

## PHD STUDENT IN THE DOCTORAL SCHOOL – CALL FOR APPLICATIONS

**Position:** PhD student in Earth Sciences discipline

**Unit of the project realization:** Faculty of Natural Sciences – University of Silesia in Katowice

**Unit realizing the PhD student education:** Doctoral School at the University of Silesia in Katowice

A PhD student, through his/her work on the PhD project, will actively support the main scientific aims of Biomorphodynamics of Mountain Geocosystem Research Team. A PhD student will be responsible for systematic research and production of high-quality results, their publication and presentation during domestic and international conferences.

Research will be carried out in the frame of the project of Preludium-BIS, financed from NCN sources, entitled: „*BIOFORCLIM - biomorphodynamics of forested hillslopes driven by forest ecosystem disturbances due to hurricane wind events and their relation to changing climate conditions* ” (number 2019/35/O/ST10/00032) under supervision of Łukasz Pawlik, PhD, associate professor.

### **Project description:**

Damage caused by hurricane wind in old-growth and managed forests may have their geomorphic consequences. It is mainly due to windthrows when trees are uprooted and some part of soil material attached to root systems is relocated. This factor in many geomorphic and soil studies was neglected and in consequence, for many protected forest ecosystems, the process of windthrows occurrence stayed significantly understudied. It applies to the current activity of the process and its long-term dynamics during the past several hundred years.

One of the natural archives that record the scope of wind damages in forests is tree-rings. A significant increase of the tree-rings width during the subsequent 5-10 years can be interpreted as an increase in solar radiation availability for trees growing under a closed forest canopy. Such a situation may occur when a gap in the forest canopy is formed by a fallen tree (uprooted or broken). One of the aims of the present project is quantification and characteristic of the contemporaneous wind regime of national parks selected for this study but also a description of the intensity and effectiveness of soil material biotransport induced by the tree uprooting process. The database created during the project realization will allow indicating which are primary factors influencing the range of this kind of biotransport. This information will be used to biotransport modeling modified by forest stand features, topography and wind regime of the sites.

A PhD student will be responsible for all aspects of the study including fieldwork and theoretical analyses. The main tasks between others include 1) preparation of an extensive database, based on the archive and historical resources, with information on the past wind-related damage of forest

ecosystems in three national parks, 2) tree cores sampling, measurement of tree-rings and their statistical analysis, 3) time series analysis allowing deep characterization of wind regime of the study sites. A PhD student will be obliged to publish his/her study results in the English language in the most prestigious scientific journals.

#### Requirements:

1. MSc diploma in geomorphology, physical geography, meteorology, climatology, GIS, cartography, geology, geophysics or similar.
2. Good and practical knowledge of the English language (written and spoken).
3. Good knowledge and practical skills in programming and/or statistical analyses (in R or Python), or willingness and ability to learn one of these programs.
4. Good knowledge and practical skills of GIS (Geographic Information System) software (SAGA GIS, QGIS, or ArcGIS), or willingness and ability to learn one of these GIS platforms.
5. Knowledge on dendrochronology will be an additional advantage.
6. High motivation and no formal contraindications for a 6-month scholarship at the University of Colorado in Denver, USA.
7. High motivation to realize the scientific investigations coupled with ability to work in a team
8. Documented scientific achievements in Earth Sciences (preferred co-authorship of the paper published in a journal from the so-called Filadelphian List), experience in presentation of the results during conferences will be an additional advantage.

#### Required documents:

1. Motivation letter with a description of the scientific interests
2. CV
3. List of scientific publications with per-cent of the contribution of the candidate
4. Copy of the MSc diploma
5. Two professional references.

Candidates should register in IRK system and select „Doctoral School – admission to a grant” (<https://irk.us.edu.pl/>, accessible from 15.07.2020).

Documents should be delivered till **25.09.2020** to an e-mail: [lukasz.pawlik@us.edu.pl](mailto:lukasz.pawlik@us.edu.pl).

In case of any questions, before the formal application please contact to the grant leader for the e-mail address given above.



Documents will be rated by the commission, led by the project leader. Admission will be carried out according to the NCN regulations. Admission can be carried out both in Polish and in English. Meeting will be organized on **28.09.2020** in the Doctoral School office (or on-line). Final decision will be sent to candidates via e-mail till **29.09.2020**.

