**INCyTE Seminar 3/8/23 Discussion Synthesis**

***Discussion Goal:*** *To consider the goals and important outcomes of an INCyTE network stoichiometric observatory experiment and to identify and develop hypotheses of interest to the group.*

**Common themes from discussion groups:**

* Some argued for the value of working across existing gradient studies and/or at extremes
  + Interest in surveying the INCyTE group to see what ecosystems and experiments are available to sample. Multiple groups suggested this would help address what questions and hypotheses we can answer.
  + In general, there is lots of interest in working across gradients or ongoing manipulations for sample collection.
  + Sampling means vs. sampling at extremes—would sampling at extremes help us better understand the possible range of stoichiometric flexibility? How can we select sites to do that? Do people have ongoing studies that could be sampled that demonstrate extremes? Can we use some simple manipulations to “push” systems toward extremes?
* Examining existing data
  + In addition to asking what kind of data collection is possible at everyone’s sites, a survey of participants could ask about existing data/samples that members can access. Important to consider collection of new data vs. existing samples and data.
  + Would more synthesis of existing data be helpful?
* What is the scale of the sampling and analyses?
  + Are we sampling at the individual level or another level (e.g., community)?
  + Hypotheses likely to vary depending on scale of interest
  + Time scale? Should there be a time component to sampling or consider space for time?
* Inclusion of P?
  + Most groups were interested in examining P as well as C and N but acknowledged that P is more challenging. Some mentioned that they don’t measure P but would like to include P as part of the experiment if they could get help with the analysis.
  + Some previous syntheses indicate that the much/most of the variation in stoichiometry is in N:P rather than C:N (how much does C change?)
* What to sample?
  + There was some discussion of whether to identify a subset of tissues not well represented in current databases (e.g., wood, roots) versus “whole” observatories. Most agreed that it would be more valuable to sample entire vertical gradients, but acknowledged the challenges (esp. foliage in tall trees).
  + Wood and roots seem like the biggest data gap to fill.
  + However, it seems like a missed opportunity not to examine vertical linkages and other environmental variables alongside roots and wood.
  + General support for developing a wood/root dataset and examining the vertical coupling hypothesis at the same time. Possible tiers of involvement depending on how much people can contribute.
  + Interest in sampling soil and deciding how to divide soil samples (bulk, OM fractions, depth) may be important for considering linkages across the vertical core.
  + Does when you sample (time of year) matter, especially in relation to sampling after a system was disturbed?