



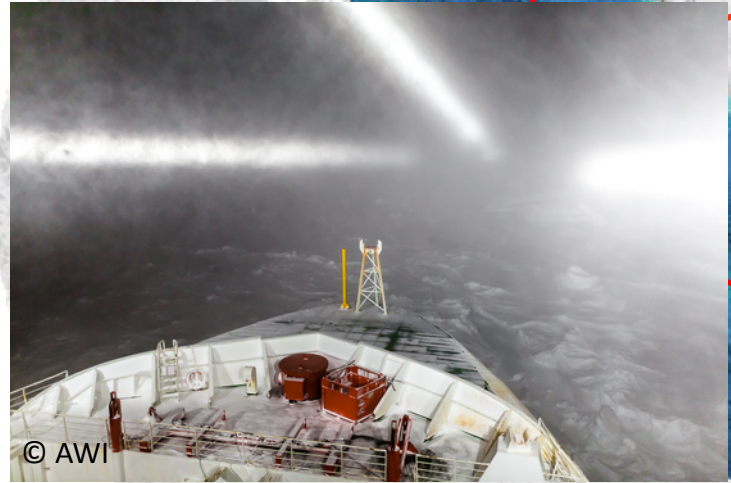
IBCSO v1.0

A new view on Antarctic bathymetry

Arndt, Jan Erik¹⁾; Schenke, Hans Werner¹⁾; Jakobsson, Martin²⁾; Nitsche, Frank O. ³⁾; Buys, Gwen⁴⁾; Goleby, Bruce⁵⁾; Rebesco, Michele⁶⁾; Bohoyo, Fernando ⁷⁾; Hong, Jong-Kuk ⁸⁾; Black, Jenny ⁹⁾; Greku, Rudolf ¹⁰⁾; Udintsev, Gleb ¹¹⁾; Barrios, Felipe ¹²⁾; Reynoso-Peralta, Walter ¹³⁾; Taisei, Morishita ¹⁴⁾; Wigley, Rochelle ¹⁵⁾;

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The Southern Ocean



www.gebco.net



Organization of the IBCSO



- Expert Group of SCAR since 2004



- Regional Mapping project of General Bathymetric Chart of the Oceans (GEBCO)



- Operates under the joint auspices of the Intergovernmental Oceanographic Commission (IOC) (of UNESCO) and the International Hydrographic Organization (IHO)



- Cooperation with the IHO Hydrographic Commission on Antarctica (HCA)



- Located at the Alfred Wegener Institute (AWI)



Data Contributors



British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

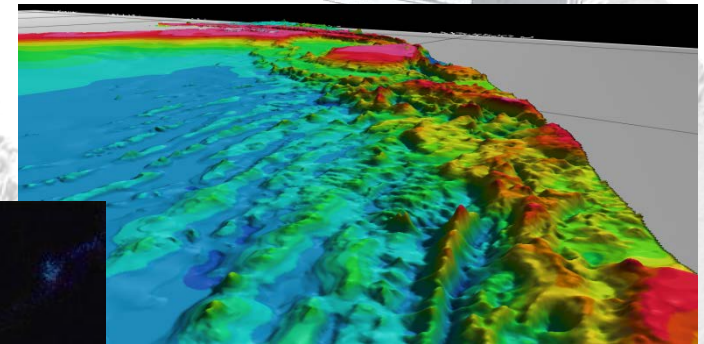
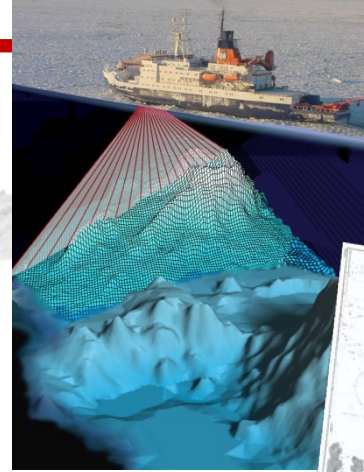


Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

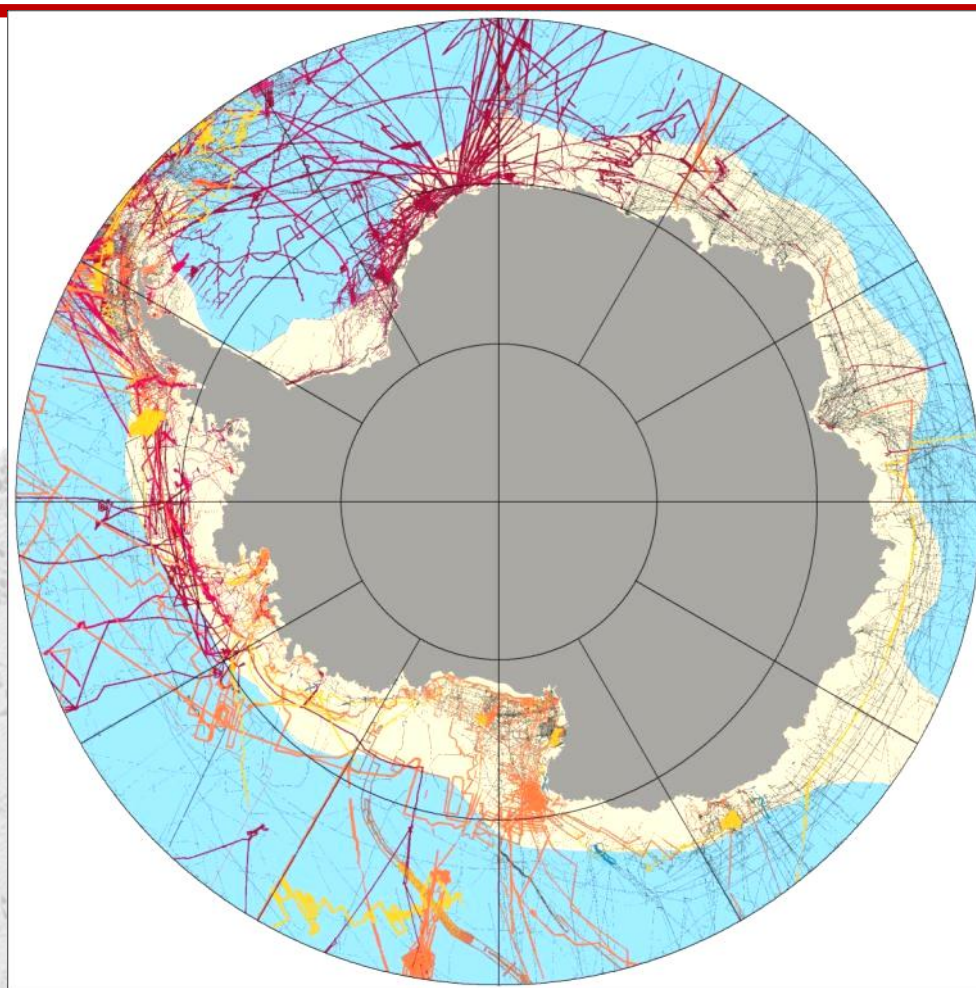


IBCSO Database

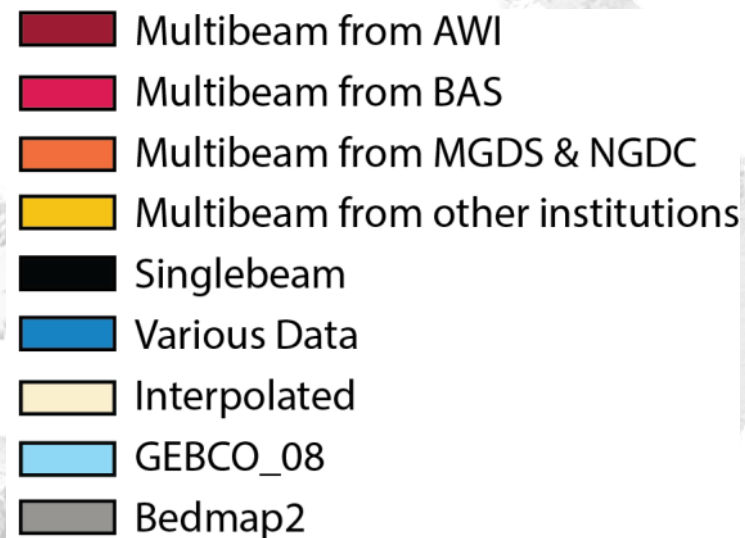
- Soundings
 - Multibeam
 - Singlebeam
- Nautical Charts
- Bathymetric Compilations
- Predicted bathymetry from satellite altimetry
- Continental Data

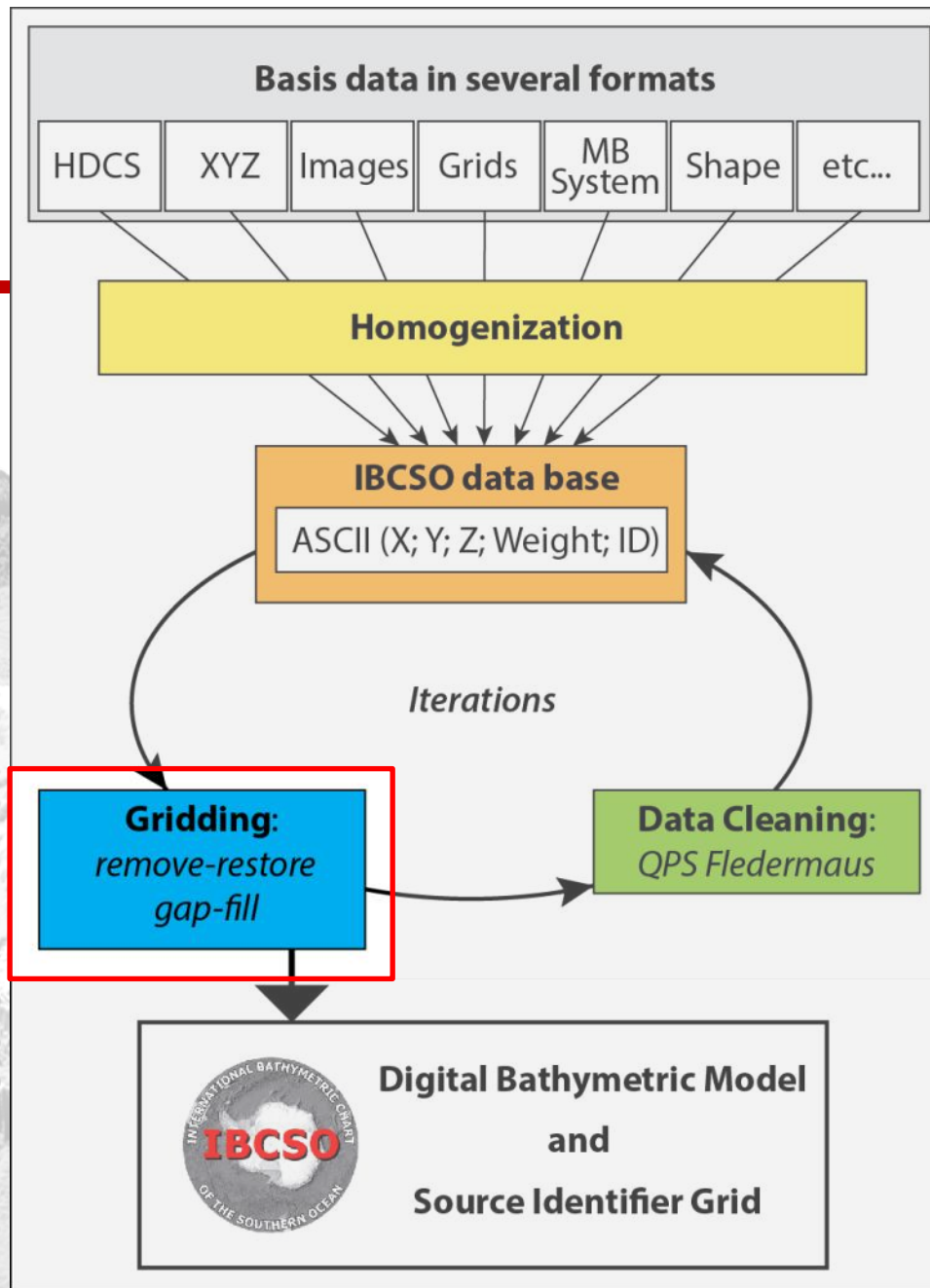


Data Distribution



- More than 4200 million soundings
- 15.4 % Multibeam
- 1.4 % Singlebeam





Gridding (remove-restore)

