



Offshore tsunami deposits signify risk for heavily populated southern Levant Coastline (Gaza and Ashkelon)

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The southern Levantine coastline is exposed to a variety of potential tsunami-generating sources, including far field influences such as large earthquakes and volcanic eruptions as well as near field offshore landslides along the continental slope, where slumping features are present throughout the area.

Not only does this coast boast a long history of continuous occupation but also today large cities (e.g. Tel Aviv, Ashdod, Ashkelon, and Gaza) and related critical infrastructure such as ports, power plants, chemical industries, roads, etc. are located along this corridor. In addition, further to the south, the Gaza Strip has one of the highest population densities in the world and is dependent on external assistance for many basic needs, goods and infrastructure.

Newly obtained sediment cores from the shallow shelf offshore Ashkelon (~12 km north of Gaza City) exhibit several events that can be linked to historical records. These cores can be subdivided in two general horizon types that show relative changes to one another across different proxies. The continuous input of Nile-delta sands results in a homogenous and stable 'background' sediment represented by well sorted, finer sands, few inclusions, lower proportions of *A. parkinsoniana* relative to fossil tests, and very few yellow-stained and blackened specimens. Contrasting these normal marine condition deposits are high energy tsunamigenic deposits characterized by poor sorting, with inclusions of a range of whole, articulated, and fragmented shells, wood, charcoal, and sub-angular to rounded pebbles.

Newly mapped and quantified offshore bathymetric evidence for landslides and slumping motion has identified features that are large enough to generate tsunamis that would affect the study area. These were modeled as possible sources and compared to different far field events. Some of those tsunamigenic horizons could be assigned to specific events ranging between the youngest at 1202AD to the oldest prehistoric event at ~5800BC. While the younger events can be assigned to well described catastrophic events within historical knowledge, the findings from around 4-5ka coincide with a period of intensified earthquake activities on land which could be classified as a seismic storm.

In conclusion the southern Levant is exposed to tsunami threat. But while the urban centers of Tel Aviv, Ashdod, and Ashkelon, benefit from good infrastructure, and efforts in risk assessment as well as evacuation plans and drills, for the Gaza Strip, the outcomes of the same tsunami event have the potential to result in devastating outcomes both at the time of the event and in the aftermath.