

## **Sodankylä-Pallas Testbed**

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The Sodankylä-Pallas Testbed is located in the boreal forest/taiga zone of Northern Finland. The purpose of the Testbed is to serve as a calibration and validation site for satellite remote sensing observations and provide long-term continuous measurement data sets for the development and verification of data inversion algorithms. The Sodankylä-Pallas site is a typical representative of Eurasian taiga belt characterized by a mosaic of sparse conifer-dominated forests and open/forested bogs. The landscape is relatively flat or gently rolling although small mountain regions (fjells) are typical.

The available data sets range from point-wise monitoring observations to regionally distributed information. These include automatic weather station observations, atmospheric sounding observations, carbon flux monitoring and ozone column measurements. Specifically, snow cover measurement at the site include both automated measurements of snow depth and temperature at several sites, as well as manual snow observations of snow stratigraphy.

Recently, the Sodankylä-Pallas site has hosted several permanent and semi-permanent reference instruments for satellite observations. These include permanent multispectral observations of ground radiance, and several experimental campaigns using microwave instruments. As of 2009/2010, the site will have permanent multi-frequency (L- to W band) radiometer observation capability and act as part of e. g. ESA SMOS Validation and Calibration activities. The site will also host a series of experimental active (scatterometer) measurements related to development of active retrieval algorithms of snow cover for the ESA CoReH2O mission.

The available and future data sets are relevant for space-borne remote sensing instruments with a high or coarse spatial resolution, as well as for atmosphere or surface monitoring instruments. The available reference data also enables the analyses of mixed pixel effects that are highly relevant for the utilization of satellite observations with a coarse spatial resolution.

The Sodankylä-Pallas site is coordinated by the Arctic Research of the Finnish Meteorological Institute (FMI-ARC). Permanent activities of the site are also related e.g. to the Global Atmosphere Watch (GAW) network of WMO, and to the Long Term Ecological Research (LTER) activities coordinated in Finland by the Finnish Environment Institute (SYKE).