Combination of organic and inorganic proxies for hydroclimate reconstruction of the Ogooué River basin (Gabon) during the last 25ka

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Marine sedimentary records recovered near the mouth of large rivers in the Gulf of Guinea store important information on the evolution of past climate and environments in Western and Central Africa. More particularly, certain organic and inorganic components of these marine sediments provide valuable indications that can be used to reconstruct past hydroclimate variability. In this area, the Ogooué (Gabon) represents the third most important river by discharge, behind the Congo and the Niger Rivers. Despite its importance, the climatic and environmental evolution of the Ogooué River basin during the Late Quaternary period has never been investigated in detail. Here, we have conducted an original multi-proxy approach on core MD03-2708cq (01°10.33'S; 08°19.01'E, 920mbsl): a marine sediment record covering the last 25ka and strategically located off the Ogooué delta. This multi-proxy investigation combines the use of inorganic tracers (clay mineralogy, major and REE elements, Sr & Nd isotopes), which represent powerful tools to reconstruct past variations in the provenance and the degree of weathering of the sediment, together with organic proxies (leaf wax hydrogen and carbon isotopes, branched GDGT lipids) that provide information about past continental rainfall and vegetation changes. Paleo-reconstructions derived from both inorganic and organic proxies allow us to reach a most robust assessment of past hydroclimate variability in Central Africa during the last 25ka that can be used to disentangle past interactions between the monsoonal signal in West equatorial Africa and environmental changes in the Ogooué basin.