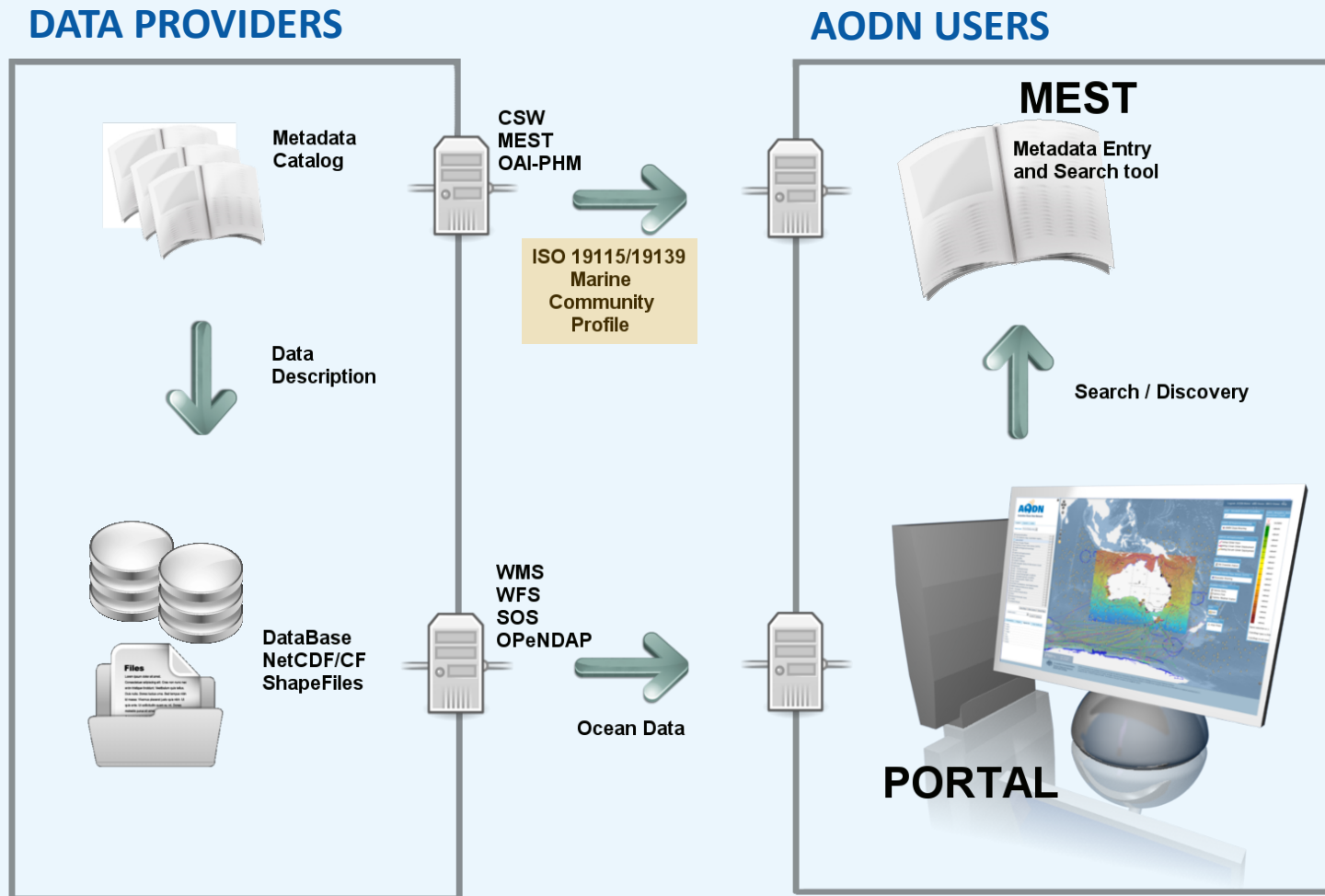
Interoperability – a data implementation challenge:

