

Figure S1. The 17-monitor-average daily maximal 8-hour O₃ in the Houston metropolitan area during July-October in both 2000 and 2006; the time periods of the two TexAQS are marked by vertical lines on the plot; the blue dash-lines represents TexAQS 2006 and the dark red lines are for the TexAQS 2000.

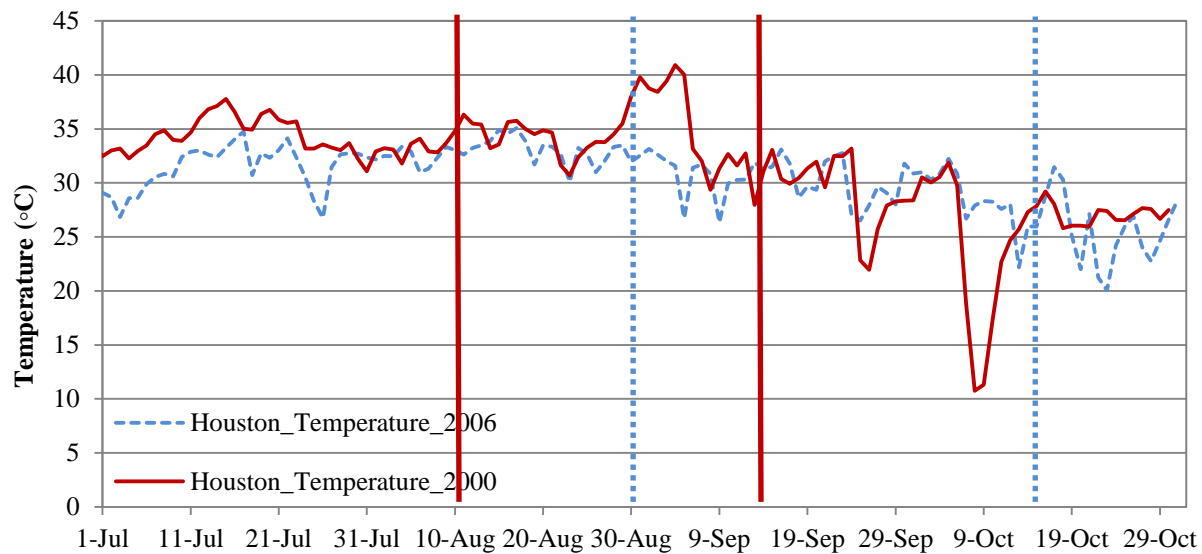


Figure S2. The 17-monitor-average daily maximal temperature in the Houston metropolitan area during July-October in both 2000 and 2006; the time periods of the two TexAQS are marked by vertical lines on the plot; the blue dash-lines represents TexAQS 2006 and the dark red lines are for the TexAQS 2000.

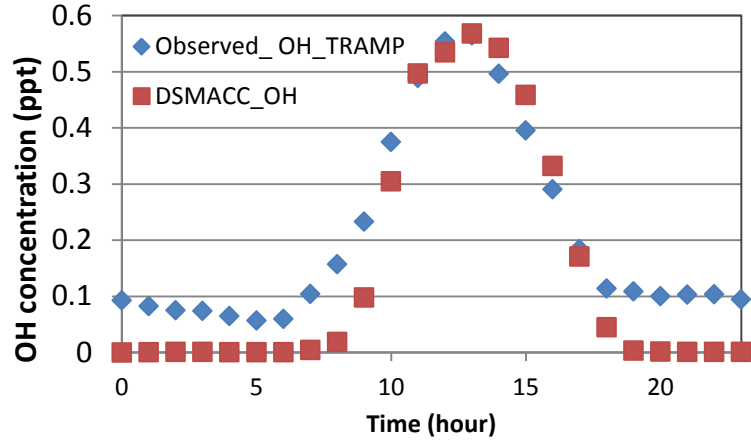


Figure S3. Observed and Modeled diurnal profile of OH radical (ppt) averaged over TRAMP in 2006

