WHAT CAN SUNPHOTOMETAY MEASURE?

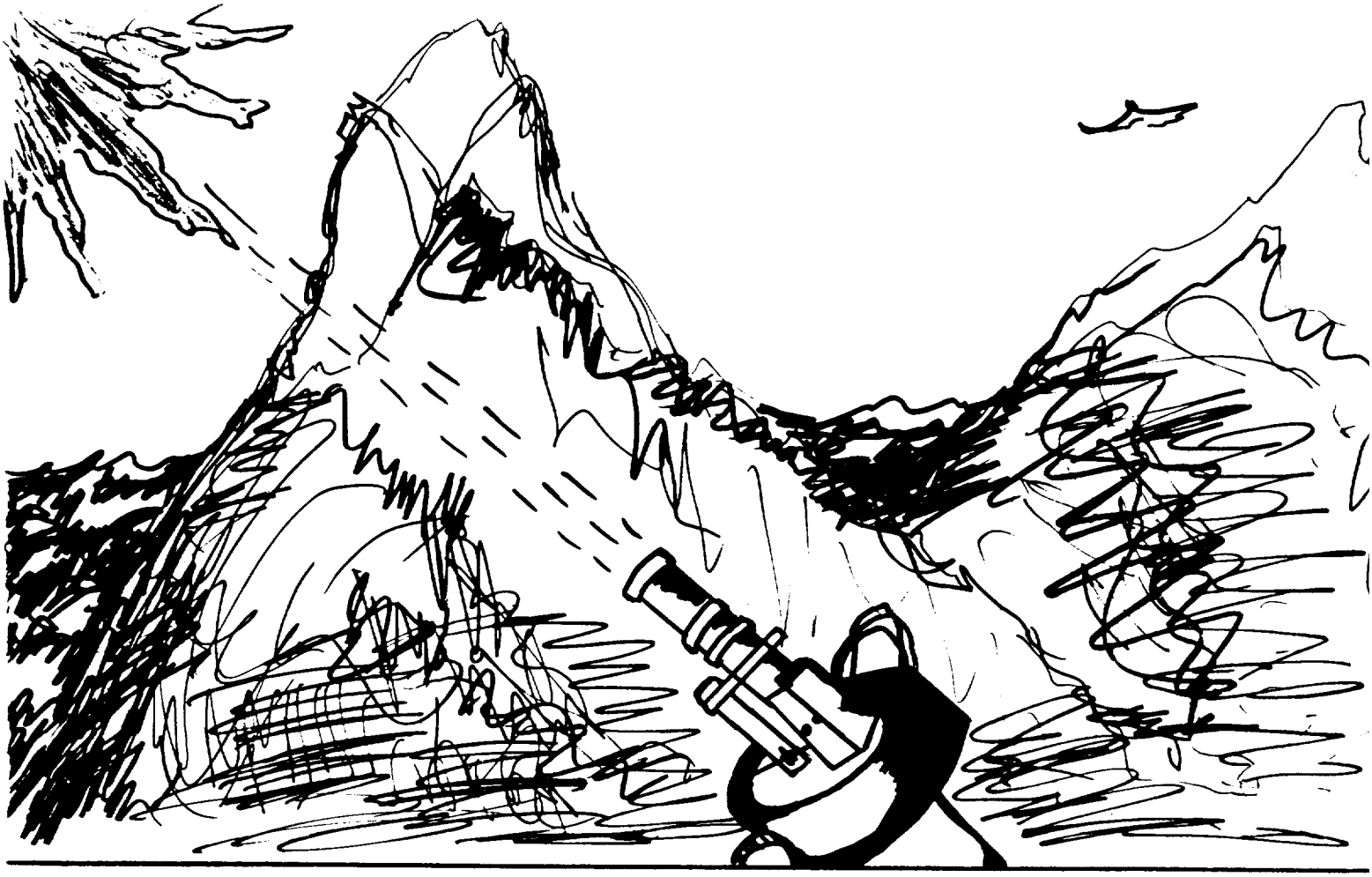
AEROSOLS

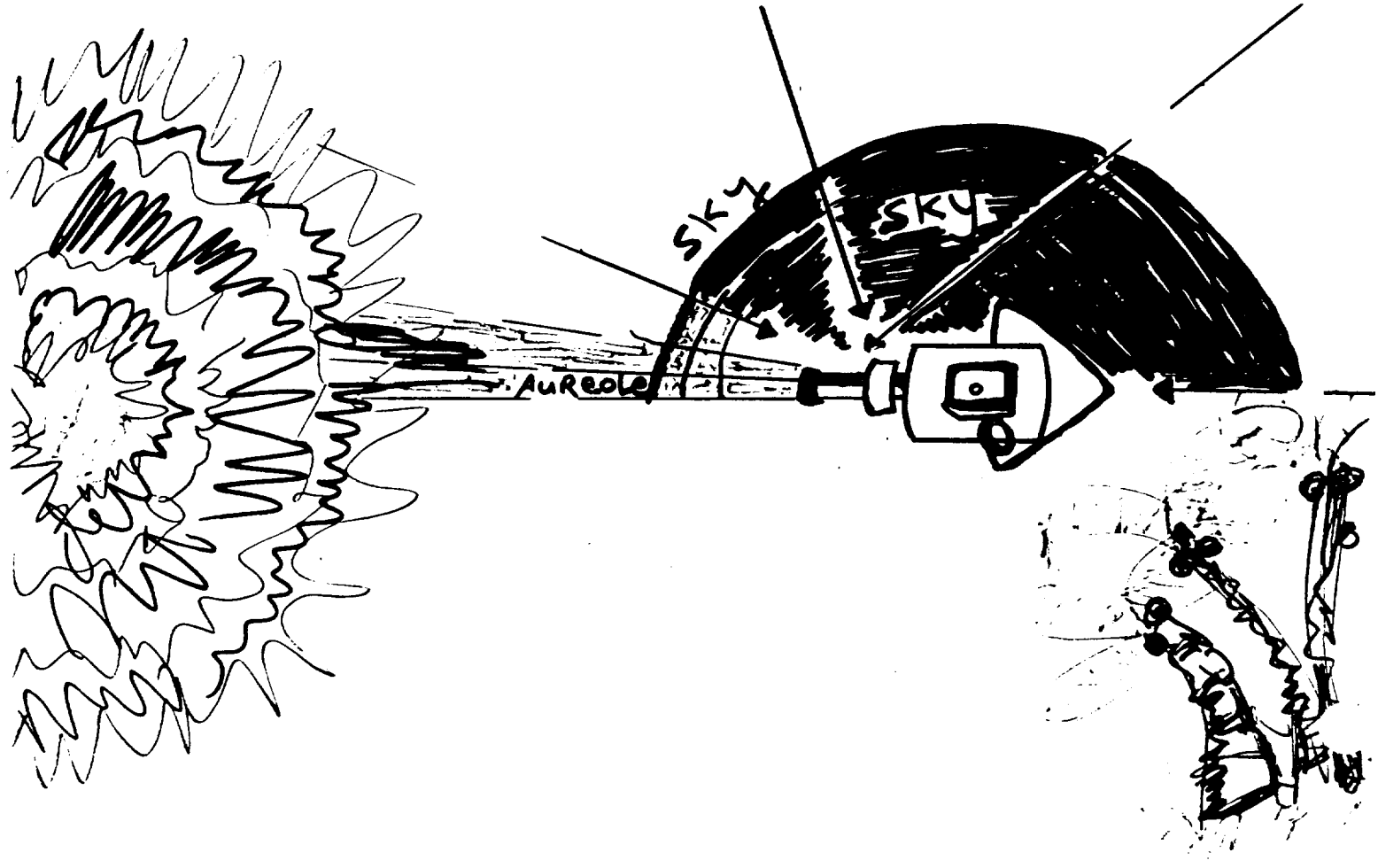
- OPTICAL THICKNESS
- SIZE DISTRIBUTION
