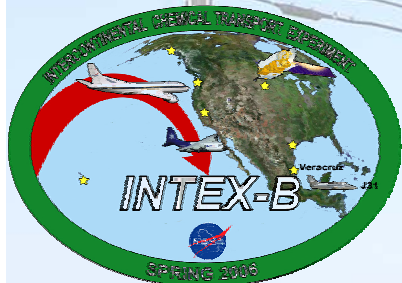


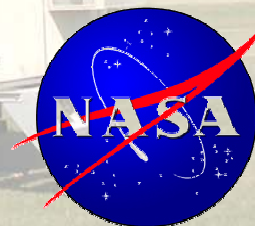
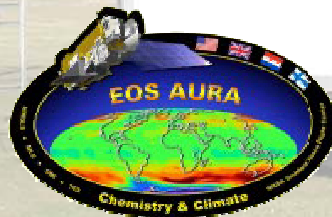
NATIVE (Nittany Atmospheric Trailer and Integrated Validation Experiment) Remotely Sensed Aerosol Optical Properties: Examples from INTEX-B and WAVES 2006

Brett Taubman, Anne Thompson, David Miller, Shannon Michaels, Tim Kane

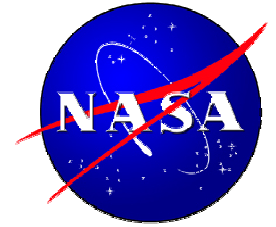
Penn State Dept. of Meteorology
Gordon Labow, Nick Krotkov
NASA Goddard Space Flight Center



PENNSTATE



NATIVE



Nittany Atmospheric Trailer and Integrated Validation Experiment

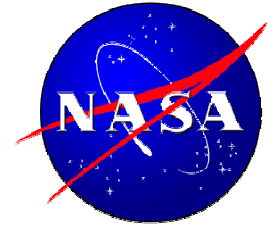
(www.meteo.psu.edu/~btaubman/Webpage/native.html):

mobile research facility designed for:

- Aura validation
- Ground-based complement to NASA based field campaigns
- Mobile IONS station
- air quality monitoring
- pollution transport and deposition



NATIVE Payload



In-situ trace gas instruments:

TeCo 49C O₃ Analyzer

TeCo 48C-TLE CO Analyzer

TeCo 43C-TLE SO₂ Analyzer

TeCo 42C NO, NO_y Analyzer

En-Sci ECC Ozonesonde Ground Station

Meteorological Instruments (10 m tower):

T, RH, P, WS, and WD

Remote Sensing Instruments:

MICROTOPS II O₃ Monitor - Sunphotometer

(305, 312, 320, 340, 380 nm)

Cimel Sunphotometer

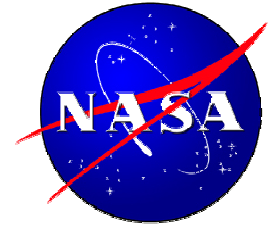
(340, 380, 440, 500, 675, 870, 1020, 1640 nm)

YES UVMFR-7

(300, 305, 311, 317, 325, 332, 368 nm)

