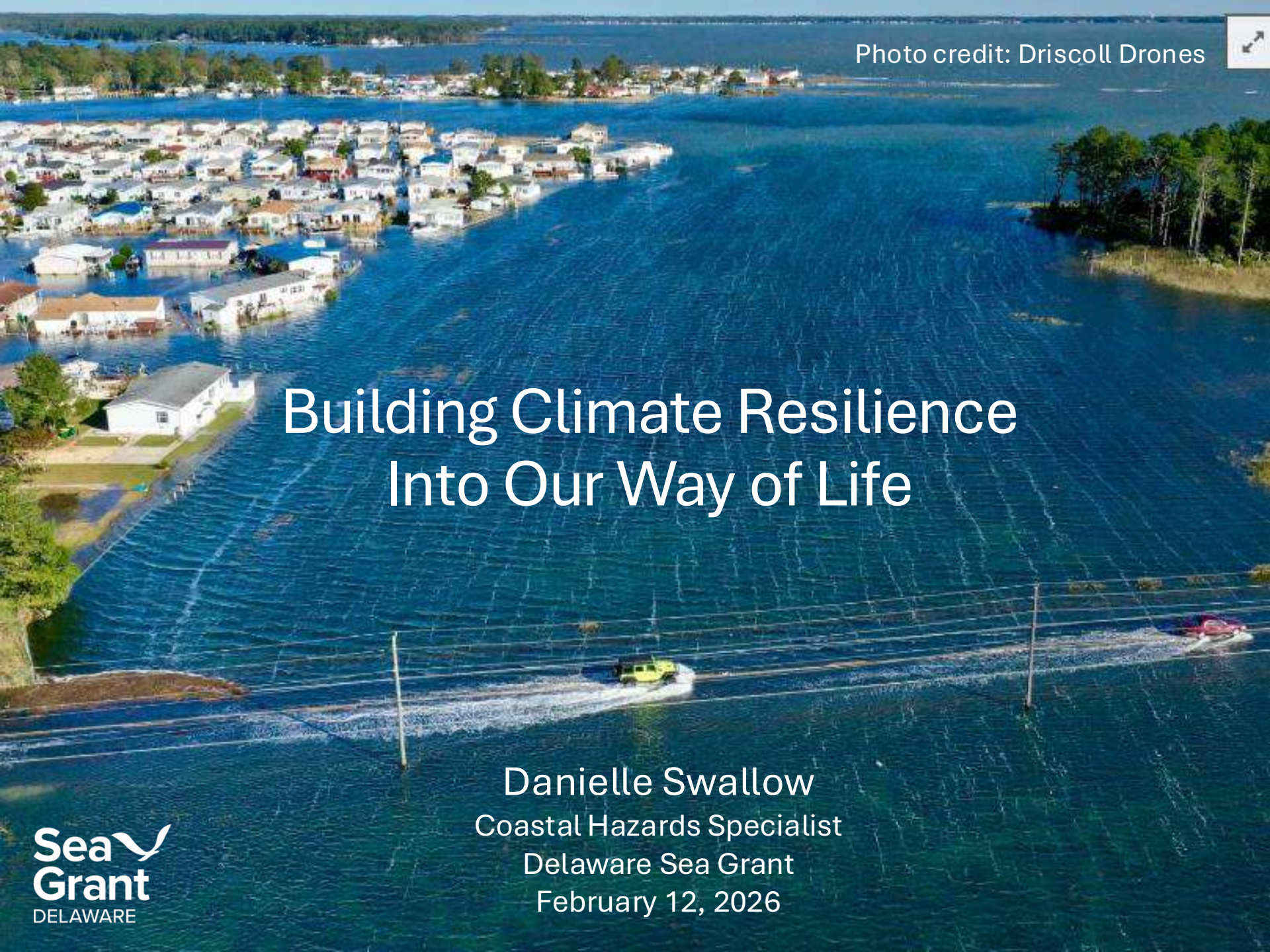


Building Climate Resilience Into Our Way of Life

Danielle Swallow
Coastal Hazards Specialist
Delaware Sea Grant
February 12, 2026

Sea Grant DELAWARE

Professional Background

Sea Grant DELAWARE

<u>Education:</u>
B.A. Political Science, Wellesley College
M.U.P. Urban Planning, New York University

