CONTEMPORARY AND LATE QUATERNARY EVOLUTION OF IZMIR BAY (WESTERN TURKEY) AND INVESTIGATION OF MORPHOSEDIMENTARY SEABED FEATURES

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Abstract
This article presents data from high-resolution shallow seismic profiles, side scan sonar, scanning sonar, surficial sediment data and video data for the sedimentary history, characterization and process-description of the Izmir Bay (western Turkey).Rate in sea level rise, seabed morphology, sediment supply, hydrodynamic regime are the main controlling factors of general infill pattern. Inspection by diver video of pockmark like seabed features are showed that some of these features are partly related with the scouring at wreck sites and controlled by the orientation of the wreck structure relative to the prevailing hydrodynamic conditions.

Keywords: Deltas, Sea level, Stratigraphy, Sediments, Izmir Bay

Introduction
Over the last decade, numerous works has been carried out on sedimentary coastal wedges in order to portray their pattern and evolution in relation to the last post-glacial sea level rise, and to estimate their future behavior. High resolution shallow seismic investigation complemented with side scan sonar and gravity coring and radiocarbon dating has been widely performed in many coastal settings around the world. Such detailed studies have been limited around the Turkish coastal areas of eastern Mediterranean and especially inner Gulf of Izmir [1] needs more representative work. In this study, the quaternary growth of Gediz delta in Izmir Bay is described and its relationship to tectonic and sea level change is interpreted. Additionally morphosedimentary seabed features are investigated with sonar and video recordings.
Material and Methods
The seismic, side scan sonar and diver video data that constitute the basis of this work were collected from the research vessel of the Institute of Marine Sciences and Technology in 2010, 2013. Data were recorded and processed using Triton SB Logger-Interpreter. Seismic profiles are divided seismic stratigraphic units, using the technique that described in Allen and Posamentier [2]. Conclusions
The shelf and basin slope area of Izmir Bay is underlain by superimposed deltaic sequences. Following the Holocene post glacial transgression, deltas were re-established deep in ancestral bays and little sedimentation took place on the shelf. The main architecture change occurred at ca. 7000 BP, i.e. when the sea-level rise slowed down comparably. The TST built up during the phase of rapid rise. It is poorly preserved and overlain by the HST that developed during the mid- to late Holocene. Rate of sea-level rise, sediment supply, basement hypsometry and hydrodynamic regime appear therefore as key-factors controlling the general geometry, preservation and nature of the sedimentary infilling. It appears in particular, that wave and current dominated bodies can be preserved in the infill of microtidal bay settings characterized by erosional seabed morphology especially in southern part of the bay. Isopach mapping shows that the thickest sediment sequences on the continental shelf are developed in bay near the limit of delta progradation. According to Aksu et al., [1] the pre-Miocene tectonic framework of the area around Izmir is characterized by north-northeast trending faults. Processed high resolution seismic profiling data show that there is no indication of active faulting and all fault like structures are related with acoustic basement morphology. This pattern is contrary the proposed tectonic models of recent works for Izmir Bay [3], [4]. Individual objects, artefacts or wrecks may act as nuclei to promote scour at local scale. Seismic, sonar and video data showed that scouring at such sites is controlled by the orientation of the wreck structure relative to the prevailing hydrographic regime, bathymetry and geological environment of the site.

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