



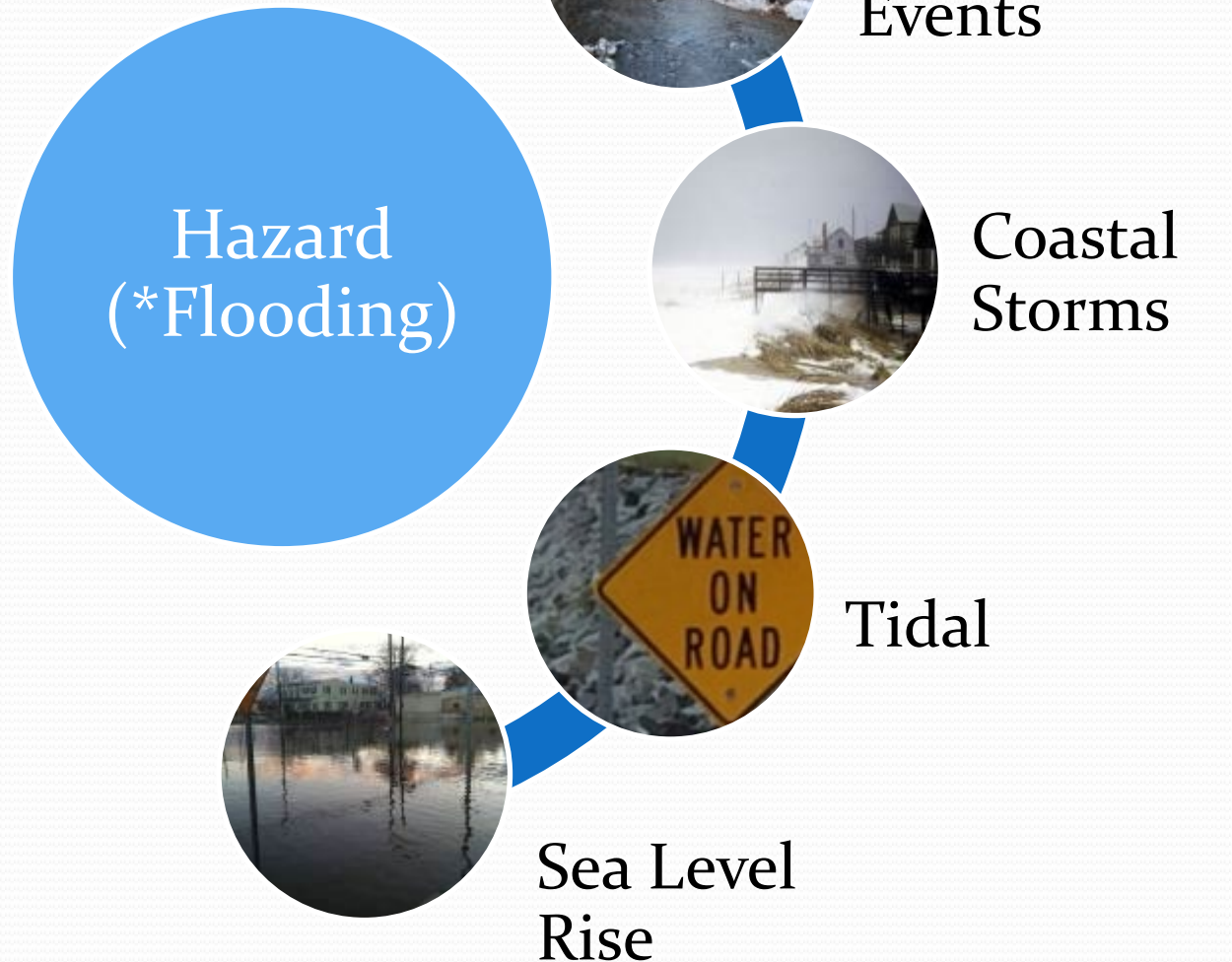
# Flood Hazards, Risk, and Resilience



**Danielle Swallow**  
**Coastal Hazards Specialist, Delaware Sea Grant**  
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# Understanding Flood Risks