28 years of experience integrating science into policy and planning decisions at the federal, state, and university levels

Technical Climate Advisor for Delaware

Co-Chair, Resilient and Sustainable Communities League (RASCL)

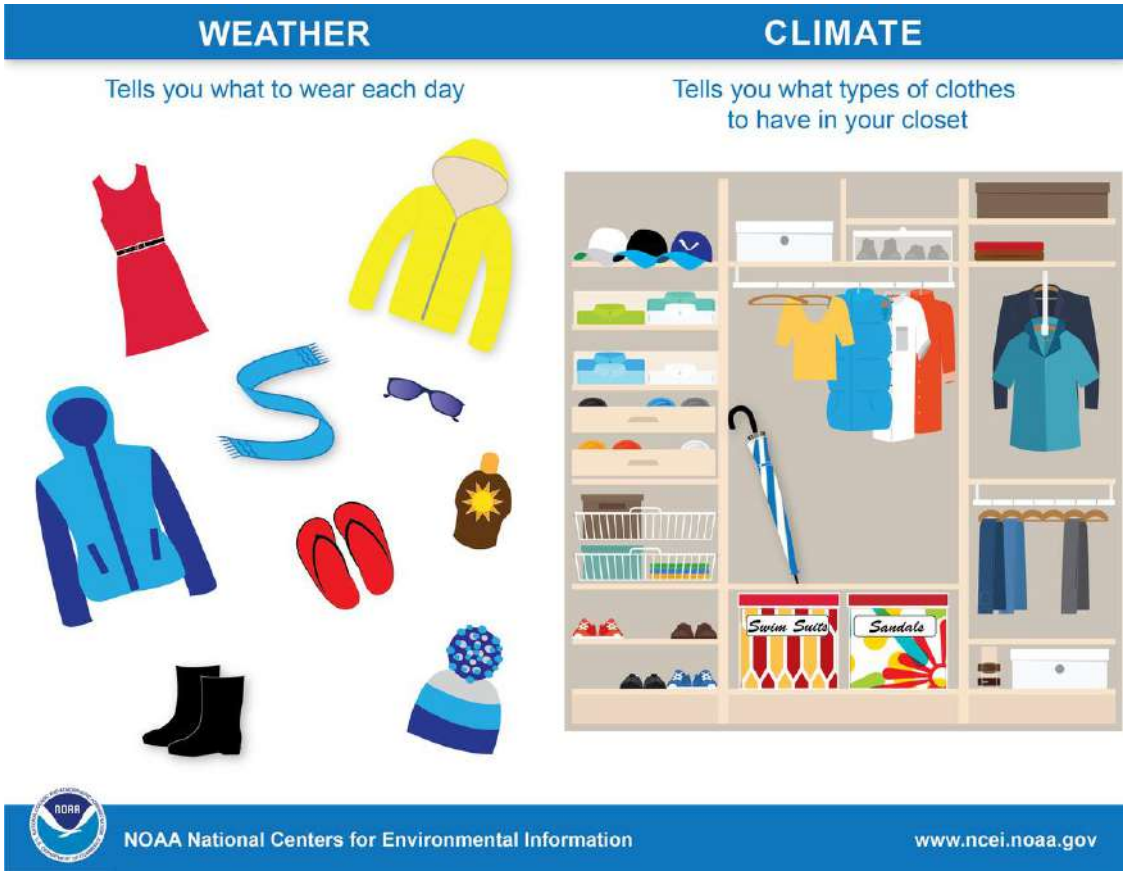
Delaware Sea Grant

www.deseagrant.org

What We Do:
Connect communities to science and information to foster healthy ecosystems, environmental literacy, and community resilience

My role as Extension Specialist: outreach, technical assistance, & capacity-building activities involving weather and climate hazards

