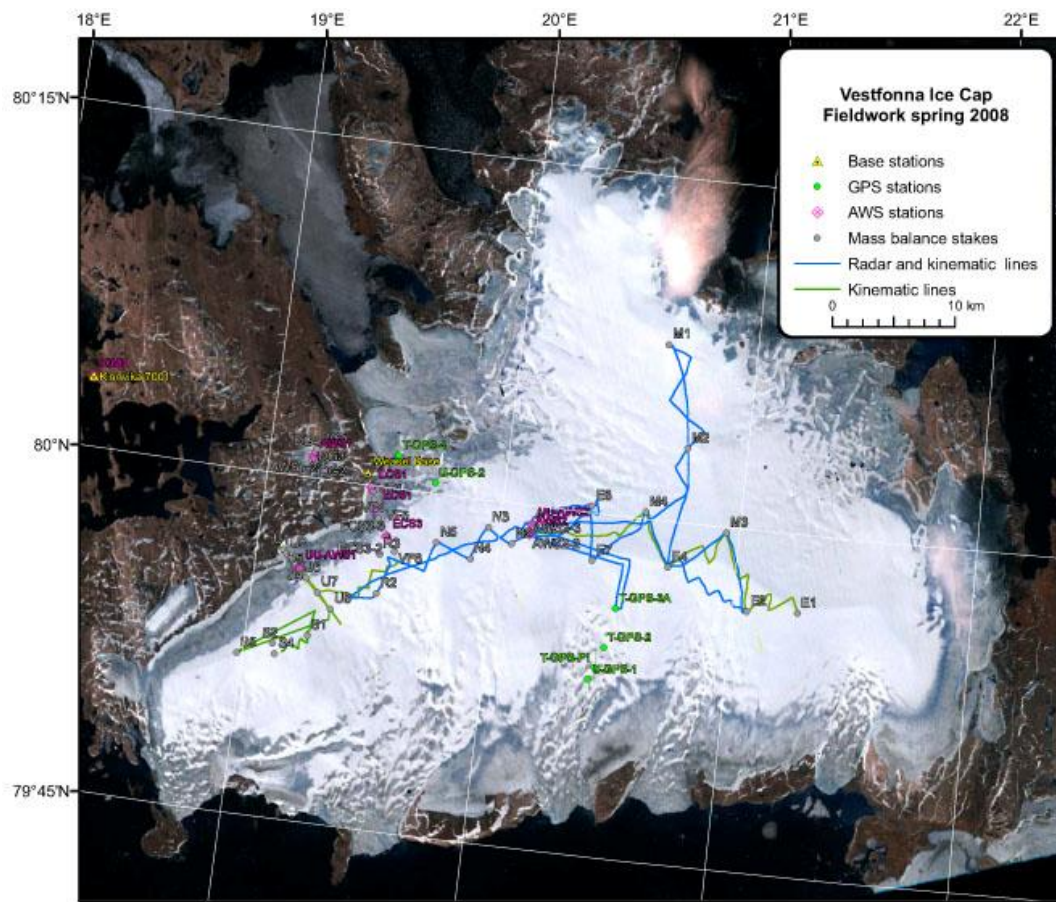


Report from Ice Dynamics team field work 2008

Participants on the spring 2008 field work:

Alun Hubbard, University of Aberystwyth, Adrian McCallum and Poul Christoffersen, Scott Polar Research Institute, Rickard Pettersson and Veijo Pohjola, Uppsala university
Associated colleagues:

Matthias Braun, University of Bonn, John Moore and Venkata Gandikota, University of Lapland (Rovaniemi), Regine Hock and Ulf Jonsell, Uppsala university



Vestfonna and the activities performed 2008. The AWS described here is along the U line perpendicular to the ice ridge to the left.

Objectives:

- to investigate the thermodynamical status of Vestfonna – and to estimate the vulnerability of the ice cap to warming
- to map ice thickness and ice topography to establish a current DEM
- to map thermal boundaries between fast flowing outlet glaciers and slow moving ridges
- to map the ice velocity field
- to evaluate the long time change in mass of the ice cap

Tools:

Ice radar, (10 Mhz impulse system)

DGPS campaigns and continuous measurements, (Trimble R7, 5700)

Remote sensing, (Aster, Radarsat, etc..)

Ice cap modeling (thermodynamical models (ELMER, etc))

