



# Radar & Applications Course (RAC)

Orientation

Warning Decision Training Division (WDTD)

# Welcome to the Radar & Applications Course (RAC)!

- Lead Instructors
- Course Content
- Objectives and Testing
- NWS Learning Center
- Sources of Information
- WES Usage



Welcome to the Radar & Applications Course (RAC) conducted by the NWS Warning Decision Training Division (WDTD). The primary purpose of the RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the radar in the forecast and warning decision making process. In this Orientation session we will cover: Lead Instructors, Course Content, Objectives and Testing, the NWS page on the Commerce Learning Center (CLC), Sources of Information, and Warning Event Simulator (WES) Usage.

# Lead Instructors

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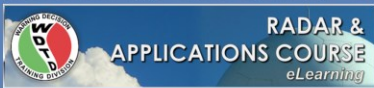
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# History of this Course



- WSR-88D Operations Course
  - 1990-97
  - 3.5 week in-residence course in Norman
- Distance Learning Operations Course (DLOC)
  - 1997-2015
  - 100+ hours of distance learning
  - 1 week workshop in Norman
- Radar & Applications Course (RAC)
  - 2015-Present
  - Name change; same format as DLOC

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 in Norman. 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.

# Job Task Skills and Knowledge

1. Display and manipulate WSR-88D products using the AWIPS workstation.
2. Create a warning and issue an update to a warning in a timely fashion using WarnGen.
3. Provided a list of WSR-88D equipment groups and their primary subcomponents (or descriptive statements of their function), and correctly identify the function(s) the components perform (or the name or acronym of the unit described).
4. Describe the processes by which the WSR-88D estimates precipitation and the potential error sources involved.
5. Describe the processes by which Doppler velocity information is obtained by the WSR-88D.
6. Describe the base data generation process.
7. Identify inherent limitations in pulsed Doppler radar and show how operators can optimize base data quality.
8. Interpret various large and small scale Doppler velocity patterns and their corresponding meteorological conditions.
9. Interpret all Base and Derived products of the WSR-88D, including:
  - a. Specific characteristics of Base and Derived products.
  - b. Strengths and limitations of Base and Derived products.
  - c. Specific operational applications of Base and Derived products.
10. Recognize impacts of sampling resolution on algorithm performance.

11. Describe basic systems operations, communications aspects, and control of system components of the WSR-88D.
12. Identify the fundamental relationships and physical processes that buoyancy and vertical wind shear have on convective storm structure, type, and evolution.
13. Identify environmental characteristics, conceptual models, and radar signatures associated with the spectrum of convective storms and their associated threats (tornado, hail, damaging wind, and flash flooding).
14. Identify contributing factors in both environmental and radar data that impact quality of Mesocyclone and Tornado Vortex Signatures (TVSs).
15. Identify typical 4-D storm-relative velocity signatures associated with stages of mesocyclone core evolution.
16. Identify the role of using WSR-88D data in the severe weather warning process, especially:
  - a. The variables which influence the warning decision.
  - b. Aspects of effective decision making.
  - c. Severe weather warning methodologies.
17. Identify strengths and limitations of using WSR-88D data in winter weather situations.
18. Demonstrate recommended storm-based warning strategies that convey threat area for proper polygon placement for various convective warning situations.
19. Demonstrate recommended strategies for issuing storm-based warning follow-up statements (canceling, continuing, and correcting) for various convective warning situations.

Combine learning and performance objectives addressed in RAC

Use these as your map for learning

RAC is a HUGE course! It's is very comprehensive and involves over 100 hours of material over the span of about 5 months. It takes a big time commitment from you...and support for that time commitment from your co-workers and management team.

