

General:

MISSING/UNDEREMPHASIZED CONTENT:

COMMENTOR:

Name: David Faulkner
Affiliation: USDA/NRCS
Email: david.faulkner@va.usda.gov

General Comments:

Dear Reader,

I think that the effort would be much improved if a section were dedicated to reviewing existing public and private sector policies, actions and programs of importance/great relevance to the carbon cycle. This section logically could be placed in between the sources and possible remedial actions sections. The purpose of this review would be to identify the most important aspects of public and private operations that either directly or indirectly increase or decrease carbon in the atmosphere in significant amounts. The following section dealing with what can be done about current trends could then identify the public and private actions and policies that could most significantly affect the carbon cycle in N. America in a positive manner.

Omitting a review of current policies and practices of greatest significance to stabilizing global change, by the public and private sector, would be a large oversight in this endeavor. Alternatively, identifying the most important policies, actions and programs that government and the private sector can take to improve the environmental performance of our economy would make a big contribution to the public debate on this topic.

Sincerely, David Faulkner
Natural Resource Economist

Response:

This is an excellent point. The review should be thorough, though its presentation in the document might be more condensed than some other topics. However, the report will avoid formally ranking existing policies, actions or programs and will not recommend policies, actions or programs.

Name: Ken Caldeira
Affiliation: LLNL
Email: kenc@llnl.gov

General Comments:

Overall, very the outline is very good.

I am concerned that what we already know about the state of the North American carbon cycle and its relation to century-scale changes in the carbon-cycle are not brought out strongly enough.

For example, we know that land carbon-sinks (in North America and elsewhere) can at best slow the growth of atmospheric carbon dioxide; that total land-sinks of carbon are likely to be small relative to the size of the fossil fuel resources, so we cannot expect CO₂-fertilization or land-carbon sequestration to save us (although these things might help).

The truth is that future findings in carbon-cycle science are unlikely to change the basic policy imperative: we are releasing CO₂ faster than the land-biosphere and oceans take it up. This disparity is likely to increase as long as rates of CO₂ emission increase. Thus, the rate of atmospheric CO₂ increase will likely increase as long as the rate of CO₂ emissions increase. No research is likely to reverse this finding. This should be made clear to policy makers.

Response:

This scientific assessment must fully represent the state of the carbon cycle at both shorter and longer time scales. Your comments will be considered by the author team as they write, and we will look for opportunities to make sure that the long-term changes in the carbon cycle are not neglected or de-emphasized.

.....
Name: Cindy Lee
Affiliation: Stony Brook University
Email: Cindy.Lee@sunysb.edu

General Comments:

It looks good, but there is nothing about the increase in ocean acidification due to CO2 dissolution in seawater. This is clearly a growing and potentially serious societal problem. See: <http://ioc.unesco.org/iocweb/co2panel/HighOceanCO2.htm>

Response:

This topic is mentioned in Chapter I, why should we care. Agreed that it is an important impact, and the team will ensure that this topic is elaborated on in chapter I, “why should we care”, and also in chapters II and XIII, which will cover the global ocean.

.....
Name: Jorge Sarmiento
Affiliation: Princeton University
Email: jls@princeton.edu

General Comments:

How about a clearly identified discussion of the state of carbon cycle modeling? Also, I suggest that you consider a special section on controversial contemporary issues, of which the mechanism of the land carbon uptake is the most critical. Steve Pacala would be a good person to review that, perhaps with Dave Schimel.

Response:

The SOCCR is not organized along particular methodologies, but rather will take advantage of all approaches, including modeling, to inform the key questions. As a document designed to be broadly informative outside the scientific community and relatively short, it will not likely be able to cover each method as a discussion unto itself.

Land carbon uptake is a key focus of the SOCCR, and as Steve Pacala is a candidate lead author he, along with others, will be able to review the state of knowledge there.

.....
Name: Christopher Sabine
Affiliation: NOAA/PMEL
Email: chris.sabine@noaa.gov

General Comments:

I think the outline generally looks good. It is hard to tell from the outline how much detail will be included, but I hope that this document will summarize the latest updates on global sources and sinks as well as the North American sources and sinks. One thing I did not see in the outline is a section suggesting major research questions that need to be addressed before the next SOCCR. It would be nice to keep a running list of what issues we have made progress on and what new issues have been raised since the last report.

