Localizing Sea Level Rise Projections for Decision-Makers

April 13, 2020

Materials will be available at: **www.eesi.org/041320data**

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Environmental and Energy Study Institute

- Founded in **1984** by a **bipartisan** Congressional caucus.
- Now an **independent**, bipartisan **nonprofit** with no Congressional funding.
- We provide **fact-based information** on **energy** and **environmental** policy for Congress and other policymakers.
- We focus on **win-win solutions** to make our energy, buildings, and transportation sectors **sustainable** and **resilient**.

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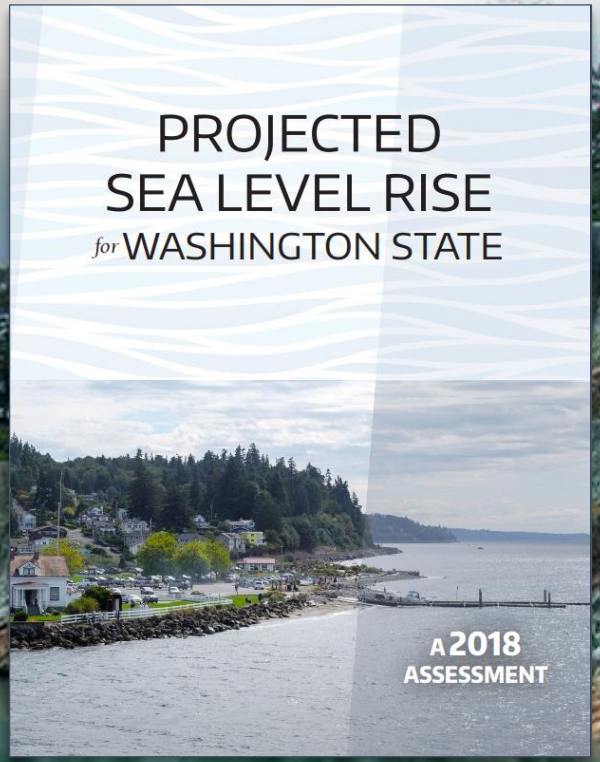
Part 1

Innovations to Support Sea Level Rise Planning in Washington State

EEEI Livestream • 13 April 2020
Localizing SLR Projections to Support Decision-Makers

Ian Miller
Coastal Hazards Specialist
Washington Sea Grant and the Washington Coastal Resilience Project Team

