

ABSTRACT

In the San Francisco Bay Area (the Bay Area), one of the greatest concerns of global climate change is inundation from sea level rise (SLR) associated with extreme storms. The projected 1.41 m SLR will inundate many of Bay Area's low-lying coastal areas, including populated development and ecologically important tidal marshes. Therefore, it's critical to map the inundation and then develop subsequent strategies to adapt to and mitigate the impact. Differing from previous static models, we used the 3Di hydrodynamic model to simulate a near 100-year storm associated with different levels of SLR at a 50-meter spatial resolution, in order to capture the dynamics of semi-diurnal tides in the Bay. The model produces a time-series with a 1-hour interval simulated inundation with both extent and depth outputs. Based on the outputs, we find there is a significant increase in inundated areas with rising sea level, especially for development and wetlands. Immediate planning and design actions are required in those areas to avoid potential long term consequences. We also recommend using the time-series result to visualize the inundation process and the integration of our research framework into GeoDesign to give planners the ability to test different adaptation proposals.