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Tsunami deposits related to Fogo flank failure (Cape Verde Islands)

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Oceanic shield volcanoes are prone to massive flank failures involving dozens to hundreds of km^3. Fogo active volcano (Cape Verde Islands) is nested in a large horseshoe shaped caldera opened to the east. This volcano-tectonic structure could be the result of past failures of the edifice (Day et al., 1999). Debris avalanche deposits were identified offshore (Masson et al., 2008). The volume of the last collapse (> 62 ka) ranges between 130 and 160 km^3, making the hypothesis for a past giant tsunami highly probable.
Santiago island is located 50 km east of Fogo island. The west coast of Santiago may have been severely affected by the tsunami. A field survey was carried out in March 2009. Surprisingly, tsunami deposits were found only in Tarrafal, where a large bay may have amplified the wave and provided sediments. Elsewhere, no evidences of tsunami were found.
The tsunami deposits appear as marine conglomerate in discontinuity above a reddish to yellowish paleo-soil. Nice cross-sections were found along the coast, in the northern part of the Tarrafal Bay. The thickness apparently increases landward (up to 4 m). The deposits consist in stacked units of pebbles or boulders, with numerous marine bioclasts (shells, corals, coralline algae). The basal contact with the paleo-soil displays scour-and-fill features.
These tsunami deposits are similar to those previously described by Pérez-Torrado et al. (2006) in the Canary Islands.

References

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