

Contribution of Intensive Campaigns to GEMS Validation

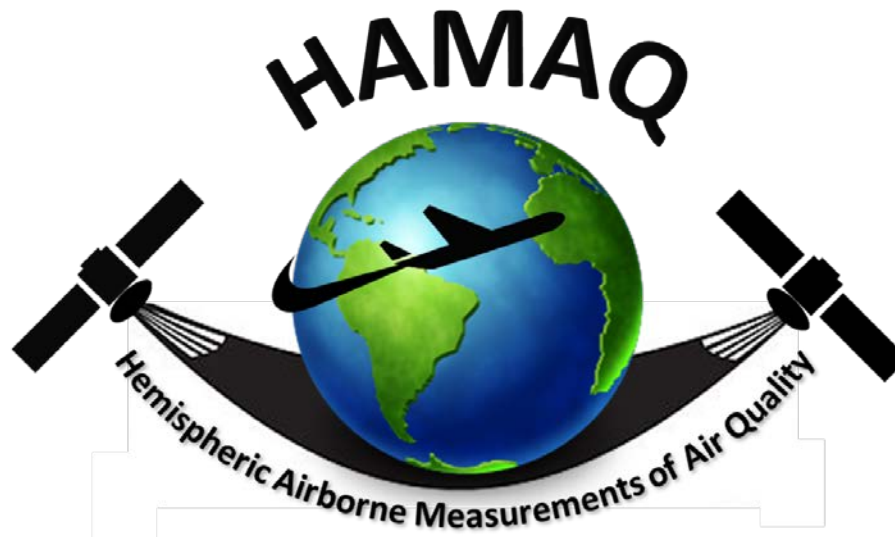
Jim Crawford, NASA Langley Research Center



