

IBCSO 2.0: A collaborative effort towards improved bathymetric information

*Second Seabed 2030 Arctic – Antarctic – North Pacific
Mapping Meeting 2019*

University of New Hampshire

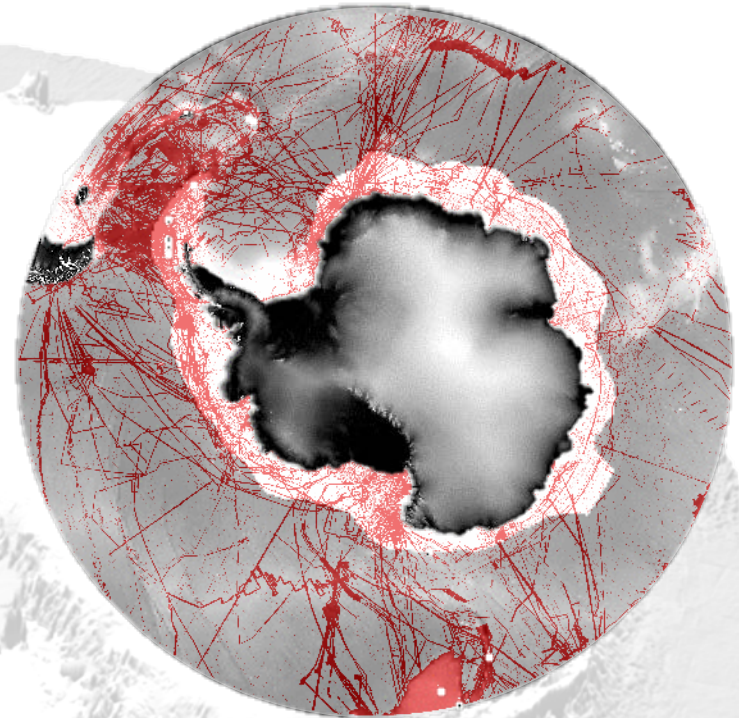
9 – 10 Nov

Laura Hehemann, Boris Dorschel, Sacha Viquerat, Simon Dreutter

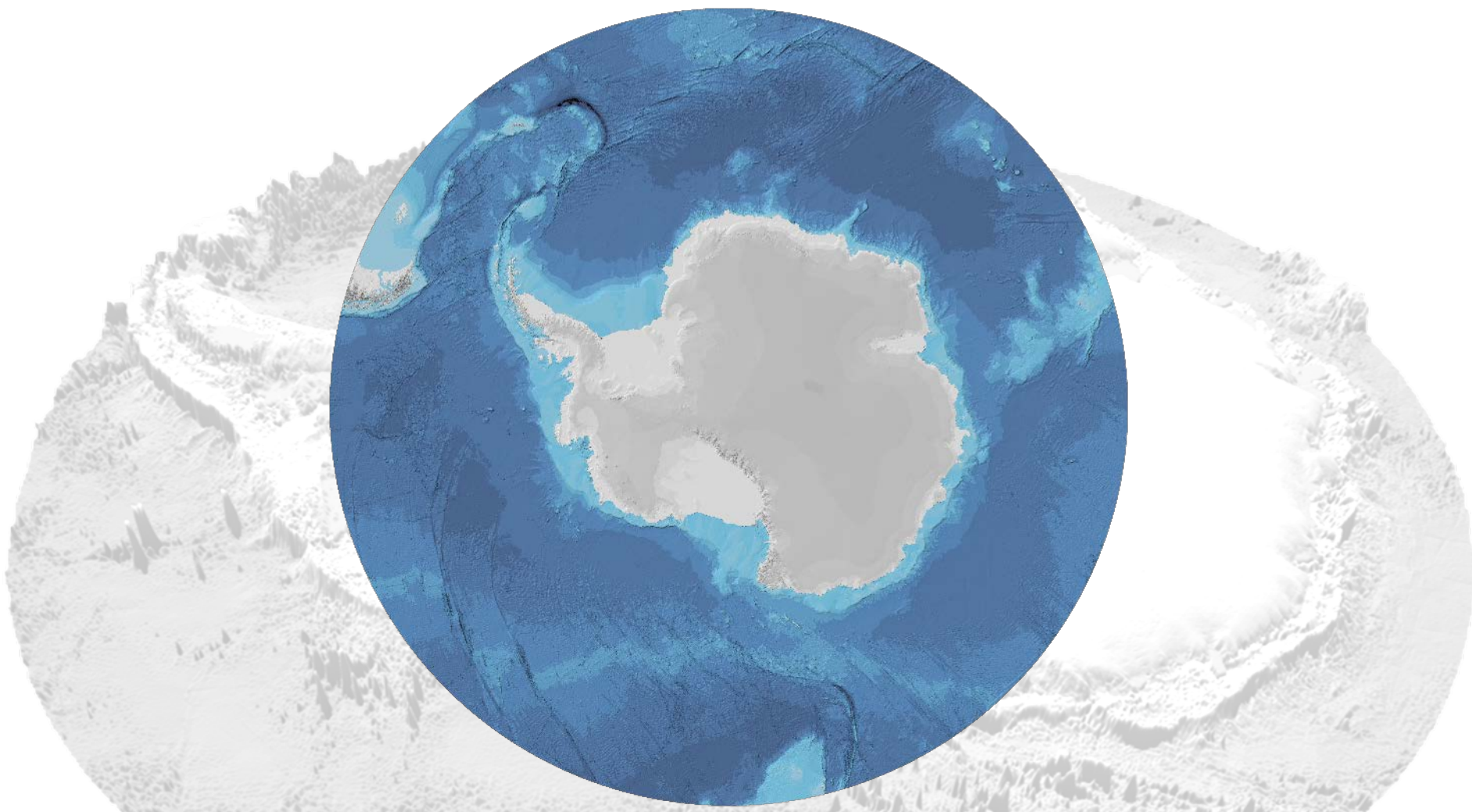
Grid Data Sources



- Background bathymetry: SRTM15+
- Bathymetry datasets: processed, raw data preferred
- Sub-Antarctic topography: SRTM15+, ADD, Peter Fretwell (BAS)
- Antarctica: BedMachine 3



