Weekly Report

CIRA
STAR/NESDIS
National Oceanic and Atmospheric Administration (NOAA)

Submitted by: Maranda Hutson
Date of Submission: 04 October 2024
Prepared by: CIRA and STAR contributors

Products and Applications

CIRA Advected Layer Precipitable Water (ALPW) Product Becomes Operational: After several rounds of product development, improvement and testbed evaluation supported by the JPSS PGRR program the Advected Layer Precipitable Water (ALPW) product has become operational. ALPW leverages NOAA Microwave Integrated Retrieval System (MiRS) passive microwave water vapor profiles from four or more polar orbiting spacecraft and moves them to a common time via the use of Global Forecast System (GFS) winds. Four layers (surface-850 mb, 850-700 mb, 700-500 mb and 500-300 mb) are created hourly, which gives forecasters a way to track the pipelines of moisture fueling heavy precipitation and floods. ALPW is particularly valuable for tracking atmospheric rivers and long distance moisture transports, and is often mentioned by the NOAA Weather Prediction Center (WPC) in Mesoscale Precipitation Discussions for flash flooding. ALPW is used by forecasters at the National Hurricane Center(NHC) to analyze the environment around tropical waves. CIRA had been producing ALPW and distributing to select users, now that it's operational it will have 24/7 support and be available throughout NWS. Acknowledgments to the ASSISTT team for help in the transition to operations, and to the many NWS forecasters who explored and advocated for the product over the years. (POC: John Forsythe (John.Forsythe@colostate.edu), Sheldon Kusselson, Dan Bikos, Natalie Tourville, Stan Kidder, Jorel Torres, Hiro Gosden, Deb Molenar. Funding: JPSS)

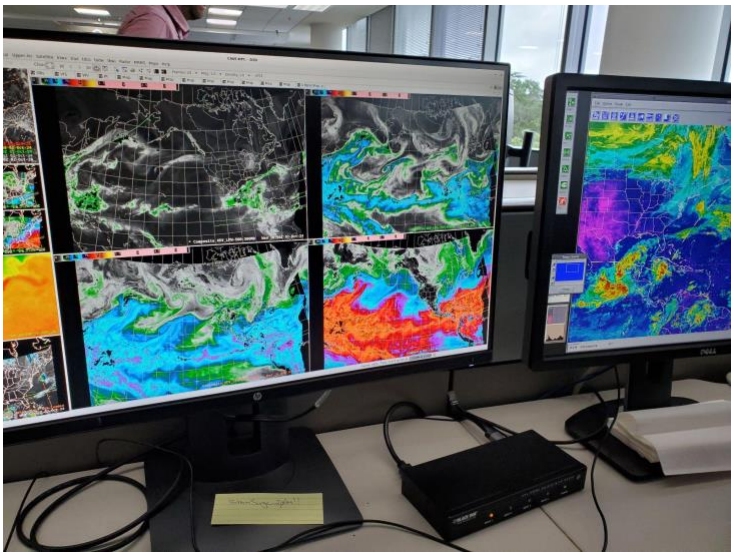


Figure: ALPW product in the AWIPS-2 workstation at the WPC, Oct. 2.,2024. Photo credit Sheldon Kusselson.

GOES-19 CMI now on SLIDER: The Advanced Baseline Imager (ABI) onboard GOES-19 reached "Beta" maturity status on 1 October 2024. With that declaration, GOES-19 ABI Cloud and Moisture Imagery (CMI) products became available to distribute through CIRA's SLIDER website (https://rammb-slider.cira.colostate.edu). Imagery from all individual ABI bands, a baseline set of RGB composites, as well as a variety of Advanced GeoColor products (e.g. GeoFire, GeoDEBRA, etc.) are now available in realtime. While this imagery is considered preliminary and non-operational, it is expected to be a valuable resource as the ABI instrument and the suite of CMI products continue to undergo post launch checkout and calibration and validation activities on its path to full maturity. During this post-launch checkout period, GOES-19 will remain located at 89.5 °W longitude, occupying the "GOES-Central" position in between GOES-East (GOES-16) at 75 °W and GOES-West (GOES-18) at 137 °W. During this period, we are also producing the now operational ALPW product (see above) and Blended TPW products remapped to the GOES-19 domain. In 2025, GOES-19 is expected to be moved to the GOES-East position, and replace GOES-16 as the operational GOES-East satellite. The SLIDER website was launched in June 2017 during the post-launch checkout phase of GOES-16 to provide an intuitive display of ABI CMI and GLM products in realtime, and has since expanded to include imagery from a nearly-complete ring of geostationary satellites (GOES-16/17/18, Himawari-8/9, GeoKOMPSAT-2a, Meteosat-8/9/10/11) and now, GOES-19 - the last satellite of the GOES-R era. To access GOES-19 products on SLIDER, select "GOES-19" from the satellite menu, or visit this direct URL: https://rammb-slider.cira.colostate.edu/?sat=goes-19

