

# National Weather Service Emergency Response for the EM community

A view of your NWS' initiative for better all-hazards decision-support for...

**a more resilient homeland !**

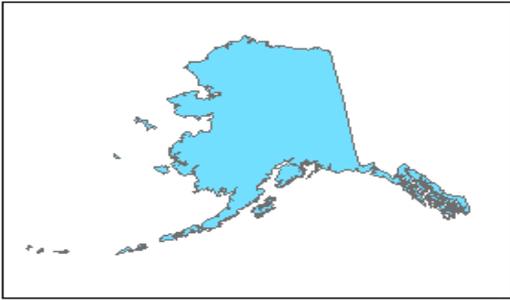
National Severe Weather Workshop 2010

Norman Oklahoma – March 5, 2010

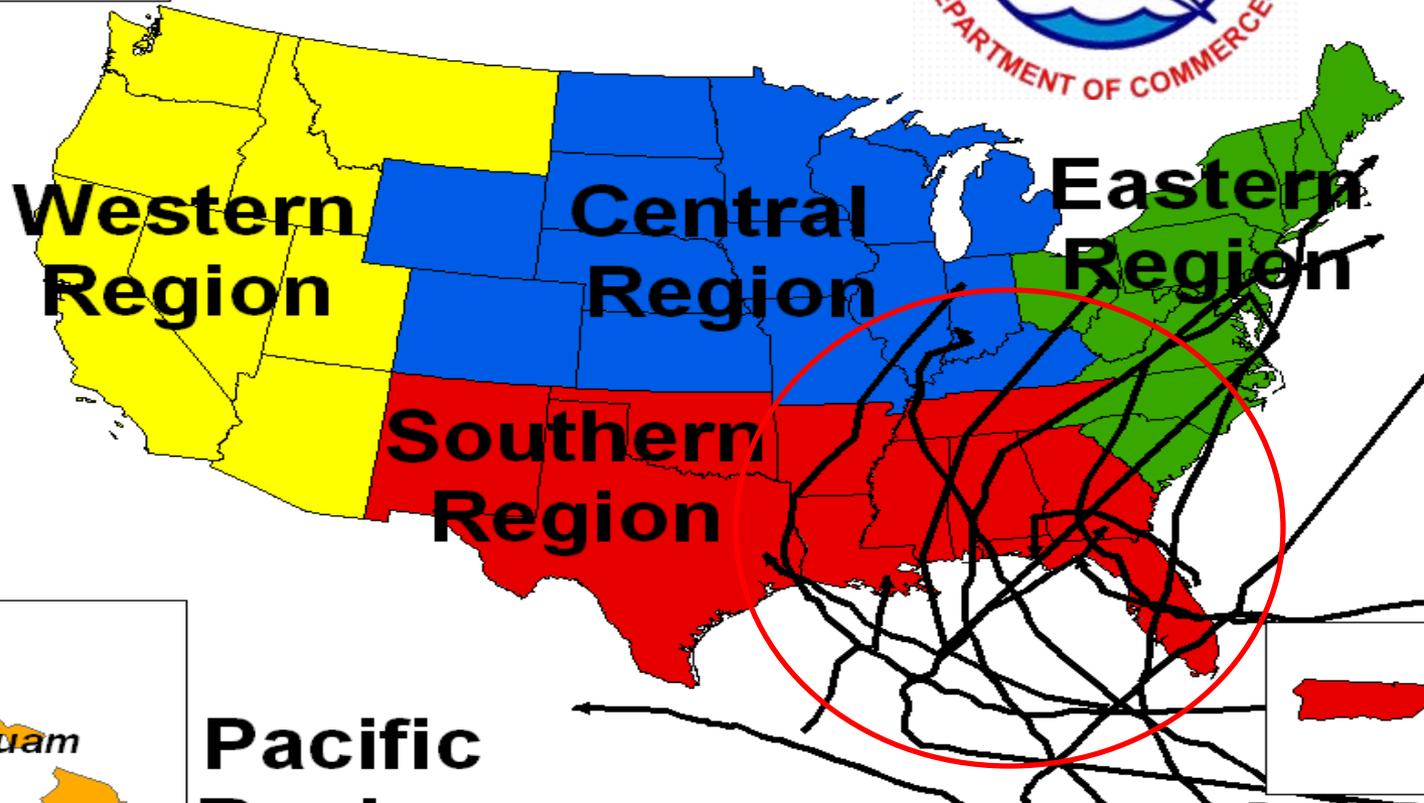


