



LaRC Aerosol Lidar: Two-Wavelength, Polarization-Sensitive Lidar for Observations of Aerosols and Clouds

(Piggy-back on AROTAL)

PI: Chris Hostetler

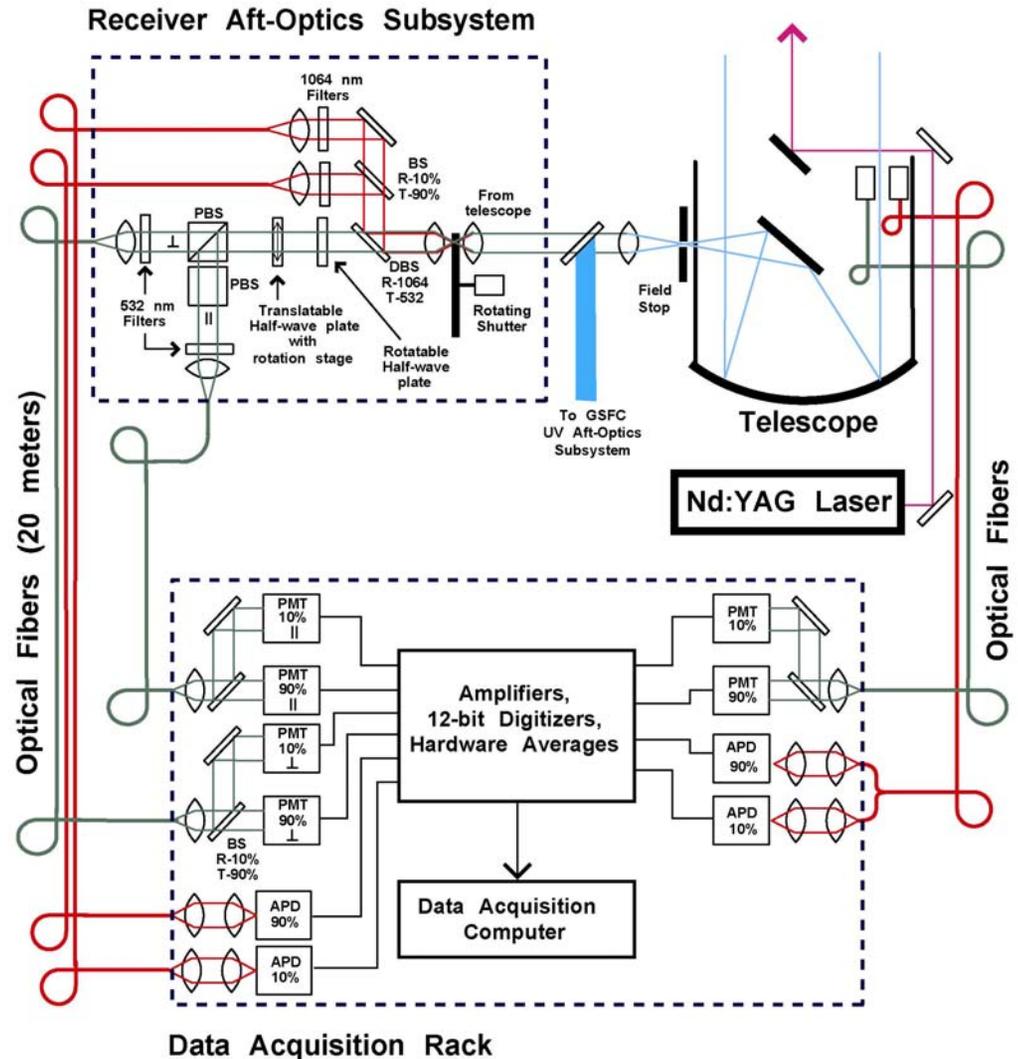
CoI: Tom McGee

CoI: John Burris

Instrument and Data Products



- Use AROTAL laser and telescope
- Acquire
 - 1064 nm backscatter
 - 532 nm backscatter
 - 532 nm depolarization
- Archival Products
 - Scattering ratios
 - Backscatter cross-sections
 - Depolarization Ratio

