



## Report on CCSM Software Engineering Working Group Meeting Sixth Annual CCSM Workshop, The Village at Breckenridge

Thursday, June 28, 2001

Co-Chairs: Tony Craig, Ricky Rood, and Cecelia DeLuca

The Software Engineering Working Group (SEWG) breakout session included 9 presentations on a variety of topics. The first half of the meeting focused on updates of current projects, while the second half focused on research topics relevant to CCSM development. We closed with a presentation on the new CCSM Software Developer's Guide, which was distributed at the workshop (see <http://www.ccsm.ucar.edu/csm/models>.)

**Tony Craig** (NCAR/CGD) started off the meeting with an overview of the new CCSM Software Engineering Group (CSEG). Tony is managing the group under the direction of the CCSM SSC chair. The group consists of roughly five software engineers from NCAR and is responsible for coordinating software development, and integrating, testing, and releasing the fully coupled CCSM.

Updates were provided on the current ACPI Avante Garde pilot project and its follow-on. Participants in the pilot project are engaged in the redesign of the Community AtmosphereModel (CAM) and the coupler, now CPL6.

**John Drake** (ORNL) presented current work on the atmospheric model, which involves cleanly modularizing physics and dynamics packages in order to accommodate three dynamical cores, and reworking the data decomposition so that it is based on arbitrary "chunks" of columns rather than latitude bands.

**Tom Bettge** (NCAR/CGD) presented the layered design of the new coupler, the lower layers of which are largely complete. Both the CPL6 and CAM teams have been following standard software engineering development practices, and have produced requirements, architecture, and design documents.

**Cecelia DeLuca** (NCAR/SCD) provided an update on the Earth System Modeling Framework (ESMF), a project that includes the CCSM as a testbed. The ESMF has been selected for negotiations by NASA HPCC and the negotiation session is projected to take place around the end of this September. The scope and objectives of the ESMF project were compared to those of the ACPI Avante Garde project.

**Mariana Vertenstein** (NCAR/CGD) presented a new initiative to develop a graphical user interface (GUI) for the CCSM. Developers at NCAR are collaborating with staff from the Hadley Centre, where a GUI for running climate applications has been in place for several years.

**S. -J. Lin** (NASA/DAO) presented work on the NASA-DAO/CAM collaboration. **Becky McKeown** (CSU) described the development of a land model in C++ using commercially-influenced software engineering methodology. **Steve Thomas** (NCAR/SCD) presented early results from a high-performance spectral element method for atmospheric dynamics.

**Brian Kauffman** (NCAR/CGD) described the motivation for and current status of the CCSM Software Developer's Guide. The format of the meeting left little time for open discussion. Subsequent meetings are likely to return to a format in which particular software issues are identified and addressed.

### Attendees:

Jeffrey Anderson	<a href="mailto:jlja@gfdl.gov">jlja@gfdl.gov</a>	GFDL
Thomas Bettge	<a href="mailto:tbettge@ucar.edu">tbettge@ucar.edu</a>	NCAR
Byron Boville	<a href="mailto:boville@ucar.edu">boville@ucar.edu</a>	NCAR
Marcia Branstetter	<a href="mailto:marcia@amazon.geo.utexas.edu">marcia@amazon.geo.utexas.edu</a>	Univ TX
Lawrence Buja	<a href="mailto:southern@ucar.edu">southern@ucar.edu</a>	NCAR
Anthony Craig	<a href="mailto:tcraig@ucar.edu">tcraig@ucar.edu</a>	NCAR
YongJiu Dai	<a href="mailto:dai@eas.gatech.edu">dai@eas.gatech.edu</a>	GA Tech
Robert Dickinson	<a href="mailto:robedt@eas.gatech.edu">robedt@eas.gatech.edu</a>	GA Tech
John Drake	<a href="mailto:drakejb@ornl.gov">drakejb@ornl.gov</a>	ORNL
Brian Eaton	<a href="mailto:eaton@ucar.edu">eaton@ucar.edu</a>	NCAR
Steve Hammond	<a href="mailto:hammond@ucar.edu">hammond@ucar.edu</a>	NCAR
Forrest Hoffman	<a href="mailto:forrest@esd.ornl.gov">forrest@esd.ornl.gov</a>	ORNL
Robert Jacob	<a href="mailto:jacob@mcs.anl.gov">jacob@mcs.anl.gov</a>	ANL
Jasmin John	<a href="mailto:jjohn@uclink4.berkeley.edu">jjohn@uclink4.berkeley.edu</a>	Berkeley
.....	.....	.....

