



Beach Tsunami Risk Modelling – A probabilistic assessment of tsunami risk for the world’s most prominent beaches

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Beaches are an essential component of many tourist destinations around the world. However, they are often exposed to the forces of nature including tidal impacts, storm surge, sea level rise and not the least tsunamis. The 2004 Sumatra tsunami and some of the recent Pacific Island tsunamis have shown their devastating impact on beaches and beach-related tourism. Thus, the economic value of beaches especially in regards of the tourism industry is estimated considering surrounding hotel ratings, infrastructure data and social media response. Based on a global earthquake-triggered tsunami risk assessment, the specific risk to beaches with respect to its value in the tourism sector is assessed for the world’s most prominent beaches. Resulting metrics focus on the security of tourists, expected wave height return periods and wave arrival times. Furthermore, co-seismic subsidence and uplift have the potential to change coast lines significantly together with tsunami-induced erosion. Finally, the metrics are combined into a global rating of the world’s most prominent beaches and their tsunami risk including Central America, Greece, the Philippines and several more locations. The final results provide a first step to emphasizing coastal protection and mitigation options for various types of coastal processes.