# Commerce Learning Center (CLC)

- Various lesson types:
  - More on this later
- Completion status tracked via the CLC
  - Lesson quizzes
  - WES activities
  - Instructor-Led Training (ILT)

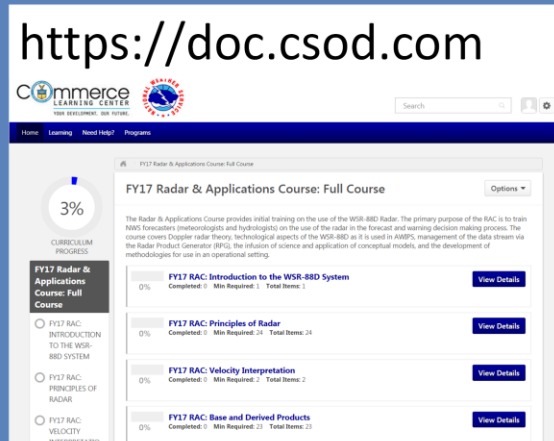


We use the Commerce Learning Center (CLC) to track your completion of each part of the RAC. We recommend you bookmark the web address <https://doc.csod.com>. Most of the lessons are on-line training that you will launch directly from the CLC. Other training (such as AWIPS Fundamentals) will be taken 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. The RAC curriculum in the CLC contains three instructor-led training events. The first two are webinars like this orientation session. The third is the RAC workshop. You will need to sign up for all three in the CLC first. Lastly, there is the AWIPS Proficiency exam. This exam will be completely locally at your office, then mailed to WDTD. Once we receive your exam, we will mark you complete in the CLC.

# Commerce Learning Center (CLC): RAC Curricula

- Take lessons
  - Register for Teletraining
  - Register for Workshops
  - Track your progress
  - Released Sep 29, 2017
- Course starts Oct 2, 2017

<https://doc.csod.com>



The screenshot shows the Commerce Learning Center (CLC) website interface. At the top, the URL <https://doc.csod.com> is displayed. Below the URL is the Commerce Learning Center logo and a search bar. The main content area shows the 'FY17 Radar & Applications Course: Full Course' with a progress indicator of 3%. A sidebar on the left lists the course components: 'FY17 RAC: INTRODUCTION TO THE WSR-88D SYSTEM', 'FY17 RAC: PRINCIPLES OF RADAR', and 'FY17 RAC: VELOCITY'. The main content area lists four RAC modules with their completion status and 'View Details' buttons:

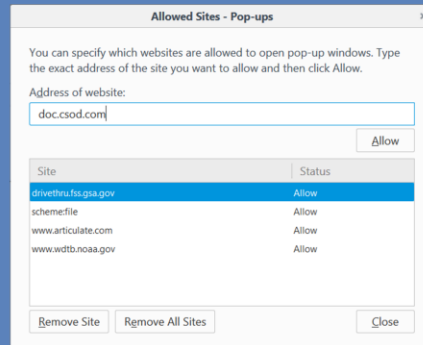
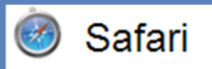
Module Name	Completed	Min Required	Total Items
FY17 RAC: Introduction to the WSR-88D System	0%	1	1
FY17 RAC: Principles of Radar	0%	24	24
FY17 RAC: Velocity Interpretation	0%	2	2
FY17 RAC: Base and Derived Products	0%	23	23

RAC Curriculum on your transcript

Your RAC Curriculum is your path to course completion.

# Commerce Learning Center (CLC): Optimizing Use

- Approved Browsers
- Turn off Popup Blocker



WDTD Web Site: <http://training.weather.gov/wdtd/>

The CLC supports all standard browsers. Some unusual behaviors may be seen in each browser. No one browser is preferred over another.

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.



# Types of Training Modes

- Web modules
  - Completed asynchronously
  - Self guided (no audio)
  - Instructor guided (with audio)
- Live, Instructor-Led Tele-training Sessions (like this!)
  - You must pre-register & take at the scheduled time
- AWIPS/WES exercises



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 (like this one) 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 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 Exam by your training facilitator, and at the RAC Workshop Lab by WDTD instructors.