- PHASE FUNCTION

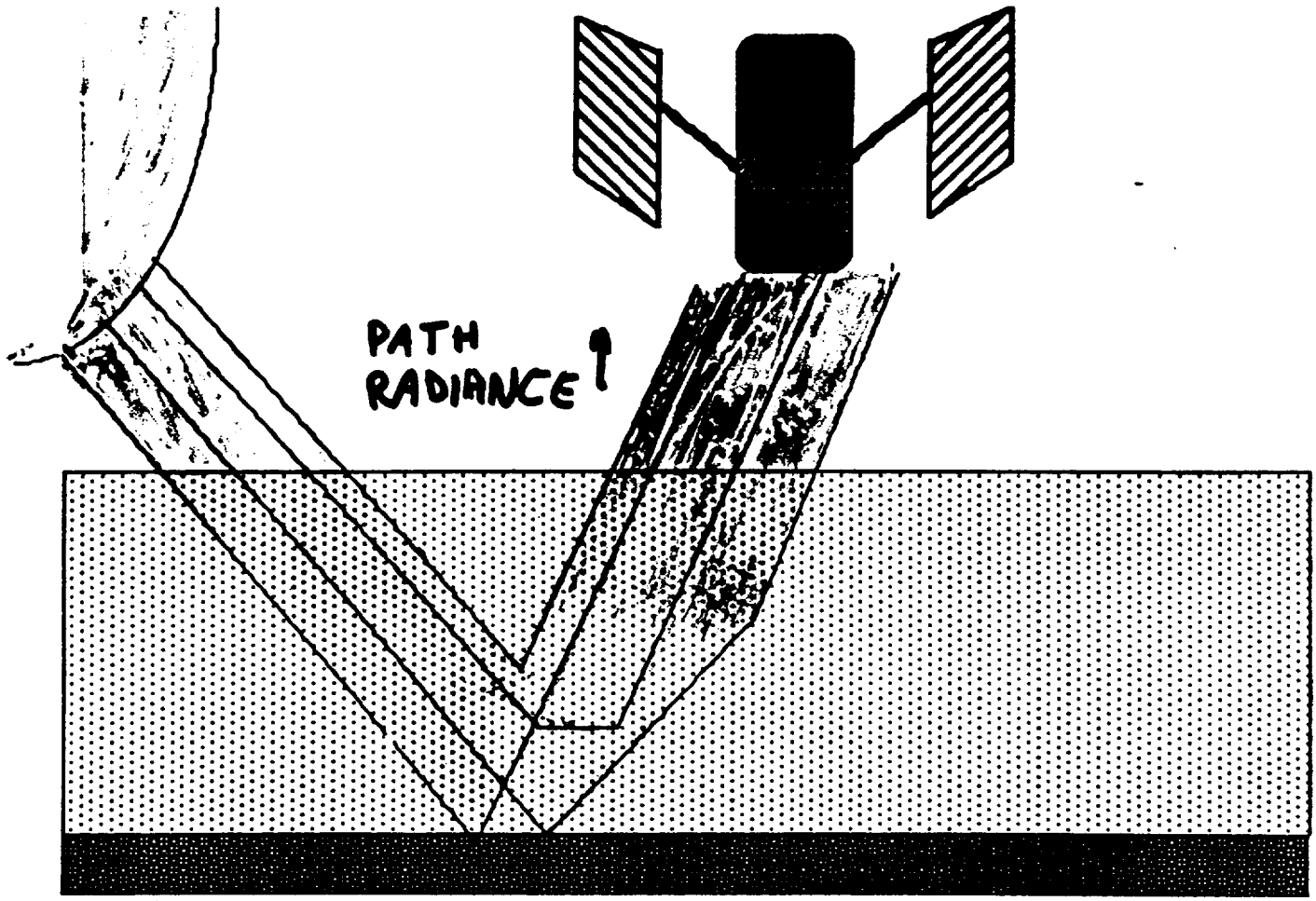
PRECIPITABLE WATER

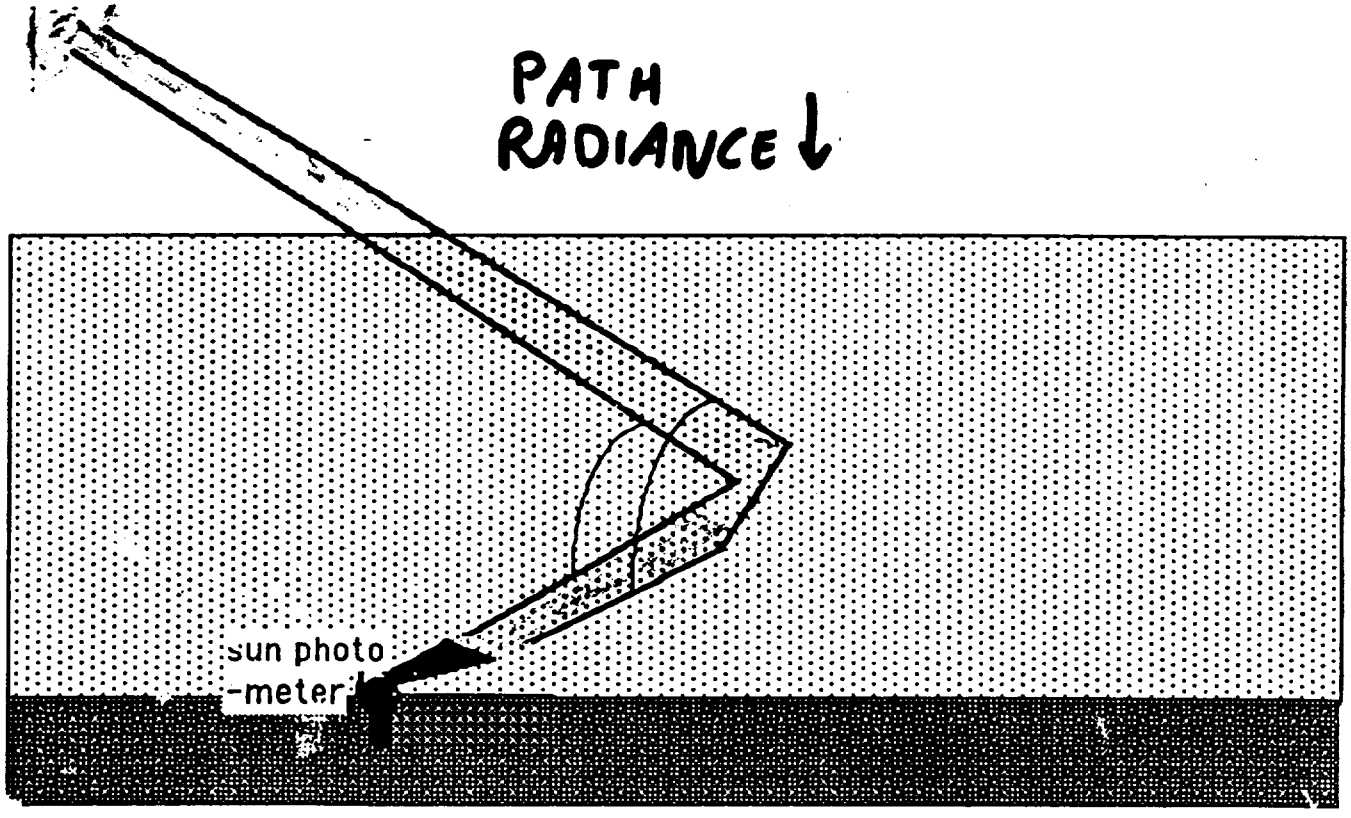
OZONE

SKY RADIANCE (L_o)