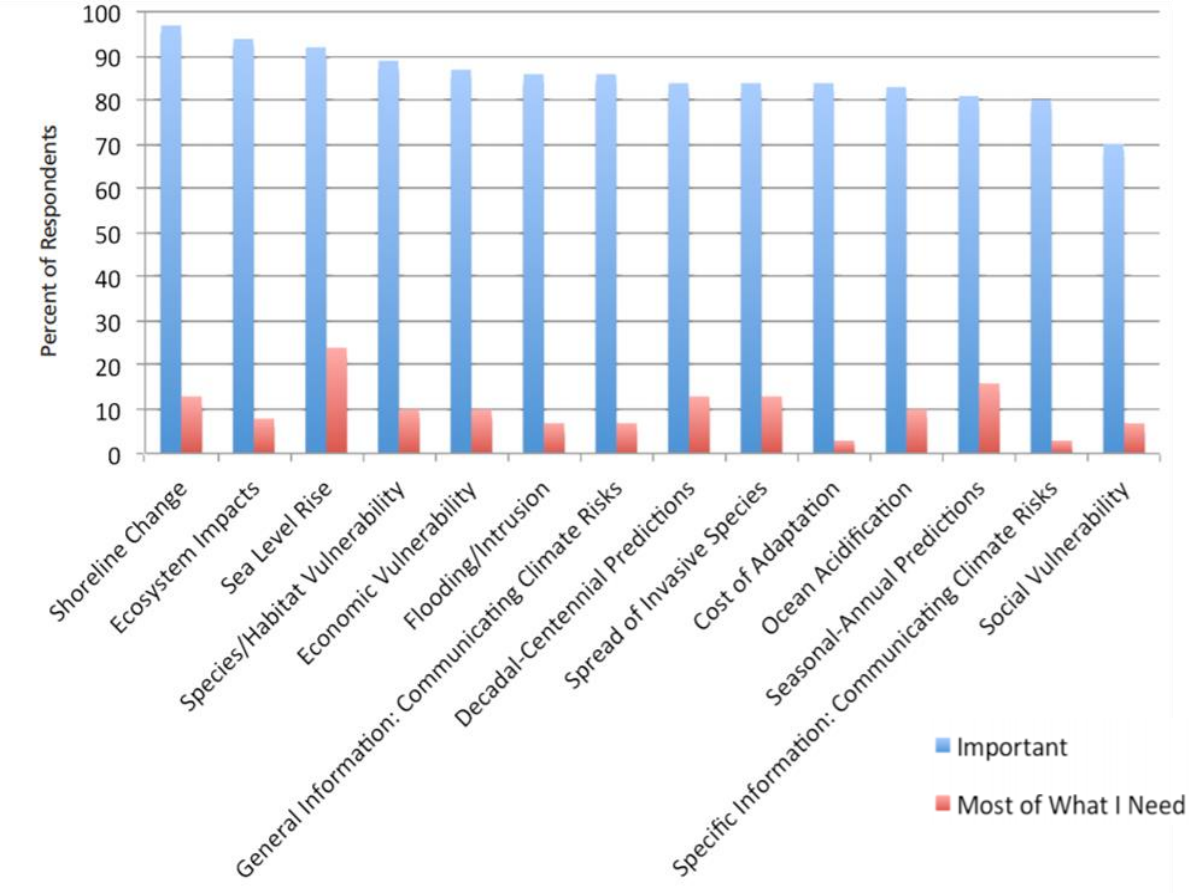


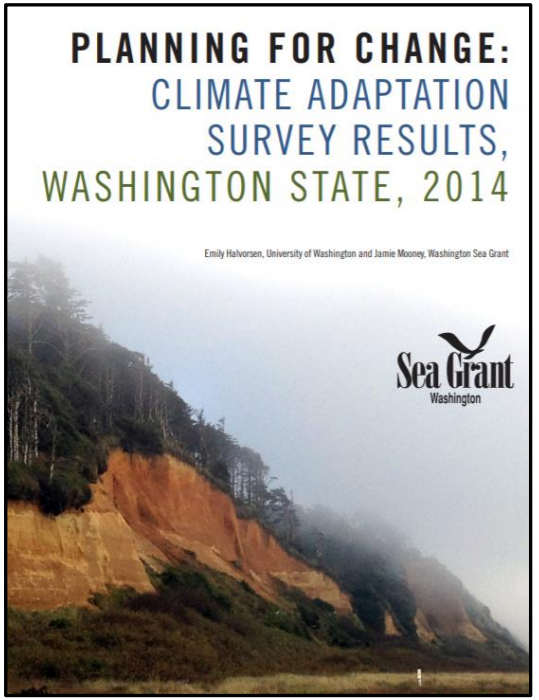
Available at wacoastalnetwork.com

Sea Grant
Washington

Washington Sea Grant is a National Oceanic and Atmospheric Administration program housed at the University of Washington. We fund and conduct marine research, education and outreach programs throughout the state to support the health and sustainable use of our marine resources.

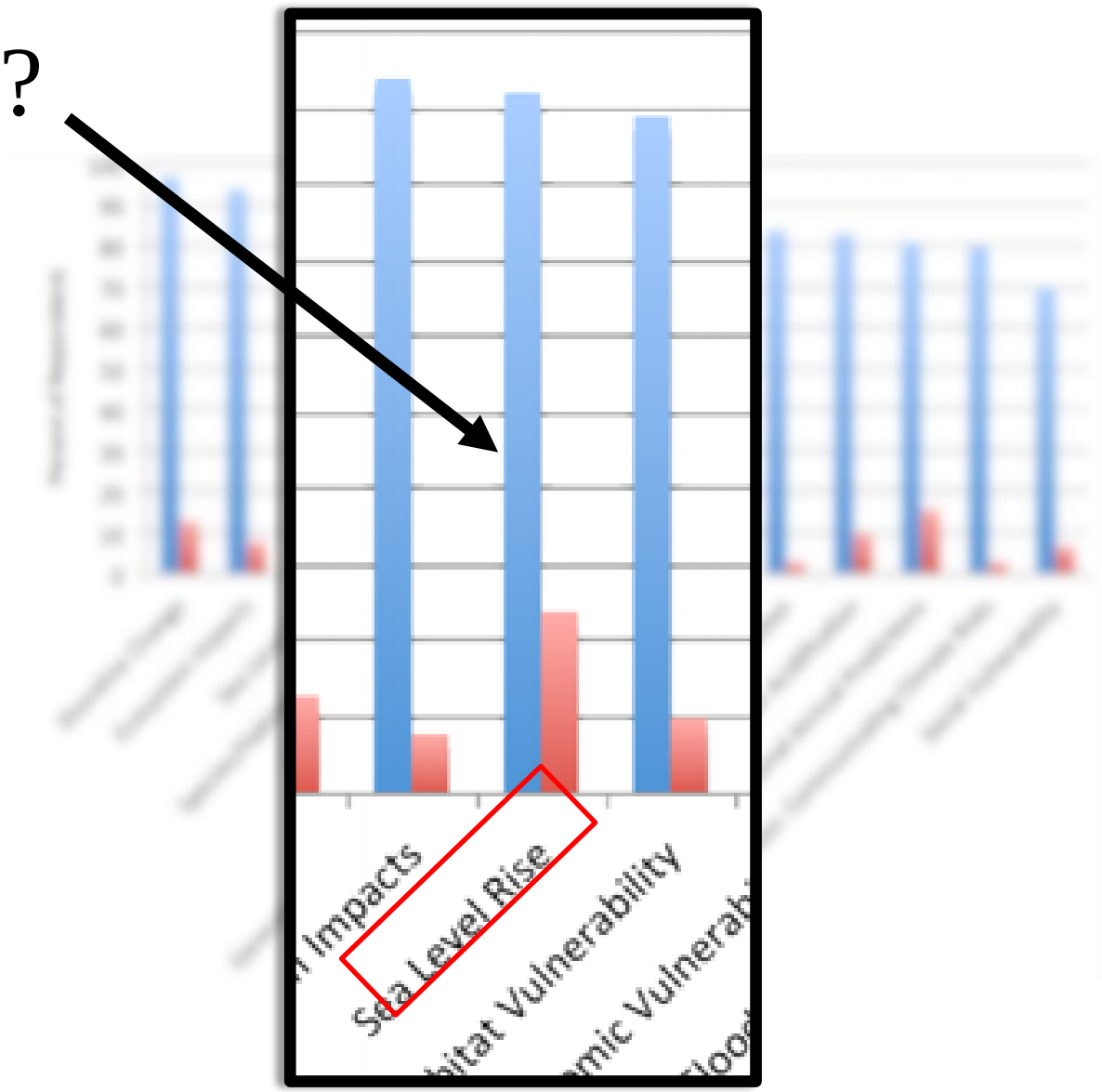
Importance of Climate Change Impacts as Compared to Information Needed





