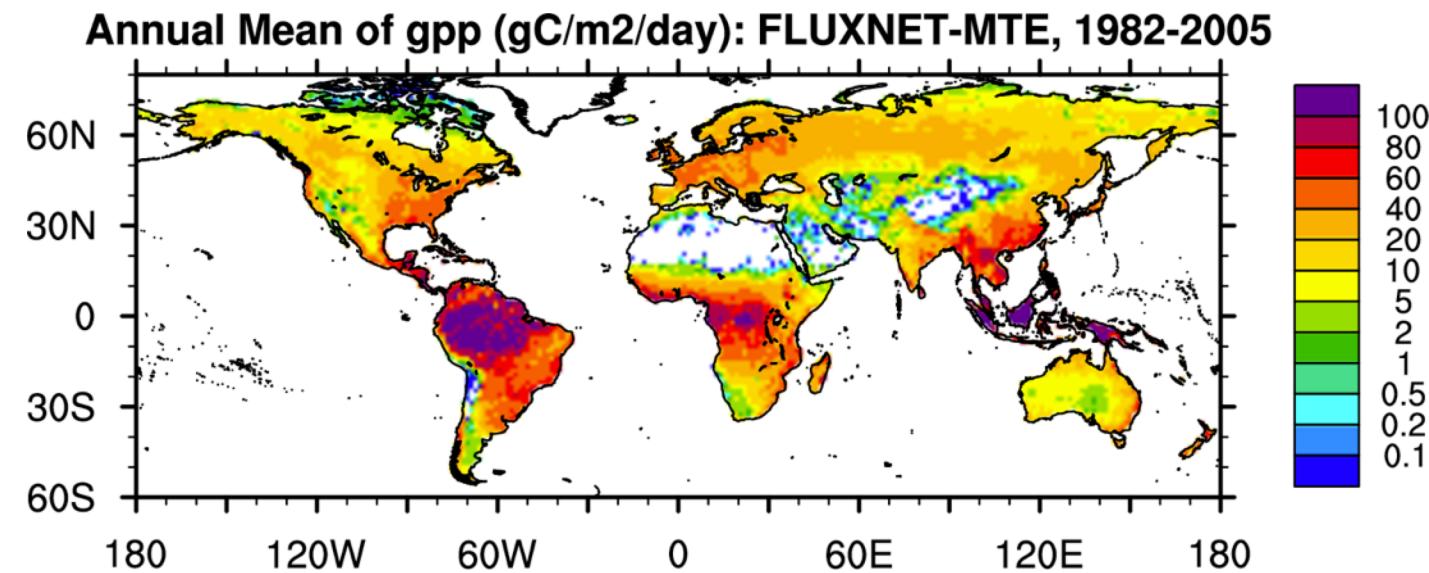


Spatial dynamics



What drives changes in
ecosystem processes over space?

Spatial dynamics: Land use and land cover change (LULCC)