Climate vs. Weather



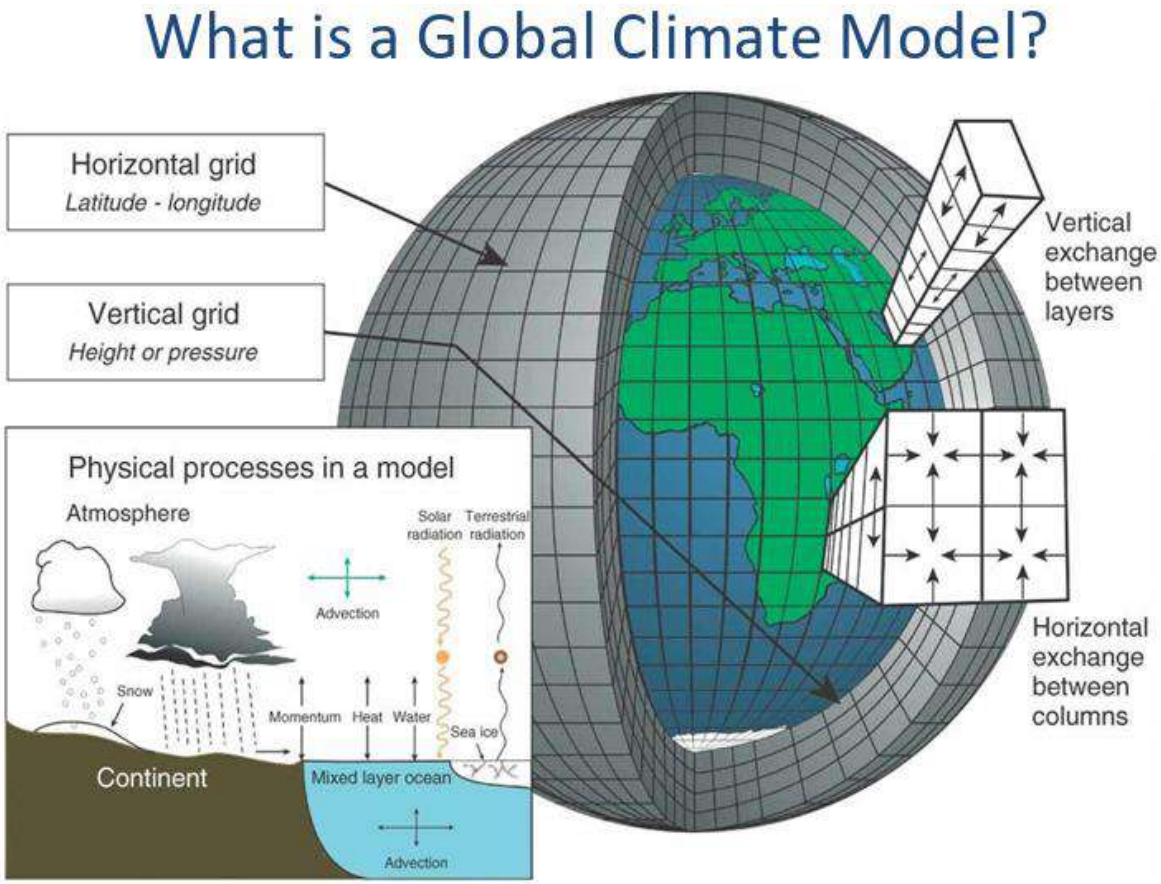
Climate is what you expect. Weather is what you get.

Climate Change refers to the broader, long-term shifts in climate patterns (temperature, precipitation, etc.) driven by global warming.

What is Global Warming?

The long-term, rapid warming of the Earth's surface due to more heat entering the Earth system than leaving it

How Do We Plan for the Future?



