

**Relating dimethyl sulphide and methanethiol fluxes to surface biota in the South-West Pacific using shipboard Air-Sea Interface Tanks**

**M. Rocco<sup>1\*</sup>, E. Dunne<sup>2</sup>, A. Saint-Macary<sup>3,4</sup>, M. Peltola<sup>1\*\*</sup>, T. Barthelmeß<sup>5</sup>, R. Salignat<sup>1</sup>, G. Chamba<sup>1</sup>, N. Barr<sup>3</sup>, K. Safi<sup>3A</sup>, A. Marriner<sup>3</sup>, S. Deppeler<sup>3</sup>, C. Rose<sup>1</sup>, J. Uitz<sup>6</sup>, J. Harnwell<sup>2</sup>, A. Engel<sup>5</sup>, A. Colomb<sup>1</sup>, A. Saiz-Lopez<sup>7</sup>, M. J. Harvey<sup>3,†</sup>, C. S. Law<sup>3,4</sup>, and K. Sellegri<sup>1</sup>**

<sup>1</sup> Université Clermont Auvergne, CNRS, Laboratoire de Météorologie Physique (LaMP), Aubière, France

<sup>2</sup> CSIRO Environment, Aspendale, Australia

<sup>3</sup> National Institute of Water and Atmospheric Research, Wellington, New Zealand

<sup>3A</sup> National Institute of Water and Atmospheric Research, Hamilton, New Zealand

<sup>4</sup> Department of Marine Science, University of Otago, New Zealand

<sup>5</sup> GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany

<sup>6</sup> Laboratoire d'Océanographie de Villefranche, Villefranche-sur-Mer, France

<sup>7</sup> Department of Atmospheric Chemistry and Climate, Institute of Physical Chemistry Blas Cabrera, CSIC, Madrid, Spain

\*now at Aix Marseille Univ, CNRS, LCE, Marseille, France and CNRS, Aix Marseille Univ, IRD, Avignon Univ, IMBE, Marseille, France

\*\*now at INAR, University of Helsinki, Finland

† Deceased

Correspondence to: Karine Sellegri (karine.sellegri@uca.fr); Manon Rocco ([rocco.manon@gmail.com](mailto:rocco.manon@gmail.com))

## Contents of this file

Figure S1. Time series of ozone concentrations (ppb) in ambient, ASIT-control, ASIT-O<sub>3</sub> and bypass during the Sea2Cloud voyage.

Figure S2. Time series of DMS concentrations in ppbv in ambient from 21 March 21:00 LT to 22 March 06:00 LT (a), 22 March 20:00 LT to 23 March 00:00 LT (b) and from 23 March 20:00 LT to 06:00 LT.

Figures S3. A. Reduced major axis (RMA) of measured ASITs DMS (seawater) vs. DMS (headspace), B. Same as A without the outliers. ASIT-control with outliers: slope = 0.51, interval of confidence = [0.45, 0.58]; intercept = -0.72, interval of confidence = [-1.05, -0.42]; r = 0.98. ASIT-control without outliers: slope = 0.51, interval of confidence = [0.31,

0.87]; intercept = -0.69, interval of confidence = [-1.88, -0.09];  $r = 0.93$ . ASIT-O<sub>3</sub>: slope = 0.36, interval of confidence = [0.27, 0.49]; intercept = -0.42, interval of confidence = [-0.88, -0.09];  $r = 0.94$ )

Figures S4. Concentration of DMS in seawater (DMS<sub>w</sub>, nM) and air (ppbv) in ASIT-control (blue) and ASIT-O<sub>3</sub> (orange). ~20min average DMS headspace (DMS<sub>hs</sub>) mixing ratios (ppbv, dots) in ASIT-control (blue) and ASIT-O<sub>3</sub> (orange) and dissolved DMS in ASITs seawater samples (nM, triangles). Concentrations of DMSP in seawater (nM) in ASIT-control (blue) and ASIT-O<sub>3</sub> (orange).

Figure S5. Difference in concentration of DMS and DMSP in seawater (nM) between ASIT-O<sub>3</sub> and ASIT-control. Note the inverse scale for DMSP.