Bill Proenza, Regional Director  
National Weather Service – Southern Region

# NWS: has largest government service regions: 4 contiguous and 2 “oconus”

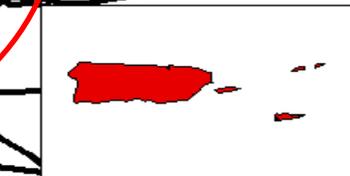


**Alaska  
Region**



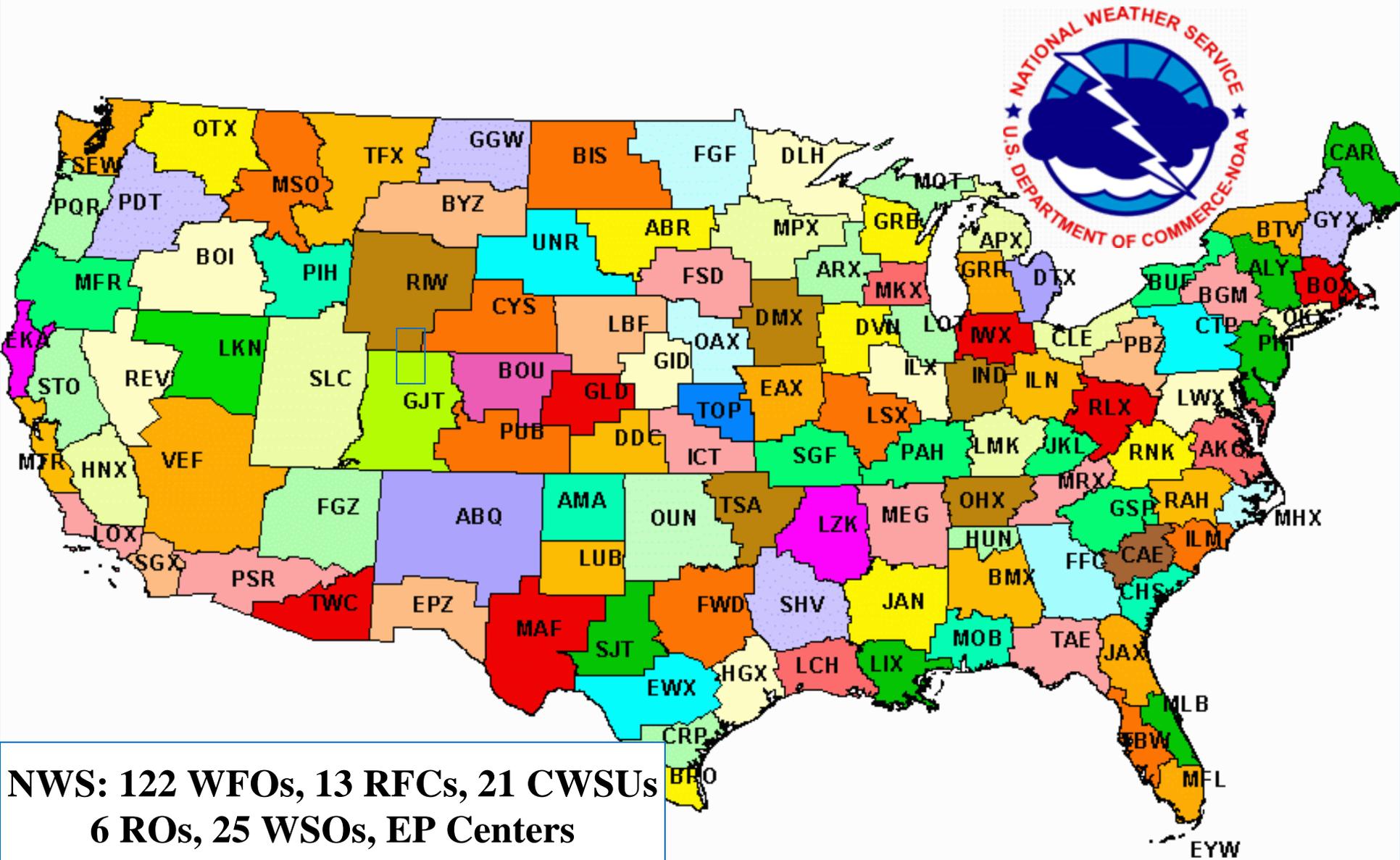
*Hawaii and Guam*

**Pacific  
Region**



*Puerto Rico and  
Virgin Islands*

