

# **CARBON CYCLE INTERAGENCY WORKING GROUP UPDATE ON NORTH AMERICAN CARBON PROGRAM**



**Paula S. Bontempi and CCIWG Members  
2<sup>nd</sup> North American Carbon Program All-  
Investigators Meeting  
17-20 February 2009**



# *U.S. Carbon Cycle Science Program*

## **A Research Element of the U.S. Climate Change Science Program (CCSP) (NACP + OCCC (OCB))**

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## Activities/Challenges for Workshop to Consider

- **Climate Change Science Program – carbon cycle science evolution and progress “report” (Building Blocks activity)**
  - Carbon Cycle Science Working Group efforts in evolving U.S. Carbon Cycle Science Plan
- **Synthesis activity progress – mid-continent, coastal, site, non-CO<sub>2</sub> greenhouse gas, plus future synthesis activity (synthesis of synthesis)**
- **High latitude priority (FY09-11)**



# Carbon Cycle Science Program – Evolution

- 17 December 2008 – revised guidance on “Building Blocks” activity (due 13 March 2009)
- CCSP Principals, the OSTP transition team (Bierbaum and Molina) - learn from agencies and individuals involved in the program about their views on the future.

## **The purpose of the building blocks is three-fold:**

- To promote ongoing long-range planning;
- To promote discussion about intersecting science and program priorities amongst CCSP agencies, principals, and working groups; and
- To be prepared for discussion with the incoming Congress and Administration about the Program and, ultimately, about development of a new strategic plan.



# Carbon Cycle Science Program – Evolution

## Building Blocks:

1. **Goals-** continuing, emerging scientific and societal opportunities, challenges, questions (10-year) + limited set of specific and/or nearer term goals (3-year)
2. **Enabling Contributions and Collaborations** - Research, science, technology needs + key activities within the community that support achieving goals + requirements for coordination/collaboration w/other communities within/outside CCSP
3. **Pathways and Options-** evolution of existing program objectives, structure (suggested alternative program objectives, frameworks, configurations) + role(s) of Principals, IWGs, agencies, coordination office + resource considerations (new or reprogrammed resources)



# Carbon Cycle Science Working Group

- July 2008 - CCSP Principals produce Building Block Tasking (revised Dec 2008)
- IWG responds by drafting charter for CCSWG/planning revisit of US CCS Plan
- Mission - to develop the next U.S. carbon cycle science plan
  - Identify challenges and priorities for the next decade (~2010-2020)
  - **Involve broader research community in formulation and implementation**
- Recommendations go to agency managers who set carbon cycle science priorities for the next decade, and sponsor most of the carbon research in the U.S.
- Summer 2008 – Charter approved by CCIWG, co-leads identified and enlisted: Anna Michelak (University of Michigan), Chris Sabine (NOAA-PMEL), Rob Jackson (Duke University), Greg Marland (Oak Ridge National Laboratory)
- Fall 2008 - 23 total members invited/finalized
- 18-24 months or until the activity is completed – additional meetings planned



# Synthesis Activities: Challenges

- What needs to be done to move toward formal synthesis? (gaps, research, obs)
- What will be produced?
- Wednesday:
  - **Site Interim Synthesis** – Synthesis of modeled and measured carbon, water, and energy fluxes across North America; regional to continental upscaling of AmeriFlux data
  - **Mid Continental Intensive (MCI) Interim Synthesis** – Synthesis of Tower CO<sub>2</sub> Flux observations, inventory-based co<sub>2</sub> budget, atmospheric inversions, etc.
  - **Non-CO<sub>2</sub>/Greenhouse Gases Interim Synthesis**
  - **Regional Interim Synthesis** – NACP spatial model-data comparisons, inverse modeling, West Coast analyses
  - **Coastal Interim Synthesis** – carbon fluxes on east Coast and Gulf of Mexico, North American Pacific Coast, carbon dynamics via optical/remote sensing data
- Thursday: **Interim Synthesis** Discussion
- Friday: **Future Synthesis** Discussion
  - **Synthesis of Synthesis** – quantitative summaries and assessments; decision support, e.g., feeding interim synthesis in to decision support; blending of the human aspect/social sciences



# CCIWG Priorities for FY09-10 (11?)

## Enhanced Carbon Cycle Research on High Latitude Systems

Augments and updates CCIWG FY09 priority

Payoffs:

1. Increased quantification of atmospheric CO<sub>2</sub> and CH<sub>4</sub> concentrations and related tracers in under-sampled locations
2. Quantitative estimates of carbon fluxes from managed and unmanaged systems in North America and surrounding oceans, with regional specificity, for input into science and decision support systems
3. Advances in coupled carbon-climate modeling enabling improved and scientifically sound estimations of greenhouse gas forcing of climate, and the Earth system analysis of climate and environmental change
4. Greater understanding of the role of nutrients and trace metals, phytoplankton functional groups, primary productivity, and subsurface transport and dynamics in carbon export to the deep sea in response to a variable and changing climate,
5. Estimates of the climate sensitivity and potential feedbacks to climate change of carbon cycling processes (e.g., factors controlling air/sea gas exchange) in the Southern Ocean



**Special Session at 2009 Joint Assembly**

**The Meeting of the Americas**

**24–27 May 2009**

**Toronto, Ontario, Canada**

**Abstract Submission Deadline: 04 March 2009, 2359 UT**

**Citizens, scientists and policy makers in Canada, Mexico, and the United States have mutual interests in improving scientific understanding of the complex interrelationships between the carbon cycle and the climate system in North America and adjacent coastal oceans. Papers submitted for this session may address topics such as spatial and temporal distributions and magnitudes of carbon sources, sinks and greenhouse gas emissions; affects of climate change, natural disturbance, and socioeconomic and institutional drivers on the pools, fluxes, and processes of the carbon cycle; scenarios or predictions of the concentrations of CO<sub>2</sub>, CO, CH<sub>4</sub> and N<sub>2</sub>O in the atmosphere; and potential policies, management strategies or technologies needed to reduce GHG emissions and/or enhance carbon stocks.**