

Activity report for Tarfala Research Station 2006

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Activity report (verksamhetsberättelse) 2006

The low snow accumulation during the winter and relatively high temperatures during a long summer season caused significant negative glacier mass balance in 2006. The snow conditions were bad already in January due to above 0°C temperatures and rain. Despite this we could travel using snow mobiles until the end of April which facilitated the winter accumulation measurements on the remote glacier at the appropriate time. Summer weather was pleasant for glaciologists but bad for the glaciers.

To explain the rationale of the monitoring programme run by Tarfala Research Station (TRS) we produced a document listing all measurements that are performed today and the accessibility of the results. Four scientists were asked to constitute a group of advice for the monitoring programme run by TRS. They are all well experienced in the fields of glacier massbalance, glacier hydrology and hydrology. They are ; Ludwig Braun (Kommission für Glaziologie, Bayerische Akademie der Wissenschaften, Germany); Wilfred Haeberli (World Glacier Monitoring Service, University of Zurich); Phil Graham (Swedish Meteorological and Hydrological Institute, SMHI) and Gia Destouni (Stockholm University).

About 50 Swedish and foreign students applied for the positions as field-assistants in 2006. We hired eight students from different Swedish and foreign universities for the winter/spring and summer seasons. These were Torbjörn Bergeliv, Lukas Egarter-Wigl, Hanna Gustavsson, Raphael Hubacher, Henrik Lindgren, Petter Schytt-Winberg, Olow Svonni and Annika Zachrisson. Chefs were Susanne Svensson-Ingvander and Helene Leitner.

Rosqvist, Törnberg and Svonni visited the station in January to download data and check out the station. The station was opened for the winter/spring season between the 14th of March and 6st of May. The winter balance on Storglaciären amounted to only + 1.15m water equivalent (w eq).

For the summer season TRS was opened the 29th of June and closed the 15th of September. We had a warm start of the season and generally the summer

temperatures were unusually high and weather was dry. No extreme rain events occurred. This resulted in that the discharge measurement at the hydrological station Rännan primarily reflected glacier melt. The summer balance for Storglaciären amounted to -2.83 m w eq., resulting in a net balance of -1.68 m w eq. The strong melt during the summer resulted in a very high position of the equilibrium line altitude at ca 1615 m a sl and the accumulation area ratio was 17.2%. Travelling in the accumulation area of the glaciers was challenging due to the many exposed huge crevasses. In late August the perimeter of Riukojieta was measured in detail and the snout positions of Östra Pässusglaciären, Stuur and Unna Raitaglaciären were also surveyed. The summer season was longer than usual and the last complementary summer balance measurements were performed not until November. In November the hydrological station Rännan was repaired. During this visit the first winter snow accumulation on Storglaciären was measured and data from loggers secured.

Senior scientists, PhD students and master students carried out many research projects using TRS as a platform in 2006, some coming for longer term projects. Neal Iverson, Iowa State University, US, started up a three year project during which he and Pete Moore investigate the cold surface layer interaction with the bed at the front area of Storglaciären. Kevin Uno, University of Utah, US, studied the noble gas and stable isotopes in ice and snow on Storglaciären. Andrew Fountain, Portland State University, returned and closed his previous very successful project during which he and colleagues could determine that glacier surface melt water drained through crevasses in the ice. During the summer Sven Blomqvist, Brad Goodfellow and Regine Hock from Stockholm University visited the station. Mark Dyrgerov, Institute of Arctic and Alpine Research, University of Colorado, US, at present a guest scientist at Stockholm University visited the station in September. Two master students from University of Wales, Aberystwyth carried out projects in the fore-field of Storglaciären in the summer. Development of the hydrological programme was discussed during a visit by Phil Graham, SMHI, and Jan Seibert, Stockholm University. Hydrologists Rolf

Weingarter, Geographisches Institute, University of Bern, also visited the station to support master students. Swedish Arctic ambassador Helena Ödmark, Swedish Foreign Ministry, spent a few days in Tarfala in early September.

In 2006 the course “Glaciers and high alpine environment” was led by Ninis Rosqvist and Torbjörn Karlin, Department of Physical Geography and Quaternary Geology, Stockholm University. Veijo Pohjola, a glaciologist from Uppsala University, returned to TRS and taught glacier dynamics. Students joining the course “Living glaciers” led by Per Holmlund visited the station in early August. Six college teachers from Hjalmar Lundbomskolan, Kiruna, followed a course on “Climate and environmental change in northern Sweden” that was led by Ninis Rosqvist.

Four college students followed the “summer research school” financed by the Faculty of Natural Science, Stockholm University students and carried out an ice velocity study in July. TRS was also visited by college students from Kiruna, Fagersta, Landskrona and Stockholm. High school students from Tärendö visited TRS in the end of August.

In September a European Science Foundation funded International Polar Year (IPY) workshop was hosted by TRS and Camilla Hanssen, IPY coordinator at the Swedish Research Council. Participants came from all over Europe and discussed how to reach out during the IPY. Ambassador Helena Ödmark, who is the Swedish representative in the Arctic Council was introduced to the station at this time.

The Swedish Polar Research Secretariat organized

a Swedish, Finnish and Norwegian training workshop in Tarfala in the end of March and early April. Snow mobiles and snow cats were tested and plans were made for future Antarctic expeditions. Markstridsskolan held their practical winter training for military mountain guides in April.

We received a grant from Henrik Granholms Stiftelse, Stockholm University. This enabled us to purchase equipment for water discharge measurements, sensors to be placed at the remote weather stations and for visualisation of monitored weather data.

The station was visited by representatives from an EC funded project “Rural Wings” in which TRS is one of the remotely located research stations that will be equipped with a satellite based broadband. When up and running this will greatly improve our internet access and outreach possibilities. The equipment will be installed in the summer of 2007.

Due to the exceptionally large ice melt, due to the snow poor winter and warm summer, a lot of interesting “glacio-archaeological objects” melted out on Storglaciären. We therefore intensified our “cleaning up the glacier campaign”. Some of the station buildings were equipped with new windows and the office space in “forskarhuset” was expanded.

Tarfala is since 2006 part of the Arctic network SCANNET (www.scannet.nu). SCANNET is a network of Terrestrial Field bases, Research Stations Managers and user groups that are collaborating to improve comparative observations and access to information on Environmental Change in the North.