



National Weather Service New York, NY



BCEQ 22nd Annual Environmental Conference

March 30, 2023

Nelson Vaz

Warning Coordination Meteorologist

NOAA/National Weather Service, New York, NY

National Weather Service

<http://www.weather.gov/myc>



NWS Overview – Mission



National Weather Service – New York, NY



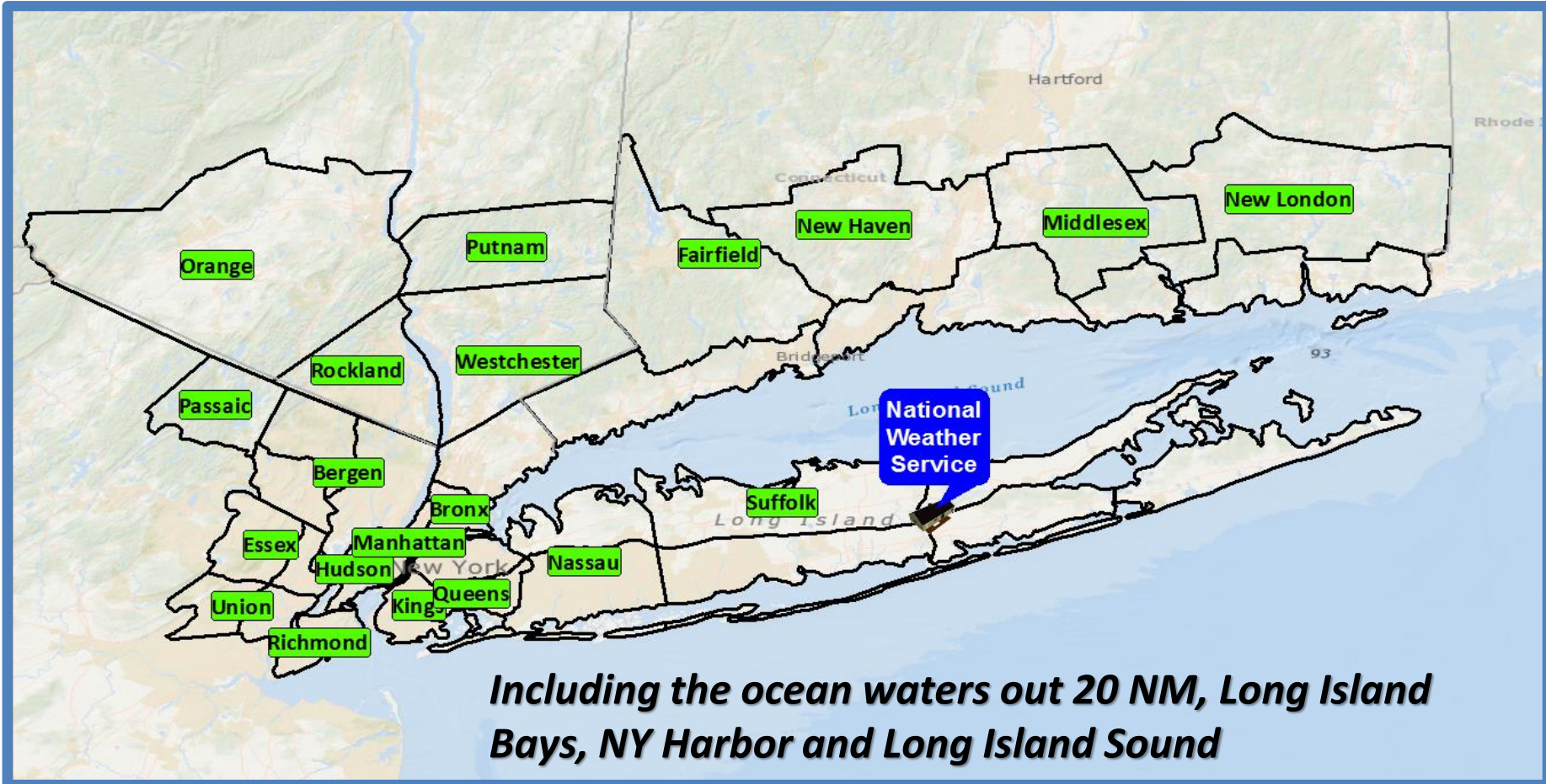
MISSION
Protect life and property
Enhance the national
economy



Service Area: www.weather.gov/nyc



Weather Forecast Office New York, NY



Population: ~ 18.6 Million; 7 % of U.S. Population



WFO New York, NY Partners



- **Federal, State, Local EMs and Public Safety**

- NYC - New York City Office of Emergency Management (8 ½ to 11 Million people)
- State, County, Local - NYS DHSES, NJ OEM, CT DEHMS + NY and NJ County + local Tri-State EM's
- Aviation - FAA, CWSU, TRACON, AWC, ATCSCC, Airlines
- Port Authority of NY/NJ - Airports (LGA, JFK, EWR, TEB, SWF), NY/NJ Port, Rail, Bus, Bridges & Tunnels
- Transportation - NY, CT and NJ DOTs, NYS Thruway
- Marine – USCG NY and LI Sector
- Utilities - National Grid, PSEG LI-NJ, LIPA, Con Ed, ORU, NYSEG, NYPA, Eversource, CT United Illuminating
- Hospital Systems – NYPresbyterian, NYU, NYC Health and Hospitals, North Shore, Northwell, NJ Hospital Assoc,
- Other - USGS, USACE, DEPs, DEC's

**Connecting our forecasts/warnings with
partner decision-making process**

- **Academia**

- NY SeaGrant, Hofstra, NYU, Stony Brook, CUNY, Stevens Institute, UCONN, CERCOM, etc.

- **Media - #1 Media Market in US**

- Average 10 per day (fair weather)
 - Exponential increases during high impact events
- Ethnic Media – 360 outlets in NYC alone
- National media requests





Tri-State Area – Many High Impact Events



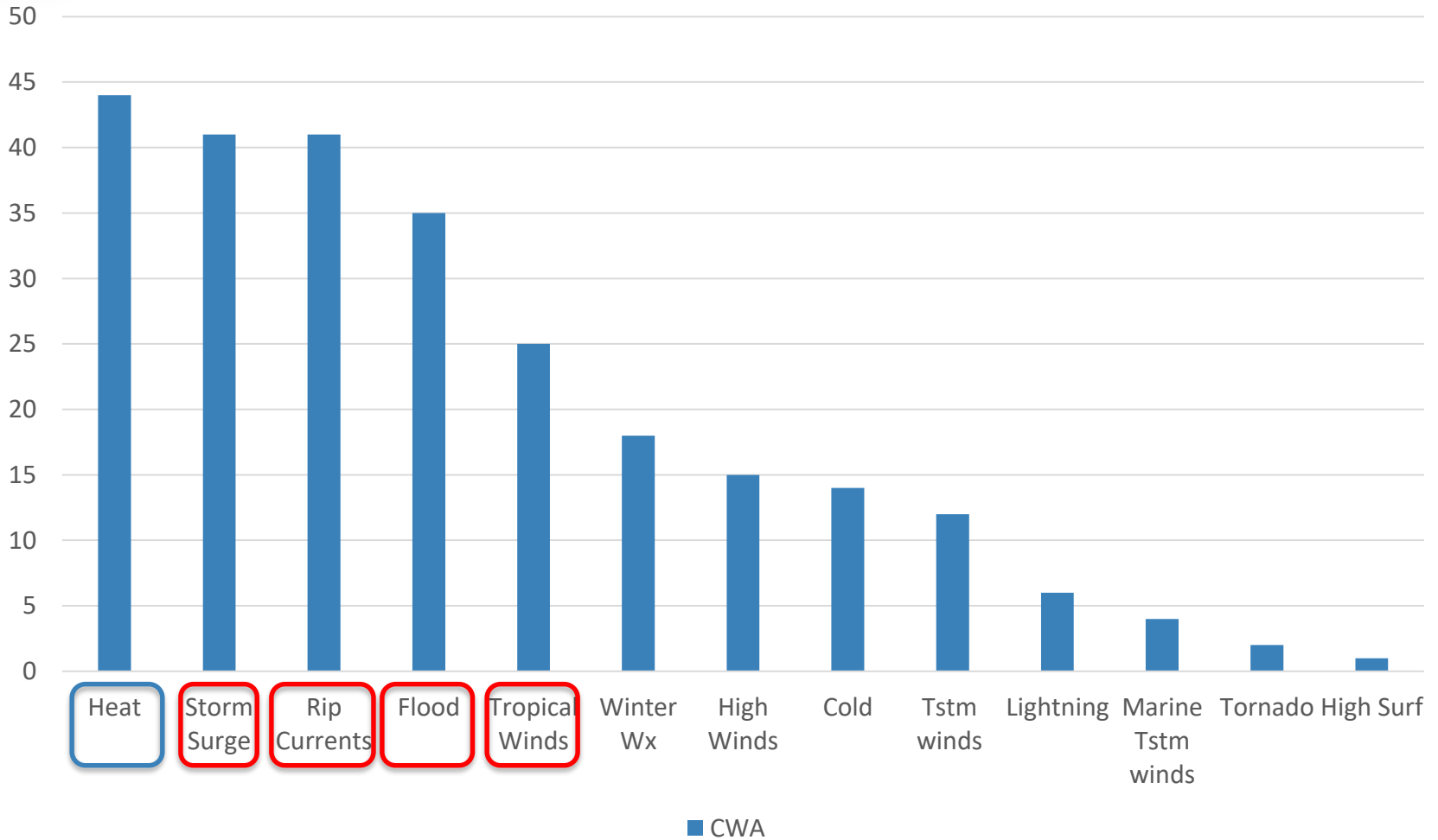
National Weather Service – New York, NY

45 Presidential Major Disaster Declarations since 2010 for the Tri-State Area

- 18 New York
 - 16 New Jersey
 - 11 Connecticut
-
- Flooding
 - Severe Thunderstorms and Tornadoes
 - Tropical Cyclones and Remnants
 - Blizzards and Winter Storms

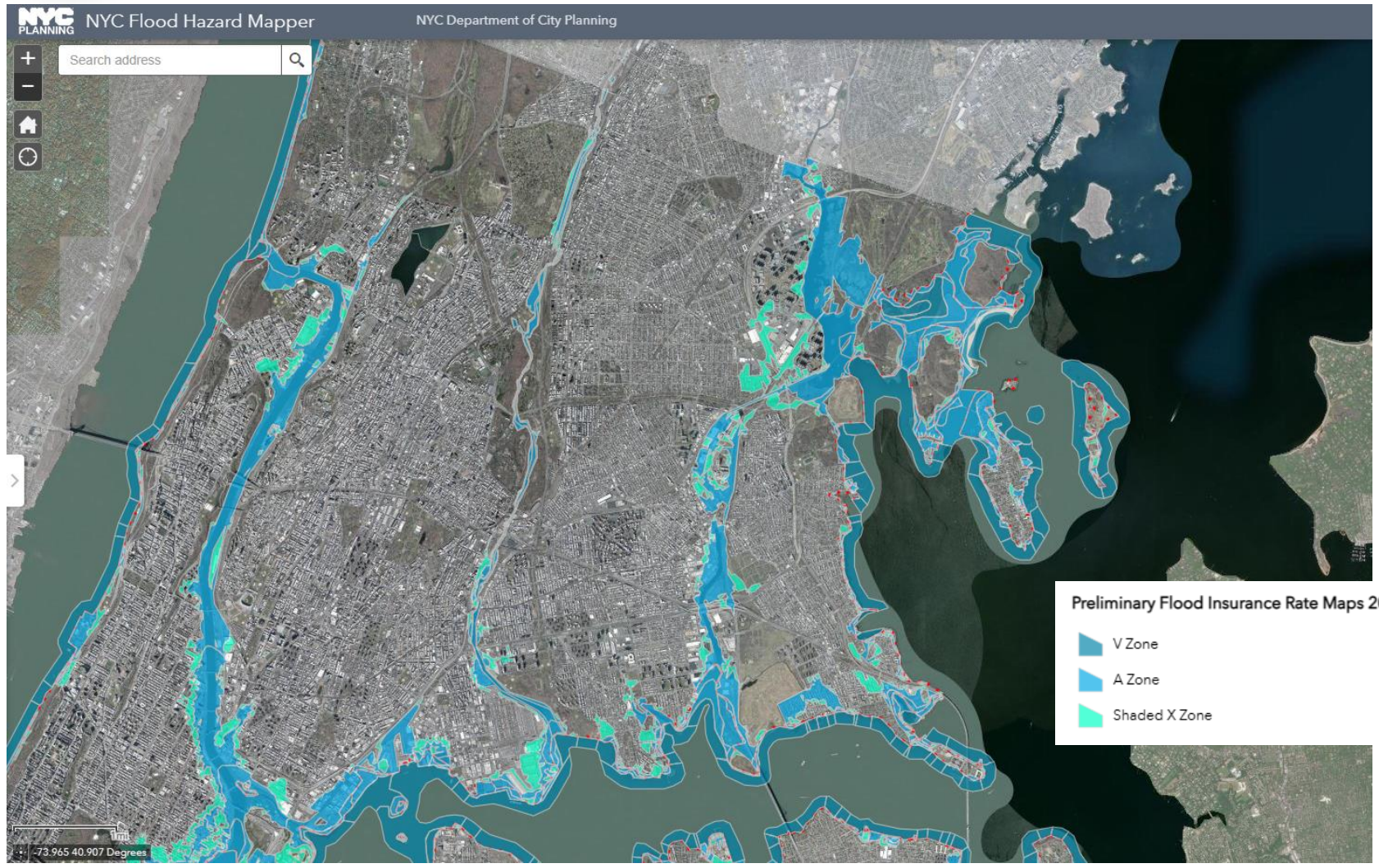


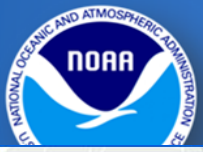
Weather Related Fatalities for Local Tri-State (2007-2021) Based on Storm Data





Flood Hazards



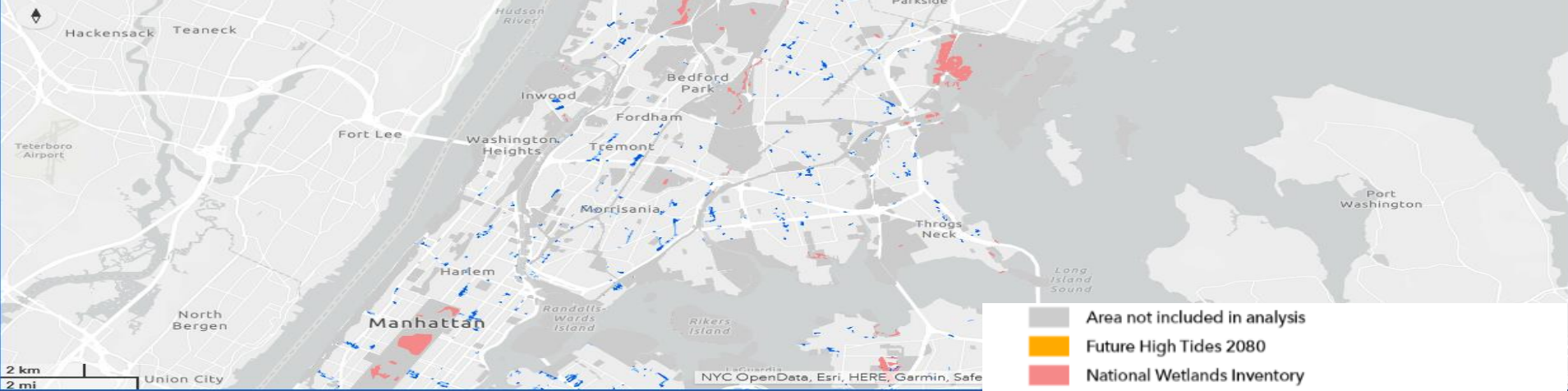


Flash Flood Hazard



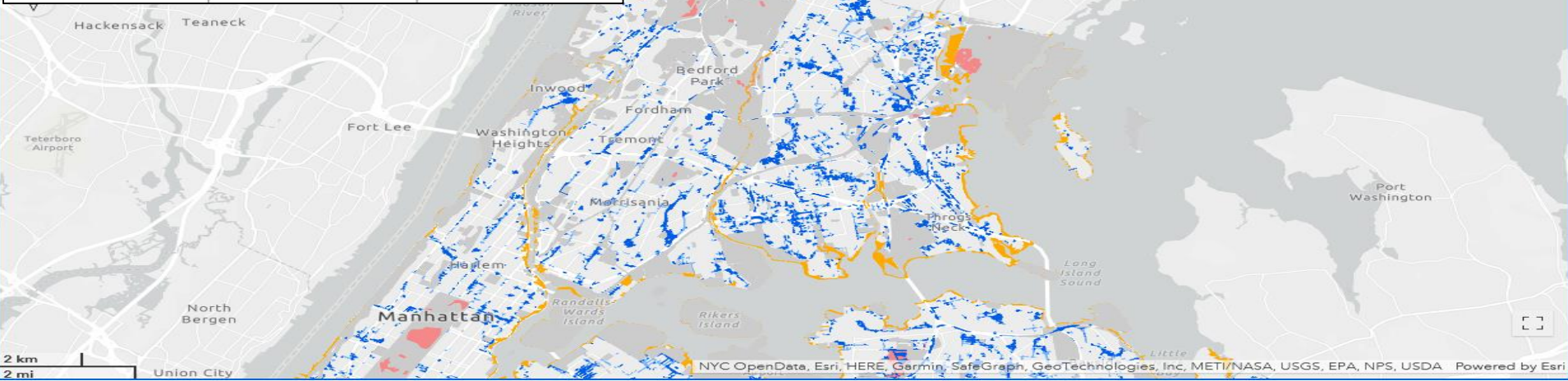
+ NYC Stormwater Flood Maps

Moderate Stormwater Flood without Sea Level Rise	~2 inches in one hour (10% chance of occurrence per year)	Current
--	---	---------



+ NYC Stormwater Flood Maps

Extreme Stormwater Flood with 2080s Sea Level Rise	~3.5 inches in one hour (1% chance of occurrence per year)	+ 4.8 feet (2080s high estimate)
--	--	----------------------------------

