

AIRS Plans and Needs Related to ARCTAS

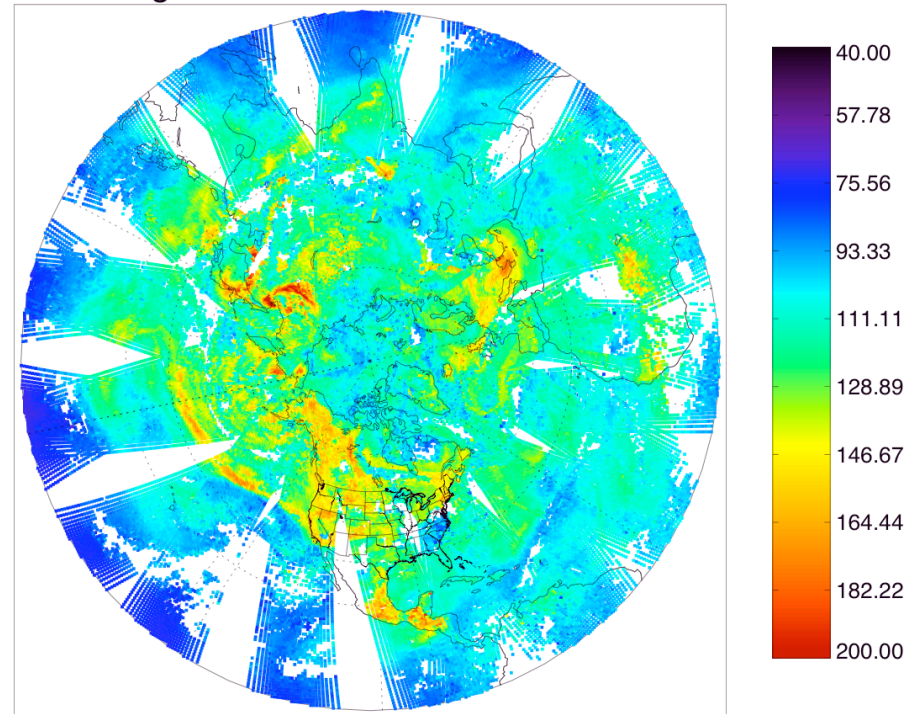
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- AIRS V5 Released
- Planed Contributions to ARCTAS
- Research Products using A-Train
- In Situ Measurements at High Latitudes Badly Needed!!
- Needs from ARCTAS

AIRS V5 Released!!