- Observe past & present conditions
- Assess future conditions based on models and scenarios

Source: 2025 Delaware Climate Change Projections

2025 Delaware Climate Projections: Temperature

- Average annual temperature increased 3˚F since 1895
- Mean annual temperatures are projected to increase 3-4˚F by mid-century, and 5-9˚F by 2100
- Winter temperatures will show the strongest increases
- **Number of hot nights and hot days will increase:** implications for public health, energy demand, wildlife, and agriculture
- Growing season will lengthen 30-60 days by end of century

Source: 2025 Delaware Climate Change Projections

Precipitation

- Delaware’s average rainfall is highly variable
- Annual rainfall increased 3 inches since 1895
- Another 2-4 inches projected by mid-century
- Greatest seasonal increase will be in the winter
- **Increased frequency and intensity of rain events**

Source: 2025 Delaware Climate Change Projections

Sea Level Rise

- Mean sea levels have accelerated in DE in recent decades
- Increasing trends of high tide flooding also observed
- High confidence mean sea levels will rise 1.25-1.54 feet by 2050

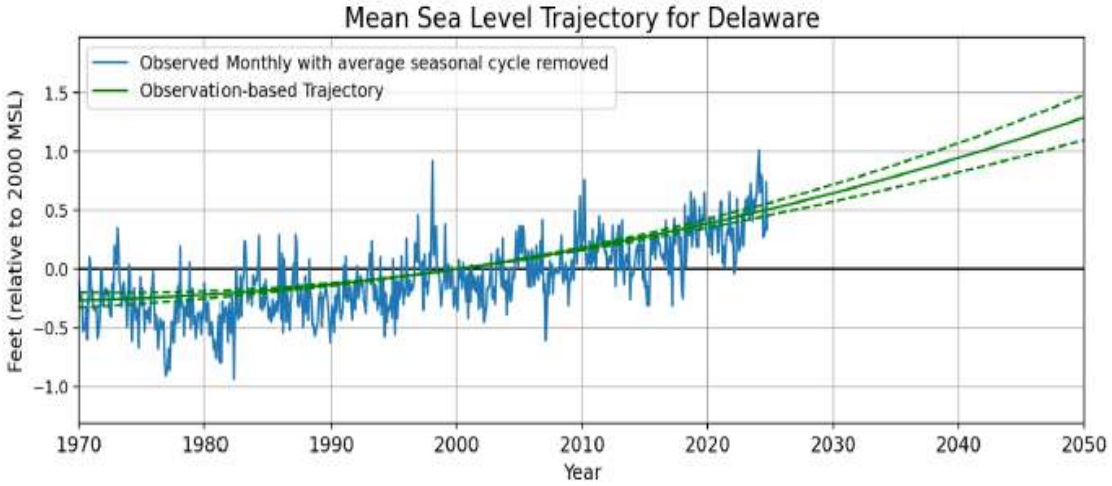
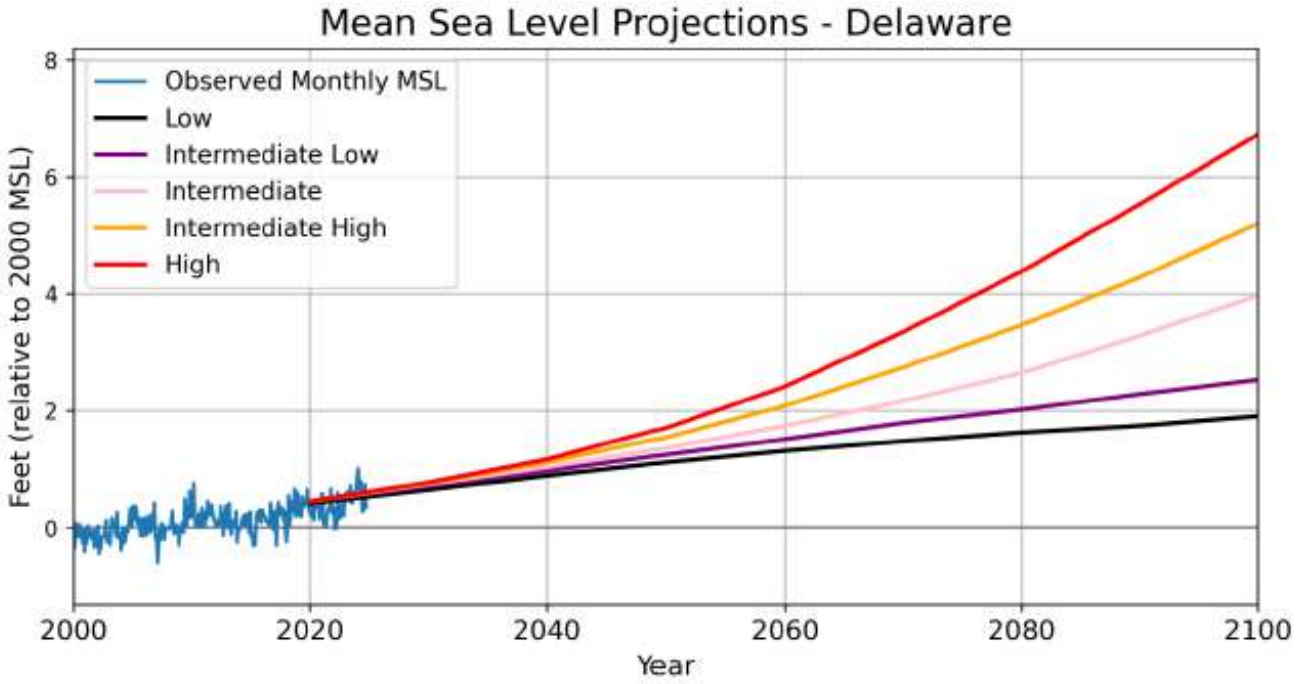


