Reactive Nitrogen in the Global Upper Troposphere from NASA DC8 Aircraft Campaigns

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Introduction

- UT NO_y ➡ global climate, air quality, the oxidizing capacity of the atmosphere.
- Large **uncertainties exist in models.**
- We use NASA DC8 and MOZAIC aircraft observations to improve understanding of global UT NO_y.
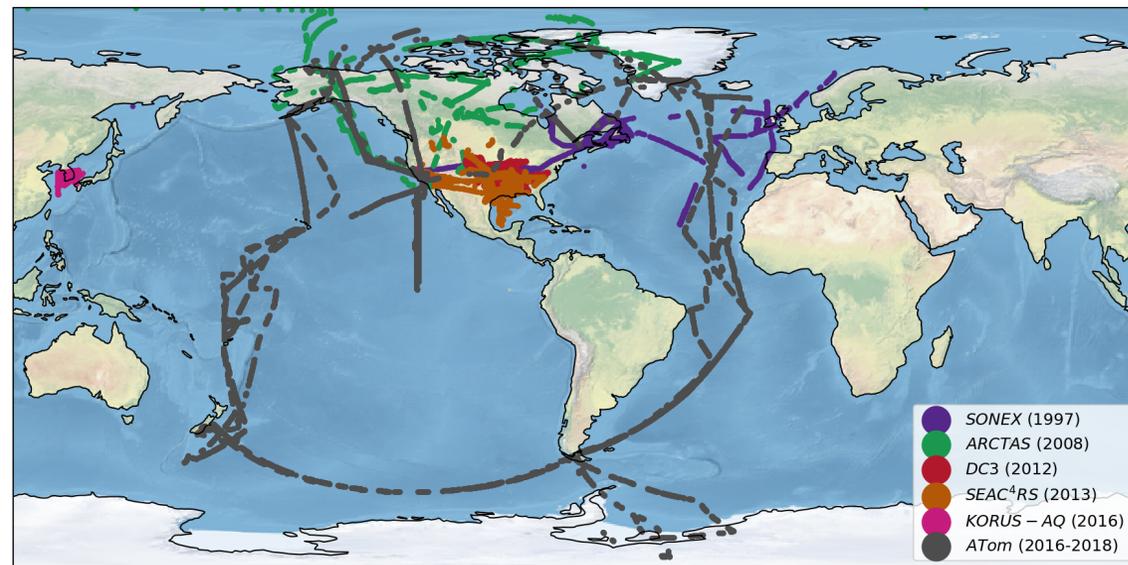
Map legend:
- SONEX (1997)
- ARCTAS (2008)
- DC3 (2012)
- SEAC⁴RS (2013) — $SEAC^4RS$ (2013)
- KORUS − AQ (2016)
- ATom (2016-2018)

References
Hudman et al., 2007, doi:10.1029/2006jd007912
Marais et al., 2018, doi:10.5194/acp-18-17017-2018
Stevenson et al., 2013, doi:10.5194/acp- 13-3063-2013

DC-8

Results - Budget of UT NO_y Components during DC8 Campaigns from SONEX to ATom

Mean Ratio Budget of NOy Components

Legend:
- SONEX (1997)
- ARCTAS (2008)
- DC3 (2012)
- $SEAC^4RS$ (2013)
- KORUS − AQ (2016)
- ATom (2016-2018)
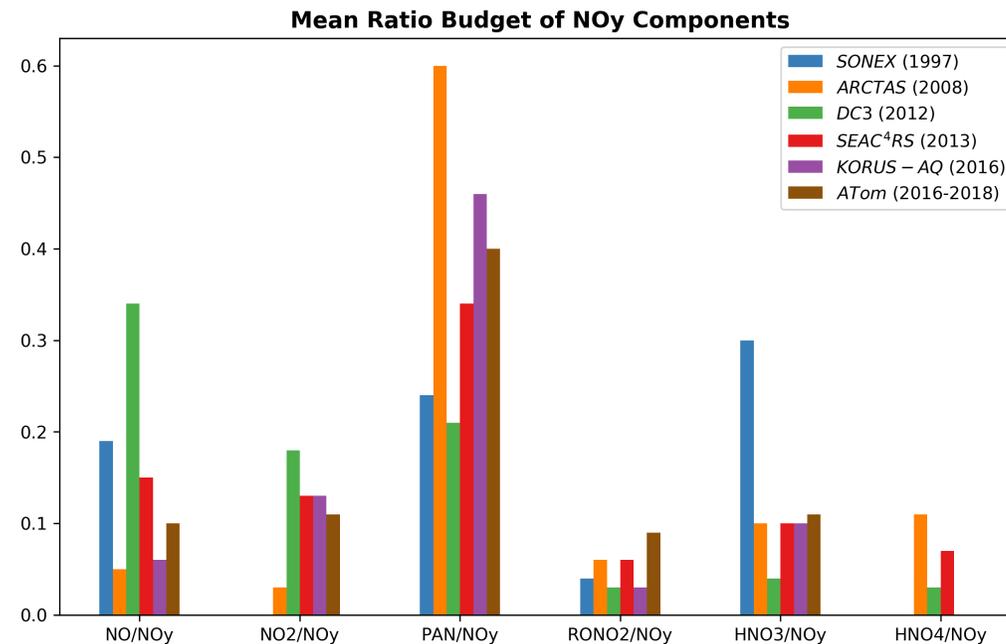
Dominance of **PAN** is 40% for ATom, 46% for KORUS-AQ, 36% for $SEAC^4RS$ and 57% for ARCTAS.

Concluding Remarks and Next Steps

- PAN dominates over cold temperature locations and NO over locations dominated by lightning.
- Next steps will be to compare DC8 and MOZAIC NO_y, and run GEOS-Chem to assess state of our understanding of global UT NO_y.