



Tropospheric NO₂ column observations from OMI: quantifying spatial and temporal resolution for evaluation of emissions and chemistry models

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The OMI (Ozone Monitoring Instrument) is capable of observing urban to regional scale variation in tropospheric NO₂ column. We examine long term averages of the OMI data set to investigate issues of precision and accuracy along with spatial and temporal resolution. We demonstrate that 5-10 km resolution can be achieved by averaging 3 years of summertime observations. The effects of albedo and measurements of the N-S and E-W spatial resolution of the long-term average are quantified using observations over a salt flat in Nevada. Diurnal variation of the tropospheric NO₂ column is observed by comparing average OMI observations at 1 and 1:25 PM (LST) over California and Nevada. The observed differences are compared to WRF-CHEM predictions and the effects of BRDF and the cloud retrieval on the patterns will be described. High resolution averages are applied to differentiate day-of-week patterns and trends for distinct regions California and compared to existing emission inventories.