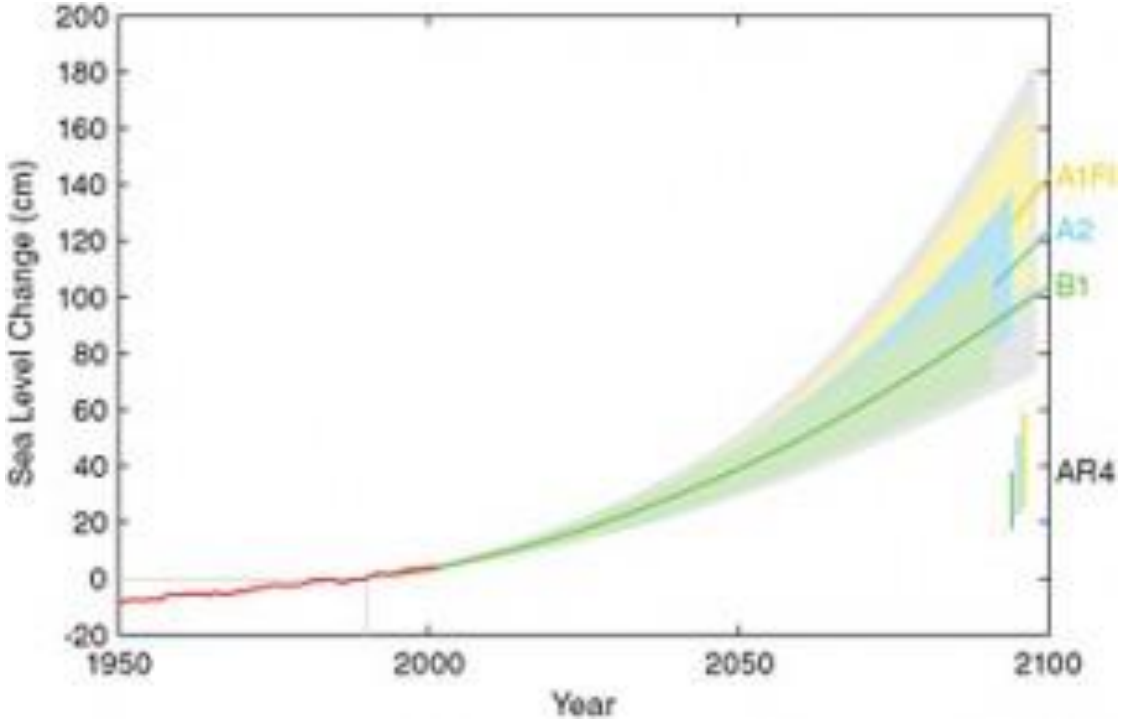
Back in 2014…

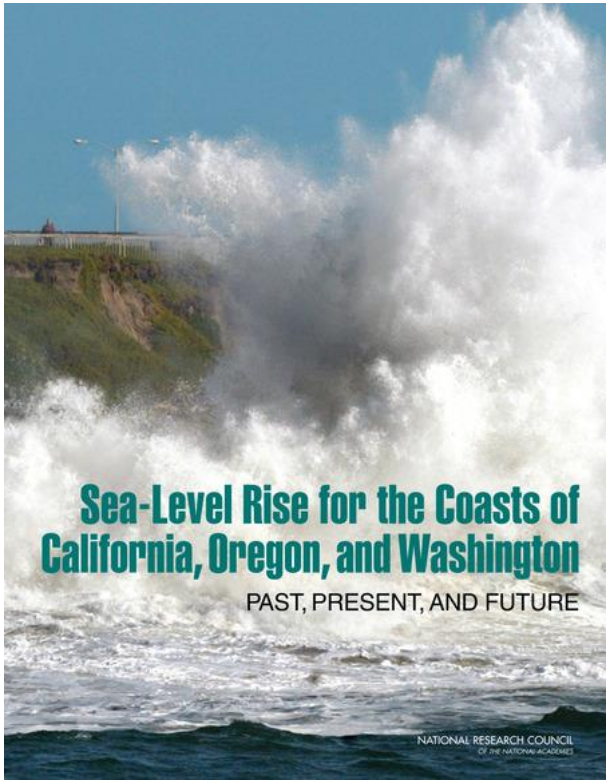
Action Gap?



Best Available Science: 2012

- Narrow range of uncertainty for each emissions scenario
- Not “localized” for most communities





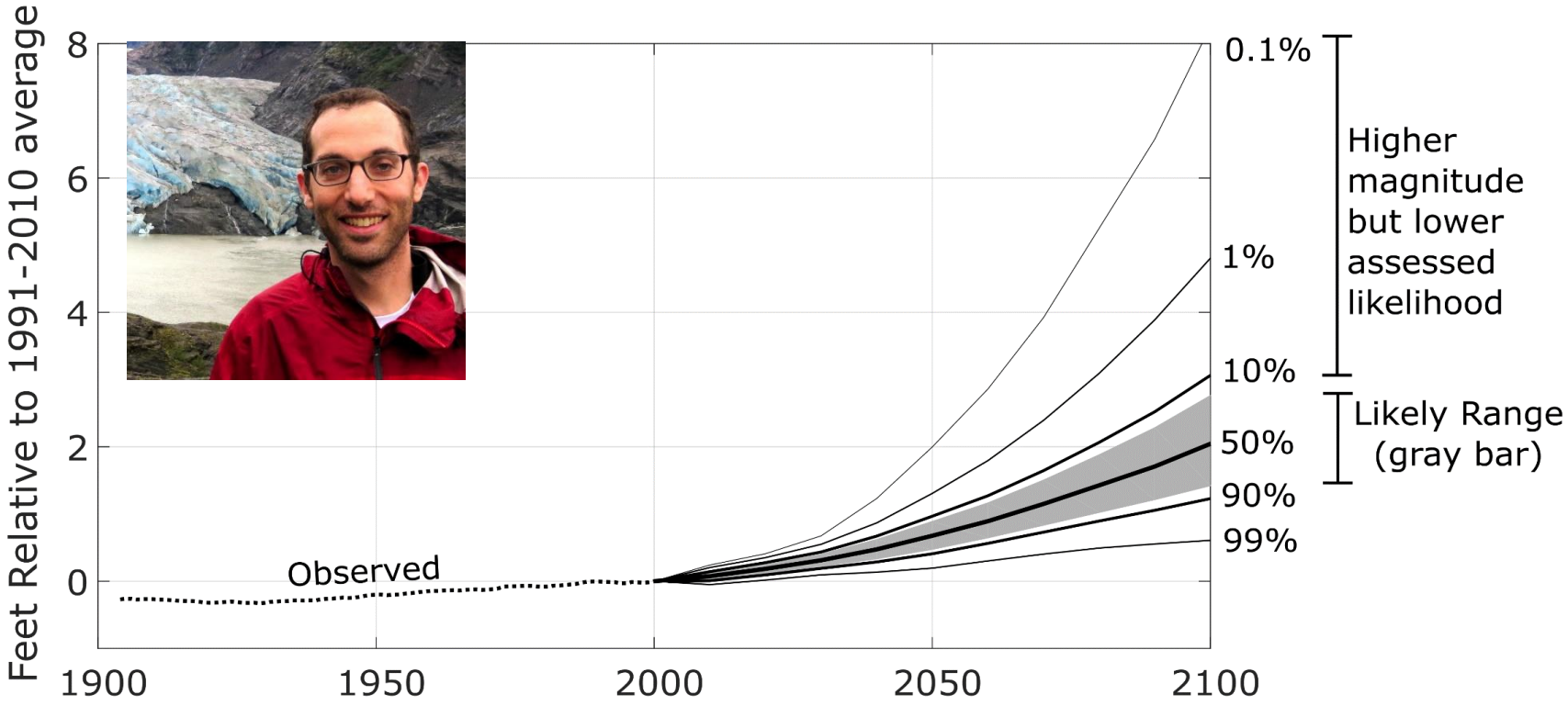
NOAA Funded "Regional Resilience" Project

