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I am a joint PhD candidate at University College Dublin (Ireland) and Wageningen University (the Netherlands). In my project I am investigating how earthworms contribute to carbon and nutrient incorporation and retention and to water flow in the soil. The research is relevant to two objectives of EcoFINDERS Work Package 2: the role of biodiversity in soil hydrological functioning (Task 2.1) and biogeochemical functioning (Task 2.2).

I am focusing on anecic earthworms, a key group of ecosystem engineers in many natural and seminatural soils. Despite the well-recognized ecological importance of these invertebrates, quantification of their impacts on soil functioning under field conditions is lacking, and the assumption that different species within this group are functionally equivalent has scarcely been tested. My work aims at tackling such gaps, and ultimately contributing to assess their role in the provision of ecosystem services, such as water regulation and carbon and nutrient retention.

I am conducting observational and manipulative experiments in field conditions to investigate the drilosphere of anecic earthworms, i.e. the soil directly influenced by earthworm activity in its biochemical and geophysical aspects. I am also performing a laboratory experiment to test how the functional diversity of an earthworm community influences soil functioning and plant growth. The techniques I am using include isotopic tracers to quantify the translocation of elements from surface residues to the soil, the use of double ring infiltrometers to measure water infiltration, and the Simplex experimental design to disentangle species identity and interaction effects in diversity/function experiments.