

An aerial photograph of a coastline, showing waves breaking against a sandy beach. The water is a deep blue, and the sand is a lighter, textured brown. The perspective is from above, looking down at the shoreline.

2022 Interagency Sea Level Rise Coastal Flooding Report

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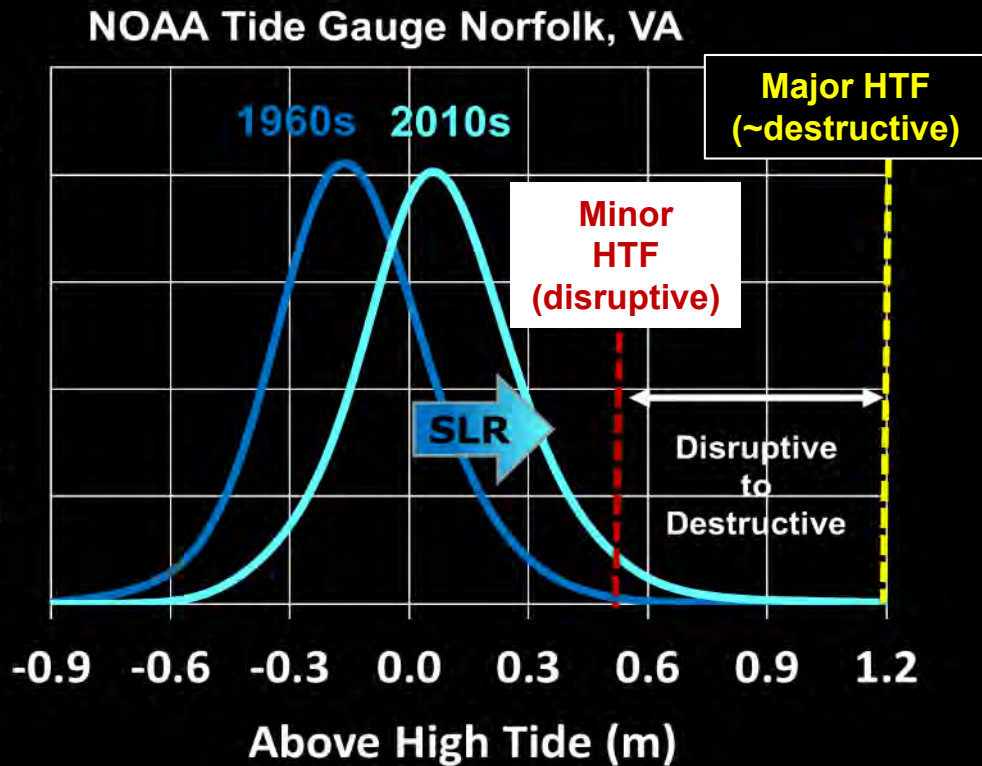
2022 US CLIVAR Summit

