WEATHER PROGRAM OFFICE
National Oceanic and Atmospheric Research
formerly the Office of Weather and Air Quality

Newsletter

Volume 5

WPO: ***Supporting world-class research to advance timely and accurate weather information***

April 2021

WEATHER PROGRAM OFFICE
National Oceanic and Atmospheric Research

About WPO

The NOAA Weather Program Office supports world-class weather research to save lives, reduce property damage, and enhance the national economy. We are located at 1315 East-West Highway, 10th floor, Silver Spring, MD 20910 in NOAA's Office of Atmospheric Research.

VISION: A Weather-Ready Nation informed by world-class weather research.

MISSION: Finding, funding, and fostering collaborative weather and air quality research to discover, develop, and transition products, tools, and services for timely and accurate weather forecasts.

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Dr. Dorothy Koch
WPO Director

Letter from the Director

I'm pleased, honored and humbled to finally be in place as the permanent Director for the Weather Program Office (WPO)! I'm very excited for the opportunity to lead this outstanding team and excellent portfolio of weather research and look forward to exciting opportunities to lead the team as we deepen, strengthen and continue to develop our programs. I'm also deeply grateful to Dr. Russell Schneider (Director of the Storm Prediction Center), who has covered as Acting Director over the past several months.

Since the last newsletter, WPO has been successful in continuing the work that supports our mission and vision. Through several office changes and adjusting to a new way of life, WPO and its partners have remained dedicated to supporting world-class weather research to save lives, reduce property damage and enhance the national economy.

In April 2020, as a part of a NOAA Research re-alignment, our office became WPO to better reflect the office's mission and recognize WPO's portfolio in a significant way. As a funder of weather research including social and behavioral sciences, WPO is consistently building new and facilitating current partnerships, participating in conferences, publishing papers, and managing operational transitions.

In addition, WPO has continued to focus on the implementation of practices and procedures in our daily lives to build respect, equality, and acceptance in the workplace; providing members of underrepresented communities equal access to the opportunities WPO offers; and support of a Weather-Ready Nation informed by world-class research.

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Dr. Dorothy Koch
WPO Director

Letter from the Director continued

To our 27 award-winning, highly-capable and diversified workforce and partners, thank you for being instrumental in WPO accomplishing the following:

6: RL8 projects delivered to NWS
10: Operational transition of projects (7 since Q1 report)
27: Peer-reviewed publications (8 in Q2)
58: Conference presentations (41 in Q2)

Over the next couple of months, WPO will be developing our way forward and strengthening, building upon and prioritizing our goals and partnerships with NOAA Line Offices, NOAA research laboratories and across the weather enterprise; publishing our FY20 Annual Accomplishments report and Notice of Funding Opportunity (NOFO) and gearing up for our 2022-2024 Strategic Plan.

I hope that you will remain confident that as our country continues to deal with uncertainties, we will keep the public informed of our priorities and help to strengthen decision-making and forecasting abilities as we discover, develop, and transition products, tools, and services for timely and accurate weather forecasts.

Sincerely,

Dorothy Koch, PhD
WPO Director

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WPO By The Numbers

WPO creates opportunities for partnership and the promotion of interdisciplinary technical expertise by engaging and communicating with researchers, funders, and the public about our programs and the projects that we fund.

Here is our latest snapshot for FY21:

6 JTTI RL8 projects (delivered to NWS) (3 in Q2)

33 Transition plans signed by OAR and NWS (Q2)

10 Operational transitions (7 since Q1 report)

57 Transition plans briefed to NWS

27 Peer-reviewed publications (8 in Q2)

58 Conference presentations (41 in Q2)

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Transitioning Weather Research

The Joint Technology Transfer Initiative (JTTI) ensures continuous development and transition of the latest scientific and technological advances into operations of the National Weather Service (NWS). Since November 2020, JTTI transitioned the following eight funded projects:

With the implementation of High Resolution Rapid Refresh V4.0 in the NWS operations, four JTTI funded projects transitioned to operations.

