



National Weather Service Baltimore/Washington

Baltimore City LEPC
June 7, 2022

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Warning Coordination Meteorologist



*National Weather Service
Baltimore MD/Washington DC*

How does NWS alert?

– Warning

- Action needed
- Threat is occurring or imminent

– Watch

- “Keep a Watch Out”
- Conditions are favorable

– No near-term threats

- Check Outlook (thru 7 days)



What do we alert for?

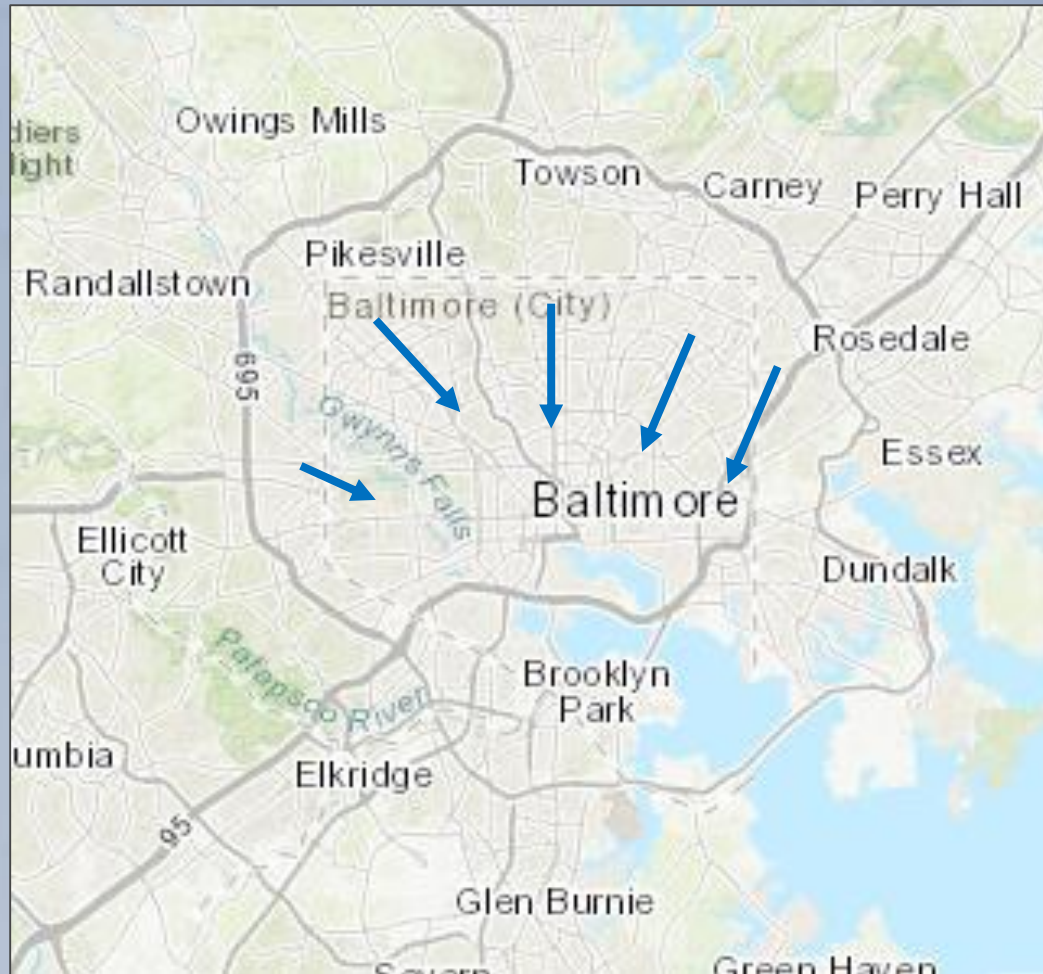
- **Hazardous weather of all kinds!**
- **Some of our summer threats:**
 - Flooding
 - Tornadoes
 - Severe Thunderstorms
 - Lightning
 - Heat

How does NWS alert?

- **Warning**
 - Action needed
 - Threat is occurring or imminent
- **Watch**
 - “Keep a Watch Out”
 - Conditions are favorable
- **No near-term threats**
 - Check Outlook (thru 7 days)