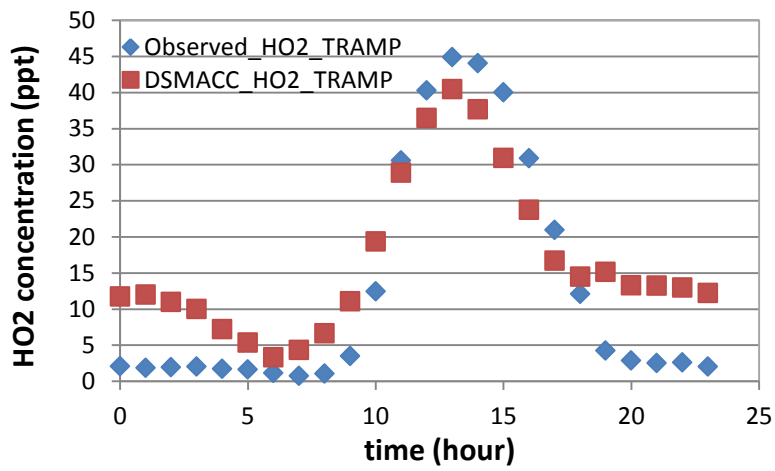


Figure S4. Observed and Modeled diurnal profile of HO₂ radical (ppt) averaged over TRAMP in 2006

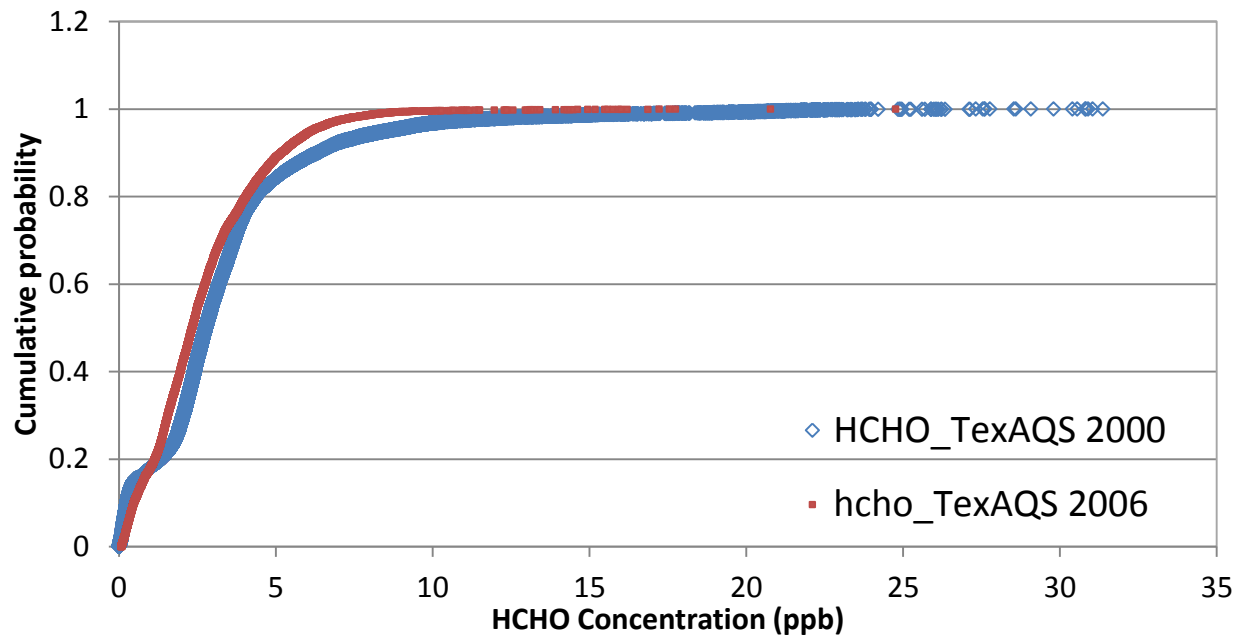


Figure S5. HCHO concentration from TexAQS 2000 and 2006.

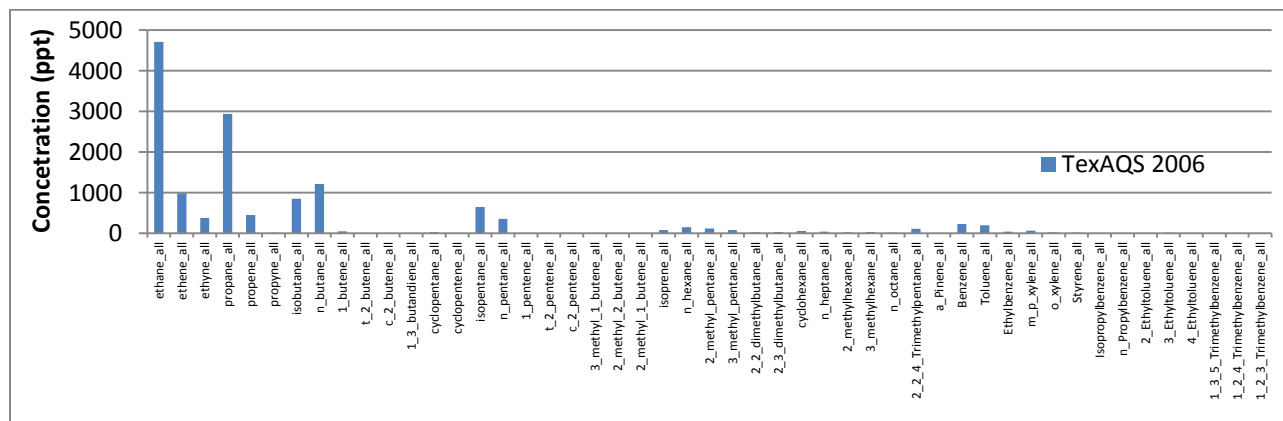


Figure S6. the average VOCs in WAS during TexAQS 2006.

