Near-surface RS applications for a robust, climate-smart measurement, monitoring, and information system (MMIS)

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Science Question

We contend that integrating near-surface RS technologies as both stand-alone measurements and with eddy covariance (EC) and space-borne methods will directly contribute to a scientifically robust MMIS and align with the goals of federal efforts to create such a system.

Analysis: Perspective/commentary with case studies in a **Box**

Results (Box)

1. Improve C assimilation/accumulation efforts (e.g., via SIF, PAR-modeling, LIDAR) to go beyond stock-based estimates that lack temporal dynamics
2. Parameterize models of veg + soil C dynamics (e.g., canopy thermal can enlighten different management options – cover crops, no-till, agroforestry)
3. Temporally dynamic baselines (e.g., by improving regional stress responses)
4. Identify spatially distinct landscape units for project stratification

Significance

We also outline how this could work – e.g., house data in USDA Ag Data Commons or NASA Data Portal. Practical suggestions are also in a companion paper led by Zoe Pierrat (New Phytol., https://doi.org/10.1111/nph.20405)

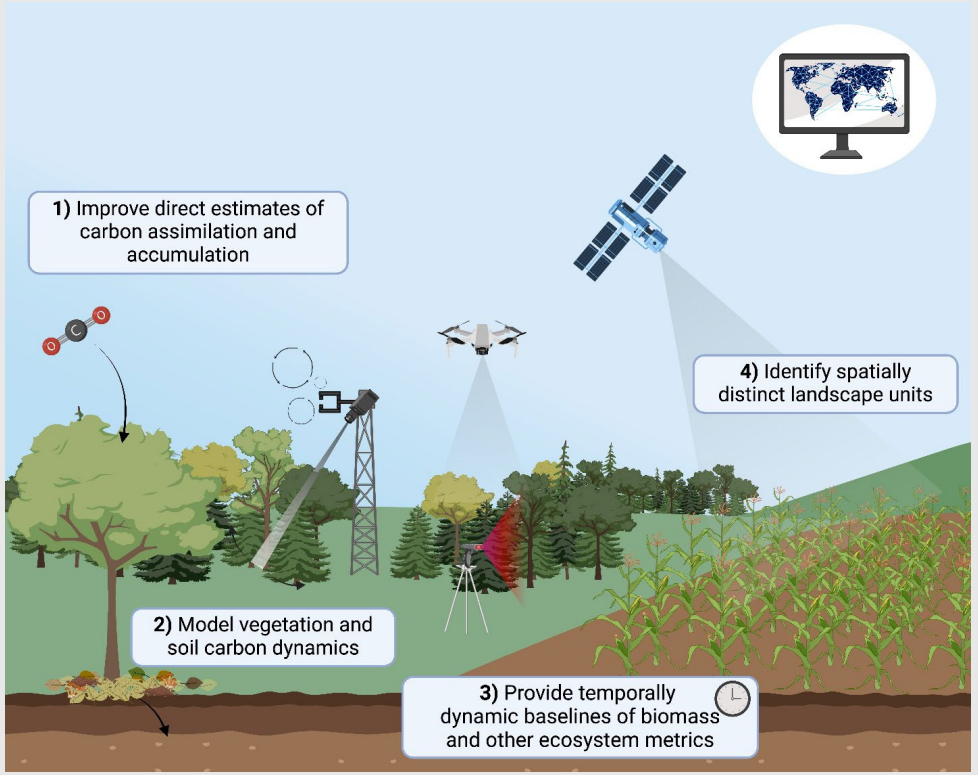

Figure 1: Conceptual representation of a variety of opportunities for improved carbon cycle understanding presented by near-surface remote sensing in conjunction with eddy covariance and satellite remote sensing data to meet the aims of the Measurement, Monitoring, and Information system (MMIS)

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