



Relationship between DMS concentration and the upper mixed layer solar radiation dose

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Dimethylsulfide (DMS) is a natural sulfur compound arising from algal dimethylsulfoniopropionate (DMSP) but through complex biotic and abiotic processes. It is an important natural source of atmospheric sulfur providing new and/or bigger hygroscopic particles for cloud formation over the ocean. One recent study (Vallina and Simo, Science, 2007) suggests the existence of a close quantitative link, at the global scale but also locally, between DMS and the solar radiation dose (SRD), a measure of available radiation inside the mixed layer. Joint data including CTDs, DMS concentration and solar radiation data, collected all along the year 2001 in the northeastern Atlantic during the POMME experiment are analyzed. Contrary to the observations in the Sargasso Sea and Blanes Bay (Mediterranean Sea) presented by Vallina and Simo (2007), this new data set clearly indicates that SRD and DMS are only weakly correlated, and this whatever the numerous sensitivity tests performed (i.e. the solar irradiance, the optical properties of surface waters, the mixed layer depth criteria). Additionally, the DMS versus SRD relationship appears quite sensitive to the irradiance attenuation law. Hence, it appears that SRD cannot be used to understand DMS dynamics at the scale of the north Atlantic basin.