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Trace gas measurements (N2O, CH4, DMS) in the upwelling area off Mauritania (NW Africa)

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Dissolved and atmospheric nitrous oxide (N2O) and methane (CH4) were measured during several cruises to the Mauritanian upwelling in the period from 2005 to 2008. Dissolved dimethyl sulphide (DMS) was measured during one cruise in 2008. The measurement campaigns were part of the German SOPRAN (Surface Ocean Processes in the Anthropocene) project which is a German contribution to the international SOLAS. The eastern tropical North Atlantic Ocean is a site of contrasting oceanic regimes which include high productive coastal upwelling areas along the Mauritanian coast and oligotrophic open ocean regions. Thus, the eastern tropical North Atlantic Ocean is an ideal site to study the air-sea gas exchange of trace gases in view of contrasting biological and physical processes. An overview about first results of the trace gas measurements will be presented. Main findings are: The coastal area off Mauritania is a site of increased emissions of N2O and CH4 with maximum surface concentrations during upwelling events. During the upwelling event in 2008, enhanced DMS values seemed to be related with grazing. We conclude that the upwelling off Mauritania is indeed a hot spot of trace gas emissions; however, the biological and hydrographic settings lead to a complex seasonal and spatial variability of the surface distributions of trace gases and their subsequent emissons to the atmosphere.