(POC: Curtis Seaman curtis.seaman@colostate.edu, Kevin Micke kevin.micke@colostate.edu, Natalie Tourville natalie.tourville@colostate.edu, Zayd Amundson zayd.amundson@colostate.edu, and Aniket Tomar aniket.tomar@colostate.edu, CIRA; Dan Lindsey dan.lindsey@noaa.gov, GOES-R. Funding: GOES-R)

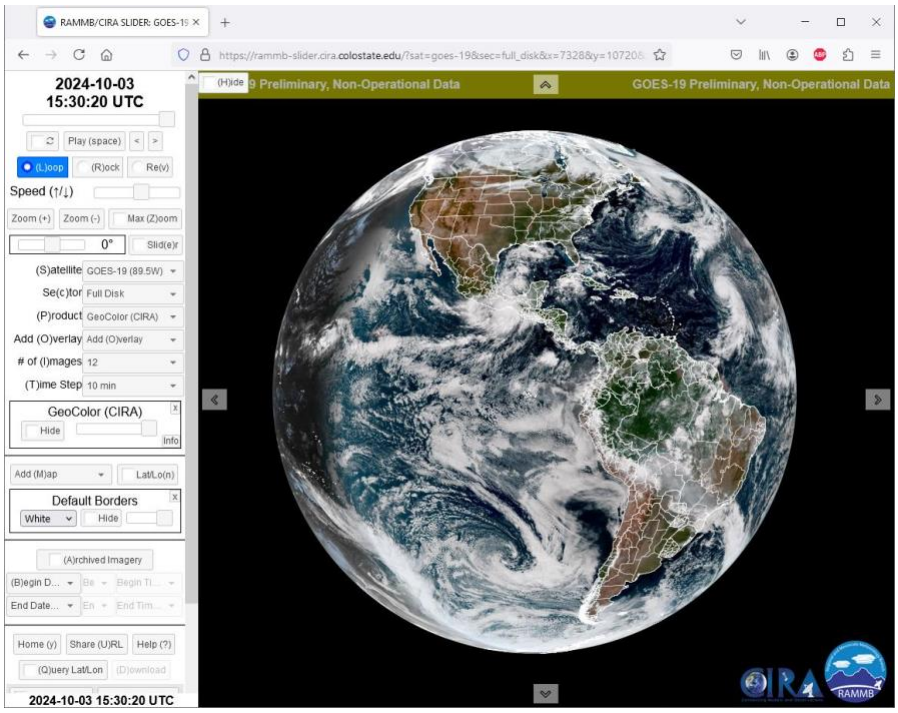


Figure: Screenshot of the SLIDER UI showing Full Disk GOES-19 GeoColor.

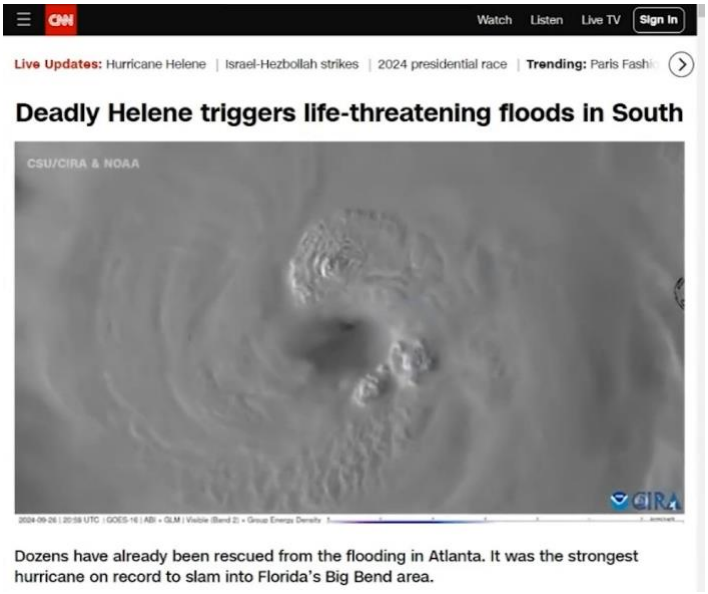
Publications (Citation: followed by a short **Summary:** (Why & so what)**, & detailed summary):**