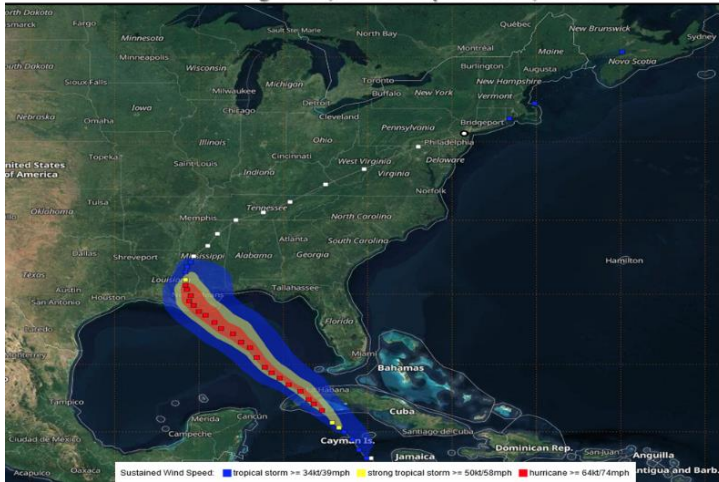




Ida – September 1-2, 2021



Ida Track August 26, 2021 – September 2, 2021



- Torrential rainfall associated with Post Tropical Depression Ida overspread Tri-State during the evening of Sep 1 into the early morning of Sep 2.
- Highest rainfall axis (5-9") occurred over northeastern NJ, NYC metro, Lower Hudson Valley, northwestern LI, and southern CT.
- Rainfall rates were as high as 3-4"/hr
- Tri-State Impacts
 - **27 Confirmed Direct fatalities** - including 11 in New York City (basement apartments), 5 in the Lower Hudson Valley and 12 people in NE NJ.
 - **Widespread catastrophic urban and small stream flash flooding**
 - Extensive property and infrastructure damage also occurred areawide, with **hundreds of homes, buildings and vehicles, and numerous roads and bridges severely damaged or destroyed**
 - **Numerous rivers and streams across nearby river basins rose to major flood levels**, flooding surrounding communities as they approached levels only reached during Irene and Floyd.
 - Uninsured Damages – FEMA claims - (Millions of \$)
 - NY \$503, NJ \$?, CT \$6.9

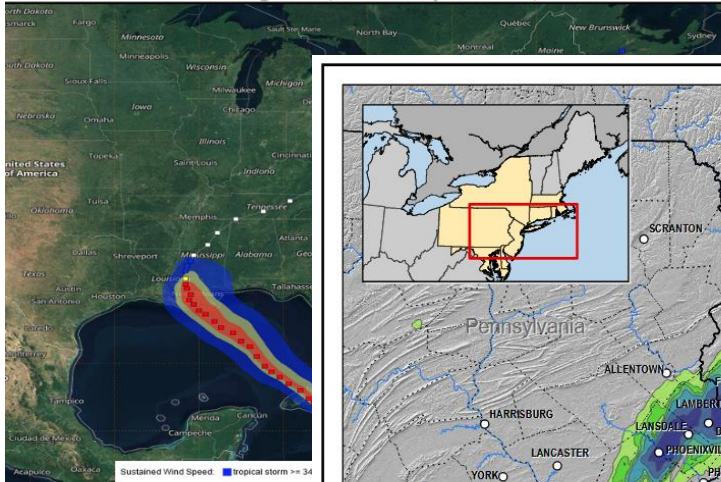




Ida – September 1-2, 2021

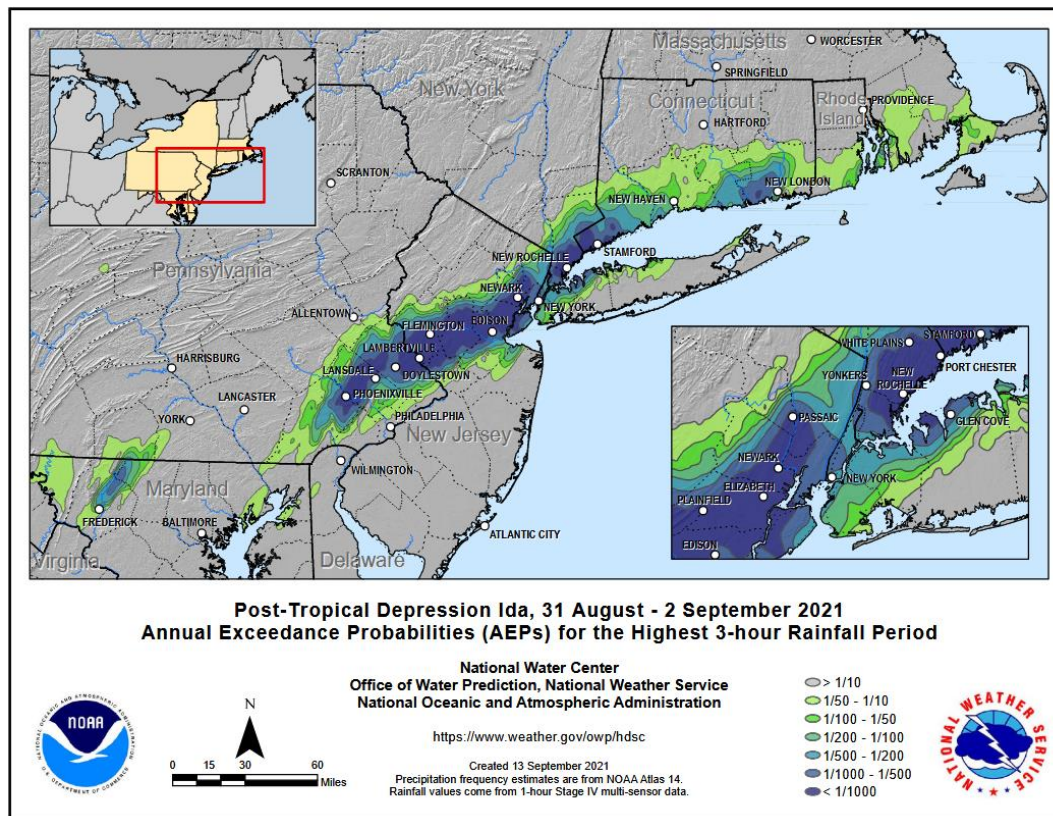


Ida Track August 26, 2021 – September 2, 2021



➤ **Torrential rainfall associated with Post Tropical Depression Ida surpassed Tri State during the evening of Sep 1 into the early**

**ver northeastern NJ, NYC
western LI, and southern CT.**



**including 11 in New York
the Lower Hudson Valley**

and small stream flash

**cture damage also occurred
es, buildings and vehicles,
severely damaged or**

ross nearby river basins

**ng surrounding
l levels only reached during**

Irene and Floyd.

➤ **Uninsured Damages – FEMA claims - (Millions of \$)**

➤ **NY \$503, NJ \$?, CT \$6.9**



Ida – September 1-2, 2021



Flooding in the Bronx the day after Ida passed through New York City. Credit: [Jim Griffin](#)



Bronx River Parkway




Train tracks flooded in the Bronx on Thursday. Photo: Spencer Platt/Getty Images

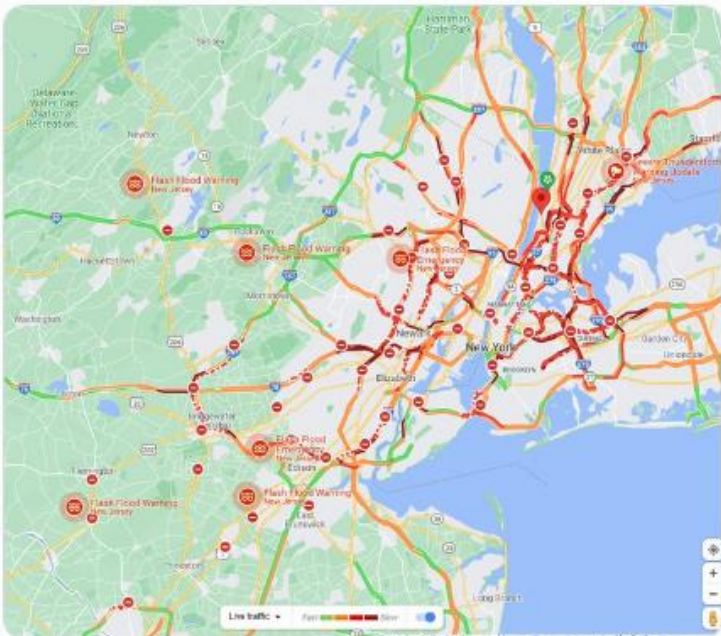


Ida – September 1-2, 2021



 **AI6YR**
@ai6yrham · [Follow](#)


You're not getting in and out of Newark or New York tonight. #flash #flood #emergency



11:15 PM · Sep 1, 2021

107 [Reply](#) [Share this Tweet](#)

[Read 5 replies](#)

 **Cliff Levy** ✓
@cliffordlevy · [Follow](#)

Replying to @cliffordlevy

It happened: NYC subway service completely suspended because of the storm. Stark example of the city's vulnerability.

Service Status

[Favorites](#) **Subway** [Bus](#) [Rail](#)

Suspended

1	2	3	4	5	6	7
A	C	E	B	D	F	M
G	J	Z	L	N	Q	R
W	S ^f	S	S ^r	SIR		

10:48 PM · Sep 1, 2021

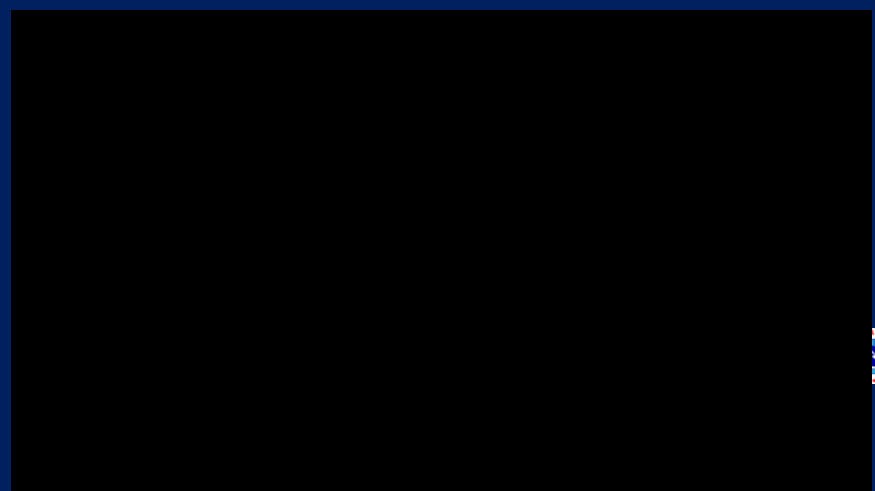
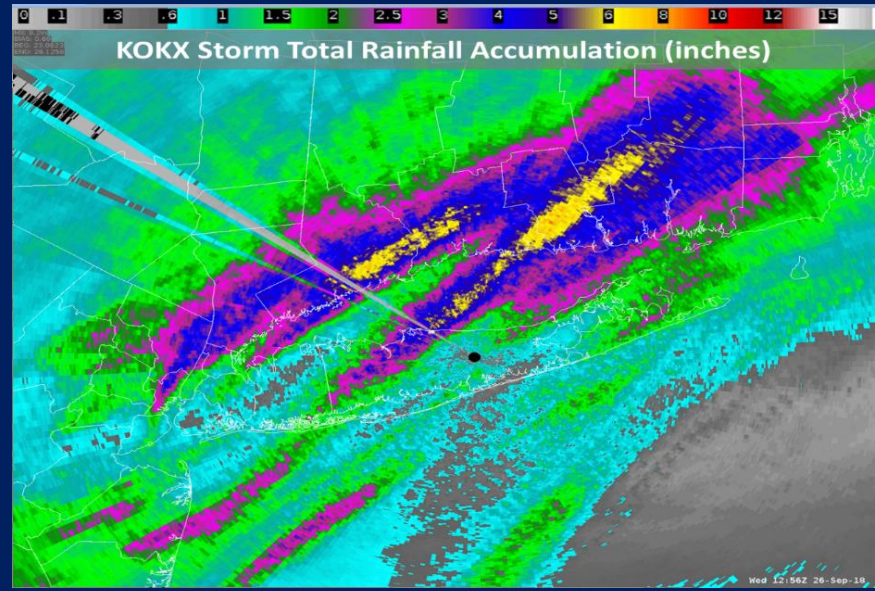
480 [Reply](#) [Share this Tweet](#)



25th 2018 CT Flash Flood Event



- Widespread 2-4" of rain, several 7" + reports across Connecticut
 - 55 reports of flash flooding
- Warm front nearly stationary across the region throughout the day
- Precipitation developed in a tropical environment
- Summer precipitation above average
 - Last significant rainfall prior to this event occurred about a week before





Sep 25th 2018 CT Flash Flood Event



Ryan Hanrahan @ryanhanrahan

Wow what an adventure for these kids in Stamford when there bus was flooded they were rescued by canoe. Thanks to @IAmTwoWheeler for the pics. #nbcct

5:49 PM - 25 Sep 2018

eWeather @Eweather13

Someone got wet mail yesterday. :Sarah George Trumbull CT

8:17 AM - 26 Sep 2018

eWeather @Eweather13

Wow. Liberty St. Bridge in Chester CT. :Alex Stein

10:23 AM - 26 Sep 2018

eWeather @Eweather13

Significant damage to the @GoodspeedMusic! Rehearsal Studio in East Haddam, CT from the flood last night. Very sad to see.

1:34 PM - 26 Sep 2018

eWeather @Eweather13

Just an incredible amount of rain today! Stratford CT :Joan Vieira #Stormhour @ryanhanrahan

9:46 PM - 25 Sep 2018

Missy Mosher @missy_mosher

Replying to @Eweather13 @FWSNewYorkNY and 4 others
Shelton, CT

7:27 PM - 25 Sep 2018



Storm Analysis- 1 in 500-1000yr event

Annual Recurrence Interval (ARI) Analysis for Rainfall

Below is from the NOAA ATLAS 14 showing the point precipitation frequency estimates. Durham, CT is highlighted where over 7 inches of rain fell in about 6 hours. That would make it a 1 in 1000 year event (.01 chance of occurrence in any given year). Other locations that saw 5 to 7 inches across CT would likely fall in the 1 in 500-1000 year occurrence.

