TAbMEP concept

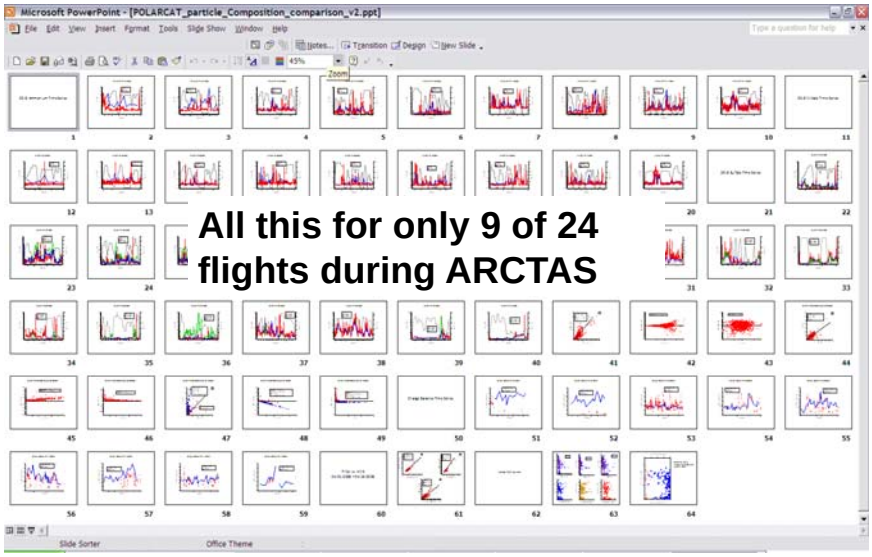
- Tropospheric Airborne Measurement Evaluation Panel

- generate **unified** data products for model assessment and validation
- unbiased assessment of the measurement uncertainties
- systematic approaches for combining airborne data sets from multiple instruments/techniques and aircraft platforms

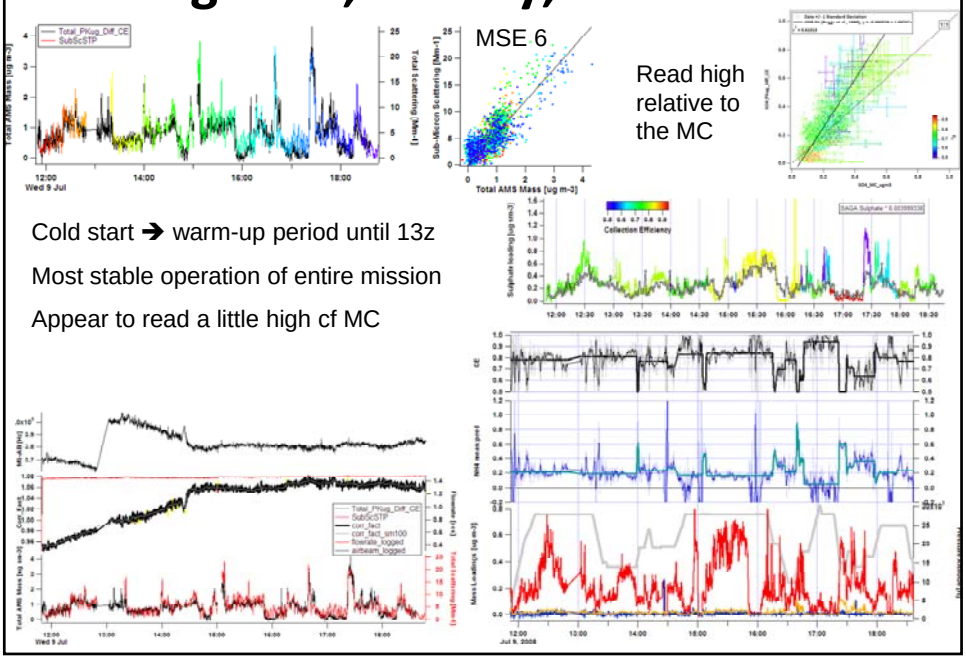
We will make you agree

- In several cases, there are significant differences between measurements which can't be reconciled with our current understanding of the instruments or their calibration procedures.
- These measurements will be unified by **increasing systematic uncertainties** so that 95% of the measurements will be encompassed within 2-σ total uncertainty limits.