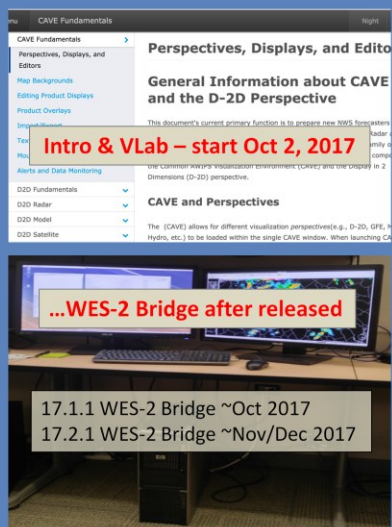
## End-of-Lesson Quizzes

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



## Topic: AWIPS 17.2.1 Convective Warning Fundamentals

- Prepares you for performance drills, workshop primer & simulations, proficiency test
- Delivery Method
  1. VLab web pages with job sheets
    - Most use live 17.1.1 AWIPS & WES-2 Bridge
    - Some use live 17.2.1 & WES-2 Bridge
  2. WES-2 Bridge practice videos
  3. Proficiency Test
- Prerequisite: RAC Orientation
- Expected Completion Time: 15-30hrs



Let's discuss the RAC Topics.

The AWIPS Convective Warning Fundamentals, which is also a stand alone course, develops fundamental radar and warning proficiency with AWIPS. You will need this when you start implementing RAC training into the RAC warning decision making exercises and simulations in the workshop primer and workshops. 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 simulation/scenarios.

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 which will be 17.1.1 for most sites and 17.2.1 for others. The practice videos must be taken on the WES-2 Bridge and will require either the 17.1.1 or 17.2.1 WES-2 Bridge. 17.1.1 WES-2 Bridge is planned to be released in Oct 2017 while 17.2.1 WES-2 Bridge is planned to be released right after in Nov/Dec 2017.

You can start the Intro module and VLab part of the AWIPS 17.2.1 Convective Warning Fundamentals on Oct 2<sup>nd</sup> when RAC formally starts. Expect both VLab and WES-2 Bridge exercises it 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.

## Complete All WES Exercises

Do these before Storm-Based Warning  
Fundamentals Workshop Primer and the Workshop!

The screenshot displays the AWIPS software interface with several key components:

- WarnGen Window:** A configuration window for warning generation. It includes options for 'Full' (none), 'Track type' (One Storm, Line of Storms), and 'Edit' (Box, Track, Box and Track). It also features a 'Product type' dropdown with options like Severe Thunderstorm, Severe Weather Statement, etc. A 'WarnGen' label is overlaid on this window.
- KCCX CELL Table:** A data table with columns for 'cell', 'wll', 'dem', 'top', 'dir', 'qid', 'path', 'bmax', 'bmin', 'rthb', 'update', 'dage', 'trch', and 'id'. A large 'SCAN' label is overlaid on this table.
- FFMP Table:** A table with columns for 'NAME', 'RATE', 'OPE', 'RCFFG OUTD', 'RCFFG INTRD', and 'RCFFG EXFF'. It lists various locations in Pennsylvania (PA) such as Blair, Clearfield, Berks, Cambria, Schuylkill, Union, Juniata, Elk, Cameron, Potter, Lycoming, Clinton, Centre, and Mifflin. A large 'FFMP' label is overlaid on this table.
- Map:** A radar map showing storm tracks and intensity, with a 'PCR' label overlaid.

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

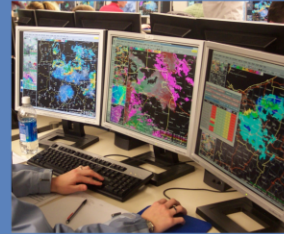
**NOTE:** Click five (5) times to reveal tools.

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.

You must develop a basic proficiency with these before you take the workshop primer and before you arrive at the RAC Workshop.

## Topic: AWIPS 17.2.1 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
  - Training facilitator: Scan and email [Michael.A.Magsig@noaa.gov](mailto:Michael.A.Magsig@noaa.gov)
  - WDTD marks test “complete” in CLC
- ***Must complete before the Storm-Based Warning Fundamentals Workshop Primer & Workshop***



You will see the AWIPS Proficiency Exam 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 exam to receive credit. You may retake the exam at the discretion of your training facilitator. Once complete, your training facilitator must send the graded exam back to WDTD (scan and email fine or regular mail). We will then mark the test “complete” in the CLC.

