Weekly Report – May 15, 2026

Cooperative Institute for Satellite Earth System Studies (CISESS)

NOAA/NESDIS/STAR

Submitted by: Maureen Cribb
Email: mcribb@umd.edu
Phone: 301-405-9344

Date of Submission: 15 May 2026

TRAVEL AND MEETING REPORTS

CISESS at EGU General Assembly 2026

This year's European Geosciences Union General Assembly was held from 3–8 May 2026 in Vienna, Austria (in-person and online). Europe's largest and most prominent annual geosciences conference brought together 22,497 registered attendees with more than half of them early-career researchers. CISESS Scientists took part in many poster and oral presentations, including the following:

- Kai Yang (CISESS), The Status of the TEMPO Total-Ozone and Ozone-Profile Algorithm: V04 Updates and Comprehensive Evaluations
- Wei-Jun Cai (CISESS & University of Delaware), Methodological Advancements for Stable Carbon Isotope Measurement of Dissolved Inorganic Carbon Using Tunable Diode Laser Absorption Spectrometers
- Miguel Cahuich-Lopez and Fong Ngan (CISESS), A Top-Down Approach to Investigate Sources and Variability of an Inert Tracer in the Washington, DC, and Baltimore, MD, Metropolitan Area
- Kuolin Hsu and Soroosh Sorooshian (CISESS Consortium: University of California at Irvine), PUnet-CDR: A Global High-Resolution Precipitation Climate Data Record for Hydroclimate and Drought Applications
- Isaac Moradi (CISESS), Advancing Assimilation of Microwave and Radar Observations in the NWP Models
- Veljko Petkovic (CISESS), Machine Learning for Passive Microwave Snowfall Regime Classification: a Global Analysis
- Phu Nguyen (CISESS Consortium: University of California at Irvine), From Hazard to Consequence: Impact-Based Drought Monitoring and Prediction
- Laura Lapham (CISESS & University of Maryland Center for Environmental Science), Barite Precipitation in Freshwater Limnic Sediments: a Proxy for Salinization
- Hyun Cheol Kim (CISESS), CTM-Assisted Generative AI Framework for Satellite-to-Surface Estimation of Ground-Level Air Pollutants

(Miguel Cahuich-Lopez, CISESS, mcahuich@umd.edu, Funding: ARL; Wei-Jun Cai, CISESS, wcai@udel.edu, Funding: OAP; Kuolin Hsu, CISESS, kuolinh@uci.edu, Funding: LEO; Hyun Cheol Kim, CISESS, hyun.kim@noaa.gov, Funding: ARL; Laura Lapham, CISESS, lapham@umces.edu, Funding: OAP; Isaac Moradi, CISESS, imoradi@umd.edu, Funding: LEO; Fong Ngan, CISESS,

fngan@umd.edu, Funding: ARL; Phu Nguyen, CISESS, ndphu@uci.edu, Funding: JPSS PGRR; Veljko Petkovic, CISESS, veljko@umd.edu, Funding: JSTAR, JSTAR GCOM & LEO; Soroosh Sorooshian, CISESS, soroosh@uci.edu, Funding: JPSS PGRR; Kai Yang, CISESS, kaiyang@umd.edu, Funding: LEO & METOP-SG)

SOCIAL MEDIA AND BLOG POSTS

A Mixed Bag of Weather Hits the South
A slow-moving cold front crawled across southern U.S. during the first week of May, bringing almost six inches of snow to Denver and severe storms and flash flooding to the Deep South, reports Christopher Smith, the GOES-R Satellite Liaison to the National Weather Service's Weather Prediction Center and Ocean Prediction Center. It was clear from radar and satellite observations that there was much convection happening in the atmosphere, extending from far eastern Texas to the Deep South states, triggering strong storms and plentiful lightning. Of note, around sunset on 6 May 2026, over twenty tornado reports from southern Mississippi were filed with the Storm Prediction Center.
(Also published on the Satellite Liaison Blog, along with other blog posts of interest by other contributors.)

