1.206 Characterization of Asian emissions and chemistry utilizing the satellite, aircraft, and ground-based measurements and model simulations.

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Abstract:

Substantial increases of nitrogen oxides (NO_X) emissions in China have been detected by satellite observations since the mid of 1990's. Recent studies reported that SO₂ and NO_X emissions in China tend to decrease, starting from the early 2010's. To accurately predict air quality in Asia and other parts of the world, it is important to understand the emissions of trace gases and aerosols in Asia. In this study, we integrate the observations from the multiple platforms and chemical transport model results to characterize the emissions and chemistry in this region. The model first adopts the most up-to-date bottom up emission inventory as *a priori* and develops an improved the emission inventory using the inversion method that incorporates satellite observations and in-situ aircraft and ground-based observations from the recent field campaigns. The model utilizing *a posteriori* emission in this study serves as an essential tool to explore atmospheric chemical processes that have caused serious air quality issues in Asia, in particular South Korea.