PLATE 7

SEDIMENT CORE LOCATIONS IN THE NORTHERN NORWEGIAN-GREENLAND SEA

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Core locations are compiled from data supplied by the Alfred Wegener Institut für Polar und Meeresforschung (AWI) in Bremerhaven, (Special Research Program 313), from GEOMAR, Forschungszentrum für Marine Geowissenschaften der Christian-Albrechts-Universität zu Kiel, from Christian-Albrects-Universität zu Kiel, from Norsk Polarinstitutt, from Institutt for biologi og geologi, Universitetet i Tromsø, and from Lamont-Doherty Earth Observatory of Columbia University in New York.

In addition, drill sites from the Deep Sea Drilling Project, Leg 38 (Talwani, Udintsev et al. 1976) and the Ocean Drilling Program, Leg 151 (ODP Leg 151 Shipboard Scientific Party 1994) are included.

A wide range of devices (such as box, gravity and piston cores) were used during these expeditions. The source institutions should be contacted about the cores and their contents.

(continued from page 24)

Map Characteristics

A glance at Plate 6 reveals the distribution of the stations of observed heat flow from which the contours are drawn. It is readily apparent that there is a paucity of data along the rise axis (which is expected due to the lack of sediment in the rift valley of the spreading center). The greatest density of data, adjacent to Svalbard, reveal three regions of elevated heat flow > 150 mW/m^2: the Knipovich Ridge, the entire Molloy and Spitsbergen Transform Region, and a parallel band of high heat flow atop the Yermak Plateau connecting with the Woodfjord volcanics on Svalbard.

Even though there is a paucity of bathymetric data along the northernmost Spitsbergen Transform, heat flow collected from the YMER icebreaker (Crane et al. 1982), reveal that there are most likely two pull-apart, short-segment spreading centers within the Spitsbergen Transform: the Molloy Ridge (already described in the above mentioned articles), and one trending NE reaching from the Spitsbergen Transform up to the Yermak Plateau. The thermal boundaries of the latter mid-transform "pull-apart basin" are poorly defined by only three heat flow values ranging from 212-442 mW/m^2.

Further south, high heat flow can be found along the Mohns Ridge in a linear shaped region trending perpendicular to the Mohns Ridge, NW towards Greenland and SE towards northern Norway. In addition, the Jan Mayen Transform Fault appears to be associated with high heat flow. The fact that transform faults in the northern Norwegian-Greenland Sea are "hot" rather than "cold" is in marked contrast to the theory that fracture zones are "heat sinks" that cut across oceanic crust. Certainly, tectonic evidence suggests that the evolution of the Norwegian-Greenland Sea is characterized by propagating ridges jumping or moving into preexisting fracture zones. The most recent example of this is the propagation of the Mohns Ridge into the ancient Spitsbergen Shear Zone forming the Knipovich Ridge in the process (Crane et al. 1991).

Figure 3 illustrates the true heat flow color scheme as a reference for Plate 6 which depicts crustal heat flow superimposed over bathymetry.

