

Core Aerosol Measurements Session Lightning Talk

AMSG WORKSHOP

Topic 1: Core Aerosol Measurements

- Olga provided an overview of the AOS measurements.

Suggestions that were discussed:

- There are few measurements of coarse mode aerosol in general and dust in particular.
 - General consensus was that this could be important, but is limited by the inlet transmission.
 - Can sampling bypass the inlet (similar to INP measurements)?
 - Can INP filters be analyzed? Maybe sometimes but depends on analysis
 - APS captures some of coarse mode.
 - Some remote sensing retrievals may be able to measure dust/coarse mode.
- Interest was expressed in collecting more regular filter measurements for analysis.
 - Questions were raised about how easy it is to get IMPROVE data.
- HTDMA was deemed as an important measurement
 - Only way to infer size-resolved chemical composition information
 - Difficulty of running this instrument was recognized, but consensus was that it is still important
 - Can we run at lower sizes, where there is more sensitivity to chemical information
 - Recommendation: ARM add a measurement at <50 nm, possibly removing a larger size if necessary.

Topic 1: Core Aerosol Measurements (ctd)

- HTDMA (ctd):
 - Much more sensitive to chemical composition than size-resolved CCN.
- Optical Properties:
 - Large uncertainties of filter-based measurements. Should ARM try a stopgap with another filter-based measurement?
 - OR try to implement an in-situ measurement?
 - Something needs to be done to replace PSAP.
- Black Carbon:
 - Can ARM add a standardized, routine BC measurement? Possible SP2-X?
 - Generally support for the need to add a BC measurement.
 - Consider using in conjunction with DMA to get better constraint on coating thickness.
- VOCs:
 - Need a VOC measurement for several process studies, but group acknowledges it is difficult and costly to run PTR-MS
 - Can ARM explore canister sampling?
- INP:
 - Data are difficult to interpret quantitatively and difficult to find.
 - Should be deployed in regions where mixed-phase clouds are important (NSA).
 - May be used more in the future once people become more aware of the measurements
- General: Put more instruments behind DMA.

Topic 2: Data product needs

- Merged size distributions:
 - Labeling data as good, bad might bias use of data. May throw out useful data.
 - What is good for one purpose may be bad for another
 - Since no data is removed, only flagged, this may be the best approach.
- Retrieval of aerosol properties from remote sensing is needed.
 - May also give information on coarse mode aerosol
 - Would give vertical distribution information
- ACSM CDCE:
 - ACSM data are in generally good shape; however, there is limited validation for CDCE algorithm for marine cases.
 - Maybe we need to put a DQ note explaining when CDCE is well-validated and when it isn't.
- ACSM PMF:
 - Interest in having PMF for ACSM data, however, there is recognition that this is labor-intensive and expensive.
 - PMF also proprietary, which is somewhat contrary to ARM model.
 - Consider employing an alternative to PMF.