Response:

The SOCCR will cover the global carbon cycle within chapter II, placing North America in a global context. However, it does have a focus on North America, and as such will not be able to do as full a summary as a global assessment such as the IPCC can do.

The SOCCR does have an emphasis on “what we know” versus what we don’t know. However, part of the assessment process will likely include issues that cannot be addressed in this SOCCR through lack of

knowledge. Given that the document is short, the author team will have to consider how to be summarize those issues. Perhaps an appendix to the document would be appropriate.

.....

Name: George Hurtt
Affiliation:
Email: george.hurtt@unh.edu

The outline is a good beginning, but needs more thought/vetting. Important that this be extended and vetted through peer review to ensure max participation/credibility.

Generally, more emphasis should be place on really substantive issues such as:

- * patterns of carbon stocks, and not just patterns of carbon sources and sinks.
- * potential climate change feedbacks on carbon cycle (e.g. chg npp, chang decomp, altered fire regimes, etc..).
- * importance of identifying mechanisms behind sources/sinks (i.e. implications for future).
- * vulnerabilities to rapid carbon loss (e.g. fire risk, permafrost loss, insect spread)
- * state of observation network and modeling capability
- * time scales of emissions vs carbon storage
- * apparent vs real carbon storage in NA (e.g. issues of export of wood products, trade deficit,).
- * GWPs and time scales in atm. Relative effectiveness of avoiding emissions vs managing sinks.
- * Intellectual context of carbon cycle: linkages to climate, hydrology, biodiversity...
- * win-win scenarios for mgt.

Response:

Agreed, these are important issues. The posting of the outline for public comment on the SOCCR website and as part of the draft Prospectus are parts of the peer review of the outline. In addition, the outline will be further reviewed and revised as needed at the first authors' workshop. The draft report produced using that outline will again have peer review as part of the technical review organized by the Lead Agencies. These issues/points will be brought to the attention of the authorship for consideration as they refine the outline and content of the report.

.....

Name: Kenneth Davis
Affiliation: Penn State University
Email: davis@met.psu.edu

I'll use Part and Section to distinguish between the two uses of Roman numerals in the outline.

I don't follow the logic of dividing section II (global context) and section III.B (North American components). I don't think this will clarify the presentation. I would merge these, and include the global context as a comment on North American components of the carbon cycle. Further, I would make Part II a point of reference for Part I section II rather than an independent, coherent discussion of the same topics as found in section II of Part I.

Response:

The outline is certainly still a work in progress and remains to be solidified by our team of lead authors. To clarify the logic, however, even though the report is meant to be focused on North America, the SOCCR Coordinating team and stakeholders present at the first workshop felt that the global context should also be robustly described, including the atmosphere and oceans. Because there is no scientifically logical way to separate the atmosphere and oceans into components to be discussed only in a North American context, chapter II evolved as a more global discussion. Chapter III then allows for detailed discussion of the terrestrial and coastal components of North America per se. The logic behind part I and part II is that our stakeholder community felt that there were benefits to both a synthetic approach and a detailed, sectoral approach for those who might only care about a certain topic area. The details of the SOCCR outline will be discussed in more detail by the lead author team.

Engineering: Part I, Sections I and II, and definitely Part II, need sections concerning direct human intervention in the carbon cycle that is not fossil fuel emissions. There is not much deliberate carbon sequestration underway at present, but it should be presented since it is a potentially major contributor to the N. American carbon cycle, and certainly information that a policy maker must have at hand.

Response:

Deliberate sequestration in forests, agriculture and other systems is definitely intended as part of the discussion in both parts I and II.

Some overall discussion of the methods available to understand the carbon cycle would be appropriate. The methodology significantly limits and classifies our understanding of our knowledge of various components of the carbon cycle, and cordons our knowledge into method-specific spatial and temporal scales. An overview of common methodology could serve as a reference point for details of various components of the carbon cycle and present repetition or incomplete discussion of methods/uncertainties within each section.

Response:

From a scientific perspective, this may be desirable, however, as a document designed to be broadly informative outside the scientific community and relatively short, the SOCCR will not likely be able to include such a discussion in the main text of the document. The author team may want to consider an appendix for such a methodology overview.

