SVALGLAC - The Netherlands and Sweden

Report of field activities on Nordenskiöldbreen, Svalbard, 28 March - 8 April 2011.

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From 28 March to 8 April 2011 a team from Uppsala University, Sweden, and Utrecht University, the Netherlands, carried out fieldwork on Nordenskiöldbreen, Svalbard (Fig. 1). The fieldwork was part of an ongoing research project to study the mass budget and dynamics of the glacier, which started in spring 2006 as part of the IPY initiative *the dynamic response of Arctic glaciers to global warming* (GLACIODYN).

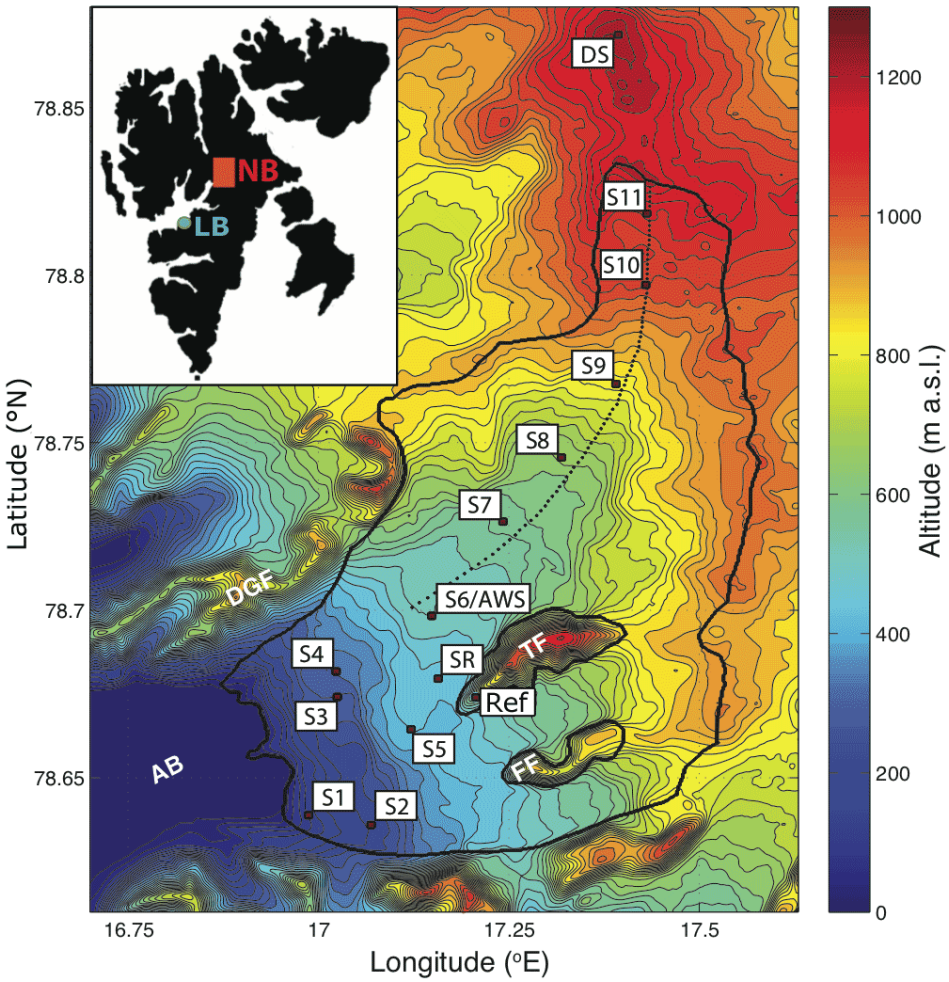


Figure 1. Map of Nordenskiöldbreen, Svalbard. Numbered dots denote GPS and/or mass balance sites. S6/AWS is the location of the Automatic Weather Station, Ref is the location of the Reference GPS on Terrierfjellet.

The fieldwork existed of replacing the IMAU GPS instruments that measure stake locations year round from which time series of glacier velocity can be derived. The stake locations were also measured with DGPS instruments for precision annual velocity determination and the stake height for the annual mass balance. Unfortunately the GPSes located closest to the glacier front (S3 and S4, Fig. 1) could not be retrieved due to pore snow conditions and crevassed areas.

Since 2009 an Automatic Weather Station (AWS) (Fig. 2) is located on the central flow line of the glacier (S6/AWS, Fig. 1). The AWS was visited, some repairs carried out and data collected. Furthermore, DGPS and high frequency snow radar profiling was done in order to determine surface height changes and accumulation patterns. About 10 km of snow radar profiles were retrieved between S7 and S9 (Fig. 1). An attempt was made to do deep radar measurements to improve the bedrock topography, which unfortunately failed. In aid of a complementary project, on top of the Lomonosovfonna ice cap, close to S11 (Fig. 1) a firn core was drilled and snow pit measurements were carried out.

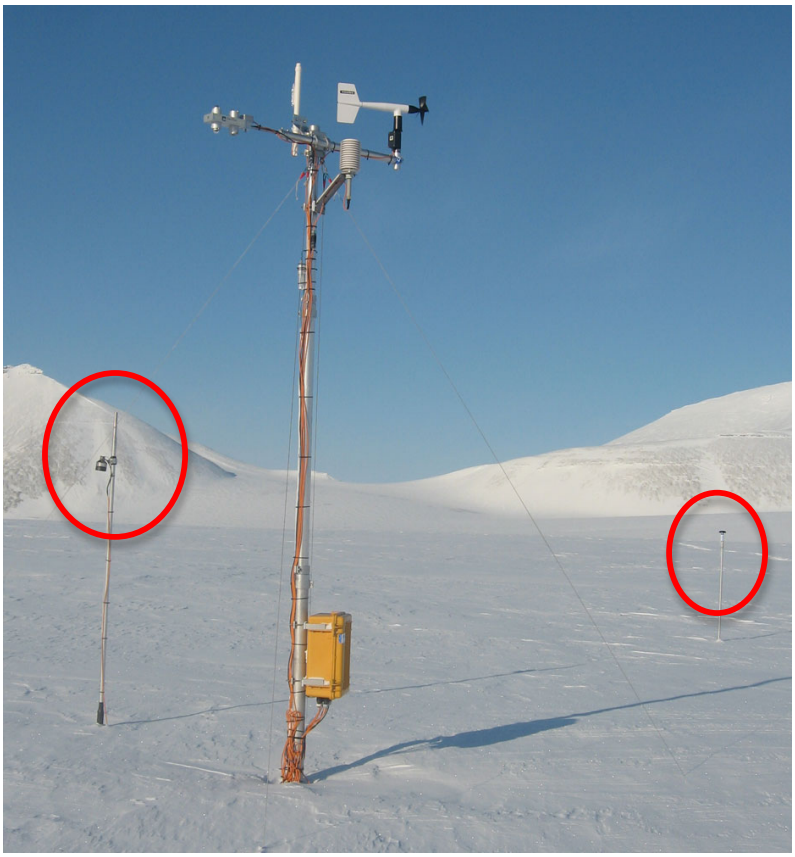


Figure 2. Photo of the Automatic Weather Station. The station is a basic energy balance station, measuring wind speed and direction, air temperature and humidity, air pressure, and short wave incoming and reflected radiation and long wave incoming and outgoing radiation. Left of the station a sonic altimeter to continuously measure mass balance variations, and to the right a GPS to measure flow velocities.

Logistics consisted of transport of personnel and equipment by snowmobile and camp was made in a hostel in Pyramiden.