



Welcome to the Radar & Applications Course (RAC) conducted by the NWS Warning Decision Training Division (WDTD).

Overview



RADAR & APPLICATIONS COURSE eLearning

"The purpose of RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the WSR-88D radar in the forecast and warning decision making process"

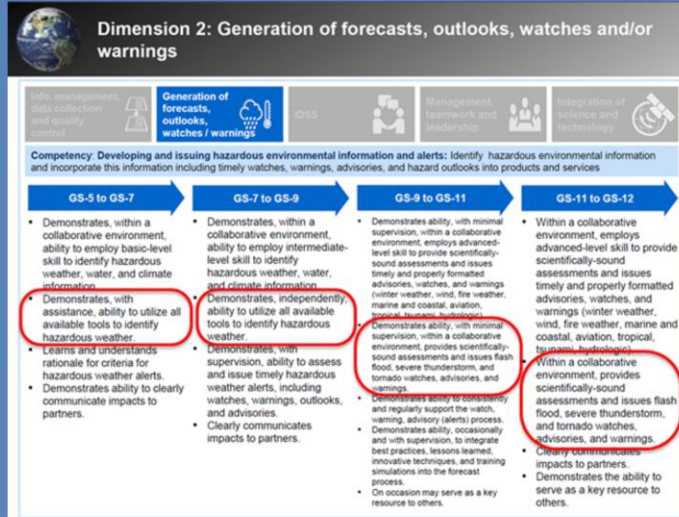
- Why you must complete RAC
- History of this course
- Commerce Learning Center (CLC)
- WES-2 Bridge
- Objectives, Quizzes, ILTs
- Course content
- Training facilitator responsibilities
- Support

The purpose of RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the WSR-88D radar in the forecast and warning decision making process.

Here is an overview of this presentation. Please take a moment to review it.

Why You Must Complete RAC

- Completion is necessary for career advancement in the NWS GS 5-12 1340 Competency-Based Model



RAC is important because its training is necessary for career advancement in the National Weather Service's GS 5-12 1340 Competency-Based Model.

History of this Course



- WSR-88D Operations Course
 - 1990-97
 - 3.5 week in-residence course in Norman
- Distance Learning Operations Course (DLOC)
 - 1997-2015
 - 100+ hours of training
 - 1-week workshop
 - Boulder (2000-2004)
 - Norman (2005-present)

Radar & Applications Course (RAC)

- 2015-Present

This course has steadily evolved over the years, but the focus has always been on the use of the WSR-88D in operations, particularly warning operations. It began in 1990 as the WSR-88D Operations Course which was taught as a 3 & 1/2 week in-residence course in Norman, Oklahoma. In 1997, it transitioned into the Distance Learning Operations Course (DLOC) and provided a blended learning approach which included web-based training, on-line modules, teletraining, and a 1-week workshop delivered at its conclusion. The name was changed to the Radar & Applications Course (RAC) in 2015 to provide a more accurate and meaningful description of the course, but it maintains the same format as DLOC.

Commerce Learning Center (CLC)

- Completion status tracked via the CLC
 - Lesson quizzes
 - WES activities
 - Instructor-led training (ILT)

Point of Contact:
Andrew.C.Wood@noaa.gov
Phone: 1-405-325-3005



We use the Commerce Learning Center (CLC) to track your completion of each part of the RAC: Lesson quizzes, WES activities, and ILTs. We recommend you bookmark the web address <https://doc.csod.com>. Most of the lessons are on-line training that you will launch directly from the CLC. Other training (such as AWIPS Warning Fundamentals) will be taken on your local WES machine, but you will need to come back to the CLC and take some action in order to show up as complete. Your point of contact is Andy Wood.

Commerce Learning Center (CLC): RAC Curricula

- Register for teletraining
- Register for workshops
- Track your progress

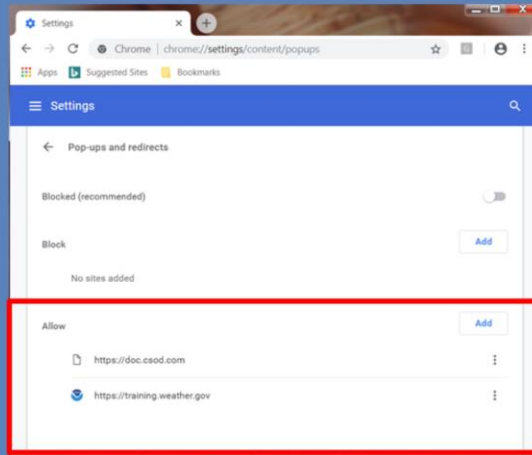
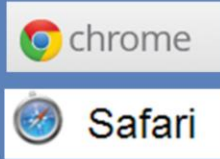


RAC Curriculum on your transcript

Your RAC Curriculum is your path to course completion. Use it to register for teletraining sessions, register for workshops, and track your progress.

