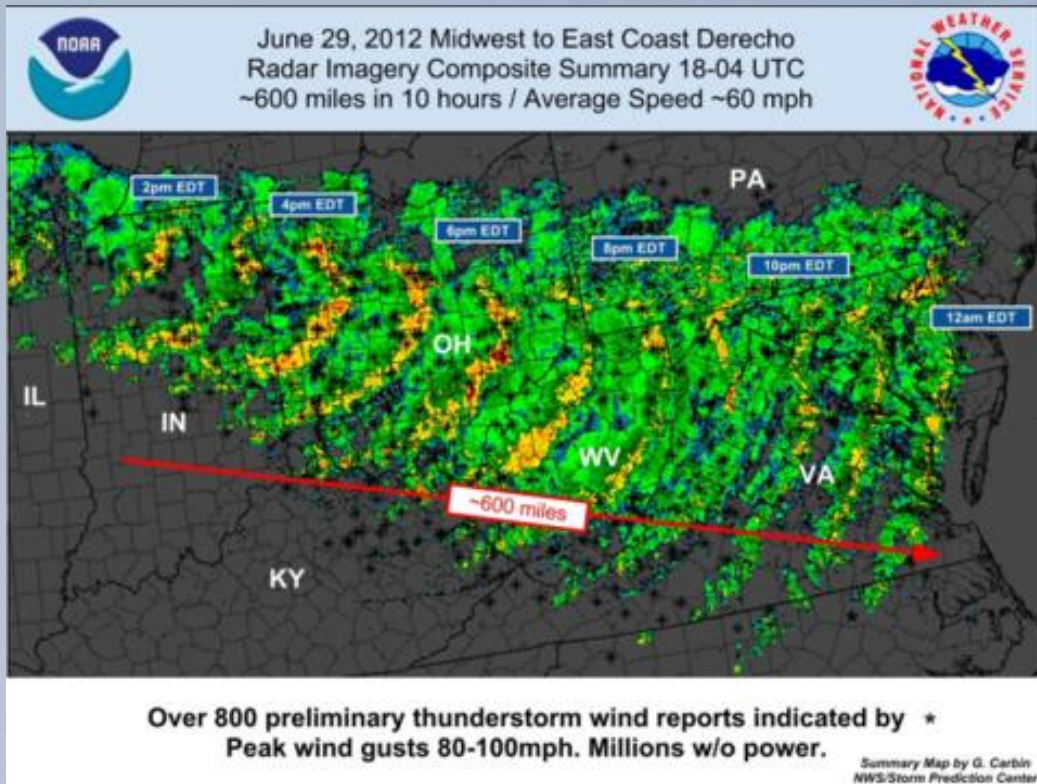


# June 29, 2012 Derecho Windstorm Event



Baltimore/Washington  
Weather Forecast Office

# Agenda

- Thunderstorm Basics
- Derecho Storm Stats
- Derecho formation
- Radar and satellite
- Derecho Frequency
- NWS Services



# NWS Baltimore/Washington Overview

## Area of Responsibility

9.3 Million People  
over 27,000 square miles

### Maryland

- 13 Counties
- City of Baltimore
- Chesapeake Bay

### West Virginia

- 8 Counties

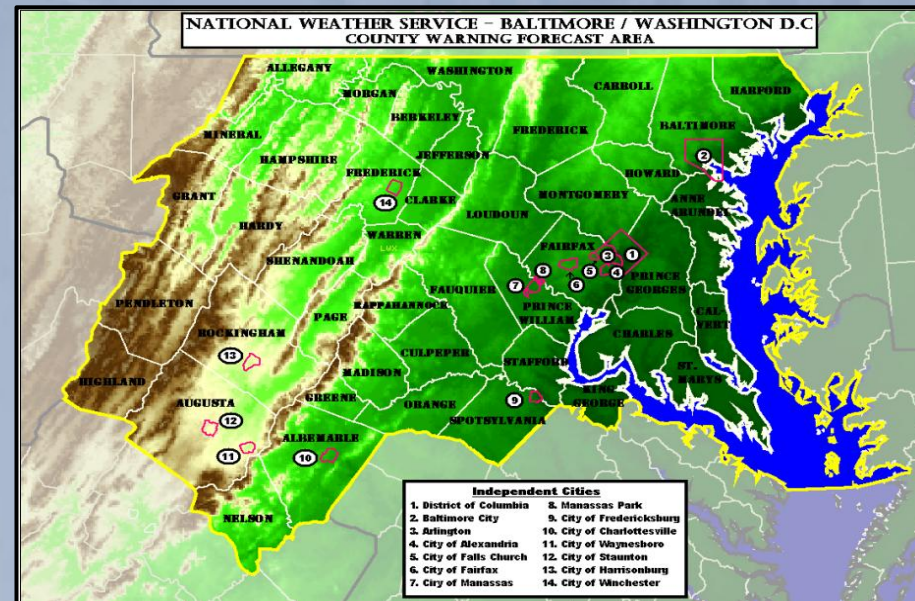
### Virginia

- 22 Counties
- 11 Independent Cities

### The District of Columbia

### Major Rivers

- Potomac
- Shenandoah
- Rappahannock



Region is prone to all weather hazards



# Thunderstorm Basics



What makes a thunderstorm severe?

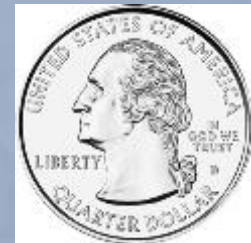


- Very Unstable Air
- Plenty of Moisture
- Increasing wind shear w/height:
  - Tilts a storm allowing it to continue for a longer time
  - Could cause a storm to rotate (increasing its severe potential)

# NWS Terminology

## “Severe Thunderstorms”

- means a thunderstorm is producing:
  - Wind gusts: 58 mph or higher
  - Hail: quarter size (1”) or larger
  - Tornadoes also qualify a storm as severe



**Note:** The National Weather Service does not classify a thunderstorm as severe based on intense lightning or flash flooding