AODN infrastructure to meet technical requirements



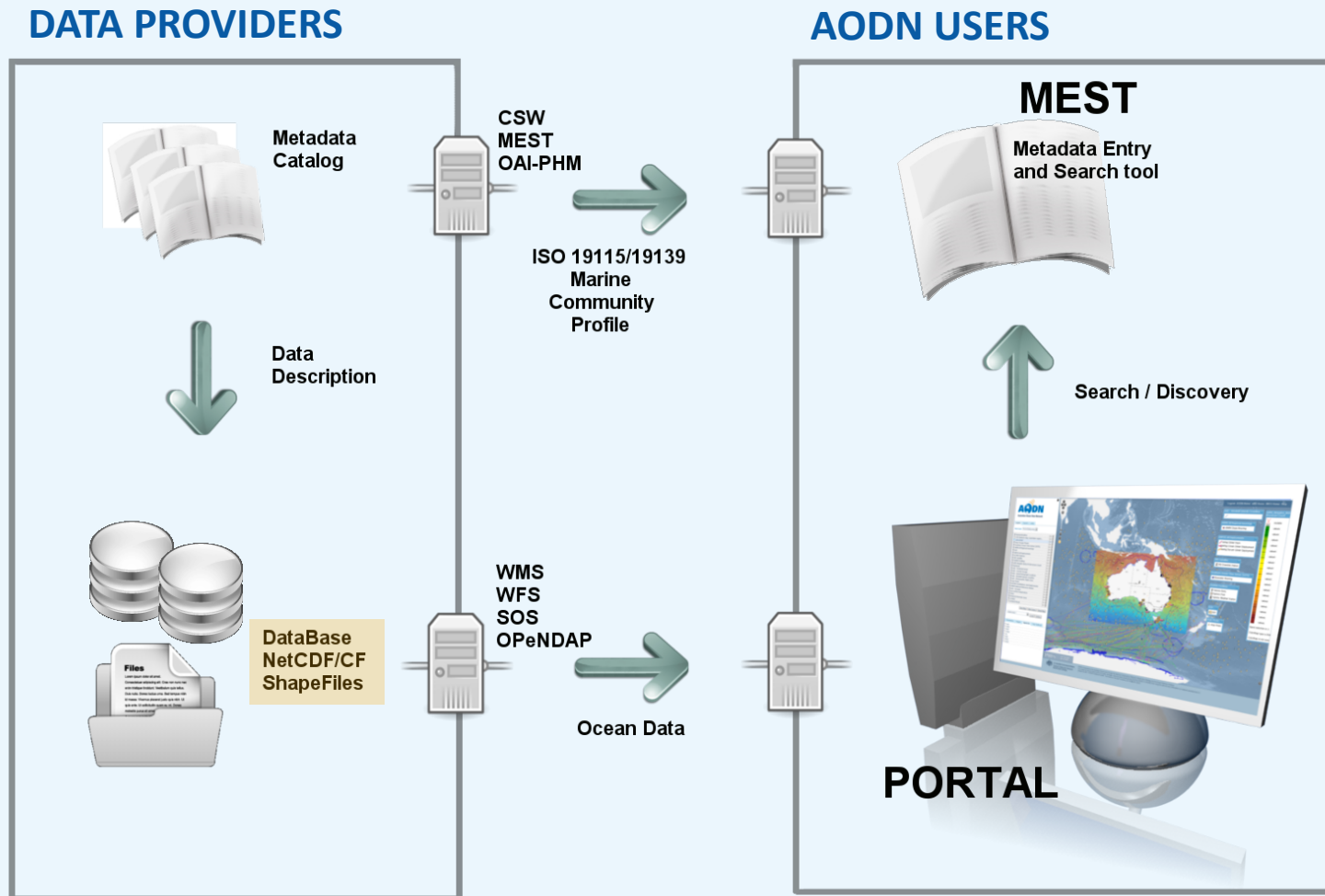
Interoperability – a data implementation challenge:

standards in describing data (**metadata**) – ISO 19115/19139 MCP



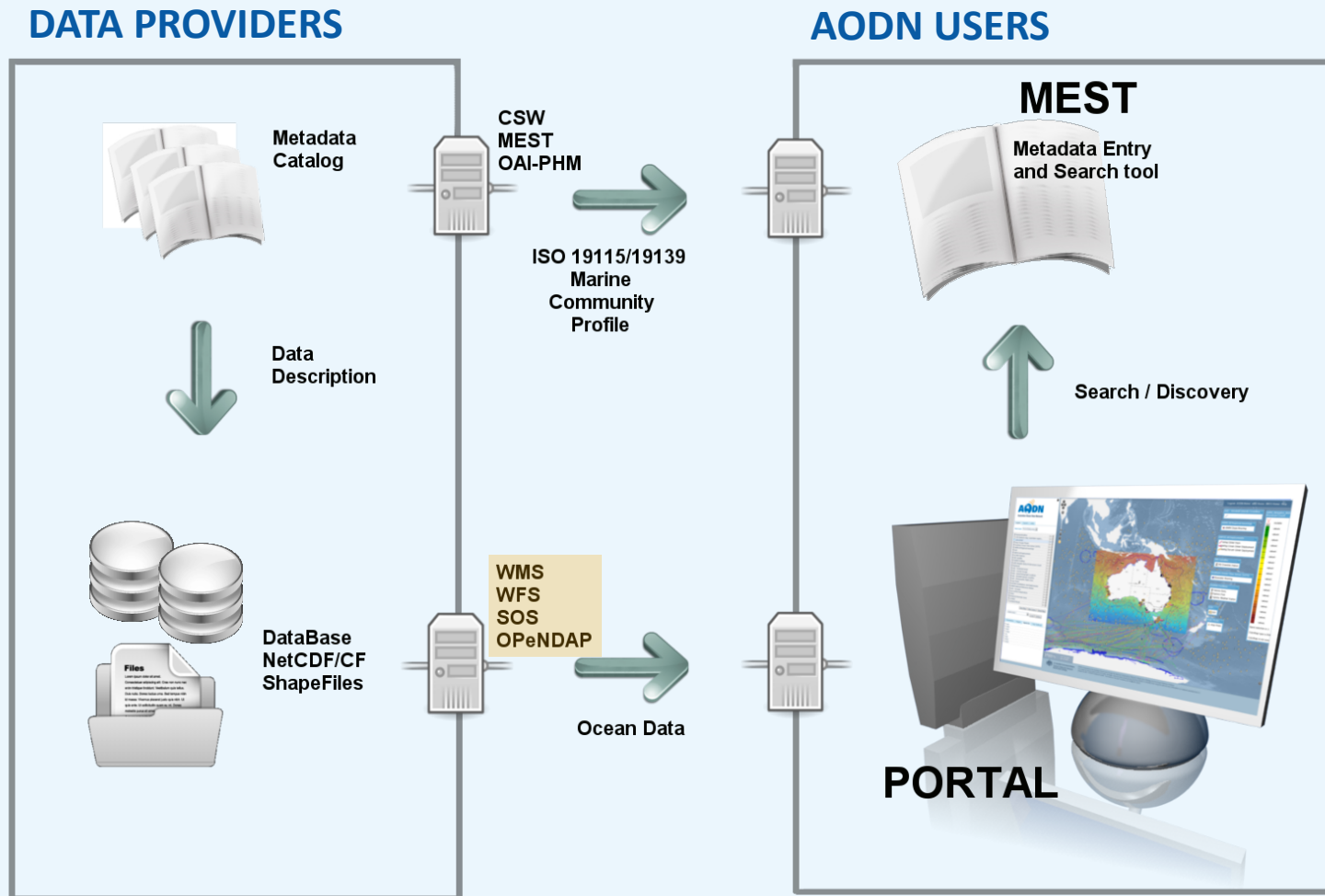
Interoperability – a data implementation challenge:

standards in exchanging data (**data formats**) – Network Common Data Format NetCDF