You must complete the AWIPS Proficiency Exam before the Workshop Primer and the Workshop.

## Topic: AWIPS 17.2.1 Convective Warning Fundamentals FY18 WES Exercises Initial Release (Oct 2017)

1. Disks containing 17.1.1 Weather Event Simulator 2 Bridge, cases, videos, and instructions
  - AWIPS Fundamentals videos
  - Applied Performance Drills videos (**new on WES**)
2. AWIPS Proficiency Test (Training Officers Only)
  - 17.1.1 or 17.2.1 WES-2 Bridge upgrade required for RAC



The AWIPS Fundamentals and WES exercises are anticipated to ship in October 2017. The shipment will contain the 17.1.1 WES-2 Bridge, cases, and other support materials including the new Applied Performance Drill videos and the AWIPS Proficiency Test.

Because 17.2.1 is the baseline for this year's RAC workshops, the 17.1.1 or 17.2.1 WES-2 Bridge is a requirement for RAC.

This will still give you 3-4 months to complete the AWIPS components of the course before workshops begin in Jan/Feb.

# Topic: Introduction to the WSR-88D System

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

RAC Introduction to the Weather Surveillance Radar 1988 Doppler (WSR-88D)

**Introduction**

Objectives  
System Requirements  
System Diagram  
1. Radar Data Acquisition (RDA) Unit  
2. Wideband Communications  
3. Radar Product Generator (RPG)  
4. Master System Control Function (MSCF)  
5. Product Distribution Communications  
6. User Systems  
Acronym Listing

Click below to view full-size graphic



Welcome to the "RAC Introduction to the Weather Surveillance Radar - 88 Doppler (WSR-88D)" web module.

**Note to NWS Staff:**

To receive credit for the RAC Introduction to the WSR-88D Training, you must login to the NWS Learning Center and complete the quiz in order to receive completion credit on your transcript!

The WSR-88D system contains several data processing, control, and display components. Some of these units also employ multiple subcomponents. NWS forecasters should have a basic understanding of the WSR-88D system in order to effectively produce the best quality data. This understanding includes knowledge of the components (and subcomponents), their relationship to each other, and the flow of data through the system. This lesson describes the five equipment (or component) groups and their primary subcomponents, as well as some of the user systems that visualize WSR-88D output. These six different groups are the:

- Radar Data Acquisition Unit (RDA),
- Wideband Communications between the RDA and The Radar Product Generator,
- Radar Product Generator (RPG),
- Master System Control Function (MSCF),
- Product Distribution Communications, and
- User Systems (e.g., Advanced Weather Interactive Processing System, Open Principal User Processor).



# Topic: Principles of Meteorological Doppler Radar

- How the WSR-88D collects, quality controls, and processes data into products
- Proceed through the lessons in order
- Prerequisite
  - Introduction to the WSR-88D System topic
- Delivery Method
  - Instructor guided web modules
- Completion Time
  - 7 hours



## Topic: Principles of Doppler Radar (Cont'd)

WSR-88D Fundamentals (5 parts)	Instructor Guided Web Module	60 min
Radar Sampling Issues	Instructor Guided Web Module	40 min
VCP Selection	Instructor Guided Web Module	20 min
Dynamic Scanning	Instructor Guided Web Module	25 min
RPG Management (2 parts)	Instructor Guided Web Module	40 min
Legacy Base Data Generation	Instructor Guided Web Module	20 min
Super-Res Base Data Generation	Instructor Guided Web Module	10 min
Dual-Pol Base Data Generation	Instructor Guided Web Module	20 min
Clutter Filtering	Instructor Guided Web Module	15 min
Range Unfolding	Instructor Guided Web Module	20 min
Velocity Dealiasing	Instructor Guided Web Module	20 min
Data Recombination at the RPG	Instructor Guided Web Module	10 min
Dual-Pol Preprocessing	Instructor Guided Web Module	15 min
Base Data Quality	Instructor Guided Web Module	20 min
Rainfall Estimation	Instructor Guided Web Module	20 min
PPS Algorithm	Instructor Guided Web Module	20 min
Dual-Pol QPE Algorithm	Instructor Guided Web Module	20 min
PPS & QPE Comparison	Instructor Guided Web Module	20 min
Snow Accumulation Algorithm	Instructor Guided Web Module	20 min

