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Supplement to:
**“MAX-DOAS measurements of NO₂, HCHO, and
CHOCHO at a rural site in southern China”**

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Table S1. Parameter settings of the DOAS fit for retrieving HCHO, NO₂, and CHOCHO DSCDs. FRS refers to the Fraunhofer reference spectrum.

Target species	Fitting window (nm)	Species fitted
HCHO	335 – 358	FRS, HCHO, BrO, NO ₂ , O ₃ , O ₄ , Ring, 3rd polynomial, 2nd offset
NO ₂ , CHOCHO	416 – 441	FRS, NO ₂ , CHOCHO, H ₂ O, O ₃ , O ₄ , Ring, 3rd polynomial, 2nd offset

Fig. S1. Time series of NO₂, HCHO, and CHOCHO DSCDs measured at different elevation angles in the 9 cloud-free days during PRIDE-PRD2006 campaign.

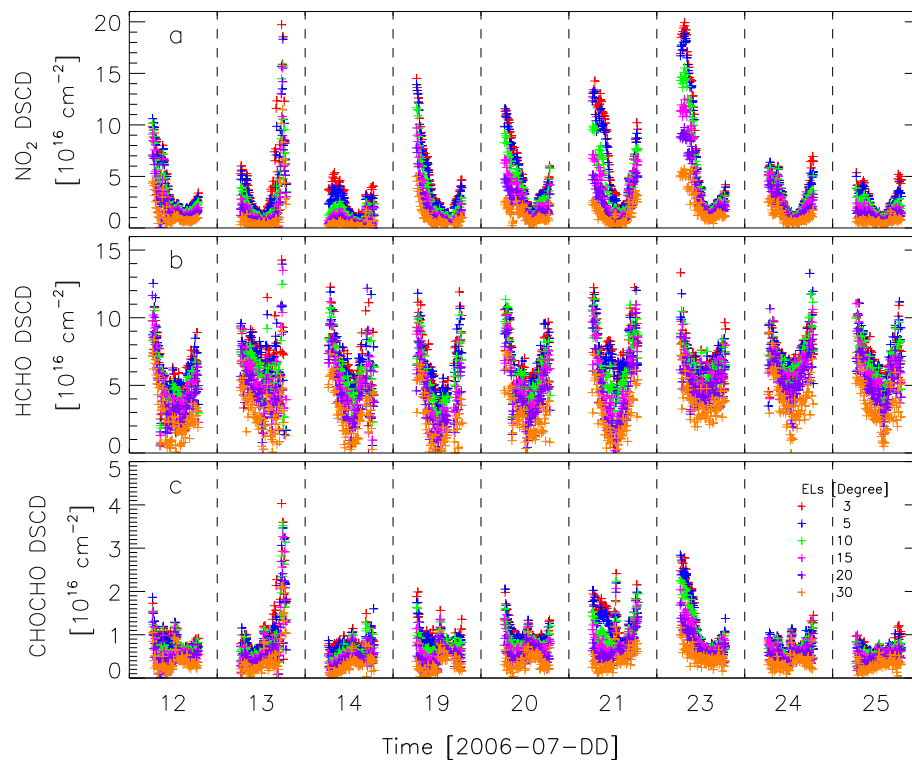


Fig. S2. Intercomparison of tropospheric NO_2 VCDs derived from geometric approach and from the NO_2 vertical distribution retrieval. The grey circles represent all measured data in the 9 cloud-free days. The red circles are a subset of grey circles, i.e. data measured in the period when strong local emission existed, as described in the text. The regression line was forced through the origin.

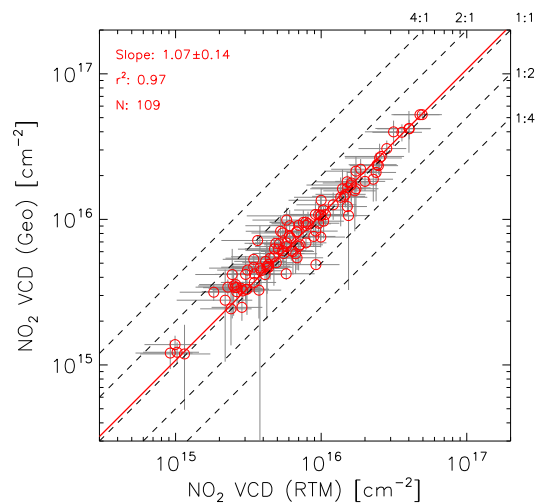


Fig. S3. Intercomparison of tropospheric HCHO VCDs derived from geometric approach and from the HCHO vertical distribution retrieval. The grey circles represent all measured data in the 9 cloud-free days. The red circles are a subset of grey circles, i.e. data measured in the period when strong local emission existed, as described in the text. The regression line was forced through the origin.