# EMs & local/state govts are best served by their nearby WFO for local impact decision-making !

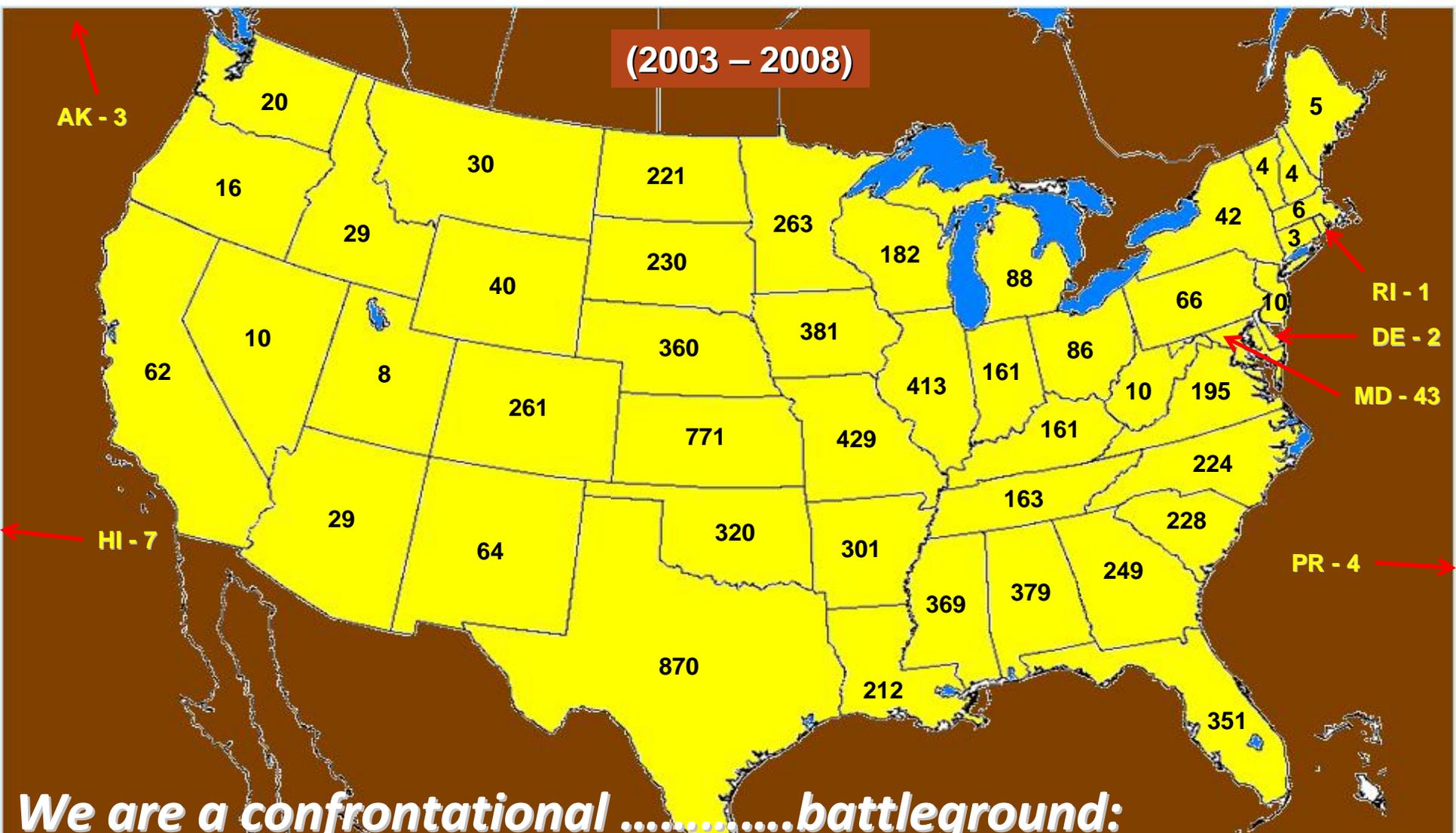




# 8386 Tornadoes in 6 years.



## The US has a unique tornado vulnerability!



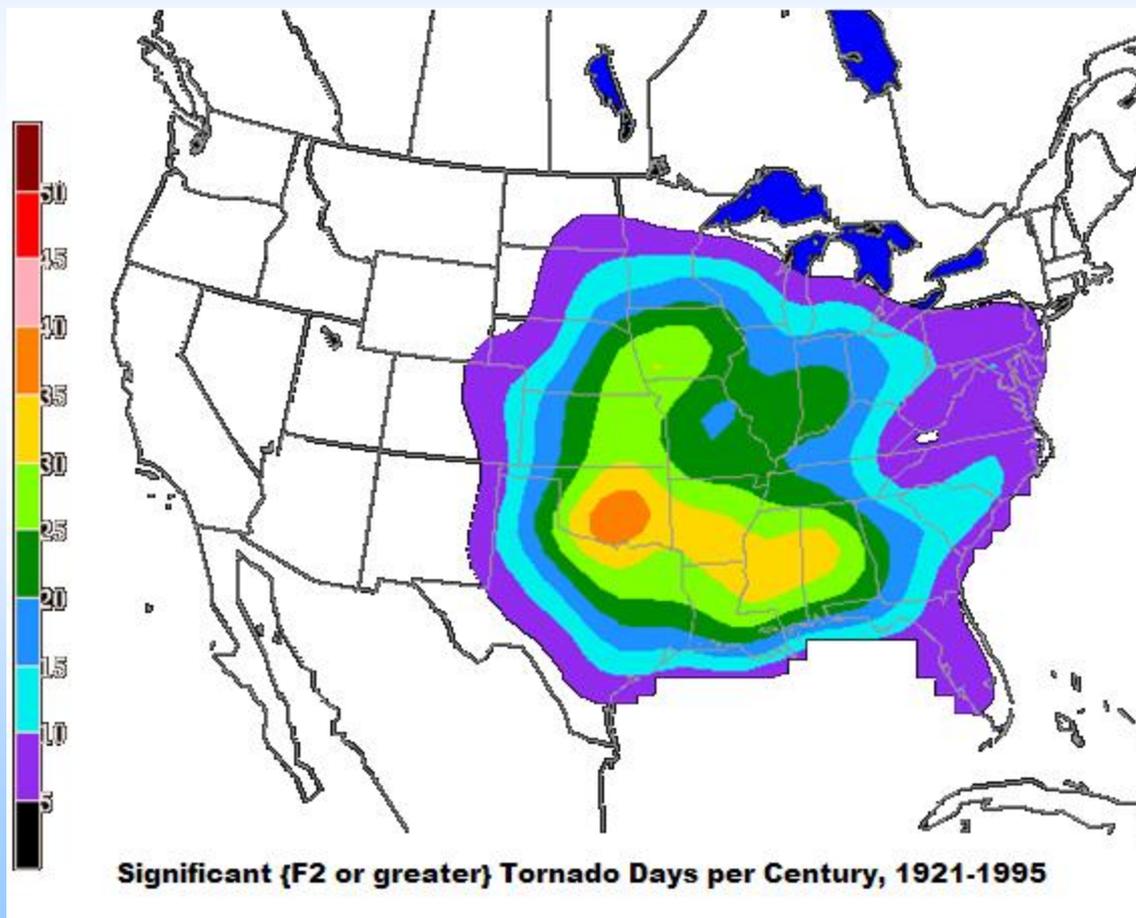
We are a confrontational .....battleground:  
continental vs tropical air. e.g. '04: 1817; '08: 1690

