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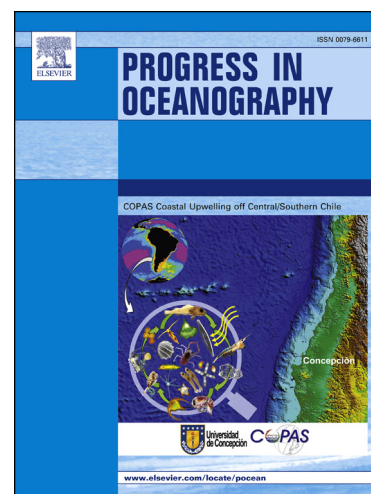
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Photoreactivity of riverine and phytoplanktonic dissolved organic matter and its effects on the dynamics of a bacterial community from the coastal Mediterranean Sea

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Abstract

High solar radiation levels measured in the Mediterranean basin can result in photo-oxidation of dissolved organic matter (DOM) at the sea surface. The objective of the present study was to determine the effects of solar radiation on two contrasting sources of DOM (diatom-derived DOM and riverine DOM) and to evaluate its effect on the growth and the composition of a bacterial community from the Mediterranean Sea. DOM was sequentially exposed to artificial solar radiation or kept in the dark and then added to microcosms containing coastal seawater. For both sources of DOM, light exposure induced photo-alterations by decreasing absorbance and fluorescence of colored dissolved organic matter. However, resulting effects on bacteria were contrasted. Photo-alteration of phytoplankton-derived DOM resulted in a lower bacterial growth during the three first days, without modifying the total dissolved organic carbon consumption. Moreover, after 3 days of incubation, the bacterial diversity as determined by 16S rRNA gene pyrosequencing, revealed that DOM phototransformation led to a higher relative abundance of *Alphaproteobacteria* and a lower relative abundance of *Gammaproteobacteria*. A limited number of operational taxonomic units (OTUs) (n=44)

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