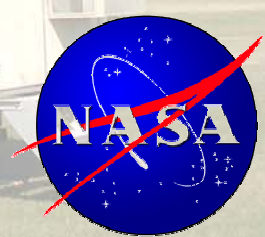
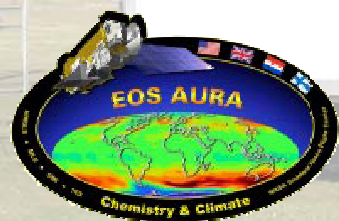
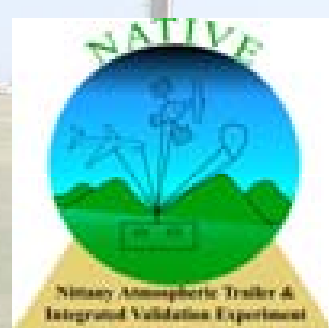
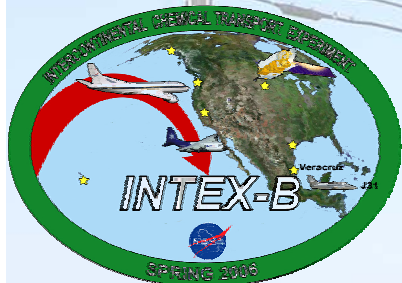


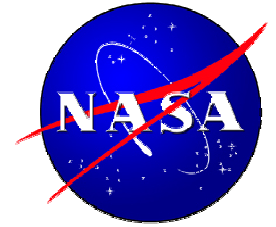
# NATIVE (Nittany Atmospheric Trailer and Integrated Validation Experiment) Remotely Sensed Aerosol Optical Properties: Examples from INTEX-B and WAVES 2006

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

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



# NATIVE



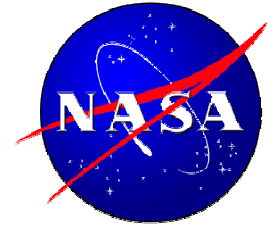
Nittany Atmospheric Trailer and  
Integrated Validation Experiment  
([www.meteo.psu.edu/~btaubman/Webpage/native.html](http://www.meteo.psu.edu/~btaubman/Webpage/native.html)):

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, NOy Analyzer  
En-Sci ECC Ozonesonde Ground Station

## Meteorological Instruments (10 m tower):

T, RH, P, WS, and WD

## Remote Sensing Instruments:

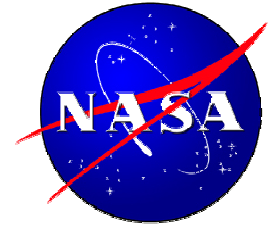
MICROTOPS II O3 Monitor - Sunphotometer  
(305, 312, 320, 340, 380 nm)