Commerce Learning Center (CLC): Optimizing Use

- Preferred browsers
- Either turn off popup blocker or whitelist both the CLC and WDTD



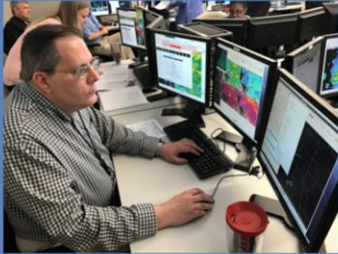
Google Chrome is the preferred browser for the CLC. Safari also works for mobile users. Other browsers may have issues.

If you have popup blockers on, you will not see the presentations appear when you select them unless you create an exception for the CLC and WDTD web sites.

WES-2 Bridge

(Weather Event Simulator for AWIPS-2)

<https://training.weather.gov/wdtd/tools/wes2/>



Point of Contact:
Dale.A.Morris@noaa.gov
Phone: 1-405-325-3008

WARNING DECISION TRAINING DIVISION
 NOAA/ NATIONAL WEATHER SERVICE

WES-2 Bridge News
 WDT has released WES-2 Bridge ver... upgrade to this build to use the latest A...

WES-2 Bridge (Weather Event Simulator for AWIPS-2)
 Weather.gov > Warning Decision Training Division > Tools > WES-2 Bridge

Current Status
 WES-2 Bridge has been upgraded to Version 17.1.1, compatible with AWIPS Build 17.1.1. WES-2 Bridge has been installed at the majority of NWS Field Offices, and WDT continues to provide support to each office. Build 17.1.1 supports the FY18 Radar and Applications Course (RAC). Build 17.1.1 is backwards compatible for Processed data archived from Build 14.3.1 to the present. For additional information about this build, please see our [release notes](#). WDT is currently working on another upgrade for WES-2 Bridge for AWIPS 17.2.1 to be compatible with the Redhat 7 operating system.



Subscribe to the WES List
 If you are at a NWS office, you can subscribe to the WES listserve. Simply subscribe at <http://infolist.nws.noaa.gov/read/login>.

Known Issues
 Note: A more complete list of issues is located on our Support Page: [Connectivity Preferences Window](#)

WES-2 Bridge is a weather event simulator for AWIPS-2. You will use it during both the distance learning and in-residence Workshop lab portions of RAC. Your point of contact for WES-2 Bridge support is Dale Morris.

Types of Training Modes

- Web modules
 - Completed asynchronously
- Live, instructor-led teletraining (ILT) sessions
- WES-2 Bridge practice exercises
 - Practice applying knowledge you've learned in real-world settings



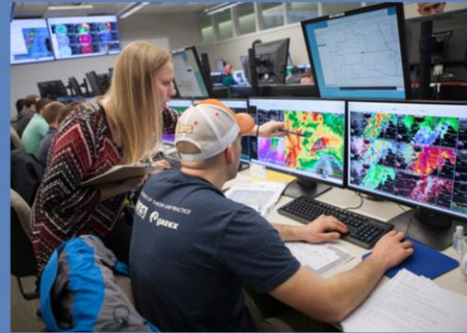
- [illegible]



RAC presents training material in various ways. Some are self-paced modules on the Internet. Others are recorded “Articulate” modules where the instructor’s voice is paired with the relevant images. Another method is via live teletraining session where you and your classmates go through material together with a WDTD instructor. You must pre-register for each teletraining session via the RAC curriculum in the CLC and take it at the scheduled time.

Objectives

- Learning Objectives
 - Evaluated via end-of-lesson quizzes
- Performance Objectives
 - Evaluated by your local training facilitator and WDTD instructors



Each lesson contains learning and/or performance objectives. A learning objective is an outcome statement that captures specifically what knowledge, skills, and attitudes learners should be able to exhibit following instruction. We assess it in RAC via an end-of-lesson quiz.

A performance objective is a statement that clearly describes the behavior or performance the learner is expected to exhibit as a result of training. We assess it in RAC via AWIPS WES exercises by your training facilitator, the AWIPS Proficiency Test by your training facilitator, and at the RAC Workshop Lab by WDTD instructors.

End-of-Lesson Quizzes

- Must be completed on the Commerce Learning Center (CLC)
- Passing score is 70-80%

The screenshot displays the KASAP APPLICATIONS COURSE interface. On the left, a sidebar menu lists various topics, including 'Severe Hail Detection Summary'. The main content area is titled 'Severe Hail (32/43 / 32/52)' and contains a quiz question. The question asks the user to identify the most likely hail type based on the following WSR-88D dual-pol data:

- Reflectivity (Z) > 55 dBZ
- Differential Reflectivity (ZDR) < 1 dB
- Correlation Coefficient (CC) ~ 0.95-0.97
- Specific Differential Phase (KDP) < 1 deg/km

To the right of the text is a four-panel radar image showing dual-polarization data. Below the text, there are four radio button options for the answer:

- ☐ Sub-severe, dry hail
- ☐ Severe hail (mostly hail, little rain)
- ☐ Sub-severe, melting hail
- ☐ Significant (> 2-inch) hail

A 'SUBMIT' button is located at the bottom right of the quiz area.