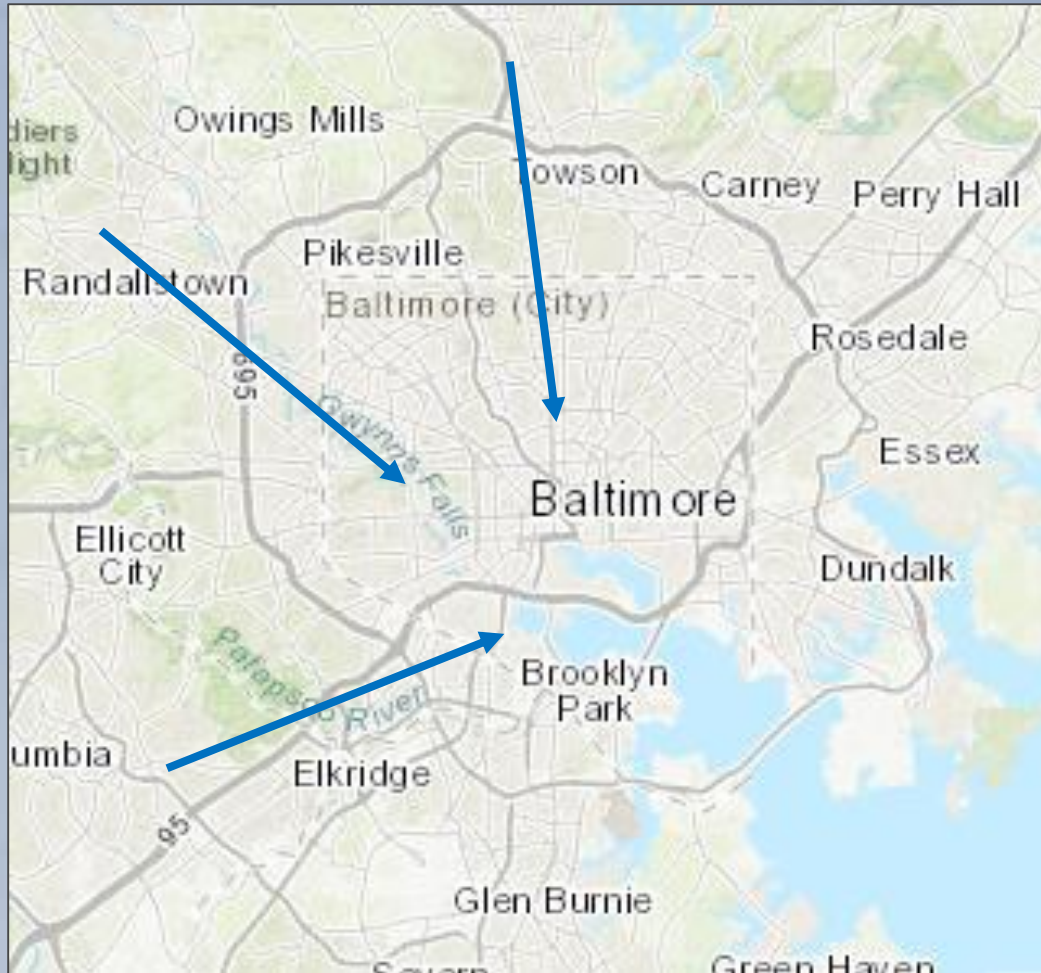


Flooding



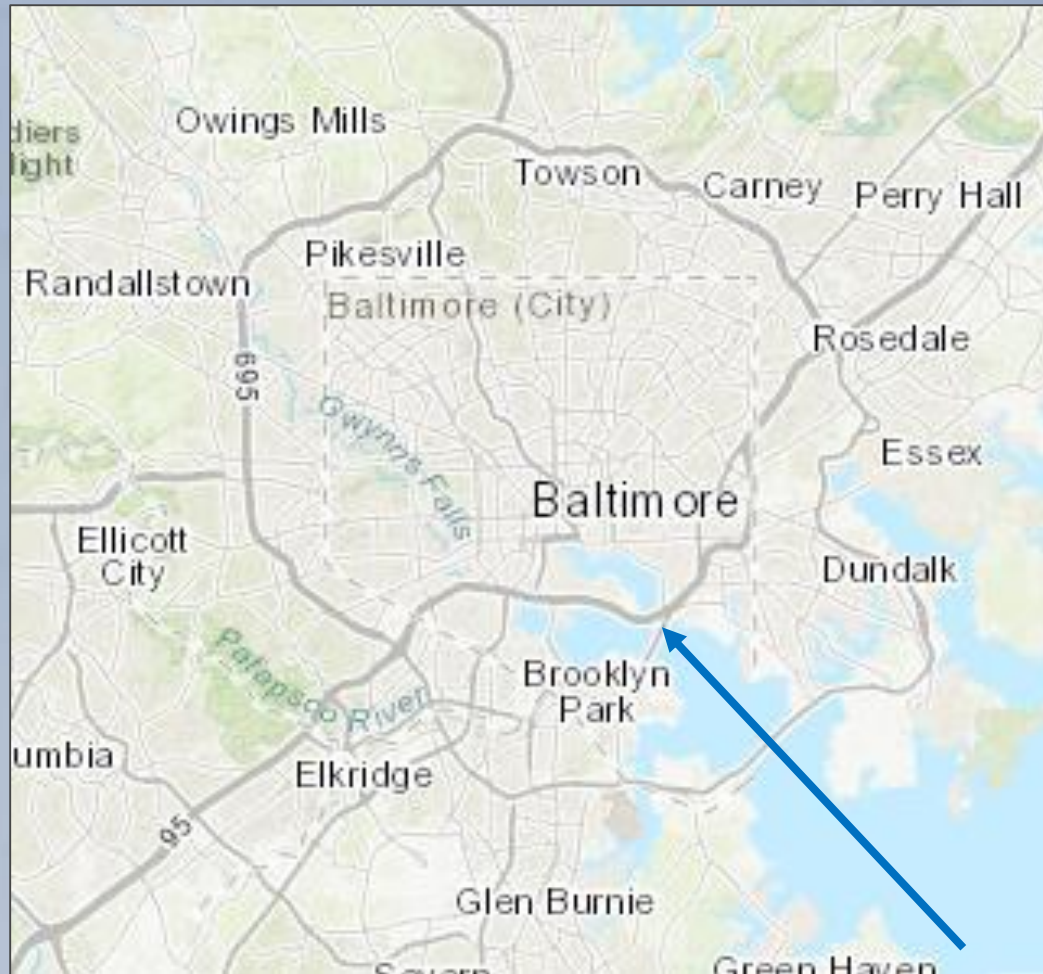
Small Stream & Urban: Results quickly from torrential rain over or near the City

Flooding



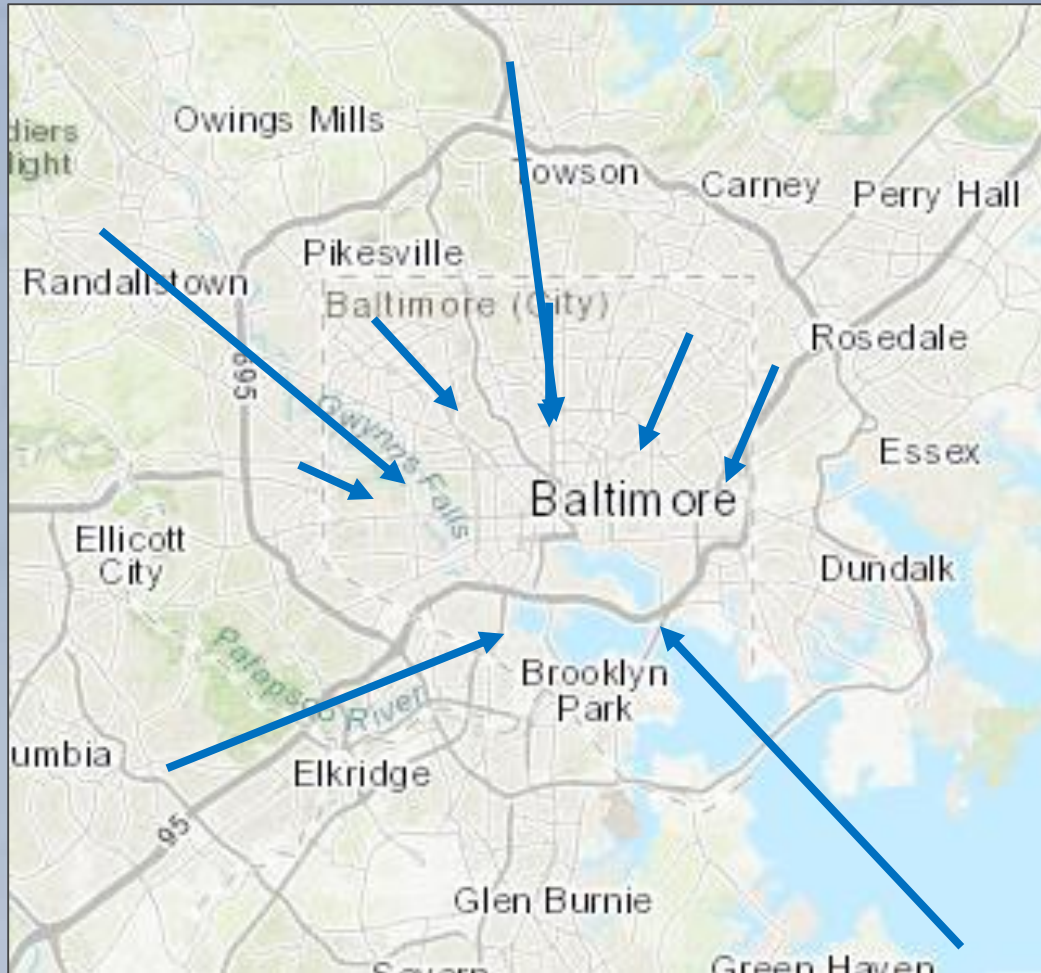
Down the Rivers: Jones Falls, Gwynns Falls, Patapsco (non-tidal part)

Flooding



Up the Bay: Tidal surge up the Bay and tidal waters (onshore winds or hurricane)

Flooding



Combination: Sometimes, it's all of the above



Flash Flooding is more dangerous...

- ❑ Can have same severity as flooding...
...but happens FASTER



- ❑ For these occurrences, NWS issues a **Flash Flood Warning**.

