



Trends

Cooperative Institute for Climate and Satellites, North Carolina
Inspire. Advance. Engage.

Fall 2013

Who we are

Hosted by North Carolina State University, CICS-NC is a unique center of excellence showcasing a partnership between universities, the private sector, non-profit organizations, community groups, and, the federal government. CICS-NC is a multidisciplinary team of experts who collaborate in climate and satellites research to support NOAA NCDC's "Research to operations" strategy.

Our Vision

- CICS-NC **inspires** cutting-edge research and collaboration
- CICS-NC **advances** NOAA's mission to understand and communicate the current and future state of the climate
- CICS-NC **engages** with business, industry, academia, and the public to enhance decision-making

[more info](#)

Main Research Activities

- Climate Data Records
- Surface Observing Networks
- National Climate Assessment
- Engagement, Outreach and Literacy
- Workforce Development
- Consortium Projects

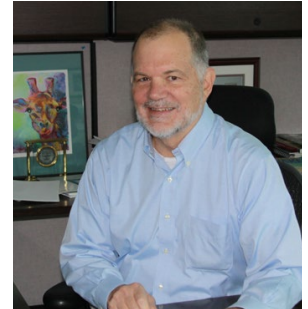
NOTE FROM THE DIRECTOR

Welcome to the first issue of the CICS-NC Newsletter. CICS-NC is part of a joint effort between North Carolina State University (CICS-NC) and the University of Maryland (CICS-MD) supported through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). We jointly provide mission directed support for NOAA's centers in Asheville, NC and College Park, MD.

Our goal for this newsletter is to inform you about CICS-NC activities that support of NOAA's National Climatic Data Center (NCDC) in Asheville. Much of our activity supports transition of research into operations. In particular, our work in satellite and surface data sets and observing systems provides our nation with our best view of the changing physical environment, while our climate literacy, outreach and education efforts help society understand and use this information.

The choices for topics in this issue were difficult, as there are many ongoing projects – please visit the CICS-NC website (www.cicsnc.org) for more information.

We hope you enjoy our newsletter and encourage you to send us your comments at info@cicsnc.org



Otis Brown, CICS-NC Director

Climate Engagement, Outreach and Literacy

CICS-NC brings climate research and information to business and industry leaders, academia and the general public. The institute builds networks and establishes partners to understand what climate information matters from their perspective, and gathers needs and requirements to assess NCDC and CICS-NC's science potential to meet these needs.

In the past year, engagement with businesses decision-makers has occurred through [workshops](#) and unique case-based learning activity called [Executive Forum on Business and Climate](#). Individual discussions also offer insight into how companies like Facebook use climate data for energy management and siting of their data center in Forest City, NC. Outreach and Engagement team is hosting a series of Climate Data and Applications workshops, with the first one focused on precipitation, and second Executive Forum on Business and Climate, in partnership with [C2ES](#).

CICS-NC also engages with local economic development partners including [ABSCI](#), the [Asheville-Buncombe Chamber and the Economic Development Coalition](#) and other corporate leaders to catalyze entrepreneurial activities in innovative applications of climate information and services and help recognize Asheville's research strength in climate science.



Engaging on climate with business leaders, professors and NCDC / CICS-NC scientists at EFBC



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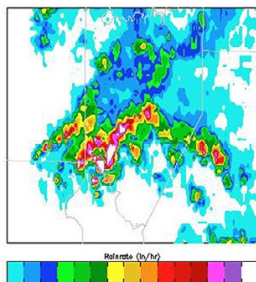
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Developing a High-resolution Precipitation Dataset from Radar

Scott Stevens is collaborating on the development of a new radar-based precipitation dataset with a resolution five times higher than what is currently available, and at 12 times the frequency. 2006 is nearly finished, and will be verified over the coming months. This effort is an undertaking well-suited for CICS-NC's resources because of the volume of data involved. Although the full record of radar data only covers around 15-20 years, it is nearly one million times larger than the entire global temperature record covering all of recorded history! This is a partnership with NOAA's National Climatic Data Center (NCDC), who will archive the new dataset, and the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), located at NOAA's National Severe Storms Laboratory in Norman, Oklahoma, who developed the software used to create the new product.

