Weekly Report – September 04, 2026

Cooperative Institute for Satellite Earth System Studies (CISESS)

NOAA/NESDIS/STAR

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TRAVEL AND MEETING REPORTS

CISESS Scientist Presents at Satellite Book Club

CISESS Scientist Christopher Smith, the GOES-R Satellite Liaison to the National Weather Service's Weather Prediction Center (WPC) and Ocean and Tsunami Center (OTC), presented at NOAA's Satellite Book Club on 27 August 2026. The presentation, titled "Central U.S. Flash Flooding: Satellite Analysis & Water Vapor Transmittance Preview", provided an overview of an event from late May of 2026. Fueled by abundant moisture, the ingredients that led to this flooding rainfall were easily trackable by satellite products, including the Synthetic GeoXO Water Vapor Transmittance (WVT) product. Synthetic GeoXO imagery is being produced by the Cooperative Institute for Research in the Atmosphere, relying on hourly High-Resolution Rapid Refresh output to simulate the 0.91- and 5.15-micron bands that will fly aboard the GeoXO Imager. The ratio of the 0.91-micron band to the existing 0.86-micron "Veggie" band is called the WVT Product, and lower reflectance values reflect moist lower levels given that the 0.91-micron band is sensitive to total precipitable water. Identifying lower-level moisture allows weather features such as dry lines to be easily detectable, providing lead time for forecasting convective initiation that can result in heavy rainfall.

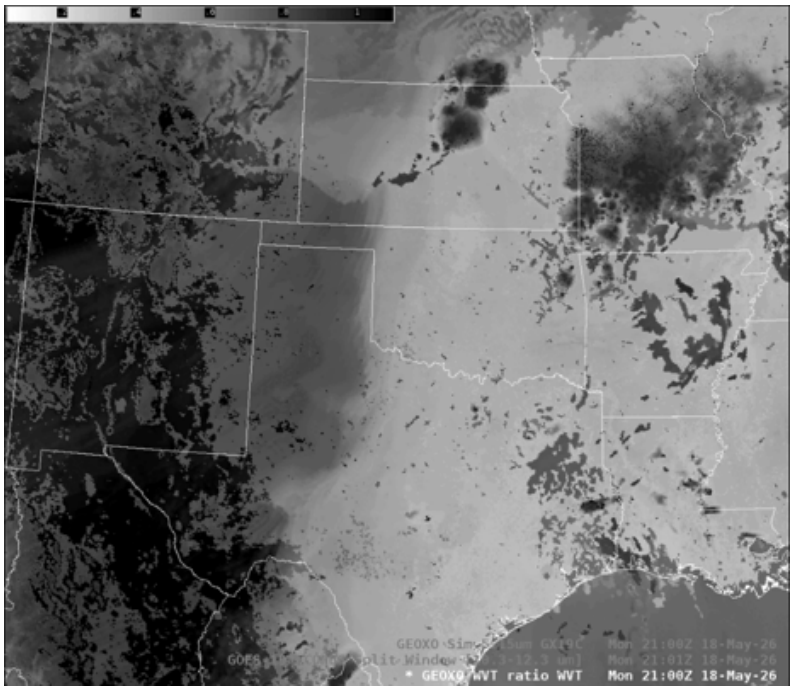


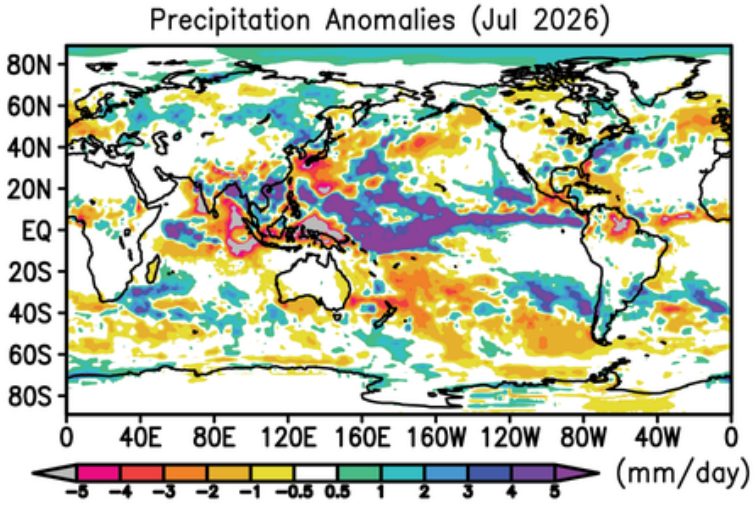
Figure: Synthetic GeoXO WVT output at 2100 UTC 18 May 2026, with brighter colors representing higher amounts of moisture and darker colors representing drier air. This image was exported from AWIPS, and display files can be shared upon request.

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

TRAINING AND EDUCATION

Global Precipitation Summary: July 2026

The El Niño rainfall anomaly pattern became more dominant in the tropics; southwestern U.S. wildfires were mitigated by seasonal "monsoon" rains, but fires in Canada, Washington, Oregon, Utah, and Colorado produced smoky conditions over large parts of the U.S.; European drought and high temperatures led to large wildfires in France and Spain; and the global land/ocean division of precipitation showed the classic "ocean high, land low" for El Niño conditions. These are the headlines in the latest monthly global precipitation summary produced by CISESS Scientist Guojun Gu and ESSIC Research Scientist Robert Adler, published on the ESSIC website. The in-depth analysis for July 2026 provides more details and points out interesting features in precipitation patterns from around the world.