End-of-Lesson Quizzes must be completed on the Commerce Learning Center (CLC). Passing score is 70-80%.

Instructor-Led-Teletraining (ILT): Overview

1. Register for the Instructor-Led-Training (ILT) sessions of your choice in your CLC curriculum.
 - Each student must register individually to receive credit
 - Register at least 24 hours in advance
2. Register for the accompanying GoToMeeting webinar
 - Use instructions in your "Approval" Email sent by the CLC



Available	All				
Select the session link to view the details.					
		Locator Number	Seats Available	Waitlist	Options (2 Results)
Sessions					
FY20-RAC-Connective6 3/17/2020 (Tuesday) 3:17:2020 (Tuesday) 1:00 PM CST 3:00 PM CST Duration: 02:00 Location: WDTD Webinar, WDTD, National Weather Center, Norman, Oklahoma, NOAA Language(s): English (US)		124652	20	0	Request
FY20-RAC-Connective6 3/27/2020 (Friday) 3/27/2020 (Friday) 1:00 PM CST 3:00 PM CST Duration: 02:00 Location: WDTD Webinar, WDTD, National Weather Center, Norman, Oklahoma, NOAA Language(s): English (US)		124653	18	0	Request

Teletraining means we train live over the internet. The registration steps are:

1. Register for the instructor-led training (ILT) session of your choice in your Commerce Learning Center (CLC) curriculum. Each student must register individually to receive credit in the CLC, even if multiple students from the same office attend the same session. Register at least 24 hours in advance.
2. Register for the accompanying GoToMeeting webinar using instructions in your "Approval" Email sent by the CLC. Contact WDTD (nws.wdtd.rachelp@noaa.gov) if the Email hasn't arrived within 24 hours (should come in just a few minutes)

Note...The audio for each session is via WDTD's RAC Line, 1-866-564-5812. Student passcode is 2094167#

Instructor-Led-Teletraining (ILT): Protocol

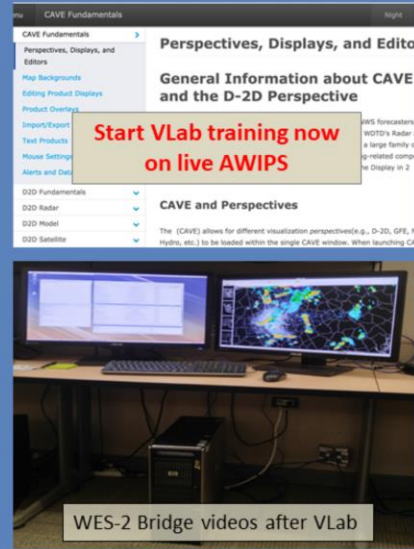
- Dedicate time for your session
 - *“Do not disturb!”*
- Keep phones muted, not on hold!
- Expect interaction
 - *Direct questions*
 - *Quiz questions*
 - *Annotate features*



During teletraining sessions: Dedicate undisturbed time for your session, keep phones muted, not on hold, and expect interaction.

AWIPS Convective Warning Fundamentals

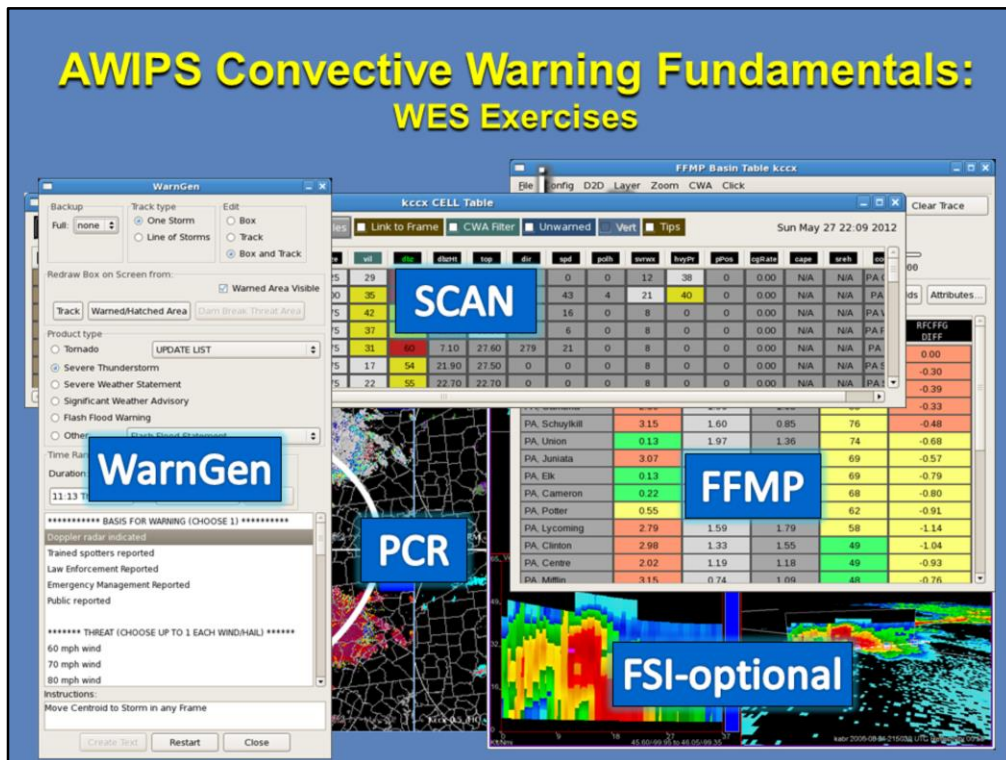
- Comprehensive AWIPS intro for convective warning decision making
- Delivery Method
 1. VLab [web pages](#) with [job sheets](#)
 2. WES-2 Bridge practice [videos](#)
 3. [AWIPS Proficiency Test](#)
- Prerequisite: RAC Orientation
- Expected Completion Time: 15 – 30 hours