**So, what is a derecho?**

*Pronounced:*  
**“Der-ray-cho”**

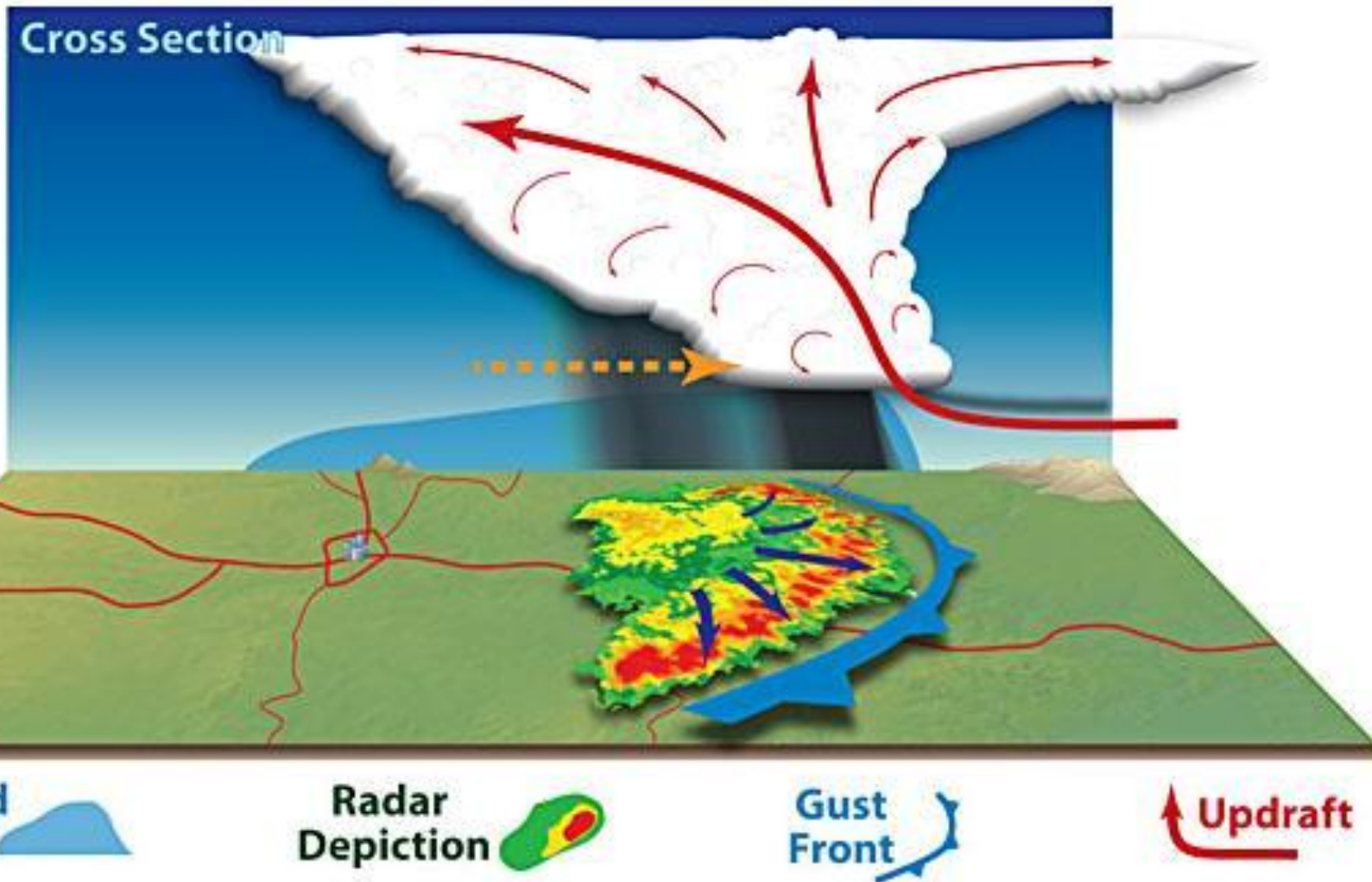


# What is a derecho?

- A long-lived, rapidly-moving line of intense thunderstorms
  - travels over 250 miles at speeds over 60 mph
    - *June 29 derecho travelled over 750 miles!*
- produces widespread damaging winds in a nearly continuous swath
  - multiple reports of winds over 75 mph
    - *Chesapeake Bay bridge: **89** mph gust (unofficial)*
    - *Dulles Airport: **71** mph gust*
    - *Reagan National Airport: **70** mph gust*
    - *BWI Airport: **66** mph gust*

