CSDMS exists to:

Support its major research theme “Surface Response to Environmental Change”, with focus on:

1. discovery, use, and conservation of natural resources;
2. characterization and mitigation of natural hazards;
3. geotechnical support of infrastructure development;
4. stewardship of the environment; and
5. global environmental security

We do this by:

- Producing protocols for community-generated, continuously evolving, open software
- Distributing software tools and models
- Providing cyber-infrastructure to promote the quantitative modeling of earth surface processes
- Addressing the challenging problems of earth surface-dynamics: self-organization, localization, thresholds, strong linkages, scale invariance, and interwoven biology and geochemistry
- Enabling the rapid development and application of linked dynamic models tailored to specific earth surface problems at specific temporal and spatial scales
- Supporting a strong linkage between what is predicted by CSDMS codes and what is observed, both in nature and in physical experiments. CSDMS partners with related computational programs to eliminate duplication of effort and to provide an intellectually stimulating environment .

Feb/2010

Partners

Partners support CSDMS on a variety of levels — from financial and in-kind support to collaborative research.

Participating US agencies include: National Science Foundation, Office of Naval Research, Army Corps of Engineers. Army Research Office, U.S. Geological Survey, NASA, National Oceanic and Atmospheric Administration, National Oceanographic Partnership Program, Idaho National Laboratory, National Park Service, National Forest Service, U.S. Dept of Agriculture, Environmental Protection Agency, Argonne National Laboratory, National Weather Service, Naval Research Laboratory, National Center for Atmospheric Research, Nuclear Regulatory Commission. A CSDMS Interagency Committee serves the function of both communication and coordination.

Industry Partners include: BHP Billiton Petroleum, Chevron Energy Technology, ConocoPhillips, Deltares, ExxonMobil Research and Engineering, Japan Agency for Marine-Earth Science & Technology (JAMSTEC), Schlumberger Information Solutions, Shell International, Petrobras, Statoil, and URS Corporation. These organizations collaborate via the participation of representatives in CSDMS committees and working groups, including a CSDMS Industrial Consortium.

CSDMS Integration Facility

CSDMS coordination activities are through its Integration Facility, located within the University of Colorado at Boulder. Our staff includes computational scientists, engineers and graduate students.

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CSDMS acknowledges the Institute of Arctic and Alpine Research (INSTAAR) for providing the physical space and intellectual environment for the CSDMS Integration Facility.

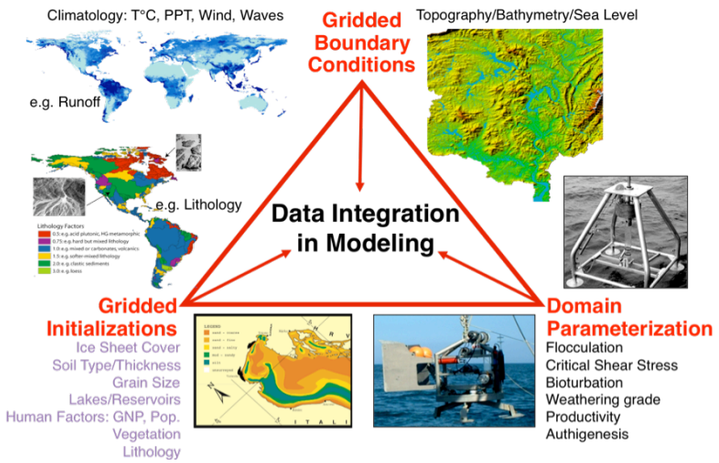
CSDMS

COMMUNITY SURFACE DYNAMICS MODELING SYSTEM

CSDMS is the virtual home for a diverse community of experts who foster and promote the modeling of earth surface processes, with emphasis on the movement of fluids, sediment and solutes through landscapes, seascapes and their sedimentary basins. CSDMS deals with the Earth's surface—the ever-changing, dynamic interface between lithosphere, hydrosphere, cryosphere, and atmosphere.