Objectives

- Support an updated sea level rise and storm surge assessment for coastal Washington
- Build climate resilience principles into state agency processes and plans
- Look for resilience co-benefit from existing planning processes and nearshore investments
- Create outreach tools to facilitate implementation of resilience projects and plans

Innovation 1:
Kopp's Probabilistic Framework

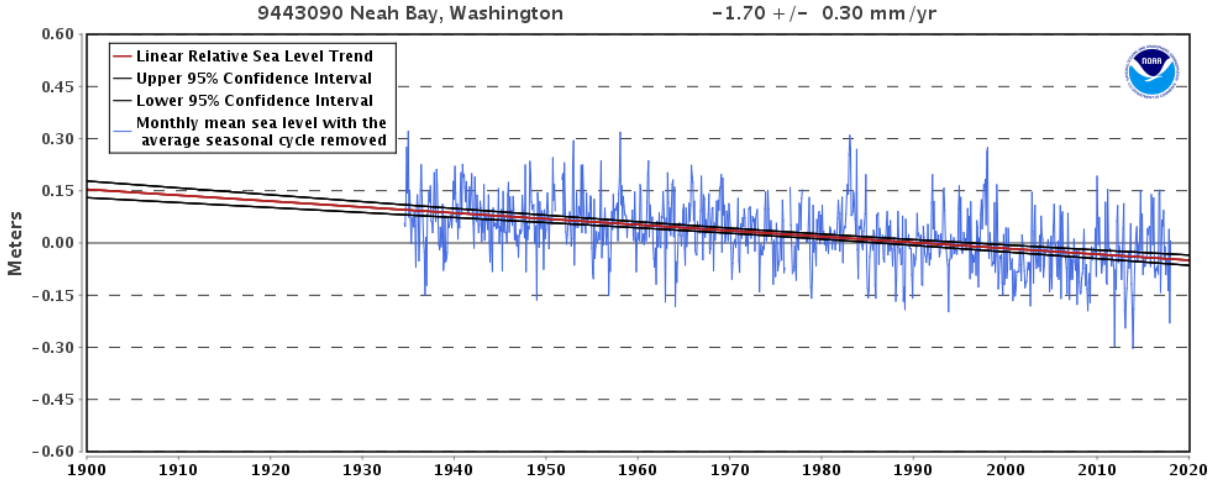
Washington State SL Projections for RCP 8.5



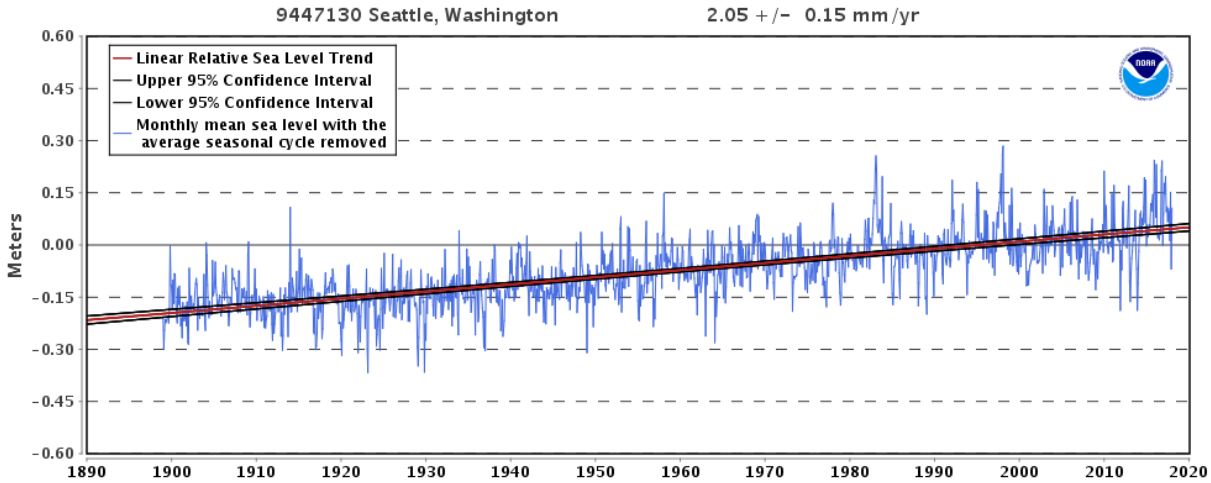
From Miller et al., 2018. Derived from Kopp et al, 2014

