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A Semi-Probabilistic tsunami hazard assessment for the Caribbean

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Globally speaking, the Caribbean region is likely not the most prominent area for tsunami research due to the absence of major tsunami events in the last century with the exception of the 1918 Puerto Rico and 1946 Dominican Republic tsunamis. But events in 1690 at the Leeward Islands, in 1770 and 1842 near Haiti or the 1867 Virgin Islands tsunami have shown the destructive power in the region. Thus, with active subduction zones like the Lesser Antilles and Puerto Rico Trenches, this region has a significant hazard and is prone to possible large inundations due to tsunami-genic earthquake events.
Two kinds of tsunami-genic sources have been identified for the region; active subduction zone interfaces, generally speaking of the subduction process stretching from Hispaniola to Puerto Rico and along the Lesser Antilles; and also sources of tsunami-genic potential, like the Muertos Trough south of the Dominican Republic, which may be capable of producing strong earthquakes. The first group is assessed probabilistically using a stochastic event set by computing earthquake return periods via a seismic moment accumulation method, while the sources of tsunami-genic potential are assessed considering a small number of deterministic scenarios.
Thus, catalogues of strong seismic events and respective slip distributions are compiled and inundation profiles for various island states of the Lesser and Greater Antilles are computed. These catalogues provide potential input for tsunami risk studies within the Caribbean.