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Sedimentological and Geochemical Characteristics of the Gorgan Bay Sediments

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Abstract

The Gorgan Bay is an elongated bay in the southeastern flank of the Caspian Sea in the Iranian territory which is separated from the Caspian Sea by Miankaleh spit. Sedimentological studies on 35 collected sediment samples from the Gorgan Bay and adjacent areas of the Caspian Sea reveals that the grain size of the bottom sediments are mostly in the range of mud to sand where the sand content increases eastward especially in the vicinity of the waterway between the bay and the sea. Mean content of carbonate and organic matter in the sediments are %35 and %30 respectively which the carbonate content increases towards the bay's inlet and the organic matter shows a decreasing trend. Mineralogically the Gorgan Bay sediments are mainly consists of igneous, metamorphic and sedimentary lithic fragments and some authogenic sediments that accompanied with some clay minerals mainly chlorite. The XRF results show that the observed differences in concentration of heavy metals (Pb, Zn, Cr, Ni, Cu, V, Ba, Zr) largly depends on the sediment type. Comparing the geoaccumulation index (Igeo) of the surficial samples with the one from the depth of 25 cm below the bottom reveals that the Gorgan Bay sediments are not polluted in respect to the heavy metals. In comparison with adjacent areas, Gorgan Bay sediments show a transition between evaporate carbonate dominated sediments of Turkmenistan coast in north and other terrigenous sediments of the Iranian coast in west.

Keywords: *Caspian Sea, Gorgan Bay, Sediment, Geochemistry, Geoaccumulation Index, Heavy Metals*