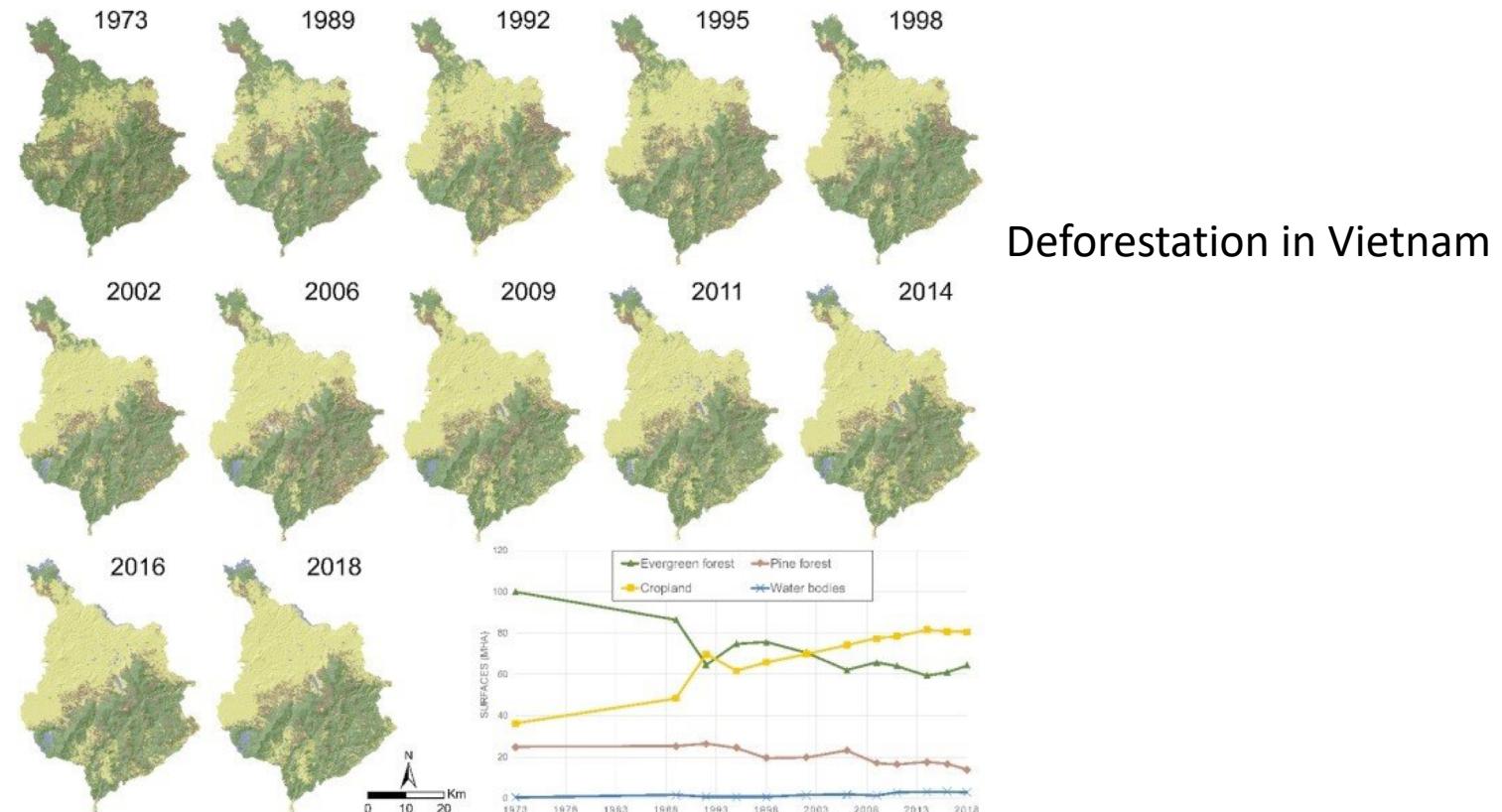
LULCC

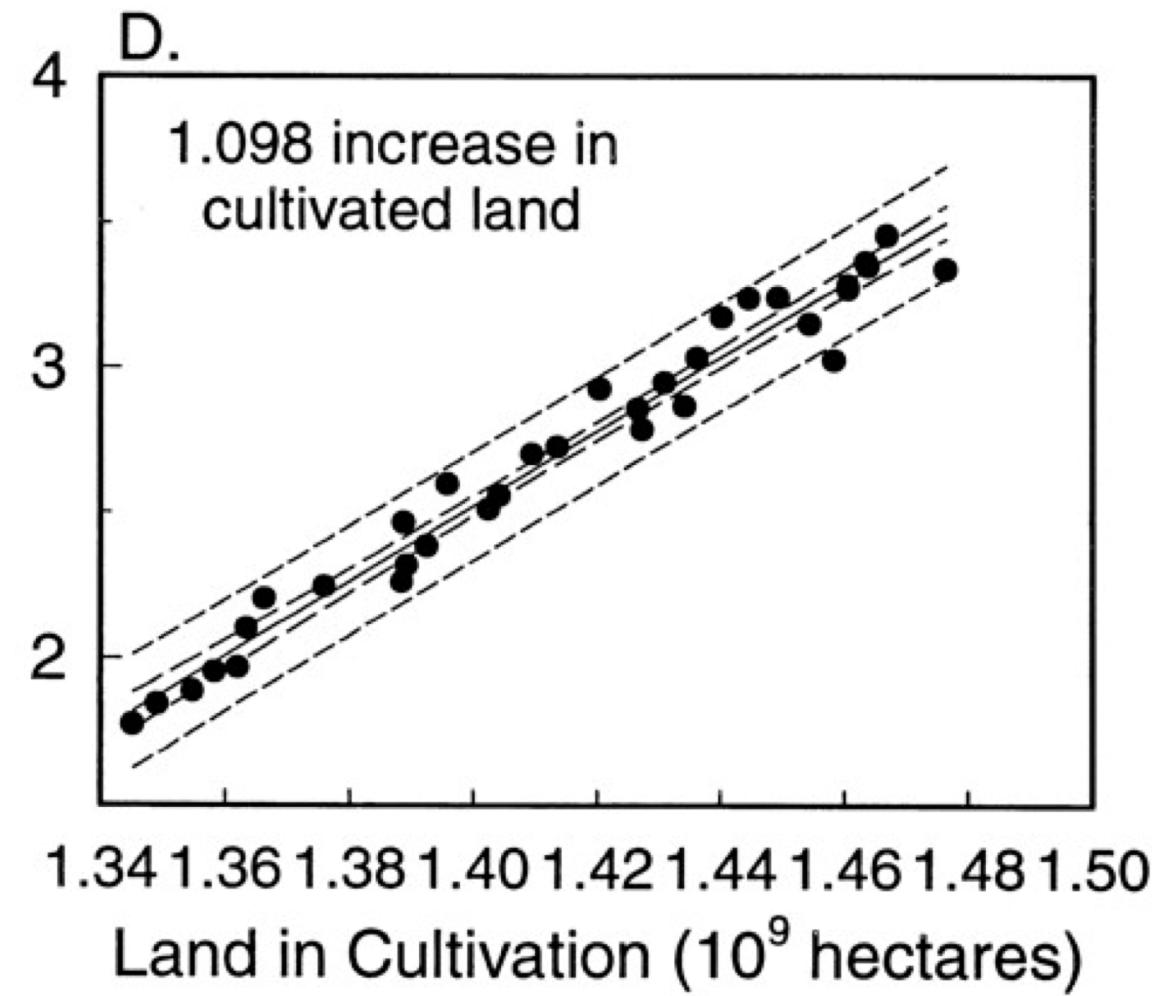