532 nm Aerosol Lidar

NATIVE Schedule



INTEX-B/MILAGRO Phase I

Houston, TX: March 2 - March 20, 2006

INTEX-B/MILAGRO Phase II

Richland, WA: April 21 - May 15, 2006

*Aura validation with WSU MF-DOAS

WAVES 2006

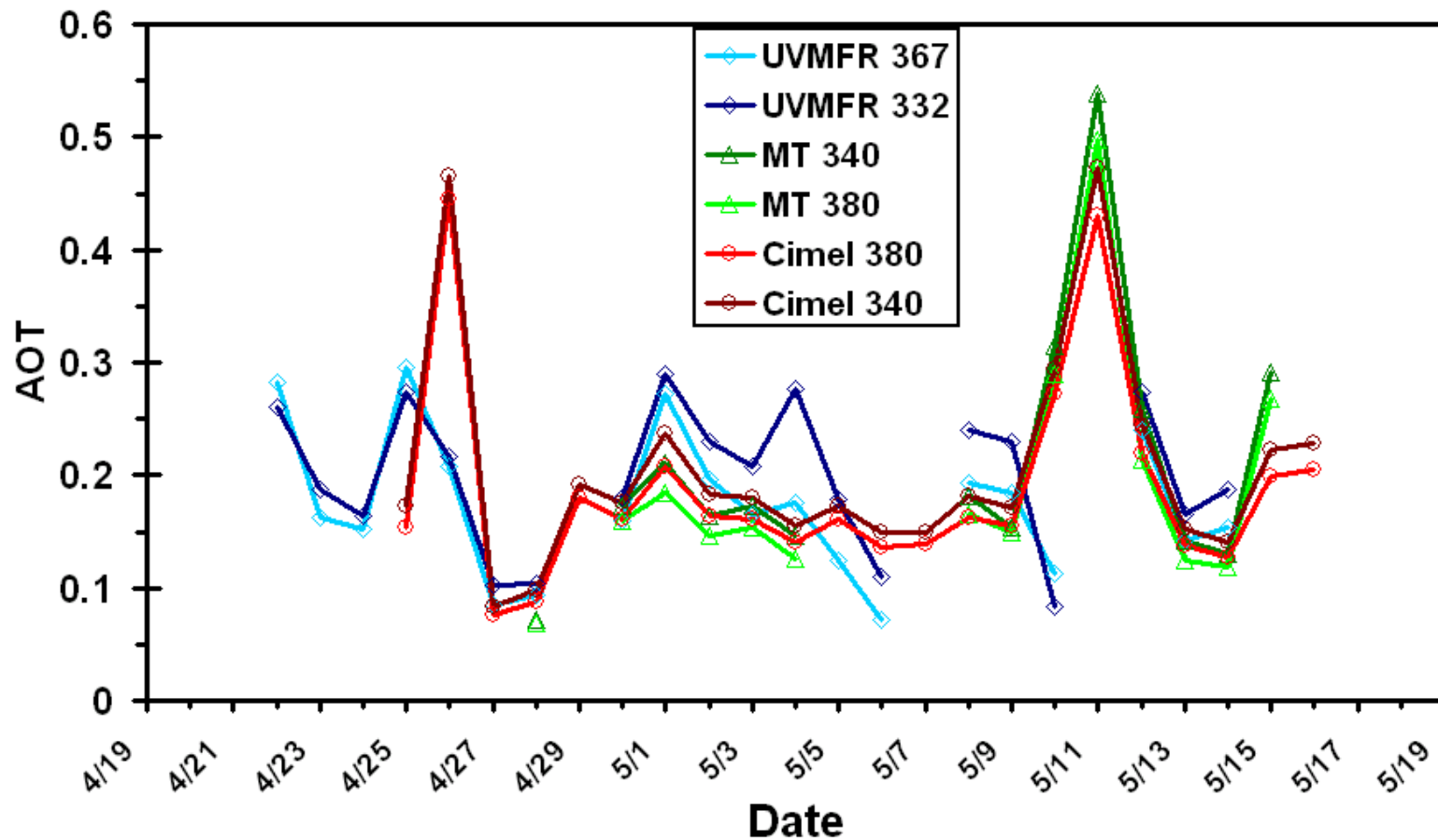
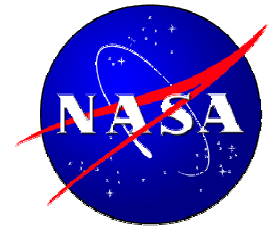
Beltsville, MD: July 7 - August 3, 2006

