Supplementary material
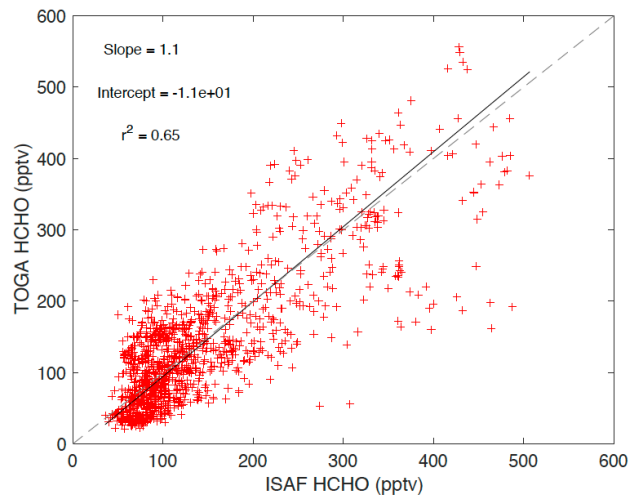
Figure S1. TOGA HCHO measurements vs. ISAF HCHO measurements during ATom-4 over oceans. Equally
weighted linear regression yields a slope of 1.1 and an intercept of -11. The correlation coefficient r^2 = 0.65.

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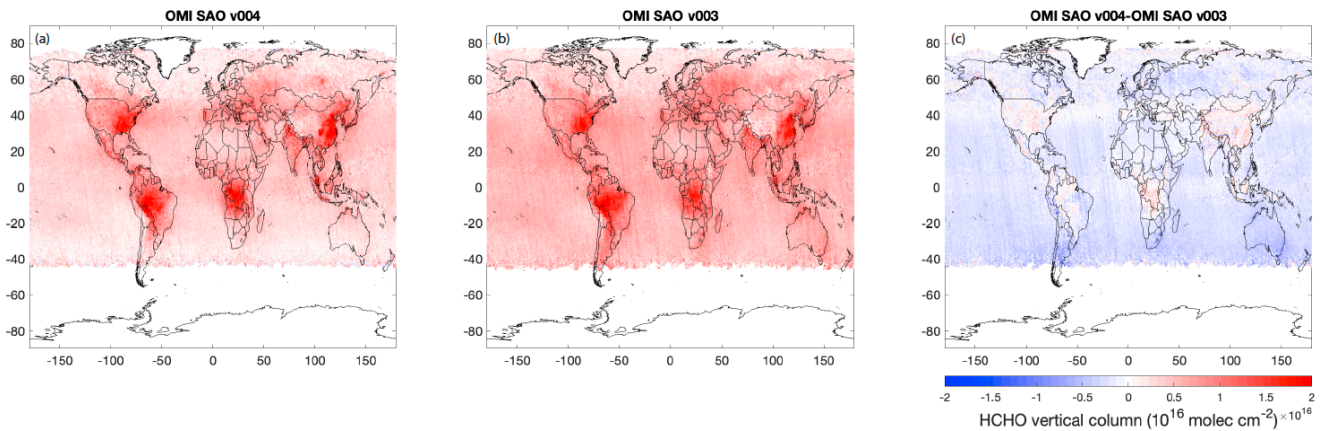
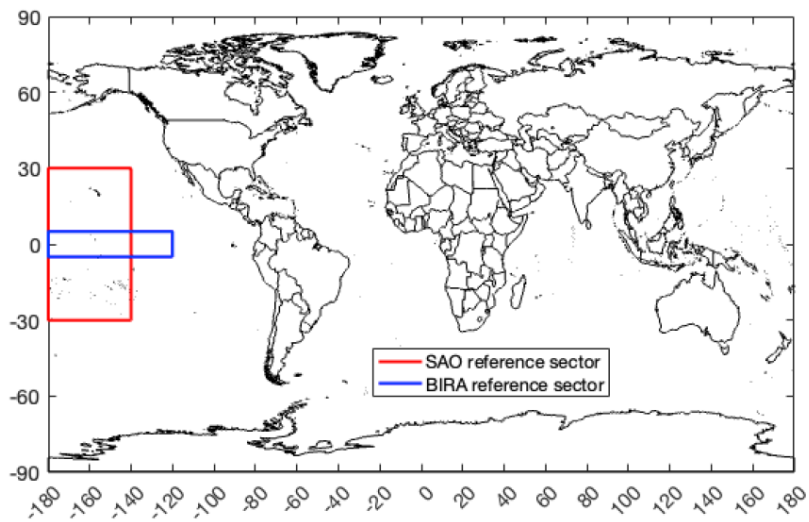


Figure S2. Global map of average HCHO vertical column over ATom-1 sampling period for (a) OMI SAO (v004), (b)
OMI SAO (v003), and (c) their differences.

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13 **Figure S3. Map of the approximate reference sector locations in SAO and BIRA retrievals for reference spectrum and**
14 **background HCHO addition. The SAO retrieval reference sector location slightly varies depending on the locations of**
15 **the closest satellite crossing.**