



Cooperative Research Programs Quarterly Newsletter

April-June, 2017

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https://www.star.nesdis.noaa.gov/star/CoRP_index.php

NEWS

David Tobin Receives Chancellor's Award for Excellence in Research:

David Tobin, senior scientist at the Space Science and Engineering Center (SSEC) and Cooperative Institute for Meteorological Satellite Studies (CIMSS) at the University of Wisconsin-Madison, was selected to receive the 2017 Chancellor's Award for Excellence in Research as an independent investigator (<http://www.ssec.wisc.edu/news/articles/9894>).

Tobin has earned a global reputation as a scientist supplying the world with better knowledge of climate trends and hazardous weather. His pioneering work with hyperspectral infrared sounders has increased their accuracy, leading to fewer forecasting errors and giving scientists greater confidence in their research findings.



David Tobin

Finnish Ambassador visited CIRA:

Kirsti Kauppi, Finnish Ambassador to the U.S., visited Colorado State University (CSU) and CIRA on 26 April 2017. The primary reason for the visit was to continue Finnish efforts nationwide to celebrate the Finnish Centennial of independence. The Ambassador honored Chandra Venkatachalam, CSU Professor of Electrical and Computer Engineering and CIRA Fellow, for his efforts that have earned him *Insignia of Knight, First Class, of the Order of the White Rose of Finland*. The delegation also toured CIRA facilities, followed by

a reception at CIRA attended by the majority of all CIRA employees. The Finnish Ambassador Kauppi and various guests gave short speeches highlighting what a pleasant working environment CSU and CIRA seem to provide to its employees and encouraging everybody to believe in the importance of their contributions to the environment and to make collaboration an important part of their work. Vaisala is contributing a C-band polarimetric deployable radar to Colorado State University to facilitate research collaborations between the University, its NOAA partners, and Vaisala.



Finnish Ambassador to the U.S. Kirsti Kauppi addresses an audience of CSU/CIRA staff. (Photo by M. Rogers)

NOAA Testbeds and Proving Grounds Workshop:

NOAA Testbeds and Proving Grounds Workshop was held in Kansas City during 25-26 April (<http://www.testbeds.noaa.gov/events/2017/workshop/agenda.html>). The purpose of the workshop was to provide a review of the accomplishments during the past year. Several Testbed managers highlighted the contributions of STAR and CI scientists to various meteorological applications that are being demonstrated within the Testbeds. This was followed by the GOES-16: The First Results Workshop on 27 April. STAR scientists and the CI Satellite Liaisons

gave an update on how the GOES-16 ABI imagery products are being used by NWS forecasters for operational decision making. Post launch validation of ABI products is progressing on schedule.

Rudlosky Interviewed for "What on Earth" Television Series:

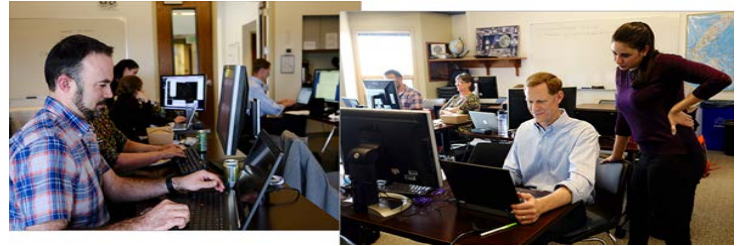
Scott Rudlosky (STAR/CoRP/SCSB) was interviewed on May 2nd 2017 for a television show on the Science Channel called "What on Earth?"



This show finds interesting satellite imagery and provides expert commentary on the possible explanations for the phenomena. The interview focused on a burn scar from a lightning-ignited wildfire in central Australia, but also included lightning images from space as well as earthquake lights/lightning. For more about the show, see <http://www.sciencechannel.com/tv-shows/what-on-earth/>.

