**Supporting information for**

# Cyclone enhances the contribution of oceanic dimethyl sulfide to the free troposphere over the Southern Ocean

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**Support information: Figure S1-S6**

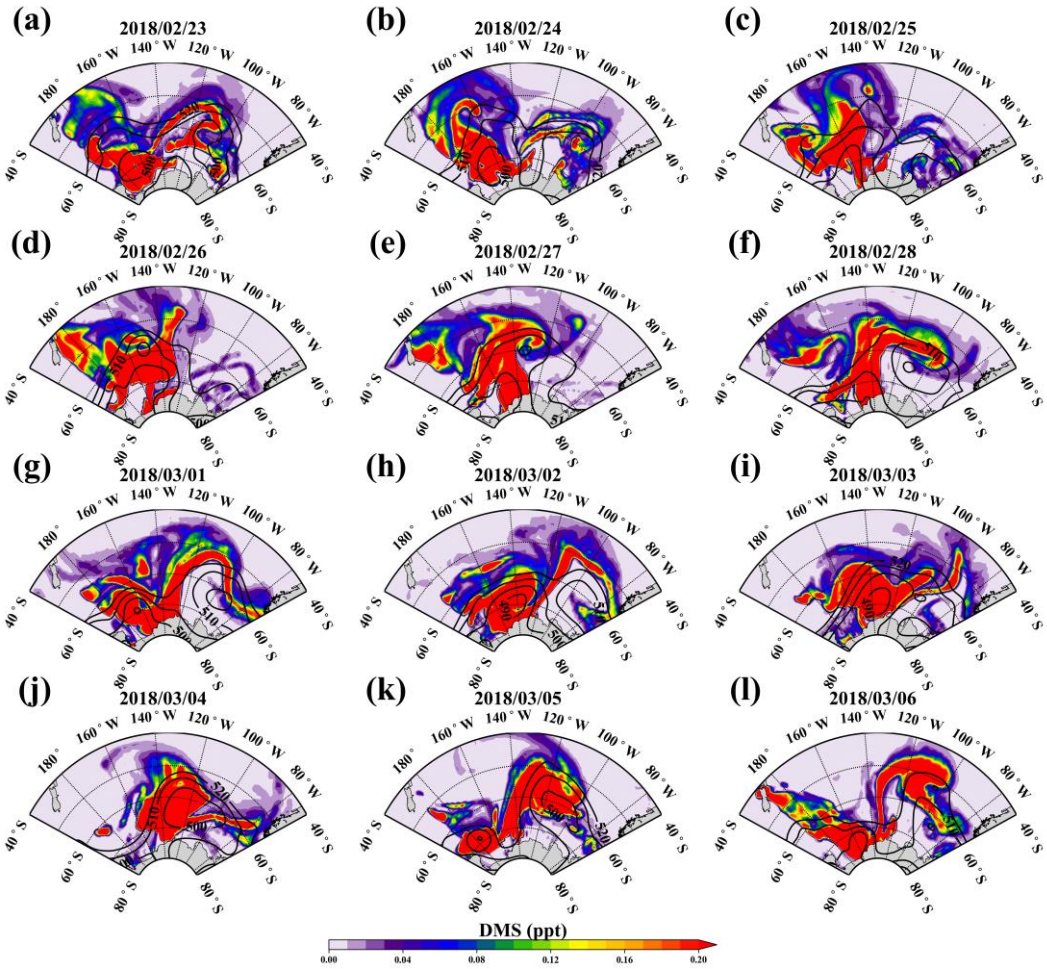


**Figure S1**. The daily simulation results of the distribution of atmospheric DMS at 1 km using the CHINARE's campaign DMS emission. (a - l) the results of different investigation periods. Note that the mean 500 hPa geopotential air pressures are presented in the background.

