

Center for Advanced Land Management Information Technologies

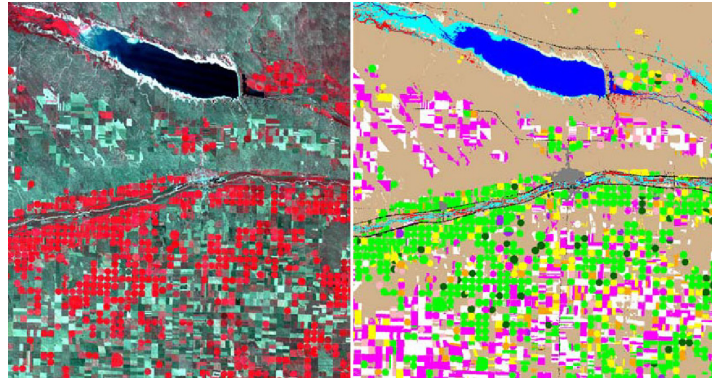
Director

James W. Merchant, 2008-present

Donald C. Rundquist, 1986-2008

Vision and Mission

The principal mission of the Center for Advanced Land Management Information Technologies (CALMIT) is to conduct research and instruction of the highest quality in remote sensing, geographic information systems (GIS) and related technologies. Our vision is to be internationally recognized as a center of excellence for applications of geospatial technologies to issues in natural resources management.



Background

Established in 1986 by the Board of Regents of the University of Nebraska, CALMIT expanded the UNL Remote Sensing Center founded in 1972. CALMIT serves to focus the significant interdisciplinary expertise in advanced land management information technologies that exists at UNL and in the region. Especially strong programs exist in hyperspectral remote sensing of vegetation, surface water, soils and coral reefs; remote sensing of water quality and aquatic vegetation; analysis of satellite image data for regional, continental and global land cover characterization;

and GIS-based spatial modeling for renewable resources management, environmental hazard assessment and land use/land cover change. CALMIT's facilities, among the best in the U.S., include:

- an indoor spectroscopy/water quality laboratory for teaching, controlled experiments and sensor calibration
- a 29-hectare field research station at UNL's Agricultural Research and Development Center near Ithaca, Nebraska
- several close-range remote sensing platforms to deploy sensor packages that operate from the ultraviolet through the microwave spectral bands over both land and water environments
- an aircraft outfitted with instruments that include an AISA Eagle hyperspectral (244-band) imaging system and a thermal-infrared camera



Faculty and Staff

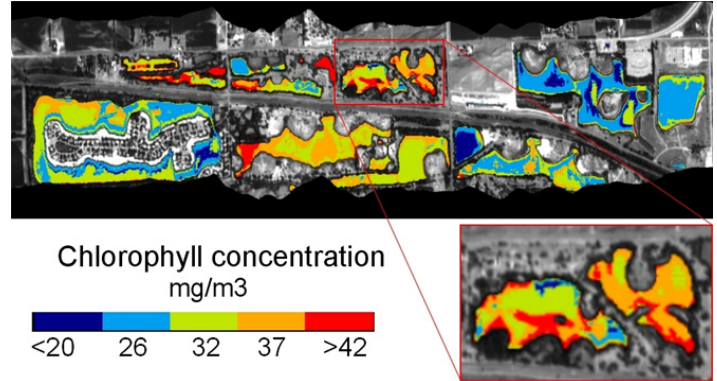
Five SNR state-funded faculty members are currently associated with CALMIT. The faculty are complemented by nine full-time employees, eight faculty fellows and approximately fifteen undergraduate and graduate research assistants.



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Funding

Although the five core CALMIT faculty are state-funded, all staff and student positions, technical equipment and research support are supported through grants and contracts with federal and state agencies, and occasionally private firms. Principal sources of funding have included NASA, NOAA, USDA, EPA, USGS, NSF, the National Park Service, the Nebraska Department of Natural Resources, the Nebraska Department of Environmental Quality, the Nebraska Department of Health and Human Services, the Nebraska Department of Agriculture, the Nebraska Emergency Management Agency, the Nebraska Military Department/National Guard and the Nebraska Office of the Chief Information Officer.



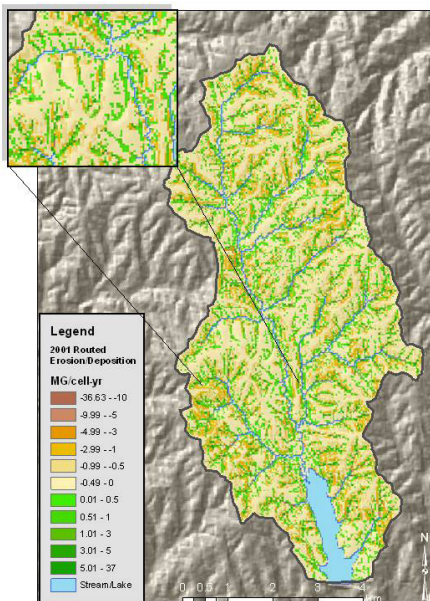
Publications

Since 2004, CALMIT faculty and staff have authored more than 100 refereed publications.

Future Prospects

Demand for research, instruction and outreach in geospatial information sciences (GIS) continues to increase nation-

wide, and this bodes well for CALMIT's future. CALMIT's research volume depends on many factors, including federal and state budgets, but several developments are promising. In 2008 Dr. Ge Lin, a GIS specialist, joined the faculty at the University of Nebraska Medical Center, and subsequently became a courtesy faculty member in SNR and a CALMIT affiliate. Dr. Lin's affiliation may lead to



new research and teaching initiatives related to public health. In August 2009 Dr. Qingfeng "Gene" Guan joined SNR. Dr.

Guan has a Ph.D. in Geography from the University of California - Santa Barbara, and has recently been serving as a research scientist with the USGS Center of Excellence for Geospatial Information Science in Rolla, Mo. His research and teaching will focus on several areas critical to CALMIT, including geographic information systems (GIS), geocomputation, high-performance computing and environmental modeling. Finally, the addition of the Geography program to SNR will provide CALMIT with new opportunities for research collaboration and student recruitment.

Role of CALMIT in SNR

CALMIT faculty teach all SNR undergraduate and graduate courses dealing with remote sensing, GIS and GPS. All SNR graduate students specializing in these technologies are advised by CALMIT faculty. CALMIT staff provide outreach to the community through the NebraskaView program and, in this capacity, frequently assist colleagues in SNR in obtaining and using geospatial data in research and teaching.

Collaboration

CALMIT faculty and staff collaborate with SNR colleagues from the High Plains Regional Climate Center, the National Drought Mitigation Center, the Great Plains Regional Center for Global Environmental Change, the USGS Cooperative Fish and Wildlife Unit and the UNL Water Center. They also work with the USGS Center for Earth Resources Observation and Science (EROS), NASA, NOAA, USDA, state agencies, and the Nebraska GIS Council.

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