AWIPS2 Training/Workshop at RAMMB/CIRA:

The first AWIPS2 National Centers Perspective (NCP) Satellite Ingest and Display workshop was held at RAMMB/CIRA on May 1-4, 2017. Participants included Michael Folmer (OPC, WPC Satellite Liaison), Monica Bozeman (NHC), Amanda Terborg (AWC), Michael Bowlan (SPC Satellite Liaison), Jorel Torres (JPSS Satellite Liaison), Andrea Schumacher (CIRA/NHC), Kevin McGrath (SPoRT) and Lee Byerle (TOWR-S). The group implemented NCP ingest and display of several experimental and operational satellite products to test functionality of NCP as an N-AWIPS replacement at the National Centers. Problems were documented for use by the NCP development team. 350 N-AWIPS products used at the National Centers products were identified for migration from N-AWIPS to NCP. National Centers Directors will be briefed on the workshop findings in late May.

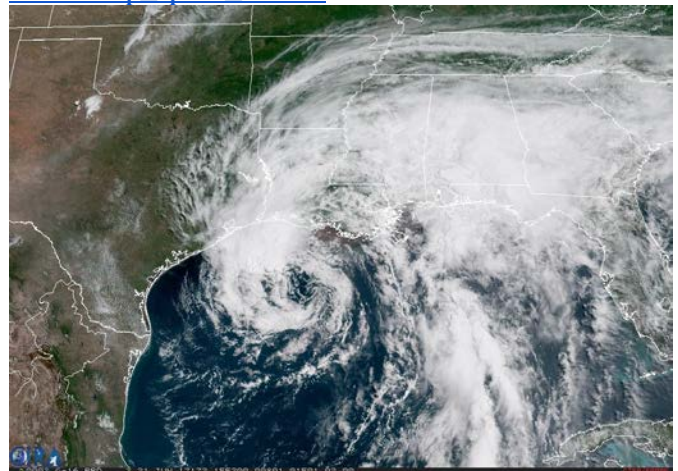


Participants of the AWIPS2 National Centers Perspective Satellite Ingest and Display workshop held at RAMMB/CIRA in Fort Collins, CO, on 1-4 May, 2017.

GOES-16 Geocolor Featured on NBC Nightly News:

CIRA's GOES-16 Geocolor animation of Tropical Storm Cindy from 21 June 2017 was picked up and shown on NBC Nightly News by Lester Holt. Below picture is one of the images from the loop. Loop can be found at ftp://rammftp.cira.colostate.edu/Lindsey/G16_geocol_or_NBC_21jun17_TS_Cindy.mp4 A higher resolution version of this loop can be found on CIRA's Loop of the Day page here:

http://rammb.cira.colostate.edu/ramsd/online/loop.asp?data_folder=loop_of_the_day/goes-16/20170621000000&number_of_images_to_display=100&loop_speed_ms=80



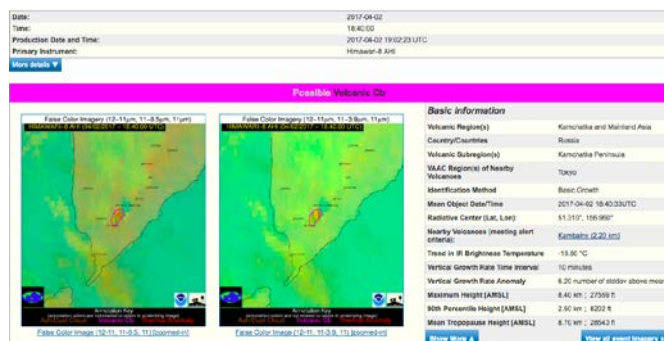
CIRA's GOES-16 Geocolor product from 21 June 2017 at 1552 UTC. This is one frame from the movie that was shown on NBC Nightly News.

