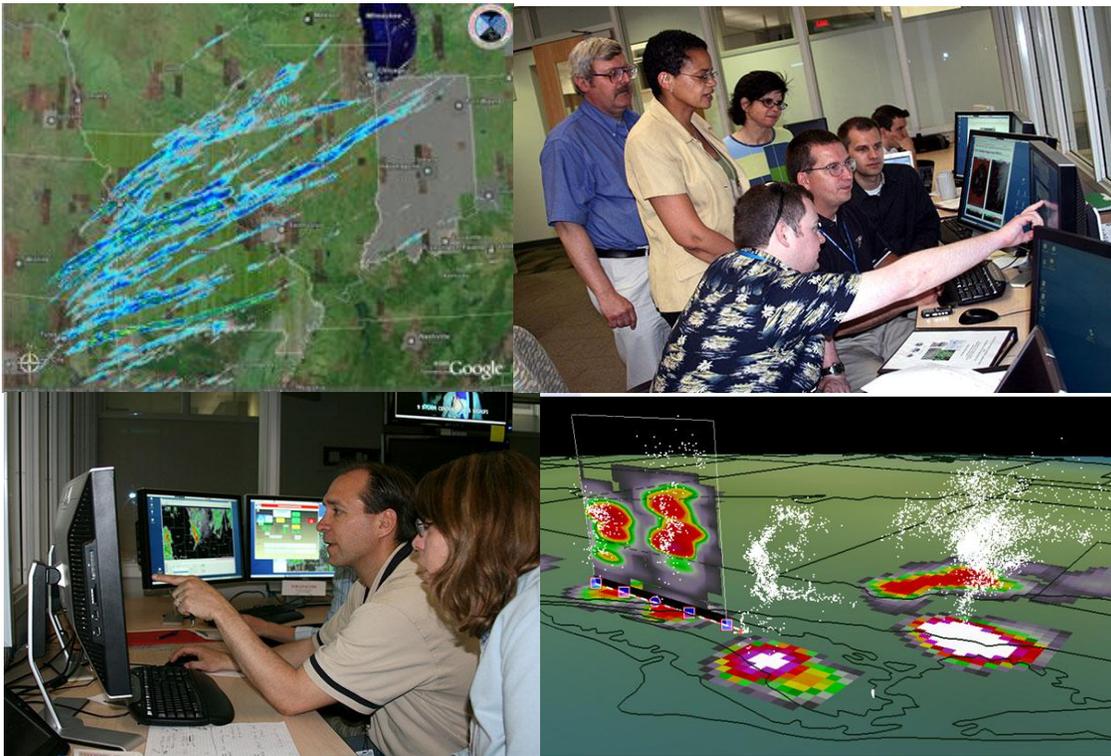


Experimental Warning Program

NOAA Hazardous Weather Testbed, Norman, OK

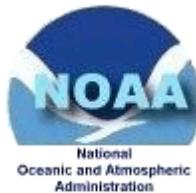
2013 SPRING EXPERIMENT EWP2013

OPERATIONS PLAN



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1. INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) Hazardous Weather Testbed (HWT) Experimental Warning Program (EWP) at the National Weather Center (NWC) in Norman, Oklahoma, is hosting the 2013 EWP Spring Program (EWP2013). We will be conducting the EWP2013 for 3 weeks (Monday – Friday), from 6 May through 24 May.

The HWT is joint project of the National Weather Service (NWS) and the National Severe Storms Laboratory (NSSL). The HWT provides a conceptual framework and a physical space to foster collaboration between research and operations to test and evaluate emerging technologies and science for NWS operations. The HWT was borne from the “Spring Program” which, for the last decade, has been used to test and evaluate new forecast models, techniques, and products to support NWS Storm Prediction Center (SPC) forecast operations. Now, the HWT consists of two primary programs. The original NSSL/SPC “Spring Program” is now known as the Experimental Forecast Program (EFP)¹.

The other activity in the HWT, and the subject of this Operations Plan, is the **Experimental Warning Program (EWP)**, which is designed to test and evaluate new applications, techniques, and products to support Weather Forecast Office (WFO) severe convective weather warning operations. This is the seventh year for warning activities in the testbed. There will be five primary projects geared toward WFO applications, 1) the development of “best practices” for using Multiple-Radar/Multiple-Sensor (MRMS) severe weather products in warning operations, 2) an evaluation of a dual-polarization Hail Size Discrimination Algorithm (HSDA), 3) an evaluation of model performance and forecast utility of the OUN WRF when operations are expected in the Southern Plains, 4) an evaluation of the Local Analysis Prediction System (LAPS) Space and Time Multiscale Analysis System (STMAS), and 5) an evaluation of multiple CONUS GOES-R convective applications, including pseudo-geostationary lightning mapper products when operations are expected within the Lightning Mapping Array domains (OK, w-TX, AL, DC, FL, se-TX, ne-CO).

We are looking for feedback from NWS operational meteorologists. User comments will be collected during shifts, forecasters will participate in live blogging, electronic surveys will be given at the end of shifts, and discussions will occur during post-mortem debriefings. Remember, input from NWS operational meteorologists is **vital** to the improvement of the NWS warning process, which ultimately saves public lives and property. The NWS feedback on this test is most important for future development for the NWS and eventual implementation of new application, display, and product concepts into AWIPS2 and other operational systems.

¹ Note that the EFP Spring Program is not the subject of this Operations Plan. For more information on the EFP Spring Program, please contact [Israel Jirak](#) (SPC).

You are part of a unique team of NOAA scientists, comprised of researchers, technology developers, and operational forecasters, working together to test new and experimental severe weather warning decision making technology for the NWS. In this operations plan you will find basic information about the various new technologies and products that we are testing during the 2013 spring convective season, as well as logistical information about the three-week program for all participants.

Additional information about the EWP2013 Spring Program is available and regularly updated on our Web site: <https://secure.nssl.noaa.gov/projects/ewp2013>.

2. OBJECTIVES

“What do we want from you?”

