NEPTUNE TALKS

a series of online scientific lectures

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Geoarchaeology of coastal hazards

Earth-shaping catastrophic events have long focused the attention of geosciences, and captured the public imagination. During the past 40 years, neocatastrophism has emerged as a key paradigm that reflects widespread changes involving cultural, scientific, political and technological spheres. Nonetheless, chronology and origin of this trend are equivocal. Google Ngram was used to quantitatively explore the recent development of catastrophism. We elucidate a discernable rise in neocatastrophic thinking during the last quarter of the twenty-first century that can be linked to the environmental awakening of the 1960s. It is suggested that these discourses of 'shock' and 'fear' partly correspond to a media-driven dramatization of natural hazards, exploited by scientists to attract wider readership. We will explore during this lecture the problems of sea-level and tsunami obsession in archaeological context.

From 2000 to 2015, tsunamis and storms killed more than 430,000 people worldwide and affected a further 530 million, with total damages exceeding US$970 billion. These alarming trends, underscored by the tragic events of the 2004 Indian Ocean catastrophe, have fueled increased worldwide demands for assessments of past, present and future coastal risks. Nonetheless, despite its importance for hazard mitigation, discriminating between storm and tsunami deposits in the geological record is one of the most challenging topics in coastal geoarchaeology. To probe this knowledge gap, we present a 4500-year reconstruction of "tsunami" variability from the Mediterranean based on stratigraphic archives and assess it in relation to climate records and reconstructions of storminess. We elucidate evidence for previously unrecognized "tsunami megacycles" with three peaks centered on the Little Ice Age, 1600, and 3100 cal. yr B.P. These ~1500-year cycles, strongly correlated with climate deterioration in the Mediterranean/North Atlantic, challenge up to 90% of the original tsunami attributions and suggest, by contrast, that most events are better ascribed to periods of heightened storminess. This finding is crucial in providing appropriately tailored assessments of coastal hazard risk in the Mediterranean and beyond.

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