



Mutual information function as a measure of correlation between Total Solar Irradiance and Dimethylsulphide on climate.

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It is well known that natural influences of solar variability on the Earth's surface temperature, has an impact not only on the climate, but also over many biophysical internal processes of the Earth. According to some authors, the major source of Cloud Condensation Nuclei (CCN) over the oceans seems to be Dimethylsulphide (DMS), which is produced by planktonic algae in seawater. On the other hand, the Total Solar Irradiance (TSI) is considered as an indicator of the impact of solar variability on DMS. The mutual information function (MIF) is introduced in this paper in order to quantify the nonlinear correlation between two variables involved in the climate variability phenomena: the Total Solar Irradiance (TSI) and the Dimethylsulphide (DMS). We found that the MIF is always positive indicating that the time series of the Total Solar Irradiance and Dimethylsulphide production are always correlated.