Supplement of

Full latitudinal marine atmospheric measurements of iodine monoxide

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Supplement

Figures S1 to S7.

Typical averaging kernels for IO are presented in Figure S1. Ozone mixing ratio observed from the R/V Mirai during seven research cruises during 2014–2018 are presented in Figure S2. Minimum concentrations of O₃ were observed over the tropical western Pacific. Correlation between O₃ and IO simulated by two global chemistry-transport models over the tropical western Pacific are shown in Figures S3 and S4. In the low ozone concentration range (e.g., <12 ppb), positive correlations between ozone and IO concentrations were evident for the two global chemistry-transport models including halogen chemistry, where the "O₃-dependent" flux was dominant. Diurnal variations of IO mixing ratio for 0–200 m during MR14-06 (leg1) are shown in Figure S5. No clear diurnal variation is observed, but large day-to-day variation is observed. Scatter diagram between SST and IO DSCDs over the remote ocean are shown in Figure S6. High IO contents are observed over high SST region (> 30°C).

![Figure S1. Typical IO averaging kernels for IO (1–2 December 2014 over the tropical Western Pacific; average during the period for Figure 2).](image-url)
**Figure S2:** Ozone mixing ratio [ppbv] observed from the R/V Mirai cruises presented in Table 1 during 2014–2018.
Figure S3: Two-dimensional histogram [%] as a function of IO volume mixing ratio [pptv] and ozone mixing ratio [ppbv] for 0–250 m altitudes simulated using a global chemical model (Sekiya et al., 2020) during the observation period (Nov–Dec 2014) over the tropical western Pacific (0–15°N, 150–165°E).

Figure S4: Scatterplot of IO mixing ratio [pptv] and ozone mixing ratio [ppbv] simulated by global chemical model (Saiz-Lopez et al., 2014) along the cruise track (MR14-06) over the tropical western Pacific.
Figure S5: Diurnal variation of IO mixing ratio for 0–200 m [pptv] during the MR14-06 (leg1) cruise.

Figure S6: Scatter plot of SST [℃] and IO DSCD (el = 3°) [10^{13} molecules cm^{-2}] over the remote ocean.
Figure S7: Daily median IO content (DSCD) for an elevation angle of 3°; molecules cm$^{-2}$) observed from the R/V Mirai for the MR14-06 (leg1), MR15-04, MR15-05, MR16-06, MR16-09 (leg3), MR17-05C, and MR17-08 cruises.

References