Global-scale black carbon profiles observed in the remote atmosphere

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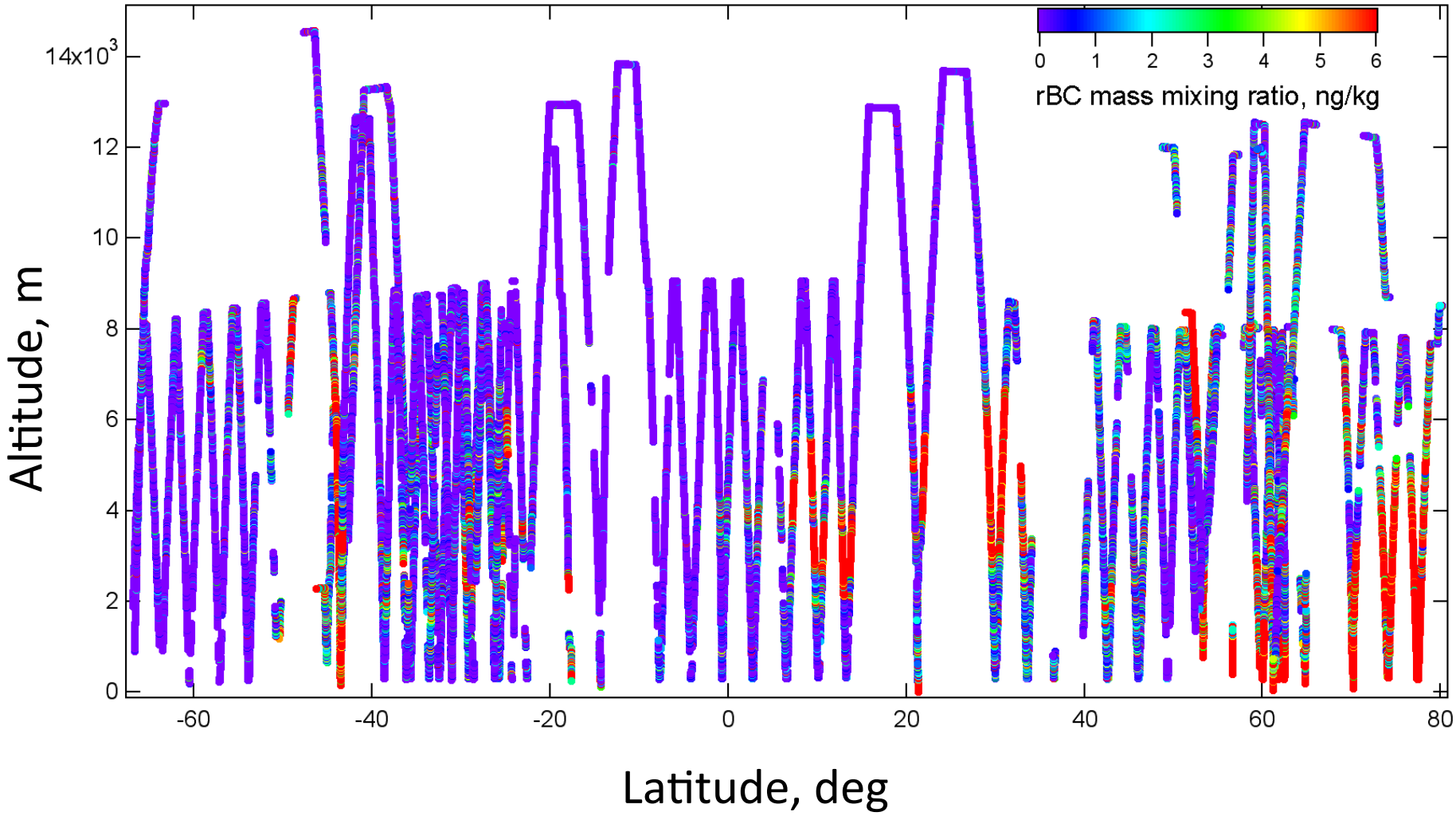
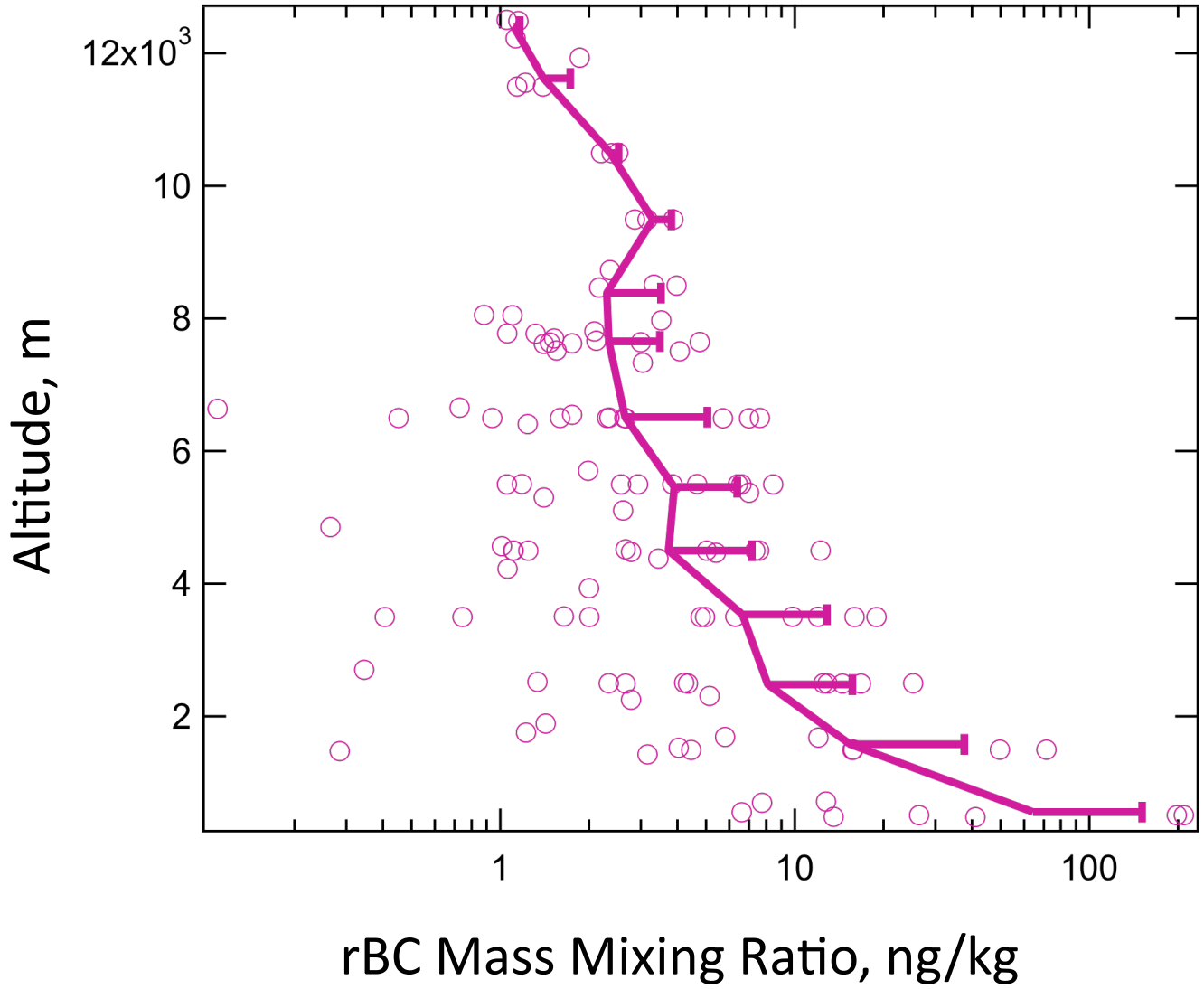
NOAA SP2: rBC Mass Mixing Ratios

