

Introduction for Drake Passage multibeam data release via PANGAEA

The multibeam bathymetric data presented here were collected in 2008 and 2011 during two approximately 5-week-long cruises of the U.S. Antarctic Program's ice-breaking research vessel, RVIB *Nathaniel B. Palmer*. Approximately 50,000 km² of multibeam bathymetry data were collected from sites on the outer continental shelf south of Chile and Argentina, sites within the Drake Passage, and sites on the continental shelf of the West Antarctic Peninsula, as well as along transits between those sites (Figure 1).

The primary objectives of the cruises were to collect fossil and live cold-water coral specimens for paleo-oceanographic and biologic studies. The bathymetric mapping was carried out to aid in the selection of sampling sites. Multibeam data were collected whenever feasible during transits and while collecting other data. An effort was made during transits to follow routes that would allow us to add to or improve the quality of existing coverage.

The two cruises were funded by the National Science Foundation (NSF) on the Research Vessel Icebreaker (RVIB) *Nathaniel B. Palmer*. They are identified by NSF and the U.S. Antarctic Program as NBP0805 and NBP1103 and by the U.S. Geological Survey (USGS) as field activity numbers 08004 and 11002, respectively. Parts of the NBP0805 cruise were devoted to geophysical studies in the Scotia Sea led by Drs. Ian Dalziel and Lawrence Lawver from University of Texas; those data are not included here.

The RVIB *Nathaniel B. Palmer* is equipped with a Kongsberg Simrad EM120 hull-based multibeam sonar arranged in a Mill's cross array with separate units for transmitting and receiving. The EM120 is a 12 kHz system with 191 beams per swath. The EM120 was continuously running throughout both cruises; data were recorded wherever the seafloor was not previously mapped by multibeam sonar or previous mapping data were of questionable quality. Only a few days of data collection were lost due to heavy seas or breaking ice. Sound velocity was uploaded during acquisition into SIS (Seafloor Information System). Expendable bathythermographs (XBTs) were deployed on an as-needed basis when there were noticeable changes in surface salinity. When CTDs were performed for unrelated water sampling purposes the sound velocity data were also uploaded into SIS.

Processing of the multibeam data differed between the two cruises. During the 2008 cruise, MBSystems was used for processing. Many science personnel participated in ping-editing and a multibeam technician compiled and checked all the processed data. In 2011, CARIS HIPS and SIPS 7.0 software was installed on the RVIB *Nathaniel B. Palmer* and used to process the multibeam data collected during that cruise. Two trained technicians processed all of the 2011 multibeam data. The processed 2008 data were brought into CARIS in 2011 to ensure collection and processing consistency; no discrepancies between the two data sets were found.

