WEATHER PROGRAM OFFICE
National Oceanic and Atmospheric Administration

WPO Newsletter
August 2021 – January 2022

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

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, 11th 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

Letter from the Director
WPO By The Numbers
WPO: AGU and AMS
Program Highlights
New Employees

Follow Us

@NOAA_WPO

Contact Us

1315 East-West Highway,
11th floor Silver Spring, MD 20910
E-mail: info.wpo@noaa.gov
https://wpo.noaa.gov

Dorothy Koch, PhD
WPO Director

Letter from the Director

Happy New Year from WPO! 2021 was a year of perseverance. We spent another year working virtually, embracing the new flexibilities while missing our colleagues at conferences and meetings. We are looking forward to a new year that will hopefully see us return to some in-person interactions. Despite the challenges, WPO has much to be thankful for and proud of.

2021 began and ended with extreme weather that wrought havoc upon many communities within our nation. Over the last year, the nation experienced winter storms in Texas that overwhelmed the power grid, record setting temperatures in the Pacific Northwest, unseasonal tornadoes across many states—Kentucky, Tennessee, Illinois, Arkansas, and Missouri, and devastating fires in Colorado and Oregon. As we enter the new year, these events and their impacts are at the forefront of our minds, and we continue our work in WPO with a renewed sense of mission. To that end, WPO embraces the need to improve forecast delivery and communication, including to the most vulnerable populations, while also pursuing an open-science approach to improving forecast science and skill.

In the fall of 2021, WPO published our FY2022 Notice of Funding Opportunity (NOFO) and received 151 proposals, kicked off 52 projects funded from our FY21 NOFO, and successfully transitioned a Climate Testbed project to Readiness Level 9 at the Climate Prediction Center. In December, WPO enjoyed the rare opportunity to send a few staff, including our Knauss Fellow, to attend AGU in person. WPO has been busy, together with other Offices at NOAA, responding to new Supplemental funding provided by Congress, including a new Disaster Supplemental Appropriations and the Bipartisan Infrastructure Legislation. Together, these will lead to enhanced investments in several areas, including fire weather, precipitation, hurricanes and coastal forecasting and science.

Letter from WPO Director
Dorothy Koch, PhD

In December, we were pleased to receive a new report from NOAA Science Advisory Board (SAB) on Priorities for Weather Research (PWR). As stated in the Executive Summary, "The report recommends accelerated and increased investments in priority areas that build upon, and are balanced across, the entire weather information value chain. When taken as a whole, the investments will be transformational, enabling NOAA and the Nation's weather services to meet accelerating weather, water and climate challenges, better protect life and property, and promote greater economic prosperity and environmental justice for all." WPO looks forward to working with the SAB PWR report recommendations as a resource to prioritize our future activities and funding opportunities.

Since our last newsletter, WPO welcomed a few new folks to our virtual office. We're excited to host a new American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow, Stephen Elliott; a new EPIC Project Coordinator, Jennifer Vogt; and two LANTERN detailees from the National Weather Service: Viviane Silva, and Aaron Poyer who will be contributing their expertise and enthusiasm to our S2S and new Fire Weather program activities, respectively.

Lastly, we are working hard to release our FY21 Annual Accomplishments report and to complete our new WPO Strategic Plan (2022–2026) that will guide WPO into the future.

WEATHER PROGRAM OFFICE
National Oceanic and Atmospheric Administration

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 FY21 snapshot*:

133 — **Conference presentations and seminars by WPO-funded PIs**

48 — **Peer-reviewed publications by WPO-funded PIs**

64 — **Projects with R2O transition plans delivered to NWS**

38 — **Projects managed by WPO's Disaster Supplemental Program**

*WPO's Annual Accomplishments Report will be released in early 2022

1315 East-West Highway, 11th floor
Silver Spring, MD 20910
https://wpo.noaa.gov

WPO's Presence at AGU and AMS Annual Meetings

Several WPO members attended this year's annual meeting of the American Geophysical Union, whether in person in New Orleans, or remotely. On 15 December, WPO held a hybrid-mode Town Hall meeting entitled "The Weather Enterprise: Transitioning Weather Research Into Operations to Save Lives, Reduce Property Damage, and Enhance the National Economy". In spite of the challenging hybrid format, the meeting proceeded without a hitch, and the team provided updates on all WPO programs, including the rapidly advancing Earth Prediction Innovation Center (EPIC) effort.