IBCSO Database

Blockmedian 2000 m

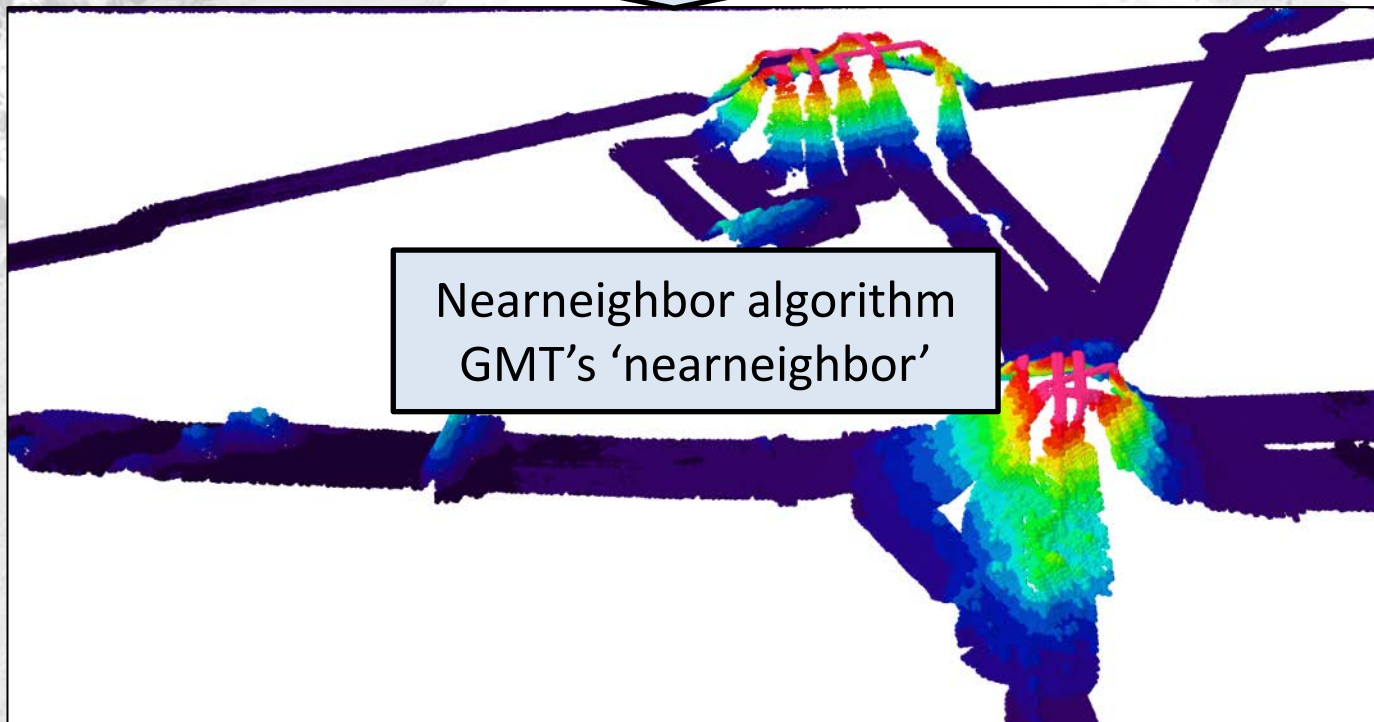
Splines under tension
GMT's 'surface'

Gridding (remove-restore)

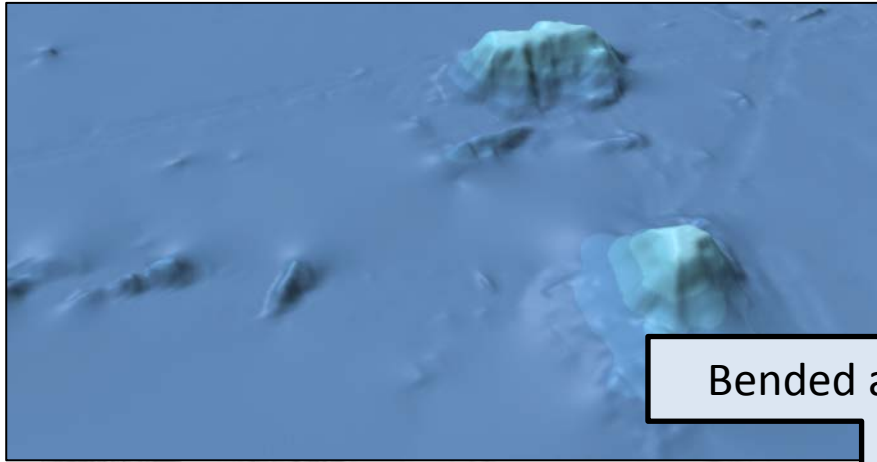
IBCSO Database

Only HQ

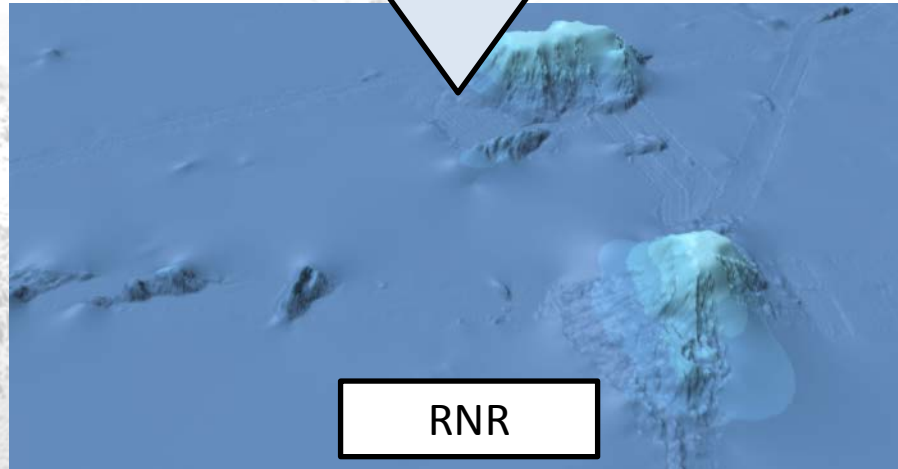
Blockmedian 500 m



Gridding (remove-restore)

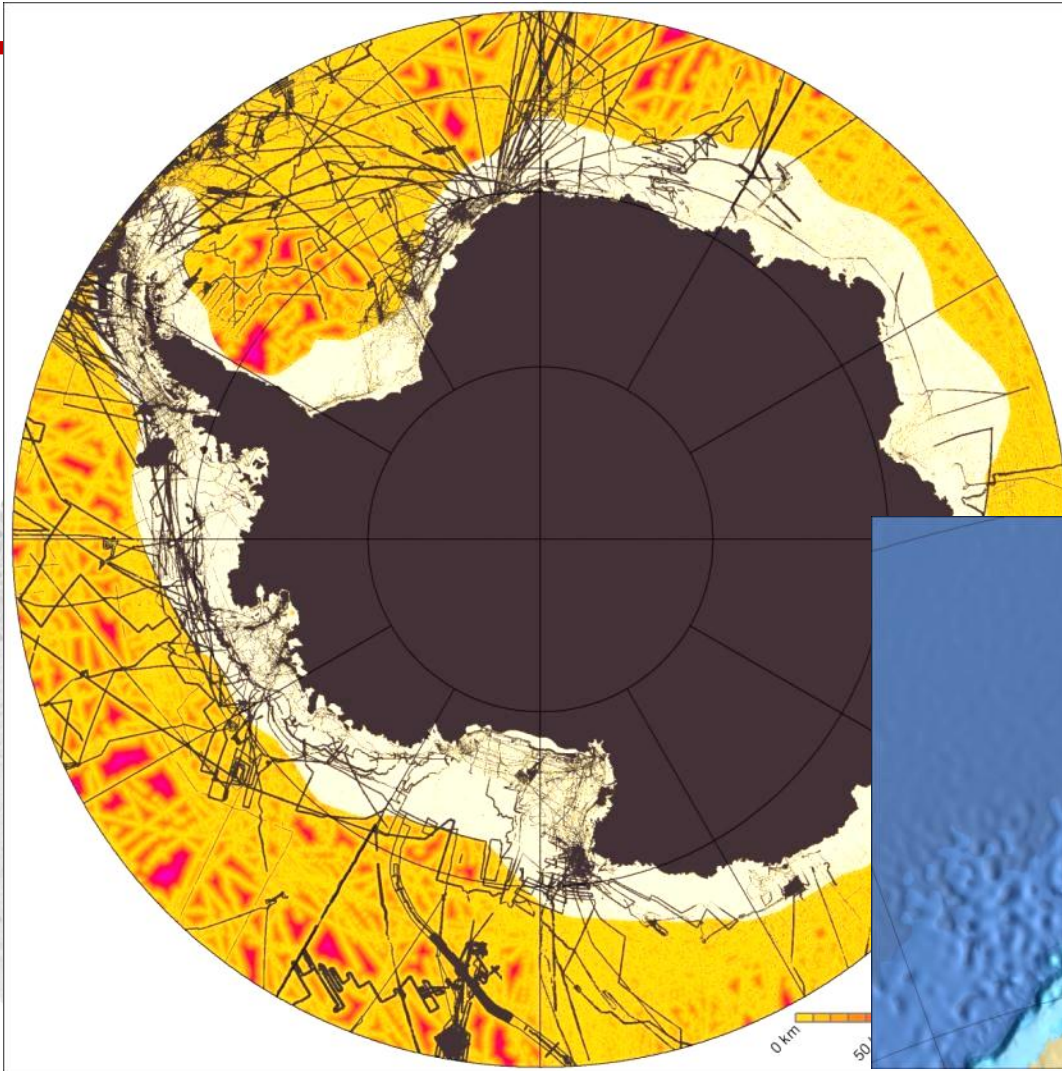


Bended and merged

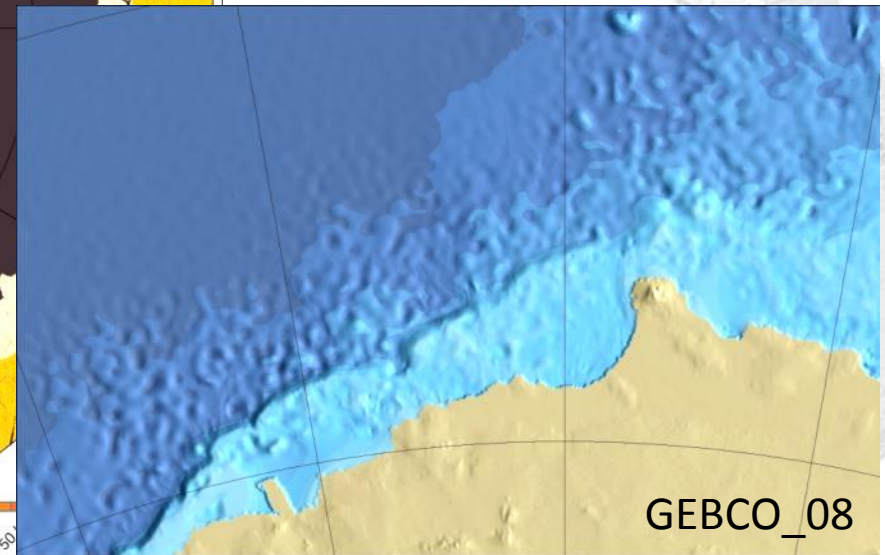


RNR

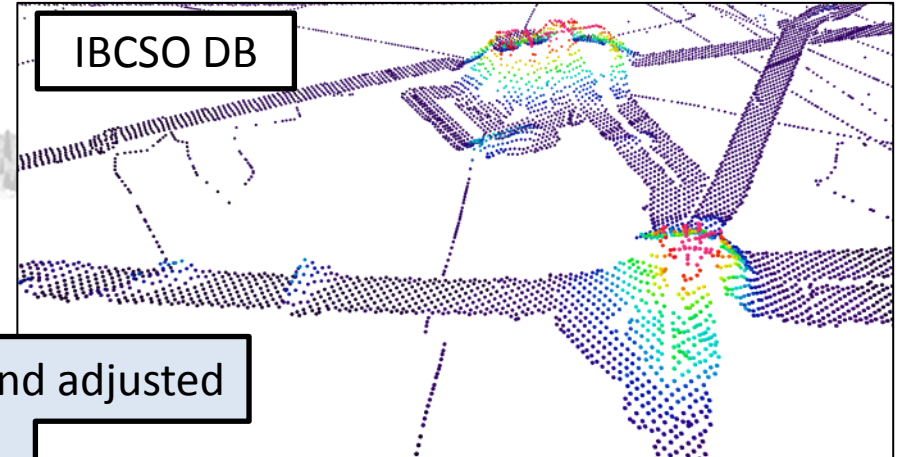
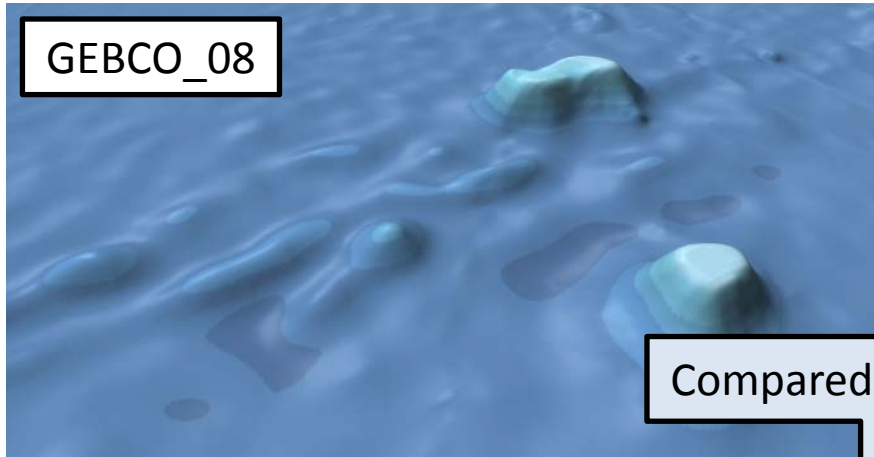
Gridding (gap-fill)



