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Seabed mapping on Australia's southern margin: Baseline information for science and marine management

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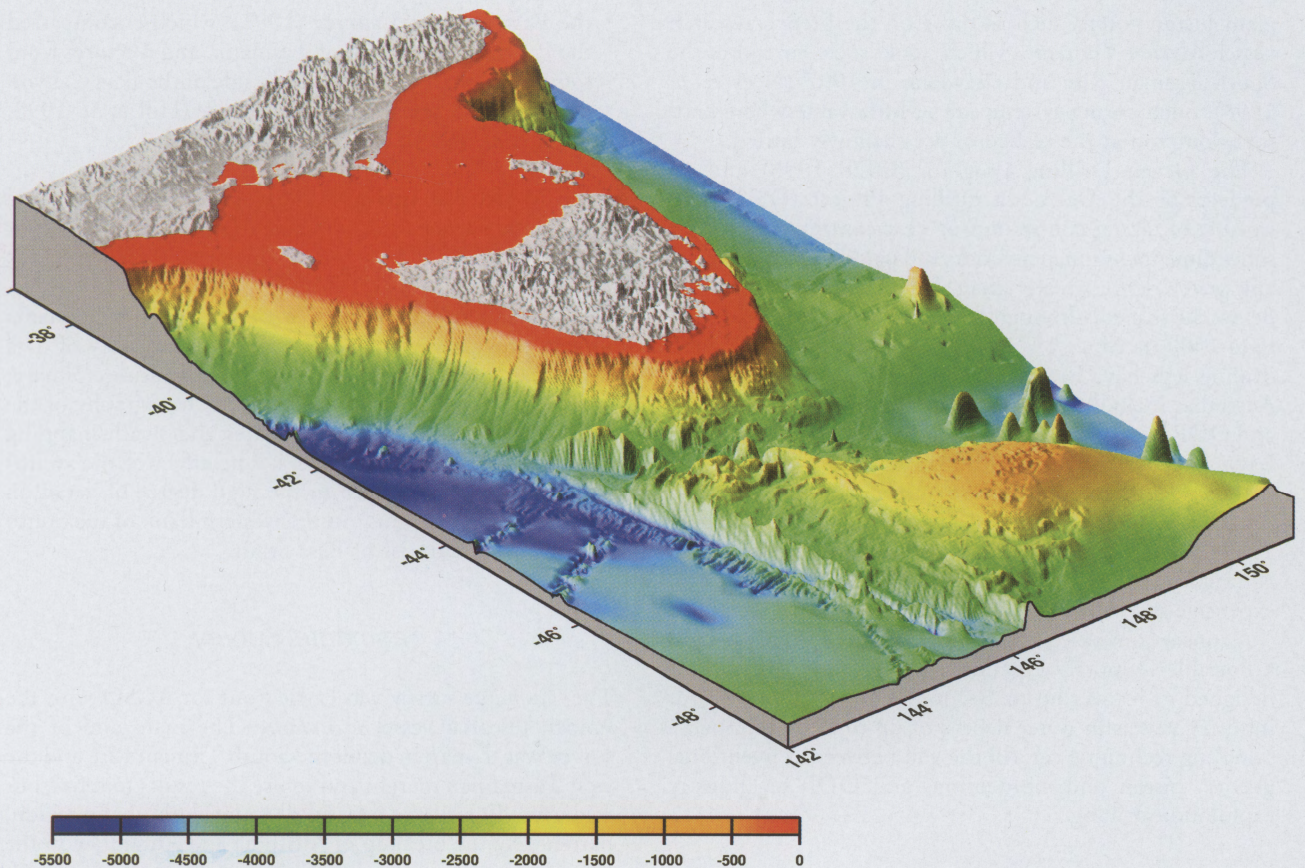


FIG. 4 — Perspective view of the topography of the Tasmanian region. Regional bathymetry from the global ETOPO5 digital data set, supplemented in Bass Strait by data from the RAN Hydrographic Office. Detailed bathymetry west, south and east of Tasmania, and east of Bass Strait was recorded by swath-mapping on AGSO surveys. Note the change in resolution near the edge of the abyssal plain southwest of Tasmania where swath-mapping and ETOPO5 data have been merged.

support a diverse fauna dominated by a colonial stony coral, *Solenosmilia variabilis*, and that the fauna is highly endemic with numerous new species.

