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Effects of Dissolved Oxygen, Biogenic Content, Bioturbation and Particles Size on Organic Matter Preservation Potential in Surfacial Sediments of Northern Part of the Persian Gulf

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Abstract

This study revealed that the dissolved oxygen level, biogenic content, bioturbation and particles size control the distribution of total organic carbon (TOC) in the surfacial sediments of Northern part of the Persian Gulf (from Strait of Hormoz to Khowr-e-Mussa). 525 surface sediment samples taken between 10 and 100 m water depth with Van Veen Grab were analyzed for biogenic content (bioturbating organisms), TOC (Rock-Eval Pyrolysis), mineralogy and particles size. Bed sediments are composed of terrigenous (quartz, feldspar, rock fragment and clay minerals) and chemical-biochemical (bivalve, gastropod, ostracod, bryozoa, planktonic and benthic foraminifera, echinoderm spine and fish notochord) particles. Based on these studies, muddy sediments, total organic carbon (0.03 to 1.48 wt%) and planktonic foraminifera (such as cyclomina and globorotalides) are increased and dissolved oxygen level (5 to 6.2 ppm) is decreased in deeper parts of eastern and middle sections of studied area than coastal area which indicates high potential for organic matter preservation in muddy sediments of the Persian Gulf with lower dissolved oxygen level and lower bioturbation (decrease in benthic content).

Keywords: *Biogenic content, Bioturbation, Total organic carbon, Bed sediments, Planktonic foraminifera, Persian Gulf.*