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OPEN REVIEW NOTICE

(Reviews requested by February 15)

A U.S. Carbon Cycle Science Plan (Draft)

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Understanding the Earth's carbon cycle is both a challenging intellectual problem and an urgent societal need. The impacts of human-caused changes in the global carbon cycle will be felt on the Earth for hundreds to thousands of years. Direct observations and process-based understanding of the global carbon cycle are needed to determine how the cycle is being modified, what the responses are to those modifications, and how best to develop sound climate change mitigation and adaptation strategies. Recognition of the need for better understanding and coordinated research on the global carbon cycle led to the development of the U.S. Carbon Cycle Science Plan about a decade ago (Sarmiento and Wofsy, 1999). Our reassessment of the U.S. carbon cycle science priorities described here was initiated by the U.S. Carbon Cycle Interagency Working Group (CCIWG) and Carbon Cycle Science Steering Group (CCSSG) in 2008 who formed the Carbon Cycle Science Working Group, consisting of members from the diverse research communities that have traditionally comprised the U.S. carbon cycle science program, along with members from research areas needed to expand the research effort.

In outlining a new research agenda for the next decade, our group chose to preserve the hierarchical structure adopted in the 1999 Carbon Cycle Science Plan. In Chapter 2, we provide a brief history of the 1999 Science Plan, progress made since that plan was prepared, and the context in which a new Plan has now been developed. We next articulate overriding questions that guided a new research agenda in Chapter 3. Within this agenda, we identify specific goals that define achievable objectives for the next decade and beyond (Chapter 4), and outline the primary research elements that we believe must be pursued to achieve the stated goals (Chapter 5). In Chapter 6, we characterize the complex interdisciplinary realm in which carbon-cycle science needs to be pursued, and the collaborations and cooperation necessary for success. Finally, in Chapter 7, we summarize our vision of the priorities for ongoing research and offer our recommendations for the scope and scale of needed research.

In this new Plan, we emphasize the long-lived, carbon-based greenhouse gases carbon dioxide and methane and the other major pools and fluxes of the global carbon cycle. Certain nongreenhouse-gases, including carbon monoxide (CO) and ratios of oxygen to nitrogen ($O_2:N_2$), provide important constraints on the global carbon cycle and are part of the plan in that context only. Throughout this document, we emphasized the importance of an integrated system to collect and maintain the essential data that drive scientific understanding.

To vet this **DRAFT** Plan across our science communities, we offer a public review period. All interested parties are encouraged to review the full Plan and provide input during this public review period, which closes **Tuesday, February 15, 2011.**

This updated announcement and a full DRAFT Plan (pdf) is available on the Ocean Carbon and Biogeochemistry front page at <u>http://www.us-ocb.org/</u>, and on the NACP website at <u>http://www.nacarbon.org/nacp/announcements/CCSPlan_public_review_notice.htm</u>.

The Carbon Planning web page and background documents are <u>here</u> (<u>http://www.carboncyclescience.gov/carbonplanning.php</u>).

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