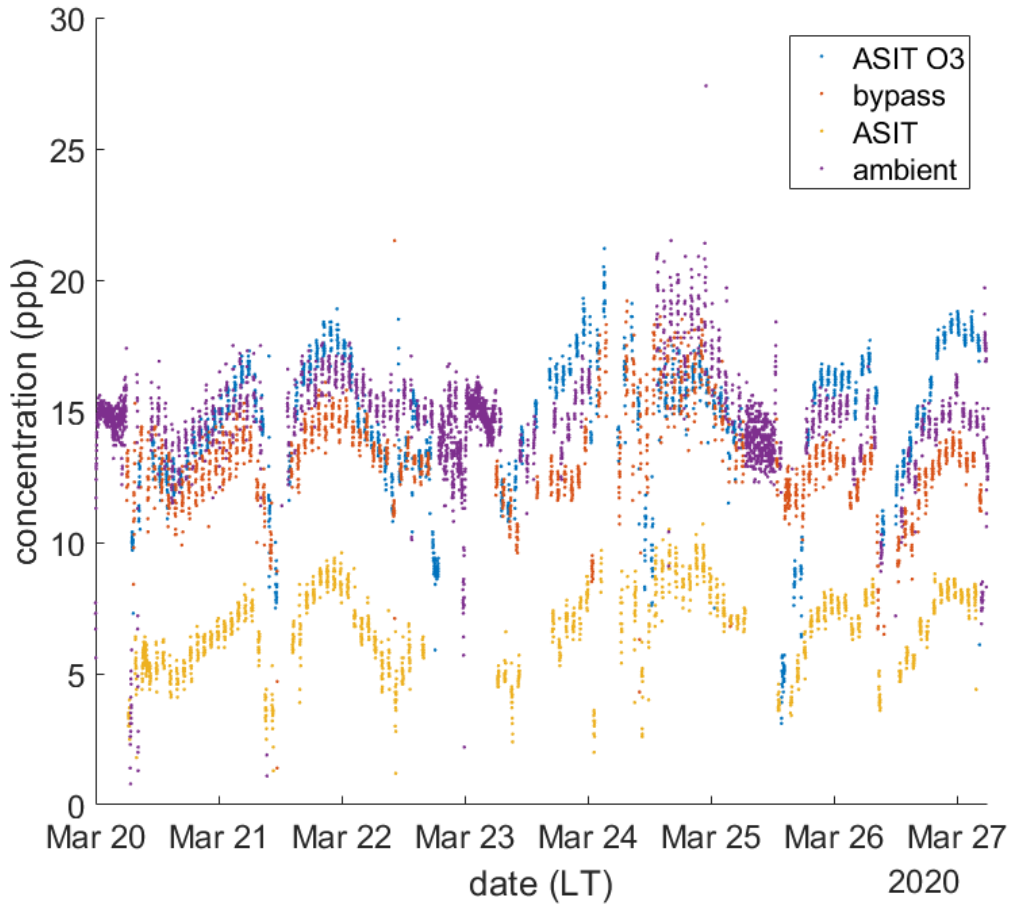
Figure S6. Calculated concentrations of MeSH in seawater (nM) from fluxes measurements derived by the Henry's law.

Figure S7. Relationship between the measured (headspace) and calculated MeSH (seawater) and their correlation ( $R^2=0.99$ , slope= 2.87, intercept = -0.03).