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)¹

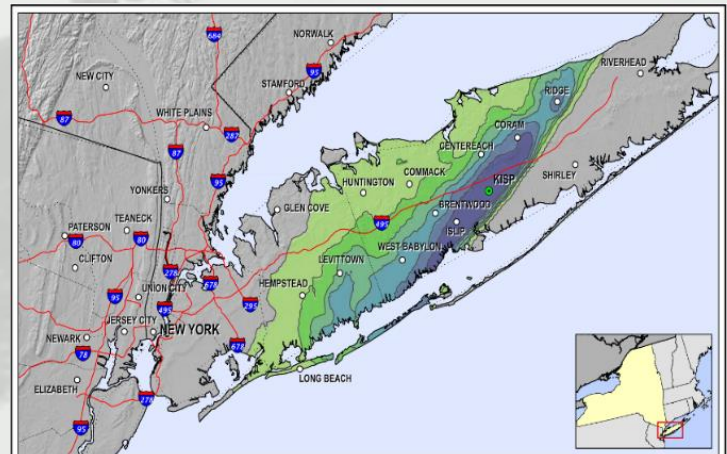
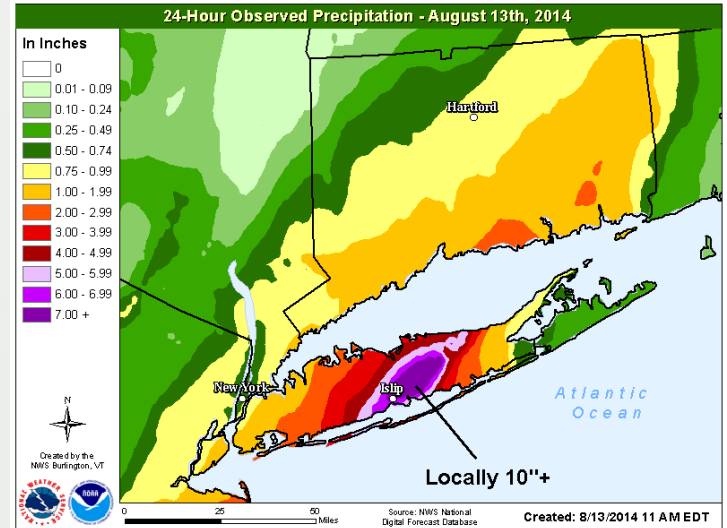
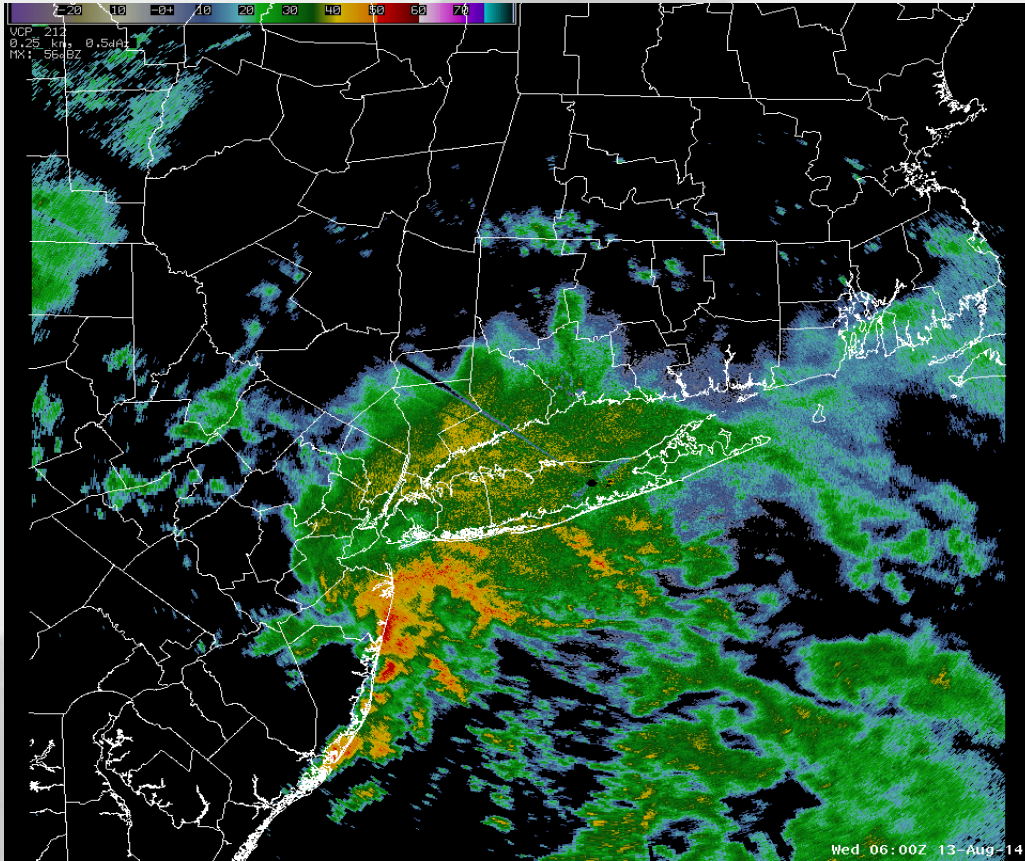
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.334 (0.260-0.413)	0.406 (0.317-0.504)	0.525 (0.408-0.653)	0.623 (0.481-0.779)	0.758 (0.567-0.990)	0.863 (0.632-1.15)	0.967 (0.687-1.34)	1.10 (0.738-1.55)	1.26 (0.820-1.85)	1.39 (0.882-2.08)
10-min	0.473 (0.369-0.585)	0.575 (0.449-0.713)	0.743 (0.578-0.925)	0.883 (0.682-1.10)	1.07 (0.803-1.40)	1.22 (0.895-1.63)	1.37 (0.974-1.89)	1.55 (1.05-2.19)	1.79 (1.16-2.62)	1.97 (1.25-2.95)
15-min	0.556 (0.434-0.689)	0.677 (0.528-0.839)	0.875 (0.680-1.09)	1.04 (0.802-1.30)	1.26 (0.945-1.65)	1.44 (1.05-1.92)	1.61 (1.15-2.23)	1.83 (1.23-2.58)	2.11 (1.37-3.08)	2.32 (1.47-3.46)
30-min	0.764 (0.597-0.947)	0.927 (0.723-1.15)	1.19 (0.927-1.48)	1.41 (1.09-1.77)	1.72 (1.28-2.24)	1.95 (1.43-2.60)	2.19 (1.55-3.02)	2.48 (1.67-3.50)	2.86 (1.85-4.18)	3.15 (1.99-4.70)
60-min	0.973 (0.759-1.21)	1.18 (0.918-1.46)	1.51 (1.18-1.88)	1.79 (1.38-2.24)	2.17 (1.62-2.84)	2.47 (1.81-3.29)	2.76 (1.96-3.82)	3.13 (2.11-4.42)	3.61 (2.34-5.28)	3.97 (2.52-5.93)
2-hr	1.29 (1.01-1.58)	1.54 (1.21-1.90)	1.96 (1.54-2.42)	2.31 (1.80-2.86)	2.78 (2.10-3.62)	3.15 (2.33-4.18)	3.52 (2.53-4.86)	4.02 (2.72-5.64)	4.68 (3.04-6.79)	5.18 (3.29-7.67)
3-hr	1.50 (1.19-1.83)	1.79 (1.42-2.19)	2.27 (1.79-2.79)	2.67 (2.09-3.30)	3.21 (2.44-4.16)	3.64 (2.71-4.81)	4.06 (2.94-5.59)	4.65 (3.16-6.50)	5.43 (3.54-7.85)	6.02 (3.83-8.88)
6-hr	1.91 (1.53-2.31)	2.28 (1.83-2.77)	2.89 (2.31-3.53)	3.40 (2.70-4.17)	4.10 (3.14-5.27)	4.64 (3.48-6.10)	5.18 (3.78-7.09)	5.95 (4.06-8.25)	6.97 (4.56-10.0)	7.75 (4.94-11.3)
12-hr	2.35 (1.91-2.83)	2.84 (2.29-3.42)	3.62 (2.92-4.38)	4.28 (3.42-5.20)	5.18 (4.01-6.60)	5.87 (4.45-7.66)	6.57 (4.82-8.92)	7.56 (5.18-10.4)	8.87 (5.83-12.6)	9.87 (6.31-14.3)



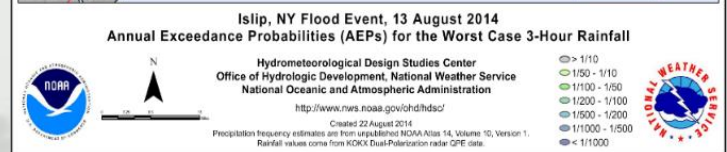


Long Island Flash Floods

August 13, 2014



< 1 in 1000 yr event
 < .1% chance in a yr





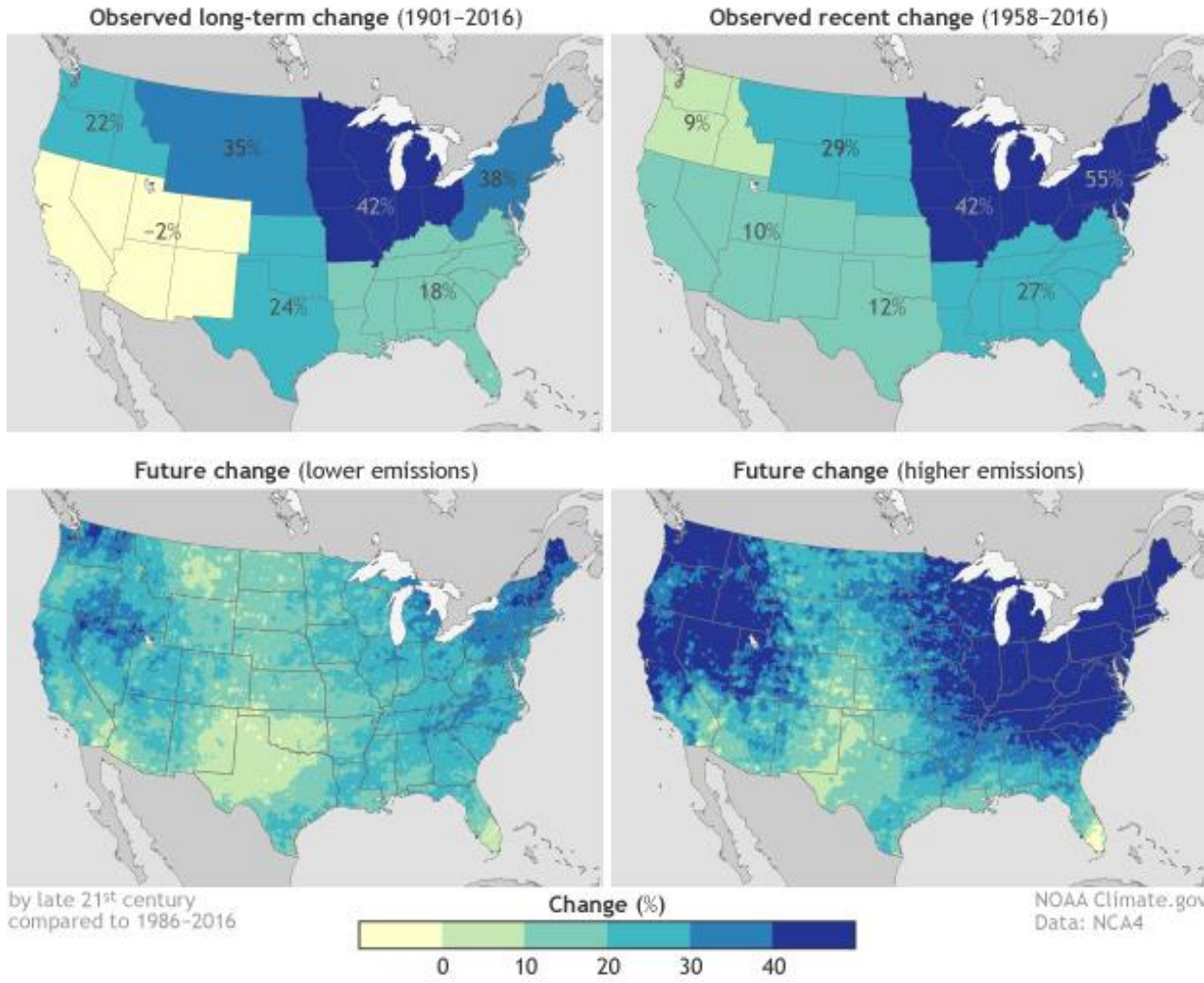
Long Island Flash Floods August 13, 2014





Climate Change and Heavy Precipitation Events

Change in extreme precipitation across the United States

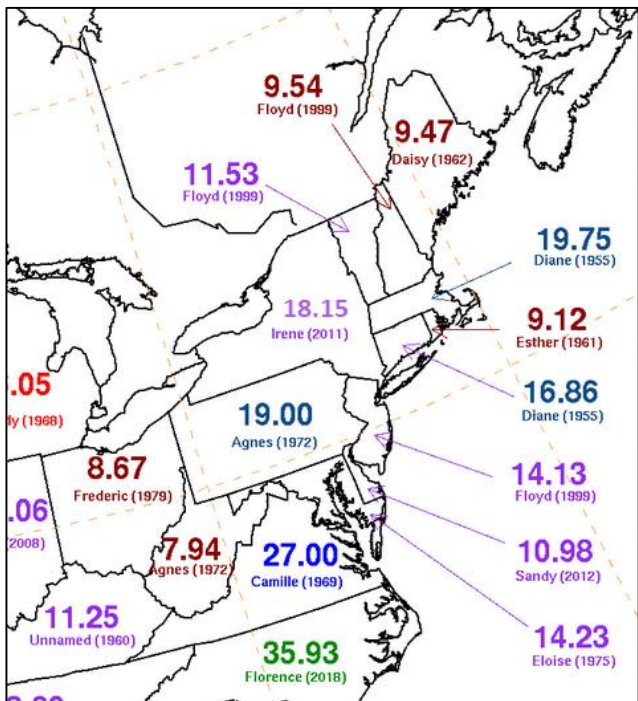




Tropical Heavy Rain Hazard



Tropical Storms Maximum Rainfall by State



- Generally heaviest rain to west of track
- **Intense Predecessor Rainfall events (PREs)** can produce devastating flash flooding days & hundreds of miles in advance of the core of the tropical system (TS Henri and Elsa)
- **Slower movers** tend to be the most prolific flooders
- What are the **preceding conditions**?
- Storm surge coinciding with heavy rain will exacerbate flooding

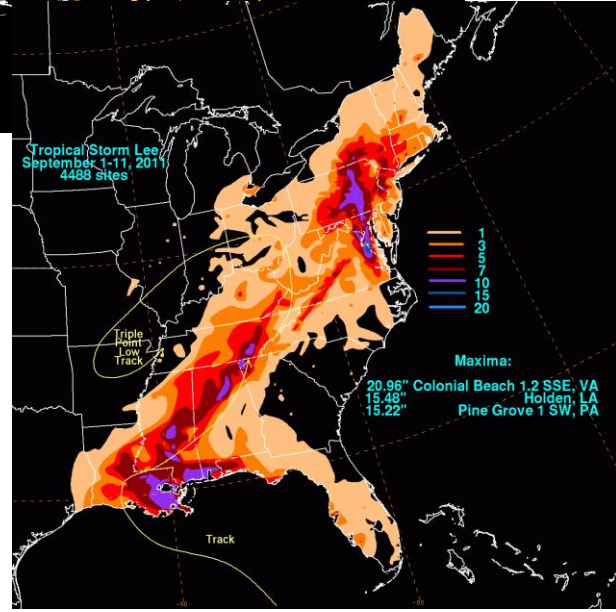
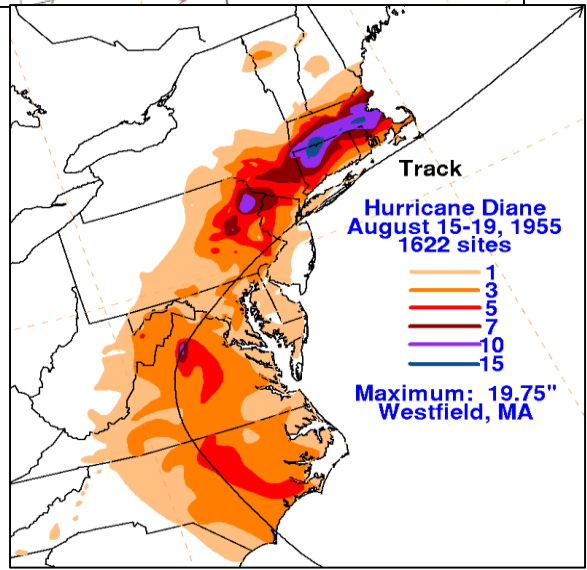
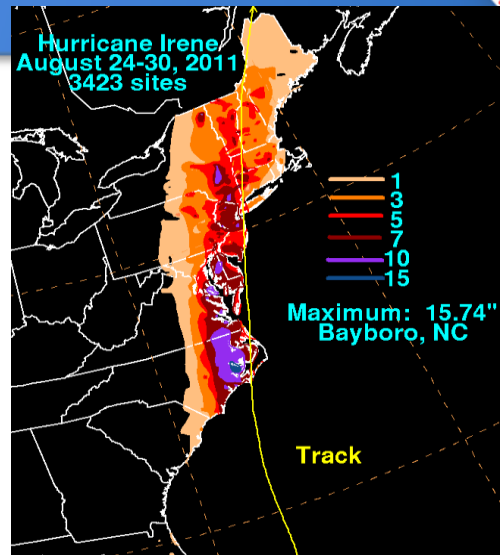
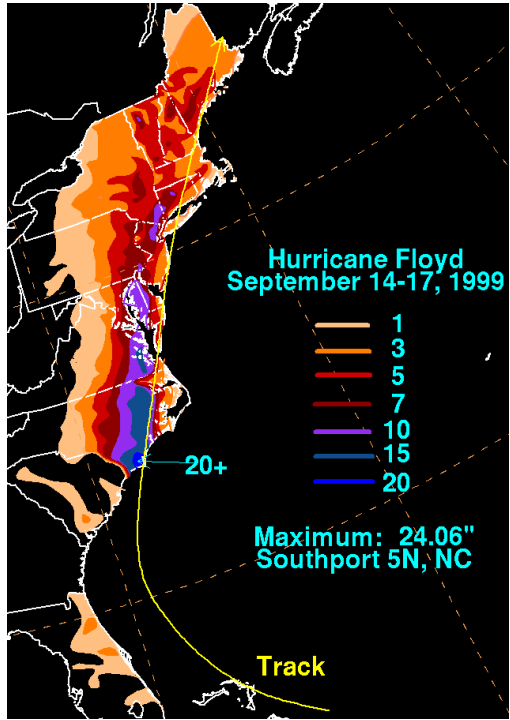
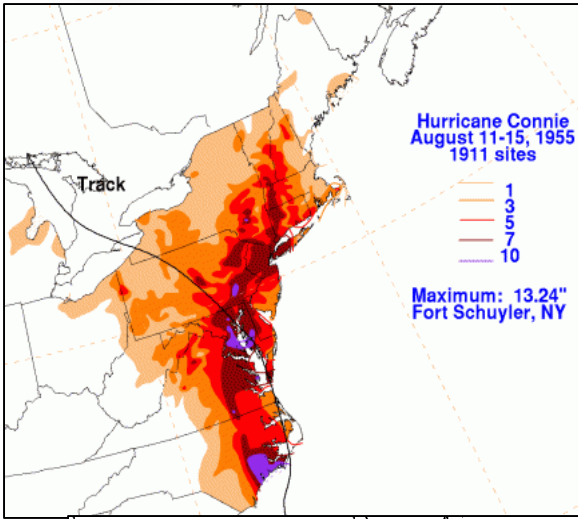
Storm	Forward Motion
New England Hurricane - 1938	>50 mph
Atlantic Hurricane - 1944	29 mph
Carol – August 1954	35 mph
Edna – September 1954	46 mph
Diane – August 1955	15 mph
Donna – September 1960	24 mph
Agnes – June 1972	18 mph
Gloria – September 1985	45 mph
Bob – August 1991	32 mph
Floyd – September 1999	25 mph
Irene – August 2011	20 mph
Elsa – July 2021 (PRE)	30 mph
Henri – Aug 2021 (PRE)	20 mph
Ida – September 2021	28 mph

Could see 15-20" in our area in 24 hours from a tropical system





Tropical Heavy Rain Hazard





NWS uses a "team" Approach to forecasting Flood Events



NWS Climate Prediction Center (CPC)

Click on product title to go to product page. More forecast products are available from the CPC. For a complete listing of all products, click on the "All Products" link in the top right corner.

6-10 Day Outlook (Precipitation)	One Month Outlook (Temperature)	Three Month Outlook (Precipitation)
6-14 Day Outlook (Temperature)	Three Month Outlook (Temperature)	Three Month Outlook (Precipitation)
Week 1-4 Outlook (Temperature)	Composites (Probability, Temp, Precip, Snow, Wind)	5-7 Day U.S. Regions Outlook (Temperature, Precipitation, Snow, Wind)
U.S. Strength Information (Monthly, Seasonal Outlook)	Global Tropics 5-Day Outlook (Weeks 1 and 2)	

Monthly Temperature Outlook (North America, August 2014)

Monthly Precipitation Outlook (North America, August 2014)

NWS Weather Prediction Center (WPC)

Excessive Rainfall Outlook - Accounts for uncertainty in rates, timing, and location

- Situational Awareness: What are the chances of rainfall heavy enough to cause flash flooding?
- Day 1-3 - Experimental out to Day 5
- Collaborated with local WFO

Understanding WPC Excessive Rainfall Risk Categories

Risk Level	Color	Description
No Area Level	White	No forecasted excessive rainfall
Low	Light Green	Light to moderate rainfall
Medium	Yellow	Heavy to moderate rainfall
High	Orange	Very heavy to moderate rainfall
Very High	Red	Extreme to moderate rainfall
Extreme	Dark Red	Extreme to moderate rainfall

River Forecast Center (NERFC & MARFC)

5 Day Significant River Flood Outlook - hydrologic modeling based on precipitation, soil moisture, stream flow, etc.

- Combined with NWS RT
- NWS flash flooding, coastal flooding or river rise flooding

NWS National Water Center (NWC)

Key Investment to Becoming a Water-Ready Nation: Deliver Forecast Driven Inundation Services!

