

The impact of biomass burning on ozone at Taishan by using a one-way nested global/regional CTM system

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A one-way nested global/regional chemistry-transport model (CTM) system has been developed for the post-analysis of ground-based observation at Taishan (36.25N, 117.10E) in the North China Plain. This model system consists of the global CTM part and the regional CTM part. The global CTM part is based on CHASER with a horizontal grid spacing of about 2.8 degree. The regional CTM part is based on WRF/Chem. In the regional CTM part, the horizontal resolutions of three domains are 81km, 27km, and 9 km, respectively. The timing and horizontal distribution of biomass burning is estimated by using hotspot data observed by AATSR on ENVISAT. The peak height of biomass burning plume is assumed to be 400m, and the duration of each hotspot was assumed to be 4 days. To evaluate the impact of biomass burning, two model calculations (with and without biomass burning, respectively) have been executed. By considering the emission of precursor hydrocarbons from biomass burning, the episodic increase of ozone was well reproduced in the model on 4, 12, and 19 June 2006. The maximum increase of ozone by biomass burning was estimated to be 30 ppbv.