

## Project information

Project title: *Influence of summer floods on changes in structural and functional biodiversity of selected river muds*

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Founding: Dotation for Young Scientist and Doctorates/2018 - Ministry of Science and Higher Education in IUNG-PIB

## Project summary

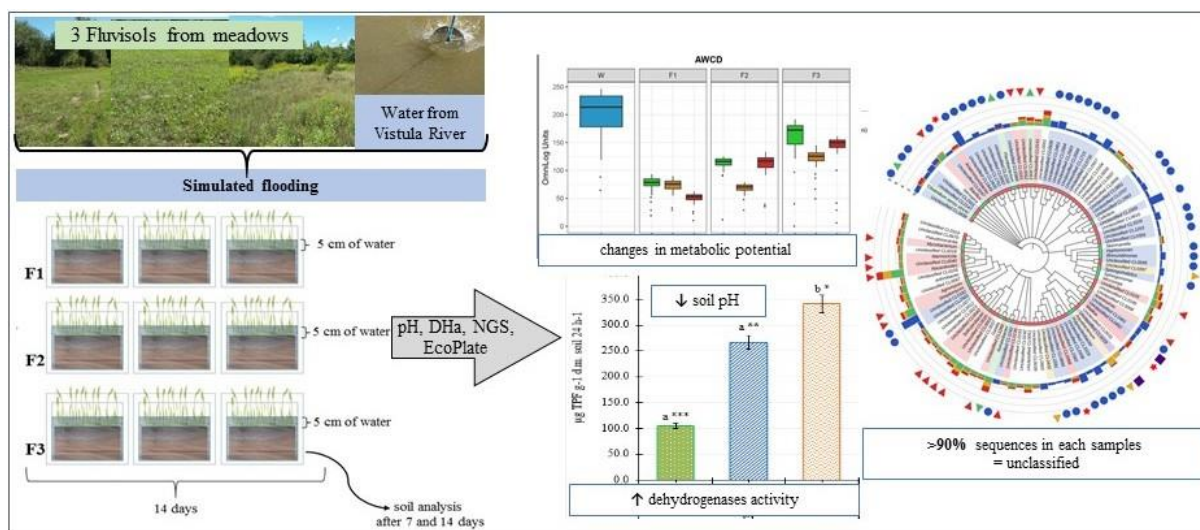
The aim of project was to assess changes in the structural and functional biodiversity of soil microorganisms communities affected by short-term flooding.

As part of the research objective, a microcosm experiment was carried out during which a 14-day flood was simulated under controlled conditions in relation to selected river muds using river water.

The research material consisted of three species of river muds (fluvisols) taken from natural floodplains meadows of the Vistula River in the Lublin Province. Soils as blocks together with vegetation were placed in containers and then flooded with water taken from the Vistula to a level 5 cm above the soil surface. Fresh soil samples, water from the Vistula and soil samples after 7 and 14 days of water standstill were taken for analyses.

Comprehensive analyses of soil quality were performed, i.e., physicochemical parameters, biological parameters, enzymatic activity, metabolic potential of microorganisms (EcoPlate™ and FF Plates™ Biolog® analysis) and structural diversity of soil microorganism population (NGS) were determined.

The results obtained allowed to confirm the research hypothesis - extreme soil moisture conditions lead to significant differences in the composition and function of soil microorganisms communities.



## Published data

• **Furtak K.**, Grządziel J., Gałązka A., Niedźwiecki J. (2019): *Analysis of Soil Properties, Bacterial Community Composition, and Metabolic Diversity in Fluvisols of a Floodplain Area*. Sustainability, 11, 14, 3929; doi: 10.3390/su11143929

• **Furtak K.**, Gałązka A., Niedźwiecki J. (2020): *Changes in soil enzymatic activity caused by hydric stress*. Polish Journal of Environmental Studies, 29, 4, 1-8; doi: [doi.org/10.15244/pjoes/112896](https://doi.org/10.15244/pjoes/112896)

• **Furtak K.**, Grządziel J., Gałązka A., Niedźwiecki J. (2020): *Prevalence of unclassified bacteria in the soil bacterial community from floodplain meadows (fluvisols) under simulated flood conditions revealed by a metataxonomic approach*. Catena, 188, 104448, doi: 10.1016/j.catena.2019.104448