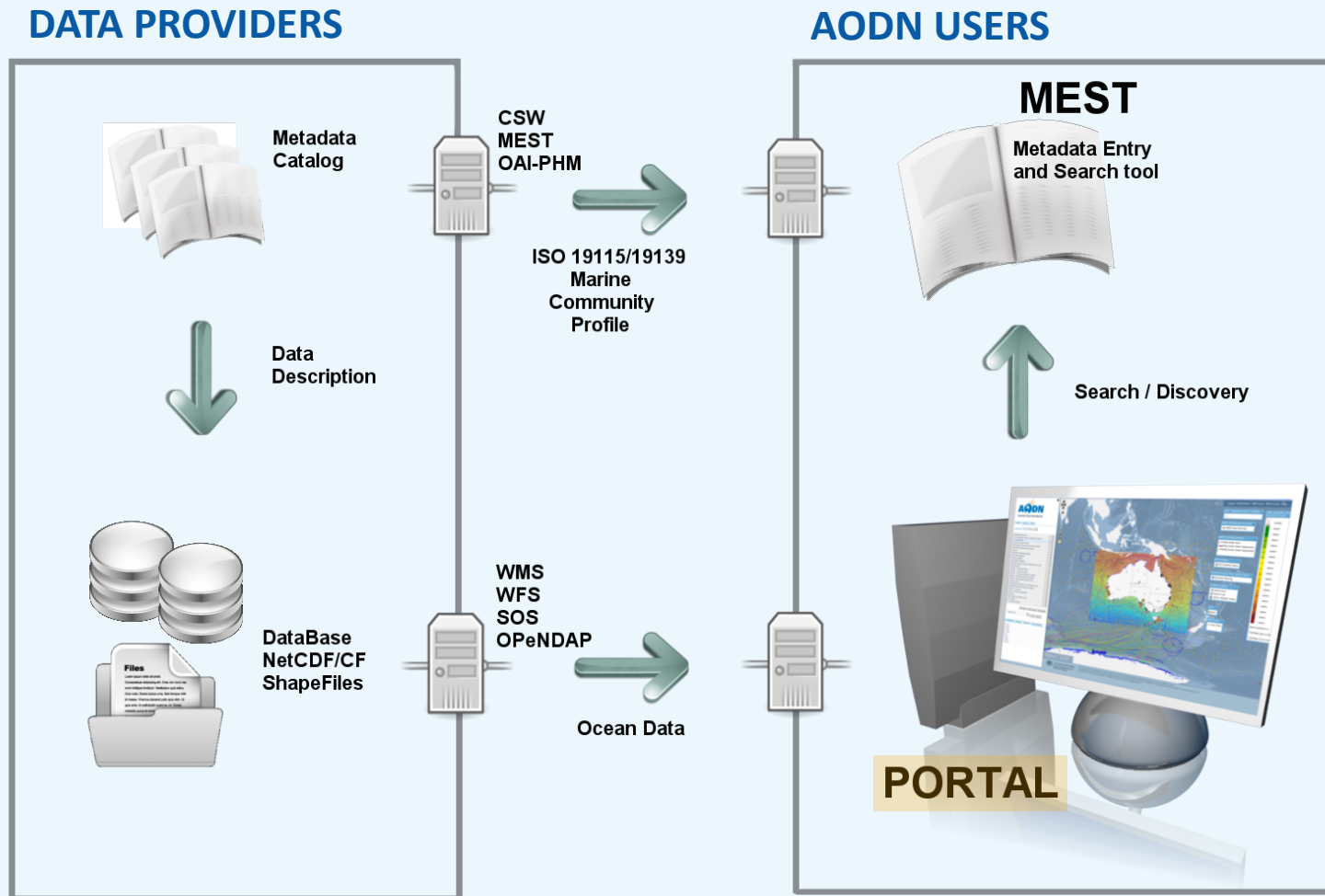
Interoperability – a data implementation challenge:

standards in presenting data (**data access**) – Open Geospatial Consortium web services

