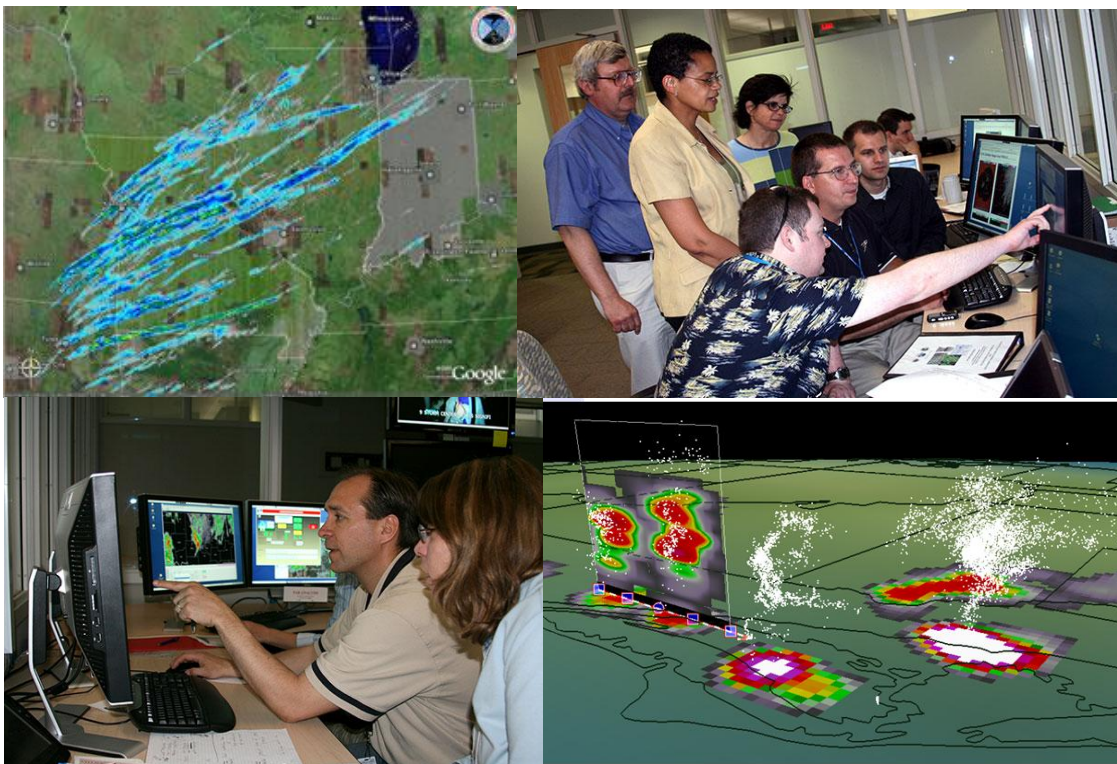


Experimental Warning Program

NOAA Hazardous Weather Testbed, Norman, OK

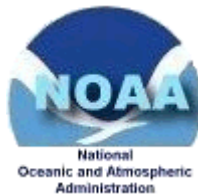
2012 SPRING EXPERIMENT EWP2012

OPERATIONS PLAN



Gregory J. Stumpf, CIMMS/NWS-MDL

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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 2012 EWP Spring Program (EWP2012). We will be conducting the EWP2012 for 5 weeks total (Monday – Friday), from 7 May through 15 June. There are no operations during Memorial Day week (28 May – 1 June).

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 fifth year for warning activities in the testbed. There will be three primary projects geared toward WFO applications, 1) an evaluation of 3DVAR multi-radar real-time data assimilation fields being developed for the Warn-On-Forecast initiative, 2) an evaluation of model performance and forecast utility of the OUN WRF when operations are expected in the Southern Plains, and 3) 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-TX, AL, DC, FL).

We are looking for feedback from NWS operational meteorologists. User comments will be collected during shifts, electronic surveys will be given at the end of shifts, and discussions will occur during post-mortem de-briefings. 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.

