

#### Sea-Level Rise and New Jersey

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  - Global temperatures have risen by ~2°F during the past century
- Increasing temperatures also cause other changes in climate and sea level.



# **TEMPERATURE AND HEAT**

# **Projected Temperatures**

a) Global surface temperature change relative to 1850-1900



Source: IPCC 2021 Summary for Policymakers



# **SEA-LEVEL RISE SCIENCE**

## Global sea level trends



Source: Univ. of Colorado Sea Level Research Group

# Projected global sea level trends



Source: IPCC 2021 Summary for Policymakers



Relative sea level change (inches):



Source: EPA; NOAA

## New Jersey Sea-Level Rise

#### Atlantic City Sea Level Trend



#### New Jersey Sea-Level Rise



Source: Kopp et al., 2019



### New Jersey Sea-Level Rise

Relative to the 1991–2009 baseline

- sea level is projected to increase 0.5 1.1 ft by 2030
- 0.9 2.1 ft by 2050

Low emissions scenario

- By 2100 is expected to be 1.7 - 4.0 ft higher

High emissions scenario

Sea level is projected to rise 2.3 – 6.3 ft



Source: US Climate Resilience Toolkit (climate.gov)



# **SEA-LEVEL RISE IMPACTS**



#### Inundation



## Storm Surge Flooding



Source: Southern Slopes Climate Change Adaptation Research Partnership

### Hurricane Sandy and Coastal Storms

Estimated 12.8% of Hurricane Sandy property damage in New Jersey attributed to human-caused sea-level rise

- <u>\$3.7 billion</u>

A coastal storm today would cause more flooding damage than the same storm 50 years ago

Today's 100-year intensity coastal flooding event is projected to occur five times as often by 2050.



Source: Strauss et al. (2021); Tebaldi, Strauss, & Zervas (2012)

#### Tidal flooding - Pelican Island, N.J. (April 13, 2020)



Source: NPR WHYY. Photo courtesy of Dominick Solazzo

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Observed and Projected Annual Number of Tidal Floods for Atlantic City, NJ



Source: NOAA NCEI New Jersey State Climate Summary



#### Stormwater Infrastructure



Source: NOAA Office for Coastal Management 2022

## **Estuary Salinity**



Source: DRBC 2020



#### **Delaware River Salt Front**



The Delaware River's current salt front (dark blue) lies 40 miles south of key drinking water intakes. A sea level rise of 3 feet would move it upstream to within 12 miles of the intakes. YALE ENVIRONMENT 360

Source: Yale Environment 360; DRBC 2020

#### Marsh Migration



Source: Kennish et al., 2016



#### **Ghost Forests**



Atlantic County

Source: NJ Parks and Forestry

# Sea-Level Rise and Agriculture

Saltwater contamination

Erosion along tidal waterways

Increasing water table, flooding

1ft SLR will inundate 16,600 acres of NJ agricultural land

– Marxen and Kaplan (2021)



NJ Agricultural Lands



# TOOLS

## NJ Climate Change Resource Center

njclimateresourcecenter.rutgers.edu

#### Climate Change 101



CLIMATE CHANGE IN NEW JERSEY: A BRIEF INTRODUCTION



CLIMATE CHANGE IN NEW JERSEY: IMPACTS AND RESPONSES



SEA LEVEL RISE IN NEW JERSEY: PROJECTIONS AND IMPACTS



CLIMATE CHANGE, HEALTH, AND EQUITY IN NEW JERSEY



FARMING, FOOD, AND CLIMATE CHANGE IN NEW JERSEY



HOW TO REDUCE YOUR GREENHOUSE GAS EMISSIONS

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#### NJADAPT



NJ FloodMapper

Flood exposure mapping tool

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Climate risks summarized by municipality

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#### NJ Forest Adapt

Forest management tool

## Thank you!

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