SCIENCE AND APPLICATIONS

Satellite Volcanic Eruption Alert Triggers Aerospace Advisory in Russia:

On April 2, 2017, an automated volcanic eruption alert from the CIMSS's VOLcanic Cloud Analysis Toolkit (VOLCAT) alerted forecasters to an explosive volcanic eruption on the Kamchatka Peninsula of Russia. A

volcanic ash advisory to aviation was subsequently issued in advance of the cloud dispersing into busy airspace. VOLCAT is uniquely capable of automatically detecting volcanic eruptions in a timely manner through advanced use of low earth orbit and geostationary meteorological satellites. VOLCAT is an enterprise information system, in that the aim is to transform large volumes of satellite and non-satellite data into actionable information. Such an approach is needed to improve aviation safety and efficiency in the wake of volcanic eruptions. VOLCAT products are currently generated at the University of Wisconsin. Transitioning “big data” approaches, such as VOLCAT, into operations is an ongoing challenge. (Mike Pavolonis, mike.pavolonis@noaa.gov)



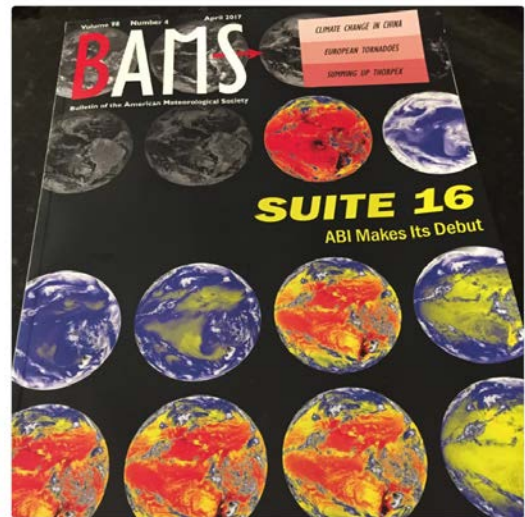
A volcanic eruption alert report is shown for the eruption of Kambalny (southern Kamchatka Peninsula of Russia) on April 2, 2017. VOLCAT automatically generates the alert report when a likely volcanic eruption is detected using sophisticated multi-sensor algorithms. Users receive a hyperlink to the alert report either via email or text message. A volcanic ash advisory was issued as a direct result of this alert.

More news about this volcanic event can be found at: Russia Today: <https://www.rt.com/news/383168-volcanos-spew-ash-kamchatka/>

GOES-16 Advanced Baseline Imager Article on The Cover of BAMS:

Tim Schmit (NESDIS/STAR/CORP/ASPB) led an article on the Advanced Baseline Imager (ABI) featured on the cover of the *Bulletin of the American Meteorological Society* (BAMS). The article gives an overview of the ABI instrument, operation and many uses. The full citation is: Schmit, T. J., P. Griffith, M. M. Gunshor, J. M. Daniels, S. J. Goodman, and W. J. Lebar, 2017: A closer look at the ABI on the GOES-R series. *Bull. Amer. Meteor. Soc.*, 98, 681-698, doi:10.1175/BAMS-D-15-00230.1.

Jen Carfagno [@JenCarfagno](#) Following
Sweet cover of latest Bulletin of @ametsoc! #Suite16 #GOESR #GOES16 @NOAASatellites #ABI @HarrisCorp @GOESguy



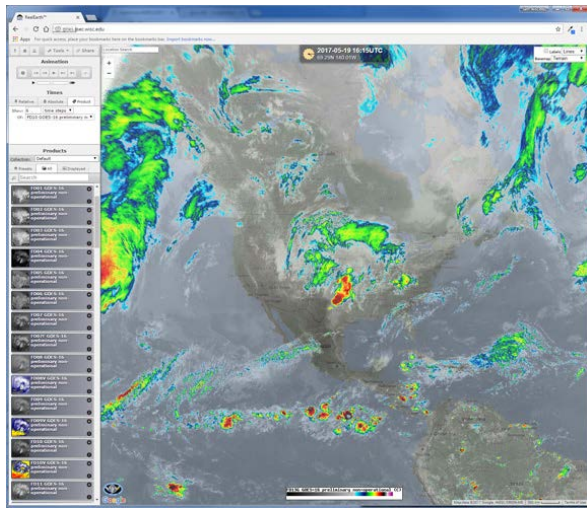
Book Chapter on Hypoxia Published:

Christopher Brown (NESDIS/STAR/CORP/SCSB) co-authored a chapter entitled “Modeling hypoxia and its ecological consequences in Chesapeake Bay” in the book “Modeling Coastal Hypoxia: Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics”. The chapter reports on the performance of a newly developed, mechanistic dissolved oxygen formulation that has been incorporated into the Chesapeake Bay Regional Ocean Modeling System (ChesROMS) model to realistically resolve seasonally developing hypoxia / anoxia in the Bay. Insights into various bio-physical interactions and biogeochemical processes of the Bay gained from these numerical experiments are considered and the application of the ChesROMS model fields in short-term hazard forecast applications is discussed. The Chesapeake Bay is a valuable recreational, ecological and economic resource that is subject to environmental hazards, such as harmful algal bloom (HAB) and hypoxia, which can degrade the Bay’s health and jeopardize the viability of this important natural resource.

Citation: Wiggert, J.D., R. R. Hood and C. W. Brown. 2017. Modeling Hypoxia and its Ecological Consequences in Chesapeake Bay in Justic, D., K. Rose, R. Hetland, and K. Fennel (eds.) *Modeling Coastal Hypoxia: Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics*, Springer International Publishing, Cham, 119-148 pp, <http://dx.doi.org/doi:10.1007/978-3-319-54571-4>.

Near Real-time GOES-16 Data Available to the Public in RealEarth:

The RealEarth web-mapping platform hosted at the Space Science and Engineering Center (SSEC) at the University of Wisconsin, is providing visualization access to real-time (preliminary non-operational) GOES-16 Advanced Baseline Imager (ABI) imagery. A majority of the bands, some with enhancements, are available for all sectors (full disk, CONUS, and meso) at full temporal and spatial resolution. These ABI images can be overlaid and combined with over 500 other products in RealEarth, including radar, surface observations, and satellite-derived products (e.g., fire, smoke, flood, cloud properties) from other geostationary and polar orbiting platforms. Due to the large data volume, only the most recent time-steps are kept for any given product based on its coverage and frequency. RealEarth can be accessed through web browsers (<https://realearth.ssec.wisc.edu>) and mobile apps for iOS and Android devices: Just search the app store for "RealEarth." A dedicated website for just the RealEarth GOES products is now live at <https://goes.ssec.wisc.edu>. A "GOES App" will be released in the iOS store in the coming weeks.

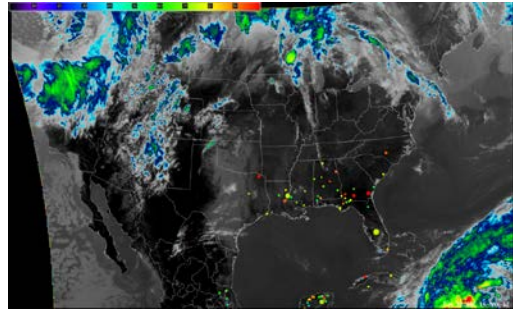


Screenshot of the dedicated GOES-RealEarth webmap (<https://goes.ssec.wisc.edu>).

VIIRS Active Fire in AWIPS on CICS-MD Satellite Proving Ground and Training Center:

The CICS-MD proving ground and training center now routinely displays the VIIRS active fire (AF) product in AWIPS (see image below). The AWIPS implementation of the AF product was developed by the Experimental Products Development Team (EPDT) and initially deployed as part of an RPM package from the Tower-S team. The most recent AWIPS version includes this tool for displaying active fires. JPSS aerosol products also have been implemented in our

