Component parameterizations requiring re-tuning for ACME land model

Deliverables

- Detailed Plan of Experiments
- Metrics
- Expected Results
- Possible Compromises, Unacceptable Behavior and back up Plan

Detailed Plan of Experiments
- designed for model tuning and parameter optimization

- Simulations at sites along a phosphorus availability gradient in the Amazon region (UQ package will be used to determine some important parameters involved in P cycle dynamics)
- Standard point simulations
  - Representative sites (different combinations of pft, soil texture, climate, soil order…)
  - Super sites
  - Fluxnet sites
- Manipulation experiments at certain sites targeting specific processes
  - Litter addition
  - Fertilization experiments
  - FACE
  - Warming experiments
- UQ Framework and the ILAMB Benchmarking tools to help with model parameter tuning.

Detailed Plan of Experiments

- Global offline simulations
  - Factorial simulations(CO_2, climate, N deposition and land use change and all)
  - C, CN and CNP
  - ECA vs Relative demand for representation of nutrient competition

Benchmarking and Metrics

- ILAMB
- Additional evaluation focusing on specific processes, especially the role of nutrients
- C14 datasets

Expected Results

- Finalized parameterization sets ready for coupled model testing
- Publications on site level and global level offline simulations

Coupled model testing and re-tuning

- Changes made in the land model may change atmospheric variables such as precipitation
- Suggesting Atmospheric group to tune their model using the prognostic land model instead of satellite phenology mode
- Integrate land and atmosphere tuning early

Possible Compromises and Back up

- Limited site level simulations we can do
  - A core sets of site simulations
- Any fallback if the new development in land component breaks the coupled simulation?
  - Land team is well prepared. We have different configurations in land model that can be used as needed

Other discussion points

- The question on forcing data when doing the offline parameterization and benchmarking
  - GSWP3 for offline forcing
  - Forrest Hoffman's poster