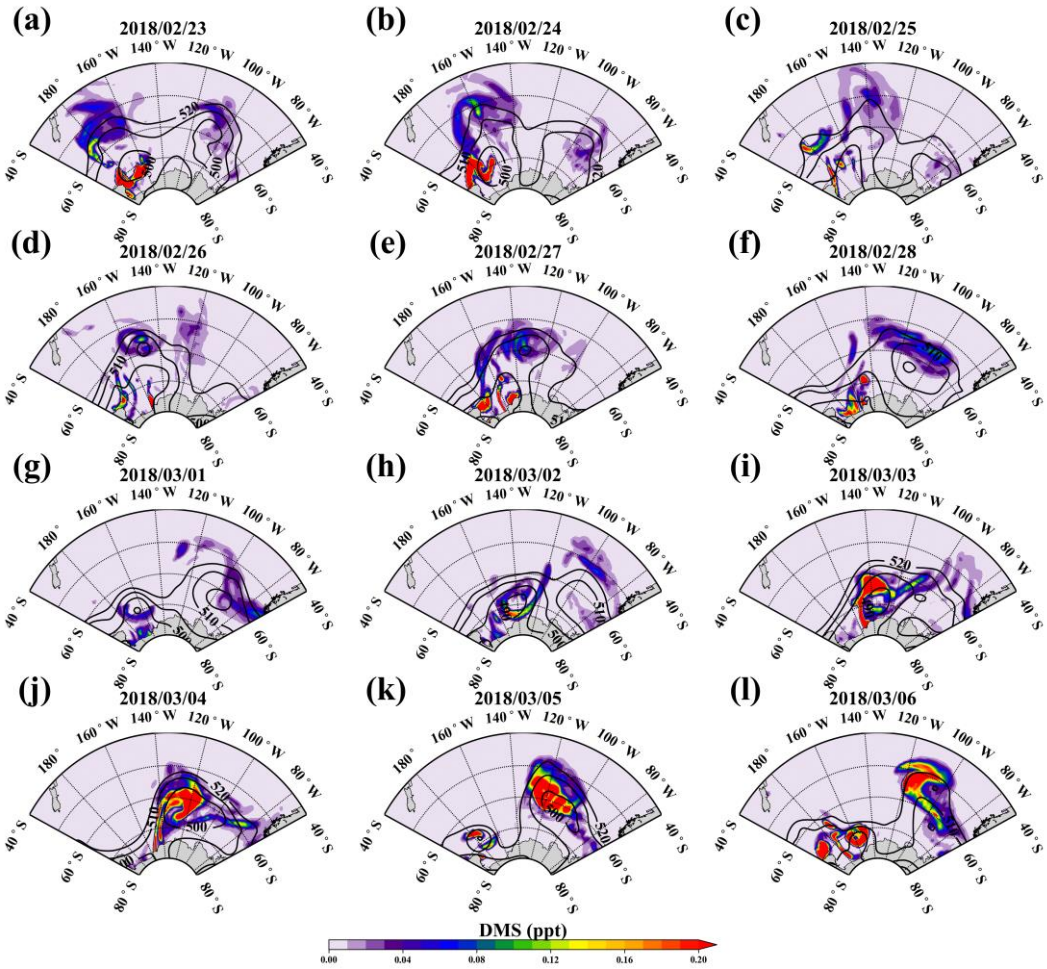


**Figure S2**. The daily simulation results of the distribution of atmospheric DMS at 3 km using the CHINARE's campaign DMS emission. (a - l) the results of different investigation periods. Note that the mean 500 hPa geopotential air pressures are presented in the background.