With the implementation of Localized Aviation MOS Program (LAMP) v2.3 upgrade, a JTTI funded project extended some of the LAMP products to Alaska region.

With the implementation of National Water Model (NWM) 2.1, a JTTI funded project extended the NWM capability to the Great Lakes region.

With the implementation of Model Evaluation Tool (MET) plus 3.0, a JTTI funded project transitioned two neighborhood verification tools to operations.

JTTI funded enhancements to the Global Extratropical Surge & Tide Operational Forecast System (G ESTOFS) model were implemented in the NWS operations.

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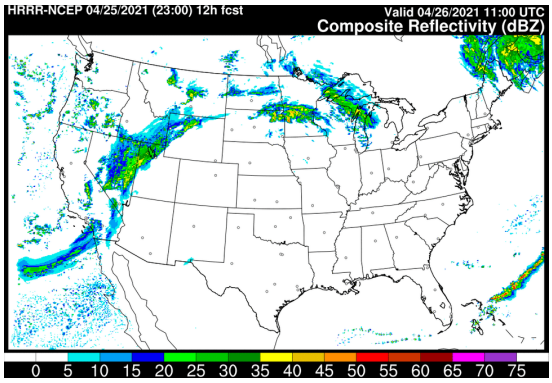
Transitioning Weather Research

WPO's Programs prioritize research by working closely with the National Weather Service (NWS) to develop and transition weather research to improve knowledge about tropical cyclones, severe storms, extreme precipitation, air pollution, and social science—and to integrate weather, water, and climate forecasting and mitigation.

Components transitioned to the following NWS operational systems:

High-Resolution Rapid Refresh (HRRR) model

The HRRR is a NOAA real-time 3-km resolution, hourly updated, cloud-resolving, convection-allowing atmospheric model, initialized by 3km grids with 3km radar assimilation. Radar data is assimilated in the HRRR every 15 min over a 1-h period adding further detail to that provided by the hourly data assimilation from the 13km radar-enhanced Rapid Refresh.



Extratropical Surge and Tide Operational Forecast System (ESTOFS)

ESTOFS (Extratropical Surge and Tide Operational Forecast System) is a collaboration between the NOAA/NOS/Coast Survey Development Lab and NOAA/NCEP. ESTOFS provides a second operational set of forecast guidance in addition to the ET-SURGE (ETSS) model. The community-based ADvanced CIRCulation (ADCIRC) model is used for ESTOFS and the Global Forecast System (GFS) model provides the forcing. The ESTOFS model is run on NOAA's WCOSS super computing system four times daily out to 180 hours producing numerical storm surge guidance for extratropical systems.

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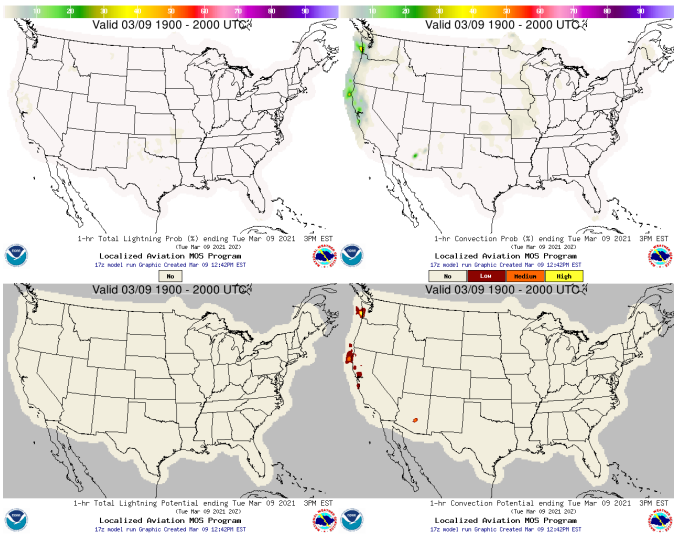
Transitioning Weather Research continued

