Constraining carbon allocation in a terrestrial ecosystem model using forest biomass data

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Introduction

Motivation

- Uncertainty remains about the main drivers and mechanisms of spatial and temporal variability of biomass via photosynthesis, respiration, allocation, and mortality
- The dynamics of carbon allocation are poorly understood due to a lack of observations, albeit they may have substantial role in controlling both the spatio-temporal variations of AGB and the interannual variability of carbon and water fluxes

Main question

- How biomass-constraints distinguish competing allocation formulations (fix vs. dynamic)?

Contrasting fix versus dynamic (climate dependent) allocation

- Two allocation model structures all constrained with biomass and fluxes
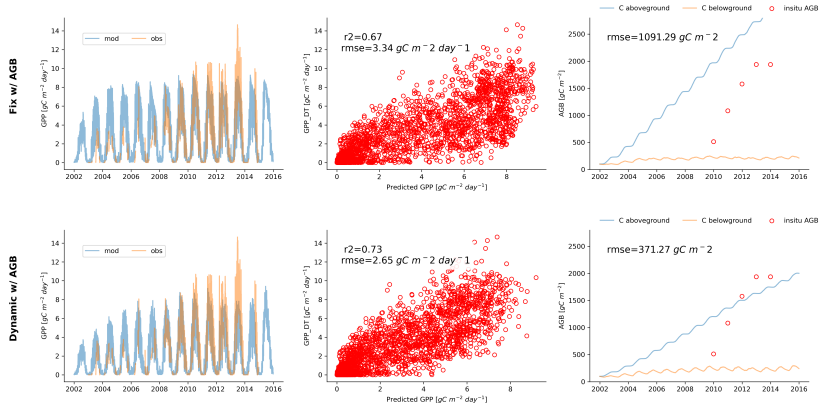
Current remarks

1. Dynamic allocation simulated better GPP dynamics, particularly during the early stage of the forest development

2. AGB estimates from dynamic allocation had a better agreement with in-situ data

3. Still substantial discrepancies in aboveground stocks: issues with model optimization?, need to initialize the C pools in different ways after spin-up?

4. Allometry above/ground did not seem realistic for both allocation schemes

5. Model optimization is a work-in-progress and needs to be further investigated

Thank you for your attention!

Any questions?

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