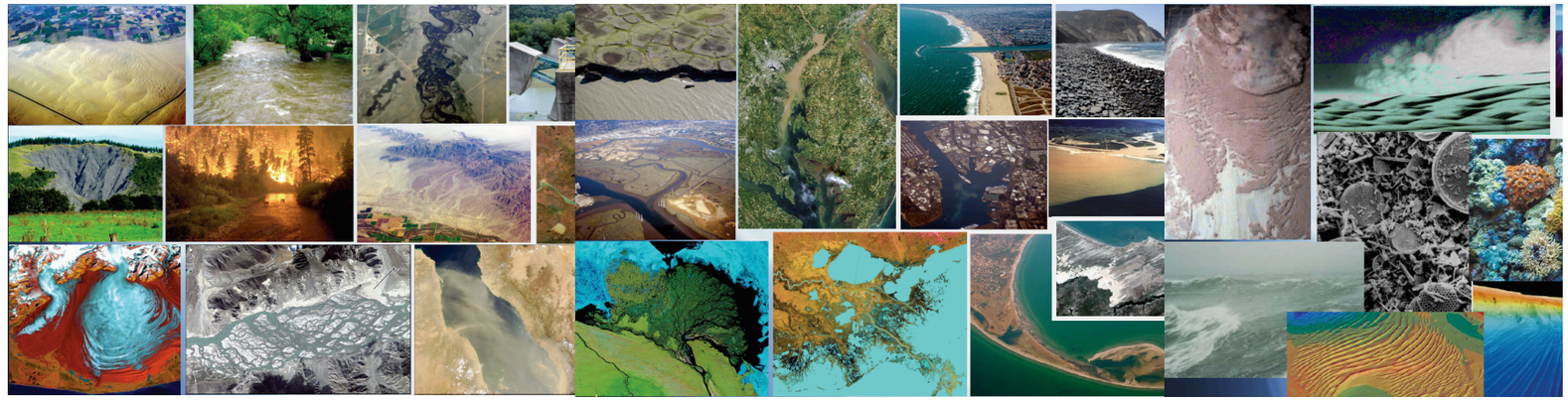
Major funding for CSDMS comes through a cooperative agreement with the National Science Foundation (NSF).

CSDMS develops, integrates, disseminates & archives software that reflects and predicts earth surface processes over a broad range of time and space scales. Toward that goal, CSDMS nurtures, develops and maintains high-level participation for the benefit of the entire Geoscience community through open collaboration and cooperation. Working together maximizes the efficacy of this community through a better awareness of past efforts, the avoidance of needless duplication, and by offering new ways to connect open-source software.



The CSDMS **Model Repository** offers more than 100 open-source models (e.g. basin evolution, morphodynamics, transport, climate and ocean) comprising 3 million lines of code written in ten languages. The CSDMS **Data Repository** offers access to global databases: topography, climatology, hydrography, discharge, cryosphere, geology, soils, sea level, land cover, and human population. The **Education and Knowledge Transfer Repository** offers undergraduate and graduate modeling courses, educational modules, modeling labs, and process and simulation movies.

CSDMS employs state-of-the-art architectures, interface standards and frameworks that make it possible to convert stand-alone models into flexible, "plug-and-play" components that can be assembled into larger applications. The CSDMS model-coupling environment offers language interoperability, structured and unstructured grids, and serves as a migration pathway for surface dynamics modelers towards High-Performance Computing (HPC).



CSDMS Working Groups

There are 8 Working and Focus Research Groups, consisting of members from 76 US Academic Institutions, 17 US Federal labs & agencies, 63 Foreign Institutes in 17 countries, and 11 companies.

Terrestrial Working Group: Weathering, hillslopes, rivers, glaciers, deserts, lakes, hydrology, and human dynamics

Coastal Working Group: Coastlines, deltas, estuaries, bays and lagoons, nearshore, human factors

Marine Working Group: Shelves, continental slopes, carbonates, offshore, deep marine, human factors

Education and Knowledge Transfer Working Group*:* courses, educational modules, modeling labs, process and simulation movies to illustrate earth surface processes.

Cyberinformatics and Numerics Working Group*:* computational aspects including high performance computing; visualization; and software protocols.

Hydrology Focus Research Group: Aspects of the hydrological system that impact earth-surface dynamics (co-sponsor CUAHSI).

Carbonate Focus Research Group: Physical and biological controls on carbonate deposition, diagenesis, karsts & reefs.

Chesapeake Focus Research Group: integrating models and data (co-sponsor Chesapeake Community Modeling Program).

Joining CSDMS

Membership in one or more groups is open to all interested participants with backgrounds in the respective scientific discipline. Each member agrees to participate in review activities, group projects, and when possible, working group discussions and meetings.

Benefits of membership include:

- Being part of a family of experts sharing research
- Improved knowledge of models for education and application
- Staying current within a community taking Geoscience to the next level
- Recognized service in an interesting and new field of interdisciplinary science
- Better and faster penetration of one's numerical advances, data and simulation products
- Competitive funding opportunities through better integrated proposals
- Closer interaction with industrial and NGO partners and federal agencies, with spin-off funding opportunities
- Academic and public recognition for code development
- Access to high performance computational resources
- Increased outreach and knowledge transfer opportunities

Join a CSDMS working or focus research group or learn more about CSDMS projects, products, and meetings by visiting:

http://csdms.colorado.edu