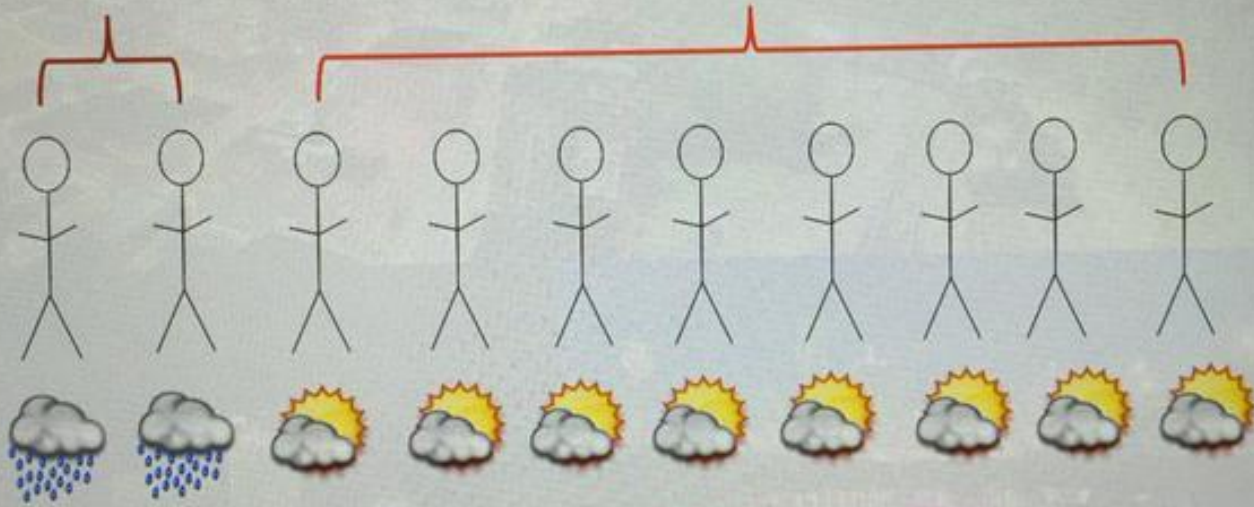


Saying What We Mean,  
Meaning What We Say-  
Communicating the Forecast

*Ellen Bacca, Meteorologist WOOD-TV*

Why is it raining?  
It's only a 20% chance.  
They are never right.

Why isn't it raining?  
They said a chance of rain.  
They are never right



**What a 20% Chance of Rain Really Means**

*Credit: Mark Fox, NWS Fort Worth/Dallas WFO*

# Technology Rapidly Improving

## HRRR

-Hourly Runs,  
15 min. Increments

-3KM Grid

Spacing!