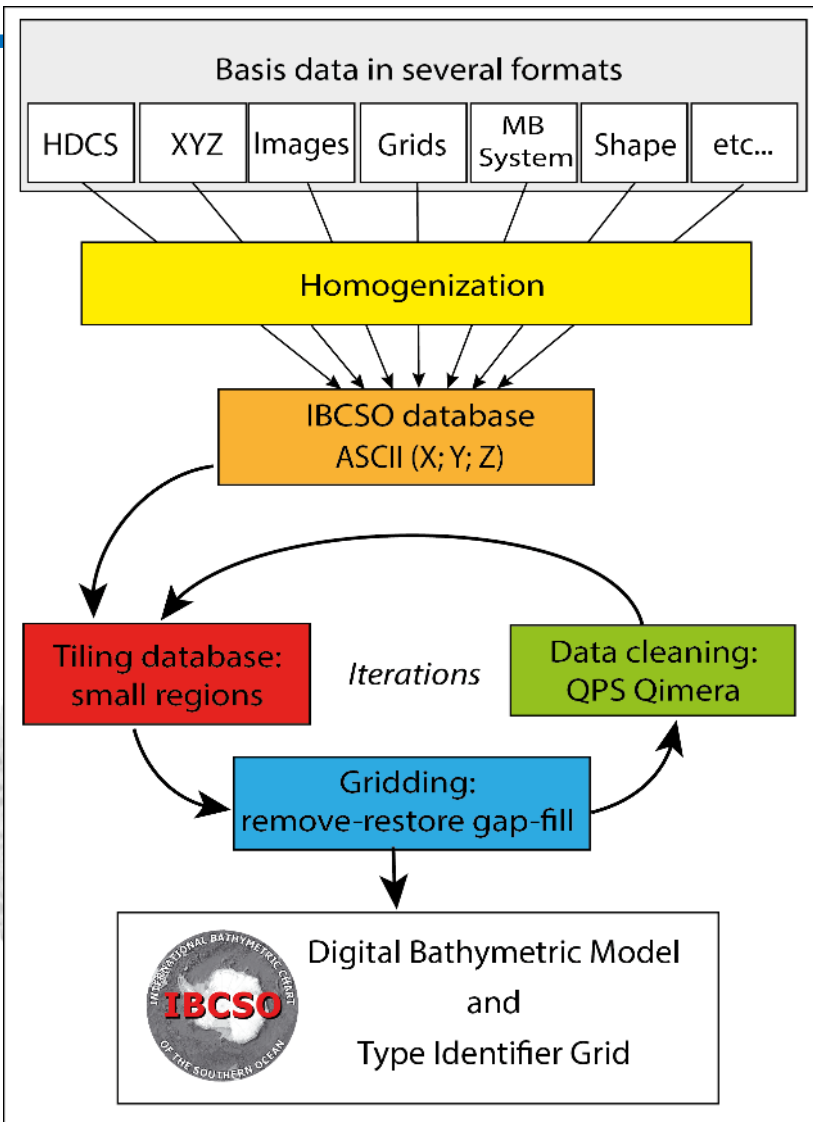
Preliminary Grid Jan-2019



22.01.2020

Portsmouth

New Infrastructure



- Database on a remote computer
- Automated scripts
- Metadata in MySQL database
- Utilizing super computer
- New interface

New Infrastructure



User Interface

- Facilitates new data import
- Allows management of metadata
- Serves as interface between mysql database and workflow

The screenshot displays the 'New Data Wizard' application interface. The main window is titled 'New Data Wizard' and contains a 'data parsing' section. Below this section, there is a table with columns for X, Y, and Z coordinates. The table has 11 rows of data. A red arrow points from the 'data parsing' section to a 'Preview Data on Map' section on the right. This section shows a map of the data points and a table of coordinates. The map is titled 'Preview Data on Map' and includes a 'Zoom to data' button and a 'Zoom to world' button. The table in the 'Preview Data on Map' section has columns for X and Y coordinates and 11 rows of data.

X Columns	21	Y Columns	20	Z Columns	22	Z is negative
