Carbon and Nitrogen Pool Estimates from the Tier II Network

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Tier II Network Under Aim 1

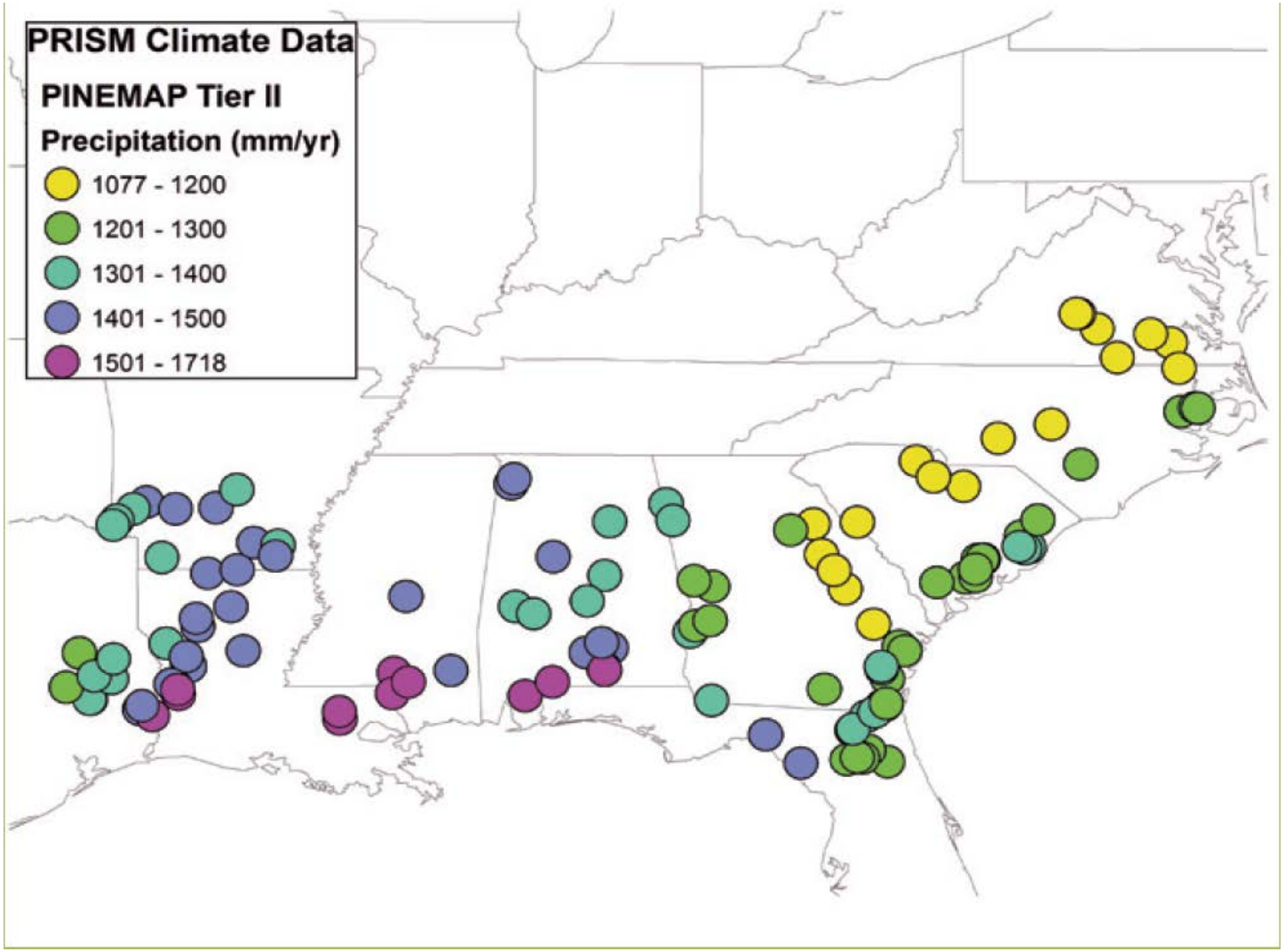
- ***Aim 1:*** *Establish a regionwide three-tiered monitoring network based on existing cooperative research trials, and develop standardized methods to quantify C, water, and nutrient storage and flux baselines and responses to climate and management.*

