

## FLOOD ADVISORY

Expected inundation by water of some low lying and poor drainage areas, resulting in a nuisance to the public but not a threat to life and property.

## FLASH FLOOD WARNING

Rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within a short timeframe from the onset of heavy rain. A dam or levee failure, or water released from an ice jam is also considered.

## FLOOD WARNING

Expected overflow or inundation by water which causes or will cause damage and/or a threat to life.

## RIVER FLOOD WARNING

Water level at a River Forecast point along a main stem river (such as the Merrimack, Nashua or Charles) is expected to reach or exceed flood stage.

## COASTAL FLOOD ADVISORY

Minor coastal flooding expected. Examples include: splashover that causes a few roads to be briefly impassable, standing water in parking lots, etc.

## COASTAL FLOOD WARNING

Widespread serious (moderate or major) coastal flooding is expected to damage property AND/OR pose a threat to life.

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### News Headlines

- Click here for the latest winter weather information throughout the 2014-2015 winter season

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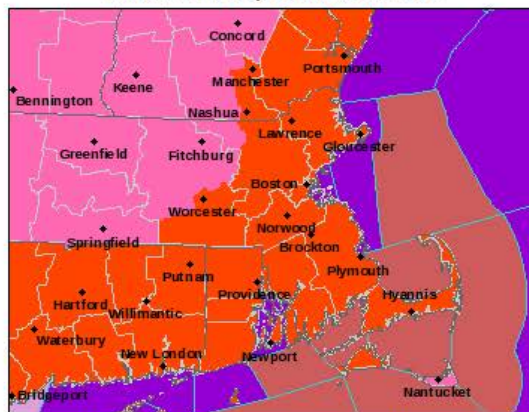
## NWS Weather Forecast Office - Boston / Taunton, MA

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Last Map Update: Mon, Jan. 26, 2015 at 5:56:08 pm EST

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# **HAZARDOUS WEATHER OUTLOOK (HWO)**

- **Issued every early morning**
- **Potential hazardous weather out to 7 days**
- **May be your first clue of a local concern!**
- **Threat evolution**
  - May not appear too ominous at first (especially if time period is greater than 5 days)
    - But let that be your signal for higher situational awareness
  - Monitor evolution of threat with time (e.g. increasing or decreasing threat)
- **Check HWO daily to maintain situational awareness**

# weather.gov/boston

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Last Map Update: Fri, Apr. 24, 2015 at 2:38:08 pm EDT



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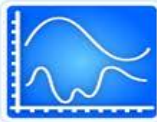
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# **AREA FORECAST DISCUSSION (AFD)**

- **Explains the rationale behind the warning and forecast decisions (i.e., the “why” of the forecast)**
- **Favorite product for many broadcast meteorologists**
- **Confidence level and degree of uncertainty**
- **May indicate alternative scenarios possible**
- **A way to get inside our heads**

.LONG TERM /SATURDAY NIGHT THROUGH THURSDAY/...

HIGHLIGHTS FOR LATE SEASON WINTER STORM POTENTIAL SUN PM/MON AM:

- \* SIGNIFICANT WINTER STORM STILL POSS FOR AT LEAST PART OF THE REGION
- \* LOW CONFIDENCE ON BEST CHANCE FOR SIGNIFICANT SNOWFALL
- \* WESTERN TRACK: SIGNIFICANT SNOW POTENTIAL ACROSS INTERIOR WITH DRY SLOT/PTYPE ISSUES ON THE COASTAL PLAIN
- \* EASTERN TRACK: LIGHTER SNOWFALL ACROSS THE INTERIOR WHILE SIGNIFICANT SNOW POTENTIAL OCCURS ACROSS EASTERN MA/RI

DETAILS...

SUNDAY INTO MONDAY....

A FAIRLY COLD AIRMASS WILL BE IN PLACE FOR LATE MARCH EARLY SUNDAY MORNING WITH HIGH PRESSURE ACROSS EASTERN CANADA. AT THE SAME TIME...A POTENT CLOSED UPPER LEVEL DISTURBANCE WILL BE APPROACHING FROM THE WEST AND INTERACT WITH NORTHERN STREAM ENERGY. THE STRENGTH AND TIMING OF THE ENERGY WILL DETERMINE THE STRENGTH/TRACK OF THE STORM AND WHERE HEAVIEST SNOWFALL OCCURS.

NORMALLY AS YOU GET CLOSER TO AN EVENT CONFIDENCE IN A GIVEN SCENARIO INCREASES...BUT THE OVERNIGHT MODEL RUNS ACTUALLY DID THE OPPOSITE. NOW THAT DOES OCCASIONALLY HAPPEN...PARTICULARLY WHEN THE MAIN EVENT IS STILL OUTSIDE 72 HOURS IN THE MODEL WORLD.

TO SUMMARIZE...THE EARLIER 12Z INTERNATIONAL MODELS SHOWED A RAPIDLY INTENSIFYING LOW PRESSURE SYSTEM PASSING NEAR THE CAPE/ISLANDS. THIS SCENARIO WOULD BRING A LARGE SWATH OF 6 TO 12+ INCHES OF SNOW ACROSS INTERIOR MA AND NORTHERN CT WITH THE HELP OF A POTENT BACK BACKBENT MID LEVEL WARM FRONT....WHILE MUCH OF EASTERN MA/RI WOULD RECEIVE A FRONT END THUMP OF HEAVY SNOW AND THEN HAVE DRY SLOT/PTYPE ISSUES. STRONG WIND GUSTS OF 40 TO 55 MPH WILL ALSO BE A CONCERN FOR A TIME ALONG THE COAST. MEANWHILE...THE 12Z AMERICAN MODELS SHOWED A WEAKER AND MORE PROGRESSIVE LOW PRESSURE SYSTEM CONFINING MOST OF THE SIGNIFICANT SNOW TO EASTERN MA/RI WITH LIGHTER SNOWS BACK INTO THE INTERIOR.

AT 00Z...THE NAM JOINED THE 12Z INTERNATIONAL MODELS SHOWING A POTENT SETUP FOR HEAVY SNOW ACROSS THE INTERIOR WITH A FRONT END THUMP FOLLOWED BY DRYSLT/PTYPE ISSUES ON THE COASTAL PLAIN. HOWEVER...THE LATEST 00Z OPERATIONAL ECMWF WHICH HAD BEEN CONSISTENT TRENDED SIGNIFICANTLY FURTHER EAST AND WEAKER. THIS WOULD CONFINE SIGNIFICANT SNOW POTENTIAL TO EASTERN MA/RI WITH A LIGHTER SNOWFALL BACK INTO THE INTERIOR. THE ECMWF ENSEMBLES ALSO TRENDED FURTHER EAST...BUT THERE WAS STILL A LARGE SPREAD WITH SOME STILL SHOWING BIG HITS ACROSS THE INTERIOR...BUT MORE ACROSS EASTERN NEW ENGLAND. AS FOR THE GFS...IT REMAINED THE WEAKEST AND FURTHEST EAST SOLUTION BUT ITS INDIVIDUAL ENSEMBLE MEMBERS STILL SHOWED A LARGE POTENTIAL RANGE IN POSSIBLE OUTCOMES.

