Overview of the SciDAC Community Climate System Model Project

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Abstract:

The development of a coupled climate system model suitable for research in decadal to century climate change research is the goal of a six lab consortium. The Community Climate System Model (CCSM3) released in June 2004 is the result of the current effort. Since significant DOE computing resources at NERSC, ORNL/CCS and NCAR are being expended in the execution of this model, attention to the software engineering of the model development have focused on performance portability, modularity and extensibility. The development of new coupler technologies based on the NERSC Multi-Processor Handshaking and the ANL Model Coupling Toolkits is a major success of the project.

Production use of this code for the Fourth Assessment Report of the Intergovernmental Panel on Climate Change was the intermediate objective of the project. Progress is now being made toward the development of more comprehensive models that will help bound the effects and feedbacks of ecological processes and atmospheric chemistry on the carbon cycle within the climate system.