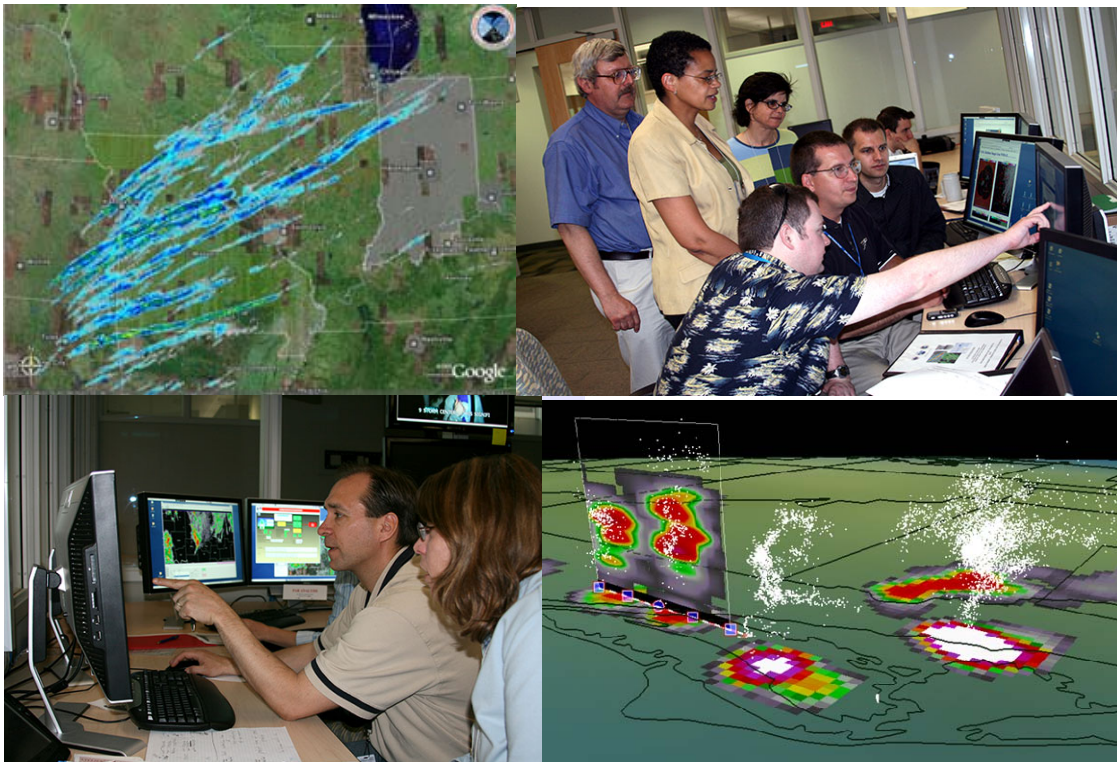


# Experimental Warning Program

NOAA Hazardous Weather Testbed, Norman, OK

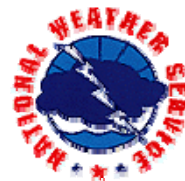
## 2011 SPRING EXPERIMENT EWP2011

### OPERATIONS PLAN



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Version 2.0  
13 May 2011



## 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 2011 EWP Spring Program (EWP2011). We will be conducting the EWP2011 for 4 weeks total (Monday – Friday), from 9 May through 10 June. There are no operations during Memorial Day week (30 May – 3 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)<sup>1</sup>.

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) evaluation of 3DVAR multi-radar real-time data assimilation fields being developed for the Warn-On-Forecast initiative, 2) 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, AL, DC, FL), and 3) evaluation of model performance and forecast utility of the OUN WRF when operations are expected in the Southern Plains.

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 AWIPS 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

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<sup>1</sup> 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 2011 spring convective season, as well as logistical information about the four-week program for all participants.

Additional information about the EWP2011 Spring Program is available and regularly updated on our Web site: <https://secure.nssl.noaa.gov/projects/ewp2011>.

