North Carolina Institute for Climate Studies

NC STATE UNIVERSITY

August 4, 2025

MEMORANDUM

TO: Jess Beck-Stimpert
Chief of Staff, NCEI

FROM: Otis Brown
Director, NCICS

SUBJECT: **Weekly Report (7/28/25–8/1/25)**

NCICS Highlights

- N/A.

Administrative

- Arrival: Philip Casey, Climate Data Analyst (7/28).

Science and Project Updates

Assessments

- *State Climate Summaries* work continued, including
  - Midwest and Northeast summaries updates, finalization of Texas graphics and text, (Jessicca Allen, Mark Essig, April Lamb, Tom Maycock, Andrea McCarrick, Laura Stevens, intern Alexis Visovatti),
  - Extreme events research (Essig), alt text development (McCarrick), and
  - Graphics guidance and refinement for consistency, clarity, and accessibility (Allen).
- *Assessment Collaboration Environment* (ACE) V2 work continued, with
  - Web app stack integration of Cloud-Native Custom Authorization (Ryan Cox),
  - Admin dashboard development, including the enabling of dynamic feature toggling by administrators (Aaron Goodman), and
  - Resource Library development, including adding the ability to select multiple topics in the Filter and beginning user interface development for components including nav bar, main page, statuses, and figure revision history (Kate).
- *Intergovernmental Panel on Climate Change* (IPCC) work continued, with
  - Tom Maycock participating in the Working Group III Bureau meeting and assisting with processing author responses and materials.
- Xiangdong Zhang reviewed the downscaling datasets information submitted to USGCRP and the USGCRP-TSU review group documents for preparation of the review report.

Access Development and Information Technology Services

- James Anheuser worked on a compaction strategy for Multi-Radar Multi-Sensor (MRMS) parquet files for the IPG project.
- Ankur Banerji prepared a script for implementing a part of the ARC Amazon Web Services (AWS) architecture and worked on implementation with Anheuser, Shuhai Li, Sucharitha Nadendla, and Parth Katlana.
- Iype Eldho worked with Anheuser and Katlana to set up the AI downscaler project pipeline.
- Aashish Malik worked on integrating the GOES imagery project code and created a sample NetCDF file.
- Dhruv Patel worked on encoding Observation Time as a contextual input to the Neural Processes model under different configurations, trained the model for Tmax and Tmin using 27 years of data, and evaluated its performance at GHCN test locations.

Science and Services

- David Coates continued heat wave code optimization and worked on plans for the upcoming lambda deployment pipeline.
- Iype Eldho worked with Coates and Olivier Prat to implement the fuzzy c-means algorithm for drought clustering.
- Ronnie Leeper discussed the Upper Missouri River Basin soil moisture monitoring product for an upcoming issue of NIDIS's "Dry Times," spatially averaged estimates of fractional available water over the Contiguous U.S., and worked on an analysis of extreme heat across the Carolinas at sub-daily scales.
- Pooja Hari Ambrish worked on the Snow Cover Extent Climate Data Record (CDR) Jupyter notebook tutorial and the monthly obs4MIPS Leaf Area Index CDR aggregation.
- Shuhai Li began work on Phase III of the ARC project, setting up the structure and developing the initial infrastructure-as-code (IaC) for AWS resources.
- Ronald Opio explored Mesonet data for use in model validation and MRMS data for validating the spatial structure of extreme precipitation events.
- Emma Scott analyzed SPI-, SPEI-, and EDDI-based flash drought events overlapping with an active phase of the Madden-Julian Oscillation (MJO), and the most common phase of the MJO when flash drought was present for 1–5-week lag periods.
- Haiyan Teng coordinated activities for the MAPP project and worked on the Quality Assurance and Quality Control plan.
- John Uehling began calculating trends in streamflow data.
- Philip Casey reviewed the GridSat CDR Production Project Plan, GOES-16 and GOES-19 satellite data, and relevant documentation.
- Terrell Wade (intern) expanded the analysis of extreme heat exceedance counts to level 2 and level 3 GHCN-Hourly stations, increasing the number of stations from 26 (level 1) to 100+, supporting a regional analysis of threshold exceedance.

Communications, Outreach, and Engagement

- Mark Essig published a web story, "A New Approach to Measuring Extreme Heat," highlighting a recent paper on heat stress metrics led by Kyle Wodzicki.

Partnerships and Collaborations

- *14th Weather Squadron* work continued, with:
    - Carl Schreck and Shuhai Li attending NOAA CPO's CRIS website demonstration,
    - Kyle Wodzicki working on STAR-ESDM code precipitation downscaling,
    - John Uehling continuing WIF GFDL-SPEAR pipeline development, and
    - Alethia Kilebasa working with Uehling on regridding GFDL-SPEAR data for bias calculations and fitting generalized extreme value distributions to streamflow data from a single station for calculating return intervals.
- Xiangdong Zhang participated in the community-wide Downscaling Workstream Telecon and discussed DOE Argonne National Lab's downscaling dataset.
- Ronnie Leeper participated in the July 31 NASA DEVELOP career panel discussion.
- James Anheuser created plots of CESM2 Annual Max Precipitation Time Series for the NOAA Atlas 15 project.
- Jessica Allen, April Lamb, Jen Runkle, and Kelsey Herbst continued collaborations on the development of a graphical abstract for a Burroughs Wellcome Fund proposal.
- Pavel Groisman was recognized by ResearchGate for 20 recent publication citations.

Publications

- Georgiadi, A. G., E. A. Barabanova, I. P. Milyukova, **P. Y. Groisman**, and A. N. Narykov, 2025: Changes in Water-Industry Load on River Water Resources in the Volga–Kama and Angara–Yenisei Reservoir Catchments under Contemporary Global Warming, *Water*, submitted.