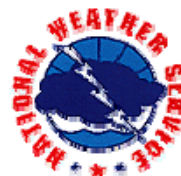


***HAZARDOUS WEATHER TESTBED
EXPERIMENTAL WARNING PROGRAM
2008 SPRING PROGRAM***

Version 1.6
16 May 2008



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 2008 EWP Spring Program. We will be conducting the 2008 EWP Spring Program for 6 weeks, from 28 April through 6 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 new 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 second year for severe convective warning-scale activities in the testbed.

There will be three primary projects (separated into “experiment stations”) geared toward WFO applications, 1) an evaluation of the phased array radar (PAR) in Norman, 2) an evaluation of networked 3-cm radars (CASA) in Central Oklahoma, and 3) an evaluation of experimental high temporal and spatial resolution gridded hazard information (a.k.a. gridded probabilistic warnings) using the NSSL Warning Decision Support System II (WDSSII). We expect the participants to be active in the first two experiments when severe weather is affecting Central Oklahoma. The probabilistic hazard experiment is less dependent on local weather since we can access the needed radar and other data sets remotely for nearly anywhere in the U. S.

We are looking for feedback from the NWS operational meteorologists. User comments will be collected during shifts, short 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

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) or [Jack Kain](#) (NSSL).

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 2008 spring convective season, as well as logistical information about the six-week program for all participants.

Additional information about the EWP Spring Program is available and regularly updated on our Web site: <http://ewp.nssl.noaa.gov>.

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 guests. 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)], and NSSL leads the path in new Doppler radar technologies. 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 2008 EWP Spring Program are as follows:

- To **evaluate the accuracy and the operational utility of new science, technology, and products** in a testbed setting in order 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 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 the 2008 EWP Spring Program are:

- To evaluate the operational utility of **Phased Array Radar (PAR)** technology during real-time operational warning situations.
 - Assess the strengths and limitations of NEXRAD and PAR data in the analysis of severe storms.
 - Evaluate how characteristics of PAR scanning strategies affect the understanding of severe storms.
 - Describe how using PAR data to make warning decisions impacts warning decision-making.
 - Comment on how PAR data may be of benefit to NWS operational responsibilities and to the public.
- To evaluate the operational utility of **Collaborative Adaptive Sensing of the Atmosphere (CASA) dense radar networks** during real-time operational warning situations as well as through playback of archived cases.
 - Evaluate how CASA reflectivity and velocity data may help the severe weather warning process.
 - Evaluate the strengths and limitations of CASA's technical capabilities?
 - High resolution data
 - Lower troposphere coverage
 - 1 minute refresh rate
 - Adaptive scanning strategies based on user needs for data.
 - To evaluate the potential benefits of NWP forecasts that incorporate CASA data for warning operations.
 - To assess how forecaster might incorporate real time 3DVAR wind products into warning decision making.

- To evaluate the utility and effectiveness of **gridded probabilistic severe convective weather warnings** before consideration into NWS warning operations.
 - Assess the new concept and technologies we will use to issue gridded warnings and how they may eventually be implemented into the NWS Next-Generation Warning Tool (NGWT).
 - Qualitatively evaluate the management of warning team workload in the issuance of gridded warnings.
 - Provide feedback on the science of adding probabilistic information to warnings, how various probabilities might be determined by forecasters in the short-fused NWS warning environment, and how these probabilities might eventually blend with larger scale severe weather probability forecasts.
 - Consider how gridded probabilistic warnings may be of benefit to users of severe convective weather hazard information.

More detailed information about the individual experiments, including specific objectives, evaluation details, and technology user manuals, are available in separate documents, available in the EWP “white binder”.

3. SCHEDULES

a. Dates of operation

The 2008 EWP Spring Program will be conducted during a **six-week period** beginning **Monday 28 April 2008**, and ending **Friday 6 June 2008**. During this six-week operations period, anywhere from 1 to 4 participants from NWS WFOs nationwide, and other academic, government, and international agencies, will be visiting each week.

b. Shakedown

A two-week shakedown period (14-18 April and 21-25 April 2008) will be conducted by HWT personnel in order to test the readiness of the technologies and the logistics of the program prior to the formal operational period when outside visitors will be participating.

The first shakedown week (14-18 April) will be conducted “loosely”, with no set schedule, as we make sure all the technologies and systems are in proper working condition. We’ll also use some of the time to train the weekly coordinators on the various systems.

