Envisioning a Resilient Oregon Coast: Projections, Impacts, and Adaptation

Photo: Armand Thibault, Neskowin, 2008

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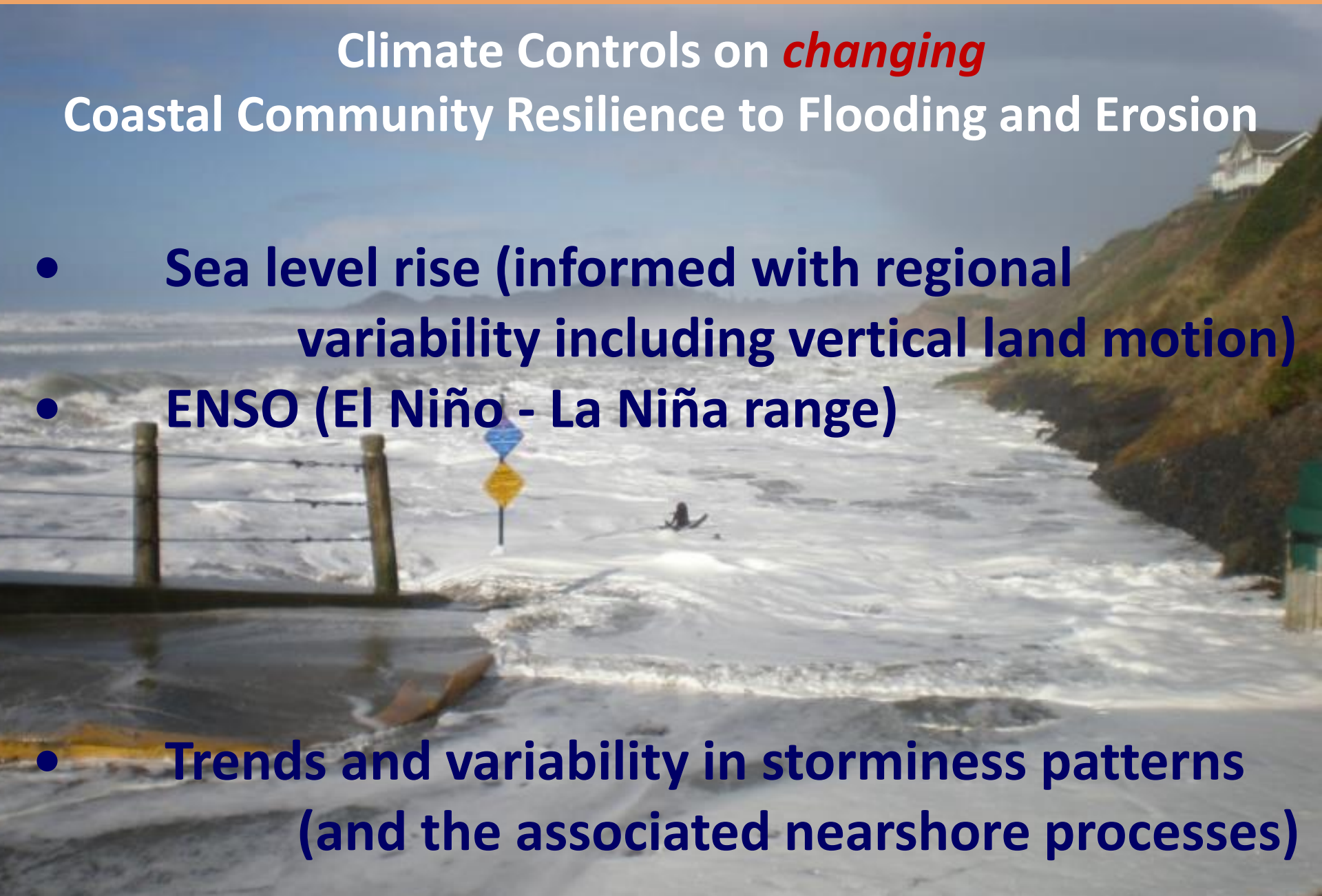
NOAA

CIRC Climate Impacts Research Consortium

Sea Grant Oregon

Oregon State University



Climate Controls on *changing* Coastal Community Resilience to Flooding and Erosion

- Sea level rise (informed with regional variability including vertical land motion)
- ENSO (El Niño - La Niña range)
- Trends and variability in storminess patterns (and the associated nearshore processes)