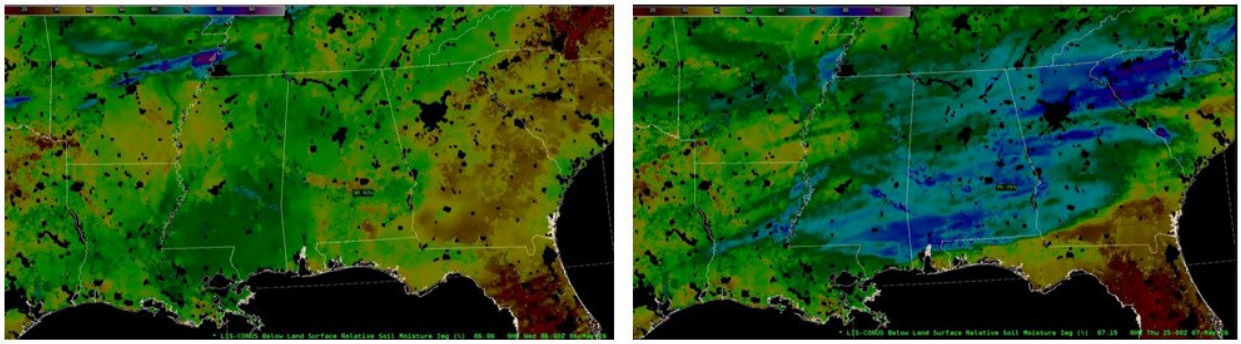


Figure: NASA/Short-term Prediction Research and Transition Center Land Information System 0-10 cm Relative Soil Moisture product (unit: %) at (left) 06:00Z 6 May and (b) 15:00Z 7 May, showing how moisture in the soils of the Deep South increased in a matter of 33 hours. Green colors represent ~50–60%, and blue colors represent ~70–80%.

(Christopher Smith, CISESS, csmith70@umd.edu; Funding: GOES-R PGRR)

PUBLICATIONS

Low Earth Orbit Satellite Observations: A Key to Improving Tropical Cyclone Track Forecasts
Citation: Moradi, Isaac, Satya Kalluri, Vijay Tallapragada, and Yanqiu Zhu, 2026: Sensitivity of tropical cyclone forecasts to the loss of low Earth orbit satellite observations. *J. Geophys. Res. Atmos.*, **131**, e2026JD046562, https://doi.org/10.1029/2026JD046562.

Summary: A new study by CISESS Scientist Isaac Moradi and NOAA colleagues highlights the essential role of Low Earth Orbit (LEO) satellite observations in tropical cyclone (TC) prediction, particularly for forecasting storm tracks, the most critical element of TC forecasts. Published on 9 May 2026 in the *Journal of Geophysical Research: Atmospheres*, the study investigates how microwave (MW) and infrared (IR) observations from LEO satellites influence forecast accuracy within NASA's Goddard Earth Observing System data assimilation framework. Results from experiments involving multiple historical TCs show that removing LEO satellite MW and IR observations leads to a substantial degradation in track forecasts. Because track prediction determines where and when a cyclone will make landfall, it is widely considered the most vital component of TC forecasting for public safety and emergency preparedness. In contrast, intensity-related forecasts, such as maximum wind speed and minimum sea level pressure, are less sensitive to the loss of LEO observations and show diminishing impacts at longer forecast lead times. The study also finds that increasing model horizontal resolution from ~25 km to ~12 km improves intensity forecasts but provides only modest improvements in track prediction compared to the impact of observational data. Overall, the findings underscore that LEO satellite observations play a dominant role in determining TC track accuracy. The authors emphasize that maintaining and enhancing LEO MW and IR observing systems is crucial for sustaining reliable track forecasts.

