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Modelling tsunamis in the Eastern Mediterranean Sea. Application to the Minoan Santorini tsunami sequence as a potential scenario for the biblical Exodus

R. Periañez, J.M. Abril

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1 Modelling tsunamis in the Eastern Mediterranean Sea.
 2 Application to the Minoan Santorini tsunami sequence
 3 as a potential scenario for the biblical Exodus

4 R. Periañez* & J.M. Abril
 Dpto. Física Aplicada I
 ETSIA, Universidad de Sevilla
 Ctra. Utrera km 1, 41013-Sevilla, Spain

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6 **Abstract**

7 A numerical model which simulates the propagation of tsunamis in the Eastern
 8 Mediterranean has been developed. Several tsunami sources have been considered:
 9 earthquakes associated to geological faults, submarine landslides, entry of pyroclas-
 10 tic flows into the sea and the collapse of a volcano caldera. The model has been
 11 applied to different past events for which historic data or previous simulations exists,
 12 to test its performance. Then it has been applied to simulate tsunamis triggered by
 13 the explosion of Santorini volcano (17th century BC) in the Aegean Sea. While the
 14 model accounts for run-ups in the Aegean coasts, it fails to explain the isochronous
 15 tsunamigenic deposits reported in eastern Sicily and the levantine coasts. A sce-
 16 nario of a sequence of intense tectonics strain release triggering a series of tsunamis
 17 could better fit the whole dataset. Thus, a submarine landslide at the Gulf of Sirte
 18 may explain the Augias megaturbidite and the sedimentary deposits reported in
 19 Augusta Bay (Sicily). Similarly, a sequential tsunami in the eastern Nile Delta may
 20 explain the tsunamigenic deposits found in Israel and Gaza. Considering the former
 21 coastline at 3500 y BP, it could also provide a plausible scenario for the biblical sea
 22 crossing related in the Exodus.

23 *Keywords:* numerical modelling, Eastern Mediterranean, tsunamis, landslide, caldera col-
 24 lapse, Santorini, Nile Delta

*Fax: 34 954486436, e-mail: rperianez@us.es

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