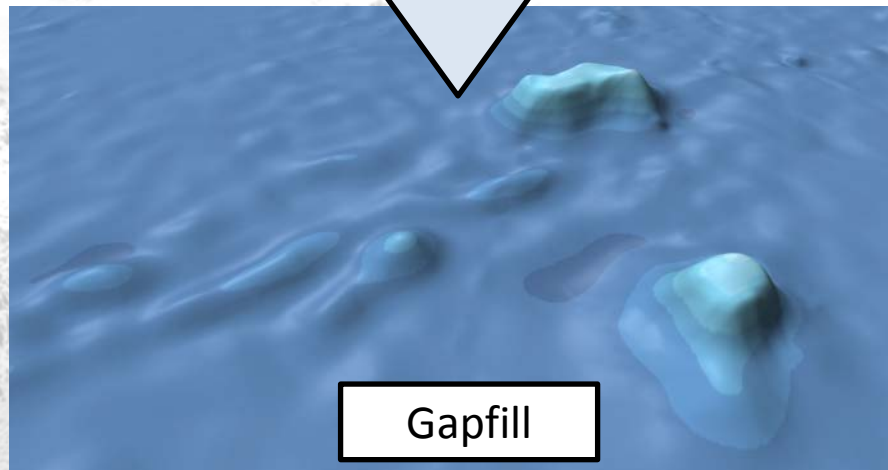
- Fill these gaps with predicted bathymetry from GEBCO_08
- **But:** not for continental shelves and southernmost parts



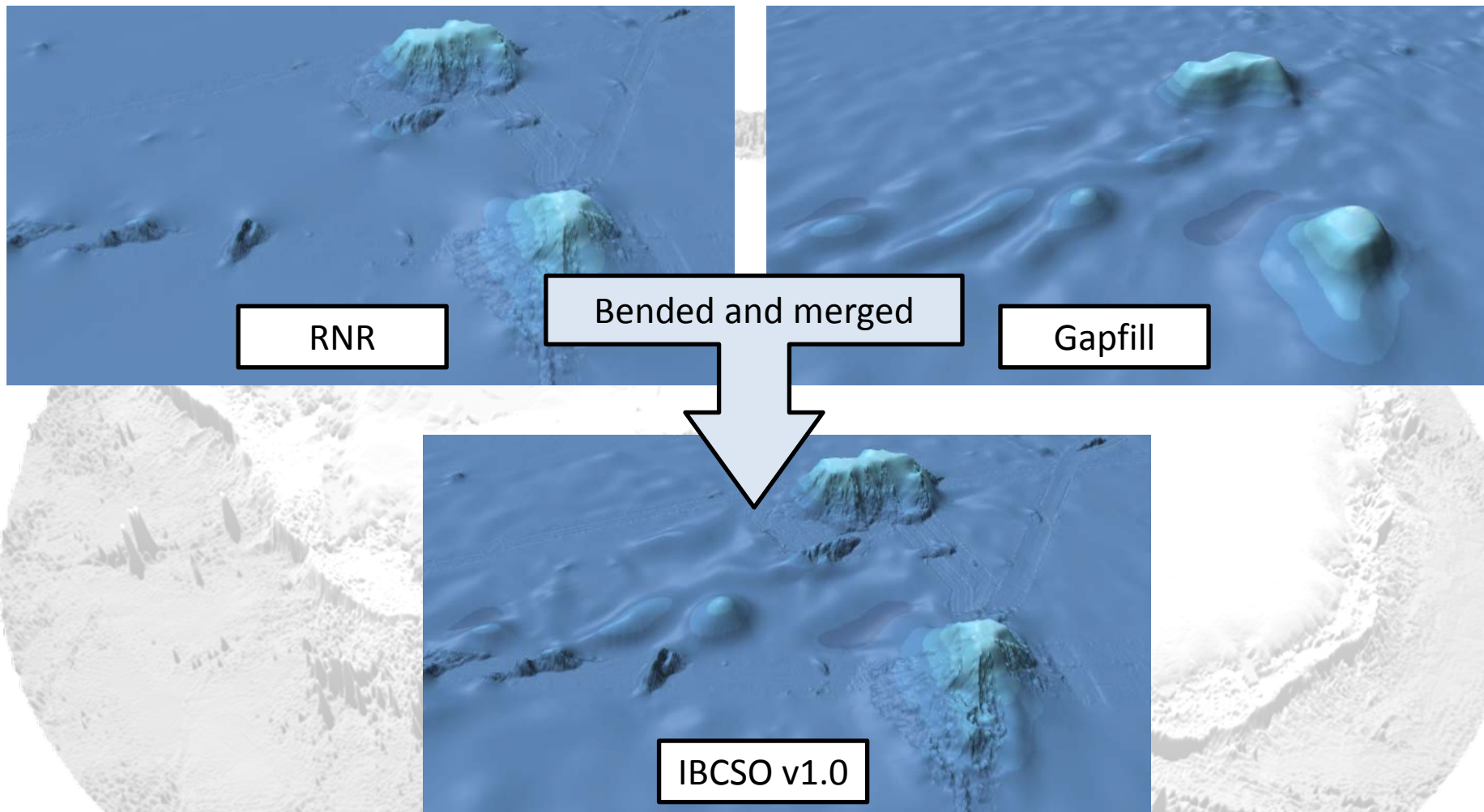
Gridding (gap-fill)



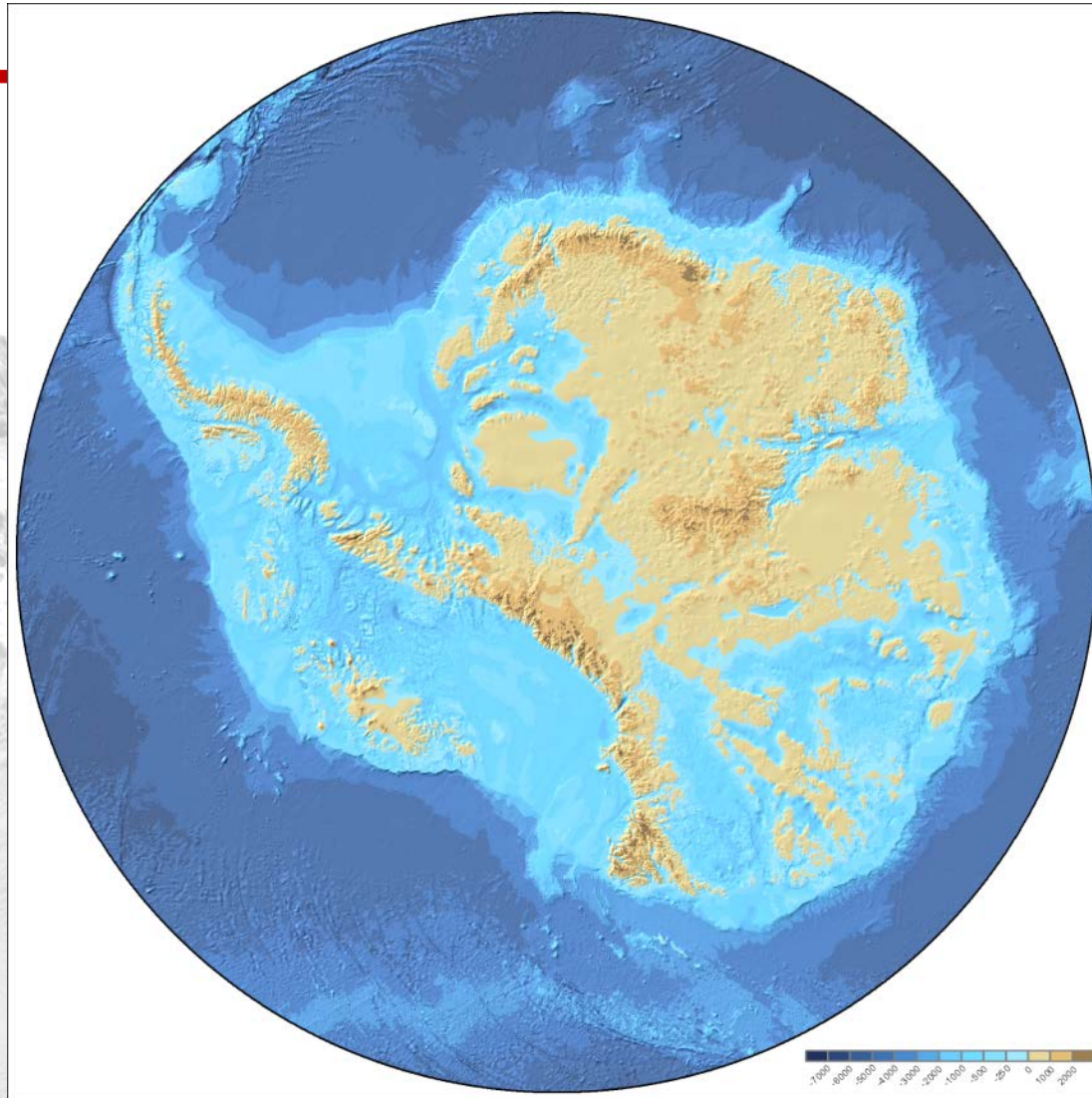
Compared and adjusted



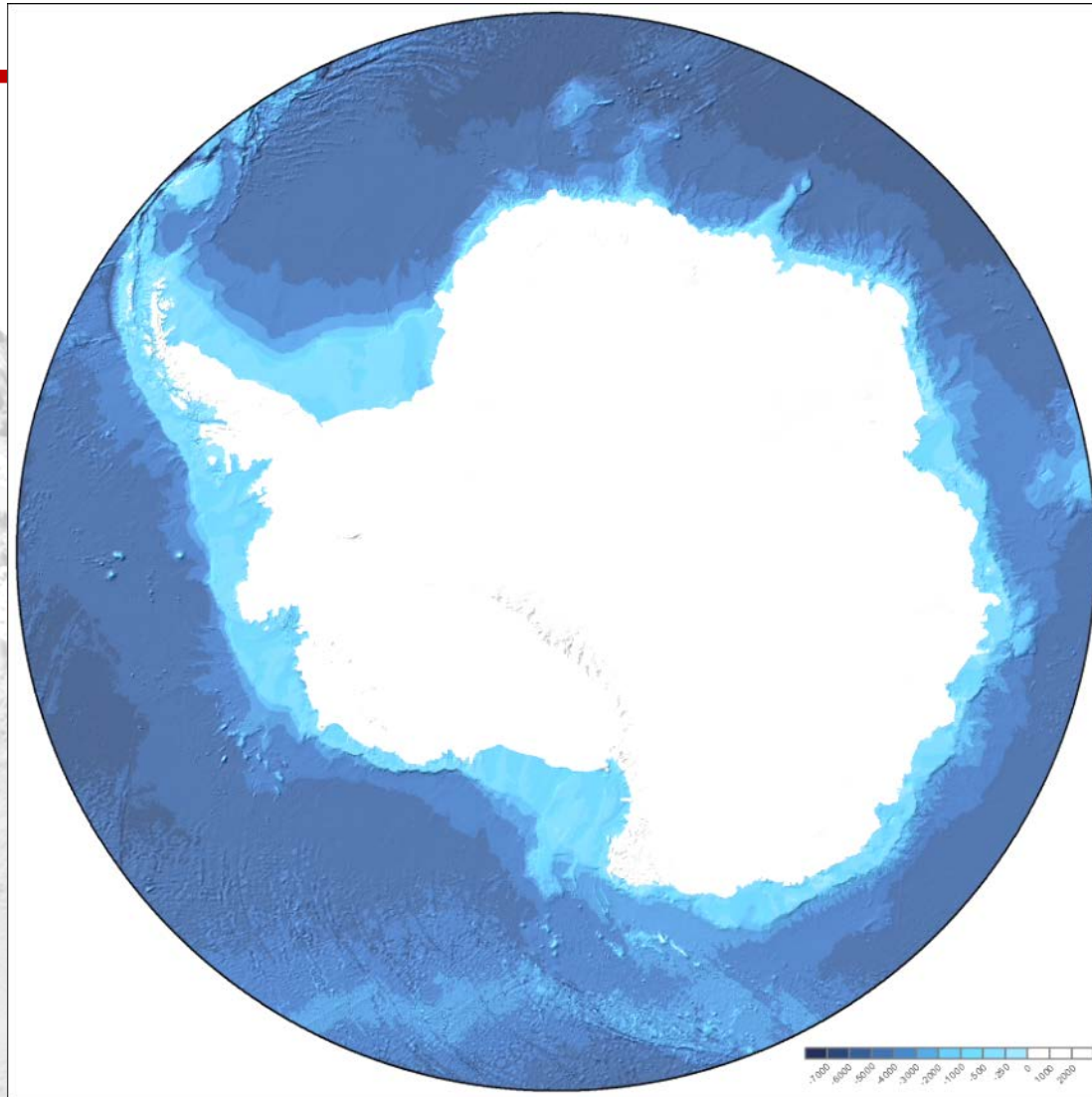
Gridding (gap-fill)