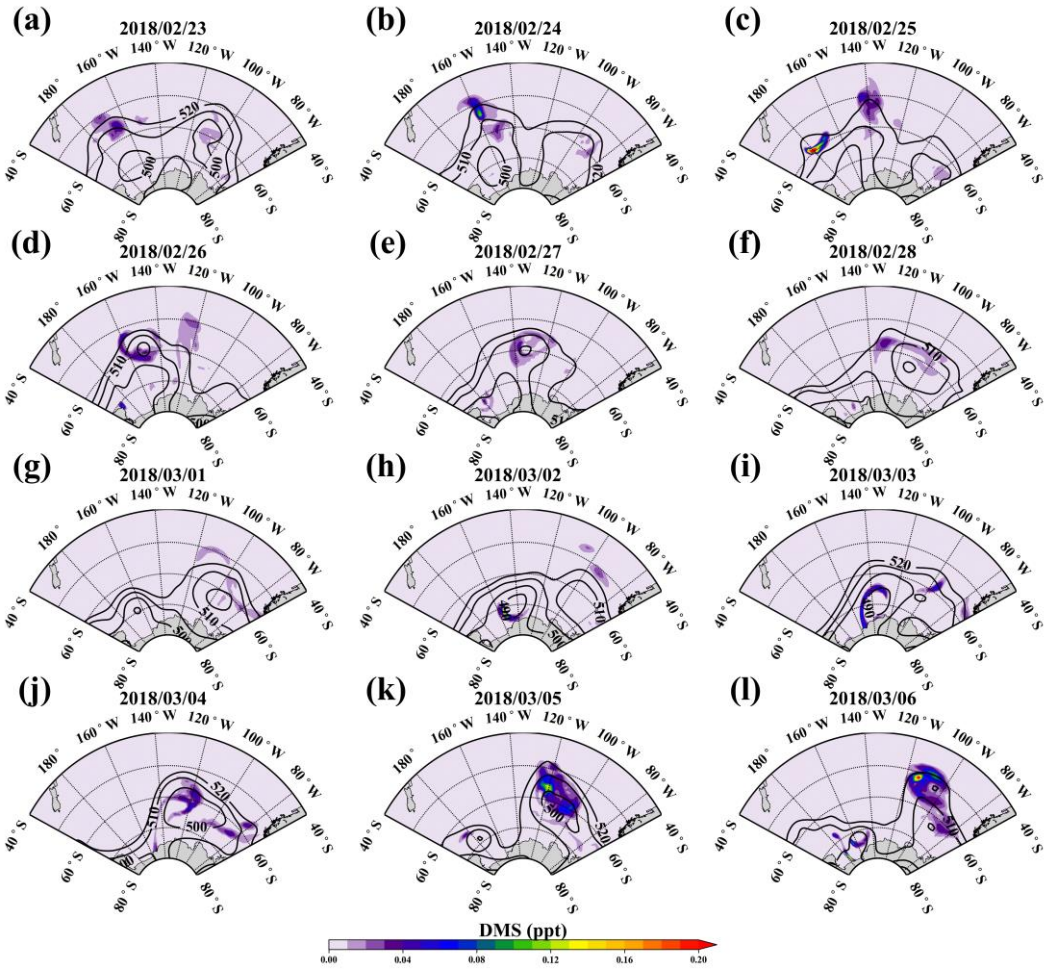


**Figure S3**. The daily simulation results of the distribution of atmospheric DMS at 5 km using the CHINARE's campaign DMS emission. (a - l) the results of different investigation periods. Note that the mean 500 hPa geopotential air pressures are presented in the background.

