

# Sea Level Rise and Coastal Flooding

## The Basics for Maine Communities

Sea level rise is a persistent and long-term problem. The predicted impacts on homes, businesses, and critical infrastructure including working waterfronts could structurally change the communities and economies along our coast. These changes may happen over a long period of time, or they may happen abruptly if we are hit with a large storm.

### SEA LEVEL RISE 101

Sea level rise is primarily due to:

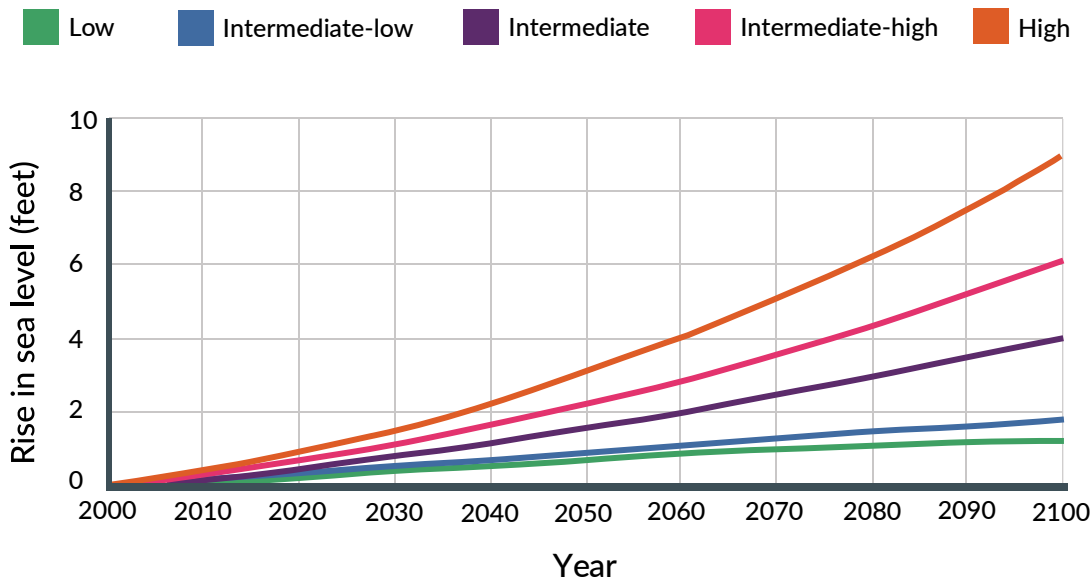
- Melting of land-based ice sheets and glaciers
- Expanding ocean water as it warms (thermal expansion)

**GLOBAL SEA LEVEL HAS RISEN BY ABOUT 8 INCHES SINCE RECORD KEEPING BEGAN IN 1880.**

On average, sea levels are projected to rise another one to four feet globally by 2100, but sea level change will vary regionally (2017 U.S. National Climate Change Assessment). The Gulf of Maine is especially susceptible to fluctuations in sea level due to changes in the strength of the Gulf Stream and seasonal wind patterns. Sea levels in the Gulf of Maine are projected to rise faster than the global average.

In Maine, a sea level rise of one foot will mean that the 10-year storm of the 21st century could cause the same flooding that the 100-year storm caused during the 20th century.

A sea level rise of two feet, without any changes in storms, could more than triple the frequency of coastal flooding throughout most of the Northeast.



Potential future local conditions using the Bar Harbor, ME tide gauge and NOAA 2017 regional scenarios for New England. The scenarios are based largely on projections of atmospheric greenhouse gas concentrations. Adapted from [WWW.CORPSCCLIMATE.US/CCACESL/CURVES.CFM](http://WWW.CORPSCCLIMATE.US/CCACESL/CURVES.CFM)

## WHAT DOES THIS LOOK LIKE FOR COASTAL COMMUNITIES?

You can view the projected impacts of sea level rise for your community and the coast of Maine online.

- The Sea Level Rise Viewer from the Maine Geological Survey shows highest annual tide, plus scenarios of 1, 2, 3.3, and 6 feet of sea level rise.

Go to: [MAINE.GOV/DACF/MGS/HAZARDS/SLR\\_SS](https://MAINE.GOV/DACF/MGS/HAZARDS/SLR_SS)

- NOAA's Sea Level Rise Tool allows you to see current high water levels and areas that are vulnerable.

Go to: [COAST.NOAA.GOV/SLR](https://COAST.NOAA.GOV/SLR)

## RECENT CONTEXT

During the January 4, 2018 nor'easter, high tides in Portland were predicted to reach around 11.5 feet, but due to Winter Storm Grayson, reached 13.8 feet. This resulted in one of the top three highest water levels recorded in Portland since 1912. This storm caused widespread coastal flooding. In 30 years, we may see this level of flooding 8-10 times a year during the regularly occurring high tides.

## WHAT CAN WE DO?

While there is no “one-size-fits all” solution to impacts of sea level rise, there are some concrete steps communities can take to understanding the risks and mitigating the damage.

### **CONDUCT A RISK ASSESSMENT**

Vinalhaven, Damariscotta and Islesboro each started the conversations in their communities by bringing in a consultant to look at elevations and critical infrastructure to determine areas with the highest risk for flooding.

### **APPLY FOR GRANT FUNDING**

Grant funds are available for sea level rise assessment work to understand what areas are vulnerable and explore possible solutions.

### **START TALKING ABOUT SEA LEVEL RISE**

Within your community, what people are worried about and what they are already observing? Most public infrastructure upgrades will need to be paid for with municipal bonding. Understanding the risks is an important step. There are programs designed to help communities start the conversation. For more information contact Susie Arnold.

Join the [ShoreUp Google group for more resources](https://GROUPS.GOOGLE.COM/FORUM/#!/FORUM/SHOREUP-MAINE)

### **TALK TO OTHER COMMUNITIES**

We are all in this together- some communities are just starting and some are well into a multi-year process of developing mitigation and adaptation strategies. Learn from those communities who are farther along in the process.

Visit: [TOOLKIT.CLIMATE.GOV/#CASE-STUDIES](https://TOOLKIT.CLIMATE.GOV/#CASE-STUDIES)  
OR [EPA.GOV/RAINE](https://EPA.GOV/RAINE)

### **SET PRIORITIES**

Use conversations with other communities and the risk assessments to create a plan to protect and shore up the most vulnerable areas. Attainable first steps can include changes to zoning and flood ordinances and adding language that accounts for sea level rise into a comprehensive plan.

### **ENCOURAGE DIVERSE LIVELIHOODS AND LONG-TERM PLANNING**

A strong coastal economy depends on the existence of diverse livelihoods. Communities can work with local businesses to plan for a resilient economy that has accounted for sea level rise.