



The EOLIS dataset: Monitoring Land Ice from CryoSat-2 Swath Processing

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Satellite radar altimetry has been routinely used to monitor land ice heights since the 1990s. However, the launch of CryoSat-2 – the first altimetry mission to carry a synthetic aperture radar interferometer on board – has allowed several technical breakthroughs and led to many new applications that were previously unforeseen. One such breakthrough is Swath processing of CryoSat's SARIn mode, making full exploitation of the information contained in CryoSat's waveforms and leading to one to two orders of magnitude more measurements than the conventional so-called Point-Of-Closest-Approach (POCA) technique.

Following on from the early demonstration of the technique and of its potential impact, the CryoTEMPO EOLIS (Elevation Over Land Ice From Swath) dataset now routinely provides information of elevation over land ice at high resolution on a monthly basis. The dataset allows the use of radar altimetry in new environments such as the more complex terrain over glaciers and ice caps, as well as new applications thanks to the superior spatial and temporal resolution, such as the more precise quantification of subglacial lake drainage events. Currently, the EOLIS dataset is provided at monthly intervals over both ice sheets as well as all larger glacier regions, with future developments such as the expansion of the dataset to the ice shelves and new gapless annual DEMs over the two ice sheets coming soon.

With the aim of making CryoSat-2 altimetry data available to non-altimetry experts and encouraging its use more broadly by the community, the platform CS2EO (cs2eo.org) provides advanced data access to the EOLIS suite datasets. In CS2EO, users can query coincident data with other altimetry sensors, as well as explore and download custom elevation change time series over desired areas on ice sheets and glaciers, without having to download the EOLIS data first.