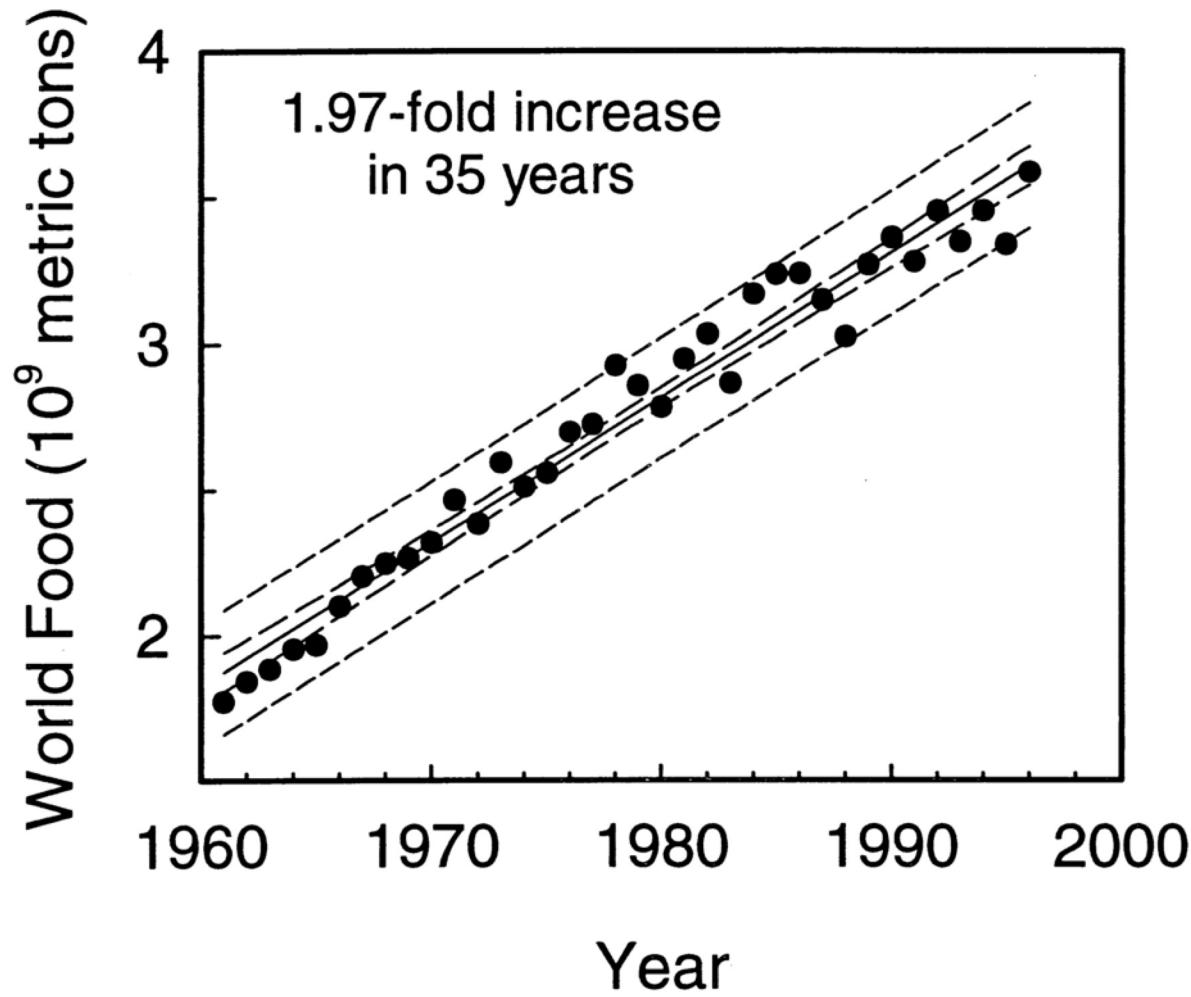
- Change from one land type to another
- Largest ongoing global change



