

## **1<sup>st</sup> European Snow Science Winter School, 8-14 February 2015, Sodankylä, Finland**

In the first half of February 2015 two major snow research institutions: Finnish Meteorological Institute (FMI), Finland and Institute for Snow and Avalanche Research (SLF), Switzerland have organized a one-week long specialist course.

Snow school was addressed to graduate students and post-docs working on snow related research. Participants referred to fields covering glaciology, hydrology, oceanography, geography, biology, chemistry as well as engineering and materials sciences. From more than 50 multi-country applications, 28 were chosen. Poland was represented by Bartłomiej Luks, Daniel Kępski and Michał Laska – all supported by Centre for Polar Studies KNOW (Leading National Research Centre).

Main goal of the workshop was to learn both modern and classical snow measurement techniques and instruments.

All participants had chance to learn and use following techniques:

- standardized snow pit stratigraphy analysis
- measurements of snow water equivalent (SWE)
- measurements of snow layers hardness with Rammsonde and SnowMicroPen (SMP)
- measurements of density with variety of density cutters
- measurements of Specific Surface Area (SSA) of snow crystals with IceCube and shortwave InfraRed Integrating Sphere system (IRIS)
- MagnaProbe
- Near Infra-Red photography (NIR)

Daily schedule was divided into morning classroom presentations (9.00-11.00 am), field measurements (11.00 am – 5.00 pm) and wrap-up sessions (7.00-9.00 pm). Major stress lied on fieldwork, prepared in small, 3-4 person groups. Such solution allowed better recognition of each technique.

Participants were accommodated in campus of the [Arctic Research Center at Finnish Meteorological Institute FMI](#) in Sodankylä – located in boreal, sub-Arctic zone of northern Finland..

On Monday we had an first practice of measurement equipment and short site tour around FMI-ARC. It was an occasion to get to know one of the biggest and oldest snow research observatories in Finland. From Tuesday to Wednesday we learned about diversity in physical features of snowpack at different sites (forested area and opened bog). On Thursday we focused on SNOWPACK modeling software and had a field lecture on lake ice formation, snow-ice interactions and snow on ice stratigraphy and internal structure.. It was also our last day in Sodankylä, because in the evening we moved another 100km north to Saariselkä, for last fieldwork.

Friday was a day of a big field campaign. For many also, a first day on cross-country skis – our mean of transport to the test site. Each group was responsible for a part of research programme discussed day before, which concerned spatial variability of snow cover deposition and its internal diversity on mountain tundra region. Day has ended with sauna, official dinner and unofficial social gathering.

In addition to getting new skills and learning about state-of-the-art measuring techniques we had also chance to learn something more Finnish lifestyle (saunas, cross-country skiing, communication) and meet interesting snow-enthusiastic people from all over the World. There were also many opportunities to taste local food (reindeer and moose meat, blueberry pannacotta), drinks (Reindeer Tears) and observe *Aurora borealis*.

Just before leaving Lapland we found also few hours for visiting Santa Claus Village in Rovaniemi, where everyone could meet Santa, see his Post Office and get picture with one of reindeers...



Poles on turtles in Helsinki ☺



*Place of residence of the whole polish team in FMI site in Sodankylä*



*Each day in Sodankylä we started with lectures in FMI main building "Polaria"*

Reindeer balls  
and  
spaghetti  
with  
green pepper sauce  
and potatoes  
and vegetables



Vegetarian diet  
From kitchen

*Every day we tried other local dishes for lunch. Reindeer meat was the most common.*



*We were divided into 3-4 person groups. Daniel Kępski with his group were responsible for Snow Water Equivalent (SWE) measurements during fieldwork at Saariselkä tundra site (photo by Anna Kontu)*



*Michał Laska with his group of four. In Saariselkä they were responsible for snow depth measurements using the Magna Probe (photo by Anna Kontu)*



