Catastrophic impacts of sudden coseismic subsidence and associated rapid sea-level rise during the next season **Cascadia subduction zone earthquake** Kelsey, Jon Allan, David Bruce, Jessica DePaolis, Mike Priddy, Rich Briggs, Robert Weiss, SeanPaul LaSelle, Mike Willis, Ben Horton



Subsidence impacts- Seaside, OR











Distance from modern shoreline (m)

Subsidence impacts in the year 2100



Motivation

- At the Cascadia subduction zone (CSZ), the effects of climate-driven relative sea-level rise (RSLR) have been mitigated by interseismic uplift
- However, this is projected to be short-lived; over the next two decades, sea-level rise rates are expected to outpace gradual uplift
- By 2100, higher-end sea level projections (SSP3-7.0) show a median RSLR of 0.4-0.6 m along the Oregon and Washington coasts
- But, a mechanism exists that can produce >1 m of sudden RSLR much sooner than 2100, coastal subsidence from the next great (>M8.0) CSZ earthquake
- Here, we examine the impacts of coastal subsidence from the next great earthquake if it happens today or in 2100

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Land-use impacts at key coastal sites





Lincoln City, OR



Eureka and Arcata, CA