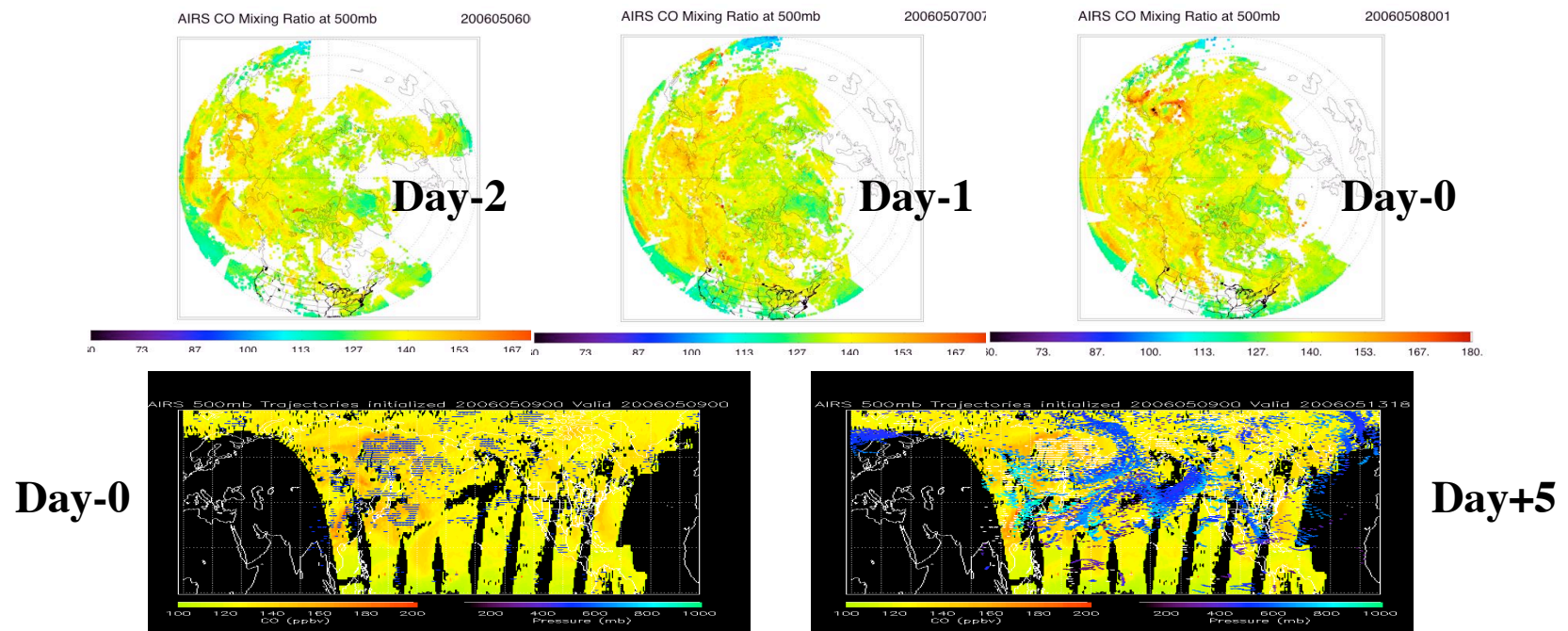
- AIRS V5 trace gas products include:
 - CO
 - CH₄
 - O₃
- Products available for data collection
08/30/2002 - 1/6/2008
- AIRS large coverage is due to wide swaths and cloud clearing
- AIRS CO validation (v4.x) against in situ measurements and MOPITT CO indicates uncertainties within 20 ppbv
- Validation of AIRS v5 products are ongoing

