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## Evaluation of the photosynthesis-driven biomass allocation scheme in land surface models

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To capture the vegetation-driven seasonal variability in surface fluxes, land surface models (LSM) simulate the evolution of leaf area index (LAI) prognostically. A common approach to achieve this, is by directly coupling the carbon assimilation flux to the leaf biomass evolution.

In this study, we evaluate this scheme by isolating it from the LSM framework, and forcing it with in situ observations of the carbon flux from a selection of 56 sites from the ICOS network. The resulting LAI is validated with the remote sensed product from Copernicus GLS. The parametrization of the biomass allocation scheme in ISBA was adopted, and a sensitivity analysis was performed.

Across a broad range of vegetation types and climate regions, it was found that the simulated phenological cycle was delayed, compared to the observations. The results highlight the importance of non-structural carbohydrate dynamics in LSM, which can decouple the direct link between photosynthesis and leaf biomass.