- Ecosystem C and N pool assessment

Overview of Tier II Network

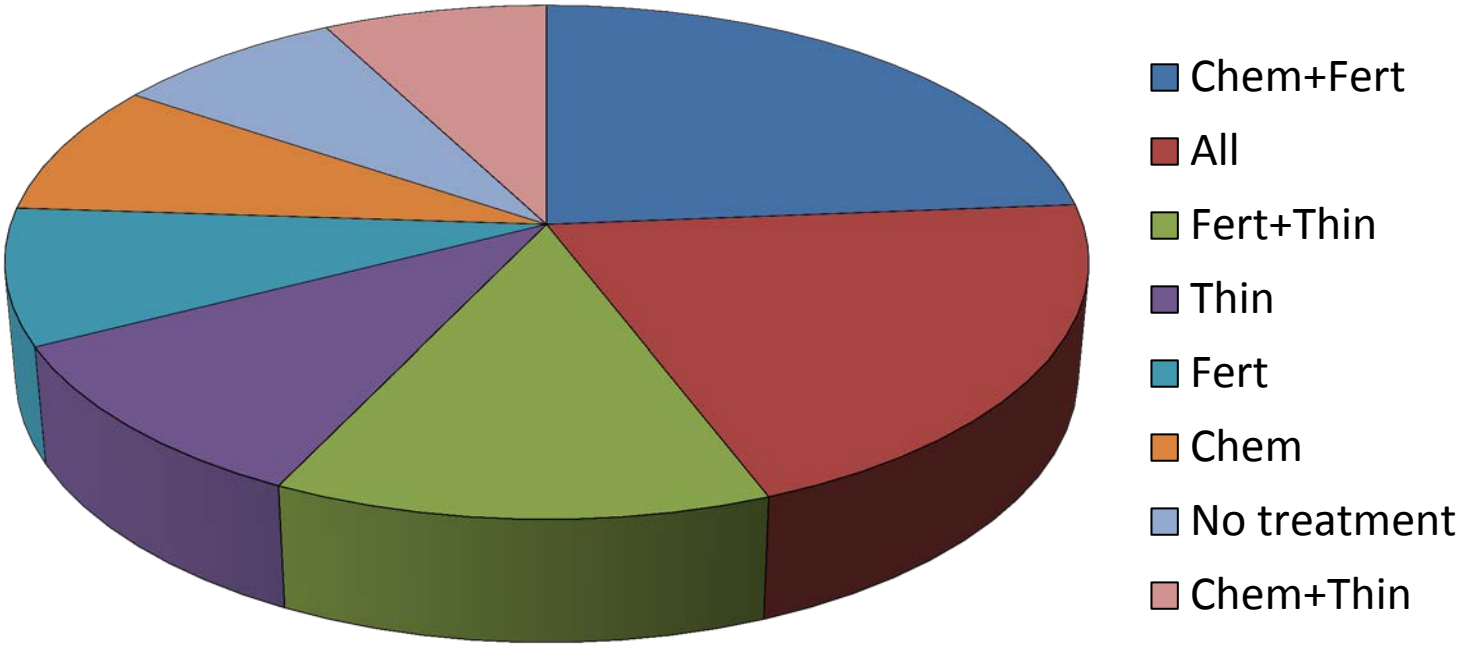
- 123 distinct sites pulled from the experimental designs of coops
  - Forest Biology Research Cooperative
  - Forest Modeling Research Cooperative
  - Forest Productivity Cooperative
  - Pine Management Research Cooperative
- 450 plots sampled
- Mean forest age 14 years at sampling