# How a derecho forms/moves?

3



Source: Storm Prediction  
Center, NOAA

National Weather Service  
Baltimore MD/Washington DC

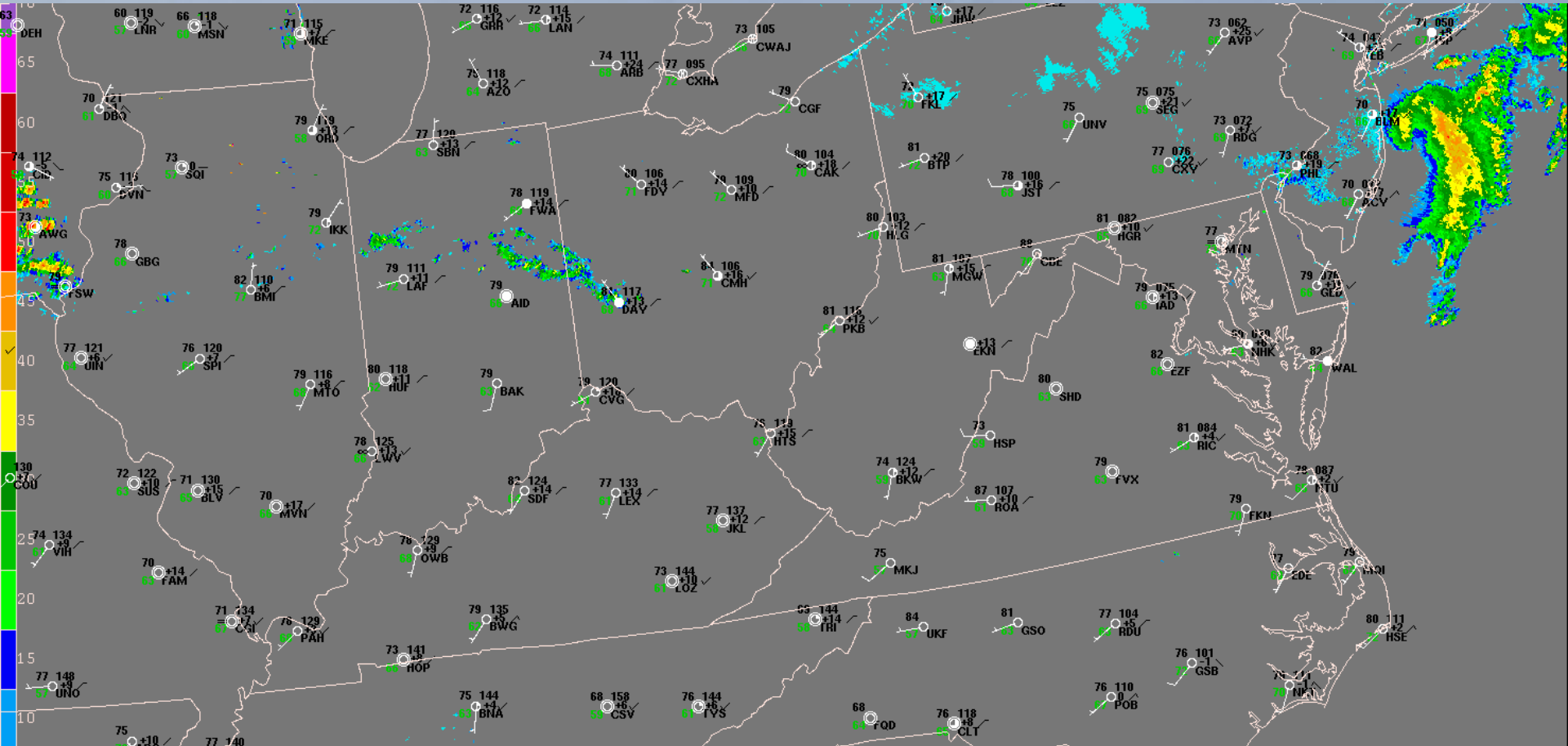




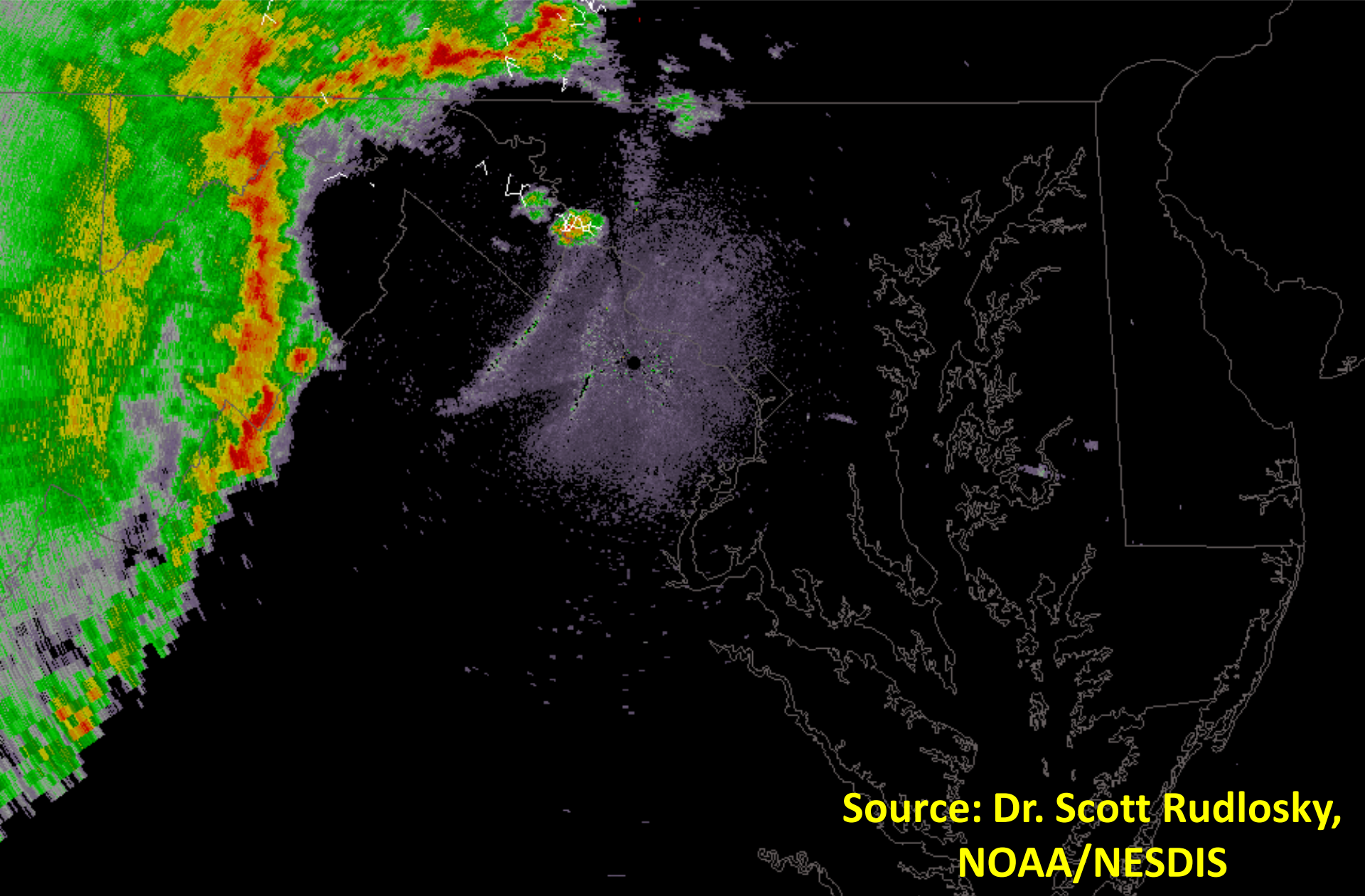
# June 29 Derecho: Radar & Satellite views