The second shakedown week (21-25 April) will be conducted in the same manner and using the same schedule as an actual operations week, except with NSSL participants and some of the weekly coordinators only.

c. Weekly schedule

The weekly schedule will be as follows:

Mon-Thu	1pm-9pm	Daily operations, including Intensive Operations Periods (IOP)
Fri	10am-1pm	Debriefing and optional seminars

d. Operations Day Schedule (Mon)

1245pm Visitor welcome at NWC 1st floor entrance

100-145pm New participant Orientation

To be given to the new weekly participants by the 2008 EWP Operations Coordinator (Greg Stumpf) in the NSSL Development Lab (NWC 2820).

145-215pm EWP daily meeting in NSSL Development Lab, led by the weekly coordinator

Daily operations coordination discussion based on SPC DY1 Outlook ([more information](#) later in this manual)

215-230pm Break

230-400pm Individual Project Seminars (will introduce the projects that will be the focus of the Monday IOP) (Dev Lab)

400-500pm WDSSII display training (HWT Operations Area)

500-900pm Intensive Operations Period (IOP) or Training/Archive Playback (HWT Ops Area)

Detailed in a [later section](#).

e. Operations Day Schedule (Tue-Thu)

100-200pm EWP daily meeting in NSSL Development Lab, led by the weekly coordinator

Debriefing of the previous day's events

Daily operations coordination discussion based on SPC DY1 Outlook ([more information](#) later in this manual)

200-900pm Intensive Operations Period (IOP) or Training/Archive Playback (HWT Ops Area)

Detailed in a [later section](#).

f. Debrief Day Schedule (Fri)

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

g. Participant Orientation and Training

Monday 100-145pm will be new participant orientation in the dev lab introducing the participants to the project, and the three evaluation elements and objectives.

Then, during each of the four operations days (M-Th) there will be opportunities for the participants to learn about the experiments (individual introduction seminars), train on the various systems, learning the knobologies and working with archive cases. The weekly coordinator will determine which time periods and on which systems each participant will be training and during archive playback evaluations. For example, the weekly coordinator may decide to have one set of participants work with the CASA folks, another set of participants work with the PAR folks, or all participants work with the probabilistic warning folks. Note that WDSSII training is required of all participants for all evaluations, so that training will usually be the first to occur on Monday.

h. Typical Mon-Thu 1-9 pm Operations Activities:

During the 100-200pm EWP daily meeting, the weekly coordinator will choose which domain, time period, and projects we'll be concentrating on for the current operational day, and which participants will be assigned to which experiment stations for that day. This daily schedule will be based on the location and timing of the chosen DY1 weather threat used for operations although departures from the official SPC forecast may be needed in some cases.

During the 2-9pm period, we will choose a 3 hour intensive operations period (IOP), centered on the event of interest. This will be padded by 30 minutes on either side for spin-up of equipment and a 30-minute post-IOP discussion, for a total of 4 hours. Normally, we will not work a longer intensive ops shift than this, but there may be one or two events, especially intense Central Oklahoma events, in which we might want to run longer than 3-4 hours. During IOPs, we encourage the weekly coordinator and/or the cognizant scientists to write and update live blogs detailing their notes and feedback.

The remaining 3 hours of the 8 hour shift that can be used for orientation, training, and running archive cases for any of the three experiments. Some of the participants may be divided to separate stations.

An example set of daily schedules might look like this:

Monday (or Tuesday during Memorial Day week):

100-145 New participant orientation seminar
145-215 Daily Meeting (map discussion)
215-400 Introduction Seminars
4-5 WDSSII and ProbWarn training
5-9 ProbWarn Intensive operations period (IOP) centered on Iowa MODT risk

Tuesday:

1-2 Daily Meeting (debriefing, map discussion)
2-4 All participants: PAR training and archive playback
4-8 PAR/CASA Central Oklahoma IOP
8-9 CASA training, or additional live operations

Wednesday:

1-2 Daily Meeting (debriefing, map discussion)
2-5 Participant 1 and 2: PAR training and archive playback; Participants 3 and 4: CASA training and archive playback
5-9 ProbWarn IOP centered on western KS

Thursday:

1-2 Daily Meeting (debriefing, map discussion)
2-6 PAR/CASA Central Oklahoma IOP
6-9 Participants 3 and 4: PAR training and archive playback; Participants 1 and 2: CASA training and archive playback

Friday:

10-12 End-of-week debriefing
12-1 Brown bag lunch in dev lab: Optional seminars or continued debriefing
1pm Forecasters depart to return home

i. Debriefings

The daily debrief will include a playback of the previous day's events and a short discussion of all three major evaluations. 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.

