Supplement of Atmos. Meas. Tech., 12, 3551–3571, 2019
https://doi.org/10.5194/amt-12-3551-2019-supplement

Atmospheric Measurement Techniques
Open Access
EGU

Supplement of

Description of a formaldehyde retrieval algorithm for the Geostationary Environment Monitoring Spectrometer (GEMS)

Hyeong-Ahn Kwon et al.

Correspondence to: Rokjin J. Park (rjpark@snu.ac.kr)

Table S1. Spatial correlation coefficients and slopes between OMI GEMS and OMI QA4ECV. Left values are statistics in Fig. 10, and right values are statistics of OMI GEMS using O_3 datasets used in QA4ECV and considering non-linear O_3 absorption effects.

Statistics	OMI GEMS vs. OMI QA4ECV			
	Mar.	Jun.	Sep.	Dec.
R	0.76 / 0.75	0.66 / 0.70	0.64 / 0.67	0.52 / 0.54
Slope	0.92 / 1.02	0.76 / 0.82	0.85 / 0.91	0.79 / 0.84

Table S2. Relative differences between OMI GEMS HCHO slant columns and OMI QA4ECV slant columns in four regions. Left values are relative differences in Table 3 and right values are relative differences of OMI GEMS using O_3 datasets used in QA4ECV and considering non-linear O_3 absorption effects.

Region	OMI GEMS vs. OMI QA4ECV			
	Mar.	Jun.	Sep.	Dec.
Sumatra/Malaysia (95°-110°E, 0°-7°N)	-0.5% / 3%	-18% / -17%	-6% / -4%	-15% / -13%
Indochina Peninsula (97°-110°E, 10°-20°N)	-7% / -3%	-20% / -18%	-20% / -15%	-17% / -12%
China (110°-120°E, 30°-40N)	-21% / -25 %	-25% / -20%	-20% / -14%	-23% / -23%
Borneo (110°-118°E, 5°S-0°)	-9% / -5%	-13% / -9%	0.4% / 5%	-18% / -16%

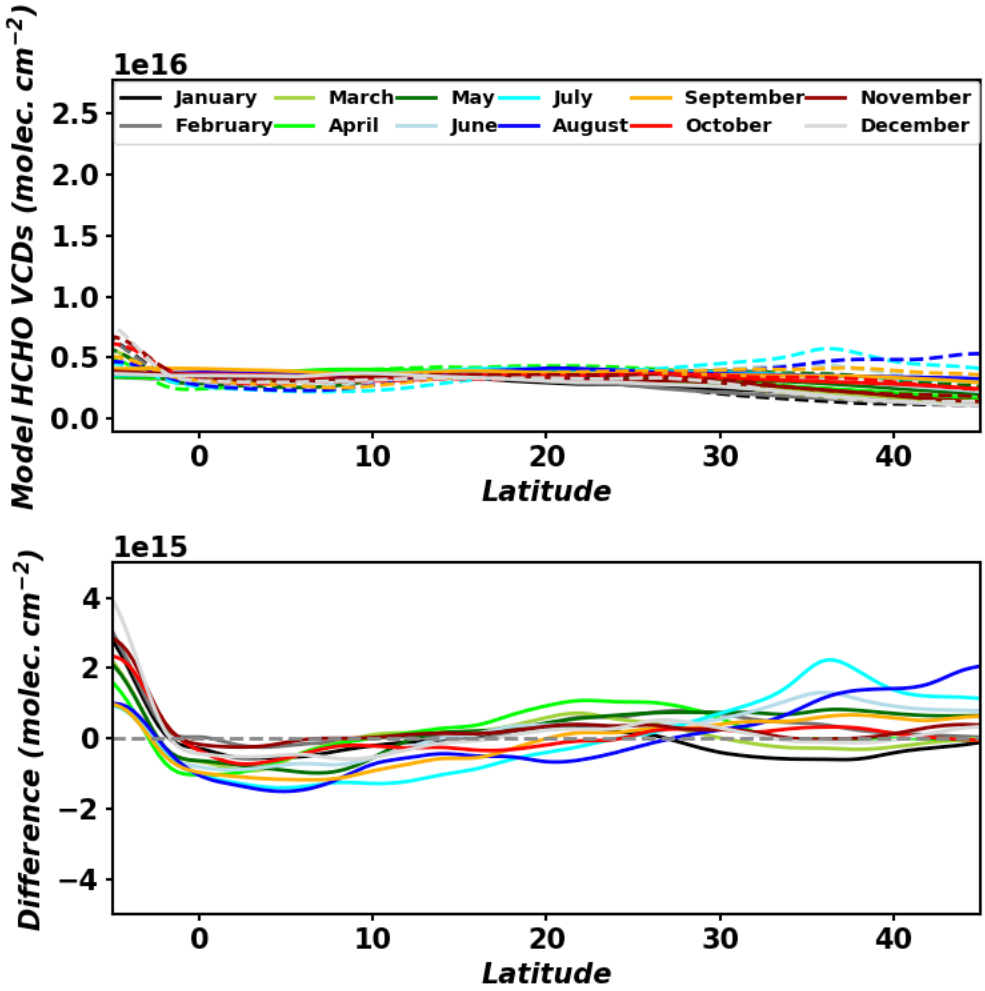

Figure S1. Simulated HCHO vertical column densities in GEMS background area (dashed lines) and OMI background area (solid lines) (top), and absolute differences between the two (bottom).

