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Variations in concentrations and sources of bioavailable organic compounds in the Indian estuaries and their fluxes to coastal waters

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Abstract:

Estuarine organic matter (EOM) supports heterotrophic carbon demand in the estuaries. However, the fraction of bioavailable organic compounds, which are easily assimilated by biological organisms, in the EOM is unclear. We hypothesize that a significant fraction of dissolved EOM is bioavailable and supports heterotrophic activity in the Indian estuaries. In order to test this hypothesis, 26 major, medium and minor Indian estuaries were sampled during wet and dry periods (2011-2012) for dissolved bioavailable organic compounds and dissolved organic carbon (DOC). The mean concentration of total dissolved carbohydrates (TDCHO) and total dissolved proteins (TDPRO) were higher during wet than dry period in contrary to the observations of dissolved free Amino Acids (DFAA). TDPRO:TDCHO and statistical analysis revealed that terrestrial oganic matter contributed significantly to the EOM in the major and medium estuaries during wet period whereas fresh organic matter derived from *in situ* production contributed in all estuaries during dry period and minor estuaries during wet period. The lower concentrations of TDCHO and DFAA and their contribution to DOC were observed in the Indian than global estuaries suggesting that either efficient