March 15, 2022

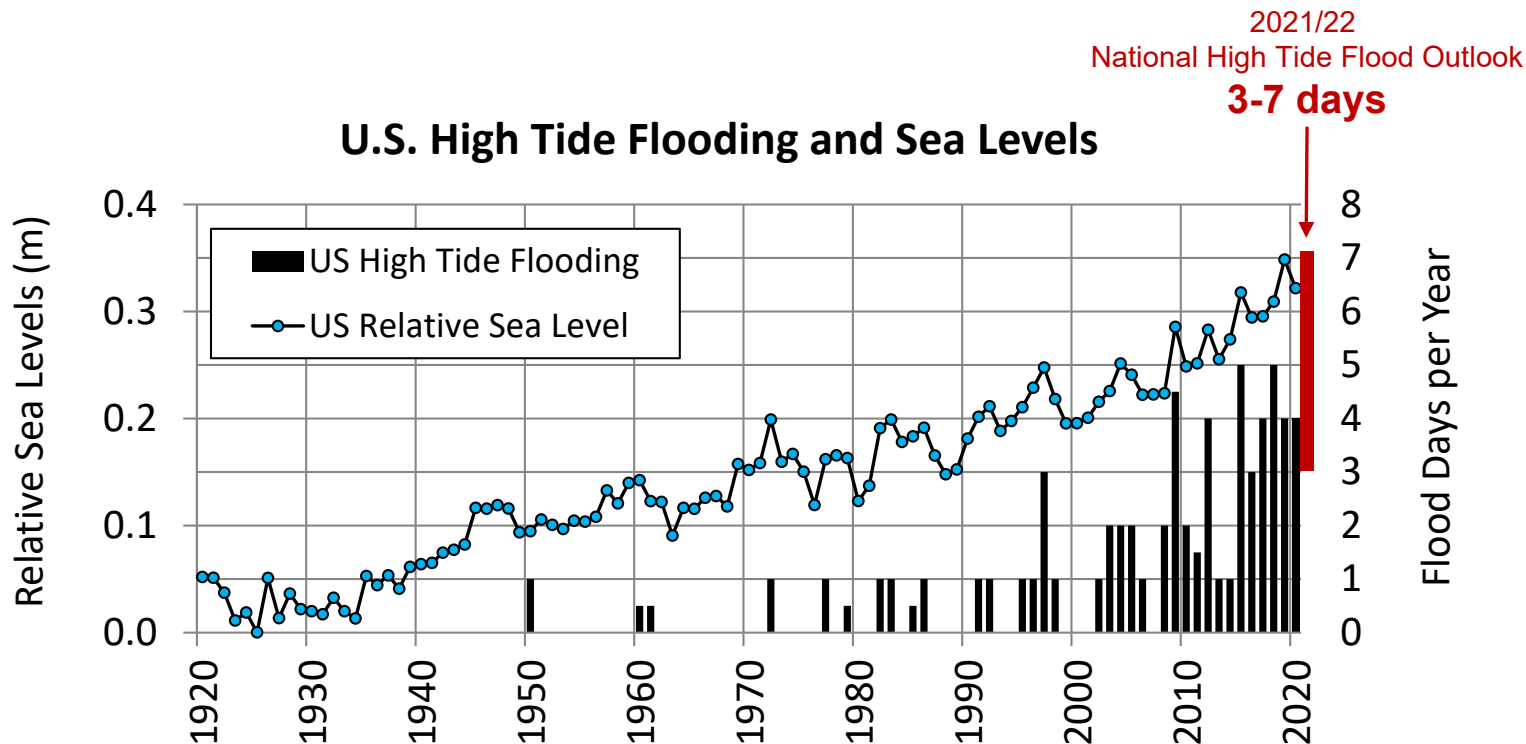
Sea Level Rise (SLR) and High Tide Flooding (HTF)



Highest Daily Water Levels
(Annual Probabilities)



Doubling of HTF since 2000 due to 'SLR trend'; Next-year predictions also consider 'ENSO variability'



Global and Regional Sea Level Rise Scenarios for the United States

















1. How much sea level rise should the U.S. expect by 2050?
2. How much could sea levels rise by 2100 or 2150?
3. What is the risk of a:
 - 2-foot (disruptive) flood
 - 3-foot (typically damaging) flood
 - 4-foot (often-destructive) floodnow and by 2050?



What are Sea Level Rise Scenarios?

- Cover the plausible range of future SLR
- Incorporate future emissions, warming and our current scientific understanding
- 5 possibilities from Low to High (1 to 6.5 ft by 2100)