Socio-economic Controls on *changing* Coastal Community Resilience to Flooding and Erosion

- Population growth
- Development Patterns
- Adaptation Planning

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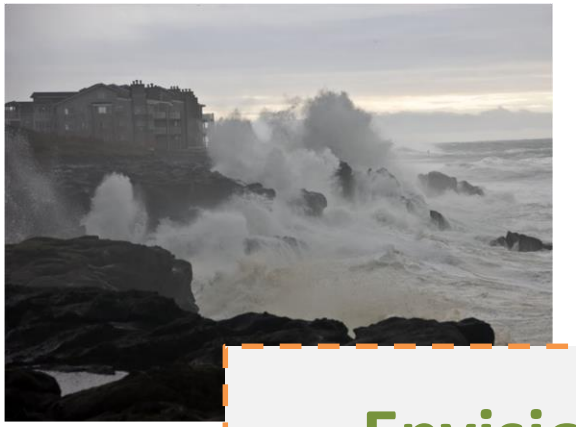
Climate

Policy

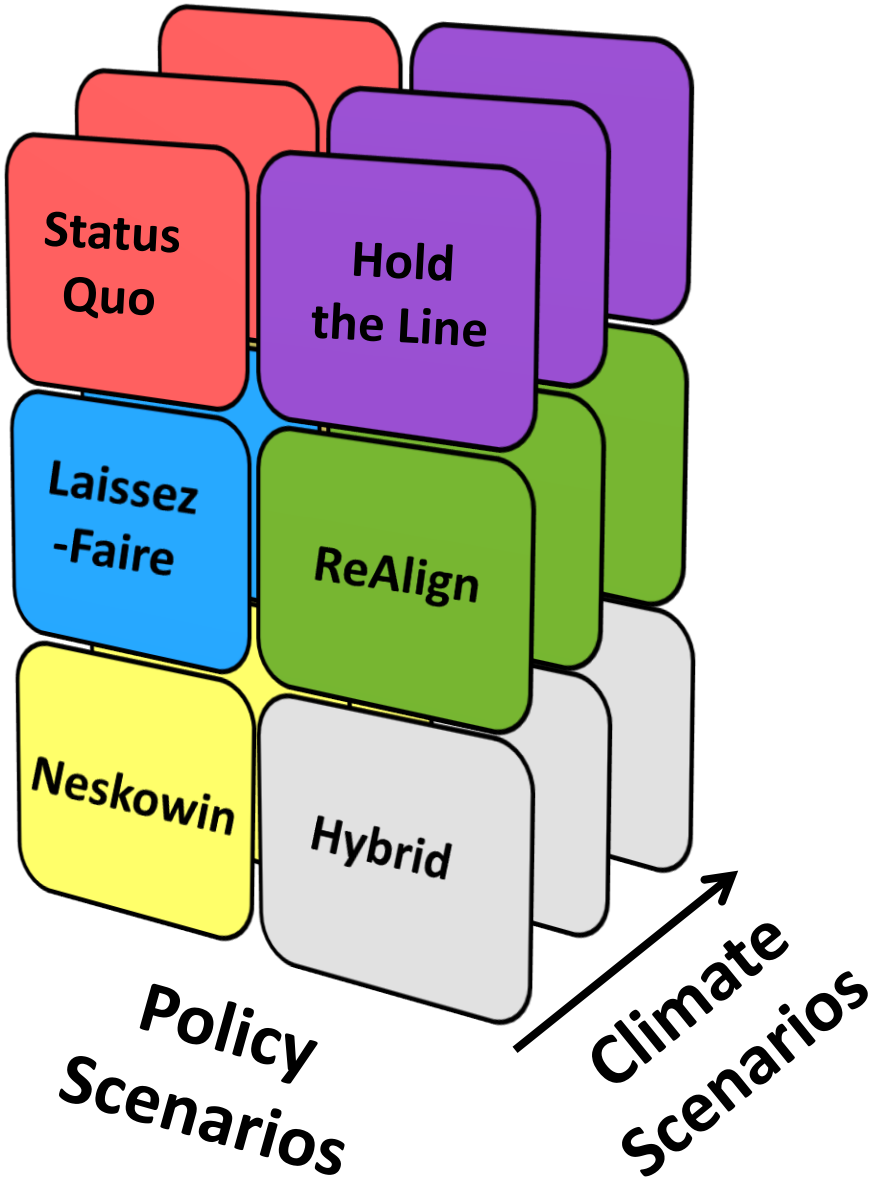


Envisioning Alternative Coastal Futures:

Exploring how complex coupled natural and human systems dynamically respond to varying adaptation and climate change scenarios.