National Water Model Guidance: Completely automated process with no forecaster engagement - but provides complementary guidance on ~2.7 million stream reaches nationwide.

NWS Forecasters heavily engaged in the forecast production

Height Above Nearest Drainage (HAND)

Height Above Nearest Drainage (HAND) - Pastoral River Valley - West Warwick/Venice

NWS WFOs

Flood Advisory, Flash Flood and River Flood Warnings

NWS WFOs

Flood Advisory - Issued when there is an imminent or occurring hazard of elevated river/streamflow, or ponding of water in urban areas, low lying roads, or poor drainage areas.

- This product is reserved for short-term events (<6 hrs)
- Typically nuisance level events, warranting notification of the public in a manner less urgent than a warning.

Flash Flood Warning - Issued when life and property threatening flooding is imminent or occurring hazard.

- This product is reserved for short-term events (<6 hrs)
- These events require immediate action to protect life and property, such as dangerous small stream or urban flooding, and dam or levee failures.

Areal Flood Warning - Issued for any high flow, overflow, or inundation in a defined area, or an area along a river or stream which threatens lives and property and are not appropriately covered by flash flood warnings or river flood warning products.

River Flood Warnings - Issued for any high flow, overflow, or inundation event which is threatening lives and property and can be quantified or indexed at specific locations and is not accounted for in areal flood or flash flood warning products. These types of warnings usually include information on the impacted upstream/downstream locations.

Building a Weather-Ready Nation

Getting NWS Forecasts & Alerts

National Weather Service
Advanced Hydrologic Prediction Service

<https://water.weather.gov/ahps2/index.php?wfo=okx>

Impact Decision Support Service (IDSS)

Weather Briefings for Flooding

The NWS vision is to build a Weather-Ready Nation; building community resilience in the face of increasing vulnerability to extreme weather, water, and climate events.

Connecting forecasts to partner decision through IDSS. Specifically, we provide expert weather support through verbal, email, powerpoint, and on-site briefings/consults to our partners ahead of high impact weather events.

Isolated Severe Weather and Flash Flooding Possible Today

Flash Flooding Possible

Decision Support Briefing #1 (Valid 6:00 a.m. Mon Aug 13, 2014)

Flash Flooding Possible

Most significant flash flood threat across New Jersey where a Flash Flood Warning has been issued. However, there is an overall reduced threat for all areas today and tonight.

Building a Weather-Ready Nation





Flood Watches



NWS WFOs

Flood watches provide advance notice and up-to-date information on the possibility of flooding and allows users to begin monitoring hydro-meteorological conditions more closely and elevate flood mitigation resources to a higher state of readiness, thus helping to protect life and property.

NWS New York NY generally issues Flood Watches 12 to 48 hours before a potential flood event, based on meteorological analysis, forecast predictability and forecast confidence.





Flood Advisory and Flash Flood Warnings



NWS WFOs

Flood Advisory - Issued when there is an imminent or occurring hazard of elevated river/streamflow, or ponding of water in urban areas, low lying roads, or poor drainage areas.

- This product is reserved for short-term events (<6 hrs)
- Typically nuisance levels events, warranting notification of the public in a manner less urgent than a warning.



Flash Flood Warning - Issued when life and property threatening flooding is imminent or occurring hazard.

- This product is reserved for short-term events (<6 hrs)
- These events require immediate action to protect life and property, such as dangerous small stream or urban flooding, and dam or levee failures.





Impact Based Flash Flood Warnings



NWS WFOs

...Most Flash Flood Events...

Base



Roads:

- Multiple city streets or maintained county/state roads closed or impassable due to standing or flowing water in areas that are not usual low water collection points (ie intersections, roads without permanent low water crossing signs)
- Approximately 6 inches or more of flowing water is over a road or bridge from a swollen river or creek (6 inches = ankle deep).
- Two to Three feet or more of standing water that poses a threat to life or property (ie, three or more feet of water on a roadway).

Buildings / Structures / Other:

- Any amount of water in contact with, flowing into, or causing damage to the first floor of a residence or public building as a result of excessive runoff. Basements only if in multiple homes (10 or more for example) or water is *flowing* from a creek or stream.
- Mudslide or landslide occurring within 6 hours of heavy rain event
- Ice jam flooding.

Rescues / Evacuations:

- Person or vehicle is trapped or swept away by flowing water from runoff.



Considerable



- **Extreme and Rare Event**
- **Risk of fatalities significantly increased**, urgent action needed to protect life and property
- **Evacuations required due to rapidly rising water** into first floor of residences
- **Numerous water rescues performed** because people are unable to get out of the way of the rising water. *Not based on vehicles driving into flood waters.*
- **Often greater than a 100 yr event**



Impact Based Flash Flood Warnings



NWS WFOs

Considerable



- increased, urgent action
- property
- rapidly rising water into
- formed because people
- y of the rising water.
- into flood waters.
- ent



Catastrophic



Significant, widespread damage with a high likelihood of numerous fatalities is expected.

- **Flash Flood Emergency**
- Homes/Business Destroyed
- Water rescues are difficult to impossible
- A 500 year or greater flood event
- High Risk Dam Break



Impact Based Flash Flood Warnings



NWS NY

Flash Flood Warning
 National Weather Service New York NY
 928 PM EDT Wed Sep 1 2021

...FLASH FLOOD EMERGENCY FOR NEW YORK CITY METRO...

The National Weather Service in Upton has issued a

- * Flash Flood Warning for...
 Bronx County in southeastern New York...
 Kings (Brooklyn) County in southeastern New York...
 New York (Manhattan) County in southeastern New York...
 Queens County in southeastern New York...
 Southern Westchester County in southeastern New York...
- * Until 1130 PM EDT.
- * At 928 PM EDT, Doppler radar indicated heavy rain across the warned area. Between 2 and 3.5 inches of rain have fallen. The expected rainfall rate is 3 to 5 inches in 1 hour. Flash flooding is already occurring.

This is a FLASH FLOOD EMERGENCY for New York City Metro. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD...Life threatening flash flooding. Heavy rain producing flash flooding.

SOURCE...Radar.

IMPACT...This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW! Life threatening flash flooding of low water crossings, small creeks and streams, urban areas, highways, streets and underpasses.

- * Some locations that will experience flash flooding include...
 Jamaica, Yonkers, Flatbush, New Rochelle, Flushing, White Plains, Mott Haven, East Tremont, Port Chester, Coney Island, Rye, Rockaway Beach, Crown Heights, Laguardia Airport, Throgs Neck Bridge, RFK Bridge, Midtown Manhattan, Kennedy Airport, Harlem and Jackson Heights.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Move to higher ground now! This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.

Catastrophic



*and damage with a
 numerous fatalities is*

Emergency
 Destroyed
 the difficult
 water flood
 break





Impact Based Flash Flood Warnings



NWS NY

Catastrophic



Flash Flood Warning
National Weather Service New York NY
928 PM EDT Wed Sep 1 2021

...FLASH

The Natio

* Flash F
Bronx C
Kings (
New Yor
Queens
Souther

* Until 1

* At 928
warned
expecte
is alre

This is
PARTICU

HAZARD.

SOURCE.

IMPACT.

* Some lo
Jamaica
Mott Ha
Rockawa
Bridge,
Jackson

PRECAUTION

Move to higher ground now! This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

Turn around, don't drown when encountering flooded roads. Most flood deaths occur in vehicles.



and damage with a
numerous fatalities is

Emergency
Destroyed
the difficult
water flood
break





Spring/Summer Weather Hazards



TORNADO



HAIL



LIGHTNING



WIND



FLOODING



Understanding
**SEVERE
WEATHER
HAZARDS**

ACTION
Take shelter immediately in a sturdy structure

ACTION
Move indoors away from windows

ACTION
Move indoors if you hear thunder

ACTION
Move indoors away from windows

ACTION
Avoid rising creeks and water-covered roads

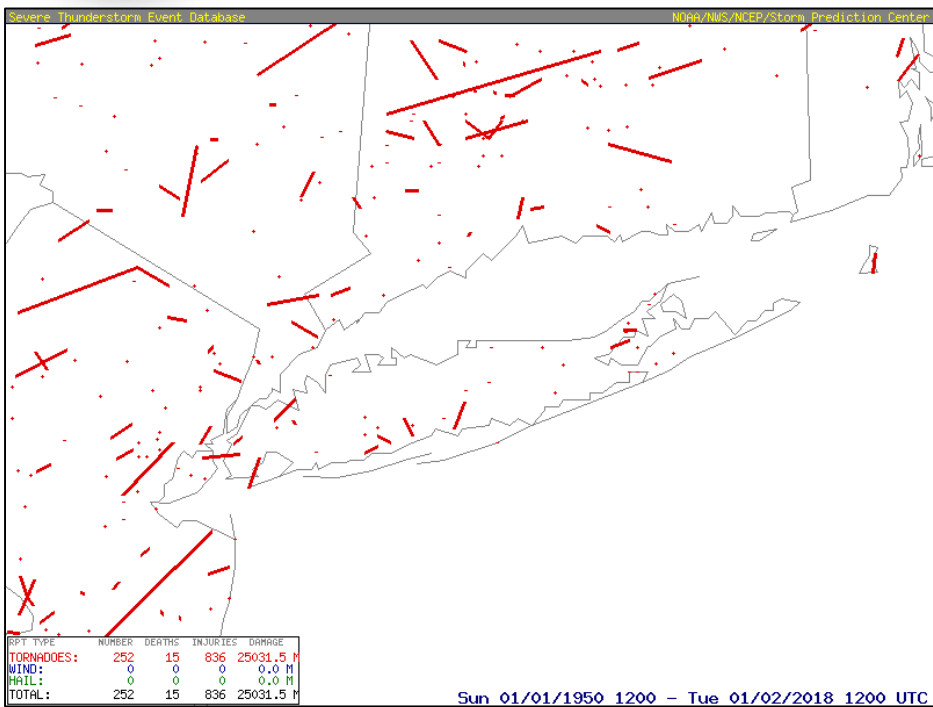
James Hobbs



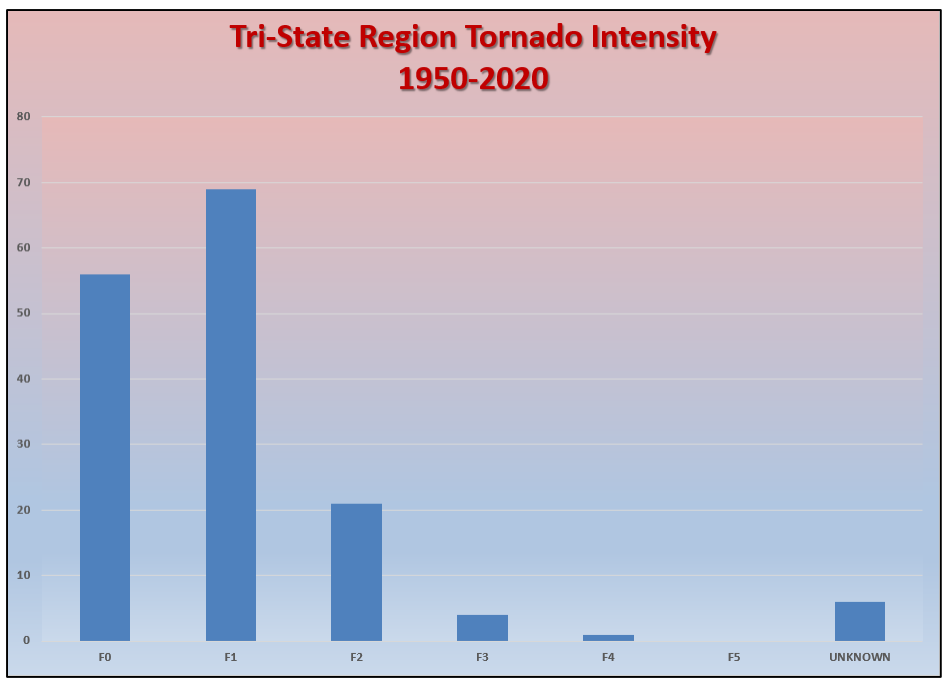
Building a Weather-Ready Nation



NYC Tornadoes



EF SCALE	
EF Rating	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200



Tri-State Region 1950-2020
Tornadoes: 157
Damage: \$396,398,647
Injuries: 229
Fatalities: 13





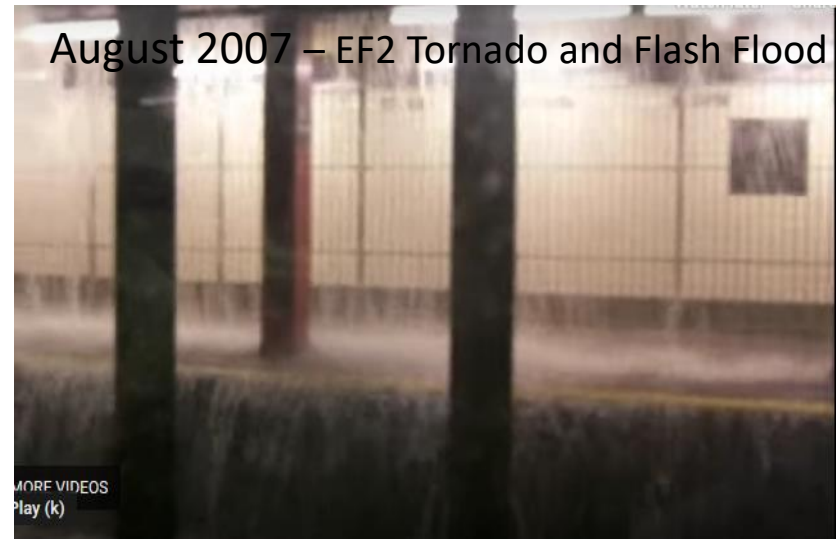
NYC Tornadoes



September 2010 – Macroburst and EF1 Tornado



August 2007 – EF2 Tornado and Flash Flood



EF1 Tornado

Breezy Point Waterspout
Carnarsie Tornado Sept 8 2012





May 15th 2018 Macrobursts and Tornadoes

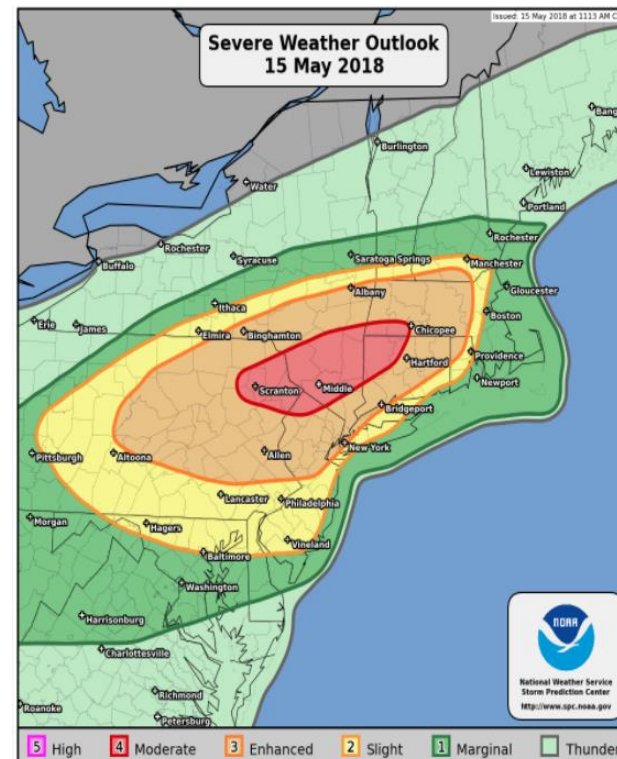


A line of severe storms moved across the northeast on the afternoon of May 15. The storms became severe due to a highly unstable environment and strong wind fields ahead of a strong cold front.

Two macrobursts (large swaths of 80-110mph straight line winds) were observed across the Lower Hudson Valley and SW CT, resulting in extensive and severe wind damage and 2 fatalities.

A total of 5 tornadoes were surveyed resulting in localized severe wind damage. Three tornadoes impacted Putnam (1 EF-2, 1 EF-1) and Orange County (1 EF-0) in New York and two EF1 tornadoes impacted New Haven County in Connecticut.

The intense squall line also created widespread wind damage across the rest of the Lower Hudson Valley, Southern Connecticut, and Northeast New Jersey resulting in 3 additional fatalities.