Climate Variation in Network

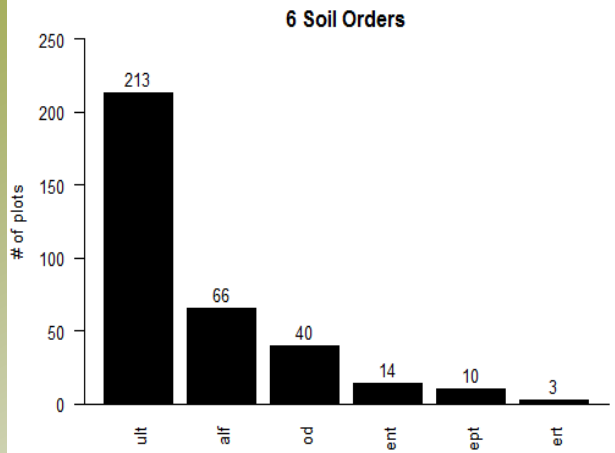


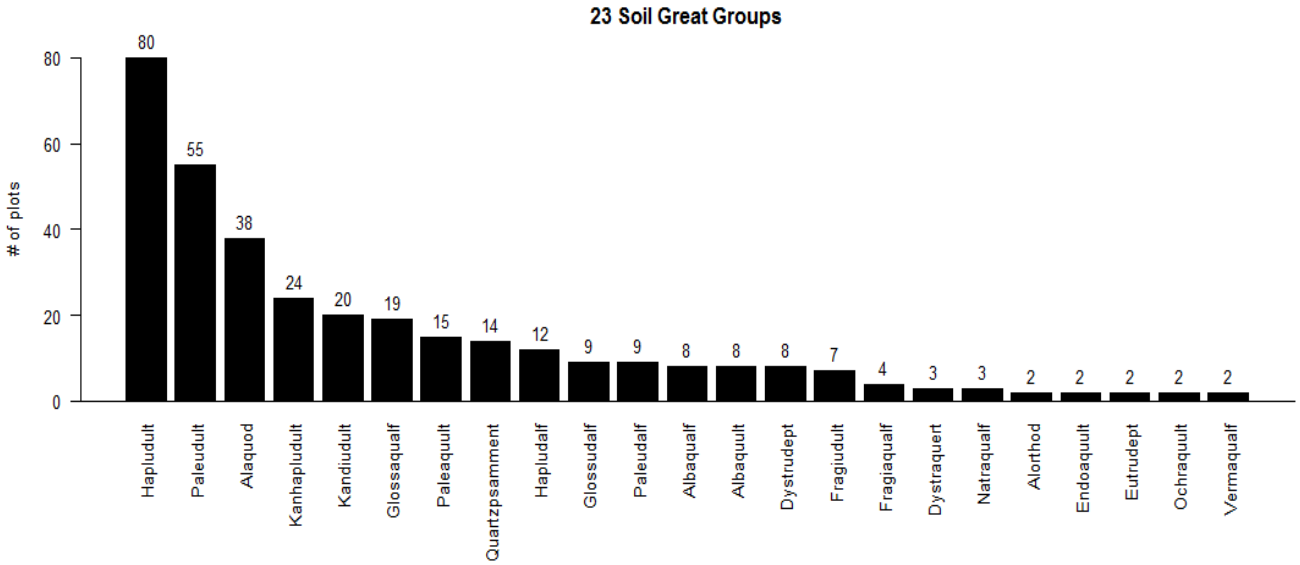
Silvicultural Treatments in Network

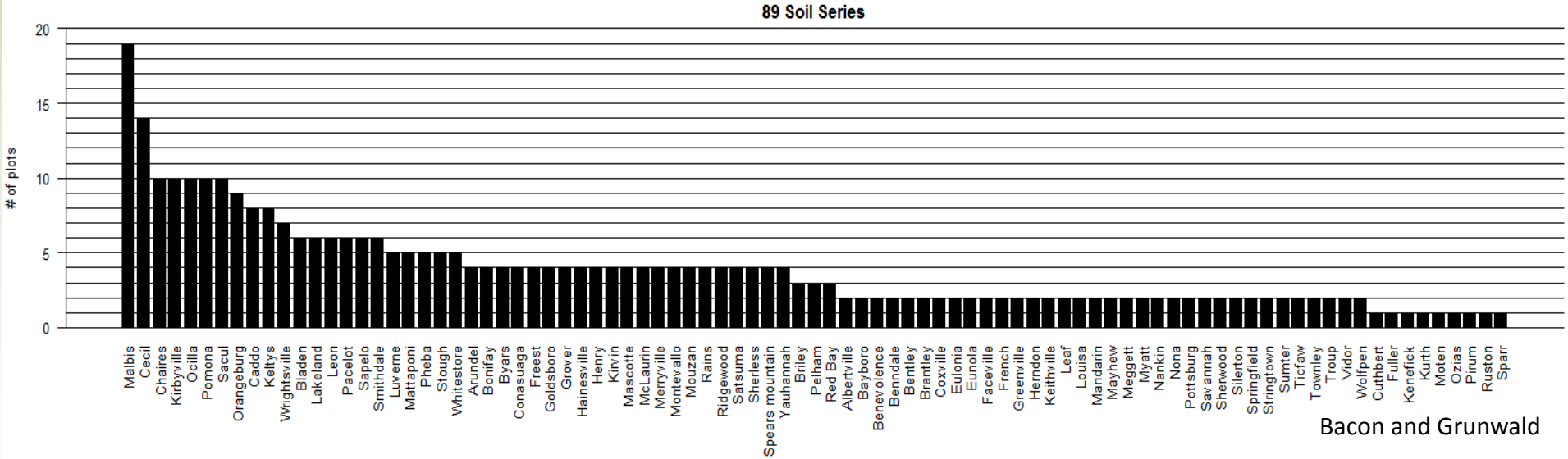
Treatments: Chemical competition control (Chem), Fertilization (Fert), Thinning (Thin)



Soil Classification from SSURGO







Bacon and Grunwald

Carbon Sampling Protocol

- Aboveground biomass and coarse roots
  - Cooperative mensurative data and allometry
- Understory
- Coarse woody debris and stumps
- Forest Floor
- Soil Samples
  - 0-10 cm, 10-20 cm, 20-50 cm, 50-100 cm
  - Rocks > 2mm, roots, and woody debris at all depths

Point Sampling Locations

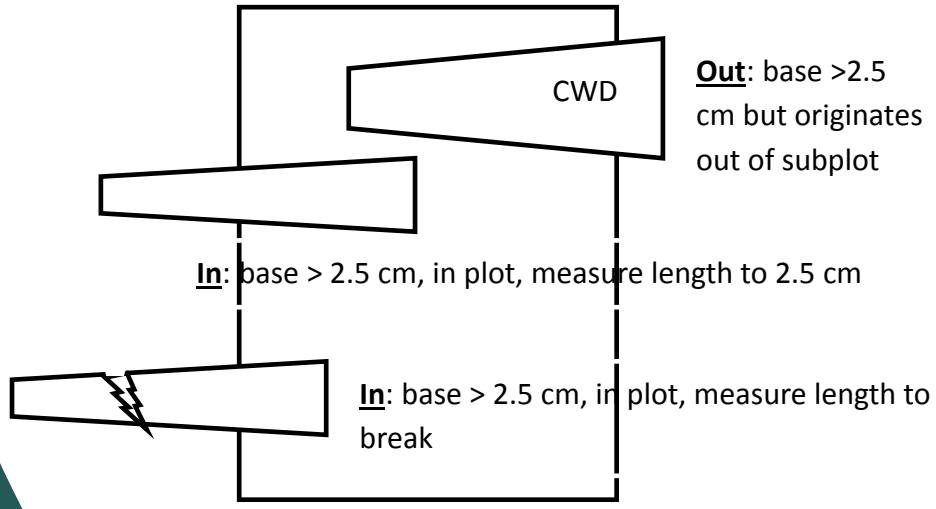
- Eight random points per plot
- Four points assigned to Group 1 or Group 2
- Measured distance to nearest tree and the midpoint of nearest planting row

Understory

- Understory coverage visually estimated
- Woody and herbaceous vegetation clipped and weighed separately

