A deep scar in the flank of Tenerife (Canary Islands): Geophysical contribution to tsunami hazard assessment

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ABSTRACT

Among the high-intensity on-Earth tsunami generating events, seismicity, submarine landslides, and volcano lateral collapses are the most important. These events are associated with, for example, submarine landslides on the Hawaiian ridge (Holcomb and Searle, 1991), the sector collapse at Stromboli (Fodor, 2004), and the submarine landslides in the North Atlantic and Norwegian Sea (Watts and Masson, 1995). Here, we present the results of a study on the potential tsunami hazard associated with a giant landslide on the north flank of Tenerife. The landslide is thought to be the consequence of previous landslides. By this study, we show that North Atlantic Ocean shorelines might be exposed to a destructive tsunami generated by a subaerial lateral collapse of at least 120 km³. This research highlights the degree of urgency of carrying out geophysical investigations on the flanks of most volcanic islands prone to potential flank collapse. These investigations will contribute to the understanding of their structure—a key parameter in the sliding process. Finally, all results should be included in a global map of tsunami hazard assessment.