CO Mixing Ratio at 500 hPa for AIRS 20060508



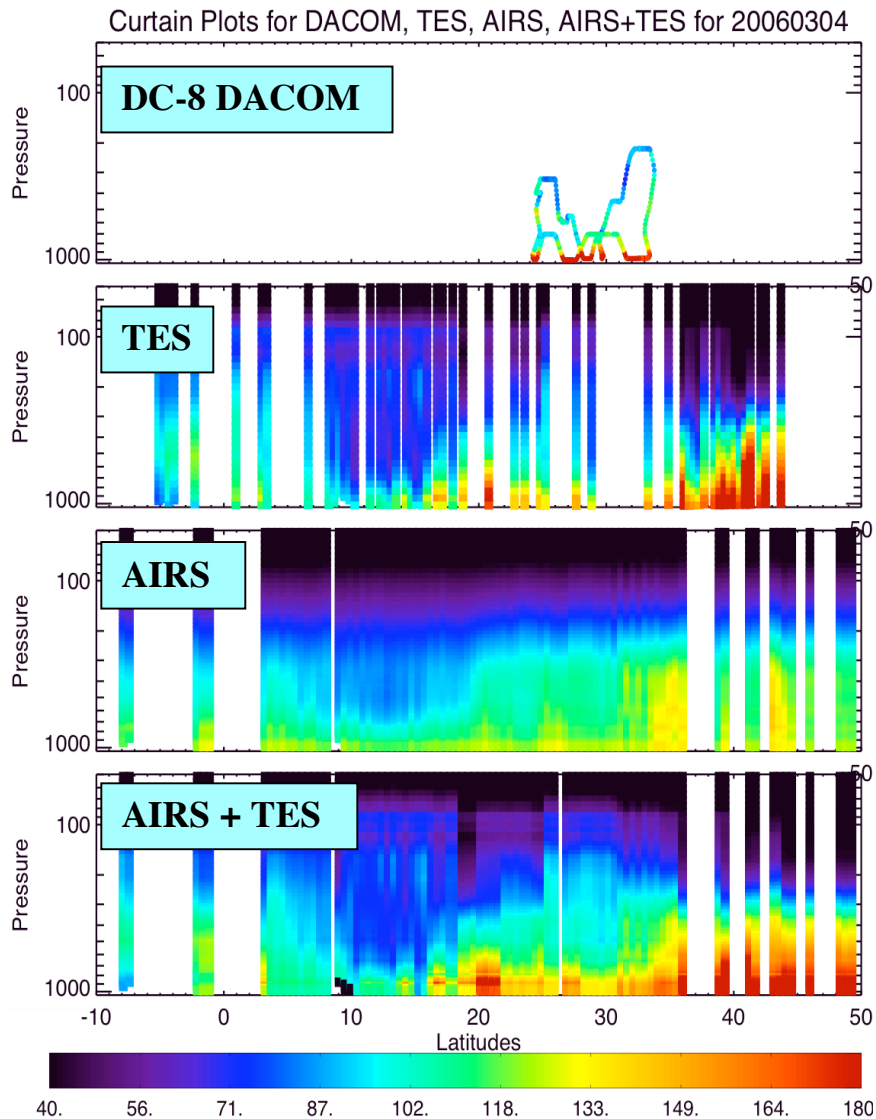
Planned Contributions to ARCTAS

- Provide AIRS CO NRT products for flight planning
- Additionally screened using MODIS cloud mask for possible cloud contaminations
- Provide trajectory forecasts up to 5 days
- Post-mission AIRS validation, data analyses, and possible algorithm improvements
- Test new/research AIRS retrieval algorithms:
 - Using Optimal Likely-hood Method (funded & under development)
 - AIRS retrievals using other L2 products from A-Train

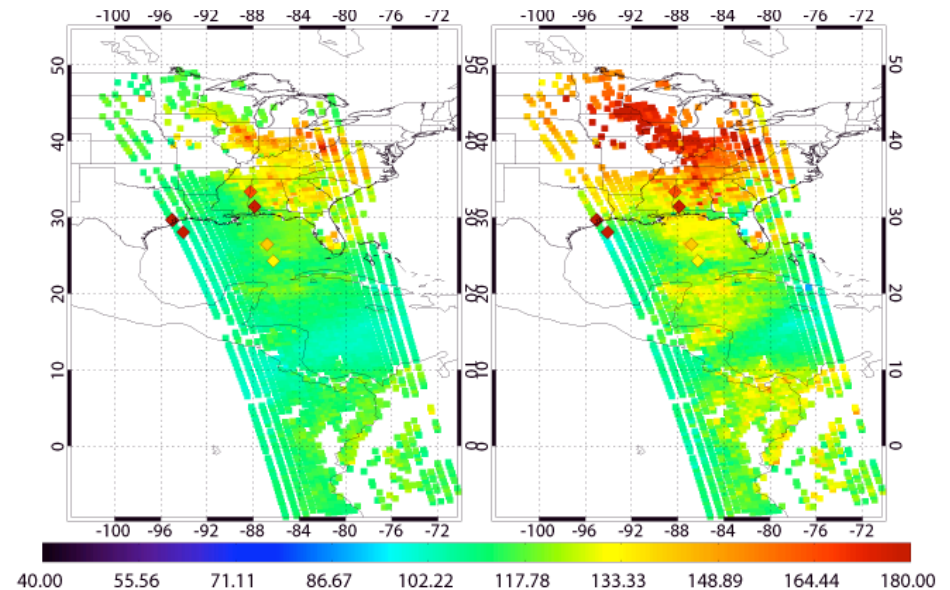


* Trajectory model provided by Brad Pierce (NOAA/Univ. of Wisconsin)

