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

Newsletter

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

July 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.

In This Issue

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Dr. Dorothy Koch
WPO Director

Letter from the Director

NOAA's Weather Program Office (WPO) and our partners have been working diligently to meet the goals set forth by WPO's 2019-2021 Strategic Plan. Our goals assist in improving effective communication of weather information to strengthen decision-making by the community and increase forecasting ability by prioritizing weather research that saves lives, reduces property damages, and enhances the national economy.

Since our last newsletter, WPO has welcomed new staff members including our new Deputy Director, John Ten Hoeve, PhD, previously of the NOAA National Weather Service (NWS) and our Pathways and Lapenta interns who will collaborate on various projects within WPO and learn how we support a Weather-Ready Nation.

To showcase our dedication in supporting world-class weather research to transition new science into products, services and/or knowledge, WPO published our Fiscal Year (FY) 2020 Annual Accomplishments report which is a reflection of our achievements as individuals and accomplishments as a NOAA Line Office. Without our dedicated staff we could not have made this a success, Thank You!

In addition, WPO is gearing up for our FY21 Annual Accomplishments report, a review and update to our strategic plan (2022-2026), and the publishing of our FY2022 Notice of Funding Opportunity. These funding calls are how we support the majority of our competitively-funded research and contain information about which WPO research programs are actively soliciting proposals, and the ground rules and key deadlines for each funding competition.

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Dr. Dorothy Koch
WPO Director

Letter from the Director continued

Recently, WPO reached two milestones that support our 1) mission to develop and transition weather research to societal applications and 2) vision of world-class weather research to advance timely and accurate information. We celebrate the following:

100 + Approved Transition Plans

113 Project transition plans briefed to NWS since 2019

As WPO moves forward, we will continue to support the weather enterprise by expanding our collaboration efforts, continued strategic communication with our partners and creating opportunities for underrepresented communities and universities to benefit society at large.

Sincerely,

Dorothy Koch, PhD
WPO Director

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WPO By The Numbers

WPO promotes interdisciplinary technical expertise by engaging and communicating with researchers, funders, and the public about our programs and the projects that we fund; creating opportunities for partnership and collaboration.

Here is our latest snapshot for FY21:

7	RL8 projects delivered to NWS (1 since Q2 report)
11	Operational transition of projects (1 since Q2 report)
40	Peer-reviewed publications (13 in Q3)
85	Conference presentations (27 in Q3)

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NOAA's Weather Program Office (WPO) releases Fiscal Year (FY) 2020 Annual Accomplishments Report

NOAA's Weather Program Office (WPO) is delighted to present our Fiscal Year (FY) 2020 Annual Accomplishments Report. The report showcases what we did last year to support world-class weather research and to transition new science into products and services that save lives, reduce property damage, and enhance the national economy. WPO staff came together to produce a document celebrating the accomplishments of an energetic workforce that served NOAA's mission while also championing diversity, equity, and inclusion (DEI) at NOAA.

The FY20 report introduces WPO's enthusiastic staff and the new WPO Director, Dr. Dorothy Koch. An executive summary provides an overview of our vision, mission, goals, and approach, and describes how WPO supported research helps society deal with the consequences of major environmental disasters that cost our Nation nearly $2 trillion in the 1980-2020 period. Detailed research accomplishments are reported by WPO research focus areas, including tropical cyclones, air quality, severe weather, artificial intelligence, seasonal forecasting, water, and social science.

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Fiscal Year (FY) 2020 Annual Accomplishments Report continued

A new feature of the report is a series of fun facts that connect our programs and accomplishments to real-world examples, helping readers understand what we do and why it matters. Here's one of WPO's fun facts:

"Did you know that the Weather Act is the most comprehensive piece of legislation that Congress has passed for NOAA in over 25 years?

The NOAA Authorization Act of 1992 was the first which, among other things, mandated the creation of the U.S. Weather Research Program, which is managed by WPO. We really like weather around here!"

The FY20 report celebrates the establishment of successful collaborative partnerships between NOAA and the community. Through these collaborations, the number of active Research & Development (R&D) projects continued to climb, increasing from 184 in FY19 to 193 in FY20. Their outcomes are helping to advance NOAA's environmental prediction systems and their ability to provide timely and accurate forecasts, warnings, and decision-making capabilities for the benefit of society.

WPO is proud to encourage diverse research that increases inclusivity and equity. Join us in celebrating a great year of accomplishments!

Read the WPO FY2020 Annual Accomplishments Report online or download the PDF.

