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Corrigendum to "A 20-year (1998–2017) global sea surface dimethyl sulfide gridded dataset with daily resolution" published in Earth Syst. Sci. Data, 16, 4267–4290, 2024

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We have identified two minor issues in the original dataset and have corrected them. The updated dataset (version 5.1) is now available at https://doi.org/10.5281/zenodo.15717448 (Zhou et al., 2025).

First, the sea ice fraction (SI) dataset we originally downloaded from NOAA's Optimum Interpolation Sea Surface Temperature (OISST) website in 2020 contained several periods with completely missing values: (1) 27–28 November 2011, (2) 7–9 January 2016, (3) 18 April–30 June 2016, and (4) 7 January–28 February 2017. Because these missing values were encoded in the same way as zero sea ice coverage (i.e., SI $= 0$), they were mistakenly treated as valid data (SI $= 0$) during data processing, leading to an overestimation of Kt and DMS flux in affected polar regions. Outside these specific periods and locations, calculations are not affected. We thank Joseph Z. Ulanowski (British Antarctic Survey) for pointing out the abnormally high DMS fluxes near Antarctic in January 2017, which led to us identifying this issue.

We have re-downloaded the SI dataset and found that it has been updated by NOAA. The updated SI dataset no longer contains gaps in 2016 and 2017. For the remaining two days with this issue in 2011, we applied temporal linear interpolation to fill the gap. Based these corrections, we regenerated the dataset for these three years.

Second, in regions such as the Antarctic ice shelf, where at least one input variable for DMS prediction was missing, the DMS concentration should also have been labeled as missing. In the previous version, however, these cases were erroneously assigned a constant value of 1.6031 nM due to an internal MATLAB bug. We have now corrected this by re-

placing those values with a missing value indicator (−999). The affected grid cells are mainly in polar and coastal regions and account for less than 1 % of the global oceanic area.

These corrections do not affect our model development. For most oceanic regions, predicted DMS concentrations and fluxes remain unchanged. Consequently, the global average DMS concentration and total emission flux reported in the paper are unaffected. Only one sentence in Sect. 3.2.3 regarding the DMS emission trend in Polar_N region requires a minor revision: "On the other hand, the highest emissions after 2005 occurred in the last 2 years ($> 0.63\,\mathrm{Tg\,S\,yr^{-1}}$), which are attributed to the highest Kt." Figures 6–12 have been regenerated using the corrected dataset as listed below. Differences relative to the original version are very small, except for the first three panels in Fig. 12, where absolute values change, but overall trends remain unaffected.

