

HSAF Visiting Scientist Cluster 4000 SNOW/ WPs:  
4310 (Finland): Contribution to calibration/validation of snow products  
4311 (Finland): Preparation of validation datasets

## Work Report

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During 1.-18.4 the first field measurement campaign of Snortex (Snow Reflectance and Transition Experiment), hosted by Finnish Meteorological Institute's Arctic Research Centre (FMI-ARC), was conducted in Sodankylä area in Northern Finland. The work related to WPs 4310 and 4311 consisted of field measurements of snow reflectance and related parameters, as well as technical support for snow reflectance field measurements and airborne albedo measurements.

### Field measurements

Field measurements were conducted every day during the measurement campaign providing a total of 80 measurement sites on an area of 90 x 90 km around Sodankylä (Figure 1). Measured parameters as well as the instrumentation used are listed in Table 1. Most of the time two teams, one operating with car and the other with snow mobile, conducted measurements at the same time to provide better spatial coverage.

On five days snow reflectance and sky irradiance were measured with a spectrometer operated by Anna Kontu and Hanne Suokanerva, who also participated in the other field measurements.

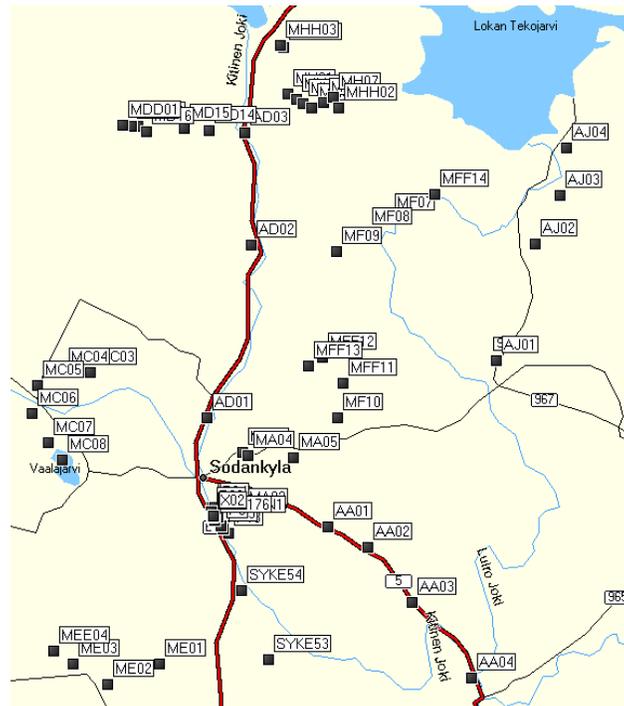


Figure 1: Field measurement sites.

**Table 1: Measured parameters and measurement equipment.**

<b>Parameter</b>	<b>Measurement equipment</b>
Snow depth	Stick
Snow water equivalent	Cylinder and scales
Profile of snow temperature	Thermometer
Profile of snow grain size	Snow crystal screen
Profile of snow wetness	Snow fork
Surface impurities	Photo
Surface roughness	Snow crystal screen
Snow reflectance	ASD FieldSpec Pro JR.
Sky irradiance	ASD FieldSpec Pro JR.

#### Technical support for field measurements

The technical support for the field measurements consisted of providing and operating vehicles (cars, snowmobiles) in the off-road terrains. For this work we had pre-scheduled group of personnel, consisting of four persons from FMI-ARC (Veikko Mylläri, Markku Ahponen, Markku Kivioja and Jyrki Mattanen) and two persons from FMI Observation Services (Petri Koivula and Veikko Postila). These persons took care of transportation in the measurement fields described in the previous chapter.

#### Technical support for airborne measurements

The technical support for the airborne measurements consisted of installing and uninstalling the airborne measurement instrumentation into the helicopter used in the campaign. Due to multiple sets of airborne measurements, the instrumentation were installed and uninstalled 3 times during the campaign, each one requiring careful positioning, mounting and wiring of several monitoring instruments. For this work we had pre-scheduled Jyrki Mattanen from FMI ARC, who needed supplement during the campaign from Markku Kivioja from FMI ARC and Petri Koivula and Veikko Postila from FMI Observation Services.

#### Additional data sets

In addition to the field measurements described above, data of several operational FMI-ARC instruments, such as basic meteorological surface data, sounding profiles, atmospheric optical density (AOD) - and UV-measurements, are available to SNORTEX project.

#### Data availability

Data can be free downloaded at [http://litdb.fmi.fi/apache2-default/list\\_of\\_all\\_data.php](http://litdb.fmi.fi/apache2-default/list_of_all_data.php).