Innovation 2: Localizing

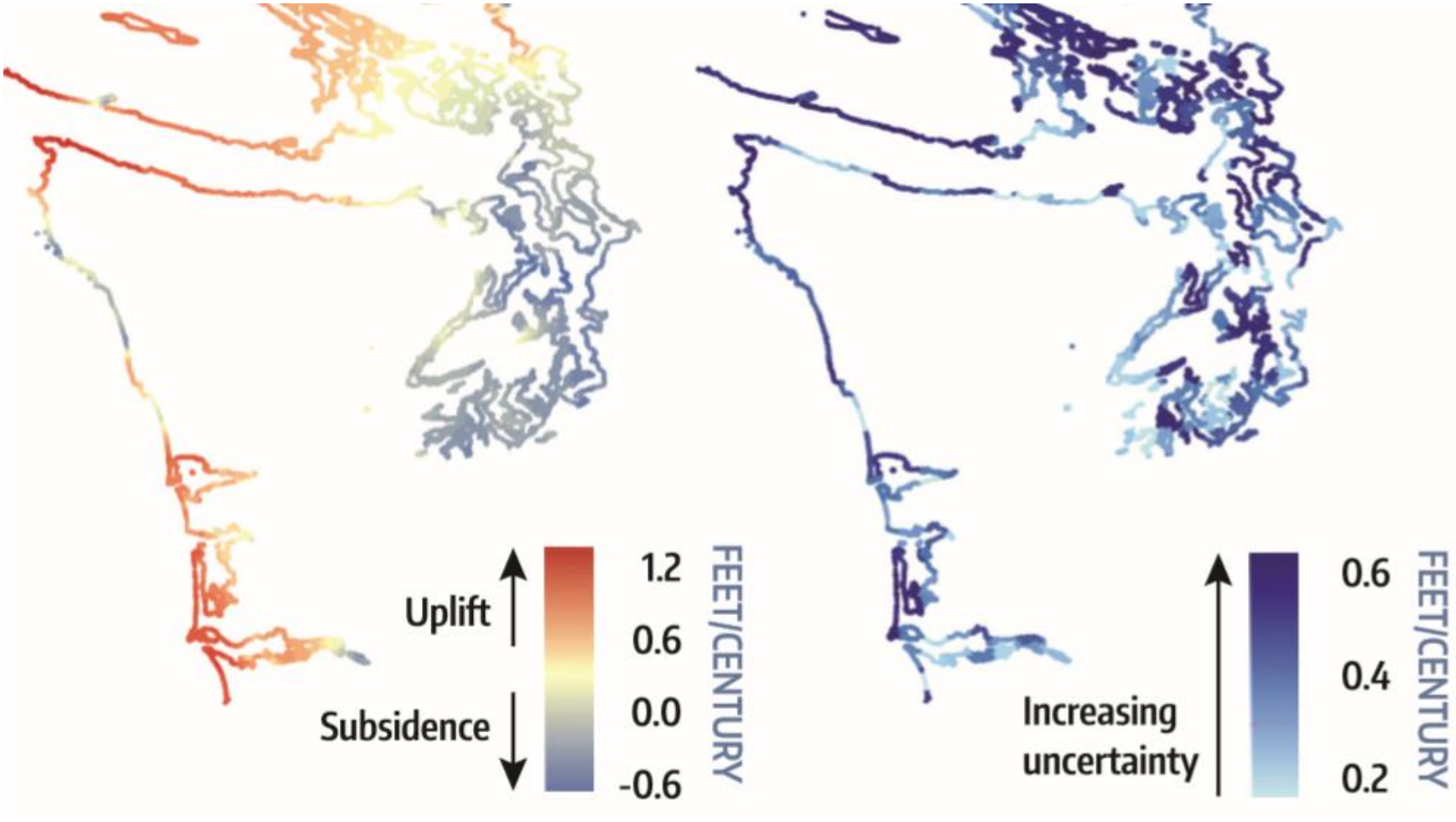
Neah Bay, WA



Seattle, WA



Vertical Land Movement



From Miller et al., 2018, “Sea Level Rise in Washington State – A 2018 Assessment”

see spreadsheet RSLProjections_for...

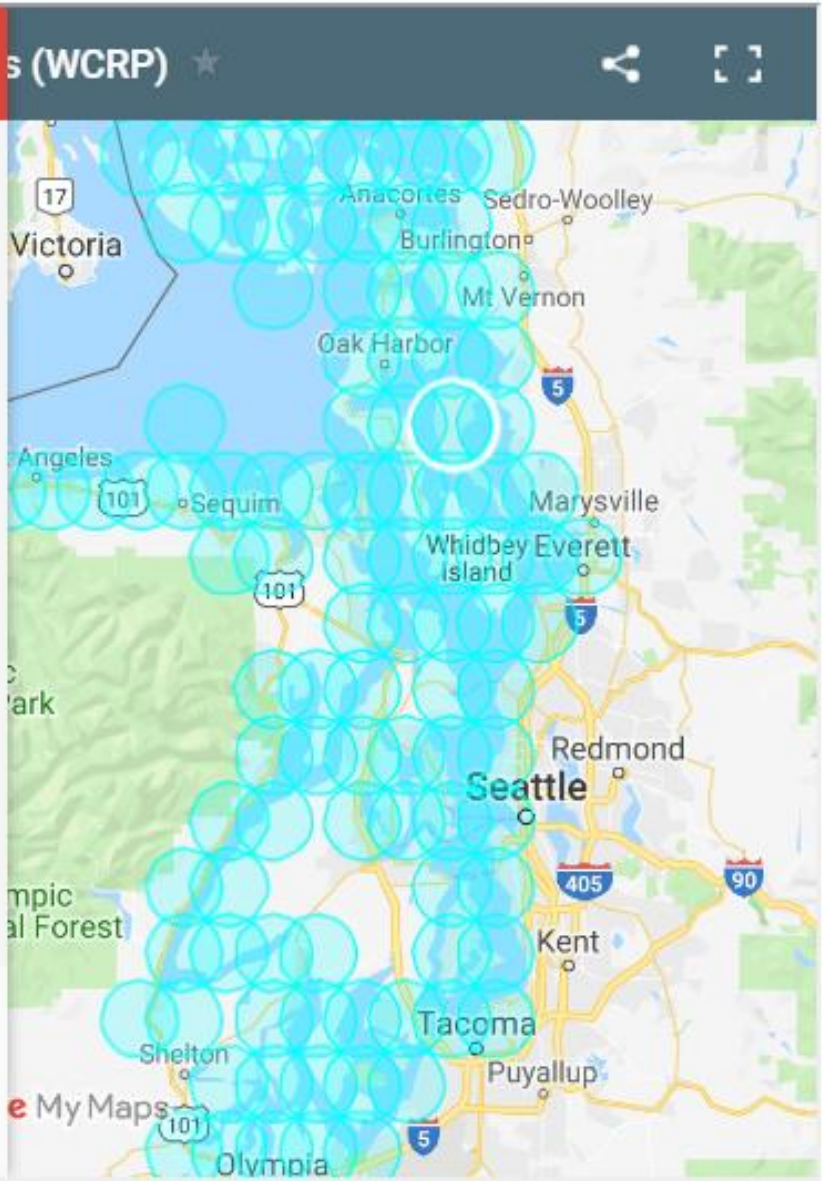
name

see spreadsheet RSLProjections_forLat48.2Long-122.5.xlsx

description

Developed as part of the Washington Coastal Resilience Project, the excel sheet referenced with this polygon summarizes a current assessment of sea level projections for this area