# Regional Radar View

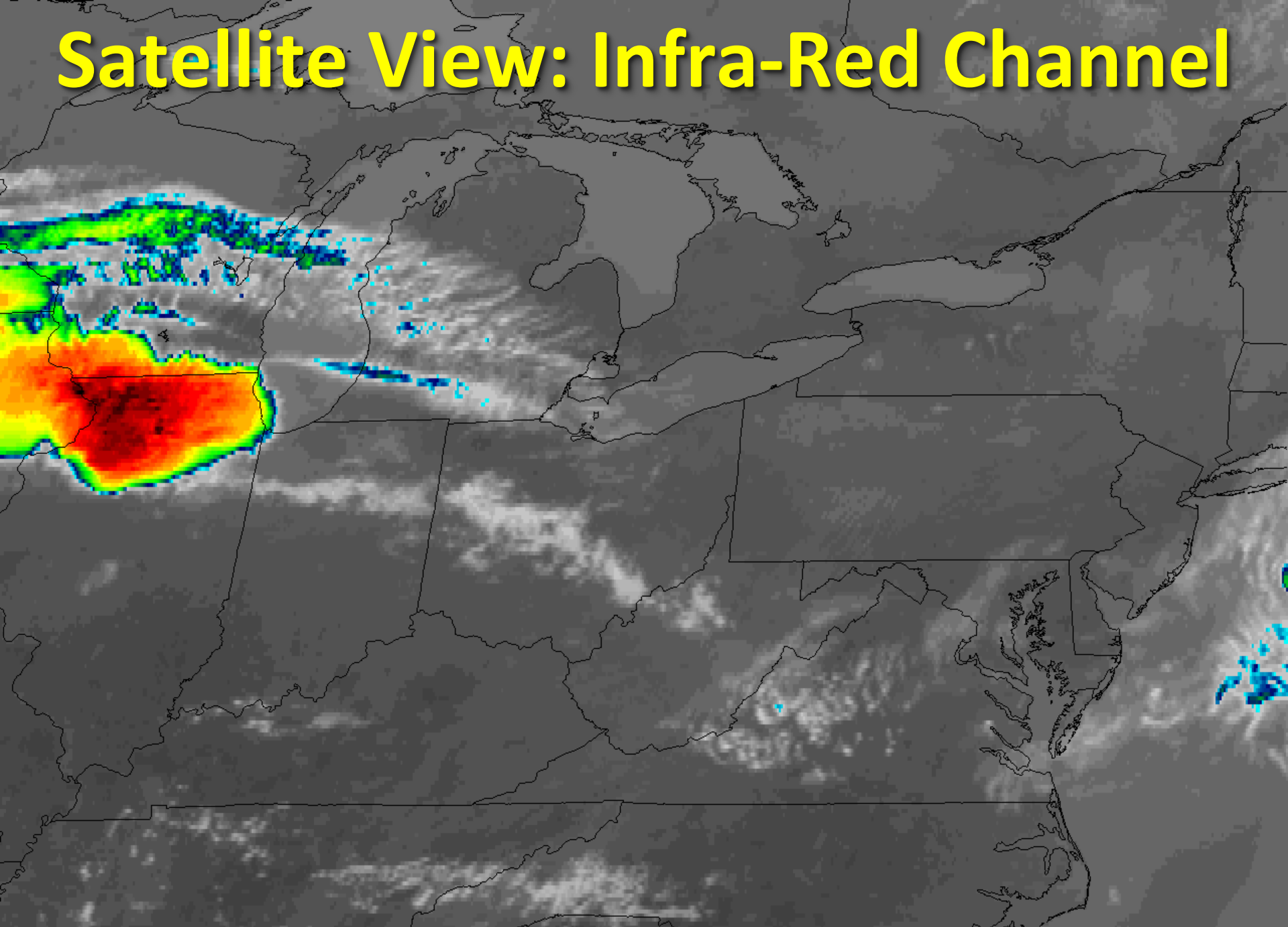


# June 29 Derecho



**Source: Dr. Scott Rudlosky,  
NOAA/NESDIS**

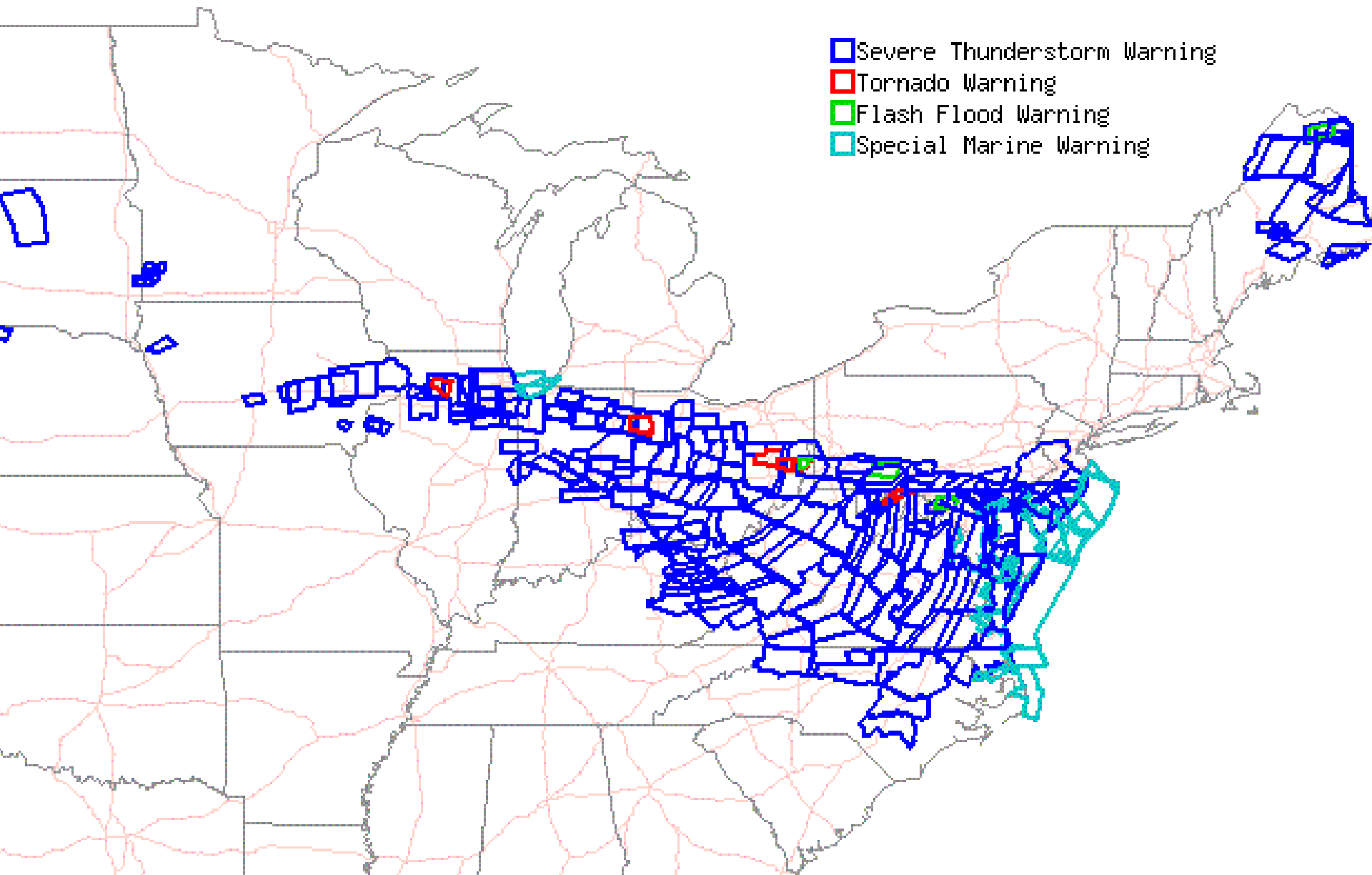
# Satellite View: Infra-Red Channel



-20 -30 -40 -50 -60 -70 -80 -90 C

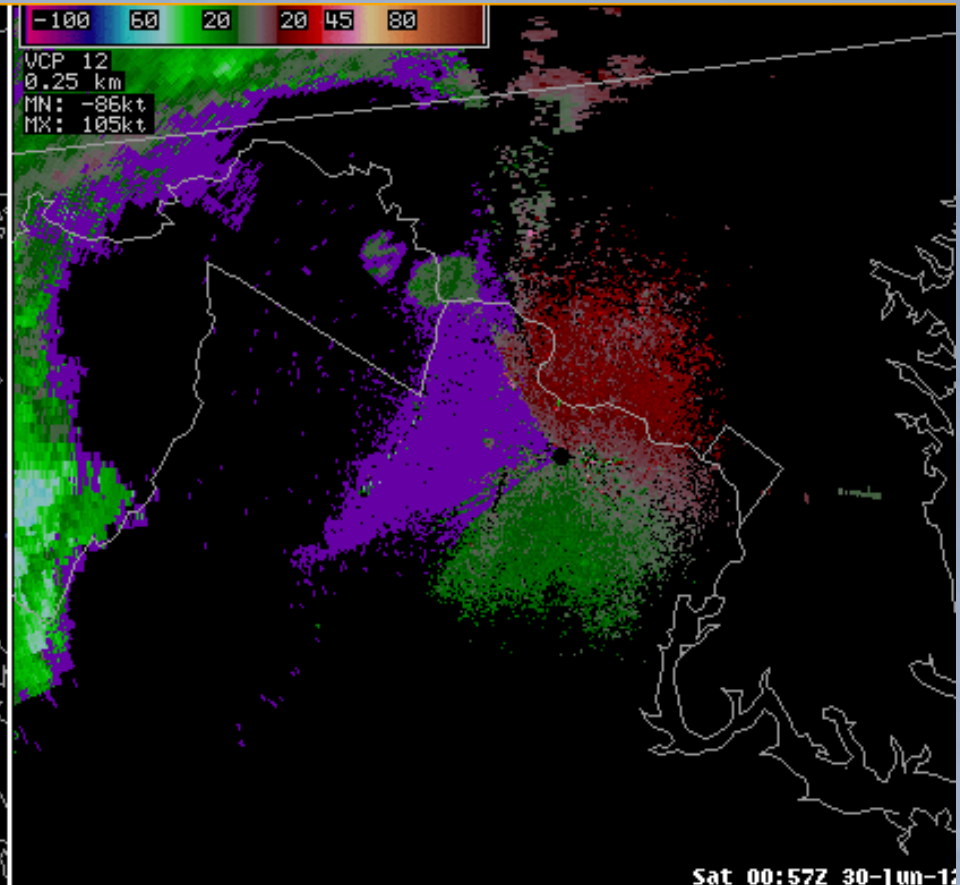