## GFS

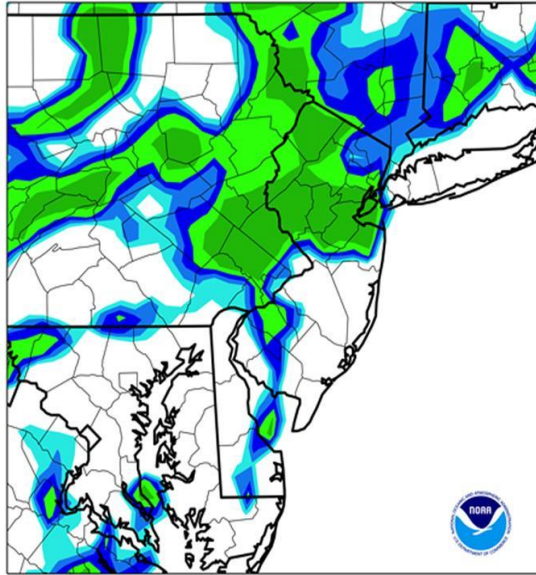
-Grid Upgraded

from

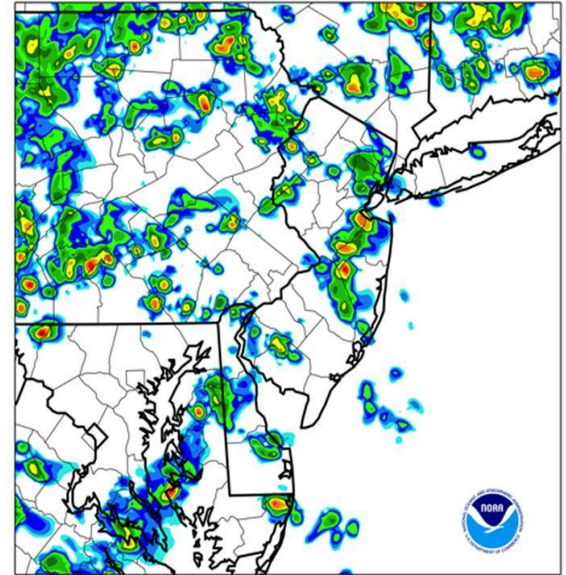
27km to 13km to

10

Existing Weather Model

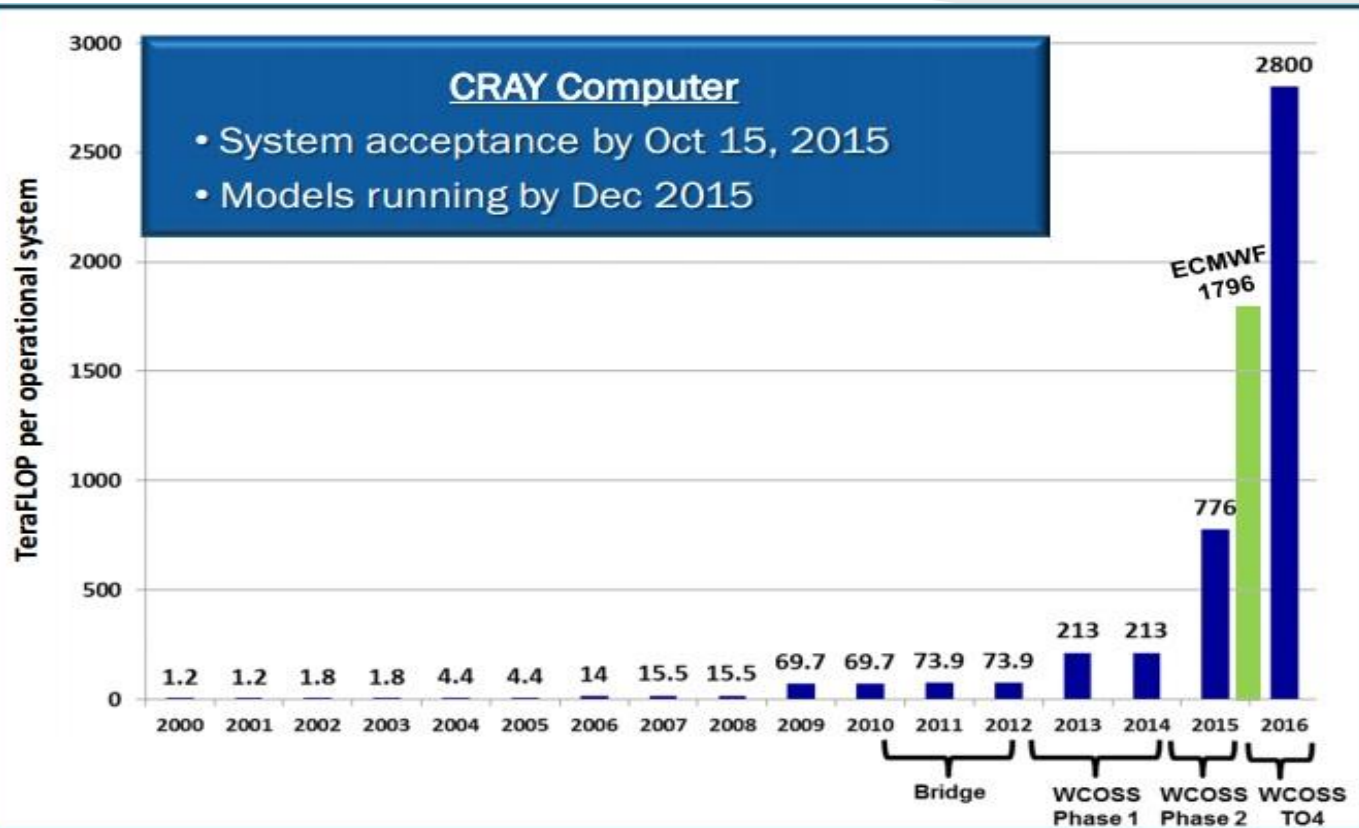


New HRRR Weather Model



This is a comparison of two weather forecast models looking six hours ahead for the New Jersey area. Image on left shows the forecast which doesn't distinguish localized hazardous weather. Image on right shows the new HRRR (High-Resolution Rapid Refresh) model that clearly depicts where local thunderstorms (yellow and red coloring) are likely. (Credit: NOAA)

