# Approach for prioritizing field activities and selecting sites

Process for Prioritizing Field Activities

- Model uncertainty quantification (UQ) to assess uncertainty in key states and fluxes related to model parameters or processes

- Synthesis and meta-analysis to identify new measurement approaches

- Candidate sites evaluated using representativeness methodology employed for NEON and NGEE Arctic

- Analyses from RGCM sensitivity studies being considered, e.g.,

  - Temperature, drought, and fire contributions to tropical ecosystem flux variability (Jim Randerson, UCI)

  - Nutrient regulation of tropical ecosystem responses to environmental changes (Xiaojuan Yang, ORNL)

  - Tropical forest NPP responses to climate from CMIP5 21st century predictions (Robinson Negrón-Juárez, LBNL)

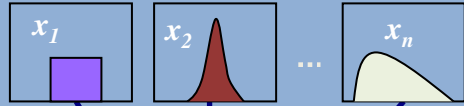 - Mapping network representativeness for tropical forests (Forrest Hoffman, ORNL)

"ForestGEO-ness"   (Maddalena et al. in prep.)
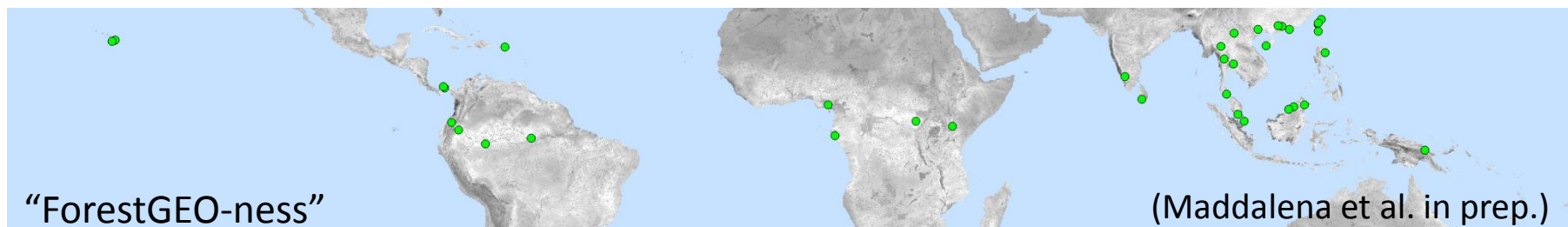
Quantify model uncertainty contributions from parameters, modules
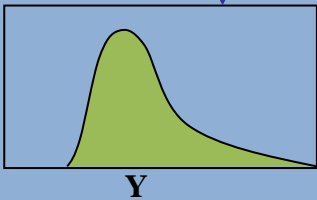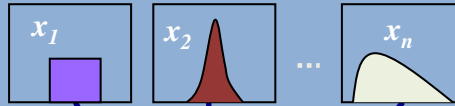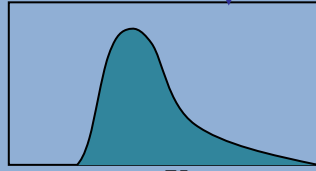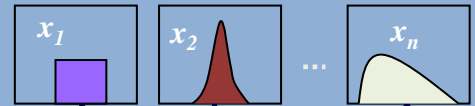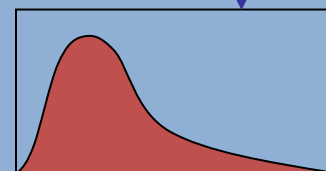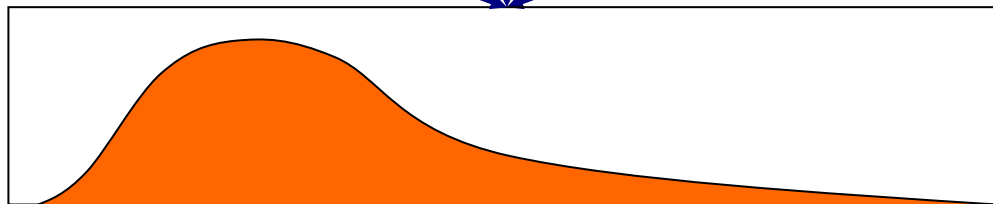
Rank processes by contribution to model variance
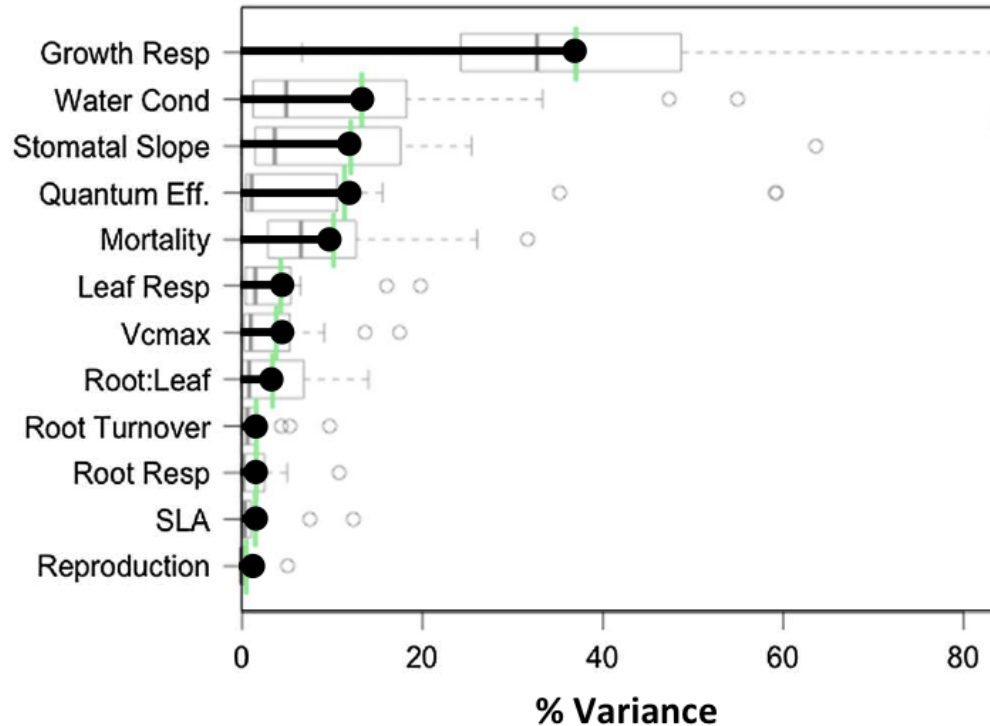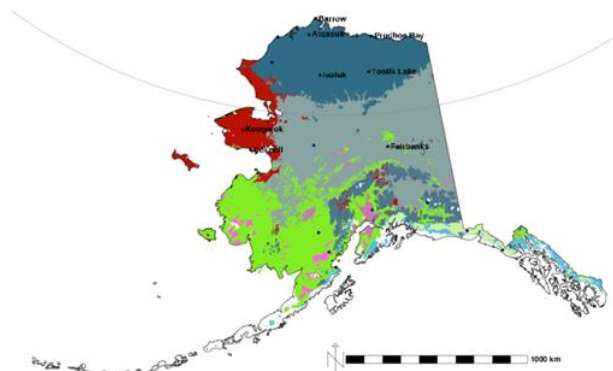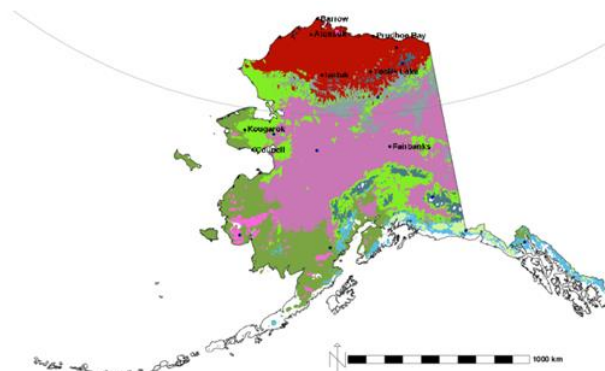