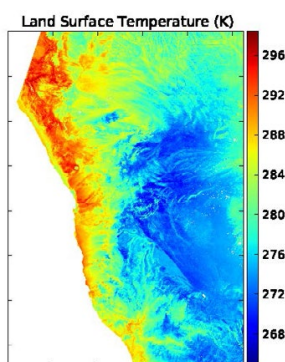


Developing a high-resolution precipitation dataset from radar

Land Surface Temperature from Satellite – Validation and Applications

Land Surface Temperature (LST) products derived from the Visible Infrared Imager Radiometer Suite (VIIRS) onboard the Suomi National Polar-orbiting Partnership (NPP) satellite provide key information of the Earth, twice per day, at 750m spatial resolution for many environmental applications, including weather forecasting, short-term climate prediction, extreme weather monitoring, water resources management.

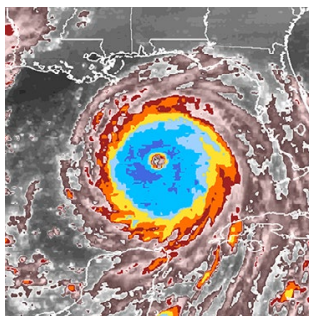
Within the EarthTemp international initiative, which develops integrated and collaborative approaches to observing and understanding Earth's surface temperatures, Pierre Guillevic is working with scientists at NOAA, NASA and European Universities to evaluate quantitative uncertainties in LST products from VIIRS using ground-based measurements and heritage satellite observations. In a new collaboration with NOAA National Centers for Environmental Prediction (NCEP), this research will investigate the potential of using satellite LST products to improve the performance of weather forecast models.



Land surface temperature from VIIRS overpassing Namibia at night on June 10, 2013

Cyclone Center Launches New Website

CycloneCenter.org was recently redesigned to provide citizen scientists with a more engaging and educational experience. Visitors choose one of four tropical cyclones to analyze. They are asked simple questions about satellite images from throughout the life of that storm, and their answers provide scientists with estimates of its strength, size, and shape. In less than a year, the project has already collected more than 235,000 image classifications from over 4,000 volunteers. It would have taken nearly a decade for a trained analyst to accomplish the same feat. Carl Schreck is analyzing these data along with collaborators from NOAA's National Climatic Data Center, the University of North Carolina at Asheville, and the Citizen Science Alliance. The results will be submitted to the Bulletin of the American Meteorological Society next year.



Satellite image of Hurricane Katrina (2005), recently highlighted on Cyclone Center during its 8th anniversary

A Warming World Will Intensify Extreme Precipitation Events

One issue of concern with climate change is possible changes in extreme rainfall amounts and the adequacy of runoff control structures. Probable Maximum Precipitation (PMP) is a theoretical value used in design of dams and similar structures and is defined as the greatest accumulation of precipitation meteorologically possible. Using climate model simulations, Ken Kunkel and colleagues (from NCDC, U. of Wisconsin, and Desert Research Institute) analyzed climate change effects on PMP values. They focused on several atmospheric factors that go into the maximum precipitation value possible in any given location, and found that changes in moisture are the most dominant. As the globe warms, more moisture in a warmer atmosphere will make the most extreme precipitation events more intense. Ongoing work is investigating how to incorporate these findings into PMP design values.

New Collaboration with the Centers for Disease Control and Prevention

Jesse Bell is developing a new collaboration with the Centers for Disease Control and Prevention. He is currently working as a Guest Researcher in the Climate and Health Program at the National Center for Environmental Health at CDC. Using his expertise in ecology and climate science, he is assisting researchers in the public health sector to better characterize the associations of various environmental exposures to health outcomes. Jesse is especially interested in understanding the potential health impacts associated with drought and changes in soil moisture conditions. With the help of CDC scientists, he is developing research plans to use soil observations from NOAA's United States Climate Reference Network to better understand a variety of health related risks associated with changes in soil moisture availability. See Climate and Health Program at <http://www.cdc.gov/climateandhealth/>



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