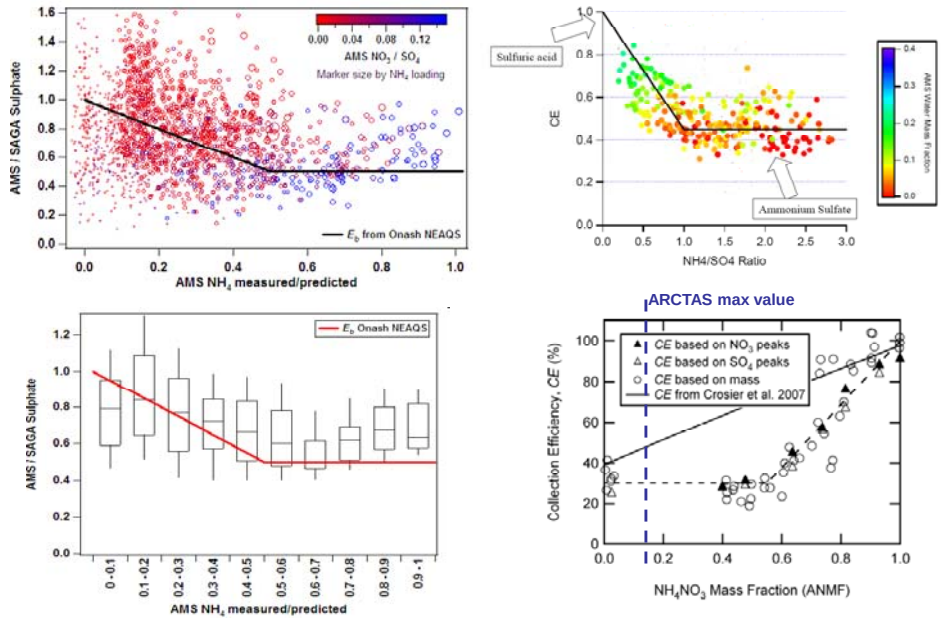
Extent of NASA intercomparisons



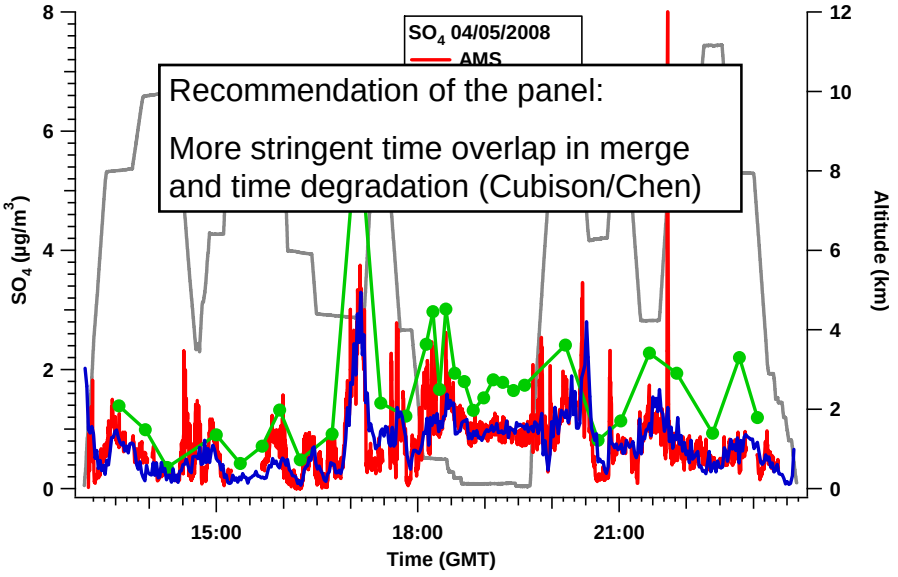
Flight 22, 9th July, Thule local



ARCTAS-1 Collection Efficiency?



Example TAbMEP intercomparison



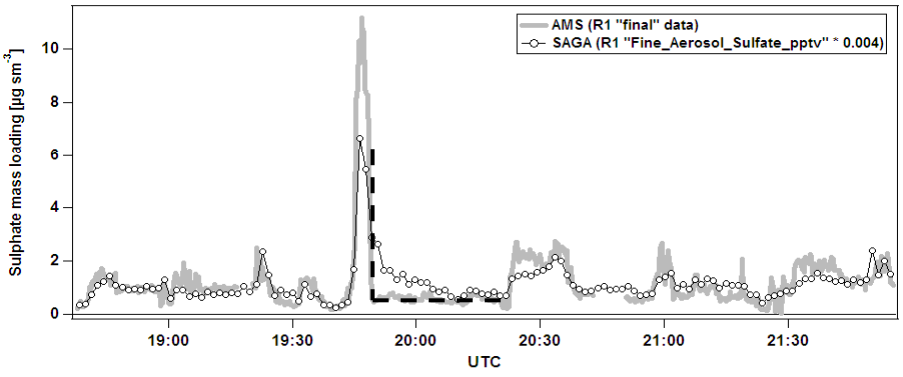
ARCTAS-A

Degrading the time-response of the Univ. Colorado HR-ToF-AMS for intercomparison purposes