Sections III.D and IV.E in Part I are unique, and stand out from the 'component-by-component' discussion that dominates the outline. These sections are important, and should be given a more prominent place as syntheses.

Response:

Good comment. Again, we will consider the outline when the full authorship team meets at the first lead author workshop.

Feedbacks and fertilization:

These issues are not prominent, but are major issues in our understanding of the future natural carbon cycle. The introduction (Part I section I) should have a brief discussion. Part I, section II.D Vegetation, soils and landscape currently only mentions carbon fluxes due to land cover change. This needs to be expanded to include carbon fluxes from undisturbed ecosystems (e.g. mature forests) and ecosystems that are being managed but where land cover is not changing. This will require a discussion of factors that can alter the terrestrial carbon cycle without changing land use - such as nitrogen fertilization, CO2 fertilization and changing climate (temperature, precip, solar radiation). In part I section III, subsection D is similarly is the only part of section III that deals with feedbacks and fertilization issues. This should be part of the sections on individual processes within the carbon cycle (e.g. vegetation, soils and land use).

Response:

Good comments, and point well taken. These issues will all be passed along to the lead author team for consideration at the lead author workshop.

.....

Name: Charles Miller
Affiliation: JPL

Email: charles.e.miller@jpl.nasa.gov

General Comments:

There is no specific mention of satellite measurements, either current or planned, of atmospheric carbon species and how this information provides top-down closure of the budget.

I would be willing to lead the writing of such a section.

Response:

The SOCCR is not organized along particular methodologies, but rather will take advantage of all approaches, including satellite measurements, to inform the key questions. As a document designed to be broadly informative outside the scientific community and relatively short, it will not likely be able to cover each method as a discussion unto itself. If a methodology overview is deemed necessary by the authorship, it could go in an appendix. Please do contribute to the SOCCR/SAR 2.2, the team welcomes your contribution.

.....

.....

FORMAT/SCOPE/OUTLINE OF DOCUMENT

.....

Name: Jan Lewandrowski
Affiliation: USDA Global Change Program Off
Email: janlewan@oce.usda.gov

General Comments:

My primary concern with the outline is that it is very long and very long outlines tend to lead to very long documents - this tendency is exaggerated when there are multiple authors and exaggerated again when the authors are drawn from the scientific community. That said, I recognize that the outline and report are both in their infancy and so I am not suggesting any adjustments in the outline to address this concern. At this point, it is only necessary to stress again that this report must be short and concise if it is going to be of interest - and thus of any use - to the policy audience we identified at the workshop.

Response:

Excellent point and very well taken. This is likely to be one of the most difficult aspects of the report to keep in check, for all the reasons you mention. Please keep providing this input as the process goes along.

The introduction needs to define the key terms of reference for the document. For example, "North America" has to be defined the first page or two not half way into Section III. The justification can come later but the term appears in the document title and will appear in the text several times before Section III. Similarly, the extent to which methane will be included also needs to be up front in the terms of reference. Related - I probably am just forgetting some of the workshop discussion but why was N2O not included?

Response:

Excellent points. We will make sure to define North America, and inclusion of methane early on. As far as the N2O issue, it is not strictly part of the carbon cycle, although of course we recognize its strong linkage with CO2 as a greenhouse gas produced by agricultural systems. The authors of the agricultural systems chapter may wish to mention this linkage, but it is not a focus of the report.

.....

Name: Richard Birdsey
Affiliation: USDA Forest Service
Email: rbirdsey@fs.fed.us

Overall I think it is a good, comprehensive outline that has sufficient depth and breadth for the first report. The organization of the report puzzles me. I don't understand the distinction between Parts I and II; the content of the two sections is partially repetitive (it should be either completely repetitive or not repetitive at all); and the two part give me the impression of unnecessary complexity. I think the two sections should be merged or else a clear purpose for the two stated. One example of the confusion: Section III title "...and why?" doesn't seem to me much different than the stated purpose of Part II.

Response:

Good points. This seems to be a common confusion. We will need to state the purpose of the two sections up front or reconsider this organization. The organization emerged from our stakeholders workshop, where the desire for both "synthesis" and "sector-specific" organized material emerged. The outline will be fully considered at the lead author's workshop to resolve these issues.



Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

Chapters VII through XIII - Anticipating that many readers will read only those chapters that focus on their areas of interest, it would be useful for Chapters VII through XIII to begin with a short overview of terrestrial system types, aerial extent, and the major C pools and fluxes associated with each. Alternatively, the reader could be directed to the appropriate earlier section of the report. This introductory material should also discuss (at least conceptually) how market forces, regulatory policy, and socioeconomic factors can influence land use change from one type to another.

Response:

Good suggestions and these will be considered by the author team as the report is formulated.

Chapters VII through XIII - Given the importance of urbanization to the trends discussed in these chapters, it should be highlighted as a discussion topic in each.

Response:

Good suggestion. We have recruited an expert in urban carbon systems, and the authors will consider where it is appropriate to incorporate urbanization into each chapter.



SPECIFIC COMMENTS



CHAPTER 1

Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

The comments below are for the version of the SOCCR outline distributed by Lisa Dilling on November 19, 2004

Comments on a specific section:

Chapter I - The discussion of the link between climate change and carbon dioxide and methane should be in the context of forcing from other greenhouse gases and natural climatic factors.

Response:

In chapter I, all scientific reasons for interest in the carbon cycle, including production of food and fiber, link to climate change, and alteration of the carbon cycle by energy use and land management will be mentioned.

Chapter I - It is not clear what the boundaries of "carbon cycle impacts other than climate" are.

Response:

These impacts include direct results of alteration of the carbon cycle, including acidification of the ocean, the effect of increasing CO2 on plant growth, and how warming of the Earth may in turn affect the carbon cycle, such as in peatland or methane hydrate feedbacks.

.....

CHAPTER 2

.....

Name: Richard Birdsey
Affiliation: USDA Forest Service
Email: rbirdsey@fs.fed.us

Part II section XII - I would change "expanding shrub lands" to "shrub land dynamics". There is a significant decline occurring in large parts of the western shrub lands due to drought and insects. May even be reversing the reported gains from woody encroachment.

Response:

An important clarification. The change will be made to the outline.

.....

Name: Bev Law
Affiliation: AmeriFlux, OSU
Email: bev.law@oregonstate.edu

Section 2D. should have a primary objective as follows:

Explain how climate and disturbance history can affect the carbon balance of terrestrial systems

Current best estimate of the historic and current carbon balance of vegetation and soils, and uncertainties in the estimates

Section "D" currently lists land use conversion from agriculture to forest or visa versa, and a topic on explaining historic and current C balance in a global context, but they should come after an explanation of the possible effects of climate and historic disturbance, and after a best estimate of historic and current C balance of terrestrial systems in N Am. (or how we plan to address the quantification).

Response:

Good points. The recommended objectives are appropriate and will be inserted in the outline. The suggested wording will be modified to also include mention of the effect of historical changes in atmospheric CO2 concentration, and the clarification that estimates of carbon balance include both stocks and fluxes

.....

Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

Chapter II - We suggest placing the section on "Accumulation of carbon in the atmosphere" immediately after the introductory "brief overview." As it is now organized, the section on carbon in the atmosphere is located between several sections that provide information on the processes that impact atmospheric carbon.

Response:

This is a good suggestion and good logic and will be weighed heavily as the author team gets down to the business of writing.

Response:

Good point. A bullet will be added: “How are carbon stocks and fluxes affected by changes in temperature, soil, moisture, nitrogen deposition, atmospheric CO2 concentration, ozone concentrations, or other environmental change?”

.....

Name: Jan Lewandrowski
Affiliation: USDA Global Change Program Off
Email: janlewan@oce.usda.gov

Section III. B. 4 & 5:

These two sections should be combined into one. One workshop participant brought up the point about the document having a balance in that options with little practical potential for additional human induced carbon storage should not receive equal space as the elephants in the living room. At present, the technical potential of storing large quantities of additional carbon in aquatic systems is very uncertain at best and the economic potential cannot even be guessed at with any confidence. Giving two sections here to aquatic systems and one each to emissions reductions and terrestrial systems runs the risk of missing this balance.

Response:

Section III is devoted to synthesizing knowledge of the carbon cycle in North America, not only those items for which there is management potential. In addition, the terrestrial sections are likely to be significantly longer than the aquatic and oceanic sections, because of their importance to a North American focused report. Section IV and most chapters in Part II will have significant discussion of the items with due consideration to their technical potentials. Your comments, though, are well taken as far as the options and measures section, and will be considered by the author team.