Awards and Recognition

Media Interactions and Request

Imagery Production Team Imagery of Hurricane Helene Featured in Media: In late September, Hurricane Helene made landfall in Florida as a Category 4 storm. Satellite visuals created by the Imagery Production Team made available in CIRA's Satellite Library were used by several high-profile media outlets to highlight Hurricane Helene. More information and links can be found below. (POC: D. Smith, dakota.smith@colostate.edu K. Erickson, kim.erickson@colostate.edu, J. Reiter, josh.reiter@colostate.edu, CIRA) Funding: GOES-R.

CNN Homepage: www.cnn.com



ABC News: "World News Tonight with David Muir". https://www.youtube.com/watch?v=tEWkfzlQ0dg&t=162s&rco=1&ab_channel=ABCNews

Washington Post: "See how Helene dwarfs other hurricane that have hit the Gulf Coast". https://www.washingtonpost.com/climate-environment/2024/09/26/hurricane-helene-storm-size-miles/

Yale Climate Connections: "Four ways climate change likely made Hurricane Helene worse". https://yaleclimateconnections.org/2024/09/four-ways-climate-change-likely-made-hurricane-helene-worse/

CNN: "Hi-res satellite shows Cat 4 Helene's powerful, lightning-filled eyewall". https://www.cnn.com/weather/live-news/hurricane-helene-florida-09-26-24#cm1jv0p4s000g3b6mpdcrpmhi

The Boston Globe: "Here's how Helene became a monstrous outlier of a storm". https://www.bostonglobe.com/2024/09/26/metro/hurricane-helene-flooding/

New York Post: "Imagery shows lightning in Hurricane Helene's eye wall". https://www.youtube.com/shorts/M5s9A1JofbA

*Tampa Bay Times: "*Thursday updates: Hurricane Helene surges toward Florida as a dangerous Cat 4" https://www.tampabay.com/hurricane/2024/09/26/live-updates-hurricane-helene-tampa-florida/

Popular Science: "What Hurricane Helene looks like from space". https://www.popsci.com/environment/hurricane-helene-from-space-video/

WFLA: “Hurricane Helene satellite imagery on Thursday”. https://www.wfla.com/video/hurricane-helene-satellite-imagery-on-thursday/10077092/

WCNC: “These looped videos were taken by the GOES-16 satellite...” https://twitter.com/wcnc/status/1839468602220536142

Space.com: “Satellites reveal Hurricane Helen’s deadly fury as a monster Category 4 storm during landfall”. https://www.space.com/hurricane-helene-category-4-storm-satellite-videos?utm_campaign=socialflow&utm_source=twitter.com&utm_medium=social&utm_content=space.com

Space.com “Satellite images show Hurricane Helene gaining strength before Florida landfall”. https://www.space.com/hurricane-helene-satellite-footage-florida

BBC.com “Storm Helene death toll rises with homes flattened in Florida”. https://www.bbc.com/news/live/ckgmx8vm8pnt?post=asset%3Aa7a06700-653e-4ff6-87a2-0ee6afc05dc4#post

Discover Magazine: “Stunning Satellite Images Reveal the Power and Immensity of Hurricane Helene”. https://www.discovermagazine.com/environment/stunning-satellite-images-reveal-the-power-and-immensity-of-hurricane-helene