Coarse Woody Debris and Stumps

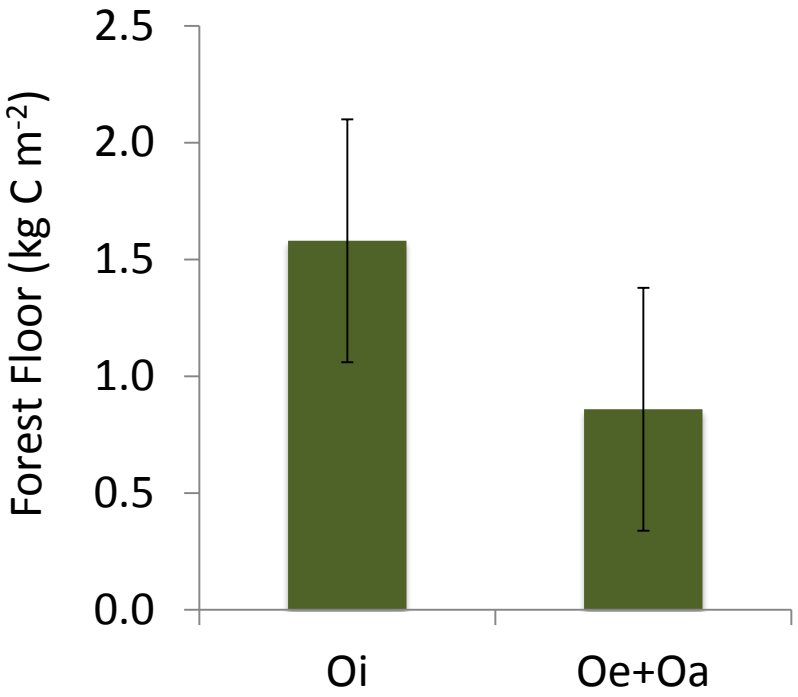
- Coarse woody debris >2.5 cm diameter measured where base originates inside the 0.5m x 0.5m plot
- Stump survey on whole plot
- Degree of decomposition

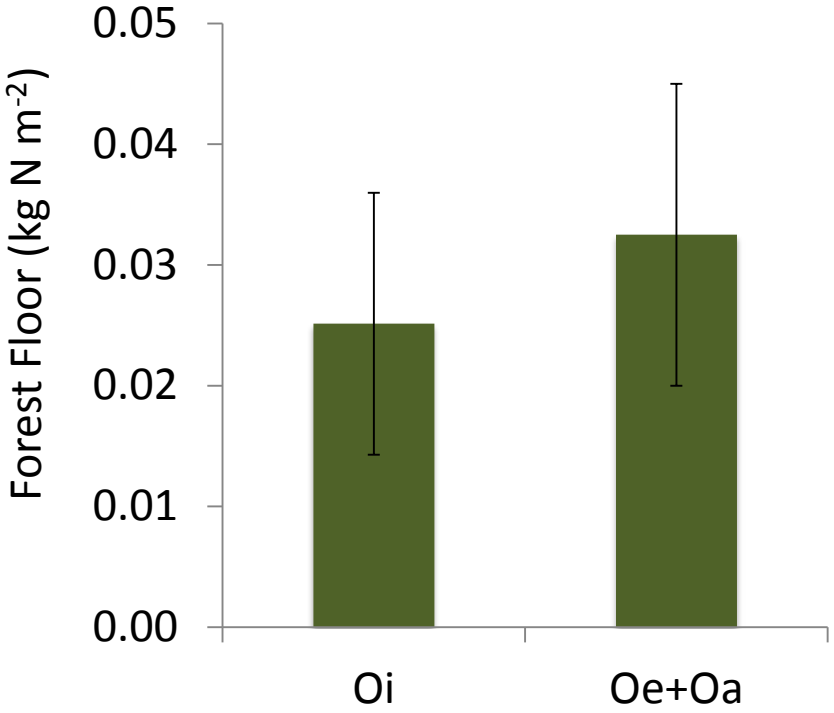


Preliminary Results: Forest Floor

- Carbon and Nitrogen
  - Litter (Oi) and Duff (Oe+Oa)