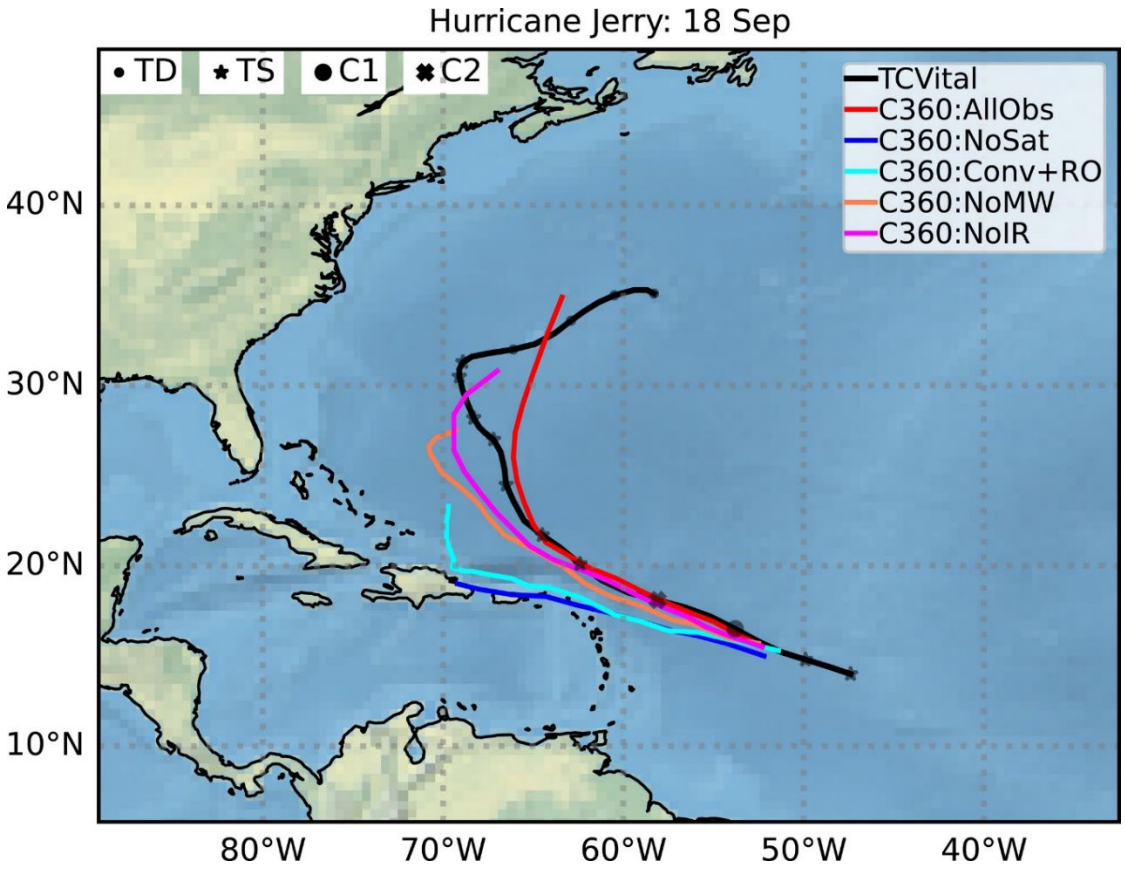


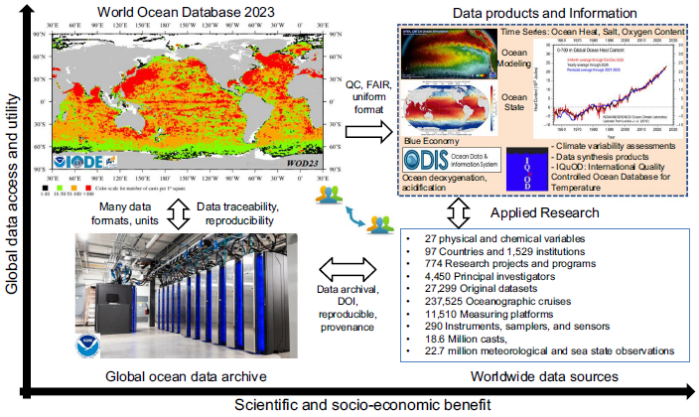
Figure: Impact of withholding different observations from the assimilation process on Hurricane Jerry's track. Forecasts were initialized on 18 September 2019 and extend up to 5 days. The markers show tropical depression (TD), tropical storm (TS), tropical cyclone category 1 (C1), and category 2 (C2) stages. The black line shows the "best track" chart of Jerry's path based on post-analysis of the event by the National Hurricane Center. The dark blue line shows the track for the experiment where all satellite observations are excluded in the assimilation process.

(Isaac Moradi, CISESS, imoradi@umd.edu; Funding: LEO)

A Deep Dive into the World Ocean Database 2023

Citation: Garcia, Hernan, Timothy Boyer, Sydney Levitus, James Reagan, **Alexey Mishonov**, **Li-Qing Jiang**, Zhankun Wang, Christopher Paver, Ebenezer Nyadjro, Scott Cross, Courtney Bouchard, Patrick Hogan, Olga Baranova, and Ricardo Locarnini, 2026: World Ocean Database 2023: a foundational data resource for and by the global ocean and coastal communities. *Sci. Data*, **13**, 613, https://doi.org/10.1038/s41597-026-06957-2.

Summary: CISESS Scientists Alexey Mishonov and Li-Qing Jiang, along with colleagues, give an in-depth description of the World Ocean Database 2023, an indispensable compilation of oceanographic in-situ profile measurements collected from ocean-observing systems covering the period 1772 to 2022. An international cooperative endeavor, this database currently includes ~18.6 million water column profiles, with ~3.6 billion measurements of 27 commonly measured physical and chemical variables, ~22.7 million meteorological and sea-state observations, and more than 245 thousand plankton tows. The authors go on to discuss the evolution of global ocean observing systems as well as data management and aggregation, providing an interesting look at the early days of collecting oceanographic data. Moving forward, among other things, they hope to increase the number of biochemical essential ocean variables, such as isotopes and trace metals, and to run data operations in the cloud for faster data processing.



(Maureen Cribb, CISESS, mcribb@umd.edu, Funding: CISESS Task I)