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## Mediterranean extreme wave sediments preserved in karst solution pockets in cliff-top sites on the island of Malta

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The Mediterranean Sea has experienced extreme waves (including large tsunamis) in the past. However, the pattern of timing, frequency and magnitudes of these events, and the relative importance of possible storm and tsunamigenic mechanisms (undersea earthquakes, volcanic eruptions, major landslides) are not so well understood. The Maltese archipelago is uniquely situated for extreme wave research in the Mediterranean Sea, since this group of small islands is exposed to waves approaching from any direction. Previous studies in Malta investigating sediment deposits from Holocene palaeotsunamis have tended to focus on the hydrodynamic characteristics of large coastal boulders. This study adopts an alternative approach. In the Aħrax area on the northernmost peninsula of Malta Island, we examined 'karst pockets' (solution hollows) that pockmark the exposed limestone terrain at elevations of up to 10-12 m asl. Deposited in the pockets are shelly marine sands. Lined by insoluble terra rossa soils, the pockets act as sediment traps during inundation by wave flow and are excellent repositories from which the accumulated marine sands cannot easily be removed.

This presentation describes the sampling methods, some challenges and results of subsequent laboratory analysis. Findings show the moderately-sorted sands contain a rich microfossil assemblage of mostly benthic species, comprising foraminifera, gastropods, echinoidea, serpulidae and bryozoa. Wave-abraded forms occur alongside well-preserved forms. Sediment stratigraphy within the karst pockets suggests various depositional episodes, contrasted by differing grain sizes, microfossil contents, colours and erosional contacts, while the cliff-top elevations of 10-12 m require consideration of the potential of both storm waves and tsunamis and their respective capabilities with regard to the exposed coastal geomorphology.