

Case Study : Resolute Polars

Monitoring Rebounds of Greenland

Most of the news about glacier melting is related to freshwater runoff and sea-level rise. Another, less talked about consequence of glacier melting is geodetic rebounding – or the rise of land caused by reduced pressure from the loss of thousands of meters, and thus tons, of ice.

Denmark Technical University (DTU) has been working for over 10 years on an important project to monitor just this type of long-term geodetic rebounding in Greenland, with operational support from UNAVCO, a non-profit consortium of universities funded by the National Science Foundation.

The Greenland project consists of 59 geodetic instrument stations located around the entire perimeter of the world's largest island (see map on other side).

Xeos by Satlink became involved in the project of upgrading the core sensing technology of the geodetic monitoring stations to the new low-power Resolute Polar GNSS Receivers with Iridium satellite communications.

The new lower-power receivers reduced station battery requirements by half, which will help prolong the lifetime of the existing batteries. For new stations in the remote polar regions, the lower power requirements mean fewer batteries, which reduces logistical costs.

The new Resolute Polars are also able to transmit more data at a lower power penalty, having built-in micro heaters to help them survive the dark, cold days of the Greenland winter.

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The upgraded network will continue to map the steady vertical velocity field associated with postglacial rebound and improve our understanding of ice mass changes in Greenland, allowing scientists to quickly detect, analyze and model any abrupt changes in the rate of ice loss in the region.

UNAVCO also provides operational support for Ohio State University geodetic monitoring program in the Antarctic, which is now also using the new low-power Resolute Polar GNSS Receivers.

For more on these closely related projects, please visit UNAVCO's web site at POLENET.