SO IN A NUTSHELL...A SIGNIFICANT WINTER STORM IS STILL POSSIBLE FOR AT LEAST A PORTION OF SOUTHERN NEW ENGLAND. THE MAIN QUESTION IS WHERE DOES THIS OCCUR. A LOT OF THE 00Z GUIDANCE...BUT CERTAINLY NOT ALL OF IT SHIFTED THE POTENTIAL OF HEAVIEST SNOW ACROSS EASTERN MA/RI. HOWEVER...THE INTERIOR BY NO MEANS IS OUT OF THE WOODS AS SOME OF THE GUIDANCE STILL HAS THE FOCUS OUT IN THAT REGION. THE SPREAD IN THE ENSEMBLES AND SUBTLE TIMING DIFFERENCES IN SHORTWAVE INTERACTION TELL US ITS TOO EARLY TO LOCK IN A SPECIFIC SCENARIO.

## Area Forecast Discussion issued early Friday morning March 18, 2016

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS

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**News Headlines**

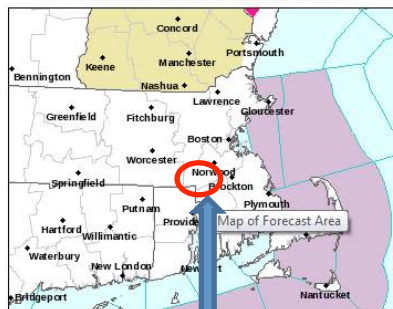
- Free hurricane webinar on May 17th for grades 4 to 6
- 2016 Spotter Training Schedule
- 2016 Spring climate and flood outlook
- Severe Weather Preparedness Week: April 25 - April 29, 2016

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Your local forecast office is [Taunton, MA](#)

On-Site: [Twitter](#) [Facebook](#) [YouTube](#) [Google+](#) [RSS](#)

Current conditions at:  
**Norwood, Norwood Memorial Airport (KOWD)**  
 Lat: 42.19°N, Lon: 71.17°W, Elev: 48ft

**66°F**  
 19°C

Humidity: 26%  
 Wind Speed: W @ 17 mph  
 Barometer: 29.92 in (1013.1 mb)  
 Dewpoint: 30°F (-1°C)  
 Visibility: 10.00 mi  
 Last update: 25 Apr 3:53 pm EDT

[More Information:](#)  
[Local Forecast Office](#)  
[Home Local 25A](#)  
[3 Day History](#)  
[Mobile Weather](#)  
[Hourly Weather Forecast](#)

Extended Forecast for **2 Miles SE Foxboro MA**

Tonight	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night
Low: 41°F	High: 44°F	Low: 32°F	High: 60°F	Low: 31°F	High: 57°F	Low: 34°F	High: 58°F	Low: 40°F

**Detailed Forecast**

**Tonight** A slight chance of showers between 6pm and 2am, then a chance of rain after 2am. Cloudy, with a low around 41. Calm wind becoming northeast 5 to 8 mph after midnight. Chance of precipitation is 30%. New precipitation amounts of less than a tenth of an inch possible.

**Tuesday** Rain. Patchy fog after 11am. High near 44. Northeast wind around 15 mph, with gusts as high as 23 mph. Chance of precipitation is 100%. New precipitation amounts between a quarter and half of an inch possible.

**Tuesday Night** A chance of rain, mostly before 10pm. Cloudy, then gradually becoming partly cloudy, with a low around 32. Northeast wind 5 to 7 mph becoming light and variable after midnight. Chance of precipitation is 50%. New precipitation amounts of less than a tenth of an inch possible.

**Wednesday** Sunny, with a high near 60. West wind around 6 mph.

**Wednesday Night** Mostly clear, with a low around 31. West wind around 5 mph becoming light and variable after midnight.

**Thursday** Sunny, with a high near 57.

**Thursday Night** Mostly cloudy, with a low around 34.

**Friday** Partly sunny, with a high near 55.

**Friday Night** Partly cloudy, with a low around 40.

**Saturday** Mostly sunny, with a high near 60.

**Saturday Night** Partly cloudy, with a low around 42.

**Sunday** Partly sunny, with a high near 61.

**Sunday Night** Mostly cloudy, with a low around 42.

**Monday** A chance of showers. Mostly cloudy, with a high near 60. Chance of precipitation is 40%.

**Additional Forecasts and Information**

[ZONE AREA FORECAST FOR WESTERN NEW-ENGLAND, MA](#)

[Forecast Discussion](#) [Hourly Weather Forecast](#) [Air Quality Forecasts](#)  
[Weather 7 Low and High Only Forecast](#) [Mobile Forecasts](#) [International System of Units](#)  
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**Additional Resources**