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EPIC HIGHLIGHTS

EPIC Updates

Partner Engagement

Unified Forecast System (UFS) Land Modeling Workshop

The Unified Forecast System (UFS) Land Modeling Workshop was held on May 25-26, 2021. During the workshop, participants discussed long-term scientific goals and reviewed the current status of land modeling in the UFS and NOAA. The main objective of the workshop was to develop design requirements for the land model within the UFS. Participants identified priorities of land model development and better representations of key processes for capturing land-atmosphere interactions within the UFS in the next 2-5 years. Discussions also focused on establishing and strengthening collaboration between modeling centers in developing land model components, coupling infrastructure, verification and validation tools, and enhancing weakly- and strongly-coupled land data assimilation packages with the ultimate goal of improving operational forecasts.

18th Joint Center for Satellite Data Assimilation (JCSDA) Technical Review Meeting and Science Workshop

The Annual JCSDA Technical Review Meeting and Science Workshop was hosted on June 7-12, 2021, and serves to facilitate coordination and the assessment of current and planned scientific developments. Scientists, software engineers, and managers from all partnering institutions participated and workshop results are used to plan future research efforts. For more information, visit here.

Dr. Krishna Kumar represented the EPIC Program and served as rapporteur for the breakout session on the topic: Integration of artificial intelligence (AI)/machine learning (ML) with the Joint Effort for Data assimilation Integration (JEDI).

NOAA's partner, the Joint Center for Satellite Data Assimilation (JCSDA), supports development of science to accelerate and optimize assimilation of satellite data in operational environmental prediction systems. Partner agencies, such as NOAA, conduct research internally, while the JCSDA supports external research through competitively awarded grants and contracts to the broader scientific community. These research efforts are complementary and coordinated with one another.

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EPIC HIGHLIGHTS

National Weather Service (NWS) Academia Partners Roundtable

On May 24th and 25th, 2021, the National Weather Service hosted an Academic Partners Roundtable to build upon conversations at the August 18, 2020, NWS Partner Webinar which focused on:

- research and undergraduate learning;
- identifying the future skills needed by the weather enterprise and the NWS for a Weather-Ready Nation;
- identifying the future research questions and priorities for our society; and
- identifying emerging issues and future opportunities for collaboration between the academic and research partners.

In support of our strong partnership with the National Weather Service and commitment to engaging the next generation of scientists, several members of the Weather Program Office (WPO) attended the roundtable. In addition, Dr. Dorothy Koch and Dr. DaNa Carlis served as panelists in one of the sessions.

Other Highlights

EPIC Welcomes Two Interns

Sam Ephraim is a 2021 William M. Lapenta Intern at NOAA's Weather Program Office (WPO). He is a rising senior at the University of Michigan majoring in Climate & Meteorology with a concentration in meteorology along with Computer Science.

Prior to interning at NOAA, Sam was a part of the Large-Scale Dynamics and General Circulation research group with professor Ángel F. Adames-Corraliza. He studied the role of thermal variations on precipitation intensity in the MJO and presented his work at the 2020 AMS Conference. Sam is currently on a Multidisciplinary Design Team at the University of Michigan where he is collaborating with a team of other students and Honda to develop a navigation system that incorporates current and forecasted weather hazards.

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EPIC HIGHLIGHTS

Sam Ephraim continued
Outside of school, Sam loves to apply his weather knowledge while enjoying his favorite hobby, sailing. He is on the University of Michigan Sailing Team and has served on the executive board as the treasurer since the beginning of 2020.

Michael Michaud is a 2021 summer intern with the William M. Lapenta Internship program. He is working with NOAA's Weather Program Office (WPO) to better understand the community aspect of community modeling from a social science perspective with the Earth Prediction Innovation Center (EPIC).

Michael enjoys interdisciplinary science and holds a BS in Atmospheric Science from Lyndon State College (now Northern Vermont University - Lyndon) and an MEd in Educational Leadership and Policy from the University of Utah. He is currently a PhD student in the Disaster Science and Management program at the University of Delaware. With backgrounds in both the physical and social sciences, he is passionate about integrating knowledge from the social, behavioral, and economic sciences into the Weather Enterprise.

Events

Office of Oceanic and Atmospheric Research (OAR) Cloud Webinar

On June 21st, the OAR Cloud Tiger Team hosted a webinar entitled "The FxCAVE Project and Transition Activities to the Cloud" with speakers Woody Roberts, Dan Nietfeld, and Evan Polster. The OAR Cloud Tiger Team started the OAR Webinar series in March of 2020 based on recommendations made during last year's OAR Cloud Workshop to increase knowledge-sharing and coordination across the organization.