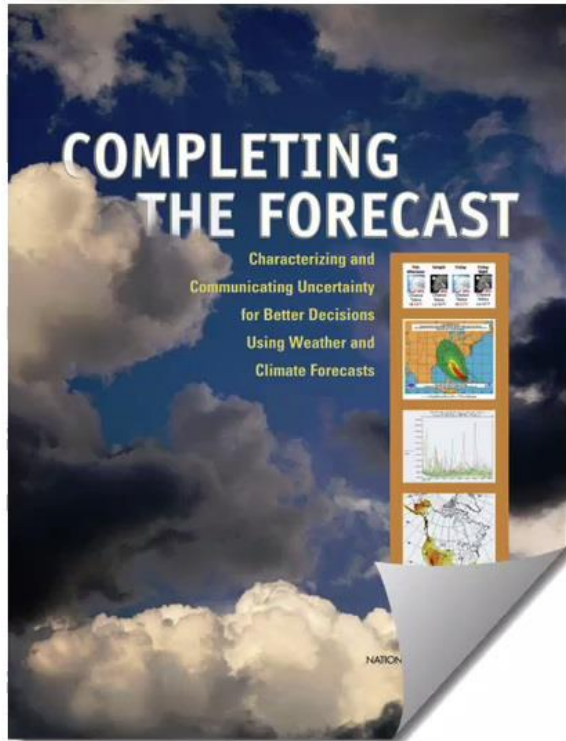
# Technology Rapidly Improving



**10 Fold Increase!**

We Need Upgrade  
How We Communicate

# What's Being Done?



the

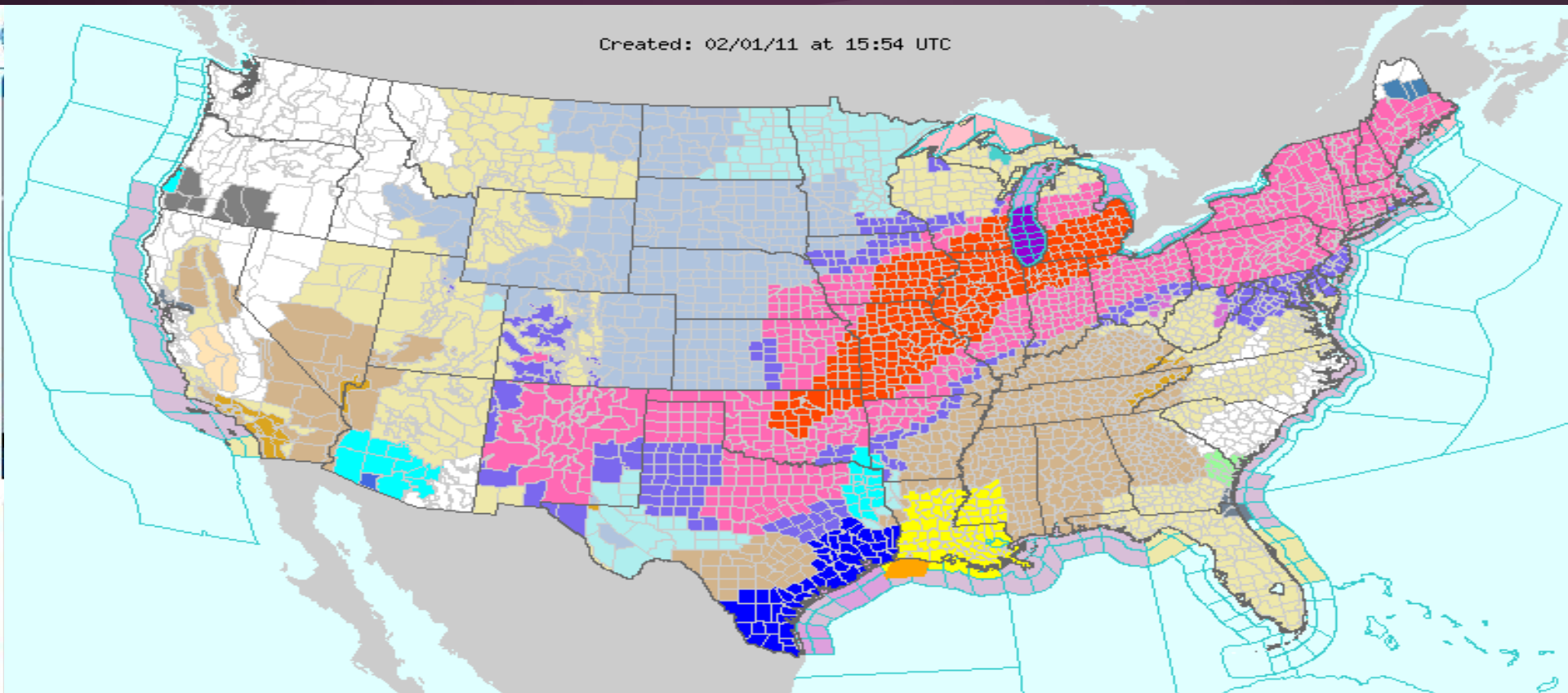
Outreach and  
public more “weather

- “NWS should dedicate executive attention to coordinating the estimation and communication of uncertainty information”
- “The entire Enterprise should take responsibility for providing products that effectively communicate forecast uncertainty information”

**Certainty (not uncertainty) must be expressed.  
How confident is the forecaster?**

# Watch, Warning, What?

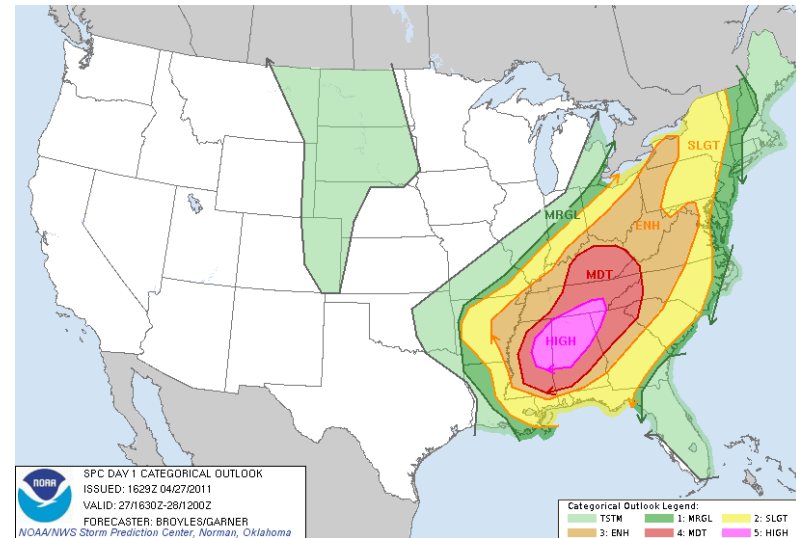
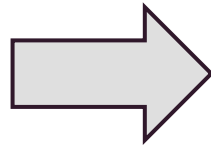
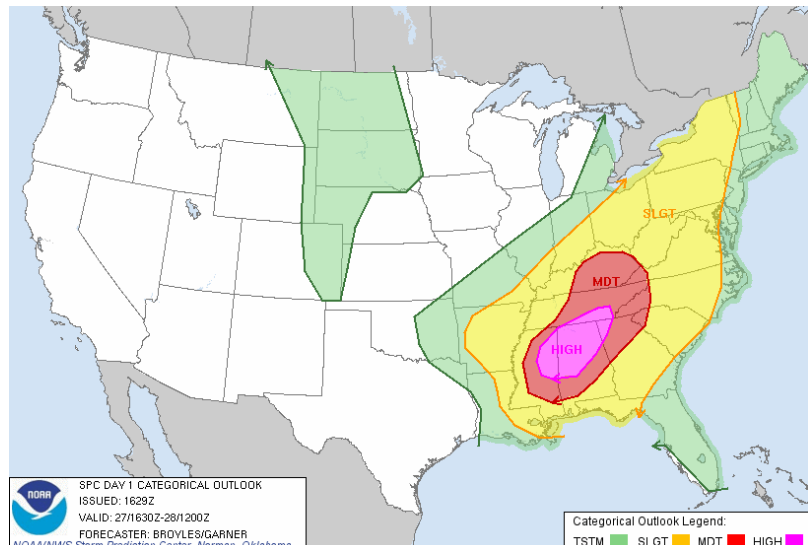
Created: 02/01/11 at 15:54 UTC



# SPC New Risk Areas

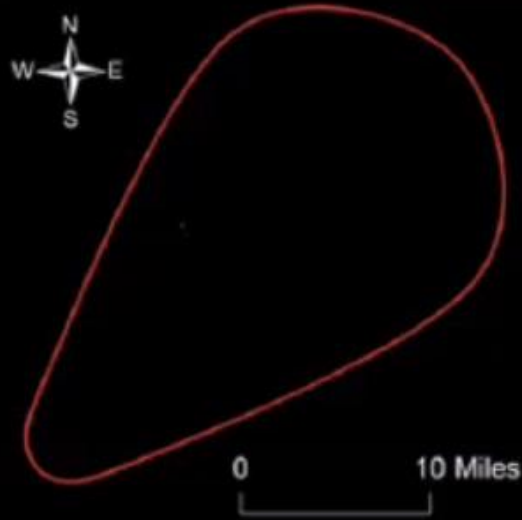
- Upgraded from 3 “risk areas” to 5 -

“A primary goal of these changes is to bring better consistency to the risks communicated in SPC outlooks” -SPC

