

CICS-MD

Cooperative Institute for Climate and Satellites

BACKGROUND

The Cooperative Institute for Climate and Satellites (CICS) is a multi-institution partnership led by the University of Maryland at College Park (UMCP) and engaged in collaborative research with several Centers and Laboratories of the National Oceanic and Atmospheric Administration (NOAA). CICS comprises two main research centers, one at the University of Maryland (CICS-MD) and the other in Asheville, NC which is administered by North Carolina State University (CICS-NC). Phil Arkin is the Executive Director of CICS and Director of CICS-MD, with Hugo Berbery as the CICS-MD Associate Director. CICS-NC is in the able hands of its Director, Otis Brown.

VISION

CICS performs collaborative research aimed at enhancing NOAA's ability to use satellite observations and Earth System Models to advance the national climate mission, including monitoring, understanding, predicting and communicating information on climate variability and change.

MISSION

CICS conducts research, education and outreach programs in collaboration with NOAA to:

- Develop innovative applications of national and international satellite observations and advance transfer of such applications to enhance NOAA operational activities;
- Investigate satellite observations and design information products and applications to detect, monitor and understand the impact of climate variability and change on coastal and oceanic ecosystems;
- Identify and satisfy the satellite climate needs of users of NOAA climate information products, including atmospheric and oceanic reanalysis efforts;
- Improve climate forecasts on scales from regional to global through the use of satellite derived information products, particularly through participation in the NOAA/NWS/NCEP Climate Test Bed;
- Develop and advance regional ecosystem models, particularly aimed at the Mid-Atlantic region, to predict the impact of climate variability and change on such ecosystems; and
- Establish and deliver effective and innovative strategies for articulating, communicating and evaluating research results and reliable climate change information to targeted public audiences.

DIRECTORS' MESSAGE

It is our pleasure to introduce the first issue of the CICS-MD Circular. We hope to inform interested scientists, managers and decision makers about significant events, while providing a glimpse into current research projects. We plan semiannual updates that will present new research activities in CICS-MD and relevant information for our partners.

CICS-MD has been actively promoting its research through presentations at many specialized science meetings and performing outreach activities like supporting students participating in the Climate Diagnostics and Prediction Workshop. The recent CICS Science Meeting held in Asheville, NC, was an opportunity to share our science with our colleagues at CICS-NC and to help coordinate and plan further collaborations.

The Memorandum of Agreement between NOAA and UMCP has been signed and formalizes the mechanisms that will govern CICS. A new Executive Board is being formed with the mission of providing oversight and direction to CICS. The community of CICS scientists is coming together and developing new research links and collaborations among members of the CICS consortium and NOAA Laboratories and Centers.

CICS-MD administers and processes all of the funding actions for the entire Consortium and handles the reporting as well; we are very grateful to the ESSIC Business Office, headed by Jean La Fonta, and Andy Negri, ESSIC Assistant Director, for their help in those areas. We welcome comments and suggestions for this Circular, and look forward to a continued communication.

Best wishes,
Phil Arkin and Hugo Berbery

PARTNERS

CICS-MD is hosted and administered by the University of Maryland's Earth System Science Interdisciplinary Center (ESSIC) and includes participants from the Departments of Atmospheric and Oceanic Science and Geography, and the Joint Global Change Research Institute. CICS-MD is the keystone of the CICS Consortium, which includes CICS-NC and other organizations.

CICS-NC, located in Asheville, is part of the North Carolina Institute for Climate Studies (NCICS) administered by North Carolina State University, and incorporates partners across institutions that make up the University of North Carolina System.

The CICS Consortium includes another 15 institutions as partners, including academic, non-governmental, and private research enterprises. Active members of the Consortium at present include Princeton University, Howard University, University of California at Irvine, City University of New York, University of Miami, Oregon State University, South Carolina, Climate Central, Remote Sensing Systems, the Institute for Global Environmental Strategies, and the Oak Ridge Associated Universities.



Cooperative Institute for Climate and Satellites-MD
5825 University Research Court, Suite 4001
University of Maryland • College Park, MD 20740-3823
Tel: 301.405.0500 • Fax: 301.405.8468
cics-info@essic.umd.edu



UNIVERSITY OF
MARYLAND

RESEARCH THEMES

Theme 1: Climate and Satellite Research and Applications incorporates the development of new observing systems, or new climate observables from current systems.

Theme 2: Climate and Satellite Observations and Monitoring focuses on: (a) development and improvement of climate observables from current systems, and (b) development of all continental and global fields of climate parameters that can be used for climate analysis and climate model initialization.

