Weekly Report – November 20, 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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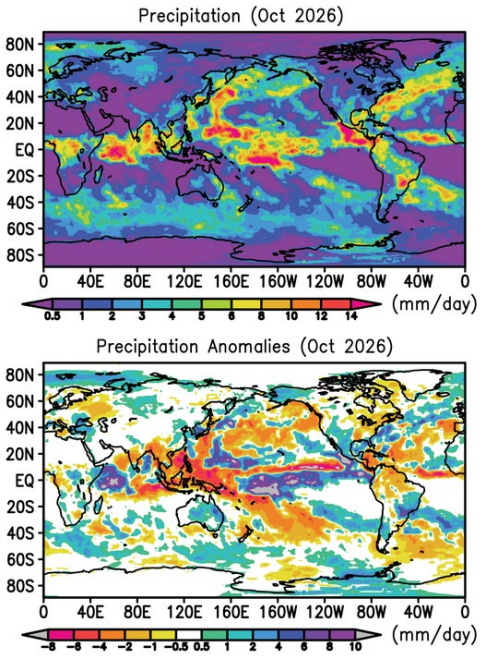
TRAINING AND EDUCATION

Global Precipitation Summary: October 2026

The El Niño continues with increasing Niño3.4 values, but with roughly the same intensity of tropical rainfall patterns; Drought and wildfires occurring over Indonesia and surrounding land areas with the very intense dry anomaly related to the El Niño; and excessive rain and flooding in southwest U.S. and Florida match the El Niño composite. 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 October 2026 provides more details and points out interesting features in precipitation patterns from around the world.



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

PUBLICATION(S)

Revealing Key Surface Air Temperature Bias Patterns in Winter Forecasts

Citation: Choi, Nakbin, **Cristiana Stan**, Bora Lee, and Eunkyo Seo, 2026: Potential sources of predictability for the surface air temperature over the CONUS during boreal winter. *J. Climate*, **39**, 5005–5016, https://doi.org/10.1175/JCLI-D-25-0495.1.

Summary: Coupled forecast models have large biases and limited skill in surface air temperature (SAT) prediction at subseasonal-to-seasonal (S2S) timescales. This is important because S2S forecasts play a major role in predicting weather events like cold surges and snowstorms during boreal winter across the contiguous United States (CONUS). Teleconnection patterns, such as the El Niño–Southern Oscillation, often modulate SAT anomalies over the CONUS. Other sources of S2S predictability over the CONUS include Arctic variability and land surface processes. How these three factors contribute to systematic SAT forecast errors at lead times of 2–5 weeks is examined in a paper by CISESS Scientist Cristiana Stan and colleagues published in *the Journal of Climate*. The authors use an Empirical Orthogonal Function (EOF)

analysis on weekly mean SAT biases over the CONUS for the December–March period, using Unified Forecast System prototype 8 (UFS-P8) hindcast data from 2011 to 2018. They identify two EOF patterns (see figure): The first EOF mode (EOF1) is characterized by a large-scale pattern centered over the central CONUS, and the second EOF mode (EOF2) has a clear dipole pattern, with negative weekly SAT biases in western U.S. and positive weekly SAT biases in eastern U.S. The EOF1 pattern is reminiscent of a planetary-scale atmospheric wave, which after closer examination, the authors attribute to the Arctic temperature teleconnection. Previous research has shown that warming over the East Siberian–Chukchi Seas tends to modulate SAT over North America. They also conclude that longwave radiation associated with cloud processes are mainly responsible for the excessive surface warming over the eastern CONUS seen in the EOF2 pattern, highlighting certain discrepancies in the UFS-P8 model. Noted are problems in the model with wintertime land–atmosphere interactions and with the generation of a tropical wave response pattern during winter that resembles its summer counterpart, previously shown to be inaccurate.

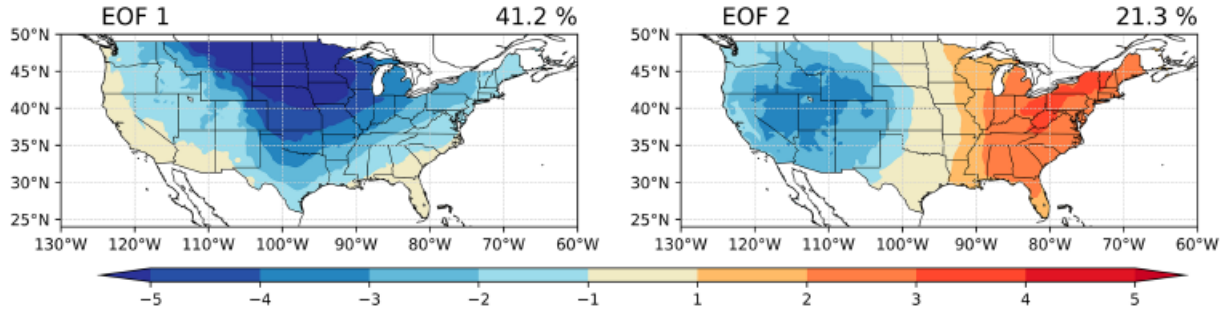


Figure: First (left panel) and second (right panel) EOF patterns of weekly SAT biases (°C) over the contiguous U.S. during weeks 2–5 from UFS P8. The percentage values indicate the explained variance of each mode.

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

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