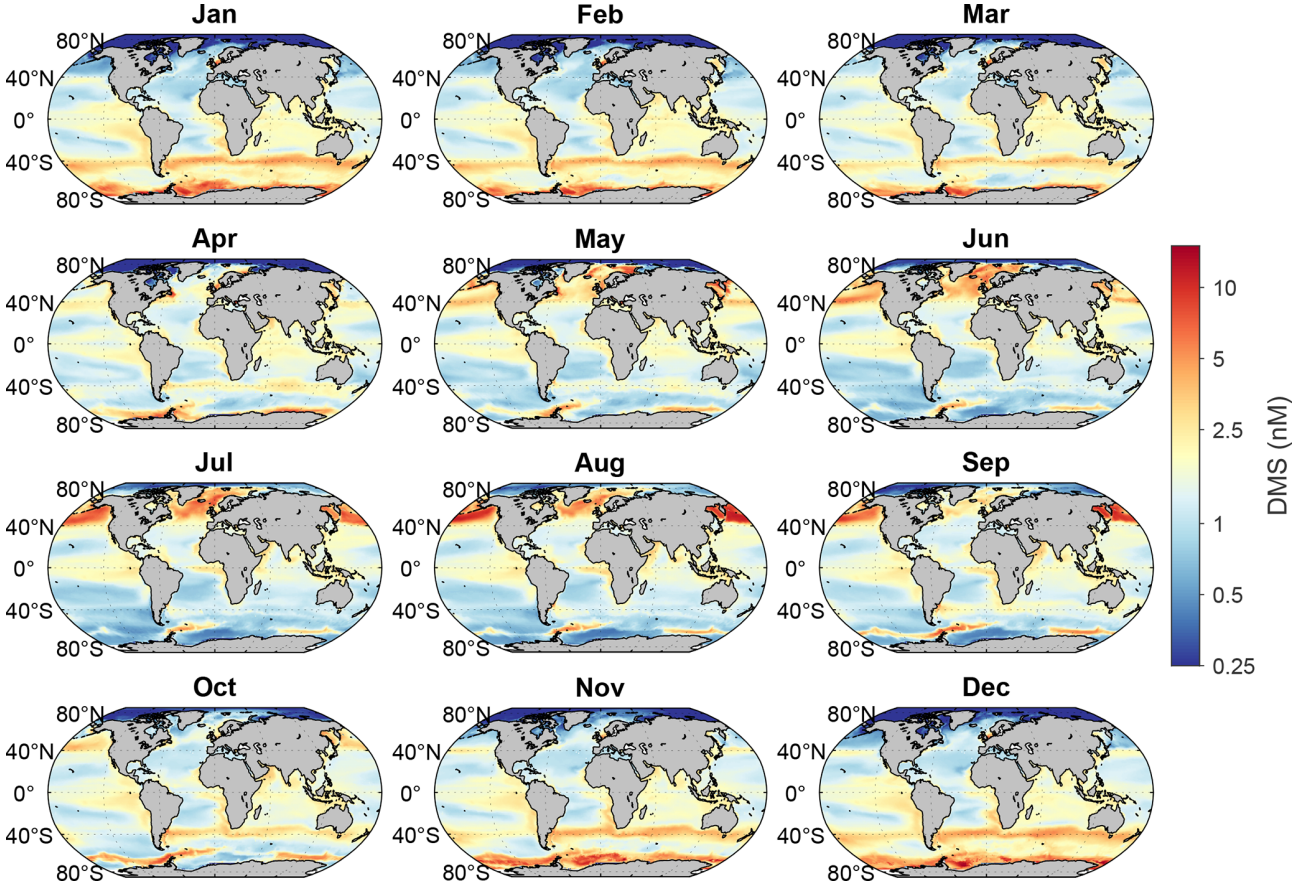

Figure 6. Monthly climatology of global sea surface DMS concentration from 1998 to 2017.

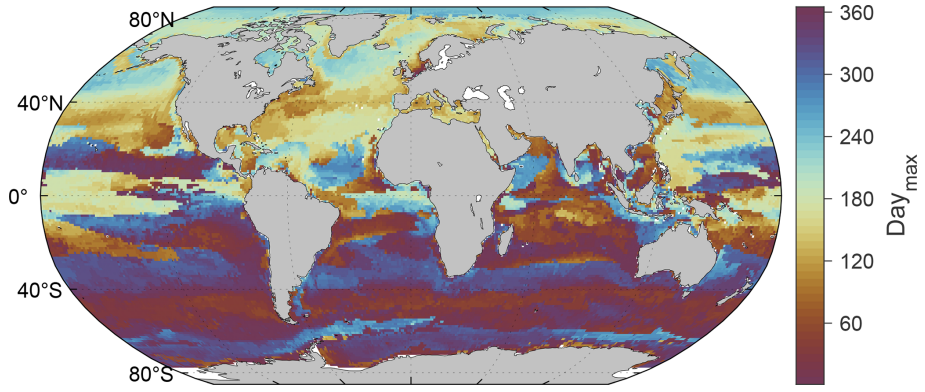

Figure 7. The day of the year with the highest sea surface DMS concentration for each grid point.