## 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 2011 EWP Spring Program 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 you to understand your 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 EWP2011 are:

- To evaluate the operational utility of **Warn-on-Forecast 3DVAR Real-time Data Assimilation** technology. The goals are to:
  - Provide an initial demonstration of real-time data assimilation ability to NWS forecasters.
  - 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 overshooting-top and enhanced thermal couplet algorithms as storms are ongoing.
- 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 operations.
- Identify appropriate display strategies within AWIPS/AWIPS-2 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/ewp2011>

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

### 3. SCHEDULES

#### *a. Dates of operation*

EWP2011 will be conducted during a **four-week period** beginning **Monday 9 May 2011**, and ending **Friday 10 June 2011**. There will be no operations Memorial Day week this year (30 May – 3 June 2011). During these four weeks, 5 full-time NWS participants will be visiting each week. There will also be a few additional part-time observers any of the weeks.

#### *b. Weekly schedule*

**Monday** is our training day. We will start the day at **10am** with an introduction to the Experimental Warning Program and a brief description of the experiment logistics. After that, the participants will begin orientation and training for each of the projects. This training is expected to last until about 2pm (with lunch in between). From then until **6pm**, forecasters will start becoming familiar with the experimental products on our HWT AWIPS 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 AWIPS procedures. During this time, the forecasters will peruse a Displaced Real-Time archive case using the Weather Event Simulator (WES). The Monday shift is scheduled to end at **6pm**. 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 view real-time data.

**Tuesdays, Wednesdays, and Thursdays** are our real-time operational days. New for this year, we will be splitting the group into two operational shifts. Our idea is to better emulate the daily activities within a WFO, from the forecast process through the nowcast and eventual warning process. This arrangement also provides an opportunity for some of the EWP forecasters to interact with visiting meteorologists on the EFP side of the testbed (the "SPC Spring Experiment"). The **early "forecast" shift** will run from **10am to 6pm**, and the **late "warning" shift** will run from **1pm to 9pm**. Note that there is a 5 hour overlap in the two shifts. During portions of this time, the two groups of forecasters will be working together.

During the middle of each of the real-time operational days, all EWP forecasters and PIs will participate in a joint EFP-EWP map discussion at **1pm**. After the map discussion, the EWP participants will convene to have a daily coordination discussion, and then a debriefing of the previous day's events, all facilitated by the weekly coordinator. After the coordination meeting, the weekly coordinator will establish our remaining schedule for the day, assigning the various participants to one or more "virtual WFOs" or the EFP CI desk, and real-time operations will continue. Our early-shift participants will leave at **6pm**. As storms develop, we will conduct intensive nowcast/warning operations. Our late shift participants will leave at **9pm**. 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 **10am-1pm**. The first 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 be invited to give short seminars on any topic of interest during an informal brown-bag lunch seminar. The experiment adjourns each Friday at **1pm**, after which the participants will begin their travel back home.

*c. Typical Tue-Thu morning real-time operations activities:*

The early shift forecasters will arrive at **10am** to begin their analysis and diagnosis of the current weather. Their analysis will be aided by several experimental forecast and nowcast products such as the UW-NearCast, simulated lightning threat, simulated satellite, and the OUN WRF, in concert with current operational products in AWIPS. The overall goal is to develop a morning Area Forecast Discussion (AFD) by **1230pm**. This AFD will be used to inform the EWP weekly coordinators and PIs in selecting the afternoon/evening nowcast/warning operations domains.

For the morning shift, although we will localize the AWIPS to a single CWA, the AFD will be written to encompass one or more candidate WFOs which the forecasters feel we should be conducting nowcast/warning operations for the late shift. The AFD might be more similar to a regional convective outlook. The forecasters will post their AFD on the EWP Blog. At **1230pm**, the forecasters will break for lunch. At **1pm**, the joint EWP/EFP map discussion will begin. The morning EWP forecasters will provide input at the map discussion as to which candidate WFO domains we will be operating. Also at **1pm**, the late shift EWP forecasters will arrive to the HWT operations area to join the joint map discussion. Finally, at **130pm**, the EWP forecasters will adjourn to the NSSL Development Laboratory for the EWP daily coordination meeting.

