

# The NOAA/NWS Warning Decision Training Branch (WDTB): On-line Training Resources for Emergency Managers & Intro to Dual-Polarization Radar

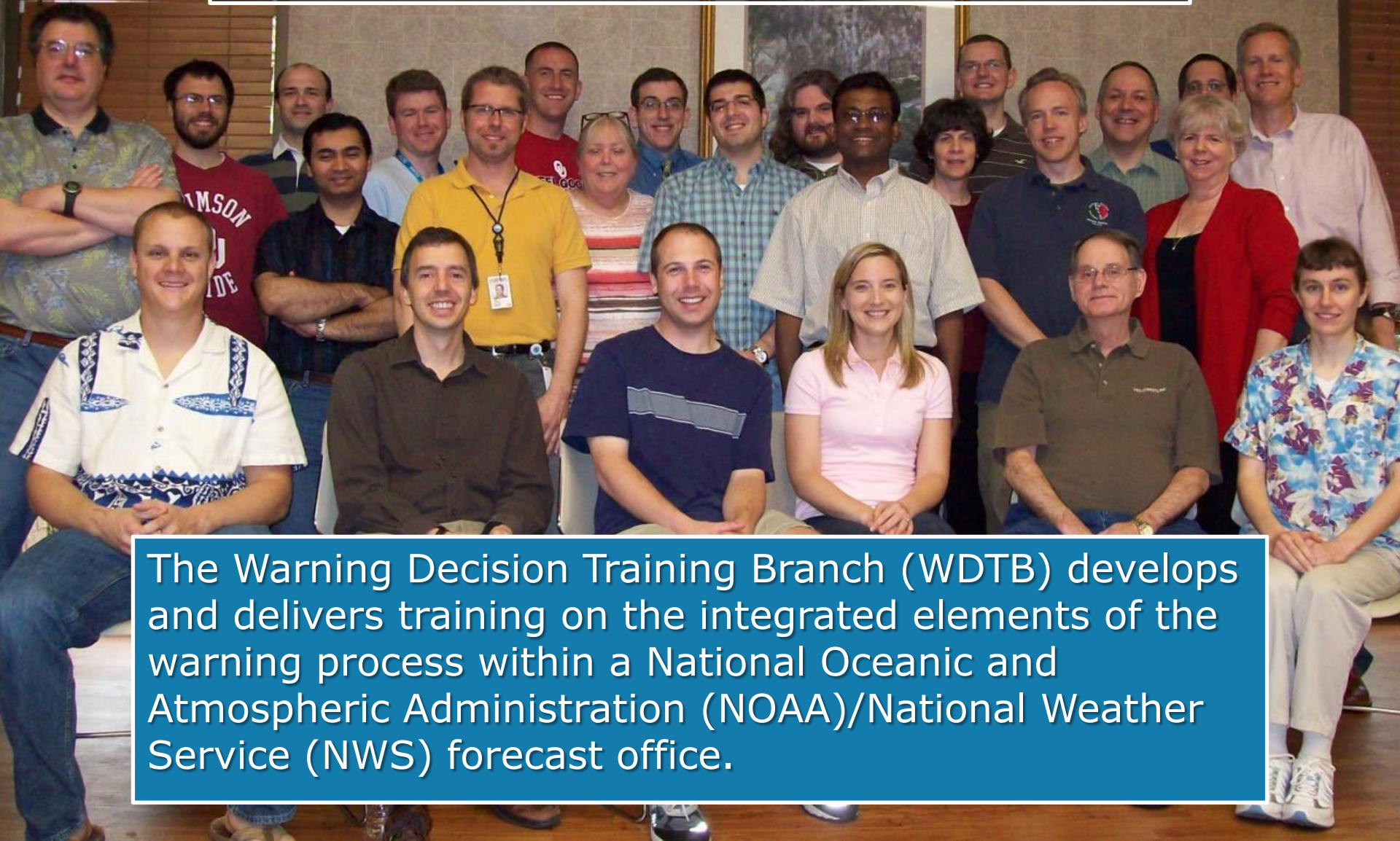
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CIMMS (University of Oklahoma)/

WDTB (NOAA/NWS)



