Weekly Report – January 23, 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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HIGHLIGHTS FOR NESDIS LEADERSHIP

People

CISESS Scientists Recognized by NESDIS

CISESS Scientists Corinne Carter, Jingjing Peng, Peng Yu, Yuling Liu, Yuan Zhou, and Zhen Song have each received the 2025 "NESDIS Vision and Creativity - Future is Here Today" award, officially honored in a ceremony on 20 January 2026. Colleagues in the Center for Satellite Applications and Research (STAR) nominated these scientists for their contributions as part of the STAR Land Product Development Science Team for developing innovative approaches to significantly enhance NESDIS's original baseline land surface product suite to enable users to better incorporate land surface information in their applications, resulting in improved weather forecasts, and more accurate agricultural, ecological and disaster monitoring.

Figure: (top row) Corinne Carter, Yuling Liu, Jingjing Peng; (bottom row) Zhen Song, Peng Yu, Yuan Zhou.

(Corinne Carter, CISESS, corinne.carter@noaa.gov, Funding: JSTAR; Jingjing Peng, CISESS, jingjing.peng@noaa.gov, Funding: GOES-R AWG & JSTAR; Peng Yu, CISESS, peng.yu@noaa.gov, Funding: GOES-R AWG & JSTAR; Yuling Liu, CISESS, yuling.liu@noaa.gov, Funding: JSTAR; Yuan Zhou, CISESS, yuan.zhou@noaa.gov, Funding: DACS, JSTAR & CISESS Seed Grant; Zhen Song, CISESS, zhensong@umd.edu, Funding: JSTAR)

CISESS Scientists Recognized by NCEI

The NCEI Annual Awards Ceremony that took place on 21 January 2026 recognized the following CISESS Scientists for their exemplary dedication in service to NCEI:
Yongsheng Zhang - For his excellent support of NOAA's data stewardship activities for satellite oceanographic data.

Liqing Jiang, Alex Kozyr, and Hyelim Yoo - For their contributions to Ocean Carbon and Acidification Data System activities, including international collaborations and products.
Alexey Mishonov - For his scientific leadership with the World Ocean Database Seasonal Estimates of Ocean Temperature, Salinity, Heat Content, and Steric Sea Level.
Anna Lienesch - For being a highly valued member of the Ocean Exploration data management team, ensuring that milestones are met and tasks are completed.
Rebecca Wenker and Rasheeda Alexander - For helping execute the priority needs of NOAA's Coral Reef Conservation Program, including a website overhaul for the US Coral Reef Task Force. They are a critical resource to both the Coral Program and NCEI.

(Yongsheng Zhang, CISESS, yongsheng.zhang@noaa.gov, Funding: NCEI; Liqing Jiang, CISESS, liqing.jiang@noaa.gov, Funding: NCEI; Alex Kozyr, CISESS, alex.kozyr@noaa.gov, Funding: NCEI; Alexey Mishonov, CISESS, alexey.mishonov@noaa.gov, Funding: NCEI; Anna Lienesch, CISESS, anna.s.lienesch@noaa.gov, Funding: NCEI; Rebecca Wenker, CISESS, rwenker1@umd.edu, Funding: NCEI; Rasheeda Alexander, CISESS, ralexa@umd.edu, Funding: NCEI)

TRAINING AND EDUCATION

Inspiring Students through Immersive Geoscience at a Teen Science Café

On Thursday, 15 January 2026, CISESS Scientist Guangyang Fang took five virtual reality (VR) headsets on the road for an educational outreach event in Alexandria, VA. The Teen Science Café was held from 3:30-6:00 pm and hosted by the non-profit Chrysalis Development Group, which aims to advance educational equity through hands-on STEAM learning experiences for youth in underserved communities. Most of the students were from local high schools and walked or took a city bus to the Chinquapin Rec Center, where they received free smoothies, pizza, and drinks upon their arrival. Dr. Fang was the leader of the overall event, which also included a Zoom appearance by Damian Figueroa (currently living in Seattle, WA), who shared his journey from CISESS intern to VR developer, as well as a career talk by NOAA Scientist Dr. Hendrik Tolman. Dr. Fang gave a presentation on Terrality, a weather visualization application that allows scientists to analyze weather datasets in VR. Then, the ~20 students did rotations with various educational modules and games. CISESS Coordinator Kate Cooney and her son volunteered their support, leading a lightning safety game and organizing giveaways for the students. It was a wonderful opportunity to spark curiosity and empower young minds to explore geoscience in VR/XR and beyond.

Figure: (Left) Guangyang Fang (on the right) provides immersive educational experiences to high school students at a Teen Science Café in Alexandria, VA; (right) Guangyang Fang introduces Damian (D. J.) Figueroa who zoomed in from Seatle, WA to discuss college, internships, and careers in science. (Photo credits: Kate Cooney)

(Guangyang Fang, gfang@umd.edu, CISESS, Funding: GEO, STAR & CISESS Seed Grant; Kate Cooney, kscooney@umd.edu, CISESS, Funding: Task I)

PUBLICATIONS

Smoke-Filled Skies, Uncertain Forecasts: Lessons from UFS-AQM During the 2020 U.S. Wildfire Season

Citation: Rozoff, Christopher M., Rajesh Kumar, Wenfu Tang, Paddy McCarthy, Jared A, Lee, Stefano Alessandrini, **Patrick C. Campbell**, David Fillmore, Chan-Hoo Jeon, and Jianping Huang, 2025: Evaluation of the Unified Forecast System Air Quality Model (UFS-AQM) online air quality prediction system during the 2020 US wildfire season. *J. Geophys. Res.: Atmos.*, **130**, e2025JD044456, https://doi.org/10.1029/2025JD044456.