East Tasmania Survey

In 1997, the 85 m Scripps Institution of Oceanography research vessel *Melville* mapped the seabed on the continental margin of east Tasmania and at the eastern end of Bass Strait in a cooperative project with AGSO. The *Melville* is fitted with a SeaBeam 2000, a 121-beam sonar system with a swath coverage of 120°. The maximum swath width is about 3.4 times the water depth, and about 20 000 km² of the margin were surveyed in eight days of surveying (Hill *et al.* 1998).

The aims of the cruise were to determine the morphology and seabed character of selected areas, to provide data for tectonic, basin and sedimentological studies (including surveying a jarosite dumping site southeast of Hobart – Harris *et al.* 1999b), to aid the fishing industry, and to provide critical information for future geoscience surveying. A specific objective was to map the structure of bedrock outcrop on the eastern margin of an inferred sedimentary basin beneath the upper continental slope off the Freycinet Peninsula.

Figure 6 is a perspective view to the northwest of the continental margin east of Bass Strait and illustrates the

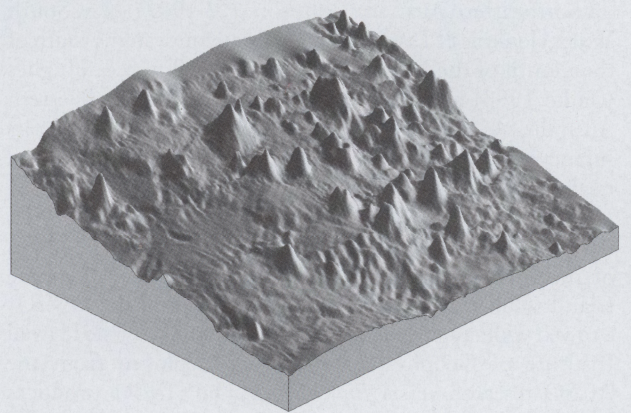


FIG. 5 — Field of seamounts on the upper continental slope, south of Tasmania recorded by swath-mapping. This image measured approximately 40 km². These seamounts, many of which were not known prior to the swath-mapping, are found in water depths of 900–2300 m. They typically stand about 400 m above the adjacent seabed and are several kilometres across. The summits of some of these seamounts are the natural habitat of the adult orange roughy.