SKY
SKY
AUREOLE


PATH
RADIANCE ↑


PATH
RADIANCE ↓
sun photo
-meter

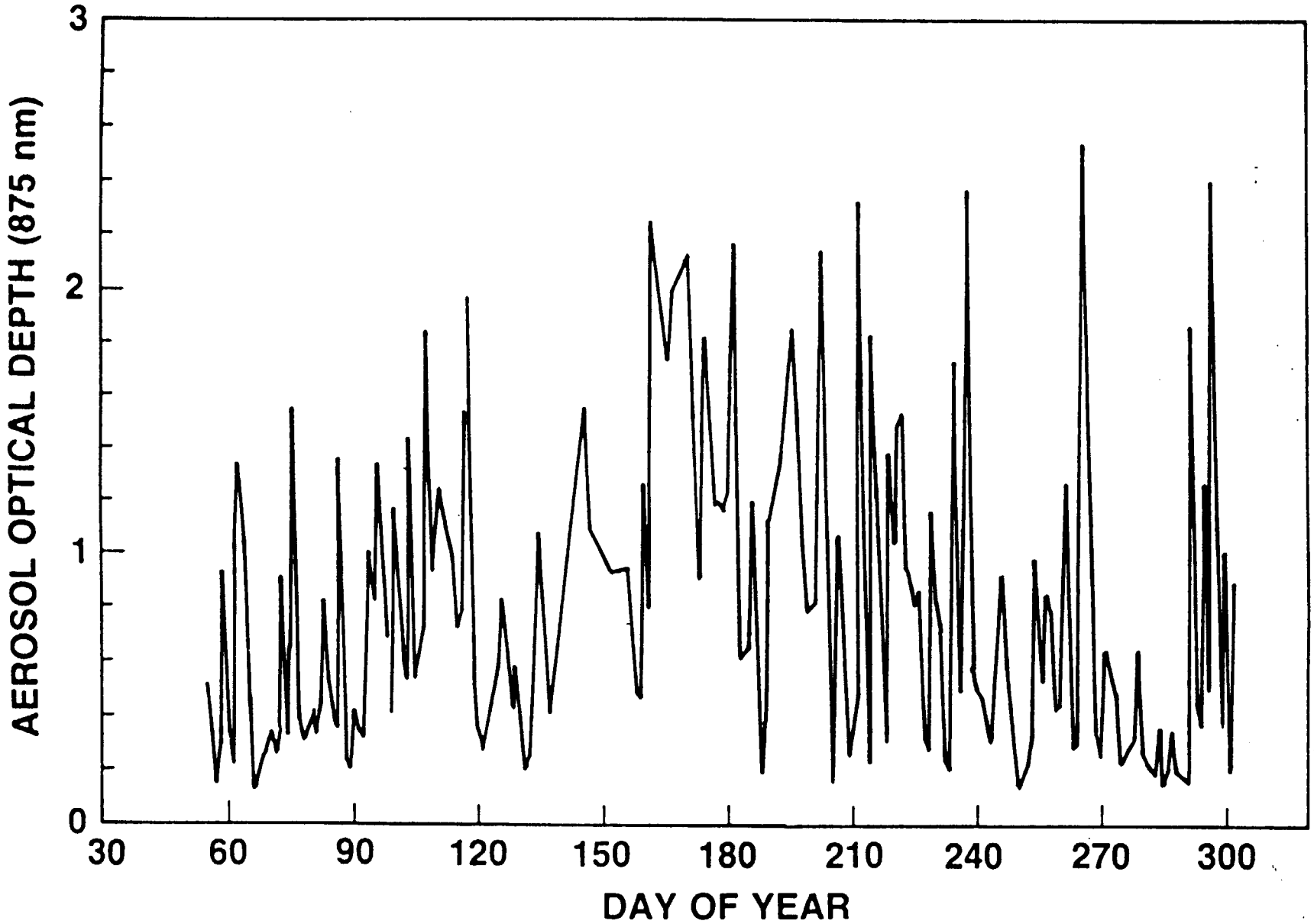