# Topic: Velocity Interpretation

- How to interpret both large and small scale velocity patterns
- Prerequisite
  - Principles of Meteorological Doppler Radar
- Delivery method
  - Instructor guided web modules
- Completion Time
  - 1 hour



## Topic: Base and Derived Products

- Covers products and the algorithms that generate them
- Prerequisites
  - Preceding topics
- Delivery method
  - Instructor guided web modules
  - Instructor Led Training (ILT) session
- Completion time
  - 10 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
Products 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)
- Prerequisites
  - Base and Derived Products Topic
- Delivery method
  - Instructor guided web modules
- Completion Time
  - 1 hour



## Topic: Convective Storm Structure and Evolution

- Thunderstorms and all things severe
- Prerequisites
  - Skew-T Mastery (Comet module)
  - Hodograph Essentials for Convective Storms
  - Multi-Radar/Multi-Sensor (MRMS) Products Course
  - Operational Severe Weather Diagnostics Parameters
- Delivery method
  - Instructor guided web modules
  - Applied Performance Drills on WES (**new**)
  - Instructor Led Training (ILT) session
- Completion time
  - 14 hours



# Topic: Flash Floods

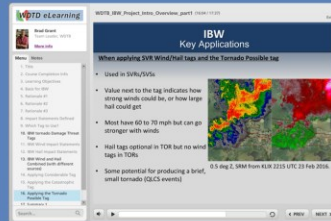
- Covers concepts, products and tools useful for flash flood forecasting and decision-making
- Prerequisites
  - MRMS Hydro Products Course
  - FLASH Products Course
- Delivery method
  - Instructor guided web modules
- Completion time
  - 2-2.5 hours





# Topic: Storm-Based Warning Fundamentals

- Prerequisites
  - Convective Storm Structure and Evolution topic
  - AWIPS Fundamentals only for Workshop Primer
- Delivery Method
  - Instructor guided web modules
  - Workshop Primer with WES-2 Bridge
- Completion time
  - 6 hours



## Topic: Storm-Based Warning Fundamentals (Cont'd)

Lesson Title	Time
TOR for isolated Tornado Threat	10 min
TOR for QLCS Tornado Threat	3 min
TOR/SVR for Backbuilding (Training Storms)	4 min
SVR for Pulse Storms (Low Shear)	4 min
SVR for Squall Line Systems	4 min
Storm-Based Warning Special Considerations	18 min
Two TORs in Close Proximity	5 min
Non-Linear Motion	21 min
Merging Storms	4 min
Limiting Number of Counties in Warnings	20 min
Impact-Based Warnings (2 modules plus 5 exercises)	2 hours
Workshop Primer	2-3 hrs

Here is the breakout for this topic. Please note the “Storm-Interrogation Primers (workshop primer)” should be done right before the Workshop. It builds on the use of tools/applications that you learned in the WES Exercises, but puts these together in a “warning decision” type of frame work. It’s a good refresher of things you should have already gone through, and a good “primer” for getting you into the warning frame of mind (which we want you to have at the workshop!)

## Topic: Storm-Based Warning Fundamentals Workshop Primer Practice on WES (2-3hrs)

- Prepare for week of simulation nirvana
- Workshop Catalyst
  - Put it all together
  - Use workshop procedures
- **When: Week before the workshop (or as near as you can)**
  - Release in Nov/Dec 2017
- Any problems:
  - [Michael.A.Magsig@noaa.gov](mailto:Michael.A.Magsig@noaa.gov)
  - 405-325-2995



One very important exercise that will 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 on WES, and you will get a head start on using workshop AWIPS procedures.