Extensification

- An increase in the area affected by human activities

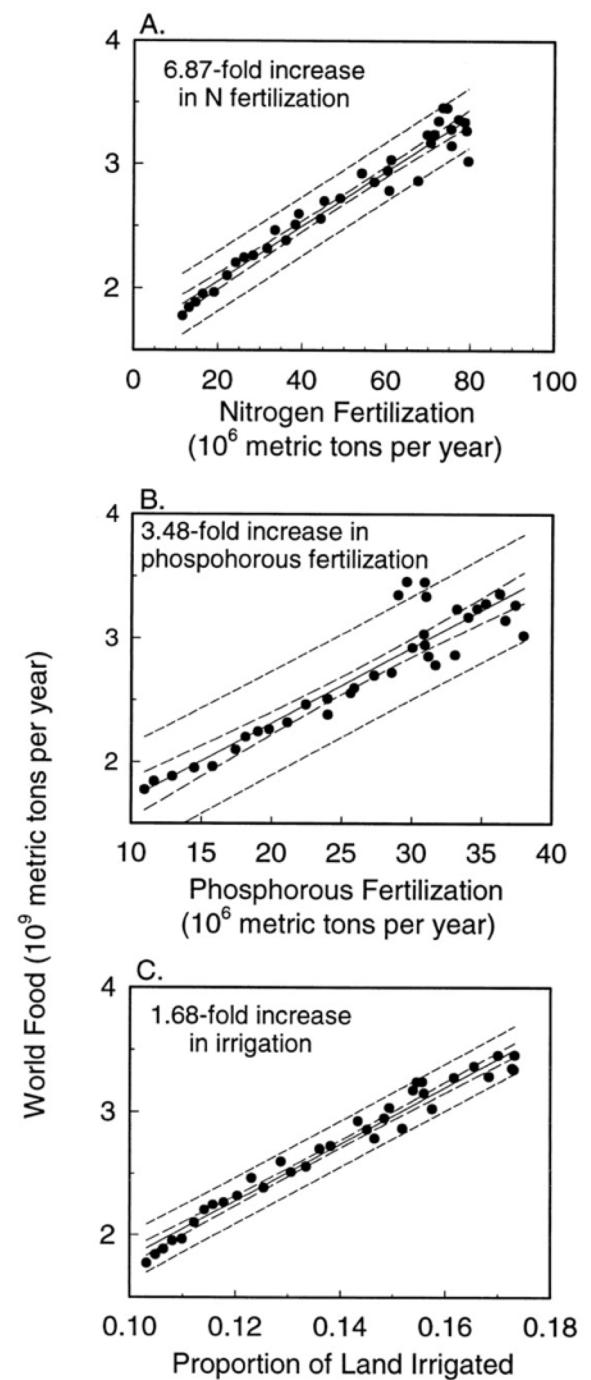




Intensification

- Increase in resource use for new land use





Spatial dynamics: Eco-climatic teleconnections