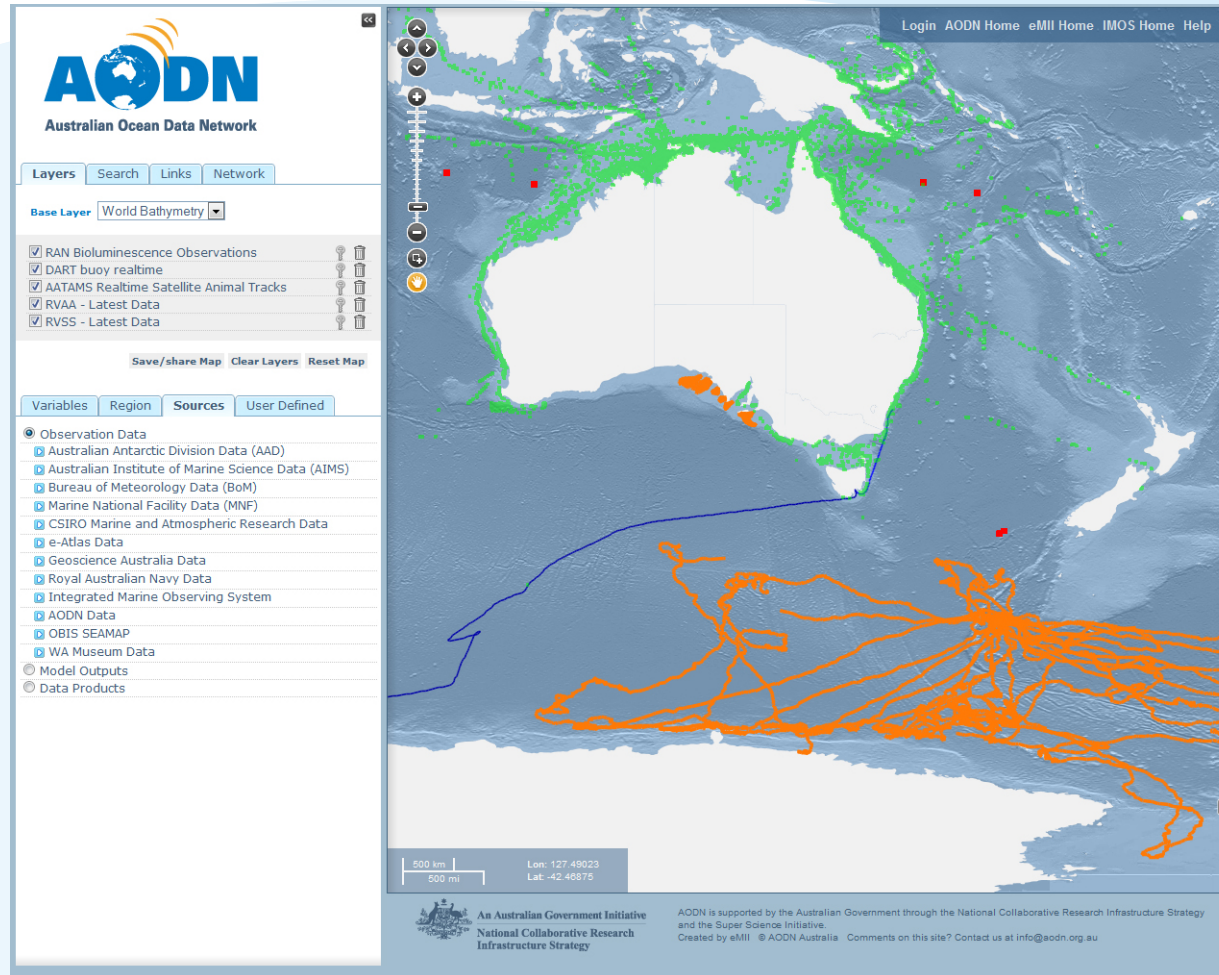


Interoperability – a data implementation challenge:

standards in releasing data (**data licensing**) – Creative Commons BY Attribution Licence



Data discovery in the AODN Web Portal:

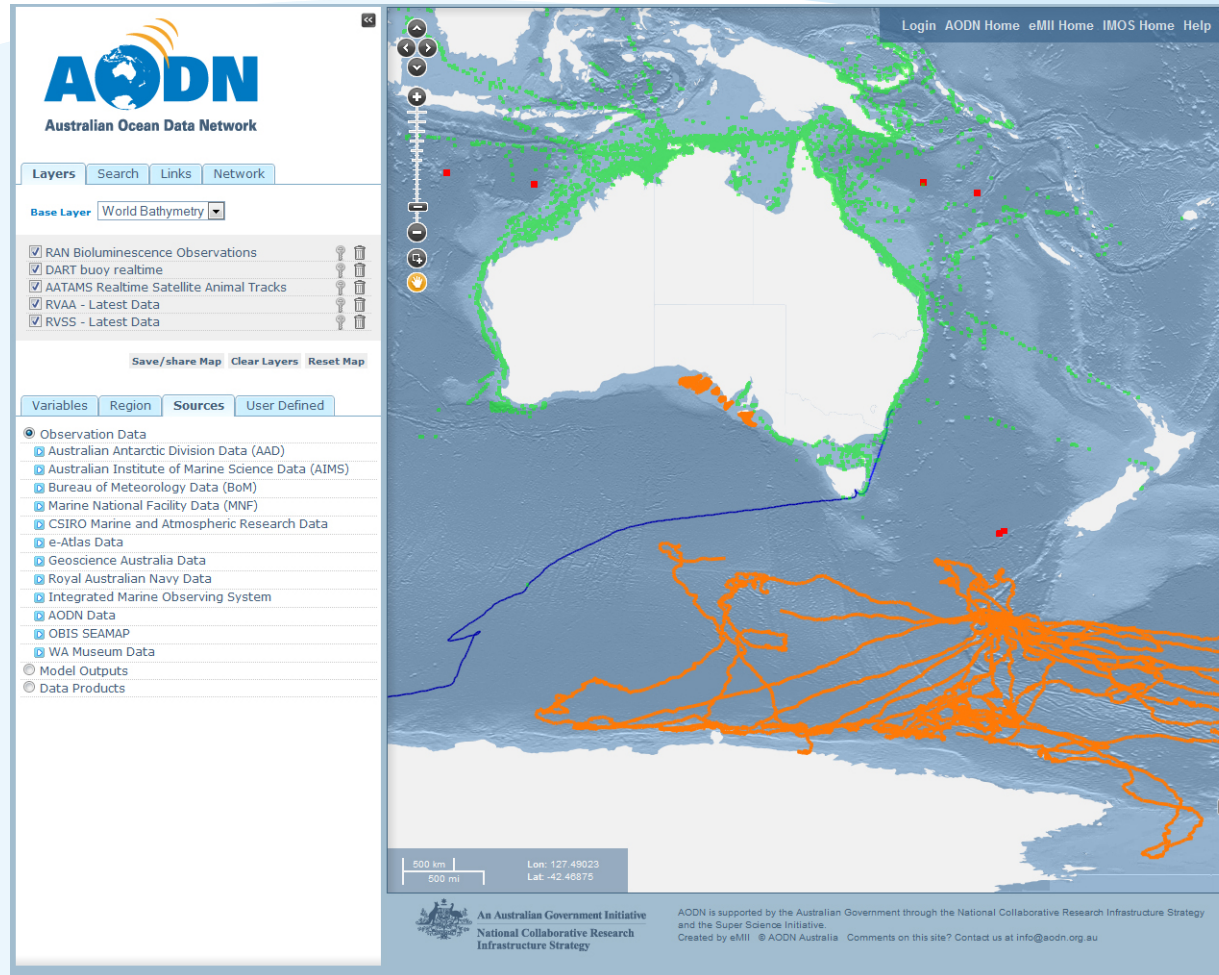


snapshot from <http://portal.aodn.org.au>

current functionalities

- map-based interface
- zoom & pan tools
- scale bar
- optional overview map
- base layers (e.g. bathymetric)
- list of active layers
- visibility options
- time series animation
- list of data sources
- drop-down menu of available layers
- text-based search
- relevant info & links

(Open) access process to marine data:



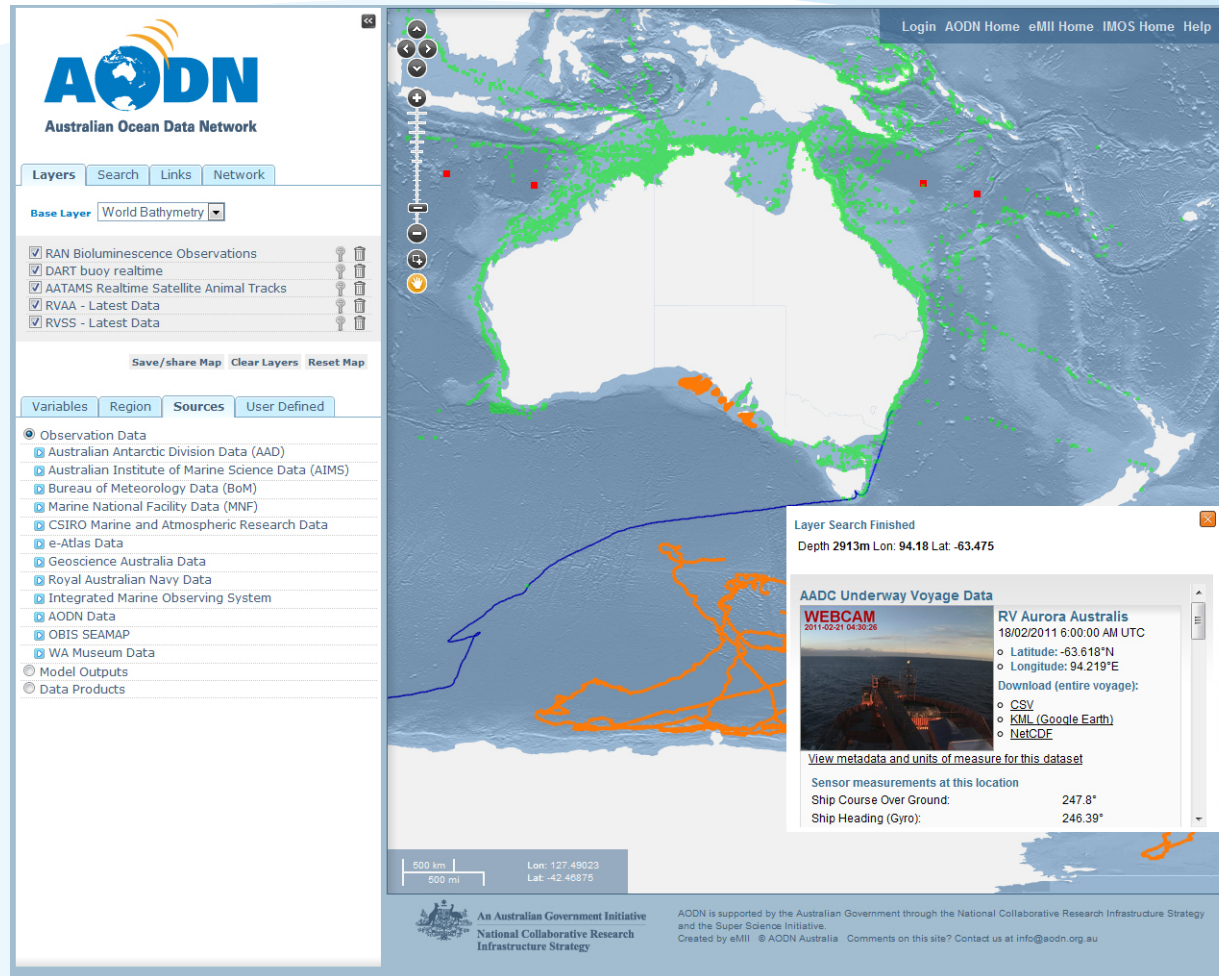
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legends & download