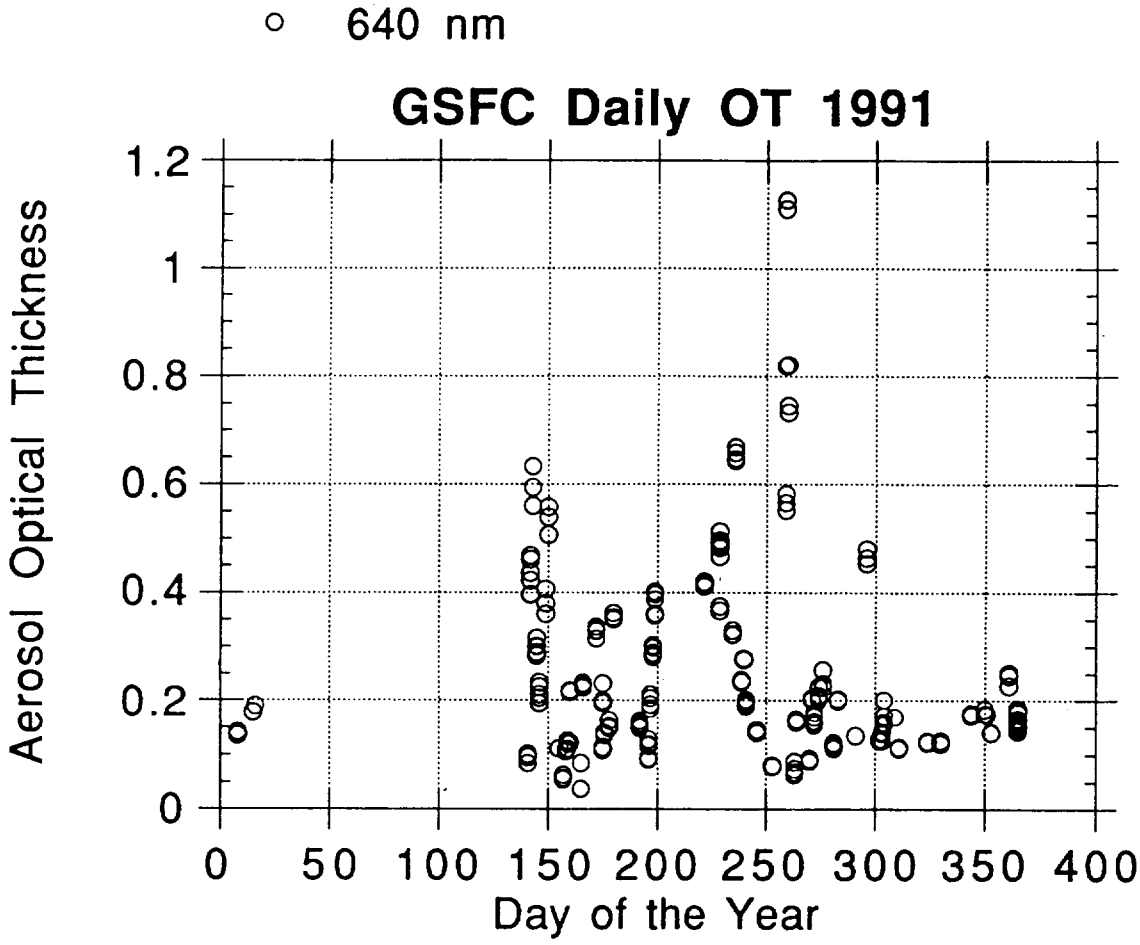
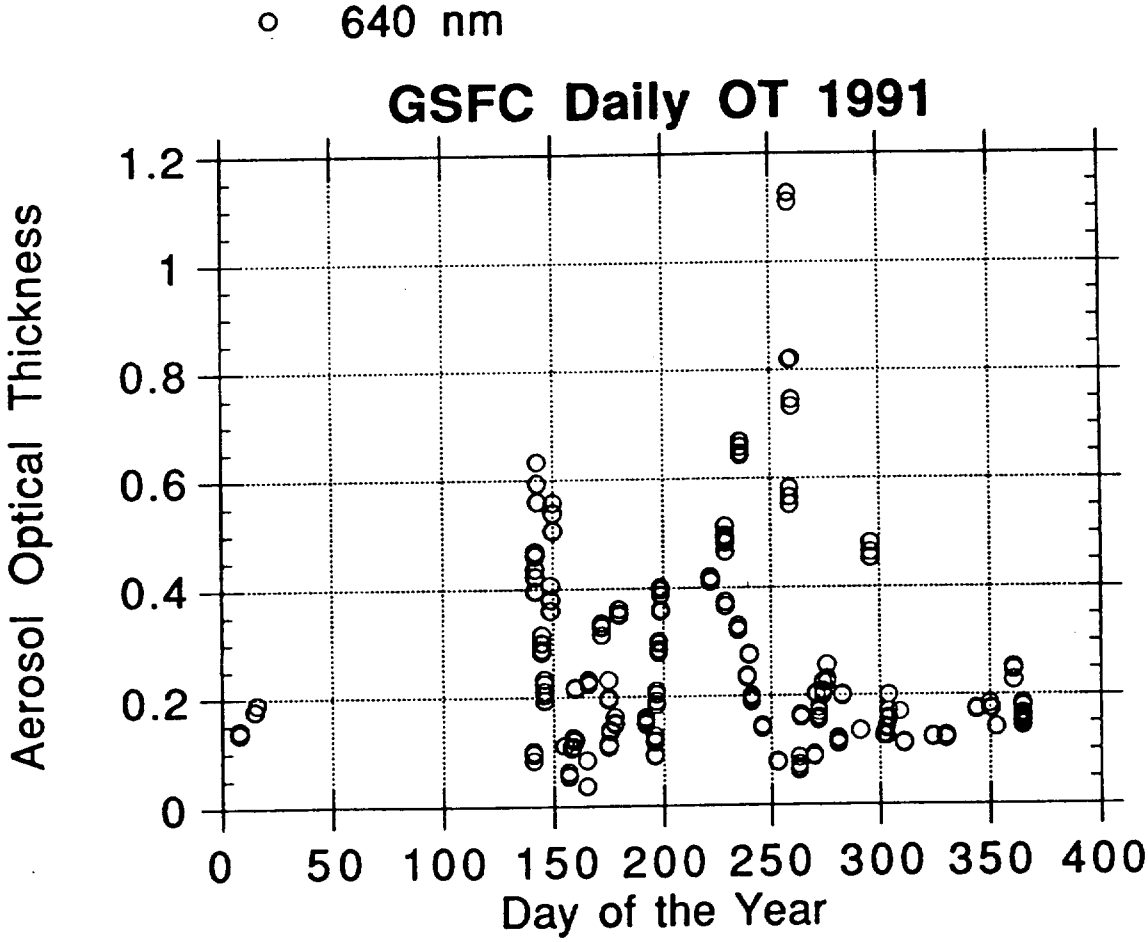