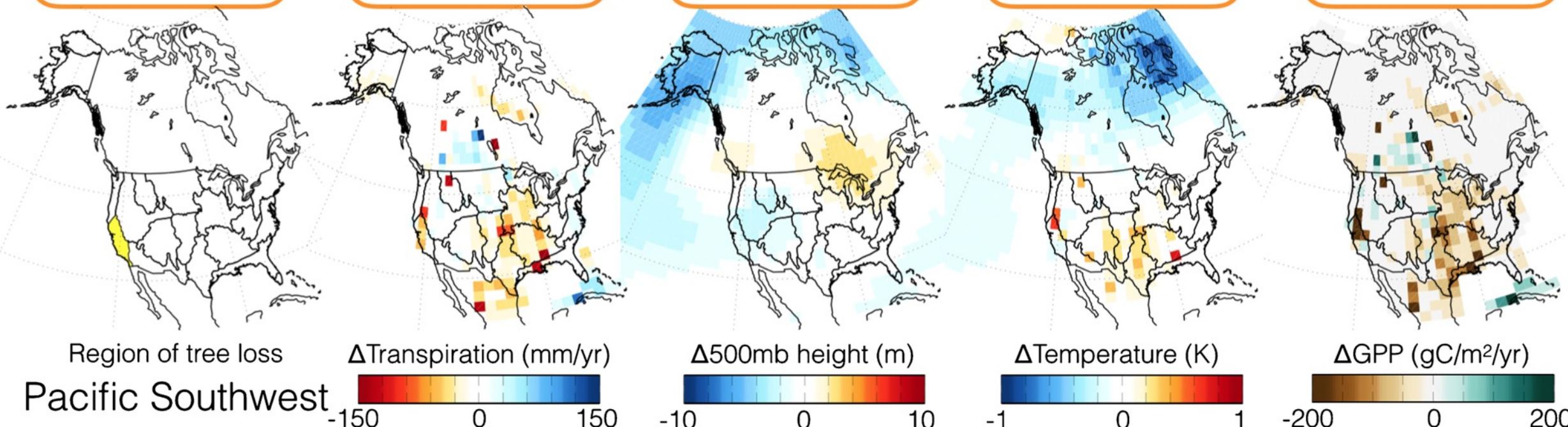
Regional
forest loss

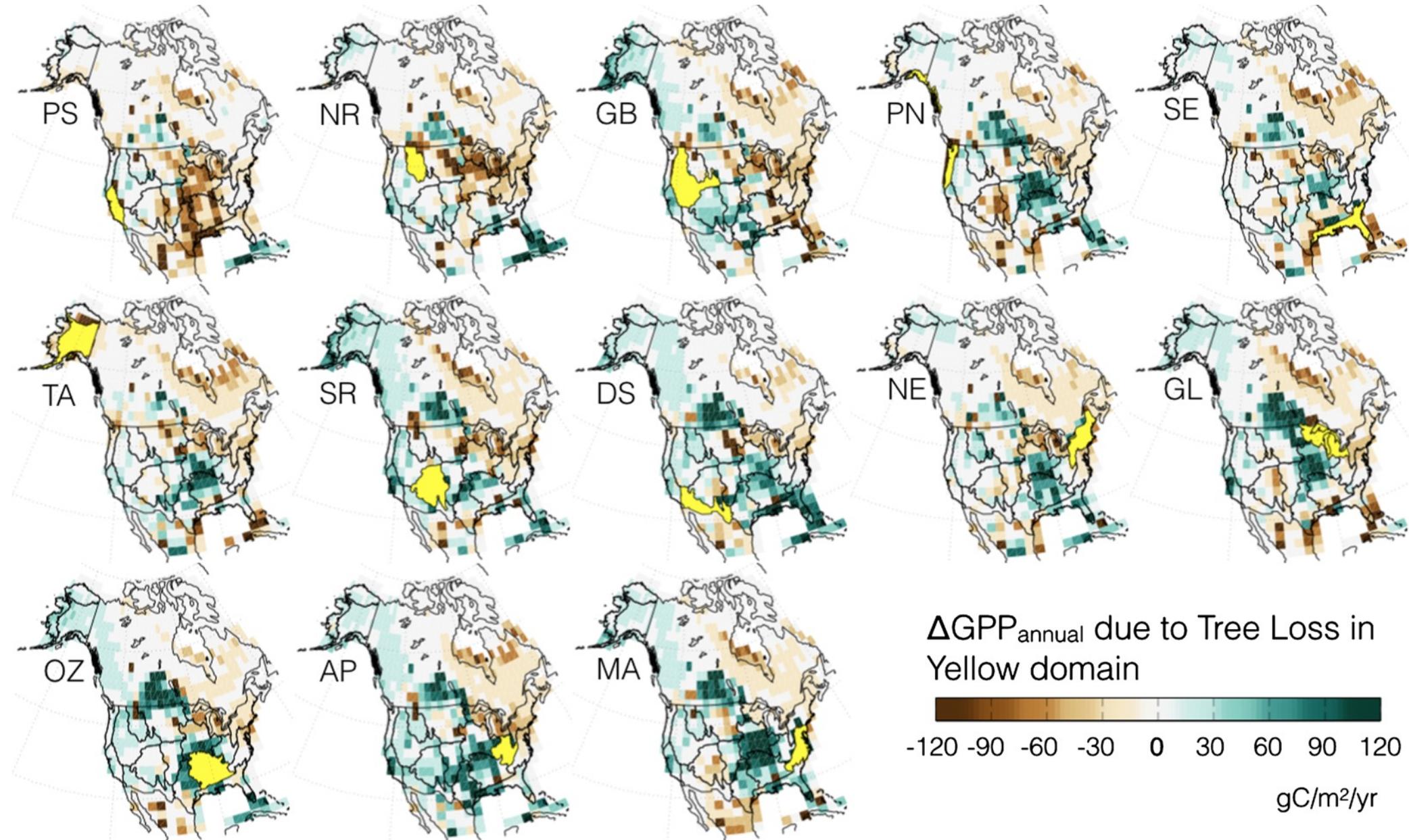
Δ Transpiration

Δ Atmospheric
Circulation

Δ Climate

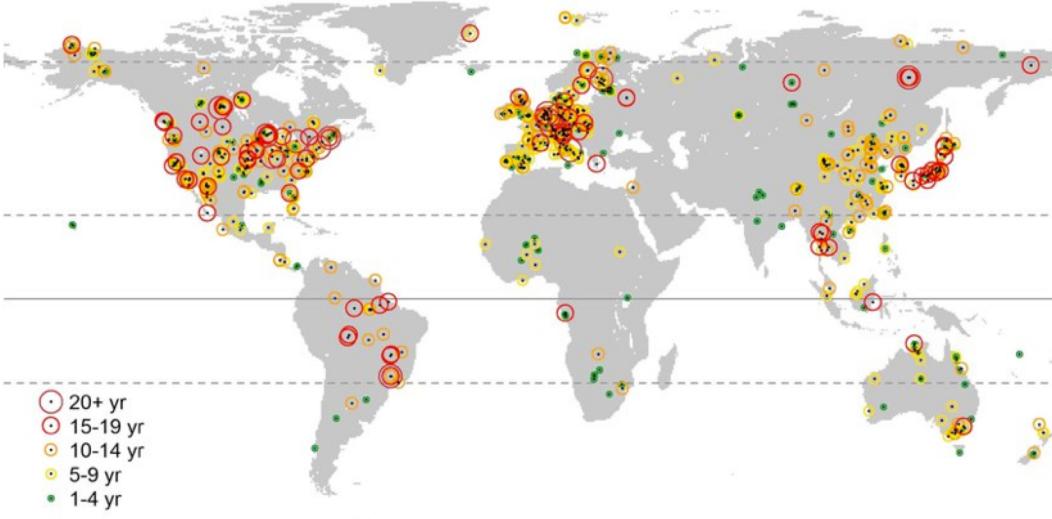
Ecological
Response



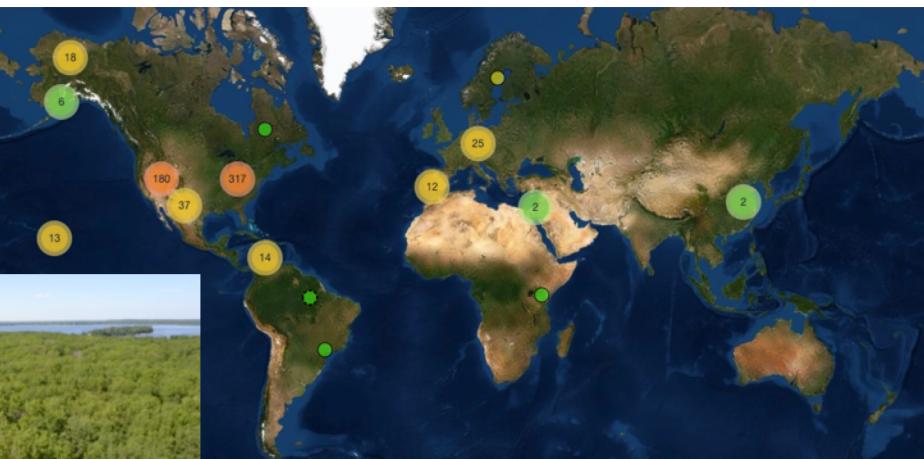