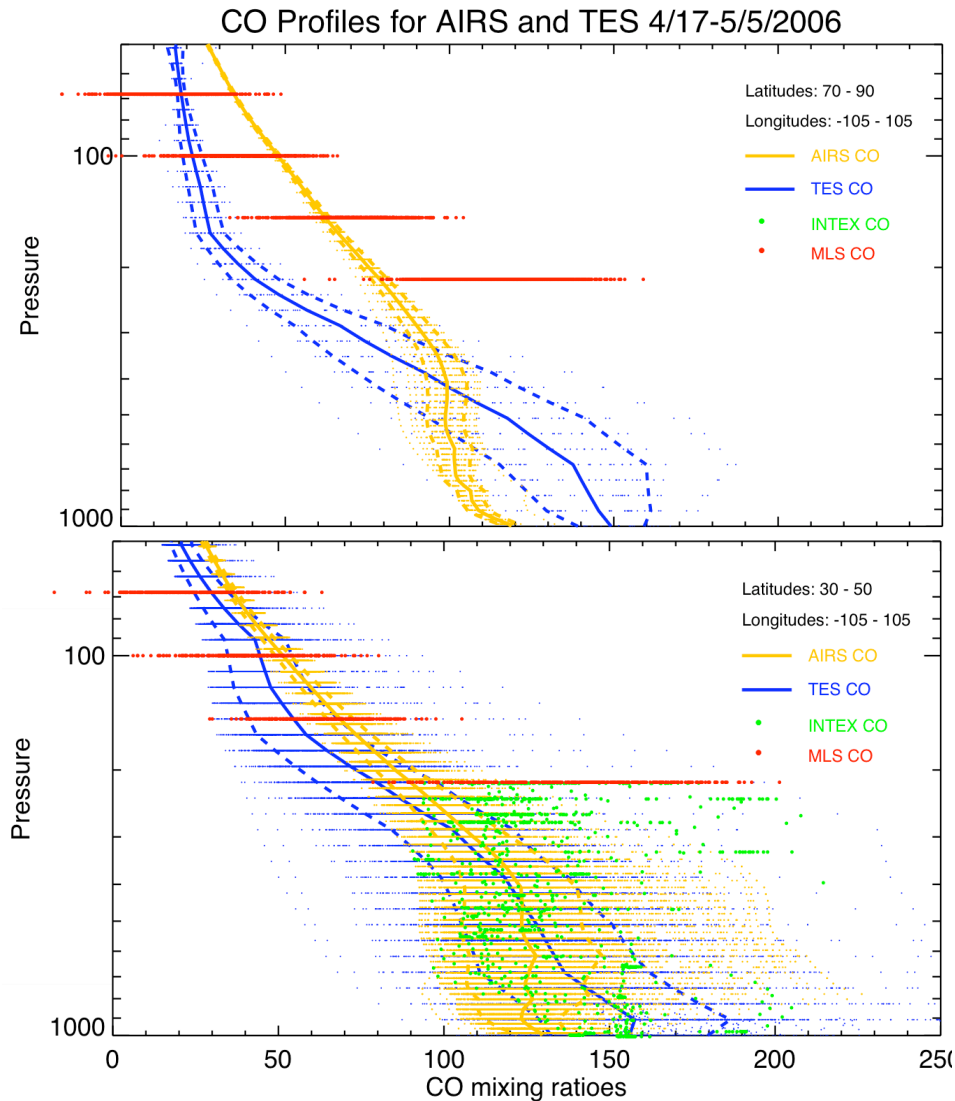
Research Products using A-Train



- **Higher CO in the lower troposphere is due to the fire activities over the south-east US.**
- **Using TES L2 profiles in AIRS retrievals increase lower tropospheric information for AIRS retrievals.**
- **TES lower troposphere information is propagated using AIRS variance through objective analysis.**
- **The combined CO shows better agreement with TES and DACOM. AIRS CO at 900 mb with uniform 1st guess vs TES profiles**



In Situ Measurements at High Latitudes Badly Needed!!



- Retrieval limitations at high latitudes
 - Snow/ice surfaces
 - Cloud detection uncertainties due to temperature inversions
 - Lower sensitivities in the thermal sensors at low temperature contrast
- Relatively larger biases between different sensors from *a priori* influence
- AIRS retrievals used MOPITT a priori while TES a priori was developed from MOZARD CTM

Needs from ARCTAS

- Over various surface types
- Differences in measurement time by Terra and Aqua contribute to biases between MOPITT CO and A-Train CO, and AIRS and IASI, etc.
- In clouds to distinguish between true transport and cloud contamination in retrievals