

## **Snow monitoring using ERS SAR and EMISAR data**

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### **Abstract**

This paper presents the datasets and results from analysis of data obtained in the Snow and Ice part of the European Multi Sensor Airborne Campaign (EMAC) and ERS-AO project. The area is located in Norway, 66 deg N and 14 deg E. The objectives of these projects have been to derive snow cover extent and snow water equivalent data from combined airborne, spaceborne and ground data obtained for snow covered mountainous areas. Three combined remote sensing and ground data acquisition campaigns were conducted at March 22- 23, May 1-3 and July 5-6, 1995. Several ERS-1 and EMISAR C- and L- band full polarimetric data were obtained from the field. Ground data measurements were performed during overflights of the EMISAR and ERS. The ground measurements include measurements of snow density, snow grain size, content of liquid water in snow and surface roughness. Air- and snow temperature data are also available. Several trihedral corner reflectors were deployed within the field for calibration and georeferencing purposes. One aerial photo of the testarea was taken July 14. The ERS-1 SAR data have been terrain corrected using Digital Elevation Model (DEM) data with a 100 m pixel spacing, absolute radiometric calibrated and converted to backscattering coefficient images by correcting for the antenna pattern, range loss and variation in resolution area. The resulting ERS-1 SAR data have been analyzed in terms of evaluating the relationship between the backscattering coefficient and snow conditions.

Keywords: ESA European Space Agency - Agence spatiale europeenne, observation de la terre, earth observation, satellite remote sensing, teledetection, geophysique, altimetrie, radar, chimique atmospherique, geophysics, altimetry, radar, atmospheric chemistry

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