



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH

National Severe Storms Laboratory  
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Norman, OK 73072

January 30, 2023

## Hazardous Weather Testbed Activities

The NOAA Hazardous Weather Testbed (HWT) at the National Weather Center (NWC) in Norman, Oklahoma, is seeking participants for several ***in-person and virtual*** experiments in 2023. The testbed is a joint project of the National Weather Service Storm Prediction Center and the National Severe Storms Laboratory that provides a conceptual framework and physical space to foster collaboration between research and operations to test and evaluate emerging technologies and science. This year, we will be conducting the 2023 HWT activities for **18 weeks** in total.

There will be **six** primary projects in the HWT during 2023. The details of the Hazard Services - Threat-in-Motion, PHI Prototype Experiment, Satellite Convective Applications Experiment, and Spring Forecasting Experiment are listed in the following pages.

Tiny Threats-in-Motion (TIM) <i>*in-person</i>	Feb 13-17, Feb 27- Mar 3
Hazard Services - Threats-in-Motion (HS-TIM) <i>*in-person</i>	Apr 17-21, May 1-5, May 8-12 <b>Application Deadline: Mar 6</b>
Probabilistic Hazard Information (PHI) Prototype <i>*virtual</i>	May 1-5, May 8-12, May 15-19 <b>Application Deadline: Mar 6</b>
Spring Forecasting Experiment <i>*hybrid</i>	May 1-5, May 8-12, May 15-19, May 22-26, May 30-Jun 2 <b>Application Deadline: Mar 6</b>
Satellite Convective Applications <i>*hybrid</i>	May 22-26, Jun 5-9, Jun 12-16 <b>Application Deadline: Mar 6</b>
Watch-to-Warning <i>*in-person</i>	September 2023

\*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

All 2023 HWT activities will have virtual contingency plans using online resources such as Google Meet and AWIPS in the Cloud. Each project-specific application form (found in the project details selection below) will require from each candidate:

- a. Name and organization (WFO, region HQ, etc.)
- b. Forecaster position
- c. Prior HWT experience
- d. Interest statement (one paragraph, 200 words max)
- e. Weeks available

The interest statements should include your motivation for evaluating future warning and/or forecast systems in the HWT and demonstrate why you would be a good fit for a particular experiment. Participants may include WFO, CWSU, or Region HQ staff, and participants are not required to have had prior HWT experience. We are seeking diversity among regions, warning and forecast experience, and HWT experience.

Note that the HWT organizational structure has two primary programs: the Experimental Warning Program (EWP) and the Experimental Forecast Program (EFP). The EFP conducts the Spring Forecasting Experiment and any questions about this experiment should be directed to the EFP coordinator, **Israel Jirak** ([Israel.Jirak@noaa.gov](mailto:Israel.Jirak@noaa.gov)). The EWP conducts the remaining HWT experiments and any questions about these experiments should be directed to the EWP coordinator, **Kodi Berry** ([kodi.berry@noaa.gov](mailto:kodi.berry@noaa.gov)).

**The deadline for the first round of applications is March 6, 2023.** Candidates will be selected shortly thereafter. Any questions or concerns about the application process should be directed to **Alan Gerard** ([alan.e.gerard@noaa.gov](mailto:alan.e.gerard@noaa.gov)).

We desire enthusiastic people who are interested in improving NWS warning and/or forecast decision-making technology, products, and services. We would be happy to provide more information about the HWT activities if requested.

Sincerely,  
Alan Gerard  
Hazardous Weather Testbed, National Severe Storms Laboratory

## **EWP Hazard Services Threats-in-Motion (HS-TIM) Project Descriptions & Details**

[Click here to apply!](#)

The deadline for applications is March 6, 2023. Candidates will be selected shortly thereafter.

**WHEN** – April 17-21, May 1-5, May 8-12

**WHERE** – Hazardous Weather Testbed, National Weather Center, Norman, OK

\*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

**WHAT** – The National Severe Storms Laboratory (NSSL), Global Systems Laboratory (GSL), and NWS Meteorological Development Laboratory (MDL) have been developing a prototype severe convective weather warning-scale tool for testing the early concepts of the Forecasting A Continuum of Environmental Threats (FACETs) initiative. One important concept is Threats-In-Motion (TIM), a proposed warning decision and dissemination approach that would enable the NWS to upgrade severe thunderstorm and tornado warnings from the current static polygon system to continuously-updating warning polygons that move with the storm. TIM capabilities have been developed using an experimental version of AWIPS-2 Hazard Services (HS), first tested in the HWT in 2019, and to be tested again during the spring of 2023.

**WHY** – We hope to extend the dialog on FACETs and TIM as the concepts become closer to possible operational reality. In addition, we hope to collect the data necessary to make improvements to the HS software prior to a decision for operational implementation.

**WHO** – We would like geographic, experiential, and gender diversity in our forecaster pool. An interest in the evolution of forecast and warnings services is a must. Three forecasters will be chosen for each of the three weeks of the experiment. Completion of the Warning Decision Training Division's Radar Applications Course and some operational severe weather warning experience is desired.

For more information:

<https://inside.nssl.noaa.gov/facets/2021/03/threats-in-motion/>

## **EWP Probabilistic Hazard Information (PHI) Prototype Project Descriptions & Details**

[Click here to apply!](#)

The deadline for applications is March 6, 2023. Candidates will be selected shortly thereafter.