Section III. C. Item 3:

Suggest thinking in terms of: "Where are the highest expected scientific and policy payoffs to reducing uncertainty?"

Response:

Good suggestion.

Section III. D. Item 1:

Suggest thinking in terms of "equilibrium" instead of "saturation". The term "saturation" implies a limit that cannot be exceeded. A unit of land in a given land use or ecosystem has a maximum - or equilibrium - quantity of carbon it can hold in that use or ecosystem but the carbon storage capacity of a given unit of land can almost always be increased by changing the land use or ecosystem.

Response:

The term “equilibrium” is equally and similarly problematic (e.g., a change in climate can change the equilibrium carbon state). A clear and appropriate terminology will be identified and used, or the term used to describe the concept will be carefully defined.

Section III. D. Item 4:

Suggest thinking in terms of, "unforeseen effects" instead of "surprises". Unforeseen effects appeals more to the complexity of carbon cycles while surprises suggests one could have thought out the issues better.

Response:

Surprises is a term coming out of the “rapid climate change” community. The term will be reconsidered or described better, as it does encompass the meaning you suggest.

.....

Name: Richard Birdsey
Affiliation: USDA Forest Service
Email: rbirdsey@fs.fed.us

Section III part 3 only partially addresses the why question. Missing are:

- * Role of air pollution (N dep, ozone, CO2)
- * Fire and other natural disturbances
- * Harvesting and wood products (possibly implied coverage in "management")

These are elaborated in Part II, but the point is, some of the whys are covered in Section III and others in part II.

Response:

Agreed. The missing elements will be added to the outline.

An explanation of the purpose of Parts I and II and purpose of each chapter will be added to the outline, and the whys appropriate to each will be included.

Section III D 3 - I don't understand what "other than carbon management means". Most land management is carbon management. Are you thinking that this means intentional management of the terrestrial carbon cycle?

Response:

The outline's wording will be modified to clarify the meaning of "carbon management"

.....
Name: Kenneth Davis
Affiliation: Penn State University
Email: davis@met.psu.edu

Part I, section III.C should in part be subsumed within the respective component discussions. Each component should include uncertainties. A new methodology section will help to clarify the source of common uncertainties.

Response:

Agreed. Uncertainties will be presented and discussed throughout the entire document within each component. This section is a summary/synthesis of those component-specific discussions. Methodologies and their contribution to uncertainties will be discussed for each component. Our methodology for treating/considering uncertainty will be treated in the introduction to this Part 1, section III C, and as needed or appropriate introduced in a preface and treated in detail in an appendix.

.....
Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

Chapter III - In Section B.2, if possible, it would be very useful to summarize the available information on the impacts of energy costs and of cost differences between fuels on GHG emissions intensity of industrial sectors and the US as a whole. This will be critical information as attempts are made to predict emissions in an environment wherein cost considerations make coal even more attractive than it is today.

Response:

Agreed. We will integrate these suggestions into the formulation and production of SAP 2.2.

Chapter III - Section B.2 should include a discussion of economic activity and population growth as prime drivers in emissions trends.

Response:

Agreed. We will integrate these suggestions into the formulation and production of SAP 2.2.

Chapter III - While it is implied in the details under Section B.3, the outline should include a bullet ensuring that the SOCCR will describe the current understanding of the processes contributing to the large uptake of carbon over the North American land mass.

Response:

The outline will be revised to include an enumerated item under D to "Describe current understanding of the processes responsible for North American carbon sources and sinks.

Chapter III - Section B.3 - It will be necessary to define "active management" as this means different things to different people.

Response:

Agreed. We will define the term active management, or substitute another term/set of terms that are less ambiguous or reader dependent.

Chapter III - In Section C, there should also be a discussion of the uncertainties regarding the prime drivers of emissions - i.e. economic activity, population growth, and fuel prices (overall prices and relative prices of different fuels).

Response:

Agreed. Presentation and discussion of uncertainty is a central theme of the report that will be applied to these drivers, as well as to estimates of carbon stocks, fluxes, etc.

Chapter III - Finally, somewhere in Chapter III, there should be a discussion of the importance of socioeconomic factors in land use and management trends and patterns.

