# Training School on Snow Observations and Data Assimilation

## Preliminary program, topics and trainers

**Lectures**

### Introduction to NWP/hydrology models and their snow data assimilation

- Overview of the forecast and analysis of snow in NWP models
  *Patricia deRosnay*

- Overview of hydrological models and assimilation of snow information in hydrology
  *Albrecht Weerts, Adam Winstral*

- Detailed snowpack models and usage of observations therein (including inverse methods)
  *Michael Lehning*

### Methods of data assimilation

- Introduction to the data assimilation methods applicable for snow
  *Patricia deRosnay*

- Optimal interpolation for spatialization in NWP
  *Ekaterina Kurzeneva*

- Data assimilation methods in different snow models
  *Ekaterina Kurzeneva, Michael Lehning, Adam Winstral*

### Snow observations for the NWP, hydrology and snowpack models

- **Conventional snow (depth) observations available for assimilation**
  *Martin Lange*

- **Remote-sensing optical wavelength snow observations (snow extent and albedo)**
  *Terhikki Manninen*

- **Remote-sensing microwave data on snow**
  *Ali Nadir Arslan*

- **Emissivity models - Observation operators for DA**
  *Ali Nadir Arslan, Terhikki Manninen*

**Snow model and DA applications**

- Snow-vegetation interactions & SURFEX snow DA
  *Patrick Samuelsson*

- Observing and modeling of snow on mountains and glaciers
  *Antonella Senese, Aynur Sensoy, Daniele Bocchiola, Carlo de Michele*

- Case studies in hydrology
  *Aynur Sensoy, Albrecht Weerts, Adam Winstral*

**Possible exercises for the student groups**

- HUT model: forward modelling and inversion of passive microwave data

- Stand-alone snow DA + forecast with SURFEX for Sodankylä

- Stand-alone snow model at stations for snow DA (Moscow model, COSMO)

- Hydrology: Assimilate your basin

- OI offline: learning optimal interpolation for snow

**Forni glacier field trip**