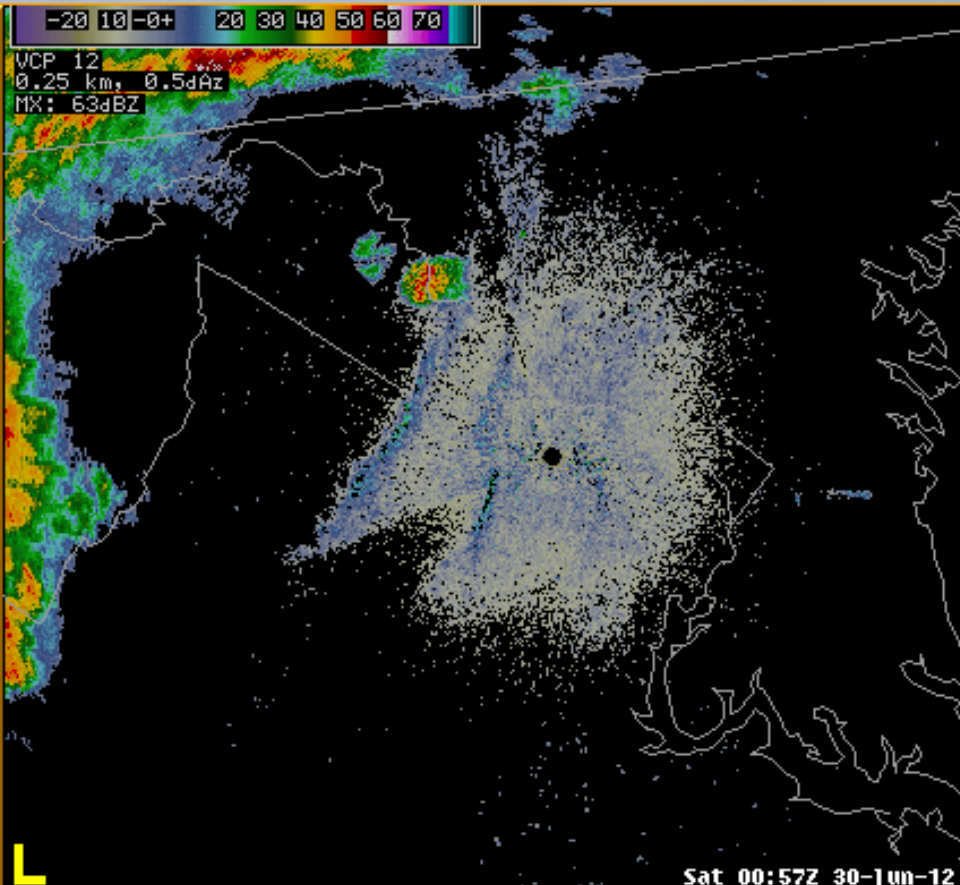
# NWS Severe Warnings

Produced by National Weather Service (<http://www.weather.gov/regsc1/gis>)  
Graph Created at: Sat Jun 30 08:30:13 UTC 2012  
# of Events: 311



# Radar Animation (LWX)

8:57 – 10:48 P.M.



