COOPERATIVE INSTITUTE
FOR RESEARCH IN THE ATMOSPHERE
Colorado State University
Fort Collins, CO 80523-1375
970-491-8448
Dr. Tom Vonder Haar, Director

http://www.cira.colostate.edu/index.html

The Cooperative Institute for Research in the Atmosphere (CIRA) was established in 1980 at Colorado State University's Department of Atmospheric Science. CIRA serves as a mechanism to promote synergisms between University scientists and those in NOAA. CIRA facilitates collaborative research between NOAA Research, NOAA Satellites and Information Service, National Weather Service, as well as, other federal agencies like the National Aeronautics and Space Administration, National Park Service, National Forest Service, and the Department of Defense.

The Institute's research is concentrated in six theme areas and two cross-cutting research areas: **(1) Global and Regional Climate –** Perform remote sensing in a continuation of ongoing climate monitoring projects with NOAA and study large scale circulations and tropical air-ocean interactions; **(2) Local and Mesoscale Weather Forecasting and Evaluation –** Perform numerical simulation of mesoscale phenomena, Develop and improve tropical cyclone diagnostic and forecast algorithms, etc; **(3) Applied Cloud Physics –** Study multi-phase cloud morphology, the development of deep convective clouds, and ice nucleation materials; **(4) Applications of Satellite Observations** – Develop and determine uses for satellite data sets and new climate and weather products based on combinations of satellite and non-satellite data; **(5) Air Quality and Visibility** – Investigate new technologies and approaches to measure and monitor atmospheric parameters that contribute to air quality and visibility and forecast air quality and other regional environmental problems requiring coupled models; **(6) Societal and Economic Impacts** - Document and better understand the impacts, uses, and values of NOAA products and services for the reduction of human impacts of natural disasters and for the economic benefit of the Nation; **(7) Numerical Modeling –** Identify processes that are important for the initiation of convection that leads to severe weather and to better understand the interactions of storms with their environments; and **(8) Education, Training, and Outreach** – Continue to instruct international collaborators in the use of operational forecast techniques, to increase the number of schools that participate in the internationally successful Global Learning and Observations to Benefit the Environment (GLOBE)program, and to develop products that promote the understanding of atmospheric and related weather impacts on society.

Annually, CIRA scientists publish over 265 scientific publications, of which 30% appear in peer-reviewed publications. Some of the more important research being performed at CIRA is in support of NESDIS' new satellite programs including both GOES-R and NPOESS. These two multi-billion dollar weather satellite programs will support weather forecasting for the next 2-3 decades. They represent vastly improved sensors and have higher frequency data collection. CIRA research is building prototype products, based on the new sensor technology, and determining how to best exploit these data even before the sensor are launched.

CIRA's research activities assist NOAA in four of its Mission Goals: 1) Provide critical support for NOAA's mission; 2) Understand climate variability and change to enhance society's ability to plan and respond; 3) Serve society's needs for weather and water information and 4) Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.

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