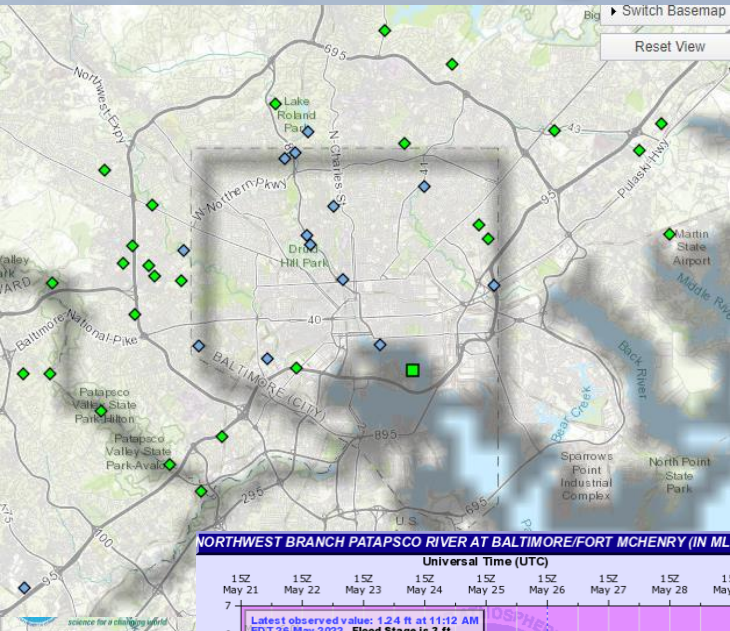
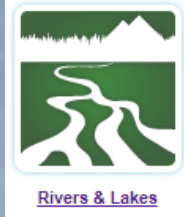


- ❑ These are issued relatively rarely, and when issued for your area, it indicates immediate action must be taken to protect life & property

Flooding

Main Resource

weather.gov/Baltimore > Rivers & Lakes



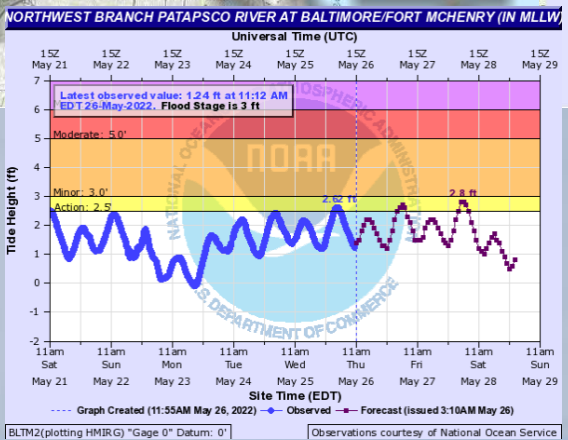
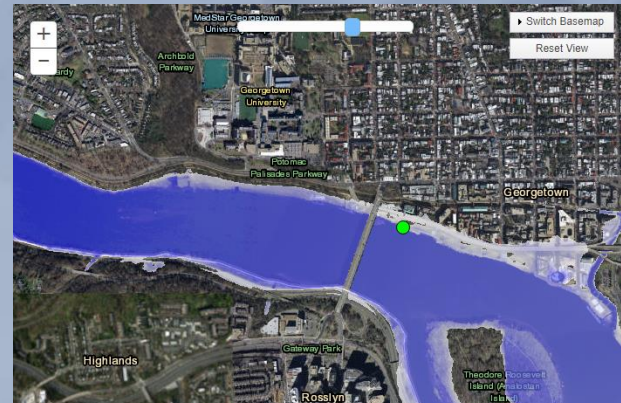
Switch Basemap
Reset View

Legend:

- Forecast available
- Probability and forecasts available
- Observations only available
- Major Flooding
- Moderate Flooding
- Minor Flooding
- Near Flood Stage
- No Flooding
- Observations Are Not Current
- Out of Service
- Flood Category Not Defined
- At or Below Low Water Threshold

Last map update:
04/09/2019 at 02:07:34 pm EDT
04/09/2019 at 18:07:34 UTC

What is UTC? | Map Help | Disclaimer



- 6.5 Water approaches Caroline Street.
- 6 Water reaches the corner of Ann Street and Thames Street.
- 5.5 Water begins to cover the Pier 4 promenade on the west side and Pier 5 on the west side.
- 5.25 The boardwalk at Fells Point begins to flood. Water also begins to cover low spots in the promenade at the end of Broadway Street.
- 5 Water begins to cover the Pier 4 promenade on the east side.
- 4.5 The end of Ann Street begins to flood.
- 4.25 The concrete promenade at Fells Point begins to flood. Water also begins to cover the boardwalk at the Maritime Park water taxi stop.
- 3.5 Water begins to cover the promenade at the Inner Harbor at the electric boat dock west of the World Trade Center.
- 3 Flooding is occurring at the end of Thames Street. Water also nearly covers the promenade at the dragon boat dock in the Inner Harbor.
- 2 Water begins to cover the lower promenade at the Harbor Place water taxi stop.



What do I do for Flooding?

- Turn Around, Don't Drown
- Watch out for low areas
- Keep eye on any streams/drainage



Tornadoes?