If the time allotted for briefings ends up not being sufficient during the early weeks of the Spring Program, we may adjust the schedules to provide more debriefing time.

4. PERSONNEL

a. EWP Officers

Greg Stumpf

Operations Coordinator greg.stumpf@noaa.gov 405-826-8644

Kevin Manross

Information Technology Coordinator kevin.manross@noaa.gov 405-255-0537

Travis Smith

Operations Team Leader travis.smith@noaa.gov 405-834-9687

David Andra

Operations Team Leader david.andra@noaa.gov 405-325-3527

b. Weekly Coordinators

There will be one primary weekly coordinator and a backup coordinator each operations week, beginning with the second shakedown week (21 Apr), and lasting through the six operations weeks (through 6 June). The backup coordinators will fill in if the primary cannot be present for any reason, and perhaps for any "off hour" events that occur outside the WFO participant shift schedule of 1-9pm Mon-Thu.

The weekly coordinators will be responsible for facilitating daily briefings from 100-200pm. These briefings will include a debriefing of the previous day's activities, as well as a short discussion, using the SPC DY1 outlook as guidance, as to the schedule for the day's events. 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 expected to be present for at least the beginning of any real-time daily evaluation, to ensure that operations are set up and running smoothly. Finally,

the weekly coordinator is responsible for "blogging" a short daily summary to be posted to the EWP web site prior to the next day's briefing, as well as a slightly longer weekly summary by the following Monday.

The weekly coordinators will begin to receive their training on the systems during the month of April before the official Spring Program begins on 28 April. Weekly coordinators are also expected to fill in as either Cognizant Scientist participants or Forecaster/Evaluator participants (see below) during the second shakedown week of 21 April for at least one 3-4 hour operational event that week.

The responsibilities of a weekly coordinator include:

- Meeting the visiting participants upon their first arrival at the NWS on Monday.
- Providing a short tour of HWT facilities on Monday to the visiting participations.
- Facilitating the EWP daily coordination meeting.
- Distribution of participants within daily operations (who works where and when?)
- Facilitating the daily and weekly post-mortem debriefings.
- 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 forecaster 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 30-minute discussions.
- A daily summary (1-3 paragraphs with images) at the end of a shift for the EWP blog.
- A weekly summary (1-2 pages), ready by COB next Mon, for the EWP blog.
- Setting up visitor Friday brown bag seminars.

c. Cognizant Scientist Participants (NWC researchers, and more!)

These are participants with advanced knowledge of the specific project and technologies (PAR, CASA, and probabilistic warnings), and who will work closely with the forecaster/evaluator participants during training, operations, and debriefings. These are typically NWC scientists or collaborating academic institutions and/or laboratories. There will be a maximum of 2 Cognizant Scientist participants assigned on any given day (to each of the three experiment stations), and a schedule will be posted on the internal EWP Web page (<https://secure.nssl.noaa.gov/projects/ewp>). Information about accessing the internal Web page will be provided to all participants prior to the start of the project.

There will be a primary and secondary cognizant scientist for each experiment per week, and each scientist "team" will commit to a full work-day week (M-F) block of time, such that there is at least one scientist available for each operations event that week. The cognizant scientists will also be available 10am-12pm Friday for the end-of-week debriefing.

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

The bulk of these participants will be the invited NWS WFO forecasters. However, there will also be a few other out-of-town participants who will fill this role, including several NWS Region Headquarters meteorologists, several Environment Canada Meteorologists, and one or more NOAA/GSD scientists. There will also be a few NWC scientists serving in this role from the WDTB, SPC, NSSL, and the ROC Applications Branch. There will be a maximum of 4 Forecaster/Evaluator 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 and test all three new systems and technology 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 three experiment stations during the week.

The invited NWS WFO meteorologists will be on shift only during any M-Th 1-9pm events for all three experiments (more on this in the next section). The non-WFO evaluators are welcome to participate during the "off-hour" events (M-Th after 9pm, Fr-Su any time). Note that only Central OK PAR and CASA operations will occur during off-hours; probabilistic warning operations will be restricted to only the M-Th 1-9pm shifts.