The AWIPS Convective Warning Fundamentals is a comprehensive introduction to all the AWIPS convective warning-related tools. You will need this when you start implementing RAC training into the RAC warning decision making exercises and simulations in the workshop primer and at the workshop. All RAC students must take it, including “experienced” forecasters, because it’s important that everyone have the same WDTD approved skill set and be on the same page when they work together as a warning team in our Workshop simulations.

The delivery method is a blend of VLab and WES-2 Bridge. Most of the VLab web pages and job sheets are taken on the live AWIPS. The practice videos must be taken on the WES-2 Bridge. Most of the content is independent of AWIPS builds, but there will be notes about any different AWIPS behaviors between builds in the VLab materials. The VLab job sheets and WES videos will prepare you to take a proficiency test that is proctored by your local facilitator.

You can start the AWIPS Convective Warning Fundamentals immediately once RAC begins. Expect both VLab and WES-2 Bridge exercises to take 15-30 hours. In the future you will likely not have much time for AWIPS training, so this is a unique opportunity to develop a deep and solid foundation of AWIPS needed for warning decision making.

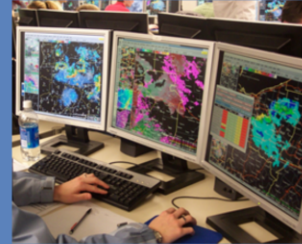


The WES Exercises cover AWIPS applications that you will use in warning decision making in your job.

It is important for you to develop a basic proficiency with these different AWIPS tools even if your current office doesn't use all of them because you will likely use some of these at different offices in your career and you need the latest exposure to all these tools to make an informed decision about what tools ultimately work best for you. Because FSI has had some recent performance problems, it will be the lone optional part of the course. All the other applications are required for this course.

AWIPS Convective Warning Fundamentals: Proficiency Test

- Demonstrate AWIPS radar and warning proficiency
 - Student will see assignment in CLC
 - Administered by training facilitator
- Score of at least 70% required
 - Retake at discretion of training facilitator
 - Tracking simplified
 - Training facilitator: Scan and email Michael.A.Magsig@noaa.gov
- ***Must complete before the Convective Storm Structure and Evolution topic's Applied Performance Drills***



You will see the AWIPS Proficiency Test listed as an assignment in the CLC. It is a timed, paper exam administered by your training facilitator. The facilitator will observe your performance of specific AWIPS tasks. You will need to achieve a passing score of at least 70% on the test to receive credit. You may retake the test at the discretion of your training facilitator. We have simplified the tracking of the exam, and now your training facilitator simply scans the graded test and emails it to Michael.A.Magsig@noaa.gov and WDTD will then enter the score in the CLC so you receive completion credit.

Note: You must complete the AWIPS Proficiency Test before the Convective Storm Structure and Evolution topic's Applied Performance Drills.

Course Materials

1. Disks containing Weather Event Simulator (WES)
2 Bridge cases with videos
 - “AWIPS Convective Warning Fundamentals” videos
 - “Convective Storms” Applied Performance Drills videos
 - “Workshop Primer” videos
2. AWIPS Proficiency Test emailed to training facilitators



The AWIPS Convective Warning Fundamentals and WES exercises should arrive near the beginning of the course (unless your office already has it). The shipment contains the WES-2 Bridge cases and other WES training videos for AWIPS Fundamentals, the RAC Convective Storms topic Applied Performance Drills exercises, and the Workshop Primer videos. Further details may be provided in RAC status email updates.

Hazard Services Delta

1. New WES-2 Bridge with Hazard Services in development

- Hazard Services training and delta proficiency exam (Dec 2021)
- Cloud solution with new WES-2 Bridge for training and proctoring the Hazard Services exam
 - Two 27" RITC monitors attached to local machine on Internet "RITC Workstation"



2. Hazard Services exam must be taken before the Hydro Workshop Primer (week before workshop)

	Sep 22 class	Nov 10 class	Dec 1 class	Dec 15 class
WDTD release RITC workstation setup doc	Nov	Nov	Dec	Dec
ITOs set up RITC workstation	Nov	Nov/Dec	Dec/Jan	Dec/Jan
Students take HS training (est 3hrs)	Dec/Jan	Jan/Feb	Feb/Mar	Feb/Mar
Students take HS proficiency exam (est 45min)	Jan	Feb	Mar	Mar/Apr

We are going to integrate Hazard Services into the residence workshops in 2022 which will include a new WES-2 Bridge with Hazard Services. A Hazard Services delta training package and proficiency exam will be sent out in Dec 2021 and will have no pre-requisites. Because WES-2 Bridge will not be deployed before the course begins, a cloud-based solution with the updated WES-2 Bridge will be used to take the training and proctor the Hazard Services proficiency exam. Two 27" monitors were sent to every office for use with RAC in the cloud, and these monitors will need to be attached to a local machine on the Internet that we will refer to as the RITC workstation.

