Assessment of a Tsunami Hazard for Mediterranean Coast of Egypt

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Analysis of tsunami hazard for Egypt based on historic data and numerical modelling of historic and prognostic events is given. There are 13 historic events for 4000 years, including one instrumental record (1956). Tsunami database includes 12 earthquake tsunamis and 1 event of volcanic origin (Santorini eruption). Tsunami intensity of events (365, 881, 1303, 1870) is estimated as I = 3 led to tsunami wave height more than 6 m. Numerical simulation of some possible scenario of tsunamis of seismic and landslide origin is done with use of NAMI-DANCE software solved the shallow-water equations. The PTHA method (Probabilistic Tsunami Hazard Assessment – Probabilistic assessment of a tsunami hazard) for the Mediterranean Sea developed in (Sorensen M.B., Spada M., Babeyko A., Wiemer S., Grunthal G. Probabilistic tsunami hazard in the Mediterranean Sea. J Geophysical Research, 2012, vol. 117, B01305) is used to evaluate the probability of tsunami occurrence on the Egyptian coast. The synthetic catalogue of prognostic tsunamis of seismic origin with magnitude more than 6.5 includes 84 920 events for 100000 years. For the wave heights more 1 m the curve: exceedance probability – tsunami height can be approximated by exponential Gumbel function with two parameters which are determined for each coastal location in Egypt (totally. 24 points). Prognostic extreme highest events with probability less 10^{-4} are not satisfied to the Gumbel function (approximately 10 events) and required the special analysis.