

Ice coring on Vestfonna Ice Cap

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Participants during drilling:

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Science:

Ice cores from the glaciers outside the main ice fields of Antarctica and Greenland have not received much attention, partly because of surface melting during the summer season, which could alter the original ice core record. Many of the scientists in the group of potentially interested participants has participated in other projects successfully drilling ice core from several of the major ice caps on Svalbard. Previous work has shown that despite the high degree of summer melting it is possible to retrieve annually resolved climate records. The overall picture from the available climate records from Svalbard suggest warmer temperatures about 1000 years ago and a cooling trend from about 1500 AD to the end of the 1800s, followed by a warming thereafter. However, the spatial variations of these changes are not fully known.

Previous ice cores from Soviet and Japanese expeditions have shown a potential to extract high-resolution climate records from Vestfonna. The 350 m thick ice cap has the potential to preserve at least two millennia of climatic information. In this project we plan to drill an ice core at the summit of this ice cap. The main goal of the project is to investigate the present and the recent past climate and the input of long-range contaminants.

Popular Summary:

Ice core records from polar ice sheets and ice caps have provided valuable records of both climate and pollution. In favourable cases these can be obtained with seasonal resolution. The ice cap of Vestfonna contains some of the deepest ice in Svalbard and therefore has the potential to contain old ice at a high resolution.

Field requirements:

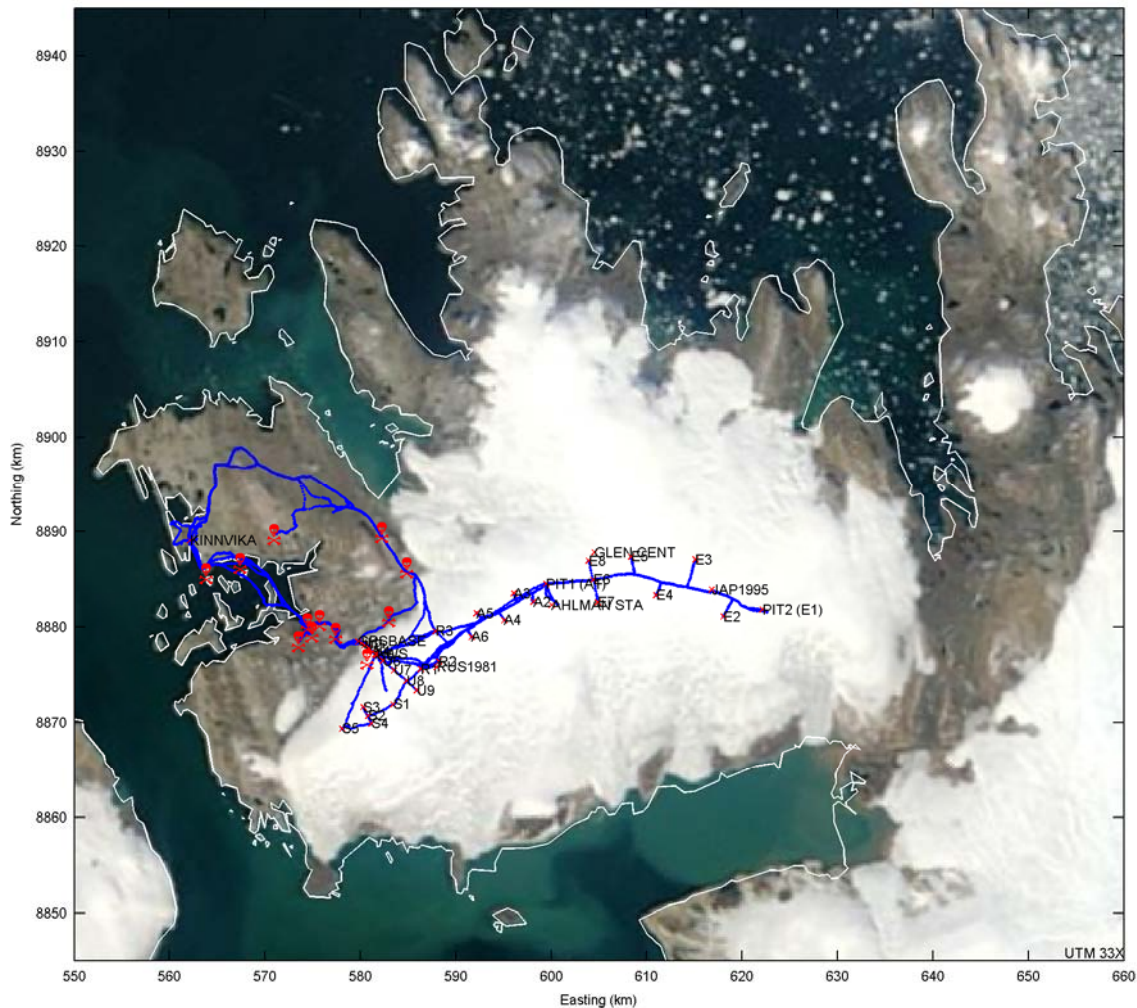
The ice coring site will be located at the summit of the ice cap. It will require a field camp with about 5-6 people with sleeping and kitchen tents. A fuel and equipment depot has been prepared at Kinnvika in summer 2007. Helicopter or Twin Otter transport will

be necessary to take people in to Kinnvika and up to the camp Ahlman area of the ice cap (79 58'N, 20 09' E). If we reach bedrock about 4 tons of ice will need to be flown out to Longyearbyen in insulated boxes. This is much better done by twin otter than helicopter. No drilling fluids or toxic chemicals will be used in the drilling operation, and all materials will be removed from the ice cap at the end of drilling.

Time plan:

The main ice core drilling will take place during the spring of 2008- mid April to early May. The time in the field depends on the drill depth, but we estimate that 4 weeks is required in order to drill a 325 m deep core with the available drill equipment.

It would be necessary to perform some radar work before the finally establishing the drilling camp and beginning drilling.



Map showing the Kinnvika station and the routes used in spring 2007. The drill site will be near Pit 1.