Response:

Agreed. The importance of socioeconomic factors in land-use and land-use change will be discussed in this chapter and as appropriate in other chapters as they discuss the role of land-use and land-use change in the carbon cycle.

.....

CHAPTER FOUR

.....

Name: Jan Lewandrowski
Affiliation: USDA Global Change Program Off
Email: janlewan@oce.usda.gov

Section IV. A

I reiterate the comment I made at the workshop that this group needs to communicate with those involved with the Scenarios SAR. The person to contact is:

Leon Clarke
Pacific Northwest National Laboratory
8400 Baltimore Avenue, Suite 201
College Park, MD 20740
Tel (301) 314-6738
Email: leon.clarke@pnl.gov

Response:

We will contact Leon Clarke

Section IV:

At several places the outline refers to reduced atmospheric concentrations of GHGs. While this is the ultimate goal, I suggest the text use terms that are focused directly on emissions - e.g., "reduced GHG emissions" and "emissions offsets". The problem with "reduced atmospheric concentrations" is that even if GHG emissions are reduced at a location, locally, nationally, and/or regionally and we could still observe increasing atmospheric GHG concentrations due to what's happening in the rest of the world. Reducing atmospheric GHG concentrations is a larger issue than just North American.

Response:

Good point. We should and will focus on emissions, but, at the same time, not lose sight of the broader goal of concentrations. Also, concentration is the more relevant reference point when we discuss sequestration.

Name: Kenneth Davis
Affiliation: Penn State University
Email: davis@met.psu.edu

Part I, section IV.D is very ambitious. It seems unlikely that a single set of costs can be determined. Different ethical and value choices (e.g. future value of money/discount factors, quantification of the costs of crossing thresholds) should be discussed.

Response:

We agree. We should and will provide a range of cost estimates, including a sensitivity analysis of major influences. It may not, however, be wise to use the threshold approach because such levels are arbitrary. A cost function would cover all possible thresholds.

Part I, section IV.E. Terrestrial fertilization/response to climate changes are implementation issues? I would make this a separate subsection that precedes part I, section IV.D.

Response:

We will consider this possible change.

Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

Chapter IV - Again, in Section A, in the context of projecting future emissions, it would be very useful to summarize the available information on the impacts of energy costs and of cost differences between fuels on GHG emissions intensity of industrial sectors and the US as a whole.

Response:

We will pursue this. There is a good deal of valuable work on using index number and structural decomposition analysis that will be helpful.

Chapter IV - Section A should also include a discussion of the uncertainties in greenhouse gas emission trajectories in the context of the uncertainties in the prime drivers of emissions.

Response:

Definitely; this will be a key part of the chapter.

Chapter IV - In Section C it would be helpful to discuss the temporal aspects of sink options and measures. This discussion should note that sink options and measure do not have to be "permanent" to provide a useful contribution to solving the problem of rising levels of atmospheric CO₂.

Response:

Definitely.

Chapter IV - In Section D, I suspect you intended to say "source reduction and sink enhancement" instead of "sink reduction and source enhancement".

Response:

We will correct the typo right away.

Chapter IV - Although "substitution effects" could fit under "market mechanisms" in several sections of the current outline, there is no specific mention of substitution effects. It would be helpful to understand how this issue will be dealt with in the report. It is important that it not get overlooked because significant long-term carbon impacts are potentially related to both intended and unintended substitution effects. To ensure that this topic is not overlooked, it should be specifically mentioned in one or more places in the outline.

Response:

We agree. Most substitutions are driven by market forces (whether inter-fuel, or the relative prominence of economic sectors, such as in the relative decline of energy-intensive goods), so they are implicit in the current outline. However, they will be explicitly listed as the outline proceeds to a higher degree of resolution.

Chapter IV - In Section E, "leakage" should be added to the parenthetical after "Second order and unintended consequences."

Response:

Good idea. The change will be made

Chapter IV - Also in Section E, it would be useful to discuss socioeconomic factors that affect implementation and compare public and private implementation issues.

Response:

Good idea.