Figure 2. The daily variation of τ_a at 875 nm measured at Gao from March 1986 to October 1986.


640 nm
GSFC Daily OT 1991
Aerosol Optical Thickness
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
350
400
Day of the Year


640 nm
GSFC Daily OT 1991
Aerosol Optical Thickness
1.2
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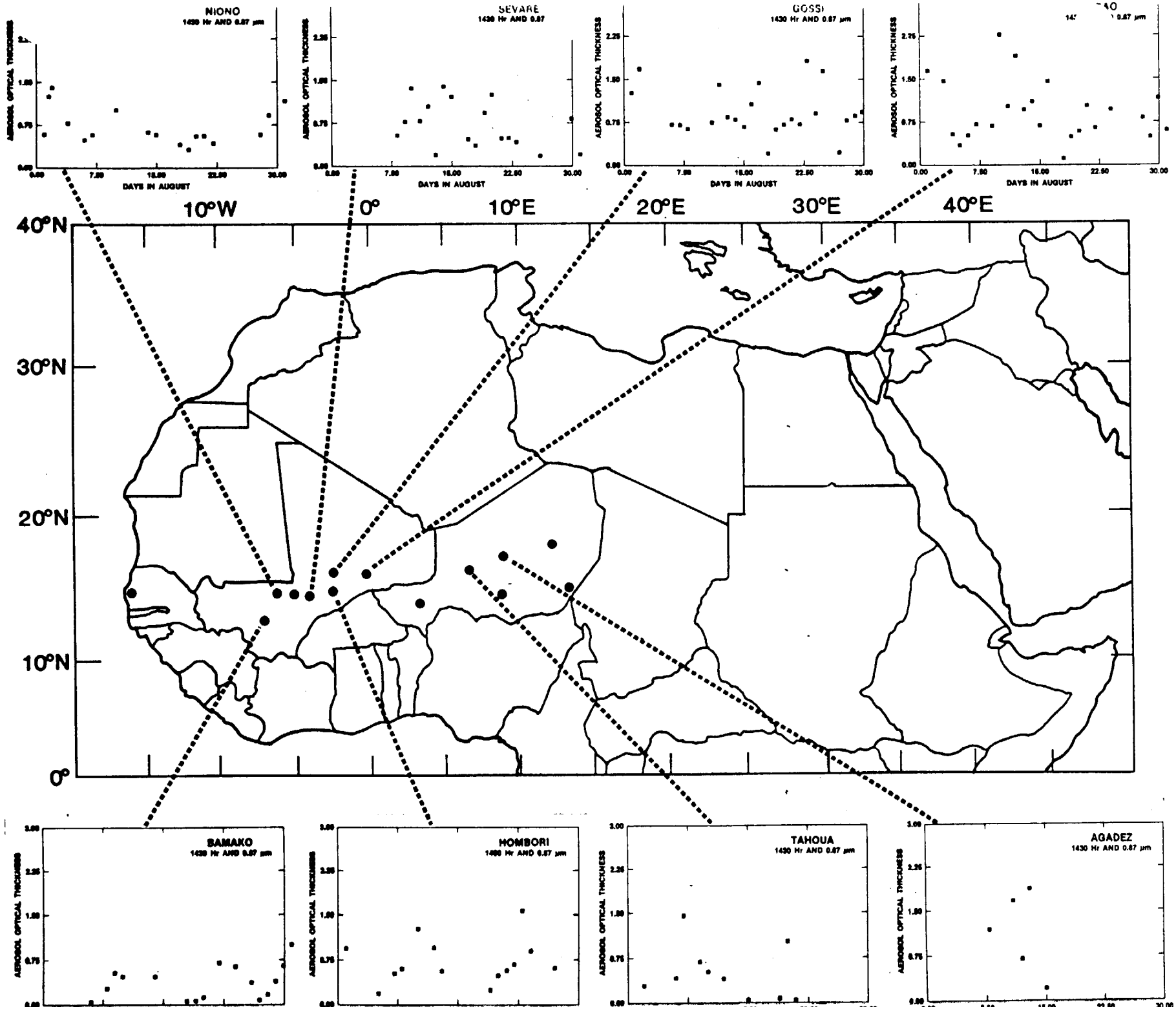
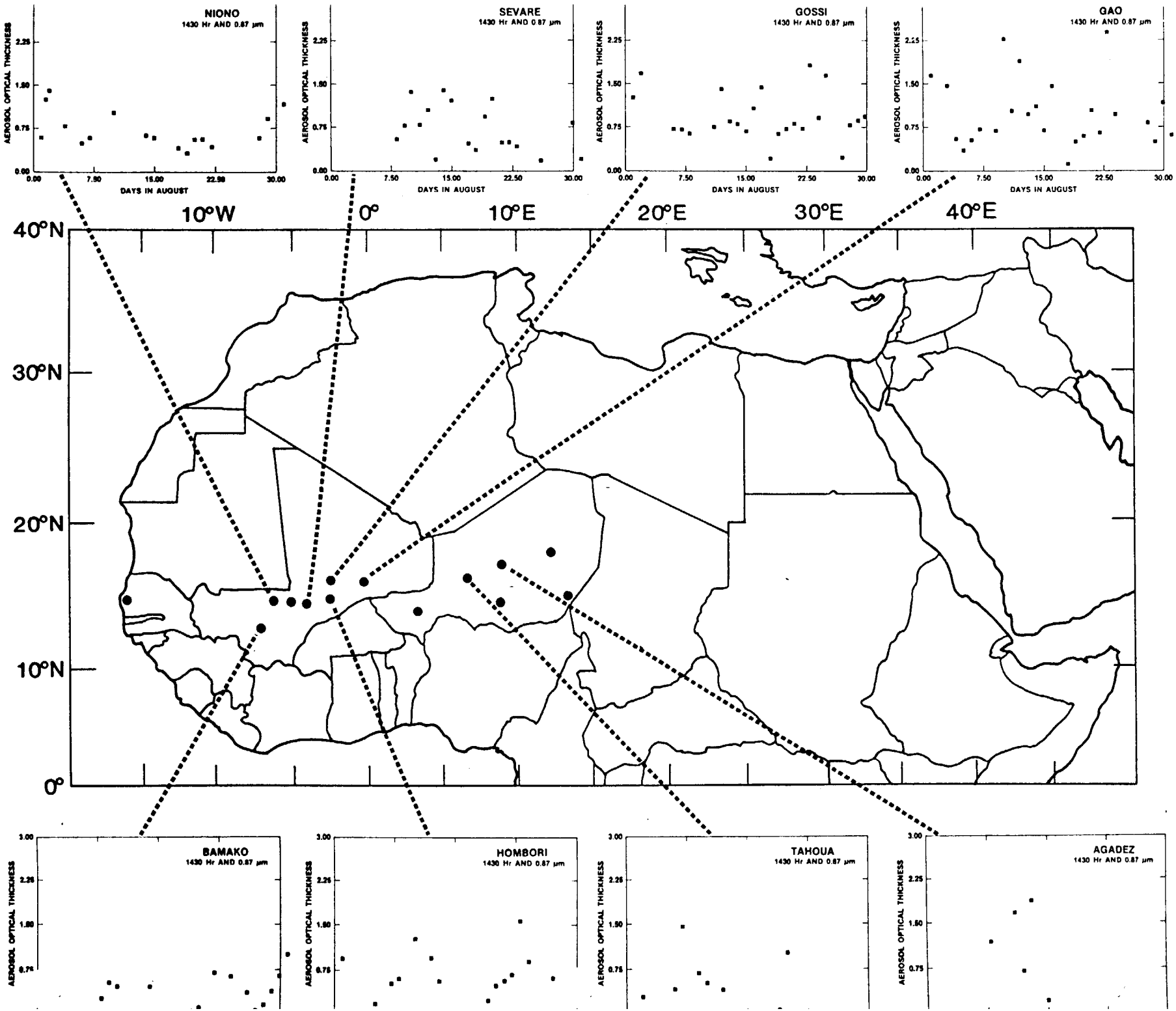
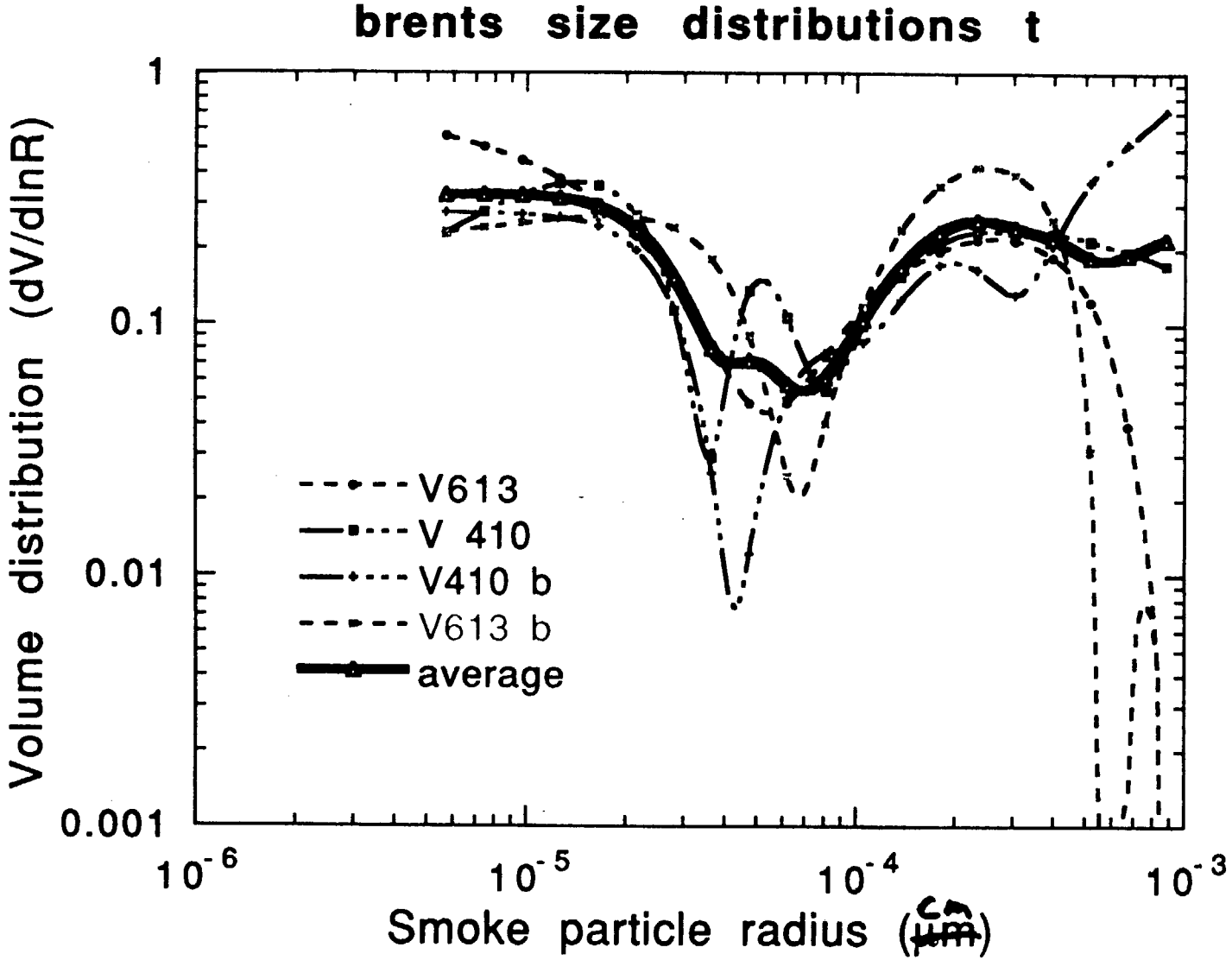
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
350
400
Day of the Year


