

“Challenges on estimating ecosystem functions”

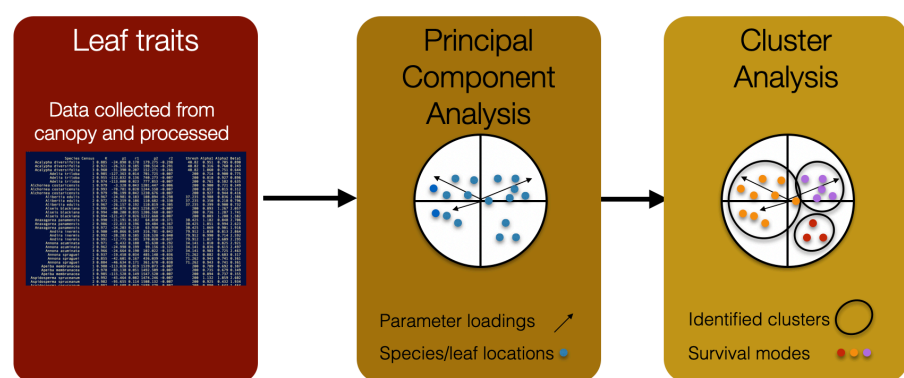
Using the radiative-transfer SCOPE model to predict the vulnerability of tropical forest to changing climate

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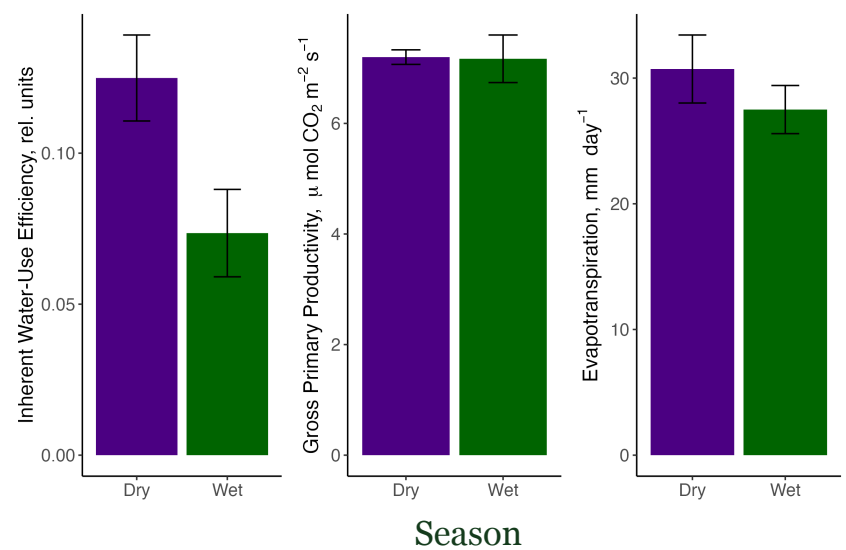
Hypothesis: Ecosystem water-use efficiency increases during dry season in the tropical forest.

Species leaf traits and cluster analysis

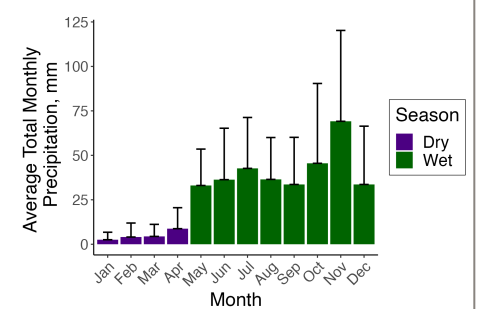
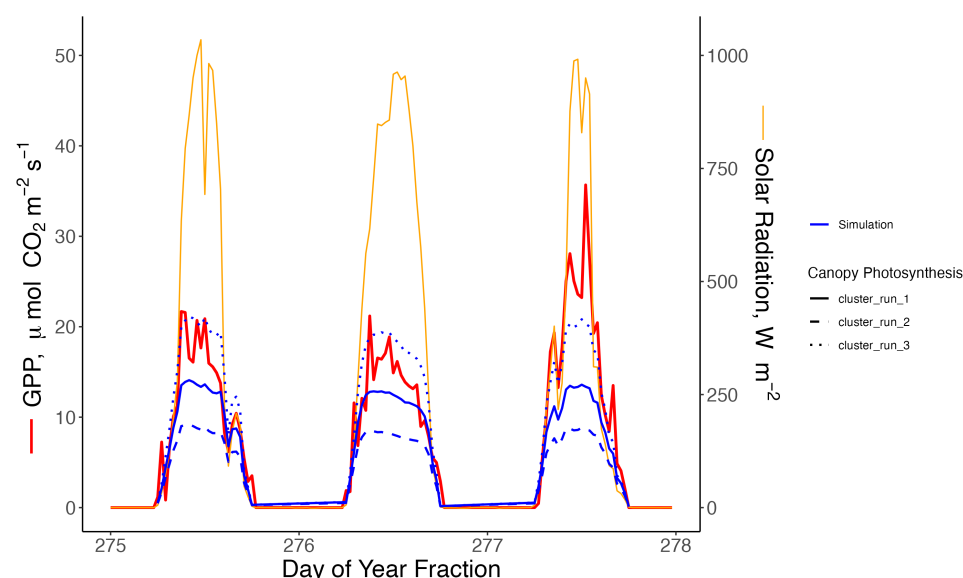