# Climatology of Tornadoes, 1921-1995

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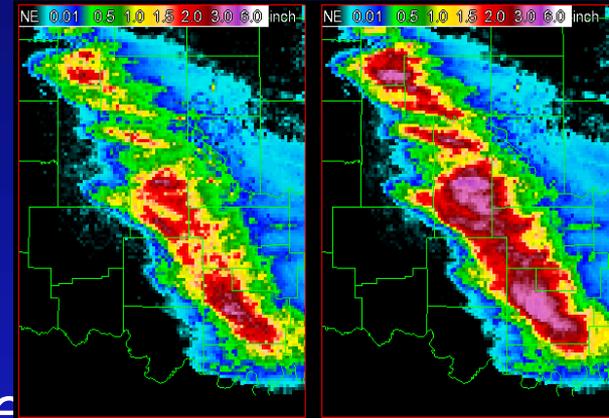
## *The true shape of tornado "alley"*

*reference: NWS/Storm Prediction Center*



# The Local/State EM community continues to ask NWS for more all-hazards support !

- Indeed our nation's resiliency depends heavily on weather info to mitigate both unnatural & natural life-threatening events
- We are also hearing very clearly that this partner community that such weather information is most effective when its immediately delivered to an EOC or on-site to a field command center
- Many natural high-impact event seasons:
  - Hurricanes of 2004, 2005 & 2008
  - Tornadoes of 2003, 2004 & 2008
  - Southern & Western fires of 2005, 2006, 2007, 2008, 2009



# The NWS Emergency Response Meteorologist (ER-MET) is a “way ahead” for more effective EM support and protection of life!

- WFO decision support can be immediate, 24x7, and can reach directly the impacted EM office, its command center or field site via the ER-MET capability.
- What is an Emergency Response MET (ER-MET)?
  - **Who**: An “all-hazard” event trained meteorologist.
  - **From**: From your nearby WFO.
  - **To**: Local, State, Federal EOCs, 1<sup>st</sup> Responder sites.
  - **What**: Provides decision makers hydro-meteorological information and impacts tailored to the event.

# So NWS, with its national network of WFOs, can best meet local EM needs.

**Specifically, local WFOs provide area focused/direct on-site all-hazards weather info in all sorts of ways with the latest communications technology.**



**Product request**

**Web Briefing**

**Recorded Briefing**

**Live Virtual Briefing**

**IC Center On-site**

**IC Incident On-site**

**NATIONAL WEATHER SERVICE U.S. DEPARTMENT OF COMMERCE-NWS**

**Significant Flooding Remains Possible This Morning and Afternoon with Rain Rates Near 2 Inches?**

**HEAVY RAIN WITH FLOODING AFTERNOON**

**RAINFALL ESTIMATES FROM RADAR (8/1)**

**Scattered Showers and T-storms Moving Southward!**

**Hurricane Gloria**

**HEAVY FLOX THIS**

**HEAVY RAIN WITH FLOODING AFTERNOON**

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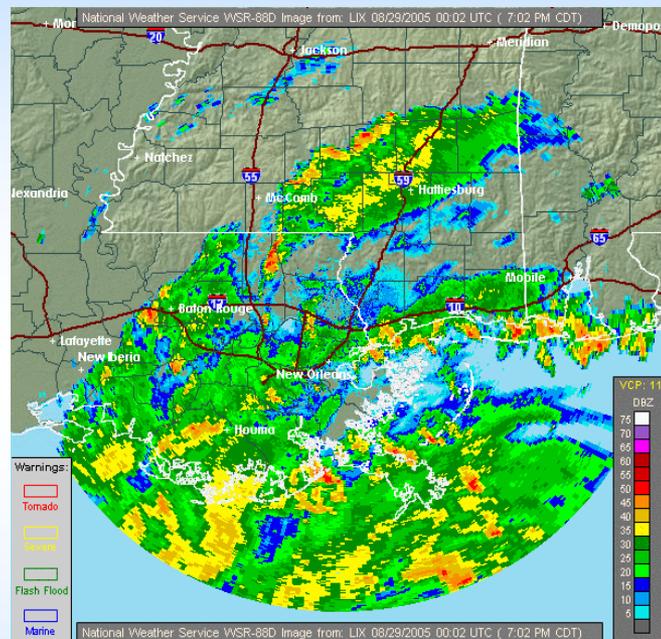
**Live Virtual Briefing**

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# The NWS most sought after web product is your GIS-based NWS radar network...its there for EMs & public

- National Weather Service WFO GIS radar graphics include the latest **watches and storm-based warning boxes** right on the radar loops.
- The NWS GIS radar gives you the distance and direction of approaching weather to any geographic point of interest to you.
- Our data gives you a running tally of **local rainfall amounts**.
- You can superimpose our radar data onto your own GIS EM awareness and response program.