NIONO
1430 Hr AND 0.87 μm
SEVARE
1430 Hr AND 0.87
GOSSI
1430 Hr AND 0.87 μm
AEROSOL OPTICAL THICKNESS
DAYS IN AUGUST
10°W
0°
10°E
20°E
30°E
40°E
40°N
30°N
20°N
10°N
0°
SAMAKO
1430 Hr AND 0.87 μm
HOMBORI
1430 Hr AND 0.87 μm
TAHOUA
1430 Hr AND 0.87 μm
AGADEZ
1430 Hr AND 0.87 μm


NIONO
1430 Hr AND 0.87 μm
SEVARE
1430 Hr AND 0.87 μm
GOSSI
1430 Hr AND 0.87 μm
GAO
1430 Hr AND 0.87 μm
AEROSOL OPTICAL THICKNESS
DAYS IN AUGUST
10°W
0°
10°E
20°E
30°E
40°E
40°N
30°N
20°N
10°N
0°
BAMAKO
1430 Hr AND 0.87 μm
HOMBORI
1430 Hr AND 0.87 μm
TAHOUA
1430 Hr AND 0.87 μm
AGADEZ
1430 Hr AND 0.87 μm


brents size distributions t
Volume distribution (dV/dlnR)
1
0.1
0.01
0.001
V613
V 410
V410 b
V613 b
average
10-6
10-5
10-4
10-3
Smoke particle radius (cm)

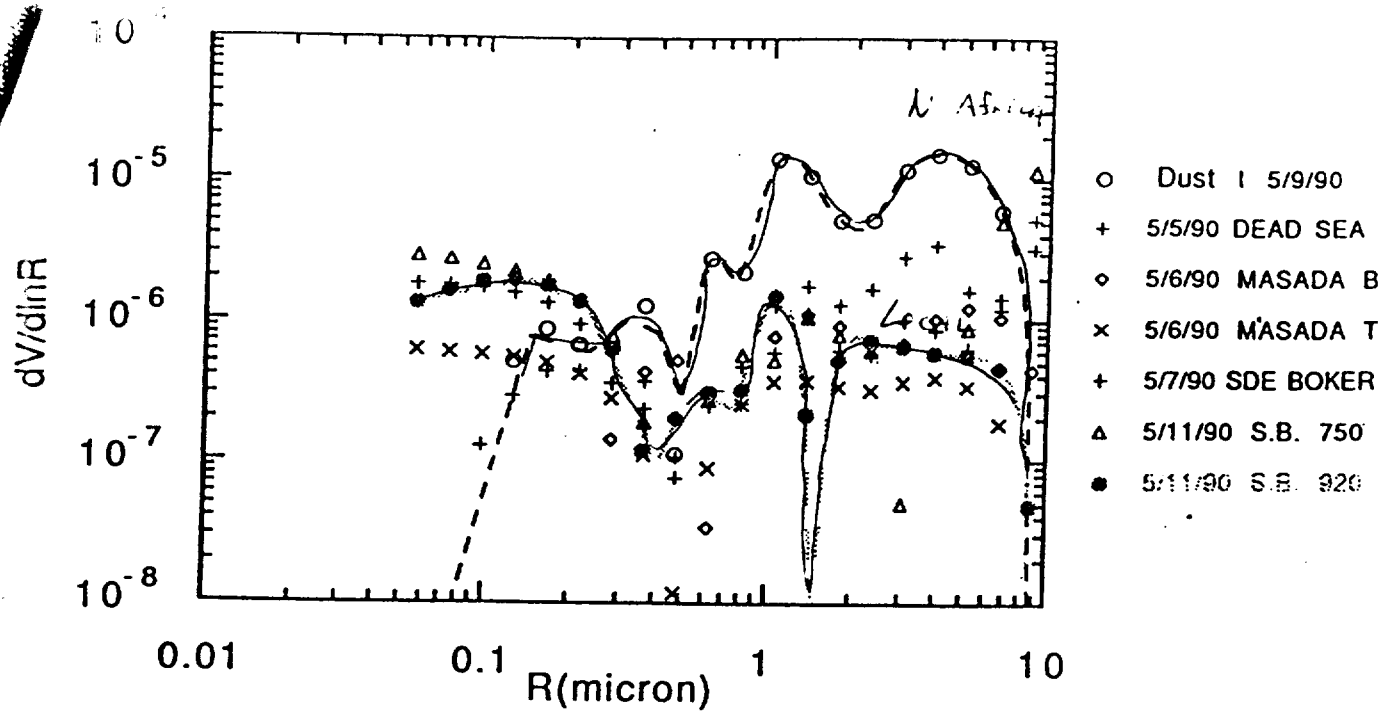


Fig. 1: Volume distribution derived from inversion of the aureole radiances measured in the northern part of the Negev desert in Israel. The heavy dashed line indicates data from May 9, 1990 when dust was transported to the region from North Africa. The light dashed line indicates the volume distribution for local aerosol. The symbols indicate different dates and location as indicated in the legent.

