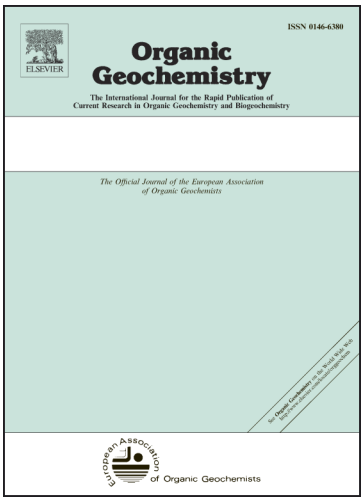

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Sediment records of long chain alkyl diols in an upwelling area of the coastal northern South China Sea

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Abstract

Here, Long chain alkyl diols in sediment cores were studied in the Yuedong Upwelling (YDU) area in the coastal northern South China Sea to investigate whether sea surface temperature (SST) and upwelling intensity over the last few decades can be traced by the diol-derived indices, i.e., the LDI (long chain diol index) as proxy for SST and the DI-1 and DI-2 (diol index 1 and 2) as proxies for upwelling intensity. The influence of riverine long chain alkyl diols (e.g., 1,13- and 1,15-diols), which may affect LDI-reconstructed SSTs, was largely ruled out based on the comparison between diol distributions in suspended particulate materials in the Pear River estuary and the core sediments. LDI-derived SSTs in downcore sediments matched well with local annual mean SSTs. The records of DI-2 changed in parallel with the local wind stress and inversely with SST at times of upwelling, suggesting that DI-2 as an effective proxy for upwelling intensity of YDU. The DI-1 showed a generally inverse variation pattern with DI-2, implying a major influence by SST, and it is thus not an