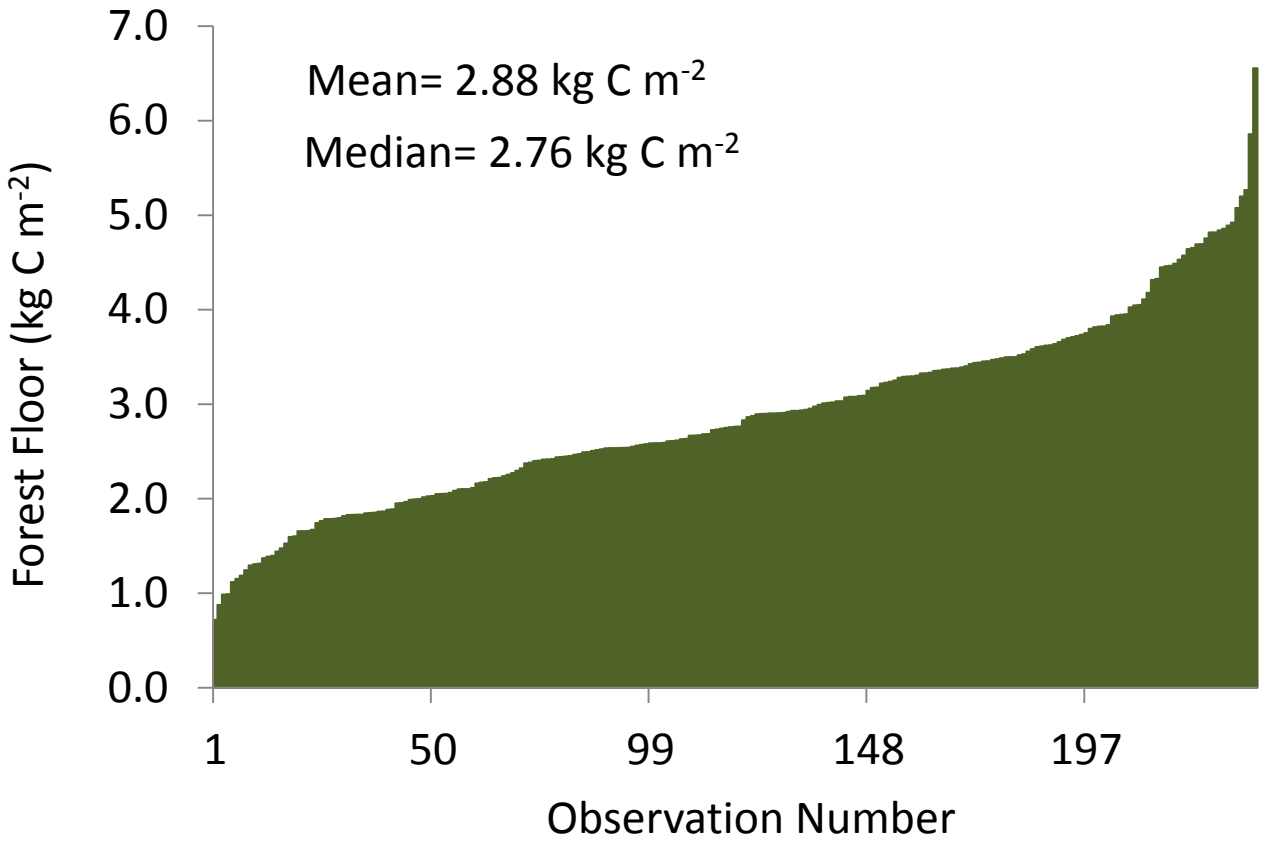
Distribution of C and N: Oi and Oe+Oa





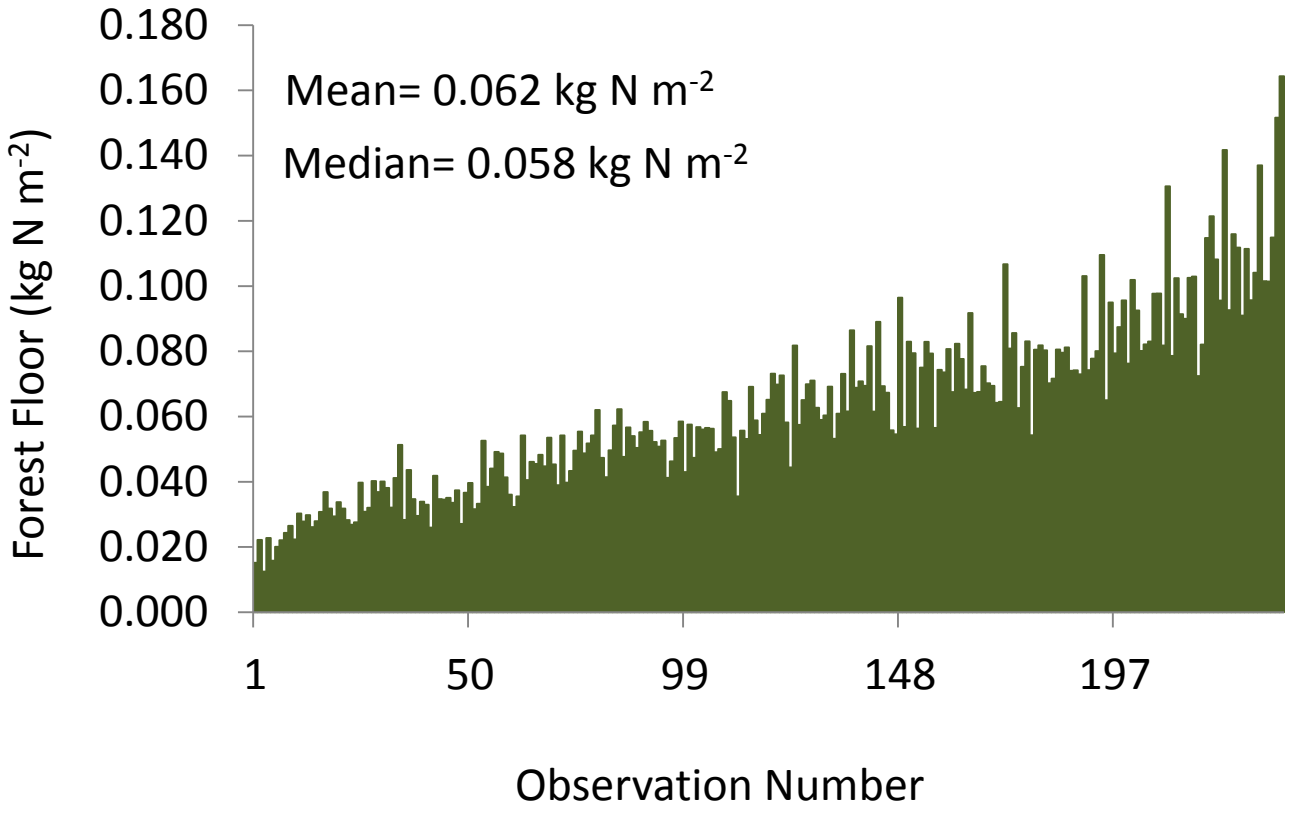
Western Gulf Region Only

Total Forest Floor C Pools



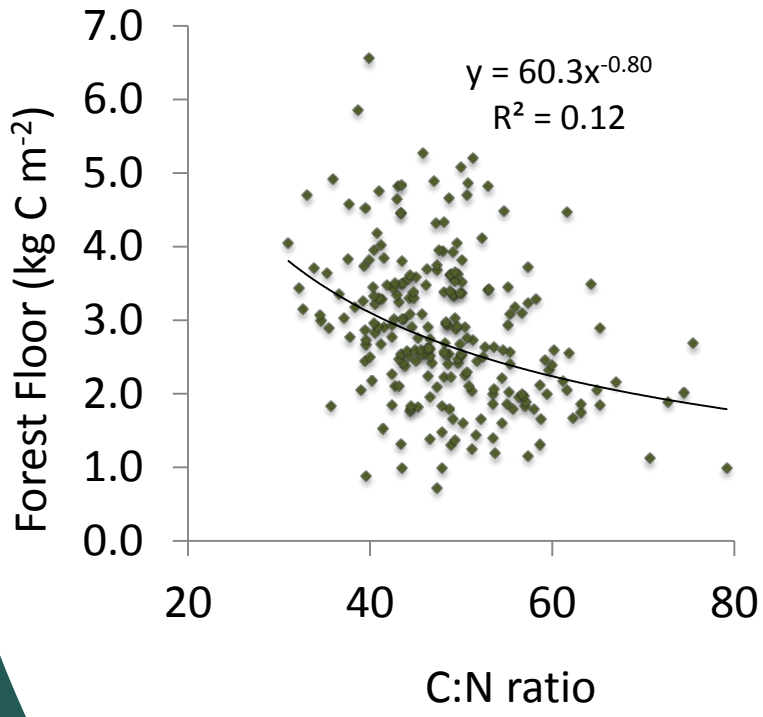
Western Gulf Region Only

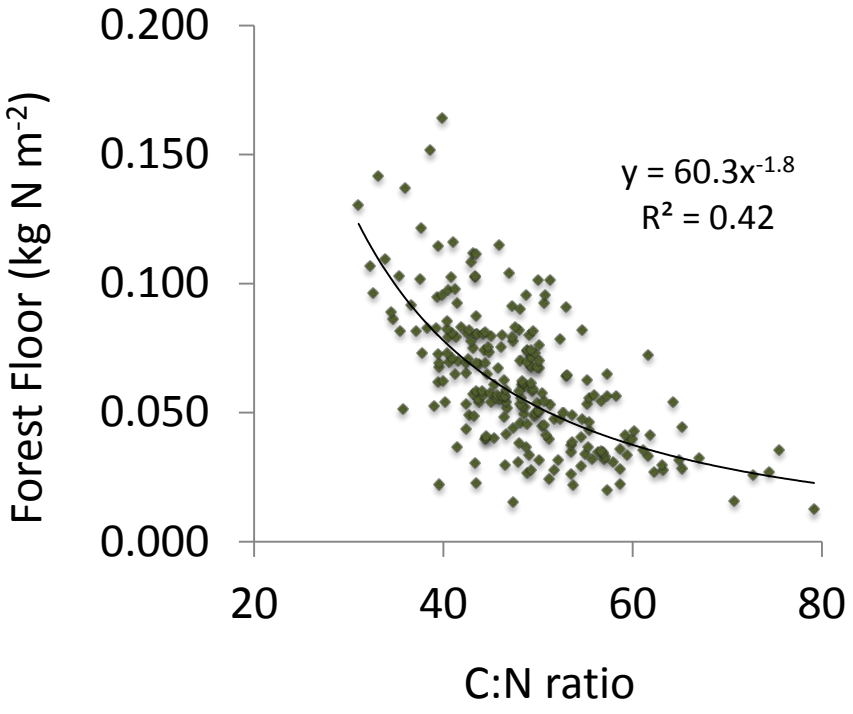
Total Forest Floor N Pools