Labor Day 1998 Derecho and Tornadoes



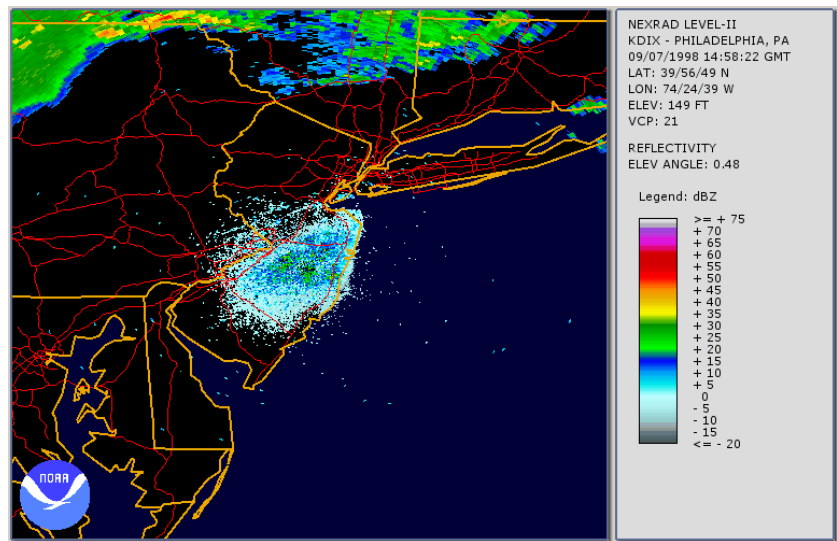
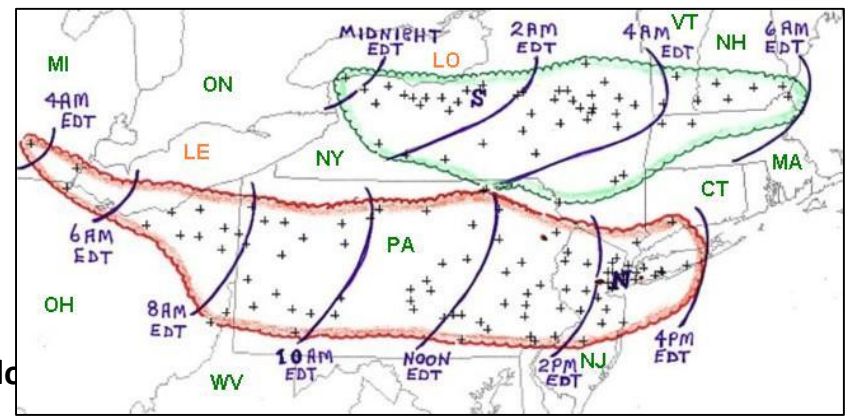
The New York City Derecho of Labor Day 1998" (outlined in red in Figure 1) raced east across northeast Ohio and Pennsylvania during the morning and early afternoon, reaching the New York City metropolitan area by mid afternoon.

Widespread 60 to 80 mph winds along the line, with an EF2 tornado confirmed in Lynbrook, NY.

4 people were killed and 62 were injured across extreme eastern Pennsylvania through northern New Jersey into the New York City metropolitan area.

Almost all of the deaths and injuries were the result of people being hit by falling trees or being in boats that were overturned. Thousands of trees were blown down and about 100 boats were overturned. At least 130 homes and businesses were damaged.

Over 300,000 customers lost power, and some did not get power restored until 5 days after the event.

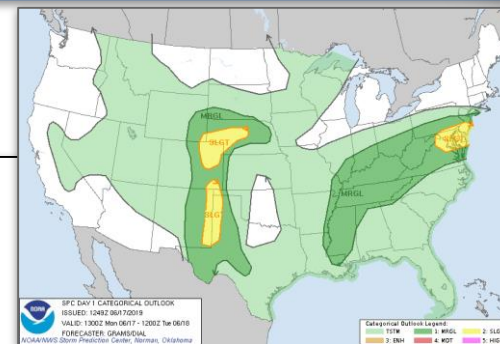


NWS uses a “team” Approach

Storm Prediction Center

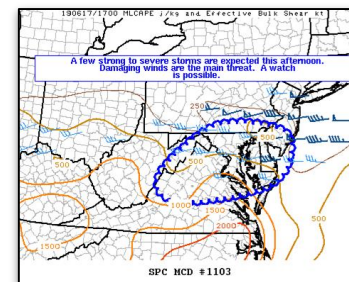
Convective Outlooks

- Daily, national-scale (all-day) forecasts that display the category of “risk” associated with Severe Convective Storms
- Forecasts have a “probabilistic” foundation that maps to the category of risk (can be all-severe or specific hazards)



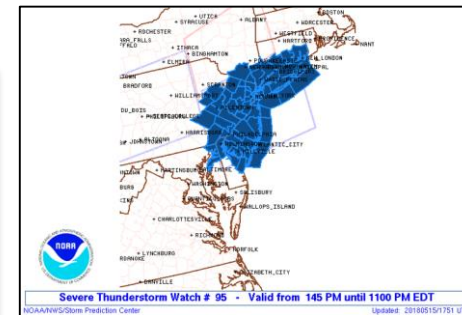
Mesoscale Discussions

- More fine-scale forecasts for an area, just ahead of an upcoming severe weather episode (within a few hours)



Watches (Tornado or Severe)

- The more “official” representation of where severe weather is anticipated to develop (within a couple of hours of initiation)
- The ‘public notification’, proclaiming that people/interests need to be aware of storm development *soon*.

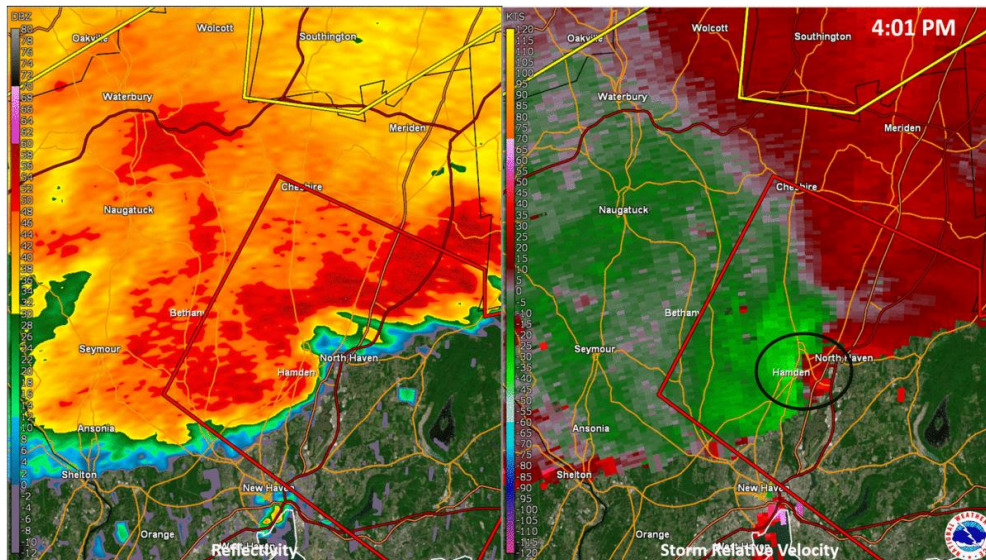




Severe Thunderstorm and Tornado Warnings



NWS NY



- Once storms form, WFO forecasters issue short-term warnings (*which are really short-term forecasts*) for threats that exist or will shortly
- Meant to elicit people to take sheltering actions

WFUS51 KOKX 272000
 TOROKX
 CTC009-272030-
 /O.NEW.KOKX.TO.W.0005.200827T2000Z-200827T2030Z/

BULLETIN - EAS ACTIVATION REQUESTED
 Tornado Warning
 National Weather Service New York NY
 400 PM EDT Thu Aug 27 2020

The National Weather Service in Upton NY has issued a

* Tornado Warning for...
 Central New Haven County in southern Connecticut...

* Until 430 PM EDT.

* At 359 PM EDT, severe thunderstorms capable of producing both tornadoes and extensive straight line wind damage were located over North Haven, or near Wallingford, moving southeast at 60 mph.

HAZARD...Tornado and quarter size hail.

SOURCE...Radar indicated rotation.

IMPACT...Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed. Damage to roofs, windows, and vehicles will occur. Tree damage is likely.

* These dangerous storms will be near...
 Guilford and North Brandford around 405 PM EDT.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW! Move to a basement or an interior room on the lowest floor of a sturdy building. Avoid windows. If you are outdoors, in a mobile home, or in a vehicle, move to the closest substantial shelter and protect yourself from flying debris.

&&

LAT...LON 4145 7274 4142 7274 4143 7268 4143 7265
 4142 7265 4141 7264 4123 7277 4125 7278
 4125 7280 4137 7302 4151 7292

TIME...MOT...LOC 1959Z 305DEG 53KT 4139 7283

TORNADO...RADAR INDICATED
 HAIL...1.00IN

\$\$

**Example:
 Tornado Warning**





Impact Based Severe Thunderstorms Warnings



Considerable / Destructive Tags

Thunderstorm Damage Threat (tag category)	Wind	Hail diameter	WEA?
Base (no tag; default)	58 mph (60 mph will appear in the warning)	1.00 inch (U.S. quarter)	NO
Considerable	70 mph	1.75 inch (golfball)	NO
Destructive	80 mph	2.75 inch (baseball)	YES

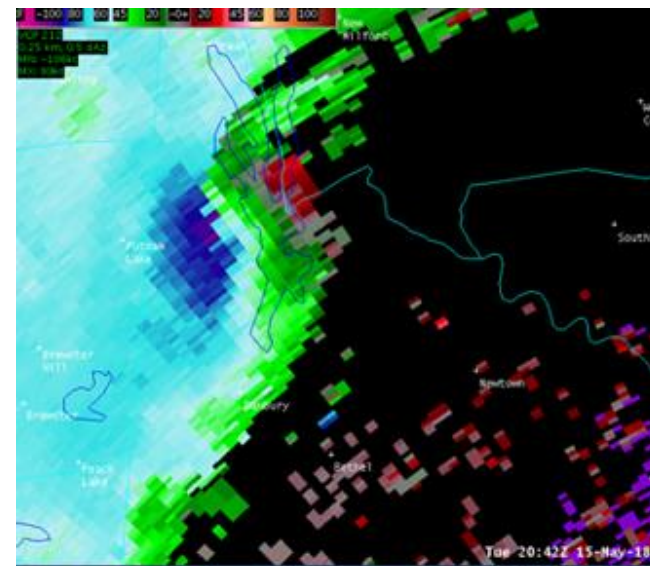
- The highest of the categories will be invoked if both qualify (i.e. if the hail triggers Considerable but the wind triggers the Destructive category, then Destructive will be displayed).
- Wireless Emergency Alert (WEA) messages will be activated on mobile devices whenever a 'Destructive' Severe Thunderstorm Warning is issued. For more information on WEAs, please visit weather.gov/wrn/wea.



We can now capitalize on the effectiveness of WEA for alerting the public of high end severe thunderstorm threats!

The new IBW coded tag structure will appear in this format:

```
TORNADO...POSSIBLE (if selected)
THUNDERSTORM DAMAGE THREAT...CONSIDERABLE/DESTRUCTIVE (if selected)
HAIL THREAT...RADAR INDICATED/OBSERVED
MAX HAIL SIZE...X.XX IN
WIND THREAT...RADAR INDICATED/OBSERVED
MAX WIND GUST...XX MPH
```



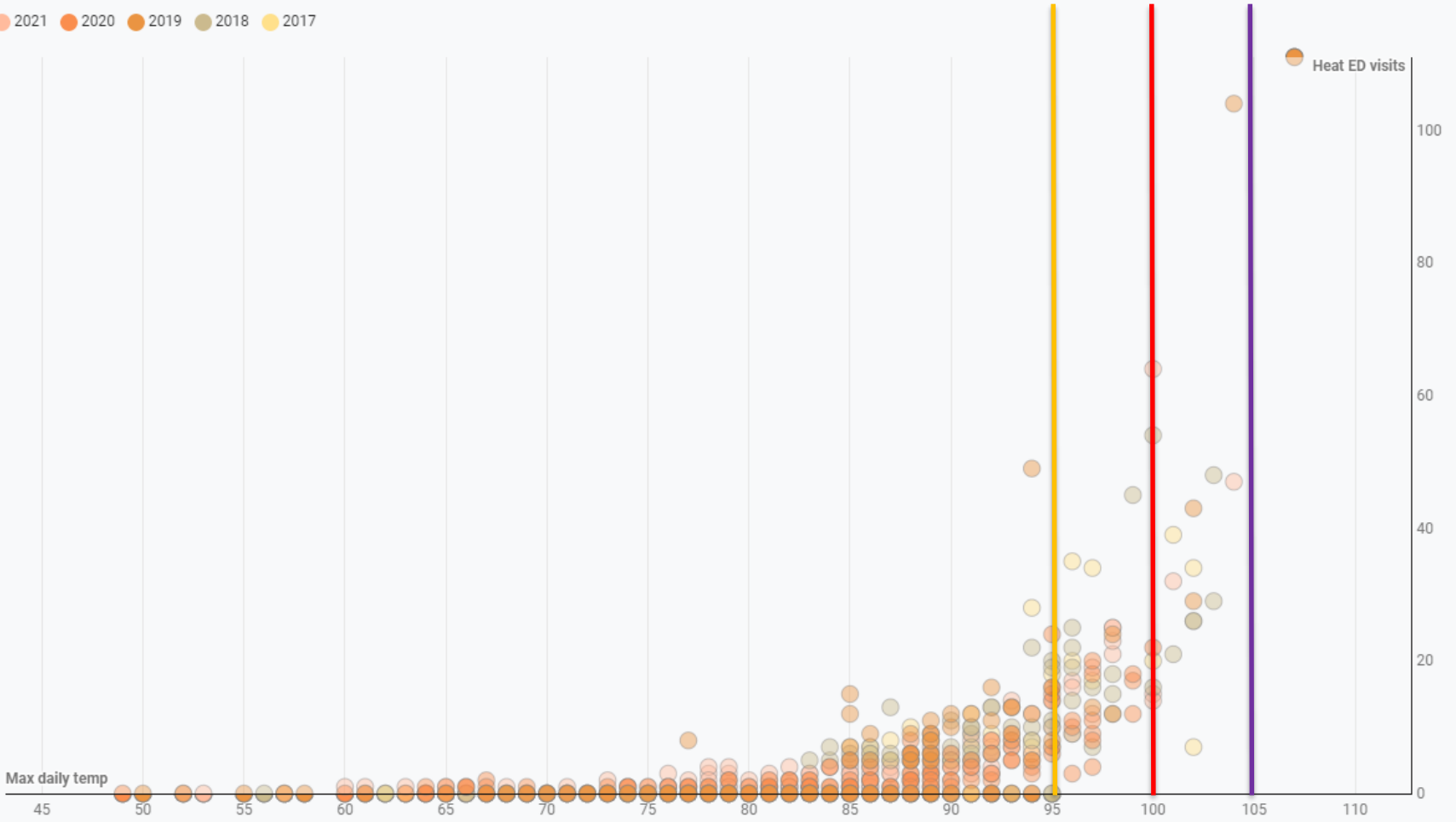


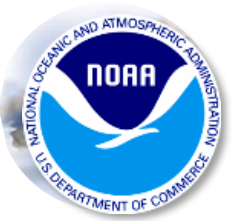
NYC Heat Impacts relative to NWS NY Heat WWA Criteria



Data from 2017 to 2020

● 2021 ● 2020 ● 2019 ● 2018 ● 2017



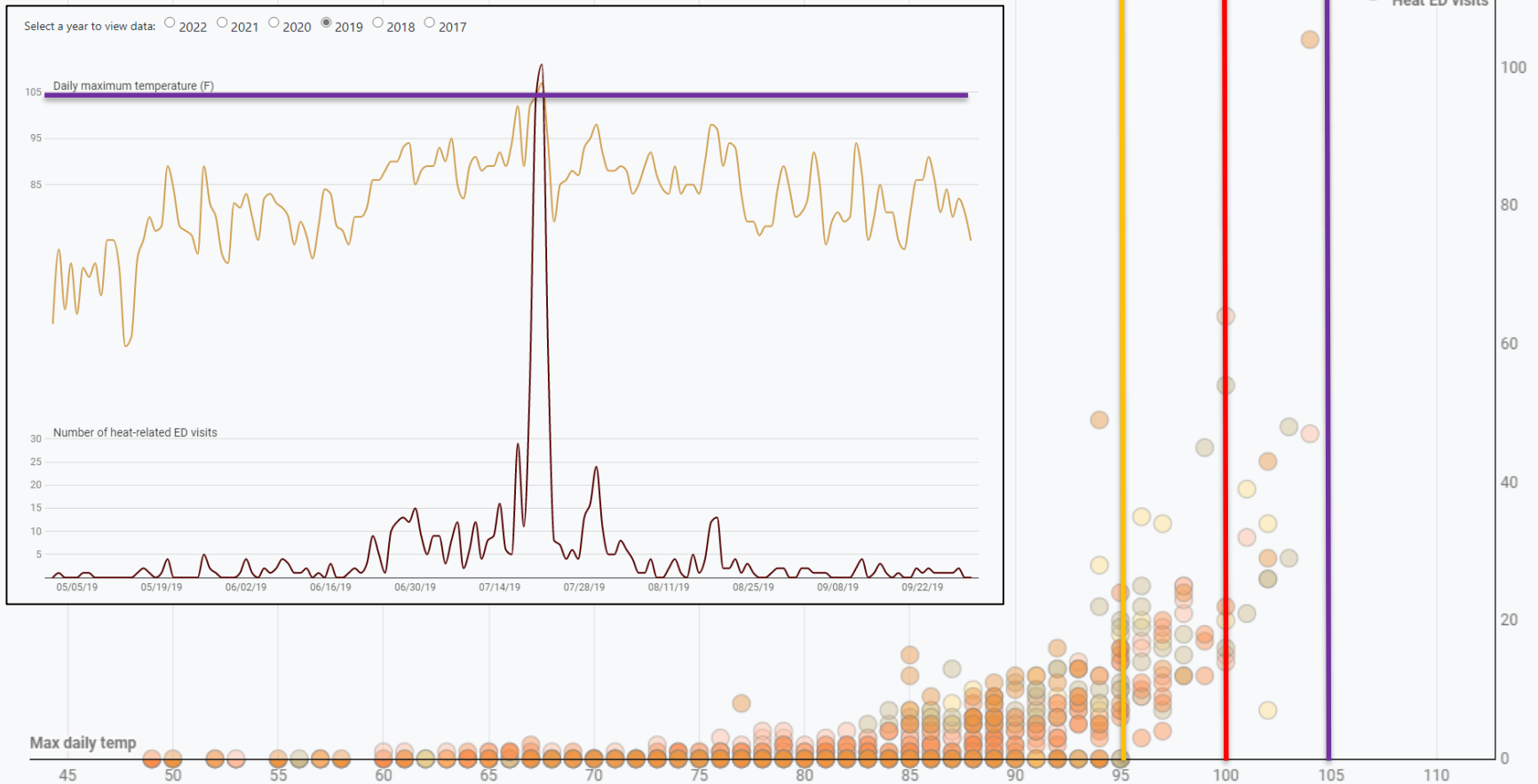


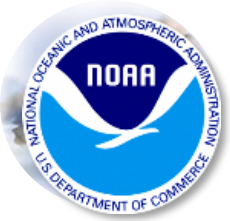
NYC Heat Impacts relative to NWS NY Heat WWA Criteria