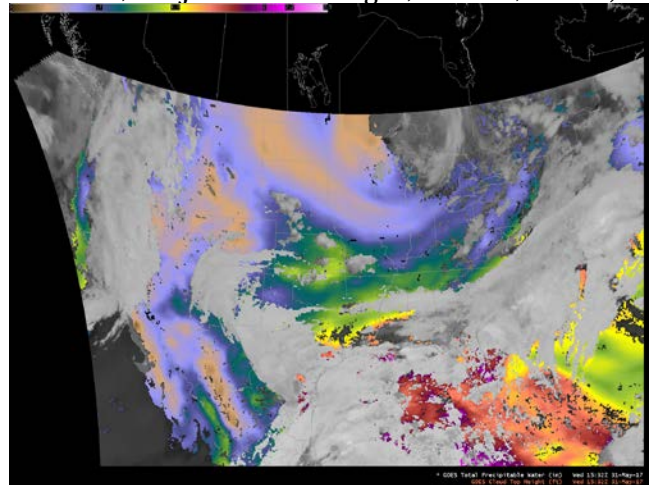
AWIPS system, allowing for investigation of the best way to visualize these complementary products.



Example of the S-NPP VIIRS active fire product from 16 May 2017 (indicated by the green, yellow and red circles) which is superimposed on the VIIRS IR imagery).

GOES-16 ABI Derived Products in AWIPS:

As part of the post-launch testing, a number of Level 2 Geostationary Operational Environmental Satellite (GOES)-16 Advanced Baseline Imager (ABI) preliminary products are now being sent over the Satellite Broadcast Network (SBN) to the National Weather Service (NWS) AWIPS (Advanced Weather Interactive Processing System). This data flow began on 31 May, 2017 and includes aerosol products, cloud properties, total precipitable water and stability parameters, fire characterizations and land surface temperature. (A. Heidinger, E/RA2, 608-263-6757, andrew.heidinger@noaa.gov; T. Schmit, E/RA2, 608-263-0291, tim.j.schmit@noaa.gov; J. Gerth, CIMSS)

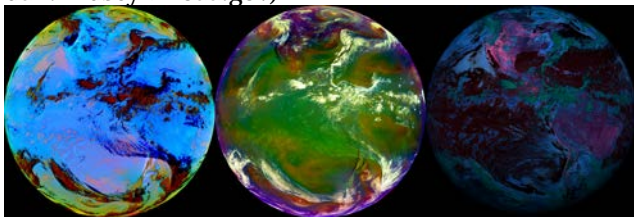


GOES-16 Total precipitable water (color-coded) and cloud top height (black-n-white) as shown in AWIPS from 31 May, 2017.

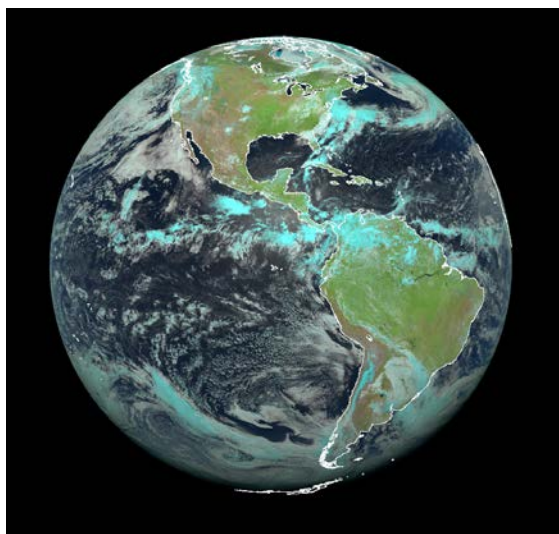
Full Disk GOES-16 RGB products in real-time:

In addition to CIRA's Geocolor product, several other multispectral (i.e. RGB) imagery products from GOES-

16 are now being produced in real-time. These include three of the most popular EUMETSAT RGB recipes (Natural Color, Dust and RGB Airmass), plus the Fire Temperature RGB originally developed at CIRA for VIIRS. These four RGBs are popular for aiding with the discrimination of snow and ice from clouds, detection and monitoring of dust, monitoring the development of mid-latitude cyclones (as well as extratropical transition of tropical cyclones), and detection and monitoring of fires, respectively. These imagery products will become available on CIRA's SLIDER web viewing tool as soon as the website is released to the public. The Natural Color RGB is provided to forecasters in AWIPS as the "Day Land/Cloud RGB." EUMETSAT's Dust and Airmass RGBs are also provided in AWIPS. CIRA has been collaborating with GINA, NASA SPoRT and the NWS Operations Proving Ground to make the Fire Temperature RGB more widely available to forecasters through AWIPS. Examples of the four RGB composites are provided in the figures below. (Dan Lindsey: dan.lindsey@noaa.gov)