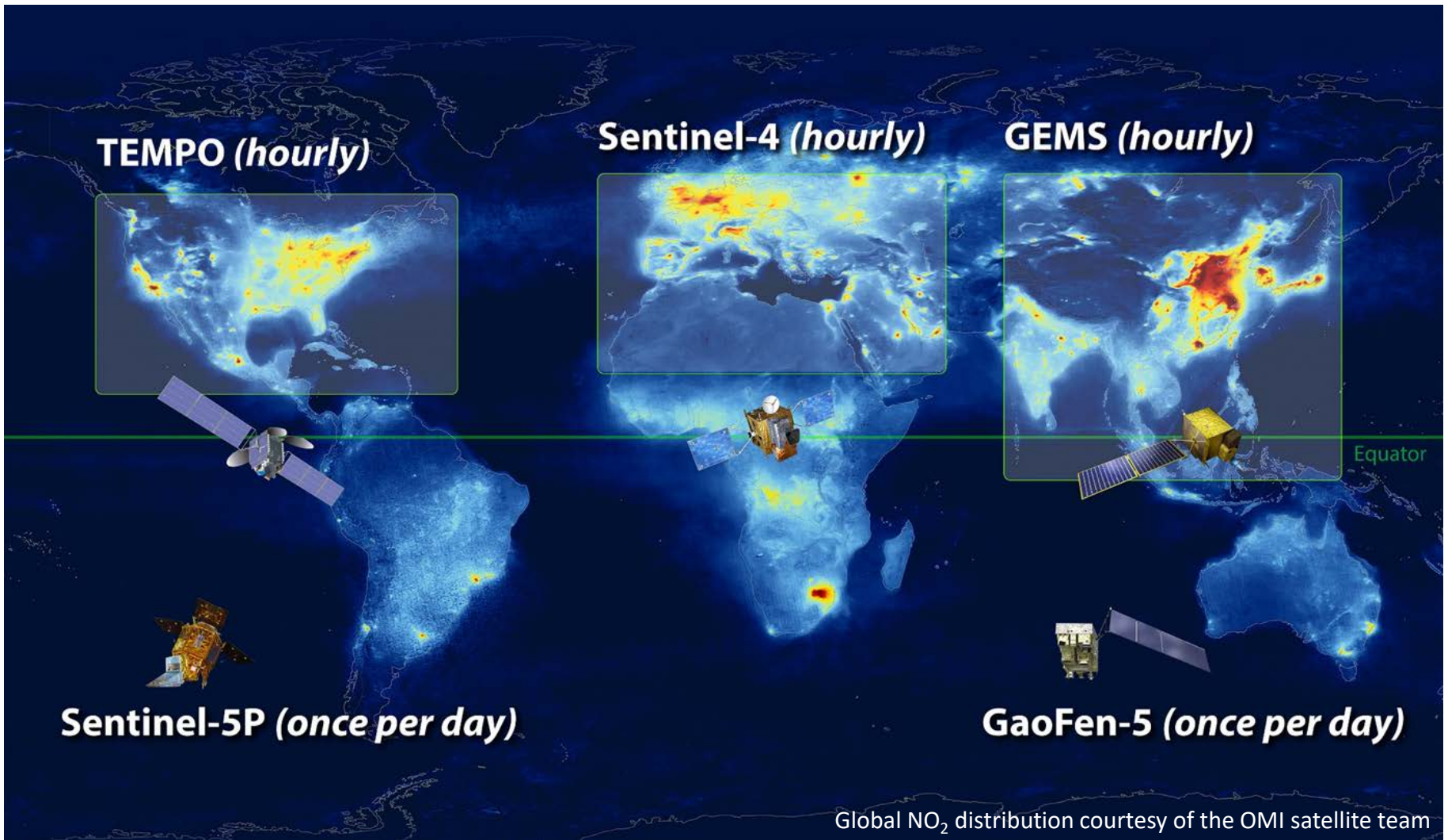
2011-2014



2016



?



Common validation strategies across the constellation are desired.

With GEMS being the first to launch, Asia is the near-term focus of validation efforts.



Filling the Asian gap in the Pandonia network is of fundamental importance if we seek to have an element of validation that is consistent across the constellation.

Establishing a Pandora network in Asia is challenging due to the political and economic diversity of the GEMS region as compared to TEMPO and Sentinel-4.

