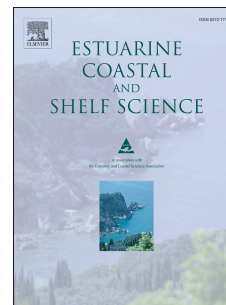


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**A seasonal study of particulate organic matter composition and quality along an offshore transect in the Southern North Sea.**

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**Abstract**

We investigated temporal differences in particulate organic matter (POM) composition and quality in the water column and sediment at three stations along a transect from the coast via Oyster Grounds to Dogger Bank within the southern North Sea, using a multiproxy approach covering a wide spectrum of organic matter (OM) degradation states. Results of pigments and phospholipid-derived fatty acids showed distinct OM composition and quality differences in these stations, as well as seasonal variations. Major events, such as a late fall bloom at Dogger Bank and a spring bloom at Oyster Grounds and the Coastal Station were highlighted and the semi-depositional status of Oyster Grounds was confirmed. The OM composition and quality were relatively constant in the upper 10 cm of the sediment at all stations. Finally, this study highlights the importance of lateral and vertical transport processes in seasonal

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