**Contributions of individual sea-level budget components to High Tide Flooding along U.S. coastlines**

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**Abstract**

High Tide Flooding (HTF) refers to minor coastal inundation events that disrupt people’s daily activities, cause property damages, and generally increase stress to infrastructures of the cities. Although it is often called “tidal flooding”, tides alone cannot cause flooding in most places nowadays. Instead, HTF usually occurs due to the unfortunate combination of changes in mean sea level, tides, and storm surges, with mean sea level being the primary driver behind the exponential increases in HTF that many locations in the U.S. have seen over the past decades. Here we focus on local relative mean sea level (RMSL) budgets and illustrate the contributions of individual components to annual HTF days along the U.S. coast since 1950. The components discussed are those from Gravity, Rotation, and Deformation (GRD) that accompany global barystatic sea-level changes due to contemporary mass loss from glaciers, ice-sheets and other terrestrial sources; Vertical Land Motion; and sterodynamic changes. We show that vertical land motion has been the most significant contributor to changes in HTF along the coasts of the northeastern U.S. and the western Gulf of Mexico. The sterodynamic component, in contrast, has played an essential role along the Atlantic coasts south of Cape Hatteras, the western Gulf of Mexico, and the Pacific coasts. The imprints of barystatic GRD effects have become increasingly visible at the majority of locations over the last two decades. Our results illustrate how subtle changes in individual RMSL budget components are nowadays already able to produce exponential increases in HTF along the U.S. coasts.