



Hypoxia and Anoxia in the Black Sea

T. Oguz

Institute of Marine Sciences, Middle East Technical University, Erdemli, Turkey

The Black Sea is known as the largest anoxic of the world's oceans. Within the deep interior basin, the anoxia starts approximately at 16.2 kgm⁻³ sigma-t level, whose depth varies approximately from 75 m in cyclonic regions to 125 m in anticyclonic regions. The anoxic layer is separated from the oxygenated surface layer through an oxygen deficient, the so-called "Suboxic layer" with a thickness of 20-to-40 m depending on the circulation characteristics. Its upper boundary is defined customarily by oxygen concentrations less than 10 iM, and may vary up and down depending on the ventilation, organic matter cycling and vertical advective and diffusive processes as well as lateral intrusions from the coastal sites. Suboxic zone therefore fits into the definition of hypoxic conditions. On the other hand, the Black Sea hypoxia occur frequently in its wide northwestern shelf particularly during summer-autumn months under heavy oxygen consumption associated with intense phytoplankton blooms and organic matter generation and recycling. The available data will be presented to elucidate the temporal and spatial characteristics of the hypoxia in both the shelf and interior waters of the Black Sea. Some results from the coupled physical-biogeochemical model simulations will also be shown as an approach to model such complex systems.