Envisioning a Resilient Oregon Coast

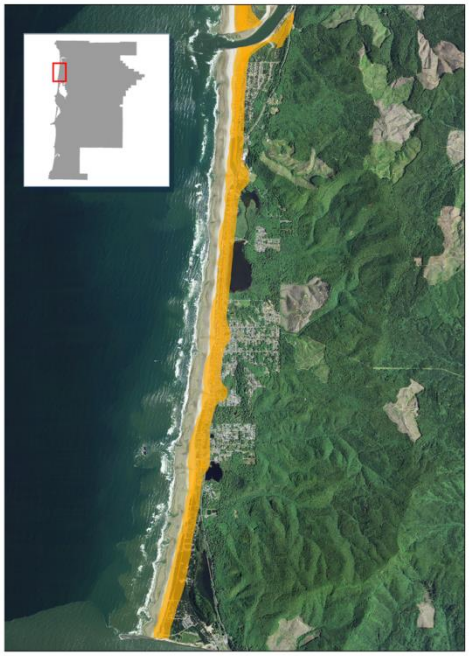
Climate Scenarios (Physical Drivers) X Policy Scenarios (Human Drivers)



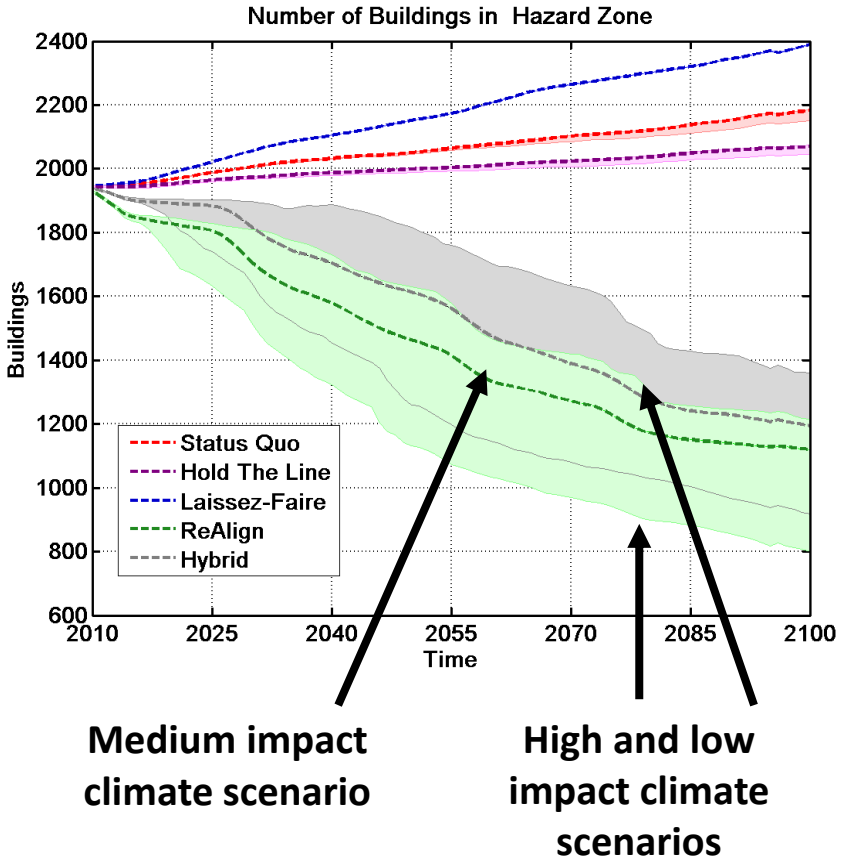
The effect of policies on development patterns

