

## Experience with RA Transponder in Greenland

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### Abstract:

Using an active transponder with the ERS-1 and 2 radar altimeters the distance to the satellite was measured at the GRIP site on the Greenland Ice Cap at an altitude of 3.2 km. The location of the transponder was determined using GPS. The difference between the observed and computed distance to ERS-1 obtained in 1995 was 0.2 m.

Since the Transponder was located 1 km from the ground track, the measurements were corrected for this offset. Due to the smoothness of the surface the error is estimated to be below 0.5 m.

The transponder signal was modelled (without considering the volume scattering) and then removed from the RA waveform. The difference between the corrected distance and that obtained using the corrected Transponder measurements was 0.1 m for a measurement obtained in 1995.

The two results show that (a) the transponder can be used as a tracking device on the ice and (b) that the effective surface of reflection agrees with the surface of the (compact, dry) snow at this high altitude.