*Bartek Luks with his team during classical snow pit analysis at the bog site. Last day they performed measurements of SSA in each snow layer with IceCube (photo by Anna Kontu)*



*SnowMicroPen (SMP) – tool used to study snow layering without digging a snow pit. Device records the penetration resistance continuously. Peaks on controller panel indicates the hard (ice) layers within the snow cover.*



*Preparing the equipment before measurements at Saariselkä tundra site. We got there after two hours on cross-country skis  
(photo by Anna Kontu)*



*Bartek Luks during snow Specific Surface Area (SSA) measurements with IceCube. The operation of IceCube is based on the measurement of the hemispherical infrared reflectance of snow at 1310 nm (Photo by Martin Schneeбели)*



*Group photo at the end. All participants and lecturers of 1<sup>st</sup> European Snow Science Winter School (Photo by Martin Schneeбели)*

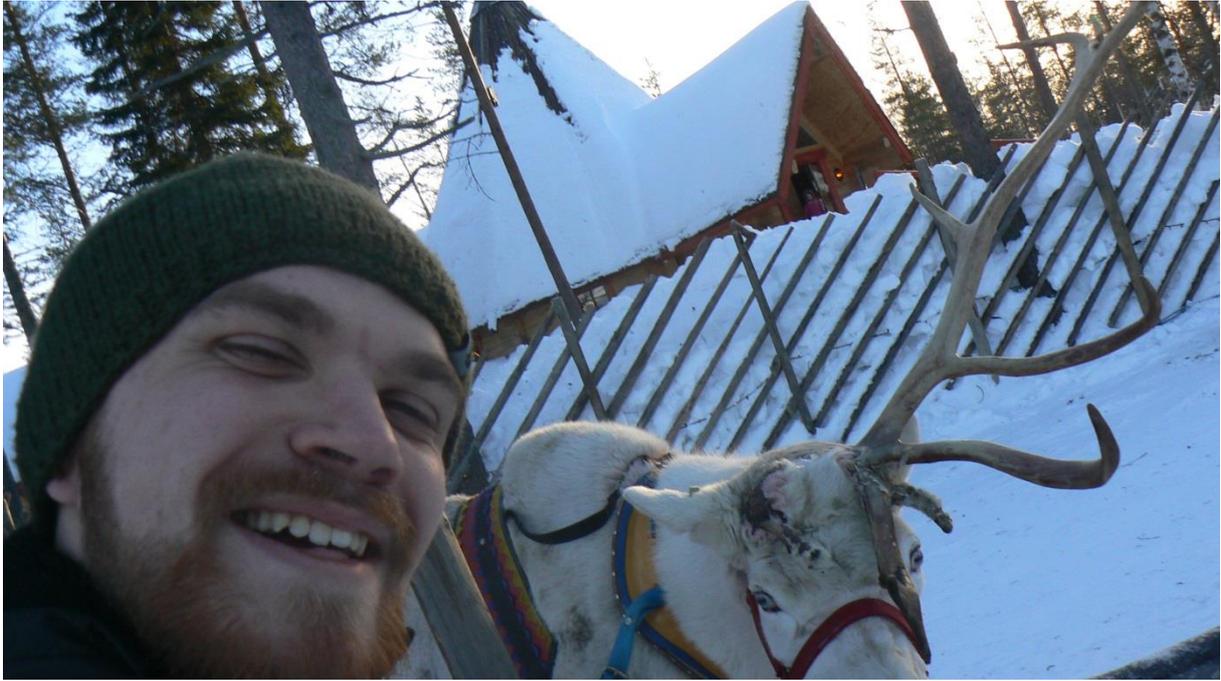
Going back...



*On the banks of the Kemijoki - longest river in Finland. In the background "Lumberjack's Candle Bridge" (in Finnish "Jätkäkynttiläsilta")*



*Arctic Circle line symbolically designated by columns in Santa Claus Village*



*Selfie with one of the Santa Claus reindeers*