

## The Cooperative Institute for Research in Environmental Sciences

The Cooperative Institute for Research in Environmental Sciences (CIRES) has been a world leader in environmental sciences since its 1967 establishment at the University of Colorado at Boulder. CIRES promotes collaboration among scientists in 13 university departments and programs, NOAA Research, NOAA Satellite and Information Service, and the National Weather Service. CIRES is the oldest and largest of NOAA's cooperative institutes.

CIRES carries out research in six theme areas: (1) Advanced Modeling and Observing Systems - Optimize modeling and observing systems for disciplines such as air quality, atmospheric chemistry, physical atmospheric and oceanic processes, cryospheric processes, space weather, data centers, and data management; (2) Climate System Variability - Work to gain an understanding of and predict climate change and its impacts; (3) Geodynamics - Characterize and identify the internal processes of our planet, including processes of the core mantle boundary, convection within Earth's mantle, and how the convection affects the surface of the planet; (4) Integrating Activities - Engage in a wide range of integrating activities in research, education, and outreach that encompass each of the institute's research themes and contribute to the overall mission of CIRES, NOAA, and the University of Colorado. This includes providing policy-friendly information to decision makers seeking guidance from science; (5) Planetary Metabolism - Study the complex web of biochemical and ecological processes and their interaction with the lithosphere, atmosphere, and hydrosphere; (6) Regional Processes - Research the mechanisms of atmospheric transport on climate and air quality, chemical transformation of products of biomass burning, air/sea gas transfer, and ozone pollution with a regional focus to address particular confluences of geography, demographics, weather and climate regimes.

Annually, CIRES scientists publish more than 600 scientific publications, of which more than 90 percent are peer-reviewed. This research is helping decision makers seeking to resolve complex problems by providing scientific insights to help shape informed policy. Examples of research focused upon societal needs include evaluating changes in the atmospheric concentration of greenhouse gases, assessing the health of Earth's ozone layer, projecting the impacts of climate change on water supply and other critical resources, documenting the thinning of polar ice, monitoring the quality of our air and water, helping to respond to drought and wildfire, developing microbial agents for degrading environmental pollutants, improving earthquake predictions, and providing decision makers with information for more effective risk assessments.

CIRES research activities assist NOAA in all four of its Mission Goals: 1) Protect, restore, and manage the use of coastal and ocean resources through ecosystem based management; 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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University of Colorado at Boulder  
216 UCB – CIRES  
Boulder, CO 80309-0216  
303-492-1143

**Dr. Konrad Steffen, Director**

<http://cires.colorado.edu>