This question applies to each participant in the EWP Spring Program, including the [research and technology specialists](#), the [forecaster participants](#), the [weekly coordinators](#), and other observers. This manual will attempt to answer that question in a broad sense. For the individual experiments, their respective manuals will provide more detailed objectives.

The [National Severe Storms Laboratory](#) (NSSL) has played a key role in the development and evaluation of applications and technology to improve NWS severe convective weather warning operations. The development process at NSSL begins with basic and applied research including field experiments, theoretical studies, and case studies designed to better understand storms and relate weather to remotely sensed signatures. This research leads to the development of technological applications, including computer algorithms employing sophisticated image processing and artificial intelligence, and innovative display systems [e.g., the Four-dimensional Stormcell Investigator (FSI), Multiple-Radar/Multiple-Sensor (MRMS) severe weather products], and NSSL leads the path in new Doppler radar technologies. In addition, the GOES-R Proving Ground, with a presence in Norman, is leading the effort to evaluate satellite-based applications to improve the forecast, nowcast, and warning process for the NWS.

The Hazardous Weather Testbed plays a vital role in the research transition to operations (R2O) process. Evaluations are conducted using archived case studies as well as real-time proof-of-concept tests at the Hazardous Weather Testbed during actual severe weather warning operations. Feedback from the evaluations leads to further research and refinement of applications, and ultimate operational applications for users. The new concepts continue to be tested to determine whether they will be included in future operational systems that help guide and manage the severe weather warning decision-making process.

The primary objectives of the 2013 Experimental Warning Program Spring Experiment (EWP2013) are as follows:

- To **evaluate the accuracy and the operational utility of new science, technology, and products** in a testbed setting to **gain feedback** for improvements prior to their potential transition into NWS severe convective weather warning operations.
 - The Hazardous Weather Testbed serves as a primary vehicle for transitioning new research, knowledge, and concepts into NWS operations. It is designed to provide forecasters with direct access to the latest developments in meteorological research while imparting scientists with the knowledge to formulate research strategies that will have practical benefits for operations.
- To **foster collaboration** between NSSL and GOES-R scientists and operational meteorologists.
 - The WFOs are our primary customers. We want to work with them to understand their requirements and improve warning accuracy and services. This will also allow for continued scientific collaboration on application development, and on informal and formal publications. The interaction between scientists and operational meteorologists will provide a synergy that will lead to improvements in future products.

The overall objectives of the specific projects to be conducted during EWP2013 are:

- To determine “best practices” for using **multiple-radar/multiple-sensor (MRMS) severe weather algorithms** in supporting NWS hazardous convective weather warning decision making. MRMS products are slated to become operations in 1-2 years. We would like our participants to:
 - Provide feedback on how the MRMS products can be integrated into current warning decision making operational techniques.
 - Suggest improvements or new MRMS products, procedures, menus, and displays that will aid warning decision making.
- To evaluate the performance and warning utility of a dual-polarization radar **Hail Size Discrimination Algorithm (HSDA)**. The goals are to:
 - Assess the utility of the HSDA for the purpose of diagnosing hail size in severe thunderstorms.
 - Compare the HSDA to other more commonly-used products and analyses used to issue Severe Thunderstorm Warnings for hail threats.
- To evaluate the model performance and forecast utility of the **Norman NWS office’s custom Weather Research and Forecasting model (OUN WRF)**. When operations are expected in the Southern Plains (within the domain of the OUN WRF), the goals are to:
 - Assess the utility of the OUN WRF for the purpose of forecasting initiation, mode, and dissipation of severe convective storms.

- Subjectively determine the forecast value of adding high-resolution model output to the suite of tools available in an operational warning environment.
- To evaluate the performance and forecast utility of the **Local Analysis Prediction System (LAPS) Space and Time Multiscale Analysis System (STMAS)**. The goals are to:
 - Evaluate timeliness and performance of variational, high temporal and spatial resolution LAPS in real time.
 - Evaluate performance of the 0-3 h convective forecasts initialized with high resolution variational LAPS in the Warn-on-Forecast paradigm.
- To evaluate the operational utility of experimental applications intended for the **GOES-R satellite platform**, including **total lightning data**, prior to the launch of the observing platform. The goals are to:
 - Assess various satellite-based applications, including convective initiation and lightning prediction applications for the pre-storm environment.
 - Evaluate GOES-R pseudo-GLM products including the flash rate of storms and their tracks for use in storm interrogation and warning decision making.
 - Identify best practices for using the GOES-R products in nowcast and warning decision making.
 - Identify appropriate display strategies within AWIPS2 for GOES-R products.

Each of these experimental products will be used through a forecast-nowcast-warning process that will be carried out during an operational day. More details are provided in a later section.

More detailed information about the individual experiments, including specific objectives, evaluation details, and technology user manuals, will be made available online at:

<https://secure.nssl.noaa.gov/projects/ewp2013>

This site requires NOAA LDAP username and password credentials for access.

3. SCHEDULES

a. Dates of operation

EWP2013 will be conducted during a **three-week period** beginning **Monday 6 May 2013**, and ending **Friday 24 May 2013**. During these three weeks, 6 full-time NWS participants will be visiting each week. There will also be a few part-time observers on any given day.

b. Operational shift times for the week

The EWP2013 shift schedule will be as follows:

<u>X-Shift at WFO</u>	within 2 weeks of visit	Training
<u>Mon</u>	1-9p	Orientation, Operations
<u>Tue-Thu</u>	flex hours	Operations
<u>Fri</u>	10a-1p	Debriefing, Webinar

c. Training shift (X-Shift at WFO)

We are providing the training and orientation materials for our spring experiment online. Forecasters will now go through the material in an 8-hour course to be taken during an on-station supernumerary shift at their WFO within two weeks prior to their arrival at the Hazardous Weather Testbed in Norman. The training materials consist of self-paced narrated Articulate presentations, and a WES Virtual Machine training case with various job sheets.

d. Monday shift

After the forecasters have arrived at the National Weather Center (NWC) and have had a brief tour of the facilities, we will convene to the NSSL Dev Lab (NWC2820) for the beginning of the **Monday Shift** at **1pm**. We start with a brief introduction from the manager of the Hazardous Weather Testbed. Next, the EWP Operations Coordinator will provide a 20-30 minute description of the experiment logistics. This is followed by information about the weekly “Tales from the Testbed” Webinar to be provided by the WDTB Webinar facilitator.

