Observation Networks
The handshake between observations and models

Harnessing the 'long tail' of ecosystem carbon cycle observations
Approaches and challenges in synthesizing and assimilating non-automated and experimental data
The Long Tail

- Frequently used data
  Often managed by a Content Management System

- Less frequently used data
  Managed through informal organizational practices such as shared network folders

- All other data / 80-85% of the total
  Infrequently used and entirely unmanaged
Carbon’s long tail

- Experimental manipulations
- Vegetation plots (esp. historical)
- Belowground carbon
- Sap flux
- Gas exchange (leaf, root, etc.)
- Soil respiration
- CH4, VOC, DOC
Successes of synthesis

- Big Data
- FLUXNET
- Remote sensing
- GLOPNET
- TRY
- Advances in theory
- Model inter-comparisons
- Model-data fusion

INCREASING DEMAND BY FUNDING AGENCIES, JOURNALS, COMMUNITY
How can we make this happen?
Can we develop a “community” approach to model-data synthesis?

What would it look like?
Agenda

- Kuperberg “ModEx”
- Papale/Agarwal “FLUXNET uncertainty & BADM”
- Cook “Data One”
- Keenan/Ricciuto “Multiple data integration”
- Dietze “Tools for model-data synthesis”
- Split Group Discussions
- Large group synthesis

Thursday, February 7, 13
Questions 1

- What are the **key challenges** to using experimental and observational data in data assimilation?

- What **priorities** are there for data or biomes the community should focus on?

- Is there a need to develop **guidelines** for community model-data assimilation to prevent misuse or assimilation of biased data?
Questions 2

- How can new tools make model-data synthesis more accessible, community-oriented, and with faster forecast turnaround times?
- Can this approach increase credibility of models for addressing policy and management questions?
- How can we better archive and document older data sets that are at risk of falling through the cracks?