

## Ice Sheet Topography, Slopes, and Flow Directions from ERS Altimetry

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### Abstract

The surface topographies of the Greenland and Antarctic ice sheets are mapped from two 168-day cycles of the ERS-1 geodetic mission and two 35-day cycles from the multi-disciplinary mission. The Waveform Altimeter Product from the UK-PAF provides the altimeter waveforms, the ECMWF atmospheric corrections, solid tides, and the DPAF revision one precision orbits. Our waveform retracking algorithm (version 4) derives range corrections by fitting a 9 or 5-parameter function to each waveform and deletes ranges for which the waveforms are not representative of surface returns. The 9 or 5-parameter function describes a single or double surface return and calculates the range correction to the midpoint of the first return, which represents the average surface within the first pulse-limited footprint. Elevations are corrected for the slope-induced error and gridded on a 5-km grid with respect to a geoid derived from the NASA/GSFC and NIMA EGM96 gravity model. Grids of surface slopes are derived from the elevation grids and used to define the ice flow directions and delineate the ice sheet drainage basins. The grids with interactive plotting software will be available on a CD-ROM.

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