

# Davis Coastal Seabed Mapping Survey, Vestfold Hills, Australian Antarctic Territory

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Geoscience Australia has conducted numerous marine surveys around the Australian margin and has demonstrated the value of integrated data sets in understanding the marine environment. This integrated approach was applied to a survey in Antarctic waters which carried out multibeam sonar, underwater video and sediment sampling programs in the coastal waters of the Vestfold Hills, near the Australian station of Davis. The survey, which was a joint project with the Australian Antarctic Division and the Royal Australian Navy, was carried out during the summer of 2009–10. The objectives of the survey were to aid the understanding of sea bed character and benthic habitats, provide a basis for hydrodynamic modeling of water movement around Davis, and to update and extend the navigational charts of the region.

The Vestfold Hills is one of the largest ice-free areas on the East Antarctic coast. The coastal area is a complex of small islands, embayments and fjords. An area of 42 km<sup>2</sup> was surveyed intensively immediately off Davis and additional survey lines were run to Long Fjord in the north and to Crooked Fjord and the Sørsdal Glacier in the south. Water depths in the survey area range from 0 to 334 m. New high resolution bathymetric and backscatter grids have been prepared for scientific use and further processing for hydrographic charting is ongoing. The grids (Fig. 1) provide information of seabed morphology and texture. A new sea floor geomorphic map has been prepared using the multibeam, video and sediment data. The underwater video has also been used to identify seafloor habitats and associated benthic communities and to examine biophysical relationships.

The new high resolution datasets reveal a mosaic of rocky outcrops and sediment-filled basins. The transition areas between bedrock outcrops and depressions are gently sloping with a thin sandy cover on shallow bedrock. Iceberg scouring is common, but some areas are protected by peninsulas and islands. Biological communities are controlled by substrate and light level. Rocky substrates in shallow water, where ice-free conditions persist for most of the summer, are dominated by dense macroalgae. The deeper muddy basins have lower biological cover, dominated by invertebrates.

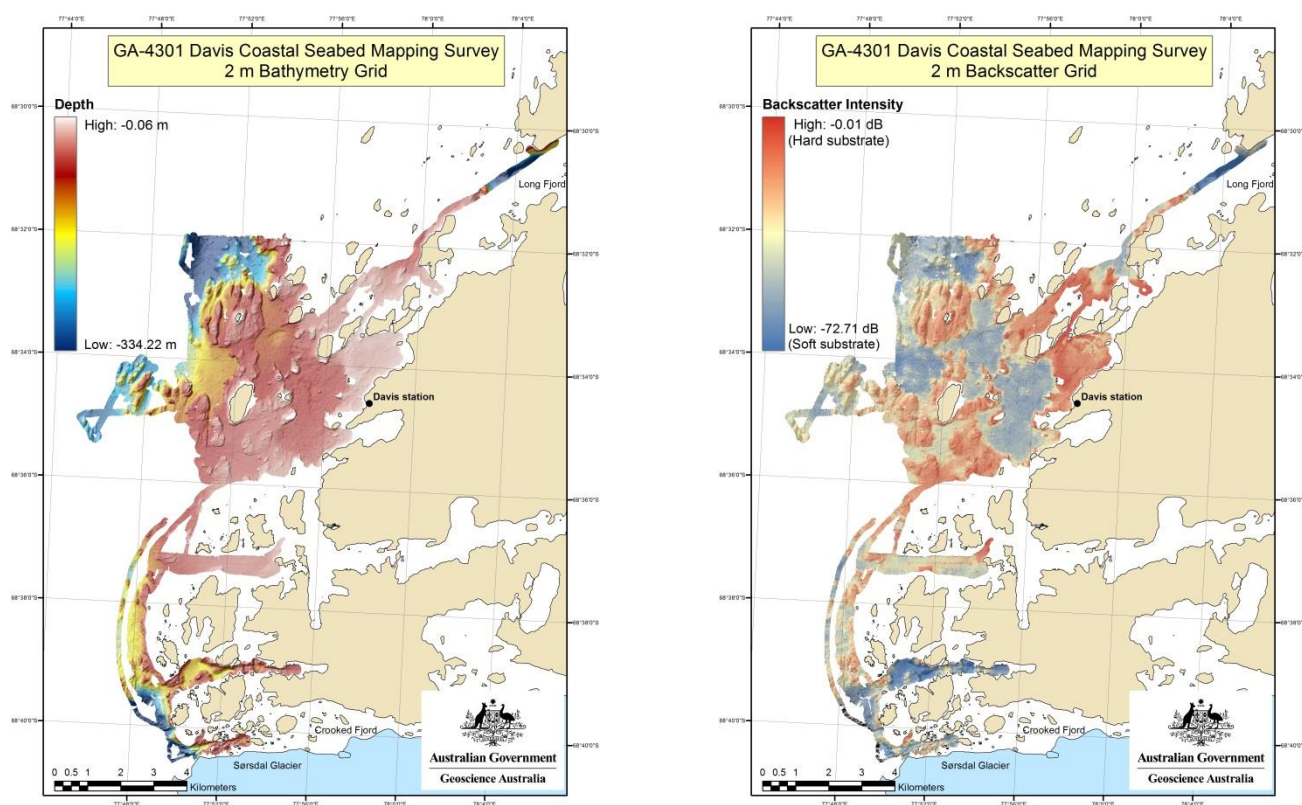


Figure 1. New high resolution bathymetry and backscatter grids for the coastal region of the Vestfold Hills, East Antarctica.