

This is a document in development. The purpose of the document is to describe the principles and concepts that organize and anchor the Earth's Climate Science Group in the Atmospheric, Oceanic, and Space Sciences (AOSS) Department at the University of Michigan, Ann Arbor. The document is strategic in nature; it defines and clarifies the goals with the primary activities in which the faculty and staff of the Earth's Climate Science Group participate. It also describes future directions in which the group would like to move. (To be included, developed: RESEARCH, EDUCATION, ?SERVICE?, ?EXPERIMENTATION?, Strategies for implementation, ...)

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It is the goal of the Earth's Climate Science Group in AOSS to perform research that advances the integrated study of the climate system. This goal recognizes that climate science requires the investigation of a system of disparate physical and chemical processes, their interactions and their feedbacks in the system as a whole. Therefore, we work to address problems which require investigation of multiple components or aspects of the climate system and which are also important to the mean state and variance of the climate system as a whole.

Climate science requires coordinated study that combines observations, theory, and prediction. Theory and prediction are often expressed by models of the climate system or its primary elements, the atmosphere, the ocean, the land, and the cryosphere. These elements encompass, tacitly, composition and chemistry, radiative transfer, clouds and aerosols, and biological process. Both natural and anthropogenic causes of variability will be investigated. We recognize the fundamental role of observations and emphasize the use of information from observations to evaluate model performance and to contribute to model development. We seek to investigate and quantify the underlying physical and chemical processes of the climate system and to isolate and predict variability from both natural and anthropogenic causes.

The Climate Science Group will perform their research as partners and collaborators in the national and international community. In particular, the Climate Science Group is committed to working with the major federal modeling centers, for example, the National Center for Atmospheric Research, the Geophysical Fluid Dynamics Laboratory, the National Aeronautics and Space Administration, and the Department of Energy. Model development in the Earth's Climate Science Group will, often, contribute directly to these modeling activities. Therefore, model development will, most often, focus on particular components or subprocesses of key importance to the performance of these national models.

The importance of the investigation of the climate system has moved out of the realms of physical and natural sciences. The Earth's Climate Science Group recognizes the importance of climate science to many other schools and departments in the University. Additionally, a measure of success of AOSS scientists is the use of AOSS research and researchers in national and international assessment activities. Given the growing

requirements for the incorporation of climate science into the research of other disciplines, we seek to participate with, and when appropriate lead, research activities that span these many fields. Of special interest to the university community are issues of sustainability, natural resources, energy, transportation, and adaptation to climate change. We will advance the concept of using knowledge of the climate system to inform these other activities and improve the environmental security of the nation.