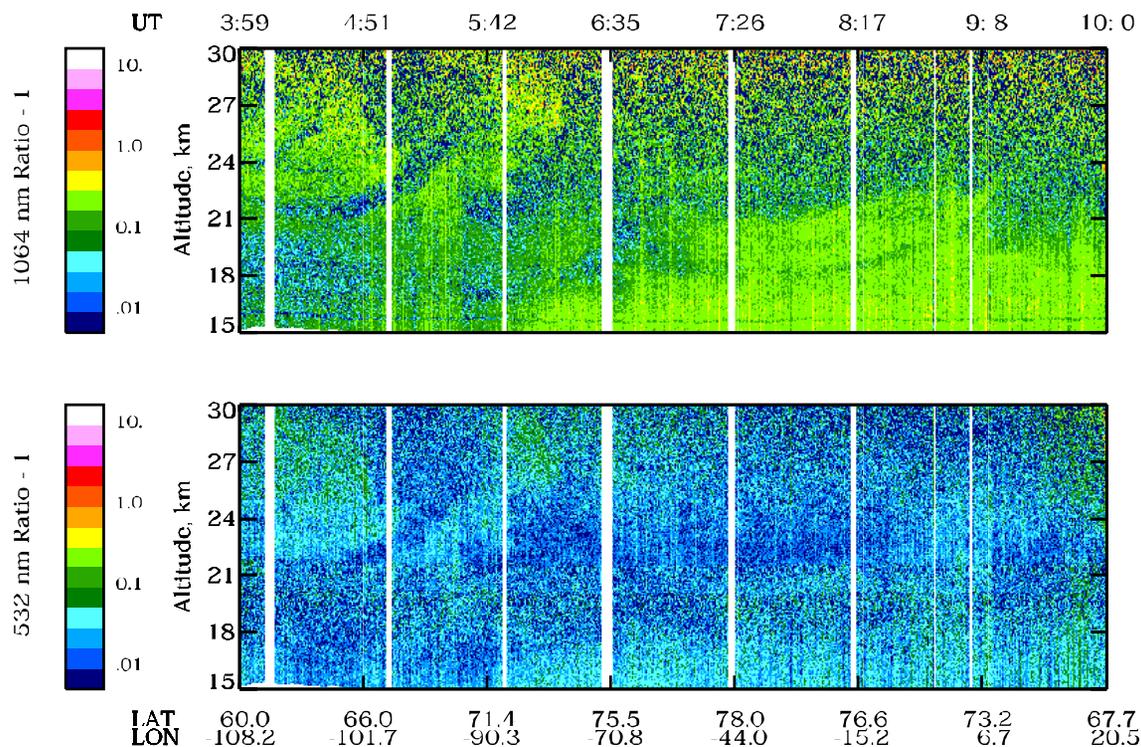
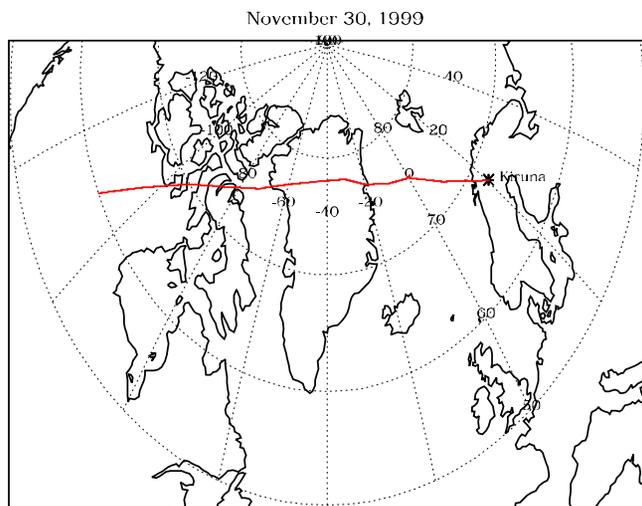