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

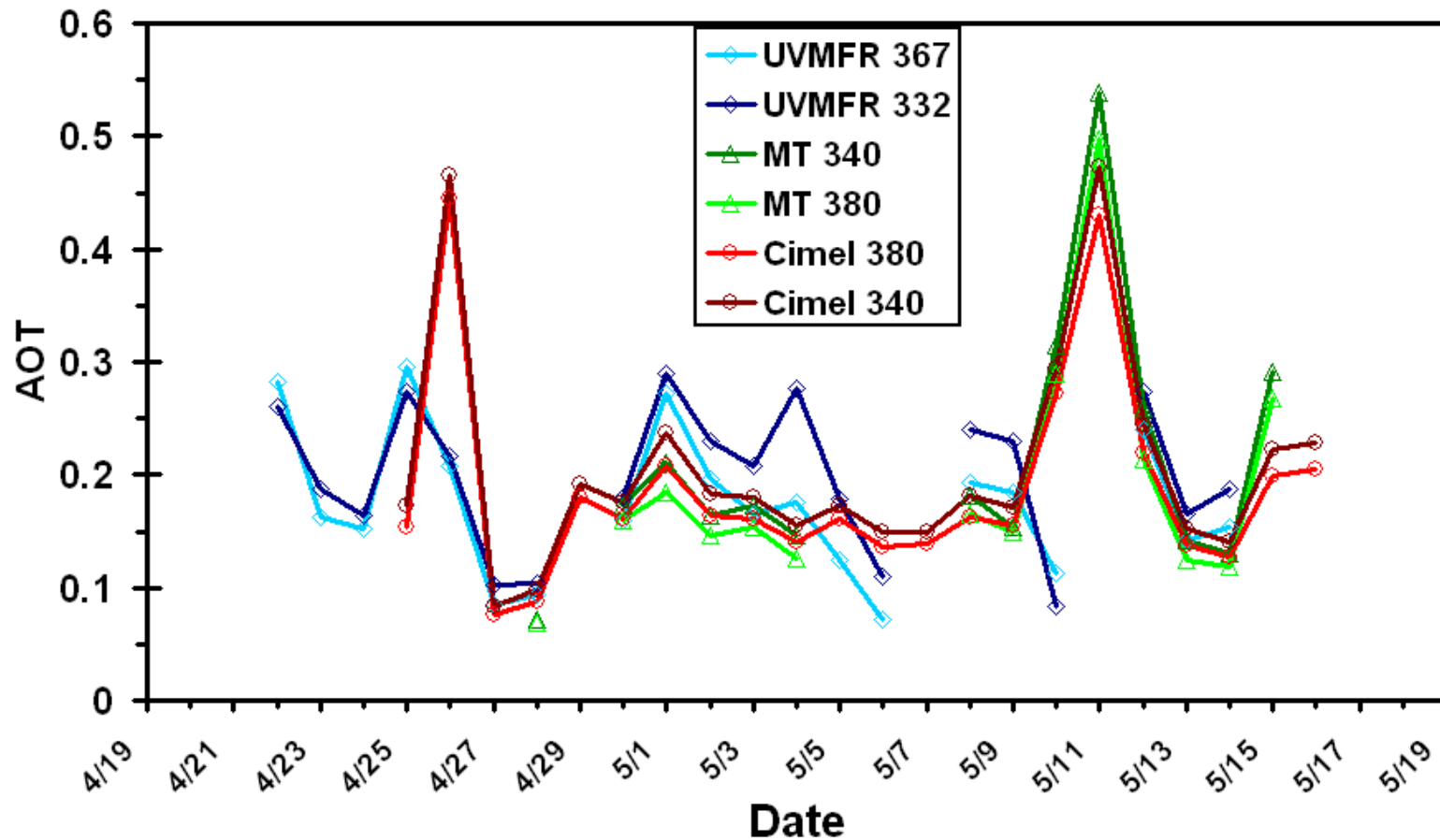
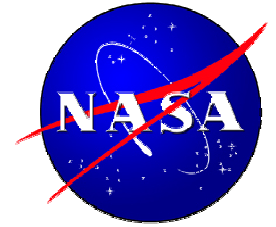
Beltsville, MD: July 7 - August 3, 2006

