



## **Plio-Quaternary Seismic Stratigraphy and Depositional History at the Southern Exit of the Bosphorus Strait**

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Analysis of Chirp seismic reflection data from the junction of the southern Bosphorus exit with the northern shelf of the Sea of Marmara reveal that Plio-Quaternary section in the area consists of three stacked sedimentary units separated by erosional unconformities. The seismic facies distribution suggests that deposition of Plio-Quaternary section in the studied area was controlled mainly by the hydrodynamic conditions which controlled the water exchange through the Bosphorus channel between the Black Sea and the Sea of Marmara, the sea-level fluctuations and partly by the tectonic movement as controlled by the North Anatolian fault. The main seismic sequences defined above the acoustic basement are made up of various sub-units with different seismic characteristic features. The deepest sequence (marine Unit 3), for example, is deposited under the control of the paleo-topography of the basement rocks. The overlying sub-unit (Unit 2a) is only observed in the natural paleo-canyon at the southern exit of the Bosphorus strait. Based on their reflection characteristics, its detrital material was supplied by a nearby river to the east during high-stand system tracts. Above the sub-unit 2a, a cut-and-fill structure forms the sub-unit 2b. It is small in size and caused locally by possible erosion of a northerly flow from the paleo-Bosphorus channel. At the top of these units, the parasequences of Unit 1 are transgressive marine deposits. The depositional energy, however, was relatively low at the beginning of these transgressive system tracts (sub-unit 1c) when the Black Sea flow into the study area was relatively weak. The ascending trajectory sigmoidal deposition of sub-unit 1b indicates the increment flow of Black Sea into the Sea of Marmara. The studied area was then invaded by the Mediterranean water. The sub-unit 1a is deposited under present oceanographic conditions.