



Preserved Offshore Tsunami Deposits Recognized in a ‘Low Risk’ Zone: an undocumented tsunami in the northern Red Sea

Beverly Goodman Tchernov (1), Timor Katz (2), Shaked Yonaton (3,4), Nairooz Qupty (1), Mor Kanari (2,5), Tina Niemi (6), and Amotz Agnon (3)

(1) Leon Charney School of Marine Sciences, University of Haifa, Mt. Carmel, Israel, (2) Israel Oceanographic and Limnological Research, Shikmona, Israel, (3) Institute of Earth Sciences, Hebrew University, Jerusalem, Israel, (4) Interuniversity Institute of Marine Sciences, Coral Beach, Israel, (5) Department of Earth and Planetary Sciences, Tel Aviv University, Tel Aviv, Israel, (6) Department of GeoSciences, University of Kansas-Missouri, Kansas City, USA

The Red Sea generally, despite all of the necessary components for tsunami production, has been generally defined as ‘low-risk’ with regard to tsunami damage on the basis of historical records, observations of small-scale tsunami production in recent periods, and a lack of field evidence. While some regions are known to be prone to tsunami events, other areas are considered safe because of their geographic and bathymetric settings, seismic disposition, and lack of written descriptions of past tsunamis. Models that are produced to estimate said risk rely on catalogues of written records and field studies that summarize known events. There are multiple failures in this approach. First, written records are not evenly distributed worldwide, nor has writing always existed; thereby limiting the possible timeframe for reference. Field studies of preserved tsunami deposits focus primarily on terrestrial or coastal deposits, which modern observations of post-tsunami deposit diagenesis are determining that they are quickly eroded and rarely preserved, thus leading to a considerably patchy record, ultimately underrepresenting the actual number of past tsunamis. Offshore sedimentary deposits may hold promise as better recorders of these events. Here we present recently published evidence for a rare, yet significant and potentially very destructive tsunami event that impacted a presumed low-risk location in the northern Red Sea’s Gulf of Aqaba. The anomalous deposits were recognized within sediment cores collected offshore (-16 to -12 msl) and were identified using a suite of common tsunamigenic indicators such as sedimentological characterization, granulometry and micropaleontology. Given rapidly expanding coastal populations in the region and worldwide, these findings are a warning that the current practice of determining risk based solely on models and historical catalogues, without offshore field studies, is insufficient.