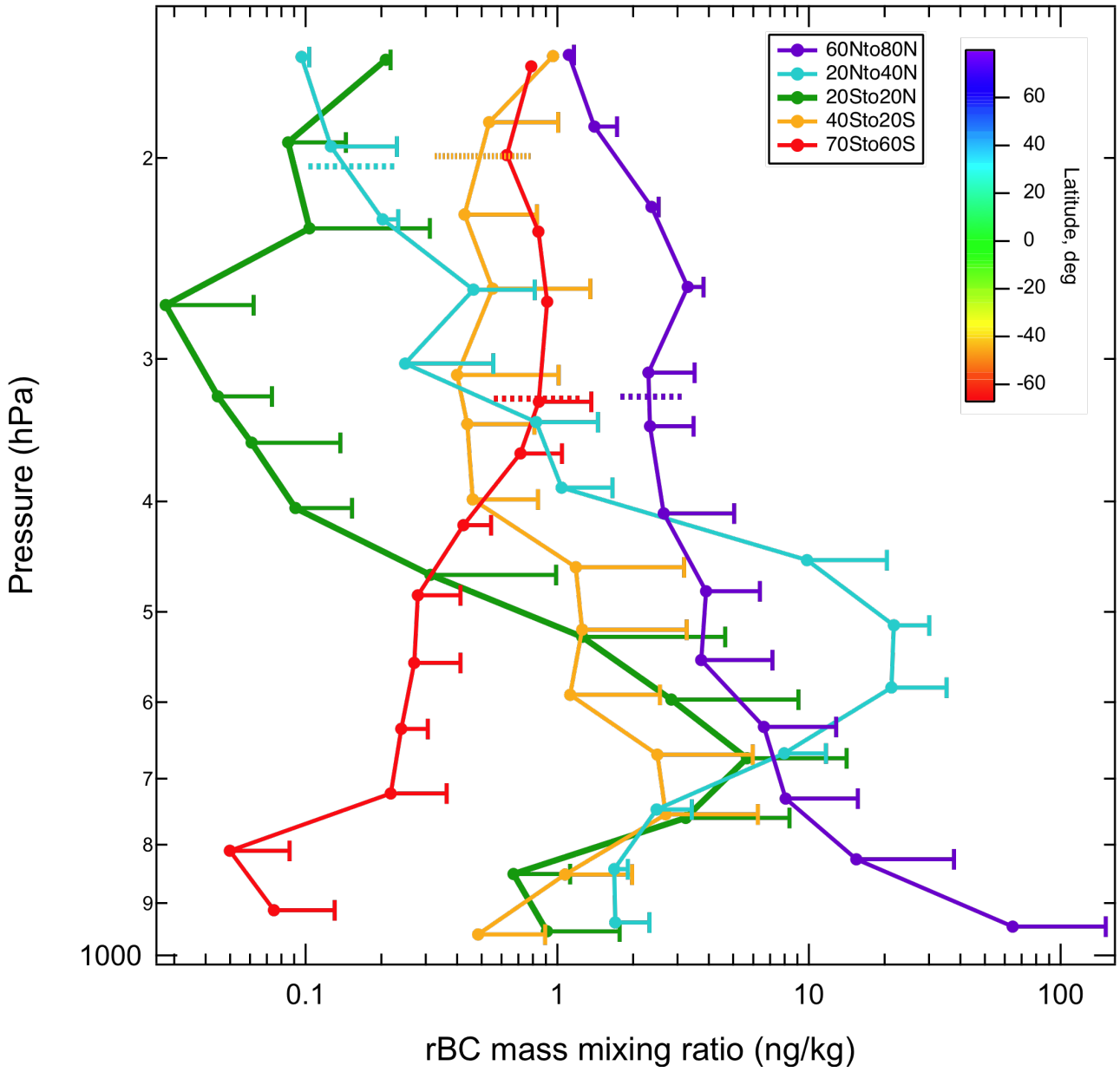


Ensemble of vertical profiles



- Each vertical ascent/descent treated as an independent profile measurement: statistics based on inter-profile variability.
- Whiskers represent standard deviation at each altitude/ pressure bin
- ~1km resolution

Zonal Averages:



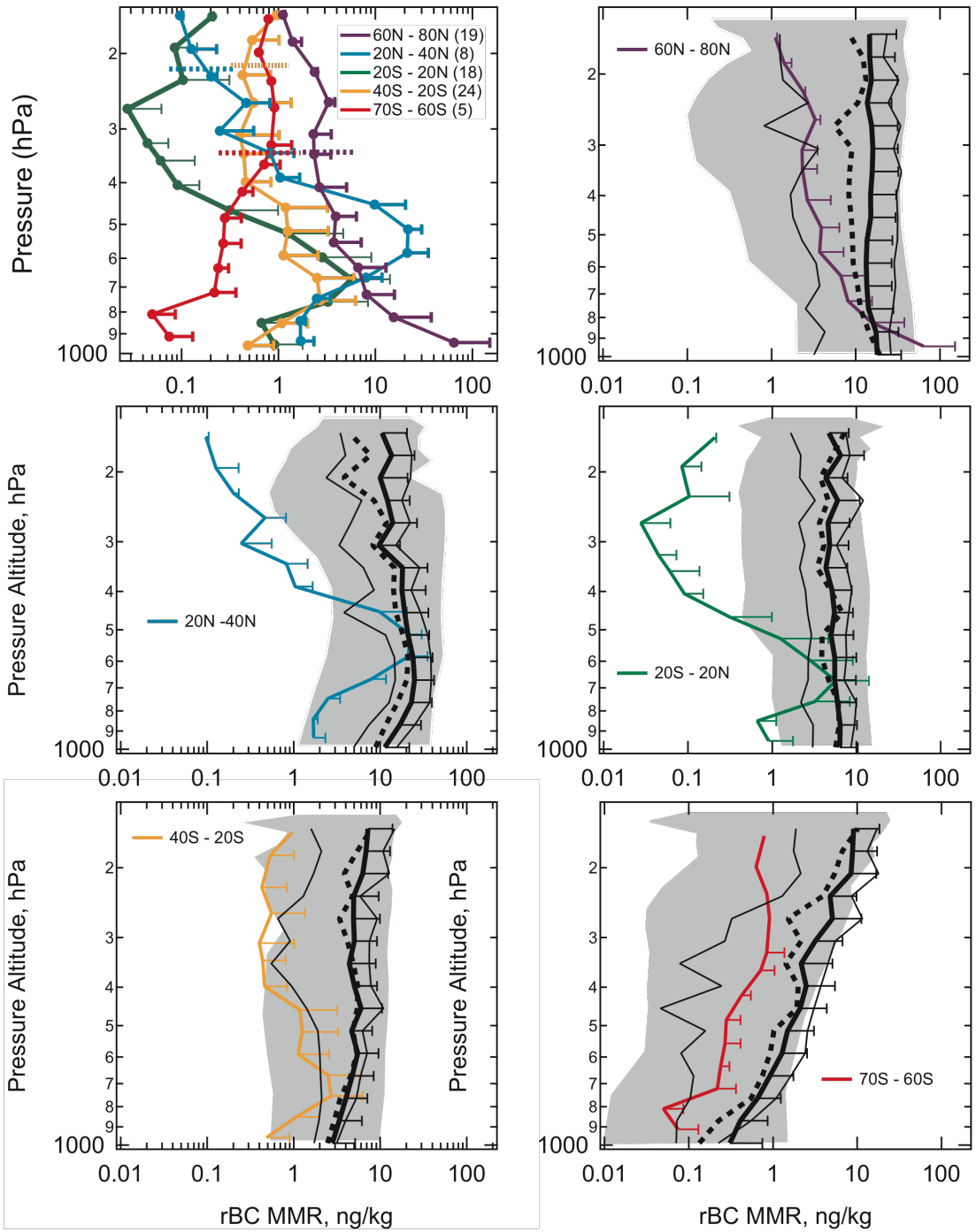
60Nto80N
20Nto40N
20Sto20N
40Sto20S
70Sto60S

- 74 profiles selected for inclusion here.
- On average 15 profiles averaged into each zonal average.
- For southernmost average, 5 profiles