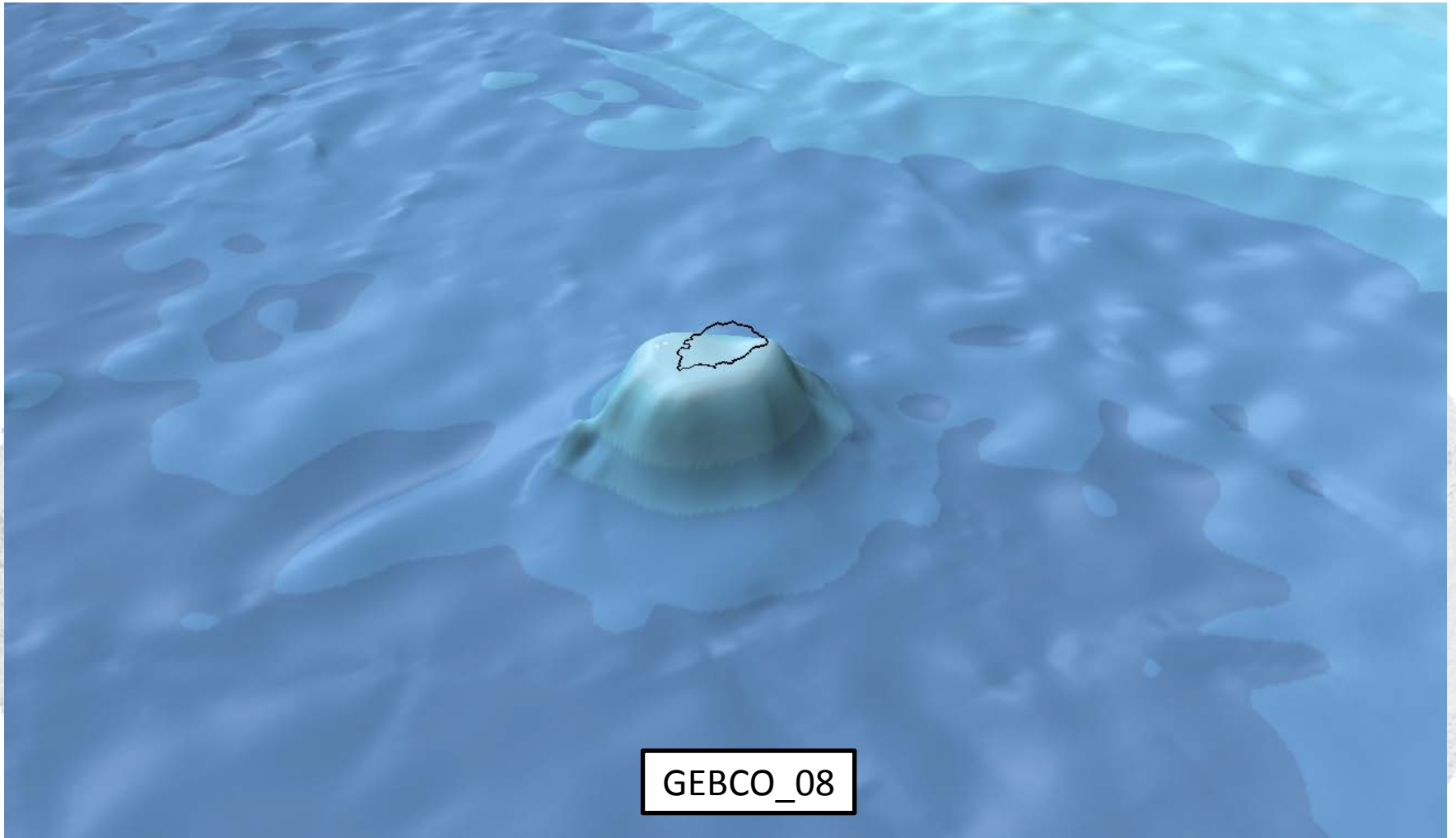
IBCSO Version 1.0



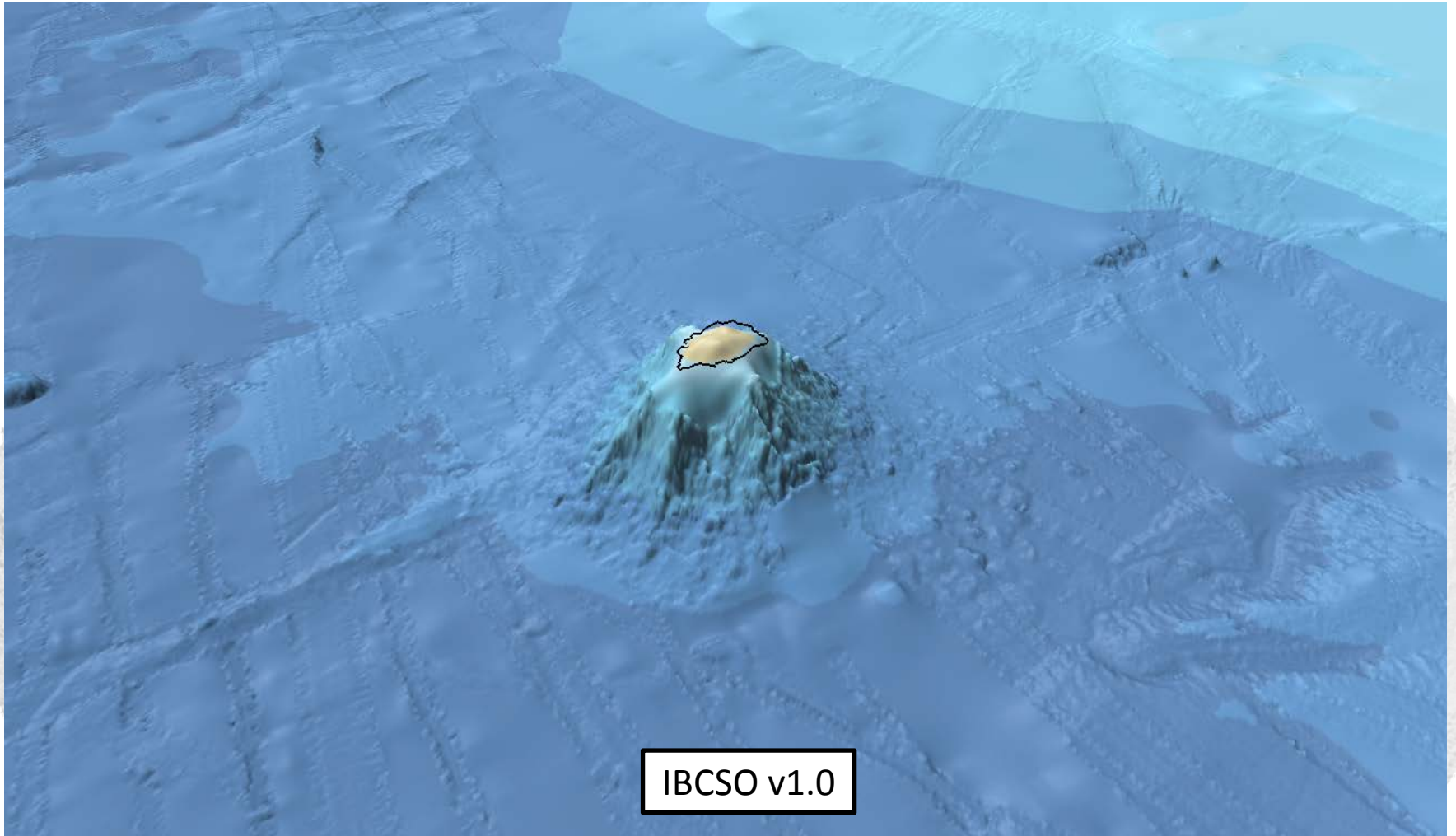
IBCSO Version 1.0



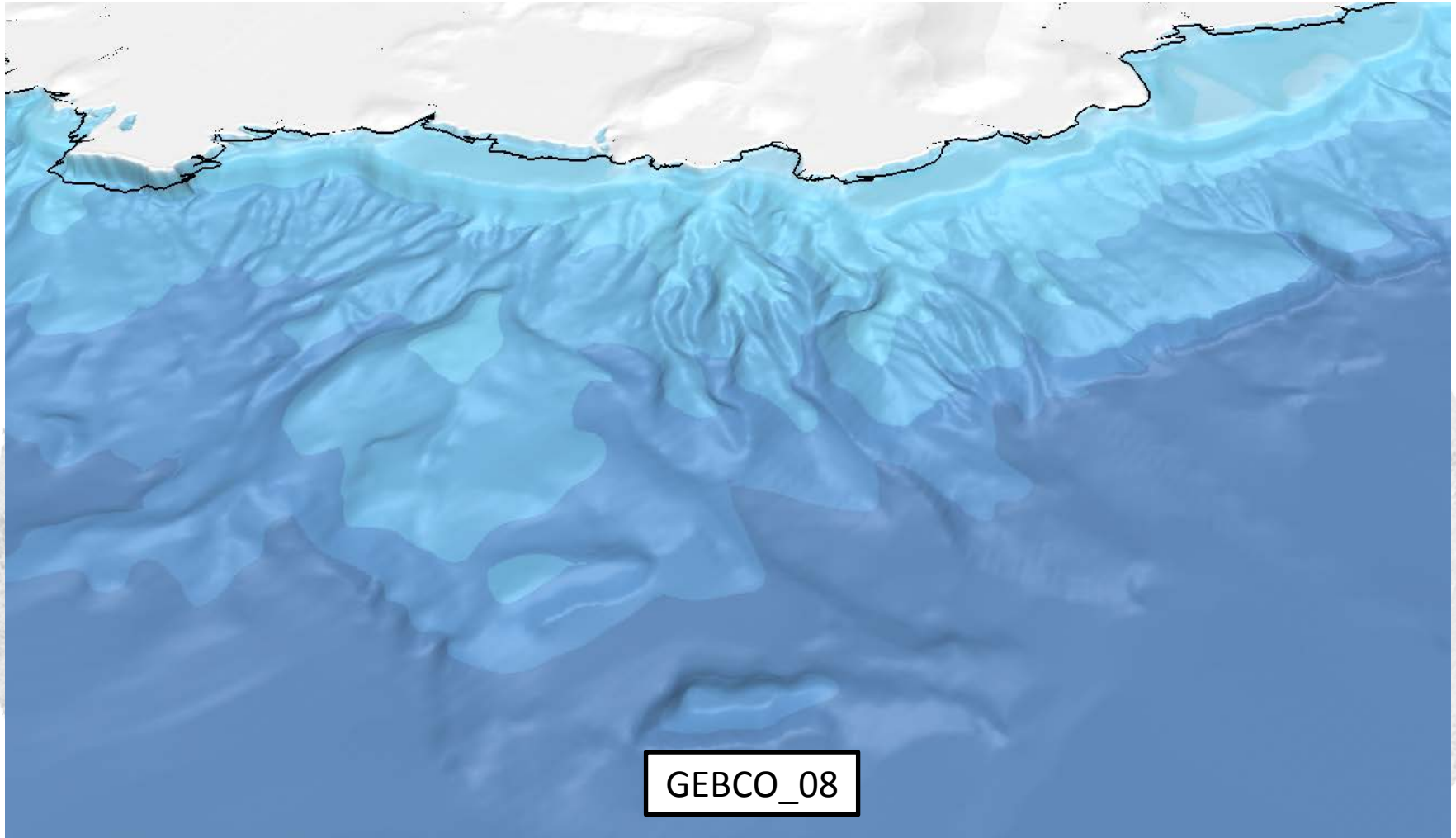
Comparison to GEBCO_08