After a short break, the participants will convene to the HWT Operations Area where they will have a 15-min coordination meeting with members of the Experimental Forecast Program (EFP) to discuss their experimental probabilistic severe weather outlook. The EFP outlooks, along with the official SPC convective outlooks, will be used to inform the EWP decision on which domain within the CONUS to conduct nowcast and warning operations. After that, the forecasters will take a short pre-operations week online survey to collect information about their current operational warning decision strategies. Next, the participants will begin to become familiar with the experimental products on our HWT AWIPS2 system, working with the PIs to know where to find the products and how they can use them in operations. In addition, the forecasters can test existing and build new AWIPS2 procedures.

Once we’re ready, we will switch to real-time operations and begin using the experimental products in nowcast and warning operations. Around **815pm**, we will break

off operations to have the forecasters take the online feedback survey. Concurrently, the weekly coordinator, and any forecasters that have finished their survey early, will determine the starting time of the following day's flex-time shift using the SPC DY2 outlook and other information. The Monday shift is scheduled to end at **9pm**. If conditions warrant and there is an extraordinary severe weather outbreak underway, we may extend the shift and seek overtime approval for those visiting forecasters that require it so that we can continue to view real-time data.

In summary, the Monday schedule:

1245p	Visitor welcome at NWC 1 st floor entrance
100p	Convene to NSSL Dev Lab (NWC2820)
100p	Welcome and Introductions (everyone)
115p	EWP2011 Orientation Briefing (Stumpf)
145p	Tales from the Testbed Orientation (Payne)
215p	Break
230p	Convene in HWT Operations Area: EFP coordination meeting to determine Monday CWAs Pre-op MRMS Survey AWIPS2 Familiarization, procedure loading Real-time nowcast/warning operations
??p	Dinner Break (time chosen based on wx)
815p	Fill out feedback survey; Day2 forecast prep
900p	Adjourn

e. Tue, Wed, Thu "Flex" Shift

Tuesdays, Wednesdays, and Thursdays continue our real-time operational days. We will be operating a flexible shift schedule during these days. This shift schedule attempts to provide for some flexibility to account for variable severe weather event times. Normally, the shift will run from 1-9pm. However, if the timing of the day's severe weather events dictates otherwise, the flex shift may run either of these blocks of hours instead: 11am – 7pm, 12-8pm, 2-10pm, or 3-11pm. The shift will cease **8 hours after** it began. If conditions warrant and there is an extraordinary severe weather outbreak underway, we may extend either shift and seek overtime approval for those visiting forecaster that require it.

Each shift will begin in the NSSL Dev Lab with a debriefing of the previous day's events. Next, the participants will convene to the HWT Operations Area where they will have their 15-min EFP coordination meeting to determine the EWP decision on which domain within the CONUS to conduct nowcast and warning operations. [Real-time nowcast/warning operations](#) will follow.

On Tuesdays and Wednesdays, the real-time operations will end **45 minutes prior** to the end of the shift so that the forecaster can fill out their online feedback surveys.

Concurrently, the weekly coordinator, and any forecasters that have finished their survey early, will determine the starting time of the following day's flex-time shift using the SPC DY2 outlook and other information.

On Thursdays, the real-time operations will end **90 minutes prior** to the end of the shift, so that the forecaster can fill out their surveys, as well as prepare their weekly Webinar with the help of the Webinar facilitator from WDTB.

The "flex" shift schedule below indicates the time *relative to the starting time of the shift*. Note the slight difference for the Thursday schedule. The start time of the shift will be determined at the end of the previous day's operations shift, based on expected timing of weather. The flex shift time will be posted to EWP Blog and emailed to the participant's MICs the night once the time has been decided.

Tue, Wed, Thu:

0 h	Convene to NSSL Dev Lab (NWC2820)
0 to +30m	Debriefing of previous day event; Daily coordination discussion
+30m	Convene to HWT Operations Area
	EFP coordination meeting to determine CWAs
	1pm EWP map discussion (11am and 12pm shifts only)
	Real-time nowcast/warning operations
+???	Dinner Break (time chosen based on wx)
+8 h	Adjourn

Tue-Wed (last 45 min of shift):

Fill out feedback survey; Day2 forecast prep

Thu (last 90 min of shift):

30-45 min:	Forecasters fill out feedback surveys
45-60 min:	Prepare for TftT Webinar with WDTB facilitator

f. Friday Shift

On **Friday**, our shift is from **9am-1pm**. During the first hour, the forecasters will be working with the WDTB facilitator to practice their ["Tales from the Testbed" Webinar](#). The next 90 minutes will be devoted to an end-of-week debriefing, with a group discussion to summarize the entire weekly testbed experience. Finally, from **1200-1240pm**, the participants will deliver the "nationally broadcast" Webinar. After this, we will take a group photo from somewhere in or near the NWC facility. The experiment adjourns each Friday at **1pm**, after which the participants will begin their travel back home.

In summary, the Friday schedule:

900am	Convene in the WDTB Conference Room
900-950am	Webinar dry run (WDTB Conference Room)
950am	Break; move to the Dev Lab
1000am-1130am	Weekly debrief (Dev Lab)
1130am	Break to grab lunch, move to WDTB Conference Room
1200pm-1240pm	EWP2012 Weekly Webinar (WDTB Conference Room)
1240-100pm	Group photo
100pm	Operations End for the week

4. OPERATIONS

a. Real-time operations (during Mon, Tue, Wed, Thu shifts)

Once we've convened to the HWT operations area for the day, we will begin real-time operations (with the exception of Mondays, in which there will be time up front for AWIPS2 orientation and the pre-shift survey).

