

Overview

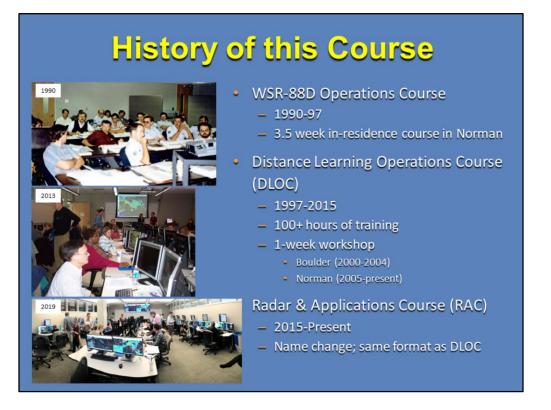
- Federal Instructors
- History of this course
- Commerce Learning Center (CLC)
- WES-2 Bridge
- Objectives and Quizzes
- Course content
- Training facilitator responsibilities
- Schedule of events
- Support



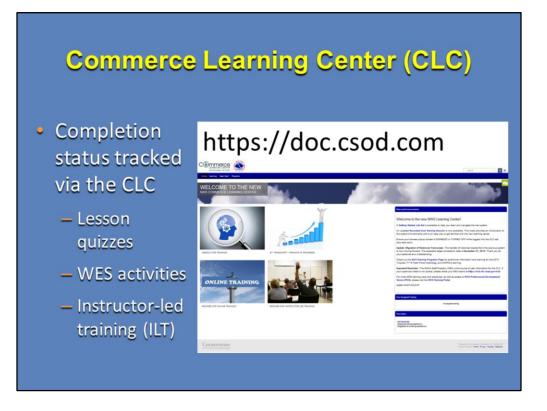
"The purpose of RAC is to train NWS forecasters (meteorologists and hydrologists) on the use of the WSR-88D radar in the forecast and warning decision making process"

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.

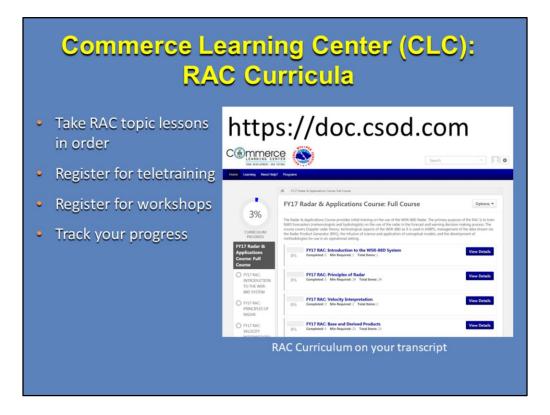




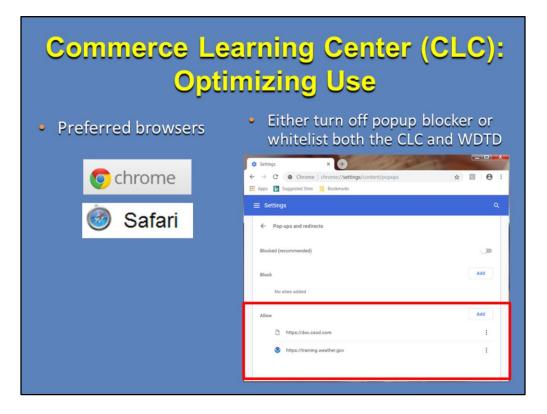
This course has steadily evolved over the years, but the focus has always been on the use of the WSR-88D in operations, particularly warning operations. It began in 1990 as the WSR-88D Operations Course which was taught as a 3 & 1/2 week in-residence course in Norman, Oklahoma. In 1997, it transitioned into the Distance Learning Operations Course (DLOC) and provided a blended learning approach which included web-based training, online 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.



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 Convective 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.

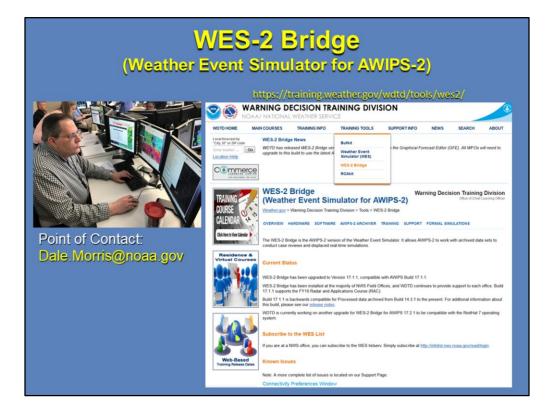


Your RAC Curriculum is your path to course completion.

