



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

ul. Bedzińska 60  
41-200 Sosnowiec  
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**No. of PhD project: IEDS/2022/US/05**

**Title of PhD project: *Dynamics of glacial systems of southern Spitsbergen***

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

**Requirements:**

1. MSc degree (or equivalent) in Geography, Surveying, Geophysics, Geology, Physics, GIS, or equivalent science discipline.
2. General knowledge of glaciology, climatology, remote sensing, geophysics, and polar studies.
3. Knowledge of fundamentals in remote sensing and/or photogrammetry, skills in remote sensing (e.g., PCI Geomatica, Envi, ERDAS Imagine or equivalent), and GIS software.
4. Practical skills in working with GNSS systems, terrestrial laser scanners, or knowledge of operation and usage of these instruments are welcomed.
5. Ability to work independently and as part of a team environment.
6. Creativity and ability to think critically.
7. Excellent networking skills to develop relationships with partners, academics, and researchers from other institutions.
8. Good communication skills in English to provide research in the study area (Polish is not required for foreigners).
9. Practical knowledge of one of the programming languages (e.g., FORTRAN, C, MATLAB, IDL, PYTHON or R) and statistical software is very welcomed.

**Tasks description:**

1. Analysis of archive satellite data, including multispectral and radar images, aiming to determine flow velocity of glaciers of southern Spitsbergen.
2. Processing of multispectral and radar satellite data to assess fluctuations of the termini of the glaciers.
3. Studies of the volume changes of glaciers based on the archival data.
4. Analysis of dynamics of glaciers, considering meteorological, glaciological and oceanographic data.
5. Preparing, organizing, and conducting field experiments in the Spitsbergen region, processing the acquired data.
6. Preparation or contribution to publishing papers in JCR journals and conference presentations.
7. Writing regular reports on progress and presentation of the results.



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8. Help in the maintenance of the day-to-day work of the research team at the University of Silesia, including teaching and responsibility for the research equipment.

**Abstract:**

We note the intensification of glaciers' ablation in response to the warming Arctic. An increase in the air temperature affects the surface melting of glaciers and mass balance. A larger water supply to the glacier drainage system increases the velocity of glaciers. And the rise in the ocean temperature intensifies the processes of frontal ablation and retreat of tidewater glaciers. Despite some research on changes in Svalbard glaciers' elevation and dynamics, no comprehensive analysis of the functioning of the Svalbard glaciers systems in climate change has been proposed.

The project's general aim is to study the changes in the dynamics of glacial systems of southern Spitsbergen in the changing climatic conditions. In particular, the research focuses on the extent to which the warming climate influences the glaciers' velocities, front fluctuations, and ice-atmosphere-ocean interaction. The study will be based on the archive satellite data, atmospheric, oceanographic, and glaciology databases.

**Other information:**

The work will be carried out under supervision of: dr hab. Mariusz Grabiec prof. UŚ, e-mail: [mariusz.grabiec@us.edu.pl](mailto:mariusz.grabiec@us.edu.pl) and dr inż. Małgorzata Błaszczyk, e-mail: [malgorzata.blaszczyk@us.edu.pl](mailto:malgorzata.blaszczyk@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\\_2022\\_2023](https://www.mssd.us.edu.pl/en/admission_2022_2023)