

WISLINE meeting 28 February 2015

Location: The Norwegian Meteorological Institute, Oslo

Topic: Cloud droplet / cloud ice measurements

Attendees:

The Norwegian Meteorological Institute (MET): Harold Mc Innes, Ole Einar Tveito, Bjørg Jenny K. Engdahl, Per-Ove Kjensli, Ragnar Brækkan

University of Oslo, Department of Geosciences: Jón Egill Kristjánsson

National Center for Atmospheric Research (NCAR): Roy Rasmussen, Greg Thompson

Kjeller Vindteknikk (KVT): Bjørn Egil K. Nygaard

Purpose of the meeting

To decide which sensor to buy and where we should place it

Background

Through WP1 of WISLINE we aim to improve the microphysics of the AROME model, and observations for verification purposes are required. The Norwegian Meteorological Institute will, according to the project description, purchase a suitable instrument for cloud ice/cloud droplet measurements. The instrument should be placed at a site that is exposed for cloud icing and reachable for inspections during the winter. A Rosemount Ice Detector was suggested in the project description.

Summary of the discussion

Haukeliseter and Gaustadtoppen are frequently inspected by MET. However Haukeliseter is not exposed to atmospheric icing as it is sheltered by surrounding mountains. Gaustadtoppen has extensive icing, and is therefore a better alternative. KVT could offer other alternatives, as they have a station with ice load measurements and meteorological observations at Ålvikfjellet in Hardanger, and they are also planning similar observations at a second site. This could be Skarveheia near Setesdalen or Røldalsfjellet. However these sites will only be inspected once every winter.

A Rosemount Ice detector costs between 120 000 and 150 000 NOK. It measures ice accretion and can be used to determine liquid water content. KVT plan to measure ice accretion on rotating cylinders at Ålvikfjellet and the second place, and these measurements will give us much of the same information as a Rosemount. In addition they will have web cameras at the sites. These data will be available for the WISLINE project.

An alternative to a Rosemount is a Thies Distrometer, which measures precipitation including drizzle. It will give us size distribution of precipitation droplets, but not cloud droplets. However drizzle is of great interest with respect to icing. The distrometer is also considerably cheaper than the Rosemount (35 000 NOK). To place a Thies Distrometer together with KVT's rotating cylinder could give very useful information, but only one inspection every winter is not sufficient. The most realistic solution

is hence to place a distrometer at Gaustadtoppen, where there already is a meteorological station that is frequently inspected. Wind and temperature are observed at Gaustadtoppen, but not precipitation. A Geonor in addition to the distrometer would therefore be usefull.

MET has an X-band radar which could provide valuable data, and if possible, we should place it in an area of interest for a period.

Norwegian Institute for Air Research measures aerosols at Birkenes. These data could be useful.

Atmospheric soundings from Sola airport could also provide useful data as this is mainly upstream of the sites mentioned above.

Conclusion

A Thies distrometer will be placed at Gaustadtoppen. It is also strongly desirable to place at Geonor in the same area, but maybe not at the top of the mountain.