



Volatile sulfur species in Upwelling regions

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Volatile sulfur species (SVOCs), in particular DMS, substantially contribute to the Non sea salt sulfate (NSSA) in the marine boundary layer and can therefore affect cloud condensation nuclei properties. So far research on volatile sulfur species in oceans has mainly focused on Dimethylsulfide (DMS)

Data from the Peruvian upwelling show apart from DMS, remarkable concentrations of Dimethyldisulfide (DMDS) and other sulfur species (Dimethyltrisulfide, Methylthiiran, Thiophene) accounting for roughly half of the volatile sulfur. Our data suggest that these species may become relevant at nitrate levels above $5 \mu\text{mol L}^{-1}$. At lower nitrate levels DMS is by far the most important SVOC. Nevertheless, DMDS and other reduced sulfur species may become important in upwelling and near shore waters. Due to their very short atmospheric lifetime of less than 1 h these trace gases may substantially contribute to atmospheric non-sea-salt-sulfate on local to regional scales and should be investigated further.