Western Gulf Region Only

C:N Ratio vs. Pool Size



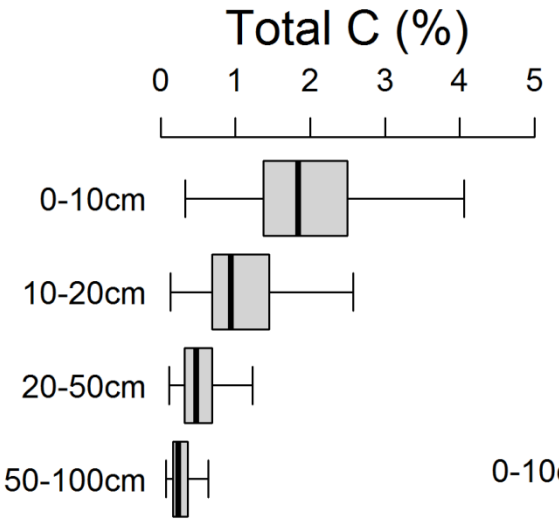


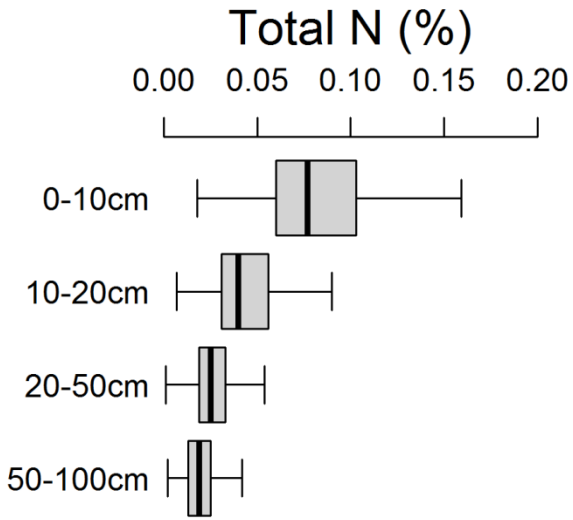
Western Gulf Region Only

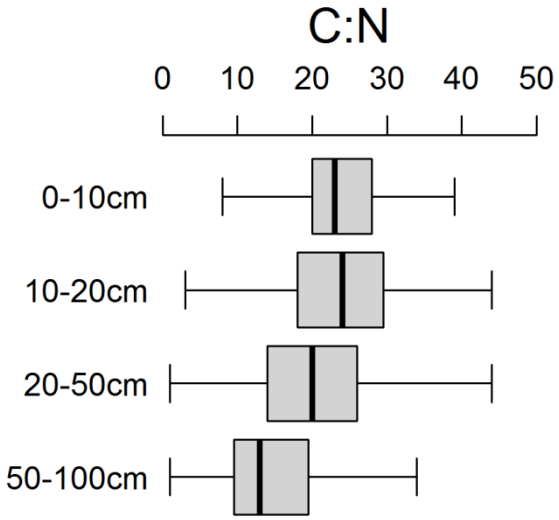
Preliminary Results: Soil

Pedo-Yeti showing off his Spodosol

Soil C and N Concentrations