Spatial dynamics: coordinated
research networks

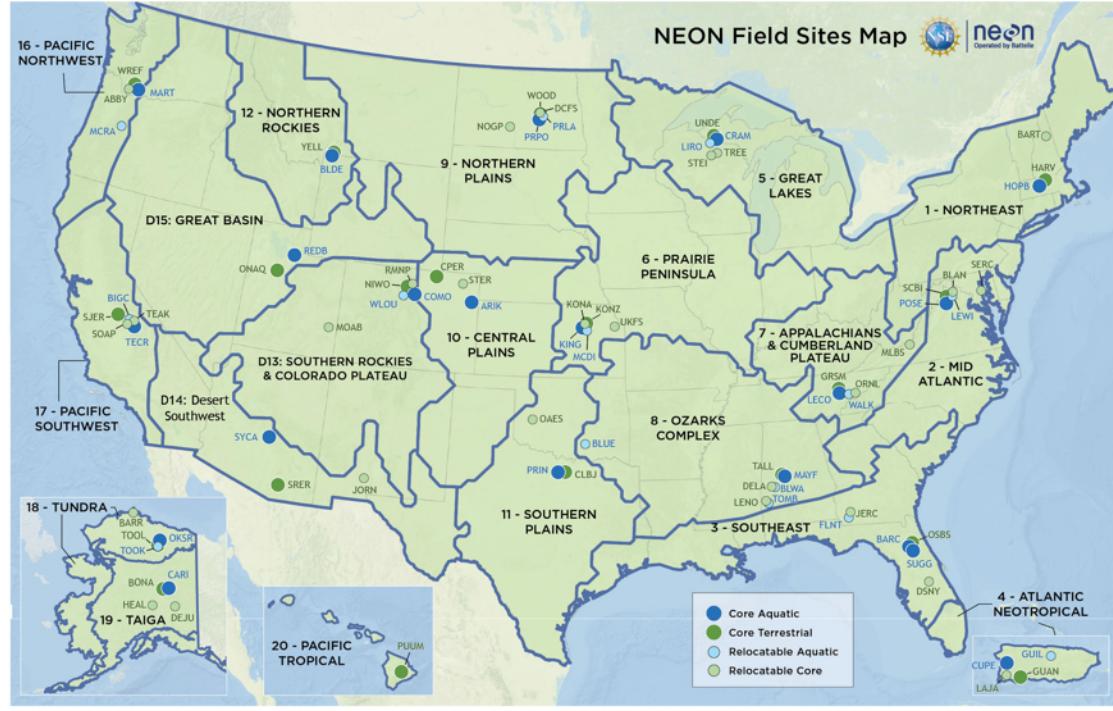
	Consistent methodology	Causal inference	Realistic complexity	Environmental gradients	Site-specific design
Single-site experiments	✓	✓	?	?	✓
Observational networks	✓		✓	✓	