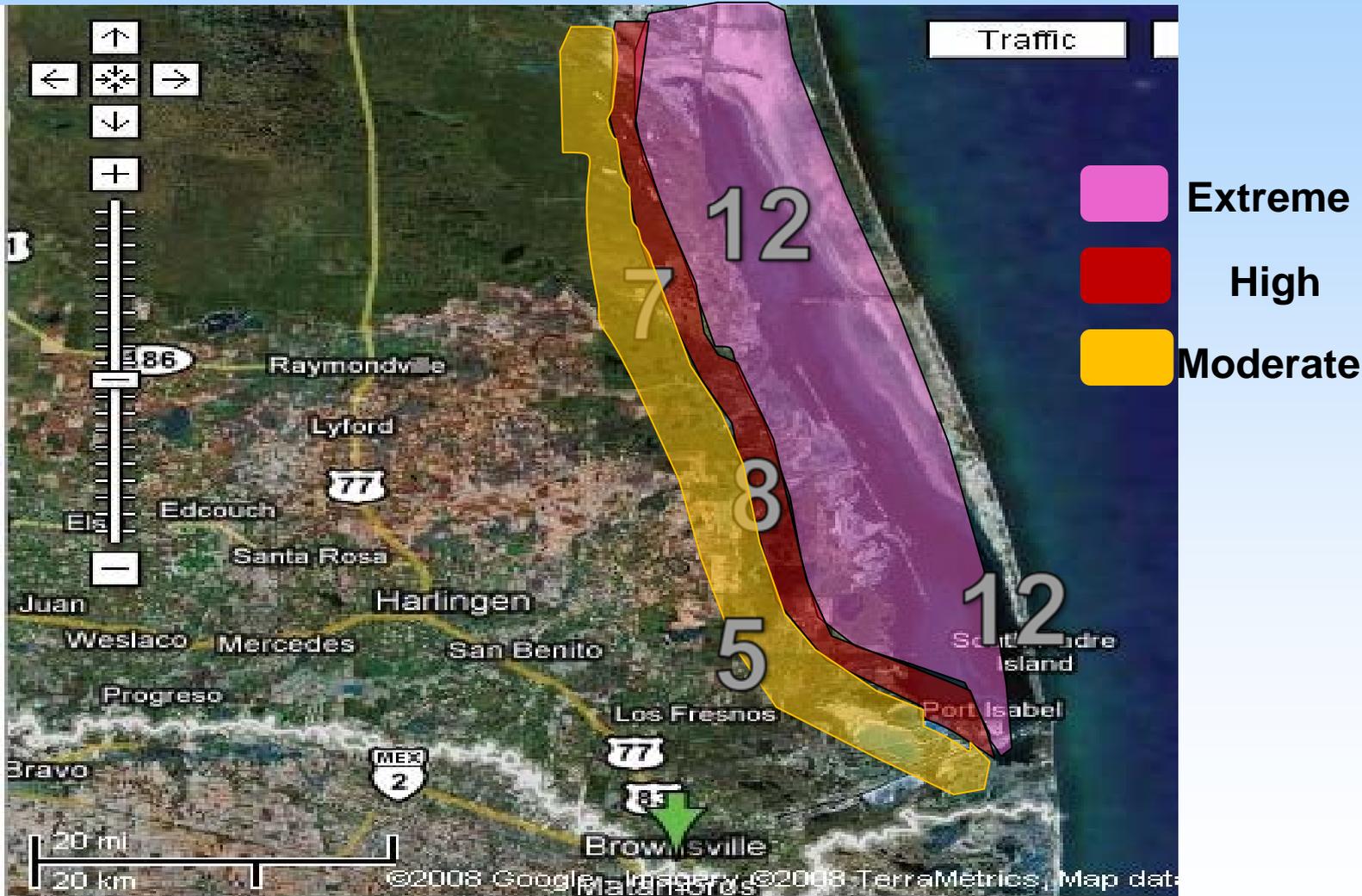
Example of NWS radar & warnings in Google Earth

[www.SRH.weather.gov](http://www.SRH.weather.gov)



