Sea Level Rise and Coastal Flooding

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DETAILS

2022 Sea Level Rise Technical Report

● Federal Interagency Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Task Force
● Most up-to-date sea level rise projections available
● Key input for 5th National Climate Assessment
● Data informs sea level rise adaptation plans at all scales
2022 Sea Level Rise Technical Report

CONTENT

- Sea level rise scenarios at global, U.S., regional, and local levels
- Covers 1970-2050
- Extreme water level probabilities for various heights
- Description of scientific data and methods employed
Intergovernmental Panel on Climate Change
Sixth Assessment Report

**CO₂ concentration**
Highest in at least 2 million years

**Sea level rise**
Fastest rates in at least 3000 years

**Arctic sea ice area**
Lowest level in at least 1000 years

**Glaciers retreat**
Unprecedented in at least 2000 years
National Sea Level Rise

- Varies by location.
- 10-12 inch rise in last 100 years; same amount projected in next 30 years.
- Results: profound shift in coastal flooding over next 30 years.
- Results: damaging floods projected 10+ times as often.

Then 1920

2020 (Now) 10-12 inches higher

2050 (Future) additional 10-12 inches
High Tide Flooding Averages

- Some regions have a 400-1,100% increase in frequency.
- Acceleration is seen at 80% of East and Gulf Coast locations.
- By 2050, minor high tide flooding is normal occurrence at most locations.

**Then (2000)**
2 days

**Now (2020)**
4 days – twice as frequent as in 2000

**Future (2050)**
25 to 75 days – up to 19 times as frequent as in 2020
Sea Level Rise Data
Past, Present, Future

- **Next 30 Years** - greater certainty.
- **After 2050** - uncertainty increases.
- **Emissions Matter.** Likely at least two additional feet by 2100 due to current emissions alone.
Sea Level Rise Causes

- **Global factors**
  - Thermal expansion of ocean waters
  - Ice loss from glaciers and ice sheets

- **Regional and local factors**
  - Sterodynamics
  - Vertical land motion
  - Gravitational, rotational, and deformational changes
About Sea Level Rise Projections

- Sea level rise projections incorporate a variety of processes.

- Uncertainty factors are related to current science and future emissions and impacts.

- To account for this, projections that span the likelihood spectrum are developed.

- This report’s scenarios are a subset of these projections and represent the range of plausible futures.
Sea Level Rise Technical Report
Comparing 2017 and 2022 Scenarios

- Same nomenclature, but extreme was dropped.
- 2010 global scenarios stayed the same, but the timing changed; less acceleration in scenarios until after 2050.
- 2022 report provides a greater understanding of future sea level trends in the near term (next 30 years).
2022 Sea Level Rise Technical Report

ACCESS AND APPLICATION

- Main Landing Page
  - Report, FAQs, podcast, data, and tools
- Data
  - Raw data files (data tables)
  - API URL builder
- Tools
  - Digital Coast Sea Level Rise Viewer
  - NASA Interagency Sea Level Rise Scenario Tool
  - Adapting Stormwater Management for Coastal Floods
  - Coastal County Snapshots: Sea Level Rise
2022 Sea Level Rise Technical Report

Updated projections available through 2150 for all U.S. coastal waters.

The Sea Level Rise Technical Report provides the most up-to-date sea level rise projections available for all U.S. states and territories; decision-makers will look to it for information.

View the Full Sea Level Rise Technical Report

Frequently Asked Questions
Digital Coast: Coastal Inundation Resources

Our nation's coasts are increasingly at risk from rising seas, changing water levels in the Great Lakes, and more frequent and intense storms. These changes are forcing communities to plan for and adapt to coastal flooding using time scales associated with both weather (hourly, daily, and weekly) and climate (seasonally, annually, by decade, and beyond).

 Communities can benefit from the resources provided below as they work to increase community resilience.

Get Started
Access Key Data
Visualize the Information
Communicate the Issue
Take Action

Access the most current information about climate change, its impacts, and future flooding.

Use these data to develop a comprehensive understanding of your community's water levels.

"Seeing" potential flooding impacts is an important step in understanding risks and vulnerabilities and where communities can improve their resilience.

Increase your skills when it comes to communicating with your stakeholders.

Find resources to help fund research and other resilience implementation plans.
If You Can’t Measure It, You Can’t Protect It

8.1% The marine economy accounts for 8.1% of the total employment in San Diego County.

San Diego County’s Marine Economy

- Establishments: 4,347
- Total Jobs: 120,480
- Wages: $4b
- GDP: $9b

Data Sources
- NOAA (Marine Economy - Employed) 2018
- NOAA (Marine Economy - Self-Employed) 2018
Coastal Businesses Are Vulnerable

Many businesses in coastal counties are vulnerable to flooding. This graphic shows the number of businesses threatened by two flood scenarios: current flooding (the 100-year floodplain) and future flooding (six feet of sea level rise).
Digital Coast: Coastal County Snapshot

Map It

Zoom in and see current business vulnerability
Implications for Local Planning

MIXED NEWS

- Narrower range of possible scenarios until 2050 means more certainty.

- Last few decades saw rates accelerate.

- More time to plan for highest levels than previously projected – but unabated emission levels could change this.

- Predictions for the next 30 years means planning can’t wait.
ADVICE FOR COMMUNITIES

Consider Risk Tolerance, Type of Asset

- Some use higher scenarios because of risk aversion and the extra protection brought by building a little higher.

- Cost is a factor. Elevating a house an extra foot is different than elevating a major road.

- For natural infrastructure, the narrower range of possible scenarios helps avoid the “over building” that impacts ecosystem benefits.
COMING SOON

Application Guide

Guidance for integrating 2022 sea level rise scenarios into planning processes.

▪ risk-tolerance approach
▪ scenario planning approach
▪ adaptation pathways approach
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