*d. Typical Tue-Thu afternoon/evening real-time operations activities:*

During the **130-230pm EWP daily coordination meeting**, 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. This operational domain decision will be informed by the early shift forecaster's AFD and the joint EFP/EWP map discussion. 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 at **230pm**, after which the EWP IT folks will begin the process to re-localize the AWIPS 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 AWIPS are re-localized, operations will resume.

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 (CI) is not expected for another few hours, then the early shift forecasters will join the EFP CI desk to evaluate the CI desk's "secondary" CI domain, which will be tied to the EWP nowcast/warning domain. A number of products and models will be analyzed to make CI forecast decisions. In some situations if time permits, the early shift forecasters will prepare an update to their AFD before the end of their shift. During this time, the late shift forecasters can also collaborate with the CI desk, but they should also be paying attention to convective initiation and consider issuing nowcasts and warnings when conditions warrant.

If, after the daily coordination meeting, convective initiation is imminent or ongoing, the morning shift forecasters will instead immediately begin nowcast/warning operations with the late shift forecasters.

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 AWIPS 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 past 9pm is also contingent on the availability of EWP staff to remain for the extra hours.

*e. Operational shift times*

The weekly shift schedule will be as follows:

Mon	10a-6p	Orientation and Training
Tue-Thu	10a-6p	Early “forecast” shift (2 forecasters)
Tue-Thu	1p-9p	Late “warning” shift (2 or 3 forecasters)
Fri	10a-1p	Debriefing and optional seminars

Participants will be divided into two groups. This is to provide the experience of both shifts to everyone. Each participant will be notified as to which group they’re in via email prior to their visit.

- Group 1: Mo (10a-6p); Tu (10a-6p); We (1p-9p); Th (10a-6p); Fr (10a-1p)
- Group 2: Mo (10a-6p); Tu (1p-9p); We (10a-6p); Th (1p-9p); Fr (10a-1p)

*f. Training Day Schedule (Monday)*

945a	Visitor welcome at NWC 1 <sup>st</sup> floor entrance
1000a	Convene to NSSL Dev Lab for Welcome and Introductions
1015a	EWP2011 Logistics Briefing
1030a	3DVAR Training
1050a	OUN WRF Training
1110a	GOES-R UAH SatCast Training
1130a	GOES-R UWCI Training
1150p	Lunch Break
1220p	GOES-R PGLM Training
1240p	GOES-R OTTC Training
100p	GOES-R NearCast Training
130p	Break
200p	Convene in HWT Operations Area for on-hands training with Displaced Real-Time WES case or real-time data
600p	Adjourn



*g. Real-time Operations Day Schedule (Tue-Thu)*

i. Early “forecast” shift

1000a	Forecasters arrive in HWT Operations Area
1000a-1230p	Prepare and issue initial Area Forecast Discussion
1230p-100p	Lunch Break
100p-130p	Joint EWP/EFP Map Discussion
130p	Convene to Dev Lab.
130p-230p	Debriefing of previous day event (if applicable) and daily coordination discussion
230p	Convene to HWT Operations Area
230p-515p	Work with EFP CI desk; CI monitoring; preparation of update to Area Forecast Discussion; issuing nowcasts/warnings using experimental data (decision on these activities is weather-dependent and up to the weekly coordinator)
515p-600p	Post-event survey
600p	Early Shift forecasters Adjourn

ii. Late “warning” shift

100p	Forecasters arrive in HWT Operations Area
100p-130p	Joint EWP/EFP Map Discussion
130p	Convene to Dev Lab.
130p-230p	Daily coordination discussion; Debriefing of previous day event (if applicable)
230p	Convene to HWT Operations Area
230p-815p	Issuing nowcasts and warnings using experimental data; CI monitoring (decision on these activities is weather-dependent and up to the weekly coordinator). Dinner break will be built in.
815p-900p	Post-event survey
900p	Late Shift forecasters Adjourn

*h. Debrief Day Schedule (Fri)*

1000am-1200pm	Weekly debrief (Dev Lab)
1200pm-100pm	Optional brown bag lunch seminars (Dev Lab)
100pm	Operations End for the week

*i. 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.