Neskowin

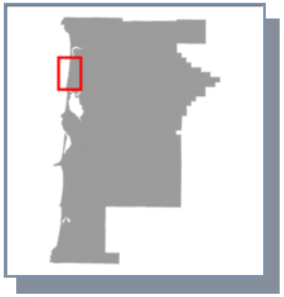
Rockaway Beach

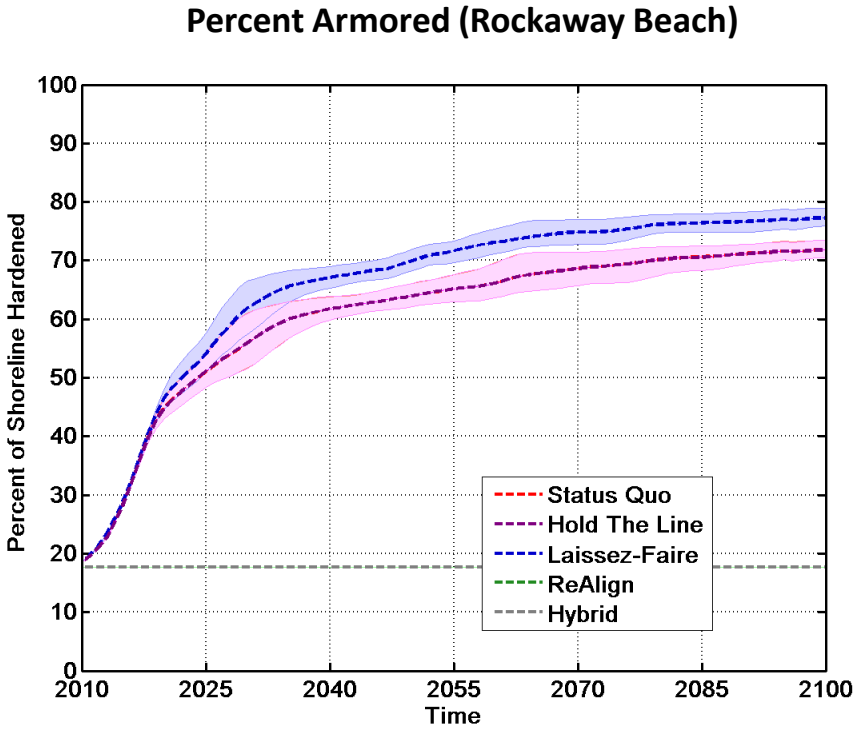


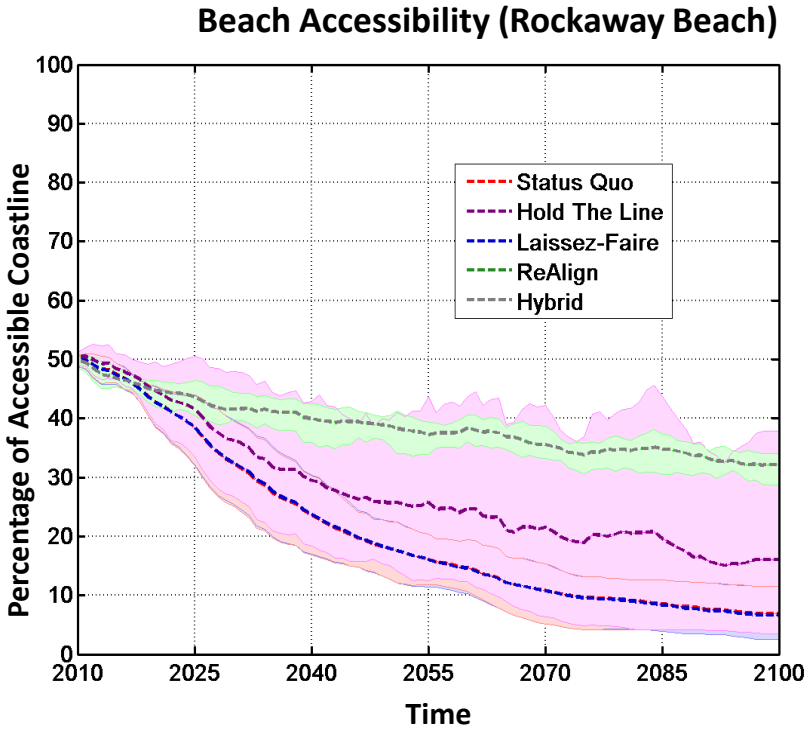
DOGAMI Hazard Zone



Policy driven tradeoffs in resilience metrics

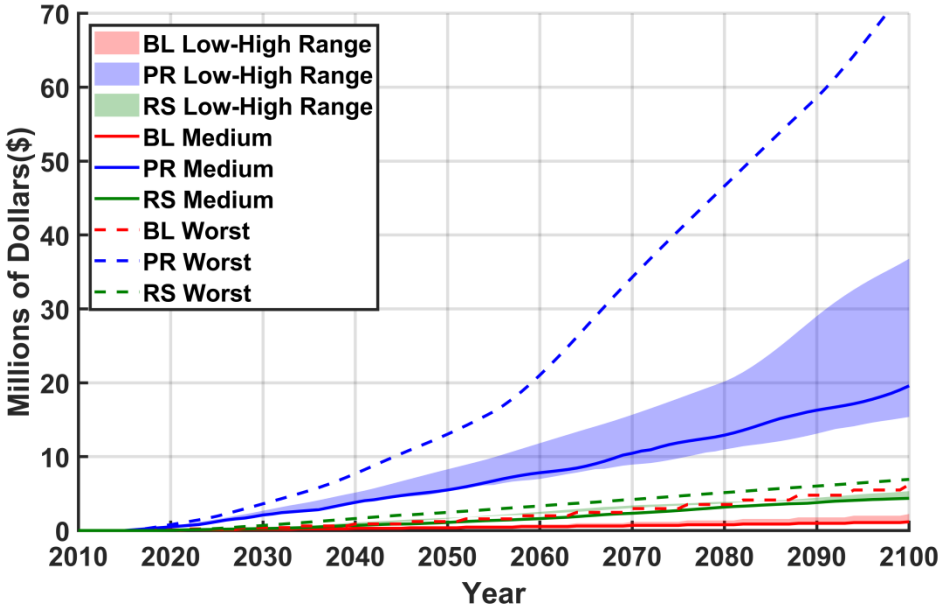






Envisioning a Resilient Oregon Coast

How expensive will adaptation options be in the future?

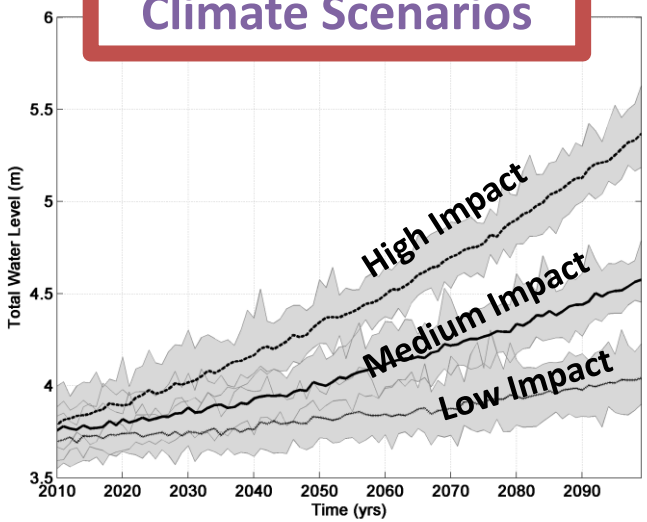


Limited Beach Access

Beach Nourishment

Which drivers (human and physical) cause the greatest variation in future flood hazards?