Figure 5.16. Mean sea level observation-based trajectory for Delaware. Observations are from 1970 to 2023 with the smoothed curve fit extrapolated to 2050. Data are relative to 2000 MSL.

Source: 2025 Delaware Climate Change Projections



Projections of mean sea level for Delaware under the five SLR planning scenarios. Historical monthly observations are plotted in blue. Data relative to 2000 mean sea level.

Source: 2025 Delaware Climate Change Projections

- Current observations track close to Intermediate-Low scenario
- Trajectory is between Intermediate-Low and Intermediate scenarios by 2050
- Scenarios diverge in later decades due to roles of ice sheet melt and ocean currents = more uncertainty
- **Use Intermediate-Low to Intermediate-High scenarios for planning**
- By 2100, the state projects SLR between 2.53 ft-5.2 ft

Climate Change Affects Everyone in Delaware

Infrastructure Damage

Damage from extreme storms, flooding and extreme heat to roads, buildings and green infrastructure.

Energy Systems Stress

Changes in energy burdens for customers and power disruptions from storms and flooding.

Land Loss

Loss of natural habitats and agricultural lands along with saltwater intrusion into soil and irrigation wells.

Cost Increases

Damage from extreme storms, flooding and extreme heat to roads, buildings and green infrastructure.

Health Risks

Increase in negative health impacts like asthma, heat stress, and insect-borne diseases, like Lyme disease.

These examples only cover some of the impacts from climate change happening now and in the future.

DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

We will experience more Extreme Weather and Compound Events

Game Changer:

daily extreme tides

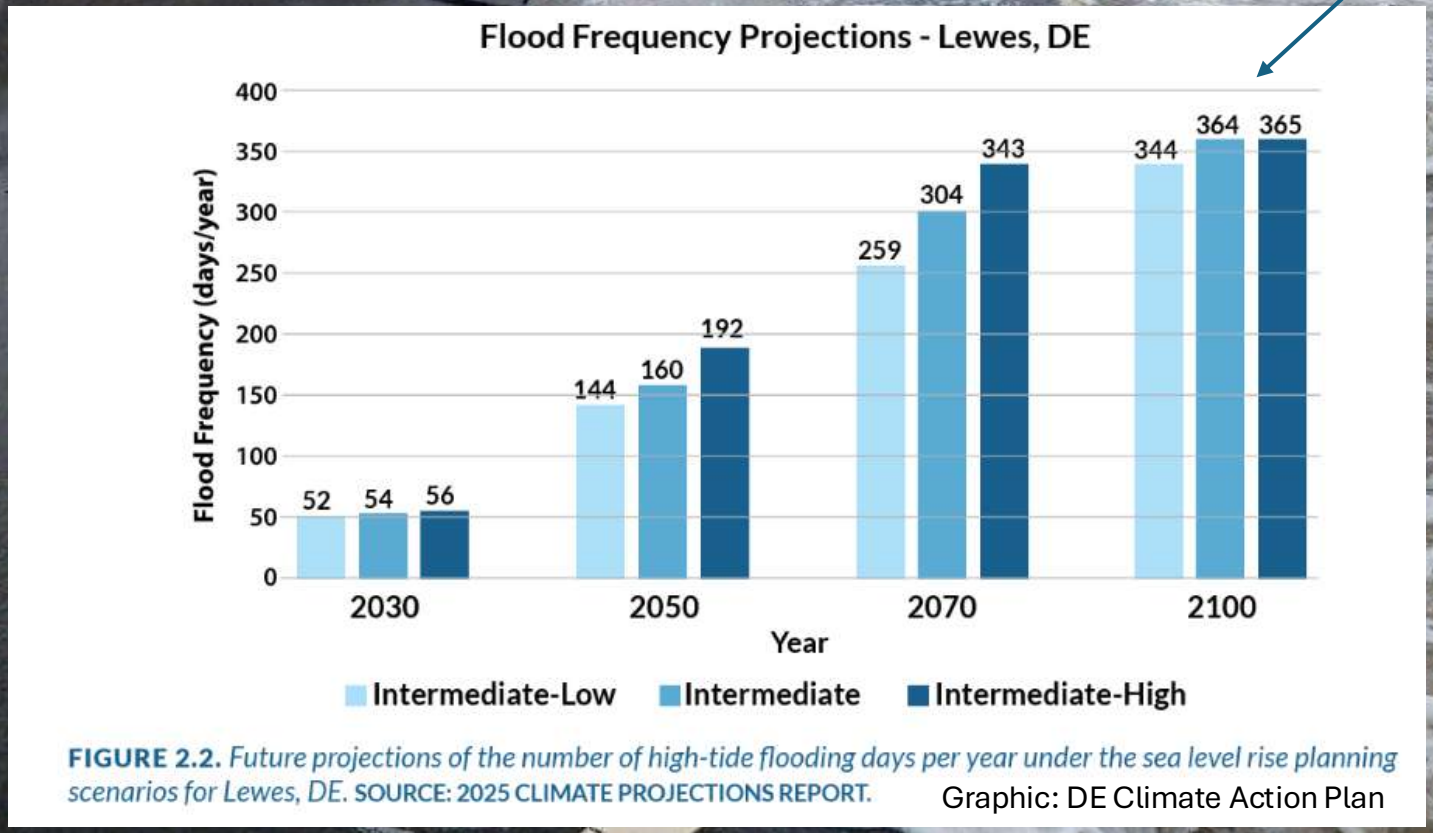


FIGURE 2.2. *Future projections of the number of high-tide flooding days per year under the sea level rise planning scenarios for Lewes, DE.* SOURCE: 2025 CLIMATE PROJECTIONS REPORT.

Graphic: DE Climate Action Plan

A New Flood Regime for DE?

1. Our daily high tides are gradually approaching what the National Weather Services considers minor flood stage (1.35 ft above MHHW)

"The persistence of minor flooding without significant need from weather systems puts Delaware as transitioning into a new flood regime and should be included in climate smart planning, building and maintaining coastal protections, infrastructure development, and natural resource and agriculture management…"

- 2025 Delaware Climate Change Projections report

2. We will have to contend with more water in our system

Photo Credit: Johannes Sayre

DNREC Marsh Migration Study: https://dnrec.delaware.gov/watershed-stewardship/wetlands/marsh-migration/

Resilience:

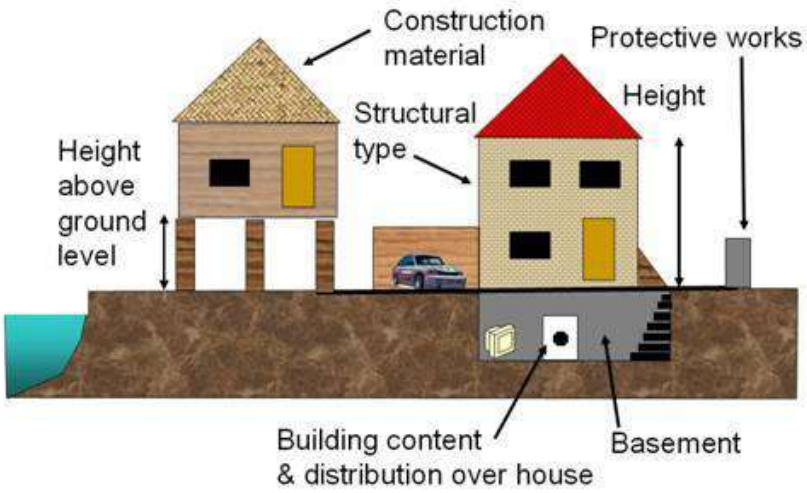
The ability to recover from or adapt easily to change