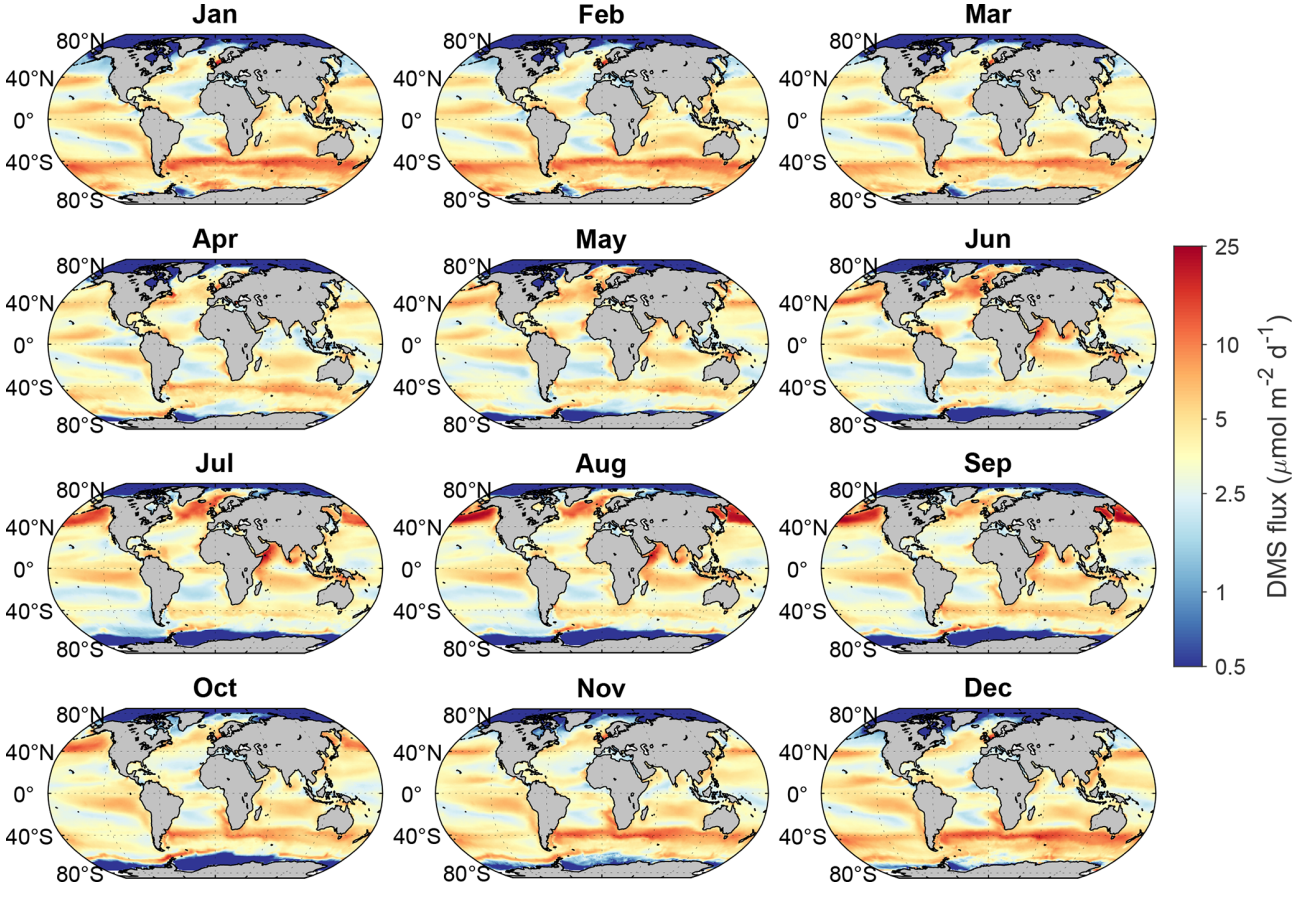

Figure 8. Monthly climatology of global DMS sea-to-air flux from 1998 to 2017.