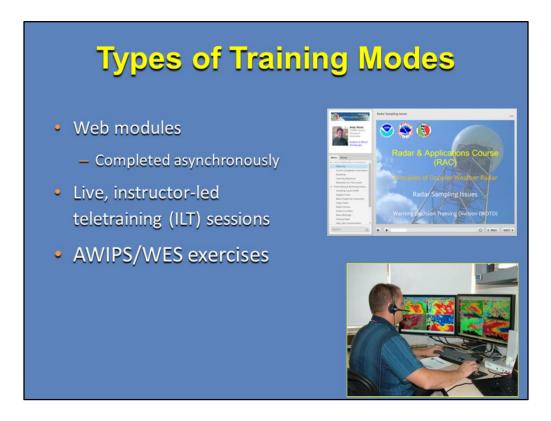


Google Chrome is the preferred browser for the CLC. Safari also works for mobile users. Other browsers may have issues.

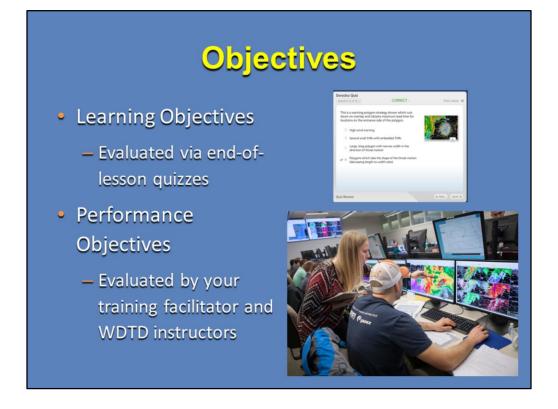
If you have popup blockers on, you will not see the presentations appear when you select them unless you create an exception for the CLC and WDTD web sites.



WES-2 Bridge 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.



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.



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.

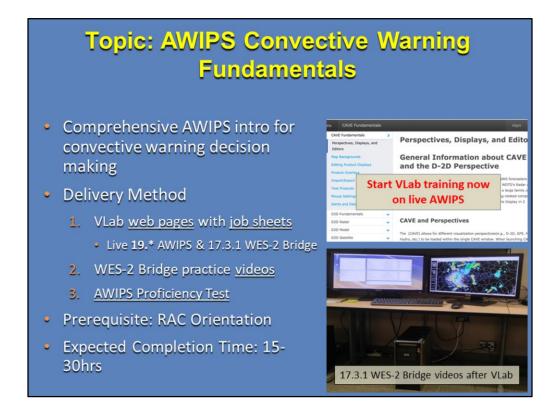
A performance objective is a statement that clearly describes the behavior or performance the learner is expected to exhibit as a result of training. We assess it in RAC via AWIPS WES exercises by your training facilitator, the AWIPS Proficiency Test by your training facilitator, and at the RAC Workshop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

End-of-Lesson Quizzes

17

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

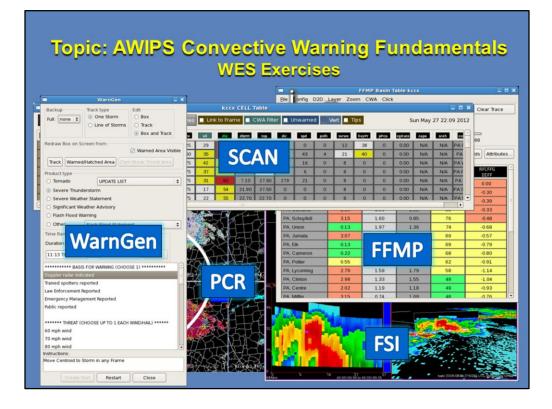




The AWIPS Convective Warning Fundamentals, is a comprehensive introduction to all the AWIPS convective warning-related tools. You will need this when you start implementing RAC training into the RAC warning decision making exercises and simulations in the workshop primer and at the workshops All RAC 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 some version of build 19. The practice videos must be taken on the WES-2 Bridge and will require the 17.3.1 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 after the orientation. 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.

