

Activity report for Tarfala Research Station 2005

Gunhild Rosqvist

*Department of Physical Geography and Quaternary Geology,
Stockholm University, SE-106 91 Stockholm, Sweden*

Annual weather & glacier status

Winter weather offered normal amounts of snow and relatively long periods with stable high pressure weather during the spring. Snowmelt in the Tarfala valley began in mid-May and continued until late June. The end of June and July was warm. In contrast the second half of August and first half of September were cold and precipitation rich. During one precipitation event, the 26-27th of August, Tarfala received 70 mm rain. At this time large volumes of glacially eroded sediments were evacuated from the glaciers and eroded from the fore-fields. The Ladtnojaure valley was completely flooded. This event also affected large areas of northern Sweden with similar flooding events as a result.

The winter balance on Storglaciären amounted to + 1.64 m water equivalent (w.e.). The summer balance for Storglaciären amounted to -1.72 m w.e., resulting in a net balance of -0.08 m w.e. The equilibrium line altitude was positioned at ca 1490 m a.s.l. and the accumulation area ratio was 43%.

Visits & fieldwork

Team Tarfala visited the station in January to download data and check the station. A severe winter storm was encountered and indoor time was used to organize documents and literature. The station was opened for the winter/spring season on the 20th of March and was closed the 1st of May. A period with stable weather in mid April allowed winter balance measurements to be carried out on the Mårma, Rabots and Riukojietna glaciers in an efficient way. TRS was opened for the summer season on the 30th of June and was closed on the 16th of September. However, the summer balance measurements on Mårma and Riukojietna could not be conducted until early October due to too bad weather conditions in September for helicopter flights to those sites. The station was again visited in November for a check up.

What is new?

New safety routines were established in 2005 for work on the glaciers and in the alpine environment and also for maintenance work on the station itself. Guidelines for work on the glaciers were prepared together with Michael Amlert, a well experienced mountain guide based in Kiruna. Staff was also trained practically in glacier safety techniques by Amlert.

A wireless network was installed at the station which allows staff and guests access to common servers and printers.

Severe melt on Storglaciären during the last decade had exposed a significant volume of old equipment such as stakes, cables and bore-hole casings. We therefore started a "cleaning up Storglaciären campaign" in 2005.

We purchased two Yamaha snow mobiles, a necessary investment for safety reasons. These were a great support for the winter/spring fieldwork on the remotely located glaciers and for transport of food/fuel from Nikkaluokta to Tarfala and of old metal garbish from the glacier via the station to Nikkaluokta.

Personnel & guests

After advertising on the web we had about 50 applicants for the positions as field-assistants. We hired eight students from different Swedish and foreign universities for the winter/spring and summer seasons. These were; Helen Carlens, John Hult, Torbjörn Karlin, Samuel Nussbaumer, Petter Schytt-Winberg, Olow Svonni and Annika Zachrisson. Karin Winarve and Susanne Svensson-Ingvander were the chefs during the spring and Susanne returned and shared the position with Mats Norén during the summer.

Senior scientists, PhD students and master students carried out research projects using TRS as a platform in 2005. For example the ecology and chemistry of the surface waters is studied by Sven Blomqvist, Stockholm University. The water balance of Storglaciären was studied by Yvo Snoek, University of Utrecht, Netherlands. Glacier Moulin drainage was investigated

by Rachel Brown, Carlton College, US. The geomorphology in the Tarfala Valley was mapped by Markus Gustafsson, Uppsala University. The evolution of the Tjernalako plateau was studied by Brad Goodfellow, Stockholm University.

The course “Glaciers and high alpine environment” was held at the station and was led by Regine Hock and Mattias de Woul. TRS was also visited by students joining the field excursion associated with the course “Living glaciers” led by Per Holmlund. These two courses are run by the Department of Physical Geography and Quaternary Geology, Stockholm University.

TRS hosted a workshop organized by the Swedish Nuclear Fuel and Waste Management Company (SKB) in April. The topic was the effects of geothermal heat on the basal conditions underneath the Greenland ice

sheet. TRS was visited by participants of the “Scotia Antarctic Expedition” in 2003 discussing climate and glacier change in Antarctica during a workshop in September.

Three female college students followed the “summer research school” financed by the Faculty of Natural Science, Stockholm University. They carried out an ice velocity project on Storglaciären supervised by Rosqvist and Jansson. TRS was also visited by college students from Kiruna and Stockholm. Traditionally we were also visited by high school students from Tärendö. “Markstridsskolan” held their practical winter training for military mountain guides at TRS in April. Journalists from SVT visited the station in the summer and reported about research in Northern Sweden in the national news.