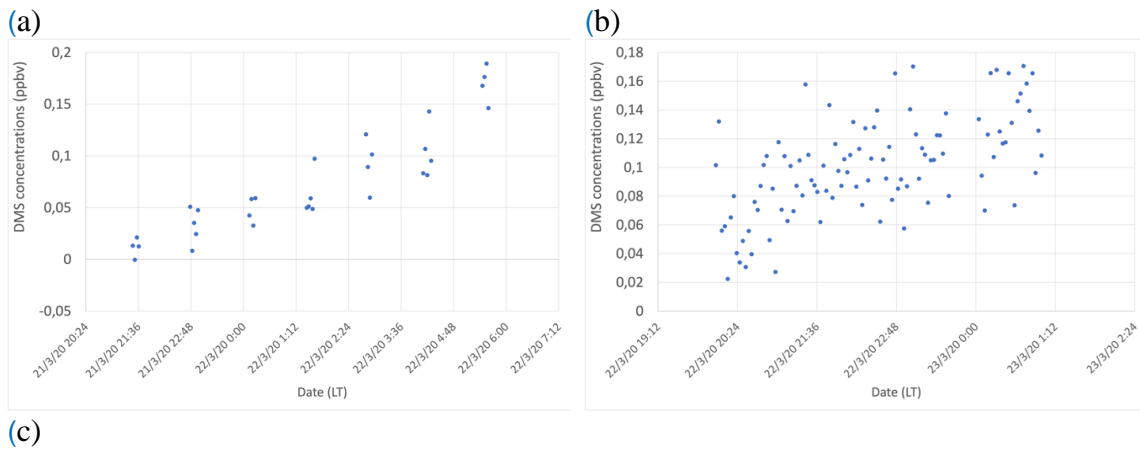
Figure S8. A) Relationship between the nanophytoplankton abundance (cell/mL) and DMS in seawater (nM). B) Relationship between the nanophytoplankton abundance.

Figure S9. Scatter plot of DMS<sub>w</sub> concentrations in March prognosticated from the climatology of Hulswar et al. (2022) versus those obtained from the combination of equation 10 and surface nanophytoplankton cell abundances from satellite retrievals

