**Objective:** to evaluate data on Snow Extent (SE) and Snow Water Equivalent (SWE) from remote-sensing observations and in-situ observations comparing them between each other and with HARMONIE snow analyses.

**Data** (Oct. 2015 – May, 2016):
1. SE satellite product METOP (polar orbiting, visual band)
2. SE satellite product MSG (geostationary, visual band)
3. Snow depth in-situ observations from SYNOP stations
4. HARMONIE analyses: SWE and snow fraction
5. SWE satellite product GLOBSNOW (microwave band)

**METOP vs MSG:**
METOP has more data in the North, but MSG has fewer pixels with undefined values. With better spatial resolution, METOP brings much information in spring. Use both MSG and METOP for DA.

**HARMONIE vs METOP and MSG:**
Good agreement where data are available. HARMONIE analyses has artifacts.

**SYNOP vs METOP and MSG:**
Good agreement where data are available. However both METOP and MSG overestimate snow. Also, SYNOP data contain representativeness errors.

**New structure functions for lake water surface temperature (LWST) from observations**

**Objective:** new structure functions of LWST dependent on the distance and on the difference in lake depth in the frame of Gandin (1965)

**Observations:** in-situ for 27 Finnish lakes by the Finnish Environmental Institute (SYKE). From MODIS for 71 pixels in Fennoscandia.

**June-July-August 2010-2014**

**Conclusions:**
- Usage of \( L_\text{w}=800 \text{ km} \) allows to introduce more observations, for lakes located far from their neighbours
- Usage of the depth difference dependency improves the analysis prevailing the influence of observations from shallow lakes on deep lakes, and vice versa