Process-based models	✓	✓		✓	✓
Empirical/statistical models	✓		?	✓	✓
Meta-analyses		?	✓	✓	
Distributed experiments	✓	✓	✓	✓	



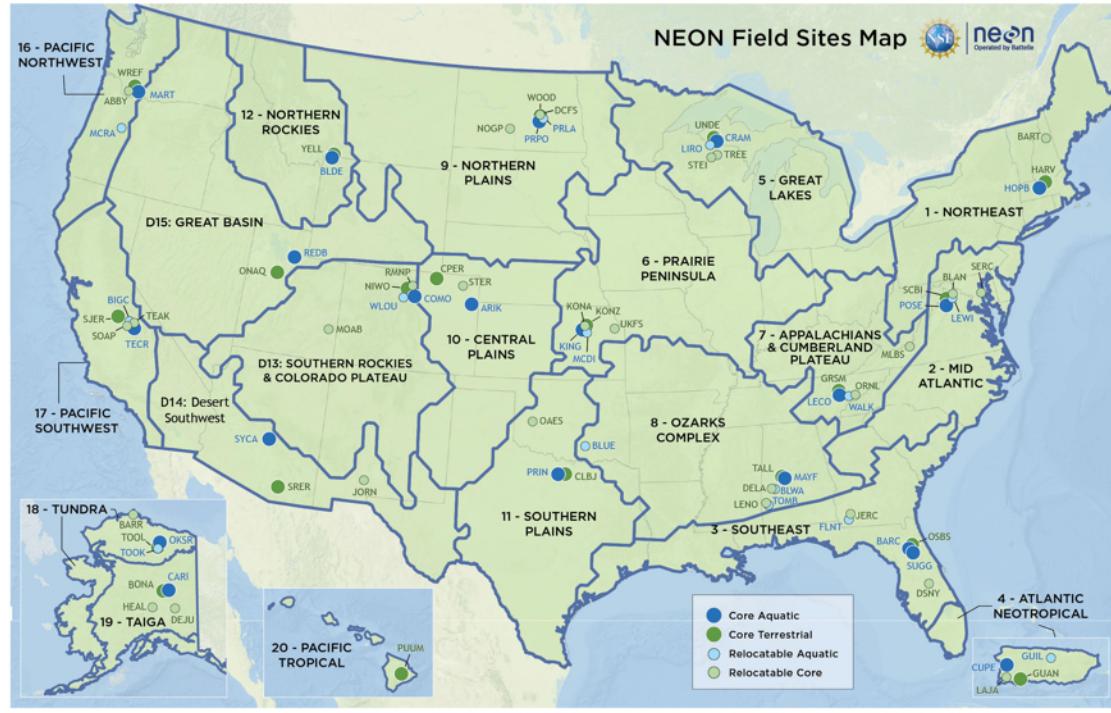
PhenoCam Network



The National Ecological Observatory Network (NEON)



