

MCI Interim Synthesis Break-Out Meeting
AGU Evening Session 2008
San Francisco, CA
Discussion Lead: Stephen Ogle (NREL, Colorado State University)

- 1) Contributions
 - a. Most contributions have been made, but have not had any contributions for forestlands
 - i. Possibilities include Linda Heath, Dave Maladenof, and Bruce Cook
 - ii. Could use global models for the forest portions of the MCI region
 - iii. Could reduce the spatial domain, eliminating the forested areas in Wisconsin, Minnesota and Missouri
 - iv. For now, will attempt to use the global model output assuming no data is provided by investigators listed above
 - b. Inversions have not been provided to CSU for analysis
 - i. Using 1x1 degree output from the models
 1. finer scale than analysis being done by Andy Jacobsen
 - ii. Andrew Schuh will talk with Andy Jacobsen about the availability of this output
- 2) Compilation of Inventory
 - a. Must compile an inventory because no single contributions provides full coverage of all CO₂ fluxes in the region for comparison to inversions
 - i. Some contributions only cover a portion of region and others only part of the temporal domain
 - b. Compilation Process
 - i. Combining contributions on a source by source basis to produce an overall estimate with an uncertainty
 1. monthly time step
 2. Assumption: each contribution to the sources is equally correct and/or flawed
 - a. The whole will provide a better approximation than any single contribution
 - b. Will test this assumption with the NPP-derived NASS estimates and Ameriflux data later in the year, but these evaluations are not without their problems (e.g., some models calibrated using these data)
 - i. See comments in Section 5 for more information
 - ii. Optimally would like to include variability from contribution to contribution on a source, and also the internal variability of each contribution
 1. Very few of the investigators have provided uncertainty with the contributions

2. S. Ogle has been contacting investigators about applying a default level of uncertainty; it is better assumption to apply some uncertainty than assuming the data have no imprecision
 - iii. Scaling data to 1x1 grid for comparison to the inversions
 1. Inventory data have been provided at a county scale and monthly time step
 2. Comparison to inversions will be done on a 1x1 grid so the inventory data must be re-scaled to this grid
 - a. Will use an area weighting for the aggregation based on land cover maps from NLCD
 3. Could be problems with edge effects where counties cross boundaries of the 1x1 grid
 - a. Will eliminate grid cells along the boundary in order to deal with this problem
 - b. Will set a 85% threshold of how much of grid cell must be included before it is eliminated from the analysis
 - iv. S. Ogle, A. Schuh, S. Denning and D. Cooley have been working on the approach for combining these data, which includes a combination of Monte Carlo Analysis and a simple error propagation
 1. The results will be reported at NACP meeting in Feb.
- 3) Comparisons
- a. Data will be compared on a monthly time step using the data from the 1x1 grid (including uncertainties)
 - b. Will compare the compiled inventory to each of the inversions separately
 - c. Evaluate relative to individual sources using exploratory statistical approaches
 - i. Will compare using RS-based and associated data provided information about land surface characteristics
 1. This will probably be more instructive about errors driven by the inventory
 - ii. e.g., MODIS EVI/LAI/Fire product, NASS crop maps and county scale crop data
 - d. Will aggregate the 1x1 by grid and evaluate the decline in error
 - i. This will likely be more instructive about errors associated with the inversions because of issues related to the transport models
 1. Aggregate both in space and time
 - e. Also will take out the mean trend and look at seasonal cycles and interannual variability between the inversions and inventories
 - f. S. Ogle will report on initial findings at NACP meeting in Feb.
- 4) Reconciliation of inventory and inversion data
- a. This topic will be the focus of an MCI working group meeting at NACP meeting in Feb.
- 5) Model output to data comparisons for inventories

- a. NASS-derived NPP for crops
 - i. County scale data
 - ii. CSU prepared dataset
 - b. Site scale comparisons
 - i. Focus on after spring workshop in Fort Collins
 - ii. Learn from continental site synthesis
 - iii. Concerned about validity of comparisons
 - 1. Ecosystem models have so many parameters that it is often possible to adjust in a way that it matched the data
 - 2. However, this does not inform about model's ability to predict state variable trends at other sites
 - 3. Need ground rules
 - a. e.g., may request that investigators provide parameters
 - iv. Compare across multiple variables
 - 1. NEE, AET, Temperature, GPP, NPP
- 6) Manuscript outline for first paper by Feb. meeting
- a. Authors will include all contributors and those analyzing the data