



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

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Title of PhD project: Assessing Seasonal Variations in Vegetation Coverage Using Remote Sensing Techniques in Small Open Channels

Providing institute: Institute of Geophysics of Polish Academy of Sciences, Warsaw, Poland

Requirements:

1. A degree in geography, physics, geophysics, environmental sciences or a related subject.
2. Experience in conducting field measurements and in remote sensing techniques applied in hydrology being desirable. A degree or certification in this research area would be an asset.
3. Experience in performing spatial analyses using GIS software.
4. Programming skills (C++, Python, or similar) and knowledge of the hydrodynamic models used for flow or transport modelling (e.g., CCHE2D, HEC RAS, Delf3D) may be a plus.
5. Ability to work effectively in a team, collaborate with other team members.
6. Fluency in spoken and written English.
7. Experience in writing scientific papers and preparing scientific presentations/posters will be an asset.

Description of the tasks:

1. Preparation and participation in the field studies and observations, including carrying out field measurements using UAV and UAV-based techniques.
2. The analysis of the data obtained during the field investigations assesses spatial, temporal, and seasonal variations in vegetation dynamics in small open channels.
3. Finding or developing the tools necessary to aid analysis.
4. Regular reporting on work progress.
5. Preparation of scientific paper and conference presentation
6. Assistance in everyday scientific, organizational and teaching tasks.



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Summary:

Vegetation, especially in small open channels, plays a crucial role in shaping all processes within the channel. A proper description of vegetation in the channel is crucial for research studies, computer modelling, or water management purposes.

This project will focus on utilizing remote sensing techniques for vegetation description and assessing seasonal variations in vegetation dynamics in small open channels. It aims to quantify changes in vegetation coverage, density, and spatial distribution over different seasons by analyzing multispectral imagery collected from satellite and/or uncrewed aerial vehicle (UAV) platforms. By integrating remote sensing data with field observations, the research will provide insights into the seasonal dynamics of channel-in vegetation and its implications for flow and mixing processes in small channels.

Other information:

The work will be carried out under the supervision of:

dr hab inż. Monika Kalinowska, monika.kalinowska@igf.edu.pl, Institute of Geophysics PAS;

dr Emilia Karamuz, emikar@igf.edu.pl, Institute of Geophysics PAS

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Information on the IEDS admissions: <https://www.mssd.us.edu.pl/en/admission-2024-2025/>