



## **Late Glacial to Holocene Sealevel changes in the Sea of Marmara; evidence from high-resolution seismic and core studies**

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Late Glacial to Holocene sedimentary record of the northern shelf of the Sea of Marmara (SoM) is documented by detailed stratigraphic analysis of sub-bottom (Chirp) profiles and sediment cores. The reflection profiles reveal the presence of four seismic stratigraphic units S4-S1 that are equivalent to lithostratigraphic units L4-L1, separated from each other by shelf-crossing unconformities of Q1 to Q3. The seismic profiles from the SoM entrance to the Strait of İstanbul (SoI) allow us to divide the Holocene sediments of Unit S1 into seven sub-units, therefore, we can estimate high-frequency sealevel fluctuations. The SoM was converted into freshwater lake in the beginning of the marine isotope stage 3 (MIS-3) due to global sealevel fall below the Dardanelles outlet (-83 m). During the MIS-3 and main part of the MIS-2, disconnection with the Mediterranean Sea and the forced regression in the SoM gave rise to deposition of progradational units (seismic units S4 and S3) as sediment wedges thickening towards the shelf edge. The maximum lowstand of the 'Marmara lake' is associated with river incisions below to 105 m water depth, above which a prominent erosional surface formed on the shelf. In contrast to the LGM disconnection with the Mediterranean Sea, the SoM experienced a period of Black Sea outflow between 15-13.5 14C ka BP, when the Black Sea level rose above the sill depth (-35 m) of the SoI. This gave rise to a freshwater transgression in the lake leading to rise the water level to -85 m by 13 ka BP.

Following the reconnection with the Mediterranean Sea at 12 ka BP, the Younger Dryas (YD) cold period in the SoM was associated by a Black Sea outflow at 11.5 ka BP leading to formation of a levee within the axis of the paleo Bosphorus shelf valley. During the YD, the sealevel increase was interrupted by stillstands at -76 m and -71 m. In the seismic profiles from the SoM entrance to the SoI, the colonization of algal-serpulid bioherms across the reflector surface signal a return to higher salinity in the SoM at 8.8 ka BP. The mid-Holocene time is represented by a formation of a subaqueous prodelta sourced from the Kurbağalıdere River at 6.2 ka BP, when the amount of the sediment supply was greater than the accommodation space.

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