Theme 3: Climate Research and Modeling is the research component that brings together (a) climate observables, modeling and validation in a comprehensive integrated whole, and (b) observational products with model development efforts to enable research into the improvement of forecasts of climate system variability on space scales ranging from regional to global, and time scales from a week or two to centuries.

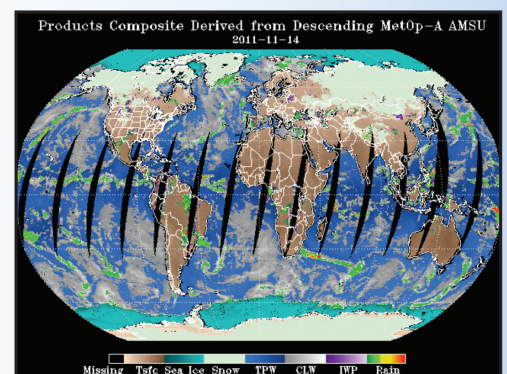
NOAA SPONSORS

- Center for Satellite Applications and Research (STAR)/National Environmental Satellite, Data and Information Service (NESDIS)
- Climate Prediction Center/National Centers for Environmental Prediction/ National Weather Service
- National Climatic Data Center/NESDIS
- National Oceanographic Data Center/ NESDIS
- Air Resources Laboratory/ Office of Oceanic and Atmospheric

A CICS Partner – NOAA/NESDIS/Satellite Climate Studies Branch

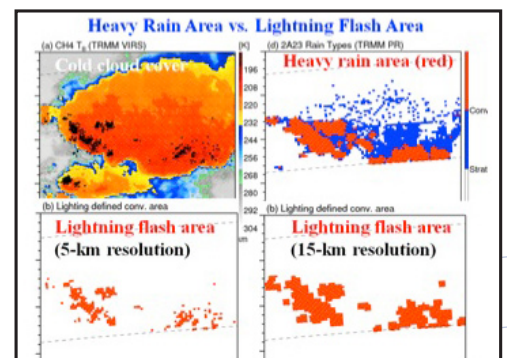
Since 2003, CICS-MD has developed a strong partnership with the Satellite Climate Studies Branch (SCSB), part of NOAA/NESDIS/Center for Satellite Applications and Research (STAR), to exploit the capabilities of Earth-observing satellites to study the climate variations of the atmosphere, the land and the oceans. SCSB and CICS-MD researchers work on a host of topics the focus that range from high priority topics related to NESDIS' operational satellite programs to cutting edge research focused on ecosystems and climate. The effort uses remote satellite observations as well as model simulations to detect, monitor and forecast the effects of climate change on the environment, including effects on its ecosystems.

The figure on the right shows a composite product of hydrological variables derived from one of the operational polar orbiting satellites – MetOp-A – that are derived from a microwave sensor package known as “AMSU.” These products, generated since 2000, are useful for weather forecasters and climate scientist.



Improving Satellite Heavy Rain Estimates Using Lightning Information

Researchers (Robert Adler, Nai-Yu Wang, and Weixin Xu) in CICS are funded by the National Oceanic and Atmospheric Administration (NOAA) to develop techniques to incorporate lightning information to improve satellite rainfall estimates. NOAA's Geostationary Operational Environmental Satellite (GOES-R; to be launched in 2016) will have the first ever Geosynchronous Lightning Mapper (GLM). Tropical Rainfall Measuring Mission (TRMM) data are being used to develop the basis and eventually the algorithms to combine GOES-R Infrared (IR) and GLM data to provide high resolution rainfall information, especially with regard to convective cores and heavy rain areas. This algorithm would be helpful in earlier warnings of heavy rain or flooding events, especially over remote area not covered by rain gauges or radars.



Seasonal Drought Prediction over the United States

CICS Research Associate Li-Chuan Chen and Physical Scientist Kingtse Mo at NOAA/ NCEP/Climate Prediction Center (CPC) have developed a new tool to predict meteorological drought over the contiguous United States using standardized precipitation index (SPI) based on precipitation forecasts from NCEP Climate Forecast System version 2 (CFSv2). The methodology and forecast skill were presented in the WCRP Open Science Conference in Denver, Colorado on October 27, 2011. Generally, prediction skill is seasonally and regionally dependent and the six-month SPI forecasts are skillful out to 3-4 months. The products (available at <http://www.cpc.ncep.noaa.gov/products/Drought/Figures/index/spi.fcst.gif>) became operational in April 2011 and have been used to assist in CPC's drought monitoring and assessment activities.

Figure shows the six-month SPI (SPI6) forecasts for (a) November 2011, (b) December 2011, (c) January 2012, and (d) three-month SPI (SPI3) for November 2011 based on the CFSv2 November 3-4 initial conditions.

