Weekly Report – May 01, 2026

Cooperative Institute for Satellite Earth System Studies (CISESS)

NOAA/NESDIS/STAR

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

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TRAINING AND EDUCATION

CISESS at Maryland Day 2026

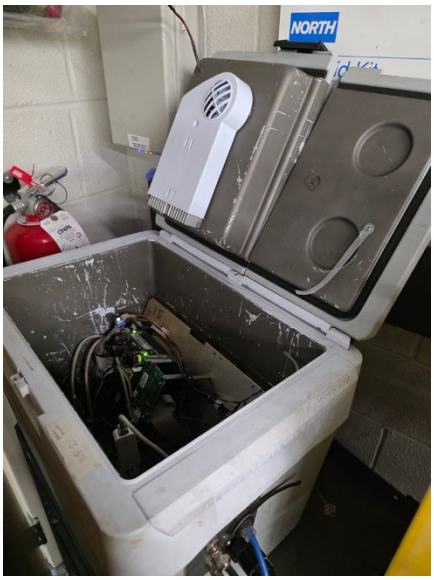
The sky was motley grey, the wind was on the breezy side, and rain was in the forecast. But undeterred, a stalwart crew of ESSIC/CISESS Scientists showed up at the College of Computer, Mathematical, and Natural Sciences' Earth Sciences tent for another fun Maryland Day on April 25. New (and welcome) additions to the ESSIC corner of the tent were outreach staff and students from the Department of Geographical Sciences. Volunteers engaged with the public, young and old, with plenty of freebies and informative handouts on everything from coral reefs from the Coral Reef Watch group to learning about lightning and how to be safe in thunderstorms. Read more about the day here, full of photos of ESSIC/CISESS folk in action.

Figure: Some CISESS faces at Maryland Day: (left) Christopher Smith, Christopher Buchhaupt, and Sergio Ibarra-Espinosa; (right) Guangyang Fang (at far left) and his team, CISESS Summer

Interns Anh Pham and Ian Way, and General Assistant Damian Figueroa (who flew in from Seattle, WA for Maryland Day!). Photo credit: Katherine Cooney

TRAVEL AND MEETING REPORTS

Site Visit to the DCLMA at Howard University



On 30 April 2026, CISESS Scientist Guangyang Fang conducted an on-site visit to the DC Lightning Mapping Array (DCLMA) station at the Howard University campus in Beltsville, MD to troubleshoot and resolve a persistent internet connectivity issue that cropped up in February. During the visit, Dr. Fang performed a thorough inspection and did some hands-on troubleshooting, including multiple system reboots and physically reseating all cable connections. After these efforts, the internet connection was successfully restored, although no single definitive action could be identified as the sole solution to the problem. Based on the troubleshooting process, the most likely cause of the problem was a loose Ethernet cable, which may have led to the intermittent disconnection. Fang also verified that the LMA system was functioning properly. At this point, the station is back online and running normally.

Figure: The DCLMA sensor at the Howard University Beltsville campus.

(Guangyang Fang, CISESS, gfang@umd.edu; Funding: GEO-XO, GOES-R AWG, GOES-R PGRR & IIJA)

PUBLICATIONS

Delving into the Monsoon Onset Vortex

Citation: Dhavale, Shreyas, Anantha Aiyyer, and **Cristiana Stan**, 2026: Case studies of the monsoon onset vortex and early season monsoon features using the UFS coupled model. *Wea. Forecasting*, **41**, 807–820, https://doi.org/10.1175/WAF-D-25-0132.1.

