eLTER and its role of providing in-situ data to large scale research projects for modelling biodiversity dynamics

Christoph Wohner[1], Alessandro Oggioni[2], Paolo Tagliolato[2], Franziska Taubert[3], Thomas Banitz[3], Sarah Venier[1], Philip Trembath[4], and Johannes Peterseil[1]

[1]Environment Agency Austria, Ecosystem Research & Environmental Information Management, Vienna, Austria (christoph.wohner@umweltbundesamt.at)

[2]National Research Council, Institute for Electromagnetic Sensing of the Environment (CNR-IREA), Milan, Italy.

[3]Department of Ecological Modelling, Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany

[4]Centre for Ecology and Hydrology, Library Avenue, Lancaster Environment Centre, Lancaster, Bailrigg LA1 4AP000, United Kingdom of Great Britain and Northern Ireland

The integrated European Long-Term Ecosystem, critical zone and socio-ecological Research (eLTER) is an emerging pan-European, in-situ Research Infrastructure (RI). Once fully established, it will serve multiple scientific communities with high-level central facilities and distributed well-instrumented eLTER sites. In the Horizon Europe project Biodiversity Digital Twin (BioDT), eLTER already plays the role of a provider for European datasets, in particular for the Grassland Dynamics prototype digital twin. Here, GRASSMIND, an individual- and process-based grassland model designed for simulating the structure and dynamics of species-rich herbaceous communities, including these communities' responses to climate and management, is to be upscaled to model different local grassland sites across Europe. As the eLTER in-situ site network also comprises such grassland sites, the site registry DEIMS-SDR (deims.org) was used to identify relevant sites and contact the respective site managers and researchers to mobilise data. This selection process was aided by the machine-actionable data endpoints of eLTER also accessible using the Python and R packages, deimsPy and ReLTER, enabling script-based extraction and analysis. Collected and mobilised data is to be published on the persistent data storage B2Share and made centrally accessible through the eLTER central data node. Metadata about the resources is also available in RDF format, making them interlinked and accessible via a SPARQL endpoint.

The data provided will enable stronger validation and improvements of the grassland simulations, and thus to better scientific insights and grassland management recommendations.