



RTopo-2: A global high-resolution dataset of ice sheet topography, ice shelf cavity geometry and ocean bathymetry

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The RTopo-1 data set of Antarctic ice sheet/shelf geometry and global ocean bathymetry has proven useful not only for modelling studies of ice-ocean interaction in the southern hemisphere. Following the spirit of this data set, we introduce a new product (RTopo-2) that contains consistent maps of global ocean bathymetry, upper and lower ice surface topographies for Greenland and Antarctica, and global surface height on a spherical grid with now 30 arc seconds resolution. We used the General Bathymetric Chart of the Oceans (GEBCO_2014) as the backbone and added the International Bathymetric Chart of the Arctic Ocean version 3 (IBCAOV3) and the International Bathymetric Chart of the Southern Ocean (IBCSO) version 1. To achieve a good representation of the fjord and shelf bathymetry around the Greenland continent, we corrected data from earlier gridded products in the areas of Petermann Glacier, Hagen Bræ and Helheim Glacier assuming that sub-ice and fjord bathymetries roughly follow plausible Last Glacial Maximum ice flow patterns. For the continental shelf off northeast Greenland and the floating ice tongue of Nioghalvfjærdsfjorden Glacier at about 79°N, we incorporated a high-resolution digital bathymetry model including all available multibeam survey data for the region. Radar data for ice surface and ice base topographies of the floating ice tongues of Nioghalvfjærdsfjorden Glacier and Zachariæ Isstrøm have been obtained from the data centers of Technical University of Denmark (DTU), Operation Icebridge (NASA/NSF) and Alfred Wegener Institute (AWI). For the Antarctic ice sheet/ice shelves, RTopo-2 largely relies on the Bedmap-2 product but applies corrections for the geometry of Getz, Abbot and Fimbul ice shelf cavities. The data set is available in full and in regional subsets in NetCDF format from the PANGAEA database.