



## **Numerical Modelling of the 1766 (May) Earthquake Tsunami Scenario Along the Northern Coasts of Marmara Sea, Turkey**

Hande Aykurt Vardar (1), Bedri Alpar (2), and Ahmet Cevdet Yalçiner (3)

(1) Istanbul University, Geophysical Engineering Department, Istanbul, Turkey (aykurt@istanbul.edu.tr), (2) Istanbul University, Institute of Marine Sciences and Management, Istanbul, Turkey, (3) Middle East Technical University, Ankara, Turkey

Following the recent 1999-earthquake disaster and its associated tsunami that occurred in the Izmit Gulf, eastern part of the Marmara Sea; much research has been carried out to determine the tsunami potential, as well as their possible effects along the adjacent coast. Based on the available archival data, many tsunamis (e.g. 989, 1343, 1509, 1766, 1894 and 1912) have affected the low-lying coasts, bays, estuaries, straits and possibly coastal lagoons along the northern coast of the Marmara Sea.

In the present study, probabilistic earthquake simulations of the May 22, 1766 earthquake and amplification of related tsunami waves along the coasts will be presented using a numerical model called NAMIDANCE. It is a tested tsunami simulation and visualization tool, and used to create tsunami inundation maps. The source parameters were chosen from the recent tsunami catalogue given by Altinok et al (2011) as derived from available marine geophysical data.

The temporal fluctuations of the near-shore water surface were plotted at several coastal locations, depending on the available GEBCO 30 arc-second grid data enhanced with satellite images. The modelling results show that the waves of the 1766 (May) tsunami reached the selected gauge points along the northern coasts of the Marmara Sea.

### **ACKNOWLEDGEMENTS**

This work was supported by the Scientific Research Projects Coordination Unit of Istanbul University (Project 6384).