Objective: Validate SAGE III aerosol extinction



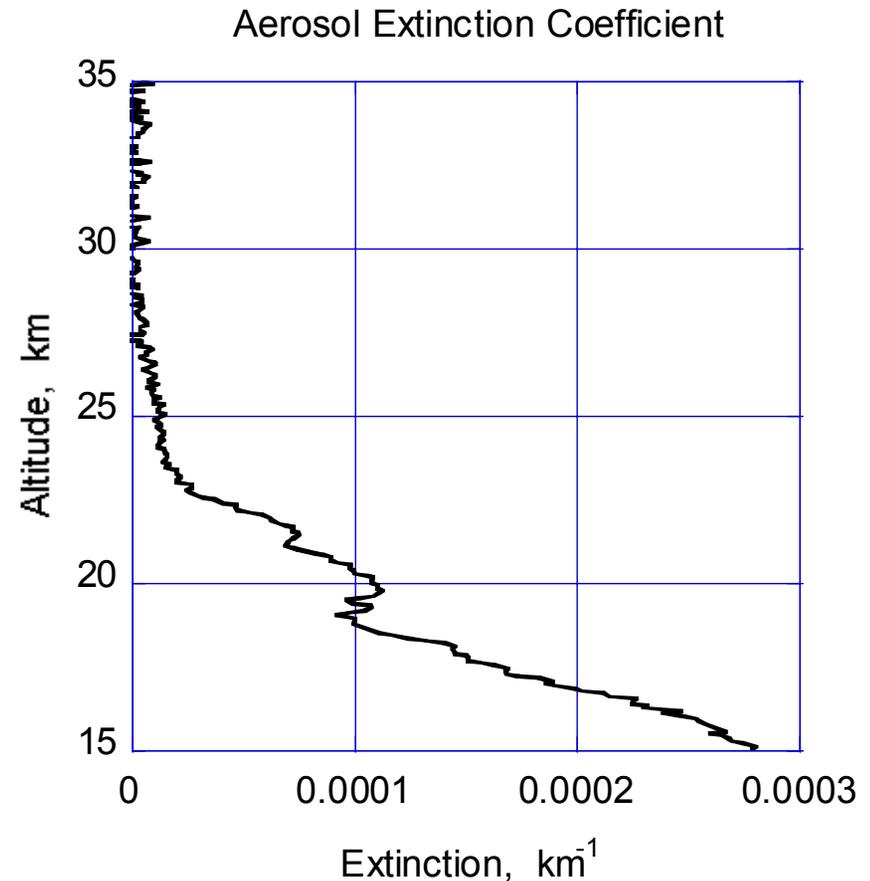
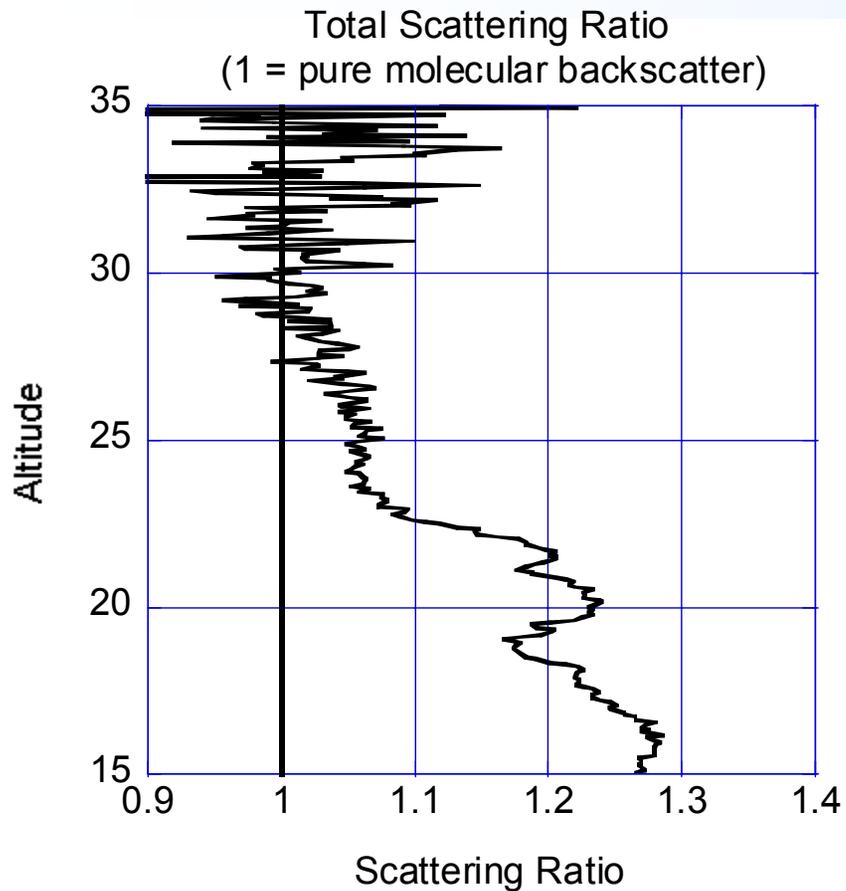
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November 30, 1999



1064 nm observations of background aerosol in SAGE III occultation volume used for validation comparison

