

International Bathymetric Chart of the Arctic Ocean (IBCAO) Version 3.0

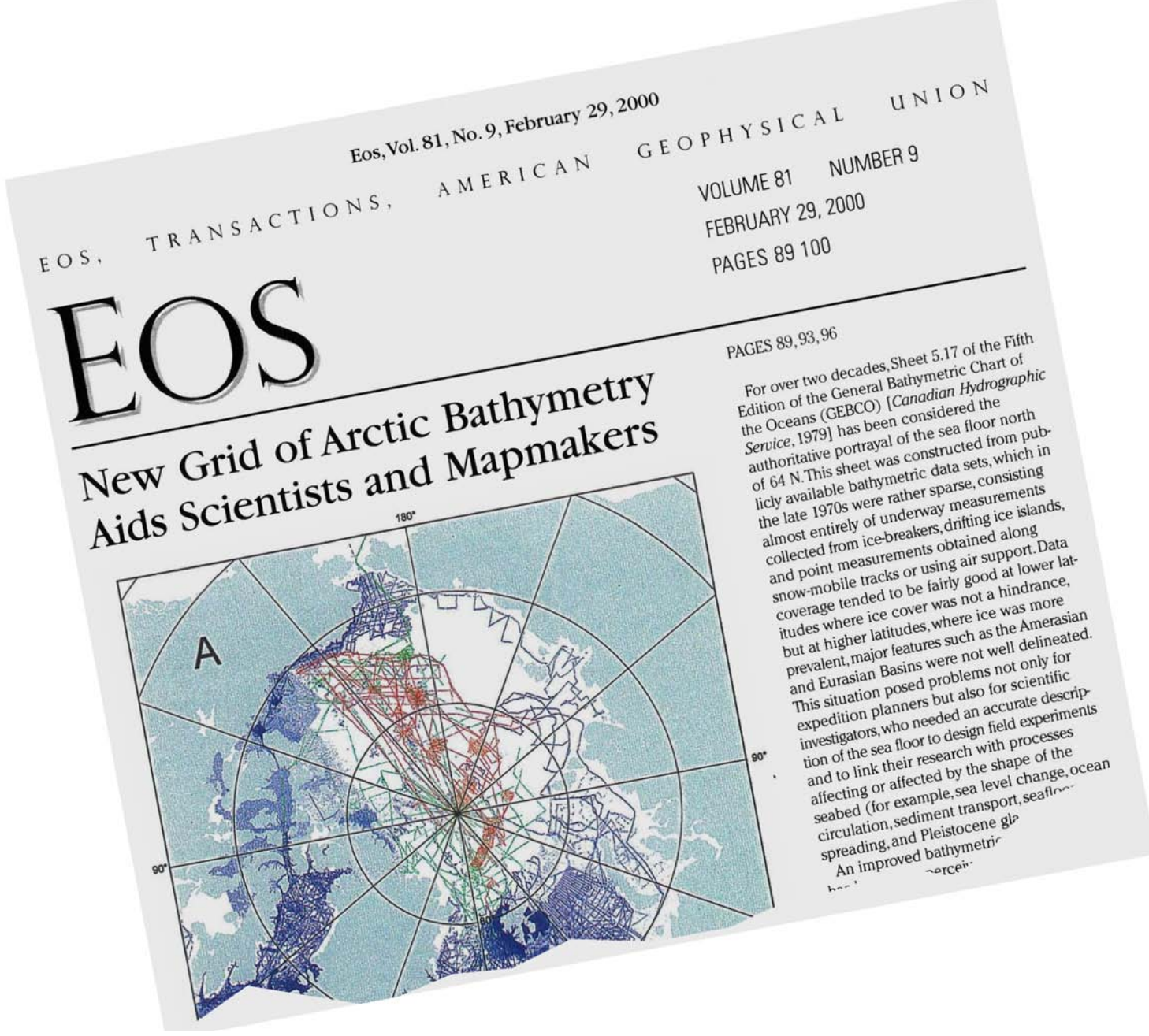


¹Martin Jakobsson, ²Larry Mayer, ³Bernard Coakley, ⁴Julian A. Dowdeswell, ⁵Steve Forbes, ⁶Boris Fridman, ⁷Hanne Hodnesdal, ⁸Riko Noormets, ⁹Richard Pedersen, ¹⁰Michele Rebesco, ¹¹Hans-Werner Schenke, ¹²Yulia Zarayskaya, ¹³Daniela Accettella, ¹⁴Andrew Armstrong, ¹⁵Robert M. Anderson, ¹⁶Paul Bienhoff, ¹⁷Angelo Camerlenghi, ¹⁸Ian Church, ¹⁹Margo Edwards, ²⁰James V. Gardner, ²¹John K. Hall, ²²Benjamin Hell, ²³Ole Hestvik, ²⁴Yngve Kristoffersen, ²⁵Christian Marcussen, ²⁶Rezwan Mohammad, ²⁷David Monahan, ²⁸David Mosher, ²⁹Dave Monahan, ³⁰Son V. Nghiem, ³¹Maria Teresa Pedrosa, ³²Paola G. Travaglini, ³³Pauline Weatherall

¹Dept. of Geological Sciences, Stockholm University, Sweden; ²Center for Coastal and Ocean Mapping/Joint Hydrographic Center, University of New Hampshire, USA; ³Dept. of Geology and Geophysics, University of Alaska Fairbanks, USA; ⁴Scott Polar Research Institute, University of Cambridge, UK; ⁵Canadian Hydrographic Service, Canada; ⁶Moscow Aerogeodetic Company, Russian Federation; ⁷Norwegian Mapping Authority, Hydrographic Service, Norway; ⁸The University Centre in Svalbard, Longyearbyen, Norway; ⁹National Survey and Cadastre, Denmark; ¹⁰Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Italy; ¹¹Alfred Wegener Institute for Polar and Marine Research (AWI), Germany; ¹²Laboratory of Ocean Floor Geomorphology and Tectonics, Geological Institute RAS, Russian Federation; ¹³Science Applications International Corporation, USA; ¹⁴Johns Hopkins University Applied Physics Laboratory, USA; ¹⁵ICREA and University of Barcelona, Spain; ¹⁶Dept. Geodesy and Geomatics Engineering, University of New Brunswick, Canada; ¹⁷University of Hawaii at Manoa, USA; ¹⁸Geological Survey of Israel, Israel; ¹⁹OLEX, Norway; ²⁰Dept of Earth Science, University of Bergen, Norway; ²¹Geological Survey of Denmark and Greenland, Denmark; ²²Geological Survey of Canada, Canada; ²³Jet Propulsion Laboratory, California Institute of Technology, USA; ²⁴British Oceanographic Data Centre (BODC), UK.