**Radar & Satellite Images**

**Hourly Weather Forecast**

Click on map above,

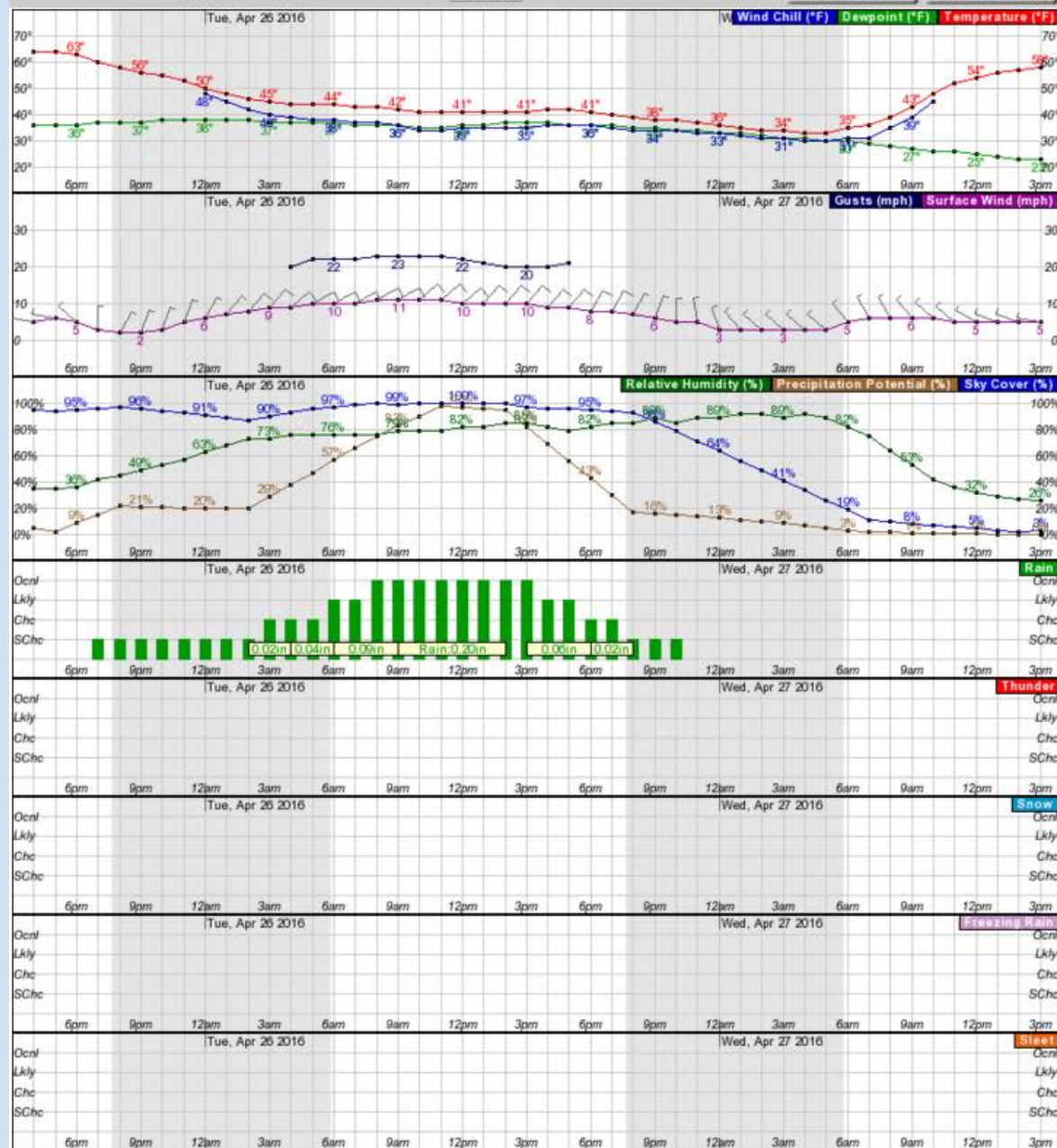
Then click on  
 Hourly Weather Graph portion  
 on the bottom-right.

48-Hour Period Starting: 4pm Mon, Apr 25 2016

Submit

Back 2 Days

Forward 2 Days



Wednesday, April 27 at 3pm

Temperature: 58 °F Dewpoint: 23 °F Wind Chill: N/A Surface Wind: W 5mph

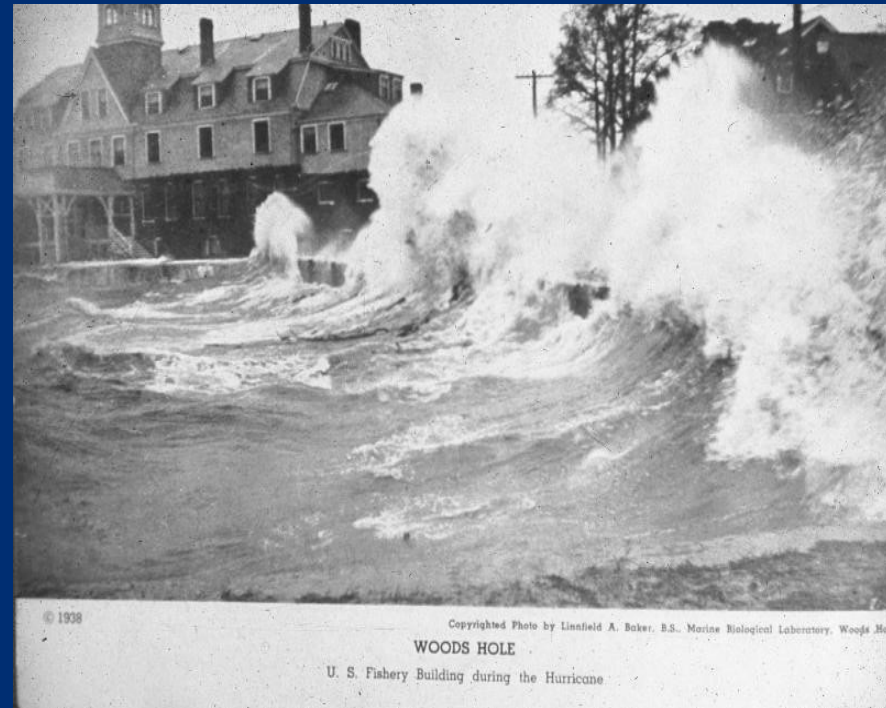
Sky Cover (%): 3% Precipitation Potential (%): 0% Relative Humidity (%): 26%

Rain: &lt;10% Thunder: &lt;10% Snow: &lt;10% Freezing Rain: &lt;10% Sleet: &lt;10%

