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Researchgate:	
Personal website / Working group website:	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>Holocene denudation of Andosols and landscape evolution in south-east Iceland – and interdisciplinary approach (2020/39/B/ST10/02971), Wrocław University of Environmental and Life Sciences, NCN, Opus 20, 2021-2024 – principal investigator, ongoing project.</p> <p>Q-MESA Mechanisms of the evolution of sandstones areas, Central and Western Europe (2020/39/D/ST10/00861), principal investigator: dr Filip Duszyński, University of Wrocław, NCN, Sonata 16, 2021-2024 – co-investigator, ongoing project.</p> <p>Erosion rates and soil formation in loess landscape of Trzebnickie Hills (SW Poland) based on isotopic procedures (10Be, 239+240Pu) and OSL datings, project no. 2018/29/B/ST10/01282, Wrocław University of Environmental and Life Sciences, NCN, 2019-2022 – principal investigator, project completed.</p> <p>Verification of parent material homogeneity in soils developed from crystalline and sedimentary rocks in the loess-influenced territory of Lower Silesia region, project no. 2014/15/D/ST10/04087, Wrocław University of Environmental and Life Sciences, NCN, 2015-2018 – principal investigator, project completed.</p> <p>Genesis and transformation of black earth soils in Poland on the background of climate change and the impact of human settlement as well as activity from the beginning of the Neolithic, project no. 2018/29/B/ST10/00610 principal investigator dr hab. Beata Łabaz, Wrocław University of Environmental and Life Sciences, NCN, 2015-2018, co-investigator, project completed.</p> <p>Spatial and temporal controls on active layer dynamics in an Arctic mountain valley, projekt no. 2015/19/D/ST10/02869, principal investigator dr hab. Marek Kasprzak, University of Wrocław, NCN, 2016-2019 – co-investigator, project completed.</p> <p>Origins of Mollic-having soils on the loess areas in the south-west of Poland in the context of environmental change and human expansion in the Holocene, project nr 2014/15/B/ST10/04606, principal investigator prof. dr hab. Cezary Kabala, Wrocław University of Environmental and Life Sciences, NCN, 2015-2018 – co-investigator, project completed.</p>
PhD topic:	CLIMA-VERT: Response of swelling black soils (Vertisols) on climate changes in an environmental gradient of Central Europe
Research discipline in Doctoral School:	Agriculture and Horticulture
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	<p>Vertisols, so-called clay swelling soils, are sensitive to changes in humidity. They are manifested primarily by morphological modifications, such as the formation of deep open-cracks starting from the ground surface in the case of long-term water shortage and the increase in the volume of the soil mass with its excess, and consequently the closure of previously formed deep cracks. Moreover, due to swelling and drying cycles, soil material is mixing, soil aggregates are prismatic and massive in topsoil and wedge-shaped with slickensides (smooth pressure surfaces) in the subsoil, which makes them difficult to cultivate.</p> <p>Vertisols directly participate in the sequestration of carbon and nitrogen, being a very important reservoir of these elements, due to the presence of thick and fertile humus horizons. The current course of weather in the temperate zone results in long-term periods of atmospheric droughts, generating soil drying that accelerates mineralization processes and, consequently, increases greenhouse gas emissions (GHG). The main goal of the project is to verify the scale of Vertisols reaction, which due to their specificity can react very actively to climate change. The opening of fissures may facilitate and intensify the processes of losses of organic carbon and nitrogen, which would place Vertisols at the forefront of soils providing significant amounts of GHG. As they are considered 'black soils' their status is important regarding food safety and sustainable management.</p> <p>To test this hypothesis, we choose three sites representing clay swelling soils arranged in an environmental gradient (highlighting seasonal changes in humidity and temperature) from northern Germany (Berlin) through southwestern Poland (Wrocław) to eastern Hungary (Debrecen). We will use geophysical methods to continuously measure in-situ soil humidity and temperature, excavate soil profiles to estimate carbon-nitrogen pools and ongoing soil-forming processes (including general characteristics of soils), and measure in-field greenhouse gases. This should give us a better view of the actual 'behaviour' of Vertisols and how to deal with them in terms of land use: protection and conservation.</p>
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	<ul style="list-style-type: none"> • Completed studies in the field of geography, environmental protection or related studies with a speciality in the field of soil sciences, • Possess knowledge in soil science (allowing recognition of soil morphology, and pedogenic processes), mineralogy, and basics of carbon sequestration. Skills in laboratory analytics typical of soil sciences will be an important advantage. • English language allowing free communication, reading English literature and preparing scientific publications (experience in this area documented in articles is welcome). • Experienced with Word/Excel, Statistica and/or Corel/Illustrator. • Availability, flexibility, and ability (soft skills) to work in an international team. • Physical skills allow work in the field.
a) Project title:	
b) Agreement number:	
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022):	
Project website:	