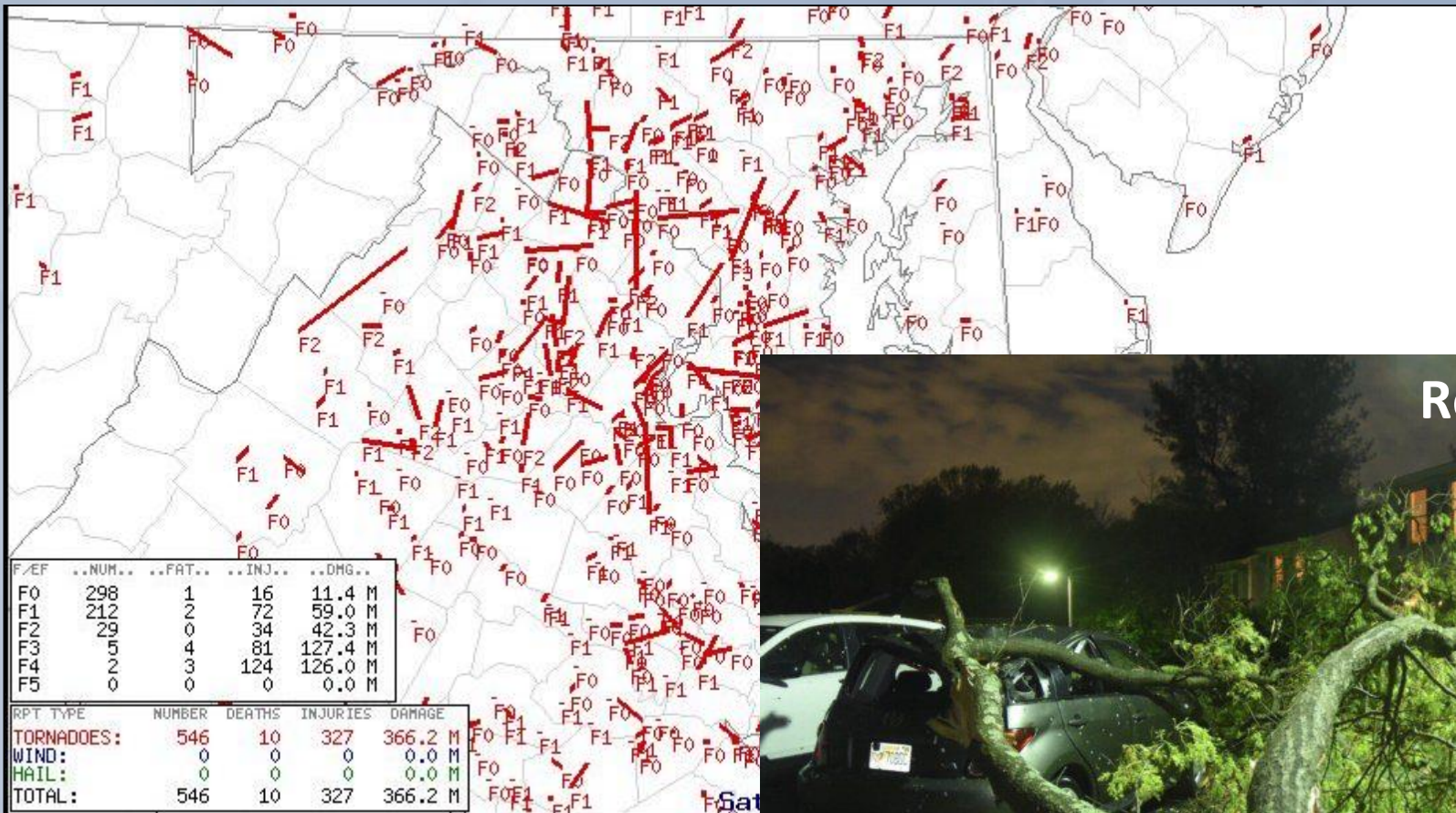


WIRELESS
EMERGENCY
ALERTS



All Tornadoes 2000-2015

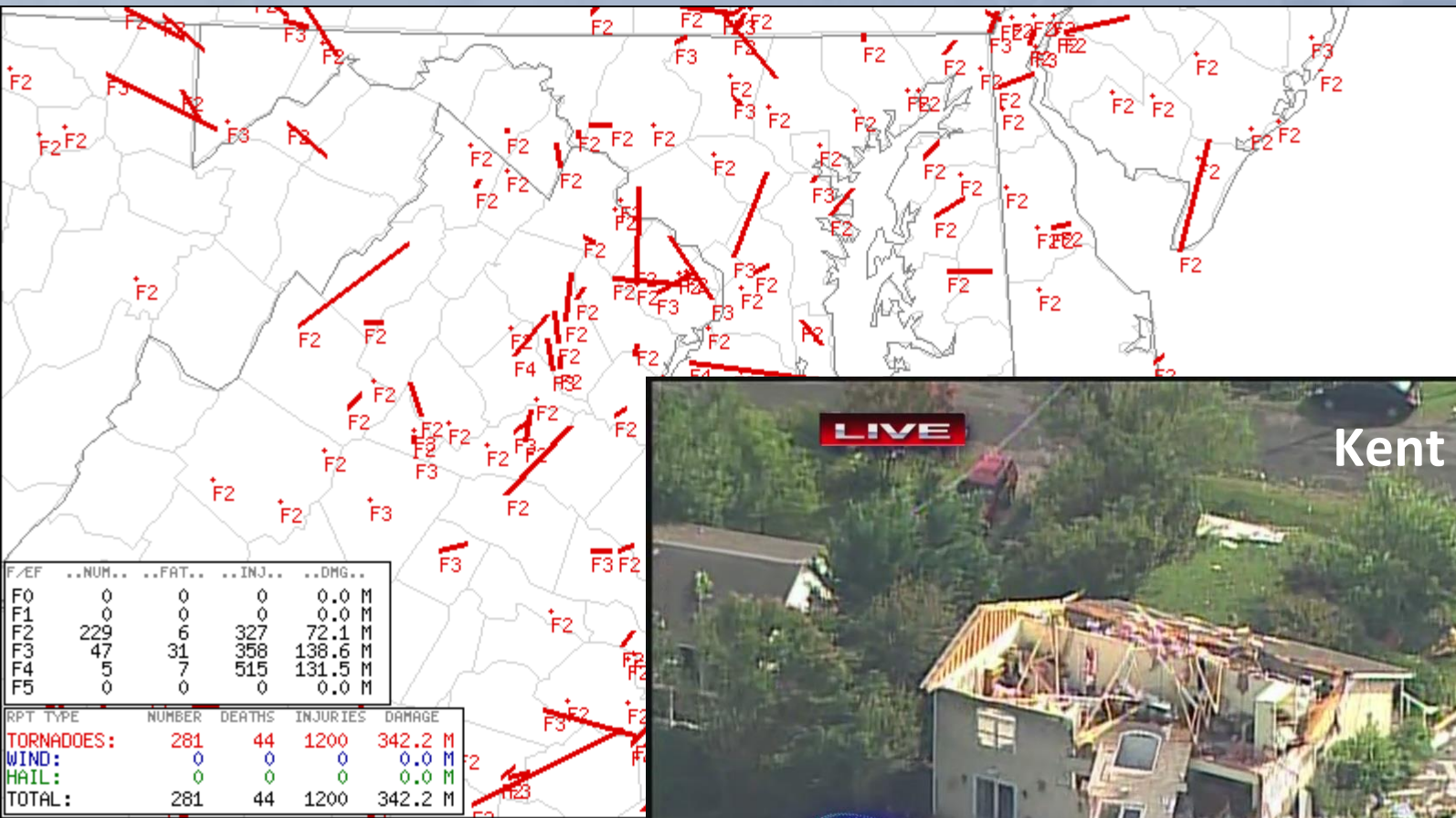
[16yrs]



Reston VA
2019
EF-0

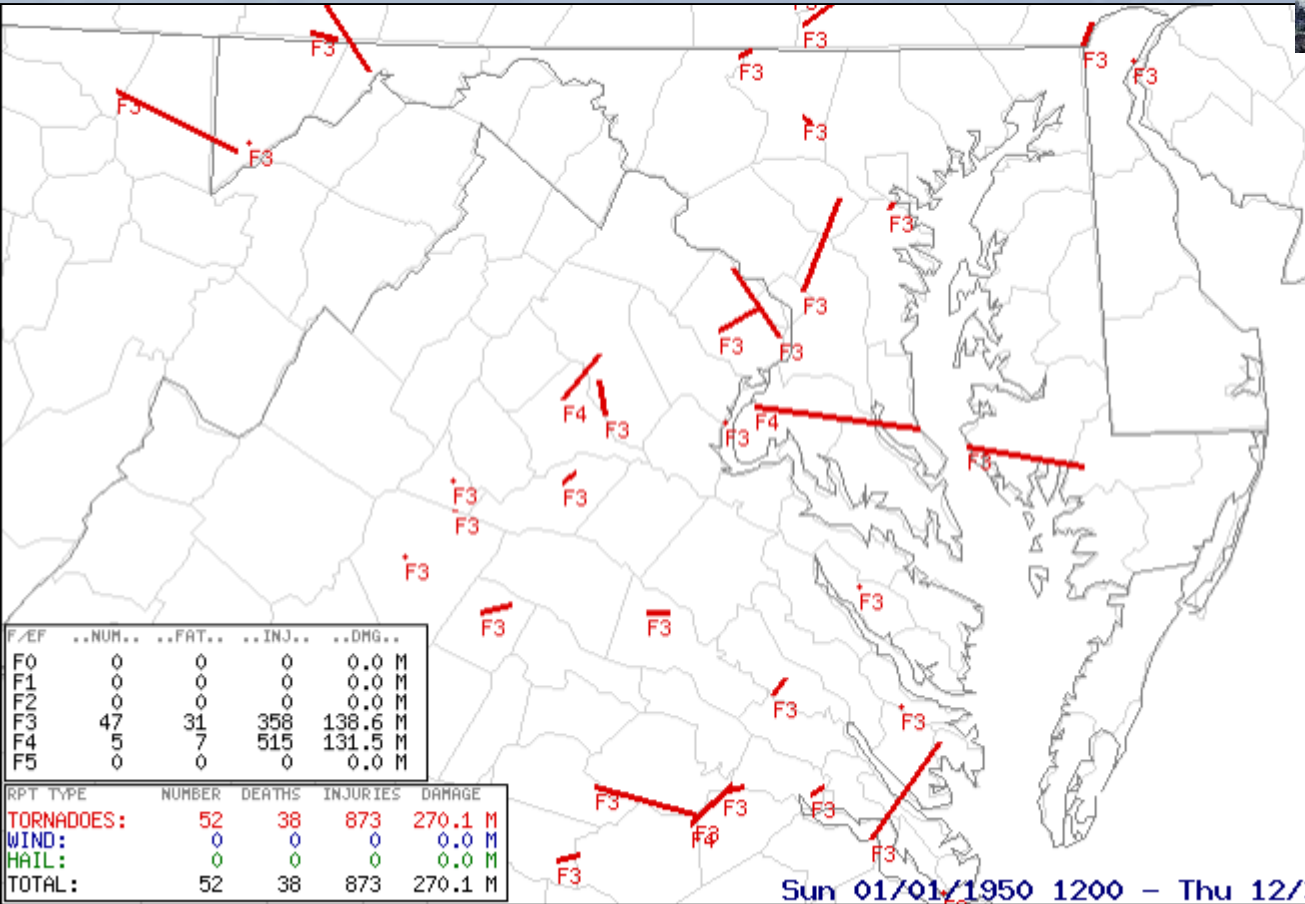
EF/F Rated 2-5

[Full Record – 66yrs]