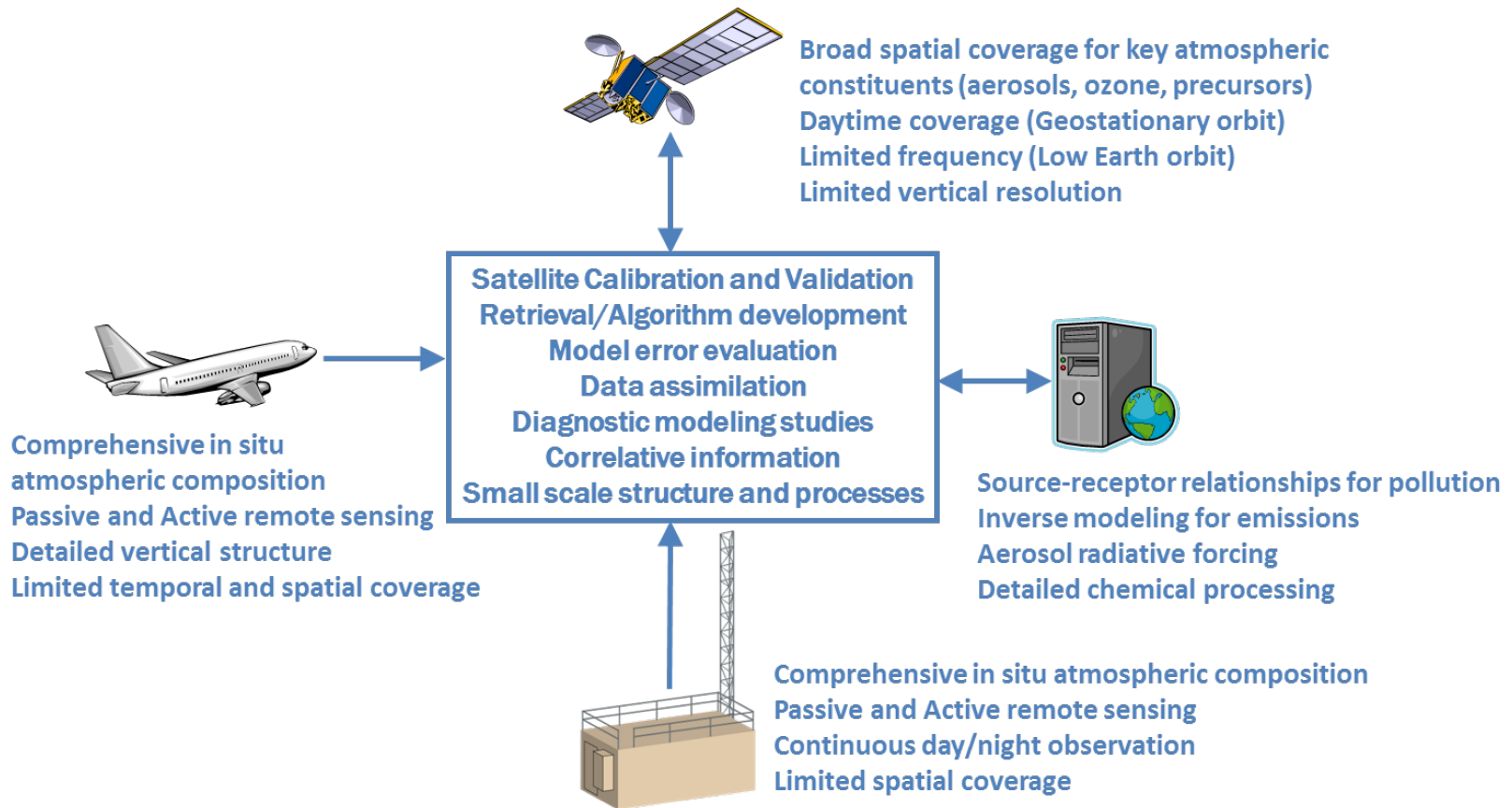


Candidate sites have been solicited through IGAC's ACAM activity.

Funding for the sites is being actively pursued but may need to come from multiple sources.