Because the experimental products that we will be evaluating cover the spectrum of mesoscale forecasts, nowcasts, and warnings for WFO operations, we will conduct our daily real-time operations in a similar manner. Of course, this is our ideal concept, but we understand it may be "interrupted" and need to be modified on the fly if the atmosphere's plans are "complicated".

i. Mesoscale Forecast and CWA selection "triage"

At the start of the shift, the forecasters will be in "mesoscale forecast" mode. The first activity will be the 15-minute EFP coordination meeting. During this meeting, EWP and EFP forecasters will discuss the EFP's experimental probabilistic severe weather outlook. The schedule of their outlooks is as follows, and we will connect with them along this schedule based on the start of our flex shift for that day:

9am	Full day outlook complete (1630-1200 UTC)
11am	Three hourly outlooks complete (18-21, 21-00, 00-03 UTC)
2pm	Three hourly outlook updates complete (21-00, 00-03 UTC)
4pm	Three hourly outlook updates complete (00-03 UTC)

The EFP outlooks, along with the official SPC convective outlooks, plus any other data, will be used to inform our operational area selection for the day. A "triage" system will be used to make this selection.

- 1) LMA domains have highest priority (> SLGT)
- 2) OUN WRF domain have next priority (> SLGT)
- 3) Greatest severe weather probability has next priority

The triage system is done to maximize operations in our smallest domains (LMAs), then our next size domain (OUN WRF / LAPS), since our chances of severe weather in these areas is reduced, and we want to maximize our opportunities to test these unique data sets.

The domain will be chosen to be the size of one CWA or two adjacent CWAs. The LMA domains (OK/wTX, AL, DC, FL, seTX, neCO) are fixed, but we also have a “floater” domain for when we are operating elsewhere in the CONUS (Fig. 4). To maintain continuity of forecast operations, we will plan to stick with one domain for entire shift. However, understanding that the weather isn’t always ideal, we will have a contingency plan to move to a new domain if severe weather doesn’t form, it dissipates, or it moves offshore. We will plan to move all teams to the new domain if this happens, although this move may happen in a staggered fashion, one or two teams at a time.

Experimental products that will be used when monitoring the mesoscale environment will include the WRF synthetic cloud and moisture imagery and the UW NearCast algorithm.

Forecasters will work as a large team to issue an afternoon/evening local severe wx discussion for their CWA (or for both adjacent CWAs) on the EWP Blog. In addition, they will provide at least hourly updates to their discussions until the end of the shift.

ii. Nowcast operations

Concurrent with mesoscale analysis, nowcast operations will begin with forecasters monitoring the 0-2 hour forecast interval to determine location and timing of convective initiation and evolution. The experimental products that will be used for nowcast operations include the OUN WRF, the Variational LAPS, and the UAH Convective Initiation product. Forecasters will work in groups of two to monitor the weather, and to issue nowcasts via live blogging. In their blog entries, they should provide feedback on the various experimental products that they are using to make their decisions.

iii. Warning Operations

As storms begin, we will begin by moving two forecasters into a warning team to begin using the experimental products and WarnGen on AWIPS2 to issue warnings. The team will consist of a lead warning forecaster, who will issue the actual warning and monitoring other storms for new warnings, and an assistant warning forecaster who will issue the warning SVS follow-ups (continuance or cancelation), as well as make live blog entries.

When more storms develop, we will break off another two forecasters to assume warning operations in the same manner as above. Warning sectors may be within the same CWA, or across two adjacent CWAs.

Two forecasters will always remain on a “meso desk” to inform the warning desks of any pertinent environmental changes. They will also live blog hourly mesoscale/nowcast updates.

The experimental products that will be evaluated for warning operations include the UW Cloud Top Cooling product, the Pseudo Geostationary Lightning Mapper (when in an LMA domain), the Multi-Radar/Multi-Sensor Severe Wx Products, and the dual-pol Hail Size Discrimination Algorithm.

On rare occasions, we have exceeded the number of working hours to capture an extraordinary event. Any forecasters who require and are granted overtime approval are welcome to stay beyond their normal shift hours. The decision to operate for more than 8 hours is also contingent on the availability of EWP staff to remain for the extra hours.

b. Feedback

Feedback will be obtained in a number of different manners. First, there will be the pre-operations online survey that will be given early on Monday. This survey collects information about forecasters’ current methodology for issuing warnings. During operations, feedback is obtained via the EWP Blog entries, as well as real-time discussions with the project investigators. At the end of each shift, the forecasters will fill out an online feedback survey.

At the beginning of the next day’s shift there will be a debriefing of the previous day’s activities. This will include a playback of the previous day’s events and a short discussion of each of the experiments.

On Friday morning we will conduct our longer end-of-week wrap-up. We will discuss the Thursday activities, and then the experiment as a whole from the entire week.

Feedback obtained during these debriefings will be collected and recorded by the weekly coordinator.

c. “Tales from the Testbed” Webinars

Each Friday of the experiment (10 May, 17, May, 24 May), from 1200-1240pm CDT, we will be conducting forecaster-led Webinars known as "**Tales from the Testbed**" (TfT). These Webinars will be facilitated by the NWS Warning Decision Training Branch (WDTB). The format will be similar to WDTB's Dual-pol "Storm of the Month" Webinars. The forecasters have 22 minutes to discuss their key takeaways that week. The audience is for anyone with an interest in what we are doing to improve NWS severe weather warnings, including field personnel, regional and national headquarters folks, and our other stakeholders in NOAA and elsewhere.

At each Webinar, the visiting NWS forecasters will discuss their experience in the testbed and summarize biggest take away from that week. The Webinars will start *promptly* at 1200 CDT, and end 22 minutes later, followed by an 8-minute question and answer session. The Webinar officially ends at 1230pm, but we will stay on the line another 10 minutes to entertain any straggling questions if needed.