Localized Aviation MOS Product (LAMP)

The Localized Aviation MOS Program (LAMP) system provides aviation forecast guidance. LAMP is designed to frequently update the central Model Output Statistics (MOS) product suite primarily by incorporating the most recent observational data. The guidance is available at over 2000 stations in the CONUS, Alaska, Hawaii, and Puerto Rico. The guidance is also available for select weather elements in gridded format covering the NDFD CONUS grid. The products are updated hourly and valid over a 25-hour period.



LAMP Convection and Lightning Comparison Images

High Resolution Ensemble Forecast (HREF)

The HREF aggregates existing high-resolution model runs, and produces probability and mean and probability-matched mean fields for a number of parameters covering aviation, precipitation, severe storm, winter weather, and general forecasting.

WPO also supports the implementation of Congressionally-mandated research priorities, including those found in the Weather Research and Forecast Innovation Act of 2017 and the Bipartisan Budget Act of 2018 - Further Additional Supplemental Appropriations for Disaster Relief Requirements Act, 2018.

For more on our funded projects click **here**.

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EPIC HIGHLIGHTS

NOAA Research Cloud Technology Incubator

Stock photo

The OAR Cloud Tiger Team released the Cloud Technology Incubator as an internal funding opportunity for OAR laboratories and programs in FY21. Supported by the Earth Prediction Innovation Center (EPIC) Program and OAR Weather Portfolio, the Cloud Technology Incubator seeks to fund projects within five themes that align with the OAR Cloud Strategic Plan: Cloud development environment; High performance compute capabilities (HPC); Artificial Intelligence & Machine learning (AI/ML); Non-HPC Cloud Processing; and Web-hosting. These projects will help the organization explore innovative uses for Cloud and determine the benefits and costs associated with Cloud computing.

OAR constituted the Cloud Tiger Team in 2019 under the leadership of NOAA's Global Systems Laboratory (GSL) and Weather Program Office (WPO), involving an integrated team of about 30 representatives from each OAR laboratory and various program offices. The objectives of the Cloud Tiger Team include executing cloud pilot projects to gain an understanding of how laboratories and programs are using the cloud, determine how to leverage capabilities across the organization, and ensure effective use of the cloud to serve the organization's future research needs.

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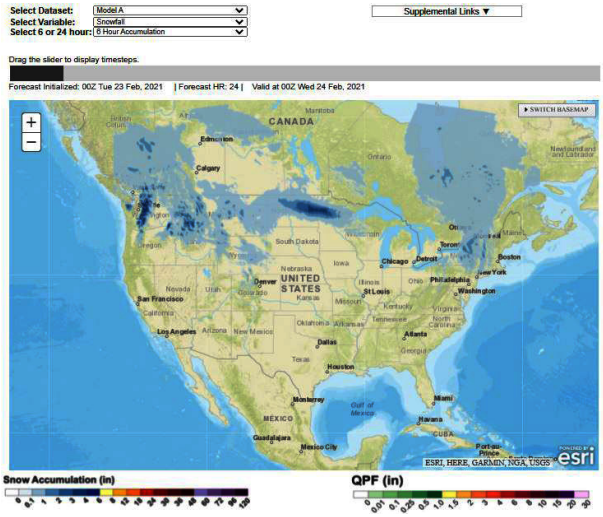
TESTBED HIGHLIGHTS

11th Annual Winter Weather Experiment



The Winter Weather Experiment's GIS-based webpage shows a 6-hour snowfall accumulation forecast ending at 00Z on Wednesday, February 24, 2021 for an experimental model (Model A). Nine additional experimental models (Models B - J) 6-hour and 24-hour snowfall accumulation forecasts were also available for participants to view and subjectively compare versus 6-hour and 24-hour observed snowfall during the same time period. Experiment participants would then rank which models performed best.