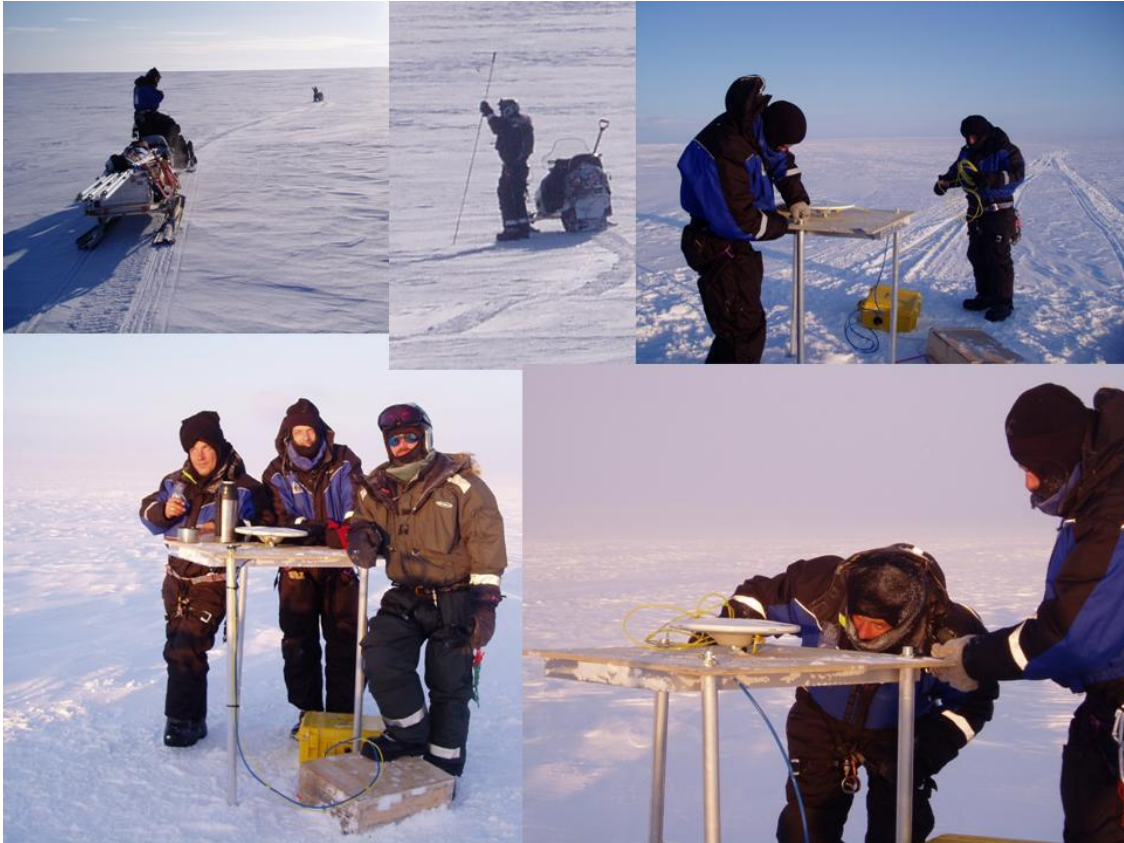
Field work 2008:

- Managing ca 200 km of continuous profiling with DGPS and Ice radar, giving topography and ice thickness and bedrock topography, as well as information of the ice thermal status
- Established 8 DGPS stations for continuous measurements on two of the fast flowing outlet glaciers
- Measured in static mode 30 velocity and mass balance stakes
- Downloaded one year of data and maintained the AWS on the UU-line

Preliminary results:

- Annual average temperature and wind speed measured at the UU-AWS over the period May 2007- May 2008 was -8.0 °C and 5.9 m/s.
- The average accumulation in the upper part of Vestfonna this mass balance year is ca 0.5 m water equivalents
- The ice cap have cold ridges, but wetter ice at depressions, and are wet based along the outlets glacier studied
- Ice speeds on the cold based parts of Vestfonna are about 10 m / yr with diminishing speeds towards the ridges. Interferometry have shown outlet glaciers speeds upto 100 m / a
- The ice sheet surface seems lower than profiling done 1996, but higher than profiling from the 1980s

Field work pix below



Ice dynamics team on mission at the fast flowing outlet glacier Frazerbreen. Rickard driving first is doing a good job probing after crevasses. And, yes, we found some of them, but then swiftly moved away to safer ground. It was more than 2 m of snow, which made the trip safer than usual. When landing a safe site we drilled down aluminium pipes and mounted the Trimble receiver and antennae. Poul and Alun are doing a good job coupling it all together. Or what was it we brought? In the lower left you find we made up the best pizza joint on the whole of Frazerbreen, and perhaps on whole Nordaustlandet. For some time the table was busy when Rickard joined in.
Photo: Veijo Pohjola.



Work at the UU-AWS. This spot was the windiest on the whole Vestfonna. Snow drift is a bigger when dealing with delicate electronics. Rickard is enjoying the pit, and Olli show sisu digging hard. It though pays to work hard in drift, ice in the face is one of the rewards. *Photo: Veijo Pohjola.*



Measuring position of massbalance stakes and making surface leveling. Sometimes the aluminum pipes we drilled 2007 was hard to find, this one made a nice ice rime statue. *Photo: Veijo Pohjola.*



Rickard is preparing the ice radar sled, and getting the receiver going. Adrian to the left was to be known as the best radar train driver. He was the only one able to drive 5 km / h for several hours in a row. We others had hard to manage driving as slow since it was easy to fall asleep at such slow pace. But then of course, Adrian is a co-pilot in RAAF (the Aussie air force) and Aussies are well known for be easy-going. *Photo: Veijo Pohjola.*



Clockwise from top right. The team prepares for the long morning commute. Traffic jams were not expected. Benign conditions on top. Early hours radar work. Our leader surveys the way ahead. Retreat from the ice cap upon the initial storm. Limited visibility made for slow going. Return to Kinnvika. Photos: Adrian McCallum.