

Seasonal and interannual variability of isoprene emissions as determined by formaldehyde column measurements from space

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Abstract

Formaldehyde (HCHO) columns measured from space by solar UV backscatter allow mapping of reactive hydrocarbon emissions. The principal contributor to these emissions during the growing season is the biogenic hydrocarbon isoprene, which is of great importance for driving regional and global tropospheric chemistry. We present seven years (1995-2001) of HCHO column data for North America from the Global Ozone Monitoring Experiment (GOME), and show that the general seasonal and interannual variability of these data is consistent with knowledge of isoprene emission. There are some significant regional discrepancies with the seasonal patterns predicted from current isoprene emission models, and we suggest that these may reflect flaws in the models. The interannual variability of HCHO columns observed by GOME appears to follow the interannual variability of surface temperature, as expected from current isoprene emission models.

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