The Hydrometeorological Testbed (HMT) hosted the 11th annual Winter Weather Experiment (WWE) virtually from November 12, 2020 - March 12, 2021. This year's WWE focused on exploring the future of snowfall products and services by providing a large suite of both experimental and operational state-of-the-art high-resolution simulations paired with probabilistic guidance. Among the data, the experiment looked into downscaling efforts over the western Continental United States (CONUS) with new machine learning Snow-to-Liquid Ratio (SLR) techniques. The virtual environment allowed the WWE to have more CONUS-wide participation through using a dynamic GIS-based website.

WPO provides funding to several projects that have developed innovative winter weather forecast tools that were tested through the WWE. WPO also provides funding to HMT for infrastructure used to conduct the experiment. Several WPO-funded principal investigators presented their research to experiment participants. The WWE has been run annually since 2011 to provide collaborative research to operations (R2O) experience through bringing together members of the forecasting, research, and academic communities to evaluate and discuss winter weather forecast challenges. WWE provides a pathway for accelerating WPO-funded research into operations.

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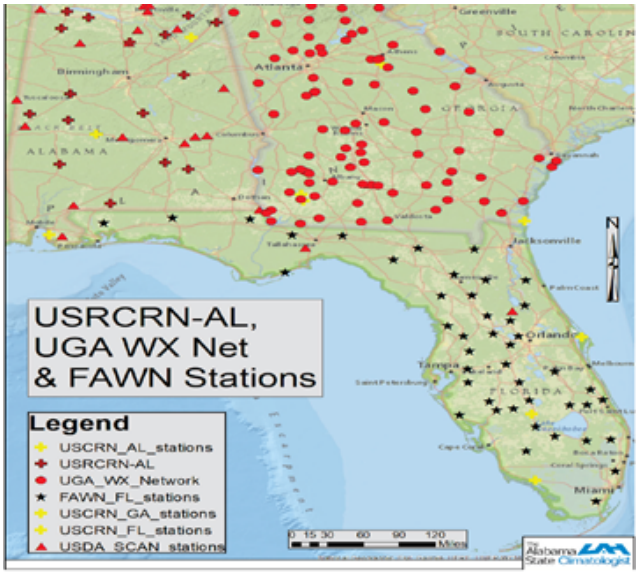
WEATHER RESEARCH OBSERVATIONS HIGHLIGHTS

Southeastern U.S. Soil Moisture Network Build-Out and Applications

Soil moisture is a key variable for assessing the onset and magnitude of both drought and flooding hydro-extremes, but accurately measuring it over a large spatial extent and systematically reporting it have proven to be challenging. In response to this need and with support from NIDIS, WPO funded a new project to University of Alabama Huntsville, University of Georgia, and University of Florida to enhance the soil moisture monitoring network in Alabama, Georgia, and Florida and to improve the application of soil moisture data to decision making in the region.



The expansion of this network in the Southeast is a critical activity in the NIDIS Southeast Drought Early Warning System (DEWS), and will be included in the NIDIS-led National Coordinated Soil Moisture Monitoring Network (NCSMMN). The NCSMMN is a national cross-agency initiative that was created to build a shared platform for soil moisture data and decision support tools. This project supports the missions of NIDIS, the National Cooperative Observer Program, the NOAA Water Initiative, and the Weather Research and Forecasting Innovation Act of 2017.

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WEATHER RESEARCH OBSERVATIONS HIGHLIGHTS

Southeastern U.S. Soil Moisture Network Build-Out and Applications
continued

The Project Outcomes will include:

- Assess the viability of low cost soil moisture sensors via test bed calibration (AL, GA)
- Expand the regional soil moisture network by installing viable versions of low cost sensors in the existing networks (AL, FL)
- Perform validation of remote sensing derived root zone soil moisture (AL, FL, GA)
- Improve the Cropping Model System and develop additional crop support tools (AL, GA)
- Ensure accessibility and useability of soil moisture data and products (AL, GA)

For more information on the Weather Observations Research Program click here.