➤ data visualisation

e.g. real-time ship track

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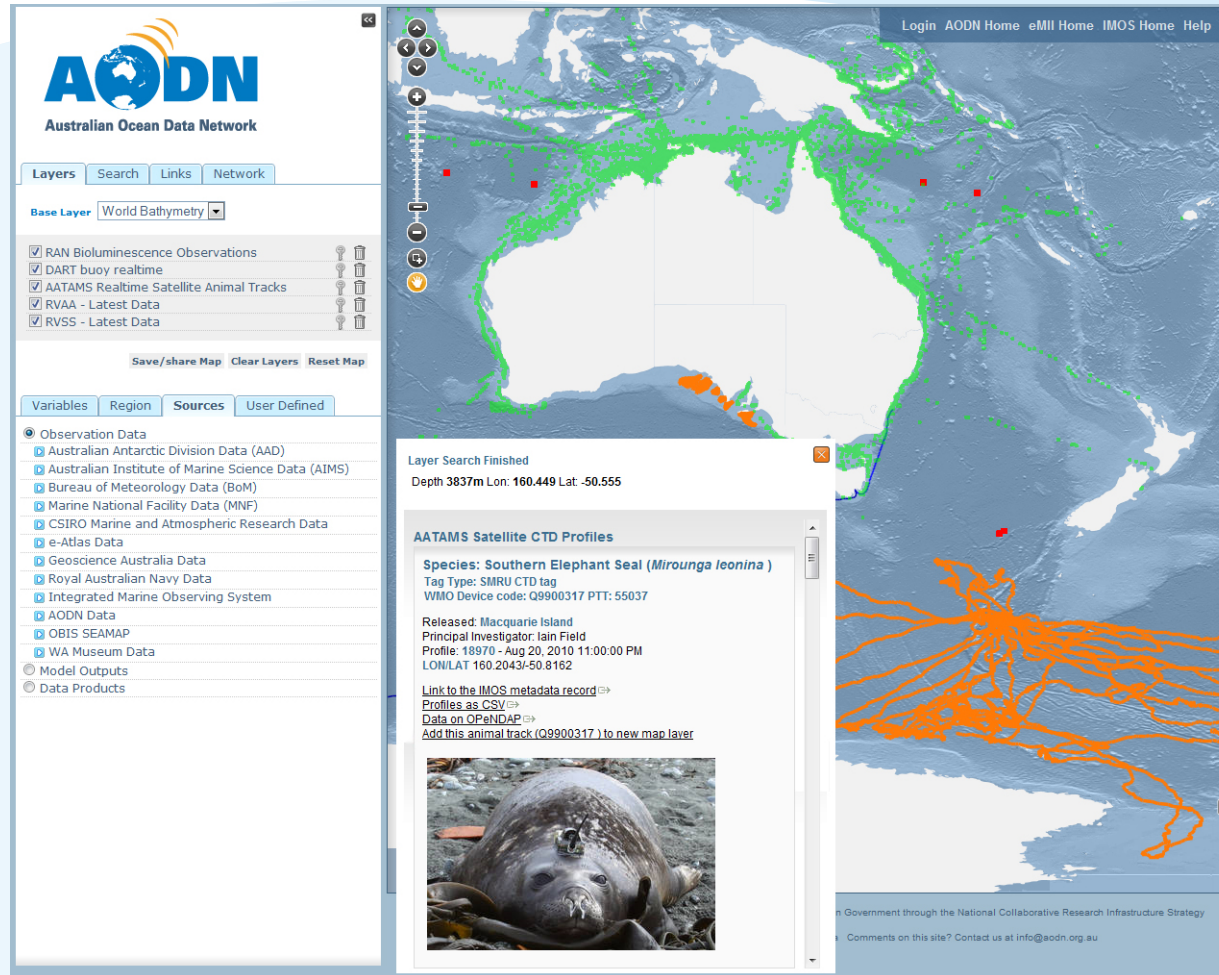
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legends & download