The WDTB facilitator will work with the forecasters each day during the week of operations to help them capture images and develop their contribution to the end-of-week Webinars. It is encouraged that many images are captured, and used as Blog entries, as this will make the collation of the images for the webinar that much easier. The final 45-60 minutes of the Thursday shift will be devoted to gathering all the images for the week and coming up with a strategy for the presentation. After the Thursday shift ends, the WDTB facilitator will compile all the images into a PowerPoint presentation. From 900-950am Friday morning, the forecasters will make a practice “dry run” of the presentation, and if any minor changes are needed, the WDTB facilitator will take care of them prior to the 1200pm live Webinar.

New for EWP2013, there will be pre-specified weekly topics. This is meant to keep the material fresh for each subsequent week, and to maintain the audience participation levels throughout the experiment. The schedule:

- Week 1: GOES-R; pGLM*
- Week 2: MRMS, HSDA
- Week 3: EFP outlooks, OUN WRF, LAPS

*pGLM may slide if there are no events within the LMA domains during that week.

One final post-experiment Webinar will be delivered to the National Weather Association and the Research and Innovation Transition Team (RITT) in June. This Webinar will be a combined effort of both sides of the Hazardous Weather Testbed (EFP and EWP).

5. PERSONNEL

a. EWP Officers

Greg Stumpf Operations Coordinator	greg.stumpf@noaa.gov	405-826-8644
Darrel Kingfield Information Technology Coordinator	darrel.kingfield@noaa.gov	630-862-0974
Travis Smith EWP Co-Manager	travis.smith@noaa.gov	405-834-9687

David Andra

EWP Co-Manager

david.andra@noaa.gov

405-325-3527

Lans Rothfus

NSSL HWT Liaison

lans.rothfus@noaa.gov

405-325-6477

b. Weekly Coordinators

There will be one primary weekly coordinator and a secondary coordinator each operations week. The secondary weekly coordinators are used as a “backup” in case the primary weekly coordinator becomes unavailable to fulfill their duties.

The **weekly coordinator** will be responsible for facilitating the operational activities of the week, including:

- Facilitating the EWP daily coordination meetings.
- Facilitating the daily and weekly post-mortem debriefings.
- Final determination of the choice of CWA(s) for the event (with input from the forecasters)
- Determining the shift time for the next day of real-time operations, based on a Day2 outlook.
- Distribution of participants within daily operations
- EWP Blog Entries:
 - Facilitating the forecaster’s daily mesoscale outlook.
 - Live blogging during the IOPs (along with the forecasters).
 - A daily summary (1-3 paragraphs with images) at the end of the day.
 - A weekly summary (in the format of past summaries), ready by COB Friday.
- Participation during and coordination of the Intensive Operations Periods (IOP).
 - Ensuring that the principle scientists are interacting with the forecasters.
 - Ensuring the smooth running of the technology and alerting various IT personnel when there are problems.
 - Rotating forecasters amongst workstation locations at regular intervals to avoid fatigue.
 - Coordinating dinner time.
 - Coordinating the content on the Situational Awareness Display (SAD).
 - Ensuring “crowd and noise control”.
 - Facilitating post-IOP surveys.
 - Making sure the ops area is clean and all computers logged off at end of shift.

c. Principle Scientists

These are participants with advanced knowledge of the specific project and technologies, and who will work closely with the forecaster participants during familiarization, operations, and debriefings. These are typically scientists from the NWC or collaborating academic institutions and/or laboratories. There will be at least 1 PI per experiment available on any given day. The PIs will also be available 1000-1130am Friday for the end-of-week debriefing and from 1200-100pm for the Webinar and group photo.

d. Forecaster Participants (WFO meteorologists, and more!)

These participants will be the invited NWS WFO forecasters. The forecasters will be available full-time for the entire weekly shift schedule. There will be 6 forecaster participants per day. They will be helping to evaluate each experiment and providing feedback in real-time and during the debriefings as per the experiment objectives. They will be issuing mesoscale, and nowcast products via the blog, issuing warnings using WarnGen on AWIPS2, and live blogging. They will be working alongside Principle Scientists at any of the experiment stations during the week.

e. Observers

In addition to the full-time forecasters, there may be several part-time observers for each operations day. The observers represent a number of different institutions inside and external to the NWC.

6. TRAVEL LOGISTICS

a. Location

The 2013 EWP Spring Program will take place at the National Weather Center (NWC) in Norman, Oklahoma. Real-time operations will be conducted in the area known as the Hazardous Weather Testbed (HWT) operations area. The HWT is physically located in a glass-enclosed room between the operations floors of the Storm Prediction Center (SPC) and the Norman NWS Weather Forecast Office (OUN WFO) on the NWC 2nd floor. The orientation (1p Mon), daily coordination meetings (Mon-Thu), and weekly de-briefings (1000-1130am Fri) will take place in the NSSL Development Lab, which is Room 2820 adjacent to the NWC Atrium elevators on the 2nd floor. The “Tales from the Testbed” Webinars (1200-1240pm Fri) will take place in the WDTB Conference room on the 2nd floor.

b. NWC Building Security

The NWC is a University of Oklahoma building that houses several NOAA facilities. The NSSL Dev Lab and the HWT Operations Area are considered secure NOAA locations. Therefore, certain NOAA security requirements are in effect for visitors to the HWT. All NOAA employees are required to visibly wear, at all times, their NOAA identification badges, in addition to special “HWT Spring Experiment” badges they will receive upon Monday check-in. Non-NOAA visitors must check in **each day** with the security desk at the 1st floor entrance to obtain a daily visitor pass.

The NOAA participants will be issued one white magnetic key card which will allow entrance into certain secure locations in the NWC. These include the NOAA main hallway (with access to a kitchenette) and the HWT operations area. Each door card has an associated 4-number PIN that is keyed into the lock pad in order to gain entry. Participants must return their door key cards and visitor badges to the Operations Coordinator before they leave the NWC on Friday to return home, as these will be recycled each week for the next set of participants.

c. Lodging, Amenities, Maps

Out of town participants are encouraged to stay at one of the following hotels depicted on Figure 1 which offer the U. S. government per diem lodging rates. Hotels details are listed in the [Appendix](#). The hotel locations are nearby a number of restaurants and other Norman businesses. This will allow participants to share rides if needed, or to socialize outside of shift hours.

