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Climate Models: An Assessment of Strengths and Limitations

Comments on the Draft Prospectus for Synthesis and Assessment Product 3.1

Expert Review Collation, February 2 – March 7, 2005



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General Comments

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Wendy Gordon, Texas Parks and Wildlife Dept.

If the intended audience includes researchers in non-climatic disciplines, please be sure that both hydrology and ecology are represented in the work that gets done. None of the lead authors appear to represent these disciplines. It is really important to try to get a better handle on the tradeoffs that might occur under climate change scenarios with respect to the water cycle. Will ET increase to such an extent that there will be noticeable reductions in streamflow or groundwater recharge? Will increases in precipitation result in increases in net primary productivity such that streamflow will remain unchanged? There are lots of possible outcomes involving vegetation and the water cycle and it is important to start pinning down these joint processes under the wide range of climatic conditions and ecoregions that exist.

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David Karoly, University of Oklahoma

General comments: Lines 22-24 state that "this CCSP product will focus on natural and human-caused factors influencing climate variability and change during the

the application and nature of the situation. Including a discussion of the strengths and limitations of applying models at particular scales or for particular variables would be acceptable, as long as there is no implicit standard of performance inferred that must absolutely be met. This is particularly the case as quite often model results are not used directly but are adjusted in various ways to account for, for example, systematic biases, geographic features not represented in the models, etc.

André Gabus, Switzerland

Page 2, Line : Proposed Addition at end of paragraph 1:
Their explaining strength will be evaluated (in the comparison of the models to be surveyed, those with a high content in causally-linked constituents will be ranked higher than those with only statistically-correlated factors).

Justification: Information on sensitivity, feedbacks and uncertainties (focus of Product 3.1) is insufficient to convey confidence to decisionmakers for using climate model outputs as input to studies or analyses in their respective, non-climatic disciplines (e.g., ecosystem science, hydrology and water resources, economics, human health, and agriculture/forestry). Before to deal with model projections (next Product 3.2), an assessment of models' qualitative structure is needed. In addition to ability of models to reproduce past events and trends, their explaining strength requires to be evaluated for conferring confidence in their predictive value. Preference will be given to those with a high content in causally-linked constituents versus those with purely statistically-correlated factors. Qualitative structural analysis is a tool available for such an evaluation of models.

References

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4. Gilli M. (1984), «CAUSOR – A Program for the Analysis of Recursive and Interdependent Causal Structures» in *Cahiers du Département d'Econométrie*, Université de Genève, Cahier 84.