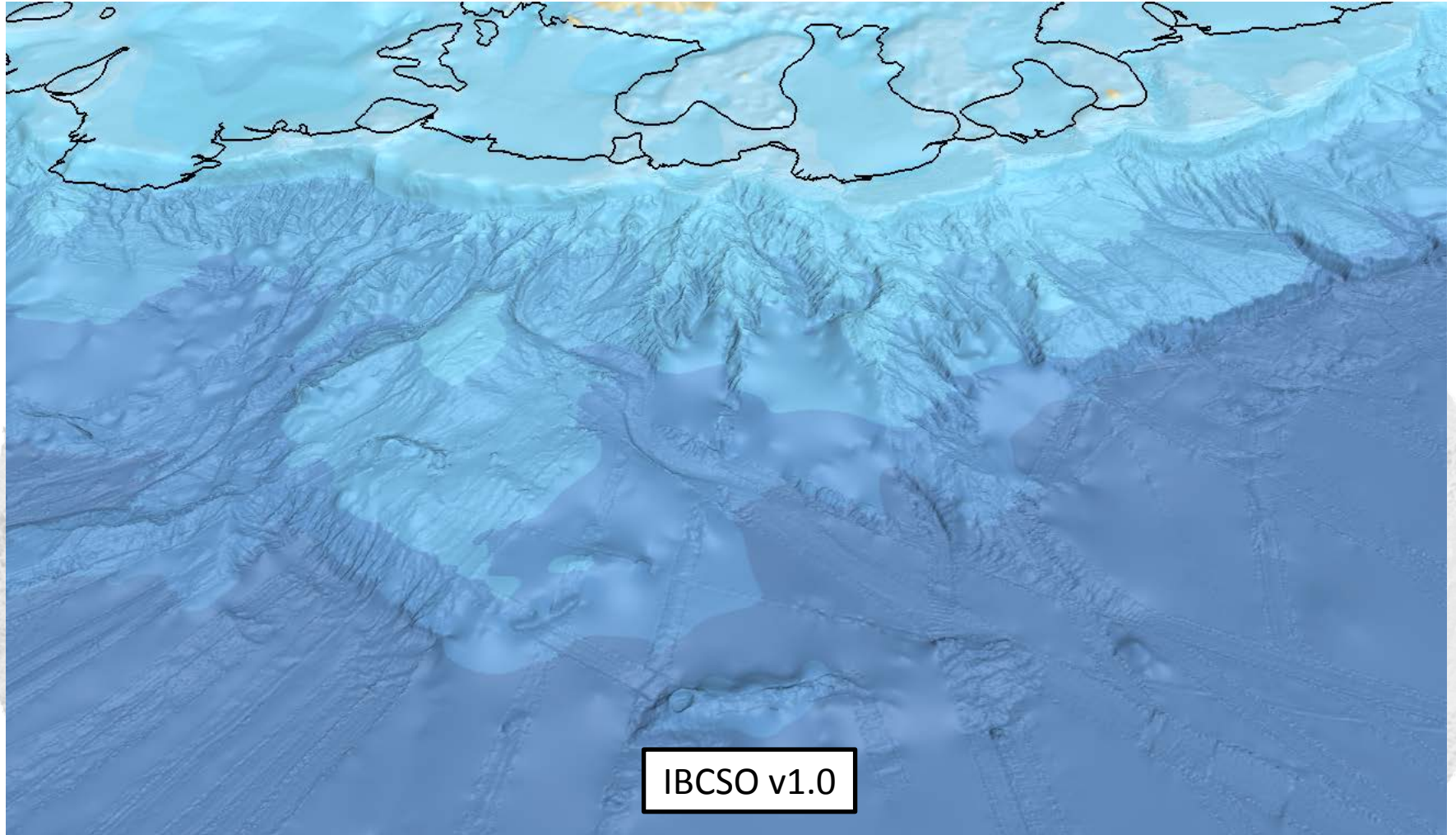
Comparison to GEBCO_08



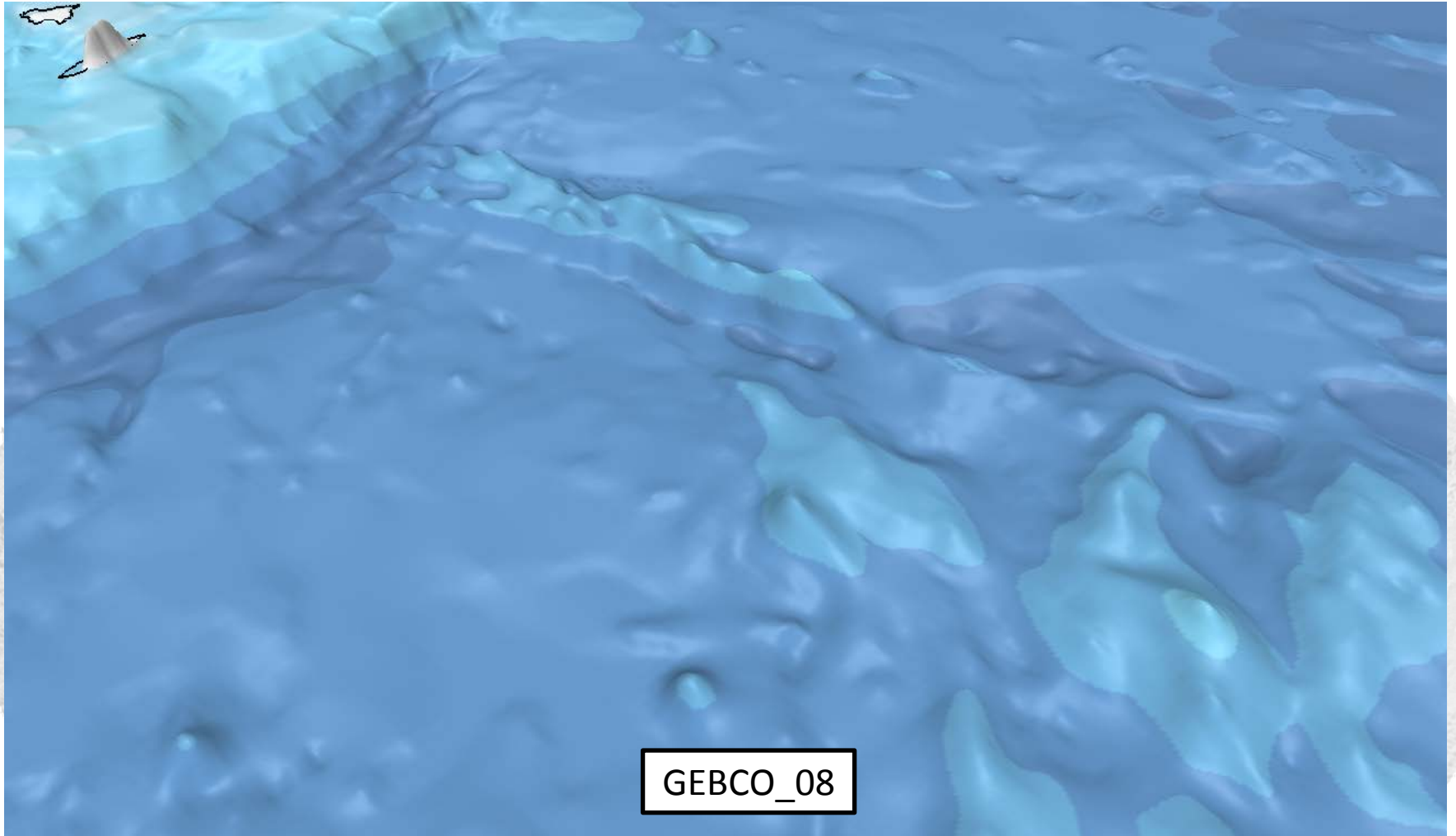
Comparison to GEBCO_08



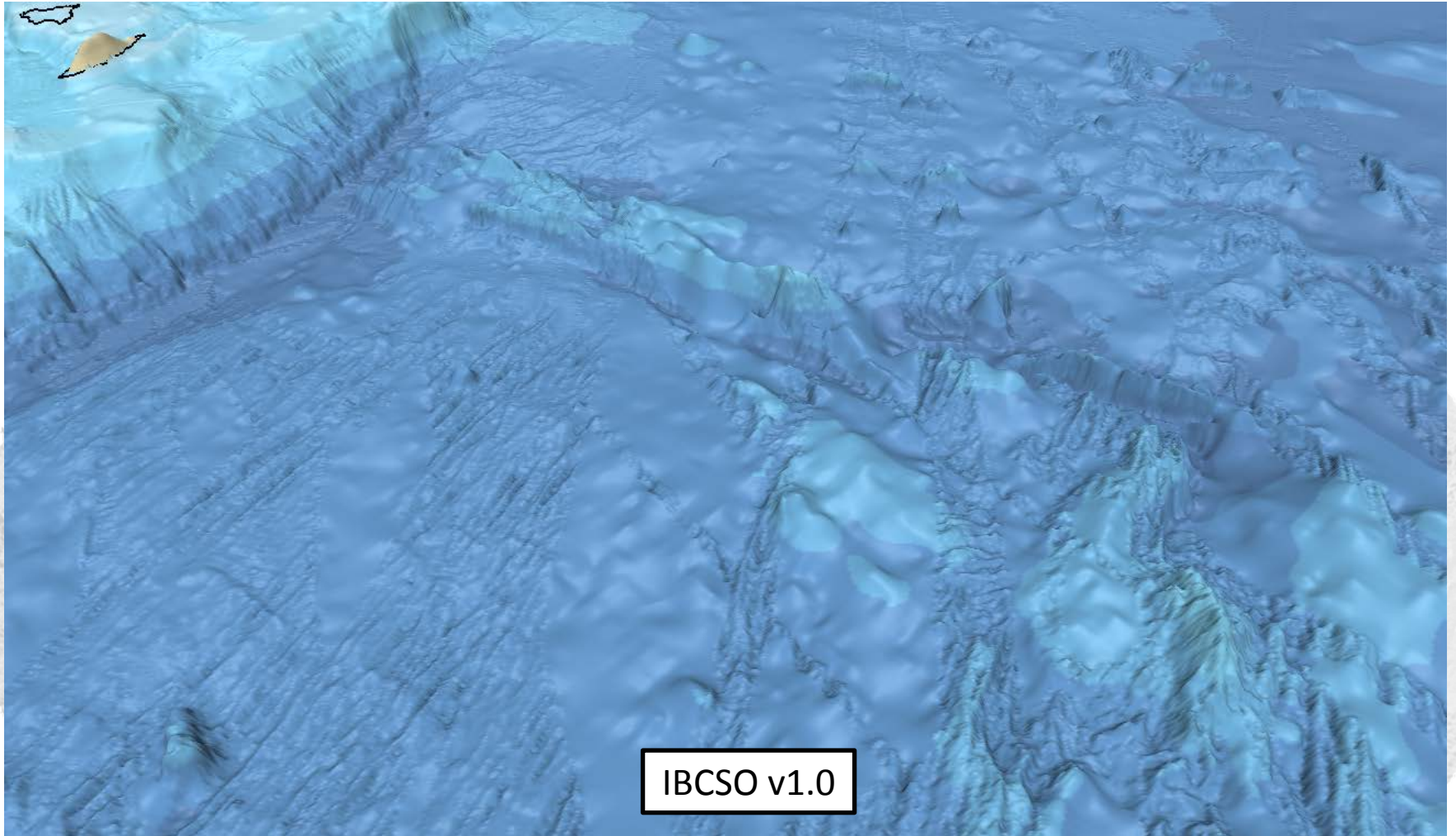
Comparison to GEBCO_08