Data Download:
http://www.wacoastalnetwork.com/files/theme/wcrp/mapdata/RSLProjections_Lat48.2N_Long122.5W.xlsx



The Dreaded Matrix

Table 1: Projected average sea level magnitudes, in feet, for different assessed likelihoods and time periods

	Assessed Probability of Exceedance:									
19 year period cente	99	95	90	83	50	17	10	5	1	0.1
2010	-0.1	0	0	0	0.1	0.2	0.2	0.2	0.3	0.3
2020	-0.1	0	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6
2030	-0.1	0.1	0.1	0.2	0.3	0.5	0.6	0.6	0.7	0.9
2040	0	0.1	0.2	0.3	0.5	0.7	0.8	0.9	1.1	1.4
2050	0	0.2	0.3	0.4	0.7	1	1.1	1.3	1.5	2.1
2060	0.1	0.3	0.5	0.6	1	1.3	1.5	1.7	2	3
2070	0.1	0.5	0.6	0.8	1.2	1.7	1.9	2.1	2.7	4
2080	0.2	0.6	0.8	1	1.5	2.1	2.3	2.6	3.4	5.4
2090	0.3	0.7	1	1.2	1.8	2.5	2.8	3.1	4.1	6.9
2100	0.3	0.8	1.1	1.4	2.2	3	3.4	3.8	5	8.6
2110	0.4	1	1.2	1.5	2.3	3.2	3.6	4.1	5.7	10.1
2120	0.5	1.1	1.4	1.7	2.6	3.7	4.2	4.8	6.7	12.2
2130	0.6	1.2	1.6	1.9	3	4.2	4.7	5.5	7.8	14
2140	0.6	1.3	1.7	2.1	3.3	4.7	5.3	6.2	9	16.2
2150	0.6	1.4	1.9	2.3	3.6	5.2	5.9	7	10.2	18.5

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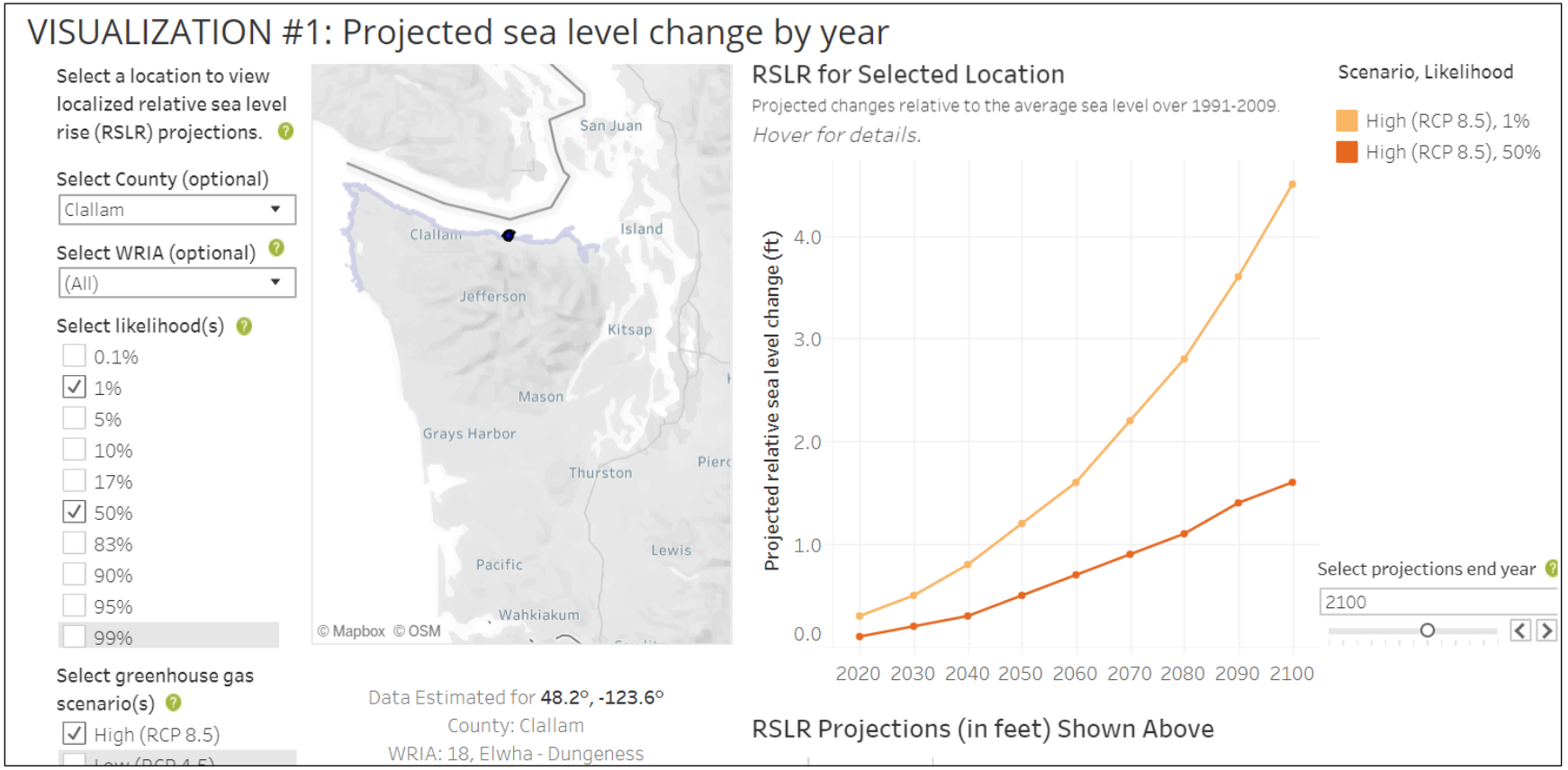
Tableau-based Interactive SLR Projection Tool



Take it away Nicole!