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DIVERSITY & INCLUSION

Accepting Who We Are — WPO's Story of Transformation and Empowerment Through Diversity, Equity and Inclusion

By WPO Diversity, Equity and Inclusion Team

WPO promotes an energetic workforce that champions diversity, equity, and inclusion (DE&I) at NOAA. Our office accepts DE&I openly as a reality, not simply a topic of discussion. This approach empowers our staff to comfortably and safely discuss issues related to inclusion and equity. In celebrating diversity, our office culture fosters a learning process that strengthens communication and trust, increasing productivity.

"We increased our conversations about diversity, equity and inclusion across the entire office after George Floyd's death last year [May 25th, 2020]. We asked if anyone wanted to talk, and provided a safe virtual space. Everybody jumped in," says DaNa Carlis, acting program manager of WPO's EPIC Program and deputy director of NOAA's Global Systems Laboratory.

The WPO community began hosting monthly DE&I sessions with a commitment to equity and confidentiality. The meetings offered a safe space that became an opportunity to recognize and celebrate diversity, a clear statement of the need to address difficult issues more openly that produced immediate results. "Our monthly DE&I sessions empowered the office. Incorporating and embracing diversity in the fabric of our staff created a process and platform that promoted equal opportunities to talk and be heard, which strengthened our trust with each other, leading to increased productivity," explains Gina Eosco, program manager for WPO's Social Science Program.

The WPO DE&I sessions opened a door that until then was an unspoken taboo, familiar to many offices around and outside our organization. "People felt how courageous it was to be vulnerable and share experiences in a safe space. The DE&I sessions reflected us, because that is who we really are. Our open attitude towards diversity, equity, and inclusion is now part of everything we do in our office. It is our shared culture," concludes Tamara Battle, policy engineer scientist with Cherokee Nation Businesses supporting WPO.

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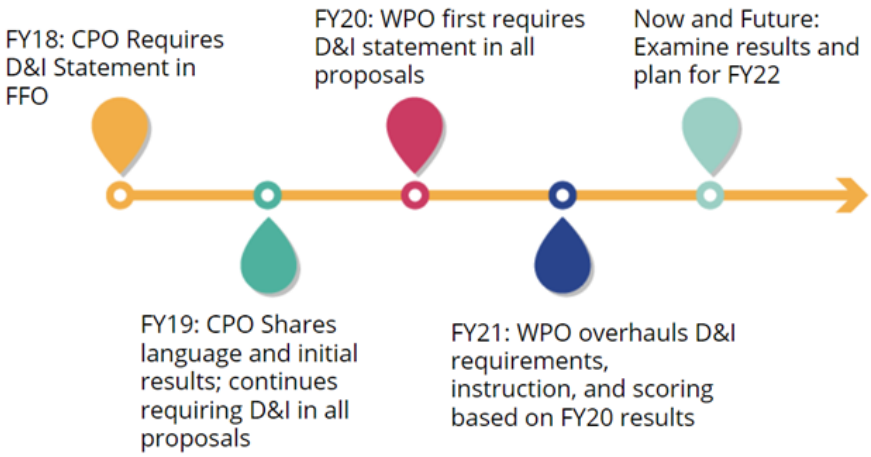
Accepting Who We Are continued

John Cortinas, director of WPO from 2010 to 2019, strongly promoted equity in all office activities. By elevating DE&I as a guiding principle for hiring, Cortinas made WPO a leader within NOAA in terms of staff diversity. Cortinas, now director of NOAA's Atlantic Oceanographic and Meteorological Laboratory, established DE&I formally as a goal in WPO's 2019-2021 strategic plan, opening the doors for change that not only influenced NOAA's hiring approaches, but also the way the office selects proposals from its annual Notice of Funding Opportunity (NOFO).