5. TRAVEL LOGISTICS

a. Location

The 2008 EWP Spring Program will take place at the National Weather Center (NWC) in Norman, Oklahoma. Evaluations of the primary experiments 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 daily and weekly briefings (1pm Mon-Thu; 10am Fri) will take place in the NSSL Development Lab, which is Room 2820 adjacent to the NWC Atrium elevators on the 2nd floor.

b. NWC Building Security

The NWC is a University of Oklahoma building that houses several NOAA facilities. Therefore, certain NOAA security requirements are in effect for visitors to the building. All NOAA employees are required to visibly wear, at all times, their identification badges. Non-NOAA visitors must check in **each day** with the security desk at the 1st floor entrance to obtain a daily visitor pass.

Most participants will be issued a 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), the HWT operations area, and a secure visiting scientist office (NWC Room 2600). Participants **must** return their door key cards before they leave the NWC on Friday to return home. The cards should be returned upon Friday departure, but if not, they will deactivate automatically after your visit.

Participants who are foreign nationals cannot be issued an NWC building access key card. Since participants will be working shifts with other participants who have NOAA IDs, if there is any need for the foreign participants to re-enter the building during off-business hours, a daily or weekly participant with a NOAA ID can provide access.

c. Lodging and Amenities

Out of town participants are encouraged to stay at the Country Inns & Suites, which offers the U. S. government per diem lodging rates. The hotel location is also nearby a number of restaurants and other Norman businesses (Fig. 3). This will allow participants to share rides if needed, or to socialize outside of shift hours.

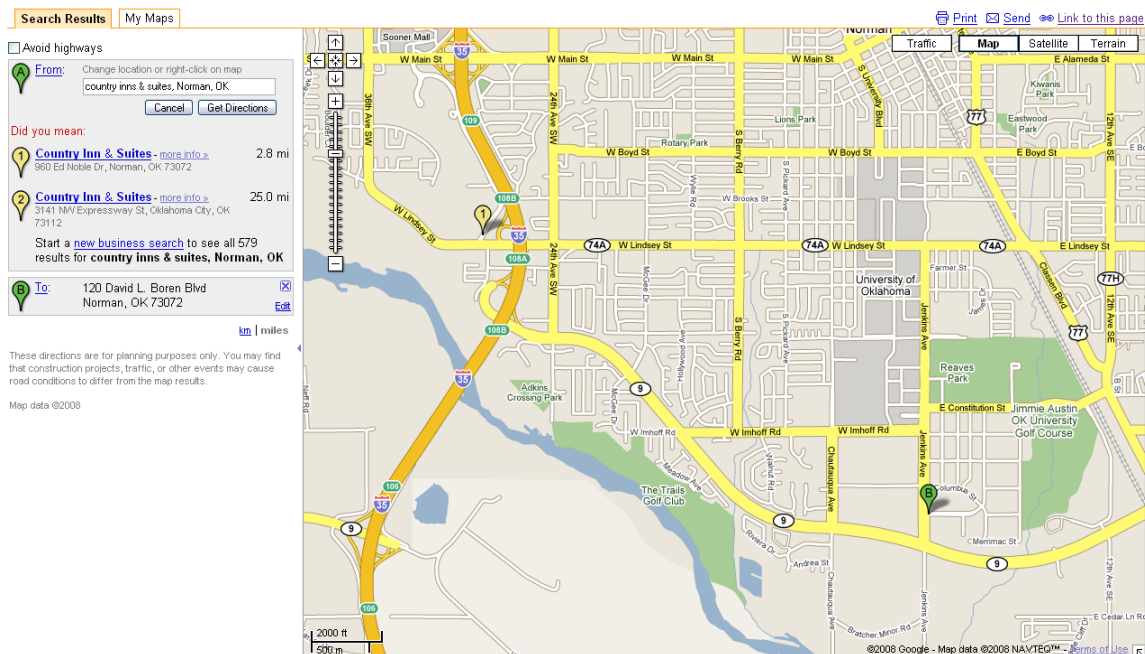


Fig 3. Map of the Norman area, incl. location of Country Inns & Suites and the National Weather Center.