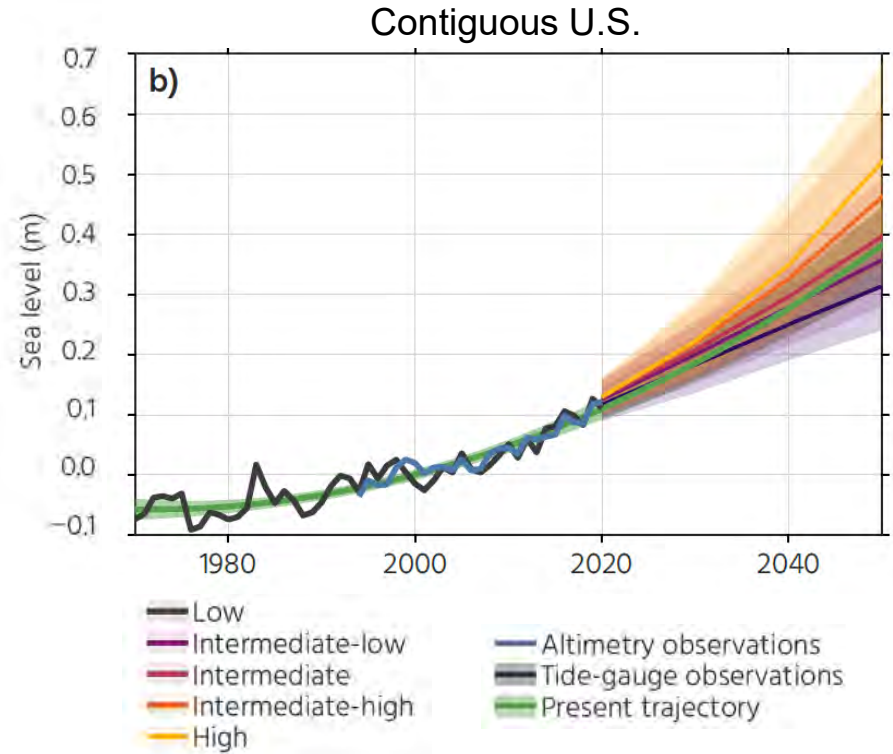
Sea Level Scenario in this Report (2100 Value)	Low Emissions Low Warming	High Emissions High Warming	Considers Possible Rapid Ice Sheet Loss
Low (0.3 m)			
Intermediate-Low (0.5 m)			
Intermediate (1 m)			
Intermediate-High (1.5 m)			
High (2m)			

 Small Contribution  Medium Contribution  Large Contribution

U.S. Sea level rise will be, on average, 10-12 in. higher in the next 30 years (2020-2050)

Key Takeaways

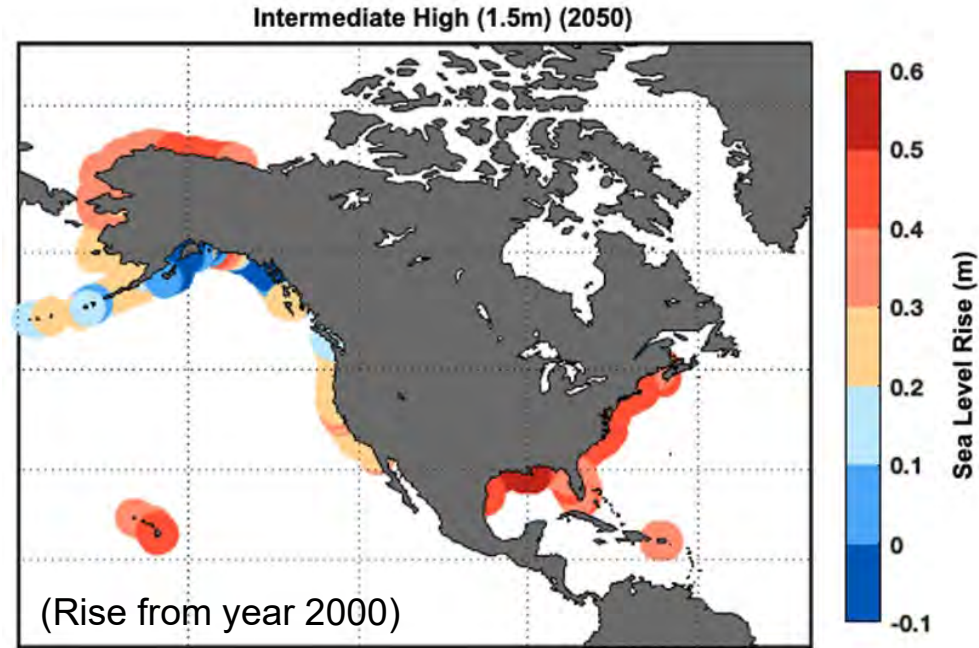
- Equals rise from the past 100 years
- Observations agree with models
- Smaller range across scenarios and greater confidence in the potential SLR in next 30 years