# NEW ENGLAND HURRICANES

## Low Frequency, High Impact!

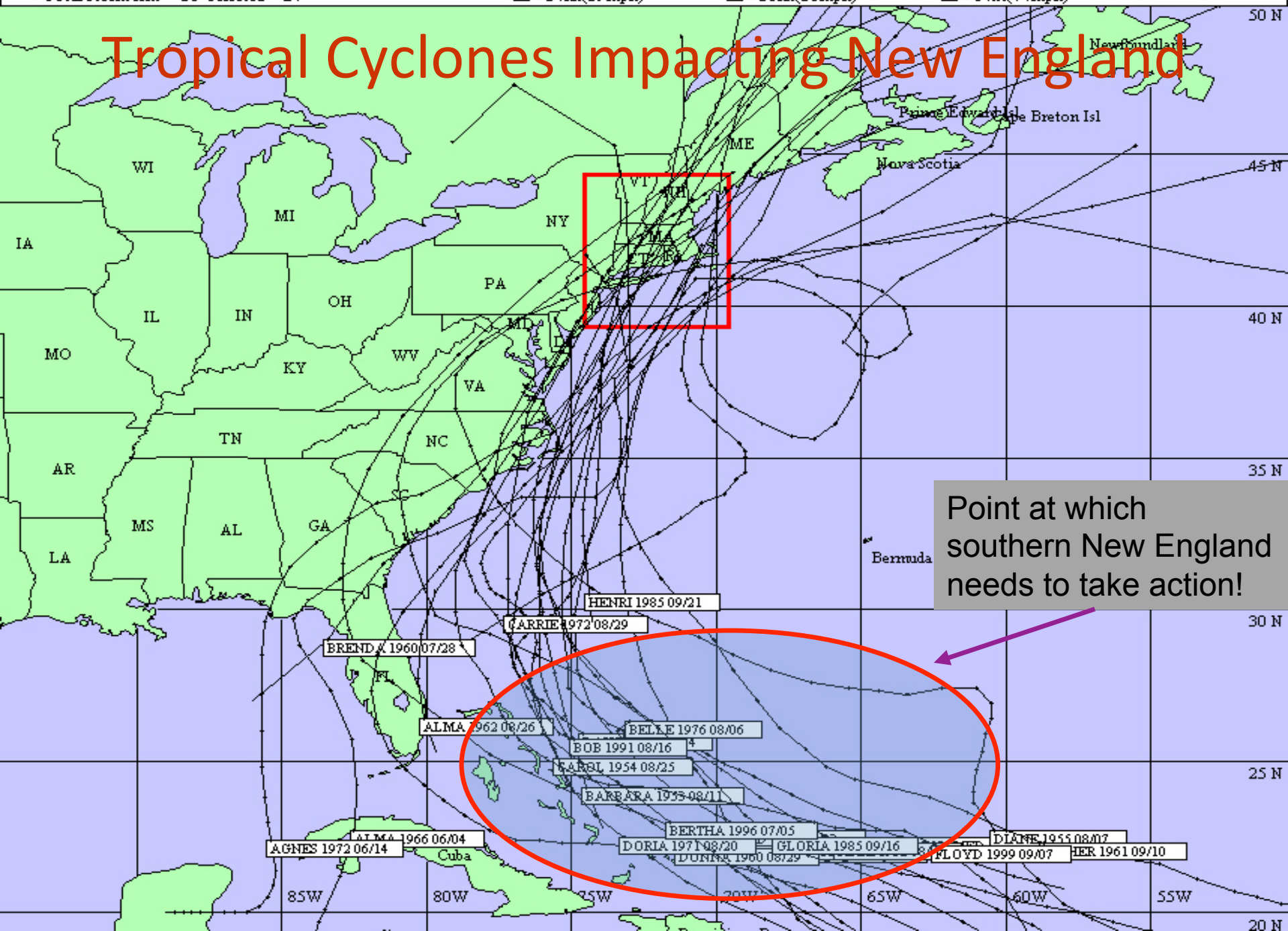
- Category 3 hurricanes
  - Great Colonial Hurricane of 1635
  - Hurricane of 1815
  - Hurricane of 1869
  - Great New England hurricane of 1938
  - Carol in 1954
- Strong Category 2 hurricane
  - Great Atlantic Hurricane of 1944
  - Edna in 1954
- Last land-falling hurricane
  - Bob in August 1991



# Common Characteristics

- **Rapid acceleration up the coast**
  - Average speed – 33 mph as they raced through
- **Heavy rainfall usually focused along and west of the storm track**
  - Nearly  $\frac{1}{2}$  of the storms since 1900 produced river/small stream flooding!
  - 6-8 inches of rainfall
- **High winds focused east of the track**
- **Storm surges focused east of the track**

# Tropical Cyclones Impacting New England



# HURRICANE BOB (1991) OFF NORTH CAROLINA



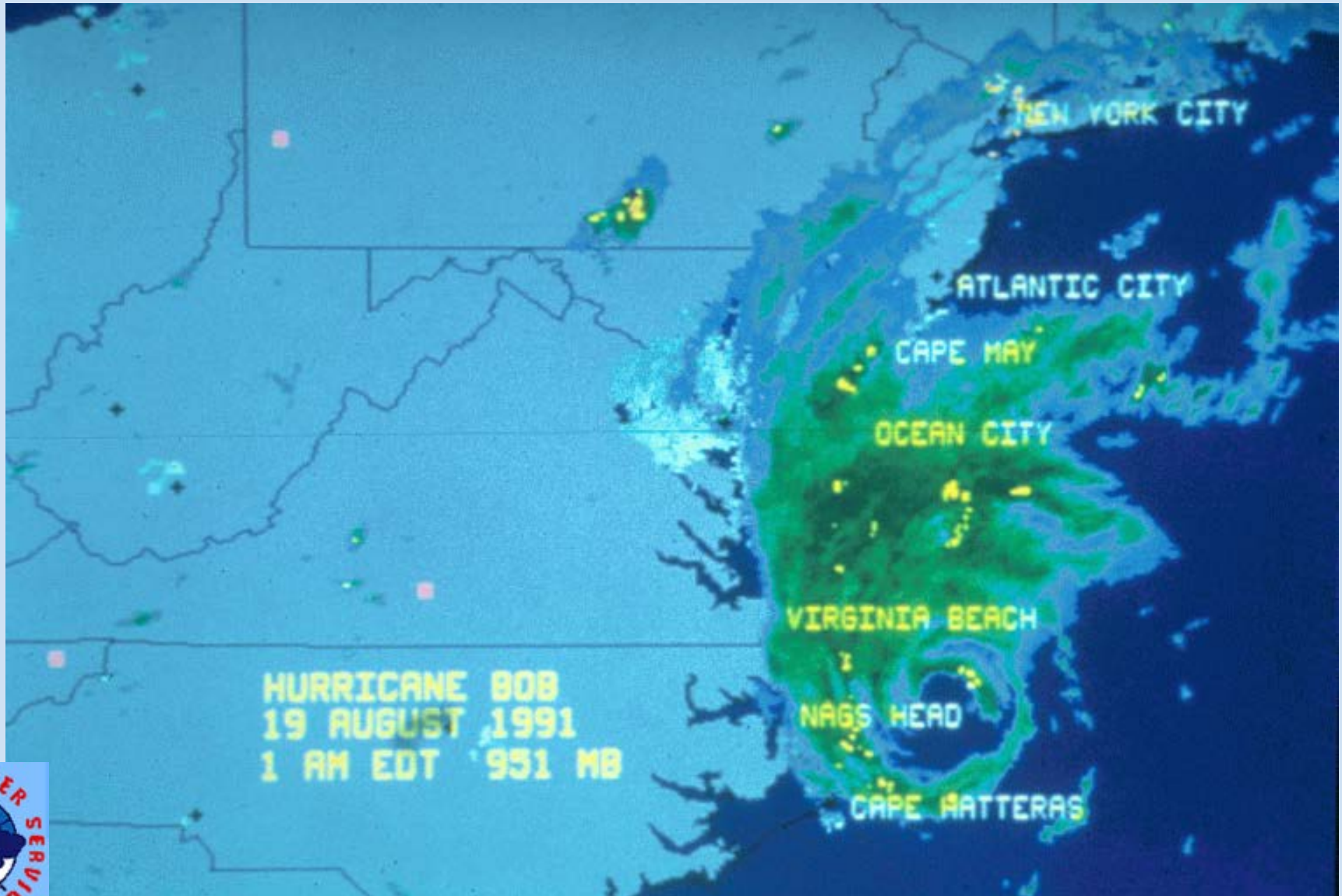
# **3 RULES OF THUMB FOR NEW ENGLAND HURRICANES**

- 1. FORGET ABOUT WHEN THE EYE WILL MAKE LANDFALL**
  - ▶ The effects of the storm will be felt many hours in advance because of the northward acceleration
- 2. YOU MUST KNOW WHERE YOU ARE WITH RESPECT TO THE TRACK OF THE EYE, HOWEVER.**
  - ▶ North & West of the track: **FLOODING RAINS**
  - ▶ South & East of the track: **STRONGEST WINDS AND STORM SURGE**
- 3. MAXIMUM WIND GUST AT YOUR LOCATION (EAST OF TRACK) CAN BE APPROXIMATED BY:**

