# The VRE Carbon and related research

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The Virtual Research Environment on Carbon has been one of the successful outcomes of the Itineris programme. The VRE hosts multiple datasets, code, reference documents, and communication material useful for a broad community of researchers, stakeholders, and end users interested in the carbon cycle and related research. An operative version of the VRE Carbon, focused on the Italian territory, has been released at the end of 2024 and includes several sections, specifically on: (i) Above Ground Biomass: with products related to above ground carbon stocks for Trento province, Tuscany, and maps for the pantropical biome; (ii) Amospheric\_Inversion\_Models: with sample products from 6 models, infographics, and R code; (iii) Carbon\_Fluxes\_Models: with products from 3 families of models plus infographics and R code; (iv) GHG\_Emissions\_Italy: with products from EDGAR and ISPRA families with code and infographics (v) Local Eesearch: examples of local level research and data (e.g. grassland carbon and ecosystem functional properties); (vi) SOCAT\_ocean\_data: with data sample and references to this data type; (vii) Test\_isoscape: a folder related to isotope data and code. In addition the (viii) Instruction folder provides information on how to manage and upload contents in the VRE. In this presentation, considerations about the improvement and the potential of the VRE carbon are discussed in more detail. Furthermore, an example of carbon related interdisciplinary research is here illustrated, with the title: ‘Ecosystem Functional Properties estimated from satellite PRISMA hyperspectral and Sentinel-2 multispectral data over different European sites and plant functional types’. The research supports the use of Ecosystem Functional Properties (EFPs) derived from the ICOS flux tower network as a way to monitor ecosystems functions and health. Estimates of EFPs are produced in different plant functional types using innovative satellite hyperspectral ASI PRISMA data and Sentinel-2 multispectral data, comparing the results and highlighting advantages and issues in the different approaches.

**Keywords: VRE, Carbon, Itineris**