



North Carolina Institute for Climate Studies

NC STATE
UNIVERSITY

November 14, 2025

MEMORANDUM

TO: Jess Beck-Stimpert
Chief of Staff, NCEI

FROM: Otis Brown
Director, NCICS

SUBJECT: Weekly Report (11/3/25–11/7/25)

NCICS Highlights

- Olivier Prat was nominated for a University Corporation for Atmospheric Research (UCAR) Outstanding Accomplishment Award in Publication for his contributions to the [article](#), “Confronting the Challenge of Modeling Cloud and Precipitation Microphysics.”

Administrative

- N/A.

Science and Project Updates

Assessments

- *State Climate Summaries* work continued, including
 - Jessica Allen providing visual direction and refinement for graphics,
 - Mark Essig editing alt text for High Plains chapters,
 - Andrea McCarrick preparing reports for review and web posting, updating alt text documents, and quality-controlling web content,
 - Laura Stevens updating Western region text and working with Ronald Opio to develop figures of temperature and precipitation trends for Hawaii and Puerto Rico,
 - Kate Johnson configuring final web content for 3 states, and modifying the ACE v1 metadata structure for the summaries’ metadata viewer, and
 - Alexis Visovatti (intern) working on reference development.
- *United By Nature* work continued, with
 - Essig editing Second Drafts of chapters, and
 - Allen, Tom Maycock, April Lamb, Ciara Lemery, Tessa Francis (Puget Sound Institute), and Phil Levin (Director, The United by Nature Initiative) discussing socio-ecological systems figure design.
- *Assessment Collaboration Environment* (ACE) V2 work continued, with
 - Ryan Cox building out platform integration patterns to improve consistency and scalability, documenting best practices, and standardizing architecture decisions,
 - Aaron Goodman finalizing Monday.com integration, and

- Johnson working on user interface and experience improvements, and testing the ACE-Monday.com connection.
- Maycock, Stevens, Haiyan Teng, and NC State Climate Office's Jared Bowden and Allison Whitaker discussed potential Assessment team support for a new North Carolina Climate Science Report.
- Visovatti virtually attended the "Extreme Events, Insurance, and Resilience: Board on Atmospheric Sciences and Climate 2025 Fall Meeting" (11/3) and the National Academy of Science, Engineering, and Medicine (NASEM) "Extreme Rainfall in Mountainous Terrain: Modeling and observational challenges for warm-season precipitation" (11/4).

Access Development and Information Technology Services

- Ankur Banerji developed an Air Quality Index data roadmap for the ARC project and worked with Garrett Graham to build a Model Context Protocol (MCP) server for the AI co-scientist project.
- Parth Katlana worked on the ARC project High Resolution Rapid Refresh (HRRR) data pipeline framework.
- Aashish Malik worked on debugging the code used to produce NetCDF files for the GOES imagery project.
- Dhruv Patel refactored the GitLab repository and created visualizations for the Gridded Data project, and began exploring SpatioTemporal Asset Catalog (STAC) implementation.

Science and Services

- Iype Eldho calculated chi scores for nClimGrid regional distributions and locations, taking daily 50, 100, and 250 nearest neighbors.
- Pooja Hari Ambrish worked on Climate Data Record (CDR) dashboard functionality changes and deployment.
- Alethia Kielbasa continued Optimum Interpolation Sea Surface Temperature (OISST) v3 sea ice concentration conversion to sea surface temperature, including finding a calibration coefficient for the northern hemisphere using UpTempO buoy data and for the southern hemisphere using IQUAM.
- Ronnie Leeper evaluated NOAA's vegetation health index response to significant declines in Soil Moisture Active Passive (SMAP) based soil moisture availability to plants, began processing index sub-components to focus on the portion most sensitive to soil moisture, and for the Extreme Precipitation project, processed USCRN 5-minute data to estimate dewpoint temperature, then combining that with temperature and precipitation data.
- Haiyan Teng coordinated MAPP project science activities.
- Kyle Wodzicki worked on Wildfire Prediction project machine learning model training and technical report.

Communications, Outreach, and Engagement

- Liz Cox continued State Climate Summaries engagement planning with Laura Stevens and attended a data repository workshop through NCSU Libraries.
- Carl Schreck presented "Weather Tools and Clouds" to ~100 North Buncombe Elementary School second grade students on November 5-6.
- Jessica Allen, Tom Maycock, and Mark Essig continued discussions on plans for NCICS communication products updates.

- Allen worked with ICMS’s Amy Camper, Lukas Noguchi, Laura Ohlmann to develop data visualization that transforms complex table information into an accessible visual narrative.

Travel

- 11/3: Kenneth Kunkel gave an invited oral presentation, “The Future Climate of North Carolina – Uncharted Waters,” as part of the NCSU Osher Lifelong Learning Institute course, “Climate Change and Global Warming: Facts and Fiction” in Raleigh.
- 11/5-11/6: Douglas Rao participated in the Leadership North Carolina training in Raleigh and met with NCSU collaborators to discuss current and future collaborations.

Partnerships and Collaborations

- 14th *Weather Squadron* work continued, with
 - Carl Schreck matching CMIP6 models with output variables,
 - Alethia Kielbasa continuing pipeline development to bias-correct GFDL-SPEAR,
 - Shuhai Li enhancing the STAR Python implementation by enabling wet-bulb globe temperature downscaling in addition to the existing variables, and
 - Kyle Wodzicki implementing and testing variables in the downscaling algorithm.
- Kenneth Kunkel gave a virtual invited oral presentation, “Extreme rainfall from tropical cyclones in the Appalachians: Lessons learned from Hurricane Helene (2024),” at the National Academies of Sciences, Engineering, and Medicine “Extreme Rainfall in Mountainous Terrain: Modeling and observational challenges for warm-season precipitation” workshop on November 4.
- Xiangdong Zhang participated in the National Academies’ online workshops, “Extreme Events, Insurance, and Resilience” and “Extreme Rainfall in Mountainous Terrain.”
- Parth Katlana continued Atlas 15 Vol 2 work, plotting charts and statistics for the Total Precipitable Water model for Generalized Extreme Value (GEV) analysis.
- Haiyan Teng discussed the proposed cross-World Climate Research Programme (WCRP) webinar series, “Translating Climate Projections into Actionable Risk: Challenges, Pitfalls, and Paths Forward,” with leaders from three European modeling centers, and participated in discussions related to two WCRP synthesis papers, one on climate risk and another on summertime circulation trends.

Publications

- Major, D., **O.P. Prat**, B.R. Nelson, D. Miller, V. Petkovic, M. Arulraj, and R. Ferraro, 2025: Event-based verification of IMERG precipitation estimates over complex terrain. *Journal of Atmospheric and Oceanic Technology*, submitted.
- Yang, X., **X. Zhang**, A. Agarwal, R. S. Ajin, T. J. Bracegirdle, P. Convey, R. Engbers, M. M. Frey, E. Garbarini, I. Gorodetskaya, X. Gong, S. González-Herrero, G. Li, M. T. Lund, L. A. Miller, O. Persson, R. Quilestino-Olario, M. Radenz, S. S. Saini, D. Sardana, R. Štůsek, M. D. Tarn, and A. Weiss, 2025: Polar winter climate: an under-represented research focus within the coupled Earth system. *Bulletin of the American Meteorological Society*, submitted.