"T_020"	0	"T20"	-59.68530273	-28.38531685	0	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68439484	-28.38750267	0.159	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68378448	-28.39005661	0.159	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68325806	-28.39270401	0.16	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68264008	-28.39532089	0.162	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68200302	-28.3979969	0.166	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68128586	-28.401474	0.211	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68072891	-28.4043026	0.171	<input type="checkbox"/>
"T_020"	0	"T20"	-59.68017197	-28.40714073	0.171	<input type="checkbox"/>
"T_020"	0	"T20"	-59.67961502	-28.41002464	0.174	<input type="checkbox"/>
"T_020"	0	"T20"	-59.67900848	-28.41294289	0.177	<input type="checkbox"/>
"T_020"	0	"T20"	-59.67832184	-28.41587639	0.182	<input type="checkbox"/>

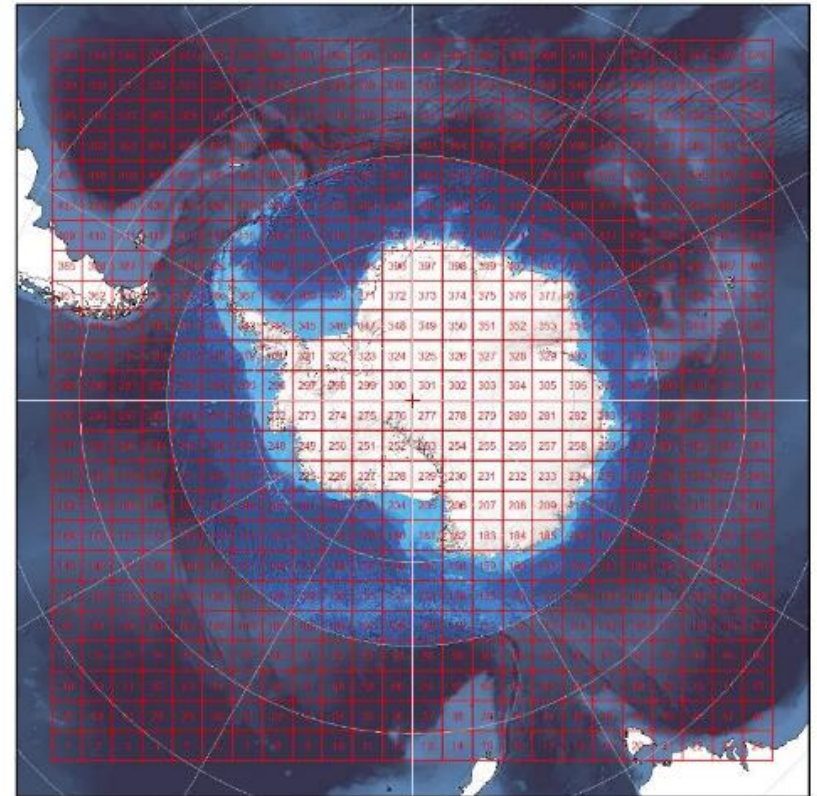
X	Y
-28.38531685	-59.68330273
-28.38750267	-59.68439484
-28.39005661	-59.68378448
-28.39270401	-59.68325806
-28.39532089	-59.68264008
-28.3979969	-59.68200302
-28.401474	-59.68128586
-28.4043026	-59.68072891
-28.40714073	-59.68017197
-28.41002464	-59.67961502
-28.41294289	-59.67900848
-28.41587639	-59.67832184

