North Carolina Institute for Climate Studies

NC STATE UNIVERSITY

August 18, 2025

MEMORANDUM

TO: Jess Beck-Stimpert
Chief of Staff, NCEI

FROM: Otis Brown
Director, NCICS

SUBJECT: **Weekly Report (8/11/25–8/15/25)**

NCICS Highlights

- Carl Schreck and Laura Stevens contributed to Bulletin of the American Meteorological Society (BAMS) "The Front Page" blog posts detailing the BAMS State of the Climate in 2024 report release on August 14, with
  - "State of the Climate in 2024: Takeaways from the Tropics" (Schreck) and
  - "State of the Climate in 2024: Takeaways from North America" (Stevens).

Administrative

- Scott Wilkins installed and configured a Coder server on the NCICS lightweight Kubernetes cluster, allowing the local Gitlab server to authenticate users and enable the existing Ceph storage infrastructure to provision root volumes for user workspaces.
- Wilkins and Steven Marcus performed monthly IT maintenance.

Science and Project Updates

Assessments

- *State Climate Summaries* work continued, including
  - Editorial, graphics, and science teams refining precipitation projection uncertainty descriptions, responding to review comments, and delivering several summaries to the Northeast Regional Climate Center for review,
  - James Anheuser investigating bar plot differences from 2021 reports,
  - Mark Essig researching extreme events and Andrea McCarrick writing alt text,
  - Kate Johnson updating the User Interface (UI) and creating test layouts for Sources and Alternative Text content for figures,
  - April Lamb drafting metadata documentation,
  - Laura Stevens working on precipitation projection figures, and
  - Xia Sun completing CSV files for NEMAC to support the data tool.
- *Assessment Collaboration Environment* (ACE) V2 work continued, with
  - Ryan Cox modernizing Cloud Stacks via AI Workflows, Amazon Q, AWS Lambda, Cognito, DynamoDB, Amplify, GraphQL, AppSync, and S3,

    - Aaron Goodman developing an Admin feature that allows admins to set project and user requirements, and
    - Johnson working on development of the Figures and Copyright sections, and reviewing Web Content Accessibility Guidelines techniques and best practices.
- *Intergovernmental Panel on Climate Change* (IPCC) work continued, with
    - Tom Maycock and Lamb participating in the monthly IPCC Working Group III Bureau meeting, and
    - Lamb logging authors responses to the first Lead Author meeting invitations and responding to author questions.
- Angel Li worked on converting the TSU metadata viewer to display static metadata that was previously removed.
- Johnson created S3 buckets for ESRI zip files and discussed architecture and next steps with Anheuser and Jonathan Brannock.

Access Development and Information Technology Services

- Parth Katlana implemented and integrated DDP pipeline parallelization with the profiler for the AI downscaling project, and worked on ARC project infrastructure services.
- Dhruv Patel trained the Neural Processes (NP) model for Tmax and Tmin using 27 years of data and evaluating its performance against PRISM and nClimGrid, began profiling GPU usage for model training using the DeltaAI HPC cluster, and participated in the National Center for Supercomputing Applications (NCSA) Hackathon, setting up a computing environment.

Science and Services

- Douglas Rao, Philip Casey, and Ken Knapp discussed the VIIRS Global Area Coverage (VGAC) project LAN.
- Casey began VGAC Python code review and participated in the NCSA Hackathon for support on the gridded data project.
- Iype Eldho worked with Olivier Prat and David Coates on Standardized Precipitation Index (SPI) parameter clustering algorithms.
- Shuhai Li continued work on Phase III of the ARC project, testing the infrastructure-as-code (IaC) for the drought data pipeline.
- Ronald Opio participated in the NCSA hackathon and profiled the project code to identify data bottlenecks.
- Haiyan Teng coordinated MAPP project activities and discussed collaboration on bridging the credibility gap in climate projection services with NCAR Community Earth System Model (CESM) Chief Scientist, David Lawrence, and on OISST case studies using ship-based data with Habitable Japan project PI, Oka Eitarou.
- Emma Scott refined plotting code for the MJO relationship to flash drought events.
- Alethia Kielbasa continued NSF streamflow project work, calculating the return periods of monthly max streamflow at two stations, and comparing the first 30 years with the most recent 30 years.
- John Uehling completed the July State of the Climate reports.
- Charlie Reed investigated Medicaid Extract data, including the merits, drawbacks, and costs associated, reviewed literature related to hypertensive disorders of pregnancy, coded the case-control study for the South Carolina birth cohort, and updated data and figures for the WNC Health Network Community Health Assessment chapter on climate.

Communications, Outreach, and Engagement

- Otis Brown, Tom Maycock, Liz Cox, and NCEI leadership met with NC State Representative Eric Ager during his August 12 visit to Asheville.
- Cox worked on plans for her Southeast Climate Adaptation Science Center (SE CASC) World Café discussion and with co-authors on plans for an upcoming American Meteorological Society (AMS) presentation.
- Mark Essig and Tom Maycock wrote and published a news story and social media posts detailing NCICS contributions to the recently released BAMS State of the Climate in 2024 report.

Partnerships and Collaborations

- Douglas Rao presented AI-ready data standard development updates to the NOAA Research Development Enterprise Committee, worked with NOAA's Rob Redmon, Steve Thur, and Jennifer Mahoney on plans for the upcoming AI Workshop, and chaired the Fresh Eyes on CMIP Task Team Meeting.
- Carl Schreck met with CPO and Geophysical Fluid Dynamics Laboratory members to discuss methods for grading the accuracy of downscaled climate projections.
- *14th Weather Squadron* work continued, with:
    - John Uehling testing methodologies for bias correction of GFDL-SPEAR data, and
    - Kyle Wodzicki optimizing code and documentation for the STAR-ESDM project.
- Kenneth Kunkel and Xia Sun developed and provided ASCE 7-28 Rain Loads standard adjustment factors to the ASCE 7-28 Future Conditions Subcommittee Chair.
- Kunkel participated in the Florida Flood Hub meeting to discuss the draft final report and recommendations for climate change adjustment factors for rainfall design values.

Publications

- Zhang, J., Y.-L. Lin, J. Wang and **X. Zhang**, 2025: A Study on Interactive Processes among Blowing Snow, Urban, and Lake-Effect Snow during the Winter Storm of Elliott, December 2022. *Monthly Weather Review*, submitted.