VOC over North America: Constraints from aircraft campaigns

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**Emission and deposition of VOC over NA**

- **Biogenic Emissions**
  - 42.2 TgC
- **Anthropogenic Emissions**
  - 14.2 TgC
- **Pyrogenic Emissions**
  - 3.4 TgC

- **Dry Deposition**
  - 10.1 TgC
- **Wet Deposition**
  - 6.6 TgC

**Vertical OHR characterization at CTR site**

Left: Annual and summertime average anthropogenic vs. biogenic contributions to total OHR. Right: Vertical profile of OHR (OH reactivity) in summer from the GEOS-Chem simulation. (CTR: Centreville, AL; the forested SOAS ground site in the SE US)

Model OHR at the surface is mainly due to VOCs (80%). The OVOC contribution to total model OHR increases with altitude (44% to 53% below 850hPa) corresponding to more aged air masses.

Annually, biogenically and anthropogenically-emitted VOC contribute ~80% and 10%, respectively, to the total model OHR. In summer, OHR is dominated by VOC from biogenic sources.

**Case studies: VOC transport in convection**

Convective transport may help explain the missing source of VOC in upper troposphere.

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