according to Uitz et al. (2006) (a) over the Sea2Cloud domain corresponding to the area containing the R/V Tangaroa trajectory and (b) over the whole domain shown Figure 10.



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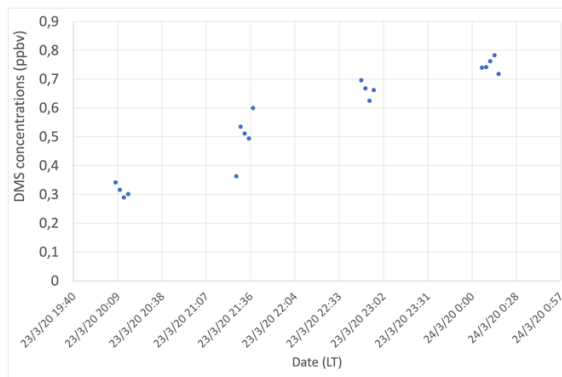
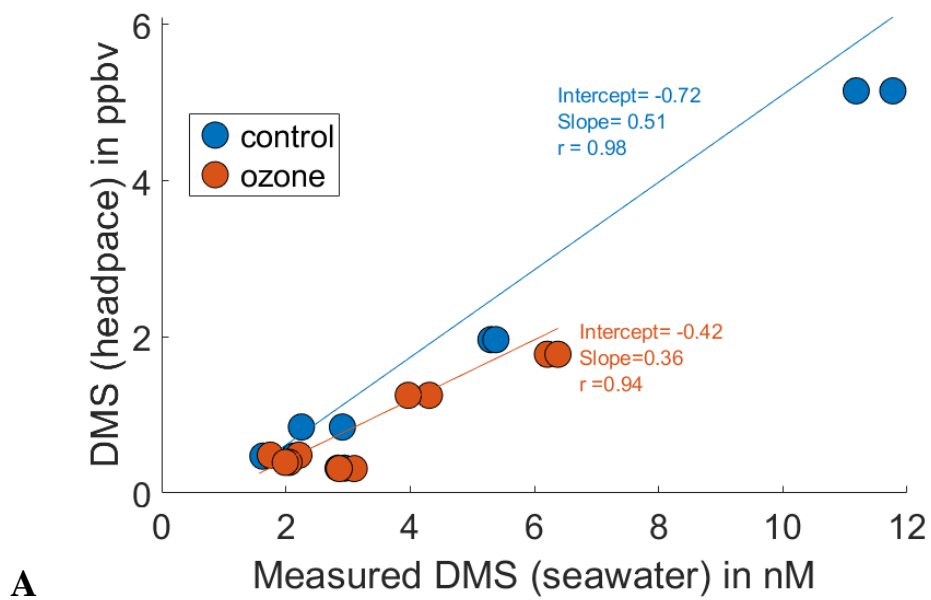
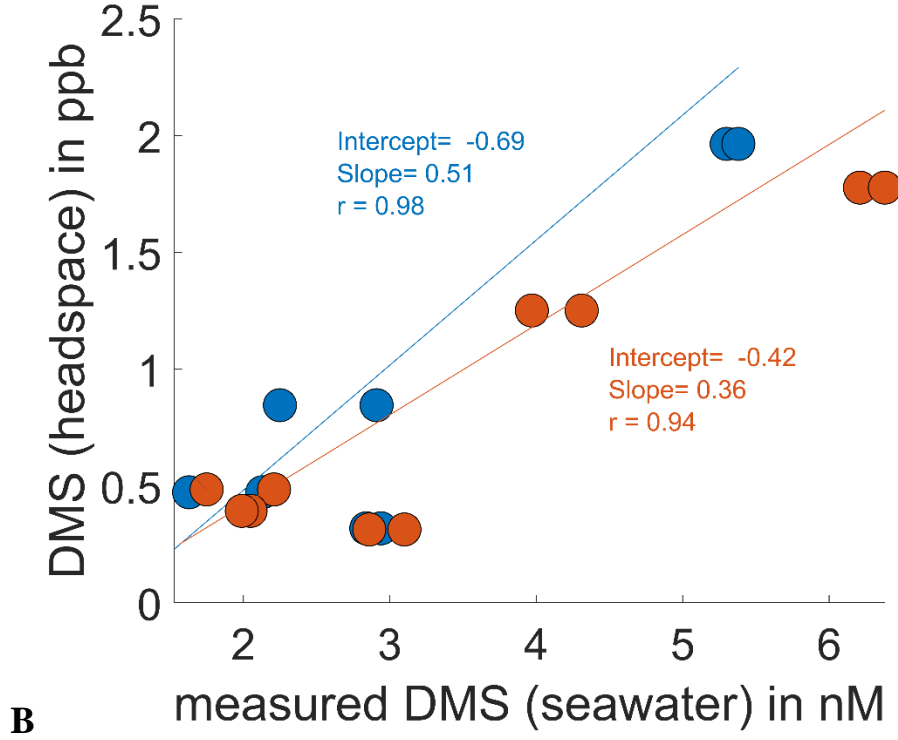