# Heavy Precipitation Events



Newark, DE, 2016

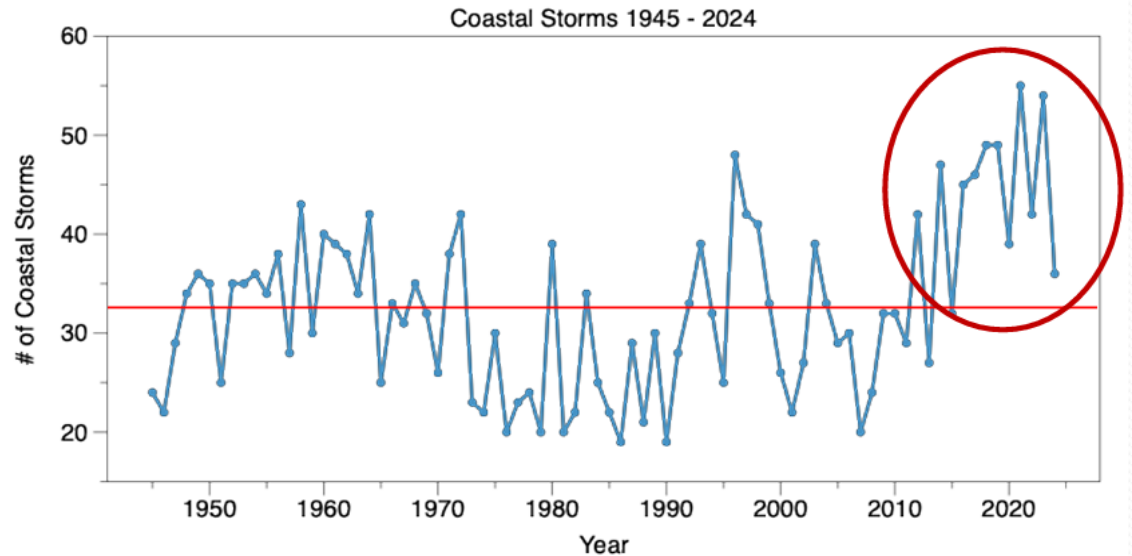


# Coastal Storms

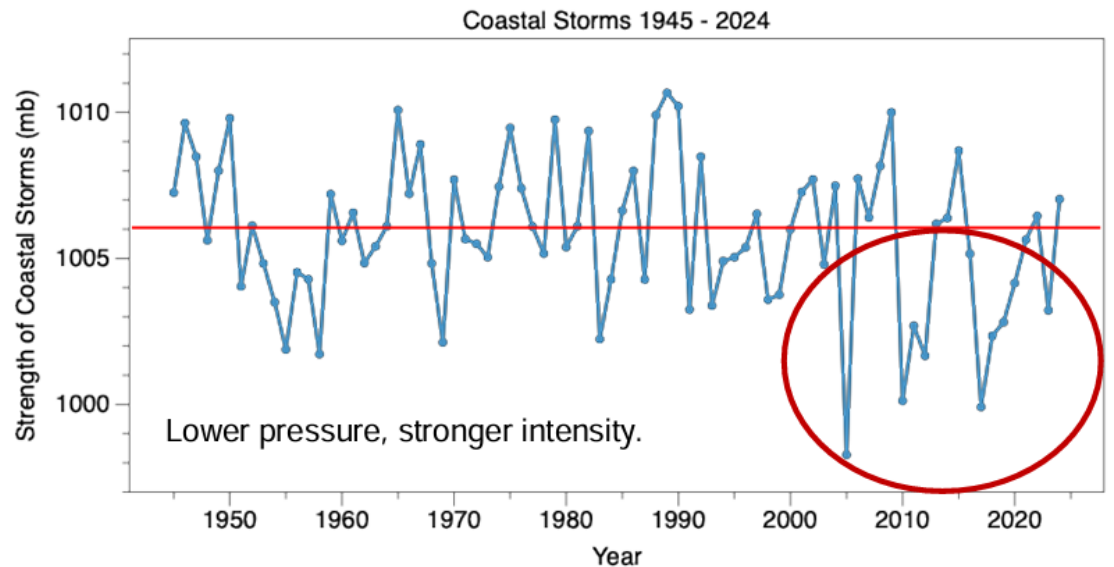
It doesn't take a direct hit to feel impacts.  
Hurricane Erin, August 2025

