



Co-seismic sedimentation during the last lacustrine stage of the Sea of Marmara, North-Anatolian Fault, Turkey.

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The present day Sea of Marmara, which represents a marine realm connecting the Aegean and the Black Sea, underwent during the late Quaternary, a lacustrine episode which ended around 12 000 yr BP. It is comparable in terms of dimensions (size, depth) and active tectonic origin, either to “isolated” marine basins (Ex.: Cariaco Trough) or to large lakes (Ex.: Issyk Kul Lake). The Sea of Marmara is composed of several aligned, actively subsiding, basins, which are the direct structural and morphological expression of the North Anatolian Fault’s northern branch. The last 20 kyr of their sedimentary fill (lacustrine before 12 kyr BP) have been investigated through giant piston coring onboard R/V MARION-DUFRESNE (MARMACORE Cruise, 2001) and 3.5 kHz seismic-reflexion imagery; the latter was completed by the profiles recorded onboard R/V ATALANTE during MARMARASCARPS Cruise (2002). Especially during the lacustrine stage, the infilling of the deep basins is dominated by turbidites (with coarse mixed siliciclastic and bioclastic basal part), intercalated in “hemipelagic-type” fine-grained calcareous and slightly siliceous clays. Often – especially in the thickest ones – the turbidites show strong segregation and sharp boundary between coarse part and suspended-load part.

In the Central Basin, the 8 m of a unique sedimentary event include a 5m-thick “ho-

mogenite” well imaged on seismic profiles. The latter is interpreted as related to a major - here earthquake-triggered - tsunami effect, as described in Eastern Mediterranean by Kastens and Cita (1981). Detailed correlations between two deep coring sites (1250 and 1200 m) indicate more than 100 % overthickening in the deepest one; this implies specific processes of distribution of terrigenous input by dense hyperpycnal currents (high kinetic energy, seiche effect, complex reflexions on steep slopes). The main sedimentary “events” considered as “seismoturbidites” appear to often smoothen (and/or completely “erase”) previous deep bottom relieves, especially fault scarps.

The peculiar sedimentary infill of the Marmara Sea’s Central Basin is interpreted as a direct consequence of the strong seismic activity; the imprint of the latter is particularly obvious during the lacustrine period (prior to the base of the Holocene), as environmental conditions favoured marginal accumulation of large amounts of erosion products (especially on the southern shelf) available for mass waisting .

Ref. : Kastens K. & Cita M.B.- (1981) *Geol. Soc. Amer.Bull.*, 92:845-857