Geophysical Research Abstracts
Vol. 20, EGU2018-11190, 2018
EGU General Assembly 2018

Evaluation of surface ozone chemistry in regulatory air quality models through the use of OMI observations and aircraft data

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Determining the chemical conditions that lead to the formation of surface ozone,a pollutant often regulated by federal governments, is of great interest to scientists and policy makers. The lack of detailed observations of ozone precursors, such as NO_x and volatile organic compounds (VOCs), limits our ability to precisely identify the non-linear chemistry that determines ozone production over large regions of the United States. Earlier studies have used the ratio of satellite observations of column HCHO, a VOC proxy, to column NO_2 to estimate ozone sensitivity. Others use changes in average maximum 8hr surface ozone to determine ozone production regime. Recent work has highlighted the regional and temporal variations of the $HCHO/NO_2$ ratio that must be accounted for. This analysis focuses on the ratio of column $HCHO/NO_2$ as observed from space and the representation of surface ozone chemistry in regulatory air quality models using a number of assumptions regarding the model framework.