- data visualisation
- legend window
- selection of available data formats

incl. image or plot

(Open) access process to marine data:



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legends & download

- data visualisation
- legend window
- selection of available data formats
- link to metadata record

AODN – exchanging more than data:

coordinated approach with

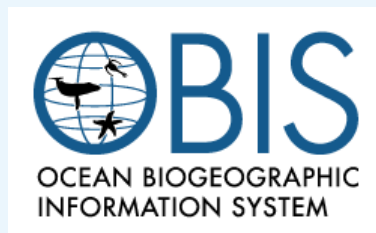
- **national collaborations**, e.g. the Terrestrial Ecosystem Research Network (TERN), Marine Biodiversity Research Hub, and the Atlas of Living Australia



AODN – exchanging more than data:

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- **national collaborations**, e.g. the Terrestrial Ecosystem Research Network (TERN), Marine Biodiversity Research Hub, and the Atlas of Living Australia
- **international initiatives**, e.g. the Global Ocean Observing System (GOOS), the Ocean Biogeographic Information System (OBIS), the National Oceanic and Atmospheric Administration (NOAA), MyOcean, and **IODE**



Facilitator role of the AODN:

involvement in exposing marine data

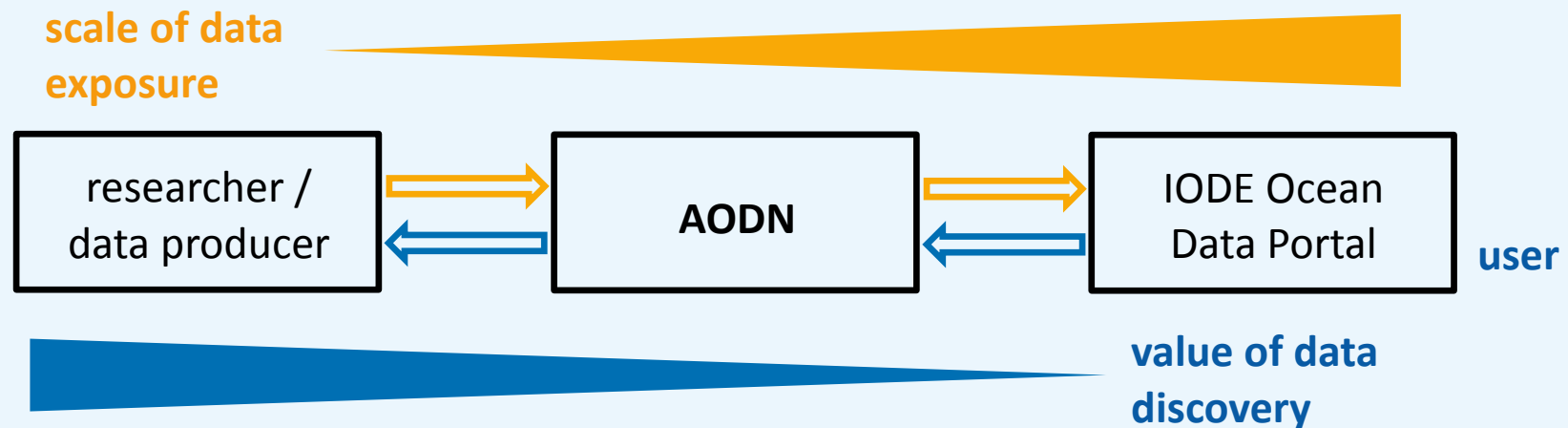
- **Australian point of access** – individual researchers, agencies, and institutes provide the AODN with access to their data sets for visualisation and discoverability



Facilitator role of the AODN:

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- **Australian point of access** – individual researchers, agencies, and institutes provide the AODN with access to their data sets for visualisation and discoverability
- **Australian data package** – the AODN provides international initiatives (e.g. **IODE**) with access to a diverse, yet interoperable collection of Australian marine data



Please feel welcome to contact the AODN:

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- concept & governance greg@metoc.gov.au
- data liaison & outreach Wiebke.Ebeling@utas.edu.au, Patrick.Gorringe@utas.edu.au
- AODN Web Portal <http://portal.aodn.org.au>
- Facebook <http://www.facebook.com/pages/AODN/159760824066030>
- Twitter <http://twitter.com/AusOceanDataNet>
- feedback survey <http://www.surveymonkey.com/s/PKM7NX6>
- new website (late April) www.aodn.org.au

THANK YOU