Group Note Synthesis, INCyTE Seminar 2023, Week 4

* Selecting species and replicates for observatories:
  + Multiple groups suggested sampling a wide representation of species (as many as possible) with the goal of characterizing according to plant functional type.
  + Ideal to get common species, minimum of 1 species per site but more is better.
  + Sampling species at extremes of distributions and where we have gaps in sample collection seems important.
  + Number of replicates doesn’t need to be high—interest is more between sites than within sites (most say 3-5)
  + There are multiple possible scales that could be considered: maximum individual plant stoichiometric range (via fertilization?); local species stoichiometric variation (community scale); global biogeographic range (max spatial variation in a species). Maybe just start with one for simplicity.
  + Focusing on PFTs and gradients in site/tree selection might be a useful way forward.
  + Would be great to “maximize our ability to address multiple hypotheses: low buy-in, but within-community and within-species variation across gradients and treatments would be great”
* Large interest in paired soils data and multiple suggestions to collect soils alongside tree cores.
  + Consider sampling multiple parts of each core in the first phase because people might not have the time or resources for multiple, more frequent trips. For some it might be easier to do sampling all at once rather than phases.
* Should we include the tropics and if so how?
  + There is a lot of interest in having tropical stoichiometric observatories, but they present more challenges and not broadly represented in our group.
  + Could reach out to Tropiroot to coordinate with their sites and sampling to improve spatial coverage if we include the tropics.
  + If we examine tropical vs. temperate trees we might need sub working groups to cater to the specific needs of each system. Tree coring in the tropics may need different protocol standards than tree coring in temperate zone.
* Gradients
  + Strong support for cores across gradient and manipulation studies, from both modeling and empirical angles.
  + Useful gradients suggested: Soil nutrients, pH, N deposition, P deposition, climate (precip, temp, soil moisture, ET), LCLUC, elevation. Geography is inherent gradient.
  + It would be helpful to get a description of everyone’s sites to better understand gradients available to us already.
  + Multiple groups expressed interest in an N fertilization or fertilization experiment as part of the observatory set up.
  + Interest in examining elevated CO2 vs. fertilization because those drive stoichiometry in different directions.
* Utilizing existing data
  + Lots of support for utilizing existing tree cores. It seems like there are a lot of unanalyzed tree core samples and data that could be compiled from multiple labs within the network.
* Need for clarity on organization: Who is leading? Budget? Protocols to use?
  + INCyTE steering committee could develop a concrete, simple sampling plan and present it to the community rather than reviewing everyone’s sites and brainstorming.
  + Should everyone be sent the same materials? Should some chemical analyses be done centrally?