Climate Scenarios



Physical

Human

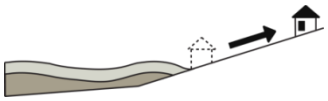
1. Status Quo

2. Hold the Line

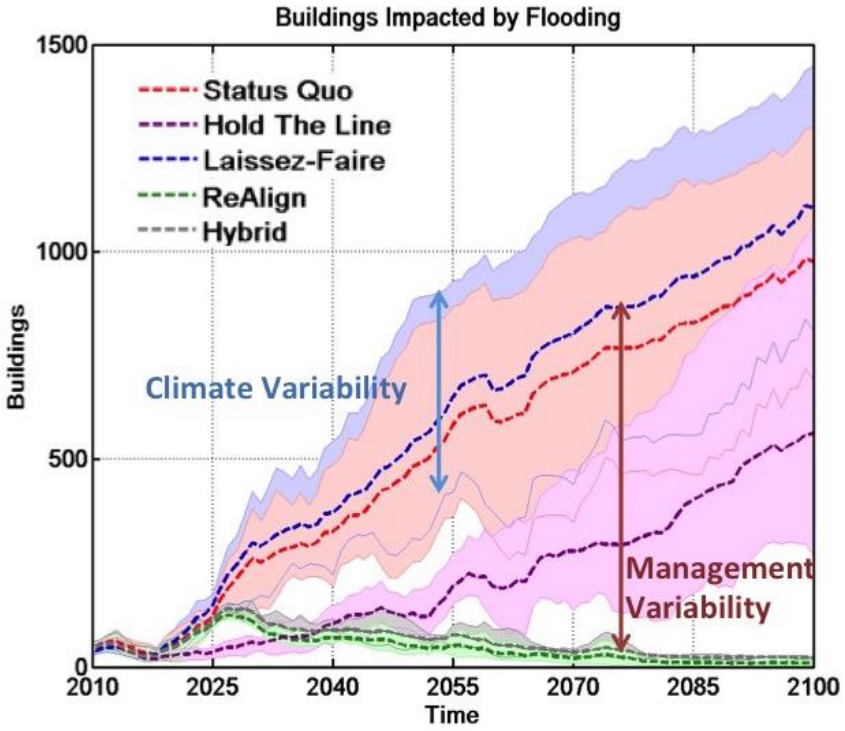
3. Laissez-Faire

4. ReAlign

5. Hybrid



Policy Scenarios



Envisioning a Resilient Oregon Coast:

Co-developing alternative futures for adaptation planning and decision-making

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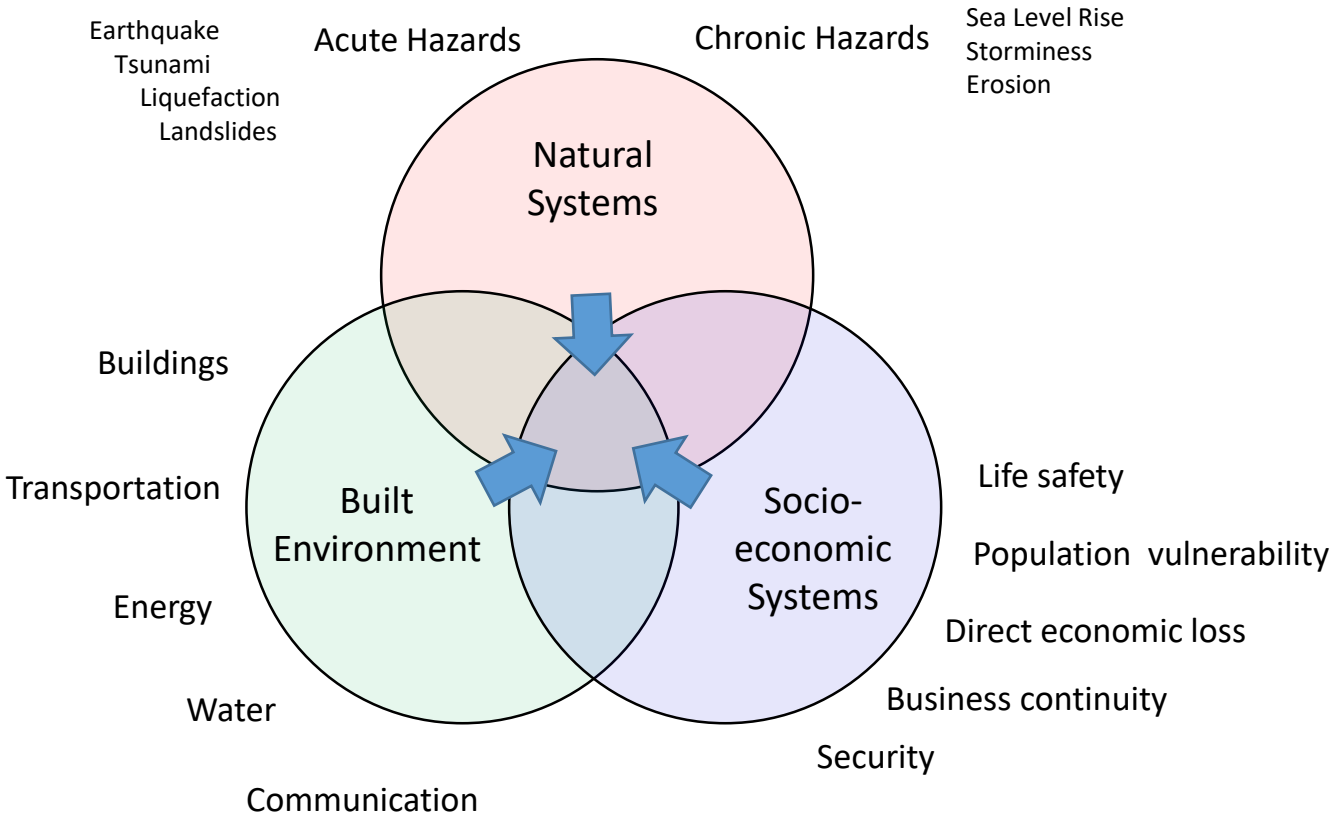
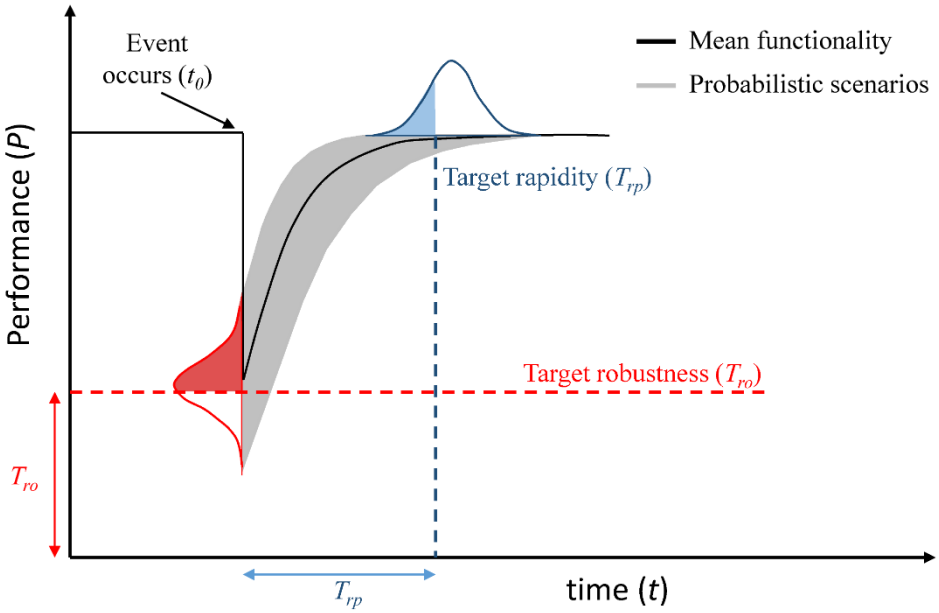
Natural Hazards and Disasters