Home

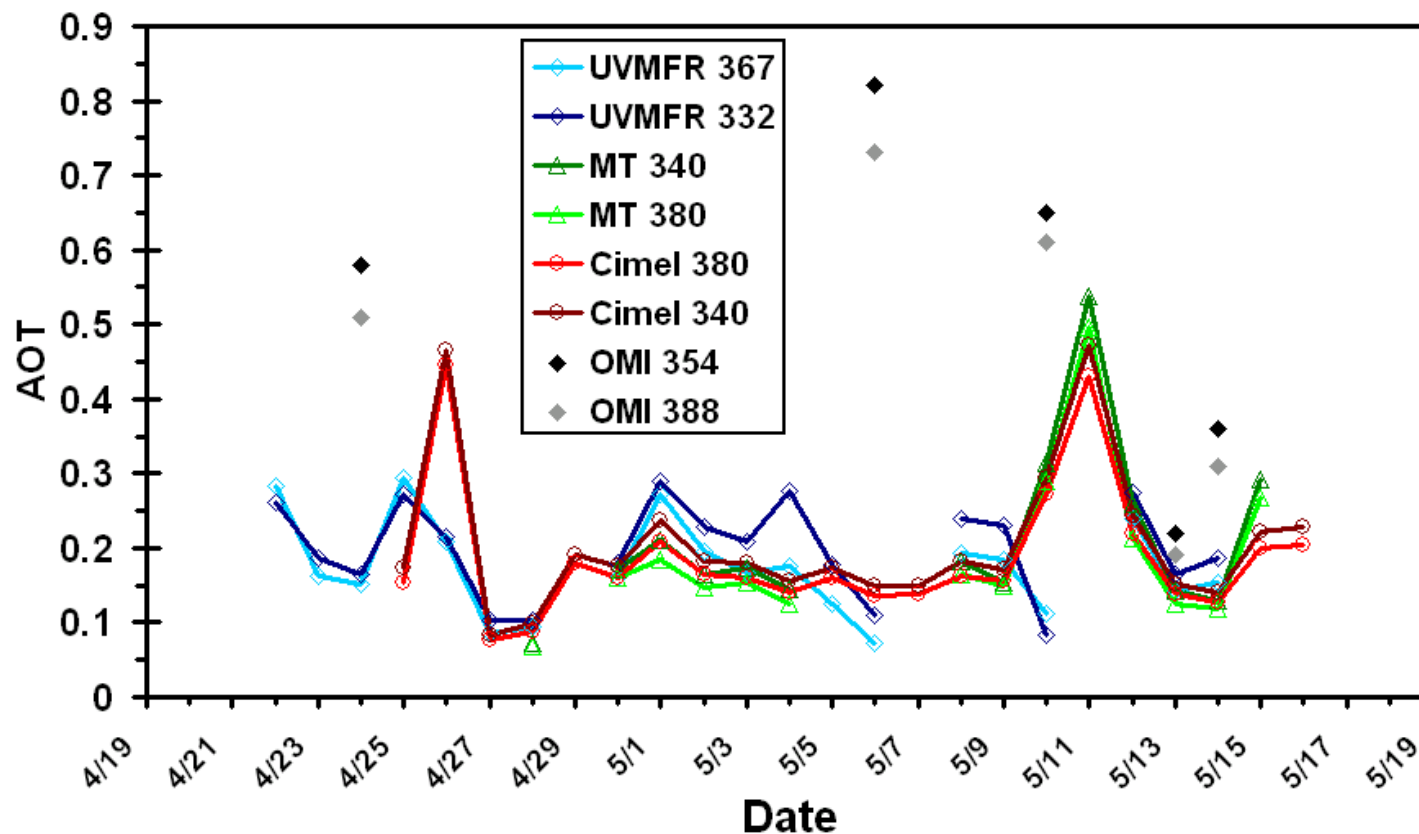
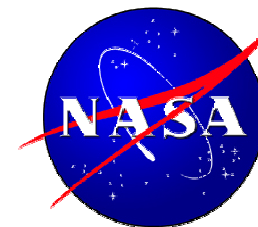
University Park, PA: June 9 - June 29, 2006

University Park, PA: August 24, 2006 - Present

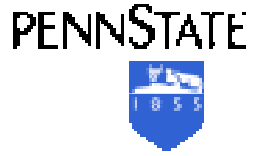
Richland NATIVE AOT



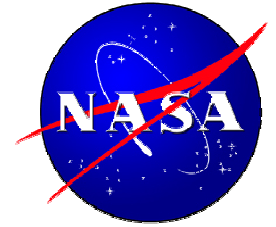
Richland NATIVE/OMI AOT Comparison



- Spatial averaging resulted in cloud contamination
- Work with OMI team to optimize data



Beltsville WAVES 2006



Water Vapor Validation Experiment - Satellite/Sondes
July 7 - August 10, 2006

<http://ecotronics.com/lidar-misc/WAVES.htm>

Aura Validation, Instrument Intercomparison, IONS 06
phase III at the Howard University Beltsville, MD campus

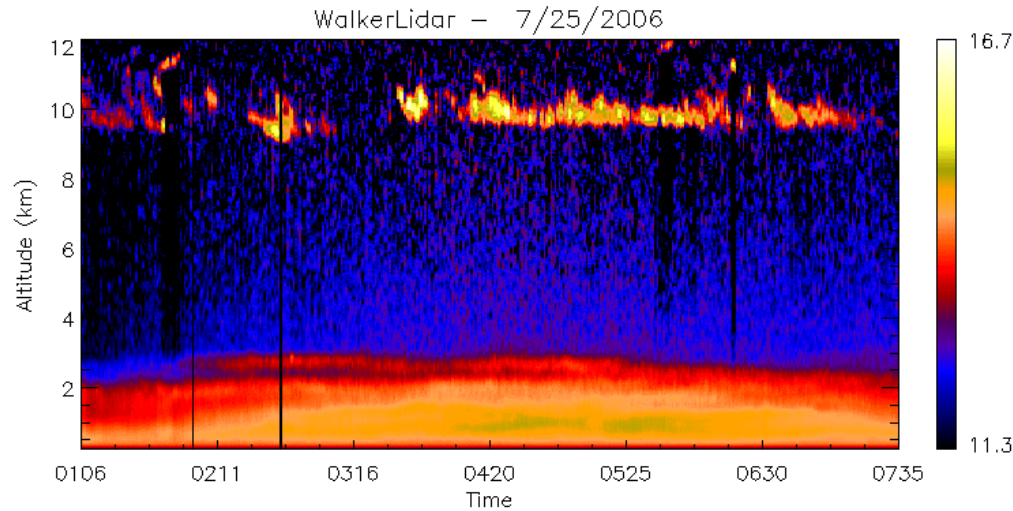
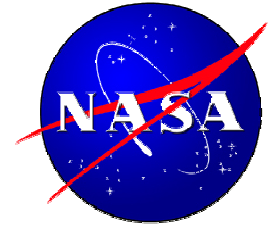
Participating Groups: NASA-GSFC/WFF, Howard U., UVA,
PSU, UMBC, NWS, NCAR, CU-Boulder

