



Biogeochemical expression of seafloor processes in the Canakkale (Dardanelles) Strait, Turkey

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Sea floor sediments taken from the Marmara Sea exit of the Canakkale Strait (Dardanelles), a 62-km long water passage connecting the Aegean and Marmara Seas, were held to geochemical analyses. On the basis of grids of echo-sounder, 3.5 kHz sub-bottom profiler, shallow seismic profiles and side-scan sonar mosaics, the asymmetrical seabed morphology is controlled by discontinuous post Early Pliocene units which were influenced by tectonic and eustatic activities while the Miocene basement is controlled by NE-SW trending dextral strike-slip faults. Gas seepages recorded either at the bottom or in the water column coincides to the areas close to the faults in the base rock, around the places the acoustic basement almost outcrops and also occasionally above the channel-fill deposits. Some conical shaped seabed features (early phase of pockmarks) appearing in groups range in size from 10 to 30 meters in diameter and are 1-2 m high. Sediment samples indicated a complicated expression of textural distribution depending on the depositional processes and possible sediment transportation in the channel. GC/MS analytical technique has reflected some characteristic signatures of fatty acid, n-alkane (low and high molecular weight) and volatile compounds (BTEX and C3 benzenes). Some hydrothermal features of sediment, e.g. sulphur and manganese which are not always encountered in seafloor sediments, reflected well in the results of the GC/MS analyses. This gives a chance of correlation of the chemical results with geological and geomorphologic data on this shelf area to the east of the strait.