Quantifying resilience metrics from the Oregon Resilience Plan

- Oregon Resilience Plan
  - Robustness and Rapidity Objectives
- Senate Bill 850
  - Mass Care and Mass Displacement
  - Encouraging Home Owner Resilience



- Work being led by Dan Cox (CCE OSU) and John Bolte (BEE OSU)

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Envisioning an Equitable Resilient Oregon Coast

Incentivizing Retrofits*

- Tax Credits: Tax credit similar to energy tax credits
- Subsidies: Needs-based grants to offer free or reduced retrofits to low-income homeowners

How does implementation of policy actions alter community resilience?

*OSSPAC Insurance Report

Apply different rates of retrofitting over time based on policy actions and household demographics

- Who in the community is most impacted by these policies, and where?
  - *income, ethnicities/race, age*
- Who is left out, and where?
  - *renters, multi-family units*

- What are the community cost and benefits of these policies?
  - *cost of subsidizing retrofits vs. benefit of sheltering in place*
- Over what period of time is adoption of these policy actions most effective?
  - *incremental adoption, priority adoption, free-market adoption*

- Work being led by Jenna Tilt (CEOAS OSU) and Pat Corcoran (Oregon Sea Grant)

Exploring Hazard Planning Policy Impacts on Housing Markets

Shoreline Armoring: State Planning Goal 18

Econometric Estimates of Capitalization Effect of Goal 18 Eligibility Option

All parcels	No effect
Eroding parcels	+ 13 %
Low Elevation (<= 30') parcels	+ 9 %
Eroding, Low Elevation parcels	**+ 22 %**

- Work being led by Steven Dundas (AgEcon OSU)

Final Thoughts

- It is critical to take the long view in terms of how sea level rise and other climate change impacts may effect our communities, ecosystems and society as a whole.

- How we manage our coast can potentially have as great of an impact as climate change (at least over time scales of decades).

- Transdisciplinary research and deep engagement with a wide range of stakeholders can inform land use planning and emergency management to increase resilience to both chronic and acute hazards.