The videos will play on one monitor and you will practice the same steps on the other monitor.

The workshop primer should be completed the week before the workshop (or as near as you can), so you are prepared to maximize your growth in the workshop.

The Workshop Primer will be released in Nov/Dec 2017, well before you need to take it.

Mike is really committed to making this an effective exercise, so do not hesitate to contact him if you have any questions or problems setting it up, running the simulation, or have some general questions about the tools or the decision making. He wants to hear from you!

# Topic: 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) Tour
  - Storm Prediction Center (SPC) Tour



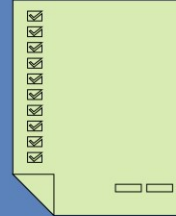
The Workshop is the culmination of RAC. It brings together everything you've learned, and more, into a laboratory and simulation environment. Most of your time at the workshop will be in the lab. Typically, you'll work with two (2) other forecasters and go through events in displaced real-time together.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

 **NOTE:** *Teach from slide.*

# Topic: RAC Workshop

## Prerequisites

- All distance learning must be completed before the Workshop including:
  - All lesson quizzes
  - AWIPS Proficiency Exam
  - WES Exercises
  - Workshop Primer
- Arrive at workshop “warning ready” including:
  - AWIPS “knob-ology”
  - WarnGen fundamentals



Put me in Coach. I'm ready to play!

You must complete all distance learning components before you may attend the workshop including: Lessons quizzes, AWIPS proficiency exam, WES exercises, and the Workshop Primer. Students must arrive at the workshop “warning ready” including AWIPS “knob-ology” 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.

# Topic: RAC Workshop Delivery Method

- In-residence at the National Weather Center (NWC)
- Four Workshops:
  - Jan 29 - Feb 02, 2018
  - Feb 12-16, 2018
  - Feb 26 – March 2, 2018
  - March 5-9, 2018
- Registration opens Sept 29, 2017
  - If only *one* week works for you, [register early!](#)
- Completion time
  - 40 hours (Monday-Friday)
  - Most students will not be able to fly home until Saturday!



## Topic: RAC Workshop Lodging

- Lodging
  - National Center for Employee Development (NCED) Conference Center and Hotel
  - Provide WDTD with your travel info when you register for a workshop using the 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. The facility is run Marriott International. 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 when you register for a workshop in the RAC curriculum section of your NWS CLC account.



## RAC Summary

### *Meteorologist- vs Hydrologist Track*

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
Flash Floods	MET
Storm-Based Warning Fundamentals	MET
Workshop (Norman, OK)	MET

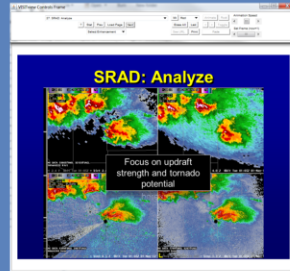
*Note: "Hydro" track completion deadline is December 19, 2018*

Note that most students have been assigned the Meteorologist Track version of the course, but a few have been assigned the Hydrologist Track. Deadline for the Meteorologist Track is before the start of your workshop. Deadline to complete the Hydrologist Track version of the course is December 19, 2017.



# Teletraining Overview

- Register in Commerce Learning Center (CLC) first
  - GoToWebinar registration info comes in e-mail
- Contact WDTD if e-mail doesn't arrive in 24 hours
- Audio
  - Same number for all sessions:
    - 1-866-564-5812
    - passcode 2094167#
    - Mute phone ( No "Hold" )



