Press Release: Friday, April 20, 2007, University of Colorado

James Syvitski, Director of INSTAAR (Institute of Arctic and Alpine Research, Boulder CO) and Professor at the University of Colorado in the Department of Geological Sciences, has been awarded a multimillion-dollar cooperative agreement from the National Science Foundation (NSF) to coordinate the national effort and develop a Community Surface Dynamic Modeling System (CSDMS). The NSF award of $4.2 million over 5 years will be augmented with financial support and support in-kind by other federal agencies, including NASA, NOAA, the Office of Naval Research, the Army Research Office, the Army Corps of Engineers, and the USGS. The CSDMS model will be a suite of numerical tools (software) that covers the behavior of how rivers and glaciers erode mountains, where and when rivers flood, the damaging nature of hurricanes and tsunamis, how sediment deposits record the nature of past climate, and the impact of sea level change on our coastal systems. Professor Syvitski is stepping down, after 12 years, as INSTAAR Director, to take on the position as Executive Director of CSDMS.

CSDMS is part of NSF's effort to organize the academic research community to model planet Earth, from its deep interior to its climate system. The creation of focal points of excellence is designed to organize the national community and support the five national imperatives in Earth-science research: 1) discovery, use, and conservation of natural resources; 2) characterization and mitigation of natural hazards; 3) geotechnical support of commercial and infrastructure development; 4) stewardship of the environment; and 5) terrestrial surveillance for global security and national defense. NSF first funded the National Center for Atmospheric Research (Boulder CO) to lead the community effort through development of the Community Climate System Model. NSF next funded Cal Tech (CA) to lead a community effort in modeling the earth's interior (e.g. volcanoes, earthquakes, and the movement of continents). CSDMS will cover the near-surface environment where people live, in which complex interactions involving rock, soil, water, air, ice and living organisms regulate the natural habitat and determine the availability of life-sustaining resources.

CSDMS will develop, support, and disseminate integrated software aimed at predicting the erosion, transport, and deposition of sediment and solutes in landscapes and their repository sedimentary basins. The enterprise should eliminate much of the duplication of effort among researchers and different federal agencies, and allow for CSDMS products to meet the needs of industry and decision makers. Hundreds of scientists from across many dozen universities and government labs will combine forces with representatives from industry for this national endeavor.

Modeling the surface of the Earth is a problem of comparable complexity to modeling oceanic and atmospheric dynamics. The experience of these communities teaches us that development of large, complex numerical models rapidly becomes a task for an entire research community. A community approach allows efficient development of models that are more powerful than any single group could develop. The CSDMS infrastructure provides a modeling environment to catalyze Earth-surface research over the coming decades by: empowering a broad community of scientists and students with computing tools and interdisciplinary knowledge; streamlining the process of idea generation and hypothesis testing through linked surface dynamics models; and

enabling rapid creation and application of models tailored to specific settings, scientific problems, and time scales. CSDMS will provide 1) professional training in use of the CSDMS computational system, 2) technology to enhance undergraduate earth-science education, (3) tools for enhancing secondary-school teaching in earth-surface science, and (4) informal educational packages to public institutions such as science museums.