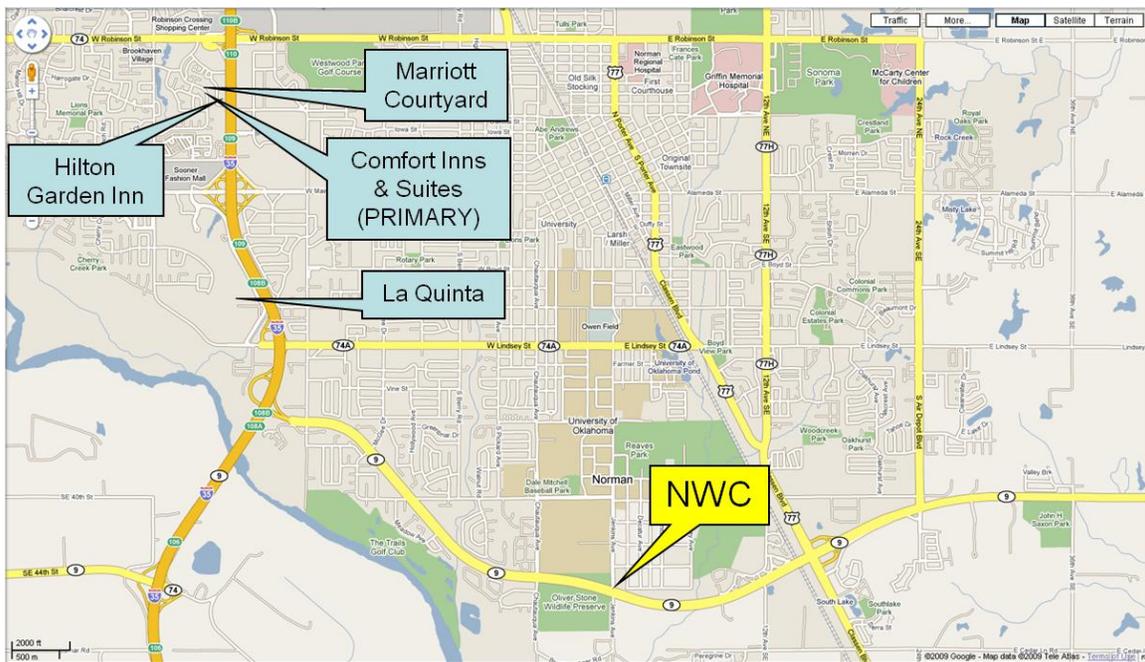


Fig 1. Map of the Norman area, incl. location of hotels and the National Weather Center.

For those renting a car, Figure 2 shows a map with directions from Will Rogers World Airport to the National Weather Center. Be aware that the section of Interstate 44 that you will travel from the airport is in the direction of “West”, even though it goes south on the map. Take Airport Road to I-44 West to I-240 east to I-35 South to Norman.

For those without rental cars, transportation between the OKC airport and the hotel should be arranged using this airport shuttle service:

<http://www.airportexpressokc.com/hotelrates.html>

To help ease travel costs, we encourage ride-share drivers to offer shuttle service to and from the airport for the other participants. Please do not use a taxi or limo unless absolutely necessary, as their costs can be considerably higher than an airport shuttle.

Participants are encouraged to save costs by sharing rides to and from the NWC. NWC employees will be unable to provide personal shuttle service.

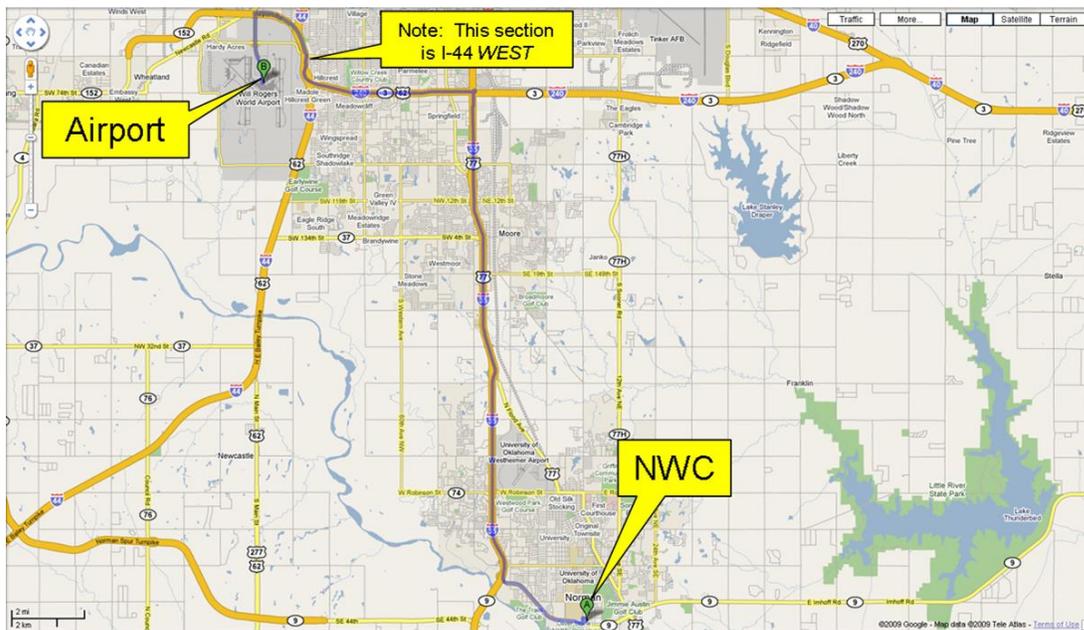


Fig 2. Map showing directions from the OKC airport to the National Weather Center.