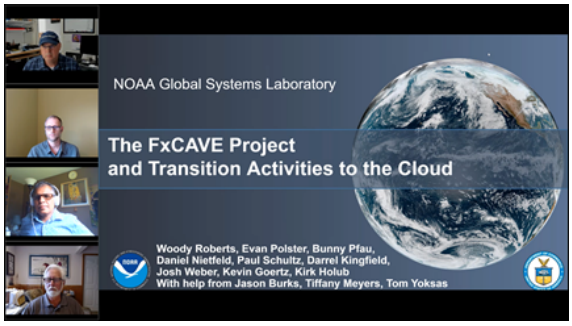

Photo Caption: From top to bottom, speaker Evan Polster (Cooperative Institute for Research in the Atmosphere NOAA Earth System Research Laboratories (ESRL) Team), speaker Dan Nietfeld (Global Systems Laboratory (GSL)), moderator Krishna Kumar (Weather Program Office), and speaker Woody Roberts (GSL) present The FxCAVE Project and Transition Activities to the Cloud at the OAR Cloud Webinar Series on Monday, June 21, 2021.

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EPIC HIGHLIGHTS

American Meteorological Society (AMS) Summer Policy Colloquium

Every year for the last two decades, the AMS Summer Policy Colloquium brings a select group of 30–40 early- to mid-career earth and atmospheric scientists from academia, government, and the private sector to Washington, D.C., for an intense, ten-day immersion in science policy.

From the EPIC Program, Dr. Jose-Henrique Alves participated in this year's event focusing on public-private–academic partnerships, policy implications of the Weather Research and Forecasting Innovation Act of 2017, climate-change legislation, and the importance of community modeling to the future of weather forecasting.

During the Colloquium, participants formed a cohort that tackled hands-on exercises, heard from dozens of prominent experts, and forged strong professional networking connections that extended to more than 600 alumni. Open discussions with policy-level officials in the President's federal agencies and Executive Office, Congressional members and staffers from both parties, and other science-policy leaders enhanced the learning opportunity towards developing earth-sciences professionals with expertise in the policy process.

"Participating in the Colloquium was a game-changer in my professional life. It empowered me with knowledge of the science-policy process, and helped create a network that will allow me to make better decisions and serve NOAA at the highest level", said Henrique.

For more information about the AMS Summer Policy Colloquium, please visit their web page.

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SOCIAL SCIENCE HIGHLIGHTS

Bridging the Sciences: Opportunities for Social Science Research within NOAA's Hydrometeorology Testbed

By Alexus Moore and Castle Williams

With help from the Weather Program Office's (WPO) Social Science and Testbeds Programs, NOAA's Hydrometeorology Testbed (HMT) held a virtual Lunch & Learn event on Tuesday, June 15, 2021, to raise awareness and promote discussion about how social science can be integrated into the testbed's projects and experiments. For those who may not be familiar, a NOAA testbed is a physical and/or virtual space where stakeholders participate in collaborative exercises or experiments aimed at solving operational problems or enhancing operations. Primarily funding physical science projects in the past, the HMT representatives were eager and excited to discuss how social science could possibly play a role in improving both the National Weather Service's (NWS) mission to protect life, property, and enhance the nation's economy, and HMT's mission to forecast precipitation extremes and their impacts.

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SOCIAL SCIENCE HIGHLIGHTS

Bridging the Sciences: Opportunities for Social Science Research within NOAA's Hydrometeorology Testbed continued

After an introductory presentation from the HMT, the meeting then split into three breakout sessions based on the HMT's research activities and ongoing experiments: Flash Flooding (Group A), Winter Weather (Group B), and Days 3 to 10 Hazards (Group C).

Questions brought up during Group A's session included how the Weather Prediction Center (WPC) formally defines flash flooding, what strategies the NWS is implementing to address urban flooding, and whether or not HMT's experiments include the publics or emergency managers. The latter proved to be a fruitful discussion about how best to bring partners and/or publics into future flash flooding experiments—as this would provide additional opportunities to understand how various end users understand and/or use NWS's products when making decisions.

Group B proposed interesting questions about the HMT's sampling and/or recruitment strategies for experiments, the timeline for newly proposed projects, and best practices for collaborating with HMT on future projects. Discussions also revolved around NOAA funding and whether it was a prerequisite before collaborating with the HMT. Although WPO's Testbed Program anticipates having a funding competition in the Fall of 2021, the HMT staff explained that NOAA funding is not required to work with the HMT. If you have a specific topic, project proposal, or idea in mind, you are encouraged to reach out to the HMT Testbed Manager to discuss these potential collaboration opportunities.

