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Preliminary study of land-plant biomarkers in marine sediments of Alfonso basin and its relationship with the climate of the last 3.5 ka

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This study used biomarkers such as n-alkanes, especially focused on the long chain n-alkanes and some diagnostic indexes derived from abundance, to elucidate molecular changes in the contribution of organic matter to the sediments, especially terrestrial vegetation surrounding continental areas around of Alfonso basin in response to climate change, particularly changes in the hydrological cycle.
The results show that in general the n-alkanes of organic matter (OM) of Alfonso basin sediments are composed of a mixture of waxes derived from phytoplankton and terrestrial plants, with a greater contribution from phytoplankton compare to terrestrial vegetation, in the oldest part of the record, associated with a marine productivity increased period favored by rainfall. Maximum abundance of C29, and high values of C27/C31 ratio indicate leaves from trees as a source wax, probably succulents plants characteristic of arid zones, with C3 as one of their metabolic pathway, identified from mean ACL values around 29.5.
The low CPI index indicates contamination and microbial communities as a possible source of long chain n-alkanes, probably due to anoxic bottom conditions in Alfonso basin favor the development of these communities.
Finally, it is suggested no change in the community, at least for the last $\sim$ 3.5 ka BP, but increased cover vegetation (biomass) in southern California during periods of increased rainfall (from $\sim$ 3.5 to $\sim$ 1.7 ka BP). The ability of terrestrial plant communities to adapt for longer periods before being replaced by other species, when faced with gradual changes rather than rapid climate change is reflected in a few changes in its composition.