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

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 [Steve Weiss](#) (SPC).

we are testing during the 2012 spring convective season, as well as logistical information about the four-week program for all participants.

Additional information about the EWP2012 Spring Program is available and regularly updated on our Web site: <https://secure.nssl.noaa.gov/projects/ewp2012>.

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.

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 2012 Experimental Warning Program Spring Experiment (EWP2012) 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 implementation 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 EWP2012 are:

- To evaluate the operational utility of **Warn-on-Forecast 3DVAR Real-time Data Assimilation** technology. The goals are to:
 - To create real-time weather-adaptive 3DVAR analyses at high horizontal resolution and high time frequency with all operationally available radar data from the WSR-88D network.
 - Compare 3DVAR data to other radar products, including multiple-radar/multiple-sensor (MRMS) products.
 - Determine the potential operational impacts of these data on the WFO nowcast and warning decision process?
- 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 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.

More detailed information about the individual experiments, including specific objectives, evaluation details, and technology user manuals, will be made available in separate documents in EWP loose-leaf binders given to the participants at the start of their visit, and online at:

<https://secure.nssl.noaa.gov/projects/ewp2012>

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

3. SCHEDULES

a. Dates of operation

EWP2012 will be conducted during a **five-week period** beginning **Monday 7 May 2012**, and ending **Friday 15 June 2012**. There will be no operations Memorial Day week this year (28 May – 1 June 2012). During these five weeks, 4 to 6 full-time NWS participants will be visiting each week. There will also be a few part-time observers on any given day.

b. Weekly schedule

Mondays will start **1pm** with an introduction to the Experimental Warning Program and a brief description of the experiment logistics will be given in the NSSL Dev Lab (NWC 2820). Next, we will have daily weather coordination discussion to determine where we will conduct our real-time operations for the day. After that, the participants will convene to the HWT Operations Area to 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. The Monday shift is scheduled to end at **9pm**. If conditions warrant and there is a major 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.

Tuesdays, Wednesdays, and Thursdays continue our real-time operational days. We will be operating a flexible shift schedule during the Tuesday, Wednesday, and Thursday of the operations week. This new shift schedule attempts to provide for some flexibility to account for variable severe weather event times. The shifts will run either of these blocks of hours: 12-8pm, 1-9pm, 2-10pm, or 3-11pm, **however most of the time, we will run a 1-9pm shift.**

At the start of the shift, the EWP participants will convene to the NSSL Dev Lab to have a debriefing of the previous day's events followed by a daily weather coordination discussion, all facilitated by the weekly coordinator. At the coordination meeting, the weekly coordinator will establish our remaining schedule for the day, assigning the various participants to one or more "virtual WFOs" and real-time operations will commence. As storms develop, we will conduct intensive nowcast/warning operations. Our participants will leave 8 hours after the shift began. If conditions warrant and there is a major severe weather outbreak underway, we may extend either shift and seek overtime approval for those visiting forecaster that require it.

On **Friday**, our shift is from **9am-1pm**. During the first hour, the forecasters will be working with a WDTB facilitator to complete the development and practice their "Tales from the Testbed" Webinar (more on this later in the Operations Plan). The next two hours will be devoted to an end-of-week debriefing, with a group discussion to summarize the entire weekly testbed experience. Finally, from **12-1pm**, the participants will deliver the "nationally broadcast" Webinar. The experiment adjourns each Friday at **1pm**, after which the participants will begin their travel back home.

c. Typical Mon-Thu real-time operations activities:

At the start of our shifts, we will conduct the **EWP daily coordination meeting**. With the exception of Mondays, these will begin with a debriefing of the previous day's real-time events. Next, the weekly coordinator will facilitate a discussion to choose which domain, time period, and projects we'll be concentrating on for the afternoon and evening operations. Preference will be given to our fixed domains in order to maximize our chances to evaluate those special products only available to those domains (PGLM and OUN WRF). Otherwise, the EWP can operate as any WFO in the CONUS. At times, we have also operated as two "adjacent" virtual WFOs if the event conditions warrant. After the decision is made, we will spend time debriefing and reviewing the previous day's exercise, gathering additional feedback on the experimental products.