Sea Level Rise Scenarios Differ Geographically

Key Takeaways

- Physical processes affect U.S. coastlines differently
- Sea level projected to rise faster and higher along East and Gulf Coasts vs. West Coast
- Observations and models agree regionally

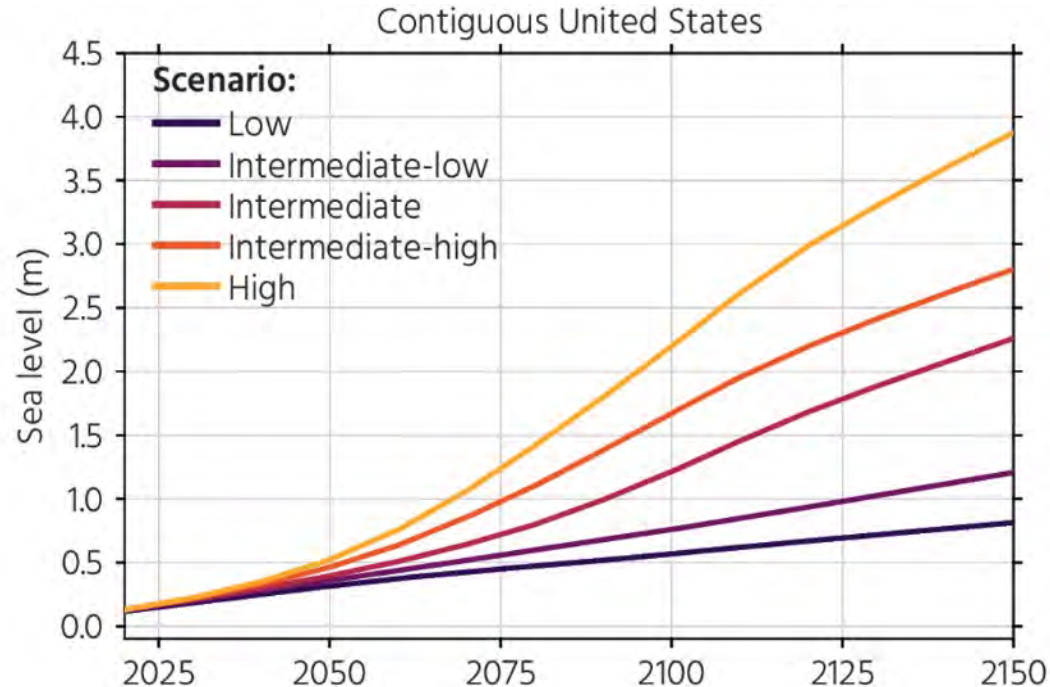


Higher global temperatures increase the risk of higher sea level rise in 2100 and beyond