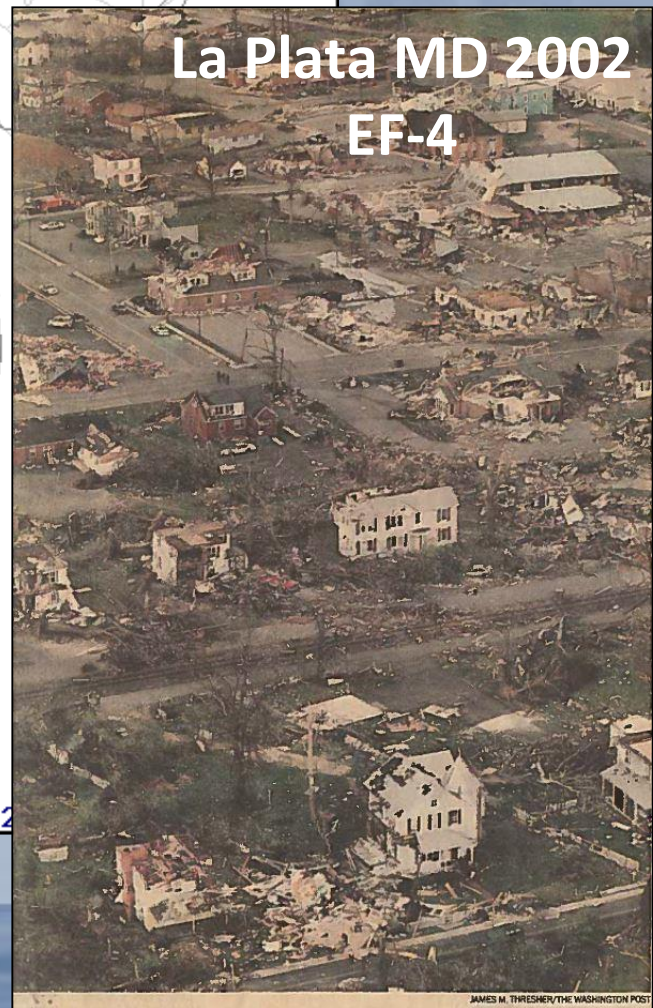
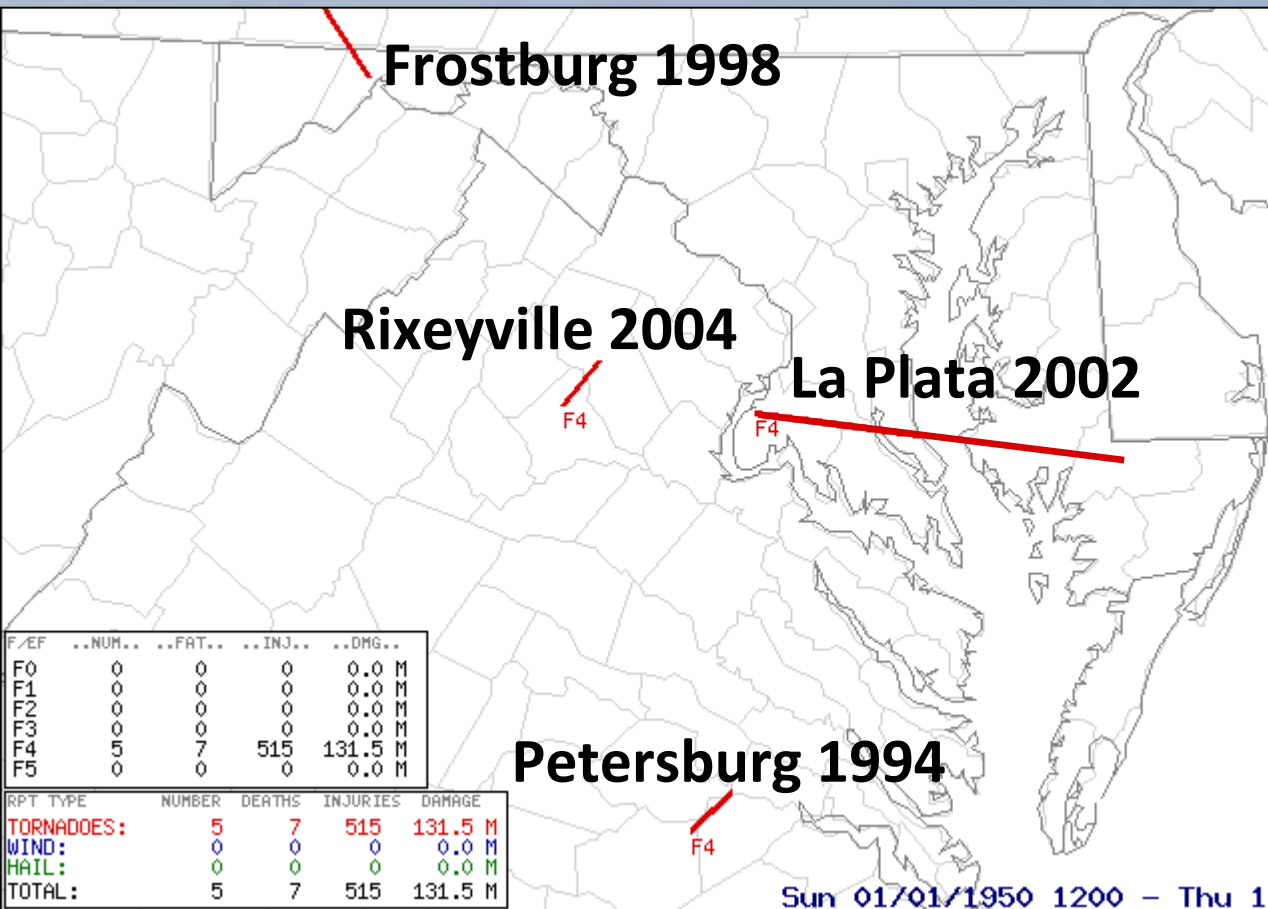
EF/F Rated 3-5

[Full Record – 66yrs



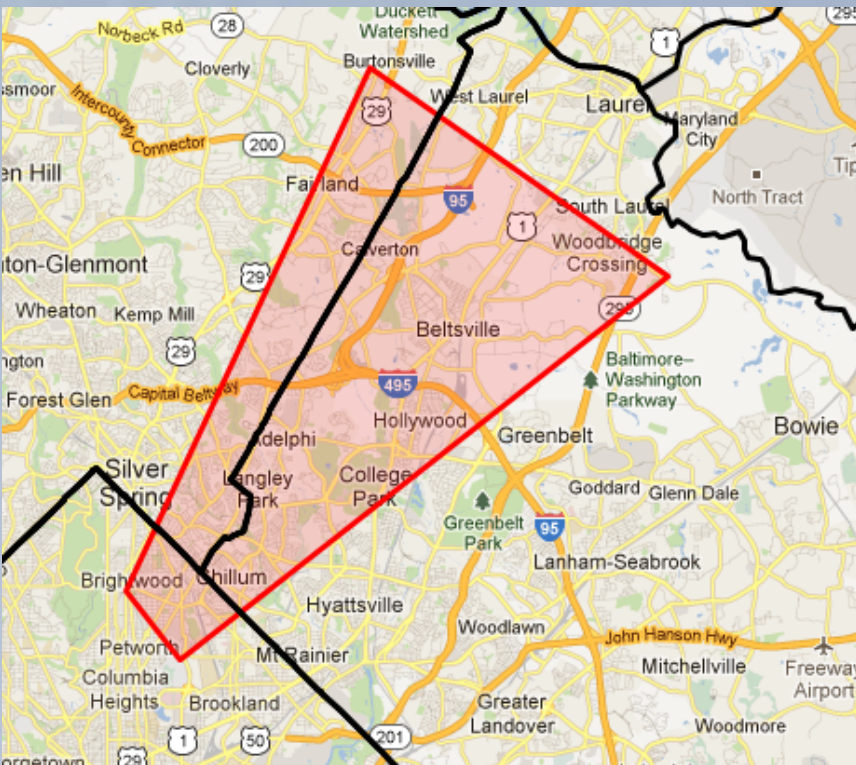
EF/F Rated 4-5

[Full Record – 66yrs]