CHAPTER FIVE

Name: Jan Lewandrowski
Affiliation: USDA Global Change Program Off
Email: janlewan@oce.usda.gov

Section V:

This section needs a lot more work. One problem that scientists often have in writing documents of this type is that they really want to talk about what interests them - the science. They recognize that the policy aspects are important and must be addressed but it is not their trigger and so they put in a section of boiler plate usual suspects policy points. This section has that look - although I recognize that this is an outline and its authors may have more concrete ideas for this section. Still, to paraphrase a workshop participant, if I put myself in a policy making position and ask why I would read this section, it's difficult to see a good reason - and this is the major audience for the document!

Response:

Not sure if this comment refers to Section IV, which is particularly focused on options and measures, including policy, or Section V, which is focused on how to improve the science-decision making interface. The goal of section V is to provide a brief look at how to improve the carbon program and future SOCCRs so that they can more effectively address decision makers needs at all levels. Some decision makers, namely science policy makers, may find this section more of interest than others, certainly.

Name: Reid Miner
Affiliation: NCASI
Email: rminer@ncasi.org

Chapter V - It would be helpful to categorize and compare issues related to the application of scientific information to decision support in the public and private sectors.

Response:

Excellent idea. We will assess what can be learned from experiences in both public and private sectors for this section.

CHAPTER 8

Name: Reid Miner
Affiliation: NCASI

Email: rminer@ncasi.org

Chapter VIII - Under "forest product lifetimes and mobility" - it will be important to include a discussion of the trends in the amounts of carbon in the forest products pool and factors that influence those trends.

Response:

Agreed. These aspects of forest products as they relate to the carbon cycle will be discussed.

Chapter VIII - We suggest that the wording of the final bullet be changed to "Detailed options and measures for managing carbon throughout the forest carbon system." This wording ensures that the discussion will not be limited to measures specifically implemented for carbon and also invites examination of forest carbon through the entire value chain - not just in the forest.

Response:

Agreed. The bullet will be revised as suggested for the reasons suggested.

Chapter VIII - This chapter should include a discussion of the trends, causes, and effects of deforestation and afforestation in North America.

Response:

Agreed. Chapter VIII should include these elements of forest dynamics in North America and the consequences for the carbon cycle/budget. The importance of and need to include these elements will be communicated to the lead chapter authors for forests for their consideration and discussion of forests in North America.

Chapter VIII - The chapter should include a discussion of trends in forest management intensity, landowner types and priorities by region, and the carbon implications for each.

Response:

Agreed. All very good points. These issues/items will be provided to the lead chapter authors for forests for their consideration and discussion of forests in the North American carbon cycle/budget.

COMMENTS FOR SUGGESTED AUTHOR(S)

Name: Jorge Sarmiento
Affiliation: Princeton University
Email: jls@princeton.edu

I would be glad to help out with Chapter II, particularly the ocean part. In my group, Andy Jacobson has just put together a global inversion including atmospheric and oceanic constraints and is on top of much of the latest information on all of this. Chris Sabine would be a great person to contribute to the oceanic constraints.

Manuel Gloor is developing a higher resolution inversion with a focus on North America and might be able to help with Chapter III, though more so a year down the line than right now.



Name: John Aber
Affiliation: Univ. of New Hampshire
Email: john.aber@unh.edu

I would heartily recommend Dr. George Hurtt from the Institute for the Study of Earth, Oceans and Space here at the University of New Hampshire we one of the authors.
Thank you.



Name: Christopher Sabine
Affiliation: NOAA/PMEL
Email: chris.sabine@noaa.gov

I am sure these are already on the list but I will submit some oceanographers anyway:
myself, R. Wanninkhof, R. Feely, T. Takahashi, F. Millero, A. Dickson, J. Sarmiento, N. Gruber, F. Chavez, P. Brewer, B. Hales, W-J. Cai



Name: Richard Birdsey
Affiliation: USDA Forest Service
Email: rbirdsey@fs.fed.us

Dr. Yude Pan, USDA Forest Service

Dr. Pan is an expert in large-scale ecosystem modeling of North America with experience as lead author of two key VEMAP publications, and PI for ecosystem modeling of the Mid-Atlantic region where she is developing technology and analyzing effects of multiple factors on the carbon cycle. Dr. Pan could contribute to part I section III-B or part II section VIII.