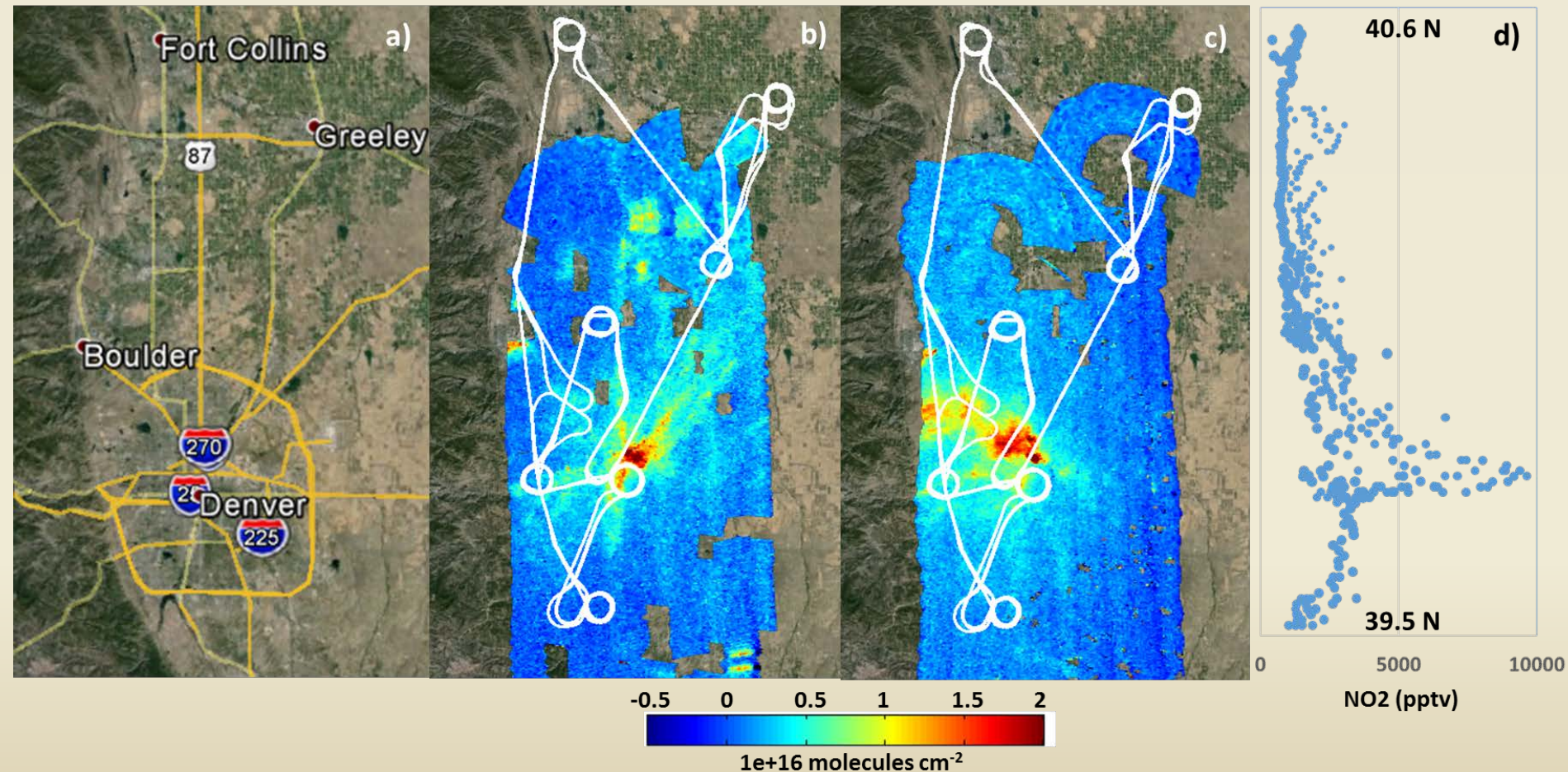
The network would not only serve validation, but would also foster community and capacity building for Asian scientists.

