AWI Bathymetric Chart of the Weddell Sea, Antarctica, 1 : 1 000 000 at 70°S

Legend

Depths

Metres: 0, 200, 500, 1000, 2000, 4000, 6000

Depth Contours and Grid Data

- 50 m
- 100 m
- 1000 m
- Depression
- Grid data point

Scientific Stations

- Permanently occupied station
- Summer station

Continental and Coastal Features

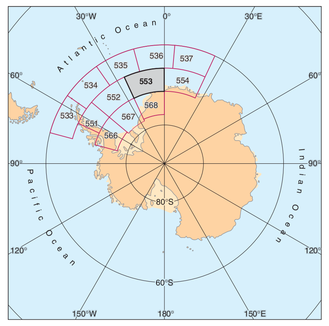
- Ice shelf
- Grounded ice
- Glacier tongue
- Coastline (with date)
- Ice front (with date)
- Flowline on ice shelf

Kilometres (70°S): 50 km, 0 km, 150 km

Nautical Miles (70°S): 10 nm, 0 nm, 100 nm

Scale: 1 : 1 000 000
Map projection: Mercator
Standard parallel: 70° S
Horizontal datum: World Geodetic System 1984 (WGS84)

Sheet Index of the AWI BCWS



Vertical reference system: Mean Sea Level (MSL)
Vertical datum: Instantaneous Sea Level

The map projection parameters are in accordance with the regulations of the IOC/IHO GEBCO guidelines, IHB Bathymetric Publication No. B-7.
One kilometre on the map at the standard parallel represents one kilometre in natural scale on earth.
Chart datum is the instantaneous sea level at the time of observation. Tidal heights are reckoned up of 2 m. Depths are shown in metres assuming a sound velocity in water of 1500 m/s.
Conversion parameters (nominal values) to achieve elevations in feet multiply by 3.2808 and to achieve depths in fathoms multiply by 0.5468.

Geographical names and their spelling do not necessarily reflect recognition of the political status of an area by the editor.
References:
• IHB, 1986, Gazetteer of Geographical Names of Undersea Features. IHB Publication B-6, 2nd Edition 1987.
• Gazetteer of the Antarctic. DMA, 4th edition April 1990.
• Hydrographic Office of the Navy (USA) (1974): The Antarctic Pilot. 4th edition, corrected to 1974 (Page 1 ff.).
• Index of German-Language Antarctic Place Names. Institut für Angewandte Geodäsie, Frankfurt am Main, 1993.

Multibeam survey by RV "Polarstern" carried out by Jens Fiocke, Rick Hagen, Klemens Heidland, Heinrich Hinze, Jürgen Monk, Fred Niederjasper, Hans Werner Schenke, Tilo Schöne and Stefan Steinmetz.

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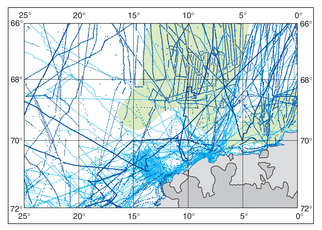
Data Sources and References



Data Source	Area	Track Line	Spot Data
GEBCO			
Hydrographic Organizations			
Scientific Organizations			
Satellite Altimetry			

1. General Bathymetric Chart of the Oceans (Data from GEBCO Digital Atlas)
IOC, IHO, and BODC, 1994. Supporting Volume to the GEBCO Digital Atlas, published on behalf of the Intergovernmental Oceanographic Commission (of UNESCO) and the International Hydrographic Organization as part fo the General Bathymetric Chart of the Oceans (GEBCO). British Oceanographic Data Centre, Birkenhead.
GEBCO Sheets 5.16 and 5.18, bathymetric contours, track lines, and bedrock contours

2. Hydrographic Organizations

2.1 International Hydrographic Organization (IHO):
INFODOCB, Boulder, Colorado; U.S. NGDC, GEODAS searches on bathymetry: November 1992; April 1993