Ian Miller, *Coastal Hazards Specialist*

Washington Sea Grant
Sitting at Peninsula College
Port Angeles, WA
immiller@uw.edu
360 417 6460

Part 2

Localizing Sea Level Rise Projections for Decision-Makers

April 13, 2020

Nicole Faghin, *Coastal Management Specialist*
Washington Sea Grant
faghin@uw.edu

How Do we Get to Implementation?

Washington Coastal Resilience Project
Four Tasks

Goal: *Rapidly increase the capacity in Washington State*

Enhance the resilience of at least

three Washington coastal communities

through pilot projects


British Columbia
• Neah Bay
• Island County (Whidbey And Camano Islands)
• Seattle
• Tacoma

ESTUARY
& SALMON
RESTORATION PROGRAM

Restoration and Sea Level Rise Guidance


British Columbia
Neah Bay
Island County (Whidbey And Camano Islands)
Seattle
Tacoma

Owen Beach Park Improvements

Tacoma, Washington

Owen Beach, Tacoma

Total water level (Flooding Extent) with sea level rise (Winter)

APPLIED SLR PROJECTIONS

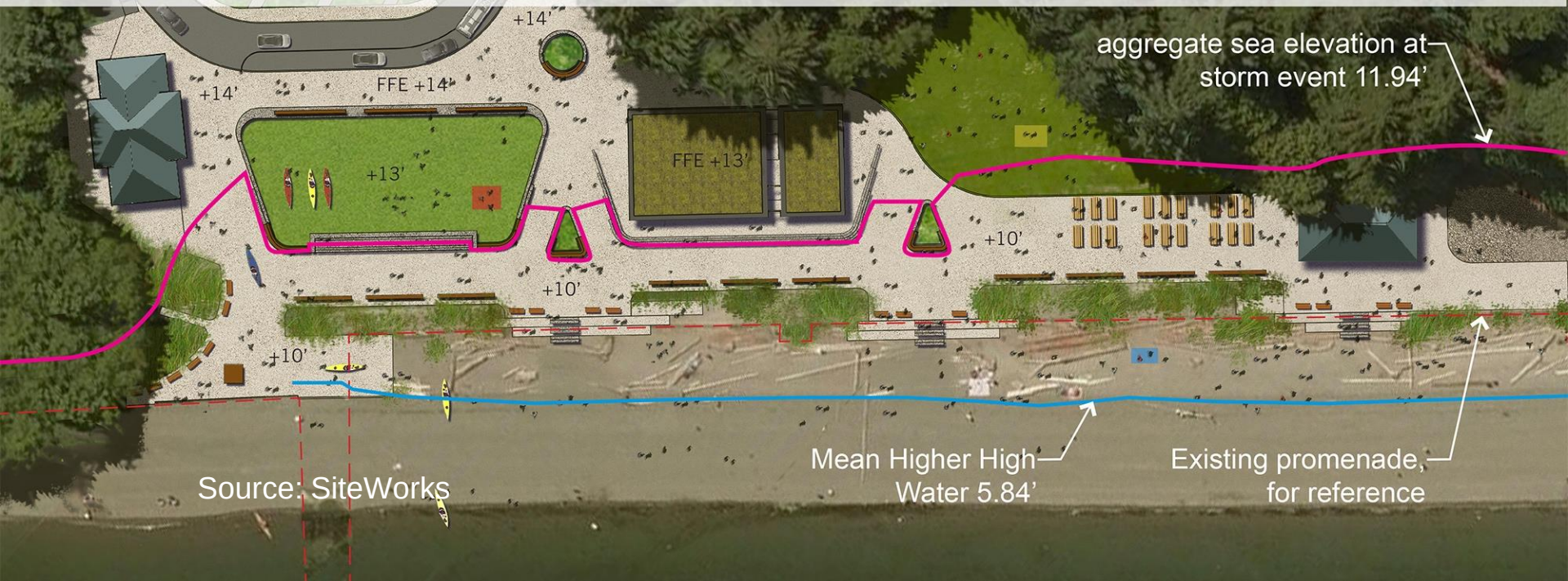
BASIS OF DESIGN SCENARIO FOR OWEN BEACH RCP8.5

*This projection excludes wave run-up impact.

**All projections are based on most recent data available and subject to change.

- 5.84’ Mean Higher High Water (existing)
- 2.5’ SLR projection @ 2090 & 20% probability
- \+ 3.6’ FEMA Flood storm surge