Additional visitor information is available at this link:

<http://www.nssl.noaa.gov/aboutnssl/visitor.html>

Each participant’s travel is fully funded and has generously been provided by the GOES-R Program and the NOAA Global Systems Division (GSD). Details on travel charging are distributed to the participants via email prior to the start of their trip.

d. Information specific to invited WFO participants

Note that the NSSL-sponsored full-time WFO participants are required to participate in the full shift schedule which begins at 1pm Monday and ends at 1pm Friday. The dates and times for travel to and from Norman will have to be determined and approved by the participants' WFO management to guarantee that the participants are on site for their assigned shift.

On rare occasions, we may exceed eight (8) working hours to capture a late event. In these cases, we will ask each participant who is a member of the NWS Collective Bargaining Unit to seek approval for additional overtime hours from their WFO management. Only those participants granted overtime will be allowed to work after the regular shift hours. Non CBU participants (SOOs, etc.) do not need overtime approval.

Note that the real-time operations shifts will intersect dinner. WFO participants are required to eat their meals during a short shift break, one forecaster at a time; preferably as to minimize impact to EWP operations (this can be coordinated on a daily basis). A kitchenette with a microwave, sink, and full-size refrigerator is available in the NOAA common space. On occasion, we may order dinner in (e.g., pizza), but usually not during a major real-time operational event. Note that the Flying Cow Café in the NWC closes at 2pm every day and does not serve dinner.

e. Participant schedule and contact information

The staffing schedule will be posted on the EWP Internal Web Page (<https://secure.nssl.noaa.gov/projects/ewp>). All participants should provide their email and cell phone information to the Operations Coordinator prior to their visit.

7. EQUIPMENT

There will be a variety of equipment available in the HWT Operations Room to support the EWP Spring Program (Fig. 3).

The **Situation Awareness Display (SAD)** will consist of 7 large LCD monitors that will provide images from any of the other EWP computer monitors, as well as live television, web page content, etc. These LCD monitors will be mounted above the desks in two areas of the HWT.

We will be utilizing the NWS **Advanced Weather Interactive Processing System 2 (AWIPS2)** system. Several of the feedback survey questions will ask the participants to comment on using AWIPS2, the first time for most of them.

The NWC 3rd floor computer room contains our AWIPS2 servers. In the HWT operations area, there are ten HWT AWIPS2 workstations (LX machines), capable of

running AWIPS2 CAVE. Most of the experimental grids are provided for viewing within the CAVE Volume Browser. The forecasters will be using the experimental data along with traditional weather data to issue experiment products and warnings on AWIPS2. Besides live WSR-88D data, the AWIPS2 system will provide live satellite, surface, upper air, and numerical model data.

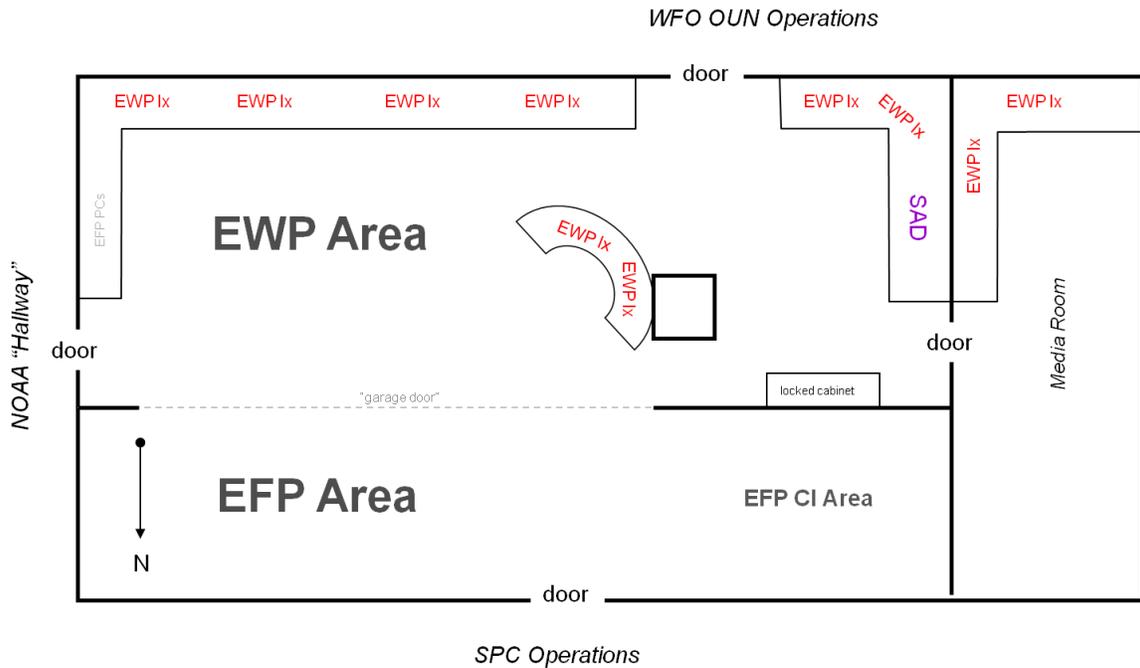
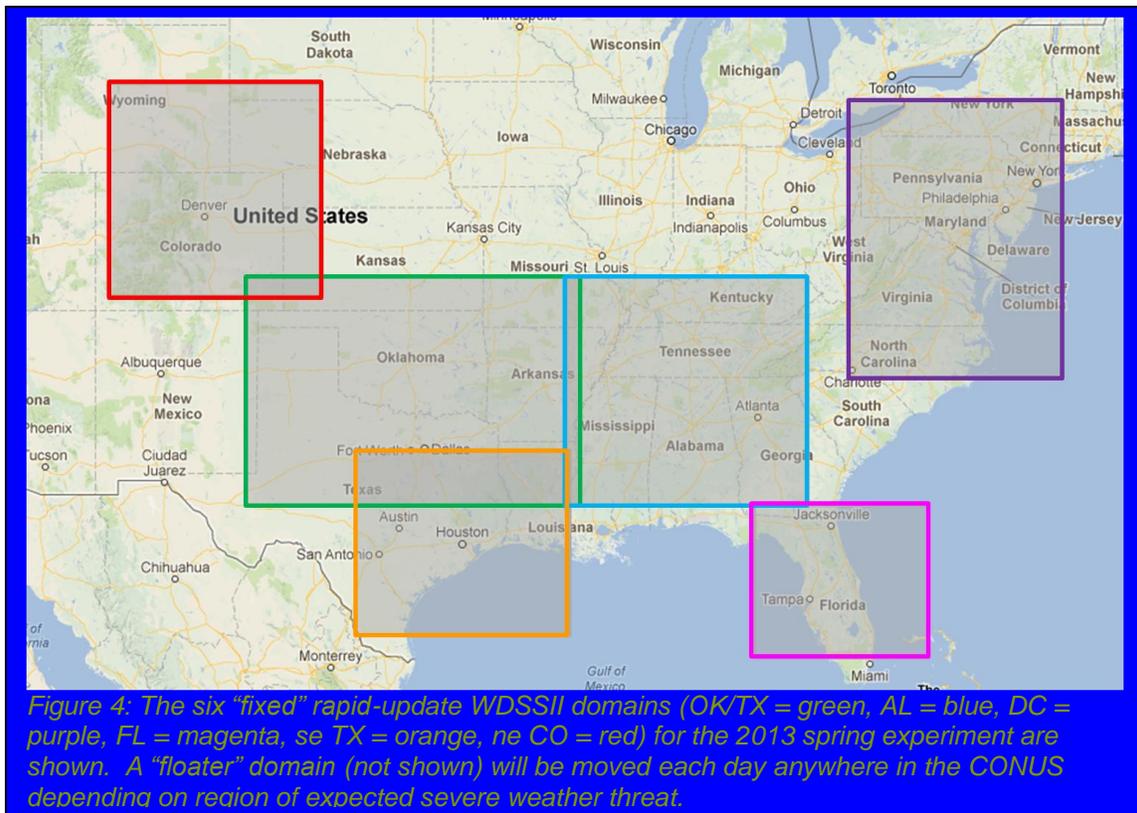


