PhD Position on the impact of changing firn on Greenland Ice Sheet mass balance

Job description

The PhD position on “The impact of changing firn on Greenland Ice Sheet mass balance” is funded for four years in the framework of the ERC project “CASSANDRA - Accelerating mass loss of Greenland: firn and the shifting runoff limit” at the Department of Geosciences, University of Fribourg, Switzerland.

Surface runoff is the largest contributor to mass loss of the Greenland ice sheet. Recent years saw the runoff area expanding into Greenland’s vast firn area. We hypothesize that this uphill migration is not just a direct effect of increased melt, but is amplified by changes in firn characteristics that favour runoff. This interplay between melt, firn and runoff could play a decisive role in Greenland’s future mass balance.

The PhD focuses on understanding the changes in the relationship between surface melt and surface runoff. To answer this research question, the successful candidate will apply spatial statistics to regional climate model data, melt extent measured from passive microwave data and remotely sensed surface runoff extent. The PhD candidate will also test the ability of existing firn models to replicate observations. Finally, the work involves participation in field studies on the Greenland ice sheet where the PhD candidate will carry out their own measurements.

More about the position

The optimal starting date for the position is 1 October 2019, which is five months after kick-off of the CASSANDRA project. Some flexibility with respect to the starting date, however, exists.

A group of five researchers will work in the CASSANDRA project: the PI (Horst Machguth), two postdocs and two PhD students. The PhD candidate will be supervised by a postdoc and the PI.

This position is associated with the Cryosphere group within the Geography unit of Fribourg University. The Cryosphere group has currently a staff of c. 20 with a strong expertise in surface processes of glaciers and ice sheets, permafrost and geophysics.

Qualification requirements

We seek a dedicated person with a strong interest in ice sheet research, climatology and hydrology.

The following requirements for the position apply:

- The applicant must hold an MSc within geosciences, geophysics, climatology or hydrology.
- Computer programming skills are mandatory, preferably using Python for processing of geophysical data, climate model output or remote sensing data.
- The applicant must have very good verbal and written communication skills in English.
The following points represent assets for the candidates:

- Demonstrated competences in general and spatial statistics
- A background in analysis of remote sensing data
- Experience in working with climate model output
- Experience in glaciological fieldwork or willingness to participate in field campaigns
- Having already published in conference proceedings or scientific journals
- Knowledge of either French or German language

We offer

- Gross salary of CHF 47,040 (first year) to 50,040 (3\textsuperscript{rd} and 4\textsuperscript{th} year) per annum (approx. net salary 40,000 to 42,500 CHF).
- A professionally stimulating working environment and the ability to shape the research strategy in collaboration with the PI and the postdoc.
- Involvement and experience in field research on the Greenland ice sheet
- The opportunity to gain experience in supervision of MSc students.
- Rich opportunities for culture and outdoor activities in the city and surroundings of Fribourg.

How to apply

The application must include:

- Application letter (briefly summarizing your motivation to apply for the position and how you see your expertise fit with job description and required qualifications)
- CV (detailing education, academic work and achievements)
- List of publications (if applicable)
- Copies and transcripts of educational certificates
- Names and contact details of 2 references (name, affiliation, relation to applicant, e-mail and telephone number)

For questions, please contact Horst Machguth (+41 26 300 9015, horst.machguth@unifr.ch). The application (merged into one PDF file) can be sent directly to horst.machguth@unifr.ch. Please note that all documents should be in English. Evaluation of applications will start June 19 and continue until the position is filled.