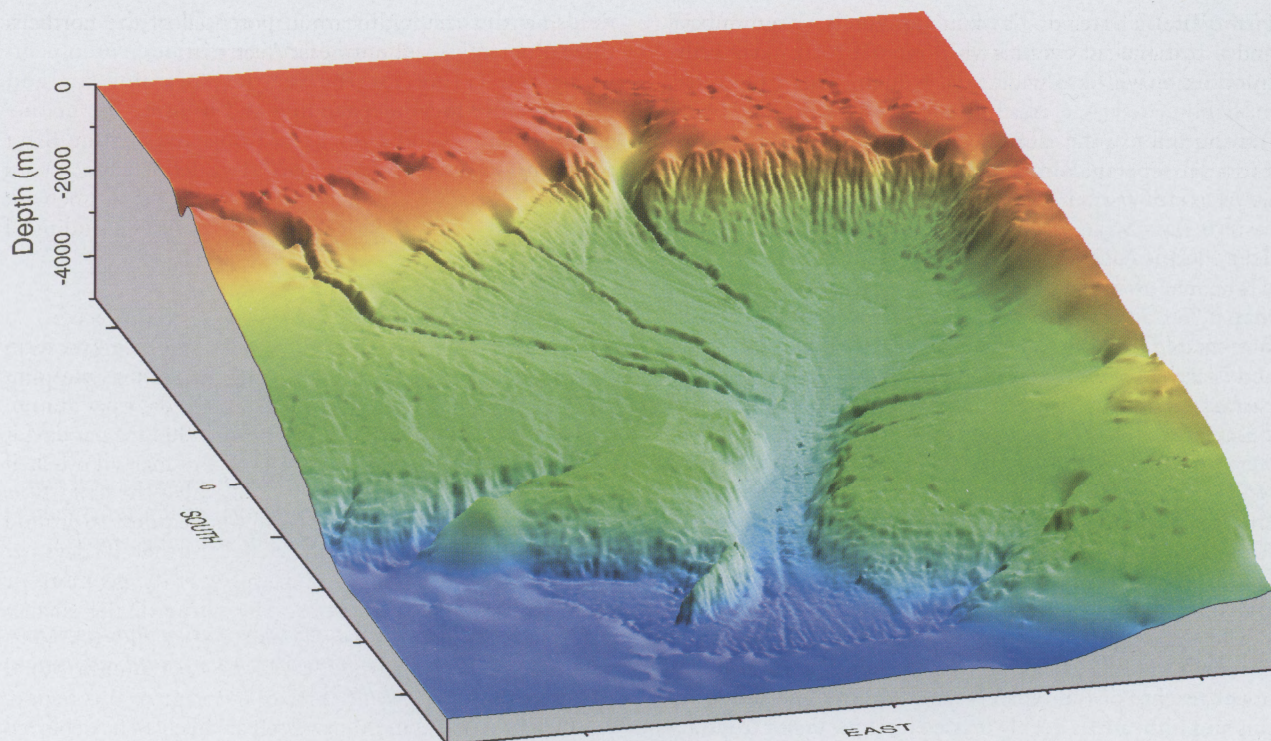


FIG. 6 — Perspective view of Bass Canyon, looking northwest from the Tasman Sea (after Hill et al. 1998). Horizontal scale is indicated by the tick marks at 20 km intervals. The image was generated from high-resolution swath-mapping data, with infill at the edges of the image provided by older, conventional bathymetric data from multiple sources. The water depths range from about 4400 m in the Tasman Basin, in the foreground, to less than 200 m deep on the continental shelf, in the background.

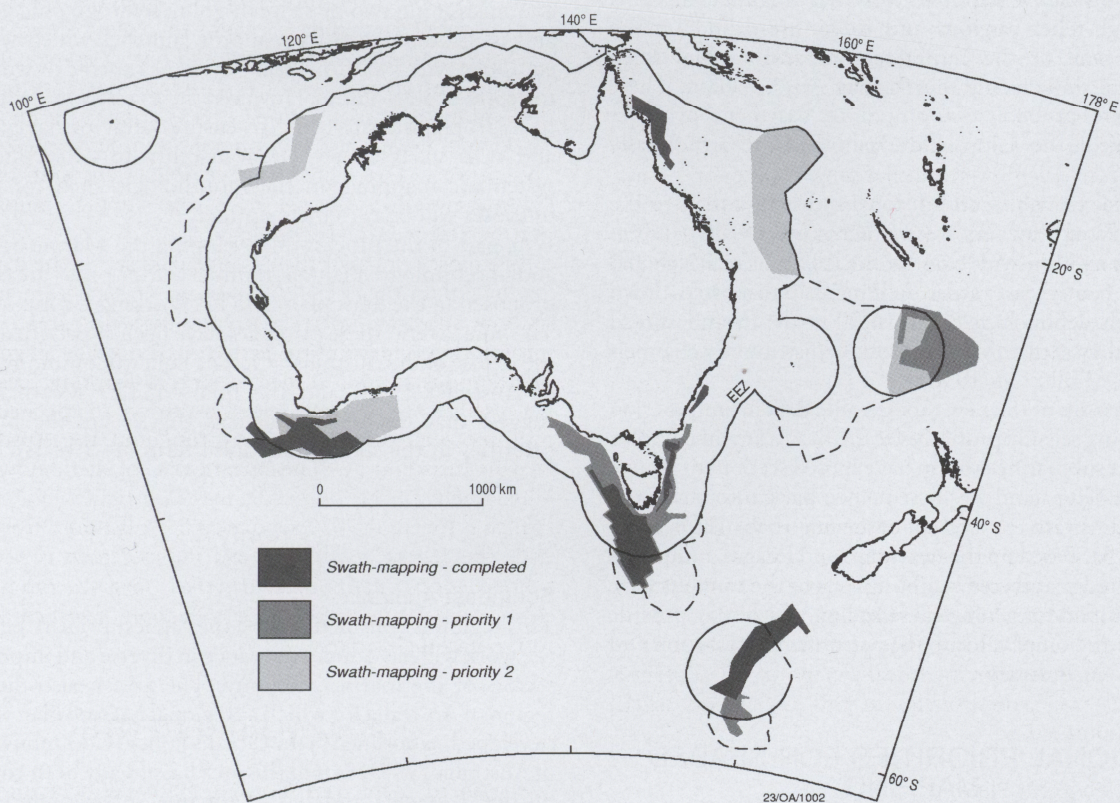


FIG. 7 — Areas around Australia which have previously been swath-mapped, and priority areas for future swath-mapping.