Alfred Wegener Institute for Polar and Marine Research

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

AWI BCWS 551xxx

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

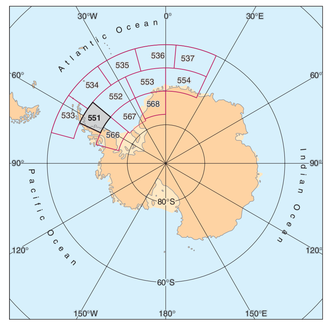
- Ice shelf
- Grounded ice
- Glacier tongue
- Coastline (1000/962)
- Ice front (0100/187)
- with date
- Flowline on ice shelf

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 millimetre on the map at the standard parallel represents one kilometre in natural scale (1:1 000 000).
Chart datum is the instantaneous sea level at the time of observation. Tidal heights are in the order 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.
Sources used:
- IHO/IOC Gazetteer of Geographical Names of Undersea Features, IHB Publication B-6, 2nd Edition 1997.
- Gazetteer of the Antarctic: ERA, 4th edition April 1990.
- Hydrographer of the Navy (USA) (1974): The Antarctic Pilot. 4th edition, corrected to 2nd Sept. 1981.
- Index of German Language Antarctic Place Names. Institut für Angewandte Geodäsie, Frankfurt am Main, 1993.

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

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Cartographic Compilation: Tilo Schöne
Cartography: Ute Wahrnsücker & Bernd Krippmann Media Factory GbR, Bremerhaven
Printing: Bundesamt fur Seeschiffahrt und Hydrographie, Hamburg
Publication: Alfred-Wegener-Institute, Bremerhaven, 1998

Preferred reference to this map:
Bathymetric Chart of the Weddell Sea, Antarctica, 1:1 000 000 at 70° S
(AWI BCWS 551, xxx), Alfred-Wegener-Institut, Bremerhaven,1998.

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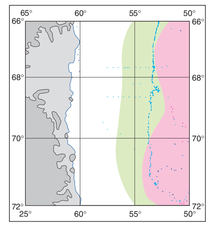
Data Sources and References



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)
British Oceanographic Data Centre (1994): General Bathymetric Chart of the Oceans, 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):
IHO-DCDB, Boulder, Colorado; U.S. NGDC, GEODAS searches on bathymetry: November 1992, April 1993.

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

2.3 National Hydrographic Offices: Plotting Sheets (various scales)
- GEBCO Plotting Sheets (GPS) 1:1500000:
  Germany
  Republic of South Africa
  Soviet Union
- Plotting Sheets 1:500000:
  Soviet Union / Russia

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

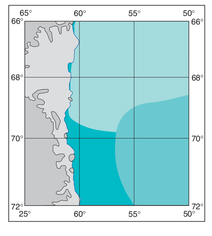
3. Scientific Organizations
- Alfred-Wegener-Institut "Ist Polar- und Meeresforschung, Germany:
  RV "Polarstern" Antarctic expeditions ANT (since 1985), single beam data from navigation echo sounder, narrow beam echo sounder, and Parasound sediment echo sounder.
- Norsk Polarinstitutt, Oslo, Norway:
  NARE expedition data 1977, 1979, 1983, A. Sorheim, pers. comm.
- Sevmorgeologia, St. Petersburg, Russian Federation:
  V.Krukov and V.S. Pozdilian, digital data, pers. comm.

4. Scientific Publications
- Hinze, H. (1984): Charting the Bathymetry of Weddell Sea, Antarctica. Marine Geodesy, Vol.17, 139-145.
- Huybrechts, P. (1992): The Antarctic ice sheet and environmental change: a three-dimensional modelling study. Berichte zur Polarforschung 99, 115 pp., Bremerhaven.
- Pozdeev, V. S., R.G. Kurlin (1987): Novaja dannaja o morfologii ledovoj bloschtschi i relefe podlednogo loshe i Dokladja dna w pulrsii tschasti bassejna Morja Uedddella (Sapadnaja Antarktida). Antarktika, Doklady Komissii, 1986, p. 75-87.

5. Satellite Altimetry Geophysical Data
- Schöne, T. (1997): Ein Beitrag zum Schwerefeld im Bereich des Weddellmeeres, Antarktis. Nutzung von Altimetermessungen des GEOSAT und ERS-1. Berichte zur Polarforschung 225, 1997.

6. Topographic Data
- RADAMS 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, therefore, of varying accuracy. Compilation and contouring are in accordance with the IHO standards (IHB S-44), applied to Antarctic waters.
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 (one millimetre on the map).
Mean positional error: horizontal accuracy e_h for contour lines of the given scale may be estimated by Kappe's empirical formula, which depends on the terrain slope α (α=30 m, b=2000 m):

$$e_h = 9 + d \cdot \cot \alpha$$

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: accuracy e_v of a contour or interpolated depth value from the map may be estimated by

$$e_v = 0.02 + d \cdot \tan \alpha$$

(α=30 m and b=200 m).
In areas with slopes greater than 20° the error may exceed 200 m due to generalization effects.