Fig 3. Layout of the Hazardous Weather Testbed operations area.

The **Open Radar Product Generator (ORPG)** servers are also located on the 3rd floor of the NWC. The ORPG servers have the capability of running up to ten live radar feeds in the CONUS, such that we can localize the AWIPS2 system to any NWS WFO.

All of the real-time experimental product grids are also available for viewing on the Warning Decision Support System – Integrated Information (WDSSII) display software, as well as in **Google Earth™** (GE) and **Google Maps™** (GM), and we may display data from these platforms on the SAD during real-time operations.

There will be seven EWP domains (Fig. 4) for the 2013 EWP spring experiment. Six of the domains are fixed and centered on the four Lightning Mapping Array domains covering central Oklahoma/west Texas, northern Alabama, east-central Florida, the Washington DC area, southeast Texas surround Houston, and in northeast Colorado. A seventh domain will “float” anywhere in the CONUS and be positioned each day over an area where storms are expected. The OUN WRF domain (not shown) is slightly larger than the Oklahoma domain. Most of the products have a horizontal and vertical resolution of 1 km, and a refresh rate of 2 minutes. The MRMS merged azimuthal shear and rotation tracks products have a horizontal resolution of 500 meters.



8. WEB RESOURCES

There are two web resources available. The external (public) web site contains general information about the EWP and past experiment summaries:

<http://hwt.nssl.noaa.gov/ewp>

The internal (private) web site is for experiment participants only. NOAA LDAP credentials are required for access. Several non-NOAA participants have been "white listed" for entry. The content includes operations plans, training materials, links to the online feedback surveys, a Google Calendar with the schedules, and other useful links. In addition, links to the [EWP Blog](#) (which remains private during the experiment, public otherwise) and the [GOES-R PG HWT Blog](#) are available.

<https://secure.nssl.noaa.gov/projects/ewp2013/>

9. ACKNOWLEDGMENTS

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APPENDIX: Lodging Options for the Norman Area

All of these options are within 5 miles of the National Weather Center. Most offer the Norman Federal per diem rate of \$77/night for certain rooms and certain dates.

Information also available at: <http://www.visitnorman.com/lodging/hotels/>

Comfort Inn & Suites:

840 Copperfield Drive
Norman, OK 73072
405-701-5200

Federal government rate of \$77 is available with a government ID. This hotel opened in 2008. It is located approximately 5 miles from the NWC. Hotel is within walking distance of several restaurants. Amenities include: free breakfast, indoor pool and spa, pillow-top mattresses, exercise room, free in-room wireless high speed internet, microwave, and mini-fridge.

Courtyard Marriott:

770 Copperfield Drive
Norman, OK 73072
405-701-8900

Federal government rate of \$77 is available with a government ID. This hotel opened in 2008. It is located approximately 5 miles from the NWC. Hotel is within walking distance of several restaurants. The hotel is 100% smoke-free. Amenities include: on-site dining, indoor pool and spa, exercise room, free in-room wired and wireless high speed internet.

Hilton Garden Inn:

700 Copperfield Drive
Norman, OK 73072
405-579-0100

Federal government rate of \$77 is available with a government ID only during select weeks. This hotel opened in 2008. It is located approximately 5 miles from the NWC. Hotel is within walking distance of several restaurants. Amenities include: on-site dining, LCD TV, outdoor pool, exercise room, free in-room high speed internet, microwave, and mini-fridge, 24-hour snack shop.

La Quinta Inn: 930 Ed Noble Drive
Norman, OK 73072
405-579-4000

Rate of \$72 is available with a government ID (\$5 less than current government rate). Newly renovated. It is located approximately 3 1/2 miles from the NWC. Hotel is within walking distance of restaurants and shopping. Amenities include: free continental breakfast, LCD television, outdoor pool and spa, fitness center, free in-room wireless high speed internet, microwave and refrigerator in some rooms.