# The Warning Decision Training Branch's Mission



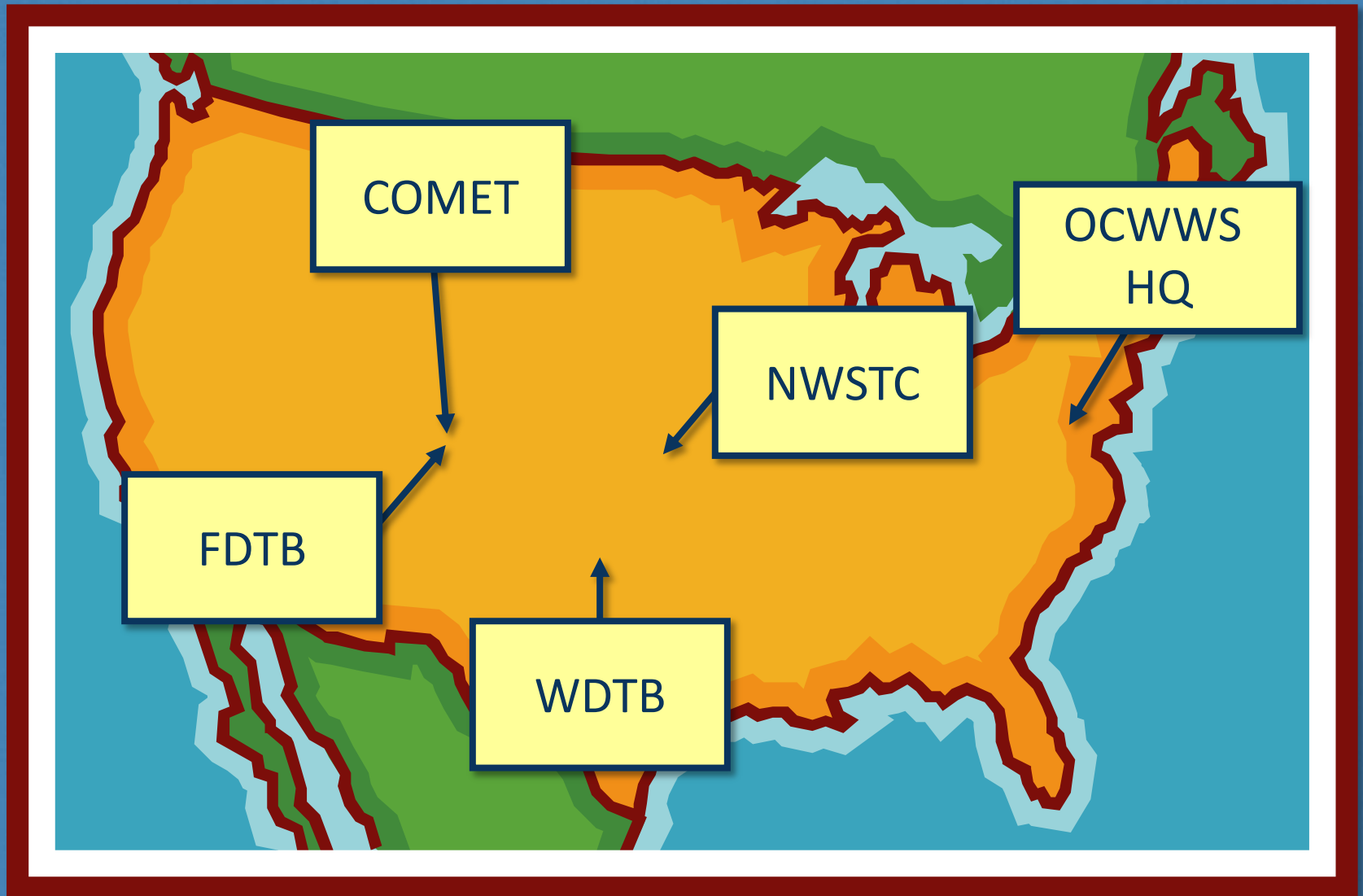
The Warning Decision Training Branch (WDTB) develops and delivers training on the integrated elements of the warning process within a National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS) forecast office.

# What WDTB's Mission Looks Like in Practice

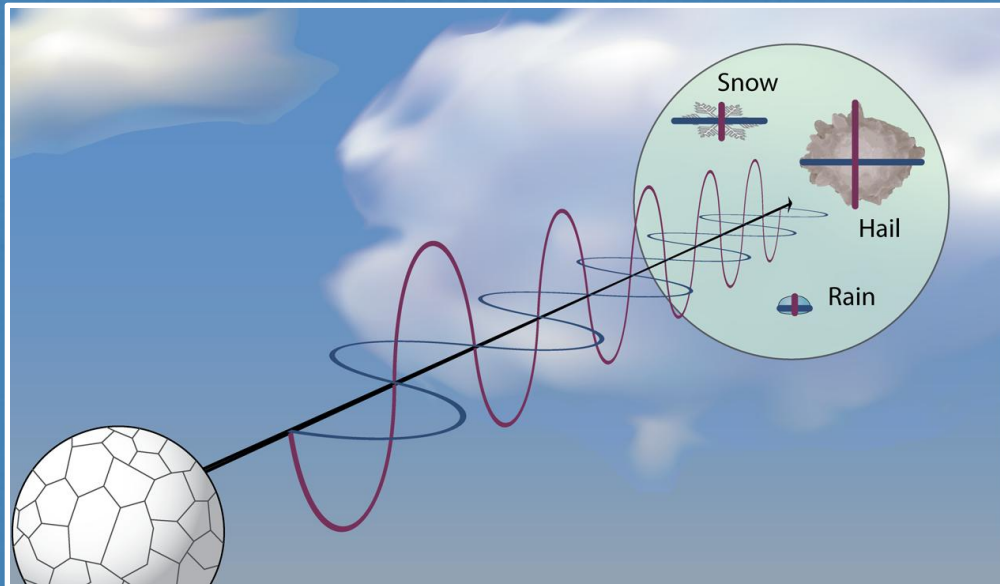


- Teach the science, technology, and human factors of radar interpretation & warnings to NWS staff
- Focus on base data interpretation, expertise, and maintaining situation awareness

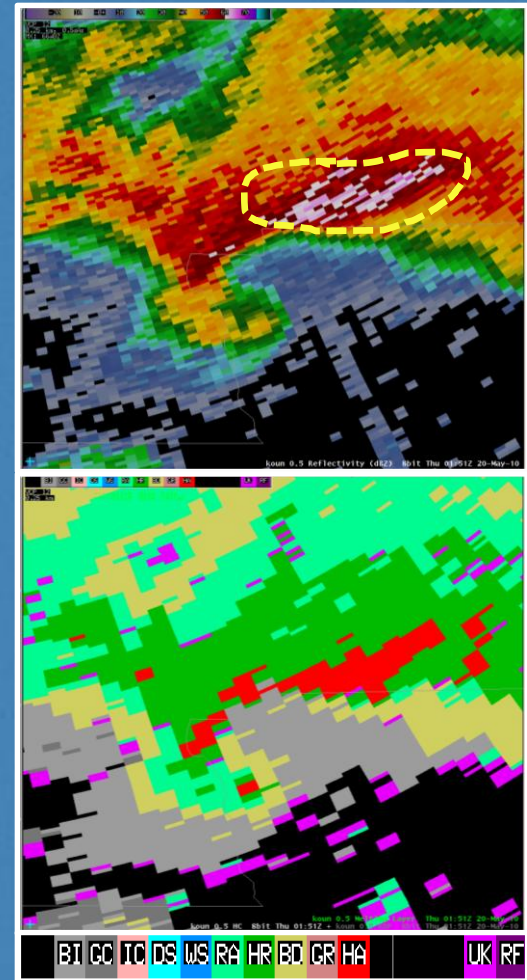
# WDTB Is a Part of the NWS Training Division



