



Supplement of

Decadal transition of summertime PM_{2.5}–O₃ coupling and secondary organic aerosol dominance in northwest China

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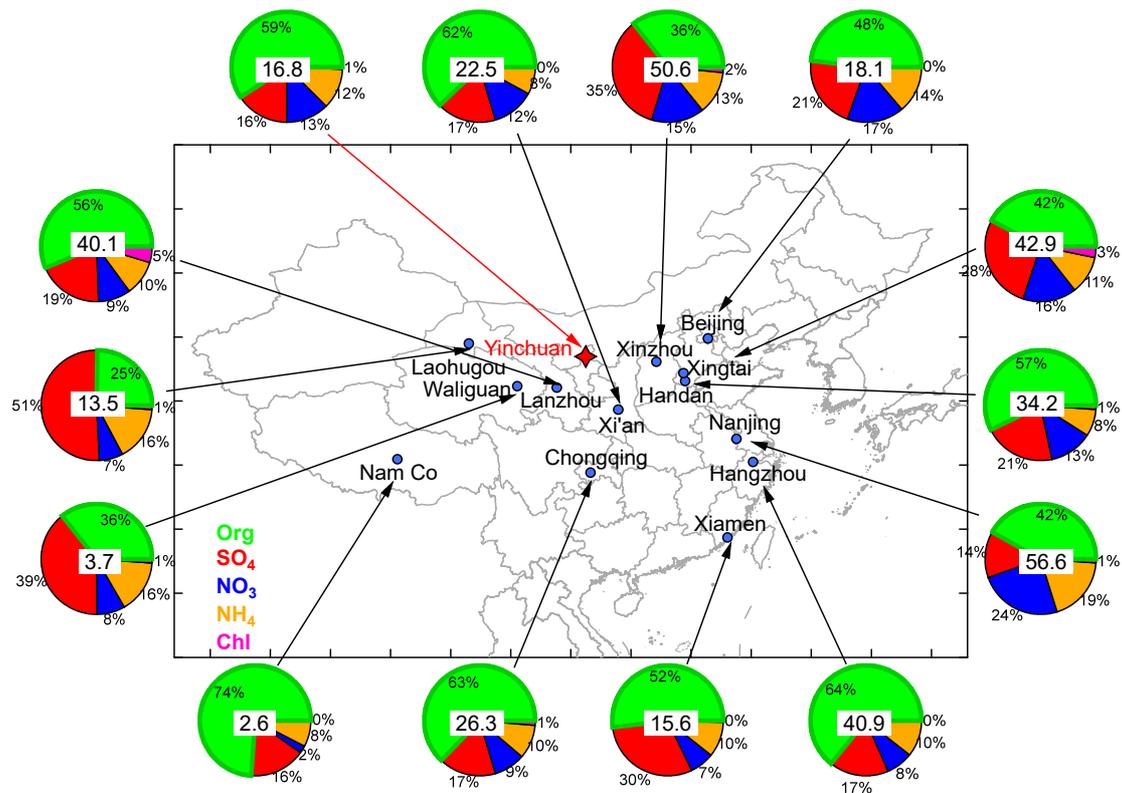
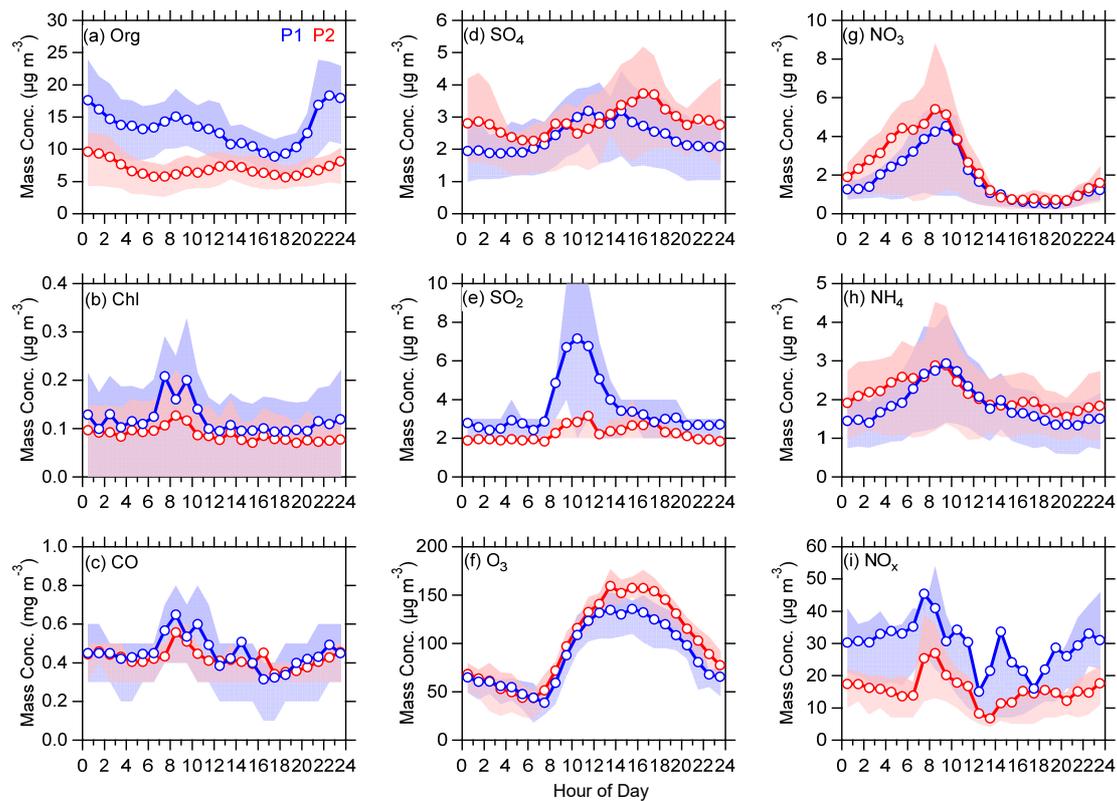
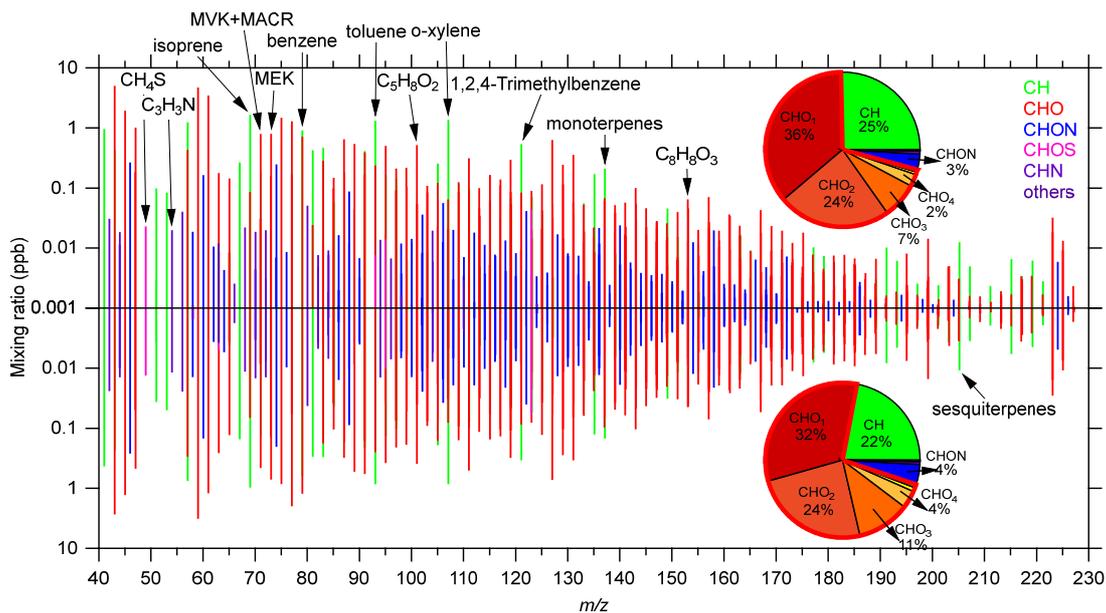