Topic: 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



- Training facilitator: Scan and email Michael.A.Magsig@noaa.gov
- WDTD enters score in CLC and student answers single question test from transcript for tracking
- Must complete before the Convective Storm Structure and Evolution topic's Applied Performance Drills

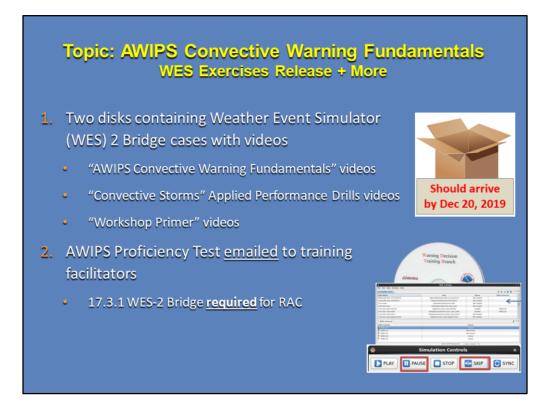
You will see the AWIPS Proficiency Test listed as an assignment in the CLC. It is a timed, paper exam administered by your training facilitator. The facilitator will observe your performance of specific AWIPS tasks. You will need to achieve a passing score of at least 70% on the exam to receive credit. 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 as attachment is preferred, but USPS "snail mail" is fine. We will then enter the score in the CLC. The final tracking step will be for the student to answer a single question test from their transcript about taking the proficiency exam.

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

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

Let's discuss the RAC topics.

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.



The AWIPS Convective Warning Fundamentals and WES exercises are being sent at the start of the course and should arrive the week of orientation. The shipment contains the 17.3.1 WES-2 Bridge cases and other WES training videos for AWIPS Convective Warning Fundamentals, the RAC Convective Storms topic Applied Performance Drills exercises, and the Workshop Primer videos we will talk more about later in this presentation.

Because 17.3.1 is the baseline for this year's RAC workshops, the 17.3.1 WES-2 Bridge is a requirement for RAC.

Topic: Introduction to the WSR-88D System

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



Topic: Velocity Interpretation

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



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



Topic: Convective Storm Structure and Evolution

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



Topic: Flash Floods

- Covers concepts, products and tools useful for flash flood forecasting and decisionmaking
- Delivery method
 - Instructor guided web modules
- Completion time
 - 2-2.5 hours



Topic: Warning Fundamentals

- "Polygonology" and wording of warnings
- Delivery Method
 - Instructor guided web modules
 - Instructor-led training
- Completion time
 - 4 hours



Topic: Warning Fundamentals (Cont'd)

Lesson Title	Time
Drawing the Warning, Part 1: Fundamentals	10 min
Drawing the Warning, Part 2: Additional Considerations	6 min
Drawing the Warning, Part 3: Complex Scenarios	10 min
Warning Content: Impact-Based Warnings	10min
After the Warning Is Issued: Continuation, Cancellation, and Expiration	7 min
Impact-Based Warnings (2 modules plus 5 exercises)	2 hours
Convective Storms & Warning Fundamentals ILT	2 hours



Teletraining means we train live over the internet, like what you're doing now.

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 Warning Fundamentals topic. The registration steps are:

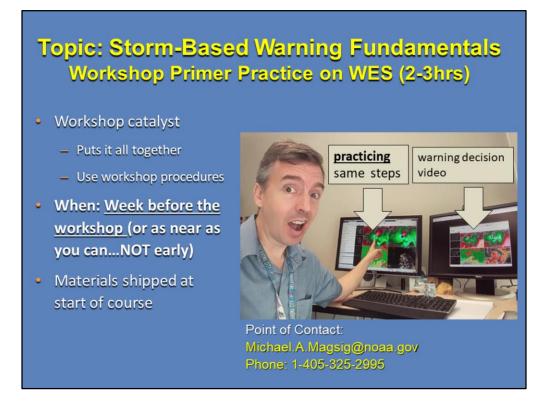
- Register for the instructor-led training (ILT) session of your choice in your Commerce Learning Center (CLC) curriculum. Each student must register individually to receive credit in the CLC, even if multiple students from the same office attend the same session. Register at least 24 hours in advance.
- 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#

Teletraining Protocol

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





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 and NOT early), so you are refreshing your skills right before you come to the workshop to maximize your growth in the 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 their workshop.
- WDTD will send frequent status updates