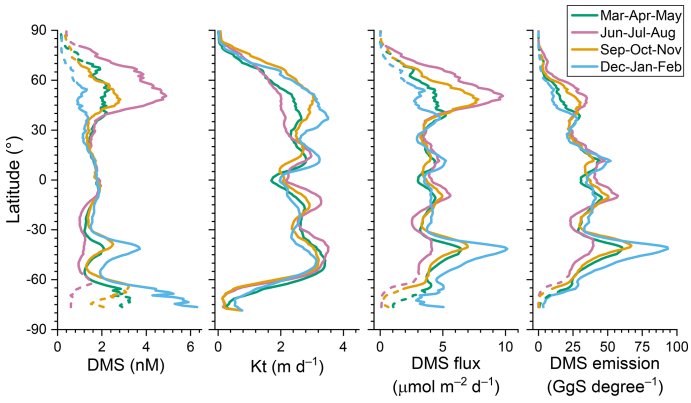

Figure 9. Latitudinal distributions of sea surface DMS concentration, total transfer velocity (Kt), sea-to-air flux, and total emissions in different seasons during 1998–2017. The dashed parts of the lines indicate regions where more than half of the satellite Chl *a* values were missing and are thus not available for the DMS simulation, so most of the Chl *a* data for these regions are from the CMEMS global biogeochemical multi-year hindcast.