Tornado Warning

3:17-6:45 PM



BULLETIN - EAS ACTIVATION REQUESTED
TORNADO WARNING
NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC
3:17 PM EDT TUE SEP 18 2012

THE NATIONAL WEATHER SERVICE IN STERLING VIRGINIA HAS ISSUED A

- * TORNADO WARNING FOR...
THE DISTRICT OF COLUMBIA...
SOUTHEASTERN MONTGOMERY COUNTY IN CENTRAL MARYLAND...
NORTHERN PRINCE GEORGES COUNTY IN CENTRAL MARYLAND...
- * UNTIL 3:45 PM EDT
- * AT 3:16 PM EDT...A SEVERE THUNDERSTORM CAPABLE OF PRODUCING A
TORNADO WAS NEAR TAKOMA PARK...OR NEAR FORT TOTTEN...AND WAS MOVING
NORTHEAST AT 45 MPH.
- * LOCATIONS IMPACTED INCLUDE...
CHILLUM...
BELTSVILLE...
FAIRLAND...

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW. MOVE TO AN INTERIOR ROOM ON THE LOWEST FLOOR OF A
STURDY BUILDING AND AVOID WINDOWS. IF OUTDOORS OR IN A MOBILE HOME OR
VEHICLE...MOVE TO THE CLOSEST SUBSTANTIAL SHELTER AND PROTECT
YOURSELF FROM FLYING DEBRIS.

THIS TORNADO MAY BE WRAPPED IN RAIN AND HARD TO SEE. TAKE COVER NOW.



What would you do?



- <10 minutes
- WEA alert: 1 way to receive
 - Have 2 or more ways to get NWS Warnings

What do I do for Tornado?

- Put as much “structure” between you and the outside as possible.
- Low, interior rooms, away from windows are best.



Severe (Damaging) Thunderstorms

14:02



Ronald Reagan's near brush with weather-induced death: the August 1, 1983 microburst

By Jason Samenow August 1, 2013

Thirty years ago today, a violent blast of cold air crashed down from a thunderstorm's clouds above Andrews Air Force Base. As the so-called microburst slammed into the ground and fanned out in all directions, the wind speed was clocked at 149 mph (at the time, [the highest-ever measured wind speed by an anemometer](#)).

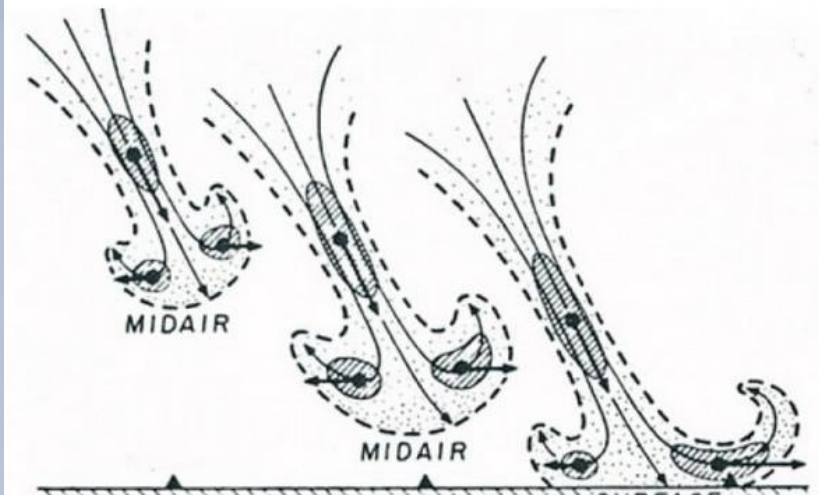


Diagram of a microburst (NOAA)

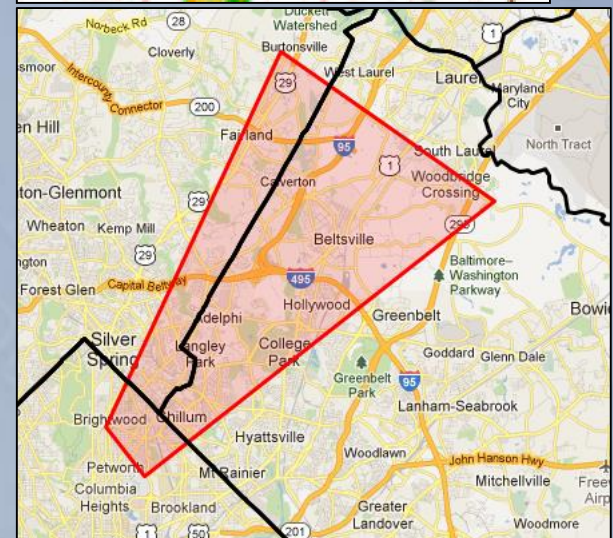
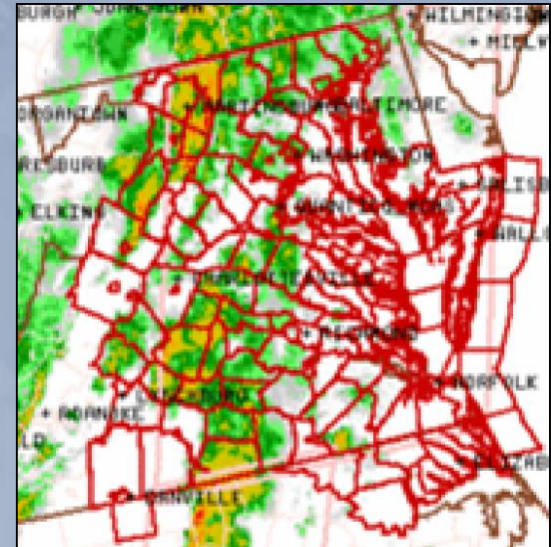
Just six minutes before this wind gust was measured, Air Force One had landed at Andrews with President Ronald Reagan aboard. His timing was

“Microburst...clocked at 149 mph... just 6 minutes before...Air Force One had landed.”

Damaging Wind gusts are 10x more common than tornadoes.

NWS Watches & Warnings

- **Watches** give hours to plan
- ‘Threat-zone’ **Warnings** to act!
 - Minutes, to 10s of minutes
 - Expect at least downed trees nearby



What do I do for Severe Thunderstorms?

- Actions are similar for tornado.
- Be ready to “jump” and put as much structure between you and the outside as possible.
- Don't be outdoors, and be ready for falling trees from dangerous/damaging winds.





Lightning Safety

Planning to be Outdoors?

Lightning Safety Awareness Week



Stay informed

Check forecast
See if thunderstorms are expected

Stay alert

Check online radar & listen for thunder

Act

If you hear thunder, immediately go to an enclosed shelter or vehicle

Protect yourself from lightning, not the rain!

Unless your shelter is enclosed on all sides, it is **not** lightning protection



Hurricane Season

June 1 – November 30



Mid-Atlantic Hurricanes

Greatest Risk: August 15 to October 15

However...