Blog Posts and Social Media

Travel, Workshops, Conferences, and Meeting Reports

Visit to NWS Pueblo, CO: Dan Bikos (CIRA), Jorel Torres (CIRA), Erin Sanders (CIRA) and Bill Line (SMCD/APDB) visited the National Weather Service Weather Forecast Office in Pueblo, CO on 3 October 2024 in an effort to build a relationship with staff. During the visit, they met with the Meteorologist in Charge, Science Operations Officer, Warning Coordination Meteorologist, and numerous forecasters and staff and discussed a range of topics, including newly available satellite products, best practices for using satellite information in operations, and unique challenges facing the Pueblo WFO. They also spent time in operations reviewing satellite imagery and products and ensuring they were available and working as expected. (POCs: Bill Line, STAR, Dan Bikos, Jorel Torres, Erin Sanders CIRA, bill.line@noaa.gov, Dan.Bikos@colostate.edu, Jorel.Torres@colostate.edu, Erin.Sanders@colostate.edu funding: PDRA, JPSS, GOES-R)

Training and Education activities

New Satellite Liaison Blog Posts: Bill Line published two blog posts in the past week:

> "Hurricane Helene (Sep 2024) Evolution". This post shares GOES and VIIRS Imagery, and how it was used by the NWS, from the development and evolution of Hurricane Helene through landfall. See Figure below (left). The link to the post can be found here.
>
> "Early GOES-19 Imagery". This post shares a variety of early GOES-19 Imagery from across the western hemisphere. GOES-19 was declared Beta mature on Oct 1, and data are currently preliminary and non-operational. See Figure below (right). The link to the post can be found here.

(POC: B. Line, SMCD/APDB, bill.line@noaa.gov) Funding: PDRA and JSTAR (submitted to SMCD report)

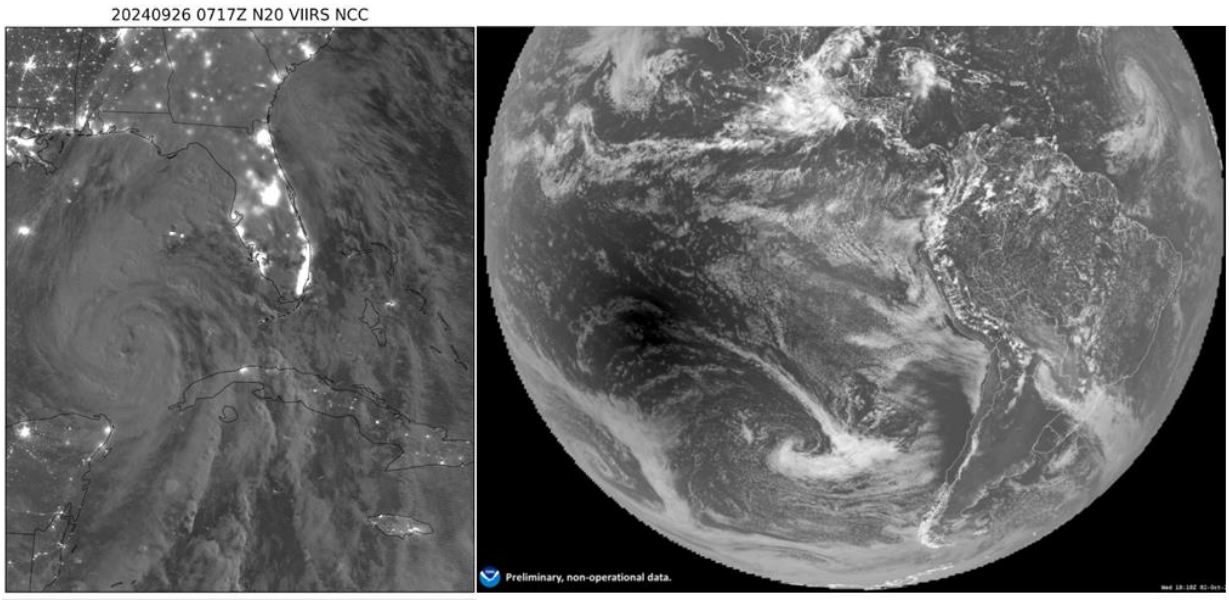


Figure: VIIRS Day Night Band Imagery of Hurricane Helene on Sep 26 (left). GOES-19 Ch01 Visible Imagery of the annular solar eclipse on Oct 2 (right).

Future Meetings and Events (dates, meeting/event, location, staff involved)

Other