Group C mentioned several interesting research areas that are ripe for social science involvement. One topic, in particular, was discussed at-length amongst the group and asked whether risk and weather communication practices should differ across the short-term (Days 1 to 2) and long-term (Days 3 to 10). As weather forecasting becomes more accurate and reliable beyond five days, it becomes important to reflect on whether the current use of weather icons, visualizations, and extended forecast graphics effectively portray those forecast improvements. The group also highlighted the need to explore how best to communicate uncertainty across the different time

SOCIAL SCIENCE HIGHLIGHTS

Bridging the Sciences: Opportunities for Social Science Research within NOAA's Hydrometeorology Testbed continued

frames, or whether it's even necessary. Other topics of interest in Group C included, but were not limited to: how best to distill massive amounts of forecast data into usable messages, the use of icons and product development, trust of forecast information beyond five days, and other communication and visualization techniques needed to communicate weather information in the long-term (Days 3 to 10).

The HMT is looking forward to expanding their breadth of knowledge by seeking out new collaborations with the social science community. In particular, researchers, forecasters, and other NWS partners are encouraged to reach out and work with the HMT to empower life-saving and protective actions against weather hazards. For more information on the Hydrometeorology Testbed initiatives, or to propose a new social or physical science collaboration, reach out to Jim Nelson, the HMT's Testbed Manager, at james.a.nelson@noaa.gov.

Did you Know?

WPO's Social Science program (SSP) is breaking new ground at NOAA?

The SSP is leading NOAA's efforts in determining the valuation of its research outputs, and how to successfully transfer knowledge to NWS operations.

Nicely done, SSP!

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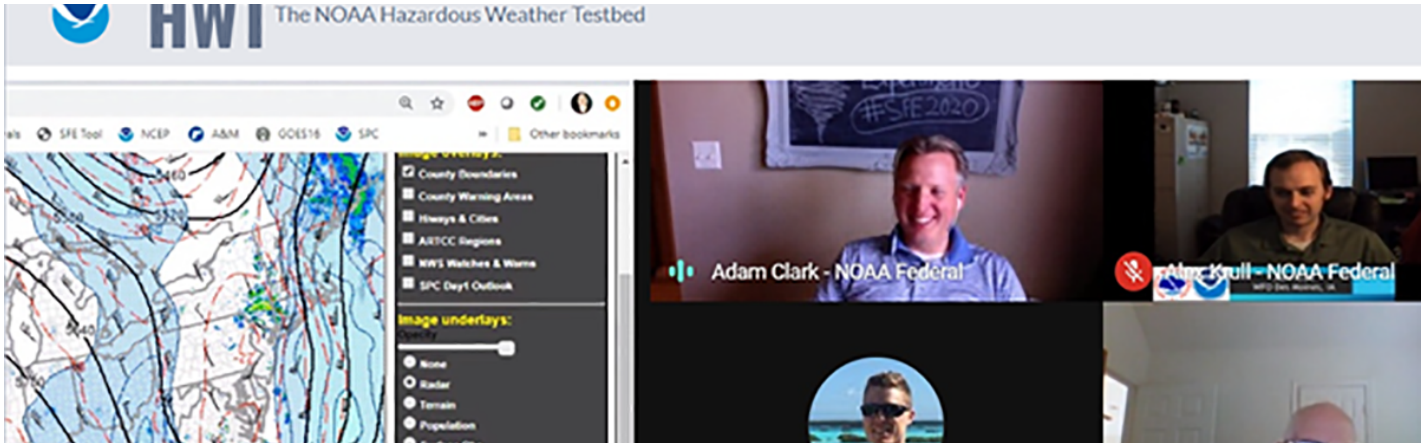
TESTBED HIGHLIGHTS

The annual Hazardous Weather Testbed (HWT) Spring Forecasting Experiment (SFE)



Screenshot from HWT's 2021 SFE with real-time observations on the left and experiment participants on the right.

