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The U.S. Department of Energy's Role in Climate Research

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Climate research looks at weather patterns and evaluates the interaction of elements such as atmosphere, land surface, ocean and sea ice systems.

The U.S. Department of Energy (DOE) is at the forefront of climate research and climate modeling. DOE has a Climate Modeling Program whose mission is to improve climate change projections using state-of-the-science coupled climate and earth system models.

Climate Modeling at DOE

The climate modeling program in the DOE Office of Science sponsors projects that develop, test, and apply state-of-the-science coupled climate and earth system models, based on theoretical climate change science foundations.

Why Climate Modeling is Important

Bamzai indicates that improved climate information at high spatial and temporal resolution is of immense significance to society and decision makers.

Specialized Facilities and Labs used in Research

There are a variety of universities, national laboratories and special computer facilities involved in climate modeling research. ASCR delivers leading edge computational and networking capabilities to scientists nationwide.

The Energy Sciences Network (ESnet) enables researchers at laboratories, universities and other institutions to communicate with each other using collaborative capabilities that are unparalleled.

Importance of HPC and Supercomputers in Climate Modeling Research

Climate modeling research requires complex algorithms which must run on state-of-the-art high performance super computers. Bamzai indicates that in climate modeling, throughput refers to the number of simulated years in a day.

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