

The 1755 earthquake in the Algarve (South of Portugal): What would happen nowadays?

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The November 1 earthquake, which reached a magnitude of 8.5, remains the most powerful and destructive to hit Europe so far. Within minutes, many lives were lost, populations displaced, livelihoods, homes and infrastructures were destroyed. Although frequently associated to the city of Lisbon, one of the most important European cities at the time, this earthquake caused similar damage and casualties, if not greater, in the southwest of the Algarve, where the seismic intensity was estimated at X-IX. Sometime later a tsunami increased the number of victims and the amount of the damages. In some locations the tsunami caused greater destruction than the earthquake itself. The tsunami hit both coasts of the North Atlantic; however, the more destructive damages occurred in the Portuguese coast, south from Lisbon, in the Gulf of Cadiz and in the Moroccan coast. The downtown of Lisbon was flooded by waves that reached a height of 6 meters. The water flooded an area with an extension of around 250 meters from the coast. In the Southwest part of Algarve the waves reached a height between 10 and 15 meters and the flooded area was much larger. Through the analysis recent research works on the assessment of the 1755 tsunami parameters and the interpretation of the more reliable historic documents, it is our intention to analyse the destructive power of the tsunami in the Algarve and delimit the flooded area. Using simple techniques of simulation it is our intention to assess the impacts nowadays in the Algarve of the occurrence of a tsunami similar to the 1755 tsunami, which would probably affect a greater number of people, buildings and infrastructures. This assessment is an important instrument not only in terms of risk preparedness but also for the integration of mitigation measures in the development strategy.