Validation of SAGE III Extinction

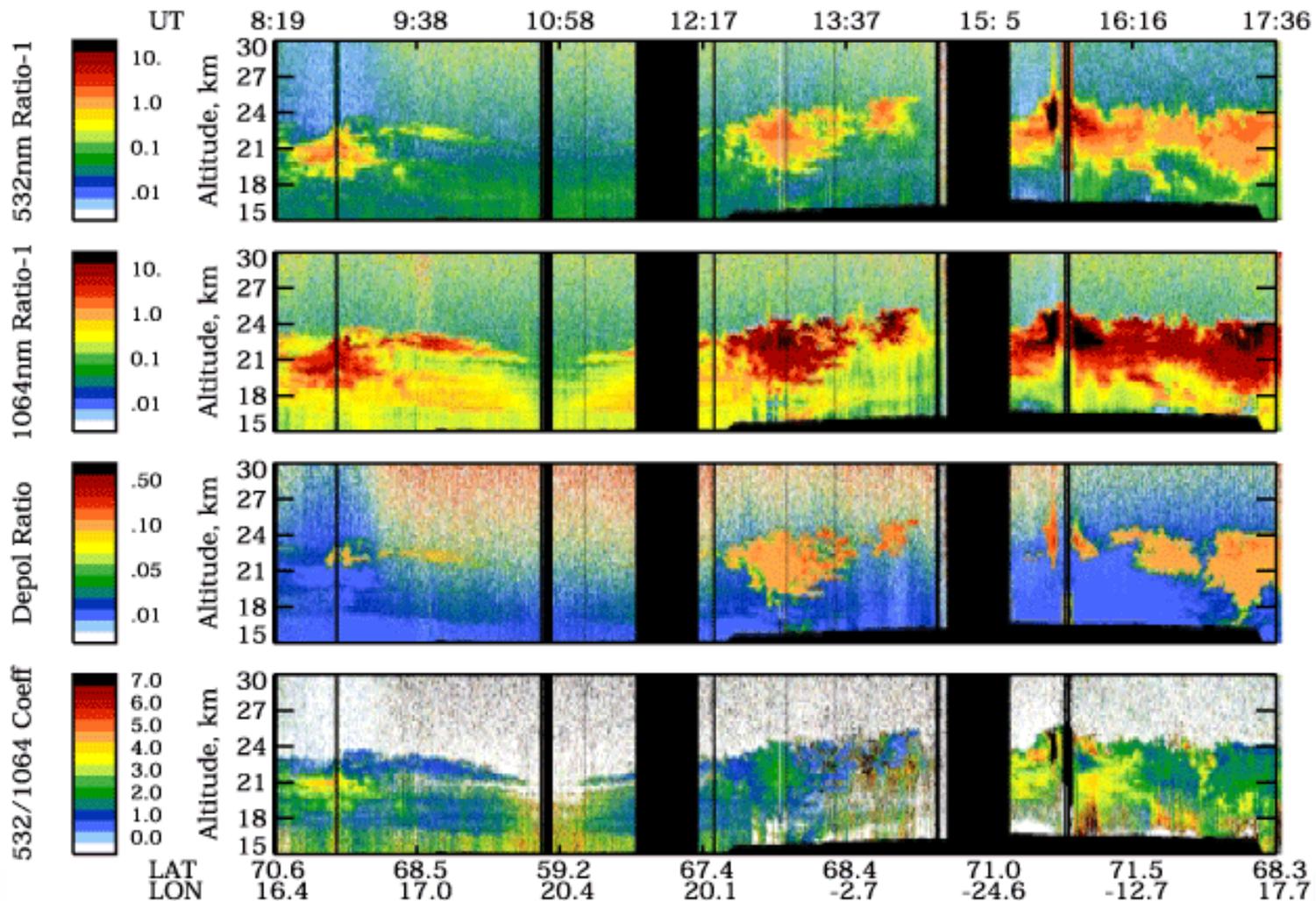


Profile of extinction will be retrieved from lidar backscatter profile assuming an appropriate extinction-to-backscatter ratio

Objective: PSC Observations



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Vertical and Horizontal Resolution



SOLVE-1 Resolutions	Vertical	Horizontal
Raw Resolution	15 m	~ 200 m
Archival Resolution	75 m	~ 2.5 km