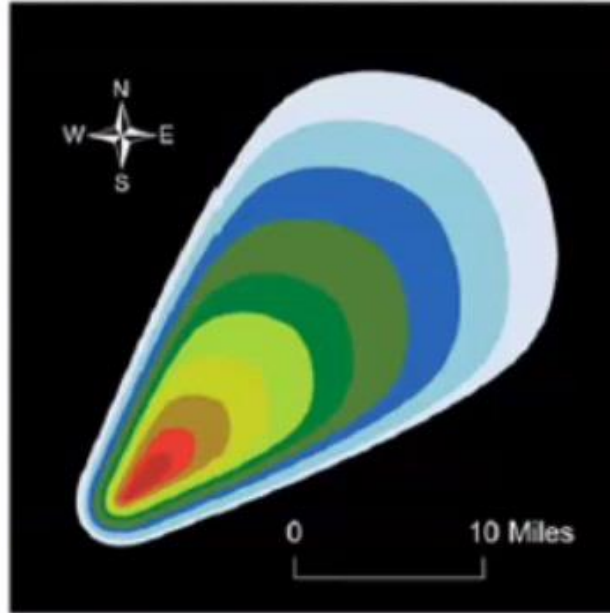




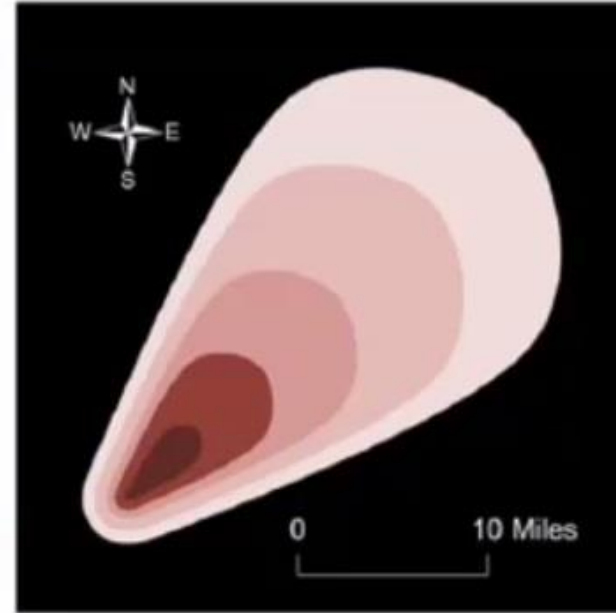
# What Works?



1a.) Original



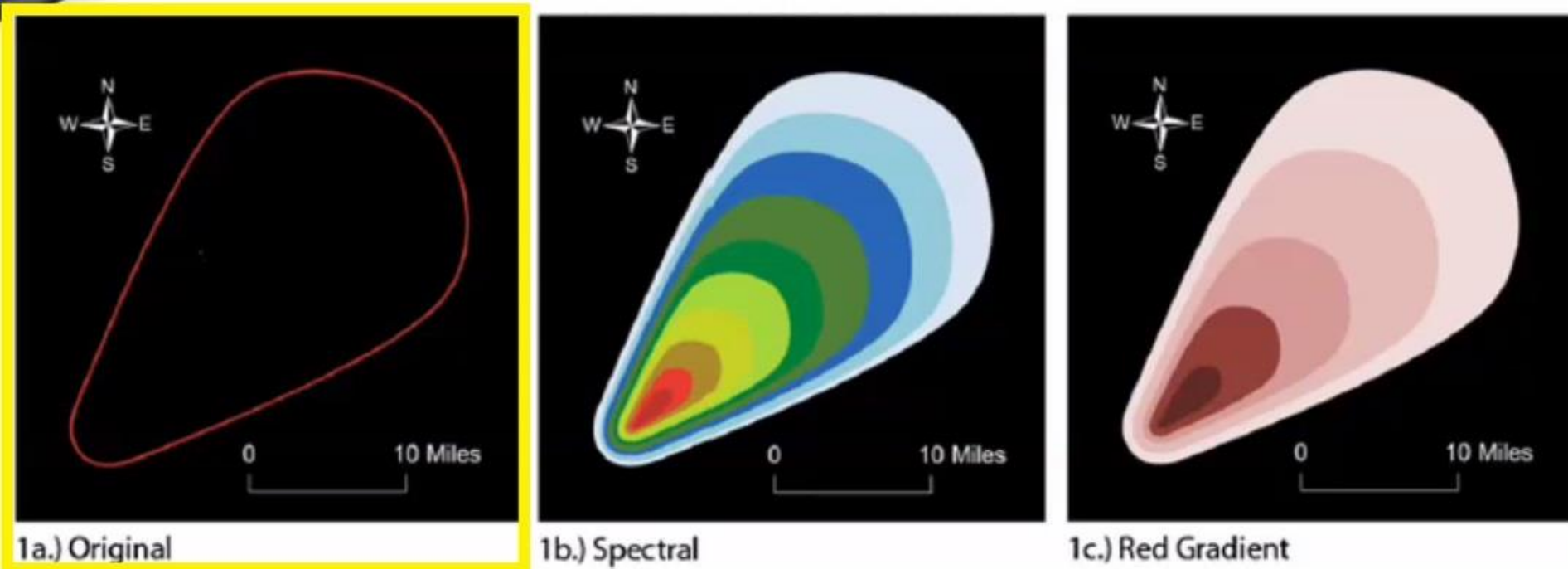
1b.) Spectral



1c.) Red Gradient

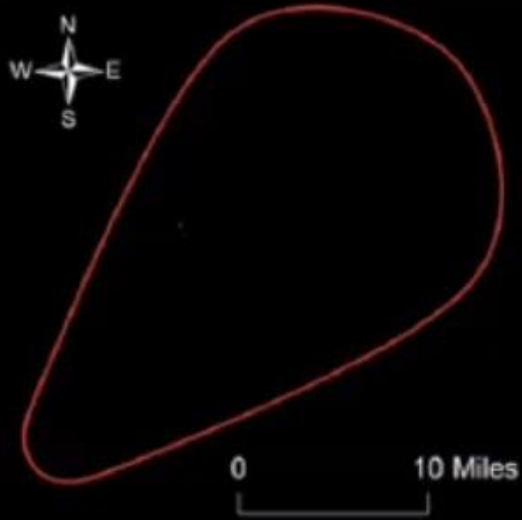
Tornado Warning Trade-offs: Evaluating Choices for Visually Communicating Risk  
Kevin D. Rash, Ronald L. Shumann III, and Greg C. Bowser

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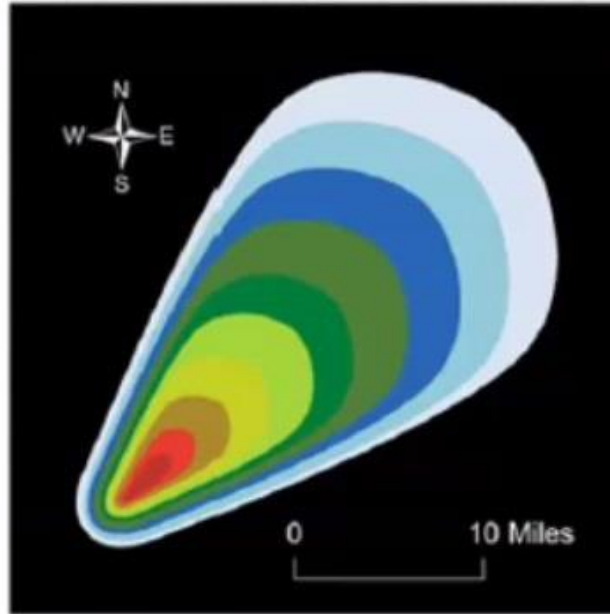