Other hotel options are available if needed, and are listed in Appendix A. Additional visitor information is available at this link:

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

Each invited WFO participant will be provided a \$1,000 travel stipend to cover all or a portion of their travel costs. The remaining costs are to be covered by their WFO or RHQ. NOAA participants traveling from outside Norman should arrange their travel plans and file their reimbursement forms with their WFO or RHQ administrative assistant, and will be able to charge up to \$1,000 of the travel costs to an NSSL accounting code. Participants are also encouraged to share rides (e.g., one rental car split between all weekly visitors) to and from the NWC, as NWC employees will most likely be unable to provide personal shuttle service.

d. Information specific to invited WFO participants

Note that the NSSL-sponsored full-time WFO participants are required to participate on the following schedule:

Mon-Thu	1pm-9pm	Daily operations
Fri	10am-1pm	Debriefing and optional seminars

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 the above shifts.

Also note that these shifts will intersect dinner time (M-Th) and lunch time (F). 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 4pm every day and does not serve dinner.

e. Information specific to non-WFO participants

Note that non-WFO participants are free to work operations outside of these hours. Off-hour operations will be limited to PAR and CASA data collection for Central Oklahoma events. The backup weekly coordinators will direct off-hour operations.

f. Optional seminars

In the past, some of the HWT visitors have request 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. This will be conducted in either the NSSL Development Lab, or a larger seminar room (locations TBD the week of the seminar). Since this is lunch time, the seminars will be of a “brown bag lunch” informal style with a generally small group of 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.

g. Participant schedule and contact information

The staffing schedule will be posted in the EWP “White Binder” and on the EWP Internal Web Page (<https://secure.nssl.noaa.gov/projects/ewp>). All participants should provide their email and cell phone information.

6. EQUIPMENT

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

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 will three experiment stations, as well as several support stations. Each will be labeled with signage.

The **Phased Array Radar (PAR) station** will occupy the SW corner of the HWT and consist of two Linux PCs. One will host the PAR Radar Control Interface (RCI), and the other PC will host a WDSSII display.

The **Collaborative Adaptive Sensing of the Atmosphere (CASA) station** will occupy the south-central wall of the HWT. It will consist of two Linux PCs, capable of running WDSSII.

The **Gridded Probabilistic Warning station** will occupy the curved table near the west column near the center of the HWT. It will consist of one Linux PC capable of running WDSSII, and possibly one Windows PC for Internet browsing and running Gibson Ridge Level 2 Analyst Edition (GR2AE) software. Since this experiment will only take place when storms are outside of Central Oklahoma, there may be times when we add one or two more “warning sectors” to operations, and if so, we’ll take over the two CASA Linux PCs for WDSSII use.

There will be an **Advanced Weather Interactive Processing System (AWIPS) station** along the south wall to the right (west) of the CASA station. The AWIPS station will consist of an AWIPS 'lx' workstation located in the center of the three main experiment stations, and serve as a resource for mesoscale analysis for all three experiments. The AWIPS server (px, dx, orpg, ldm) machine will be located in the left (east) position on the south wall, close to the southeast corner of the HWT.

There will be a Windows PC on the east wall of the HWT. This will serve as **a general email and Internet browsing station** for any participant.

7. ACKNOWLEDGMENTS

The 2008 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) Radar Research and Development Division and the NSSL Warning Research and Development Division; the National Weather Service's Meteorological Development Laboratory (MDL); the NWS Warning Decision Training Branch, and the NWS Weather Forecast Office in Norman, OK. CASA (the Center for Collaborative Adaptive Sensing of the Atmosphere) is a National Science Foundation-funded Engineering Research Center with University of Massachusetts (lead), University of Oklahoma, Colorado State University and University of Puerto Rico, Mayaguez.

In particular the following individuals should be cited: Travis Smith, Kevin Manross, Kiel Ortega, Arthur Witt, Angelyn Kolodziej, Don Burgess, Charles Kerr, Robert Toomey, Jeff Brogden, Valliappa Lakshman, Kurt Hondl, Brenda Phillips, Jerry Brotzge, Pam Heinselman, Doug Forsyth, Karen Cooper, Vicki Farmer, Doug Kennedy, Paul Griffin, Brian Schmidt, Will Agent, Brad Sagowitz, Bob Staples, Michael Magsig, Jim LaDue, John Ferree, and Kevin Scharfenberg.

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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.