## Home

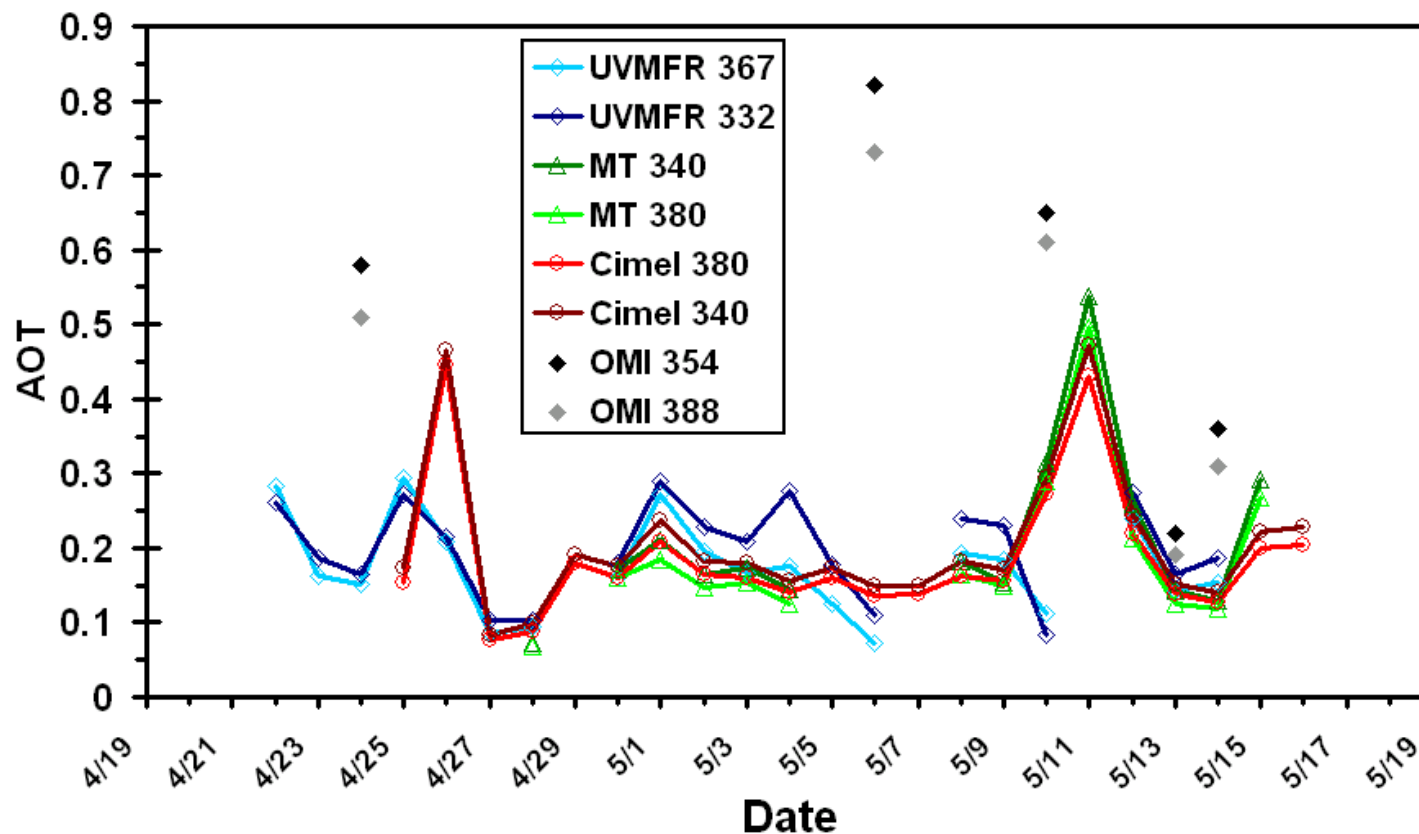
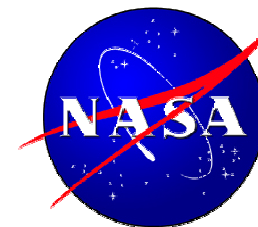
University Park, PA: June 9 - June 29, 2006

University Park, PA: August 24, 2006 - Present

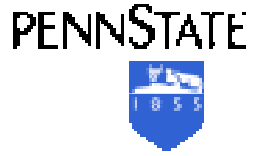
# Richland NATIVE AOT



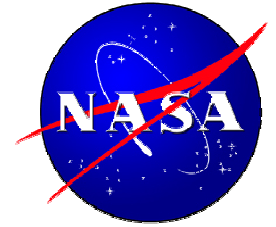
# Richland NATIVE/OMI AOT Comparison



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



# Beltsville WAVES 2006



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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

