



## **NO<sub>x</sub> emissions from power plants in China: bottom-up estimates and satellite constraints**

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The Ozone Monitoring Instrument was recently suggested to be of great help to quantify emissions from individual large point sources. In this work we developed a unit-based power plant emission inventory for China and evaluated the tropospheric NO<sub>2</sub> columns in China measured by OMI for time periods of 2005-2007 with GEOS-Chem model. OMI NO<sub>2</sub> observations were used to identify emission hotspot regions dominated by large power plants over China. The good correlation between modeled and OMI-retrieved tropospheric NO<sub>2</sub> columns were found in those hotspot regions in summertime, indicating that the satellite retrievals can be used to constrain NO<sub>x</sub> emissions from large point sources in China. We then compared the relationships between modeled and OMI-retrieved tropospheric NO<sub>2</sub> columns for newly added power plants between 2005 and 2007 and found that NO<sub>x</sub> emissions from certain large power plants can be quantified using OMI retrievals. Emission increase rates between 2005 and 2007 derived from OMI observations and the GEOS-Chem model are used to evaluate the a priori emission estimations of new power plants. Comparison of OMI and modeled NO<sub>2</sub> columns over all grids suggests that the current emission spatial allocation methodology tends to distribute fewer emissions to urban areas, which is mainly accounted for the large uncertainties from industrial and transportation sources.