# Storm Surge on GIS graphic..

Storm Surge GIS example, <12 hours from impact



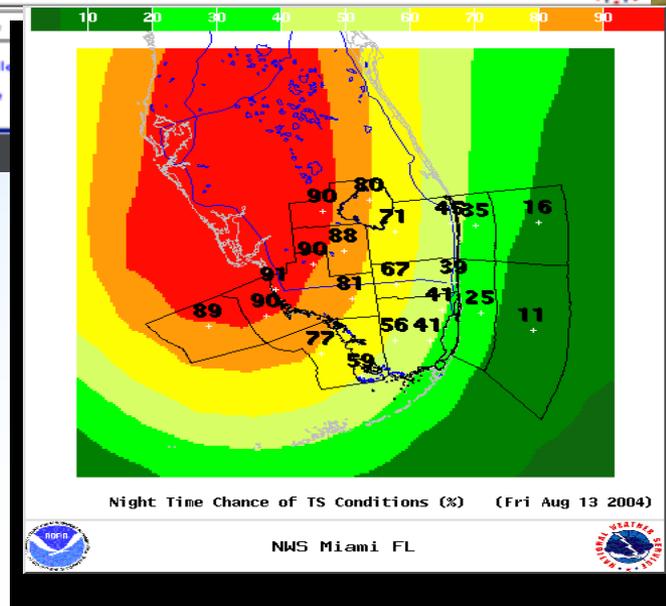
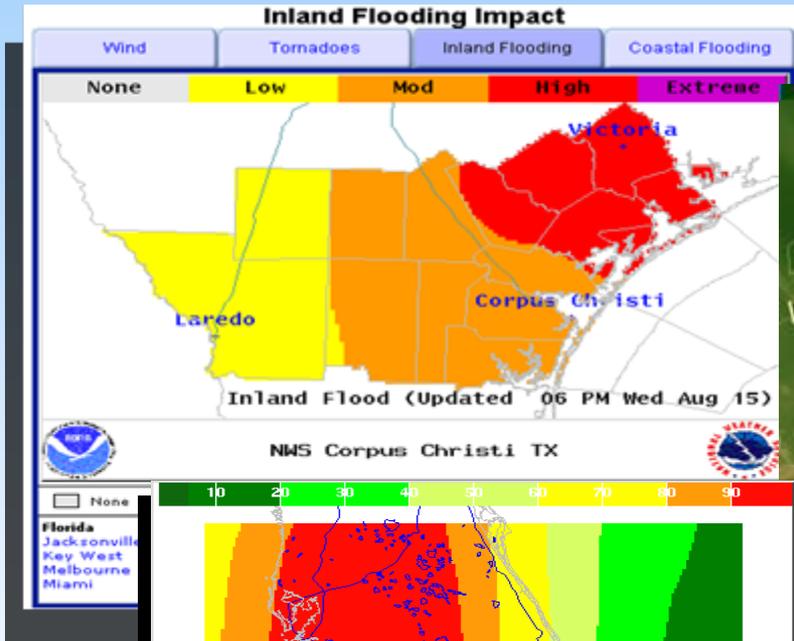
Slide courtesy of Barry Goldsmith, WFO Brownsville

# Graphiccasts !



- **NWS Weather Forecast Office, River Forecast Center and Regional Office internet graphical/podcast hazard depictions of hydro-meteorological events.**
- **Partner/user valued internet enhancements that better depict the timing of hazards/threats into affected areas.**
- **Illustrating air, land & sea severe weather & all types of water related impacts using such decision assisting enhancements for partners/users/public**

# WFOs transpose products (e.g. HLS) into **Graphics** and **Grids**!



Slide courtesy of Barry Goldsmith, WFO Brownsville

# WFO Post Storm Reports

WFOs compile an official historical record of severe weather conditions.

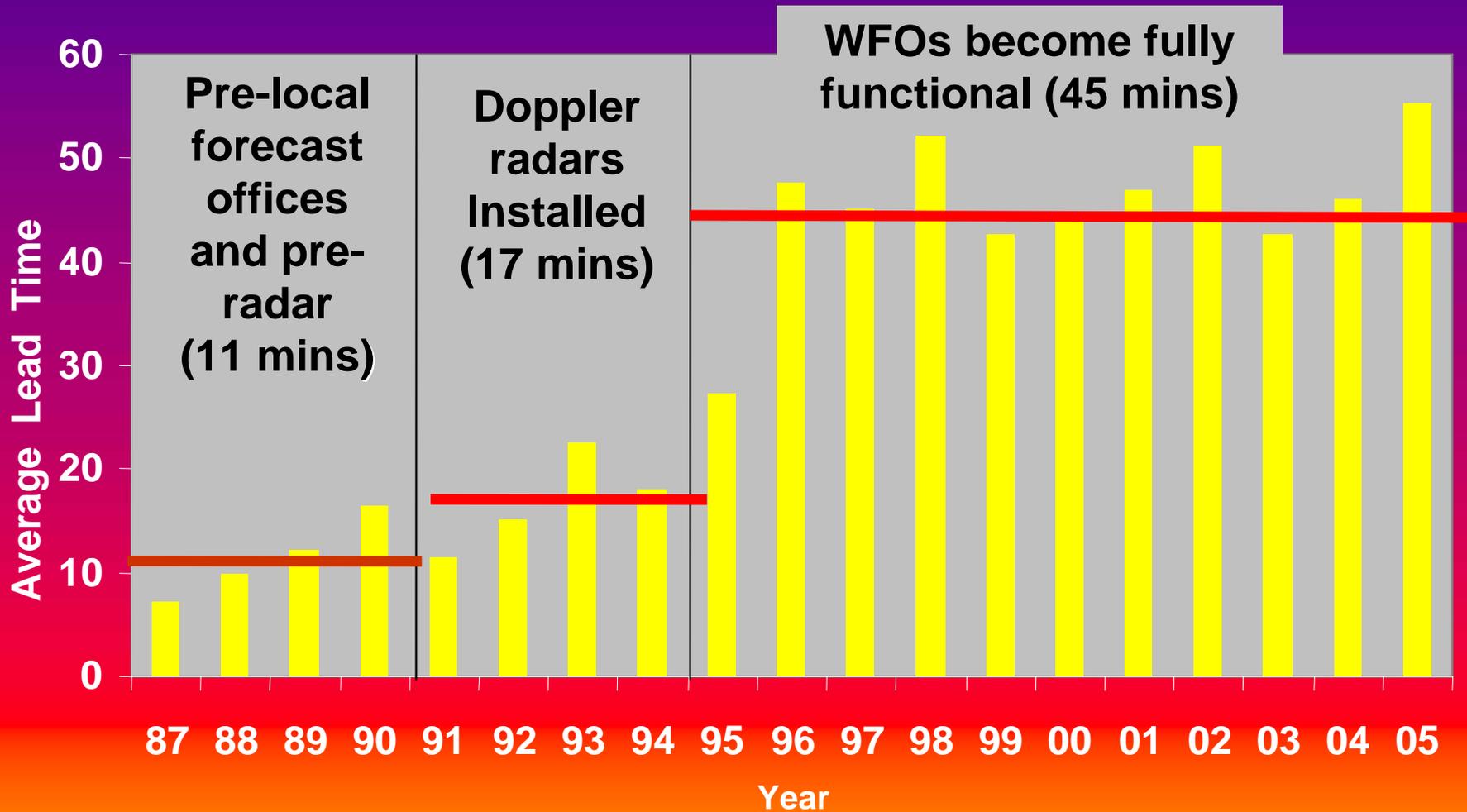
Such summaries include . . . **Tornado surveys, rain storms and flash flooding, windstorms, storm surge, river flooding, casualties and damages.**