Philip Jones	<a href="mailto:pwjones@lanl.gov">pwjones@lanl.gov</a>	LANL
Brian Kauffman	<a href="mailto:kauff@ucar.edu">kauff@ucar.edu</a>	NCAR
Al Kellie	<a href="mailto:jfish@ucar.edu">jfish@ucar.edu</a>	NCAR
Anthony King	<a href="mailto:kingaw@ornl.gov">kingaw@ornl.gov</a>	ORNL
Erik Kluzek	<a href="mailto:erik@ucar.edu">erik@ucar.edu</a>	NCAR
Keith Lindsay	<a href="mailto:klindsay@ucar.edu">klindsay@ucar.edu</a>	NCAR
Rebecca McKeown	<a href="mailto:beckym@nrel.colostate.edu">beckym@nrel.colostate.edu</a>	CSU
Jose Milovich	<a href="mailto:milovich1@llnl.gov">milovich1@llnl.gov</a>	LLNL
Kenichi Miura	<a href="mailto:PDG01255@nifty.com">PDG01255@nifty.com</a>	
Jace Mogill	<a href="mailto:mogill@cray.com">mogill@cray.com</a>	CRAY
Gerardo Montoya	<a href="mailto:gejemo@ciencias.ciencias.unal.edu.co">gejemo@ciencias.ciencias.unal.edu.co</a>	Univ. of Columbia
Norikazu Nakashiki	<a href="mailto:nakasiki@criepi.denken.or.jp">nakasiki@criepi.denken.or.jp</a>	CRIEPI
David Neckels	<a href="mailto:dneckels@hotmail.com">dneckels@hotmail.com</a>	
Nanncy Norton	<a href="mailto:njn01@ucar.edu">njn01@ucar.edu</a>	NCAR
Muhammad Shaikh	<a href="mailto:shaikh@eas.gatech.edu">shaikh@eas.gatech.edu</a>	GA Tech
Yogesh Sud	<a href="mailto:sud@hq.nasa.gov">sud@hq.nasa.gov</a>	NASA
John Taylor	<a href="mailto:jtaylor@mcs.anl.gov">jtaylor@mcs.anl.gov</a>	ANL
Joe Tribbia	<a href="mailto:tribbia@ucar.edu">tribbia@ucar.edu</a>	NCAR
Junichi Tsutsui	<a href="mailto:tsutsui@criepi.denken.or.jp">tsutsui@criepi.denken.or.jp</a>	CRIEPI
Mariana Vertenstein	<a href="mailto:mvertens@ucar.edu">mvertens@ucar.edu</a>	NCAR
Vincent Wayland	<a href="mailto:wayland@ucar.edu">wayland@ucar.edu</a>	NCAR
David Williamson	<a href="mailto:wmson@ucar.edu">wmson@ucar.edu</a>	NCAR
Patrick Worley	<a href="mailto:worleyph@ornl.gov">worleyph@ornl.gov</a>	ORNL
Yoshikatsu Yoshida	<a href="mailto:yoshida@ncar.ucar.edu">yoshida@ncar.ucar.edu</a>	NCAR
S.-J. Lin	<a href="mailto:lin@dao.gsfc.nasa.gov">lin@dao.gsfc.nasa.gov</a>	GSFC
Bill Spatz	<a href="mailto:spatz@ucar.edu">spatz@ucar.edu</a>	NCAR
John Michalakes	<a href="mailto:michalak@mcs.anl.gov">michalak@mcs.anl.gov</a>	ANL
Everest Ong	<a href="mailto:eong@mcs.anl.gov">eong@mcs.anl.gov</a>	ANL