The Town Hall prompted active follow-up discussions. A participant from National Institute of Health (NIH) asked about current and future collaborations with the National Science Foundation or NIH. Participants asked about cloud computing architecture as part of EPIC cloud computing strategy and how researchers should choose among cloud service providers. A question queued up prior to the Town Hall asked about the tornado tragedy in Kentucky and surrounding states, and forecasting/forewarning issues. We discussed Forecasting a Continuum of Environmental Threats (FACETs), and also public expectations of "normal" weather and how that impacts credibility of warnings. We noted that the tornadoes and derecho going on in the upper midwest as the Town Hall was occurring received considerably more attention than the previous system.

WPO staff from the EPIC Program team also presented two posters entitled "Coordinating the Giant: The Earth Prediction Innovation Center", presented by Maoyi Huang, and "Open-Development, Innovation and EPIC: Funded Projects in Support of a Community Modeling Framework to Improve Operational Weather Forecasting", presented by Henrique Alves. Both posters attracted great attention, connecting WPO efforts to the growing body of Earth scientists adopting community modeling and open-development practices.

Figure 1. WPO team members presented their posters at 2021 AGU Fall Meeting

WPO at the 102nd Annual AMS Meeting

WPO had a pervasive presence at the 102nd Annual AMS Meeting, held virtually this year. WPO hosted a Town Hall Meeting entitled: Transitioning Weather Research into Operations to Save Lives, Reduce Property Damage, and Enhance the National Economy with over 150 in attendance.

The Earth Prediction Innovation Center (EPIC) held its first symposium entitled: First Symposium on Earth Prediction Innovation and Community Modeling highlighting the vision for EPIC and community modeling. The Subseasonal 2 Seasonal (S2S) program held several sessions on its uses and applications, advances in subseasonal forecasts, and its joint effort in improving S2S forecasts. The Joint Technology Transfer Initiative (JTTI) highlighted much its ongoing research and how to accelerate research into operations.

Additionally, the Social Science program both hosted and presented several sessions highlighting the importance of social science and its importance to the Weather Enterprise. The Observations Program hosted a few sessions including Emerging Technologies for Hurricane Observations and two sessions, part I and part II, covering mesoscale observations. Lastly, the Testbeds program held several sessions (part I, part II, part III and part IV) focused on enabling and transitioning research to operations for decision makers, end users and the public.

You can view all of the previously mentioned presentations, and find many others here.

EPIC HIGHLIGHTS

EPIC Strategic Plan

EPIC released its 5-year [Strategic Plan](#) in September 2021, highlighting EPIC's vision to accelerate scientific research and modeling contribution through continuous and sustained community engagement to produce the most accurate and reliable operational modeling system in the world.

EPIC Website is now Live!

We are excited to announce that the EPIC website is now live - epic.noaa.gov! This is just a soft launch and we have lots of exciting updates planned for the site so check back frequently.

This was truly a team effort with considerable input on the design, development, content, testing, and release from a variety of individuals across organizations. We owe a special thanks to the following people (in alphabetical order): Caroline Delgado (NWS OSTI), Charlene Barone (Raytheon), Chris Franks (NWS ROC), Gillian Petro (Raytheon), Henrique Alves (WPO), Jen Vogt (WPO), Krishna Kumar (WPO), Laura Generosa (Raytheon), Leah Dubots (WPO), Linda Taylor (NWS Comms), Mike Walker (OAR Comms), Monica Allen (NOAA Public Affairs), Randii Oliver (Raytheon), Susan Jasko (UFS C&O), and the UFS C&O Working Group.

EPIC Supports 3rd Annual OAR Cloud Computing Workshop

The 3rd annual OAR Cloud Computing Workshop - Cloud Adoption in OAR: Discussion, Action and Outcome was held November 16-18th, 2021. Over 100 people registered for the workshop and took part in discussions spanning the three days. EPIC team members, Krishna Kumar and Jennifer Vogt, helped plan, organize and run the workshop. The presentations spanned the five themes set by the OAR Cloud Tiger Team: Cloud-based Remote Development Environment, High-Performance Computing, Artificial Intelligence/Machine Learning, Cloud Web & Data Hosting & Visualization and Migrating Applications to the Cloud.