**4. PERSONNEL**

*a. EWP Officers*

**Greg Stumpf**

Operations Coordinator                      [greg.stumpf@noaa.gov](mailto:greg.stumpf@noaa.gov)                      405-826-8644

**Kevin Manross**

Information Technology Coordinator      [kevin.manross@noaa.gov](mailto:kevin.manross@noaa.gov)                      405-255-0537

**Travis Smith**

EWP Co-Manager                              [travis.smith@noaa.gov](mailto:travis.smith@noaa.gov)                      405-834-9687

**David Andra**

EWP Co-Manager                              [david.andra@noaa.gov](mailto: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.
- 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 AWIPS 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 2011 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 2<sup>nd</sup> floor. The training (10am-4pm Mon), daily coordination meetings (130-230pm Tue-Thu), and weekly de-briefings and guest seminars (10am-1pm Fri) will take place in the NSSL Development Lab, which is Room 2820 adjacent to the NWC Atrium elevators on the 2<sup>nd</sup> 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 1<sup>st</sup> 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.

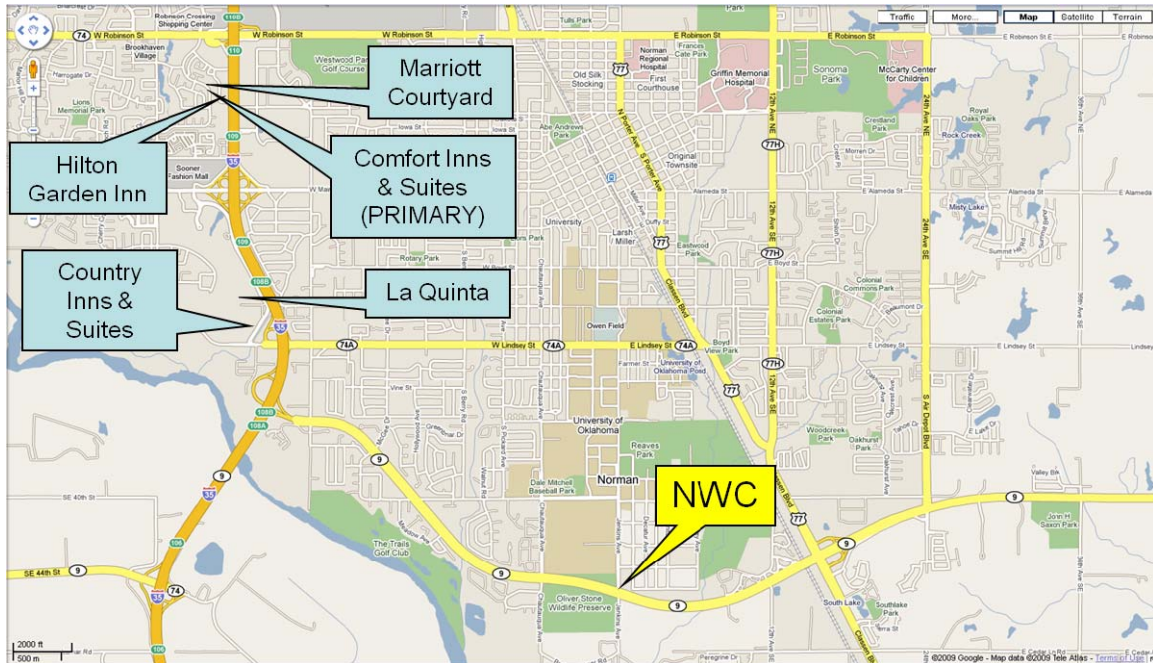


Fig 1. Map of the Norman area, incl. location of hotels and the National Weather Center.