**All important for your disaster documentations and declarations by emergency management.**



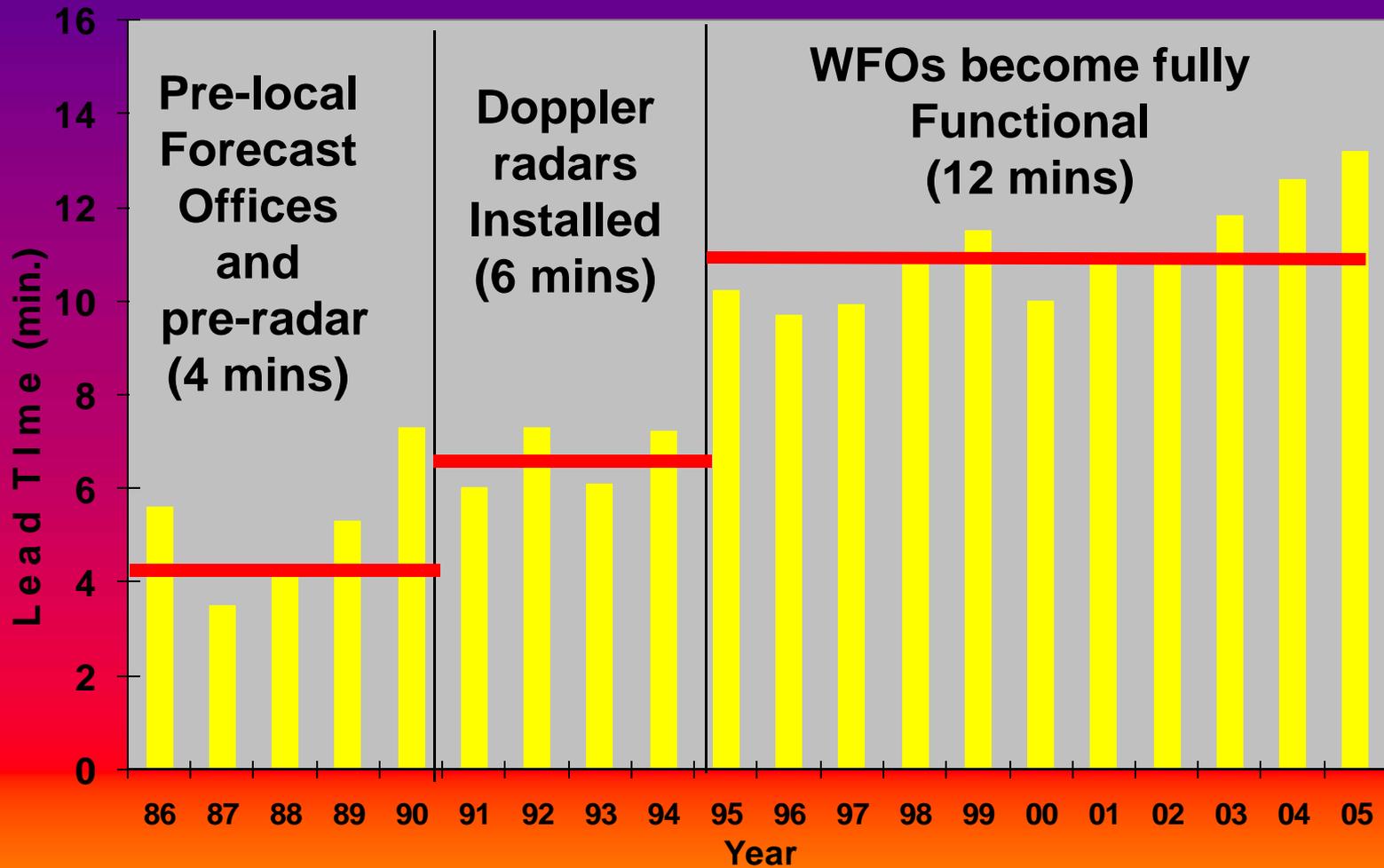
# NWS Modernization Quadrupled Flash-Flood Warning Lead Times