EPIC HIGHLIGHTS

EPIC Presents at EISWG

Dr. Maoyi Huang represented EPIC at the Science Advisory Board Environmental Information Services Working Group (EISWG) Meeting held on December 3rd, 2021. This presentation highlighted the new leadership within the Weather Program Office, the EPIC contract awarded to Raytheon Intelligence and Space (RI&S), the establishment of the NOAA Modeling Board and future plans for the establishment of the Community Modeling Board. EISWG works closely with the five Line Offices in NOAA including the Office of Oceanic and Atmospheric Research (OAR) and provides advice for prioritizing weather research initiatives to produce real improvements in weather forecasting.

WPO Social Science Program Launches 2021 Competition with 10 New Projects

Following extreme precipitation and flooding events, such as from Hurricane Ida, it remains clear that even the best forecast will not always lead to the optimal societal outcome. Meteorology, along with other social, cultural, and political influences, are critical components to the decision making process. "As we continue to advance the science of weather forecasting, it's also important to advance our understanding of the people we serve and appreciate the complexity of their decision-making contexts." Dr. Gina Eosco, Social Science and FACETs Program manager states.

Dr. Eosco, as well as the rest of the social science team, deeply understand the need for this field within the realm of science. The challenge becomes how to best raise awareness for the need, and further incorporate it into daily operations.

This is why the Weather Program Office's (WPO) Social Science Program is thrilled to announce 10 new social science projects associated with their first official competition. These projects will advance knowledge on how people receive, interpret, perceive, and respond to weather information, especially warnings, with respect to protective action decision-making. The researchers aim to tackle vast challenges, such as risk communication, decision support, and tool creation.

SUPPLEMENTALS HIGHLIGHTS

Supplemental Program publishes Hurricane Supplemental Story Maps

1) [Improvements in Forecasting Weather, Floods, and Hurricanes: Overview Report on Supplemental Program FY18](#)

The Supplemental Program is one of the many programs in the Weather Program Office within the office of Oceanic and Atmospheric Research of NOAA. The Improving Forecasting and Assimilation (IFAA) Story Map Report describes the research of this $50M portfolio. Authored by the Supplemental Program Team, this document gives, in plain language, the financial breakdown, partner organizations, research focus area summaries, and vignettes on a few of our projects within the IFAA portfolio, along with model transition acceleration.

2) [Improving Forecasting of Hurricanes, Floods, and Wildfires: Overview Report on Supplemental Program FY19](#)

The Improving Forecasting of Hurricanes, Floods, and Wildfire (IFHFW) Story Map Report describes the research of this $25M portfolio. Also authored by the Supplemental Program Team, this document gives, in plain language, the financial breakdown, partner organizations, research focus area summaries, and vignettes on a few of our projects within the IFHFW portfolio, along with model transition acceleration.

Please feel free to share both reports, which are typically updated once per quarter.

The FV3 moving nest is establishing the groundwork for next generation advancements in hurricane forecasts. FV3 dynamical core is essential to the future of improving hurricane structure and intensity predictions and analysis. Incorporating an embedded moving nest into FV3 permits scientists to track the inner-core region of a hurricane at 1-2 km resolution. This project is offering real-time data through this website: **AOML Hurricane Model Viewer**
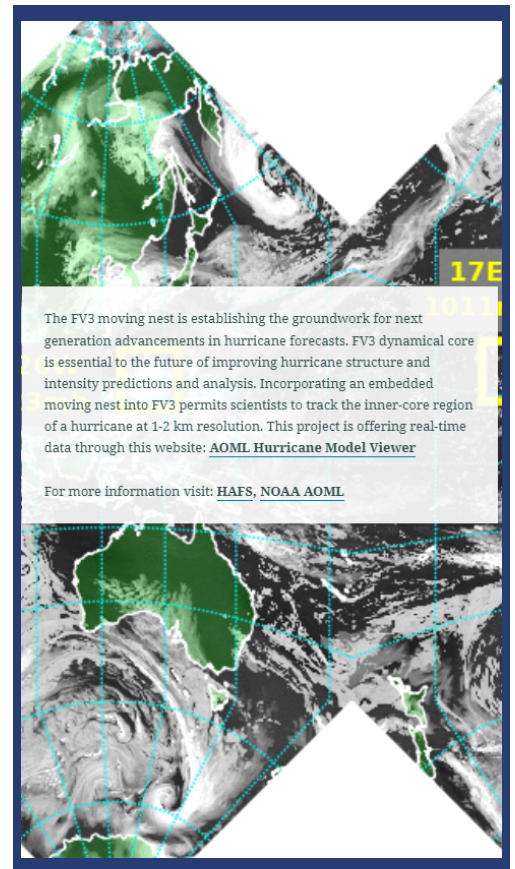
For more information visit: **HAFS**, **NOAA AOML**