Summary: The monsoon onset vortex (MOV), fueled by the Somali Jet, mainly affects the west coast of India, bringing in rain for farming but also creating hazardous conditions like strong winds and damaging heavy rainfall. Forecasting MOVs more accurately is important for predicting subseasonal variations in monsoon rainfall. Although many studies have examined the subseasonal predictability of monsoons in numerical prediction models, none have looked into MOV forecasts and their impacts on early-season rainfall in operational models. This is the subject tackled by CISESS Scientist Cristiana Stan and colleagues in their paper published in the journal *Weather and Forecasting*. The Unified Forecast System (UFS) global coupled model prototypes 5, 6, and 8 provided the forecasts. These prototypes are intermediary steps toward

developing a new version of the Global Forecast System. Each prototype has different physics updates and initial conditions, as well as different numbers of vertical levels, which might affect MOV forecasts. ECMWF Reanalysis (5th Generation) data and Integrated Multi-satellitE Retrievals for the Global Precipitation Measurement Mission observations were used for validation. One important model result is that an unusually strong Somali Jet results in anomalously higher rainfall for the central-western parts of India. All prototypes capture well the spatial distribution of the anomalous precipitation increase but not its magnitude. Prototype 5 (P5) does a better job of capturing this feature over central India, while Prototype 8 (P8) captures it better off the west coast of India. Future plans include examining more MOV cases and considering more factors such as sea surface temperature and the El Niño-Southern Oscillation, among others.

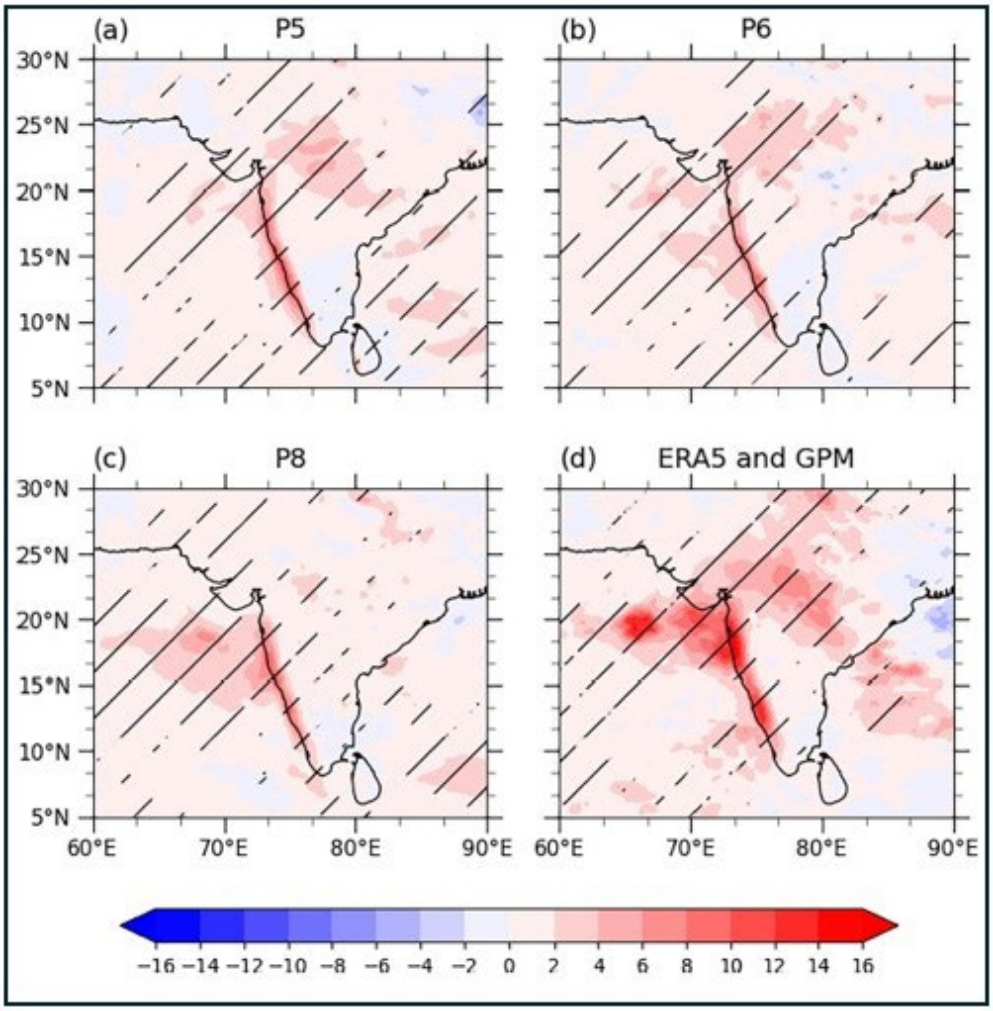


Figure: Anomalous monsoon rainfall (in mm/day) corresponding to a one standard deviation increase in the Somali jet index for the three prototypes (a-c) and observations (d).