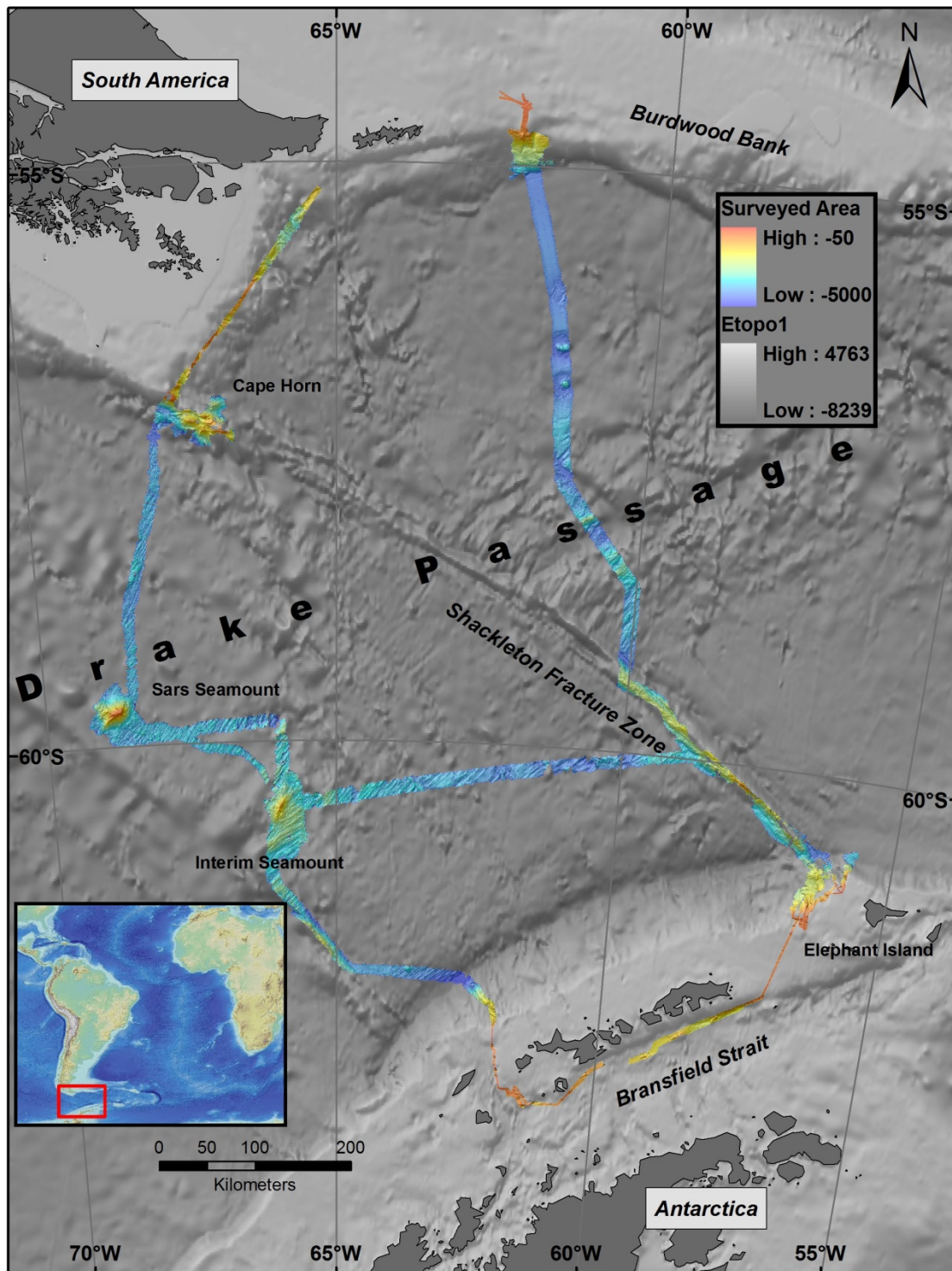


Figure 1: Location map showing multibeam bathymetry coverages from cruise NBP1103 and the portion of cruise NBP0805 that was in the Drake Passage.

Related Publications:

- Burke, Andrea, Robinson, Laura F., McNichol, Ann P., Jenkins, William J., Scanlon, Kathryn M. and Gerlach, Dana S., 2010, Reconnaissance dating: a new, rapid radiocarbon method applied to assess the temporal and spatial distribution of Southern Ocean deep-sea corals. *Deep-Sea Research Part I: Oceanographic Research Papers*, v.57, iss. 11, p. 1510-1520. <http://www.sciencedirect.com/science/article/pii/S0967063710001627>
- Waller, Rhian G., Scanlon, Kathryn M., and Robinson, Laura F., 2011, Cold-water coral distributions in the Drake Passage area from towed camera observations – initial interpretations. *PLoS-One* v.6, iss.1, p. 1-9. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0016153>
- Margolin, Andrew R., Robinson, Laura F., Burke, Andrea, Waller, Rhian G., Scanlon, Kathryn M., Roberts, Mark L., Auro, Maureen E., van de Flierdt, Tina, 2014, Temporal and spatial distributions of cold-water corals in the Drake Passage: insights from the last 35,000 years. *Deep-sea Research Part II: Topical Studies in Oceanography*, v.99, Jan. 2014, p.237-248. <http://dx.doi.org/10.1016/j.dsr2.2013.06.008>
- R.G. Waller, L.F. Robinson, 2012, Southern ocean corals: Cabo de Hornos, *Coral Reefs*, 31 (1) (2012), p. 205-205
- L.F. Robinson, T. van de Flierdt, 2009, Southern Ocean evidence for reduced export of North Atlantic Deep Water during Heinrich event 1. *Geology*, 37 (3) (2009), pp. 195–198
- A. Burke, L.F. Robinson, 2012, The Southern Ocean's role in carbon exchange during the last deglaciation. *Science*, 335 (6068) (2012), pp. 557–561