- **June (Agnes 1972)**
- **November (Gordon 1994)**

So, windy, right?



- First thing most think of is *WIND*
 - *One of the biggest problems for safety*
 - *Wind is often not the main threat*

**A tropical storm/hurricane/remnant
can bring 4 threats**



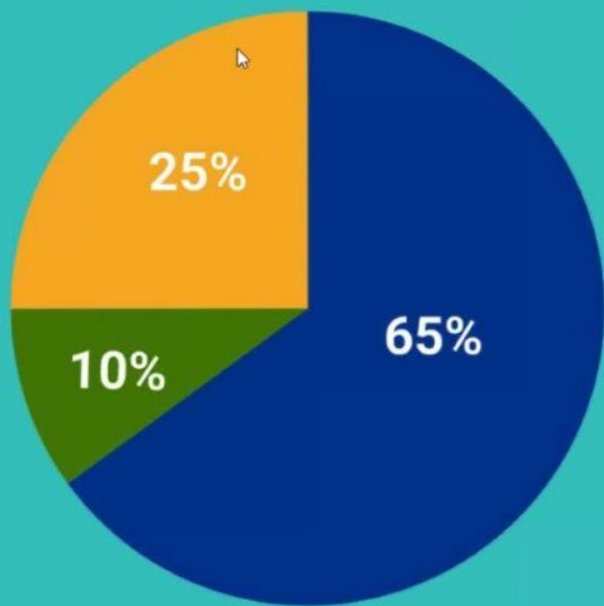
The 4 Threats

- Inland Flooding
- Tidal Flooding
- Winds <- Saffir-Simpson Wind Scale
- Tornadoes

* Each storm has its own mix of these 4 threats



2022 Atlantic Hurricane Season Outlook



■ Above-normal ■ Near-normal ■ Below-normal season

Season probability

Named storms
14-21

Hurricanes
6-10

Major hurricanes
3-6



Heat

The infographic is split into two columns: Heat Exhaustion (yellow background) and Heat Stroke (red background). A central figure of a person is also split vertically. The top of the figure is a circle with a lightning bolt on the Heat Stroke side and a dizziness icon on the Heat Exhaustion side. The middle of the figure is a torso with a stomach icon, a heart icon, and a lightning bolt on the Heat Exhaustion side, and a heart icon and a sad face icon on the Heat Stroke side. The bottom of the figure is a pair of legs with a lightning bolt on the Heat Exhaustion side and a sad face icon on the Heat Stroke side. A large 'OR' is placed between the two columns at the top.

HEAT EXHAUSTION	OR	HEAT STROKE
Faint or dizzy		Throbbing headache, confusion
Excessive sweating		No sweating
Cool, pale, clammy skin		Body temperature above 103° Red, hot, dry skin
Nausea or vomiting		Nausea or vomiting
Rapid, weak pulse		Rapid, strong pulse
Muscle cramps		May lose consciousness

HEAT EXHAUSTION TREATMENT:

- Get to a cooler, air conditioned place
- Drink water if fully conscious
- Take a cool shower or use cold compresses

HEAT STROKE TREATMENT:

CALL 9-1-1

- Move person to cooler place
- Cool using cool cloths or bath
- Do not give anything to drink

- Heat Advisory
 - 105 (Heat Index)
- Excessive Heat **Warning**
 - 110+ (Heat Index)

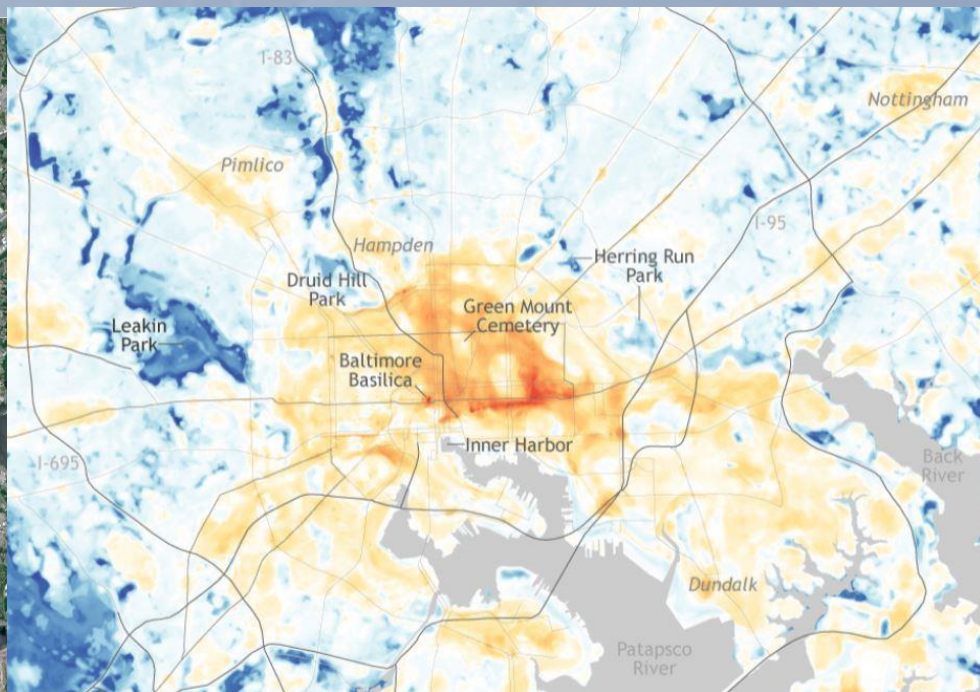
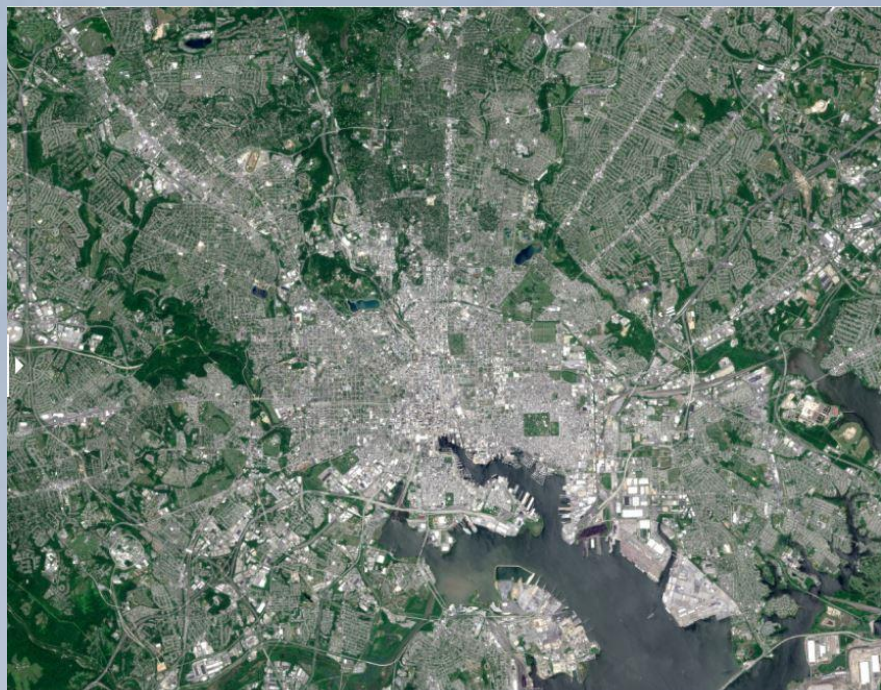
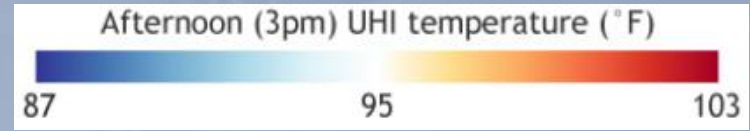
What do I do for Heat?

