

Related research programs

CCSM Community Climate System Model

The CCSM program is a component of the overall U.S. Climate Change Science Program (CCSP). It is a large project involving a large community of scientists and stakeholders in design, construction, evaluation, and use of the ultimate product, the CCSM. The program is a highpriority activity within the Climate and Global Dynamics (CGD) Division of the National Center for Atmospheric Research (NCAR). It provides the infrastructure and support mechanisms necessary for university scientists and other collaborators to contribute to the building of a common climate modeling system, as well as to use the modeling system to address scientific questions about Earth's climate, past, present, and future. Program priorities and decisions are based on scientific peer review and scientific consensus, and the results of the program are open to all. It provides the opportunity to support diversity in the approach to both an outstanding intellectual challenge and a major societal issue. The program also has a mission to foster the creative involvement of university researchers and students in the subject area and thus contribute to the development of highly trained people. The program is a complement to the other major modeling programs in the CCSP that are specifically oriented toward a government mission to provide decision-support information.

[Learn more....](#)



Computational Infrastructure for Geodynamics

On behalf of its Member Institutions, CIG works under a Cooperative Agreement with the National Science Foundation to develop, support, and disseminate open-source software for the greater geodynamics community. We are currently working with software in several sub-disciplines, including mantle convection, short and long time-scale tectonics, computational seismology, and the geodynamo. Plans call for expanding into magma migration during the coming year. We invite you to take advantage of CIG for your research by using currently available software or participating in a workshop or training session. You can help set CIG's agenda and priorities by working with your colleagues on the Science Steering Committee.

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Critical Zone Exploration Network

The surface of the Earth is rapidly changing, largely in response to anthropogenic perturbation. How will such change unfold, and how will it affect humankind? The Critical Zone is defined as the external terrestrial layer extending from the outer limits of vegetation down to and including the zone of groundwater. This zone sustains most terrestrial life on the planet. Despite its importance for life, scientific approaches and funding paradigms have not promoted and emphasized integrated research agendas to investigate the coupling between physical, biological, geological, and chemical processes in the Critical Zone.

[Learn more....](#)



Consortium of
Universities for the
Advancement of
Hydrologic Science

Mission: CUAHSI fosters advancements in the hydrologic sciences, in the broadest sense of that term, by:

Developing, prioritizing and disseminating a broad-based research and education agenda for the hydrologic sciences derived from a continuous process that engages both research and applications professionals;
Identifying the resources needed to advance this agenda and facilitating the acquisition of these resources for use by the hydrologic sciences community;
and

Enhancing the visibility, appreciation, understanding, and utility of hydrologic science through programs of education, outreach, and technology transfer.

CUAHSI has chosen three community science goals around which to organize our activities:

1. linking the hydrosphere and biosphere,
2. upscaling hydrologic, biogeochemical, and geomorphic processes, and
3. predicting the effects of human development and climate change on water resources.

[Learn more....](#)



Geosciences
Network

The Geosciences Network (GEON) project is a collaboration among a dozen PI institutions and a number of other partner projects, institutions, and agencies to develop cyberinfrastructure in support of an environment for integrative geoscience research. GEON is funded by the NSF Information Technology Research (ITR) program.

The key integrative science theme in GEON is a more quantitative understanding of the 4-D evolution of the North American lithosphere. The cyberinfrastructure in GEON is required to support an inherently distributed system?since the scientists, who are users as well as providers of resources (e.g., data, tools, and computing and visualization capabilities), are themselves distributed. Furthermore, GEON is required to tackle the extreme heterogeneity among data and tools, across a wide range of earth science sub-disciplines and disciplines.

A number of integrative science themes provide the initial guiding applications for realizing this cyberinfrastructure. These include (1) gravity modeling of 3D geological features such as plutons, using semantic integration of (igneous) rock and gravity databases, and other geological and geophysical data, (2) study of active tectonics via integration of LiDAR data sets, data on distribution of faults and earthquakes, and geodynamics models, and (3) study of lithospheric structure and properties across diverse tectonic environments via the integration of geophysical, petrologic, geochronologic, and structural data and models.

[Learn more....](#)

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Global Water
System Project

The Global Water System Project seeks to answer the fundamental and multi-faceted question:

How are humans changing the global water cycle, the associated biogeochemical cycles, and the biological components of the global water system and what are the social feedbacks arising from these changes?

Three major research themes follow this overarching question:

I. What are the magnitudes of anthropogenic and environmental changes in the global water system and what are the key mechanisms by which they are induced?

II. What are the main linkages and feedbacks within the earth system arising from changes in the global water system?

III. How resilient and adaptable is the global water system to change, and what are sustainable water management strategies?

[Learn more....](#)



Land-Ocean
Interaction in the
Coastal Zone

The LOICZ Project is one of six programme elements of the IGBP and one of five of the IHDP, and focuses on the interface of the Earth system where land, ocean and atmosphere meet and interact. The overall goal of this project is to determine at regional and global scales:

1. the nature of that dynamic interaction;
2. how changes in various components of the Earth system are affecting coastal zones and altering their role in global cycles;
3. to assess how future changes in these areas will affect their use by people and;
4. to provide a sound scientific basis for future integrated management of coastal areas on a sustainable basis.

LOICZ has developed scientific knowledge and tools that address global change in the coastal zone, focusing on material flux and human dimensions at regional and global scales. For LOICZ purposes, the coastal zone incorporates the domain extending from river catchments through the land-sea interface and coastal shelf, to the shelf margins. Globally LOICZ has established regional coastal projects addressing natural and socio-economic knowledge and tools development for material flux from river catchments to the coastal shelf.

[Learn more....](#)



National Center for
Earth-surface
Dynamics

NCED's purpose is to catalyze development of an integrated, predictive science of the processes shaping the surface of the Earth, in order to transform management of ecosystems, resources, and land use.

NCED is a partnership of research and educational institutions, government agencies, and industry that pursues its goal of predictive Earth-surface science by integrating physical, biological, and social sciences. NCED achieves research synthesis by focusing on a fundamental component of the Earth-surface system - channel networks and their surroundings - that recurs in varying but fundamentally related forms across a wide range of environments and scales. NCED collaborates with applied partners to identify knowledge gaps and develop tools to forecast landscape evolution and guide landscape management, restore river systems, find and develop subsurface resources, and promote environmental awareness. NCED shares the excitement of landscape science with a diverse community, exchanging perspectives through partnering, nurturing, and interacting in formal and informal education settings.

[Learn more....](#)



Scientific
Committee on
Oceanic Research

SCOR is the leading non-governmental organization for the promotion and coordination of international oceanographic activities. SCOR does not have the resources to fund research directly; therefore, SCOR science activities focus on promoting international cooperation in planning and conducting oceanographic research, and solving methodological and conceptual problems that hinder research. Scientists from the thirty-five nations participate in SCOR working groups and scientific steering committees for the large-scale ocean research projects.

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