The general schedule is as follows. The RAC in the Cloud (RITC) workstation setup document will be emailed to the facilitator on the day of the orientation for the Information Technology Officer (ITO) to use to set up the RAC In The Cloud (RITC) Workstation. The training will be released in December 2021, and students will take the training in the middle to later parts of the course. The Hazard Services training and Hazard Services Proficiency Exam would need to be taken before the Workshop Primer, which is the week before the workshop. The hydro primer will also be available in the cloud with this solution.

RAC Tracks

Meteorologist vs Hydrologist

Orientation	MET, HYDRO
Introduction to the WSR-88D	MET, HYDRO
Principles of Doppler Radar	MET, HYDRO
Velocity Interpretation	MET, HYDRO
Base and Derived Products	MET, HYDRO
Winter Weather	MET
Convective Storm Structure and Evolution*	MET
<small>Note: AWIPS Convective Warning Fundamentals should be completed before the Applied Performance Drills</small>	
Flash Floods	MET
Storm-Based Warning Fundamentals	MET
Workshop (Norman, OK)	MET

Let's discuss the RAC topics. You should complete them in order since they build on each other.

Most RAC students are Meteorologists who have been assigned to the Meteorologist Track, but a few are Hydrologists who have been assigned to the Hydrologist Track.

Topic: Introduction to the WSR-88D System

- Overall system description covering equipment groups
- Delivery Method
 - Self guided web module
- Completion Time
 - 1 hour



Instructor: Andy Wood

The Introduction to the WSR-88D System topic is a self-guided web module that discusses the overall system description and covers the equipment groups. Completion time is about one hour.

Topic: Principles of Meteorological Doppler Radar

- How the WSR-88D collects, quality controls, and processes data into products
- Delivery Method
 - Instructor guided web modules
- Completion Time
 - 7 hours



The Principles of Meteorological Doppler Radar topic consists of instructor guided web modules which cover **how the WSR-88D collects, quality controls, and processes data into products. Completion time is about seven hours.**

Topic: Velocity Interpretation

- How to interpret both large and small scale velocity patterns
- Delivery method
 - Instructor guided web modules
- Completion Time
 - 1 hour



The Velocity Interpretation topic consists of instructor guided web modules which cover **how to** interpret both large and small scale velocity patterns, **Completion time is about one hour.**

Topic: Base and Derived Products

- Covers products and the algorithms that generate them
- Delivery method
 - Instructor guided web modules
 - Instructor Led Training (ILT) session
- Completion time
 - 10 hours



The Base and Derived Products topic covers products and the algorithms that generate them. Delivery method consists of both instructor guided web modules and an instructor led training session. **Completion time is about ten hours.**

Topic: Base and Derived Products (Cont'd)

Introduction and Base Products	Instructor Guided Web Modules	2.5 hrs
Reflectivity Derived Products	Instructor Guided Web Modules	2.0 hrs
Velocity Derived Products	Instructor Guided Web Modules	1 hr
Dual-Pol Derived Products	Instructor Guided Web Modules	1 hr
Precipitation Estimation Products	Instructor Guided Web Modules	1.5 hrs
Base and Derived Products ILT (Review & Case Study)	Teletraining	2.0 hrs

Students must register for Teletraining portion

The lessons in this topic are organized into sections.

The final lesson “Products Review & Case Study” is an Instructor-Led Teletraining session. You must pre-register in the CLC for one of the sessions.

Topic: Winter Weather

- Precipitation type analysis
- Accounting for errors in Snow Accumulation Algorithm (SAA)
- Delivery method
 - Instructor guided web modules
- Completion Time
 - 1 hour



The Winter Weather topic consists of instructor guided web modules which cover precipitation type analysis and how to account for errors in the Snow Accumulation Algorithm. Completion time is about one hour.

Topic: Convective Storm Structure and Evolution

- Thunderstorms and all things severe
- Delivery method
 - Instructor guided web modules
 - Applied Performance Drills on WES
 - Instructor-Led-Teletraining session
- Completion time
 - 12 hours



The Convective Storm Structure and Evolution topic covers thunderstorms and all things severe. Delivery method is instructor guided web modules, Applied Performance Drills taken on the Weather Event Simulator (WES-2 Bridge), and an Instructor-Led-Teletraining (ILT) session. This is the longest topic; completion time is about twelve hours.