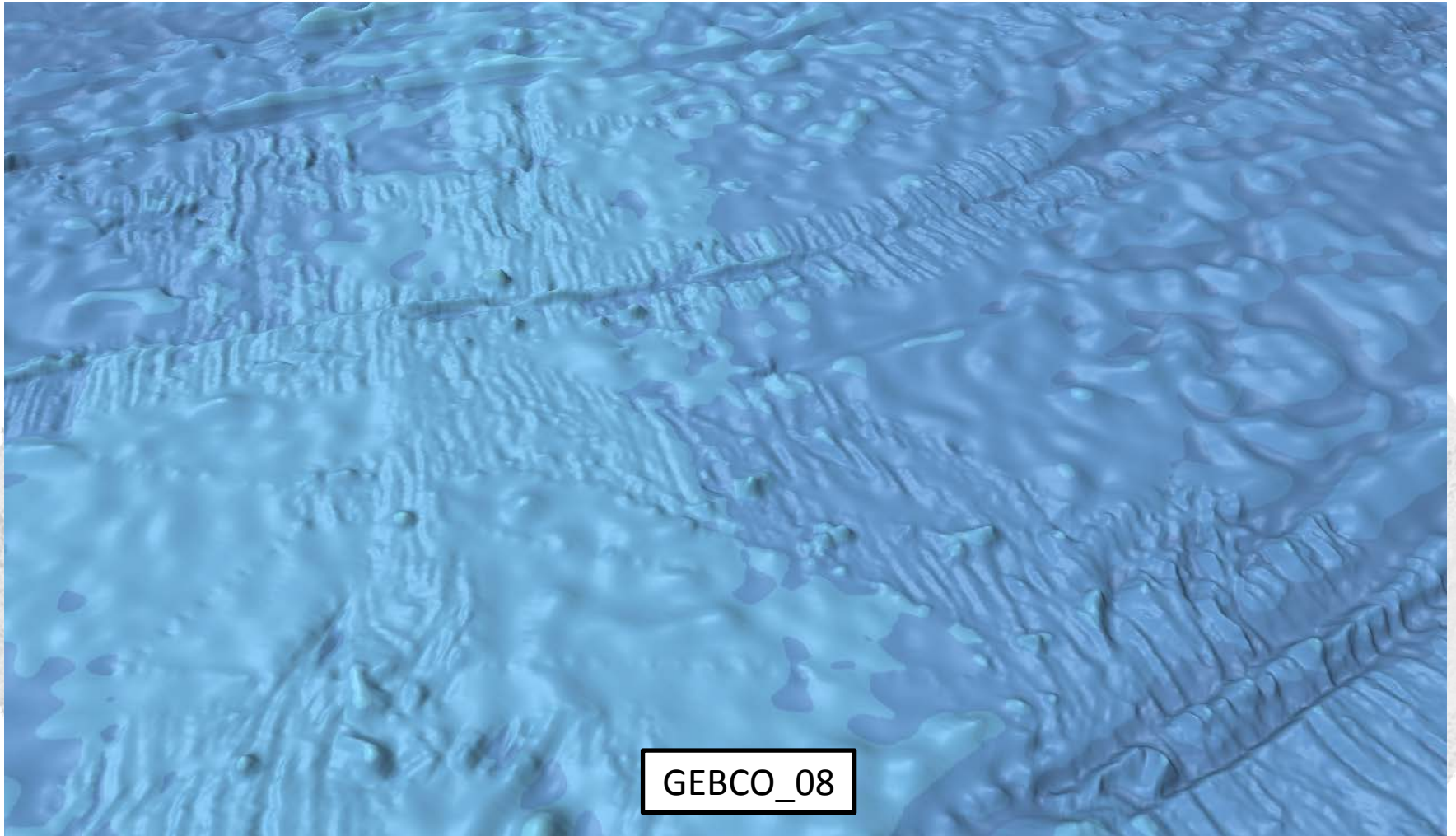
Comparison to GEBCO_08



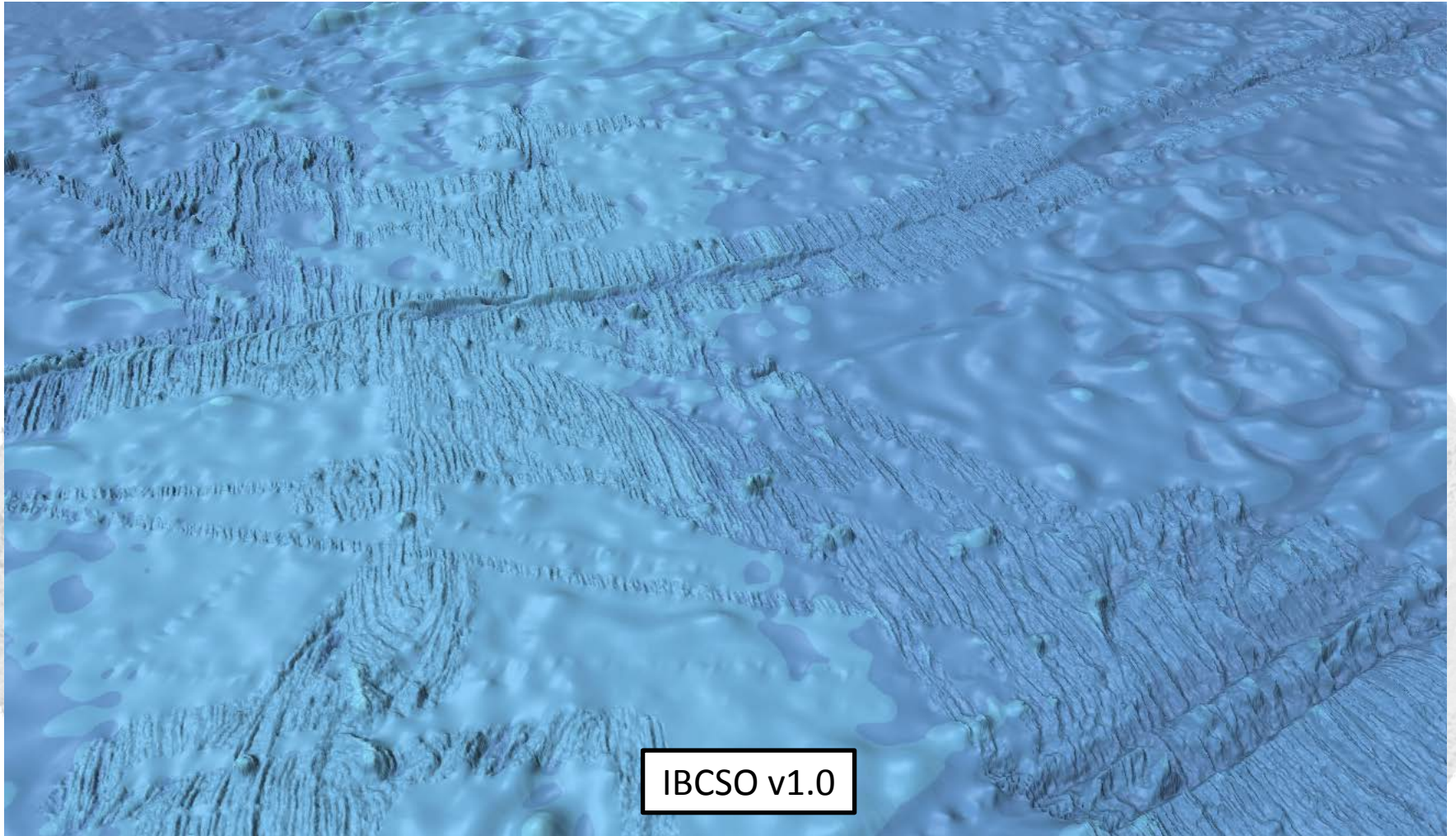
Comparison to GEBCO_08



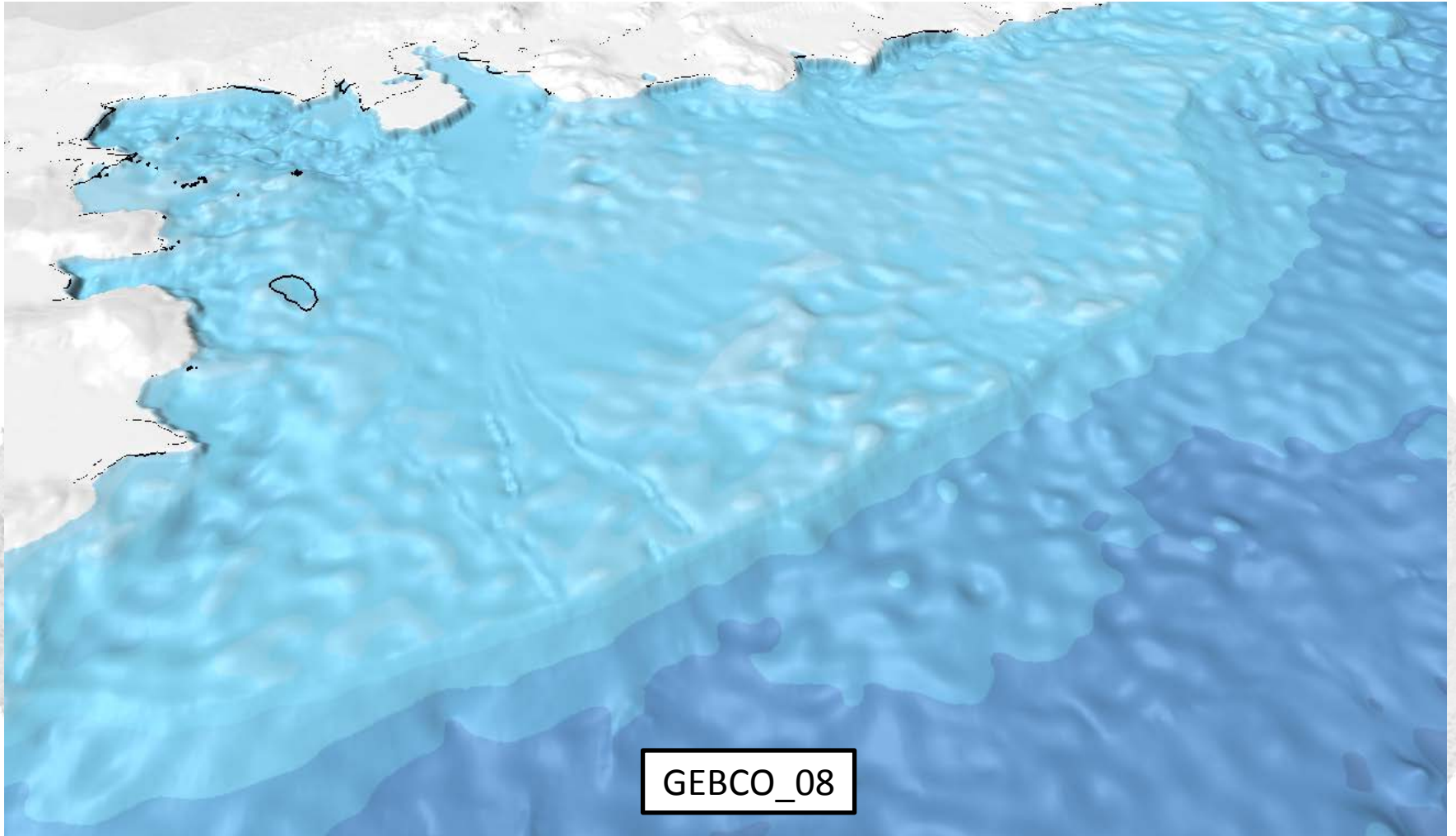
Comparison to GEBCO_08



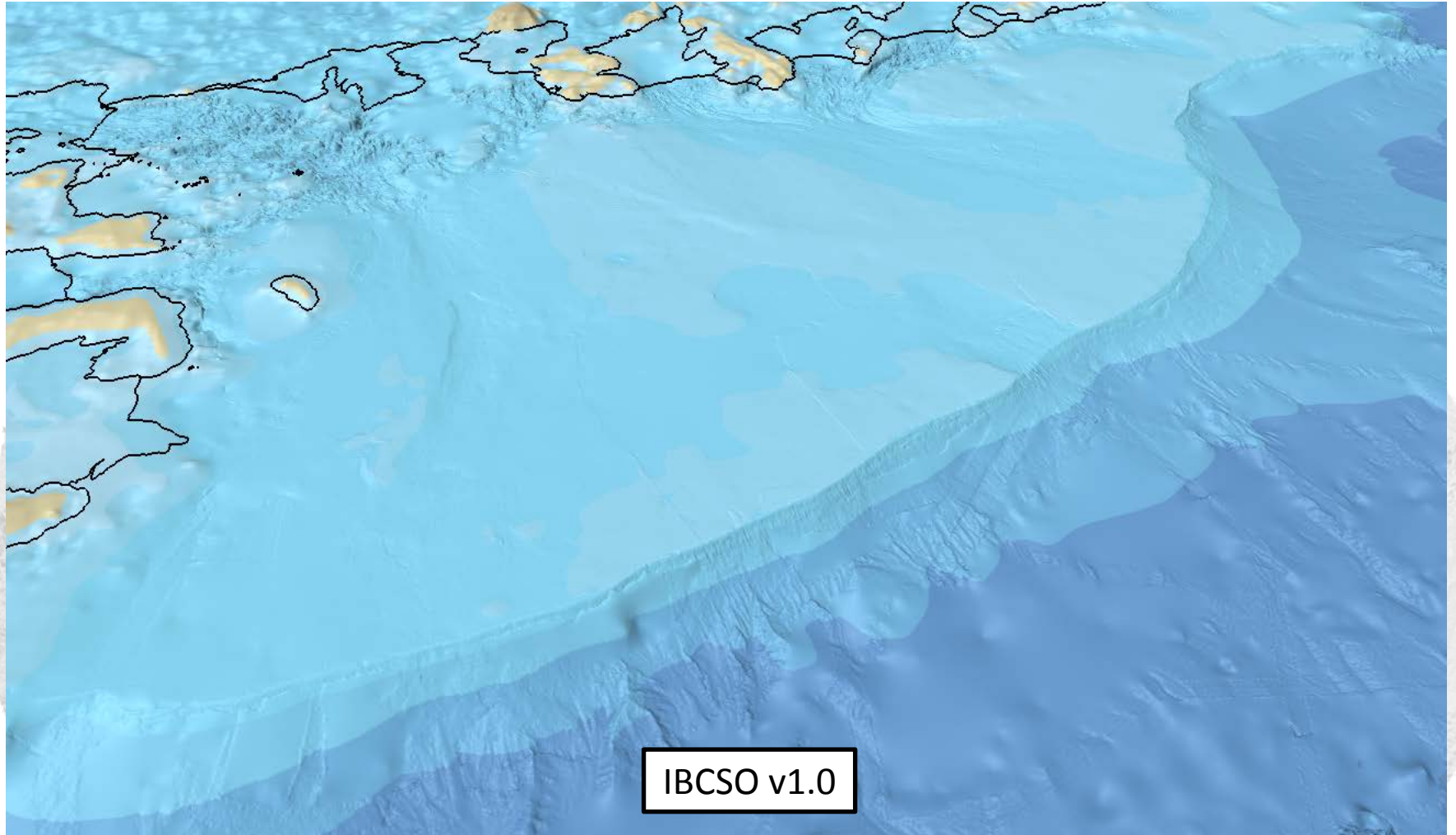
