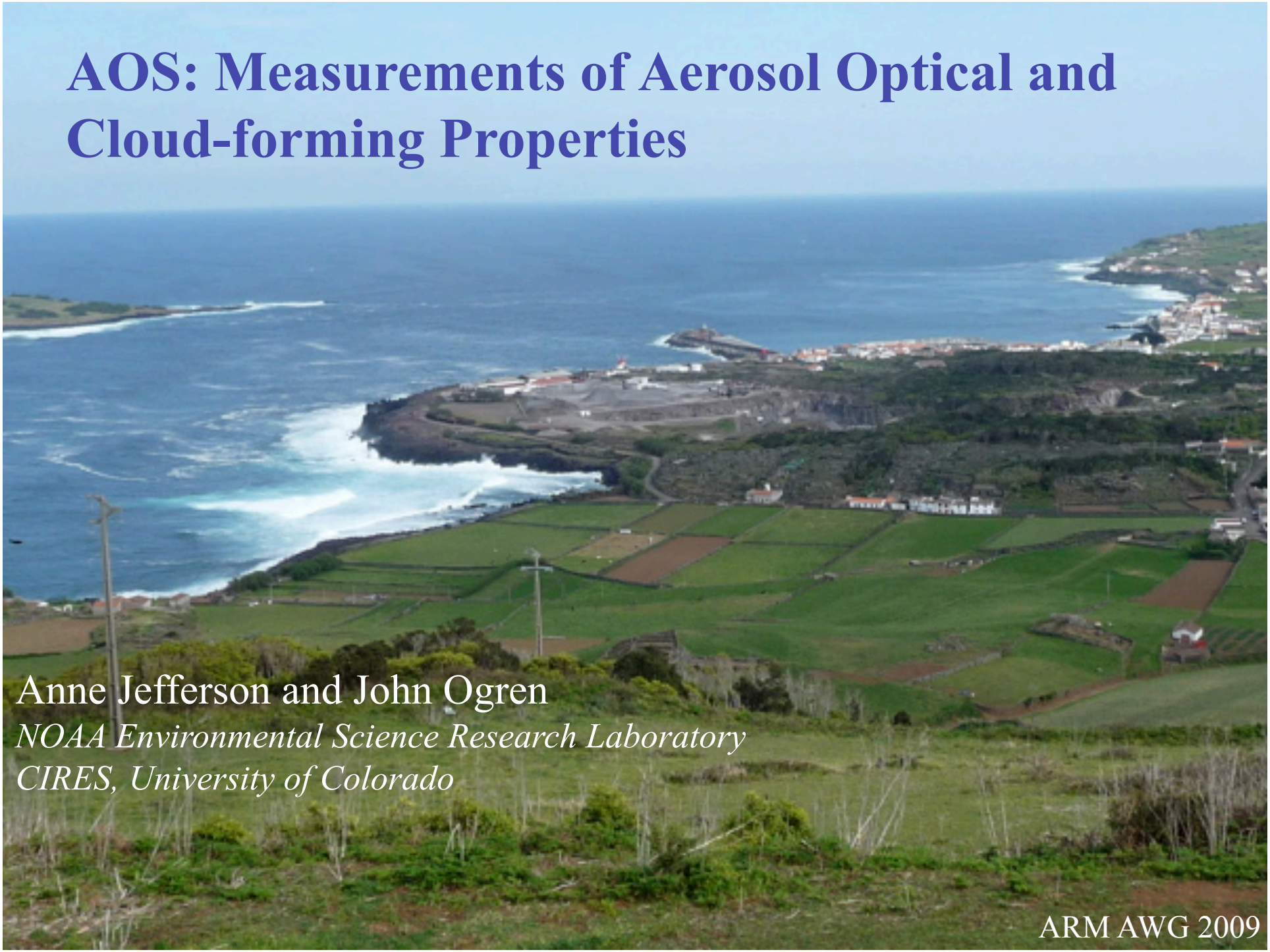
AOS: Measurements of Aerosol Optical and Cloud-forming Properties



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ARM AWG 2009

Aerosol Observing Systems

In-situ surface measurements of aerosol optical, chemical, size, hygroscopic and cloud-forming properties

- SGP
  - ARM central facility Lamont, OK
- AMF
  - Pt Reyes, CA 3/2005 - 9/2005
  - Niamey, Niger 12/2005-1/2007
  - Murg Valley, Germany 4/2007 -1/2008
  - Shouxian China 5/2008 - 12/2008
  - Graciosa Island, Azores 4/2009
- BRW/NSA
  - Barrow Alaska
- AMF2
- Darwin
- MAOS