Figure S1: Average mass concentrations and chemical compositions of total NR-PM_{2.5} mass loadings observed in China using different types of aerosol mass spectrometers (e.g., ToF-ACSM, Q-ACSM, HR-ToF-AMS) during the summertime.

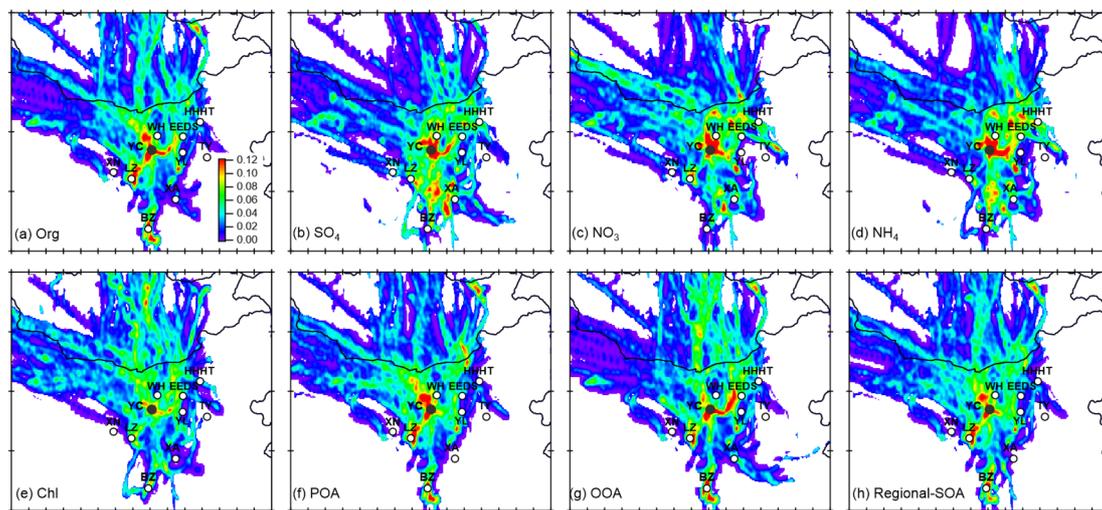


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Figure S2: Diurnal variations of the chemical compositions of NR-PM_{2.5} (Org, SO₄, NO₃, NH₄, Chl) and gaseous species (SO₂, CO, O₃, NO_x) during P1 and P2, respectively. The circles indicate the mean values, and the shaded areas represent the 75th and 25th percentiles.



20 **Figure S3: Average mass spectrum of Vocus PTR-MS during P1 (upper panel) and P2 (lower panel). The pie charts refer to the mass contributions of different categories.**



25 **Figure S4: Potential source contribution function of NR-PM_{2.5} compositions and OA factors during this campaign in Ningxia. The color scales indicate the values of PSCF. The city marked as a solid circle in each panel is Yinchuan (YL), and hollow circles refer to Xi'an (XA), Lanzhou (LZ), Xining (XN), Taiyuan (TY), WH (Wuhai), Yulin (YL), Eerdos (EEDS) and Hohhot (HHHT).**