# Derecho Climatology



4 derechos  
every 3 years

One derecho  
every 4 years

One derecho  
every 2 years

One derecho  
every year

**Derecho Climatology**

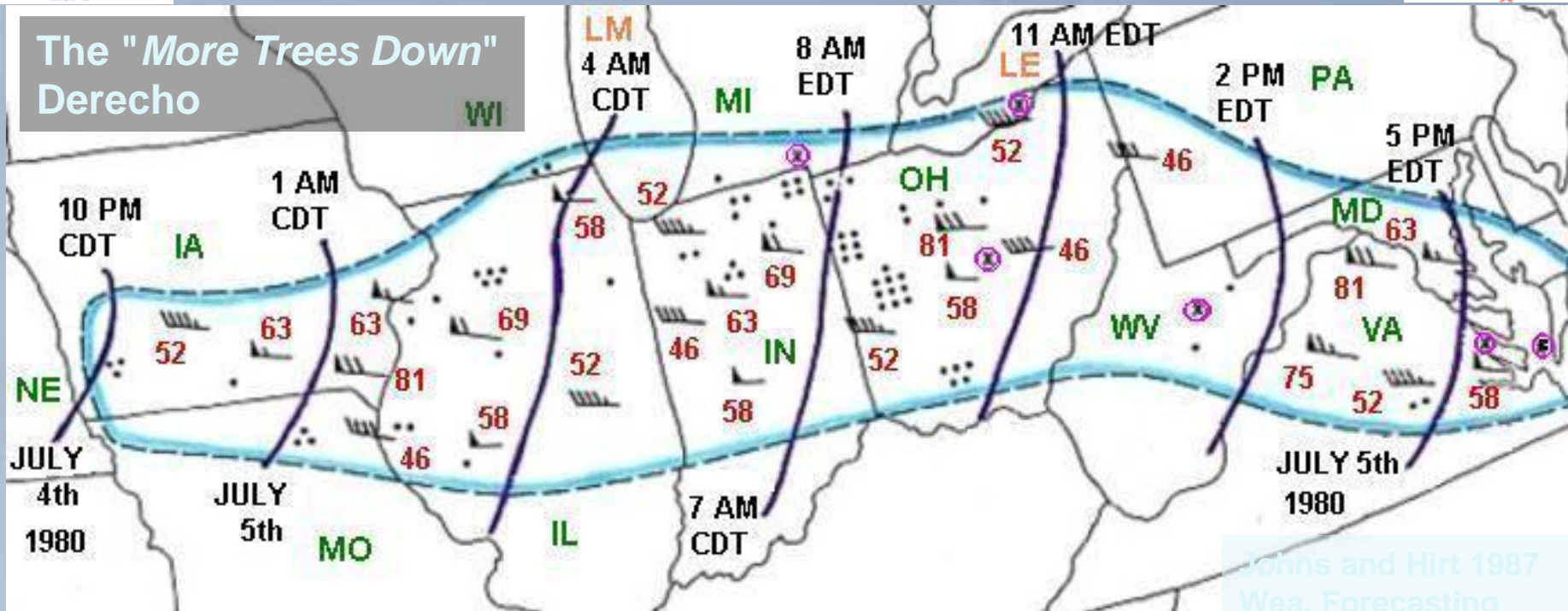
Coniglio and Stensrud 2004  
Wea. Forecasting