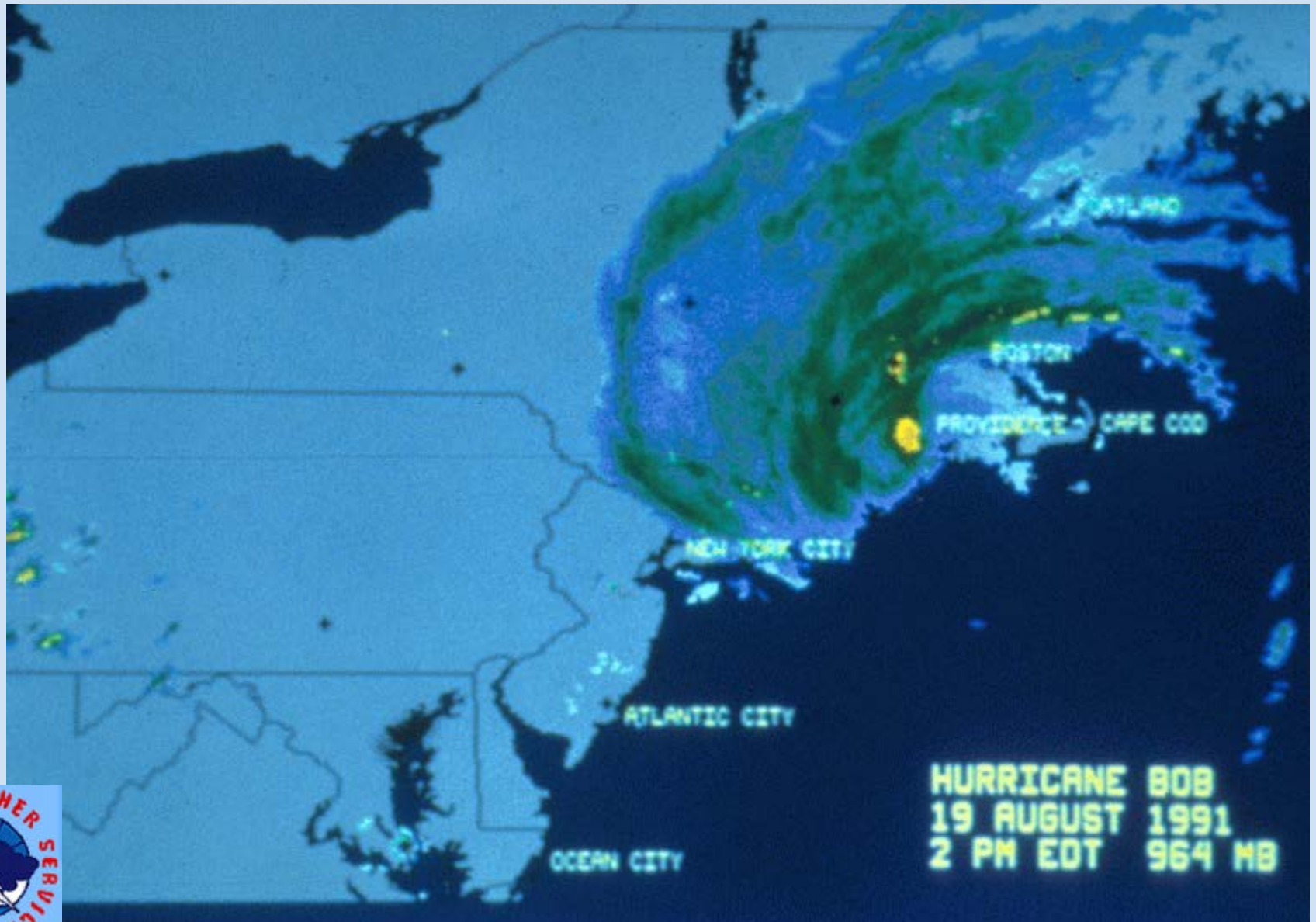
**Max. Sustained Winds + Forward Motion**



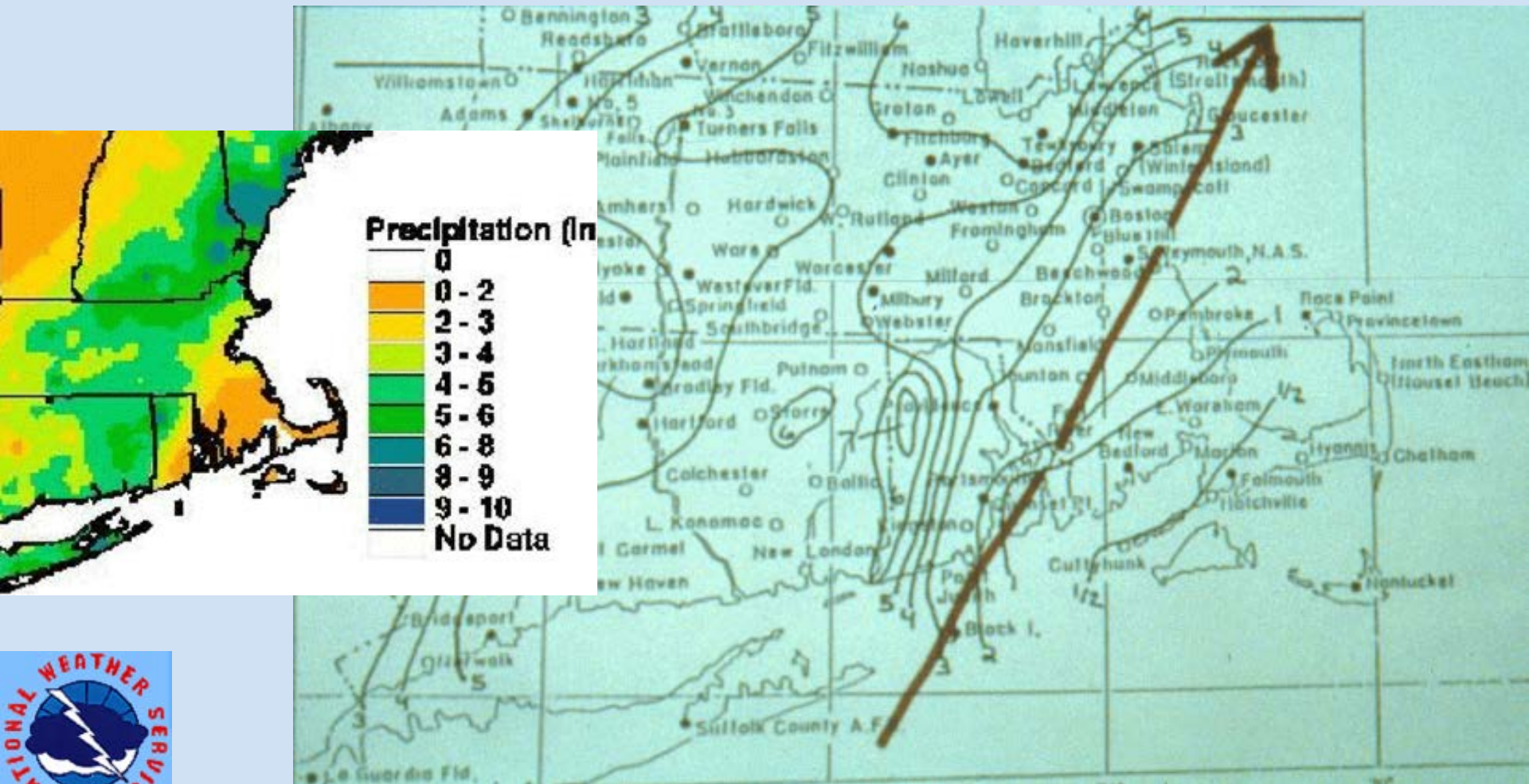
**14 hours in advance of Bob, tropical storm force gusts and coastal roadways closing in Rhode Island !!**