START DATE	END DATE	SESSION ID	LOCATOR	TRAINING NUMBER	LOCATION	SEATS AVAILABLE	WAITLISTED	DETAILS	REQUEST
11/18/2015 9:00 AM	11/18/2015 10:00 AM	RAC FY18 Orientation Session 1	CST	2834	1 Hours 0 WDTD Webinar Men > WDTD	5	0		Request
11/17/2015 2:00 PM	11/17/2015 3:00 PM	RAC FY18 Orientation Session 2	CST	2835	1 Hours 0 WDTD Webinar Men > WDTD	10	0		Request
11/18/2015 4:00 PM	11/18/2015 5:00 PM	RAC FY18 Orientation Session 3	CST	2836	1 Hours 0 WDTD Webinar Men > WDTD	8	0		Request
11/20/2015 2:00 PM	11/20/2015 3:00 PM	RAC FY18 Orientation Session 4	CST	2837	1 Hours 0 WDTD Webinar Men > WDTD	14	0		Request
11/23/2015 9:00 AM	11/23/2015 10:00 AM	RAC FY18 Orientation Session 5	CST	2838	1 Hours 0 WDTD Webinar Men > WDTD	10	0		Request
11/24/2015 1:00 PM	11/24/2015 2:00 PM	RAC FY18 Orientation Session 6	CST	2872	1 Hours 0 WDTD Webinar Men > WDTD	10	0		Request

Teletraining simply means we train live over the internet, like what you're doing now. We'll do that using GoToWebinar which requires you to register in advance. If you haven't received an e-mail from the CLC within 24 hours after registration, please contact WDTD. We strongly recommend that you use the registration information in the CLC e-mail to reserve your spot with GotoWebinar as soon as possible, not the day of the webinar. Your "Approval" message from the NWS Learning Center will have information about how to get registered. After this Orientation teletraining session is over, you will have two more: One at the end of the Based and Derived Products topic and another at the end of the Convective Storm Structure and Evolution Topic.

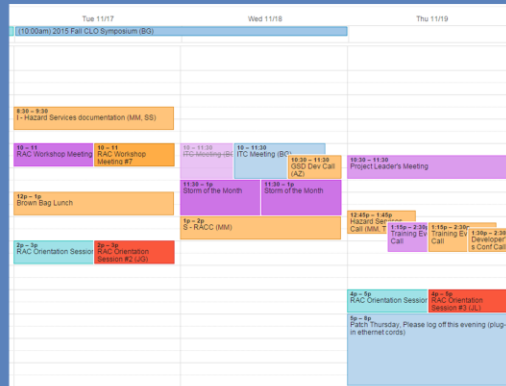
# Teletraining Protocol

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



# Facilitator Actions

- Coordinate scheduling of training events
  - No office conflicts
- Monitor progress
- Provide time/support
  - reach out to WDTD if necessary



Your training facilitator plays a critical role. He/she must: coordinate the scheduling of training events, monitor your progress and provide time and support and reach out to WDTD if necessary. Your training facilitator is our partner in this. We all want you to have a great training experience.

# More Facilitator Actions

- Install & test WES exercise materials
  - Testing instructions provided with AWIPS Fundamentals
- Proctor AWIPS Proficiency Test in advance of workshop

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

STUDENT \_\_\_\_\_ DATE \_\_\_\_\_  
EVALUATOR \_\_\_\_\_ TEST SCORE **100%**

Instructions:

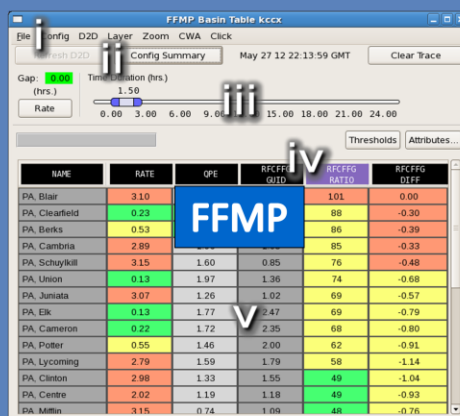
- The following exam contains 40 questions that require the student to perform certain operations and/or make appropriate verbal responses. Many questions are worth 1 or 2 points each, with the rest worth more. There are a total of 100 possible points. The exam should be completed in 100 minutes or less. 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 OB9 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 point to you.

Facilitators must also install and test the WES exercise materials and proctor the AWIPS Proficiency Test in advance of the Workshop. Testing instructions will be provided with AWIPS Fundamentals.

