



# Highlights from CIRES Education and Outreach

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CIRES, the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder, works closely with NOAA laboratories in Boulder and hosts the National Snow and Ice Data Center, the Science and Technology Policy Center, CIRES Education & Outreach (E&O).

## Abstract

The Education and Outreach (EO) group for CIRES, the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder, is active across the spectrum of geosciences education, including teacher and scientist professional development, digital learning resources and courses, graduate student fellowships, exhibits, student events and after-school clubs and project evaluation. Our climate education projects are bearing fruit; for example, the NSF-funded Climate Literacy and Energy Awareness Network (CLEAN) digital resource collection went live November 1, 2010.

CIRES scientists are engaged in our work through broader impacts components on research projects, as stars of the video screen, presenters, reviewers, and learning resource providers. We support young scientists through fellowships, conduct climate communication training, and provide educational expertise to research projects. CIRES Education and Outreach also offer a series of workshops scheduled for the spring and summer, including a workshop series on Oceans and Climate, as well as review camps for the CLEAN pathway project.

ICEE-- Inspiring Climate Education Excellence funded by NASA GCCE-- is developing self-directed online modules for teachers through NASA and NSF Broadband Impacts funding. A traveling exhibit about the changing Earth is under development and will tour rural libraries nationally. Kits and curriculum to be used after school are available or under development focused on space weather, geomagnetism, weather and water.

## Climate Education Projects



*"These frameworks are all really great and everything and we need them, but what we really need is the curriculum and professional development to go with them."*

--Florida teacher educator commenting on the Climate Literacy framework

Teachers need high quality learning resources, professional development in climate science, understanding of best teaching practices and a supportive community to teach climate topics with confidence. CIRES EO climate education projects include the NSF funded CLEAN Pathway, the NASA funded ICEE project for teachers, NSF funded workshop series, and climate communications training for NOAA scientists.



<http://cleanet.org>  
CLEAN SEEKS  
SCIENCE EXPERTS!

CLEAN, the Climate Literacy & Energy Awareness Network, is a reviewed and annotated National Science Digital Library Pathway of high quality existing online resources and information on effective teaching strategies relating to climate and energy topics. See the adjoining CLEAN poster.



Members of a CLEAN review team

## Current Climate Education Projects



Following a face to face workshop held June 2010, ICEE is developing on-demand digital modules for educators. These modules address the need to help teachers learn climate concepts and climate teaching strategies.

Videos from the workshop are available through iTunesU, a workshop archive site is live, and a moderated online forum is growing at [iceeonline.org/forum](http://iceeonline.org/forum). Scientists, educators and providers of education resources are invited to join the ICEE community.

## Learn more at [iceeonline.org](http://iceeonline.org)



An avatar "guide" helps learners navigate the modules, forum and other ICEE products. Research shows this technique provides a more engaging user experience.