WAVES data, IONS images available:

<http://avdc.gsfc.nasa.gov/Data/WAVES/>

<http://croc.gsfc.nasa.gov/intexb/ions06.html>

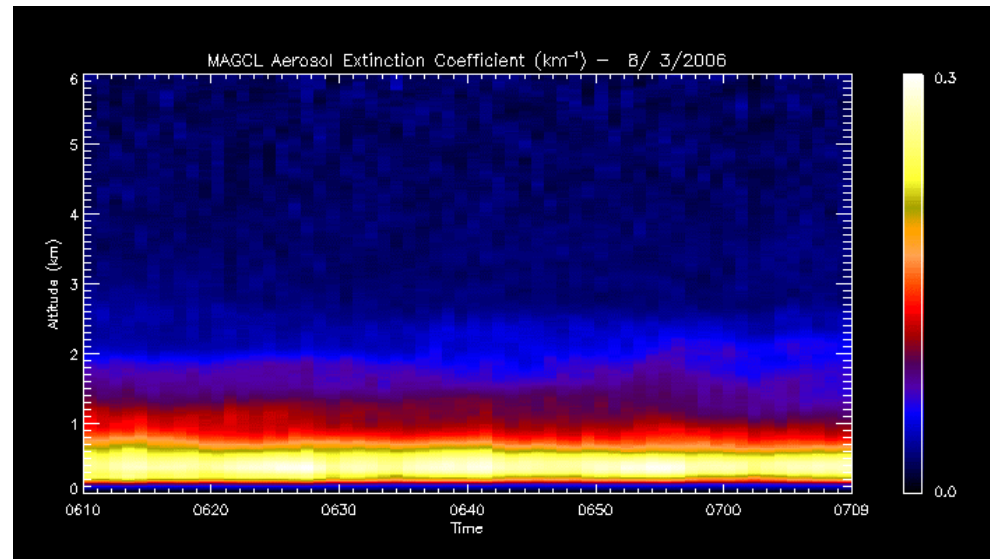
WAVES NATIVE Lidar



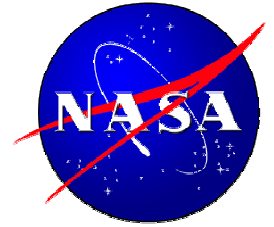
532 nm lidar operated nearly continuously during WAVES

Observed clouds and aerosols throughout the troposphere

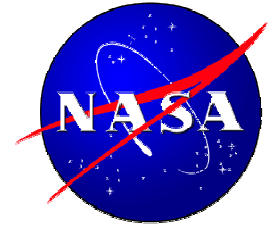
Data are being calibrated using co-located cimel and radiosonde launches during WAVES



Summary of Initial Results



- Rapidly processing NATIVE aerosol optical property data from multiple campaigns
- WAVES NATIVE/satellite comparisons are in progress - stay tuned for AGU
- **Proof of Concept** - NATIVE single platform provided multiple measurements (ground-based in-situ and remote sensing) for intercomparison/validation purposes at WAVES - prototype deployment for TC4



Acknowledgements

- *Jim Mather and everyone else at PNNL/Battelle
- *NASA EOS Aura Validation and TCP (INTEX-B)
- *Howard University
- *Belay Demoz, Everette Joseph, Dustan Karschner, Robert Long, Kelly Lynn Ross, David Stucker, Demetrius Venable, Joshua Walker, Dave Whiteman, John Yorks

Visit us at:

<http://www.meteo.psu.edu/~btaubman/Webpage/native.html>

<http://croc.gsfc.nasa.gov/intexb/ions06.html>

Data Availability:

<http://www-air.larc.nasa.gov/missions/intex-b/intexb.html>

<http://avdc.gsfc.nasa.gov/Data/WAVES/>