**ABSTRACT:**

We face a number of challenges in modelling the terrestrial carbon cycle. Detailed understanding is focused at a few research sites, which limits knowledge of global patterns. Our interest in future dynamics is compromised by the interaction of processes that either have varied time constants or are seemingly stochastic. New tools (data assimilation) and data sets (remote sensing) are helping to resolve these challenges.

Data assimilation (DA) provide a means to combine models with data in a statistically optimal manner. The outcome of DA is an analysis with estimates of model state variables and/or parameters, and their errors. However, DA can fail if we do not effectively incorporate ecological information into the carbon model. Such information focuses and improves parameter estimation.

Novel radar instruments provide capacity to monitor regional terrestrial biomass. Biomass stocks are a critical control on carbon cycling, but are relatively poorly constrained by our reality checks. Therefore, an independent biomass map provides significant new information for model analysis. The spatial variability of a biomass map is also indicative of landscape disturbance history, and can be used to infer for models their stochastic disturbance parameters, and non-steady state biomass dynamics.

Seminars are live webcast: [http://www.fin.ucar.edu/it/mms/ml-live.htm](http://www.fin.ucar.edu/it/mms/ml-live.htm)

* Refreshments are served before seminar. *

For more information, contact Gaylynn Potemkin, email [potemkin@ucar.edu](mailto:potemkin@ucar.edu), phone: 303.497.1618