**Note the heavy rain north/west;  
sunshine and 125 mph winds south/east**

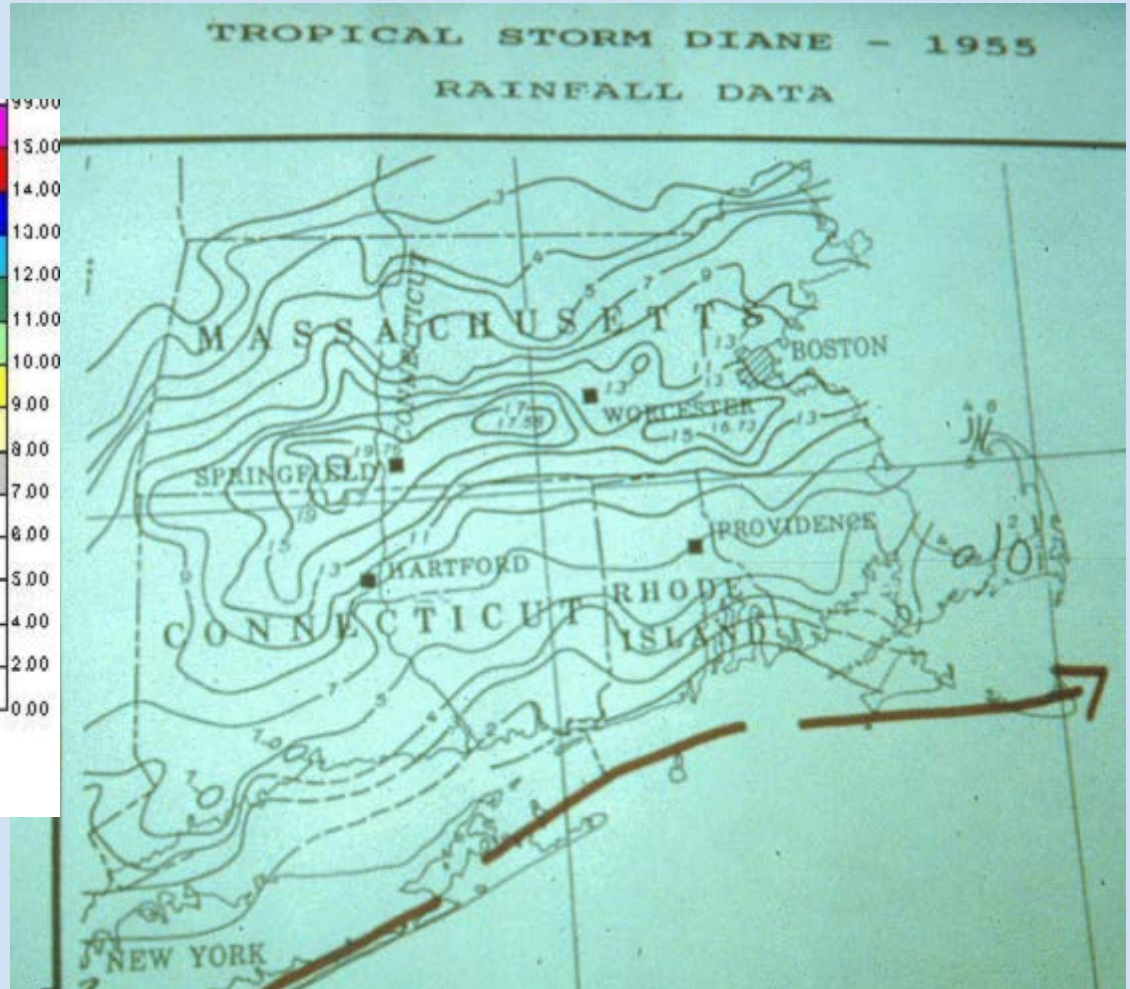
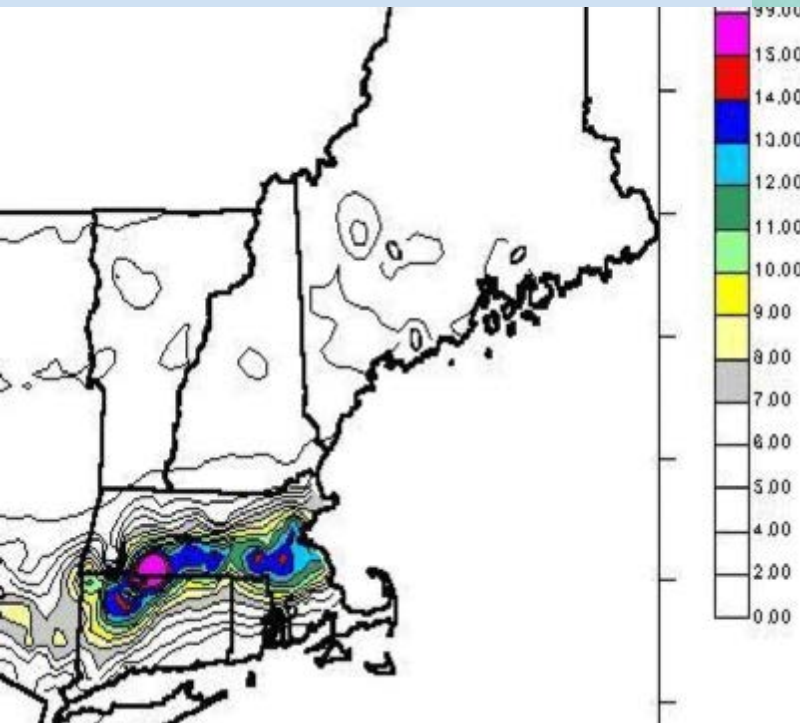


