

# The Carbon-Land Model Intercomparison Project (C-LAMP)

## Objective

Reduce model uncertainty by comparing multiple land biogeochemistry modules within the Community Climate System Model (CCSM) with best-available satellite and in-situ observations.

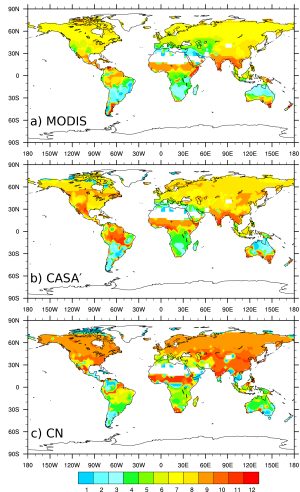
## Approach

- ▶ The CCSM Biogeochemistry Working Group developed an experimental protocol, model evaluation metrics, a prototype diagnostics package, model output standards, and a database of model simulation results on the Earth System Grid (ESG). See <http://www.climatemodeling.org/c-lamp>.
- ▶ Over 16,000 years of simulation and 50TB of output were generated using the Climate Science End Station INCITE allocation at ORNL.
- ▶ The CASA' and CN modules were combined with the Community Land Model version 3.1 (CLM3.1) and model results were assessed by comparison with satellite- and ground-based measurements.

## Impact

Significant improvements were made to the CN module as a result of this model evaluation, and CN was selected for inclusion in CLM4 for IPCC AR5/CMIP5 simulations. C-LAMP will serve as a prototype for a new International Land Model Benchmarking (ILAMB) activity.

Randerson, J. T., F. M. Hoffman, P. E. Thornton, N. M. Mahowald, K. Lindsay, Y.-H. Lee, C. D. Nevison, S. C. Doney, G. Bonan, R. Stöckli, C. Covey, S. W. Running, and I. Y. Fung. September 2009. "Systematic Assessment of Terrestrial Biogeochemistry in Coupled Climate-Carbon Models." *Global Change Biol.*, **15**(9):2462–2484. doi:10.1111/j.1365-2486.2009.01912.x.



Month of Maximum Leaf Area Index