Międzynarodowa Środowiskowa Szkoła Doktorska
przy Centrum Studiów Polarnych
w Uniwersytecie Śląskim w Katowicach

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No. of PhD project: IEDS/2023/US/03

Title of PhD project: ***Importance of the crevasse zone for the energy balance and effective ablation of the southern Spitsbergen glaciers***

The leading unit: Institute of Earth Sciences University of Silesia in Katowice (INoZ UŚ), Sosnowiec

Requirements:

1. MSc degree (or equivalent) in Geography, Geophysics, Physics, Surveying, Information Technologyy, GIS or equivalent science discipline.
2. Good communication skills in English in order to provide excellence in research in the area and prepare publications (Polish is not required for foreigners).
3. Ability to work independently and as part of a team environment.
4. Creativity and ability to think critically.
5. Excellent networking skills in order to develop strong relationships with partners and with academics and researchers from other institutions.
6. Skill in statistical analysis and presentation of the geophysical data with standard software like Statistica and ArcGIS.
7. Some programming skills (e.g. in Matlab) would be of benefit.

Tasks description:

1. The main objective of the dissertation is to modelling surface energy balance an effective ablation in the crevassed zone.
2. Measuring components of energy balance with particular regard to the variability of albedo and the presence of water in the crevasses.
3. Preparing, organizing and conducting field experiments in the Svalbard region, processing the acquired data.
4. Preparation or contribution to the publication of papers in JCR journals and conference presentations.
5. Writing regular reports on progress and presentation of the results to the project management board according to the agreed schedule.
6. Help in the maintenance of the day-to-day work in the University of Silesia in Katowice, including organization of research, teaching and responsibility for the research equipment.

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Abstract:
Modelling of the energy balance of a glacier's surface based on data from direct measurements is important for the assessment of ablation intensity patterns. Crevassed zone on a glacier has a larger effective surface of meting. Thus seems to produce more meltwater in comparison to a flat, uniform surface of the ice. Meltwater collected in ponds in crevasses and in depressions between them affects the albedo of this area. In consequence, the higher portion of short radiation is used for melting and warming the glacier ice. For a better understanding of processes driving ablation in crevassed zones of a glacier, essential are measurements of morphometric parameters of crevasses, energy balance in this area and other factors influencing melting intensity. As a result of such studies, one can expect a definition of factors of the energy balance of crevassed zones and intensity of ablation for modelling the spatial pattern of melting on glacier surface and availability of meltwater supply of glacier drainage system.

Other information:
The work will be carried out under supervision of: dr. hab. Bogdan Gądek prof. UŚ, e-mail: bogdan.gadek@us.edu.pl and dr. Dariusz Ignatiuk, e-mail: dariusz.ignatiuk@us.edu.pl, Institute of Earth Sciences, University of Silesia in Katowice.

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Information on the IEDS admissions: https://www.mssd.us.edu.pl/en/admission_2023_2024-reg/