Dissolved CH$_4$ and N$_2$O concentrations during a full tidal Cycle at Wright Myo Mangroves, Andaman Islands, India

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Dissolved CH$_4$ and N$_2$O concentrations and nutrients were measured in water collected at a fixed site in a pristine mangrove creek located at Wright Myo, Andaman Isles, over a full tidal cycle during the intermonsoon period (January 2004) and during the wet season (July 2004). In January measured dissolved CH$_4$ ranged from 282-704 nmol l$^{-1}$ (11989-27071 % saturation) and N$_2$O concentrations from 6.0-13.2 nmol l$^{-1}$ (102- 208 % saturation). Similar ranges in dissolved concentrations were observed in July, dissolved CH$_4$ concentrations ranged from 324-625 nmol l$^{-1}$ (14422-27608 % saturation) and dissolved N$_2$O 6.60-10.5 nmol l$^{-1}$ (127– 168 % saturation). These data demonstrated the creek behaved as an annual atmospheric source for both trace gases. Analysis of these data revealed a laterally sigmoidal trend in temporal distribution of dissolved gas concentrations suggesting a superimposed tidal signal controlled their flux. However the results could not be explained simply in terms of estuarine dilution. A similar trend was seen in the nutrient data. This suggested that fluxes of trace gases and nutrients in mangroves may be a function primarily of tidally controlled hydrostatic pressure with greater concentrations observed at tidal minima and vice versa.