- Pigments (chlorophyll, carotenoid, anthocyanin)
- Max. rate of carboxylation
- Leaf mass area

CO₂ and H₂O Fluxes (eddy covariance)



Gross Primary Productivity (GPP) simulation



SCOPE model

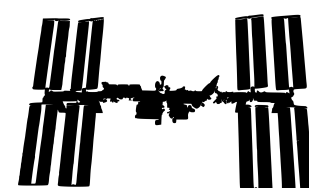
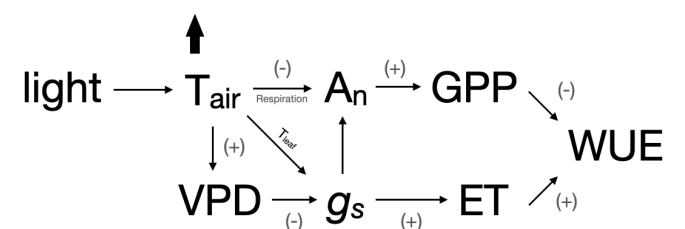
Outputs:

- Photosynthesis
- Reflectance & fluorescence
- Heat (transpiration)

Main Challenges:

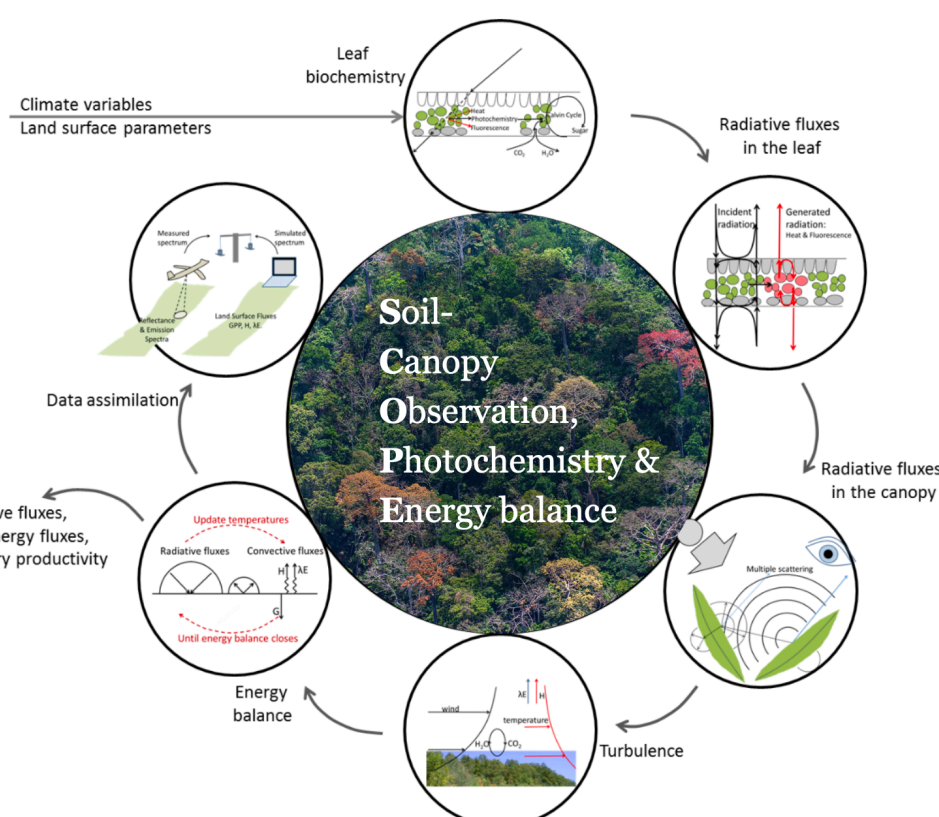
- Scales
- Partitioning (environ. & physiology)

Causal inference



Remote Sensing Applications

- Solar-induced fluorescence (OCO-3 + TROPOMI)
- Evapotranspiration (ECOSTRESS)
- Plant traits (DESIS)
- Vegetation structure (GEDI)



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About the author