2.2 National Hydrographic Offices: Nautical Charts (various scales):
Norway
Soviet Union / Russia
United Kingdom

2.3 National Hydrographic Offices: Plotting Sheets (various scales)
• GEBCO Plotting Sheets (GPS) 1:1000000:
Argentina
Republic of South Africa
Soviet Union
• Plotting Sheets 1:500000:
Soviet Union / Russia

2.4 National Hydrographic Offices: Digital Data:
Norway
United Kingdom
United States of America

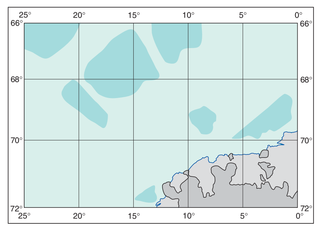
3. Scientific Organizations
• Alfred-Wegener-Institut für Polar- und Meeresforschung, Germany:
RV "Polarstern" Antarctic expeditions ANT (since 1983):
Multibeam data from SeaBeam and Hydrosweep system, single beam data from Atlas/Krupp Atlas echo sounder, narrow beam echo sounder, and Parasound sediment echo sounder.
• Japan Oceanographic Data Centre
• National Science Foundation, USA:
NANE expedition data 1977, 1978, 1985, 1993. A. Schenk, pers. comm.
• Sevmorgeologia, St. Petersburg, Russian Federation:
V. E. Andreev and V.S. Pozdeev, digital data, pers. comm.

4. Scientific Publications
• Drewry, D. J. (1983): Antarctica: Glaciological folio. SPRI, Cambridge, 1983.
• Hinze, H., V. Tinjasson (1985): Ice thickness and bedrock elevation in Western Dronning Maud Land, East Antarctica. Preliminary results. Annals of Glaciology, Vol.11, 42-45, 1985.
• Hinze, H. (1985): The Antarctic ice sheet and environmental change: a three-dimensional modelling study. Berichte zur Polarforschung 26, 1985.
• Japanese Antarctic Research Expedition (JARE), data reports no. 76-149, 1980-1987.
• Kolbin, G. A., Ya. D. Sklyarenko (1985): Geologicheskoe stroenie sela Ekstrom-Schelfovaya, Antarktida. Sankt-Petersburg, SZ 1988.
• Pozdeev, V. S., R.G. Kurnin (1987): Nekoye dannye o morfologii kolkovy lobotchasti i kontinentalnogo sklona morya Lazarevya. Sovetskaya antarkticheskaya ekspeditsiya (Sbornik Antarkticheskogo Antarktida, Doklady Komisii), 93, 68-71, 1987.
• Robin, G. de Q. (1958): Seismic shooting and related investigations. Norwegian-British-Swedish Antarctic Expedition, 1949-52. Scientific results, Vol. V. Glaciology-II. Norsk Polarinstitutt, Oslo, 1958.

5. Satellite Altimetry and Geophysical Data
• Kazinova, I.N., R.G. Kurnin, V.N. Masolov, G.E. Grikurov (1983): Antarctic crustal structure according to satellite altimetry data. In: Orovan, James, (eds) (1983): Antarctic earth science. (Proc.) 4th intl. symposium, 498-502, 1983.
• Rouxel, D., B. Monnereau, J. Verhoef, P. Cadet, B. Hinz (1992): Satellite gravity, bathymetry, and Z-A Scatterplots (1992): Tectonic chart for the Southern Ocean derived from GEOSAT altimetry data. In B.D.E. John (ed.), Antarctica as an exploration frontier - hydrocarbon potential, geology and hazards, Am. Assn. Petrol. Geol., Studies in Geol. 31, 89-100, 1992.
• Sandwell, D.T., W.H.F. Smith (1992): Global marine gravity from ERS-1, Geosat and Exact Repeat Mission altimetry. Version 4 April 1992, 1992 Dec 15, 1992.
• Schöne, T. (1997): Ein Beitrag zum Schwerefeld in Bereich des Nordostmeeres, Antarktis. Nutzung von Altimetermessungen des GEOSAT und ERS-1. Berichte zur Polarforschung 205, 1997.

