SSA 2010 Annual Meeting Abstract

Session: The January/February 2010 Earthquakes in Haiti, Offshore Northern California, and Chile: Origins, Impacts and Lessons Learned
Schedule: Fri 23 Apr – PM Poster #80
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Presenter: Goldfinger, Chris

CO-SEISMIC LANDSLIDING AND LOCAL TSUNAMI GENERATION ON THE HAITIAN PENINSULA FROM THE JANUARY 2010 MW 7.1 EARTHQUAKE

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The Mw 7.1 Haiti earthquake caused a number of ground failures along the northern shore of the Haitian peninsula. Satellite imagery acquired post-earthquake reveals evidence of several probably co-seismic rockslides along seacliffs 4.5 km west of Grand Goave. These slides continued into the bay, possibly becoming submarine debris flows and or turbidity currents. Four failures occurred at (1) Petit Paradis, 1.2 km east of Grand Goave, (2) 0.9 km east of Fouche, (3) 3 km northeast of Grand Trout and 0.5 km south of Ca Ira. A fifth possible failure is located 1.8 km NW of La Salle. The failures all occurred at the prograding fronts of small river deltas where the frontal part of the delta collapsed as a lateral spread or partially submarine slide, transporting the delta front sediments into deeper water in Baie de Port au Prince, and Baie de Grand Goave. One of the slides, near the village of Petit Paradis, apparently generated a local tsunami. The tsunami, reportedly 2 m in height, was responsible for 7 deaths according to press reports. The upper part of this slide included trees along the shoreline which can be observed standing in ~ 2 m of water, and now 68 m offshore. Further delta front failures may occur as destabilized slopes fail in headward fashion, with or without the influence of aftershocks. The coastline in the area of failures west of Port au Prince appears to be an amalgam of similar past events, evidenced by multiple arcuate scallops and partially healed arcuate slide scars. The delta front failures have drawn attention to the rapid outbuilding of these deltas in Haiti, which are likely the result of denudation of the island over recent decades, and although the slides and tsunami were co-seismic events, the tsunami may be considered partly anthropogenic in nature.

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