**WHEN** – May 1-5, May 8-12, May 15-19; Virtual Experiment. Forecasters will participate remotely Monday (for training and familiarity with tools) followed by additional remote participation only when severe weather is expected (>Slight Risk). This experiment may skip days if no severe weather is likely anywhere in the CONUS.

**WHAT** – Participants will issue Probabilistic Hazard Information (PHI) in combination with storm-based warnings using a cloud-based web platform. The focus for the 2023 spring experiment will be updated procedures and mechanics of handling both objects and warnings simultaneously. Forecasters will have access to machine learning algorithms that provide probabilities of individual hazards as well as new storm tracking algorithms. Participants will be asked to choose between these multiple tracked objects, test the manipulation speed and motion uncertainty, and assign probabilities and warnings relative to each PHI threat-in-motion. In addition to automated guidance available within the PHI-prototype system, forecasters will have access to live data within the AWIPS-II cloud platform for storm interrogation and analysis.

**WHY** – This HWT experiment provides an pre-operational evaluation of cloud-based PHI-design, workload, and possible configurations for the initial implementation in operations. Feedback from this evaluation will be used for configuration of PHI within Hazard Services and provide guidance for an operational implementation of PHI at NWS offices nationwide.

**WHO** – Forecasters with previous experience in HWT experiments working with PHI prototype, Hazard Services-PHI, or Threats-in-Motion are highly encouraged to apply, but all forecasters are welcome to apply for this experiment. We would like geographic, experiential, and general diversity in our forecaster pool. Completion of the Warning Decision Training Division's Radar Applications Course and some operational severe weather warning experience is desired.

## **EWP Satellite Convective Applications Experiment Project Descriptions & Details**

[Click here to apply!](#)

The deadline for applications is March 6, 2023. Candidates will be selected shortly thereafter.

**WHEN** – May 22-26 (in-person\*), June 5-9 (virtual), June 12-16 (virtual)

**WHERE** – Hazardous Weather Testbed, National Weather Center, Norman, OK & Online

\*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

**WHAT** – Participants will issue experimental short-term forecast discussions, convective warnings, and impact decision support services for a given County Warning Area using new and experimental satellite products and guidance using the AWIPS-II platform during live weather cases. Forecasters will participate in discussions with subject matter experts as well compose blog posts during realtime operations regarding their use of the operational and experimental satellite products in the warning decision-making process. Feedback will also be captured through surveys and post-event group discussions. The experimental and operational satellite products most likely to be available include, but are not limited to:

- NUCAPS Temperature and Moisture Profiles
- OCTANE Speed Sandwich Product
- PHS Mesoscale Model
- ProbSevere Hazard Model (version 3)
- ProbSevere LightningCast Model

**WHY** – This HWT experiment provides an operational demonstration of products and capabilities associated with the recently-launched GOES-R and JPSS series of satellites. This evaluation will gauge the effectiveness of the GOES-R training, test forecaster understanding of GOES-R/JPSS data, understand the usability and effectiveness of the visualizations in AWIPS, and identify best practices for integrating the new data into operations. Feedback received during GOES-R/JPSS product demonstrations will be integrated into training initiatives in coordination with the Warning Decision Training Division, the GOES-R/JPSS programs, and researchers for future product development and visualizations.

**WHO** – All forecasters are welcome to apply for this experiment. We would like geographic, experiential, and gender diversity in our forecaster pool. Training with IDSS concepts is preferred.

## **EFP Spring Forecasting Experiment Project Descriptions & Details**

[Click here to apply!](#)

The deadline for applications is March 6, 2023. Candidates will be selected shortly thereafter.

**WHEN** – May 1-5, May 8-12, May 15-19, May 22-26, May 30-Jun 2 both in-person\* & virtual

**WHERE** – Hazardous Weather Testbed, National Weather Center, Norman, OK & Online

\*In-person participation will comply with DOC COVID-19 Workplace Safety Plan

**WHAT** – The Storm Prediction Center (SPC) and the National Severe Storms Laboratory (NSSL) invite you to participate in experimental forecasting and evaluation activities either in-person or online as part of the annual HWT Spring Forecasting Experiment (SFE):

- Activities are formulated to provide evidence-based information on how best to design convection-allowing models (CAMs) and ensemble systems (the operational HREF evolved from these efforts), and to explore innovative ways to extract relevant information from CAMs and create calibrated probabilistic hazard guidance for high-impact weather events.
- The SFE efforts support NOAA plans to develop a simplified, Unified Forecast System (UFS) centered on the FV3 dynamic core. The 3-km FV3-based Rapid Refresh Forecast System (RRFS) will be evaluated against the HRRR and HREF, as it is scheduled to replace those systems in NWS operations in 2024.
- The focus of the experiment is directly aligned with NWS FACETs and Warn-on Forecast (WoF) programs, including examination of real-time forecasts from a prototype WoF ensemble system.
- To accomplish these goals, the SFE brings together major model development organizations in the US (EMC, GSL, NSSL, GFDL, and NCAR) to work collaboratively in improving community modeling for future implementation into NWS operations.

**WHY** – NWS forecaster participation in the HWT SFE is essential to facilitate meaningful interactions between the development and operational communities that will accelerate research-to-operations transitions. In particular, this provides opportunities for forecasters to provide feedback to ensure that new guidance products and visualization approaches meet their needs. This is a unique opportunity to see and influence the future of NWS forecasting tools for high impact weather.

**WHO** – Any forecaster who wants to be on the cutting-edge of NWS science developments please consider participating either in-person or virtually in the innovative, exciting SFE activities for one week during the May 1-June 2 period.