BNL Stephen Springston and Art Sedlacek

Changes to the AOS systems

SGP

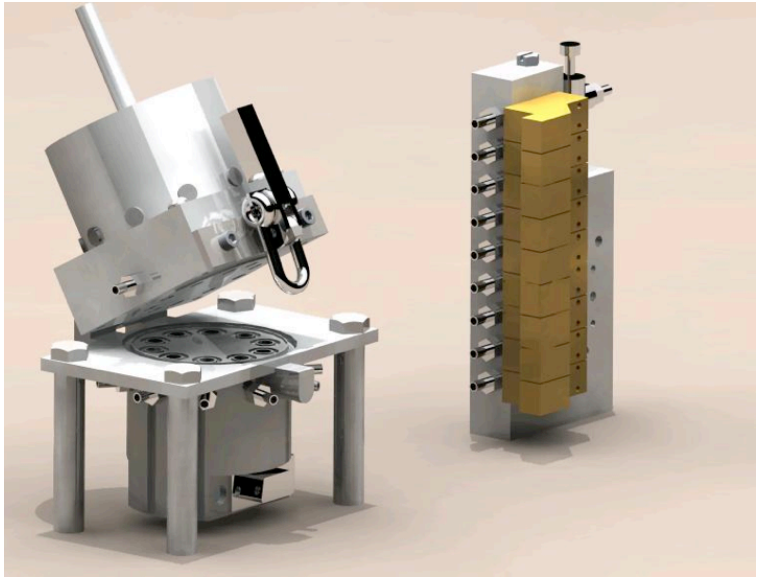
3λ PhotoAcoustic Absorption Photometer (PAAS)
Manvendra Dubey -LANL

NSA/BRW

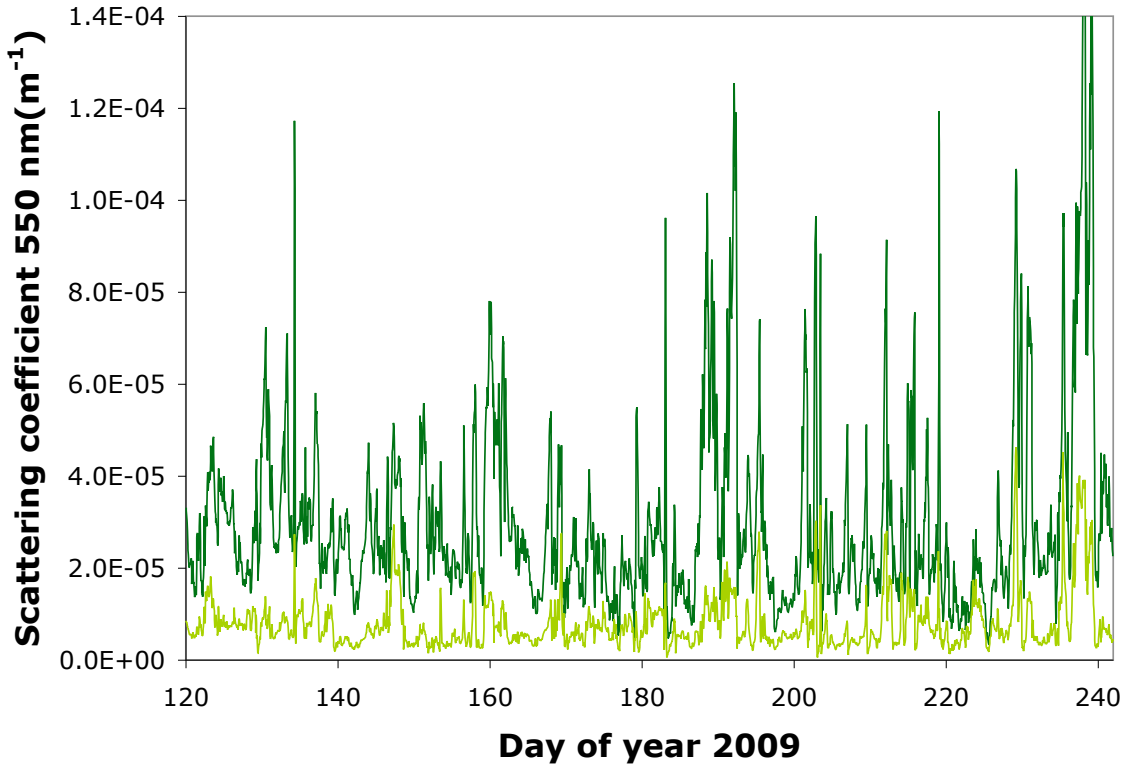
Aerosol OC composition- Lynn Russell UCSD
SMPS aerosol size distribution - NOAA/LITR
Reinstall humidified nephelometer fRH measurements

NOAA Multi-filter Light Absorption Instrument

Poster and demonstration
A New Miniature Multi-filter Continuous Light absorption Photometer, by **P. Sheridan**, J. Wendell, A. Jefferson, B. Andrews, and J. Ogren