Mike Cubison

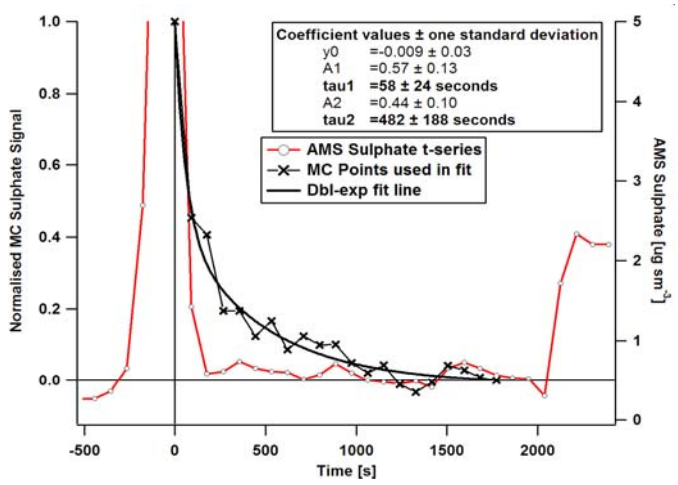
July 2009

AMS v. MC: discrepancy in time-response



- Sharp sulphate plume during research flight #7
- Use as proxy for differentiating between AMS- and MC- time-response to fluctuations in concentration

Double-exponential fit



Assumptions:

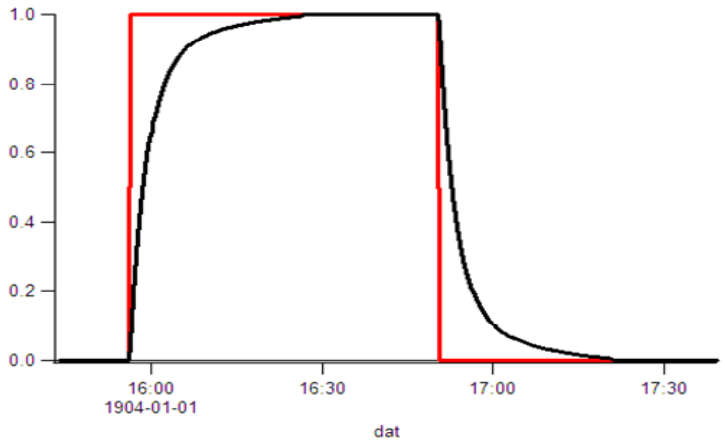
1) Change in sulphate concentration is a step-function; residual in the MC is the time-decay resulting from this change

2) The consistent "baseline" measured by the AMS after the step change is the "zero" for the time-decay

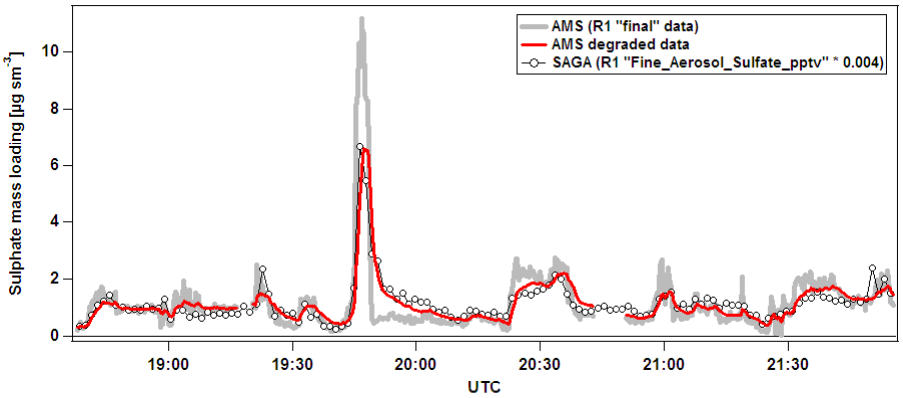
3) A double-exponential fit is appropriate for the MC decay

•Preliminary analsysis: only longer time constant (8 min) may be meaningful, shorter one (1 min) may be an artifact of how the fit was set up here
•Much shorter than John Crounse's HNO3 time constants (15 and 90 mins)

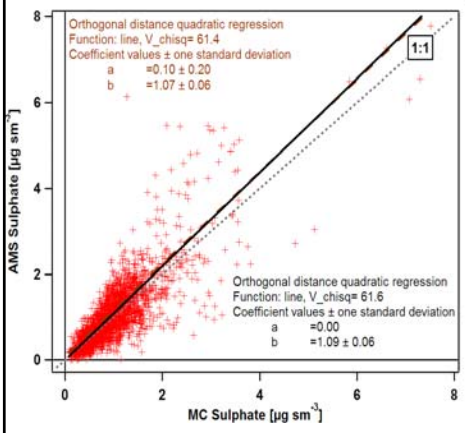
Test decay on artificial step function



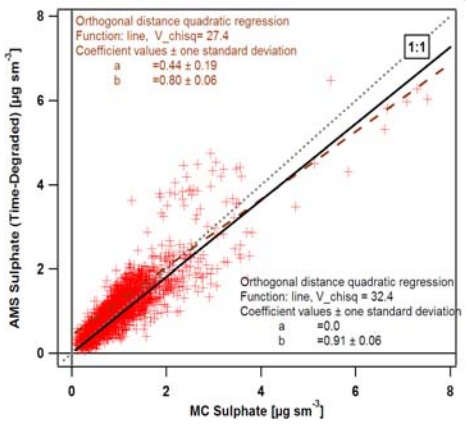
Degrade AMS F7 using double-exp



AMS vs. MC for Flights 3->10 incl.



Normal



time-degraded