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Supplement of

Mapping gaseous dimethylamine, trimethylamine, ammonia, and their particulate counterparts in marine atmospheres of China’s marginal seas – Part 1: Differentiating marine emission from continental transport

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Figure S1. Two chromatograph figures for cations without and with K⁺ interference ((a): without K⁺ interference; (b): with K⁺ interference)
Figure S2. Relationship between DMA_{gas} and TMA_{gas} during the whole campaign.
Table S1. Atmospheric Gaseous and Aerosol Concentrations of DMA and TMA in the marine atmosphere during the campaigns and at the coastal sites with published data.

| Location and Region | Sampling Period | Source | DMA gas (μg m⁻³) | TMA gas (μg m⁻³) | DMAH⁺ (μg m⁻³) | TMAH⁺ (μg m⁻³) |
|---------------------|-----------------|--------|------------------|------------------|----------------|----------------|
| Yellow and Bohai Seas (Campaign A) | December 9 - 22, 2019 | this study | 0.006 ± 0.006 | 0.031 ± 0.009 | 0.065 ± 0.068 | 0.28 ± 0.17 |
| Arabian Sea | November 16 to December 19 in 1994 | Gibb et al. (1999) | 0.0088 | 4.8 * 10⁻⁴ | 0.011 | 4.8 * 10⁻⁴ |
| Yellow Sea and Northwest Pacific | April, 2015 | / / | 0.013 ± 0.011 | 0.013 ± 0.014 |
| East China Sea | June, 2016 | / / | 0.031 ± 0.010 | 0.012 ± 0.007 |
| Yellow Sea and Bohai Sea | August, 2015 | Xie et al. (2018) | / / | 0.024 ± 0.013 | 0.019 ± 0.007 |
| | June-July, 2016 | / / | 0.051 ± 0.022 | 0.021 ± 0.008 |
| South Yellow Sea (SYS) | November, 2013 | / / | 0.019 ± 0.017 | 0.032 ± 0.020 |
| Coastal site1 | November-December, 2013 | / / | 0.016 ± 0.018 | 0.002 ± 0.001 |
| Coastal site2 | August, 2016 | / / | 0.029 ± 0.023 | 0.009 ± 0.007 |
| SYS | November, 2012 | / / | 0.013 ± 0.005 | 0.030 ± 0.013 |
| North Yellow Sea and Bohai Sea | November, 2012 | Yu et al. (2016) | / / | - | 0.015 ± 0.007 |
Table S2. Summary of min-max values and mean values of amine in gas and particle phase during the campaigns.

| Location                  | Sampling period                  | DMA<sub>gas</sub> min-max valu | TMA<sub>gas</sub> mean value | DMAH<sup>+</sup> mean value | TMAH<sup>+</sup> mean value |
|---------------------------|----------------------------------|---------------------------------|-------------------------------|-----------------------------|-----------------------------|
| Yellow and Bohai Seas     | December 9 - 22, 2019             | <LOD-0.029 (0.006±0.006)        | 0.014-0.060 (0.031±0.009)     | 0.006-0.41 (0.065±0.068)    | 0.057-1.8 (0.28±0.17)       |
| (Campaign A)             |                                   |                                 |                               |                             |                             |
| coastal site (36.34°N, 120.67°E) | August 1-9, September 12 - October 1, November 16 - December 1, 2019 | <LOD-0.14 (0.018±0.021)        | <LOD-0.004 (0.001±0.001)     | <LOD-0.097 (0.017±0.013)    | <LOD-0.004 (0.001±0.001)    |