

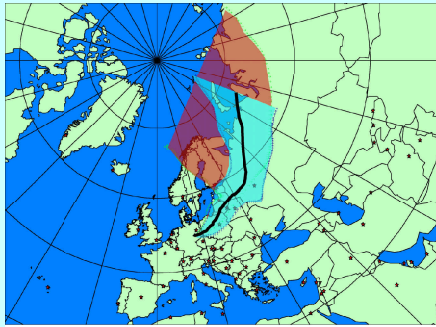
ARCTIC HAZE EVENT OVER CENTRAL EUROPE



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GOTTFRIED WILHELM LEIBNIZ

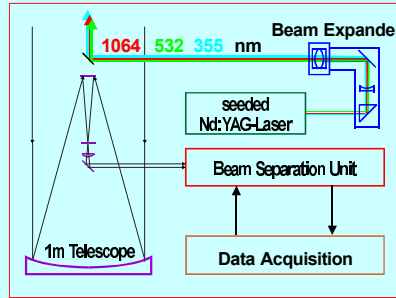
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Arctic Haze



Raman Lidar

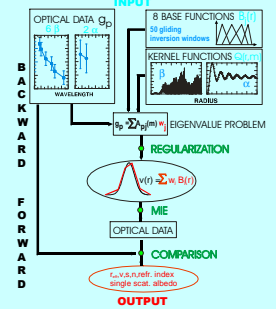
Dual-wavelength aerosol Raman lidar



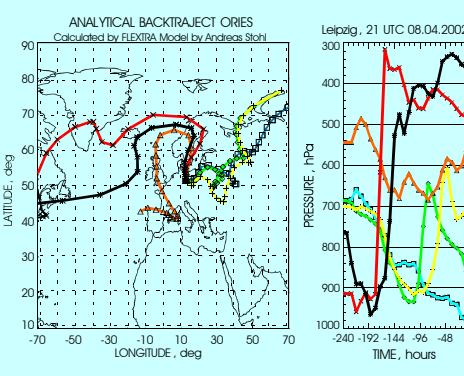
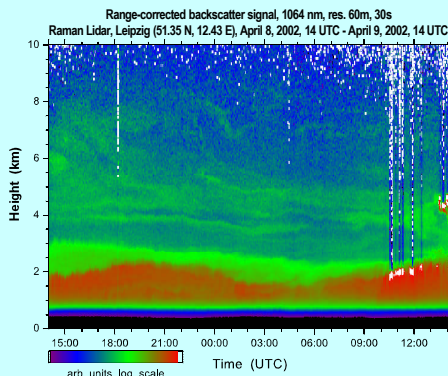
Backscatter	387	β_{aer}
	532 II	β_{aer}
	607	β_{aer}
Extinction	387	σ_{aer}
	607	σ_{aer}
Humidity	387	m_{H_2O}
	407	
Temperature	529.0	T_1
	530.3	T
	533.7	T_2
	535.0	

Inversion

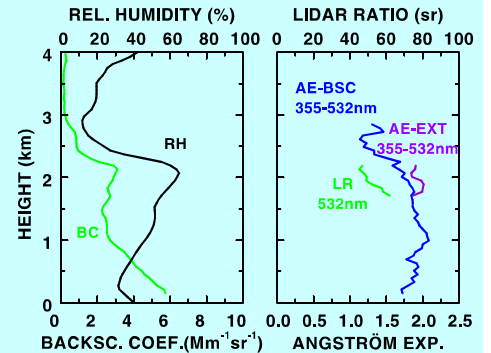
$$\alpha(\lambda), \beta(\lambda) = \int_0^{\infty} Q_{ext}(r, m, \lambda) v(r) dr$$



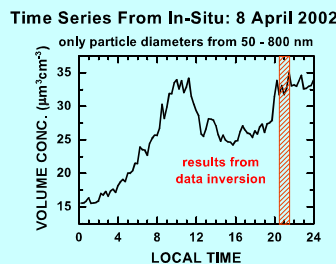
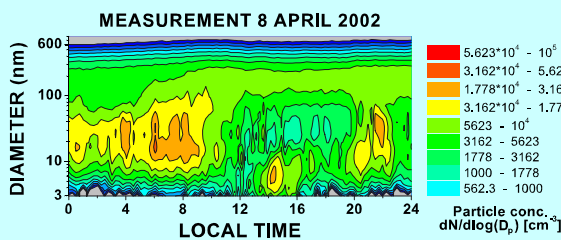
LIDAR Observations



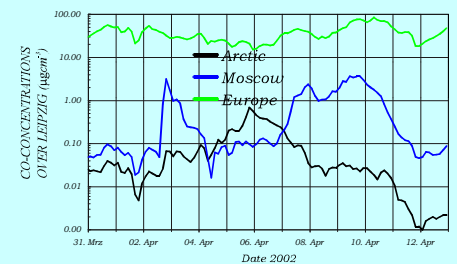
OD from Sun photometer:
0.44 at 532 nm



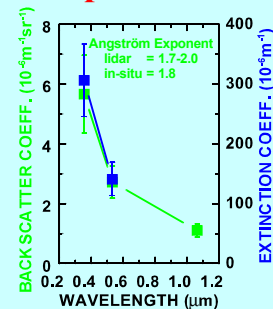
In-situ Surface Observations



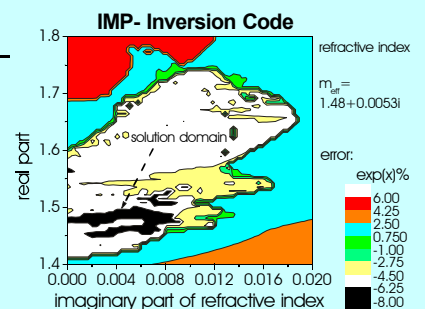
Model



Comparison: Inversion - In-situ



	Inversion(1800-2200m)		in-situ (25<radius<400nm)	
	min	max	1700-1900lt	2030-2130lt
r_{eff} (μm)	0.13 ± 0.06	0.07 ± 0.002	0.14 ± 0.04	0.14 ± 0.04
v ($\mu m^3 cm^{-3}$)	23 ± 8	42 ± 3	26 ± 4	33 ± 5
s ($\mu m^2 cm^{-3}$)	560 ± 120	1859 ± 175	550 ± 83	700 ± 105
n (cm^{-3})	---	---	4300 ± 430	6300 ± 630
real part	1.51 ± 0.13	1.48 ± 0.02		
imag. part	$0.004 \pm 0.004i$	$0.005 \pm 0.003i$		
single-scat.	0.97 ± 0.04	0.96 ± 0.02		
albedo (532nm)				



Summary

- advection of Arctic Haze during 1st half of April 2002
- LIDAR, Sun photometer, in-situ
- inversion codes: detailed microphysical particle characterization
- validation tests with in-situ data