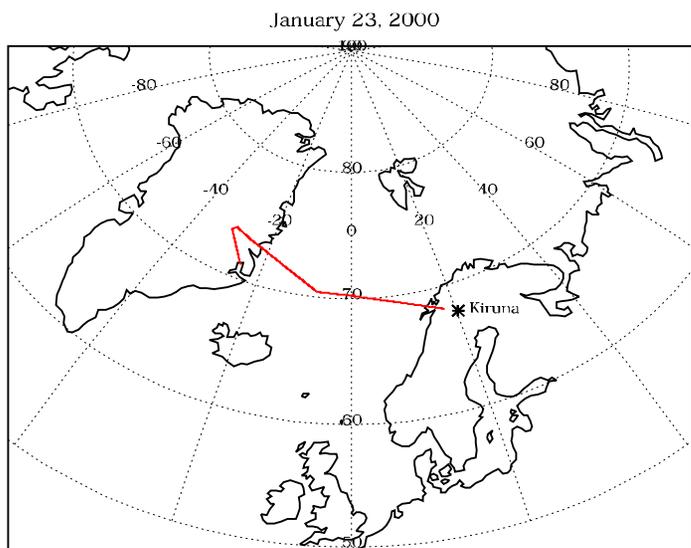
- New processing scheme will allow horizontal resolution without sacrificing accuracy
 - Need input on maximum resolution required for various applications, e.g.,
 - What resolution is required for mountain wave PSC studies?
-

PSC Observations

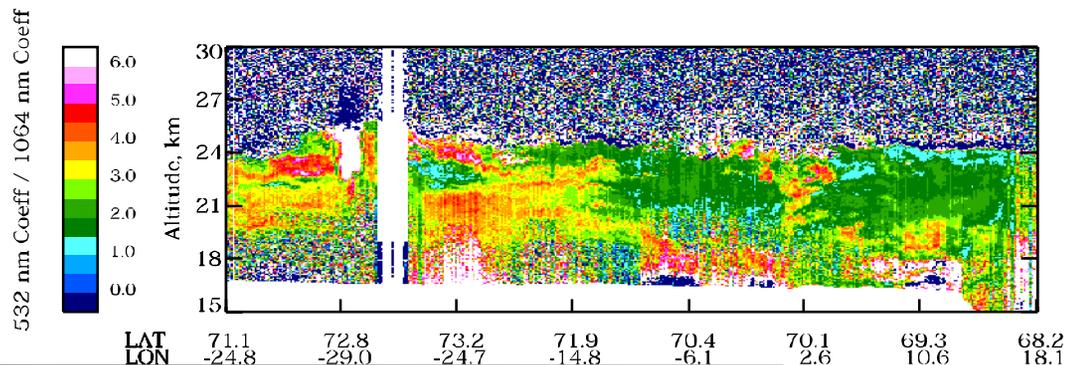
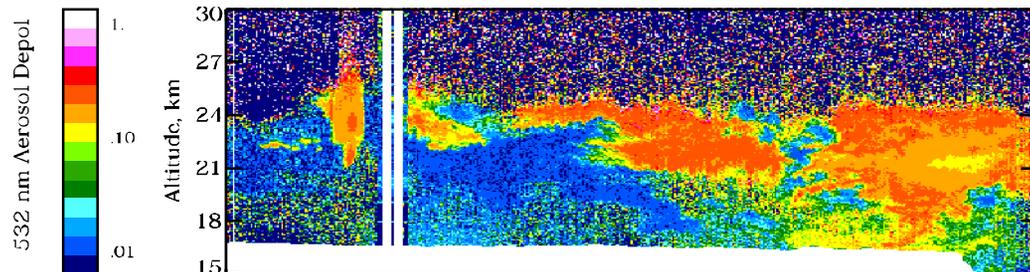
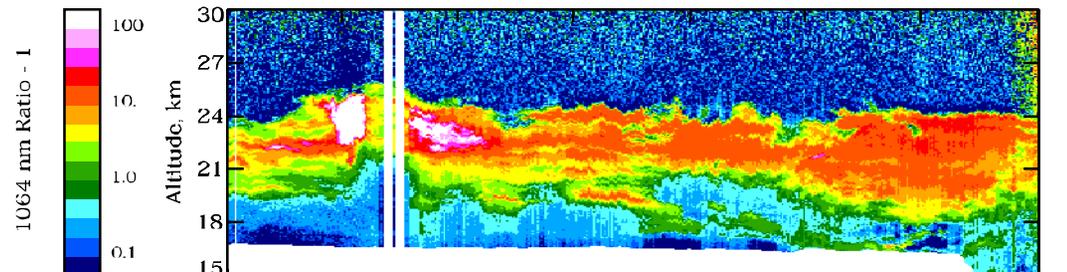


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January 23, 2000



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Objective: Validate SAGE III Aerosol Extinction Retrieval



- Background stratospheric aerosol is validation target
 - PSCs not a suitable target for extinction validation due to non-uniformity and sampling miss-match
- 1064 nm is the primary validation wavelength
 - Low loading makes accurate 532 nm aerosol measurement impractical – relative error becomes large as loading decreases
- Profile of extinction will be retrieved from lidar backscatter profile assuming an appropriate extinction-to-backscatter ratio