Since 2019, WPO includes DE&I language in their NOFO. Starting in FY20, all proposals submitted to WPO are required to feature a DE&I statement. The outcomes are encouraging, pointing to more diverse collaborations, greater utilization of equity, diversity and inclusion in training programs, resulting in invaluable societal benefits. Additional steps have been taken to include DE&I as scoring metrics in proposals submitted to WPO's FY21 NOFO. "We had inspiration from NOAA's Climate Program Office and decided to expand the language in our NOFO just before we were about to publish. Over five days the entire staff rewrote sections adding review criteria that include DE&I as scoring metrics in submitted proposals," added Gina.



Caption: *Timeline of actions for including DE&I in WPO Notice of Funding Opportunity (adapted from Matthew Mahalik et al. presentation at AMS 101th Annual Meeting, 2021)*

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Accepting Who We Are continued

DaNa, Tamara and Gina lead the WPO discussion group that has not only strengthened trust within the WPO community, but improved the effectiveness of the new employee onboarding process. Claudia Womble, WPO's contracting officer representative who joined the office in 2020, added that, "It was refreshing to see another line office within NOAA see the value of having the platform to provide a psychologically safe environment for people to be their true selves and express their thoughts in the diversity and inclusion realm." One new employee who asked to remain anonymous shared, "I have never experienced conversations like this in a work environment... Creating an inclusive work environment shows that WPO cares about its employees as people."

WPO's fearlessness in handling topics that are challenging has inspired other NOAA research laboratories and programs to start the conversation in support of OAR's commitment to diversity and inclusion. "I feel proud of being in an organization that is not only talking about DE&I, but is committed to taking action and having those conversations," affirmed Gina. Tamara added that "the experience changed my worklife. It gave an opportunity for us all to show how we feel without feeling judged."

The experience with DE&I brought WPO staff closer together. Open communication generates a comfortable environment where Federal and contracting staff from all ethnic backgrounds and walks of life can express their fears and frustrations, share stories of personal biases and hopes, while reviewing their perspectives and resetting priorities.

"I really want to see that WPO continues to have the courage to handle challenging topics. That makes us take action, be proactive to do the hard things and change, because that is what's needed," concluded DaNa.

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WPO [NEWS]

We are hiring a Program Coordinator [contractor]

TriVector Services is seeking a Scientist [contractor] with experience in numerical modeling or operational forecasting of the physical earth system (atmosphere, ocean, land, ice) to support the effort to accelerate interagency improvements in the nation's earth system modeling capabilities, by coordinating among leadership, scientists, and staff of multiple meteorological agencies to support the NOAA Weather Program Office (WPO). More

We are hiring a S2S Program Coordinator [contractor]

Cherokee Nation is seeking a Scientist III [contractor] to provide scientific, technical and programmatic support to the NOAA Weather Program Office Subseasonal-to-Seasonal Program through project development, implementation and tracking. More

SubX Current and Potential Users Forum

The NOAA Weather Program Office is pleased to announce the 2021 Subseasonal Experiment (SubX) Current and Potential Users Forum, scheduled for August 24 - 26, 2021. The goals of this virtual workshop are to encourage sharing of practices among SubX users, and to identify barriers to adoption by new users. More

Raytheon Intelligence and Space to lead new center dedicated to advancing U.S. weather forecasting

Raytheon Intelligence and Space has been chosen to design and develop the Earth Prediction Innovation Center (EPIC), an extramural center that will unite academia, industry and government to help create the most user-friendly and user-accessible comprehensive Earth modeling system. More

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WELCOME

to the team

DaNa Carlis, PhD
Detailee, EPIC Program Manager

Dorothy Koch, PhD
WPO Director

Christopher "Chris" Spells, PhD
Hurricane Supplemental Coordinator

Claudia Womble
Contracting Officer Representative (COR) III

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