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>

If a ride-share driver is willing to offer shuttle service to and from the airport for the other participants, that will help ease travel costs. 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.

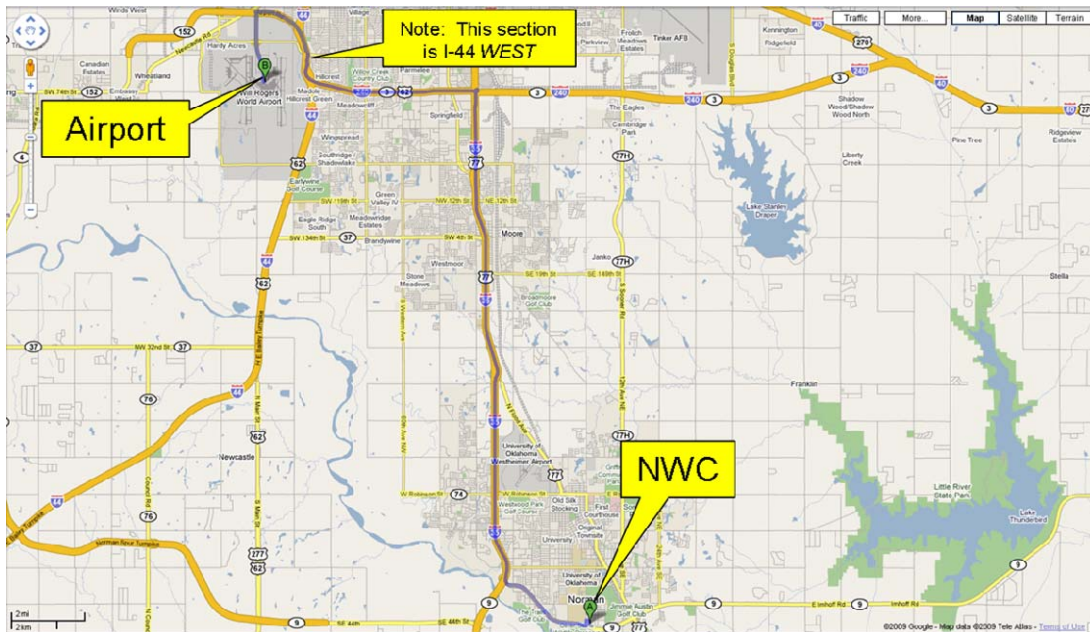


Fig 2. Map showing directions from the OKC airport to the National Weather Center.

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 on one of two schedules. Each participant will be notified as to which group they're in via email prior to their visit.

Group 1: Mo (10a-6p); Tu (10a-6p); We (1p-9p); Th (10a-6p); Fr (10a-1p)

Group 2: Mo (10a-6p); Tu (1p-9p); We (10a-6p); Th (1p-9p); Fr (10a-1p)

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 the number of working hours to capture a late event (past 6pm on Mon, past 6pm on Tu-Th for the early shift, or past 9pm on Tu-Th for the late shift). 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 late “warning” shifts on Tu-Th 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 3pm every day and does not serve dinner.

*e. Optional seminars*

In the past, some of the HWT visitors have requested time to present a seminar on a topic of their choosing. While seminars are not required for participation in the Spring Experiment, we will accommodate participants if there is interest. We have set an optional block of time on Fridays, from 12-1pm, for seminar presentations. These seminars will be conducted in the NSSL Development Lab. Since this is lunch time, the seminars will be of a “brown bag lunch” informal style with a generally small group of invited attendees. If more than one participant chooses to present a seminar, they will be squeezed into the one hour block, using “conference style” timing (15, 20, or 30 min each), for a maximum of 4 seminars. Seminars should be arranged with the weekly coordinator by the end of the Wednesday daily coordination meeting so that an announcement can be sent to interested viewers.

*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.