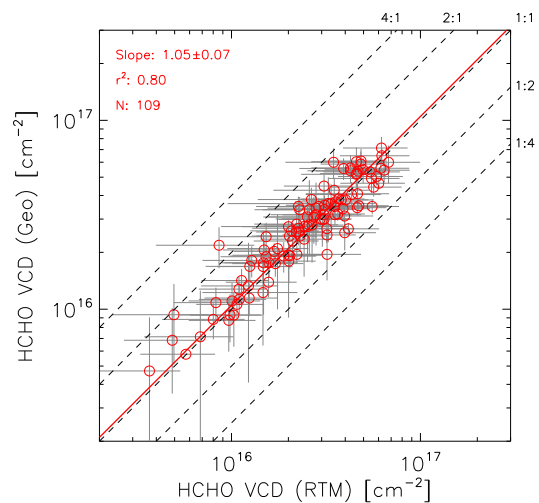


Fig. S4. Intercomparison of tropospheric CHOCHO VCDs derived from the geometric approach and from the CHOCHO vertical distribution retrieval. The grey circles represent all measured data in the 9 cloud-free days. The red circles are a subset of grey circles, i.e. data measured in the period when strong local emission existed, as described in the text. The regression line was forced through the origin.

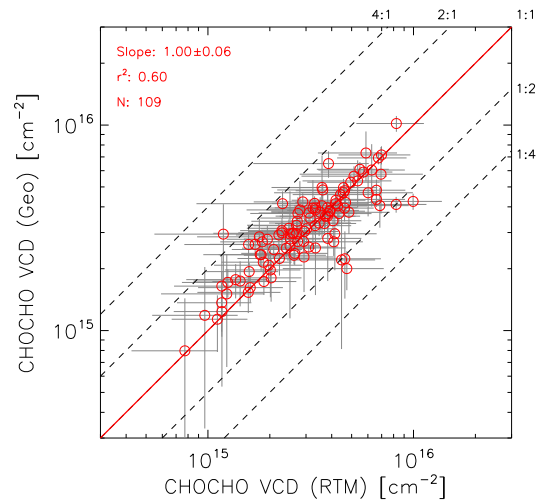


Fig. S5. Time series of tropospheric NO_2 VCDs derived from the MAX-DOAS and OMI observations during the PRIDE-PRD2006 campaign in July 2006. The grey circles represent values calculated by the geometric approach for the entire campaign, the red diamonds refer to values derived from the NO_2 vertical distribution retrieval for the 9 cloud-free days using the RTM, and the triangles are values observed by OMI from space. The triangles are color coded by the cloud fraction derived from the OMI observations.

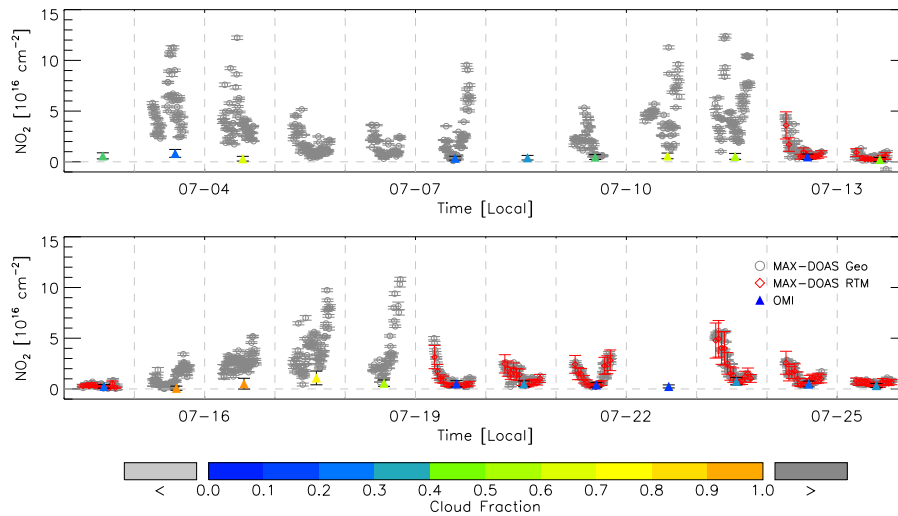


Fig. S6. Time series of wind speed in the 9 cloud-free days during the PRIDE-PRD2006 campaign. The red circles represent simulated values in the surface layer (i.e. 0 – 18 m a.g.l.) by the CMAQ model, the blue “+” refer to measured values by an Ultrasonic Anemometer at the BG site.

