

Active Subduction on Both Coasts of Costa Rica Does not Represent an Important Tsunami Hazard

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Costa Rica, on the southern terminus of the Middle American Trench is being affected by active subduction on both, along the Pacific coast as well as on its Caribbean coast. Three main subduction segments can be recognized along the Pacific coast: 1) under northwestern Costa Rica, off Papagayo Gulf and Nicoya peninsula, the Cocos plate is subducting under the Caribbean plate; 2) under southern Costa Rica (Osa and Burica peninsulas) the Cocos plate subducts under the Panama Block and 3) in the central Pacific coast (between Nicoya and Osa peninsulas) the Cocos plate subducts under a shear zone that marks the transition between the Caribbean and the Cocos plate. Along the Caribbean coast, south of Puerto Limon, the Caribbean plate subducts under the Panama block.

Large subduction earthquakes occur under the Nicoya peninsula, Osa peninsula and south of Limon. Most of the rupture area of these large events lies below land so the deformation of the ocean floor is minimal and therefore the tsunamis they generate are small. No large subduction earthquakes occur under the central Pacific coast of Costa Rica due to the subduction of small sea mounts that act as small asperities without potential to accumulate large amounts of slip. For this reason the region between Nicoya and Osa peninsulas is not an important tsunamigenic zone.

S05: Neotectonics, Tsunami Hazard, and Monitoring in the Caribbean

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