PolarCLIMATE Project, Estonia

Progress report and scientific highlights 2012.

Picarro laser instrument (Picarro L2120-i) is working after repair in early spring in USA and is now our main instrument for δD and $\delta^{18}O$ analysis of ice core samples.

Lomonosovfonna 2009 ice core δD and $\delta^{18}O$ analysis were continued .(Coooperation with Paul Scherrer Institut Switzerland, NPI (Norway) and Uppsala University (Sweden). A 149 m long ice core was drilled at Lomonosovfonna in spring 2009 and transported to Bern and sampled by now :4000 samples for isotopes, chemistry and black carbon. Isotope measurements is planned to finish in January 2013 (half in Bern and half in Tallinn).

Holtedahlfonna 2012 shallow core δD and $\delta^{18}O$ measurements were compleated (coooperation with NPI and Institute for the Dynamics of Environmental Science,(Venice, Italy). First results were presented at IPICS OSC, (Gabrieli et al, 2012)

Lomonosovfonna and Austfonna shallow core $\delta^{18}O$ measurements (coooperation with Uppsala University) (in progress). Results of $\delta^{18}O$ measurement will be used for dating and interpretating the paleoclimatolocical conditions.

Jan Mayen shallow core δD and $\delta^{18}O$ measurements (coooperation with Arctic Center). (in progress).

Sea ice studies in Svalbard area (cooperation with NPI). The spring sea ice evolution in Rijpfjorden. was studied. A paper (Wang et al) submitted to Annals of Glaciology.

Changes in the work plan
Fieldwork in Amundsenisen in spring 2012 was canceled because of unfavourable ice conditions in Svalbard fiords. It was impossible to transport people and equipment to Hornsund station. For last 2 years Estonian team did not participate in fieldwork on Svalbard! As the finances, planned for fieldwork were not used as planned , the Estonian Research Council suggested to prolong the usage of SvalGlac budget up to the end of 2013!

Scientific publications

Conference posters:
1.Gabrieli Jacopo, Andrea Spolaor, Tõnu Martma, Jack Kohler, Mats Björkman , Elisabeth Isaksson, Paul Vallelonga, Carlo Barbante. Sensitivity of trace and rare earth elements as dust source proxies in Svalbard and Greenland glaciers. " IPICS (International Partnerships in Ice Core Sciences)OSC, 1.-5. October 2012, Presqu'île de Giens, France.

2.Wendl I., A. Eichler, S. Brütsch, I. Budde, M. Laborde, M. Gysel, E. Isaksson , T. Martma and M. Schwikowski. The first Black Carbon record from a Svalbard ice core. "IPICS OSC, 1.-5. October 2012, Presqu'île de Giens, France.

Ppapers.

1.Wendl, I., Eichler, A., Tobler, L., Eikenberg, J., Martma, T., Isaksson, I., Vogel, E., Schwikowski, M. 2012. First dating attempt for the 2009 ice core from Lomonosovfonna, Svalbard. Annual Report 2011. Eds: A. Türler, M. Schwikowski, A. Blattmann. Paul Scherrer Institut, Bern, 41.

2.Caixin Wang, Liqiong Shi, Sebastian Gerland, Mats A. Granskog, Angelika H. H. Renner, Zhijun Li, Edmond Hansen, and Tõnu Martma Spring sea ice evolution in Rijpfjorden (80°N), Svalbard, from in-situ measurements and Ice Mass Balance Buoy (IMB) data Submitted to Annals of Glaciology