# Example of WDTB's Science & Technology Training: Dual-Polarization WSR-88D

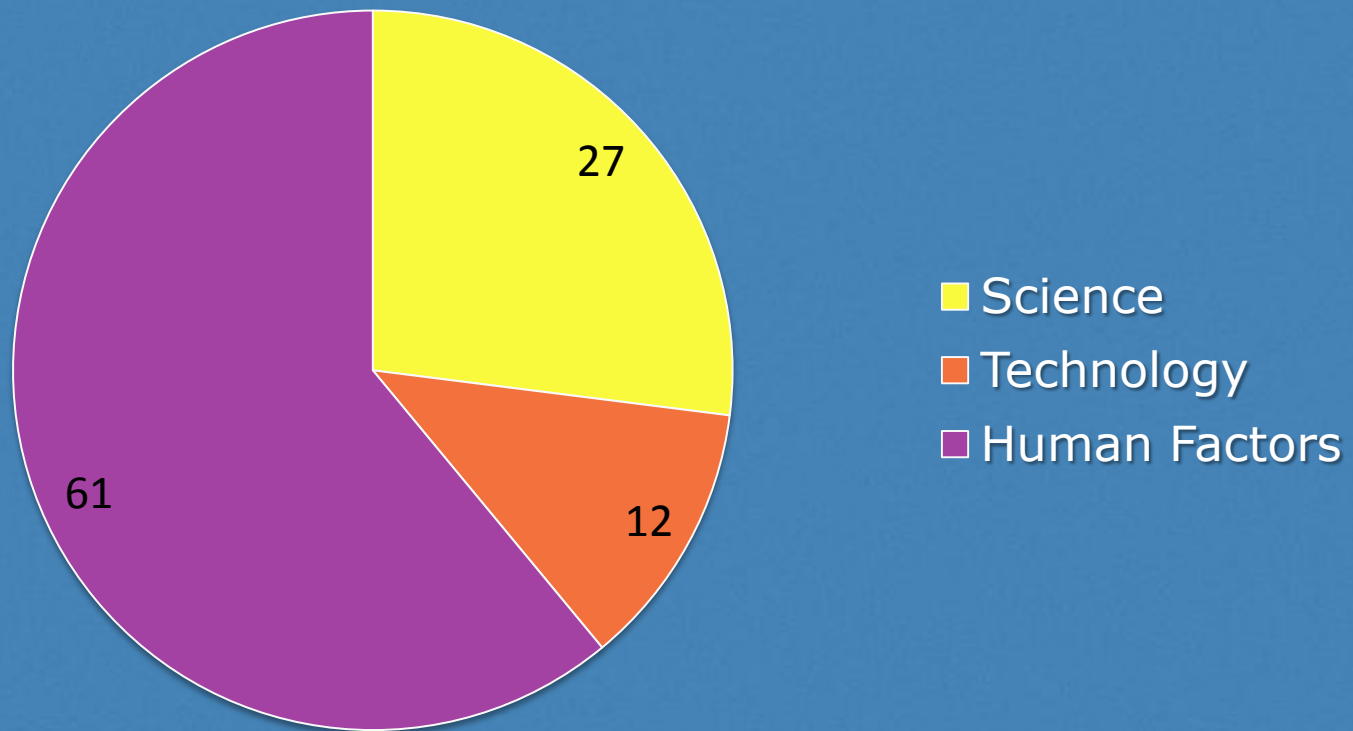


Most significant modification to the WSR-88D since the original deployment



# Why Is Human Factors Training Important to the WDTB?

Factors Contributing to Missed Tornado Events (%)



# Example of WDTB's Human Factors Training: Communicating Risks in High Impact Events

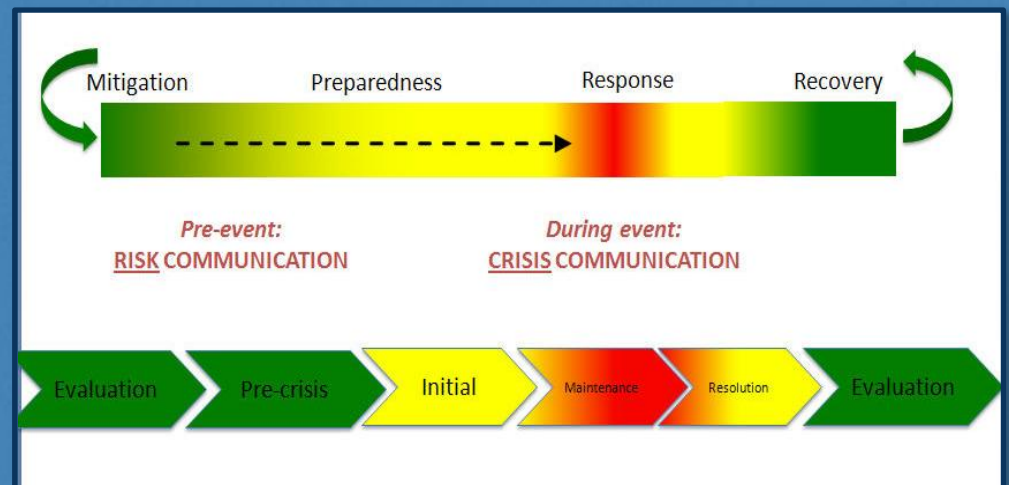


Deepwater Horizon



Enbridge Oil Spill on  
Kalamazoo River, MI

Lessons learned from  
NWS "Stories from  
the Field" & links to  
what social science  
has taught us