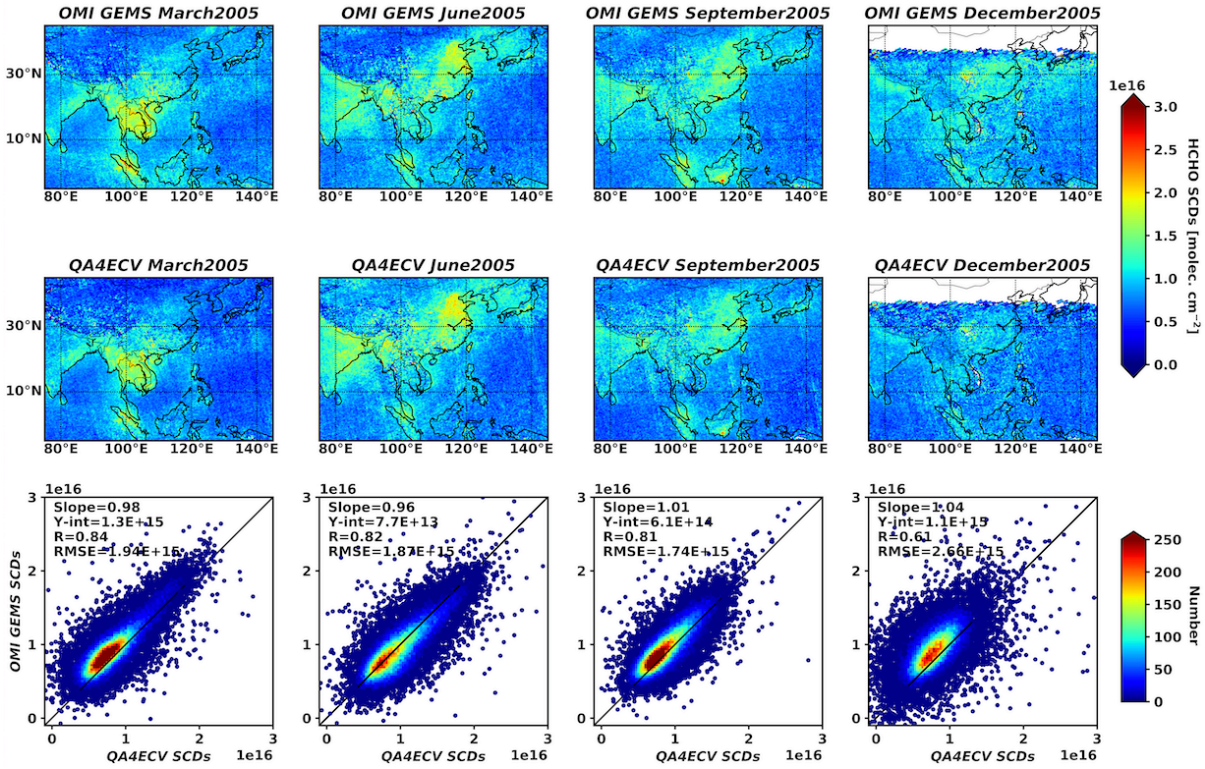

Figure S2. This is the same display as Fig.10 except that OMI GEMS products are retrieved using the 4th order polynomials instead of the 3rd order polynomials in default fitting options.

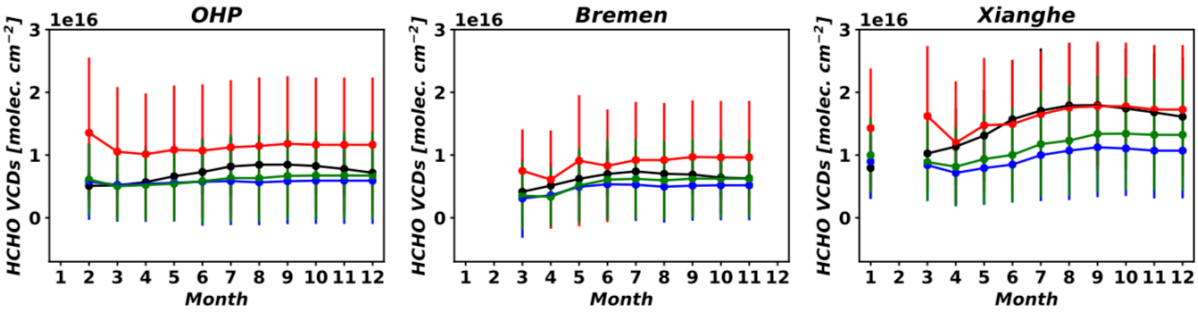

Figure S3. Monthly variations of HCHO VCDs from MAX-DOAS (black) and OMI at OHP, Bremen, and Xianghe. Blue indicates OMHCHO, red indicates QA4ECV, and green indicates GEMS.