Lahaina Banyan Tree
2023-2024

How long before life returns to “normal?”

Remnants of Hurricane Ida, Annapolis, 2021

How Do We Adapt? First: Know Your Risks



- What are your primary hazards?
- What is the elevation of your property?
- Are you close to a waterway or wetland?
- Are you in an evacuation zone? https://preparede.org/know-your-zone/
- Are local swales, drains, and gutters well-maintained?
- Is there evidence of erosion?
- Do other properties drain towards you or away from you?
- Are there shade trees present?
- Is your home storm-ready?

Property Protection

- Safeguard important paperwork
- Install backflow preventers
- Install water sensors in the home
- Elevate utilities or install barriers
- Elevate your home
- Invest in a generator
- Secure outside furniture
- Prune trees and branches
- Clear gutters and swales
- Limit impervious surfaces

Community Resiliency Measures: Practice Adaptation *and* Preparedness

- Limit impervious surfaces
- Treat natural features as a form of community infrastructure
- Encourage native vegetation and ample buffers

- Support emergency responders
- Expand CERT training
- Carry out annual disaster preparedness training
- Encourage participation in the Community Rating System

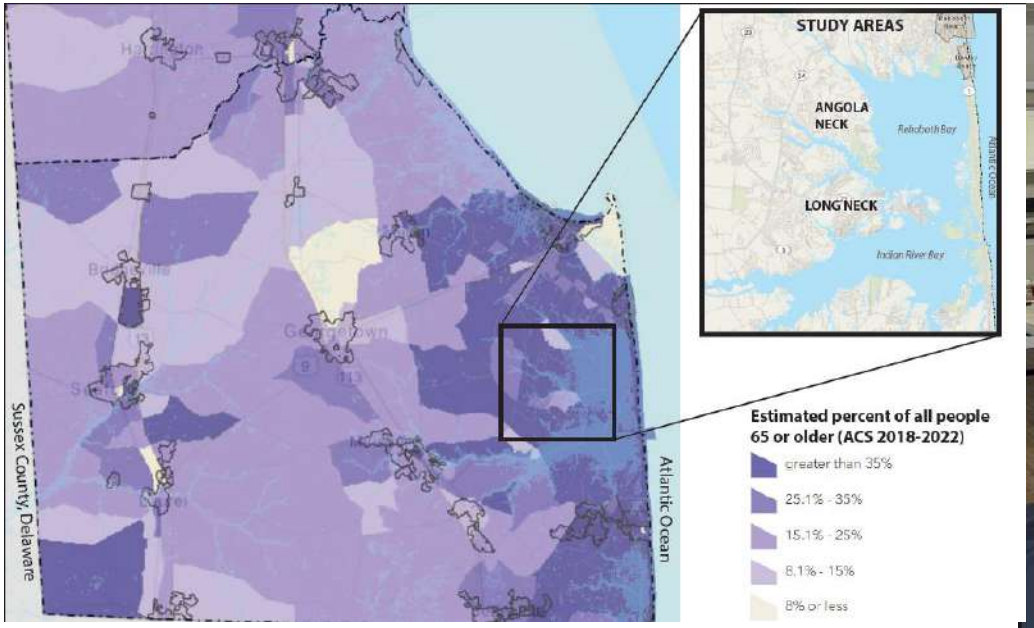
A Sample of My Efforts: FloodVision®

- March 15, 2025: kick-off event in Milton with Climate Central to launch data collection
- Official rollout coming soon