Image: Screen capture of satellite data from Hurricane Supplemental FY18 Story Map

OBSERVATIONS HIGHLIGHTS

Image: 2021 ETW Logo

The 2021 NOAA Emerging Technologies Workshop

The NOAA Observing System Council (NOSC) hosted the NOAA Emerging Technologies Workshop (ETW) on October 25–28, 2021. The ETW aims to bring together and foster collaboration between NOAA, stakeholders from other federal agencies, private industry, and academia amidst the discussion of current and future observing technologies. The 2021 ETW theme concentrated on the discovery, development, and deployment of innovative observing technologies targeting climate, extreme weather, fire weather, and the great lakes and oceans.

The NOAA Weather Program Office (WPO) Observations program played an integral role in the planning and execution of the fully virtual 2021 ETW. In addition to involvement in the workshop organization, the WPO Observations program showed a strong presence in ETW Day 2: Weather Extremes. The day was kicked off with Dr. Louis Uccellini, former director of the NOAA National Weather Service (NWS), giving an honorable mention in the keynote address to the WPO Observations Program for their leading efforts in advancing weather observing technologies. During the Discovery - Extreme Weather Observing Technologies session, three FY21 Observations program projects, including long-duration weather balloons (PI, Dr. Audrey Sushko), smartphone pressure observations (PI, Dr. Cliff Mass), and aircraft derived observing systems (PI, Dr. Michael McPartland), were highlighted as new and emerging technologies in the field. Renee Richardson, WPO Sea Grant Knauss Fellow, facilitated the session Resources and Opportunities for Weather Observation Development to support the development of cutting edge meteorological observing technologies. In this session, Sandy LaCorte, Observations Coordinator, presented an overview of the WPO Observations Program to promote opportunities the program offers to support observing technology development. With 637 registrants, the WPO Observations program was successful in advertising and highlighting the many ways the program works to serve and support emerging observing technologies in the weather enterprise.

OBSERVATIONS HIGHLIGHTS

Observations Publishes Two Story Maps

The Weather Program Office's (WPO) Observations Program Team is pleased to announce and share two reports:

1) NOAA WPO Observations Program Overview
2) NOAA WPO Observations Program: FY21 Projects

Using the ArcGIS StoryMap platform, these reports hold the history and mission of the Observations Program, and highlight the projects the program funded for FY21. These documents include background information on the program, how the program strives to follow The Weather Act, the funding priorities for the FY21 grant competition, funded institutions, and a list of the 18 funded projects.

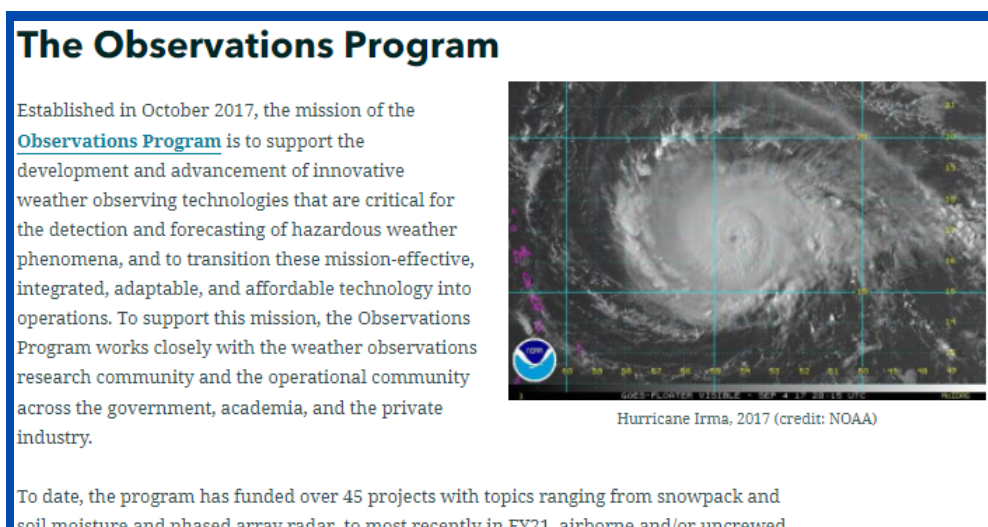Both reports are available on the Observations Program page. Please feel free to share both reports.