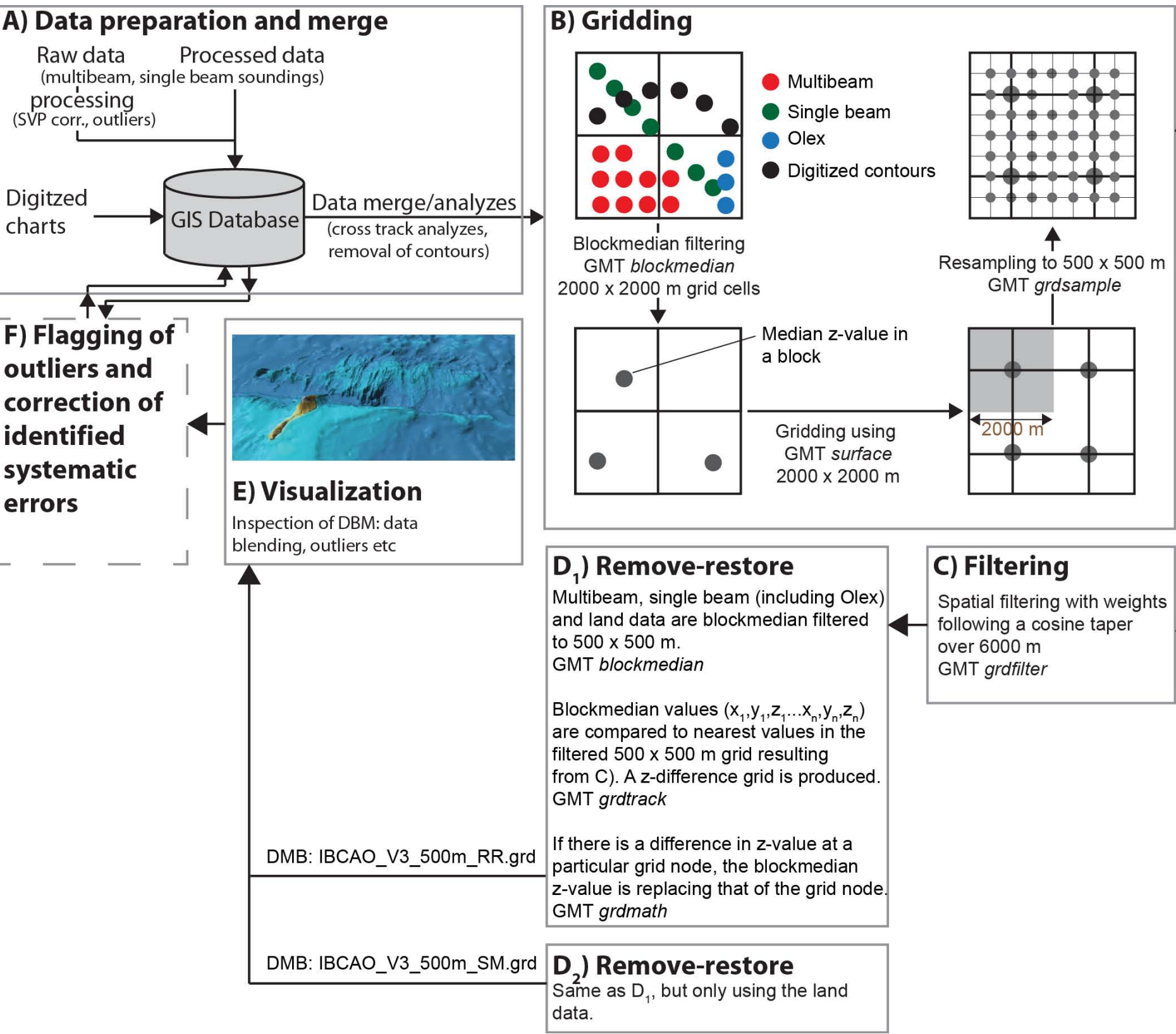
Summary

The International Bathymetric Chart of the Arctic Ocean (IBCAO) released its first gridded bathymetric compilation in 1999. The IBCAO bathymetric portrayals has since supported a wide range of Arctic science activities, for example, by providing constraint for ocean circulation models and the means to define and formulate hypotheses about the geologic origin of the Arctic Ocean undersea features. IBCAO Version 3.0 comprises the largest improvement since 1999 taking advantage of new data sets collected by the circum-Arctic nations, opportunistic data collected from fishing vessels, data acquired from US Navy submarines and from research ships of various nations. Built using an improved gridding algorithm, this new grid is on a 500 meter spacing, revealing much greater details of the Arctic seafloor than IBCAO 1.0 (2.5 km) and 2.0 (2.0 km). The area covered by multibeam surveys has increased from ~6 % in Version 2.0 to ~11% in Version 3.0.

