

Mobile Aerosol Observing System in GVAX 2012

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ARM

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a passion for discovery



MAOS A/C in GVAX

Capabilities (Instruments)
Schedule
Site
Consumables and Logistics
Mentors
Operational Staffing
Communications/Data Stream
Current Issues



Bringing it all together

MAOS is composed of two parts

MAOS-A (aerosols)

ACSM

7- λ Aethalometer

Dual column CCN

HTDMA

MET

3- λ PSAP

SMPS

SP2

3- λ PASS

3- λ Nephelometer

3- λ f (RH)

UHSAS

CPC (> 10 nm)

UCPC (> 2.5 nm)

MAOS-C (chemistry)

PILS

PTRMS

Trace Gas:

O₃

CO

NO, NO₂ and NO_y

SO₂

SODAR and Radar Wind Profiler (ACRF)

Design

- Self Contained (just add power and internet)
- Fast Setup (2-h to erect railing, sampling mast, power on)
- Portable/Robust
 - Instruments permanently installed (shock mounted), plumbed, wired (CCN putting out data in 1 h, warm up 6-h)
 - Pumps, electrical service entrance pre-installed in ventilated vestibule
 - External items shipped internally (railing, inlet)
 - Turtle mode in ~8 h (< 2 h)
- Flexible
 - Heat/Cold, Wind
 - Guest instruments (power, rack space, sampling, computers)
 - Bandwidth availability
 - Comparability
- Smart Control
 - 'Master' Computer
 - Local/Remote control of individual systems (2 independent ways)
 - Remote/Auto Restart and Shutdown

Operational During ALC IOP ~6/15 - ~8/15/2011

System Shake Out

- electrical
- stack (aerosol and trace gas)
- computer control/acquisition
- communications
- logistics
- materials & supplies
- inlet manifold
- procedures & checklists
- troubled identification

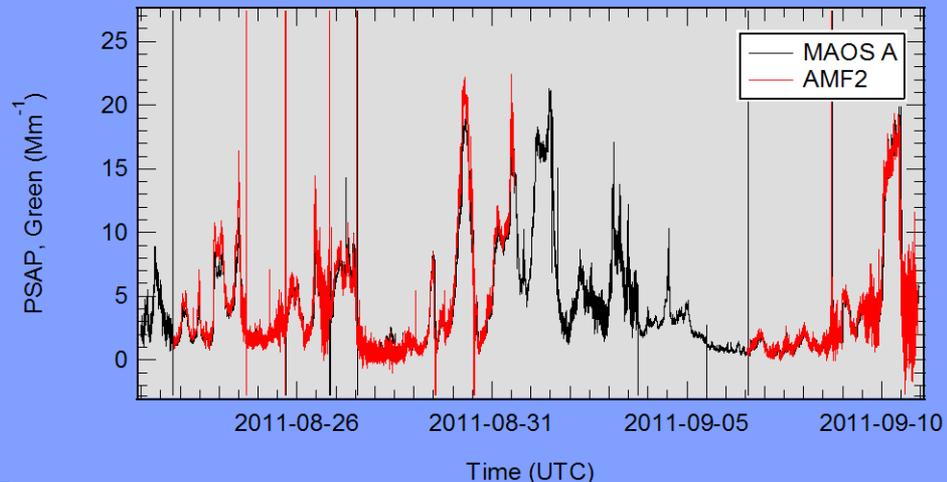
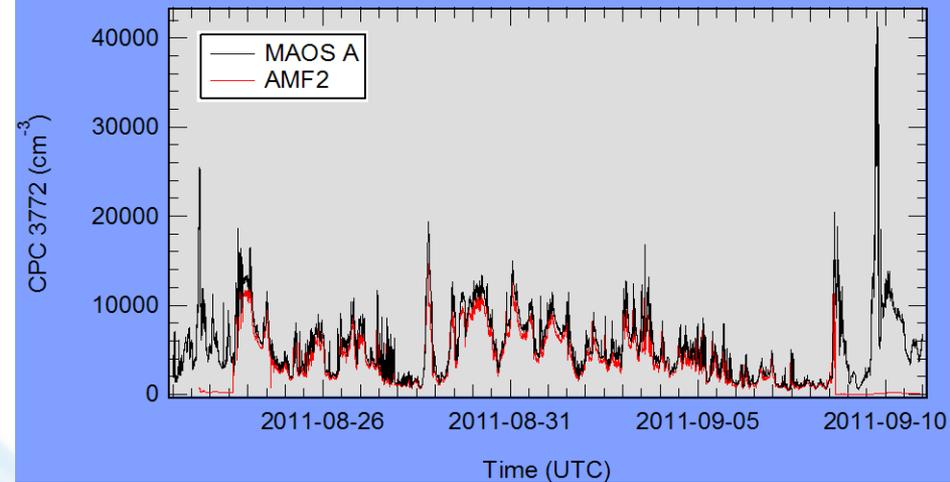
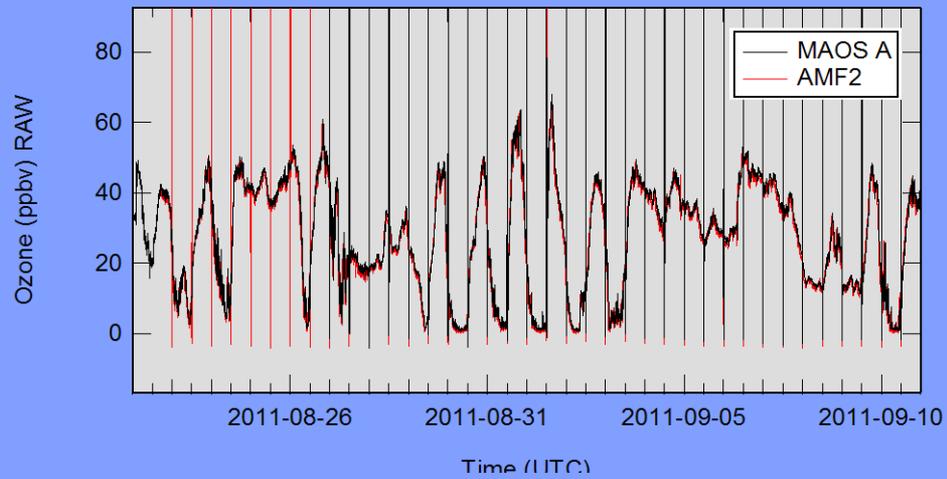
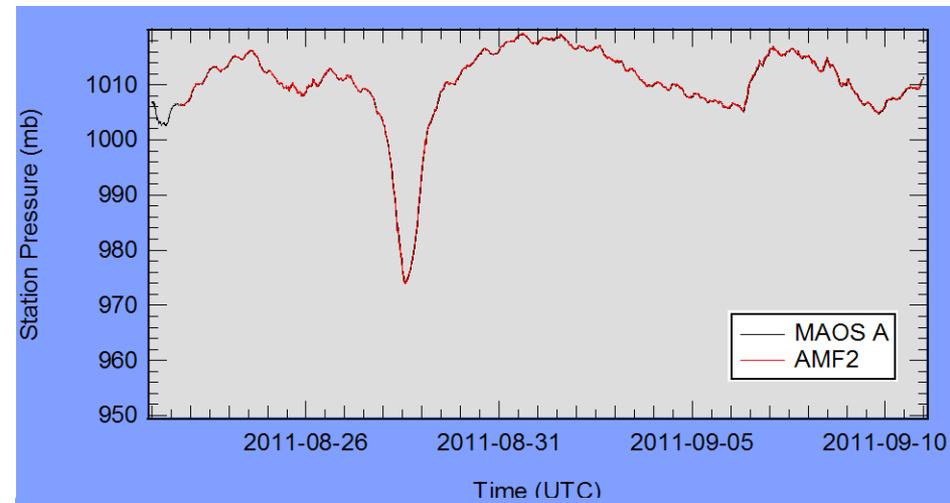
Instrument Intercomparisons (partial list)