We will complete our coordination meeting after one hour, after which the EWP IT personnel will begin the process to re-localize the AWIPS2 workstations for the chosen CWA(s) of the afternoon/evening nowcast/warning operations. During this time, the forecasters from both shifts can take a break. Once the AWIPS2 are re-localized, operations will resume. On Mondays, we will also spend time having the forecasters become familiar with AWIPS2, how to use the experimental products, and checking and building procedures.

Operations from this point forward will be weather-dependent. The weekly coordinator will guide the activities of the forecasters from both shifts. Typically, if convective initiation is not expected for another few hours, then the forecasters will monitor the weather and consider issuing nowcasts and warnings when conditions warrant.

When storms develop and we start to issue warnings, we consider this our “intensive operations period” or IOP. During IOPs, the project scientists will capture images, and to write and update live blogs detailing their notes, images, and participant feedback. The forecasters will be issuing nowcasts and warnings at the AWIPS2 workstations, while viewing the experimental data.

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.

d. Operational shift times

The weekly shift schedule will be as follows:

Mon	1-9p	Orientation, Operations
Tue-Thu	flex hours	Operations (info about flex hours is below)
Fri	10a-1p	Debriefing, Webinar

e. Monday Schedule

1245p	Visitor welcome at NWC 1 st floor entrance
100p	Convene to NSSL Dev Lab (NWC2820)
100p	Welcome and Introductions
115p	EWP2011 Orientation Briefing
145p	Daily weather discussion
215p	Break
230p	Convene in HWT Operations Area for on-hands AWIPS2 Familiarization; procedure building; screen captures for Webinars
415p	Break (or when forecasters are ready to begin real-time ops)
445p	Real-time nowcast/warning operations in HWT Operations Area
??p	Dinner Break (time chosen based on wx)
815p	Fill out feedback survey
845p	Day 2 forecast discussion to choose tomorrow’s “flex” shift time
900p	Adjourn

f. Tue, Wed, Thu “Flex” Schedule (Tue-Thu)

The “flex” shift schedule below indicates the time *relative to the starting time of the shift*. Note the slight difference for the Thursday schedule. All shift hour information will be relayed to the participant’s MIC at the end of the week.

0 h	Convene to NSSL Dev Lab (NWC2820)
0 to +1 h	Debriefing of previous day event; Daily coordination discussion
+1 h	Break
+1 h 15 m	Real-time nowcast/warning operations in HWT Operations Area
???	Dinner Break (time chosen based on wx)

Tue and Wed:

+7 h 15 m	Fill out feedback survey
+7 h 45 m	Day 2 forecast discussion to choose tomorrow's "flex" shift time
+8 h	Adjourn

Thu:

+7 h 00 m	Fill out feedback survey
+7 h 30 m	Dry run of Webinar with WDTB facilitator
+8 h	Adjourn

g. Debrief Day Schedule (Fri)

900am	Complete Webinar; Practice presentation (WDTB Conference Room)
1000am	Weekly debrief (NSSL Dev Lab)
1140am	Break to grab lunch, move to WDTB Conference Room
1200pm	EWP2012 Weekly Webinar (WDTB Conference Room)
100pm	Operations End for the week

h. Debriefings

The daily debrief will include a playback of the previous day's events and a short discussion of each of the experiments. The weekly debrief will be a time for longer and continued discussions and end-of-week wrap-up. Feedback obtained during these briefings will be collected and recorded by the weekly coordinator.

i. Training

For the first time in EWP history, and based on feedback from forecaster participants in former EWP spring experiment, we are providing the training and orientation materials for our spring experiment online. Forecasters will now go through the material in an 8-hour self-paced course to be taken during an on-station supernumerary shift within two weeks prior to their arrival at the Hazardous Weather Testbed in Norman. The training materials consist of a mixture of self-paced PowerPoints, several Articulate and Visitview presentations, and a WES Virtual Machine training case with various job sheets. The advantage of this format is that it opens up Mondays as a fourth real-time operations day for each week.