Topic: Convective Storm Structure and Evolution Delta

- Hydro Applied Performance Drills “delta”
- Delivery method
 - In the cloud along with the Hazard Services delta
 - Take before the primer
- Completion time
 - Est. 2 hours



Along with the Hazard Services delta, we are planning on including a Hydro Applied Performance Drills “delta” that would be taken in the cloud before the Workshop Primer. Estimation time is expected to be 2 hours.

Topic: Flash Floods

- Covers concepts, products and tools useful for flash flood forecasting and decision-making
- Delivery method
 - Instructor guided web modules
 - Instructor-Led-Teletraining (ILT) session
 - Combined with Warning Fundamentals ILT
- Completion time
 - 2 hours



The Flash Floods topic consists of instructor guided web modules which cover concepts, products and tools useful for flash flood forecasting and decision-making. There will also be an Instructor-Led-Teletraining (ILT) session which will be combined with the Warning Fundamentals ILT. Completion time is two to three hours.

Topic: Warning Fundamentals

- Provides the fundamental knowledge and skills required to issue effective storm-based warnings.
 - WarnGen
 - Recommended strategies for polygon creation and placement
- Delivery Method
 - Instructor guided web modules
 - Instructor-Led-Teletraining (ILT) session
 - Combined with Flash Flood ILT
- Completion time
 - 5.5 hours



The Warning Fundamentals topic provides the fundamental knowledge and skills required to issue effective storm-based warnings. Training includes skills for basic proficiency in using some AWIPS storm analysis applications such as WarnGen and recommended strategies for polygon creation and placement. Delivery method is instructor guided web modules and a combined Flash Flood/Warning Fundamentals Instructor-Led-Teletraining session. Completion time is about five and a half hours.

Workshop Primer

- Why: Workshop catalyst
 - Puts it all together
 - Use workshop procedures
- When: Week before the workshop...not earlier
- Length: ~3.5 to 4 hours
 - Schedule with management
- How: Take training on the WES (likely in cloud), then complete the assignment (survey) in the CLC by 17Z Friday before the workshop
 - Afterwards, WDTD will mark the lesson complete in the CLC



Point of Contact:
Michael.A.Magsig@noaa.gov
Phone: 1-405-325-2995

One very important exercise that will help prepare you for the week of simulation nirvana at the workshop is the Workshop Primer. In this catalyst for the workshop, you will start to put everything together to issue warnings using WES-2 Bridge and get a head start on using the same AWIPS procedures you will use at the workshop.

The Workshop Primer should be completed any time in the week before the workshop (or as near as you can; NOT too early), so you refresh your skills right before you come to the workshop. That way you can focus on your higher-order learning skills, instead of remedial training at the workshop. Length is about three and a half to four hours.

The Workshop Primer begins with training on the WES-2 Bridge which is likely going to be in the cloud; demonstration videos play on one monitor and you practice the same steps on the other monitor. Afterwards, complete the assignment (which is a survey) in the Commerce Learning Center (CLC). Once you complete the assignment, WDTD instructors will mark the lesson complete in the CLC. The Workshop Primer is due by 17Z the Friday before your workshop.

Lesson Completions – Stay on Pace!

- RAC is a HUGE course
 - over 100 hours
- All distance learning must be completed before a student is permitted to attend the workshop.
- WDTD will send status updates



Please be aware that RAC is a **HUGE** course (over 100 hours) and all distance learning must be completed before a student is permitted to attend the workshop. Thus, it's important to stay on pace. It takes a big time commitment from the student and support for that time commitment from co-workers and the management team.

The RAC Project Leader (Bobby Prentice) will send status updates which include the latest "RAC Training Completion Report" and a course completion timeline in order to help keep you on pace.

RAC Workshop

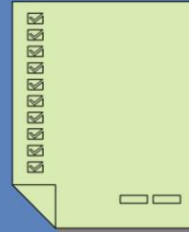
- Sessions include:
 - Warning Decision and You
 - Warning Methodology
 - Mini-Scenarios
 - Flash Flood Forecasting
 - Flash Flood Lab (pt 1 & 2)
 - Warning Issuance
 - Simulation Scenarios
 - Communication and Team Dynamics
 - Hazardous Weather Testbed (HWT) Visit
 - Storm Prediction Center (SPC) Visit



The Workshop is the culmination of RAC. It brings together everything you've learned, and more, into a laboratory and simulation environment. Most of your time at the workshop will be in the lab. Typically, you'll work with two (2) other forecasters and go through events in displaced real-time mode together.

RAC Workshop: Prerequisites

- All distance learning must be completed before the workshop, including:
 - All end-of-lesson quizzes
 - AWIPS Proficiency Test
 - WES Exercises
 - Workshop Primer
- Arrive at workshop “warning ready” including:
 - AWIPS “knobology”
 - WarnGen fundamentals



You must complete all distance learning components before you may attend the workshop including: Lessons quizzes, AWIPS Proficiency Test, WES exercises, and the Workshop Primer. Students must arrive at the workshop “warning ready” including AWIPS “knobology” and WarnGen fundamentals. We want you to get the basics out of the way so we can work on your higher order warning forecaster skills at the workshop.