Comparison to GEBCO_08



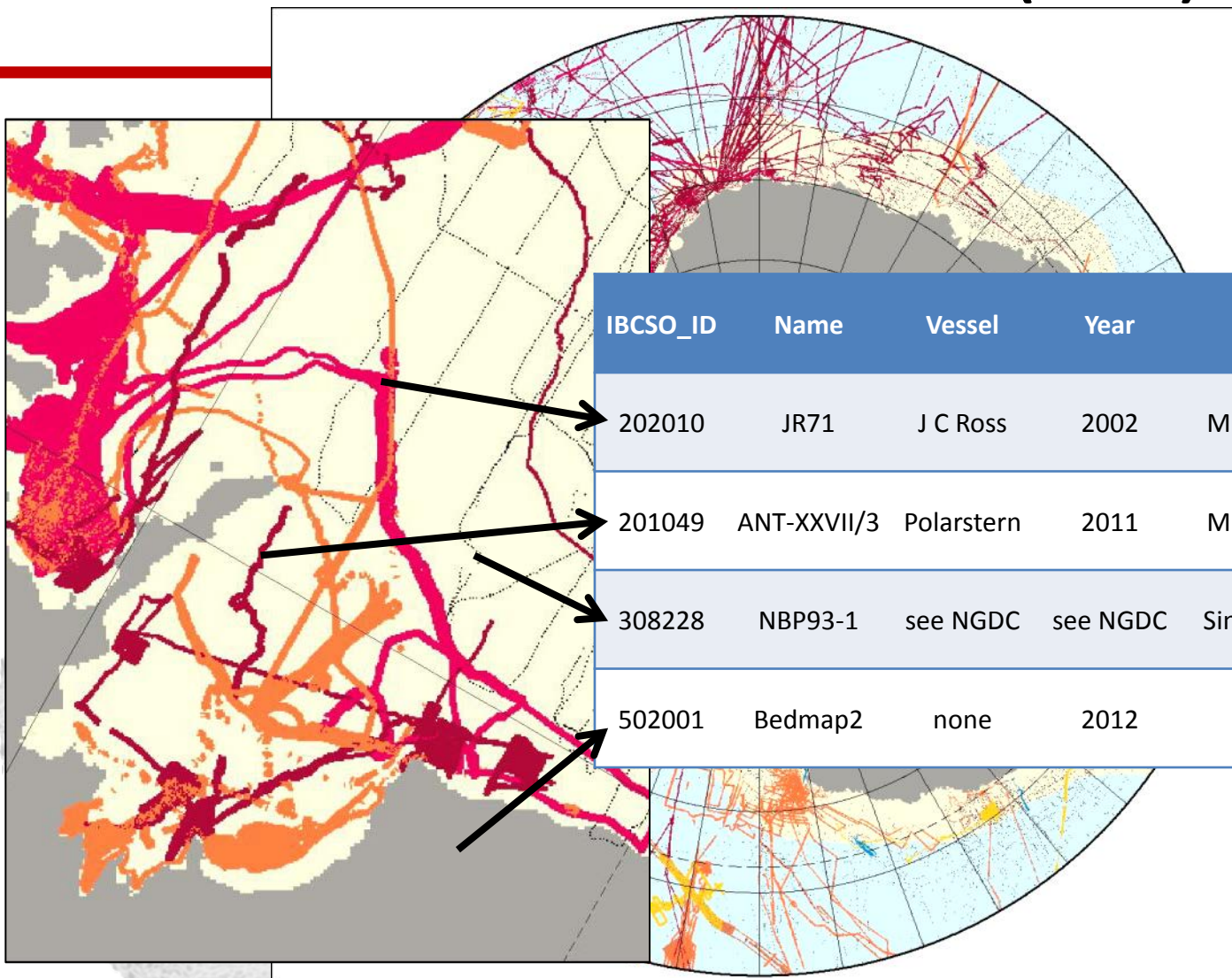
Comparison to GEBCO_08



Comparison to GEBCO_08



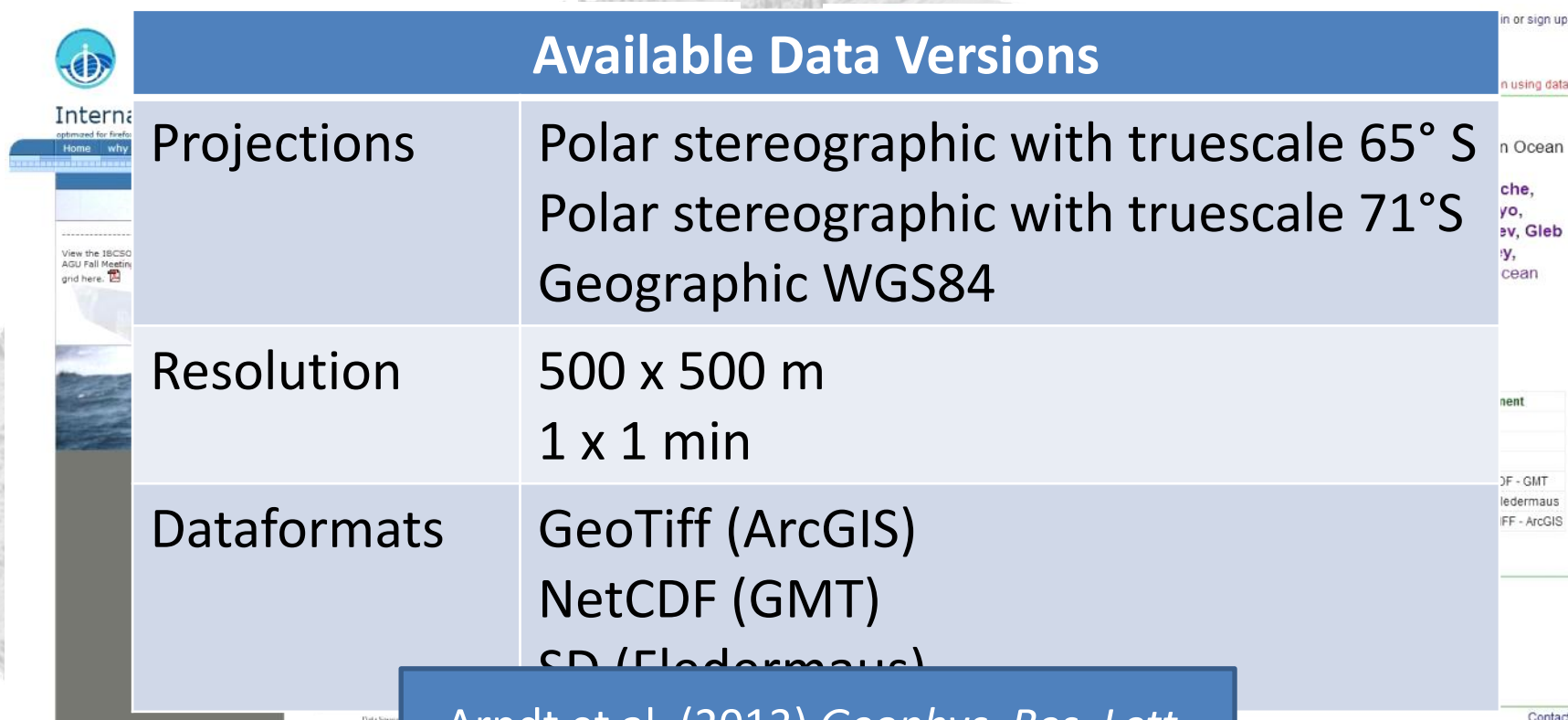
Source Identifier (SID)