- Met:
- PSAP/PSAP
- Ozone/Ozone

Operator Training



Learning the Ropes



Schedule

- GVAX
 - October 6 BNL – Uplift
 - January 9-20, 2012 Lucknow - Install/Spin up
 - February – March Lucknow – Sampling
 - April 1-7 Lucknow – Destage
 - April 10 Lucknow – Depart
- TCAP
 - ~March 8-31 Cape Cod - Install/Spin up
 - April 1 – ~May 15 Cape Cod – Sampling
- Amazon
 - January 20, 2014 – January 2015

Consumables/Logistics

- Butanol
 - Gases
 - Water
 - Filters/Tape
 - PILS Reagents
 - Static neutralizers
-
- Manifest and Instrument List
 - Travel Visas (flexible)
 - Lodging

Mentors

- Springston
- Flowers
- Kuang
- Lee
- Mei
- Senum
- Sedlacek

Roles and Responsibilities:

Instrument mentors develop and maintain instruments and are responsible for providing both operational procedures, calibration and data processing. Mentors are available to provide support for troubleshooting, repair and updating of procedures.

Operational Staffing

- Set up:
 - Springston, Sedlacek, Senum, Lee + Operating Staff
- Routine Ops
 - Umesh Dumka, Curt Dvonch, Brad Flowers, Arun Kumar, Ajay Nayar, Anil Ravi, Prijith Sudhakar
 - Daily logs
 - Instrument service
 - Data transfer

Communications I

- Voice
 - VOIP (Skype)
 - Cell phones
 - Land line
- Text
 - Skype
 - e-Mail (from within MAOS)
 - e-Mail (from residence)
- Status Reports
 - e-Mail/ftp to mentor home institution
 - Hand carry to ISRO for ftp upload
- Pictures/Screen shots
 - Direct access to MAOS instrument network
 - ftp to/from between MAOS and mentor home institution
 - Removal of media for off-site transfer

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Communications II

- Instrument Health and Status
 - 24/7 Access to instrument network
 - 2-h/day Access to instrument network
 - Integration/problem periods only access to instrument network
- Data Transmission
 - Hourly ftp upload to ARM DMF
 - Daily CD to ISRO for vetting and placing on ftp server
 - Return with structure at end of program

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Data Stream

- 'AOS' Data streams to DMF ingest for Mentor review
- non-'AOS' Data streams to DMF for Mentor processing
- Large (TB) streams via hard drive at end of campaign

Current Issues

- Communications
- Data Transmission
- Quick Looks
- Sample dilution
- 'Birthing' process for some systems
- Procedures/Instrument modes
- Infrastructure
 - 50/60 Hz
 - Brown outs
 - Power interruptions
 - Final mounting/packing/securing

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