Key Takeaways

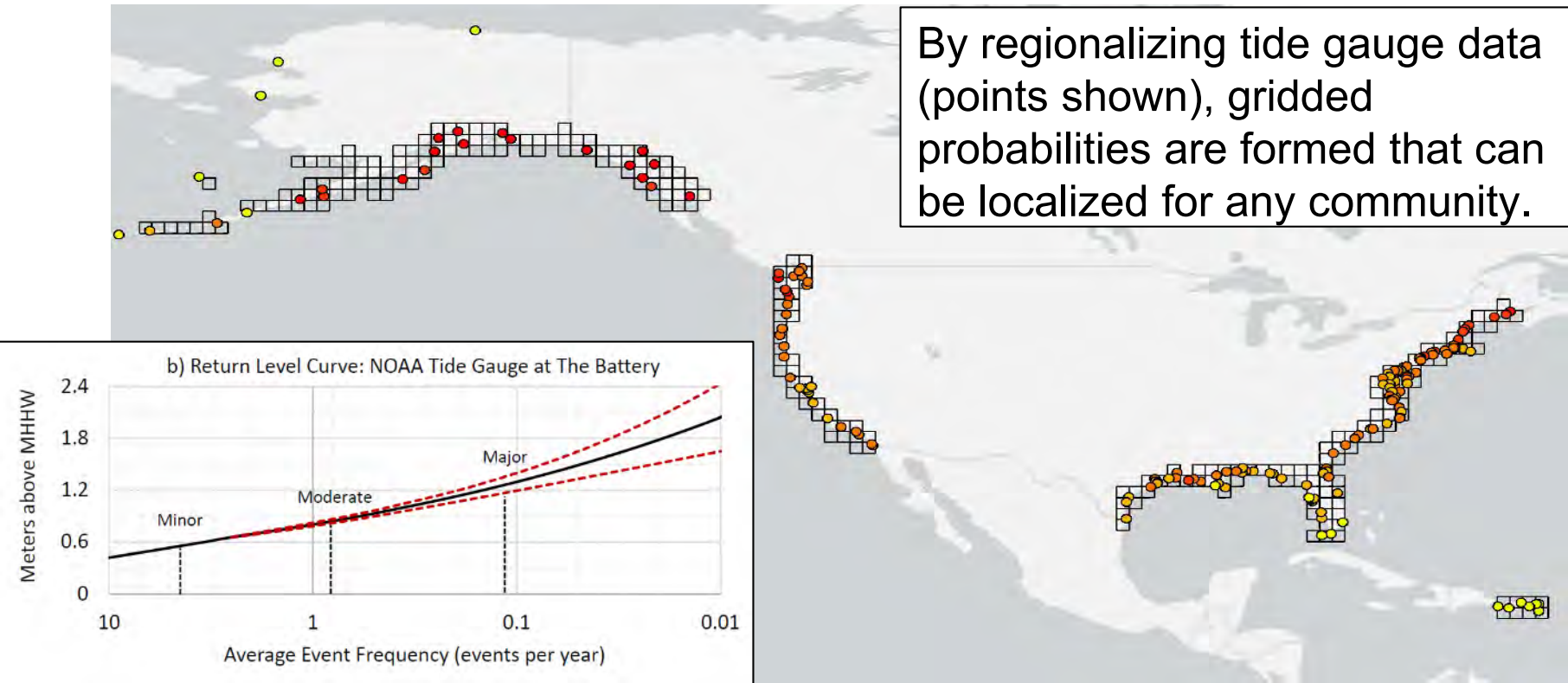
Scenario Ranges Relative to 2000:

- 2100: 2 - 7 ft (0.6 - 2.2m)
- 2150: 3 - 13 ft (0.8 - 3.9m)
- Ranges are driven by future emissions and known-unknown ice sheet dynamics