4. 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

b. Weekly Coordinators

There will be one primary weekly coordinator and a secondary coordinator each operations week.

The **primary weekly coordinator** will be responsible for facilitating the EWP coordination meetings on Tue, Wed, and Thu (130-230pm). The weekly coordinator will also facilitate a Friday end-of-week debriefing from 10am-12pm, and arrange a brown-bag seminar session if any participants desire to give a talk (from 12-1pm, "conference style" if there are more than one seminars). The weekly coordinator is also present during each IOP. Finally, the weekly coordinator is responsible for maintaining entries on the EWP Blog. The detailed responsibilities of the primary weekly coordinator include:

- Facilitating the EWP daily coordination meetings.
- Determining the location of afternoon/evening warning operations.
- Determining the shift time for the next day of real-time operations, based on a Day2 outlook.
- Distribution of participants within daily operations
- Facilitating the daily and weekly post-mortem debriefings.
- EWP Blog Entries:
 - A daily outlook (1-3 paragraphs with images) at the end of the daily coordination meeting.
 - Live blogging during the IOPs.
 - A daily summary (1-3 paragraphs with images) at the end of the day.
 - A weekly summary (1-2 pages), ready by COB Friday.
- Participation during and coordination of the Intensive Operations Periods (IOP).

- Live blogging during IOPs and/or ensuring that the cognizant scientists are live blogging during IOPs.
- Ensuring the smooth running of the technology and alerting various IT folks when there are problems.
- Collecting forecaster feedback, quotes, and testimonials from the cognizant scientists and forecaster/evaluators.
- Rotating forecasters amongst workstation locations at 1 or 2 hour intervals.
- Coordinating the content on the Situational Awareness Display (SAD).
- Ensuring “crowd and noise control”.
- Facilitating post-IOP surveys.
- Setting up visitor Friday brown bag seminars. Ideally, these should be determined by the end of the Wednesday daily coordination meeting, and an email announcement sent to the EWP “Brown Bag Lunch” mailing list.

The **secondary weekly coordinators** will be available for the early shift to localize the AWIPS2 machine to a particular WFO. The secondary weekly coordinators are also used as a “backup” in case the primary weekly coordinator becomes unavailable to fulfill their duties.

c. Principle Investigators/Cognizant Scientists (NWC researchers, and more!)

These are participants with advanced knowledge of the specific project and technologies (3DVAR, OUN WRF, GOES-R), and who will work closely with the forecaster participants during training, 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. Information about accessing the internal Web page will be provided to all participants prior to the start of the project. The PIs will also be available 10am-12pm Friday for the end-of-week debriefing.

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

The bulk of 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 4 to 5 forecaster participants assigned on any given day, and a schedule will be posted online.

Regardless of their affiliation, these are the participants who will fill the role of a NWS WFO forecaster, helping to evaluate each experiment and providing feedback in real-time and during postmortem debriefings as per the experiment objectives. They will be working alongside Cognizant 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.

5. TRAVEL LOGISTICS

a. Location

The 2012 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 (12p Mon), daily coordination meetings (Mon-Thu), and weekly de-briefings (10am-12pm 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 (12-1pm 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. 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. The hotel locations (except the Best Western and Residence Inn) 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.

