



Centrum Studiów Polarnych

Centrum Studiów Polarnych
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PhD student position at environmental Interdisciplinary Polar Studies in Centre for Polar Studies, Leading National Scientific Centre (KNOW)

Reference No: CSP/2014/US/5

Title of PhD project:

“Changes of water content and drainage in polythermal glaciers based on radio echo-sounding data”

Location: Centre for Polar Studies/ Faculty of Earth Sciences US

Deadline: 5th September 2014 r.

Interviews: 15th – 19th September 2014 in the chosen institute

(http://www.polarknow.us.edu.pl/wp-content/uploads/Location_CPS_partners.pdf)

In the case of students from abroad the interview will be performed in the form of video conferencing.

Mode of study: full-time

Degree to be obtained: Doctor of Philosophy in Earth Sciences, discipline – Geography

Duration: 4 years (8 semesters), from October 2014

Language: Polish and English, Polish is not obligatory for students from abroad

Scholarship: EU citizens and owners of Card of the Pole can apply for scholarships funded by the KNOW (Leading National Scientific Centre) 2 000 – 4000 PLN/month

Fees applicable: EU citizens applying on a regular basis – no fees; Non-EU citizens: 3 000 EUR per year; More information are available on website <http://admission.us.edu.pl/english/admission-rules>

Required documents and registration online: <https://www.irk.us.edu.pl/index.php>, more information: http://www.polarknow.us.edu.pl/wp-content/uploads/Resolution_No_273_conditions_and_method_of_recruitment_for_the_first_year_of_doctoral_studies.pdf

Conditions of recruitment: The final result of the completion of the candidate's higher education (up to 6 points, the conversion of diploma ratings: 6.0 (excellent) - 6 points.; 5.0 -

5 points.; 4.5 - 4 points.; 4.0 - 3 points.; 3.5 - 2 point.; 3.0 - 1 point), Foreign grading scale will be converted.

The interview will assess the candidate's intellectual level of the candidate's knowledge of English and professional level of the doctoral dissertation project (maximum 15 points). Delivery the project of doctoral dissertation (max. 2 pages) to 5th September 2014.

Requirements:

1. MSc degree (or equivalent) in Geography, Geology, Geophysics, Physics, Hydrology, Geodesy or Computer Science or equivalent science discipline.
2. Knowledge on glaciology, hydrology and hydrogeology enabling to understand the mechanisms of water circulation and retention in glaciated areas.
3. Ability to organize individual work and teamwork skills.
4. Willingness to engagement in research and organizational works in the unit.
5. Creativity and receptiveness to the new scientific challenges.
6. Excellent physical fitness allowing to conduct fieldwork.
7. Skills in programming language (e.g. FORTRAN, MATLAB or C++) and GIS software are welcomed.

Tasks description:

1. Conducting of experimental fieldwork on Spitsbergen and Antarctic glaciers using radio echo-sounding method.
2. Acquisition of practical skills in geophysical instruments.
3. Processing of geophysical and geodetic data with computer software.
4. Creation of quantitative and qualitative models of drainage and retention of englacial and subglacial water.
5. Regular implementation of the program of Interdisciplinary Polar Studies and reporting the progress of the study course.
6. Presentation results of the study on conferences, preparation and publishing papers in ICR journals.
7. Engagement in research and organizational works in the unit.

Abstract

Hydrothermal structure of glaciers reflects its heat balance determined by the heat exchange with surroundings and the heat transfer within the ice body. The rapid climatic changes may imply evolution of glaciers' thermal structure. Polythermal glaciers consist of "cold" ice layer and the ice in pressure melting point temperature. Glaciers of such type are common on Spitsbergen and outer areas of Antarctic (e.g. Antarctic Peninsula region). The water circulation within or beneath the glacier is strictly determined by thermal conditions of ice. The thermal structure of glacier influences on its properties e.g. retention ability, permeability, plasticity, etc. Understanding of englacial and subglacial drainage system and its spatio-temporal variability is possible though the use of radio echo-soundings, appropriate processing and interpretation. Proposed project aims to determine qualitative and quantitative model of water circulation and its retention within polythermal glaciers and to predict the drainage changes due to adaptation the thermal structure to climatic changes.

An important issue to resolve will be to identify the differences/similarities of the glaciers hydrothermal system in Arctic and Antarctic regions.

Other information:

1. The thesis supervisor will be **Prof. Dr. Jacek Jania and Dr. Mariusz Grabiec** (Faculty of Earth Sciences University of Silesia).
2. In addition to the candidate's application submitted to KNOW it would be mandatory to send CV and the motivation letter to: mariusz.grabiec@us.edu.pl. The letter should include a proposal of solution the main problems of the doctoral project.
3. Contact: polarknow@us.edu.pl – Leading National Research Centre (Ph.D. D. Ignatiuk)