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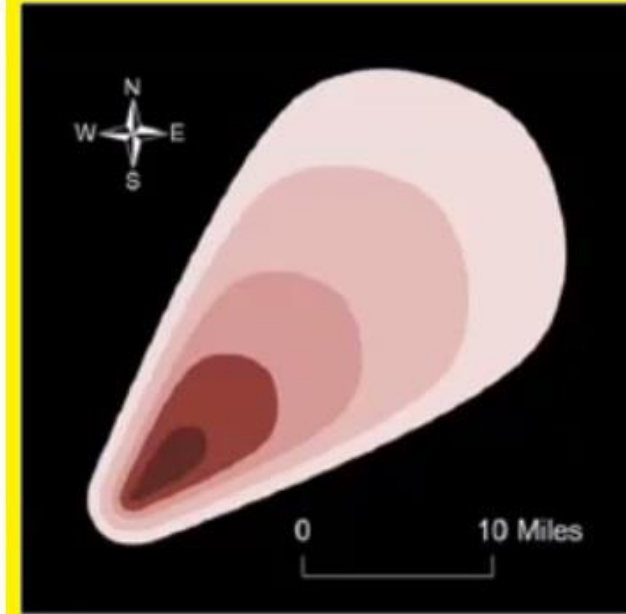
# What Works?



1a.) Original



1b.) Spectral



1c.) Red Gradient

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# No Change



**John** [redacted] I am using Slight, Moderate and High - as it was before - and not displaying Marginal and Enhanced.



**Chris** [redacted] We stayed with the old system.

August 7 at 3:17am · Unlike ·  1

# Modified



**Doug** Here in severe weather country I use Minimal, Low, Elevated and High. I use green, yellow, orange and red for colors. Then I show on the same map but a second part of the map the threats. I show if tornado, flooding, hail and wind are low, elevated or high threats.



**Brad** I've changed them to a Low-Med-High-Extreme scale. I use this color pattern on all graphics from Outlooks to impacts.



**Dave** Yellow, orange, red: Slight & Enhanced combined as "Elevated," Moderate as "Increased," and High.

August 7 at 6:04pm · Like

# Ditched Completely



**Tom [redacted]** Damaging winds and hail possible?

August 6 at 10:29pm · Like



**Tom [redacted]** say this because I've ditched using SPC outlook maps. This is my second summer doing so. I communicate the risks/threats for the day vs showing a slight, mdt, high map. So far so good.





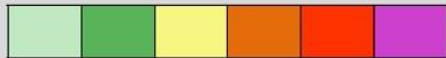
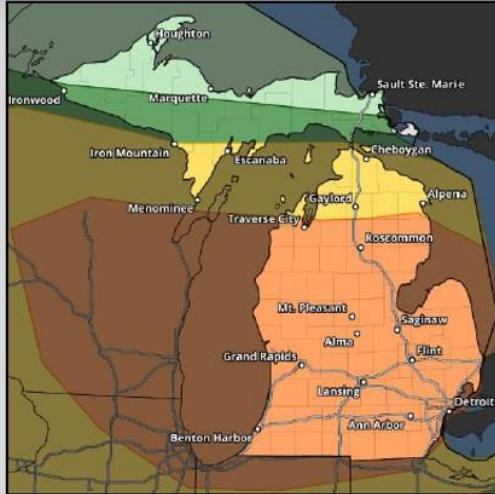
# Severe Weather Potential

Sunday, August 2, 2015



Created: Sunday, August 02, 2015 – 100 PM

## Severe Weather Outlook Through Sunday Evening



Lesser Threat → Greater Threat

### Expected

**Sunday:** Scattered Thunderstorms

**Sunday Evening:** More Organized Storms

### Possible

**Sunday and Sunday Evening**

Damaging Winds, Some Hail

**Sunday Evening**

Brief, Spin-Up Tornadoes

### Time of Greatest Risk

Sunday 6pm through Monday 1am

[weather.gov/grandrapids](http://weather.gov/grandrapids)

*Grand Rapids NWS Severe Weather Info Graphic*



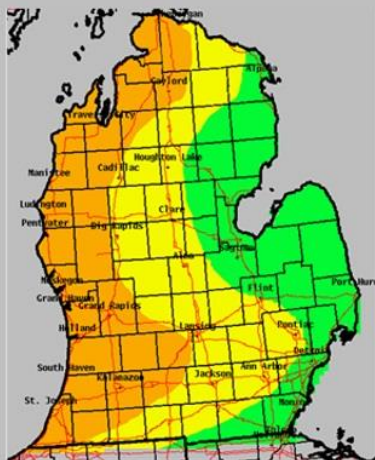


# Winter Storm Expected

## Today and Tuesday



**Including: Ludington, Muskegon, Grand Rapids, Kalamazoo**



### Expected Impacts

- Dangerous travel, snow covered roads
- Visibility reduced to a few car lengths with near white-outs at times
- Numerous accidents
- Some road closures, school closures, flight delays

### Possible Impacts

- Flight cancellations
- Hazardous travel lasting through Wednesday

### Snow

Dry, wind driven snow  
4"-8"  
Over 1" per hour rates possible

### Ice Accumulation

None Expected

### Temperatures and Wind

Highs: Today, mid 20s; Tues., low 20s  
Wind chills: Single digits to near zero

### Immediate – Life Saving Action

Extremely Life Threatening  
Everything Will be Shut Down Possibly for Days or Weeks