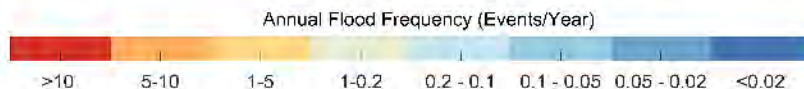
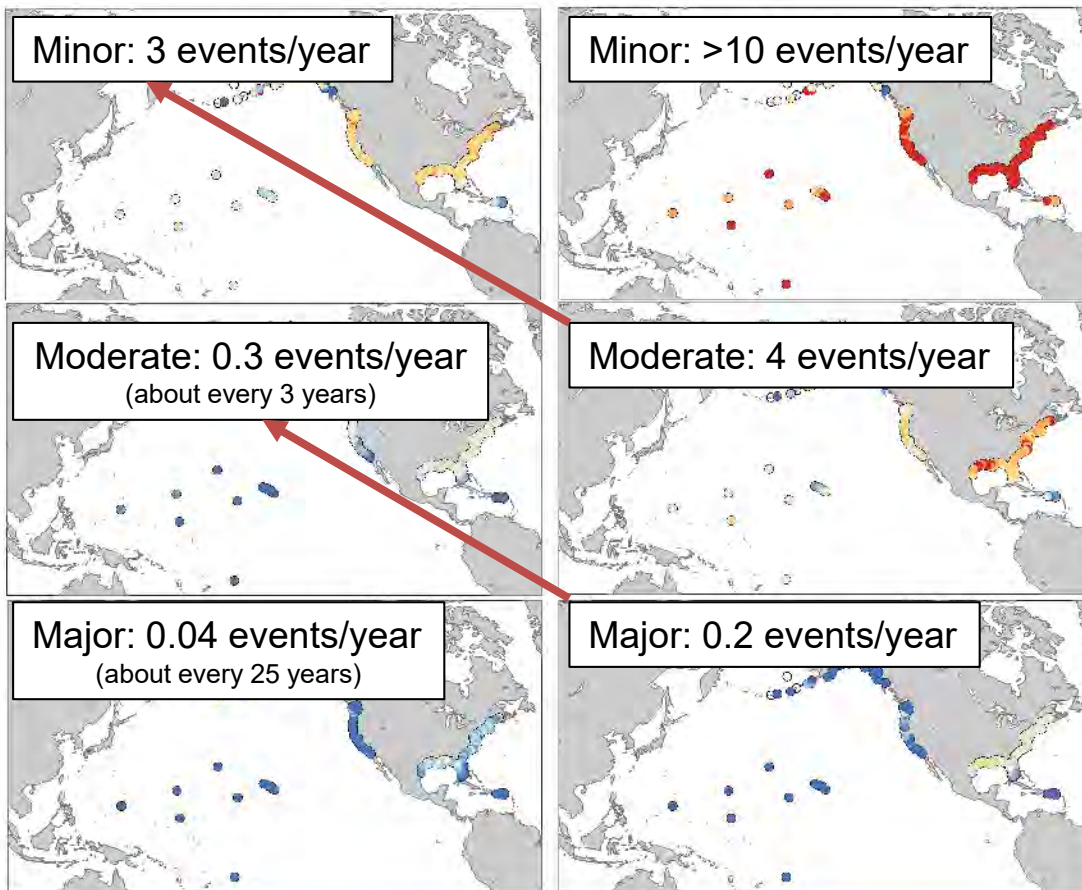
A regional frequency analysis (of scale and shape parameters) to assess high tide flood risk

By regionalizing tide gauge data (points shown), gridded probabilities are formed that can be localized for any community.



High Tide Flooding in 2020

High Tide Flooding by 2050



In 2050, a flood regime shift:

- moderate flooding to occur more frequently than minor flooding occurs today.
- major flooding to occur slightly less than moderate flooding occurs today.




“Moderate Level High Tide Flooding”
in Norfolk, VA
(Oct 2019: WAVY TV)

Now (2020): 1 event/year
Then (2050): 7-8 events/year

Questions?

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 **National Ocean Service**
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

An official website of the United States government. [Here's how you know we're official.](#)


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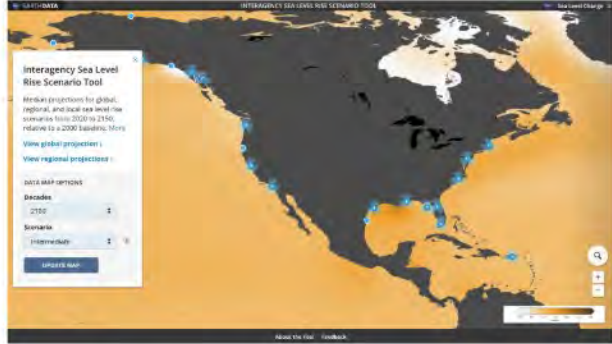
2022 Sea Level Rise Technical Report

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

 **SEA LEVEL CHANGE**
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Interagency Sea Level Rise Scenario Tool



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