Examples of the EUMETSAT Dust RGB (left), EUMETSAT Airmass RGB (center) and CIRA Fire Temperature RGB (right) now produced in real-time for GOES-16 ABI.

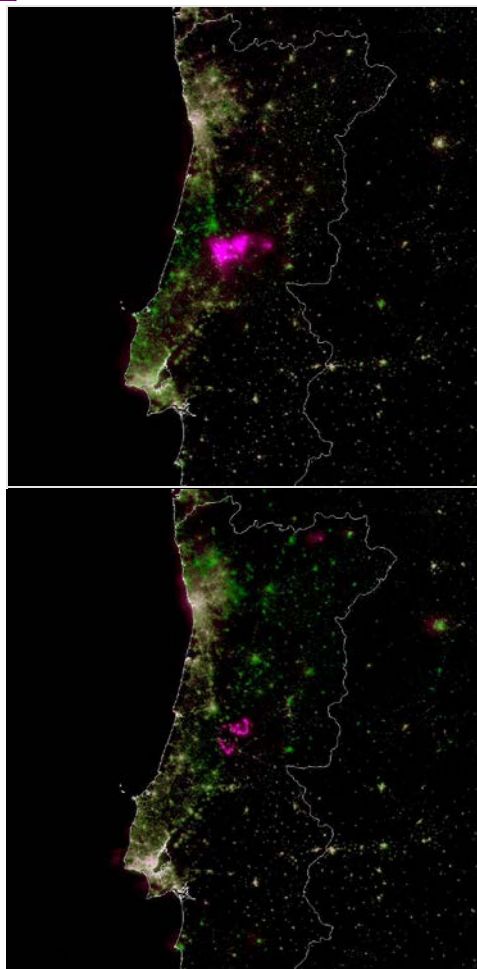


GOES-16 ABI full disk Natural Color RGB image as it appears on CIRA's SLIDER web display tool.

VIIRS Day/Night Band Detected Portugal Wildfires Timing and Extent:

A massive wild fire in Portugal claimed more than 60 people in June 2017. VIIRS Day/Night Band imagery provided remarkable views of the evolving wildfire over the course of several nights. The views include a more complete description of the fire extent on the first night, thanks to the DNB's ability to detect light from the flames that are forward-scattered through the overlying cloud canopy. In such cases, IR-based methods may be limited in sensitivity or mask out portions of the fire extent due to cloud-suppressed brightness temperatures. In the false-color composite imagery shown above, lights from the fire line are highlighted in magenta colors. The DNB stable nighttime lights (produced by Chris Elvidge's group at NOAA/NCEI) provided the reference information for asserting new lights in the current scene of each image. This story was featured on NASA's Earth Observatory web page:

<https://earthobservatory.nasa.gov/IOTD/view.php?id=90427>.



False color composite imagery of the Portugal wildfires, based on VIIRS Day/Night Band information. Magenta colors correspond to significant 'new' lights when compared against a cloud-cleared reference background of city lights. In

this case, these new lights correlate with the location of the fires on the evenings of 18 June 2017 0203 UTC (left) and 19 June 2017 0145 UTC (right). The DNB provided tracking of the evolving active fire line over the course of multiple nights.

More news about the Portugal fires can be found at:

The Guardian:

<https://www.theguardian.com/world/2017/jun/22/portugal-forest-fires-under-control>

BBC News: <http://www.bbc.com/news/world-europe-40316934>

Bloomberg:

<https://www.bloomberg.com/news/articles/2017-06-18/catastrophic-forest-fire-leaves-57-dead-in-northern-portugal>