EGU24-20365, updated on 18 May 2024
https://doi.org/10.5194/egusphere-egu24-20365
EGU General Assembly 2024

Bridging Field Surveys and Remote Sensing for Enhanced Landscape Feature Analysis in EU Agriculture

Talie Musavi[1], Jon Skøien[1], Bálint Czúcz[2], Andrea Hagyo[3], Fernando Sedano[1], Laura Martinez-sanchez[1], Renate Koeble[1], Marijn van der velde[1], Jean-Michel Terres[1], and Raphaël d'Andrimont D'andrimont[1]

[1]European Commission Joint Research Center (JRC), Ispra, Italy, (talie.musavi@ec.europa.eu)
[2]Norwegian Institute for Nature Research, Torgarden, P.O. 5685, 7485 Trondheim, Norway
[3]European Environment Agency, Copenhagen, Denmark

This study conducts a comprehensive comparison of landscape feature data derived from different sources — Small Woody Features (SWF) product from Copernicus Land Monitoring system, LUCAS Landscape Feature (LF) Module, and LUCAS Transect Module — in EU agricultural landscapes. Additionally, we consider the European Monitoring of Biodiversity in Agricultural Landscapes (EMBAL) project's approach of in-situ data collection for land cover, landscape elements, and biodiversity. This approach offers a promising avenue for integrating detailed field survey data with broad-scale remote sensing observations. Furthermore the EMBAL project has the potential to enhance the previously mentioned datasets by incorporating additional information, such as the nature value of all surveyed land units, habitat types or pollination potential among others. This inclusion could contribute to having better insights into the ecological significance and monitoring of agricultural landscapes. Our analysis further explores the potential of incorporating cutting-edge datasets for enhanced monitoring of landscape features. Specifically, we consider the high-resolution (3-meter) dataset from Liu et al. (2023), which presents a detailed canopy height map and quantifies tree cover and woody biomass across Europe.

We critically assess the strengths and limitations of each source: SWF's remote sensing foundation provides broad coverage but focuses only on woody features, the LUCAS LF Module combines photo-interpretation with field survey for a more detailed typology, and the LUCAS Transect, though discontinued, offered valuable field data for linear features. Strategies for monitoring landscape features have been considered for a long time, but are continually updated with the latest available data and methods. A comprehensive comparison and evaluation of the new data sources has not yet been carried out. Our study aims to identify complementarities between the different datasets to improve both quantitative and qualitative monitoring of landscape features informing sustainable agricultural practices and biodiversity conservation strategies.