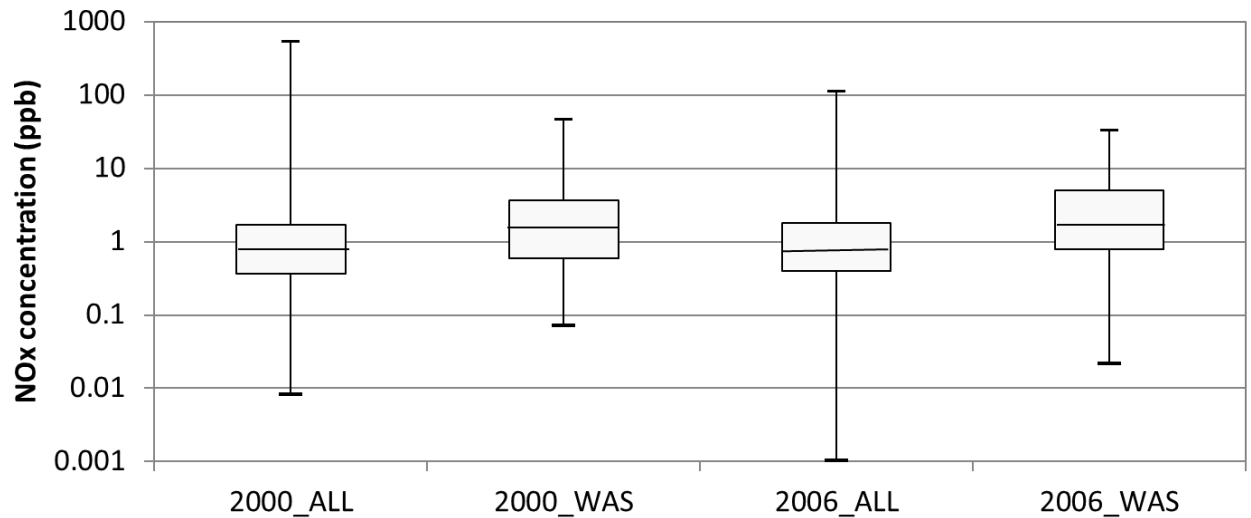


Figure S7. The campaign-average NO_x concentration during TexAQS 2000 and 2006; 2000_ALL: the 1-second samples of NO_x concentration for TexAQS 2000, 2000_WAS: the canister-basis NO_x concentration for TexAQS 2000, 2006_ALL: the 1-second samples of NO_x concentration for TexAQS 2006, 2006_WAS: the canister-basis NO_x concentration for TexAQS 2006.

Table S1. RO₂ radicals, its radical group and its precursor VOCs in the MCM chemical mechanism

Peroxy Radical	Radical group	Precursor
HEXCO2 HEXBO2 PEBO2 C2H5O2 IPECO2 IC3H7O2 SC4H9O2 NC3H7O2 PECO2 IPEBO2 IC4H9O2 IPRCO3 TC4H9O2	ALKAO2	Alkane (C-C)
HOCH2CH2O2 HYPROPO2 IPROPOLO2 HO3C4O2 PRONO3AO2 C43NO34O2 BU1ENO3O2 PRNO3CO3 PRONO3BO2	ALKEO2	Alkene (C=C)

HOCH2CO3 CH3CO3 C2H5CO3 HOC2H4CO3 CH3COCH2O2 MEKAO2 CO2C3CO3 MEKBO2 HCOCO3 HC4CCO3 CH3CHOHCO3 HO1CO3C4O2 NBUTOLAO2 HC4ACO3 NC4CO3 MIPKAO2 HO2C5O2 C57O2 C510O2 HO3C6O2 C59O2 C58O2	CARBO2	Carbonyls
CH3O2	CH3O2	CH4
HMKAO2 MACO3 MVKOHAO2 MVKOHBO2 ISOPDO2 ISOPBO2 HMKBO2 MACRO2 ISOPCO2 ISOPAO2 NISOP2	ISOP2	Biogenic