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Carbon sequestration verification system for land ecosystems

Enhancing the carbon sequestration of vegetation and soil is a crucial climate change mitigation and adaptation option. However, the applicability of this option in policy-making and companies' sustainability programs requires i) detailed and reliable information on the land ecosystems' carbon budgets and ii) linking these data to practical decision support systems: carbon inventories, life-cycle analyses, and carbon footprint estimates.

The FMI carbon sequestration verification methodology represents the state-of-the-art in its field (Fer et al. 2020). It is open science (https://pecanproject.github.io/) and comprises three methods: i) measurement technologies, ii) simulation models, and iii) a model-data integration system.

The FMI verification methodology calculates site-specific carbon estimates for large land areas based on easily-available satellite, weather, soil, and management practice data. Then, it evaluates the reliability of these estimates and identifies error sources using a smaller number of more intensively measured study sites.

The FMI carbon sequestration verification methodology is constantly being developed but is already ready for prototyping in wide-ranging practical applications and service development. The methodology would be developed into an operational digital application. This concept helps measurement and IT technology developers connect their work to an impactful framework, thus improving their business opportunities. Customers for the results are the numerous entities using nature's carbon sequestration in their sustainability plans.

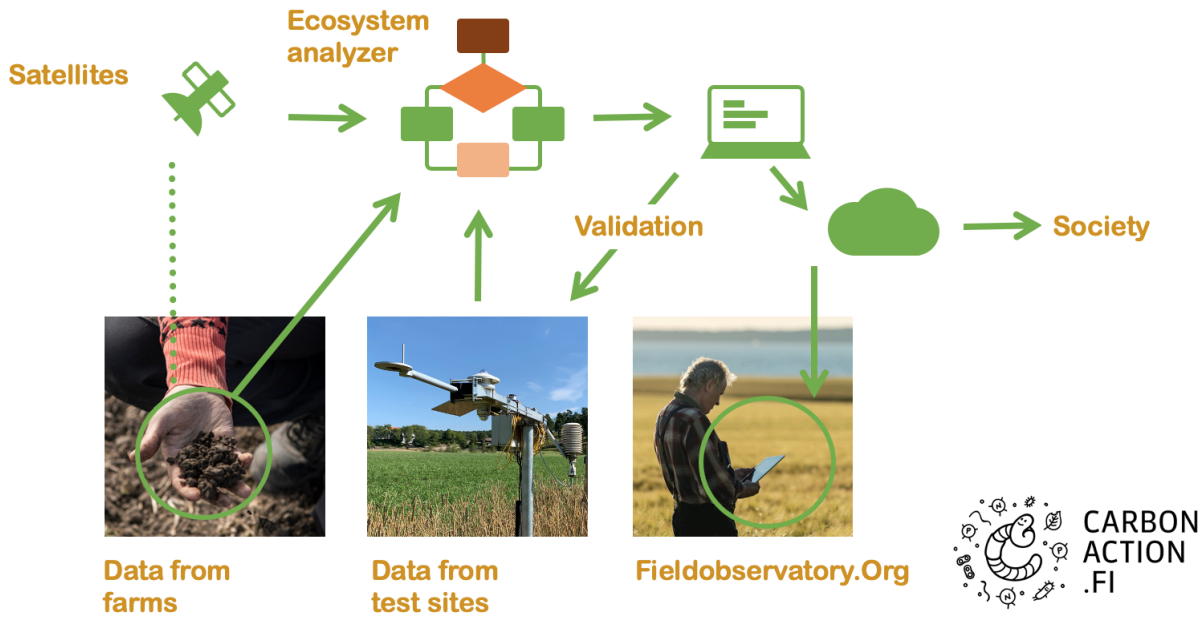

Fig. FMI verification methodology for land ecosystem's carbon sequestration.