but we direly need “sci-tech” infusion to improve



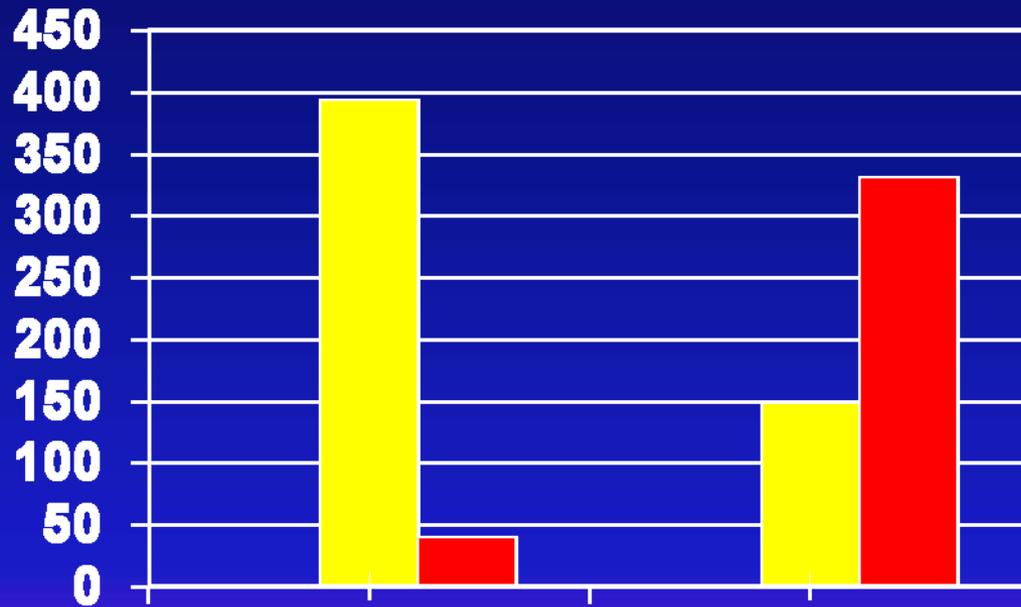
# NWS Modernization Tripled Tornado Warning Lead Times

but improvement pace mostly has leveled-out in last decade



**During 2003 tornado outbreak we had 2.5 times more tornadoes than 1974 but only 1/10 the deaths!**

**Improving weather warnings, saves lives!**



**2003 May  
Outbreak**

**1974 Super  
Outbreak**

**Avg 19 minute  
leadtime**

**Avg 4 minute  
leadtime**

**■ Tornadoes**

340 versus 148

**■ Fatalities**

39 versus 330

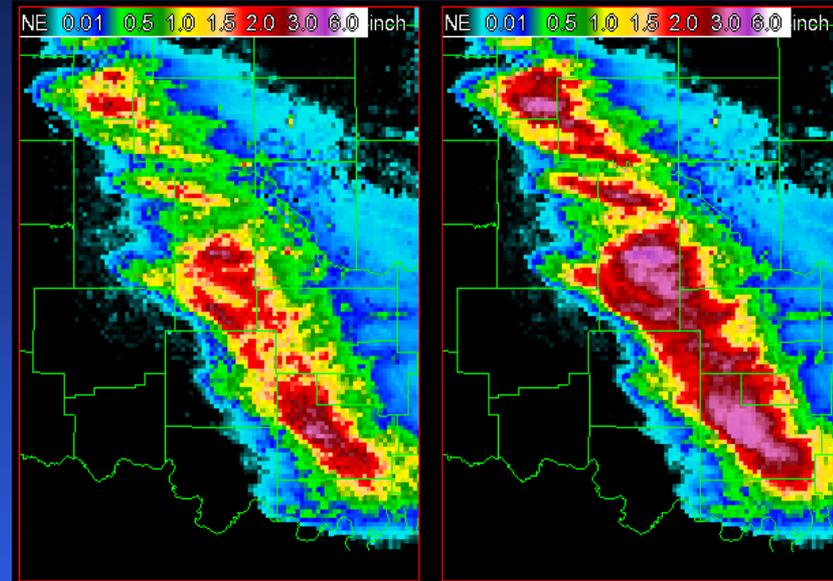




# Dual-Polarization Doppler Radar

NWS Southern Region

- Dual- Pol gives us *(from NSSL documented reports):*
  - ◆ **Finer imaging & better data for...**
    - ◆ **rainfall estimation**
    - ◆ **storm structure & pinpointing tornadoes**
    - ◆ **And more...**



Dual-Pol WSR-88D 1-hr rainfall est. (left) vs. legacy WSR-88D estimate (right).

The right-hand image was a significant overestimate but the Dual-Pol product provided a much better estimate.



# NSSL Research to NWS Operations

- **Dual-Pol Radar (2 to 5 yrs)**
  - ◆ **Improved storm structure image**
  - ◆ **Improved precipitation detection and flood warning lead-times**
- **Phased Array Doppler (10 yrs)**
  - ◆ **30 second complete “volume scans” adding 4+ minutes to tornado lead-times !**
  - ◆ **Higher resolution on velocity data, storm structure imaging, precipitation intensity**



**Your “ER-MET” proposal and the  
much needed renewed infusion of  
science and technologies...  
Is the way ahead for our Nation!**

**But it takes an engaged EM community with their state and  
national EM associations working together to...**

**communicate your vital requirements for ER-MET high-  
impact resources and to renew our infusion of science and  
technology**





**In this way,**

**you can assure you will have the 24x7 direct weather support with the latest technology for state & local government and EM decision-makers**

**...all towards a More Resilient all-hazards Homeland...**

**Such local WFO services epitomizes the concept:**

***...weather services closest to the people, serves best.***



***“A nation committed in this way to such  
an investment today...  
saves countless lives in the future!”***

**Bill Proenza, Regional Director  
National Weather Service, Southern Region**

**[www.SRH.weather.gov](http://www.SRH.weather.gov)**