The annual Hazardous Weather Testbed (HWT) Spring Forecasting Experiment (SFE) was held virtually from May 3 - June 4, 2021. The NOAA HWT SFE is a yearly experiment that investigates the use of convection-allowing model forecasts as guidance for the prediction of hazardous convective weather. This year included more forecasting activities than previous years; and also allowed all participants, as opposed to just National Weather Service (NWS) forecasters, to participate in the forecasting. Participants also performed next-day evaluations of multiple models' performance. WPO provides funding to several projects that were tested through the SFE, including:

National Center for Atmospheric Research (NCAR) Convection-Allowing Model Machine Learning (ML)-derived convective mode probabilistic guidance and NCAR ML-derived High Resolution Rapid Refresh (HRRR)-based convective hazard probabilities

PI Dr. Ryan Sobash

Iowa State University (ISU) Machine Learning-based Severe Wind Probabilities

PI Dr. William Gallus

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TESTBED HIGHLIGHTS

The annual Hazardous Weather Testbed (HWT) Spring Forecasting Experiment (SFE) continued

Real-time testing and evaluation of the Valid Time Shifting Enhanced Convective Scale Hybrid EnVar

PI Dr. Xuguang Wang

WPO also provides funding to HWT for infrastructure used to conduct the experiment. The SFE allows for a variety of model output to be examined and evaluated daily, and experimental forecasts to be created and verified to test the applicability of cutting-edge tools in a simulated forecasting environment. The SFE provides a pathway for accelerating WPO-funded research into operations.

Did you know?

The 2020 Spring Forecasting Experiment was entirely virtual?

The Hazardous Weather Testbed (HWT), which is managed by WPO, hosted its first-ever 100% virtual Spring Forecast Experiment in April-May 2020. Despite it being completely virtual, over 100 forecasters participated in the meeting.

Way to go!

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WPO [NEWS]

Welcome to our new staff and interns

The NOAA Weather Program Office (WPO) welcomes Dorothy Koch, PhD, Director and John Ten Hoeve, PhD, Deputy Director to WPO. Both Dorothy and John come to us from the National Weather Service.

We also welcome Christine Bassett and Jonathan W. Smith, PhD, Subseasonal-to-Seasonal Program Coordinators [Contractors], to the WPO team. We would like to give many thanks to Jessie Carman, PhD, who held the Acting Deputy Director role during the interim period without permanent leadership.

In addition, WPO is excited to have three summer interns: Samuel Ephraim and Michael Michaud, 2021 William M. Lapenta Interns, and Alexus Moore, NOAA Pathways Intern.

WPO Transitions webpage has been published!

In alignment with the Weather Research and Forecasting Innovation Act of 2017, NOAA's Weather Program Office (WPO) launched a Research Transitions webpage that focuses on:

- WPO transitioned weather projects;
- Annual funding opportunities;
- Transition plan policies; and
- A step-by-step look at NOAA Readiness Levels for the transition of research and development (R&D) into operations.

In addition, the webpage aims to serve as a resource for the greater community and help create an understanding of WPO's role in the weather enterprise and how we support the mission and vision of NOAA, NOAA Research and WPO.

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WPO [NEWS]

WPO to publish FY2022 Notice of Funding Opportunity

NOAA's Weather Program Office (WPO) is soliciting proposals for weather, air quality, and earth system modeling and observations research reflecting multiple science objectives spanning time scales from hours to seasons, and from weather and water observations and earth system modeling to fire weather and social, behavioral, and economic science. While this funding opportunity is primarily aimed at supporting investigators at non-federal research institutions, a separate funding competition for NOAA federal institutions will be held by the WPO Joint Technology Transfer Initiative (JTTI) program.

The FY2022 WPO funding opportunity is expected to be published in mid-August 2021 and open until mid-November. Additional information will be posted at wpo.noaa.gov/nofo.

Supplemental Program FY18 Hurricane Supplemental Story Map has been published

This StoryMap provides an overview of the $50 M portfolio, Improving Forecasting and Assimilation (IFAA). WPO takes the lead in organizing and managing this effort, which ensures stewardship, accountability and results of the World-class scientists that are researching 27 separate projects over a four-year period. Many of these IFAA projects leverage the Unified Forecasting System (UFS) framework for research to operations transitions, a mission critical for NOAA. This StoryMap was written by the Supplemental Program Team and is managed by the NOAA Line Offices of: Oceanic and Atmospheric Research / Weather Program Office (OAR/WPO), National Weather Service / Office of Science and Technology Integration (NWS/STI), and National Environmental Satellite, Data, and Information Services / Center for Satellite Applications and Research (NESDIS/STAR).

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WELCOME

to the team

Christine Bassett
Subseasonal-to-Seasonal Coordinator [Contractor]
Bio

Maoyi Huang, PhD
EPIC Program Manager
Bio

Alexus Moore
Pathways Intern
Bio

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WELCOME

to the team

Jonathan W. Smith, PhD
Subseasonal-to-Seasonal Program Coordinator
Bio

John Ten Hoeve
Deputy Director
Bio

To learn more about WPO's 2021 Summer Interns click here.

To learn more about WPO's Staff please click here.

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