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# Various paleoseismological records of M∼7 earthquakes rupturing strike-slip fault in a semi closed marine basin: examples from the Sea of Marmara

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The North Anatolian fault (NAF) in the Marmara Sea is a major strike slip fault that ruptures in large magnitude earthquakes. It crosses the Marmara Sea, which borders Istanbul and its 12 million inhabitants. The presented paleoseimological record rests upon sedimentary cores sampling the different basins. The turbidites identified at the different sites are earthquake generated, based on their particular sedimentological and geochemical signatures; the correlation of turbidites at different sites; and the match of the most recent turbidite with a nineteenth century historical earthquake. The studied earthquake induced sedimentary deposits have different origins: (1) classical thick turbidites and homegenites, (2) very thin silt-rich sedimentary layers linked to the settling of the sedimentary cloud induced by the seismic waves, (3) thin turbiditic deposits linked to reworking of sediment veneer covering slopes. In the eastern Cinarcik Basin, an accurate earthquake record was obtained using two cores that were correlated using long-term geochemical variations in the sediment. To date turbidites, we used carbon 14 and paleomagnetic data to build an OxCal model with a local reservoir correction of 400±50 yr. The Çınarcık segment is found to have ruptured in 1509 C.E., sometime in the fourteenth century, in 989 C.E., and in 740 C.E., with a mean recurrence interval in the range of 256–321 years. Finally, we used the earthquake record obtained to review the rupture history of the adjacent segments over the past 1500 years.