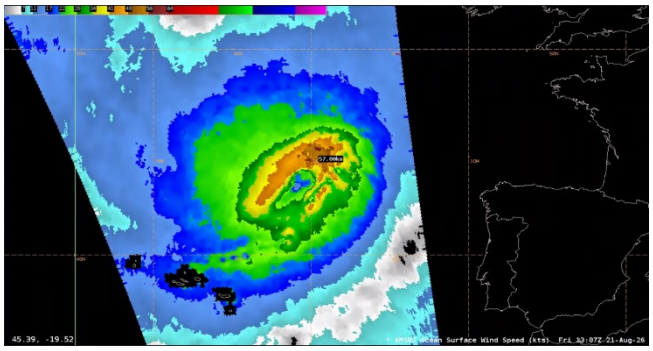


(Guojun Gu, CISESS, ggu@umd.edu; Funding: COSMIC2)

SOCIAL MEDIA AND BLOG POSTS

Start of the Atlantic Stormy Season

Christopher Smith, GOES-R Satellite Liaison to the National Weather Service's Weather Prediction Center (WPC) and Ocean and Tsunami Center (OTC), highlights in his latest blog post the assortment of satellite information that weather forecasters used to follow the development of a low-pressure system on 21 August 2026, signaling the autumnal start of



extratropical cyclone activity in the Atlantic. Wind speeds of more than 57 knots (65 mph) were measured by the GCOM-W/AMSR2 instrument, and the Sentinel-3B altimeter measured significant wave heights of up to 4.5 meters.

Figure: AMSR2 Ocean Surface Winds output at ~1300 UTC 21 August 2026.

(Also published on the Satellite Liaison Blog, along with other blog posts of interest by other contributors.)

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

PUBLICATIONS

Assessing PMW-detected Convective Rainfall
Citation: Ji, Lei, **Veljko Petković**, and Marko Orescanin, 2026: Estimating uncertainty of PMW-based convective fraction product. *J. Geophys. Res.: Atmos.*, **131**, e2026JD046377, https://doi.org/10.1029/2026JD046377.
Summary: How accurately can passive microwave (PMW) sensors detect convective precipitation? That is the question posed in a paper by CISESS Scientists Lei Ji and Veljko Petković and Naval Postgraduate School's Marko Orescanin published in the *Journal of Geophysical Research: Atmospheres*. They use eight years (2015–2023) of collocated observations from the Global Precipitation Measurement mission Core Observatory Microwave Imager (GMI) and Ku-band Precipitation Radar (KuPR) in their analysis, with the latter serving as the reference dataset. Two-meter temperature (T2m) and total column water vapor (TCWV) from the ERA5 reanalysis are used to describe environmental conditions. The standard deviation of the difference between KuPR and GMI convective volume fractions (CVFs) quantifies the PMW CVF uncertainty. They report that over the ocean, convective precipitation is generally underestimated by the PMW product except when there is plentiful water vapor (TCWV > 60 mm) or high surface temperatures (T2m > 304 K). Over land, the PMW product is generally overestimated but tends to be underestimated under relatively low water vapor and surface temperature conditions (TCWV < 45 mm and T2m < 285 K). These new insights, among others, into regional precipitation characteristics will be instrumental in improving the operational PMW algorithm.

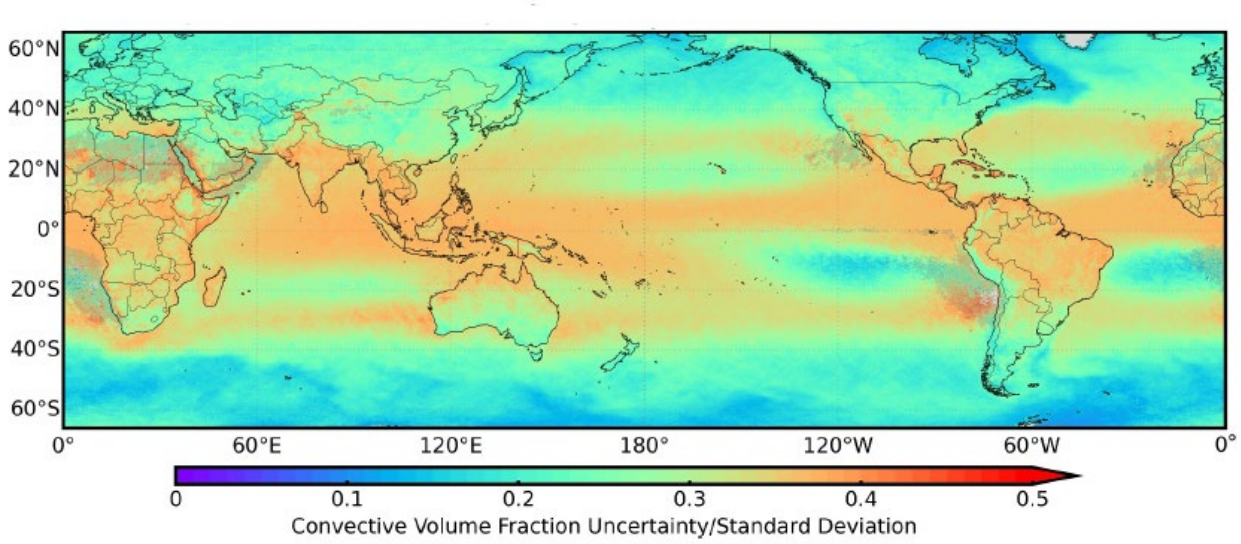


Figure: Global distribution of the uncertainty of GMI convective volume fraction (CVF; resolution: 0.25°). CVF uncertainty is highest in areas dominated by non-shallow convective precipitation, mainly between 40°S and 40°N.

(Lei Ji, CISESS, lji121@umd.edu, Funding: JSTAR GCOM; Veljko Petković, veljko@umd.edu, Funding: JSTAR, JSTAR GCOM & LEO)

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