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7-4 Impact of the 2008 Great Recession on
Urban Nitrogen Oxides Emissions in US
Megacities

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Over the past decade, NO_x emissions in the United States have experienced dramatic changes, due to both emission control and the 2008 Global Economic Recession. The NO_x trends over eight US most populous cities (“megacities”) are examined using the NO₂ observations from NASA Ozone Monitoring Instrument (OMI) (NO₂ column) and the US EPA Air Quality System ground network (NO₂ surface concentration). Both OMI and AQS observed consistent downward trends over these metropolitan areas from 2005 to 2012, with an average of -5.0% from OMI and -5.3% from AQS. During this period, the NO_x changing rate is distinctly different at different stage of the recession. Satellite observed that the average reduction rates are -7.3%/yr, -9.2%/yr and -2.8%/yr prior to, during and after the recessions, respectively, which are comparable to the -6.0%/yr, -10.8%/yr, and -3.4%/yr for each period derived from AQS ground network. Finally, we will present preliminary results of using the OMI and AQS observed NO_x trends to evaluate the NO_x emission inventories and projection, including the newly released NEI2011s and the Cross-State Air Pollution Rule projection, as well as the operational emission data used to support the NOAA National Air Quality Forecasting Capability system.