



Determinants of Microbial Respiration and Biomass across Global Drylands

Drylands are critical ecosystems as they cover over 45% of terrestrial surface, play critical roles in the global carbon cycle and sustain an increasing human population. They are particularly threatened by climate change and desertification drivers, such as increases in aridity and in grazing pressure. Thus, a better understanding the functioning and threats of these ecosystems is essential to detect early warning signals of ecosystem change and to guide conservation and restoration efforts.

In collaboration with the Dryland Ecology and Global Change Lab (DryLab; <https://maestrelab.com/en/>) we, the [Experimental Interaction Ecology \(EIE\)](#) group at [iDiv](#), the German Center for Integrative Biodiversity Research, are using observational and experimental approaches in the framework of the [BIODESERT](#) project (lead by Fernando Maestre) to evaluate how climate and grazing pressure affect the structure and function of microbial properties in dryland ecosystems.

In a previous thesis, microbial respiration and microbial biomass were measured in 226 plots distributed across 25 countries around the world. Now, a database with a large number of response variables is also available to better understand how grazing, climate, soil properties and biodiversity affect microbial respiration and biomass, and how these microbial attributes relate to other ecosystem functions. In this master thesis, the student will now explore this database to assess the drivers of our microbial data across global drylands.

Missing expertise in the field of microbial communities and drylands will be made by the EIE and DryLab in the project, where the student should bring a high interest for large data sets and advanced statistical approaches.

The work does not include laboratory work, but it is always possible to learn the methods and to accompany platforms of the Experimental Interaction Ecology and field work, if this is desired. Therefore, the work can take place 100% from outside.

If we have aroused your interest and/or you have further questions about the project, simply contact us at any time at nico.eisenhauer@web.de

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iDiv is a central facility of Leipzig University within the meaning of Section 92 (1) of the Act on Academic Freedom in Higher Education in Saxony (Sächsisches Hochschulfreiheitsgesetz, SächsHSFG). It is run together with the Martin Luther University Halle-Wittenberg and the Friedrich Schiller University Jena, as well as in cooperation with the Helmholtz Centre for Environmental Research – UFZ. The following non-university research institutions are involved as cooperation partners: the Helmholtz Centre for Environmental Research – UFZ, the Max Planck Institute for Biogeochemistry (MPI BGC), the Max Planck Institute for Chemical Ecology (MPI CE), the Max Planck Institute for Evolutionary Anthropology (MPI EVA), the Leibniz Institute DSMZ–German Collection of Microorganisms and Cell Cultures, the Leibniz Institute of Plant Biochemistry (IPB), the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) and the Leibniz Institute Senckenberg Museum of Natural History Görlitz (SMNG).

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