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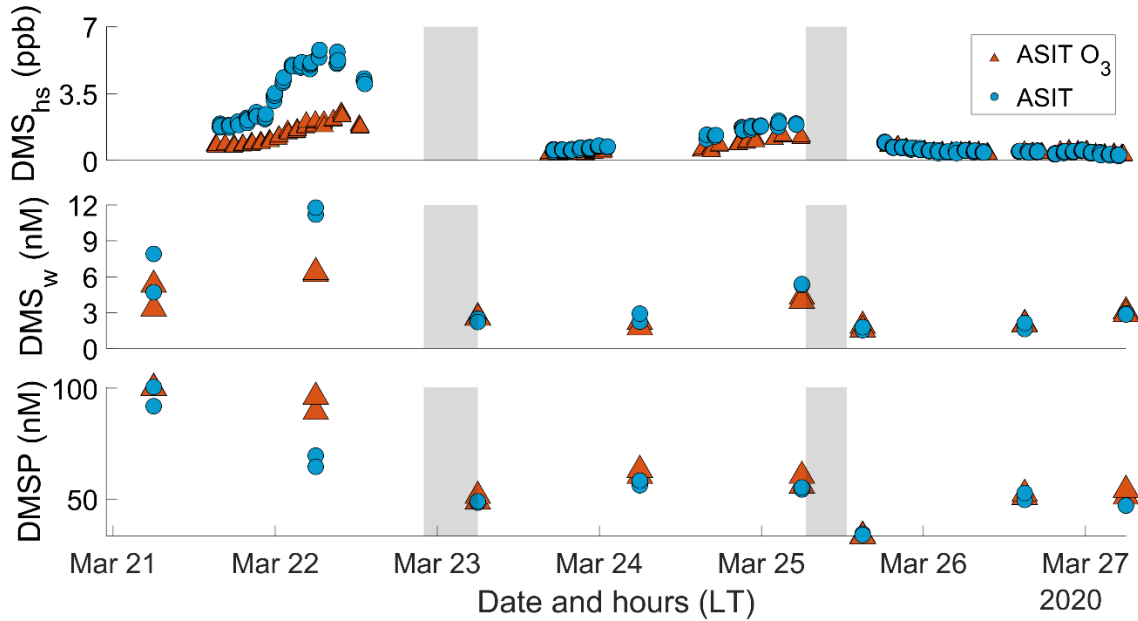