11.94’ aggregate sea elevation at storm event



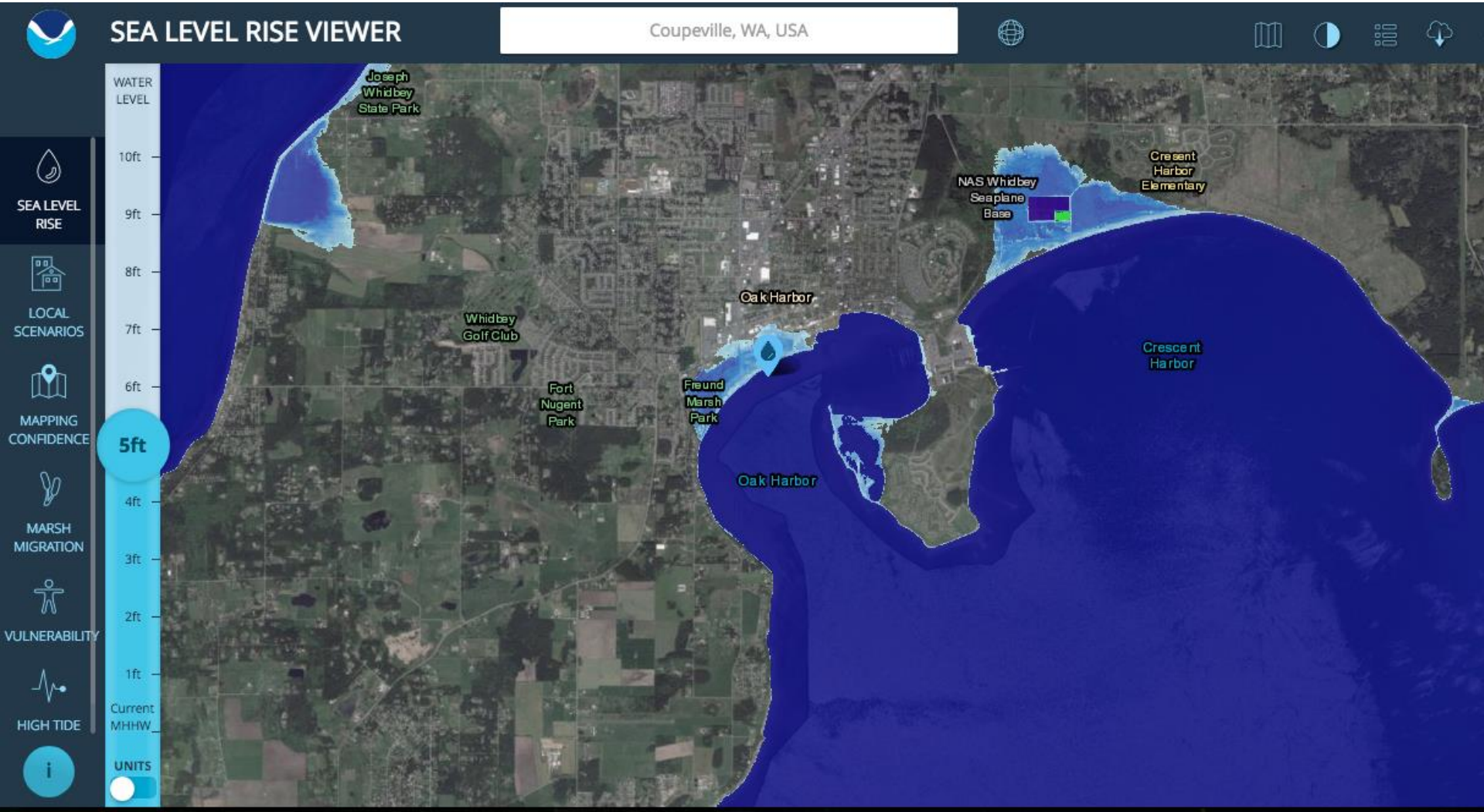
Ruston Way Park Visioning and Wave Study

Tacoma, Washington

Source


British Columbia
Neah Bay
Island County (Whidbey And Camano Islands)
Seattle
Tacoma

Evaluate impacts with NOAA Sea Level Rise Viewer



Historic Beach Communities

Source: Coastal Atlas

Canal Communities

Source: Coastal Atlas

Bluff Communities

Source: Coastal Atlas

Strategies for Homeowners

Short –term	Now - 2050
Mid- term	2050 - 2070
Long – term	2070 - 2100

Island County Sea Level Rise Strategy Study
Community-Based Planning Report

Island County, WA

Community-Based Coastal Resilience Planning Guidebook


Step 1
Define planning issues and establish a community planning team
Step 2
Identify community values and vulnerable assets
Step 3
Analyze risk and establish thresholds for action
Step 4
Develop and implement community resilience strategies and projects
Step 5
Monitor outcomes to inform future plans

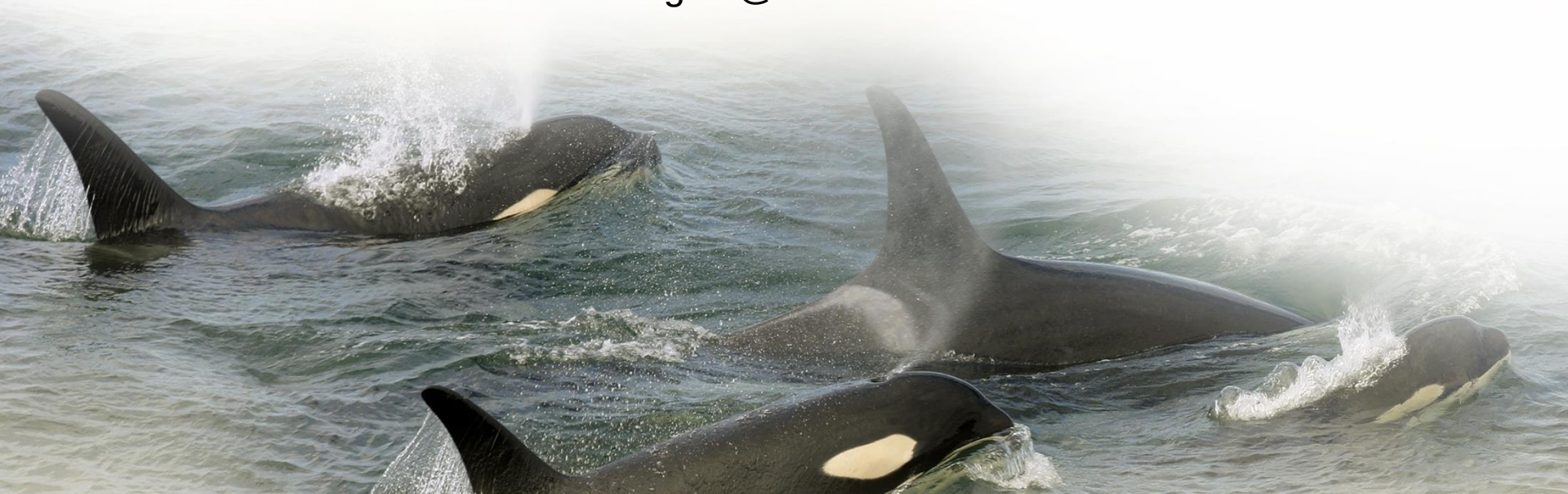

Source: greenbank/wacoast.gov


How do we get these tools
to the decision makers?


70%

Questions?

Nicole Faghin, *Coastal Management Specialist*
Washington Sea Grant
faghin@uw.edu



EESI

Localizing Sea Level Rise Projections for Decision-Makers

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