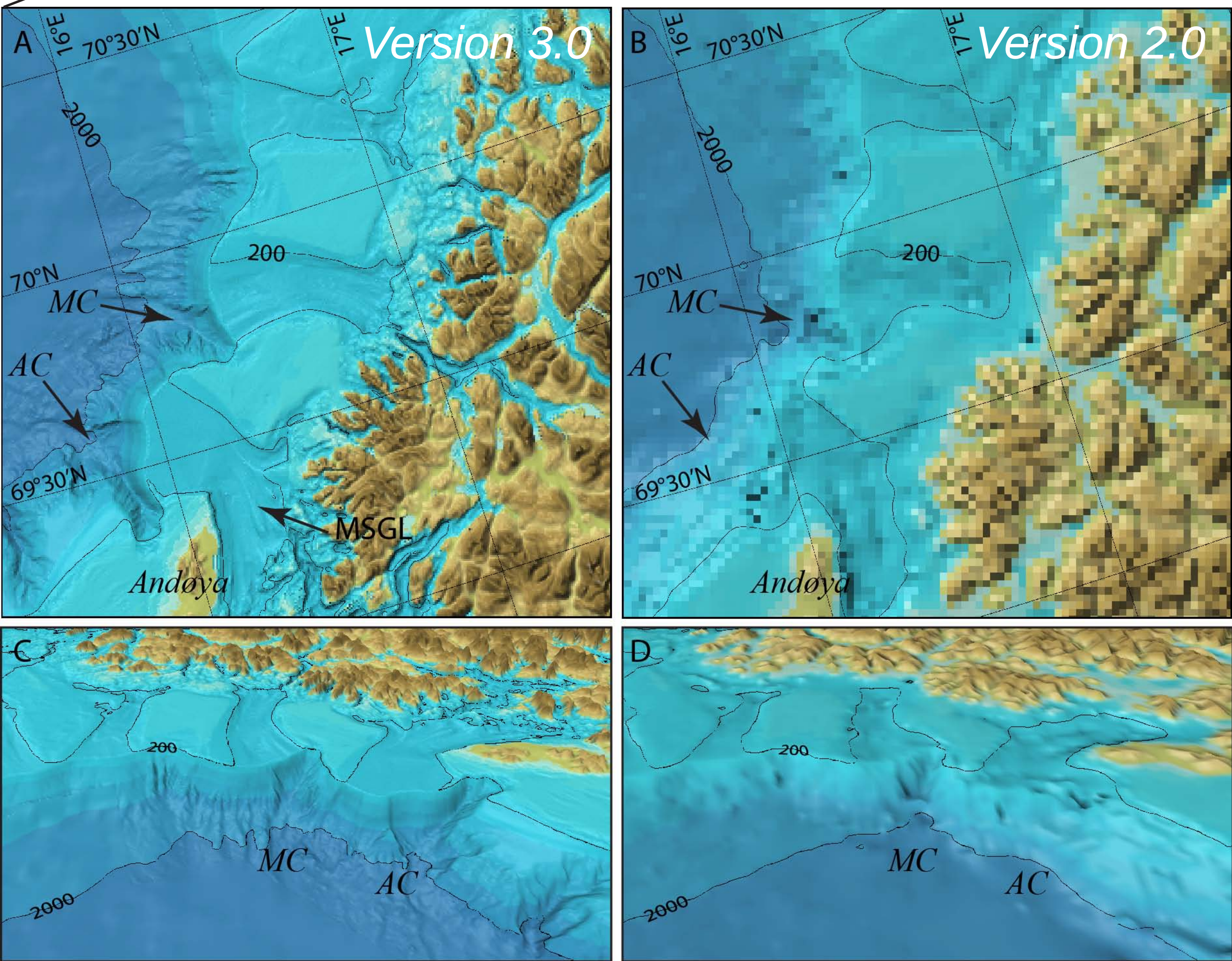