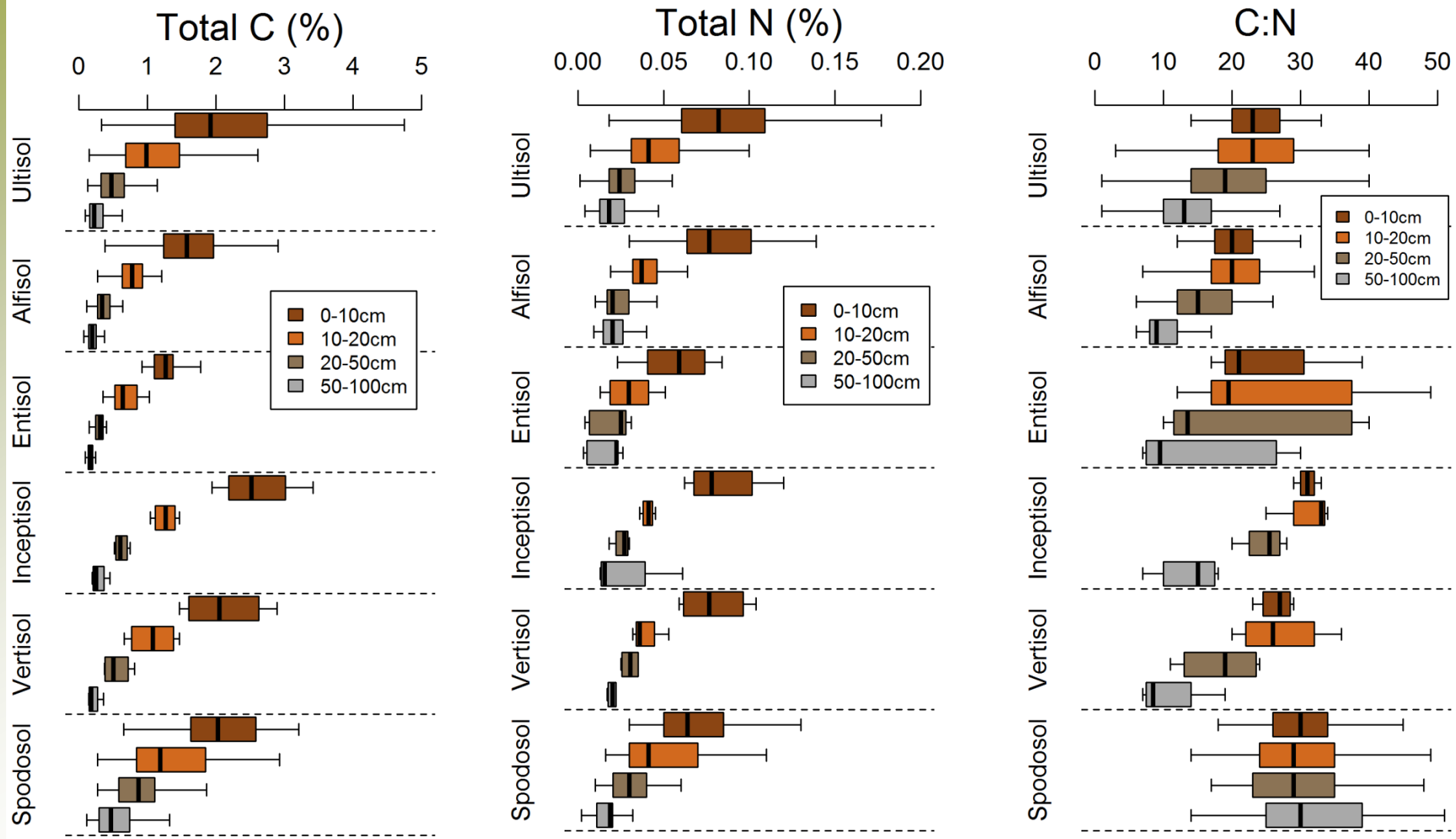






A. Bacon

Soil C and N by Soil Order



A. Bacon

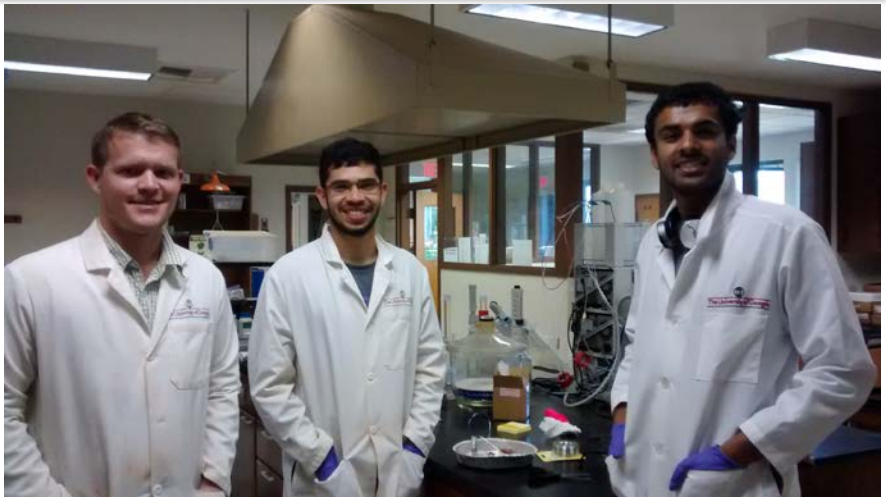
‘Add-On’ Soil Measurements

- Soil textural analysis for Western Gulf Region
- Visible/near-infrared properties
- pH, Mehlich I extractable (P, K, Ca, Mg, Zn, Mn, Cu, Fe, B), and CEC meq/100g