A. Homogenization

- Extracts only x, y, z columns from the processed raw data files and converts these to standardized output files
- Removes definite duplicates within one cruise
- Collects extent and min/max depth values -> **MySQL DB**

B. Tiling

- Assigns data to smaller regions (25km x 25km)
- Data cleaned & flagged (Qimera)
- Shapefile created of tiles per cruise
- Lists tiles to edit

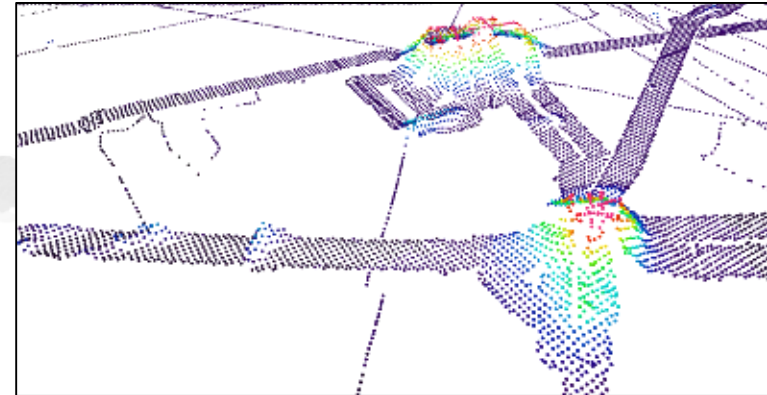


New Infrastructure



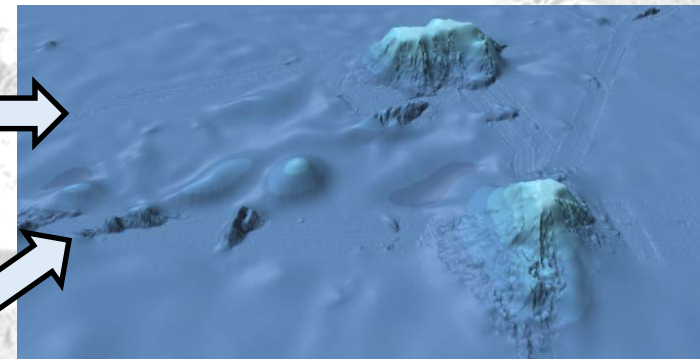
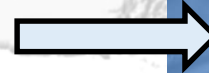
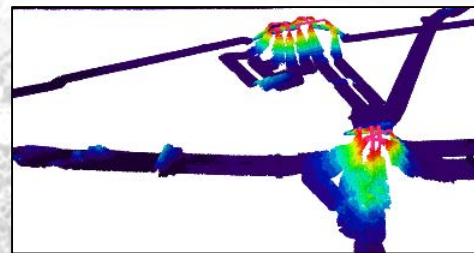
C. Weighted block median

- 500m X 500m window



D. Gridding

- Spline under tension
- Gapfill



Predicted
bathymetry
(from SRTM15+)