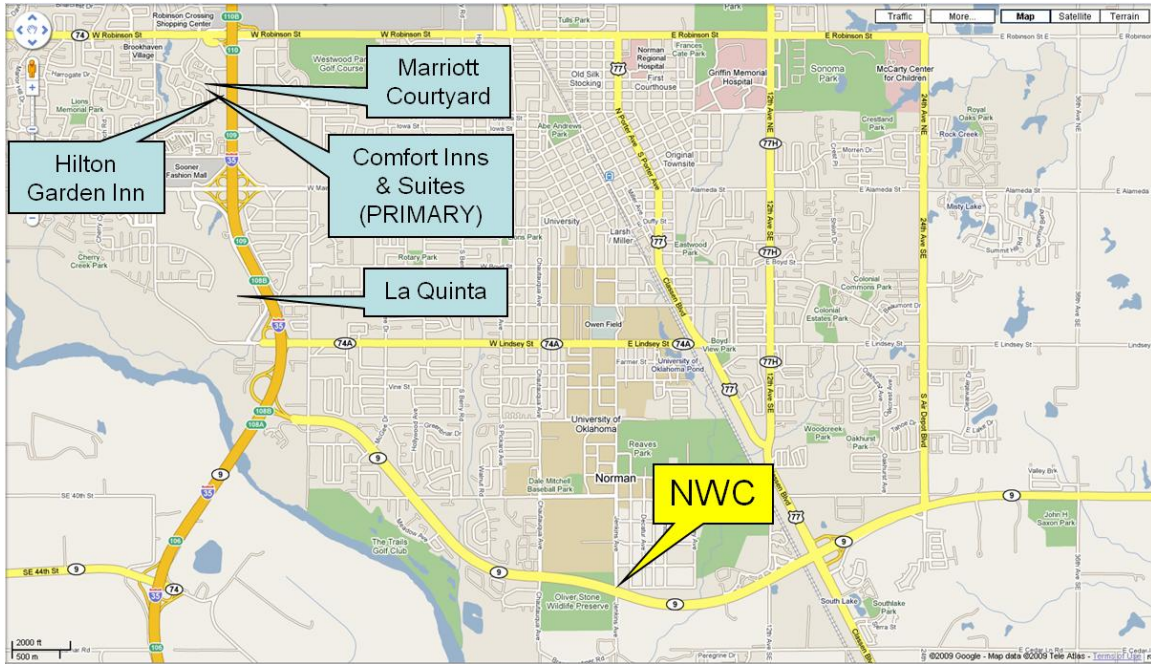


Fig 1. Map of the Norman area, incl. location of hotels and the National Weather Center.

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. You can find specific information about the hotels in Appendix A.

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 hope that ride-share drivers are willing 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.

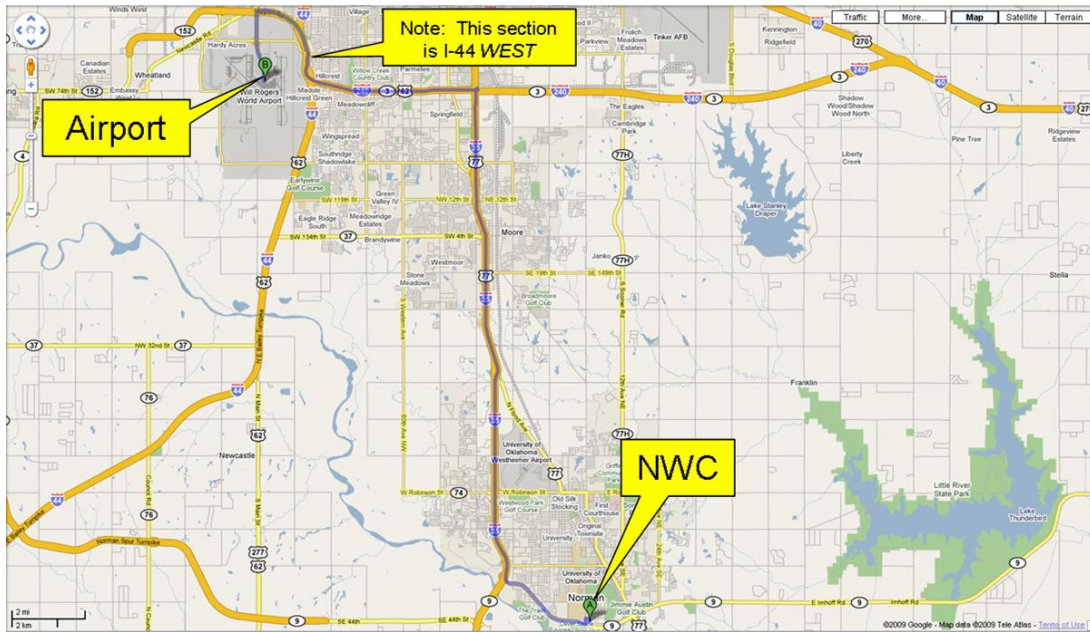


Fig 2. Map showing directions from the OKC airport to the National Weather Center.