**1½" of rain on Cape Cod; 7" of rain in Foster/Glocester, RI**



**Shortly after Connie, Diane dumped 18.15" in Westfield, MA in one day – almost half their *annual* rainfall.**

**AUG. 17-20, 1955**

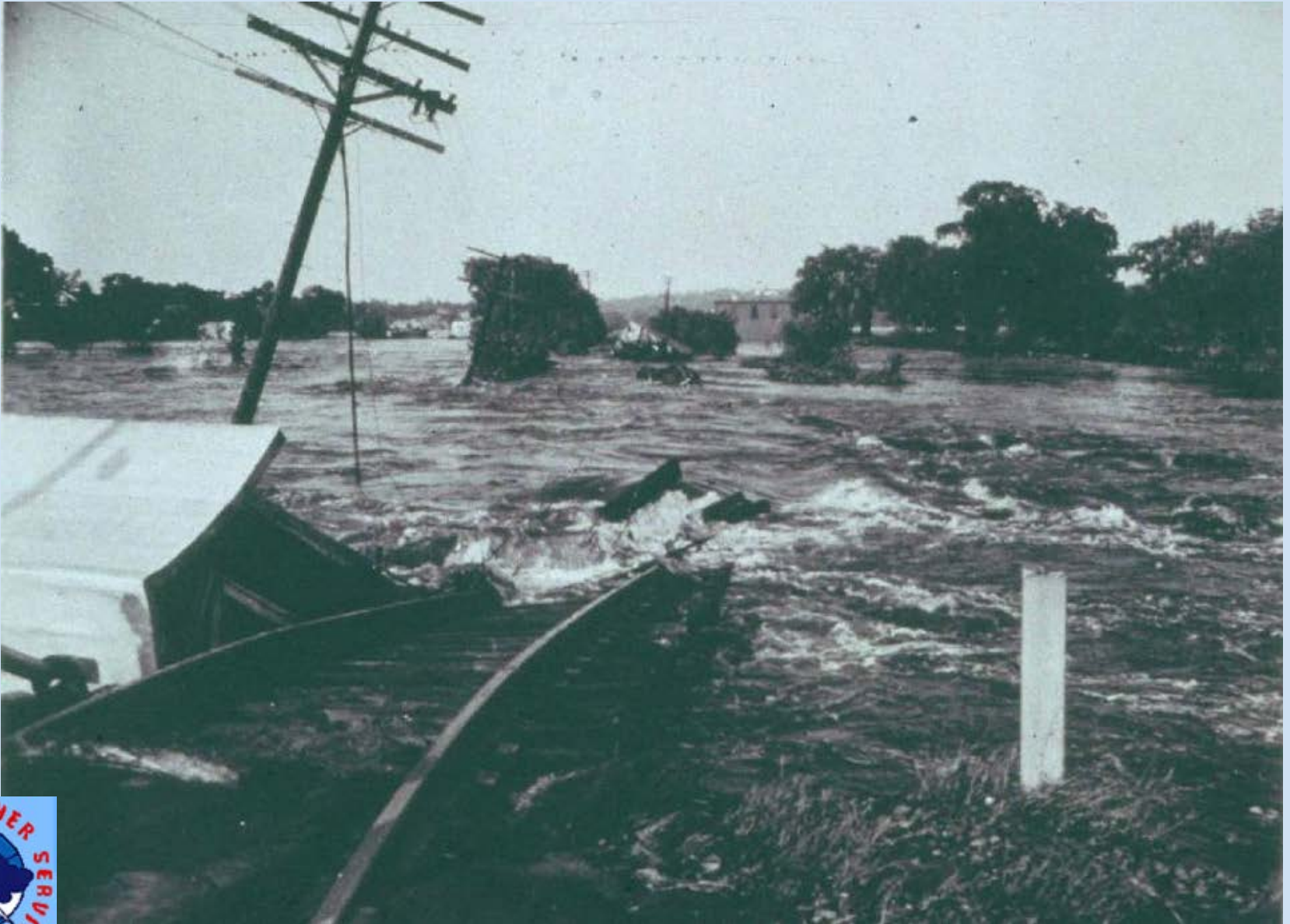


Dave's grandmother used to say...