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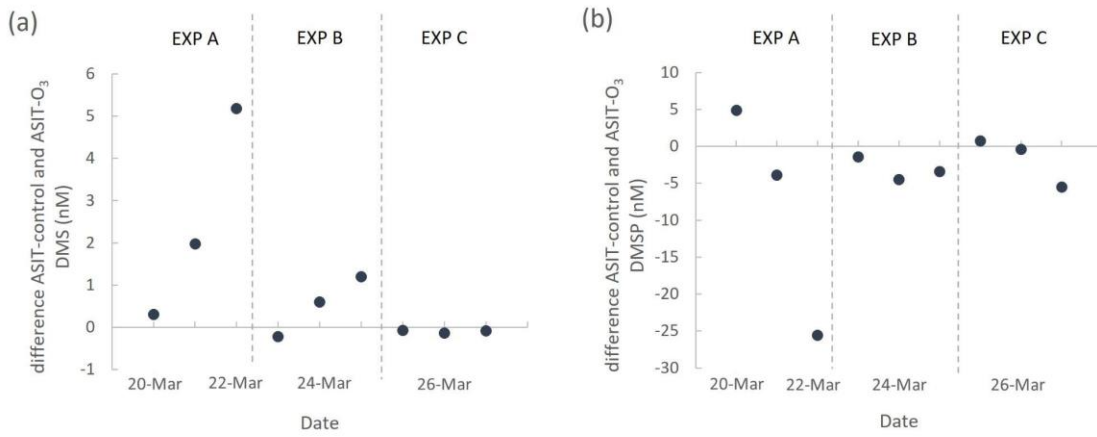
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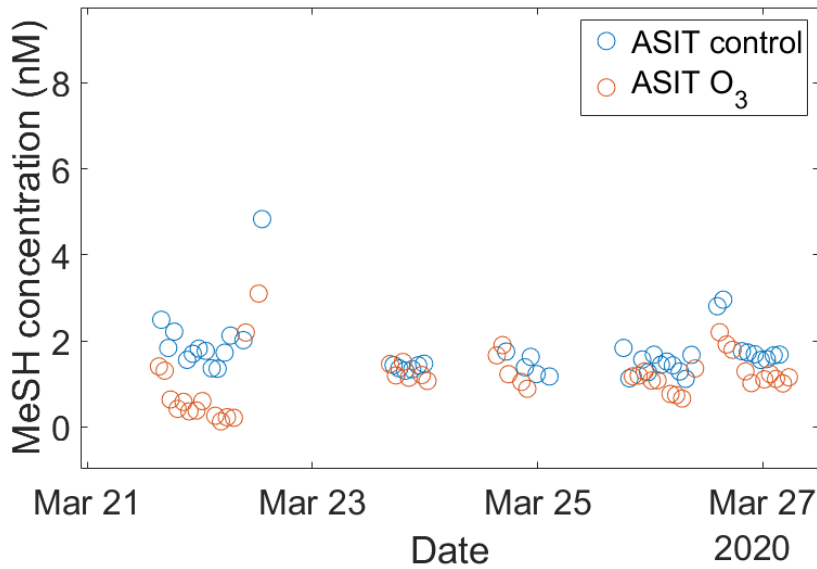
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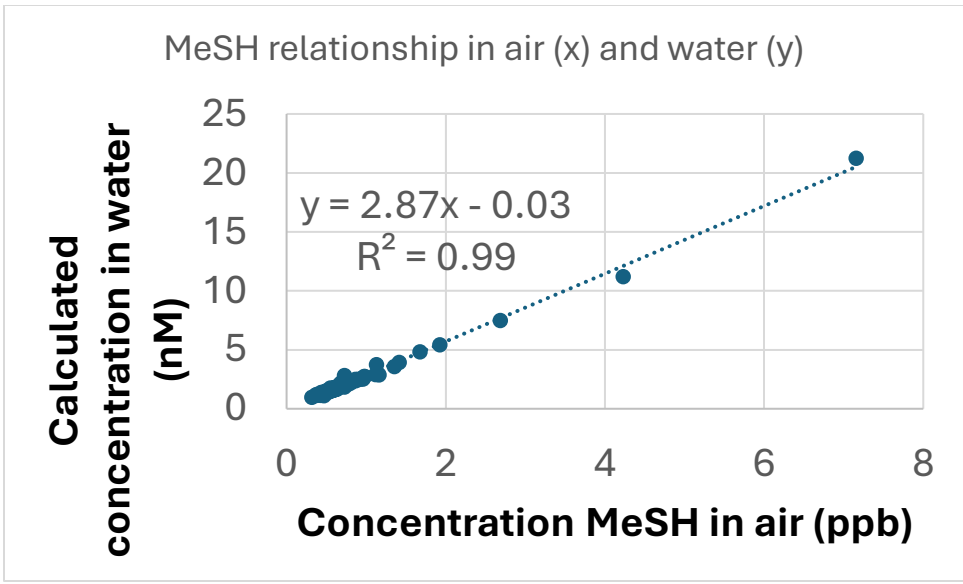