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 NSSL and the GOES-R Program. 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 12pm 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. "Tales From the Testbed" Webinars

With the generous assistance of the NWS Warning Decision Training Branch (WDTB), we are embarking on a new feature of the spring experiment. Each Friday of the experiment (11 May, 18, May, 25 May, 8 June, 15 June), from 12-1pm CDT (1-2pm EDT), we will be conducting forecaster-led Webinars known as "**Tales From the Testbed**". The format will be similar to WDTB's Dual-pol "Storm of the Month" Webinars. At each Webinar, each visiting NWS forecaster will summarize their biggest take away from their week of participation in the testbed. After the short presentation, there will be a 30 minute question and answer session with the audience. 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 the NOAA labs, the GOES-R office, the NextGen program, and elsewhere.

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.

f. 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.

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.

New for 2012, 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. 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.

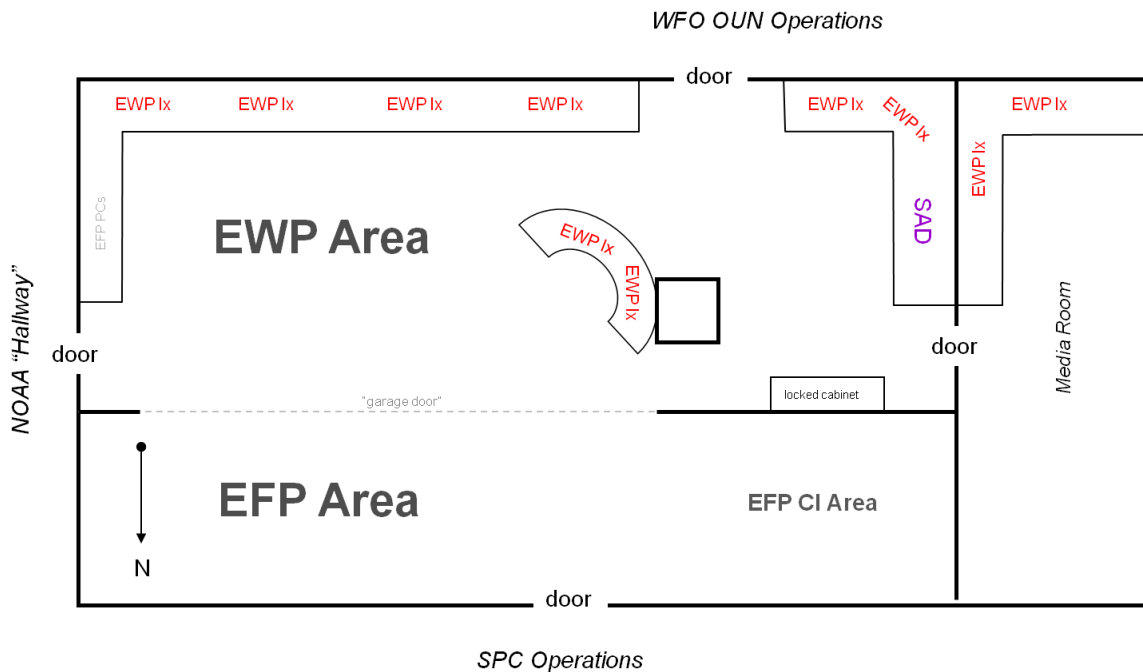


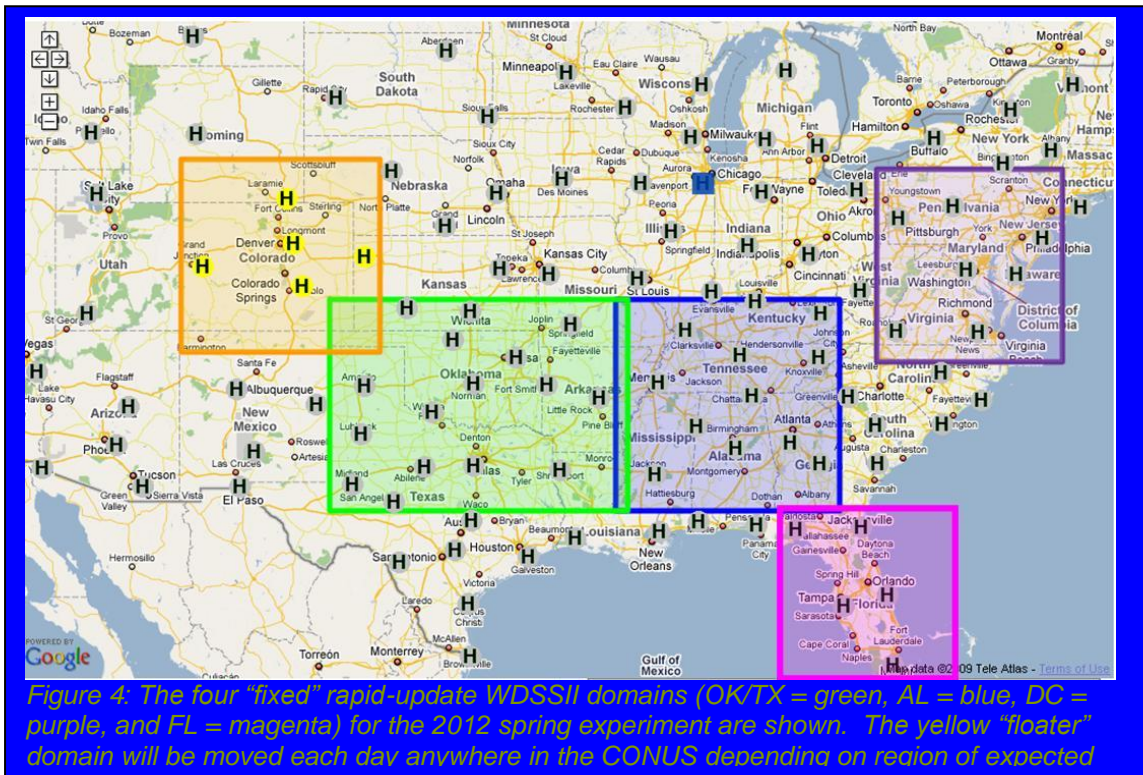
Fig 3. Layout of the Hazardous Weather Testbed operations area.

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 five 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 five EWP domains (Fig. 4) for the 2012 EWP spring experiment. Four of the domains are fixed and centered on the four Lightning Mapping Array domains covering central