# How to Impact Warning Performance?

Flash Flood Warning Best Practices- Part 2 (00:02 / 30:05) ATTACHMENTS

**WDTB eLearning**

Brad Grant  
Team Leader, WDTB

Bio Email

**Flash Flood Warning Best Practices**

**Part 2 of 3: How and When to Use "Flash Flood Emergency"**

Presented by:  
The Warning Decision Training Branch

artikulite  
powered presentation

SLIDE 1 OF 25 PAUSED 00:02 / 00:24

- 1. Flash Flood Warning Best Practices
- 2. Focus on Use of Flash Flood Emergencies
- 3. What are the Course Completion Requirements?
- 4. Where is the Rationale?
- 5. Learning Objectives
- 6. Are All Flash Flood Warnings "Emergencies"?
- 7. How and When Can I Use FF Emergency?
- 8. How and When Can I Use FF Emergency?
- 9. How and When Can I Use FF Emergency?
- 10. It is a Whole Lot About Communication
- 11. Ready, Set, Go!
- 12. Criteria of Using Flash Flood Emergency
- 13. Here are Some Examples of FF Emergencies
- 14. More Examples of FF Emergencies
- 15. More Examples of FF Emergencies
- 16. More Examples of FF Emergencies
- 17. Other Considerations for FFE
- 18. How Do You Communicate Severity in the To
- 19. What are Some of the Ways to Warn Public
- 20. Can We Overuse Flash Flood Emergency?
- 21. State of Emergency

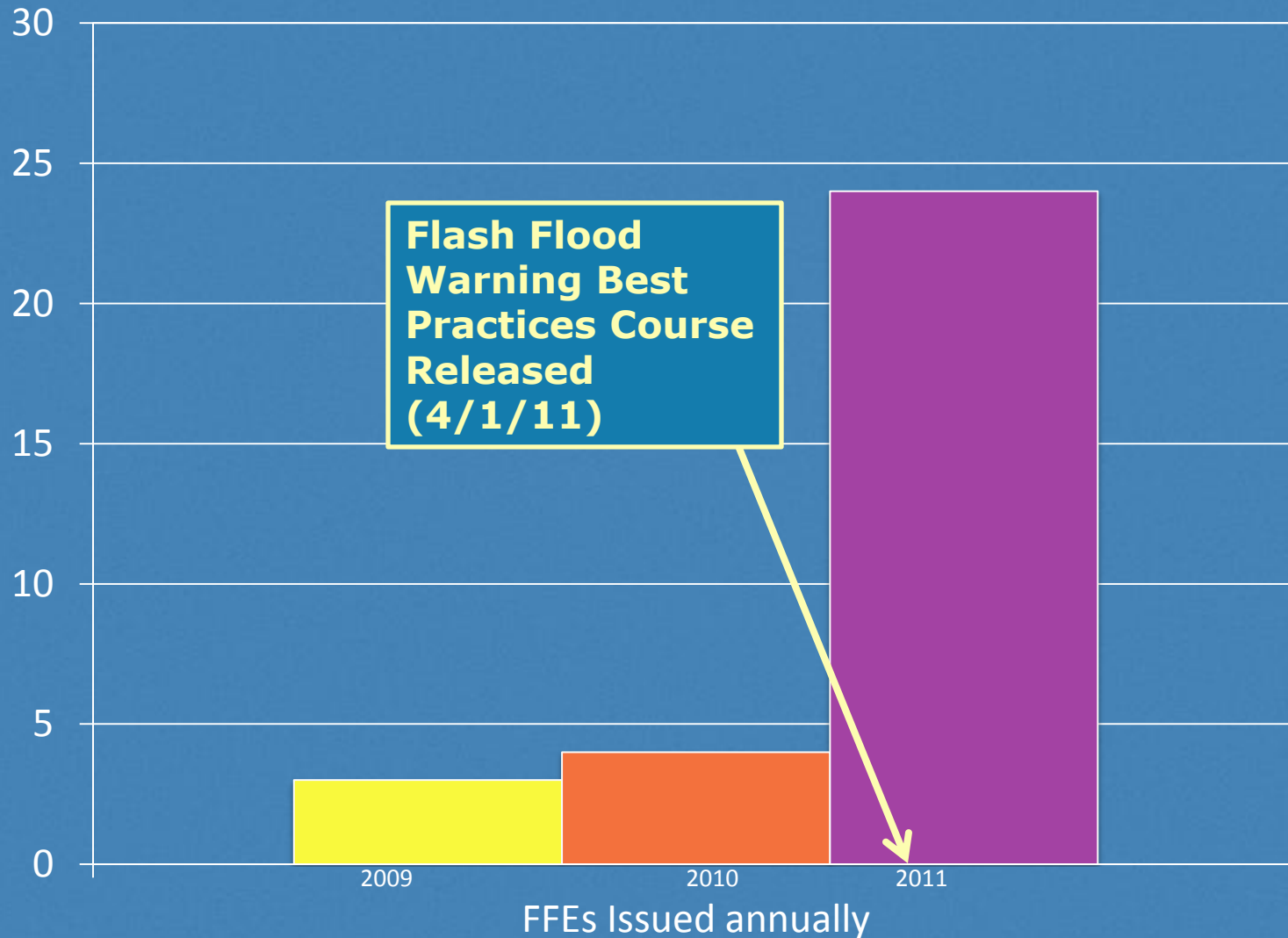
Water rescues at Millington (TN) Naval Air Base on May 1, 2010