6. Topographic Data
• Antarctic Digital Topographic Antarctic Database. Version 1.94 (G.). Institut für Angewandte Geodäsie, Frankfurt am Main, and Alfred-Wegener-Institut, Bremerhaven, Germany, 1994.

Accuracy of Bathymetric Depths



The bathymetric data contained in this chart is evaluated from various data sets of different quality and age. Gridding, contouring, and contouring are in accordance with the IHO standards (IHB S-44), applied to a Cartesian coordinate system.
Reported, but unconfirmed or suspect depths were omitted if they conflict with morphologic evidence from other sources.

The positional accuracy of bathymetric data, contour lines and features in relation to the graticule is approximately 1 mm (or 1 kilometre on earth).
Mean positional error, horizontal accuracy e_h for contour lines of the given scale may be estimated by Koppe's empirical formula which depends on the terrain slope α (sin50 = m, 0<50 m):

$$e_h = a + b \cdot \tan \alpha,$$

A vertical accuracy of better than 2% of depth was achieved with the compilation from heterogeneous depth data. However, some suspect data may still be present.
Mean depth error e_v of a contour or interpolated depth value from the map may be estimated by

$$e_v = a + b \cdot \tan \alpha,$$

(α=50 m and α=0 m).
In areas with slopes greater than 20° the error may exceed 200 m due to generalization effects.

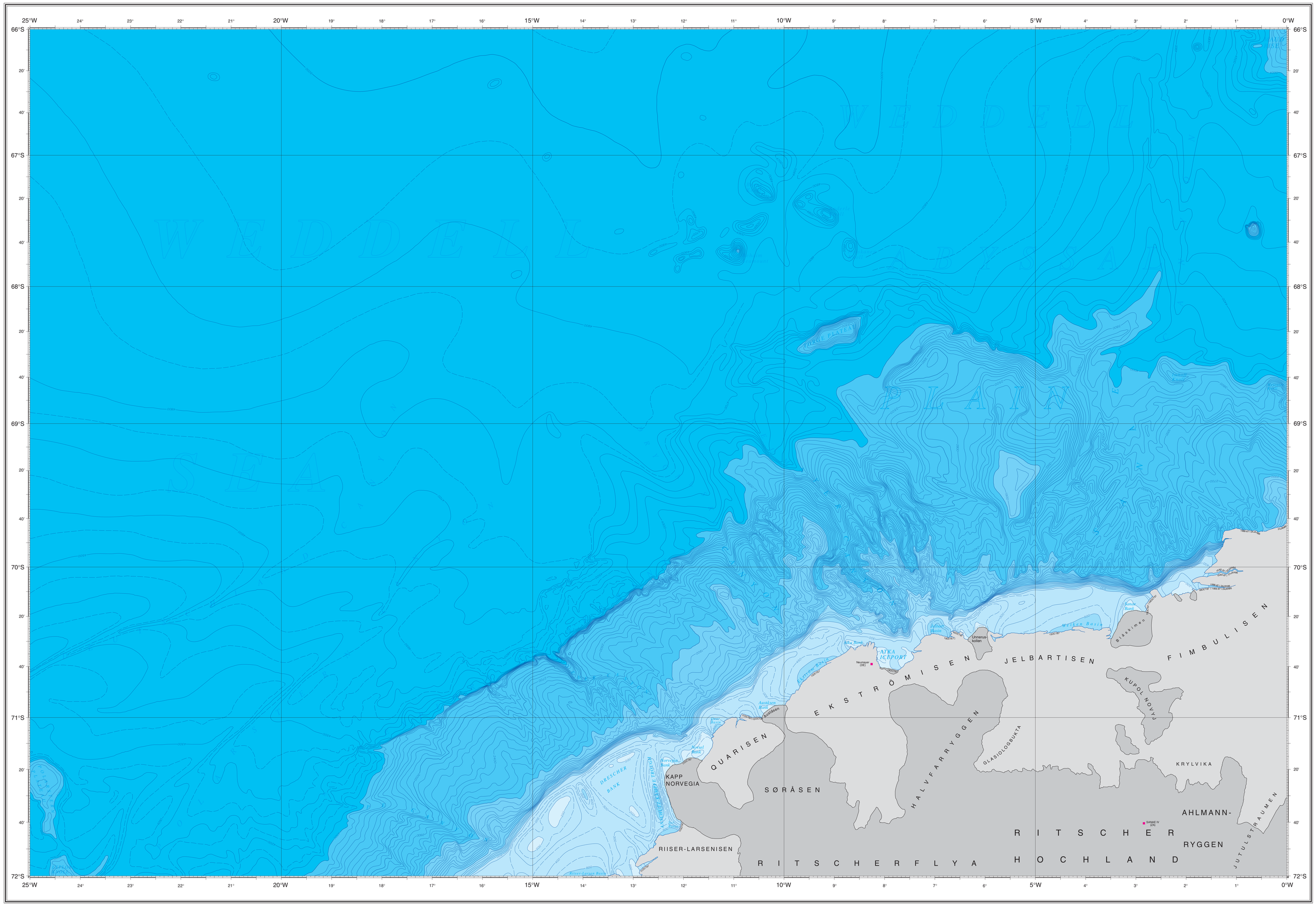
Despite an automatic accuracy estimation, a classification may reflect how closely the ideal has been approached under the existing constraints, e.g. inhomogeneous data and seabed roughness. Thus, categories for the accuracy of bathymetric depths were chosen. The map of bathymetric accuracy gives an overview of accuracies, but it does not reflect special features, e. g. canyons or seamounts. Areas with an estimated depth accuracy of worse than 200 m, better than 200 m, better than 100 m, and better than 50 m are indicated.