Forest Floor and Soil Archive

- Every sample has been air dried and is being held in a plastic container
- It is not trivial to extract subsamples of archived soils

A Project Within a Project



Tier II: Training Impact

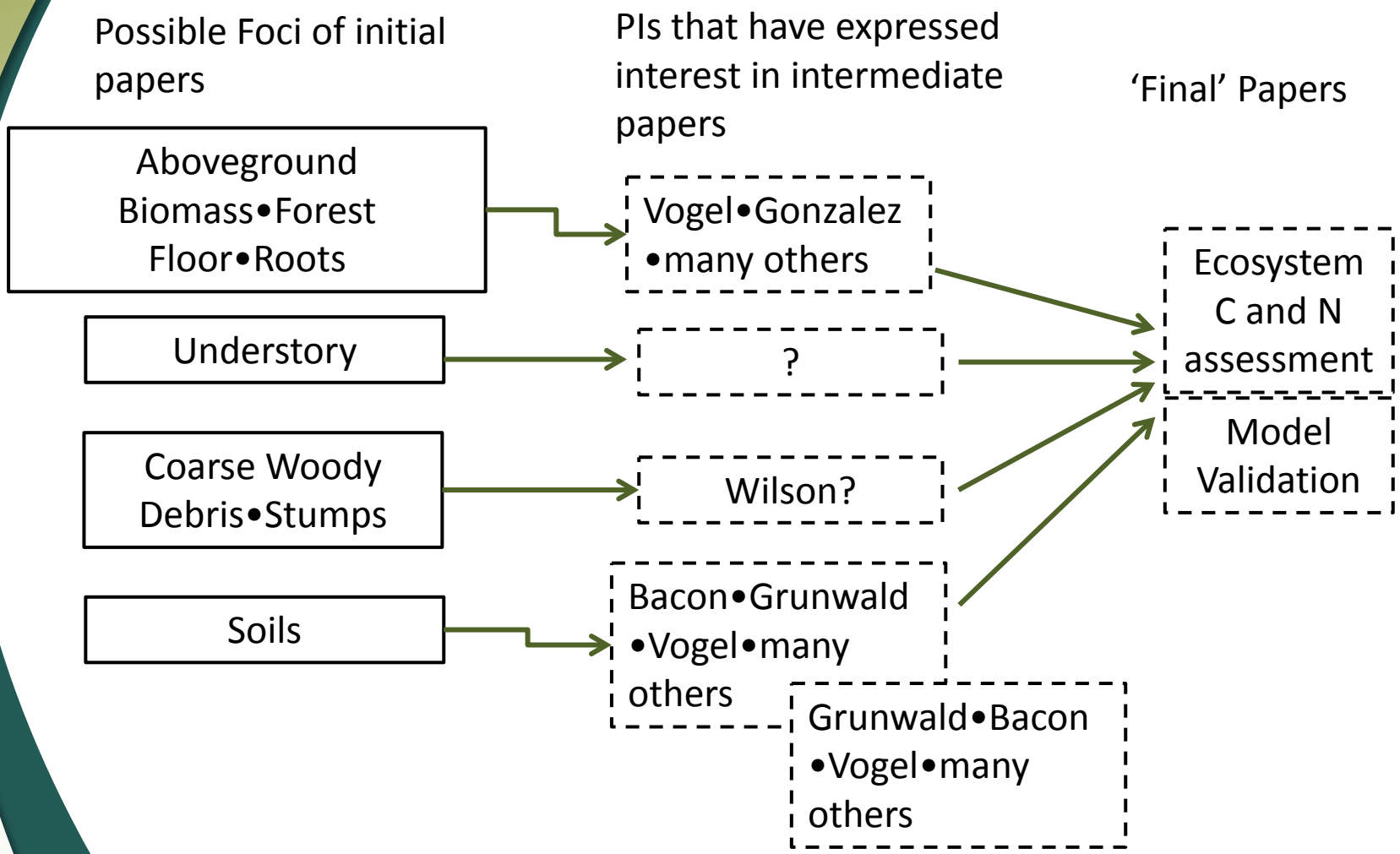
- Georgia
  - 6 undergraduate students
  - 1 Brazilian exchange student
  - 1 full-time research co-op guy “that I (Madison) dragged out to a couple of Tier II sites”
- Virginia T
  - 12 un
- Florida
  - 7 und
  - 3 technicians
  - 1 Postdoctoral fellow
- Texas A&M and Oklahoma State University
  - 12 undergraduate students
  - 4 technicians
  - 3 visiting Chinese Scientists

37 Undergraduates and 4 visiting scientists

Ongoing Work

- Six field sites need to be visited
- Some laboratory work needed
- Qa/Qc ongoing
- Finalizing database for site treatments and aboveground characteristics
- New timeline—End of summer

Strawman Paper Breakdown



Questions