Relating training outcomes to improved services









# Flash Flood Warning Emergencies Issued



# How WDTB Reaches 2000 Meteorologists Each Year

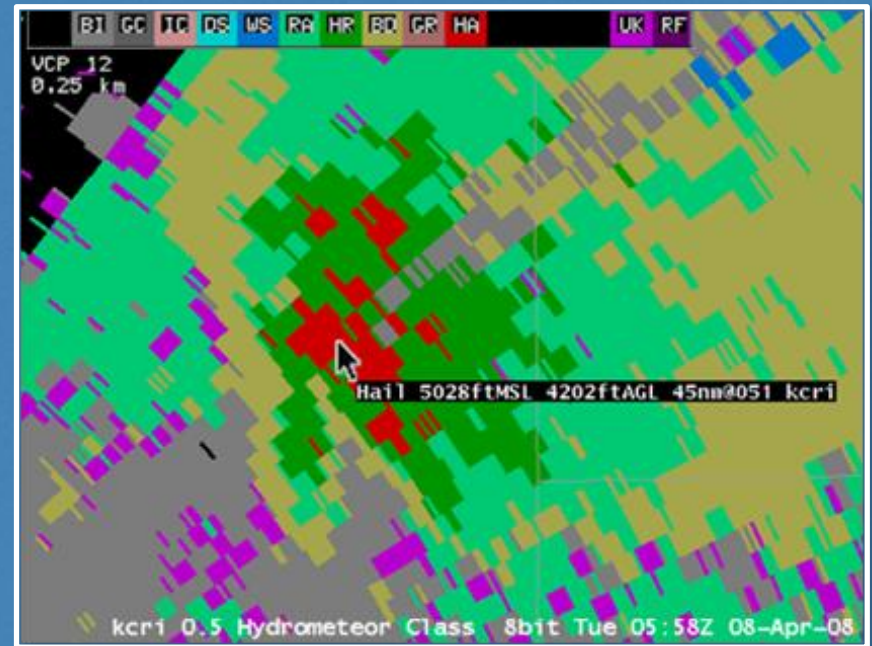
Delivery	Students per Year	Advantages	
In-Residence	~100	<ul style="list-style-type: none"> <li>- Immersive</li> <li>- Hands On Application</li> <li>- WDTB Facilitation</li> <li>- Responsive to Students</li> </ul>	
Instructor-Led	~400	<ul style="list-style-type: none"> <li>- Low Cost</li> <li>- WDTB Facilitated</li> <li>- Responsive to Students</li> </ul>	
Web-Based	~2000 (21,084 Modules)	<ul style="list-style-type: none"> <li>- Low Costs</li> <li>- Reaches Large Audience in a short time</li> </ul>	
Simulations	~1600 (4 Sims/student)	<ul style="list-style-type: none"> <li>- Hands On Application</li> <li>- Evolved into Low Cost</li> <li>- "Train as you fight"</li> </ul>	

# Courses That May Interest Emergency Management Community

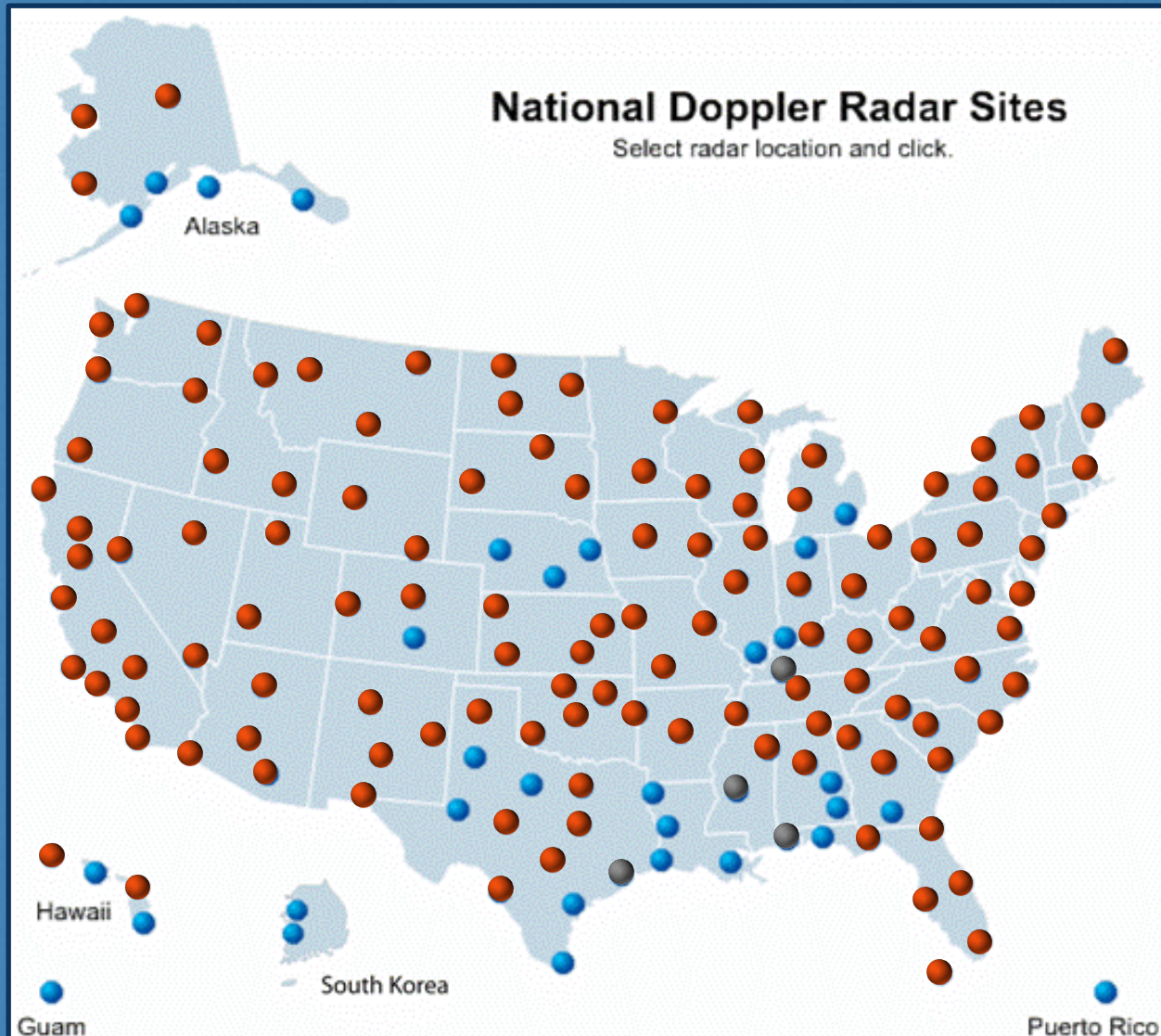
- Dual-Polarization Radar Training
  - <http://www.wdtb.noaa.gov/courses/dualpol/outreach/index.html>
- Integrated Warning Team Training
  - <http://www.wdtb.noaa.gov/courses/iwt/index.html>
- Communicating Risks in High-Impact Events
  - <http://www.wdtb.noaa.gov/courses/risk-comms/index.html>
- EF-Scale Training
  - <http://www.wdtb.noaa.gov/courses/EF-scale/>
- Wind Farms, the WSR-88D and Coexistence
  - <http://www.wdtb.noaa.gov/modules/windfarms/index.html>

