



## **Quantarctica: A Unique, Open, Standalone GIS Package for Antarctic Research and Education**

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The Norwegian Polar Institute has developed Quantarctica (<http://quantarctica.npolar.no>), an open GIS package for use by the international Antarctic community. Quantarctica includes a wide range of cartographic basemap layers, geophysical and glaciological datasets, and satellite imagery in standardized open file formats with a consistent Antarctic map projection and customized layer and labeling styles for quick, effective cartography.

Quantarctica's strengths as an open science platform lie in 1) The complete, ready-to-use data package which includes full-resolution, original-quality vector and raster data, 2) A policy for freely-redistributable and modifiable data including all metadata and citations, and 3) QGIS, a free, full-featured, modular, offline-capable open-source GIS suite with a rapid and active development and support community.

The Quantarctica team is actively incorporating more up-to-date, peer-reviewed, freely distributable pan-Antarctic geospatial datasets for the next version release in 2017. As part of this ongoing development, we are investigating the best approaches for quickly and seamlessly distributing new and updated data to users, storing datasets in efficient, open file formats while maintaining full data integrity, and coexisting with numerous online data portals in a way that most actively benefits the Antarctic community.

A recent survey of Quantarctica users showed broad geographical adoption among Antarctic Treaty countries, including those outside the large US and UK Antarctic programs. Maps and figures produced by Quantarctica have also appeared in open-access journals and outside of the formal scientific community on popular science and GIS blogs. Our experience with the Quantarctica project has shown the tremendous value of education and outreach, not only in promoting open software, data formats, and practices, but in empowering Antarctic science groups to more effectively use GIS and geospatial data. Open practices are making a huge impact in Antarctic GIS, where individual countries have historically maintained their own restricted Antarctic geodatabases and where the next generation of scientists are entering the field with experience in using geospatial thinking for planning, visualization, and problem solving.