The Integrated Observing System for Air Quality

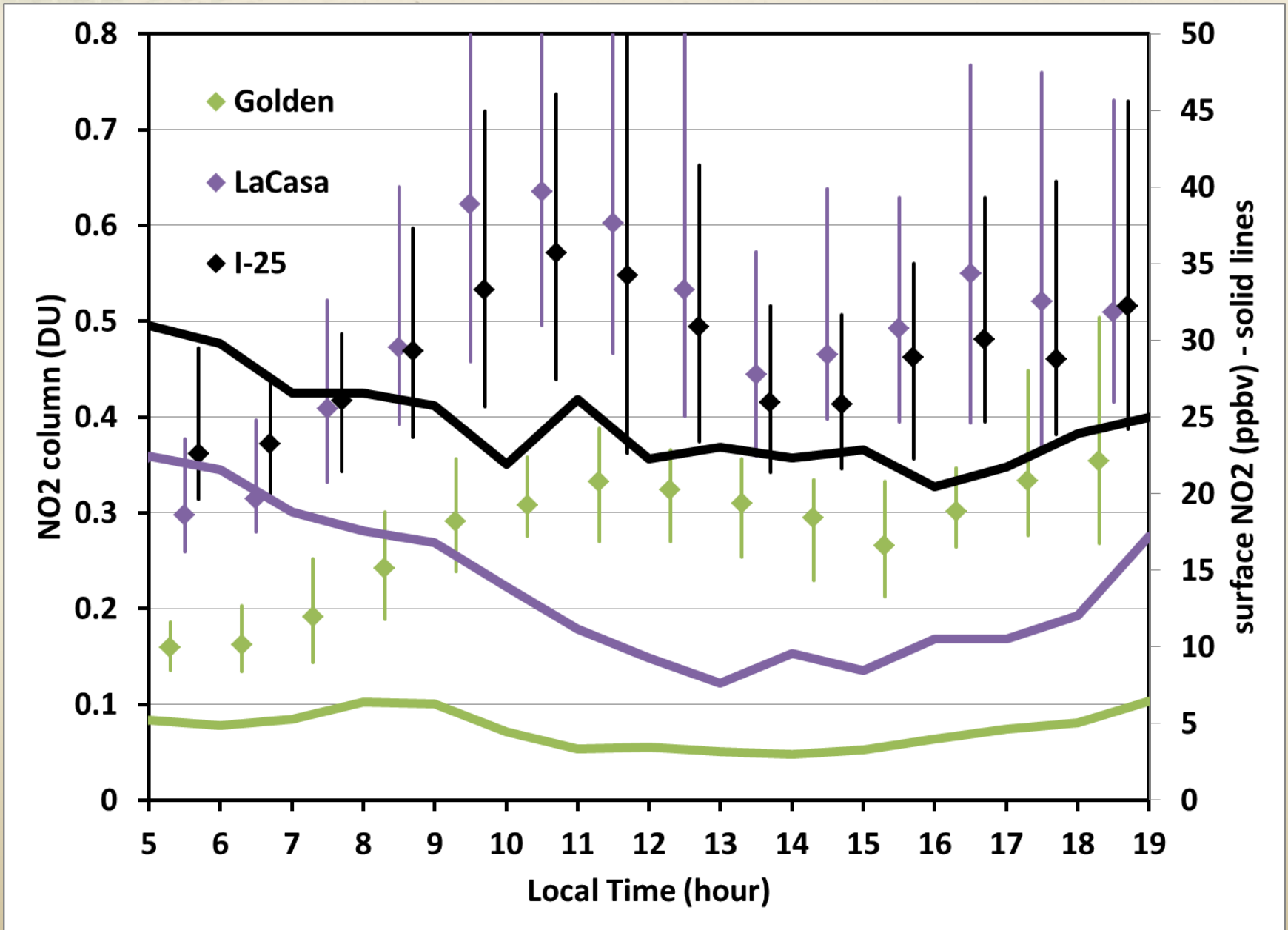


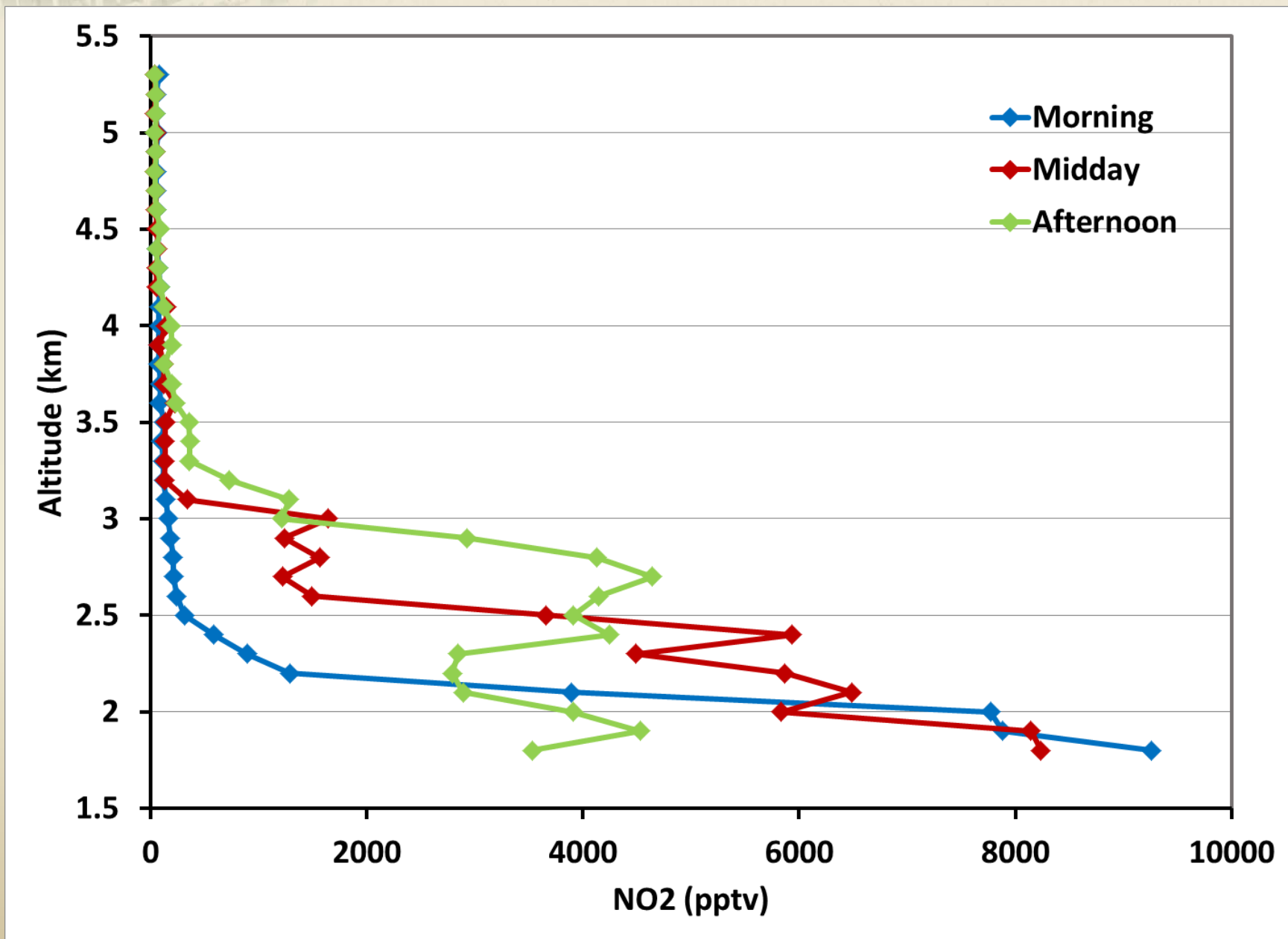
Ideally, airborne science and validation studies would come after at least one year of analyzing the connection between satellite and surface observations.

