

## GeoMAP on REMA

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The first version of GeoMAP (v.201907) will be released at the ISAES XIII meeting, providing a modern geological GIS dataset describing exposed bedrock and surficial geology of Antarctica. This poster illustrates the GeoMAP dataset draped over another recently released continent-wide dataset - the Reference Elevation Model of Antarctica (REMA).

GeoMAP construction occurred from 2015-2019 through an international effort involving ~18 key collaborators, 11 student volunteers, and much manual labour. The aim was to capture existing geological map data, update its spatial reliability, and improve representation of glacial sequences and geomorphology. The new GIS dataset comprises over 83,000 polygons that describe 'known geology' of rock exposures, rather than 'interpreted' sub-ice features, using a mixed chronostratigraphic- and lithostratigraphic-based classification. The map displayed here renders GeoMAP polygons with colours reflecting rock or deposit age, many of which will be difficult to see at a continent scale. A rich attribute table enables these data to be displayed or queried in a wide-variety of ways. Other data captured for GeoMAP, but not displayed here, includes a source bibliography of 502 polygons outlining maps and previous work, 1476 fault lines and 3850 structural data points. GeoMAP has potential to provide fresh perspectives, for example, through combined geological legends and interrogation of continent-wide time-space plots. It is also ideal for continent-wide perspectives and cross-discipline science.

GeoMAP has been displayed over a shaded greyscale image of REMA (Howat et al. 2019) relief, downscaled to 200 m resolution with data gaps filled by a 100 m DEM to provide visual continuity. REMA was constructed using the Blue Waters supercomputer and the open source photogrammetry software SETSM. A series of individual DEM's were developed from DigitalGlobe optical stereoscopic satellite images acquired from 2009-2017, then registered vertically to satellite altimetry measurements from Cryosat-2 and ICESat. REMA has absolute uncertainties of less than 1m over most of its area and relative uncertainties of decimetres. Version 1 has been developed into a high resolution (8 m) terrain map covering ~98% of the Antarctic continental landmass.

Howat, I. M., Porter, C., Smith, B. E., Noh, M.-J., and Morin, P. 2019: The Reference Elevation Model of Antarctica, *The Cryosphere*, 13, 665-674, <https://doi.org/10.5194/tc-13-665-2019>, 2019.

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