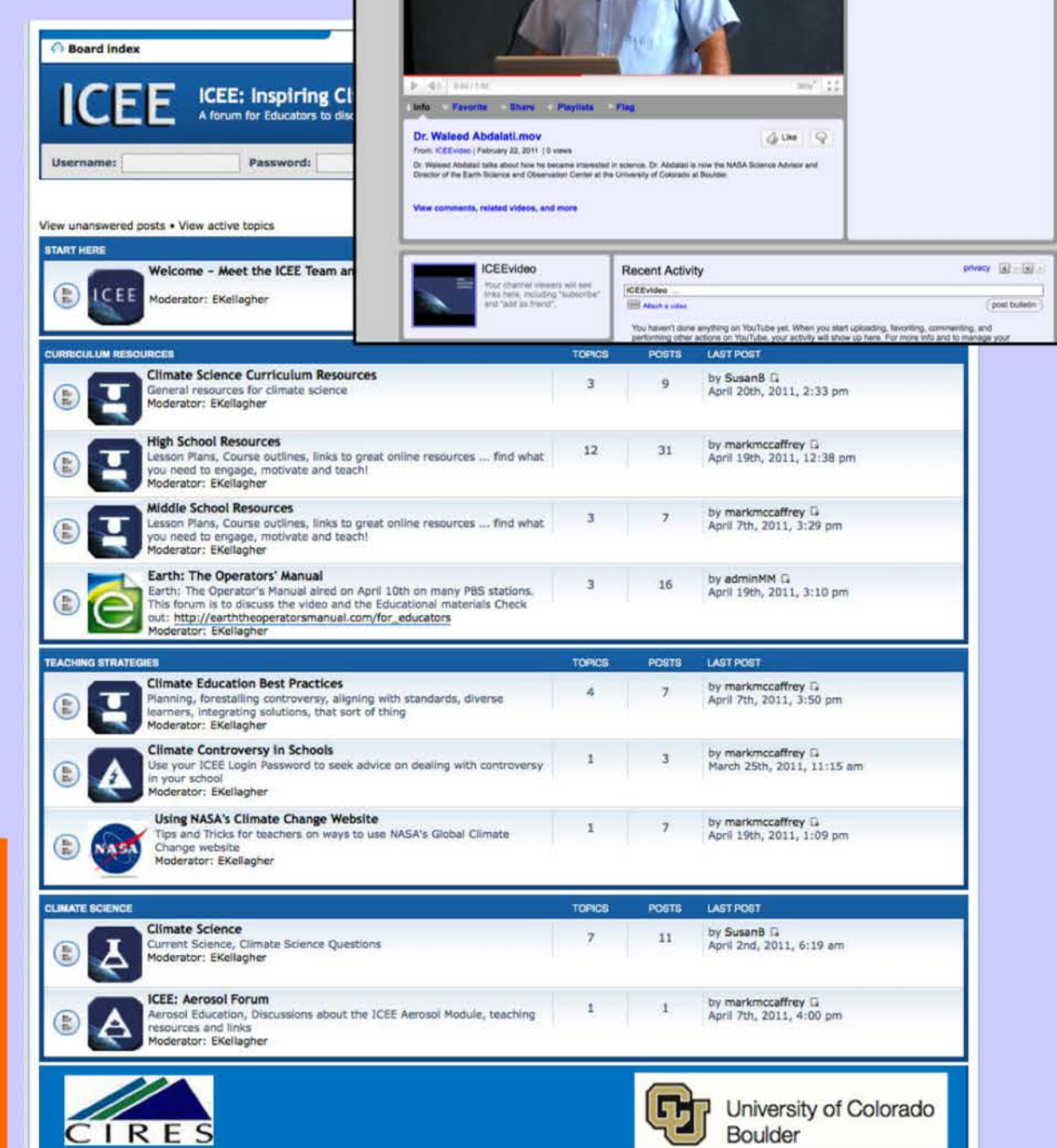


ICEE teacher during June 2010 workshop

## Modules under development

How Scientists Know  
Earth's Energy Balance  
Human Impacts  
Complex Climate Interactions  
Climate Variability  
Local Impacts  
Ecosystem Impacts  
Mitigation and Adaptation  
Best Teaching Practices

A full suite of resources will support educators in their climate education needs. An online forum provides a venue for community discussion.



## Oceans and Climate Workshop Series



CIRES Outreach is also delivering professional development workshops face to face, via videoconferencing and skype. In this way teachers participate from rural Colorado, California and other partner locations. Presentation videos are online.

The 2011 workshop series focuses on Water in the West and the ocean influence, over two half days and a week-long institute.

A teacher exchange program supports teachers from Colorado and California to attend workshops in the other state. This project is funded through the NSF Centers for Ocean Science Education Excellence (COSEE). Learn more at <http://cires.colorado.edu/education/outreach/cosee/index.html>



Teachers working with State Climatologist Nolan Doesken April 16, 2011.



## Other Notable CIRES EO Projects

Other CIRES EO projects of note:

- Jose Jimenez CAREER: developed content about aerosols and climate for ICEE modules
- Dave Noone CAREER: supports development of student research experience, weather and water curriculum for use after-school.
- Stefan Maus NASA supplement: supports teacher workshops and kit development in geomagnetism.
- NASA Solar Dynamics Observatory: reached teachers with solar weather resources and kits.
- Project Extremes GK12: places science graduate students in classrooms.
- CIRES EO conducts many evaluation studies for partner projects nationally.
- CIRES EO supports NOAA scientist climate communication needs through webinars and workshops.



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