The National Ecological Observatory Network (NEON)



Viewpoint

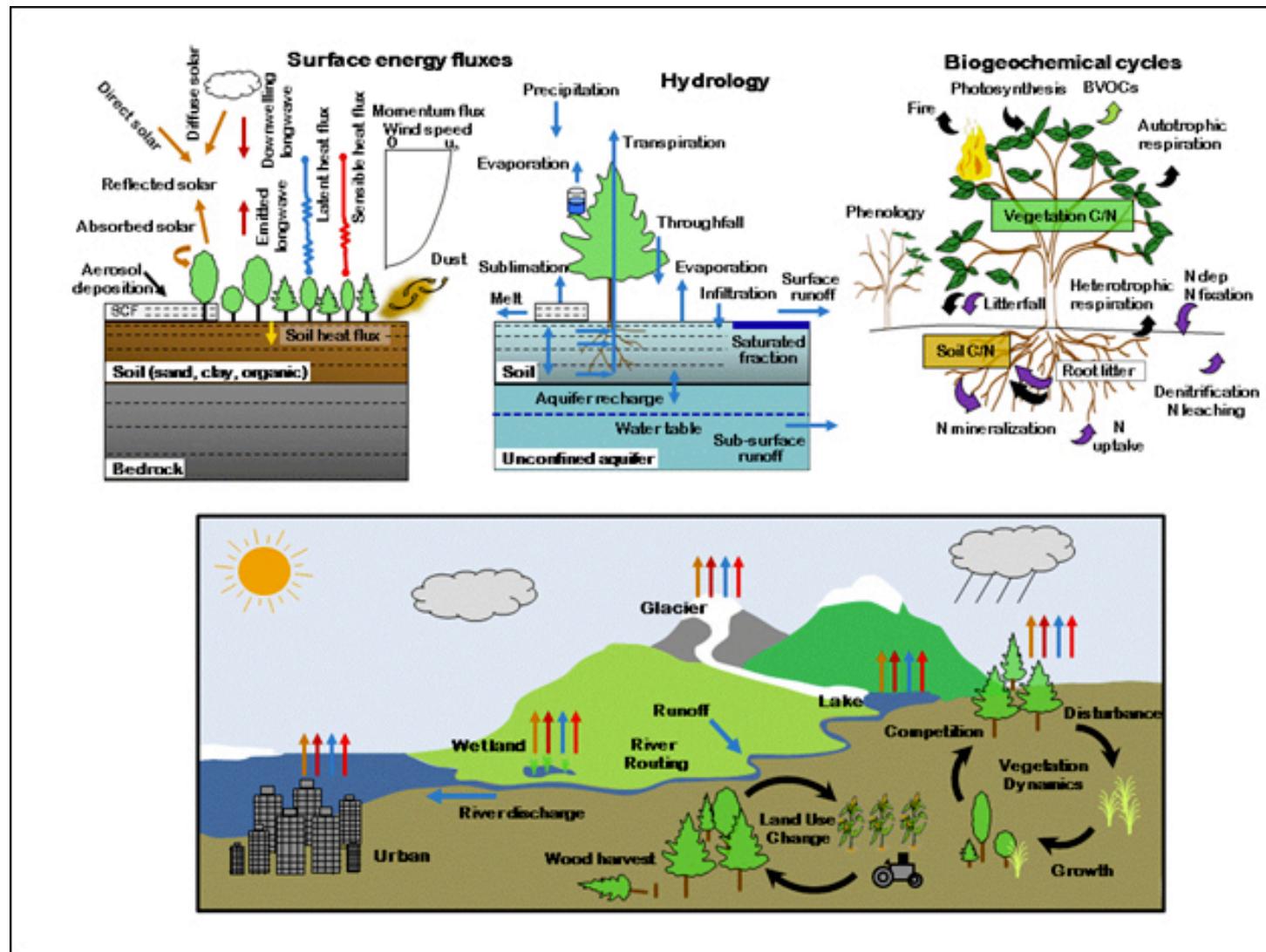
Reimagining NEON Operations: We Can Do Better

ALAN K. KNAPP AND SCOTT L. COLLINS

BioScience (October 2019)

How do we predict spatio-temporal changes in ecosystem processes?

Land surface models



Earth System Models