RAC Workshop: Delivery Method

- In-residence at the National Weather Center (NWC)
- You will be automatically registered via the CLC
- Completion time
 - 40 hours (8 am Monday - 5 pm Friday)
 - Due to flight schedules, many students will be unable to fly home until Saturday!



The RAC Workshop delivery method is In-residence at the National Weather Center (NWC). You will be automatically registered in the CLC. Completion time is 40 hours for the week, 8 am Monday through 5 pm Friday. Due to flight schedules, many students will be unable to fly home until Saturday!

RAC Workshop: Lodging

- Lodging and shuttle bus
 - National Center for Employee Development (NCED) Conference Center and Hotel
 - Provide WDTD with your travel info using the Commerce Learning Center (CLC)



Workshop lodging will be at the National Center for Employee Development (NCED) Conference Center and Hotel located three miles east of the National Weather Center (NWC) in Norman. Most of the hotel's guests are postal service employees in-training as students in the NCED Training Facility on the same grounds across the street. You will be asked to provide WDTD with your travel information in the RAC curriculum section of your NWS CLC account.

RAC in the Cloud Workshop Backup Plans

- We expect in-residence workshops to resume in 2022
- “RAC in the Cloud” (virtual) workshops are a backup plan in the event of a future COVID shutdown



We expect to resume in-residence workshops in 2022. “RAC in the Cloud” (virtual) workshops are a backup plan in the event of a future COVID shutdown.

Post-RAC Workshop

Follow up Training Recommendations

- WDTD will provide post-RAC workshop follow up training recommendations to both students and their training facilitators
 - Based on instructor observations during RAC lab simulations
- Goal is to improve office warning performance
 - WDTD will provide actionable opportunities to further improve warning performance



WDTD will provide post-RAC workshop follow up recommendations to both students and their training facilitators based on instructor observations during the RAC lab simulations. The goal is to improve warning performance at their home office after completing RAC. WDTD will accomplish this by providing actionable opportunities to further improve warning performance.

Training Facilitator Responsibilities

RAC FY2#-#: Completion Timeline									
Class Begins	Orientation (20 minutes) Recommended completion by Day 9	Orientation Question and Answer webinar (30 minutes) Attendance is optional Day 0	Intro to the WSR-88D System (1 hour) Recommended completion by Day 1	Principles of Radar (6 hours) Recommended completion by Day 11	Velocity Interpretation (45 minutes) Recommended completion by Day 13	Base and Derived Products (7 hours) Deadline Day 26	Base and Derived Products ILT session* (2 hours) Deadline Day 27	Hydro Track Course Completion Deadline (Hydro students only) Day 27	
Winter Weather Applications (1 hour) Recommended completion by Day 27	AWIPS Convective Warning Fundamentals** (18 hours) Deadline Day 76	Convective Storm Structure and Evolution (16 hours) Deadline Day 83	Convective Storm Structure and Evolution Instructor-Led- Training session* (2 hours) Deadline Day 84	Flash Floods (4 hours) Recommended completion by Day 90	Storm-Based Warning Fundamentals (5.5 hours) Deadline Day 99	Flash Flood & Storm-Based Warning Fundamentals Instructor-Led-Training session* (2 hours) Deadline Day 100	AWIPS Convective Warning Fundamentals, Hazard Services Delta (4 hours) Deadline Day 100	Workshop Primer*** (4 hours) Deadline (due 17Z) Day 107	Workshop**** (40 hours) Day 110-114

*All students must attend one of the Instructor-Led-Training (ILT) sessions by the listed deadline. Completion of all the topic's lessons is a prerequisite for attending.

**Meteorologist Track students must complete AWIPS Fundamentals (which is also a separate stand-alone course) before they begin the Convective Storm Structure and Evolution topic's Applied Performance Drills section. This includes the AWIPS Proficiency Test.

***Meteorologist Track students should take the Workshop Primer the week before their workshop so they arrive at the workshop "warning ready" and can focus on higher-order learning skills. In order to receive completion credit, the student must complete the accompanying assignment in the Commerce Learning Center (CLC) by 17Z the Friday before their workshop begins.

****Be aware that RAC is a HUGE course and all distance learning lessons must be completed before a student is permitted to attend the RAC workshop. If a student hasn't completed all of the lessons, he/she must wait until the next workshop opening to complete the course.

- Ensure you have adequate training time built into your work schedule
- Monitor your progress to ensure you stay on pace
- Provide support and guidance

Your training facilitator plays a critical role. He/she must ensure you have adequate training time built into your work schedule, monitor your progress to ensure you stay on pace, and provide support and guidance.

