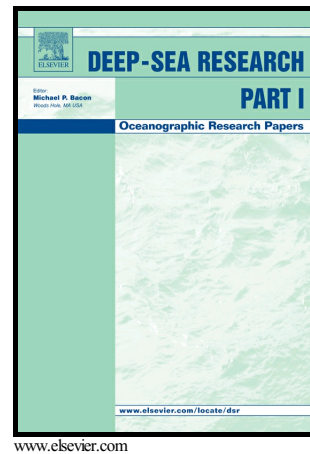


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## ORGANIC MATTER ALONG LONGITUDINAL AND VERTICAL GRADIENTS IN THE BLACK SEA

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**Abstract**

We studied organic matter in the central Black Sea and its northeastern and northwestern shelf break within three weeks in November 2013 to test the hypothesis that *in situ* production could explain lateral and vertical variability in its composition and distribution. The wide spatial coverage over a short period of time achieved during this study revealed longitudinal variability in organic matter characteristics reflecting productivity at the Black Sea surface. Particulate organic matter was dominantly autochthonous in the central Black Sea. Allochthonous influence of river discharge was only traced on the northwestern shelf by high concentrations but low freshness of particulate organic matter. Compared to the NW shelf break and central Black Sea, primary production was high near the NE shelf break, likely fueled by input from the Azov Sea. Vertical patterns were similar throughout the deep Black Sea and appeared to also be governed by *in situ* processes rather than reflect variability in the surface water. As concentrations of organic matter decreased with depth, its elemental and isotopic composition indicated chemoautotrophic production at the oxic-anoxic interface and organic matter degradation in the benthic boundary layer. Though profiles of dissolved organic carbon indicated a minor source in anoxic deep water, likely linked to chemosynthesis and reflux from sediments, a negative deviation of concentrations from a

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