

# Geophysical catastrophes that changed history in the Eastern Mediterranean – what you don't know can hurt you

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Geophysical catastrophic events have shaped evolution for at least tens of millions of years, They have also changed history, as we know it, for at least thousands of years. An interesting existential question which pertains to the current climate crisis is the time scale of the changes precipitated by these events.

The Eastern Mediterranean straddles plate boundaries and has thus likely witnessed unknown numbers of catastrophic earthquakes, volcanic eruptions and tsunamis. Such events are typical in subduction zone dynamics. Understanding the return period of these catastrophes allows better societal preparation and response. It also allows wiser resource allocation during a climate crisis, which poses an existential threat for the entire humanity, not just locally.

In this talk, I will focus mainly on two large catastrophes in the past 3800 years, namely the Bronze Age eruption of the Thera volcano in the Aegean, and the 365AD earthquake and associated tsunami. The first event changed the climate in the Northern hemisphere for several years and precipitated the demise of the Minoan civilisation in Crete. The second event was triggered off SW Crete and destroyed Hellenistic Alexandria. In the first centuries anno Domini, Alexandria was the cradle of ancient science and arts, arguably overtaking Athens and Rome, particularly in technological innovation. Recent evidence suggests that the city was destroyed by the devastating tsunami triggered by the earthquake and never recovered its ancient glory.

While the triggers were fairly abrupt, both events had different time scales in terms of impact, and both resulted in dramatic changes in the history of the Eastern Mediterranean. These catastrophes and others I will briefly describe, they underscore how engineers and scientists need to always take note of the worst case scenario, which, more often than not, is disregarded as extreme and very unlikely. Populations in the Eastern Mediterranean are generally not prepared for events of such scale, and this needs to change, particularly in a changing climate, which will amplify vulnerabilities.