# An Example of WDTB On-Line Training: Dual-Polarization WSR-88D Radar Training

- New technology upgrade  
aka: Dual-Pol
- Most significant  
modification since  
original WSR-88D  
deployment
- Previous radar products  
remain the same
- Additional base and  
derived radar products



# Current Status of the Dual-Polarization Upgrade (as of 9 Jan 2013)



# Overview of Dual-Pol Training Solutions

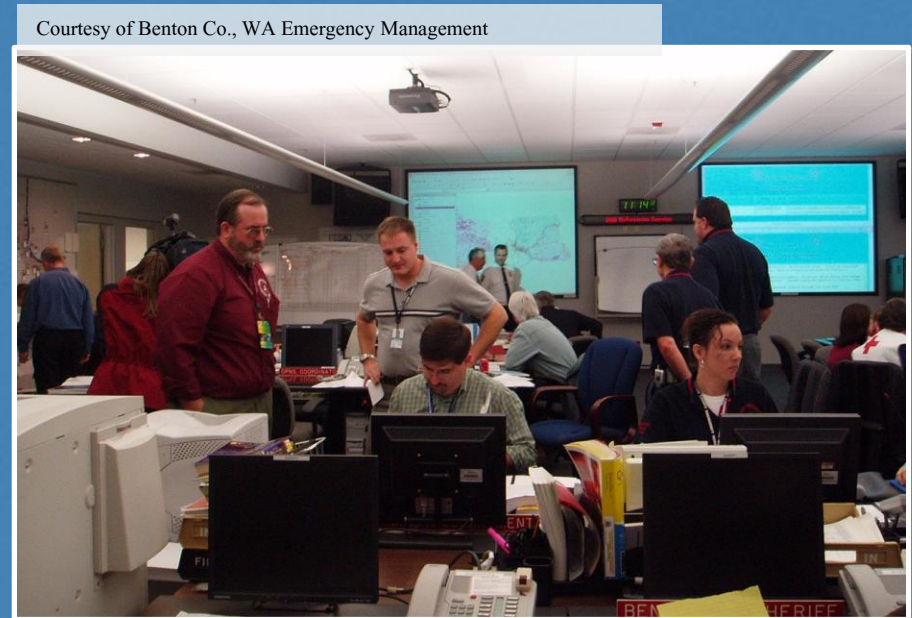
Course	WSR-88D Dual-Pol Operations Course	Dual-Pol Education and Outreach
Audience	<p>All NWS Forecasters</p> <ul style="list-style-type: none"><li>- Meteorologists</li><li>- Hydrologists</li><li>- CWSUs</li></ul>	<ul style="list-style-type: none"><li>- First Responders</li><li>- Broadcast Mets</li><li>- Other Private Sector Meteorologists</li><li>- Emergency Managers</li><li>- Other Public Stakeholders</li></ul>
Scope	<ul style="list-style-type: none"><li>- Two ~8 hour courses delivered over 2 years</li><li>- Web- and WES-based</li></ul>	<ul style="list-style-type: none"><li>- Two tracks (Mets and non-Mets)</li><li>- Support materials for WCMs</li></ul>

# Outreach Training Dilemma: Need to Reach Different Audiences

## Trained Meteorologists



## Non-Meteorologist Decision Makers



To adequately meet training needs of each group, two solutions are necessary

# Solution #1: Train Meteorologist Partners by Leveraging NWS Forecaster Training



- Make NWS training available to non-NWS mets
- Create separate introduction to course
  - Outline available training
  - Highlight content designed for NWS