- Existing model parameters/processes ranked by their contributions to model uncertainty
- Data synthesis and measurements focused on largest reduction in model uncertainty
- Process repeated throughout project as new data, process knowledge become available
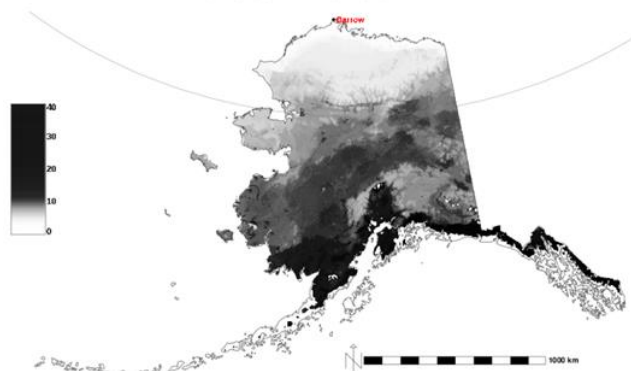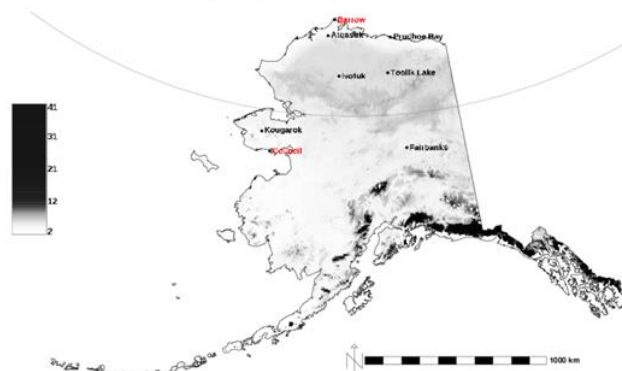
2000–2009   2090–2099

Barrow   Barrow + Council
(Hoffman et al., 2013)

Top Row: At this level of division, the conditions in the large boreal forest become compressed onto the Brooks Range and the conditions on the Seward Peninsula "migrate" to the North Slope. *Bottom Row:* Site and network representativeness.

# ForestGEO Network Global Representativeness

(Maddalena et al. in prep.)
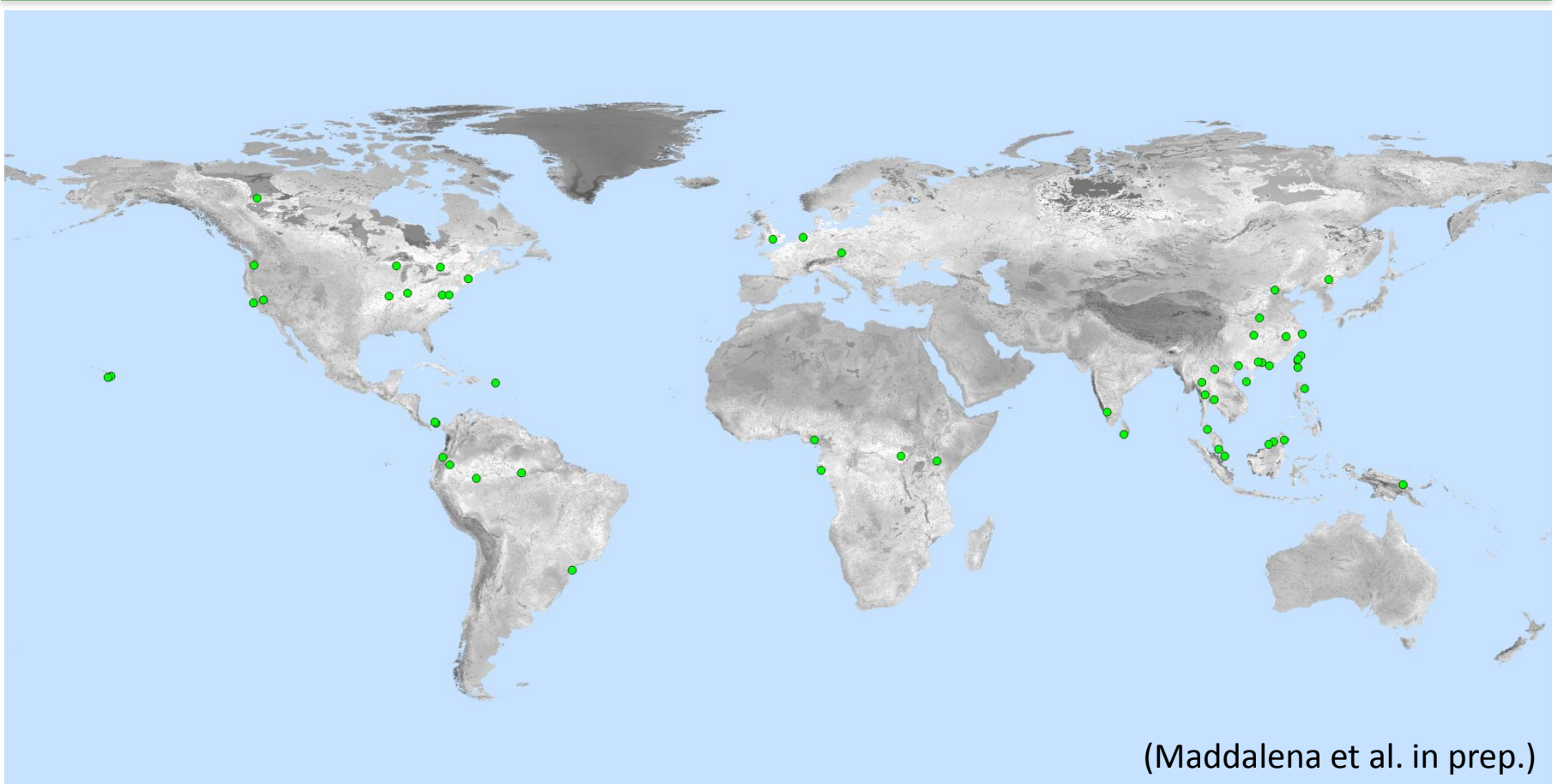
Light-colored regions are well represented and dark-colored regions are poorly represented by the ForestGEO sampling network.