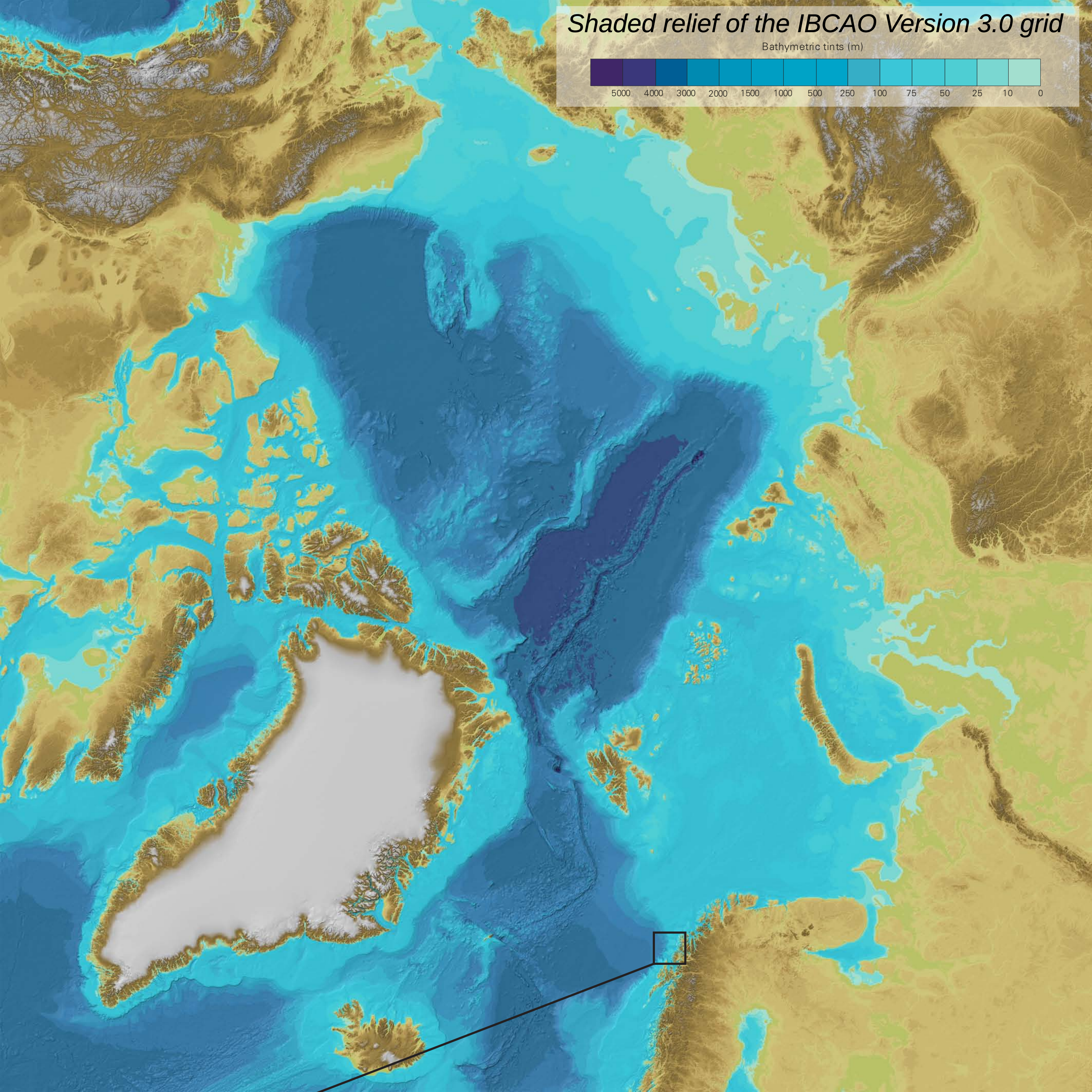