# Past Derechos: Mid— Atlantic Region





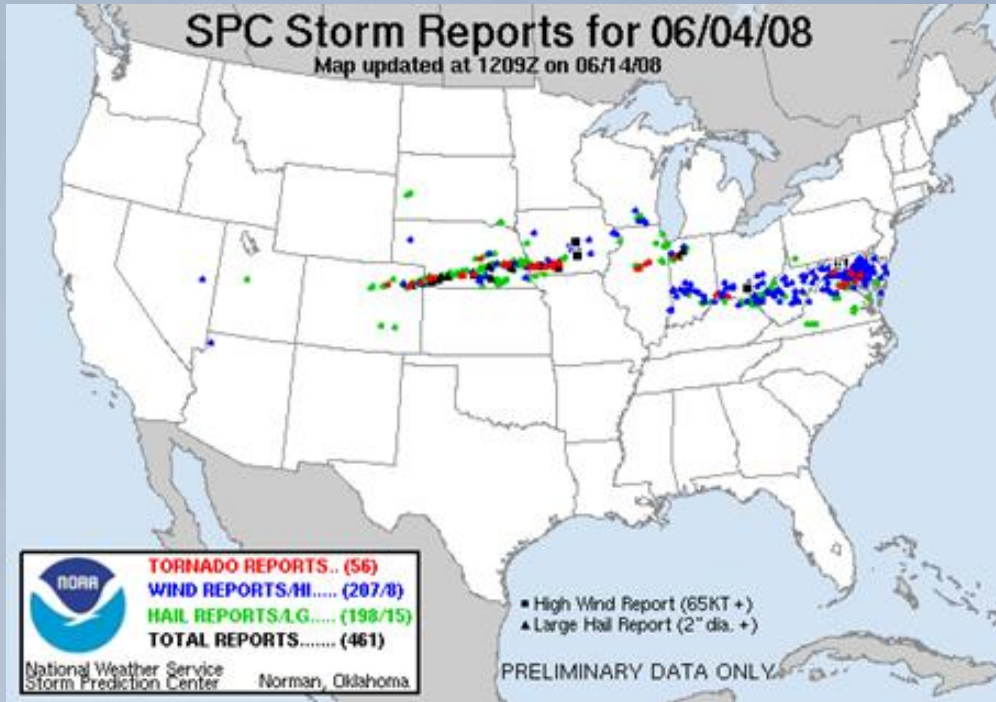
# 4-5 July 1980 Derecho Event



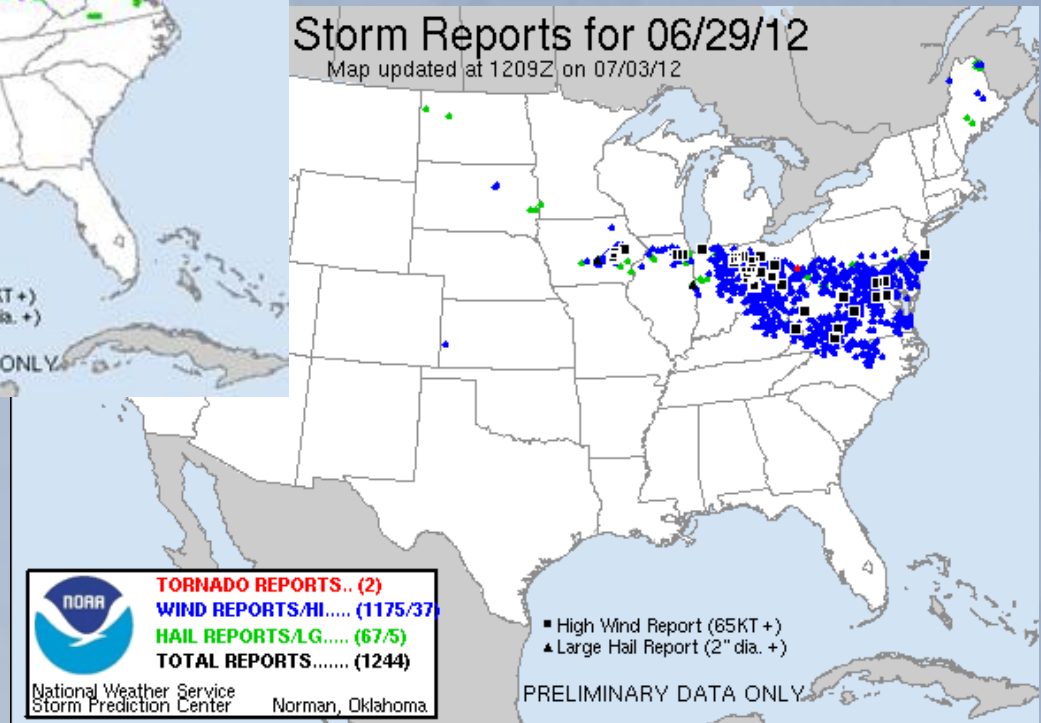
A bowing line of thunderstorms produced a derecho east of Omaha, Nebraska (NE) about 10 PM CDT (03 UTC) on Friday evening, July 4th, 1980. The derecho rushed eastward at speeds of 55 to 60 mph reaching eastern Indiana (IN) and northwestern Ohio (OH) by 8 AM EDT (12 UTC) on Saturday morning, July 5th and the mid Atlantic coast by early evening on the 5th. Measured wind gusts exceeded 80 mph at several points along the storm's track. Six people were killed (shown as "x"s circled in purple: 4 boating; 2 camping); 67 were injured (shown as dots) by derecho winds.

# 2008 / 2012 Derechos

June 2008



June 2012



# Derecho Impact



*National Weather Service  
Baltimore MD/Washington DC*

# Impact

- **Over 2 million customers without power (MD/VA/DC)**
  - Virginia's largest non-tropical outage
    - 987,989 statewide
  - Maryland
    - 1,067,854 statewide peak
  - Washington DC
    - ~68,000



# Impacts

- **Communications**

- Phone Lines Down; Cell towers lost power
- Landline Comms Damaged
  - Limited/no ability to make/receive calls
  - Large 911 Outages
    - Northern VA (1.5M+ People)

# Impact

- **Direct Storm Fatalities (7)**

- 0: DC
- 4: VA (our CWA)
- 3: MD (our CWA)

- **Direct Storm Injuries (2)**

- 0: DC
- 2: VA (our CWA)
- N/A: MD

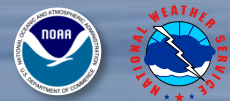
# NWS Services: Derecho



*National Weather Service  
Baltimore MD/Washington DC*

# Severe Thunderstorm Watch

- Issued 6:35 P.M. Friday evening





# 7:47 P.M. Friday

## Special Weather Statement:

...SEVERE THUNDERSTORMS WITH DAMAGING WIND GUSTS TO IMPACT REGION THIS EVENING...

AT 745 PM...A LINE OF SEVERE THUNDERSTORMS PRODUCING DAMAGING WIND GUSTS WAS CROSSING SOUTHEAST PENNSYLVANIA AND CENTRAL WEST VIRGINIA. THIS LINE OF THUNDERSTORMS IS EXPECTED TO HIT THE POTOMAC HIGHLANDS BETWEEN 8 AND 8:30 PM...THE SHENANDOAH VALLEY BETWEEN 8:30 AND 9 PM...THE INTERSTATE 95 CORRIDOR INCLUDING THE GREATER WASHINGTON AND BALTIMORE METROPOLITAN AREAS BETWEEN 9:30 AND 10 PM...THEN REACHING THE CHESAPEAKE BAY BETWEEN 10:30 AND 11 PM.

THIS LINE OF STORMS HAS A HISTORY OF PRODUCING MAJOR WIND DAMAGE ACROSS WEST VIRGINIA DUE TO WIND GUSTS OVER 75 MPH ..ALONG WITH PROLIFIC CLOUD TO GROUND LIGHTNING.

RESIDENTS AND VISITORS TO THE REGION SHOULD MONITOR THEIR FAVORITE MEDIA OUTLET AND NOAA WEATHER RADIO FOR WARNINGS...AND BE PREPARED TO TAKE ACTION TO PROTECT LIFE AND PROPERTY SHOULD A WARNING BE ISSUED FOR THEIR AREA LATER THIS EVENING.



# 9:35 P.M. Friday

## Special Weather Statement:

...EXTREMELY DANGEROUS THUNDERSTORMS TO IMPACT BALTIMORE AND WASHINGTON REGION THIS EVENING...

AT 9:30 PM...A LINE OF SEVERE THUNDERSTORMS PRODUCING DAMAGING WIND GUSTS WAS CROSSING WESTERN MARYLAND AND THE EASTERN PANHANDLE OF WEST VIRGINIA. THIS LINE OF THUNDERSTORMS IS EXPECTED TO HIT CENTRAL MARYLAND AND THE WESTERN SUBURBS OF WASHINGTON DC BETWEEN 10 AND 10:30 PM...THE INTERSTATE 95 CORRIDOR INCLUDING WASHINGTON DC AND BALTIMORE BETWEEN 10:30 AND 11 PM...THEN REACH THE CHESAPEAKE BAY BETWEEN 11:30 AND MIDNIGHT.

THIS LINE OF STORMS HAS A HISTORY OF PRODUCING MAJOR WIND DAMAGE ACROSS WESTERN MARYLAND AND EASTERN WEST VIRGINIA DUE TO WIND GUSTS OVER 75 MPH...ALONG WITH PROLIFIC CLOUD TO GROUND LIGHTNING.