- Be aware that heat stresses your body, even if you're young and fit.
- Stay cool as you're able, and drink lots of water.
- If you start to feel impacted at all, act quickly to cool down.
- Help look out for each other.



Baltimore City and Excessive Heat

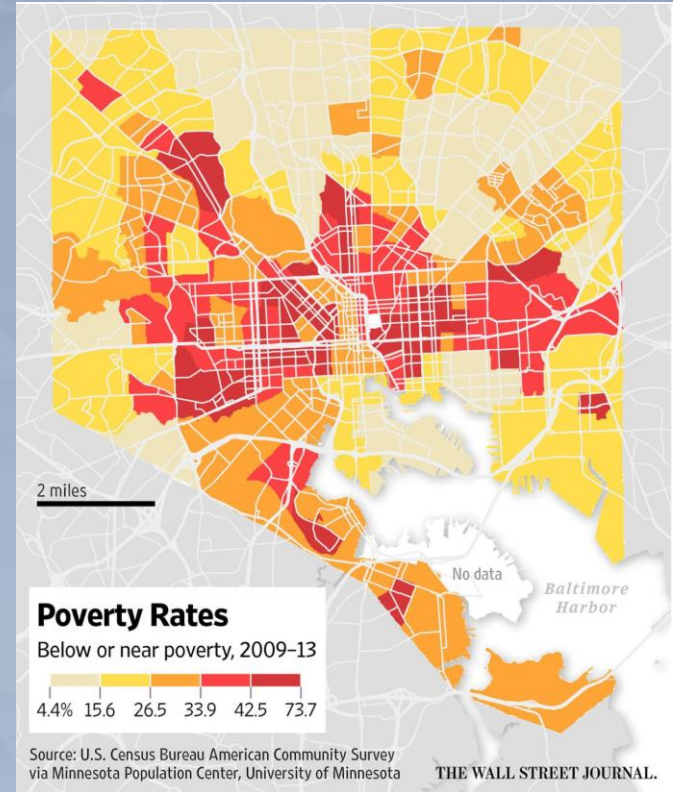
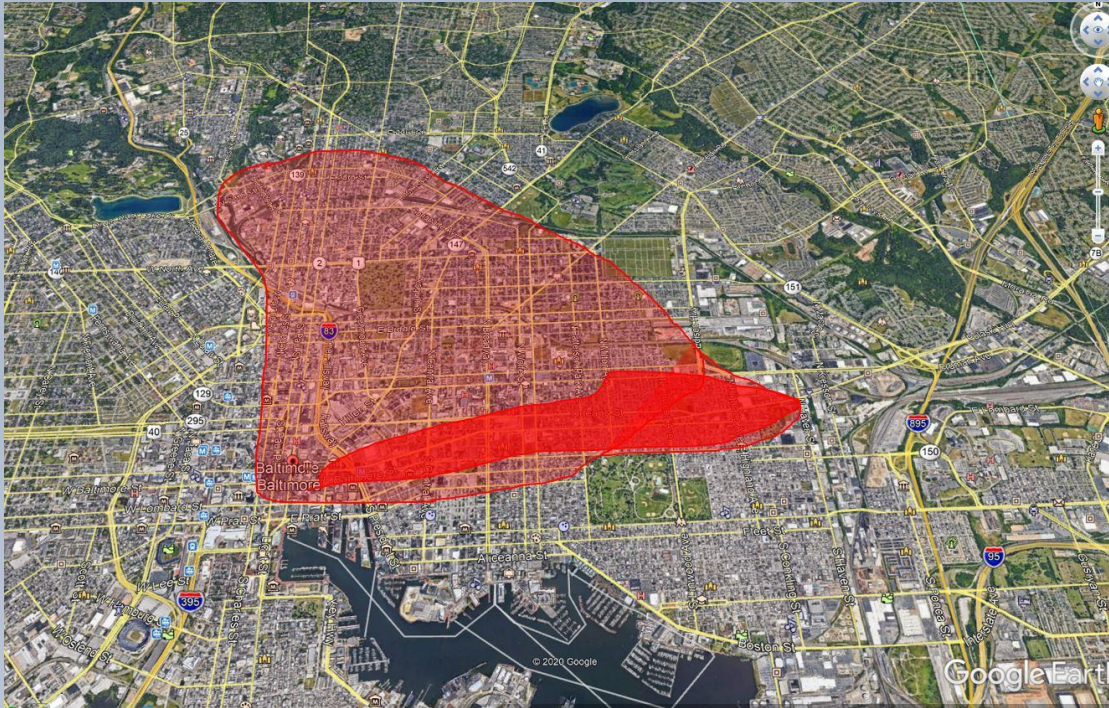
The Issue - Inconsistent Heat Impacts



Courtesy NOAA/OAR

Baltimore City and Excessive Heat

The Issue - Inconsistent Heat Impacts



Baltimore City and Excessive Heat

The Issue - Inconsistent Heat Impacts

Higher Poverty, less likely to have:

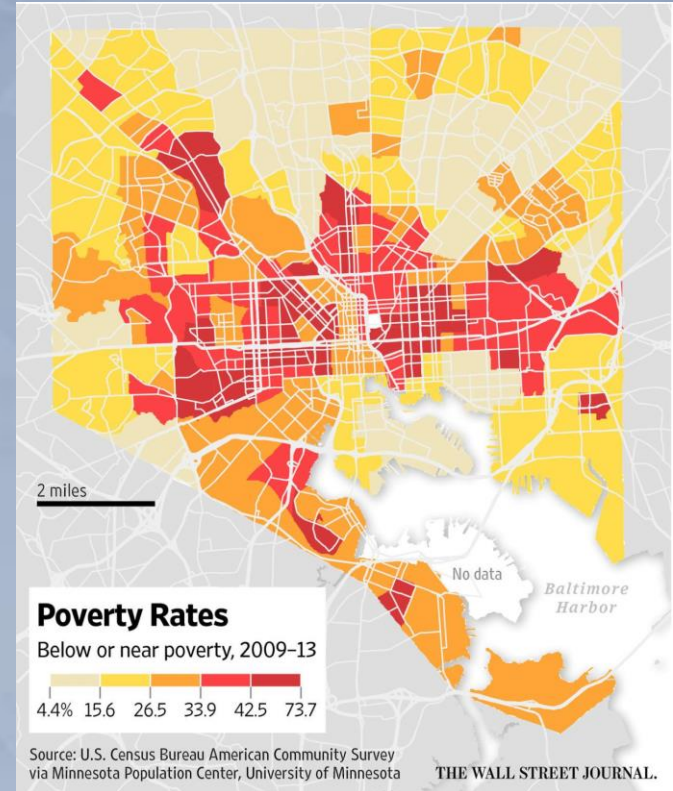
- Air Conditioning
- Neighborhood Trees

More likely to have:

- Underlying health issues
- Mobility issues (ability to move to cooler location)

Bottom line:

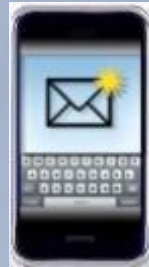
Hotter heat indices in places where it will be more impactful.



WAYS TO GET THE MESSAGE!

- **Mobile Phone**

- iNWS
- Text Alerts
- Wireless Emergency Alerts (WEAs)



- **weather.gov/baltimore**

- **Social Media**

- @NWS_BaltWash

- **NOAA Weather Radio**





BOTTOM LINE

- **Your NWS is here 24-hrs/day to give as much advance notice as possible for hazardous weather**
- **Get Warnings quickly**
- **Be ready for:**
 - Flooding & Flash Flooding
 - Tornadoes
 - Severe (Damaging) Thunderstorms
 - Hurricanes & their remnants
 - Lightning
 - Heat

Thank you!
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