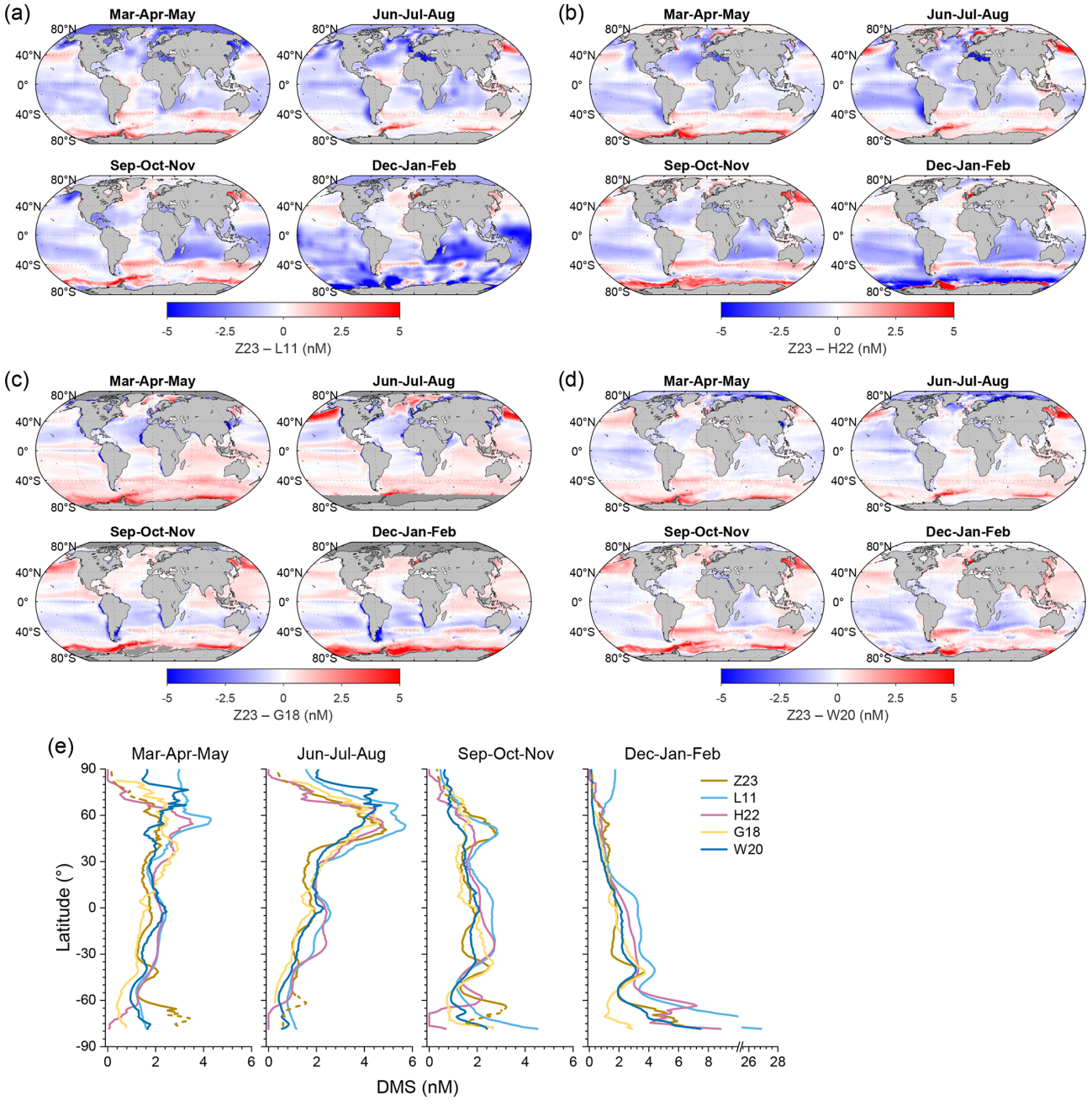

Figure 10. **(a–d)** The spatial distributions of DMS concentration differences between Z23 and four previously estimated fields across different seasons: **(a)** L11, **(b)** H22, **(c)** G18, and **(d)** W20. Dark gray regions of the ocean represent areas where data are missing for at least one field. **(e)** Comparisons between the latitudinal distributions of Z23 and four previous DMS fields across different seasons. The dashed parts of the Z23 lines indicate regions where more than half of the satellite Chl *a* values were missing and are thus not available for the DMS simulation, so most of the Chl *a* data for these regions are from the CMEMS global biogeochemical multi-year hindcast.

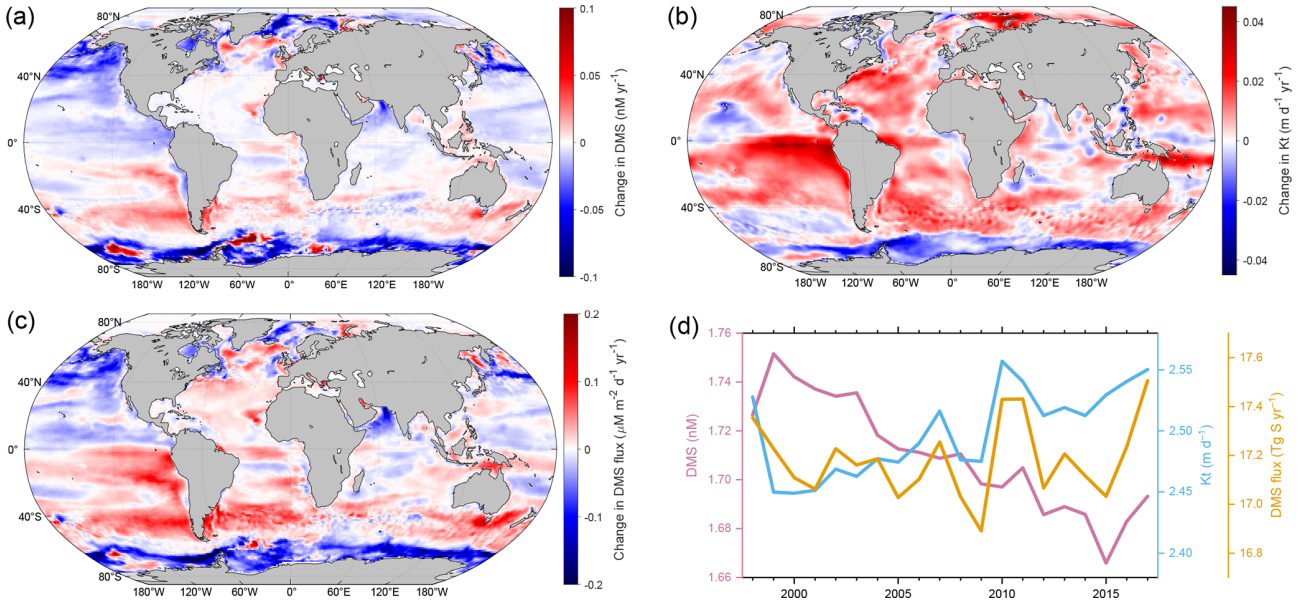

Figure 11. **(a–c)** The spatial distributions of changes in **(a)** DMS concentration, **(b)** Kt, and **(c)** DMS emission flux from 1998 to 2017. The linear regression slopes for the annual means are taken as the rates of change here. **(d)** The temporal changes in global annual mean DMS concentration, Kt, and total emission flux from 1998 to 2017.