Input layers include 17 global bioclimatic, topographic, and edaphic variables (e.g., biotemperature, seasonal precipitation, slope/aspect, soil C and N).

3-Network Tropical Forest Representativeness
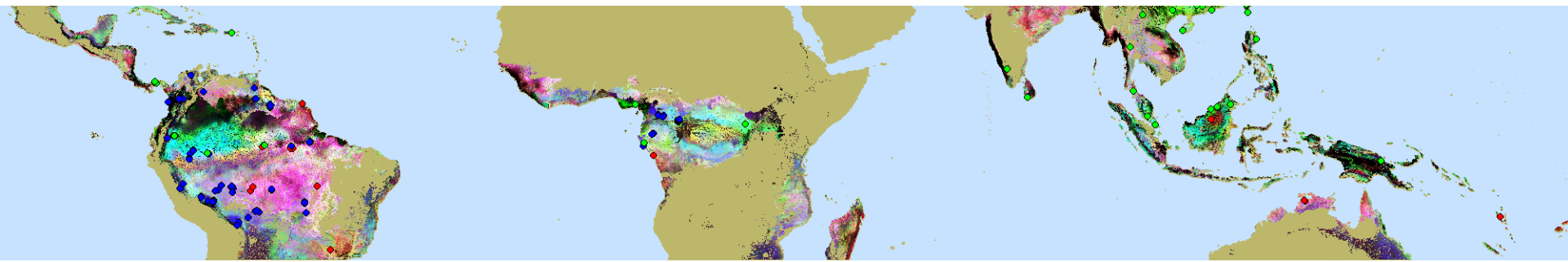
- Individual networks can be combined to determine how well they represent pan-tropical forests

- Here, every location is a combination of three colors, one for each network

- Analysis enables targeting representative sites (or underrepresented sites) as required by science objectives

- Analysis also offers a data-based spatial and temporal scaling framework

ForestGEO
Fluxnet
RAINFOR
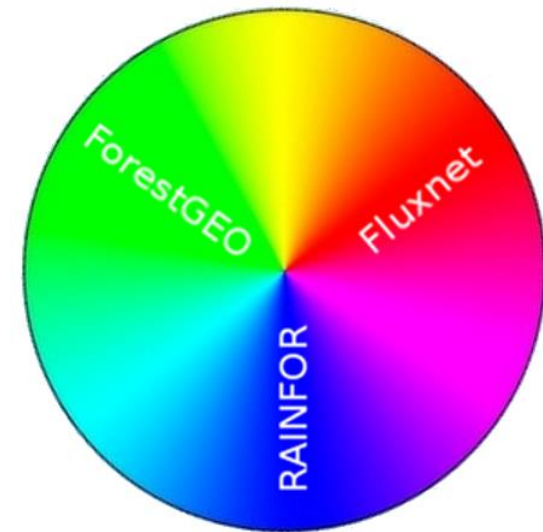
Light colors = well represented
Dark colors = poorly represented

Land Use History and Management