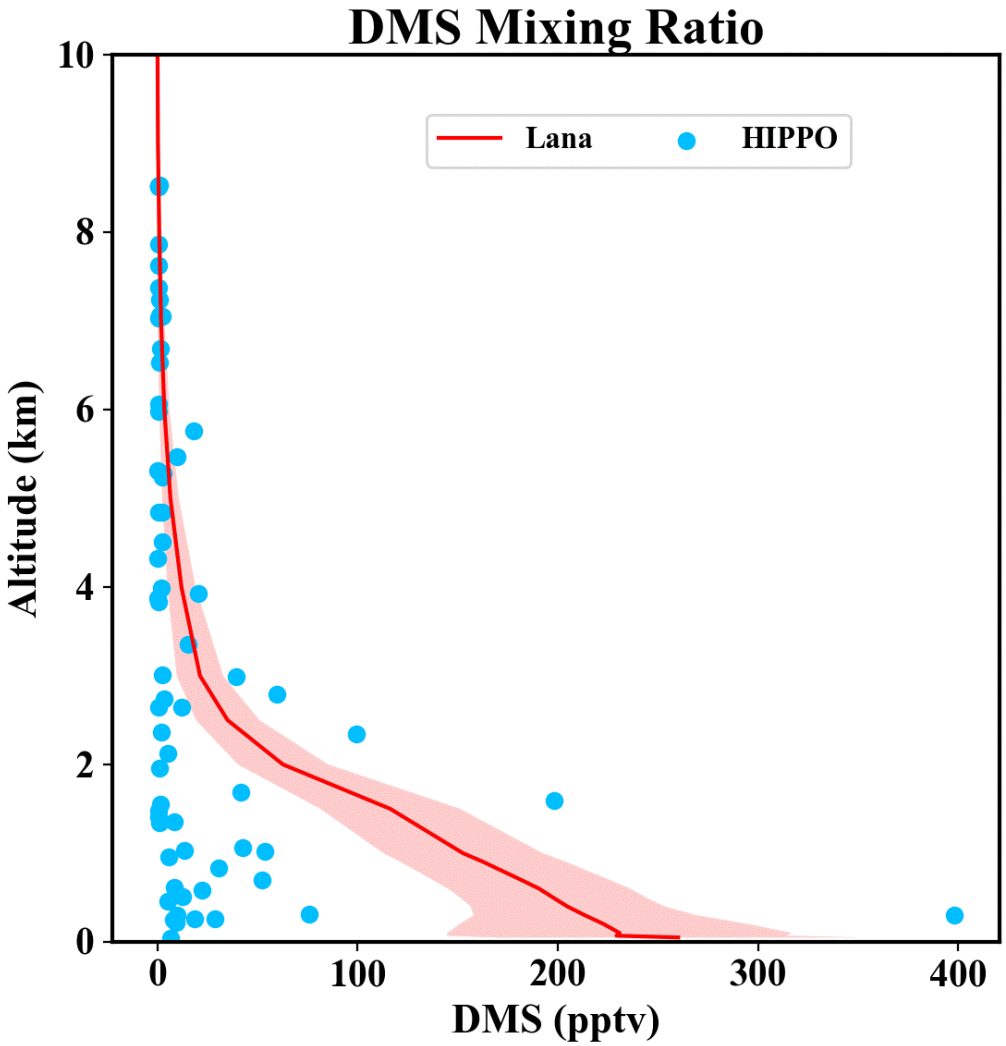


**Figure S4.** The comparison of the modelling results of mean DMS mixing ratio using the Lana's climatology near the ocean of New Zealand and HIPPO flight measurement data.