Geo-TASO Observations over the Denver Front-Range Area

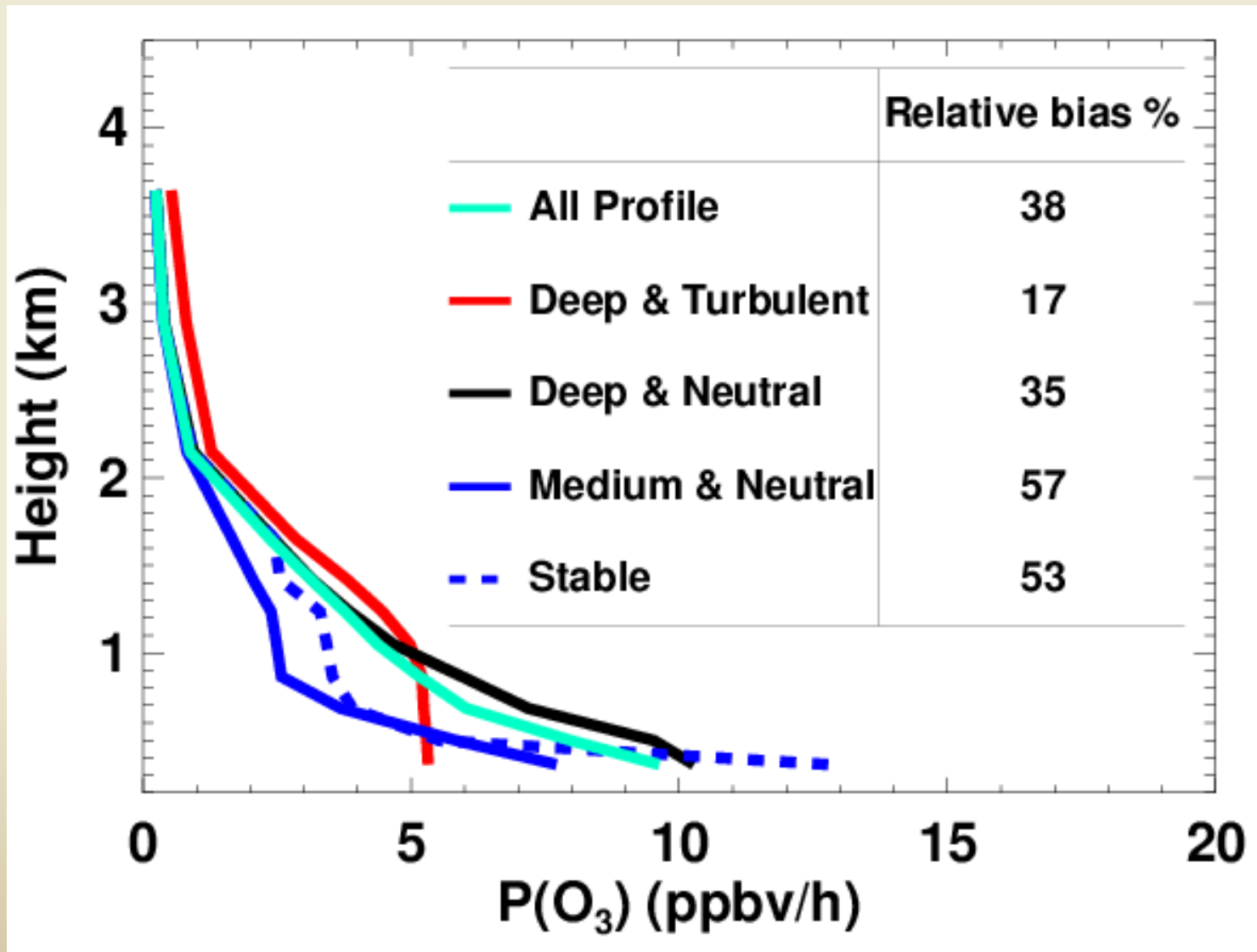


The latitudinal distribution of P-3B observations are shown on the right for all flight data averaged over 0.01×0.01 deg. Symbol sizes increase for data farther to the west in proximity to the foothills of the Front Range.