### Be Prepared – Major Actions

Expect Dangerous Conditions  
Expect Major Disruption of Normal Activities

### Be Aware – Minor Actions

Caution – Especially When Travelling  
Plan to Be Inconvenienced

### Little to No Action

Little to No Impact on Daily Life  
Plan on Minor Inconvenience

### Will This Happen?

Near Certain



Better than 50/50 Chance

Unlikely

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

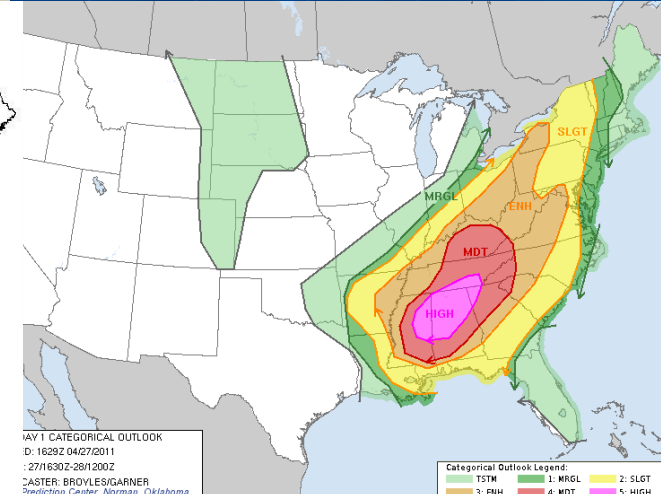
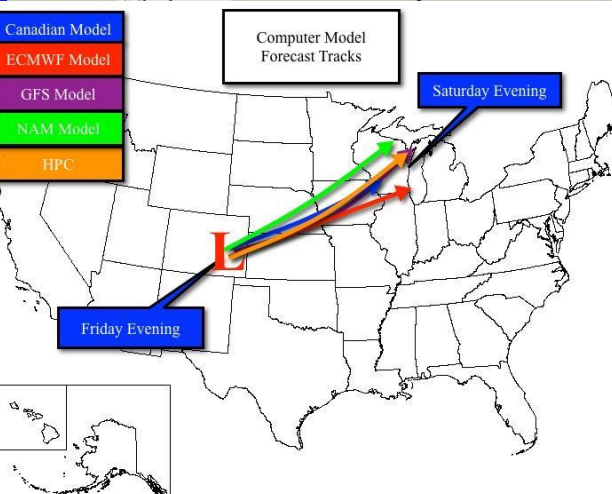
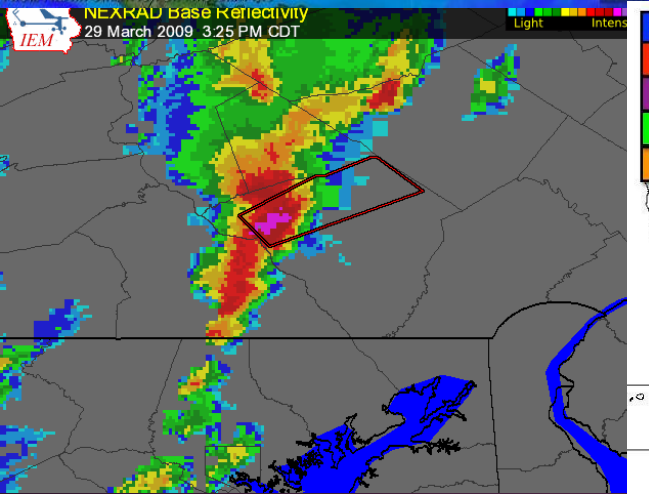
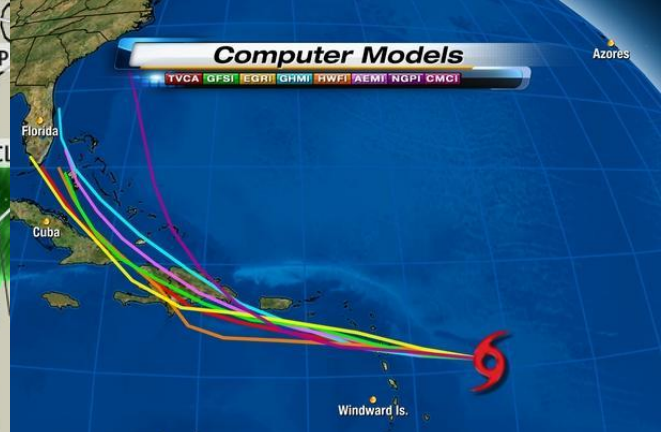
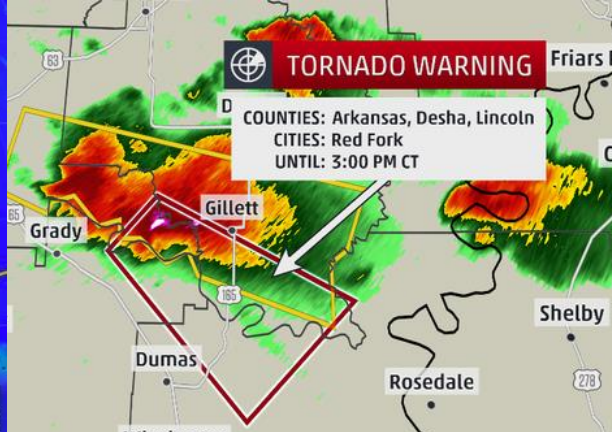
*Grand Rapids NWS Winter Weather Info Graphic*