Data from 2017 to 2020

● 2021 ● 2020 ● 2019 ● 2018 ● 2017





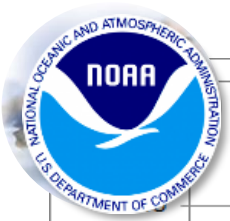
90 Degree Day Information at Central Park (1869 to Present)

Average Number of 90°F + Degree Days By Month								
	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
2001	0	3	2	2	8	0	0	15
2002	3	0	1	12	14	2	0	32
2003	0	0	4	2	2	0	0	8
2004	0	0	1	0	1	0	0	2
2005	0	0	4	8	9	2	0	23
2006	0	0	1	4	3	0	0	8
2007	0	2	2	2	4	0	0	10
2008	0	0	4	6	1	1	0	12
2009	2	0	0	0	5	0	0	7
2010	1	1	4	16	12	3	0	37
2011	0	0	3	14	3	0	0	20
2012	0	0	5	10	3	0	0	18
2013	0	2	3	10	1	1	0	17
2014	0	0	0	3	3	2	0	8
2015	0	0	1	5	8	6	0	20
2016	0	2	0	10	7	2	0	21
2017	0	3	3	5	1	1	0	13
2018	0	2	3	6	7	2	0	20
2019	0	0	1	10	3	0	1	15
2020	0	0	2	14	4	0	0	20
2021	0	0	8	4	5	0	0	17

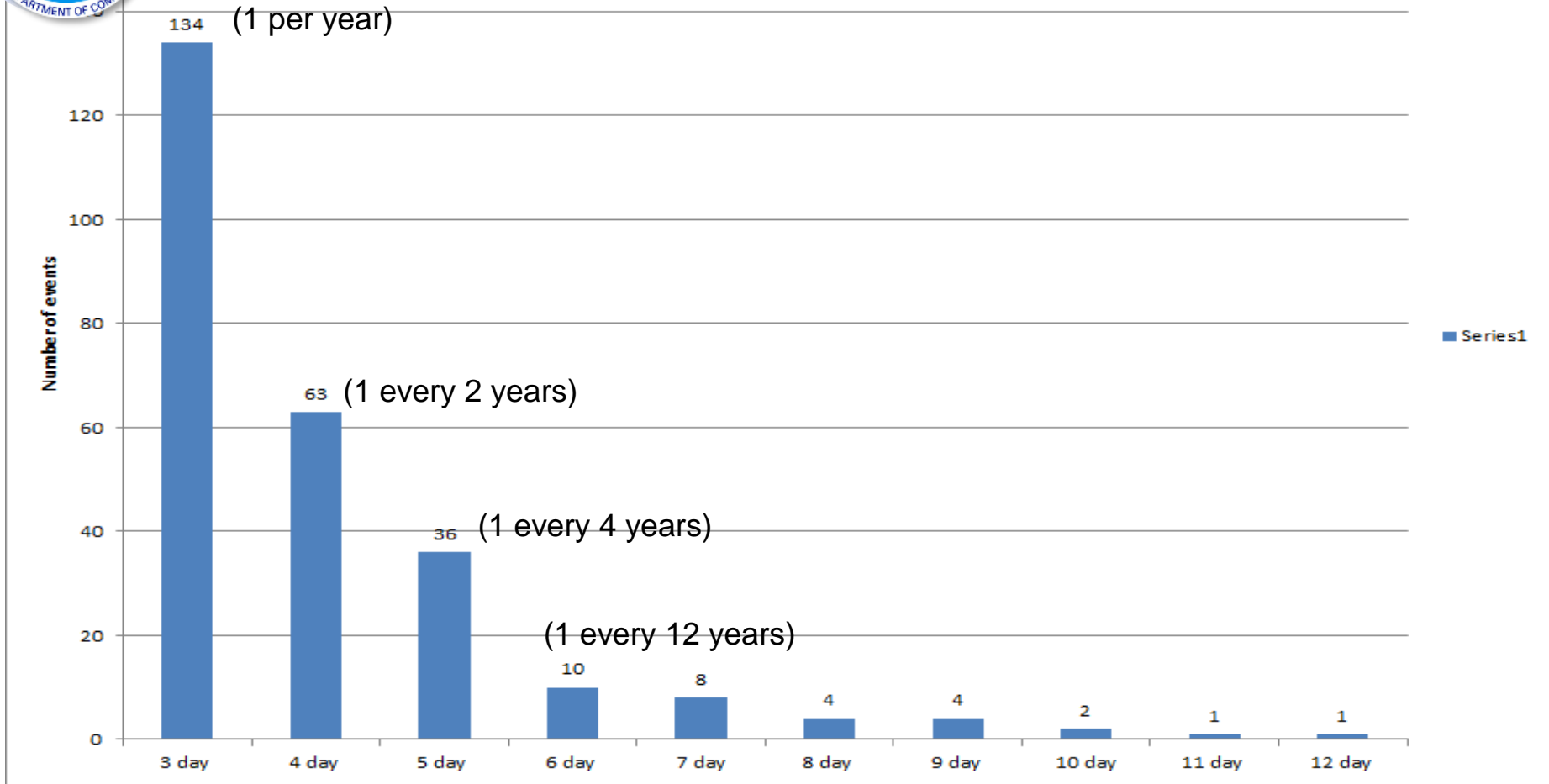
55% of the last 20 years have seen more than the average amount of 90+ days (the average for the season is 17).

70% of the last 10 years has been above average for 90+ days

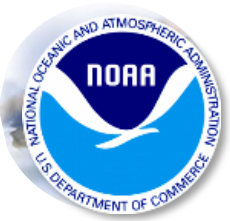
25 90+ days in 2022



FREQUENCY OF HEATWAVES 1876-2011



- Heat wave defined as 3 days where high temperature $\geq 90^{\circ}$.
- Longest heat wave in NYC is 12 days.



NWS NY Heat Watch, Warning, Advisory Products



- **Excessive Heat Outlook:** Issued in the Hazardous Weather Outlook, highlighting potential for excessive heat criteria to be reached 3 to 5 days before an event.
- **Heat Advisory:** Heat Index is forecast to reach 95 to 99 F for at least 2 consecutive days or 100 to 104 F for any length of time.
- **Excessive Heat Watch/Warning:** Issued when heat index is forecast to reach or exceed 105°F for at least 2 consecutive hours.
 - Watch is issued 48 hours in advance.
 - Warning is issued 24-36 hours in advance.
 - Note – an outlook is issued up to 7 days in advance (Hazardous Weather Outlook – HWO)

What Could a Major Hurricane Do?

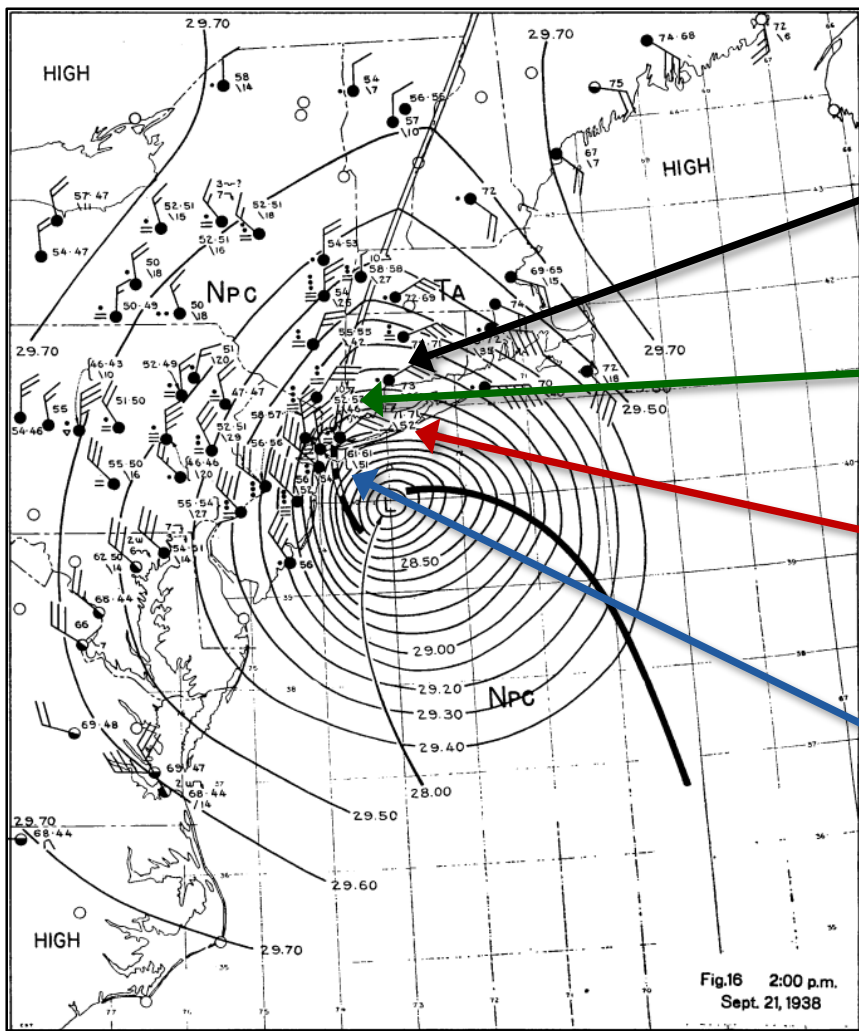


Fig.16 2:00 p.m.
Sept. 21, 1938

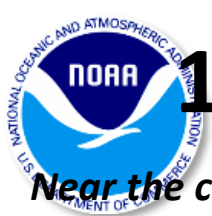
(From Charles H. Pierce)

Catastrophic Inland Flooding

**Torrential-Heavy Rain
5-10 inches**

**Record Storm Surge
10-15 ft Inundation**

**Record Wind Speeds
120 mph sustained**



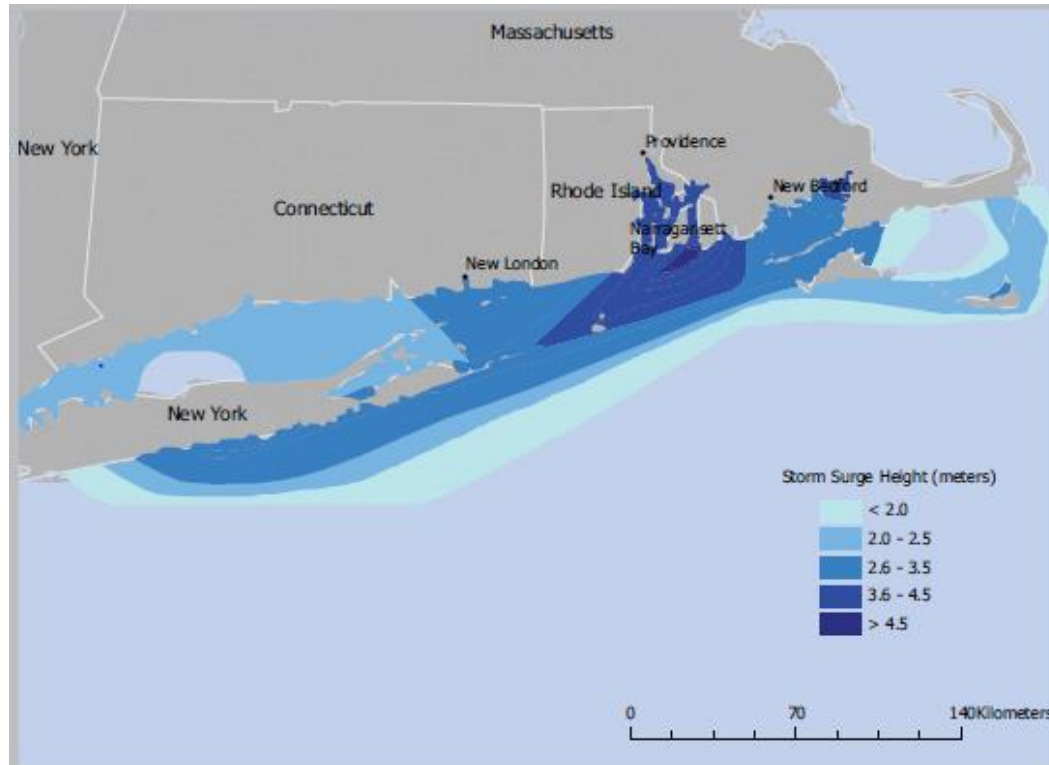
1938 Hurricane – Cat 3 Storm Surge



Near the coast, the combination of strong winds (100-115 mph sustained), destructive waves, storm surge damaged or destroyed thousands of buildings.

As much as 5 to 8 ft of surge in Western Long Island Sound.

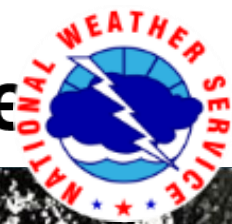
- A 16.75 ft. Mean Lower Low Water (MLLW) water level occurred at Willets Point which is a record height that still remains today (gauge later moved to Kings Point) – 2 ft higher than Sandy!***



Storm surge of 1938 Great New England Hurricane (Source: Emanuel, 2005)



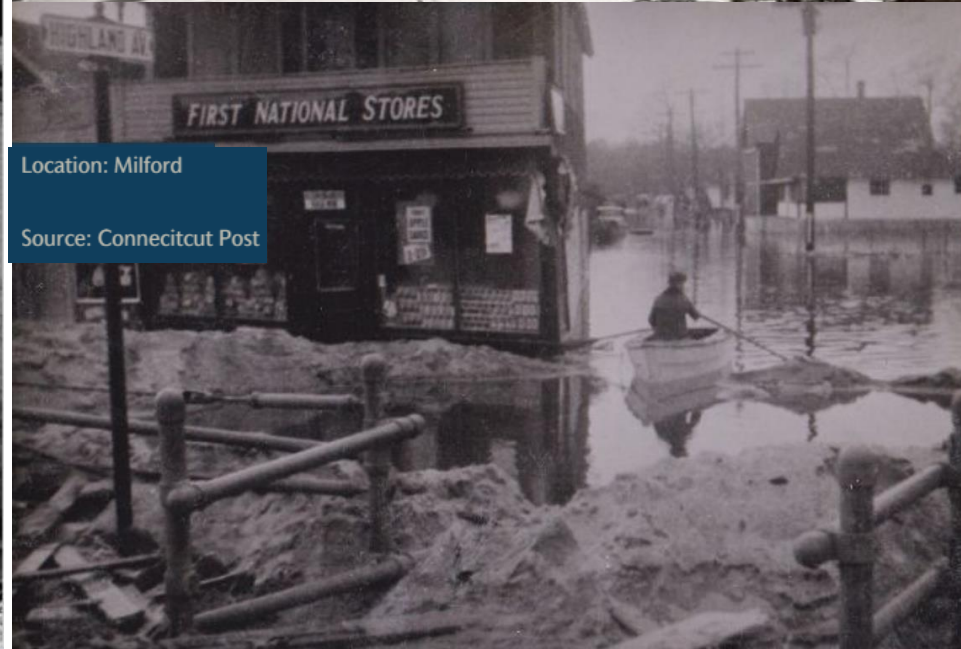
1938 Hurricane – Cat 3 Storm Surge



Location: Norwich
Source: Norwich Times



Location: Stamford
Source: Stamfordhistory.org



Location: Milford
Source: Connecticut Post

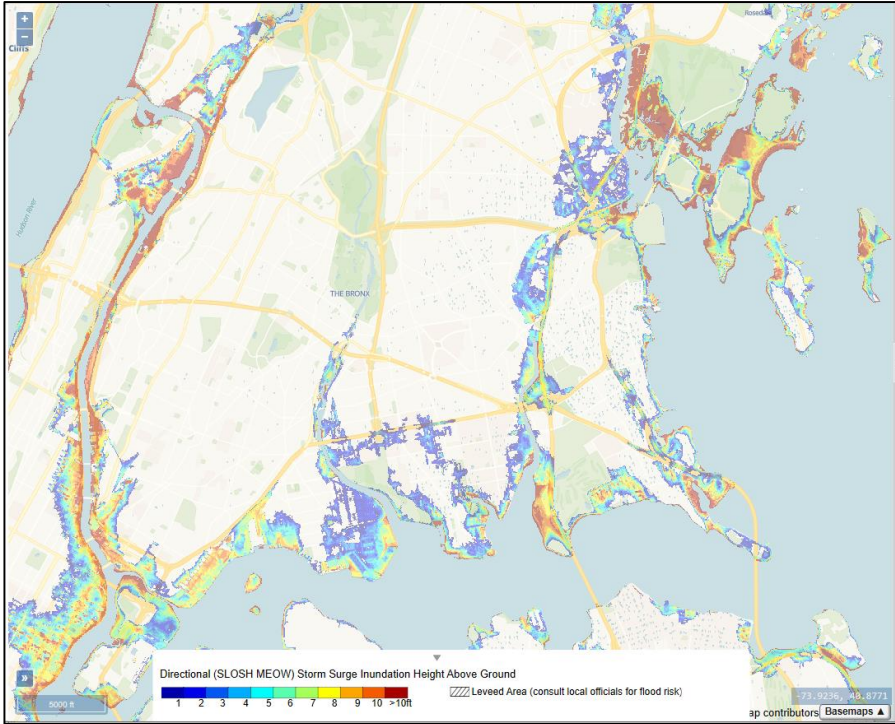
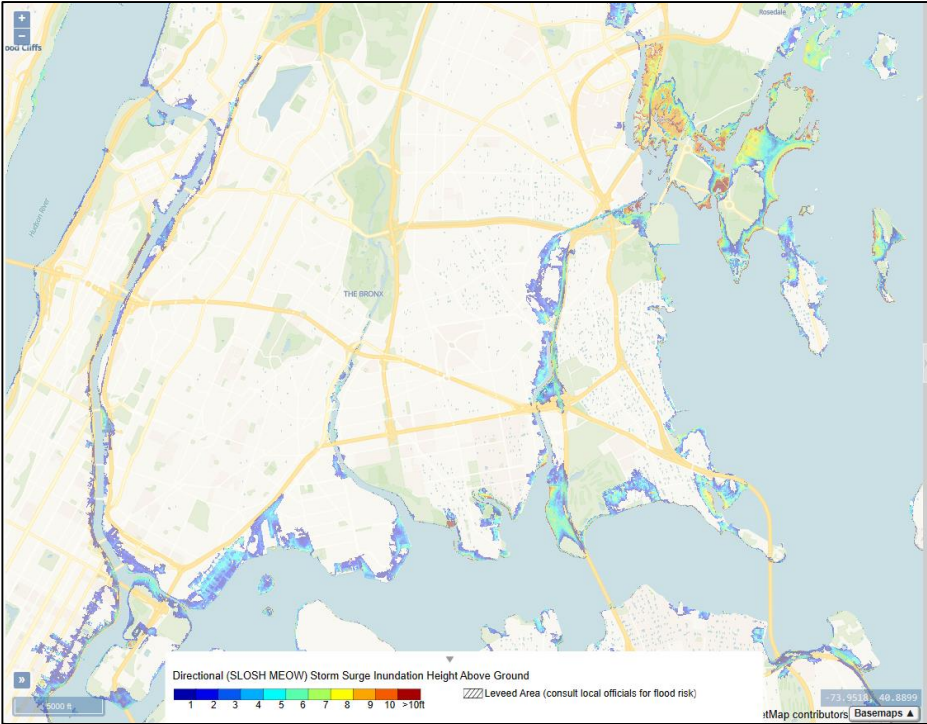