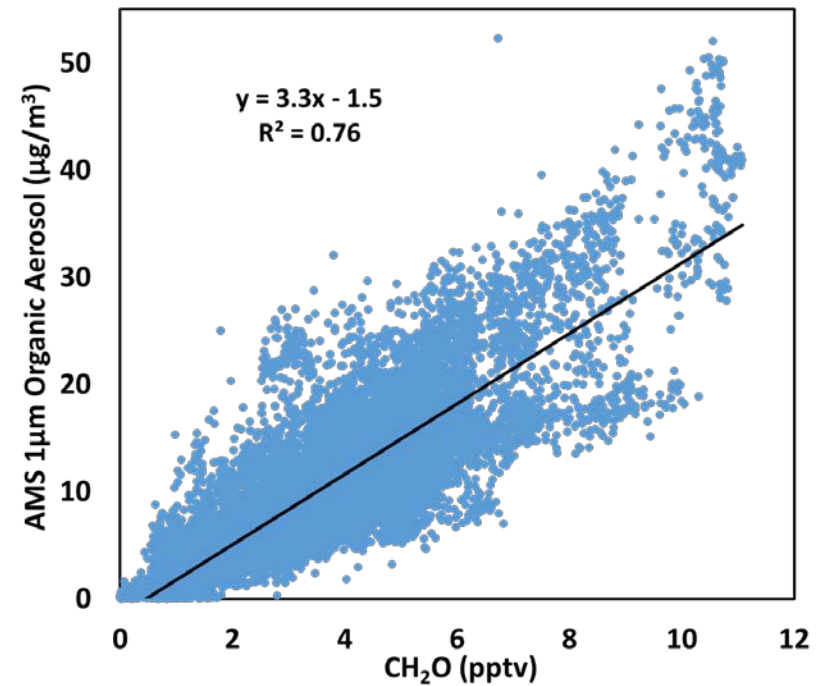




Bias in O_3 production estimate when assuming a well-mixed BL



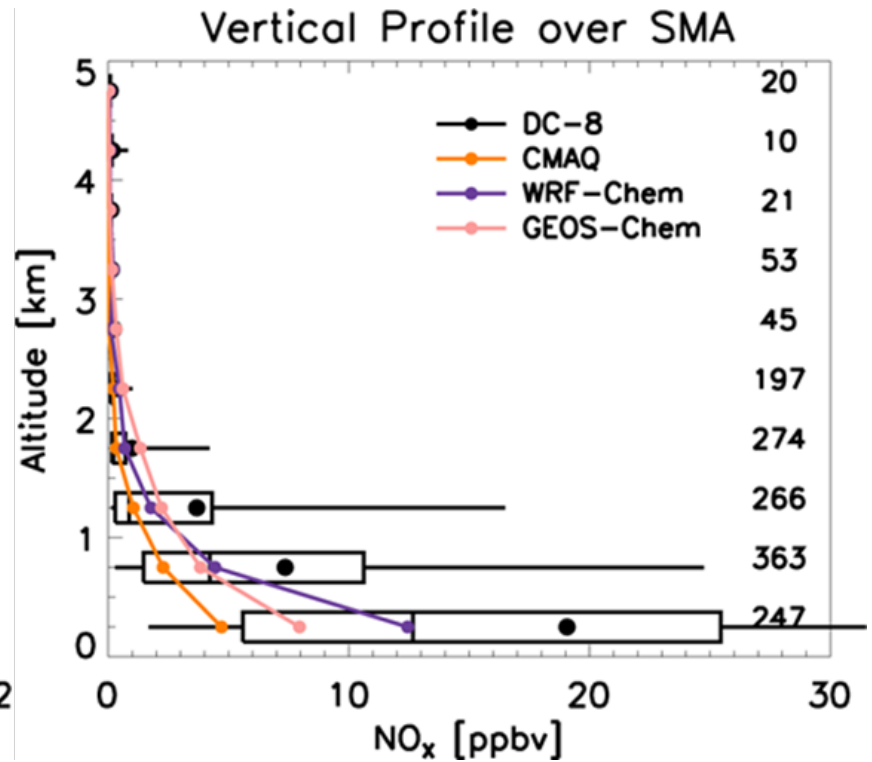
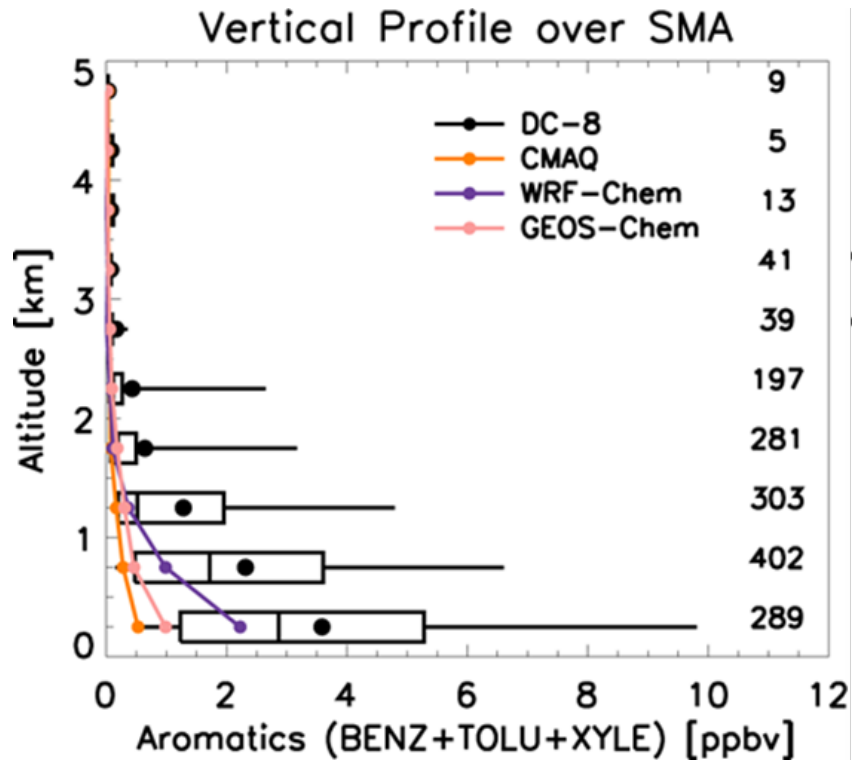
Investigating Satellite Proxies for Air Quality



Correlation of surface ozone with CH₂O column densities from airborne in situ profiles over five sites during DISCOVER-AQ Maryland.

Correlation of organic aerosol with CH₂O observed over Seoul during KORUS-AQ.

Evaluating Emissions Inventories



Comparison of NASA DC-8 observations with three independent models for aromatic VOCs (left) and NO_x (right) over Seoul during KORUS-AQ.

Important steps moving forward

- 1) Seek near-term funding for Asian Pandora network**
- 2) Develop white papers from the HAMAQ proposal for potential NASA airborne field campaigns for both GEMS (2021/2022) and TEMPO (TBD)**
- 3) Work with European colleagues to develop a possible campaign for Sentinel-4**

I am interested in learning about other planned activities.

Your interest and input is welcome!