



Shallow gas accumulations and related structures in the sediments of the eastern Black Sea

D. Dondurur, **M. Ergün** and G. Çifçi

Institute of Marine Sciences and Technology, Izmir, Turkey (mustafa.ergun@deu.edu.tr / Fax : +90 232-2785082)

The eastern Black Sea basin has been undergoing about 12 km of subsidence since the early Tertiary. This area was dominated by major extensional faults, which have generated half-graben structures. The Archangelsky and Shatsky ridges represent regionally uplifted footwall blocks to major extensional faults that form the southern and northern continental slopes of the region. However, the southern side of the basin was affected by the reactivation of extensional faults and the development of new reverse faults at the end of Eocene. The study area is located in the Yeşilırmak River delta on the Turkish shelf over the Sinop Basin towards the Archangelsky Ridge. The overall compressional deformation of the Sinop Basin, which a foreland basin, was superimposed onto the footwall block forming the Archangelsky Ridge. Large amounts of microbial methane production, accumulation and expulsion of shallow gases are present at the Turkish shelf of the eastern Black Sea. Shallow gas was detected on the subbottom profiler and sonar records. It continues about 25-65 m below the seafloor and is marked by bright and cloudy spots, sometimes pockmarks and acoustic voids. Circular and elongated pockmarks are present between 180- and 300-m water depths. The circular pockmarks have diameters of 50-120 m and the elongated pockmarks are 150-200 m wide with crater depths of 10-25 m. In deeper sediments, buried pockmarks developed under periodically varying overpressure conditions driven by the seismologically active North Anatolian Fault. Linear elongated pockmarks were formed by downslope tensional stretching together with strong seafloor currents acting as a connector of circular pockmarks.