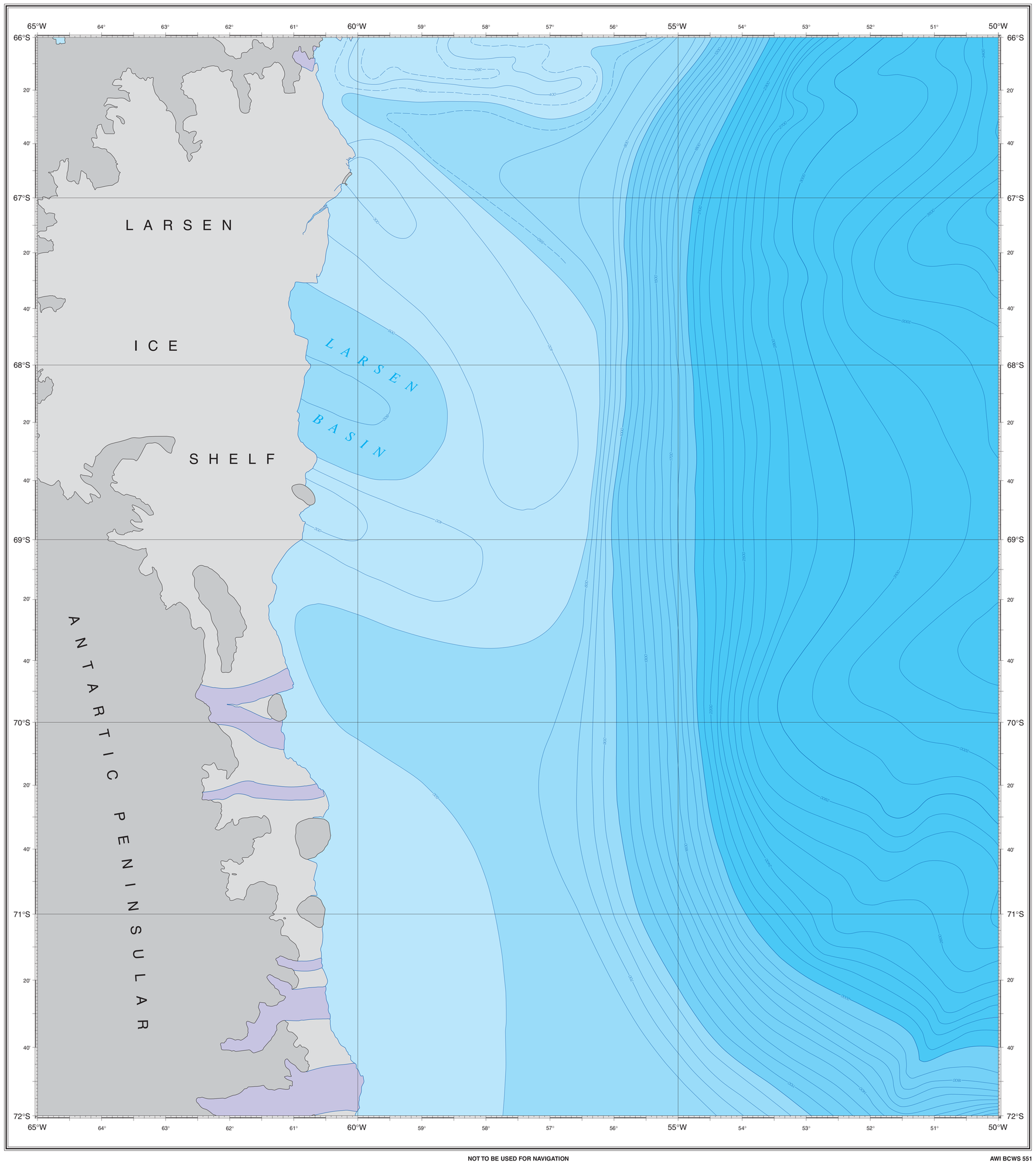
Despite an automatic accuracy estimation, a classification may reflect how closely the ideal has been approached under the existing constraints, e.g. inhomogeneous data and seabed roughness. Thus, categories for the accuracy of bathymetric depths were chosen. The map of bathymetric accuracy gives an 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. (1984): 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 (Antarctica) and Ice Navigation in Antarctica, published by the SCAR. For further information on meteorological 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



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NOT TO BE USED FOR NAVIGATION

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