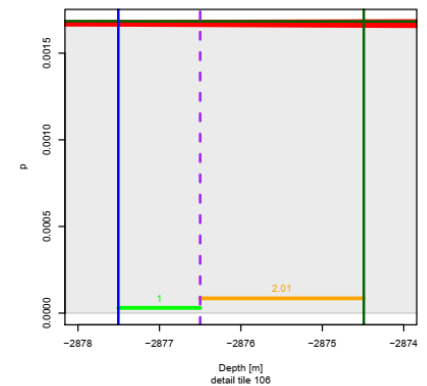
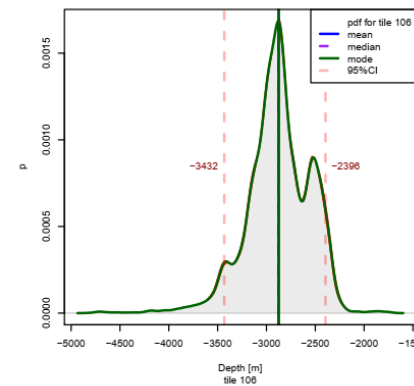
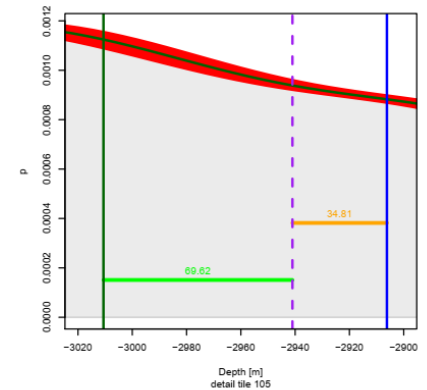
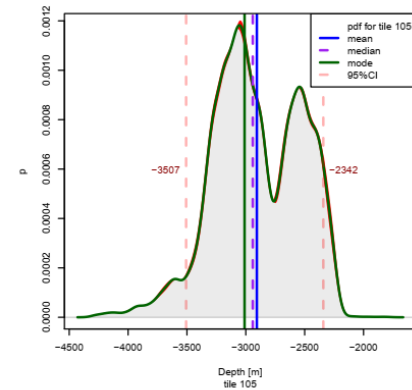


New Infrastructure



E. Automated reporting on block median

- PDF output per tile and/or complete grid
- TID percent cover
- Summary statistics
 - median, mean, mode, and 95% CI of depth
- Backlog of previous grids



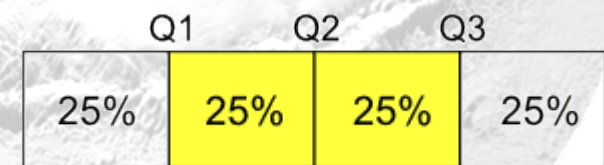
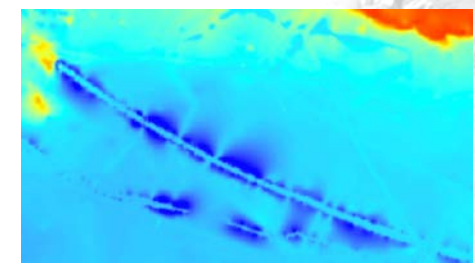
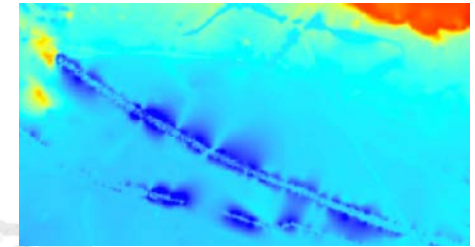
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2019-07-15_16_36_48_ScriptProfiling.pdf	7/15/2019 7:10 PM	Foxit Reader PDF ...	42 KB

Products



- Sampled surface of minimums & 25% quartiles
- Sampled surface of block median (50% quartile)
- Sampled surface of maximums & 75% quartiles
- SD / Variance per blockmedian window



Interquartile Range
= $Q3 - Q1$

A large blue and white ship is sailing on a dark blue sea. In the background, there are large, rugged mountains covered in snow under a clear blue sky. The text "Thank you!" is overlaid in the center of the image.

Thank you!