

# Future Coastal Flooding and Erosion Hazards in Cascadia

## Key Takeaways

1. The southern and northern extents of Cascadia presently experience chronic coastal hazards more frequently than other locations - this is correlated with local beach morphology.
2. Southern and Central Cascadia will experience the greatest overall increase in hazard change, indicating these areas may not be as prepared to adapt as others in the region.
3. Erosion hazards will increase more during the 21st century across the entire Cascadia region than either flooding or beach safety hazards.

Climate change is leading to rising sea levels and changing storminess patterns that intensify chronic coastal hazards like flooding and erosion, reducing our ability to safely utilize the beach. To limit the harmful effects of increasing chronic coastal hazards in Cascadia communities, we need assessments of future hazard impacts so that we can make informed efforts regarding adaptation to the coming changes. In this project we conduct a future hazards assessment for Cascadia by:

- Taking a regional approach (the entire outer coast of Cascadia) to align with the spatial and temporal scale of management and policy decisions
- Using a probabilistic model to understand the uncertainty associated with our forecasts
- Assessing three different sea-level rise scenarios (low, medium, and high)
- Tracking three different simple coastal hazard metrics for flooding, erosion, and beach safety through time and under the different scenarios

Safe Beach Recreation Hours



**Proxy for usability of the beach**  
*(wide enough to play, camp, etc.)  
Beach Width < 10m during the day*

Collision Hours



**Proxy for Erosion**  
*Water levels are higher than the base  
of the dune, but don't overtop it*

Overtopping Hours



**Proxy for Flooding**  
*Water levels are higher than the top of  
the dune and flood the area behind it*

*(Sallenger, 2000; Hadziomerspahic et al., 2022)*

