



## **Bistatic scattering of GPS signals off Arctic sea ice**

**M. Belmonte Rivas** (1,2), P. Axelrad (1), J. Maslanik (1)

(1) Colorado Center for Astrodynamics Research (CCAR), University of Colorado at Boulder, USA. (2) Now at the KNMI (Koninklijk Nederlands Meteorologisch Instituut), The Netherlands

In this work, we evaluate the potential of a GPS bistatic radar for the detection of sea ice and its classification. Using flight data collected over the Beaufort, Bering and Chukchi Seas, and assuming surface scattering as the dominant interaction mechanism, a Kirchhoff scattering model is fit to reflected GPS waveforms to estimate the L-Band dielectric permittivity of the surface and its large scale roughness. These products are compared against independent measurements of roughness provided by a LIDAR surface profiler and a reference classification of sea ice types obtained from the simultaneous analysis of microwave thermal emissions, C-Band radar backscatter and visible imagery. Finally, the separability of sea ice types in terms of GPS radar products is examined.