*It is important for the facilitator to verify the WES is set up and works. We will have guidance provided with the AWIPS Fundamentals release.*

## Be “Warning Ready” ...for anything!

- RAC will expose you to new phenomena and tools
- Will likely be used in your career
- Thus, it’s to your benefit to take ownership over ALL the material in this course.



RAC will expose you to a wide variety of meteorological phenomena and tools, many of which may be new to you. For example, you may be at an office that experiences very little severe weather, very little winter weather, or one that doesn’t use the Flash Flood Monitoring and Prediction (FFMP) tool. The fundamentals you will learn as a new NWS Meteorologist taking RAC will likely be used later in your career, probably within the next few years as you advance on to other offices. Thus, it’s to your benefit to take ownership over ALL the material in this course.

# Important Dates

Event	Date	Time (Z)
Base & Derived Products ILT registration opens	9/29/2017	
Convective Storm Structure and Evolution ILT registration opens	9/29/2017	
Registration opens - Workshop	9/29/2017	
RAC Begins	10/2/2017	
Speaker Notes arrive on station	10/6/2017	
Base & Derived Products ILT, session 1	10/31/2017	16Z
17.1.1 WES-2 Bridge, AWIPS Fundamentals videos, Applied Performance Drills videos, AWIPS Proficiency Test	Oct 2017	
Base & Derived Products ILT, session 2	11/14/2017	19Z
Base & Derived Products ILT, session 3	11/28/2017	16Z
Base & Derived Products ILT, session 4	12/12/2017	19Z
Convective Storm Structure and Evolution ILT, session 1	11/21/2017	16Z
17.2.1 WES-2 Bridge and Workshop Primer	Nov/Dec 2017	
Base & Derived Products ILT, session 5	12/19/2017	19Z
Convective Storm Structure and Evolution ILT, session 2	12/7/2017	19Z
Registration closes - Workshop	12/19/2017	
Convective Storm Structure and Evolution ILT, session 3	12/21/2017	16Z
Convective Storm Structure and Evolution ILT, session 4	1/16/2018	16Z
Convective Storm Structure and Evolution ILT session 5	1/25/2018	19Z
Workshop 1	Jan 29-Feb 2, 2018	
Workshop 2	Feb 12-16, 2018	
Workshop 3	Feb 26-March 2, 2018	
Workshop 4	March 5-9, 2018	

# Sources of Information

## RAC Home Page

- Course news
- Teletraining
- Schedules
- Help
- WES-2 Bridge support
  - Dale.Morris@noaa.gov
  - Alexander.Zwink@noaa.gov

The screenshot displays the NOAA National Weather Service Warning Decision Training Division (WDTD) website. The main heading is 'WARNING DECISION TRAINING DIVISION' with the NOAA logo. Below this, there are navigation tabs: 'WDTD HOME', 'MAIN COURSES', 'TRAINING INFO', and 'TRAINING TOOLS'. A 'TRAINING TOOLS' dropdown menu is open, listing 'Bufkit', 'Weather Event Simulator (WES)', 'WES-2 Bridge', and 'RCAkit'. The 'WES-2 Bridge' option is highlighted with a mouse cursor. Below the navigation, there is a section for 'WES-2 Bridge (Weather Event Simulator for A...)' with a sub-heading 'OVERVIEW' and a red box around the 'SOFTWARE' tab. The page contains detailed text about the WES-2 Bridge's deployment, current status, and a deployment schedule table.

Data Test Sites	
OUN	Norman, OK
BYZ	Billings, MT

<http://training.weather.gov/wtdt/courses/rac/>

The RAC Home Page is an additional source for course information. 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.

## RAC Support

- [nws.wdtd.rachelp@noaa.gov](mailto:nws.wdtd.rachelp@noaa.gov)
  - Contacts all WDTD RAC instructors
- Or, contact one of the instructors listed directly

There are three sources of RAC support: Your local facilitator, the RAC e-mail help list, or feel free to contact WDTD lead instructors directly.

Bobby will also send status updates via e-mail.



# Questions?

- We look forward to working with you!



 **NOTE:** Ask each office individually if they have any questions.