

**CCSM Paleoclimate Working Group Report**  
**16 and 17 February 2006**  
**University of Wisconsin-Madison and NCAR via Videoconference**  
**Co-chairs: Zhengyu Liu and Matthew Huber**

The PaleoWG has maintained the commitment of the PaleoWG themes:

- How much of climate variability is due to insolation and volcanic activity? (theme 1)
- What are the mechanisms that drive abrupt climate changes? (theme 2)
- How do hydrological, biogeochemical, and cryospheric processes feedback onto climate change? (theme 3)
- What are the relative roles of greenhouse gases, heat transport, and continental geometry in the maintenance of the deep paleoclimate? (theme 4)

The WG

1. discussed progress of the CCSM paleoclimate simulations in the past year;
2. explored new issues and strategies for future paleoclimate simulations;
3. recommended strategies for enhancing collaborations/communications between the PaleoWG and the paleoclimate community; and
4. prioritized the simulations for the coming CSL allocations.

**CCSM PaleoWG progress report.** The WG discussed progress in early human impact hypothesis, glacial inception, glacial-cycle and its coupling with carbon cycle, role of volcanic forcing and solar variability, long transient simulation of the Holocene, dust, using paleodata to constrain climate models, and Permian climate.

**Further issues and strategies for future experiments:**

1. recommended creating time period oriented task groups on several sub-areas in pre-quaternary and quaternary period;
2. suggested that for quaternary carbon cycle modeling, a series of snapshot steady-state CCSM3 simulations of flow fields are needed;
3. recognized the importance of land-ice modeling for deep paleo, for glacial cycle, and for early human hypothesis;
4. suggested exploring the possibility of creating a joint Biogeochemistry/Paleo task force to create a long-time off line ocean carbon cycle model (fewer tracers, less complexity, including sediment model); and
5. suggested long transient simulations to study the mechanism of abrupt climate changes.

**Recommendations for data processing:**

1. CCSM Paleo Science Portal. As more and more simulations are becoming available, it becomes more and more apparent that the analysis of the model output becomes a serious issue. The WG recommended enhancing the current CCSM Paleo Science Portal significantly by (a) collaborating with more university users and (b) writing collaborative proposal to make data more accessible to the community.

2. Software engineering setup. Recognizing the unique feature of paleo settings for the CCSM, the WG designated a subgroup to consider further a software engineering group, perhaps submitting proposals to set up scripts to bridge the modern and paleo CCSM communities.

**Recommendations of priority simulations:**

Based on the readiness and scientific merit, the WG recommended the top priority simulations for the upcoming CSL allocations:

1. Acceleration run for Permian ocean (Christine)
2. Acceleration of orbital years in the coupled model for the Holocene (Bruce)
3. Continue the transient Holocene simulation (Bruce)
4. Perform the 8.2 ka run (Betty?)
5. Prepare for the historical run for the last 2000 years (Caspar?)
6. Preindustrial control run with the T42x1 version with dynamic vegetation (Bruce)
7. Testing MACCM-SOM runs for PaleoWG biogeochemical studies (perhaps wait until the summer after the WACCM release)?

**Attendees:**

Matt Huber, Purdue (co-chair)  
Zhengyu Liu, UW-Wisconsin (co-chair)  
Bette Otto-Bliesner, NCAR  
Bruce Briegleb, NCAR  
Charles Jackson, U. Texas  
Chris Poulsen, U. Michigan  
John You, University of Sydney, Australia  
Arne Winguth, UW-Wisconsin  
Steve Vavrus, UW-Wisconsin  
Yi Wang, UW-Wisconsin  
Pat Behling, UW-Wisconsin  
Clay. Kelly, UW-Wisconsin  
R. Gallimore, UW-Wisconsin  
David Archer, U. Chicago  
R. Jacob, Argonne National Lab  
C. Ammann, NCAR  
J. Kiehl, NCAR  
E. Brady, NCAR  
B. Tomas, NCAR  
N. Mahowald, NCAR  
S. Levis, NCAR  
C. Shellito, UNC