Acknowledgements

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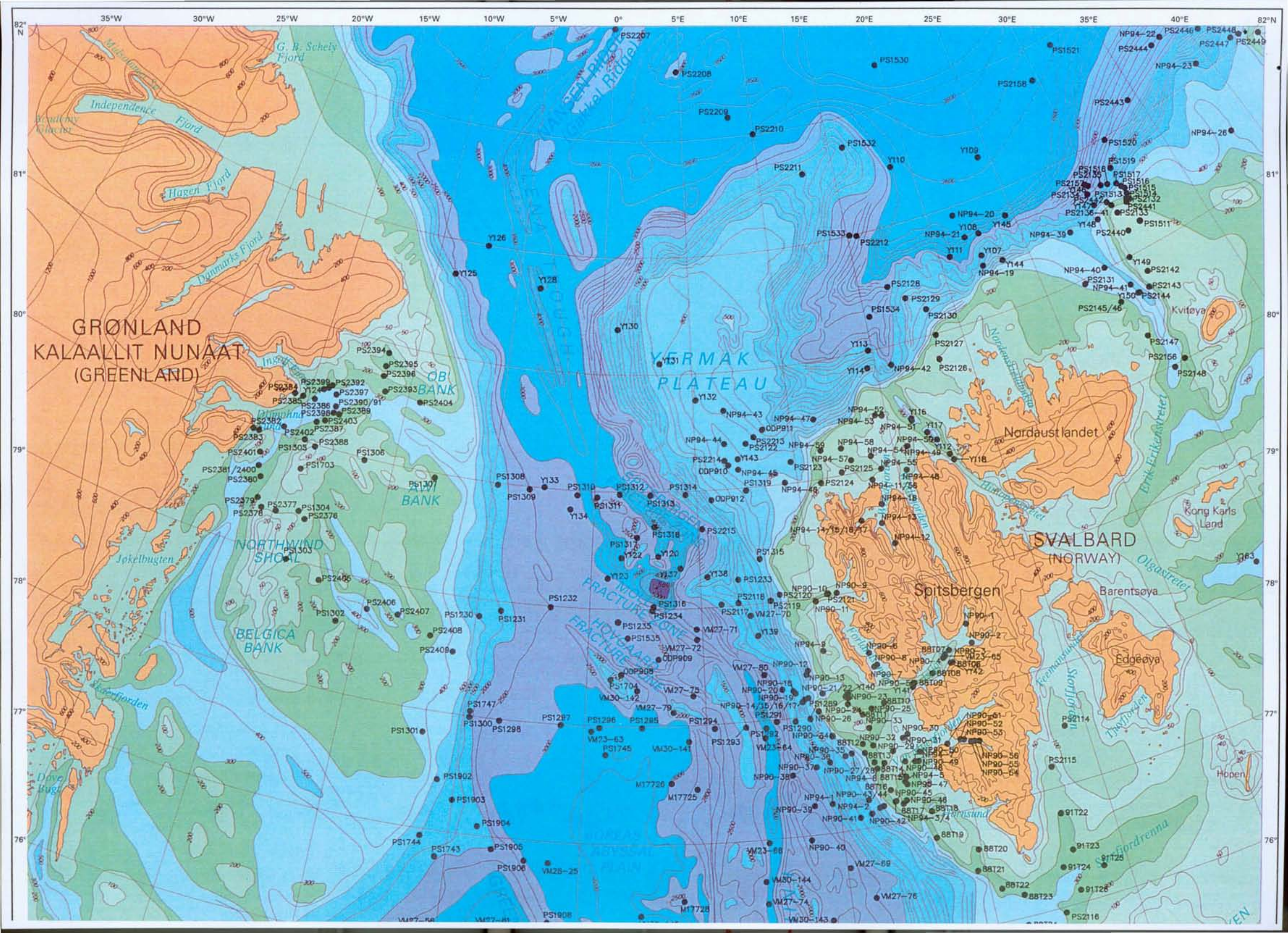
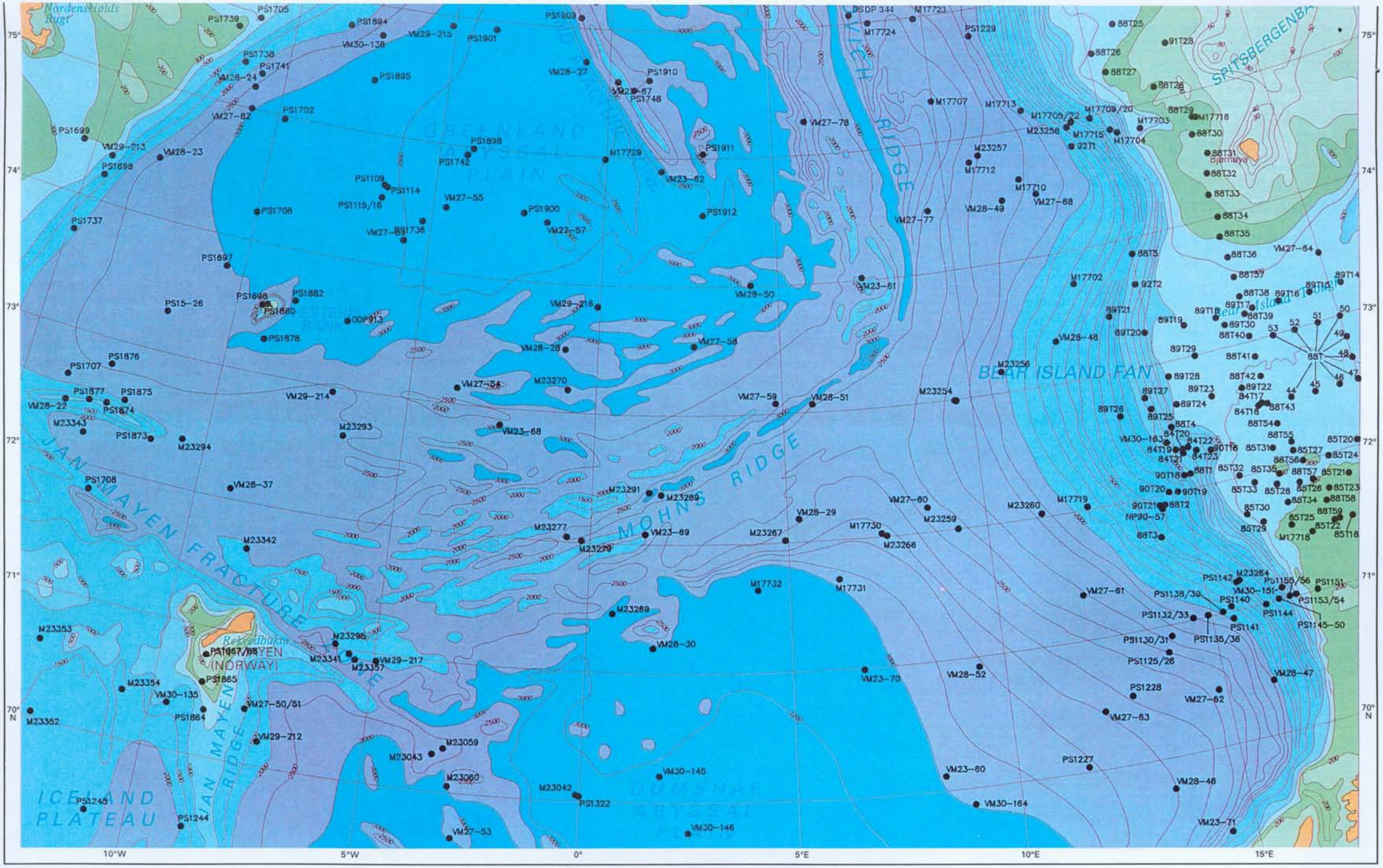