Summary: The wildfire season of 2020 in the U.S. was a particularly active one, with substantially more fires reported than in previous years. Air quality degraded accordingly in affected parts of the U.S., mainly in the western states. This scenario provided the ideal testbed to evaluate how well NOAA's 72-hr Unified Forecast System Air Quality Model (UFS-AQM) performs given such extreme environmental conditions, the topic explored by CISESS Scientist Patrick Campbell and colleagues in their paper published in the *Journal of Geophysical Research: Atmospheres*. They carried out a meteorological and air-quality-based forecast verification for the period 15 August-30 September 2020, a time when western wildfires made huge contributions to fine particulate matter ($PM_{2.5}$) pollution levels in the contiguous U.S., especially along the U.S. Pacific Coast. UFS-AQM did well in predicting near-surface weather, i.e., temperature, moisture, and winds. When it came to ozone (O_3) and $PM_{2.5}$, the authors report a mixed bag of edifying results. In general, UFS-AQM did well in predicting regional near-surface O_3 and $PM_{2.5}$ patterns and changes over time. However, when there was cloudiness and

heavy smoke, $PM_{2.5}$ predictions were poor. This is because wildfire emissions ingested by UFS-AQM are based on satellite-detected wildfire locations, and cloudiness/smoke likely obscures fire radiative power as seen from space. UFS-AQM had a positive bias in near-surface O_3 everywhere, as well as in column-average nitrous oxide and carbon monoxide in active fire regions. Although the authors noted ways to improve the UFS-AQM modeling system by, for example, improving input emissions datasets, they suggest that a probabilistic air quality forecasting approach is likely the less time-consuming and more efficient direction to go.

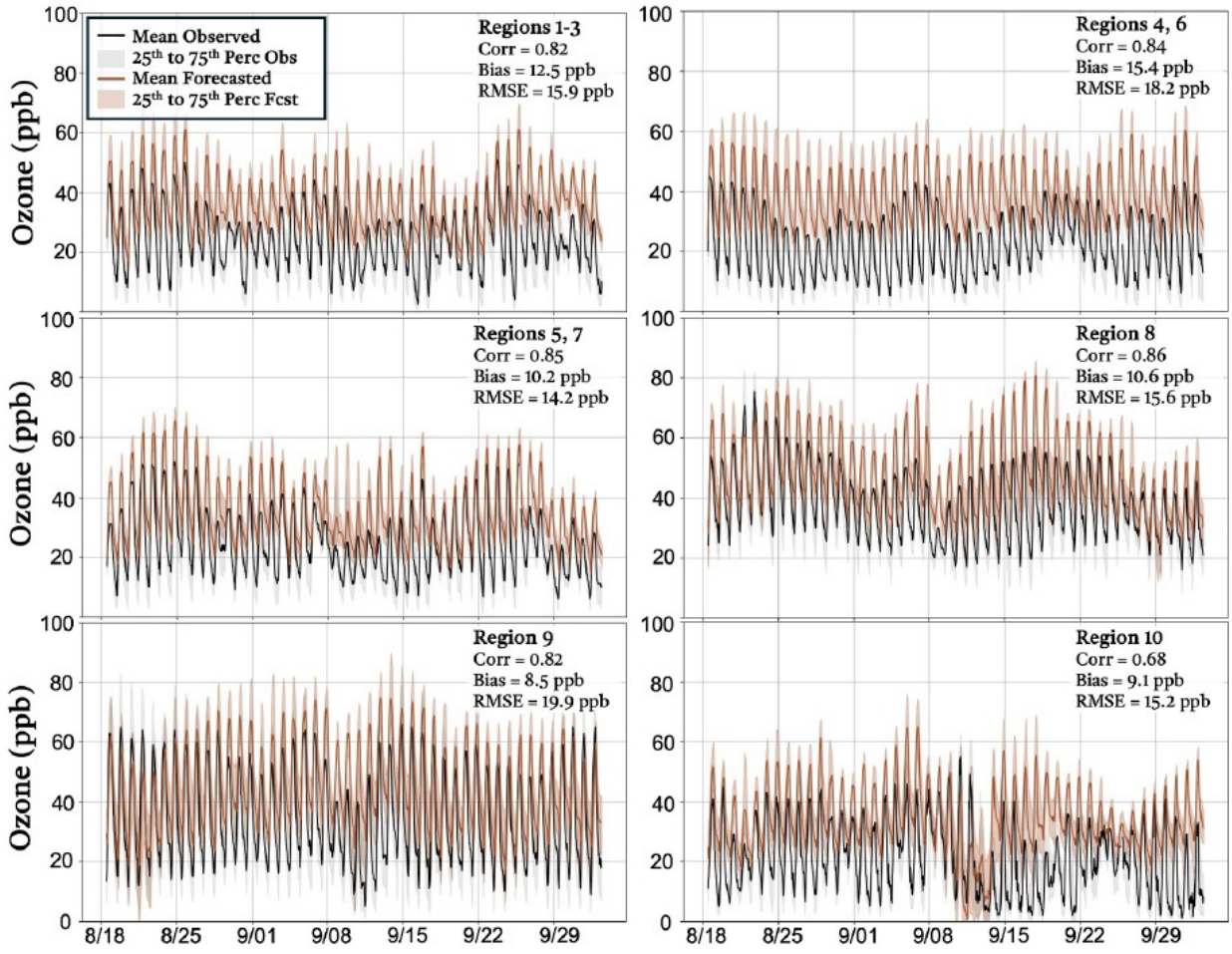

Figure: Time series of mean O_3 in the 10 Environmental Protection Agency regions covering the contiguous U.S. Observations are in black, and UFS-AQM forecasts are in brown.

(Patrick Campbell, CISESS, patrick.c.campbell@noaa.gov; Funding: ARL)

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