THIS IS A PARTICULARLY DANGEROUS SITUATION THIS EVENING. RESIDENTS AND VISITORS TO THE REGION SHOULD START PLANNING NOW TO PROTECT LIFE AND PROPERTY THROUGH SEEKING SHELTER IN A STURDY BUILDING WHEN WARNINGS ARE ISSUED FOR YOUR AREA.

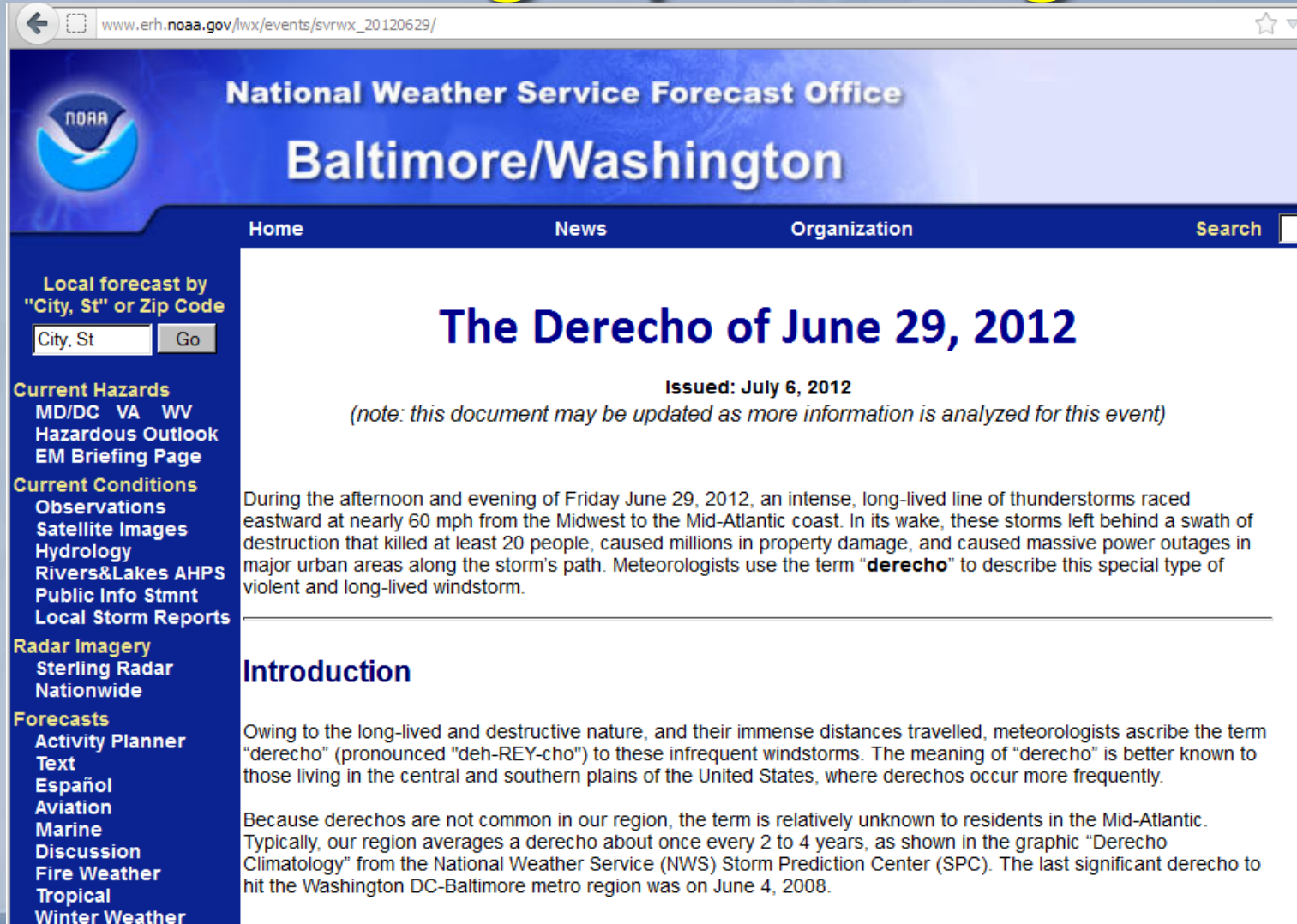


# Summary

- A long-lived Derecho with widespread wind damage occurred on June 29th
- Tremendous impacts to major metro areas of Baltimore & Washington DC
- Although rare, derechos can occur here and cause significant disruption
- Be prepared! Heed all NWS-issued severe thunderstorm warning



# More info on Derechos weather.gov/washington



The screenshot shows a web browser window with the address bar displaying [www.erh.noaa.gov/lwx/events/svrwx\\_20120629/](http://www.erh.noaa.gov/lwx/events/svrwx_20120629/). The page header features the NOAA logo and the text "National Weather Service Forecast Office Baltimore/Washington". A navigation bar includes links for "Home", "News", "Organization", and "Search". On the left side, there is a "Local forecast by 'City, St' or Zip Code" section with a text input field containing "City, St" and a "Go" button. Below this are several menu categories: "Current Hazards" (MD/DC VA WV Hazardous Outlook EM Briefing Page), "Current Conditions" (Observations Satellite Images Hydrology Rivers&Lakes AHPS Public Info Stmtnt Local Storm Reports), "Radar Imagery" (Sterling Radar Nationwide), and "Forecasts" (Activity Planner Text Español Aviation Marine Discussion Fire Weather Tropical Winter Weather). The main content area has a large blue heading "The Derecho of June 29, 2012" and a sub-heading "Issued: July 6, 2012". A note states: "(note: this document may be updated as more information is analyzed for this event)". The text describes a derecho event on Friday, June 29, 2012, that caused significant damage and fatalities. It defines a derecho as a special type of violent and long-lived windstorm. The "Introduction" section explains that derechos are infrequent in the Mid-Atlantic region, occurring about once every 2 to 4 years, and notes that the last significant derecho in the Washington DC-Baltimore metro region was on June 4, 2008.

[http://www.erh.noaa.gov/lwx/events/svrwx\\_20120629/events/svrwx\\_20120629/](http://www.erh.noaa.gov/lwx/events/svrwx_20120629/events/svrwx_20120629/)

National Weather Service  
Baltimore MD/Washington DC