Reference: Hinze, H. (1994): Charting the Bathymetry of Weddell Sea, Antarctica. Marine Geodesy, Vol.17, 139-145.

Caution.
Due to incomplete survey coverage dangers may exist, particularly within the 200 metre depth contour.
For further information on navigation, magnetic variation, ocean currents, and ice in the area of this map see Sailing Directions and Routing Charts and contact the Hydrographic Offices or IHB.
For further information on research stations and glaciology contact the SCAR. For further informations on bathymetry contact the IHB IOC GEBCO Committee or AWI.

Accuracy

- ± 50 m
- ± 100 m
- ± 200 m
- Worse than ± 200 m


25°W
24°
23°
22°
21°
20°W
19°
18°
17°
16°
15°W
14°
13°
12°
11°
10°W
9°
8°
7°
6°
5°W
4°
3°
2°
1°
0°W
66°S
67°S
68°S
69°S
70°S
71°S
72°S
20'
40'
W E D D E L L
S E A
E K S T R Ö M I S E N
J E L B A R T I S E N
F I M B U L I S E N
Q U A R I S E N
H A L V F A R R Y G G E N
G L A S I O L O G B U K T A
K U P O L N O V A
K R Y L V I K A
S Ø R Å S E N
K A P P
N O R V E G I A
R I I S E R - L A R S E N I S E N
R I T S C H E R F L Y A
R I T S C H E R
H O C H L A N D
A H L M A N N -
R Y G G E N
J U T U L S T R A U M E N
D R E S C H E R
B A N K
Vestfjella
Dronning Maud Land
Ekström Ice Shelf
Jelbart Ice Shelf
Lazarev Ice Shelf
Riiser-Larsen Ice Shelf
Nivlisen Ice Shelf
Fimbulisen
Lützow-Holm Bay
Sverdrup Bay
Lützow-Holm Bay
Vestfjella
Neumayer (GER)
Norway Bay
Kapp Norvegia
Riiser-Larsen Bay
Sverdrup Bay
Sverdrup Bay
Lützow-Holm Bay
Lützow-Holm Bay
Lützow-Holm