AMF Graciosa, Azores May-August 2009



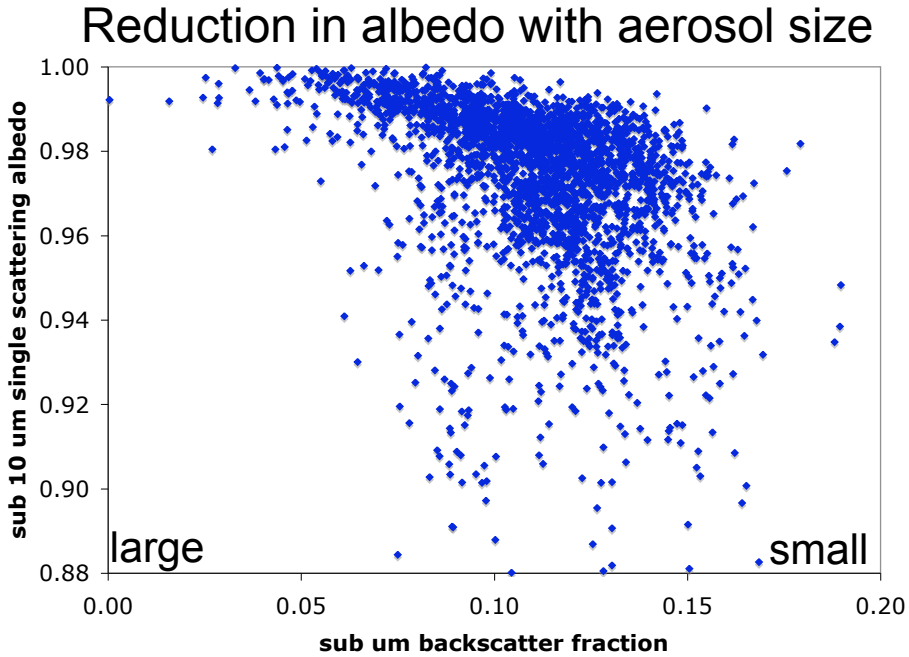
Sub 10 *um* and sub *um* scattering coefficients at 550 nm

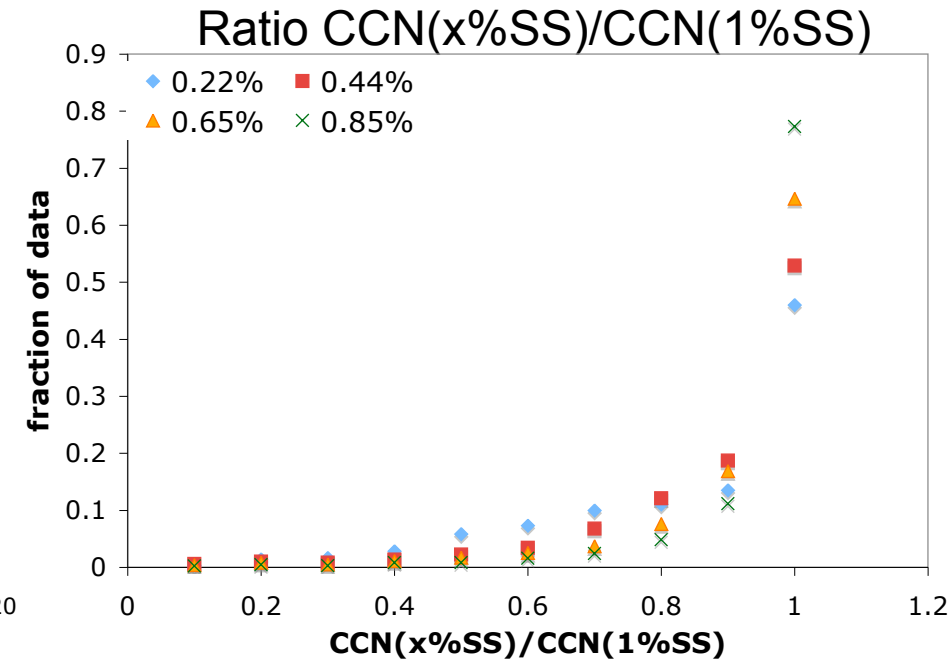
Average aerosol optical parameters

parameter	Ave (std)
Scattering Coeff (550nm)	30 (21)
Single scatter albedo (550 nm)	0.97 (0.02)
Angstrom (550/700)	-0.14 (0.39)
fRH (550 nm)	2.75 (0.60)
Sub *um* scattering fraction	0.28 (0.13)

- Most of the scattering is from super micron size aerosol
- Low Angstrom, high fRH and high single scatter albedo suggest sea salt is the dominant aerosol

Role of sub *um aerosol on aerosol and cloud properties at Graciosa*





The AMF is located at the local airport in Graciosa
Local pollution has a minor influence on the aerosol and cloud properties
The sub 10 um scattering albedo declines with decrease in particle size
The pollution particles seem to have a minor influence on the rate of CCN growth with %SS as 46% of the data have 100% of particles activated at 0.2% SS