We are seeing  
more frequent  
and intense  
storms since  
2000

## Coastal Storm Frequency 1945 - 2024



## Coastal Storm Intensity 1945 - 2024



Graphs courtesy of Dr. Dan Leathers  
& CEMA

# High Tide Flooding





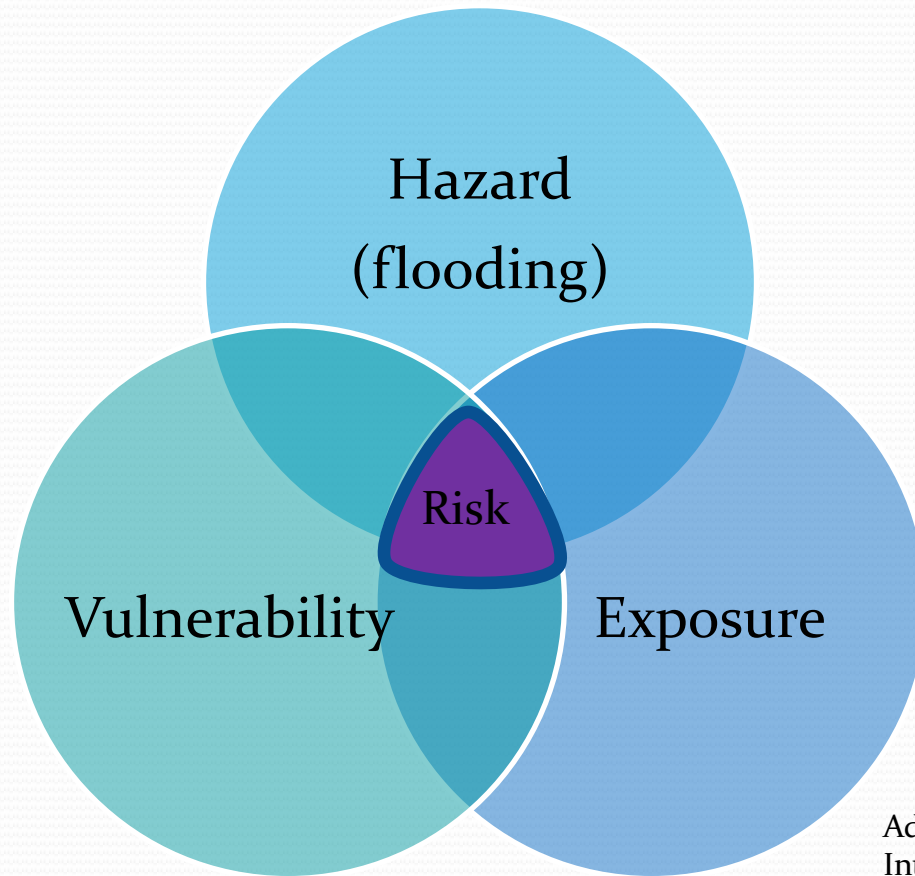
**Sea Level Rise:**  
an increase in the  
average height of  
our tides

*Sea level rise will create a profound shift in coastal flooding over the next 30 years by causing tide and storm surge heights to increase and reach further inland. By 2050, “moderate” (typically damaging) flooding is expected to occur, on average, more than 10 times as often as it does today, and can be intensified by local factors.*

– NOAA Sea Level Rise Technical Report



$$\text{Risk} = \text{Hazard} + \text{Exposure} + \text{Vulnerability}$$



Adapted from FEMA, IS-393.A  
Introduction to Hazard Mitigation

# Property Risk Assessment

- How close are you to a waterway or wetland?
- What is the elevation of your property?
- Is your house elevated?
- Are local drains and swales well-maintained?
- Do other properties drain towards you or away from you?
- Is your home storm-ready?



# Property Protection

- Elevate your home
- Elevate utilities
- Invest in a generator
- Safeguard important paperwork
- Use flood-resistant materials
- Clear gutters and swales
- Secure outdoor furniture
- Limit impervious surfaces
- Maximize natural buffers
- Restore wetlands and dunes



# Invest in Nature-Based Solutions

The natural floodplain provides essential functions and benefits.



# Personal Risk Assessment



[www.preparede.org](http://www.preparede.org)

- Am I capable of evacuating on my own?
- If I shelter in place, can I meet my needs for 3 days, even if there is no power or water?
  - Do I have a back up generator I know how to operate?
  - Do I have a/c to keep me cool during heat waves?
- Do I have a neighbor or relative I can turn to?
- Am I dependent on others for critical life-sustaining treatment, or transportation, or personal care?
- Do I have pets or dependents to consider?

# Community Preparedness



- Support emergency responders
- Create social networks and volunteer in organizations
- Expand CERT training
- Carry out annual disaster preparedness training



**American  
Red Cross**



# Resilience: the ability to bounce back after disruptive events



Community resilience  
requires building  
neighbor to neighbor  
reliance and  
organizational  
connection



# Thank You!

[dswallow@udel.edu](mailto:dswallow@udel.edu)