The Observations Program

Established in October 2017, the mission of the **Observations Program** is to support the development and advancement of innovative weather observing technologies that are critical for the detection and forecasting of hazardous weather phenomena, and to transition these mission-effective, integrated, adaptable, and affordable technology into operations. To support this mission, the Observations Program works closely with the weather observations research community and the operational community across the government, academia, and the private industry.

To date, the program has funded over 45 projects with topics ranging from snowpack and soil moisture and phased array radar, to most recently in FY21, airborne and/or uncrewed

Hurricane Irma, 2017 (credit: NOAA)

Image: Screen capture of NOAA WPO Observations Program Overview Story Map.

SEASONAL TO SUBSEASONAL HIGHLIGHTS

2021 Subseasonal Experiment (SubX) Current and Potential Users Forum

The Subseasonal to Seasonal (S2S) Program organized and convened the 2021 Subseasonal Experiment (SubX) Current and Potential Users Forum on August 24–26, 2021. The goals of this virtual workshop were to encourage sharing of practices among SubX users and to identify barriers to adoption by new users. SubX, launched in 2016, is a multi-model ensemble project using both research and operations components; it addresses both the need for real-time prediction guidance as well as a means to answer pressing research questions at the subseasonal (2 weeks to 3 months) time scale.

The forum brought together 105 registrants from federal and state government agencies, academia, and private enterprise. Each day featured plenary sessions highlighting the features of SubX and how it is currently informing operations, applications, and research. There was scheduled time during each session for more detailed discussions about current and potential future SubX use.

The discussion revealed a wider range of sectors actively relying on data from subseasonal ensembles than was originally recognized. Users from public health, agriculture, water resource management, defense, energy, sea ice and navigation, fisheries and ecosystem modeling, and research/model verification are using subseasonal data for situational awareness, resource planning and, in some cases, decision support.
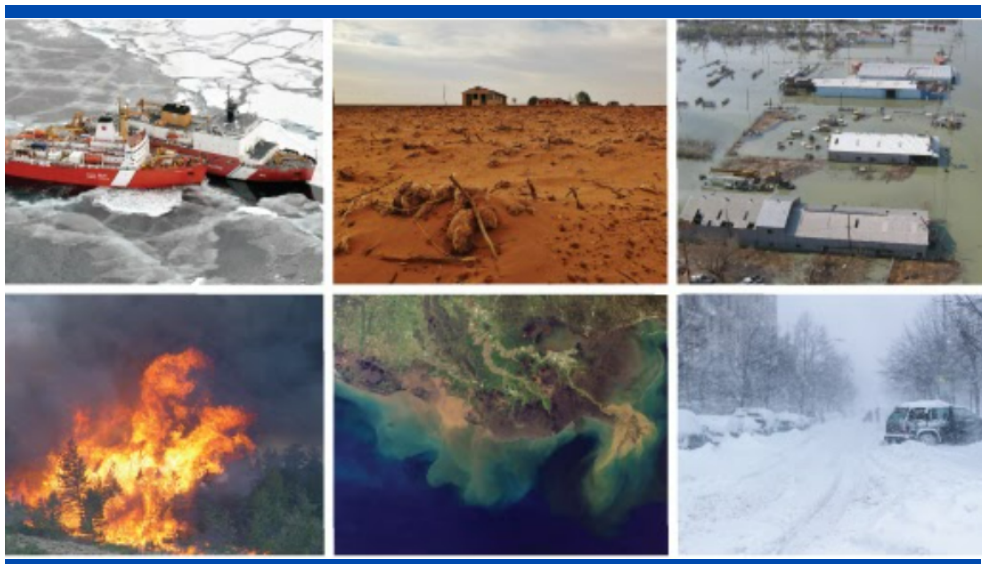
In addition, much discussion centered on whether future improvements to SubX should target achieving operational-level skill or instead expanding its capability to address a wide range of research and user needs. Overall, participants noted the urgent need for interagency coordination and commitment for SubX's sustained existence and updates, frequent additions of various model output data, increased consistency and synchronization in model initialization, and consistent output timing and formats.

WELCOME TO THE TEAM

Jennifer Vogt
EPIC Coordinator (Contractor)
Bio

Stephen Elliott
American Association for the
Advancement of Science (AAAS) Science
and Technology Policy Fellow

Viviane Silva
S2S Program - LANTERN

Aaron Poyer
Fire Weather Program - LANTERN

1315 East-West Highway, 11th floor
Silver Spring, MD 20910
https://wpo.noaa.gov