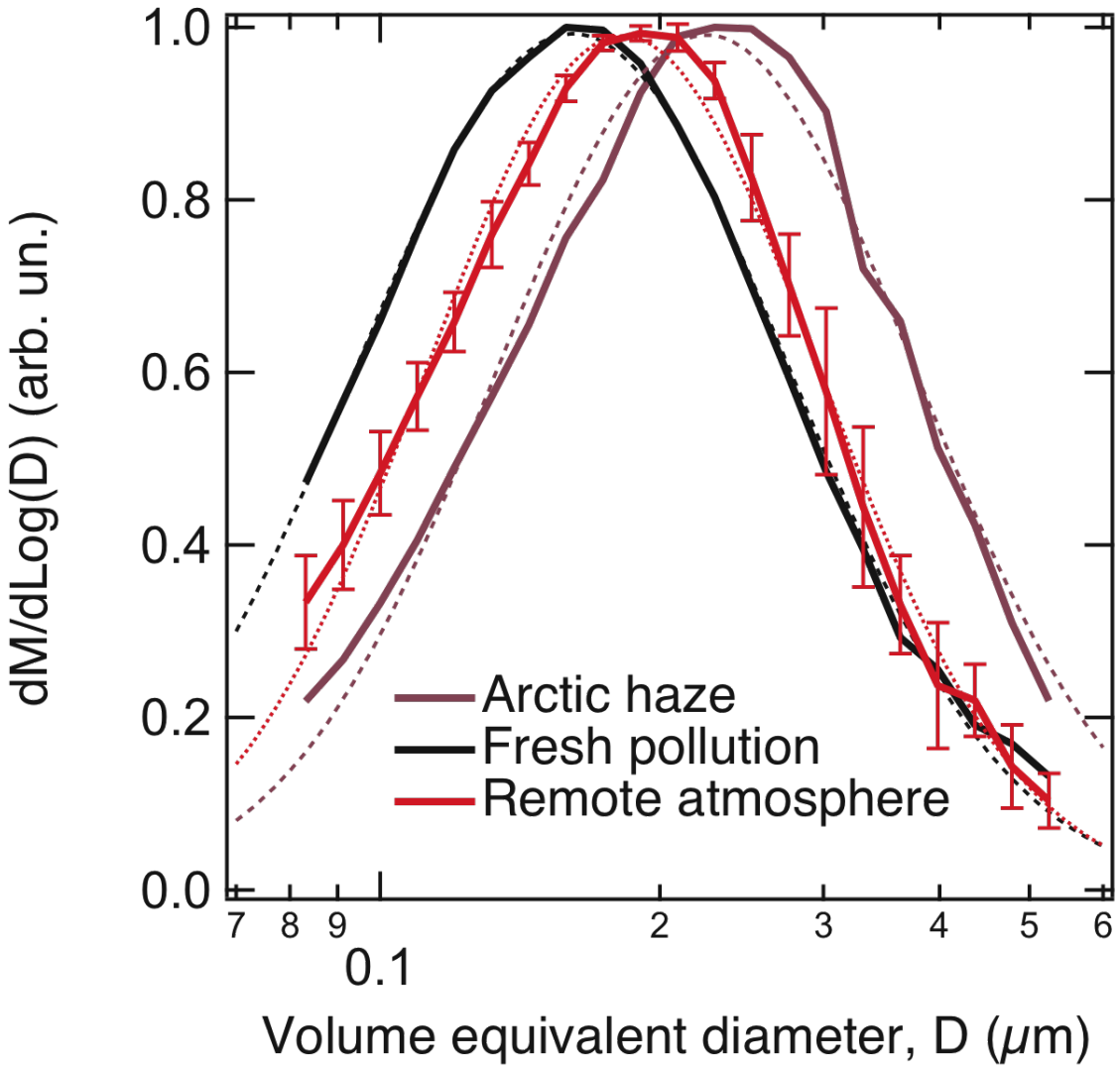
Model Comparison:

AEROCOM MODELS
January average:

- LMDzT-INCA(LSCE)
- ECHAM5(MPI)
- GCM/CAM
- MIRAGE
- CTM2
- CCM-Oslo
- LMDzT (LOA)
- GOCART
- MATCH
- IMPACT/DAO
- ECHAM-MADE (DLR)
- GISS
- TM5
- MOZART-GRDL-NCAR



rBC Size Distributions



Future Plans

- Expanded global intercomparison between BC measurements and models incorporating more seasonal data (all available data sets) and updated model results

- Comparison of BC observations to models constrained by actual wind fields (perhaps ECHAM with hind-cast, or GEOS-Chem?)

- BC mixing state (H1?, H2, H3) and size distributions for constraining removal