Data retrieval

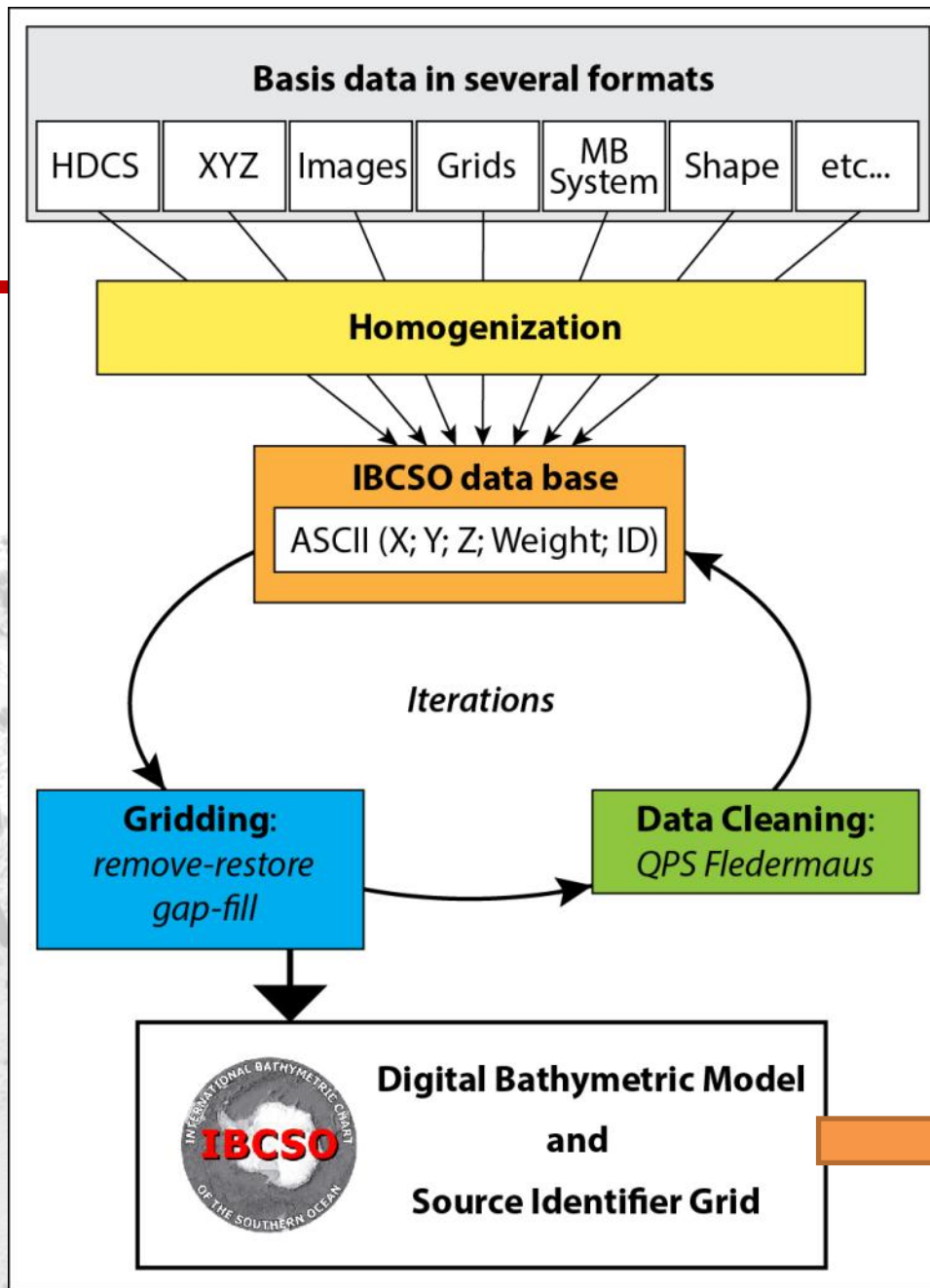
www.ibcso.org -> Data

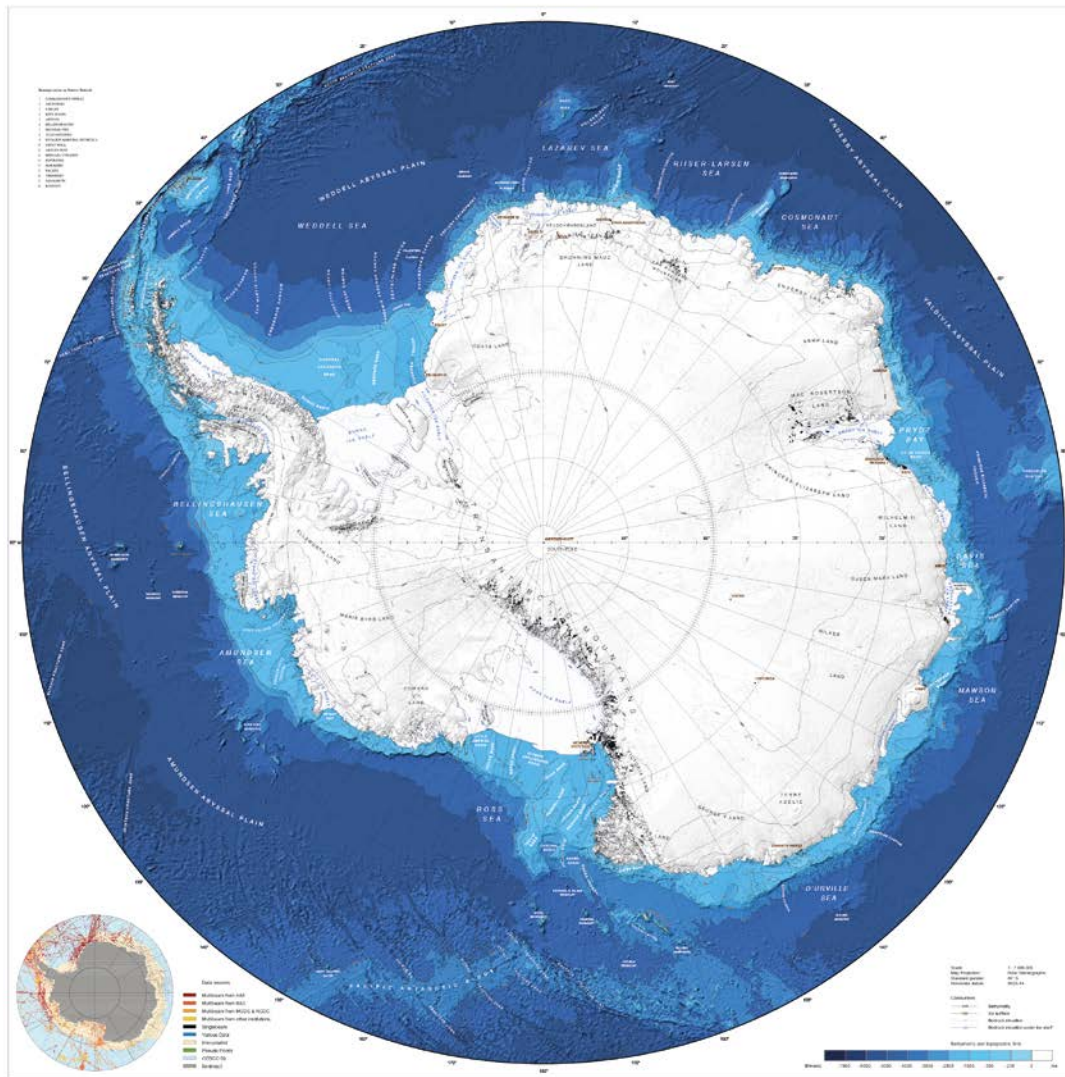
www.pangaea.de -> IBCSO



Available Data Versions	
Projections	Polar stereographic with truescale 65° S Polar stereographic with truescale 71° S Geographic WGS84
Resolution	500 x 500 m 1 x 1 min
Dataformats	GeoTiff (ArcGIS) NetCDF (GMT) SD (Eledormaus)

Arndt et al. (2013) *Geophys. Res. Lett.*





THE INTERNATIONAL BATHYMETRIC CHART OF THE SOUTHERN OCEAN (IBCSO)

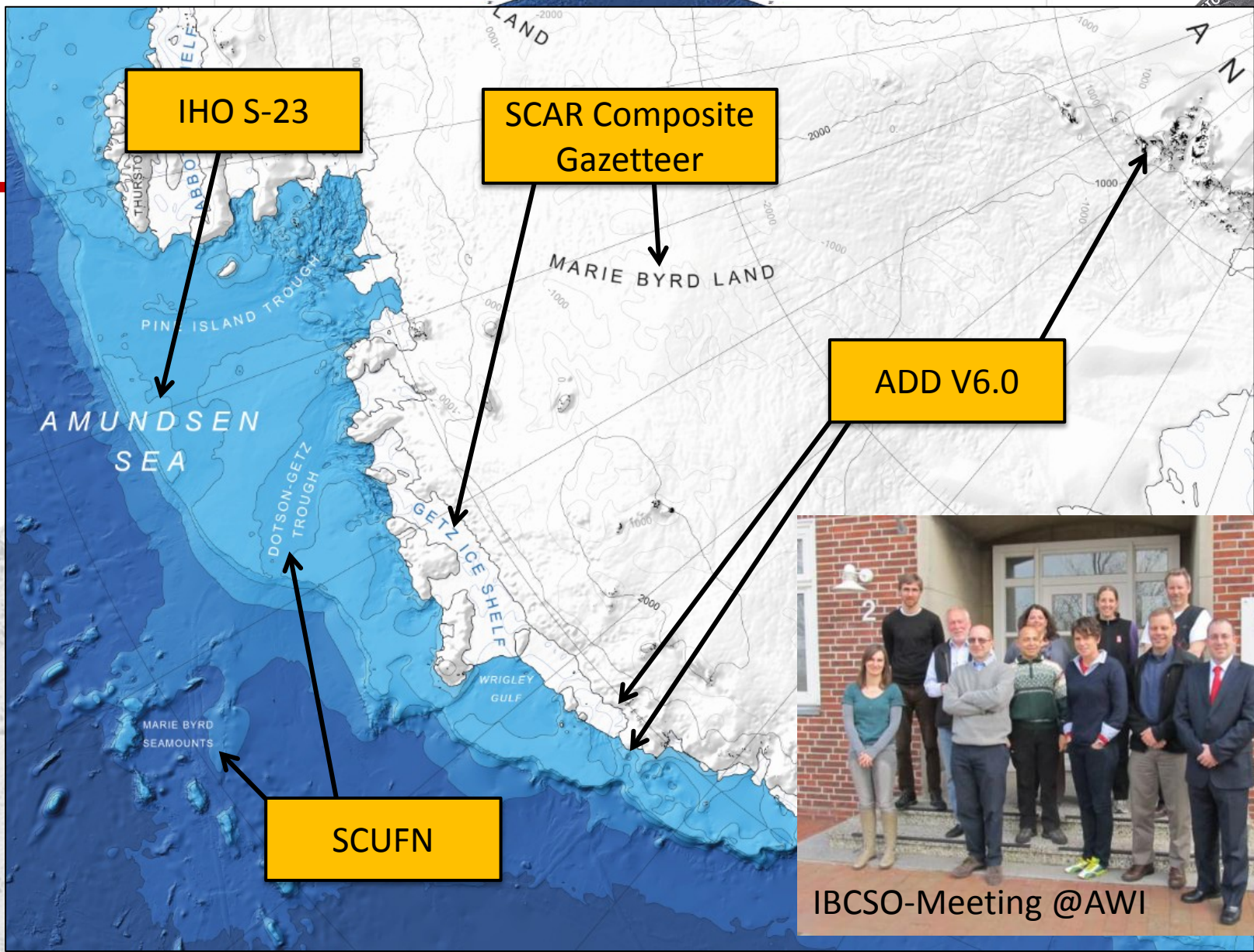
General Information: The IBCSO is a project of the International Hydrographic Organization (IHO) and the International Geophysical Year (IGY) 1957-1958. It is a collaborative effort of many nations to create a comprehensive bathymetric chart of the Southern Ocean. The chart is based on data from various sources, including satellite altimetry, ship-based surveys, and historical data. The chart is available in digital format and is updated regularly.

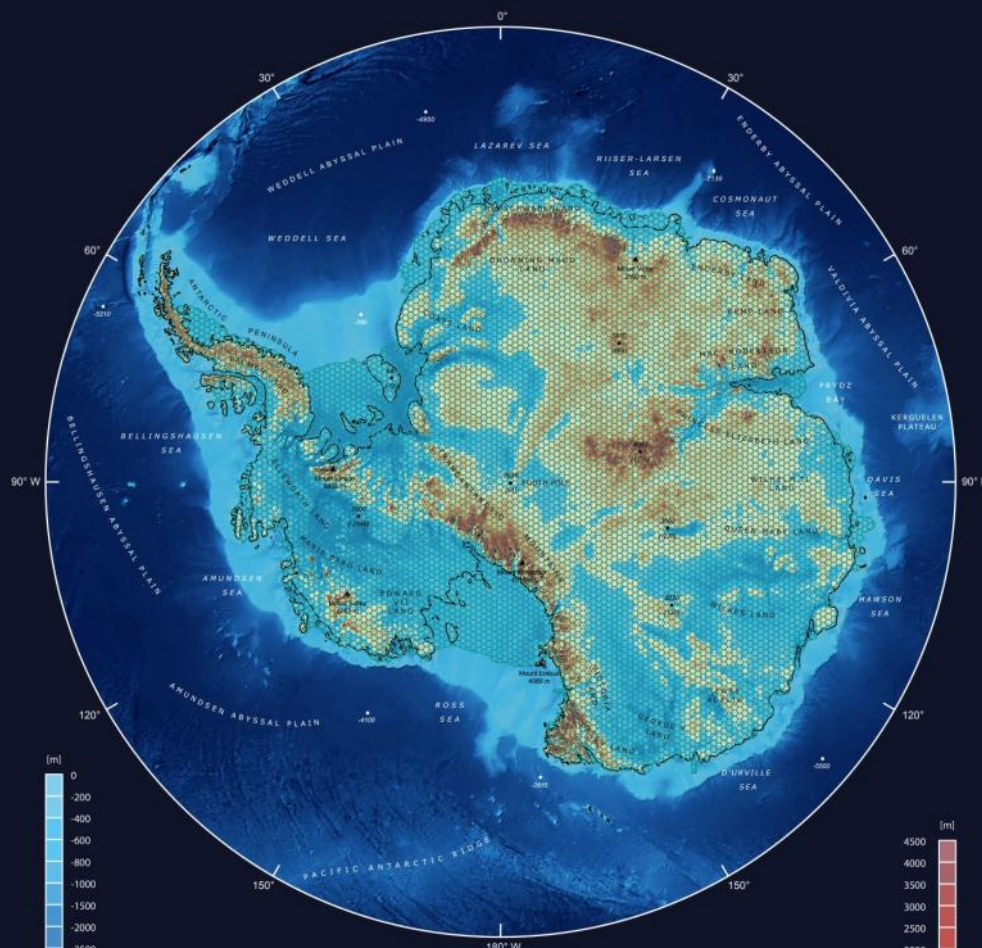
Legend: The legend defines the color coding for bathymetry and ice extent. Bathymetry colors range from light blue (0-200m) to dark blue (2000-4000m). Ice extent is shown in white and light grey, indicating areas with ice cover.

Scale: The chart is a Mercator projection with a scale of 1:100,000,000. The distance scale at the bottom right indicates distances in kilometers and miles.

Contributors: The chart is a collaborative effort of many nations, including the United Kingdom, the United States, the Soviet Union, and many others. The IHO and IGY are the primary organizations involved in the project.

Copyright: The chart is a public domain work and is available for use by anyone. However, the IHO and IGY are the primary organizations involved in the project.





Antarctica and the Southern Ocean Seafloor

with ice and bedrock topography

Based on the International Bathymetric Chart of the Southern Ocean (IBCSO)

Height on ice; bedrock (meters)

Scale 1 : 12.000.000

Depth below sea level (meters)

0 240 600 960 1.680 2.400 Kilometers

1 cm corresponds to 120 km Vertical Exaggeration 1 : 30

Map Projection: IBCSO Antarctic Polar Stereographic, Standard Parallel: 65°S, Ellipsoid: WGS 84
Databases: IBCSO V1.0 Digital Bathymetric Model (2013), GRL, doi: 10.1002/grl.50413 with continental data of Bedmap2 (2013), The Cryosphere, doi: 10.5194/tc-7-375-2013

The light turquoise wireframe grid represents the ice surface. The hexagon edge length is 50 Kilometer. Grounding line is represented in black. Seafloor, ice and bedrock surface are vertically exaggerated by a factor of 30.

Foil with microlenses

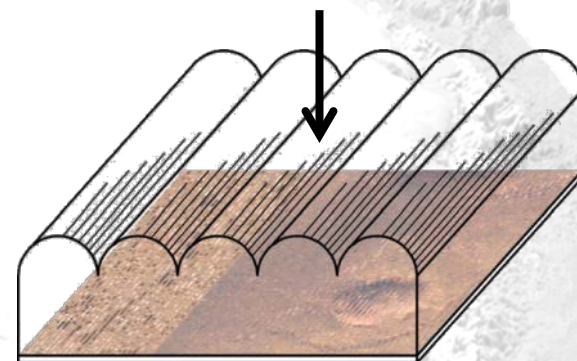


Image with multiple synthetic views

Future of IBCSO!?



SCAR OPEN SCIENCE CONFERENCE, XXXIII SCAR BIENNIAL MEETINGS, AND XXVI COMNAP AGM

23 August to 3 September 2014,
New Zealand

Image: Rob Suisted/www.naturespic.com



Thanks for your attention!

For further information visit

www.ibcso.org

or contact me via

Jan.Erik.Arndt@awi.de