Dr. Richard Birdsey, USDA Forest Service

Dr. Birdsey is an expert in using land inventory data to characterize management impacts on the carbon cycle, and is the national leader for revising the accounting rules and guidelines for reporting greenhouse gas emissions reductions and sequestration. Dr. Birdsey could contribute to part I section IV-C.



Name: Bev Law
Affiliation: AmeriFlux, OSU

Email: bev.law@oregonstate.edu

Scott Denning (atmosphere)
Sue Trumbore or Eldor Paul (soils)

Name: George Hurtt
Affiliation:
Email: george.hurtt@unh.edu

george hurtt
steve pacala
berrien moore
jorge sarmiento

Name: Charles Rice
Affiliation: Kansas State University
Email: cwrice@ksu.edu

Section IV: Susan Capalbo, Bruce McCarl, Cathy Kling

Section VII: Keith Paustain, Rattan Lal, Cesar Izaurralde, Chuck Rice, Henry Janzen (Canada), Ed Gregorich (Canada)

Section IX: Chuck Rice, Jerry Schuman

Name: Kenneth Davis
Affiliation: Penn State University
Email: davis@met.psu.edu

Part I, section III.C, "Where does it matter to reduce uncertainty from a scientific perspective?" I think that discussion of this sort would benefit from a writer with expertise regarding decision making given uncertainty. Klaus Keller, kkeller@geosc.psu.edu, is a colleague that I know with this expertise who works in carbon cycle science and engineering.

I am interested in helping to write portions of:
Part I, sections II.C Accumulation of carbon in the atmosphere; D. Vegetation, soil and landscape, and F. Quantitative integrated historical and current N. American carbon cycle in a global context, as well as the Part I, section III.B corrolaries of these sections.

I am also interested in the "methodologies, spatial and temporal scales, and uncertainties" discussion that I suggested above. Part I, section II.C and this 'methodologies' suggestion are probably those areas that most closely match my expertise.

Finally I am interested in contributing to Part I, section IV.E. "implementation issues," particularly the measurement and monitoring section (which is related to the suggested 'methodologies' discussion).

A NOAA CMDL scientist (e.g. Pieter Tans) should be sought to lead partI, section II.C.

Name: Reid Miner

Affiliation: NCASI
Email: rminer@ncasi.org

Dr. Kenneth Skog of the USDA Forest Products Laboratory in Madison Wisconsin would be an excellent primary author for the part of the report dealing with carbon storage in forest products.

As an author for material dealing with soil carbon, especially in forests, I would like to nominate Dr. Eric Vance. Dr. Vance is a Project Leader with the National Council for Air and Stream Improvement (NCASI), a non-profit environmental research organization funded by the North American Forest Products Industry. Eric has expertise in forest soils and site productivity, carbon sequestration, nutrient cycling, and land application of paper mill by-products. He manages research projects on these topics for NCASI and is an author of 27 papers published as journal articles, book chapters, and scientific reports. He organized a symposium and was guest editor of a paper set entitled "Approaches and Technologies for Detecting Changes in Forest Soil Carbon Pools," which was published in the Soil Science Society of America Journal in 2003. He has served on a number of industry and government agency advisory boards and steering committees, and most recently coordinated industry committees to review proposals for the U.S. Forest Service-DOE-Industry Agenda 2020 research programs in the Northeast, North-Central, and Southern regions.

Eric earned a B.S. degree in Forestry from Michigan Technological University and M.S. and Ph.D. degrees in Forest Soils from the University of Missouri. He was a Visiting Fulbright Scholar at Rothamsted Experimental Station, U.K. and was author of "An Extraction Method for Measuring Soil Microbial Biomass C," recently named a Soil Biology and Biochemistry Citation Classic as the most cited paper in that journal since 1980 (>1100 citations). He has also held research appointments at the University of California-Santa Barbara and the Institute of Arctic Biology, University of Alaska.



Name: Charles Miller
Affiliation: JPL
Email: charles.e.miller@jpl.nasa.gov

Charles Miller, JPL <charles.e.miller@jpl.nasa.gov>: atmospheric carbon cycle species measurements from space



Name: Steven Hastings
Affiliation: San Diego State University
Email: shasting@sunstroke.sdsu.edu

Comments for Author:
I wanted to nominate Dr. Walt Oechel, San Diego State University (oechel@sunstroke.sdsu.edu) as one of the authors for the SOCCR report.