**Figure S5.** Difference in concentration of DMS and DMSP in seawater (nM) between ASIT-O<sub>3</sub> and ASIT-control. Note the inverse scale for DMSP.

### Recalculated MeSH concentration in both ASITs

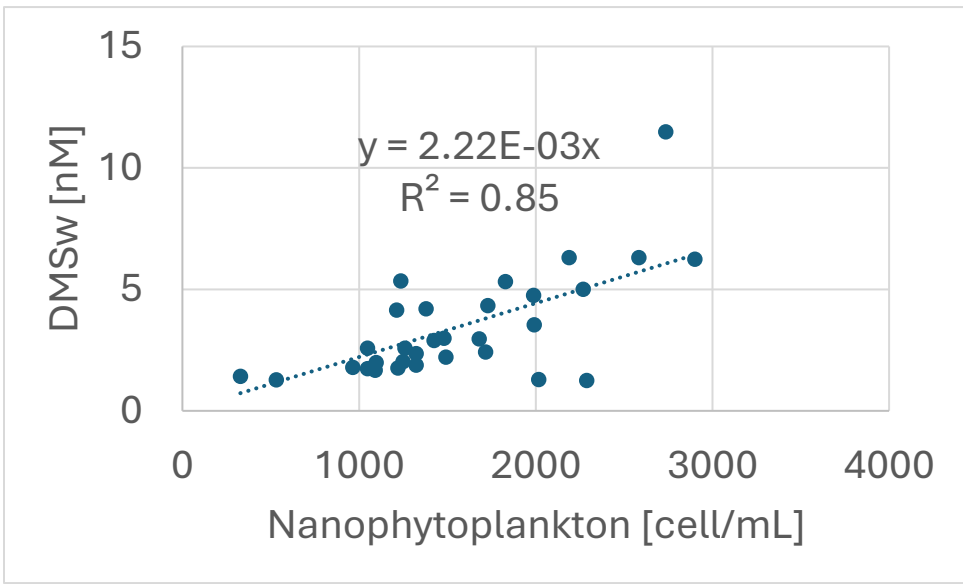


**Figure S6.** Calculated concentrations of MeSH in seawater (nM) from fluxes measurements derived by the Henry's law.



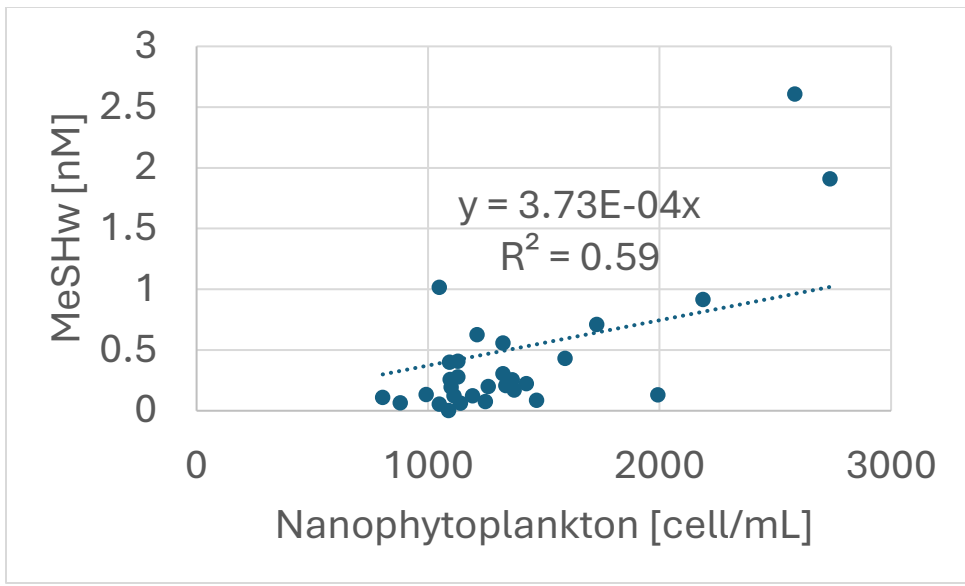
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A