Fenwick Island Police Department
Sample visualization (Present Day vs Year 2030, Intermediate Low Scenario Plus 10% annual storm)

Evacuation Planning Roundtable in Angola - June 2025

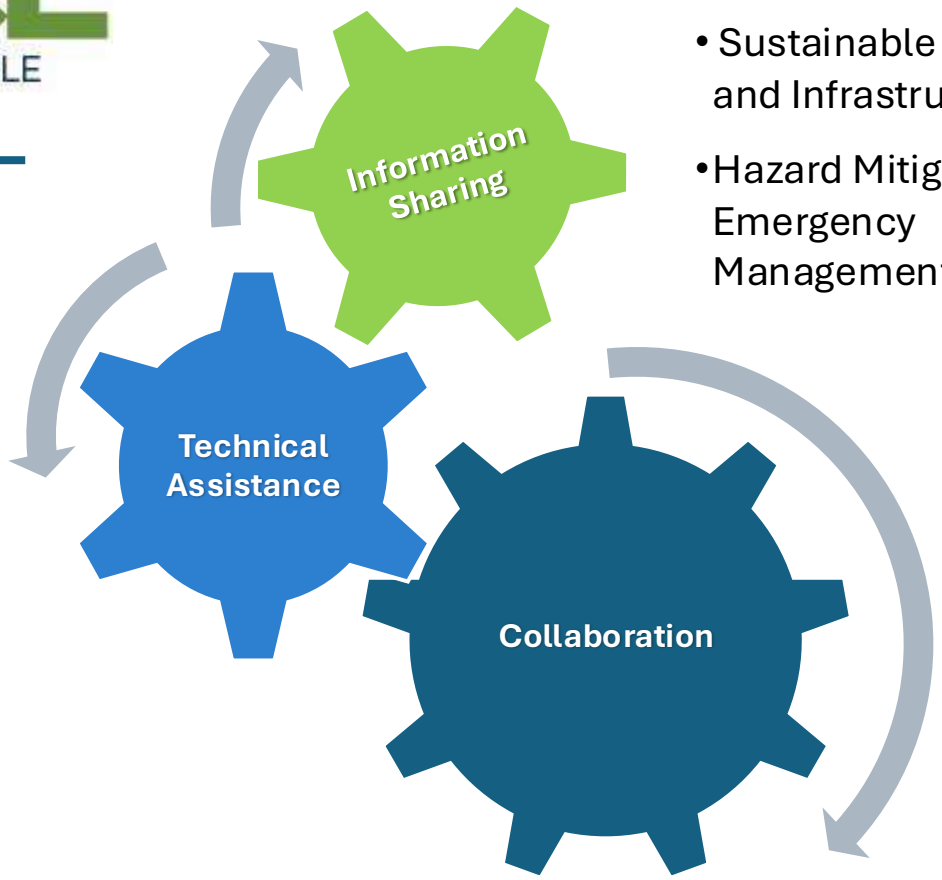
- Emergency responders from coastal Sussex idendified needs and improved coordination on evacuations, with a particular focus on older adults – the state's fastest growing demographic



44% of the population of Long Neck and Angola is over 65 years old. Source: DE-PLANs www.deseagrant.org/de-plans

RASCL
RESILIENT AND SUSTAINABLE COMMUNITIES LEAGUE

- Mission: Support all Delaware communities in taking the necessary actions to thrive in the face of a rapidly changing climate.



Our Core Topics:

- Climate Resilience
- Sustainable Land Use and Infrastructure
- Hazard Mitigation and Emergency Management

https://www.derascl.org/

RASCL
RESILIENT AND SUSTAINABLE COMMUNITIES LEAGUE

The RASCL Summit

- 10 Annual Summits
- 175 average attendees
- This year's theme: *Making Space for Sustainable Growth and Resilience: The Role of Land Use Planning*
- March 5, 2026
- Del-One Conference Center

Register at: https://www.derascl.org/summit

Thank You

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Delaware Sea Grant

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2025 Delaware Climate Change Projections: https://cema.udel.edu/projects/de-2025-climate-change-projections.php

2025 Delaware Climate Action Plan: https://dnrec.delaware.gov/climate-plan/