## 6. EQUIPMENT

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

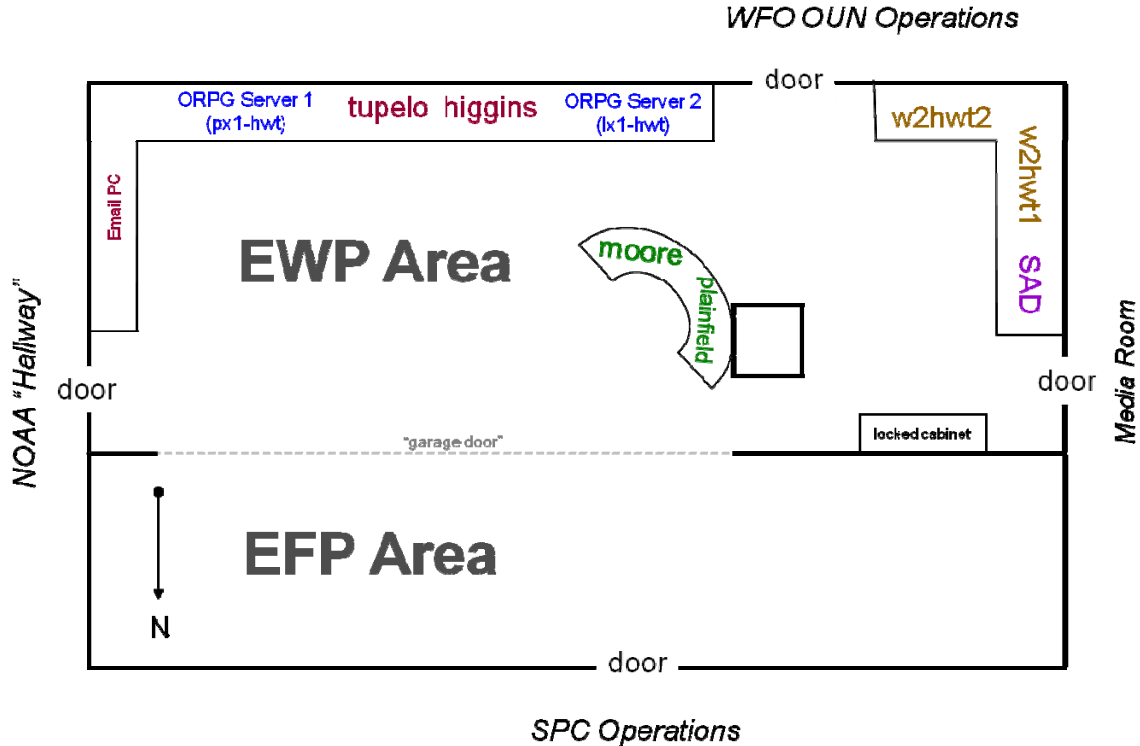


Fig 3. Layout of the Hazardous Weather Testbed operations area.

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.

There are three HWT Linux workstation pairs, as well as several support stations. We have the capability to run any experiment from any of the workstations.

- **w2hwt1 - w2hwt2** occupies the SW corner of the HWT.
- **tupelo - higgins** occupies the south-central wall of the HWT.
- **moore - plainfield** occupies the curved table near the west column in the HWT.

In the NWC 3<sup>rd</sup> floor computer room runs our **Advanced Weather Interactive Processing System (AWIPS1, AWIPS2) servers**. Each of the Linux workstations in the HWT are capable of running **AWIPS D2D displays**. The experimental grids are provided for viewing within the D2D Volume Browser. The forecasters will be using the experimental data along with traditional weather data to issue experiment products and