IBCAO was first released in 2000 as a Beta version with an accompanying article in EOS. This release was preceded by a presentation at the AGU Fall Meeting in San Francisco 1999.

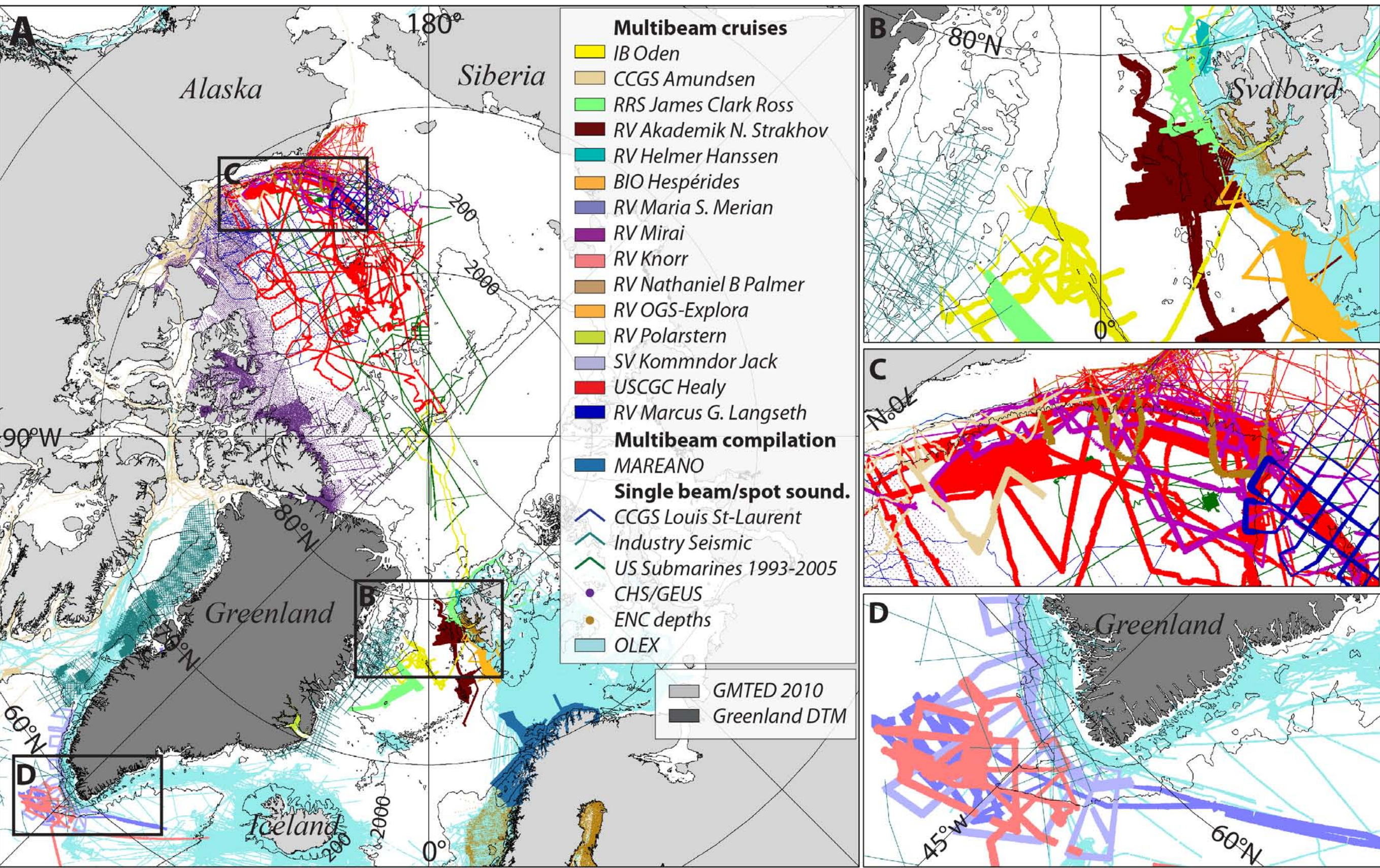
(This image of the article is from the AGU online archive of EOS back issues)



A Schematic illustration of the IBCAO compilation procedure. The main difference from the procedure used to compile IBCAO 2.0, is the final step consisting of adding multibeam, single beam (including Olex), and land data using the remove-restore method. Only single beam soundings with dense spatial coverage (close to or less than 500 m between soundings) are added in this final process, i.e. sparse random tracklines are omitted.



Comparison between IBCAO 3.0 (A) and 2.0 (B) in the area of northwestern Norwegian continental margin where the MAREANO multibeam data makes a significant difference. Note the difference in portrayal of canyons along the slope; even the large Andøya Canyon (AC) and Malangen Canyon (MC) are barely visible in IBCAO 2.0 (D) compared to in IBCAO 3.0 (C). MSGL=Mega Scale Glacial Lineations.



Bathymetric data new to the IBCAO 3.0 compilation. Figures and text is from: Jakobsson, M., Mayer, L., Coakley, B., Dowdeswell, J.A., Forbes, S., Fridman, B., Hodnesdal, H., Noormets, R., Pedersen, R., Rebesco, M., Schenke, H-W, Zarayskaya, Y., Accettella, D., Armstrong, A., Anderson, R.M., Bienhoff, P., Camerlenghi, A., Church, I., Edwards, M., Gardner, J.V., Hall, J.K., Hell, B., Hestvik, O., Kristoffersen, Y., Marcussen, C., Mohammad, R., Mosher, D., Son V. Nghiem, S.V., Pedrosa, M.T., Travaglini, P.G., Weatherall, P., The International Bathymetric Chart of the Arctic Ocean (IBCAO) Version 3.0, 2012, Geophysical Research Letters, v. 39, L12609, doi: 10.1029/2012GL052219