Oklahoma/west Texas, northern Alabama, east-central Florida, and the Washington DC area. A fifth domain will “float” anywhere in the CONUS and be positioned each day over an area where storms are expected. There are also four “floating” 3DVAR domains (not shown), which are smaller than the domains shown below. 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.



7. ACKNOWLEDGMENTS

The 2012 EWP Spring Program wouldn't be possible without contributions from a number of individuals and organizations. Those from the National Oceanic and Atmospheric Administration (NOAA) include: the National Severe Storms Laboratory (NSSL) Warning Research and Development Division and the NSSL Radar Research and Development Division, the National Weather Service's Meteorological Development Laboratory (MDL), the GOES-R Program Office, and the NWS Weather Forecast Office in Norman, OK.

In particular the following individuals should be cited: Darrel Kingfield, Karen Cooper, Travis Smith, Kristin Calhoun, Chris Siewert, Kiel Ortega, Gabe Garfield, Aaron Anderson, David Andra, Robert Toomey, Jeff Brogden, Valliappa Lakshman, Kurt Hondl, Vicki Farmer, Paul Griffin, Will Agent, Brad Sagowitz, Bob Staples, and others.

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APPENDIX A: 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/vn-hotels-bb.php>

Comfort Inn & Suites:

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

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: 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 week. 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, outdoor pool and spa, fitness center, free in-room wireless high speed internet, microwave and refrigerator in some rooms.