Tropical Storm Surge Hazard



Approximation of Sandy storm surge inundation footprint

Potential storm surge inundation from a major hurricane



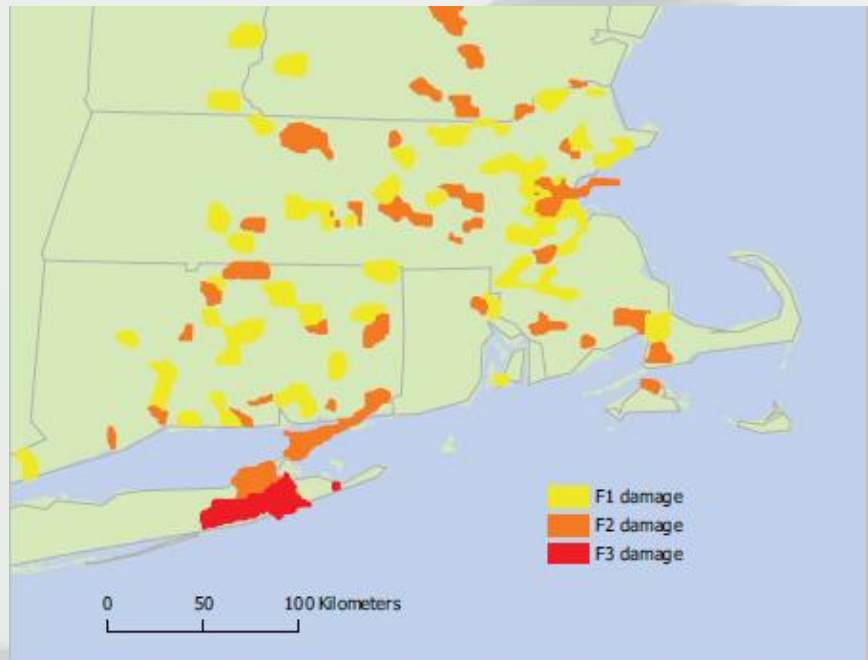


Cat 3 Wind Impacts

1938 Hurricane



Approximately 20,000 miles (32,000 km) of electric power and telephone lines were inoperative due to the tree damage, causing nearly everyone in the region to lose electric power. (RMS 2010)



Degree of wind damage as a result of the 1938 Great New England Hurricane, as classified by the Fujita Scale (Source: Boose et al., 2001)

Enhanced Fujita Scale	
EFU	Unknown No surveyable damage
EF0	65–85 mph Light damage
EF1	86–110 mph Moderate damage
EF2	111–135 mph Considerable damage
EF3	136–165 mph Severe damage
EF4	166–200 mph Devastating damage
EF5	>200 mph Incredible damage

28. TREES (SOFTWOOD)

Typical Construction

- Softwood: Pine, Spruce, Fir, Hemlock, Cedar, Redwood, Cypress

DOD	Damage description	EXP	LB	UB
1	Small limbs broken (up to 1" diameter)	60	48	72
2	Large branches broken (1"–3" diameter)	75	62	88
3	Trees uprooted	87	73	113
4	Trunks snapped	104	88	128
5	Trees debarked with only stubs of largest branches remaining	131	112	153

* Degree of Damage

27. TREES: HARDWOOD

Typical Construction

- Hardwood: Oak, Maple, Birch, Ash

DOD*	Damage description	EXP	LB	UB
1	Small limbs broken (up to 1" diameter)	60	48	72
2	Large branches broken (1"-3" diameter)	74	61	88
3	Trees uprooted	91	76	118
4	Trunks snapped	110	93	134
5	Trees debarked with only stubs of largest branches remaining	143	123	167

* Degree of Damage



Cat 3 Wind Impacts



2. ONE-AND TWO-FAMILY RESIDENCES (FR12) (1000 – 5000 sq. ft.)

Typical Construction

- Asphalt shingles, tile, slate or metal roof covering
- Flat, gable, hip, mansard or mono-sloped roof or combinations thereof
- Plywood/OSB or wood plank roof deck
- Prefabricated wood trusses or wood joist and rafter construction
- Brick veneer, wood panels, stucco, EIFS, vinyl or metal siding
- Wood or metal stud walls, concrete blocks or insulating-concrete panels
- Attached single or double garage

DOD*	Damage description	EXP	LB	UB
1	Threshold of visible damage	65	53	80
2	Loss of roof covering material (<20%), gutters and/or awning; loss of vinyl or metal siding	79	63	97
3	Broken glass in doors and windows	96	79	114
4	Uplift of roof deck and loss of significant roof covering material (>20%); collapse of chimney; garage doors collapse inward; failure of porch or carport	97	81	116
5	Entire house shifts off foundation	121	103	141
6	Large sections of roof structure removed; most walls remain standing	122	104	142
7	Exterior walls collapsed	132	113	153

Enhanced Fujita Scale

EFU	Unknown	No surveyable damage
EF0	65–85 mph	Light damage
EF1	86–110 mph	Moderate damage
EF2	111–135 mph	Considerable damage
EF3	136–165 mph	Severe damage
EF4	166–200 mph	Devastating damage
EF5	>200 mph	Incredible damage

24. ELECTRICAL TRANSMISSION LINE (ETL)

Typical Construction

- Single wood poles with wood cross arms
- Single steel or concrete poles with metal cross arms
- Metal trussed towers

DOD*	Damage description	EXP	LB	UB
1	Threshold of visible damage	83	70	98
2	Broken wood cross member	99	80	114
3	Wood poles leaning	108	85	130
4	Broken wood poles	118	98	142
5	Broken or bent steel or concrete poles	138	115	149
6	Collapsed metal truss towers	141	116	165

* Degree of Damage

19. HIGH-RISE BUILDING: GREATER THAN 20 STORIES (HROB)

General Description

- Generally consist of rectangular shapes but can have curved or triangle footprints
- Roofs are generally flat but may have a more complex roof shape as part of esthetic statement
- Roofing material single-ply membrane fully adhered, polyurethane foam roof, metal, or copper clad roof covering
- Penthouse is steel framing with metal panels
- Exterior cladding is glass or metal curtain walls or pre-cast concrete window panels
- First floor often has very large glass areas that are susceptible to debris impact
- Atriums with overhead glazing or tall window walls
- Examples are hotels, office buildings, and condominiums

DOD*	Damage description	EXP	LB	UB
1	Threshold of visible damage	70	58	86
2	Loss of roof covering (<20%)	86	69	107
3	Damage to penthouse roof and walls; loss of rooftop HVAC equipment	93	75	111
4	Broken glass in exterior walls at 1 st and 2 nd floors; broken glass in entryways	101	83	120
5	Damage to parapet walls or coping	104	87	122
6	Broken curtain wall panel anchors	129	110	157
7	Significant loss of roofing material (>20%)	143	115	165
8	Significant damage to curtain walls and interior walls	145	123	172
9	Uplift or collapse of roof structure	159	123	183
10	Significant structural deformation	228	190	290



Cat 3 Wind Impacts



1938 Hurricane - Eastern Long Island



Bridge Hampton's Main Street. This shows the Hampton Library. The large tree blown over is supposed to be one of many that came ashore from the *Louis Phillippe* which was wrecked in 1842. Trees and shrubs of all kinds were thrown overboard to lighten the ship. Many were planted and grew into giant trees afterwards, throughout the Hamptons.

Photo D. L. H.



Another view of Main Street. These large trees blown by a southerly wind just lay against the store fronts. Many came down with such force as to smash the entire front in.

Photo D. L. H.



John Wicks Tavern built in 1686 was known as Bulls Head Tavern because Bridge Hampton used to be called Bulls Head. While the tavern was not severely damaged, the trees on all sides and Main Street were weeks in being cleared up so people would not stumble if walking at night.

Photo D. L. H.

On the turnpike to Sag Harbor there was a grove of large spruce trees planted after the Civil War. When the hurricane blew from the southeast they were all blown across the highway. It was, until cleared by saws and machinery, an almost impenetrable mass. The pine aroma was grand, though.

Photo D. L. H.



Another view of clearing and opening the road. The aroma of the cut spruce lingered for several days, and anyone passing through was reminded of the pine forests of Maine.

Photo D. L. H.



This is the Sag Harbor Methodist Church and part of the tower. All high buildings had severe damage. Many cars were damaged beyond repair because of the trees and buildings that were blown on them.

Photo D. L. H.

This occurred on Madison Street in Sag Harbor. The large elm was blown across the street into the house on the other side. During its fall it held that car firmly on the ground.

Photo D. L. H.



3
(major)

111-129 mph
96-112 kt
178-208 km/h

Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.



Cat 3 Wind Impacts



Location: Greenwich - Merritt Parkway
Source: Connecticut Post



Are we ready for a Cat 3 Hurricane?

	Statistics from Tropical Storm Isaias
Maximum Wind Gust	68 MPH
Trouble Spots	8,836
Miles of Lines Downed	600 Miles
Percentage of Trees Downed	1%
Recovery Time (7,000 Crews Used)	7 Days

Estimated Statistics from a Major Hurricane
160 MPH
175,000
40,000 Miles
50%
70 Days

Our state will eventually be impacted by a major hurricane. We must be prepared for the catastrophic and unprecedented disruption that this disaster will cause. The level of damage that would be inflicted could take years to fully recover from.

Credit: Doug W. Glowacki - CT Division of Emergency Management and Homeland Security



NWS New York Tropical Page



Welcome to the NWS New York, NY Tropical Weather Page

[Weather.gov](#) > [New York, NY](#) > Welcome to the NWS New York, NY Tropical Weather Page

New York, NY
Weather Forecast Office

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Programs](#)

Outlook

Threats and Impacts

Satellite

Radar

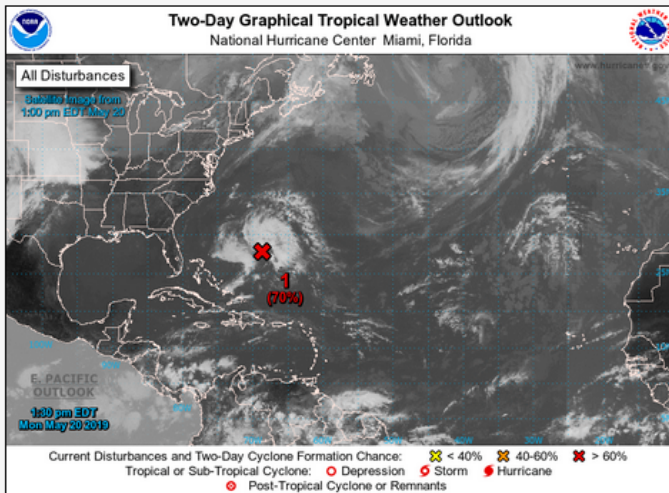
Social Media

Preparedness

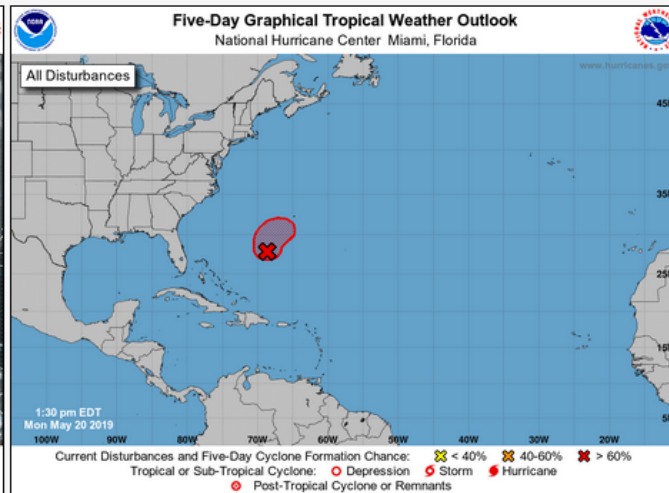
Links

There are currently no active storms in the North Atlantic, Caribbean Sea, or Gulf of Mexico.

Local Briefing from the National Weather Service office in New York



[Product Description](#)



[Product Description](#)

Click each image above to view the full-size image.

Special Tropical Weather Outlook
NWS National Hurricane Center Miami FL
130 PM EDT Mon May 20 2019

For the North Atlantic...Caribbean Sea and the Gulf of Mexico:

Showers and thunderstorms associated with a broad area of low pressure located several hundred miles southwest of Bermuda are showing signs of organization. Although recent satellite wind data suggest that the system currently lacks a well-defined center of circulation, environmental conditions are expected to be conducive for the formation of a short-lived subtropical or tropical cyclone later today or tonight. Conditions are forecast to become unfavorable for further development by late Tuesday, and the disturbance is expected to merge with a cold front on Wednesday.

<https://www.weather.gov/okx/tropical>



NWS NY Webpage

Local forecast by "City, St" or ZIP code

[Location Help](#)

- ### News Headlines
- New England and New York NWS offices will conduct an experiment to improve Frost-Freeze Services this Fall
 - Attention Mariners! The NWS is soliciting feedback on a new version of our Coastal Waters Forecast that includes more detail of wave groups in the forecast.
 - Soliciting comments on future of NOAA public P-Surge, P-ETSS, ETSS, and ESTOFS Websites
 - Register Now For The 8th Tri-State Weather Conference Held At Western Connecticut State University On 10/15/22

MY FORECAST
Central Park NY

Fair

55°F
13°C [Get Detailed Info](#)

Today Sunny
High: 69°F

Tonight Mostly Clear
Low: 54°F [change location](#)

NWS Forecast Office New York, NY
Weather.Oz > New York, NY

Current Hazards | Current Conditions | Radar | Forecasts | Rivers & Lakes | Climate and Past Weather | Local Programs

Click a location below for detailed forecast.

Watches, Warnings & Advisories
 Special Weather Statement
 Hazardous Weather Outlook

Zoom In | Zoom Out

Last Map Update: Tue, Oct. 11, 2022 at 10:20:06 am EDT

- Radar
- Current Weather
- Rivers & Lakes
- Satellite
- Forecast Maps
- Hour by Hour Forecast
- Tropical Weather
- Graphical Hazards
- Text Forecasts
- Forecast Discussion
- Weather Hazard Briefing
- Submit a Storm Report
- Skywarn
- Marine Forecasts
- Coastal Flooding
- Beach and Surf
- Past Weather
- Fire Weather

Hazardous Weather Conditions

- Flash Flood Watch until August 15, 12:00 AM EDT
- Hazardous Weather Outlook

Weather Story | Local Radar | Satellite

DAY/NIGHT FORECAST

Tuesday	68°-71°
Tue Night	44°-58°
Wednesday	69°-72°
Wed Night	57°-62°

Current conditions at
Poughkeepsie, Dutchess County Airport (KPOU)
Lat: 41.63°N Lon: 73.88°W Elev: 164ft

Mostly Cloudy
79°F
26°C

Humidity 67%
Wind Speed SW 6 mph
Barometer 29.84 in (1010.2 mb)
Dewpoint 67°F (19°C)
Visibility 10.00 mi
Heat Index 81°F (27°C)
Last update 14 Aug 11:53 am EDT

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

Extended Forecast for
Hopewell Junction NY

Flash Flood Watch

NOW UNTIL 12:00am Wed
Flash Flood Watch

Today	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night
Heavy Rain 60%	Heavy Rain 60% → 90%	Mostly Sunny	Partly Cloudy	Mostly Sunny	Slight Chance Showers 20%	Chance Showers 50%	Chance Showers 50%
High: 81°F	Low: 66°F	High: 88°F	Low: 68°F	High: 89°F	Low: 70°F	High: 87°F	Low: 69°F

Detailed Forecast [Topographic](#) [Click Map For Forecast](#)

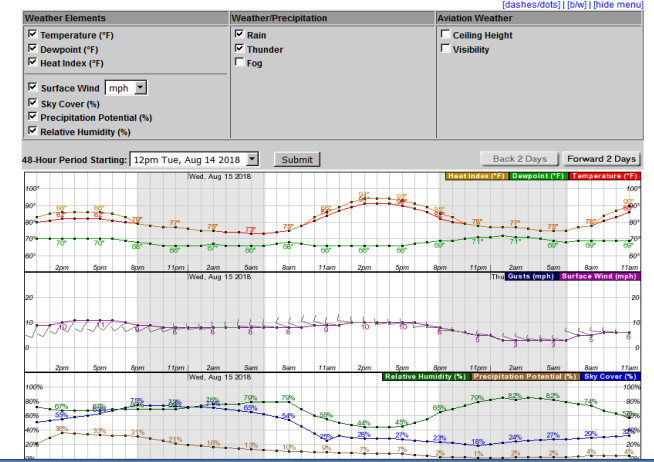
National Weather Service Forecast Office
New York, NY

Home | News | Organization | Search for: | [NWS](#) | [All NOAA](#) | [Go](#)

Point Forecast: Levittown NY
40.72N 73.51W (Elev. 75 ft)

Last Update: 10:22 am EDT Aug 14, 2018

Hourly Weather Forecast Graph



<https://www.weather.gov/okx/>



Building a Weather-Ready Nation



NWS NY Weather Story

Weather Story:

- Key Weather Message for the next couple of days
- Updated at least once a day


<https://www.weather.gov/okx/weatherstory>

NWS Forecast Office New York, NY
 Weather.gov > New York, NY

New York, NY
 Weather Forecast Office

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

Click a location below for detailed forecast.



