Agaete revisited: new data on the Gran Canaria tsunamiites

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The tsunami deposits of the valley of Agaete (Pérez-Torrado et al., 2006), north-western Gran Canaria, attributed to the Guimar flank collapse in Tenerife, have been revisited and new data are presented here. Besides the occurrences reported by Pérez-Torrado et al. (2006) a new outcrop was found and named "La Ruina" (at 28° 05' 47,41" N; 15° 41' 52,04" W; 71 m asl). The above-mentioned authors suggested the possibility that more than one marine conglomerate deposit could be present in the outcrops of "Llanos de Turmán" and "Berrazales". At "La Gasolinera" and "La Aldea 1" the conglomerates are formed by a single layer representing one depositional event; at "La Aldea 2", the conglomerates are composed of two layers directly contacting with each other, but evidence of a time hiatus between them was not found. Although the hypothesis of stacking of two depositional units within the same episode versus deposition of two distinct layers in different time-moments is debatable at the present state of knowledge, the first possibility is favoured. The field evidence at "Llanos de Turman" and "Berrazales" unquestionably shows that terrestrial sediments (colluvia; paleosols) are present and separate two marine conglomerate deposits, indicating that at least two distinct tsunami inundations are needed to explain the stratigraphy. However, at the new "La Ruina" outcrop, besides the two deposits mentioned above, a third and older marine conglomerate was found, clearly separated in time from the ones cited above. The existence of marine conglomerates emplaced in different moments is evidenced by the occurrence of intercalated paleosols, colluvia and other subaerial materials, implying significant time intervals between the emplacement of marine conglomeratic layers. A number of gastropod operculae from the tsunamiites were sent for U-Th dating to try to further constrain the age span of these deposits.

The field evidence presented above shows that the emplacement of the deposits is related to, at least, three tsunami events. The lateral correlation between different outcrops is difficult due to variable number of deposits in each outcrop, lateral discontinuity and variability, and to compositional and textural similarity between distinct tsunami sediments. The occurrence of three Pleistocene tsunami deposits in the same area points to a relatively high frequency of tsunamis (generated by landslides, surface rupturing earthquakes, fast entry of voluminous volcanic deposits into the sea or large submarine eruptions). It is possible that this recurrence of tsunami inundations may reflect multiple-phased landslides responsible for the mega-landslide scars prominent in the geomorphology of the neighbouring island of Tenerife.

Reference:
Pérez-Torrado, F.J.; Paris, R., Cabrera, M.C.; Schneider, J.-L.; Wassmer, P.; Carracedo, J.-C.; Rodríguez-Santana, A. & Santana, F. (2006) Tsunami deposits related to flank collapse in oceanic volcanoes: The Agaete Valley evidence, Gran Canaria, Canary Islands. Marine Geology 227: 135 – 149.