(Cristiana Stan, CISESS, cstan@gmu.edu; Funding: OSTI)

Atmospheric Impacts of the April 2024 Total Solar Eclipse
Citation: Das, Debanjana, Ricardo Sakai, Adrian Flores, Nakul N. Karle, Zhifeng Yang , Ujjawal Shah, Rocio D. Rossi, Ivan Sloan, Sen Chiao, and **Belay B. Demoz**, 2026: Atmospheric and meteorological responses during the April 8, 2024, total solar eclipse: advancing workforce development through experiential learning. *Front. Environ. Sci.*, **14**, 1751718, https://doi.org/10.3389/fenvs.2026.1751718.
Summary: The 8 April 2024 total solar eclipse seen over the National Capitol Region offered a great opportunity to see how the atmosphere responds to short-term reductions in solar radiation, reports CISESS Scientist Belay Demoz and colleagues in their paper published in the journal *Frontiers in Environmental Science*. Contributing to the field of eclipse meteorology, they collected measurements of temperature, humidity, solar radiation, wind, and turbulence before, during, and after the eclipse, using a suite of instruments in place at the Howard University Beltsville Research Campus, a semi-rural research facility recognized as a Global Climate Observing System Reference Upper-Air Network station. This scientific field study was also organized as a structured experiential learning activity involving faculty, research scientists, technicians, postdoctoral fellows, and undergraduate and graduate students, collaborating and learning from one another. Qualitatively consistent with similar studies on different eclipses, downwelling shortwave irradiance and near-surface air temperature both decreased (by 98% and 2.8°C, respectively), while relative humidity increased by 22%. The authors note that this eclipse also perturbed the stratosphere and ionosphere.

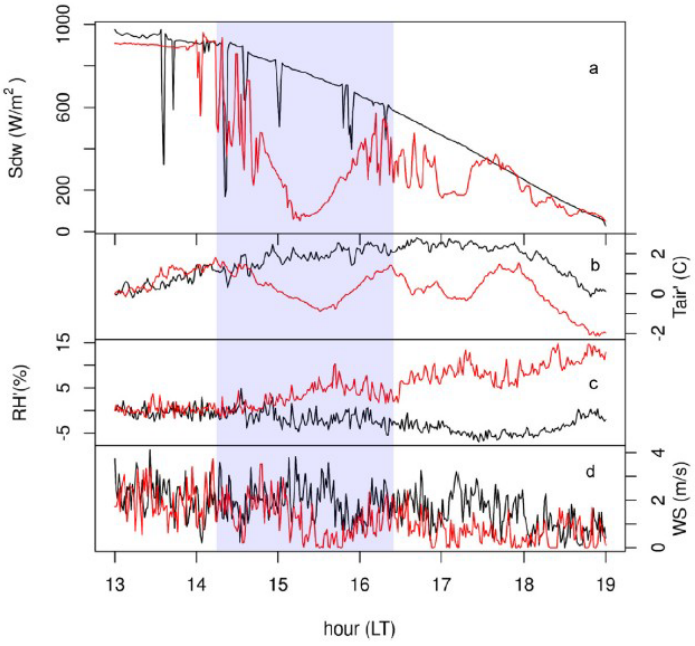


Figure: Time series of (a) downwelling shortwave radiation, (b) air temperature, (c) relative humidity, and (d) wind speed. The shaded region marks the eclipse period. The black line shows a clear-sky reference day (7 April 2024), while the red line shows the eclipse day. Note the eclipse-induced drop in solar irradiance and the corresponding temporary cooling and RH increase.

(Belay Demoz, CISESS, bdemoz@umbc.edu; Funding: LEO)
(Maureen Cribb, CISESS, mcribb@umd.edu, Funding: CISESS Task I)