Monticello Poughkeepsie Hartford Middletown Newburgh New Haven New London West Milford Spanghero Bridgeport New York Islip Farmingdale West Hampton Montauk Peekskill Danbury Bridgeport West Hampton Montauk Poughkeepsie New York Islip Farmingdale West Hampton Montauk

Monitors, Warnings & Advisories Small Craft Advisory Special Weather Statement

Zoom Out Zoom In

Last Map Update: Wed, Dec. 2, 2020 at 6:17:23 am EST

Weather Story Local Radar Satellite

Forecast for the Next Few Days

Thurs. Fri.

Highs: 47° - 51° Highs: 44° - 52°

Lows: 26° - 42°

Weather Story for the Tri-State Area

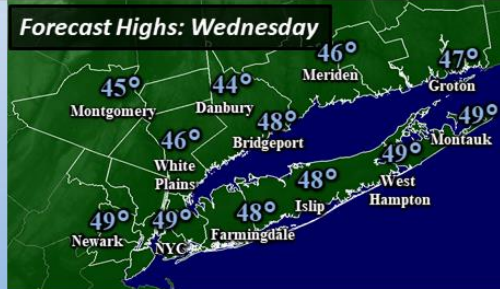
New York, NY
Weather Forecast Office

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

Forecast for the Next Few Days

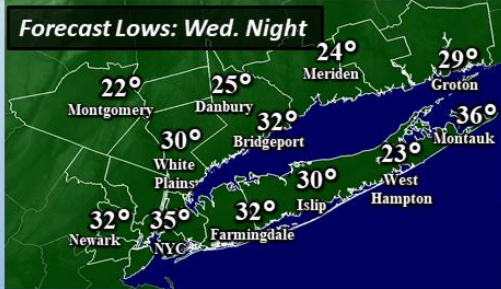
National Weather Service - New York, NY

Forecast Highs: Wednesday



Montgomery	45°
Danbury	44°
Meriden	46°
Groton	47°
Bridgeport	48°
Montauk	49°
White Plains	46°
West Hampton	48°
Islip	48°
Newark	49°
NYC	49°
Farmingdale	48°

Forecast Lows: Wed. Night



Montgomery	22°
Danbury	25°
Meriden	24°
Groton	29°
Bridgeport	32°
Montauk	36°
White Plains	30°
West Hampton	23°
Islip	30°
Newark	32°
NYC	35°
Farmingdale	32°

Thurs. 

Highs: 47° - 51°

Fri. 

Highs: 44° - 52°

Lows: 26° - 42°

Breezy and dry for Wednesday into Thursday, followed by more clouds and a slight chance of showers later on Friday.



Building a Weather-Ready Nation

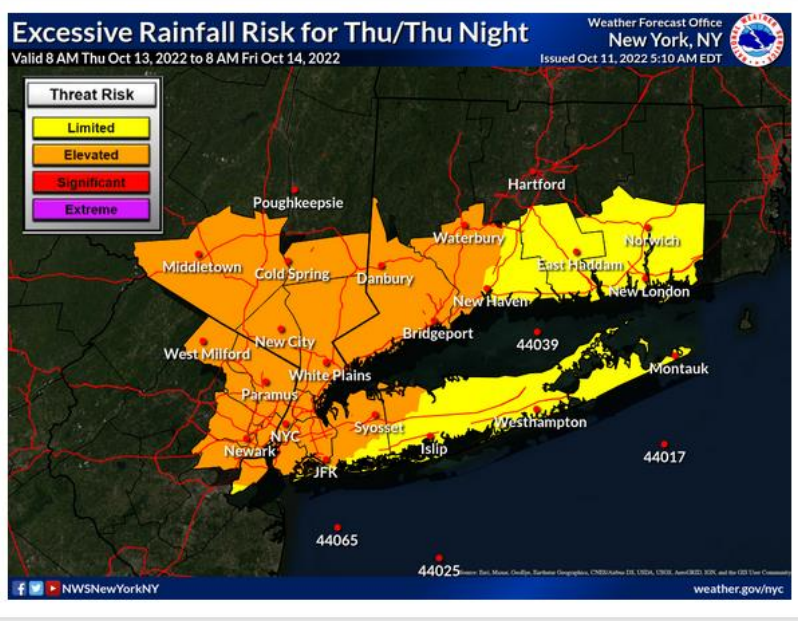


Graphical Hazardous Weather Outlook

<https://www.weather.gov/okx/weatherstory>

Experimental Graphical Hazardous Weather Outlook

Weather Forecast Office New York, NY
Updated: October 11th 2022, 10:09:30



Public Marine

24 Hr Hazard Risks	Today	Wed	Thu	Fri	Sat	Sun	Mon
Severe Thunderstorm	Green	Green	Green	Green	Green	Green	Green
Tornado	Green	Green					
Thunderstorm Wind	Green	Green					
Hail	Green	Green					
Lightning	Green	Green	Yellow	Green	Green	Green	Green
Excessive Rainfall	Green	Green	Orange				
Wind	Green	Green	Yellow	Green	Green	Green	Green
Frost/Freeze	Green	Green	Green	Green	Green	Green	Green
Fog	Green	Green	Green	Green			
Fire Weather	Green	Green	Green	Green	Green	Green	Green
Ice Accumulation	Green	Green	Green				
Snow/Sleet	Green	Green	Green	Green	Green	Green	Green

Risk Level	Category	Definition
Green	None	No Excessive Rainfall risk
Yellow	Limited	Isolated flash floods possible. Most flooding will be localized to areas that can experience rapid runoff with heavy rainfall.
Orange	Elevated	Scattered flash floods possible, some potentially significant. Most vulnerable are urban areas, roads, small streams, and washes.
Red	Significant	Numerous flash floods including some significant events likely. Many streams may flood, affecting nearby residential and urban areas.

GHWO:

- Highlights the risk of various weather hazards over the next seven days.
- Updated every 3 hours



Building a Weather-Ready Nation



Social Media



NWS New York NY @NWSNewYorkNY

The latest #Isaias track from National Hurricane Center takes it over the area Tue morning. 30-40% chance of tropical storm force winds most likely beginning Tue evening, but could start as early as late Tue morning/early afternoon. 2-4" of rainfall for much of the area.

11:46 AM · Aug 2, 2020 · Twitter Web App

NWS New York NY @NWSNewYorkNY

Here is our latest overview of impacts for Tropical Storm Isaias. Tropical Storm Watches and Warnings are issued for the entire region with heavy rain, coastal flooding, and strong winds being just some of the expected threats through Tuesday evening. #NYwx #NJwx #CTwx

9:39 AM · Aug 3, 2020 · Twitter Web App

NWS New York NY @NWSNewYorkNY

For clarity on the difference between a regular Flash Flood Warning and the Flash Flood Emergencies we've issued earlier tonight... This was an exceedingly rare event with 6-10" of rainfall falling over a several hour period. Take these warnings (and emergencies) seriously!!

National Weather Service @NWS - 19h

A Flash Flood Emergency is issued for exceedingly rare situations when a severe threat to human life and catastrophic damage from a flash flood is happening or will happen soon.

1:39 AM · Sep 2, 2021 · Twitter Web App

NWS New York NY @NWSNewYorkNY

This is perfect example of what you should not do! Notice the white car towards the end that is floating. This water is too deep to drive through. Turn Around Don't Drown!!

10:30 PM · Sep 1, 2021 · TweetDeck

NWS New York NY @NWSNewYorkNY

Preliminary Ida Storm Totals & Stats

- Central Park: 7.19"
- JFK: 2.77"
- LaGuardia: 6.89"
- Islip: 2.63"
- Newark: 8.44"
- Bridgeport, CT: 5.94"

Wednesday was the wettest day on record for Newark and LaGuardia, 3rd wettest at Bridgeport, and 5th wettest at Central Park.

3:21 PM · Sep 2, 2021 · Twitter Web App

126 Retweets 24 Quote Tweets 243 Likes

NWS New York NY @NWSNewYorkNY

This is perfect example of what you should not do! Notice the white car towards the end that is floating. This water is too deep to drive through. Turn Around Don't Drown!!

Unequal Scenes @UnequalScenes · 19h

Serious flooding in #brooklyn from #Ida

0:21 350.6K views

10:30 PM · Sep 1, 2021 · TweetDeck

899 Retweets 59 Quote Tweets 2,178 Likes



Building a Weather-Ready Nation...

Connecting NWS Forecasts to Decisions

Impact-Based Decision Support Services



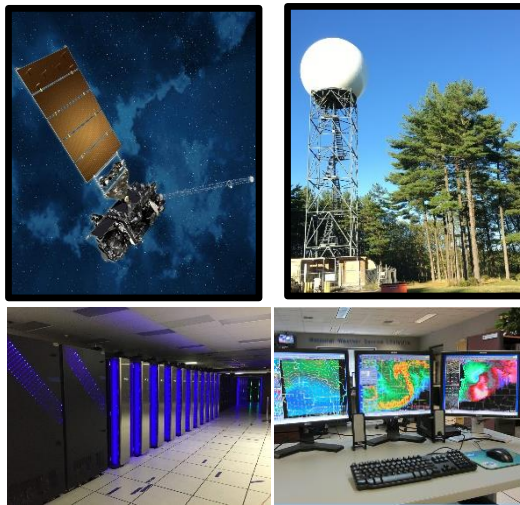
Generating forecasts and warnings



Connecting those forecasts/warnings with partner decision-making process



Impact-based Decision Support Services



Providing the best hydrometeorological forecasting in the world



Developing relationships / Knowing partner needs

Fulfilling Mission & Building Trust



“Ready, Responsive, Resilient Communities”



Building a Weather-Ready Nation



Send us your Storm Reports



The type of storm report information we need...

- **Type of event:** (wind damage, hail size, flash flood water rescues, coastal flooding, roads closed due to hazardous weather, injuries/deaths, etc.)
- **Approximate Time of Event**
- **Approximate Location of Event** (cross roads, exit #, etc.)
- **As real time as possible**

How Your Storm Reports Are Used

1. Statistical reporting of weather impacts (lots of them!)

[National Hazard Statistics](#)

[Flood Loss Summaries from WRSB](#)

[Tornado Maps from SPC](#)

[Tropical Cyclone Reports from NHC](#)

[National Service Assessments](#)

[NWS Safety Literature](#)

2. Warning verification

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION

Home Contact Us About NCEI Help

NCEI > Storm Events Database (Select State)

Storm Events Database

Data available from 01/1950 to 04/2019

Data Access

- Search
- Bulk Data Download (CSV)
- Storm Data Publication

Documentation

- Database Details
- Version History
- Storm Data FAQ
- NOAA's NWS Documentation
- Tornado EF Scale

External Resources

- NOAA's SPC Reports
- NOAA's SPC WCM Page
- NOAA's NWS Damage Assessment Toolkit
- NOAA's Tsunami Database
- ESRI/FEMA Civil Air Patrol Images
- SHELDUS
- USDA Cause of Loss Data

Storm Events Database

State/Area: -- All States and Areas --

Begin Date: 04 / 01 / 2016

End Date: 04 / 30 / 2019

Advanced Search and Filter Options

Search

Event Type(s):

- Astronomical Low Tide
- Avalanches
- Blizzard
- Coastal Flood
- Cold/Wind Chill
- Debris Flow
- Dense Fog
- Dense Smoke

More information on Counties, Zones and Event Types...

Storm Data are geographically categorized by County or by NWS Forecast Zone. Smaller (areal coverage) are collected by county (Tornado, Thunderstorm Winds, Flash Floods and Hail) while larger scale events are collected by forecast zone (Heat, Cold, Drought, Flood, Tropical & Winter Weather).

Each event type listed below are also listed with their collection type (County or Zone). All searches are by county. For zone-based events, all zones intersecting or within a selected county will be returned from a search.

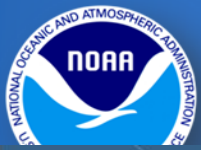
The county selection list is built from the events recorded in the Storm Events Database. An unlisted county means that no records are present.

<https://www.ncdc.noaa.gov/stormevents/>

<https://www.weather.gov/okx/SubmitStormReport>



Building a Weather-Ready Nation



Send us your Flood Reports



MyCoast New York VOLUNTEERS NEEDED!

Help document local flooding and storm impacts through community science

The MyCoast New York portal is used to collect and analyze photos of flooding, changing shorelines, and hazardous weather impacts across New York's varied coasts and waterbodies.

Photos are linked to real-time environmental conditions to create reports that help emergency managers, local planners, residents, and state agencies understand our changing environment and make informed decisions.

REPORT TYPES



FLOOD WATCH - Tracking flooding across the state



STORM REPORTER - Documenting storm damage

Download the **MyCoast app** or visit **MyCoast.org/ny**



Need more info?
Contact Jessica Kuonen,
jak546@cornell.edu



Report Types



FLOOD WATCH - Tracking flooding across the state

Flooding can occur anywhere for a number of reasons. Use Flood Watch to capture flooding and impacts in your community. Some common types of flooding include: river, ice jam, runoff, urban stormwater failure, agricultural drainage failure, high tide, storm surge, local wave action, and high water in lakes and ponds.



STORM REPORTER - Documenting storm damage

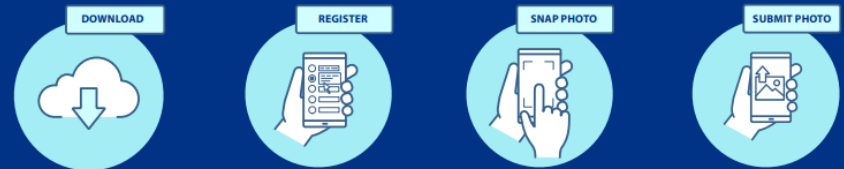
New York experiences heavy downpours, high winds, tropical storms, nor'easters, and lake-effect. Use Storm Reporter to capture damage and impacts to infrastructure, the natural environment, and your community.



COASTSNAP - Capturing the changing shoreline

CoastSnap is an international network of simple camera mounts at coastal locations that invite the public to take photos. New York has CoastSnap mounts located in Stuyvesant, Watch Hill, and Rockaway Beach. CoastSnap photos are collected and displayed through MyCoast NY.

How to start:



Download the **MyCoast app** or visit **MyCoast.org/ny**

<https://mycoast.org/ny>



Building a Weather-Ready Nation



NWS Safety Information



NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Spring Safety
Weather-Ready Nation National Program

Weather Hazards Safety Campaigns Ambassador Education Collaboration News & Events International About

STORM PLANNING TIMELINE

A few days out	The day before	The day of
<i>If the forecast calls for severe weather in a few days, start preparing now.</i>	<i>The day before, forecast accuracy continues to improve.</i>	<i>Remain vigilant and aware of any active Watches. A Warning may be issued at a moment's notice!</i>
<ul style="list-style-type: none"> Make sure that you have emergency supplies 	<ul style="list-style-type: none"> Adjust plans 	<ul style="list-style-type: none"> Remind your family of the communication plan Know how to evacuate

SOCIAL MEDIA
Social Media Plans

ALWAYS LOCK PARKED CARS
Infographics

Thunderstorm Wind Threats

NATIONAL HURRICANE PREPAREDNESS
Spring Weather Safety
Presentations

Español
Spanish content

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Summer Safety
Weather-Ready Nation National Program

Weather Hazards Safety Campaigns Ambassador Education Collaboration News & Events International About

Heat Exhaustion Heat Stroke

Heat Exhaustion	Heat Stroke
<p>ACT FAST</p> <ul style="list-style-type: none"> Move to a cooler area Loosen clothing Sip cool water Seek medical help if symptoms don't 	<p>ACT FAST</p> <p>CALL 911</p> <ul style="list-style-type: none"> Move person to a cooler area Loosen clothing and remove extra layers
<p>Dizziness</p> <p>Thirst</p> <p>Heavy Sweating</p> <p>Nausea</p>	<p>Confusion</p> <p>Dizziness</p> <p>Becomes Unconscious</p>

SOCIAL MEDIA

Air Quality and Health
Infographics

Heat Safety Explained
Videos

Español
Spanish content

AMERICA'S PrepareAthon! **USDA**
CDC **Ready**
Partners

National Hurricane Preparedness

National Hurricane Preparedness Week is April 30-May 6, 2023.

Be ready for hurricane season. Take action TODAY to be better prepared for when the worst happens. Understand your risk from hurricanes, and begin pre-season preparations now. Make sure you understand how to interpret forecasts and alerts, and know what to do before, during, and after a storm. If you live in hurricane-prone areas, you are encouraged to prepare before hurricane season begins on June 1.

Hurricane Preparedness Themes

Know Your Risk: Water & Wind	Prepare Before Hurricane Season	Understand Forecast Information	Get Moving When a Storm Threatens

2023 SOCIAL MEDIA PLANS #
April 30-May 6, 2023 >

<https://www.weather.gov/safetycampaign>



Building a Weather-Ready Nation



NWS New York, NY Contact Information



I. Ross Dickman, Meteorologist-In-Charge

I.Ross.Dickman@noaa.gov

631 924 0037 x 222

Nelson Vaz, Warning Coordination Meteorologist

Nelson.Vaz@noaa.gov

631 924 0037 x 223

David Radell, Science Operations Officer

david.radell@noaa.gov

631 924 0037 x 224



Web:

<http://www.weather.gov/okx/>



Phone Number:

631-924-0517



E-mail:

okx.operations@noaa.gov



Facebook:

<http://www.facebook.com/NWSNewYorkNY>



Twitter:

<http://www.twitter.com/NWSNewYorkNY>



YouTube:

<https://www.youtube.com/user/NWSNewYorkNY>



Building a Weather-Ready Nation