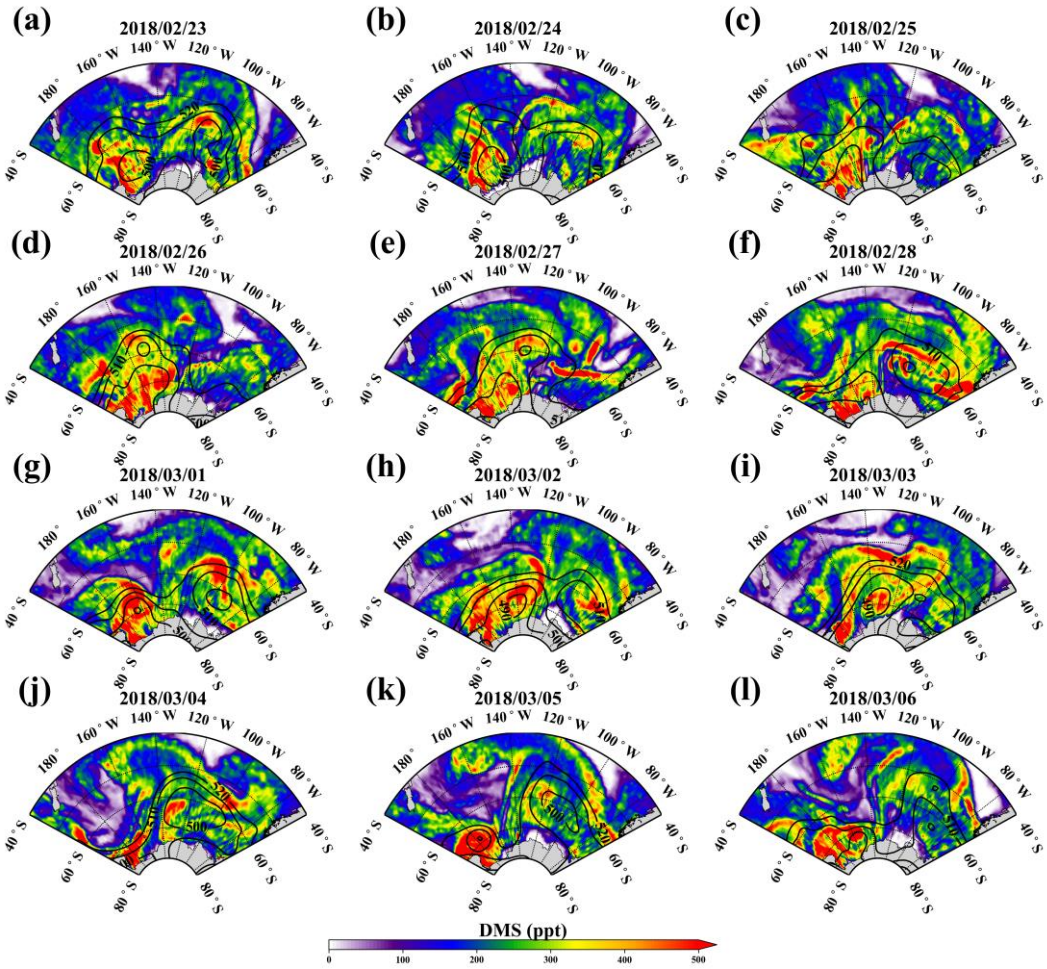


**Figure S5**. The daily simulation results of the distribution of atmospheric DMS at 1km using Lana's emission climatology. (a - l) the results of different investigation periods. Note that the mean 500 hPa geopotential air pressures are presented in the background.

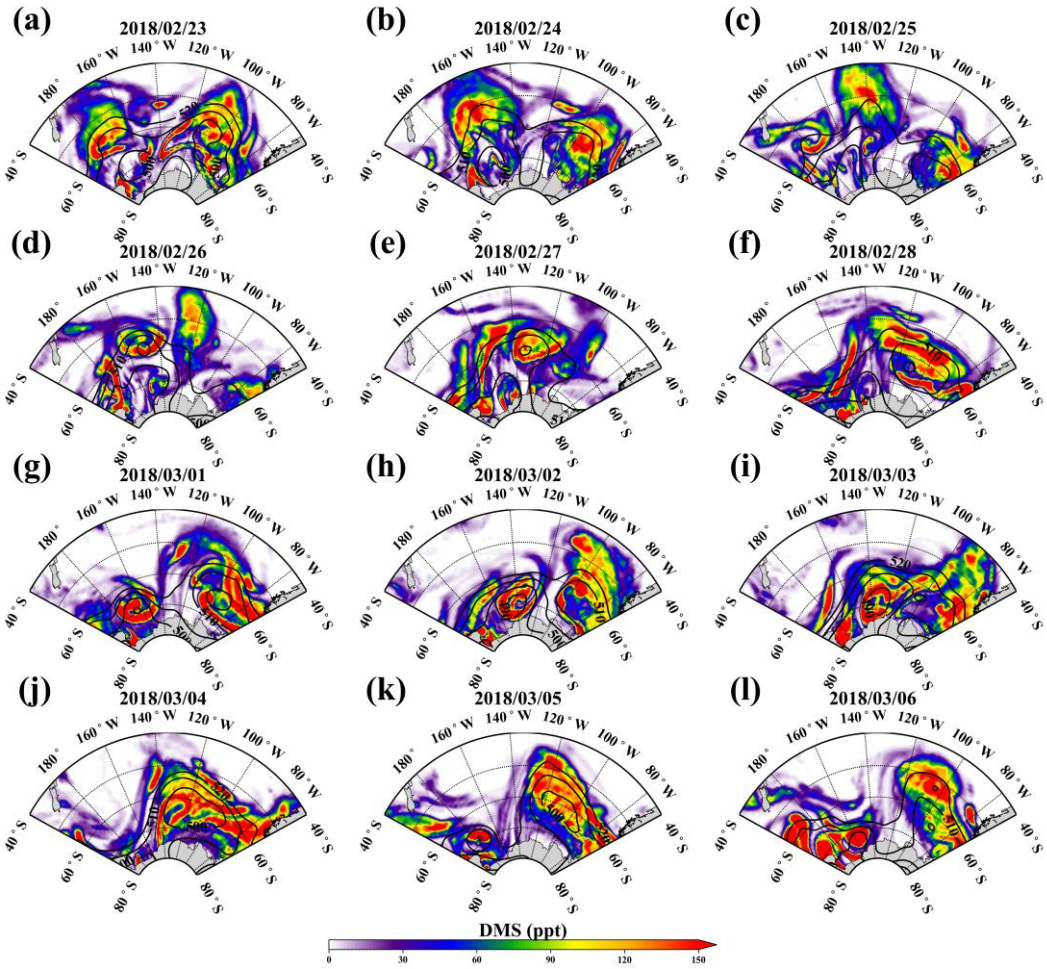


**Figure S6**. The daily simulation results of the distribution of atmospheric DMS at 3 km using Lana's emission climatology. (a - l) the results of different investigation periods. Note that the mean 500 hPa geopotential air pressures are presented in the background.