

WATER – POSTER #37

Analyzing a coastal community's resilience to future flooding: A case study of Seattle, Washington

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Coastal communities are exposed to a variety of hazards, including flooding caused by coastal storms, and runoff from inland precipitation and snowpack melt. Areas susceptible to flooding in coastal communities with gravity fed stormwater systems may be especially vulnerable to sea level rise due to these systems depositing their flow into the ocean. Single-event volumes of precipitation are expected to increase and further stress coastal communities due to changes in local and global climate. Sea level around Seattle, WA is estimated to rise 0.55 m – 1.28 m by 2100. This sea-level rise will likely be coupled with a 1-2% increase in annual precipitation.

This study investigated how projected changes in Seattle's sea-level rise and precipitation events influence the city's resilience to flooding. Seattle's current exposure to flooding was compared to future exposure by modeling the current exposure and the capacity of Seattle to handle changes in climate. Areas of lowest resilience were determined using a GIS overlay of Seattle's exposure to flooding and resilience and sensitivity indices. The resilience and sensitivity analysis was conducted using a resilience framework developed at the University of Idaho. The city's hazard mitigation plan and long-term comprehensive plan were examined to determine what steps, if any, Seattle is or plans to take to increase adaptive capacity.