Norman Federal per diem is: \$70/\$39

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

PRIMARY: Country Inn and Suites by Carlson:

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

They will offer the federal government rate of **\$70 to any guests with either federal government ID or on a federal government travel order.** (The regular room rate here is \$109/night). In order to secure this rate, call the hotel directly at (405) 360-0240 and ask for the U. S. Government per diem rate.

This hotel just opened in 2007. It is located 3.8 miles from the NWC. Amenities include: non-smoking facility; deluxe continental breakfast; indoor pool, hot tub, fitness center; close proximity to a large variety of restaurants (many within walking distance.)

Hotel information is available at:

<http://www.countryinns.com/webExtra.do?key=&hotelCode=OKNORMAN>

Best Western Norman Inn & Suites:

2841 S. Classen Blvd.
Norman, OK 73071
405-701-4011

Federal government rate of \$70 is available with a government ID. This hotel just opened in the fall, 2007. It is located approximately 1 mile from the NWC.

Amenities include: complimentary continental breakfast; outdoor pool, exercise room; wireless high speed internet.

Holiday Inn: 1000 Interstate Drive
Norman, OK 73072
405-364-2882 or 1-800-HOLIDAY

Single room, gov't rate, \$79 (state or federal)

Double room, gov't rate, \$79 (state or federal)

Amenities include: a restaurant, lounge, exercise facilities, indoor swimming pool and Jacuzzi, walking distance to movies and restaurants.

Fairfield Inn: 301 Norman Center Court
Norman, OK 73072
405-447-1661

Single room, \$94.99 plus tax (no gov't rate); they do offer AAA and senior rates, if you ask for them.

Amenities include: suites, indoor pool and spa, game room, free continental breakfast, 24-hour coffee, HBO & cable, walking distance to shopping and restaurants.

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

2 Doubles, federal gov't rate, \$73
1 King-size, federal gov't rate, \$88

Web address is: <http://www.lq.com>; search for Norman, OK

Amenities include suites and extended stay rooms, free continental breakfast, 25" Zenith televisions, modem lines in rooms, outdoor pool and spa, coffee maker in room, walking distance to shopping and restaurants

Residence Inn: 2681 Jefferson
Norman, OK 73072
405-366-0900 or 1-800-331-3131

Studio suite, NOAA rate is \$70 **when available (SPECIFY NOAA RATE)**
Studio suite, federal rate is also \$70, but by specifying the NOAA rate if it's available, they will likely continue a lower rate for the Norman area.

Studio suites include a living area with fold-out couch, full kitchen, dining area in addition to the sleeping area; the penthouse suite includes a living area with fold-out couch, full kitchen and dining area, and two queen-sized beds (one bed and bath downstairs, one bed and bath in loft); also includes two TVs and WIRELESS INTERNET ACCESS (new).

Amenities include full breakfast, hospitality (cocktail) hour, an outdoor pool, and recreational facilities. Guests would need a rental car (or some other transportation arrangement), although the Residence Inn does provide a shuttle around Norman.

Sooner Legends Inn & Suites:

1200 24th Avenue SW
Norman, OK 73072
405-701-8100

Web address:

http://www.soonerlegends.com/Norman_Oklahoma_Hotel/accommodations.html

Government travelers paying with a government travel card can get the \$70 government rate.

This is a newly remodeled, very nice hotel. Rate includes full, cooked-to-order breakfast. Includes lots of OU hospitality and an on-site restaurant specializing in barbecue and Mexican cuisine.

Hampton Inn: 309 Norman Court Center
Norman, OK 73072
405-366-2100 or 1-800-HAMPTON

Single room, "contractor/government" (lowest) rate, \$129

An indoor pool, exercise room, free HBO, cable and a deluxe continental breakfast are also available, walking distance to shopping and restaurants.

The National Center for Employee Development:

2801 East State Highway 9
Norman, OK 73071
(405) 447-9000

This is a conference center as opposed to a hotel, located 2.5 miles from the NWC. They have an on-site cafeteria that serves meals throughout the day. They offer the \$70 government rate to **government employees with a valid government ID.**

Amenities include: non-smoking facility, 1 queen bed per room, pool, fitness center, tennis, track, and racquetball, two buffet-style food courts serving breakfast (6 am to 10:30 am), lunch (11 am - 1:30 pm), and dinner (5 pm – 9 pm)

More information is available at www.nced.com/cc