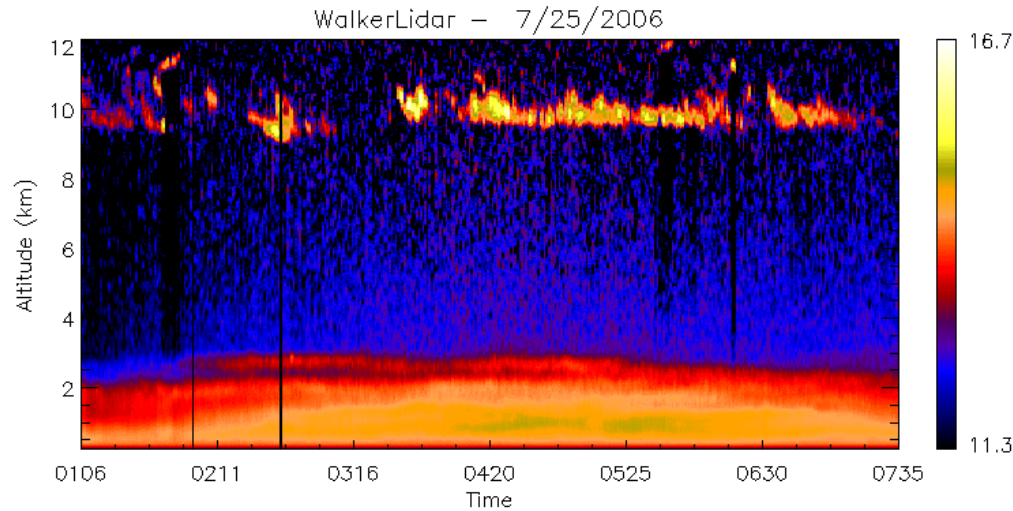
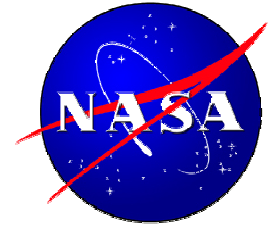
Participating Groups: NASA-GSFC/WFF, Howard U., UVA,  
PSU, UMBC, NWS, NCAR, CU-Boulder

WAVES data, IONS images available:

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

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

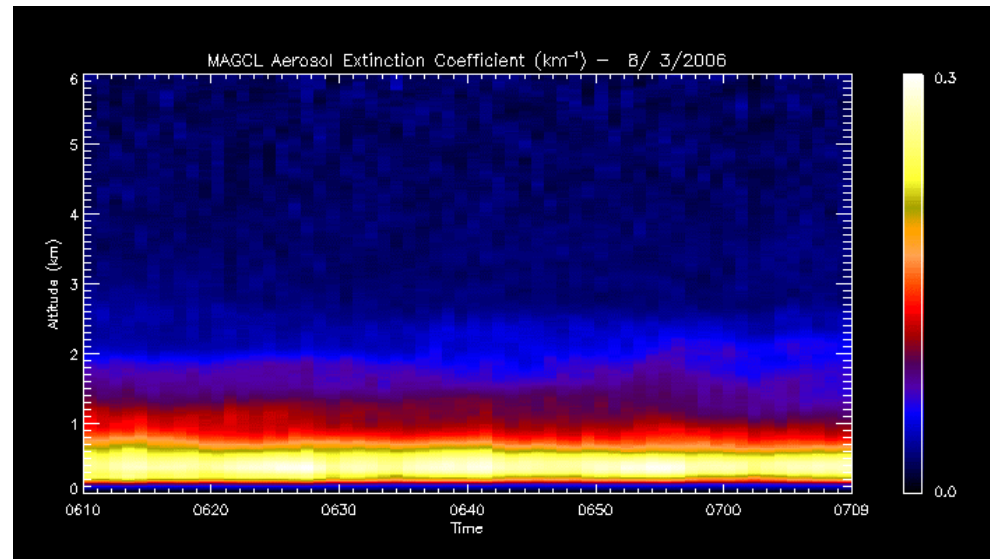
# WAVES NATIVE Lidar



532 nm lidar operated nearly continuously during WAVES

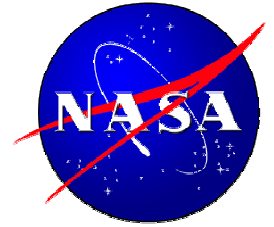
Observed clouds and aerosols throughout the troposphere

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

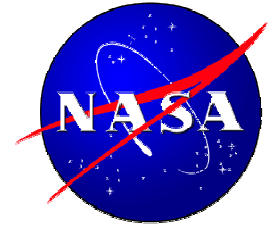




# Summary of Initial Results



- 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/>