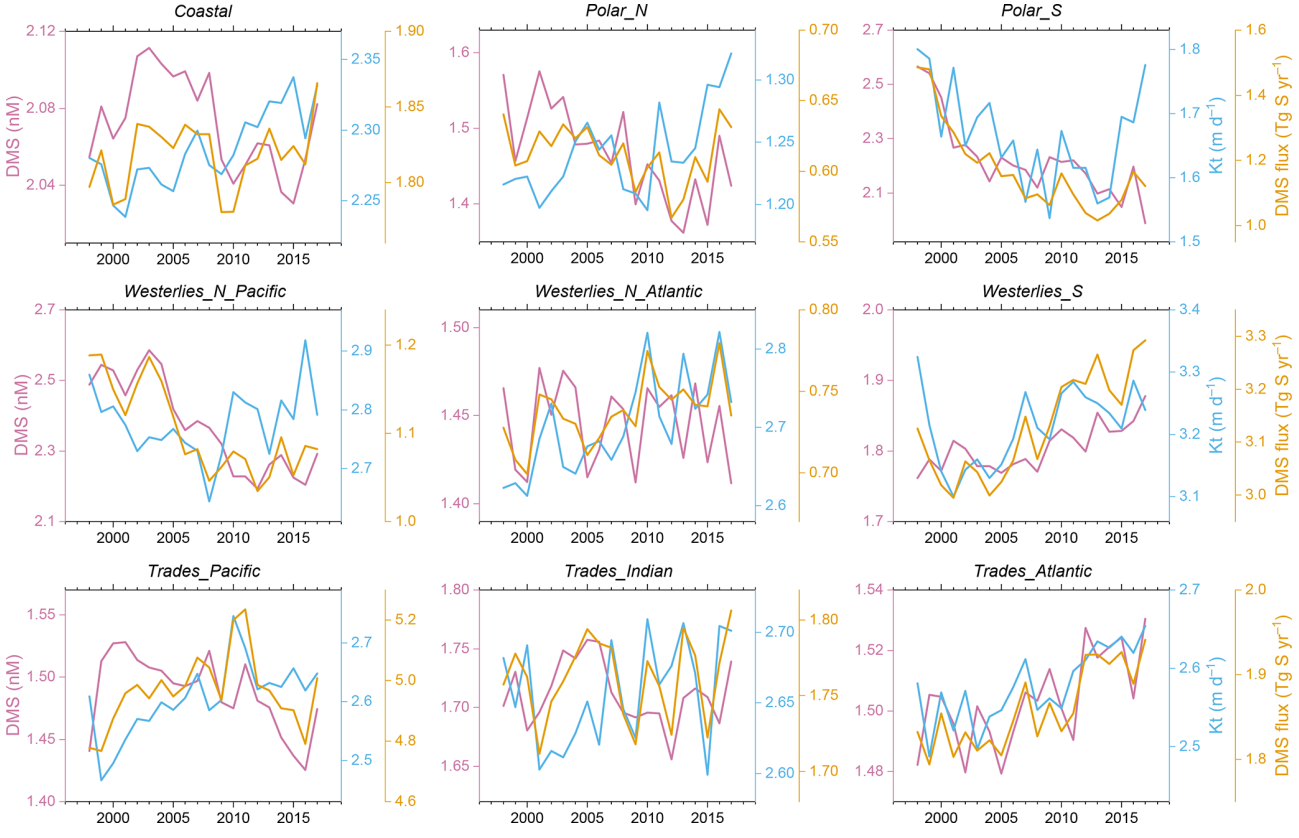

Figure 12. The temporal changes in annual mean DMS concentration, Kt, and total emission flux in different regions from 1998 to 2017.

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References

Zhou, S., Chen, Y., Huang, S., Gong, X., Yang, G., Zhang, H., Herrmann, H., Wiedensohler, A., Poulain, L., Zhang, Y., Wang, F., Xu, Z., and Yan, K.: A 20-year (1998–2017) global sea surface dimethyl sulfide gridded dataset with daily resolution, v5.1, Zenodo [data set], https://doi.org/10.5281/zenodo.15717448, 2025.