## Solution #2: Present High-Level Overview & Key Topics for Non-Meteorologist Partners

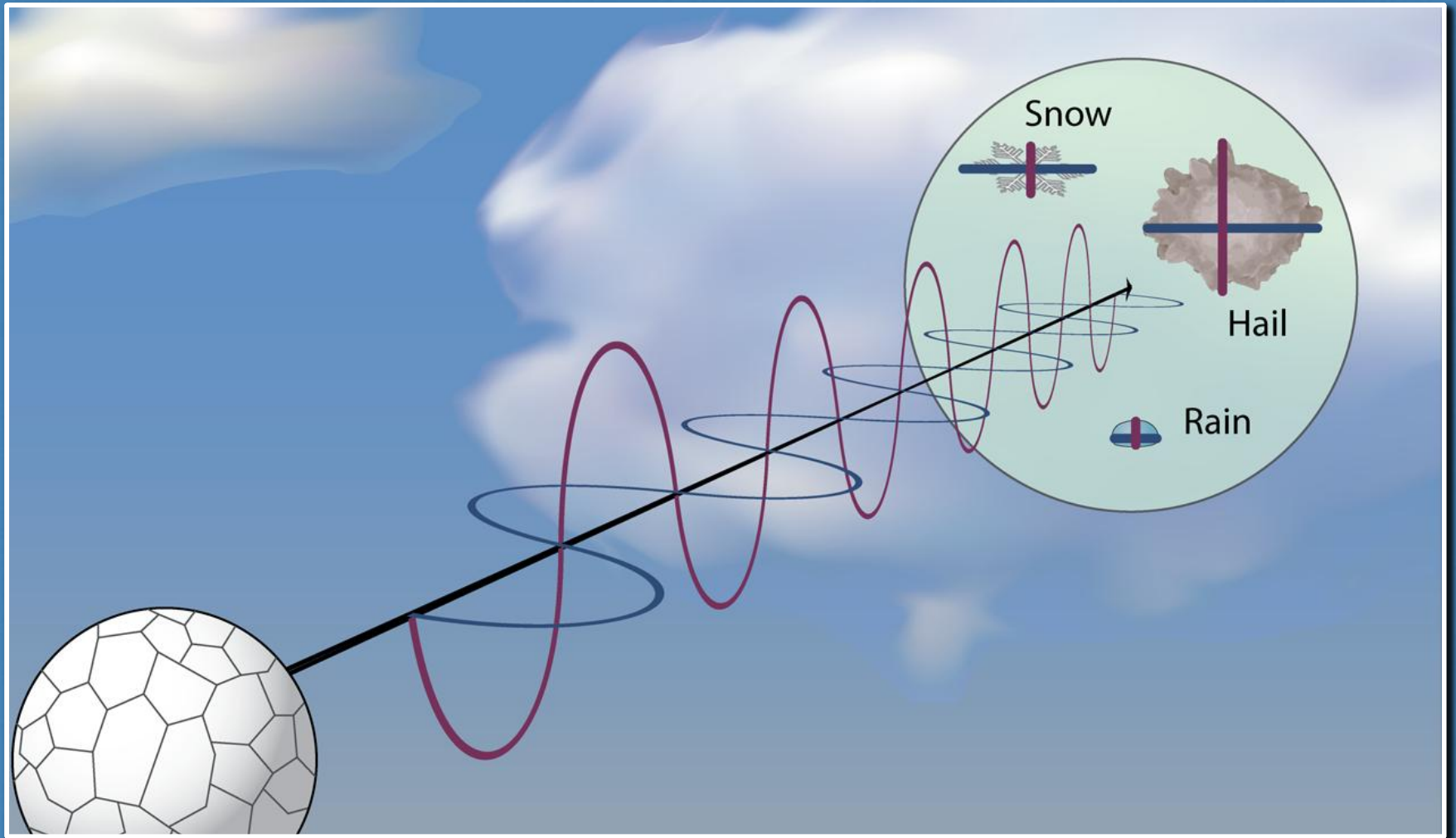
- Overview: What is dual-polarization technology
- Focus on:
  - Benefits of new technology
  - Aspects of radar that have not changed
- Provide non-met users with some application of new data



# How Can Dual-Polarization Technology Help Emergency Managers?

- Data helps NWS provide better service
- Experienced EMs can make use of some data in right circumstances
- If you try to use dual-pol products:
  - Always use them in context of other data
  - Know their limitations
  - Trust local experts