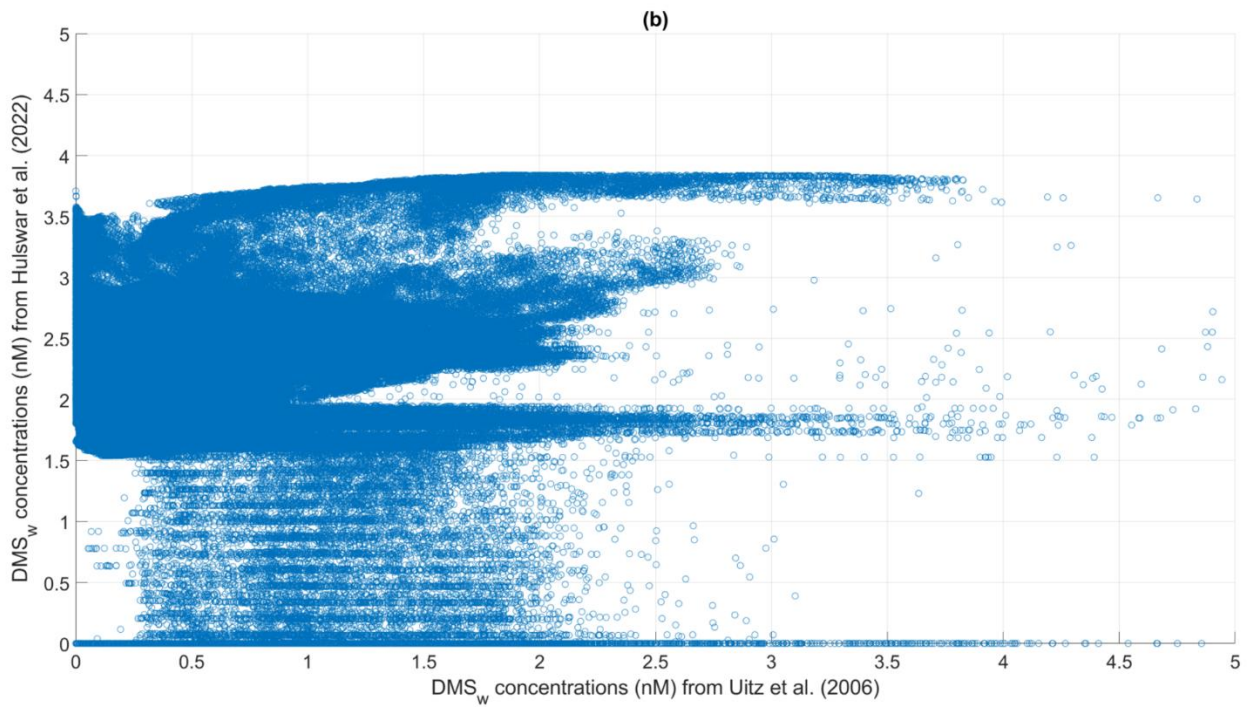
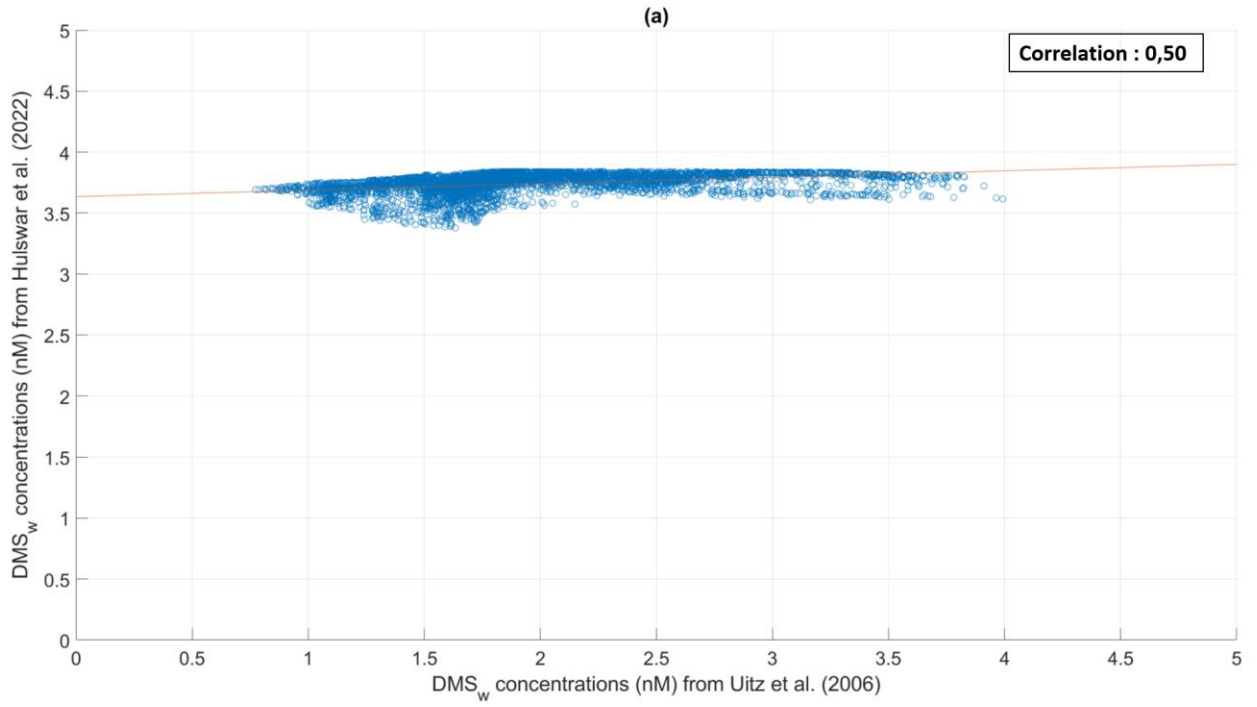
B





**Figure S8.** A) Relationship between the nanophytoplankton abundance (cell/mL) and DMS in seawater (nM). B) Relationship between the nanophytoplankton abundance

(cell/mL) and calculated MeSH in seawater (nM) and their correlation ( $R^2=0.59$ , slope= $3.73 \cdot 10^{-4}$ ).



**Figure S9.** Scatter plot of  $\text{DMS}_w$  concentrations in March prognosticated from the climatology of Hulswar et al. (2022) versus those obtained from the combination of equation 10 and surface nanophytoplankton cell abundances from satellite retrievals according to Uitz et al. (2006) (a) over the Sea2Cloud domain corresponding to the area containing the R/V Tangaroa trajectory and (b) over the whole domain shown Figure 10.