Facilitator Responsibilities:

AWIPS Proficiency Test

- Install & test WES exercise materials
 - Testing instructions provided with AWIPS Convective Warning Fundamentals release
- Proctor AWIPS Proficiency Test and Hazard Services Proficiency Test

WSR-88D DISTANCE LEARNING OPERATIONS COURSE
WARNING DECISION TRAINING BRANCH
AWIPS OPERATOR PROFICIENCY EXAM...EVALUATOR
VERSION

STUDENT _____ DATE _____
EVALUATOR _____ TEST SCORE 100%

Instructions:

- The following exam contains 40 questions that require the student to perform certain operations and/or make appropriate verbal responses. Many questions are worth 1 or 2 points each, with the rest worth more. There are a total of 100 possible points. The exam should be completed in 100 minutes or less. Please give students a few minutes to read over the instructions before beginning the exam.
- The student will use an AWIPS D-2D workstation (with at least OBB 0 loaded), preferably in practice mode, to perform all functions. The Topic 1 Student Guide, the AWIPS User Manual, personal notes or pre-saved office procedures on the AWIPS workstation are not allowed. You may review items on the exam with the student before the exam, but during the exam please do not provide any assistance to the student.
- You are the evaluator, and responsible for administering this test. Keep track of time for the student. You may clarify questions, but please do not give hints or let them know if their answer is right or wrong unless, in your opinion, their wrong answer prevents them from correctly answering subsequent questions. In these situations, the student must acknowledge that they have made their final attempt prior to you.

Your facilitator must also install and test the WES exercise materials (unless they've already been installed) and proctor the AWIPS Proficiency Test and Hazard Services Proficiency Test. Instructions are provided with the AWIPS Convective Warning Fundamentals release and the Hazard Services delta training release.

RAC Web Page

<https://training.weather.gov/wdtd/courses/rac/>

- News and Notes
- Course Description
- RAC Pages
 - Course Outline
 - Course Support
 - Webinar Registration Information

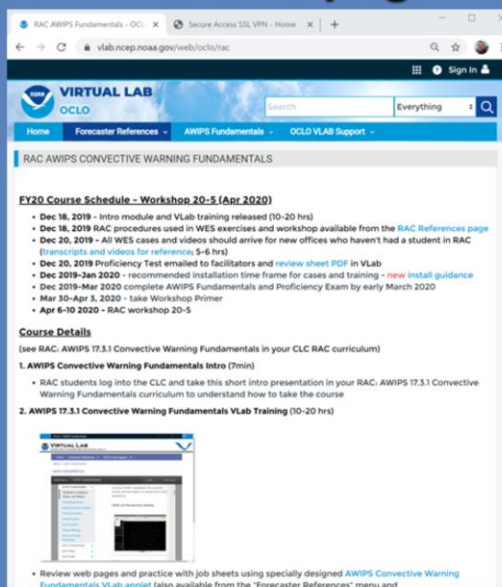
The screenshot shows the NOAA National Weather Service Training Decision Training Division website. The header includes the NOAA logo and the text "NOAA/ NATIONAL WEATHER SERVICE". Below the header is a navigation bar with links: WDT HOME, MAIN COURSES, TRAINING INFO, TRAINING TOOLS, SUPPORT INFO, NEWS, SEARCH, and ABOUT. The main content area is titled "Radar & Applications Course News" and contains several sections: "Local forecast by NOAA NWS at JPL", "Radar & Applications Course News" (with a description of the course and a link to the registration form), "No Residence Courses are scheduled through December 31st", "The Radar & Applications Course (RAC) Warning Decision Training Division FY21" (with a link to the training portal), "How to Register?" (with a description of the course and a link to the registration form), "Residence & Virtual Courses" (with a description of the course and a link to the registration form), and "RAC Pages" (with links to Course Outline, Course Support, and Webinar Registration Information). The footer includes social media links for Facebook, Twitter, and YouTube, and a link to the RSS feed.

The RAC web page is a good source for course information and support. Note...although the course outline has links to lessons on our WDTD web site and the CLC, you must access the lessons from your RAC curriculum on the CLC to receive credit.

VLab: RAC AWIPS Convective Warning Fundamentals web page

<https://vlab.ncep.noaa.gov/web/oclo/rac/>

- WES-2 Bridge materials
- Shipping schedule
- Procedures download
- Installation guidance



The VLab's AWIPS Convective Warning Fundamentals web page has all the documentation about WES-2 Bridge materials, shipping schedule, procedures download, and installation guidance. It should answer most of your AWIPS and WES-2 Bridge questions.

RAC Support

1. Your office's training facilitator (i.e., SOO/DOH)
2. RAC Web page
<https://training.weather.gov/wdtd/courses/rac/>
3. The RAC Help Email list nws.wdtd.rachelp@noaa.gov
— Better for general inquiries and quick responses
4. Contact instructors directly



There are four sources of RAC support:

1. Your office's training facilitator (usually your SOO or DOH).
2. RAC Web page
3. The RAC Help Email list which contacts the entire WDT RAC Team. This is better for general inquiries and quick responses (for example, instructor is out of the office).
4. Contact instructors directly

The RAC Project Manager (Bobby Prentice) will also send RAC status updates via e-mail.

Questions?



If you have questions about this orientation, contact the RAC Help list (nws.wdtd.rachelp@noaa.gov) or ask them verbally during the Orientation's Question and Answer webinar.