



## **Climate and productivity interpretation for the last 100yr on Portuguese Margin - Biomarkers evidence**

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Alkenones, organic biomarkers synthesized by higher plants, such as C23-C33 n-alkanes and n-alcohols C20-C30 and total organic carbon were analysed at annual resolution for the last 100yr at three sites in the Tagus River deposition center (PO287-26 9° 21.8'W -38°33.5'N) in Cape Raso (PO287-28 - 9°30.9'W -38°37.5'N), and Estremadura site (PO 287-44B 10°30.6'W -39°27.6'N). The North Atlantic Oscillation (NAO) is the dominant mode of atmospheric circulation over the entire Northern Hemisphere (NH) and known to control the climate on the Iberian Peninsula. During NAO negative phases increased precipitation results in the intensification of the Tagus River discharge and influx of terrigenous material. During NAO positive phases, the strong north-south atmospheric pressure gradient and the clockwise flow around the Azores high-pressure center generate stronger coastal upwelling conditions on the Portuguese Margin. Suspended sediments transported by the river and deposited on the shelf Tagus prodelta are characterized by high concentration of organic matter. The Tagus deposition center is influenced by the seasonal (May to September) coastal upwelling, mainly the Cape Raso filament. High n-alkane and n-alcohol contents are used as indicators of runoff, while alkenone contents are believed to indicate river derived productivity along of the sequence. Higher concentration of terrigenous biomarkers occurred in the Tagus site during the negative phases of the NAO index associated to lower temperatures. High marine productivity as reflected by the 37-alkenones concentration and total organic carbon is evident in the Cape Raso site and can be associated to stronger coastal upwelling in the area. SST was estimated from the relative composition of C37 unsaturated alkenones through the Uk'37 index. For the last 100yrs, SST shows lower temperatures (14.5°C) and higher variability (3°C) at the Tagus site, while higher temperatures, 16°C at Cape Raso and 17.5°C at the Es-

tremadura site and lower variability (1‰C and 1.5‰C respectively) were found at this sites.