GRØNLAND
KALAALLIT NUNAAT
(GREENLAND)
SVALBARD
(NORWAY)
Spitsbergen
Nordaustlandet
Edgeøya
Barentsøya
Kong Karls Land
Kvitøya
Hopen
YERMAK
PLATEAU
BELGICA
BANK
NORTHWIND
SHOAL
AWI
BANK
OB'
BANK
Independence Fjord
Hagen Fjord
Danmarks Fjord
G. B. Schely Fjord
Academy Glacier
Jøkelbugten
Dove Bugt
Olgastretet
Erik Eriksenstretet
Storfjorden
Hinlopenstretet
35°W
30°W
25°W
20°W
15°W
10°W
5°W
0°
5°E
10°E
15°E
20°E
25°E
30°E
35°E
40°E
82°N
81°
80°
79°
78°
77°
76°



HYPSOMETRIC TINTS

Meters		
Land Mass		1000
Sea Level 0		2000
100		3000
200		4000
300		5000
500		
1000		

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Polar Stereographic Projection Scale 1: 3,000,000 at Latitude 71°N

1995

PS	Alfred-Wegener-Institute for Polar and Marine Research, Bremerhaven, Germany
M	Special Collaborative Program 313, University of Kiel, Germany
NP	Norwegian Polar Institute, Oslo, Norway
T	Institute for Biology and Geology, University of Tromsø, Norway
VM	Lamont Doherty Earth Observatory, U.S.A.
Y	Department of Geology, University of Stockholm, Sweden
DSDP	Deep Sea Drilling Project
ODP	Ocean Drilling Program