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Title:	Assessment of hydrocarbon biomarkers from surface sediments of Ashtamudi and Mandovi estuaries to delineate the source inputs: An inter-comparison study
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Abstract:	<p>Estuaries are the transition zones that act as a buffer between land and sea, and it also serves as the main passage for transferring large amounts of terrestrial input into the sea. A significant part of organic matter that is largely derived from allochthonous (riverine and anthropogenic flux) and autochthonous (planktonic and benthic) inputs sinks through the water column and finally gets preserved in sediments. The organic matter derived from terrestrial sources represents important fraction and varies with environmental conditions. However, progressive increase in anthropogenic activities in areas close to the estuarine systems, such as industrialization and urbanization, have resulted in incremental nutrient loading along with organic matter, that has ultimately degraded the ecosystem health. Our study areas Ashtamudi and Mandovi estuaries have also been receiving a high influx of organic matter from fishing (Ashtamudi) and mining (Mandovi) activities that has turned both the estuaries polluted. Furthermore, the disposal of plastic contaminants has aggravated the degree of pollution in these areas. The distribution of the organic matter is also controlled by hydrodynamic factors, and the particle size distribution is one of main key factors that determine the accumulation of the contaminants. So, a multiproxy approach was applied to understand the sources of OM in both the systems. The source identification of the organic constituents will help to understand the pollution status as well as anthropogenic pressures over the ecosystems. Furthermore, investigating present status of the estuaries will result in building management strategies as well as monitoring techniques for maintaining the ecosystem health. The saturated hydrocarbon fractions were extracted from the surface sediment samples, and n- alkane proxies along with unresolved complex mixture and identification of petroleum biomarkers were used to delineate the sources. Various proxies such as the carbon preference index (CPI) and UCM vs. the n-alkanes ratio were evaluated to understand the organic matter input. The upper part of both the estuaries is characterized by finer particles while the lower part largely contains coarse sized particles as suggested by D (4,3) values. Also, low to very low UCM is detected in upper section of both the estuaries while the middle as well as lower stations was marked with the presence of moderate or high UCM, respectively. The lower tidal advected zones of both estuaries were characterized by the presence of abundant contaminants derived from spillage of petroleum. In addition, plastic derived contaminants are also present in varying concentrations in both the estuaries. Therefore, the multiproxy results indicate the major role of the anthropogenic stressors in the lower reaches of both the estuaries.</p>
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