# Speaking of cows...



## Inland River Flooding - Diane (1955)



Consider the region's flood history  
*It's often snowmelt or tropical rains!*

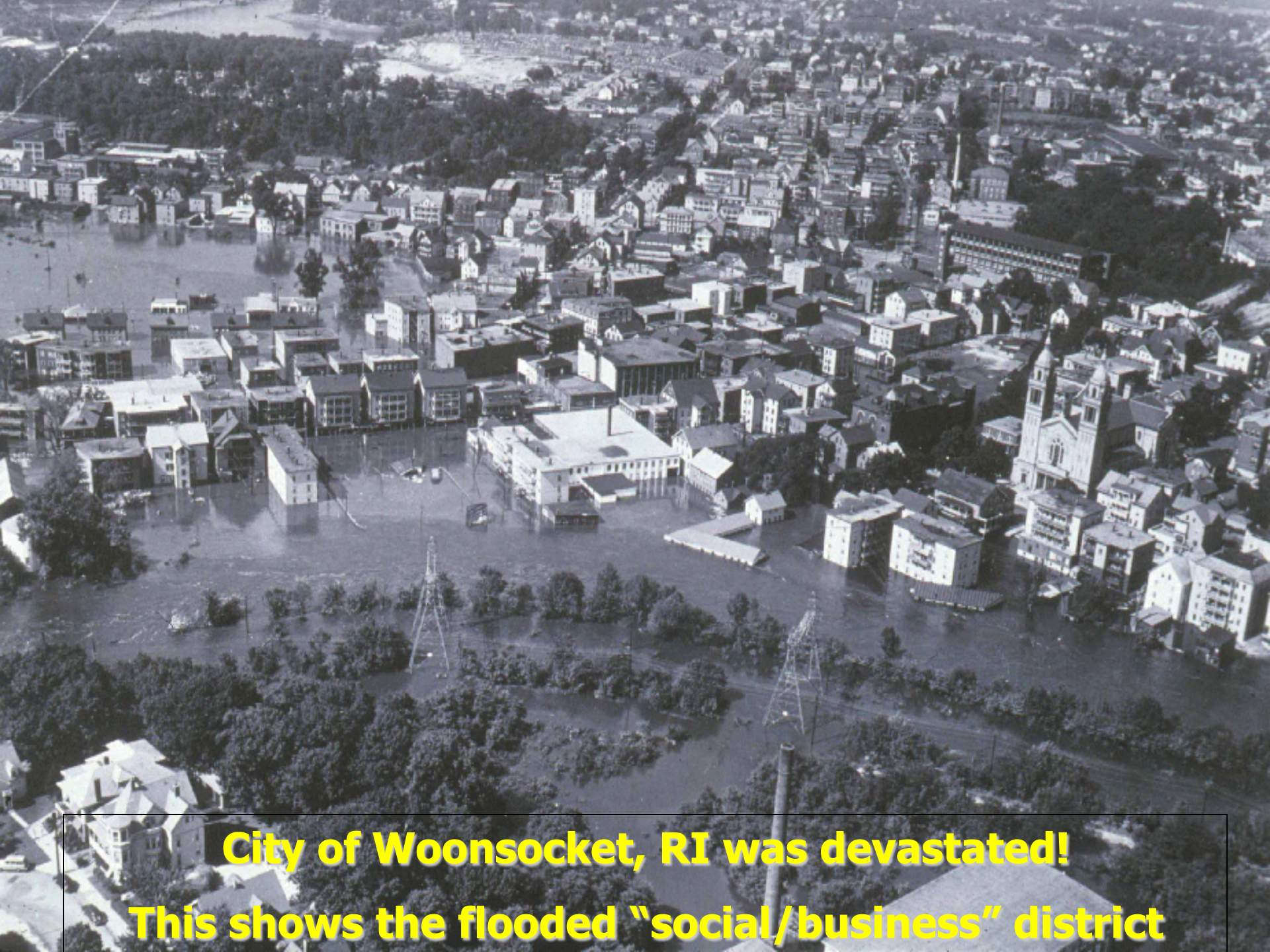


**Route 44 west – Putnam, CT**  
**Before Tropical Storm Diane, 1955**

Flash Flooding from 12-14 inches of rainfall!



**Route 44 west – Putnam, CT**  
**After Tropical Storm Diane, 1955**



**City of Woonsocket, RI was devastated!**  
**This shows the flooded "social/business" district**

# EDNA, 1954: BLACKSTONE RIVER - WOONSOCKET, RI



# 1938 Hurricane: Westminster Street - Providence, RI



# 1938 HURRICANE – HARTFORD, CT



# 1938 HURRICANE - Winchendon, MA - Millers River



B. SCENE ON MILLERS RIVER AT WINCHENDON, MASS.

Courtesy of International News Photo.



# IRENE FLOODING



Connecticut River – Belows Falls, VT



Green River – Leydon, MA

# COMPARISON OF TROPICAL STORM IRENE VS. A MAJOR HURRICANE

## TROPICAL STORM IRENE

Wind Gusts from Irene reached a maximum of 67 MPH.

T.S. Irene downed approximately 1 – 2% of the State's Trees

T.S. Irene resulted in over 800,000 power outages requiring 9 days to fully restore.

Total damages estimated at 200 Million Dollars

Governors S.T.O.R.M. Briefing

## MAJOR HURRICANE

Instantaneous Maximum Wind Gusts in a fast moving major hurricane can reach close to 200 MPH.

A major hurricane may down up to 70 - 80% of the State's trees.

A major hurricane may black out the entire state, some areas for an extended period of time (over a month).

Total damages estimated in the tens of billions of dollars.

October 25<sup>th</sup>, 2011



# How you can get NWS weather information...

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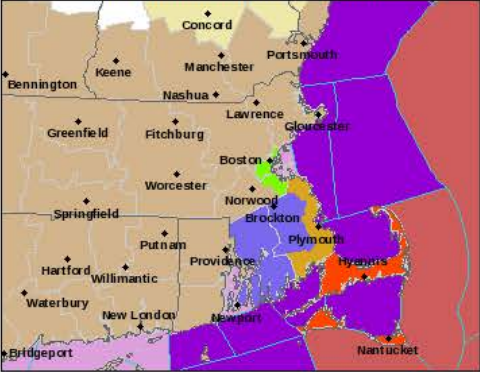
- [Powerful Winter Storm to Impact Southeast New England](#)
- [Upcoming SkyWarn Classes](#)
- [Weathering the winter season](#)
- [The Original NWS Boston/Taunton Website is Available Here while we Transition to our New Webpages](#)

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<a href="#">Coastal Flood Warning</a>	
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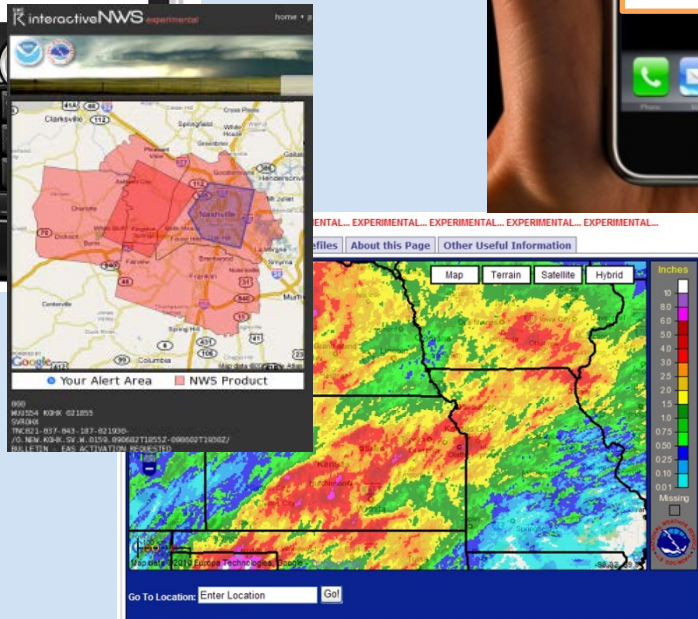
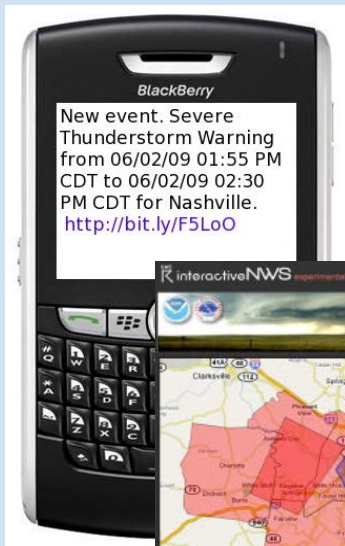
# ***How you can get NWS weather information...***



***[www.nws.noaa.gov/nwr](http://www.nws.noaa.gov/nwr)***

# The World Has Changed

Flash Flood Warnings trigger the Wireless Emergency Alerts (WEA) on smart phones



# ***How you can get NWS weather information...***

***Weather Alerts On the GO!***



<b>Extreme</b>       <b>Severe</b>	Warning Type
	Tsunami Warning*
	Tornado Warning
	Extreme Wind Warning
	Hurricane Warning
	Typhoon Warning
	Flash Flood Warning
	Dust Storm Warning

**Types of Alerts:**

- **Extreme weather warnings**
- **Local emergencies requiring evacuation or immediate action**
- **AMBER Alerts**
- **Presidential Alerts during a national emergency**



# *How you can get NWS weather information...*

Delivered through multiple channels...

- YouTube
- Facebook
- Twitter