# Broadcast Workflow

## Certainty Forecast Helps Reduce Hype



Will This Happen?	
Near Certain	
Better than 50/50 Chance	
Unlikely	✓

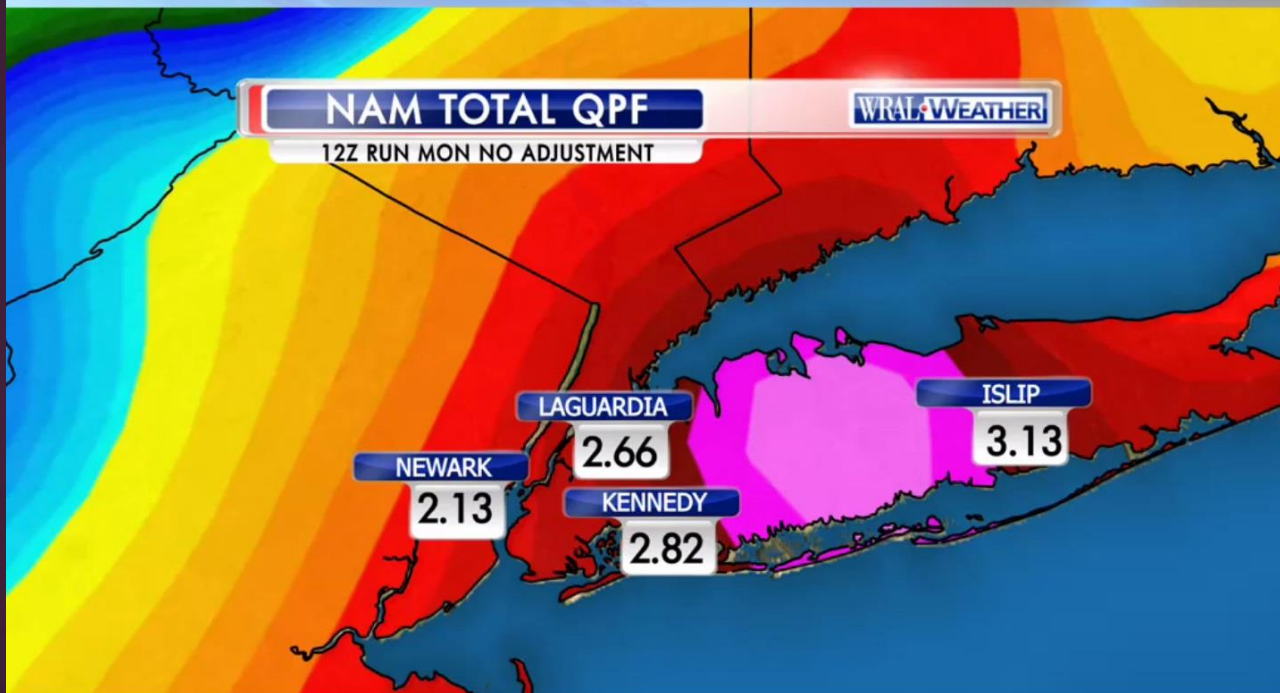


*How do we convey certainty now?*



# DETERMINISTIC SOLUTIONS

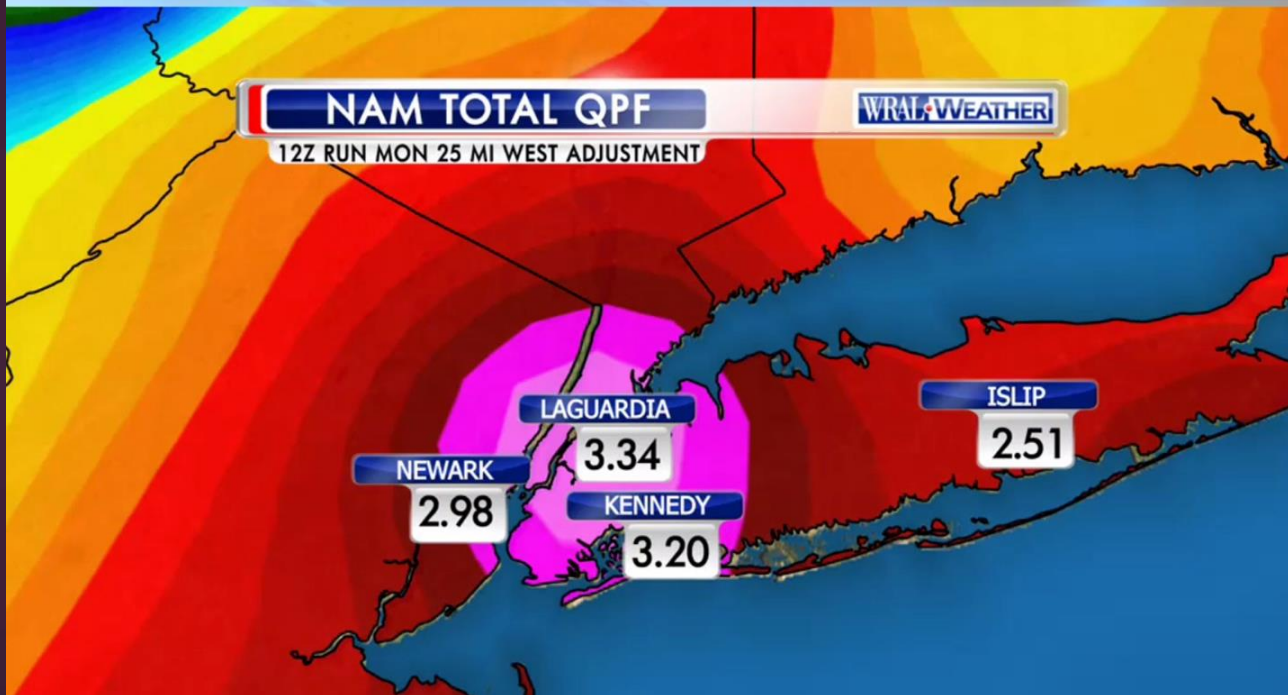
coverage you can count on



Greg Fishel, WRAL-TV, Raleigh, NC

# DETERMINISTIC SOLUTIONS

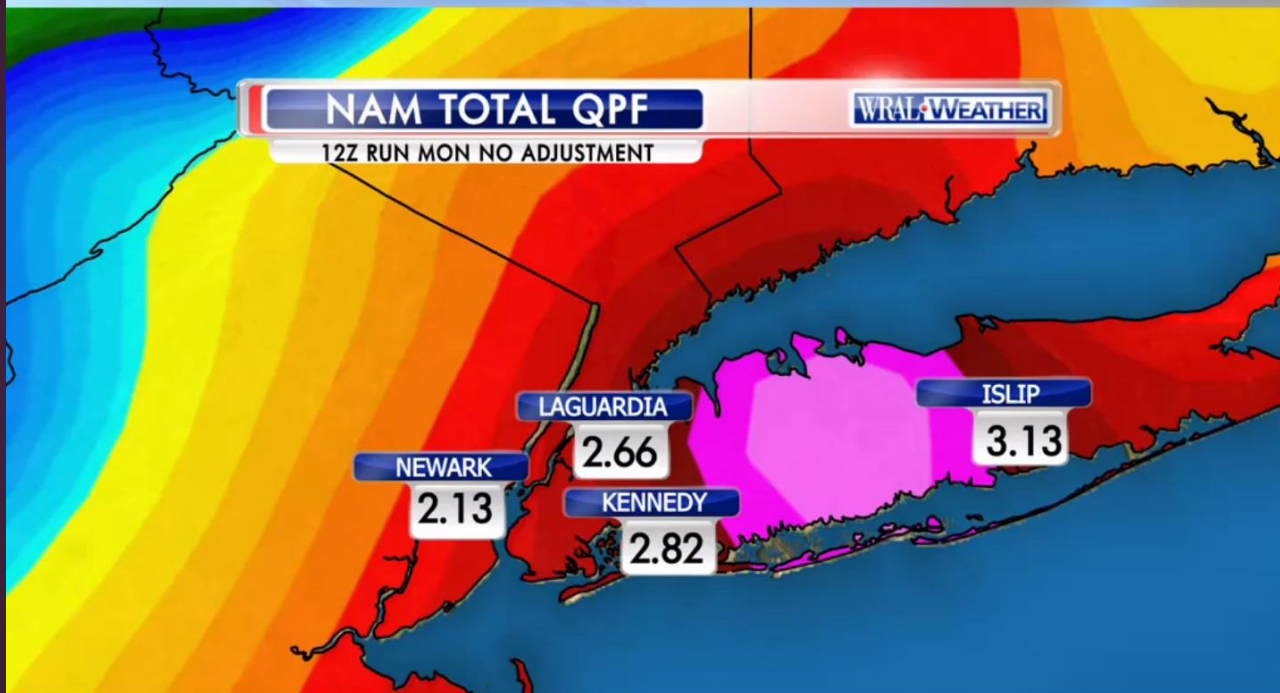
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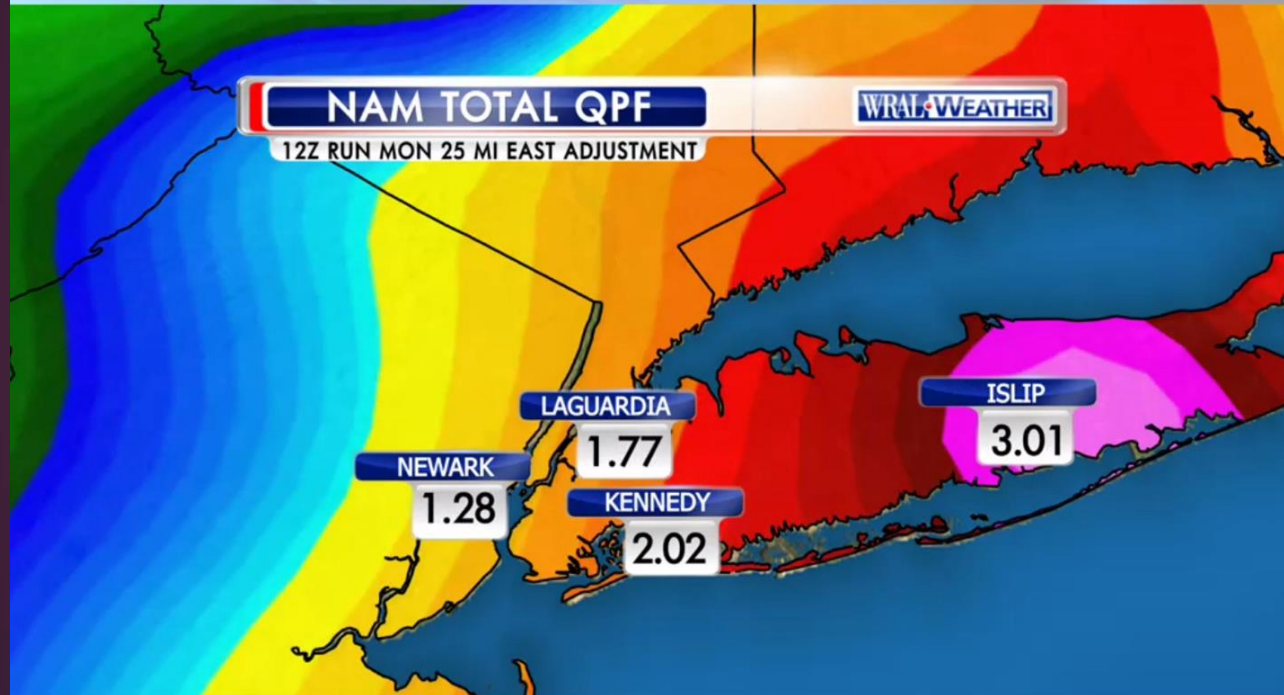
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coverage you can count on

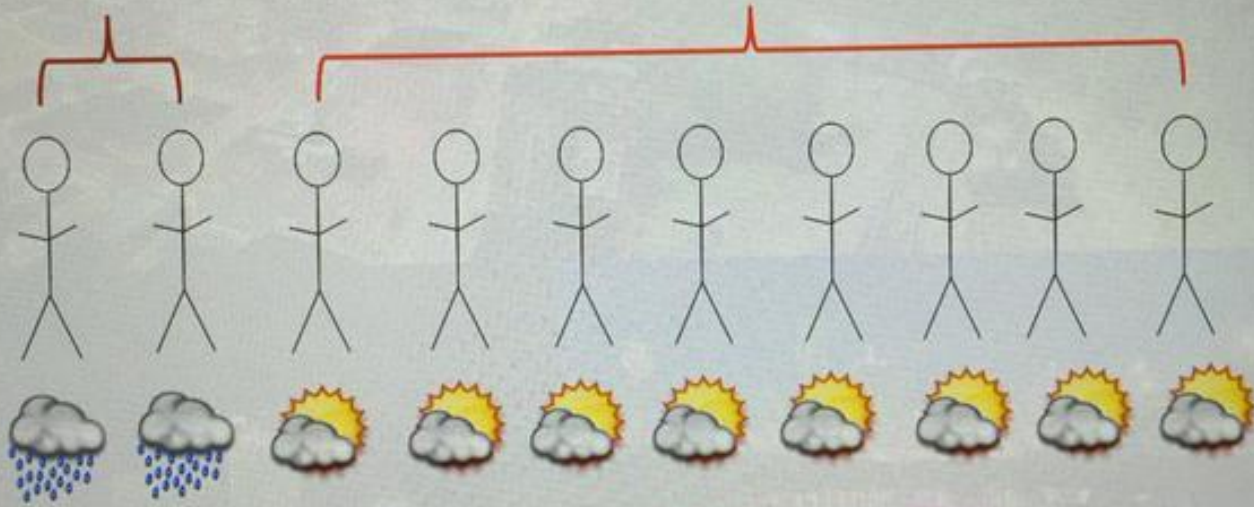


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**What a 20% Chance of Rain Really Means**

*Credit: Mark Fox, NWS Fort Worth/Dallas WFO*

-David R. Novak, NOAA/NWS, College Park, MD; and J. Demuth, “Progress, Challenges, and Future Directions in Communicating Uncertainty”

-Dr. Louis W. Uccellini, Director, National Weather Service: “The National Weather Service of the Future:

Building a Weather-Ready Nation”

-John T. Ferree, NOAA/NWS, Norman, OK “Approaches in Communicating Hazardous Weather Risk and Uncertainty”

-Greg Fishel, WRAL-TV, Raleigh, NC: “Ensembles: Everyone Gets It but Broadcasters”

-Tornado Warning Trade-offs: Evaluating Choices for Visually Communicating Risk

Kevin D. Rash, Ronald L. Shumann III, and Greg C. Bowser

-H. Michael Mogil, How The Weatherworks, Naples, FL; and B. G. Levine “Saying What We, As Meteorologists, Really Mean”