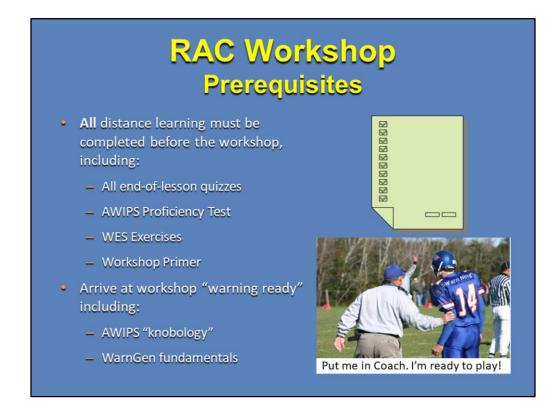


Please be aware that RAC is a **HUGE** course (over 100 hours) and all distance learning must be completed before a student is permitted to attend their RAC workshop. Thus, it's important to stay on pace. It takes a big time commitment from the student and support for that time commitment from co-workers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

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



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.



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 National Weather Center in Norman.
 Weather Center (NWC)
- Workshop:
 - Nov 18-22, 2019
- You will be automatically registered in the CLC
- Completion time
 - 40 hours (8 am Monday 5 pm Friday)
 - Many students will not be able to fly home until Saturday!



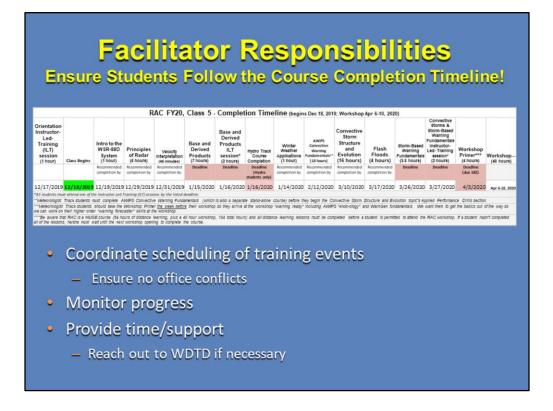


Workshop lodging will be at the National Center for Employee Development (NCED) Conference Center and Hotel located three miles east of the National Weather Center (NWC) in Norman. Most of the hotel's guests are postal service employees in-training as students in the NCED Training Facility on the same 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.

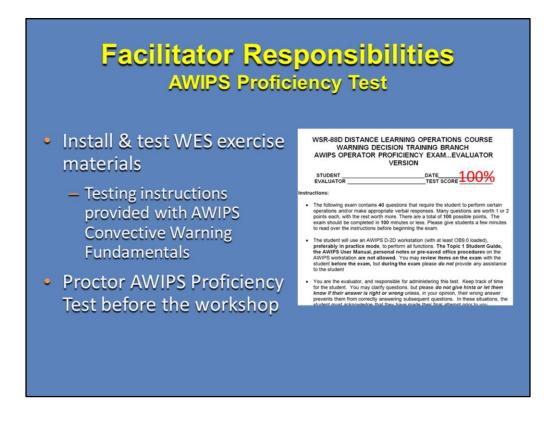


WDTD will provide post-workshop observations and feedback to both students and their training facilitators based on instructor observations during the RAC lab simulations. The goal is to improve warning performance at their home office after completing RAC. WDTD will accomplish this by providing actionable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

Training facilitators should contact the RAC Project leader (<u>Robert.A.Prentice@noaa.gov</u>) if they **do not** want their office to receive this information.



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.



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 Convective Warning Fundamentals.

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

Schedule of Events

Event	Date	Time (Z)
Orientation Instructor-Led-Training (ILT) session	12/17/2019	19Z
Upload Orientation session read ahead (pdf) to web page	12/17/2019	1930Z
RAC FY20, Class 5 Begins	12/18/2019	
AWIPS Fundamentals videos, Applied Performance Drills videos, AWIPS Proficiency Test, Workshop Primer (disc mailed out via overnight)	12/20/2019	
Workshop travel authorization accounting codes released	To be determined	
Base & Derived Products ILT, session 1	1/7/2020	19-21Z
Base & Derived Products ILT, session 2	1/16/2020	19-21Z
Convective Storms & Warning Funds ILT, session 1	3/17/2020	19-21Z
Convective Storms & Warning Funds ILT, session 2	3/27/2020	19-21Z
Workshop	Apr 6-10, 2020	



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.



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 WDTD 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 email.



If you have questions, be sure to ask them at the Orientation instructor-led-teletraining session or contact nws.wdtd.rachelp@noaa.gov