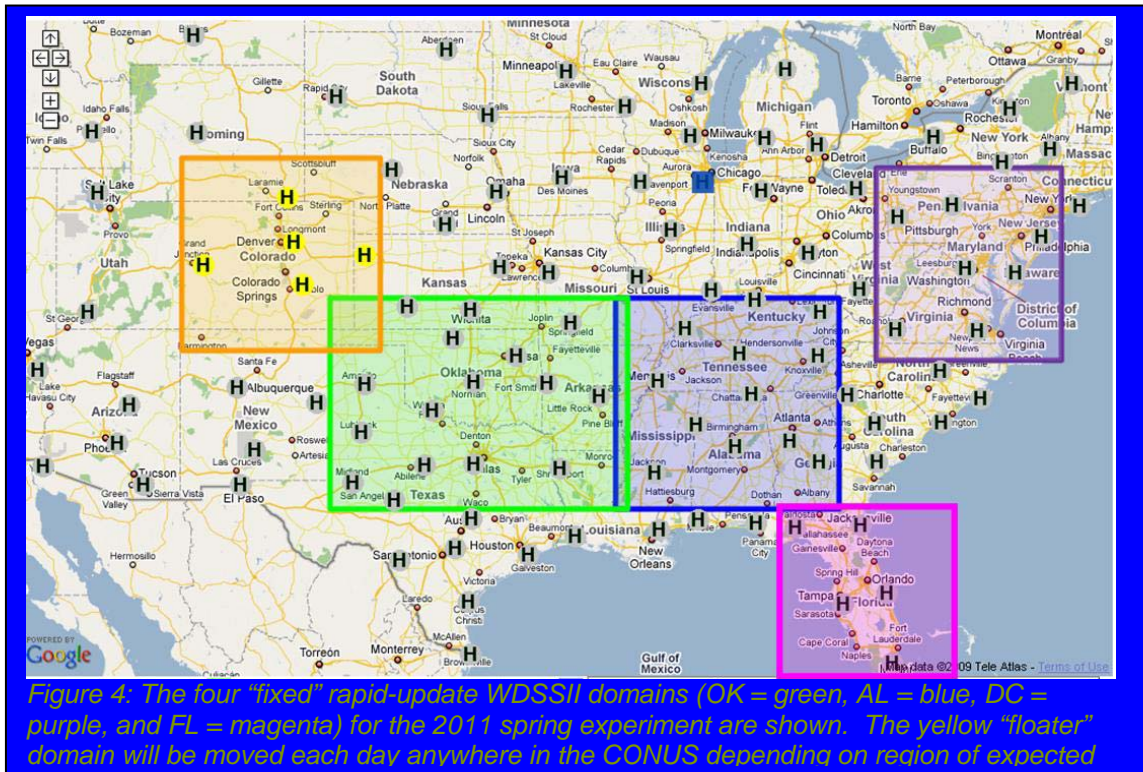


warnings on AWIPS. Besides live WSR-88D data, the AWIPS system will provide live satellite, surface, upper air, and numerical model data.

There are two **Open Radar Product Generator (ORPG)** servers **along** the south wall flanking either side of the tupelo – higgins workstation pair. These ORPG servers (px1-hwt, lx1-hwt) each have the capability of running up to five live radar feeds in the CONUS, such that we can localize the AWIPS 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 2011 EWP spring experiment. Four of the domains are fixed and centered on the four Lightning Mapping Array domains covering central Oklahoma, 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. 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**

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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 and offer the Norman Federal per diem rate of \$77/night for certain rooms.

Information also available at: <http://www.visitnorman.com/vn-hotels-bb.php>

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### **Comfort Inn & Suites (PRIMARY HOTEL):**

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.

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### **Hilton Garden Inn:**

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

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: on-site dining, LCD TV, outdoor pool, exercise room, free in-room high speed internet, microwave, and mini-fridge, 24-hour snack shop.

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### **Marriot Courtyard:**

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.

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

Rate of \$70 is available with a government ID (\$7 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.

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**County Inns & Suites:**

960 Ed Noble Parkway  
Norman, OK 73072  
405-360-0240

Federal government rate of \$77 is available with a government ID. This hotel opened in 2007. It is located approximately 3 miles from the NWC. Hotel is within walking distance of restaurants and shopping. The hotel is 100% smoke-free. Amenities include: deluxe continental breakfast; heated indoor pool and spa, fitness center, free in-room wireless high speed internet, microwave and refrigerator in some rooms.