# Example of What Dual-Pol Training Covers: How Does Dual-Polarization Radar Work?

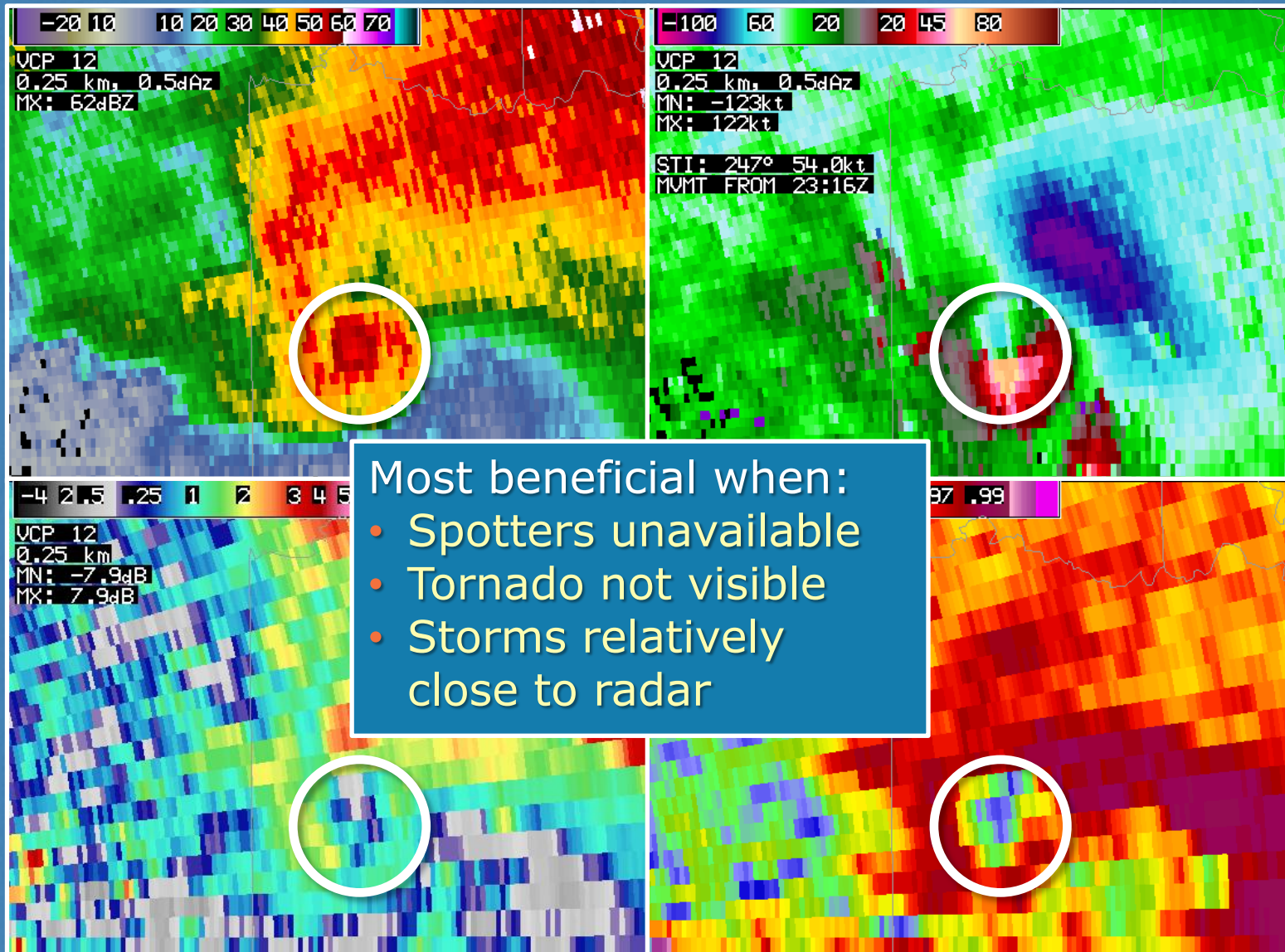


## Example of What Dual-Pol Training Covers: Five Benefits of Dual-Polarization Radar

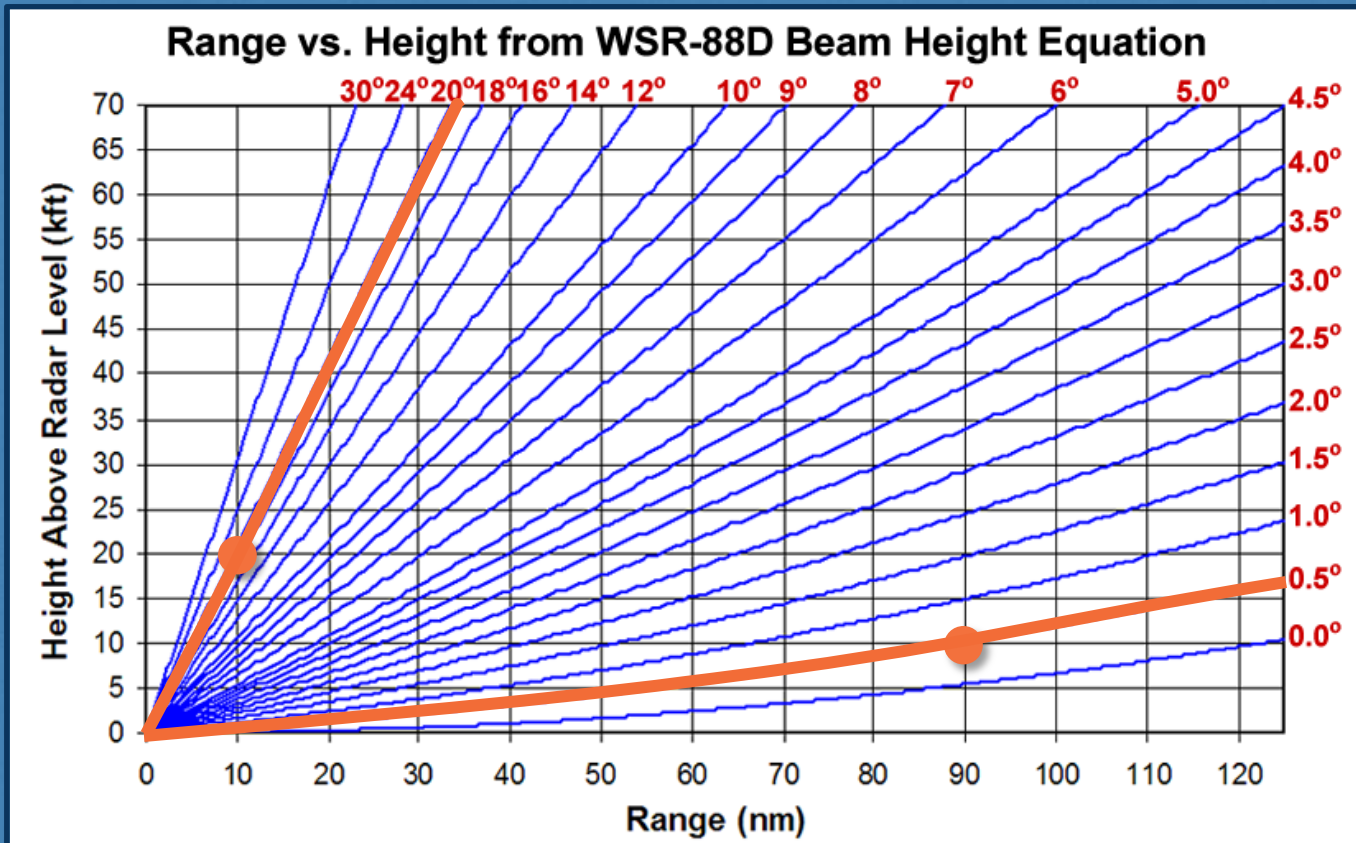
1. Identify non-weather targets more easily
2. Differentiate rain, snow, melting snow
3. Detect when hail is present in a thunderstorm
4. Detect areas of heavy rain better
5. Detect debris lofted by damaging tornadoes

It will take years for benefits to fully materialize!

# Example of What Dual-Pol Training Covers: Tornadic Debris Signatures



# Example of What Dual-Pol Training Covers: Radar Range Dependence Still Applies



Lowest height WSR-88D can observe at 90 nm away: 10,000 feet  
Highest height WSR-88D can observe at 10 nm away: 20,000 feet

# Summary

- The WDTB provides training on the NWS warning process and the tools forecasters use
- Most of our training is available on-line
- Emergency managers may find some of our training useful
- One example: Dual-polarization technology upgrade to WSR-88D training

# Contact Info

- My e-mail:

[Andrew.C.Wood@noaa.gov](mailto:Andrew.C.Wood@noaa.gov)

- Warning Decision Training Branch's web site:

<http://www.wdtb.noaa.gov/>

- For more information on the dual-polarization technology upgrade:

<http://www.roc.noaa.gov/WSR88D/DualPol/Default.aspx>

&

<http://www.wdtb.noaa.gov/courses/dualpol/outreach>