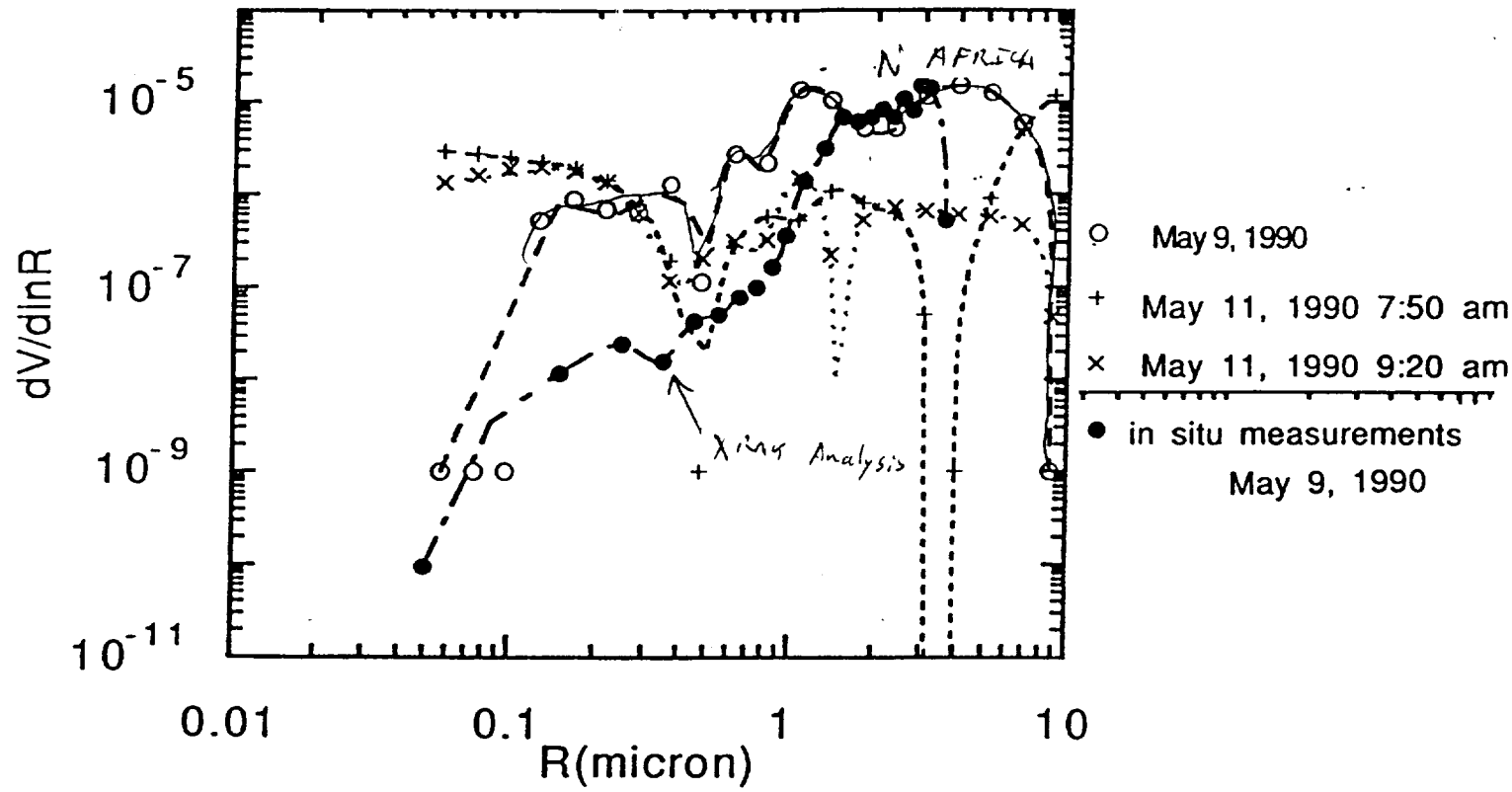
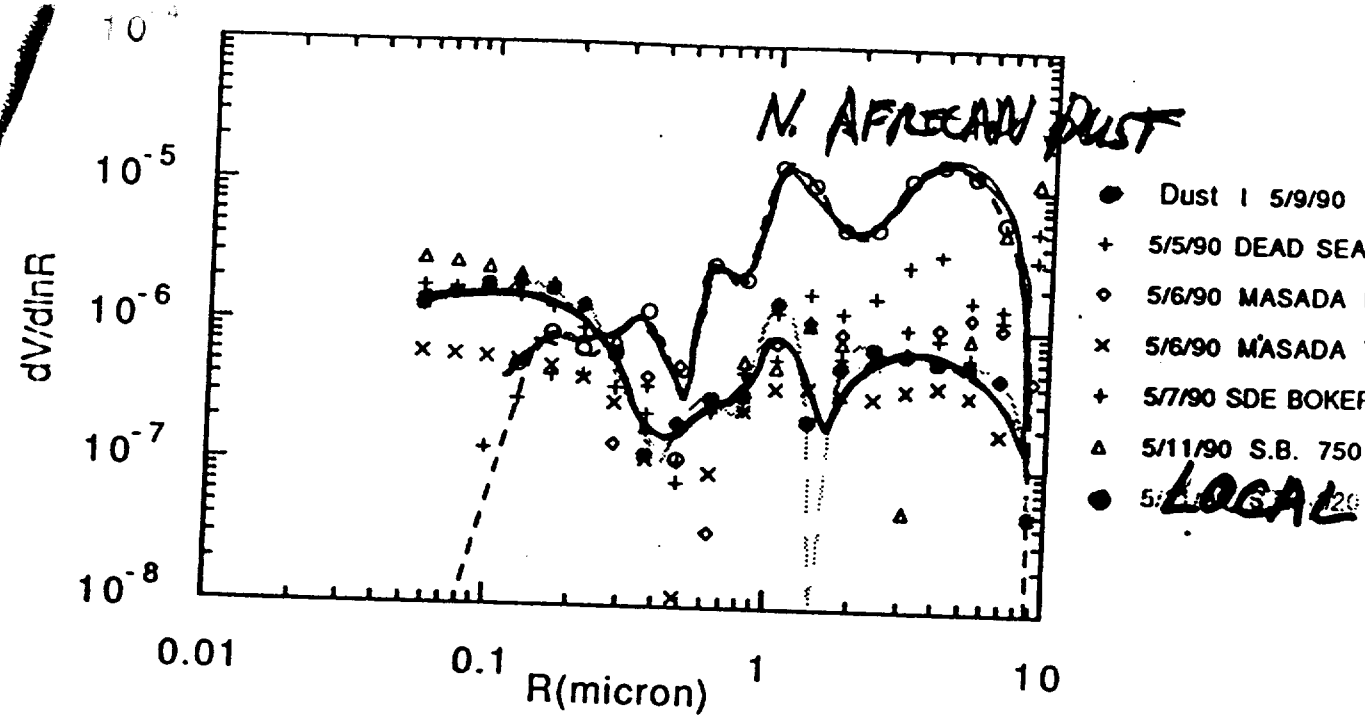


Fig. 2: Same as in Fig. 1. Only data from May 9, 1990 and May 11, 1990 are shown and compared volume distribution derived from X ray analysis of dust samples, collected with a cascade impactor (•).



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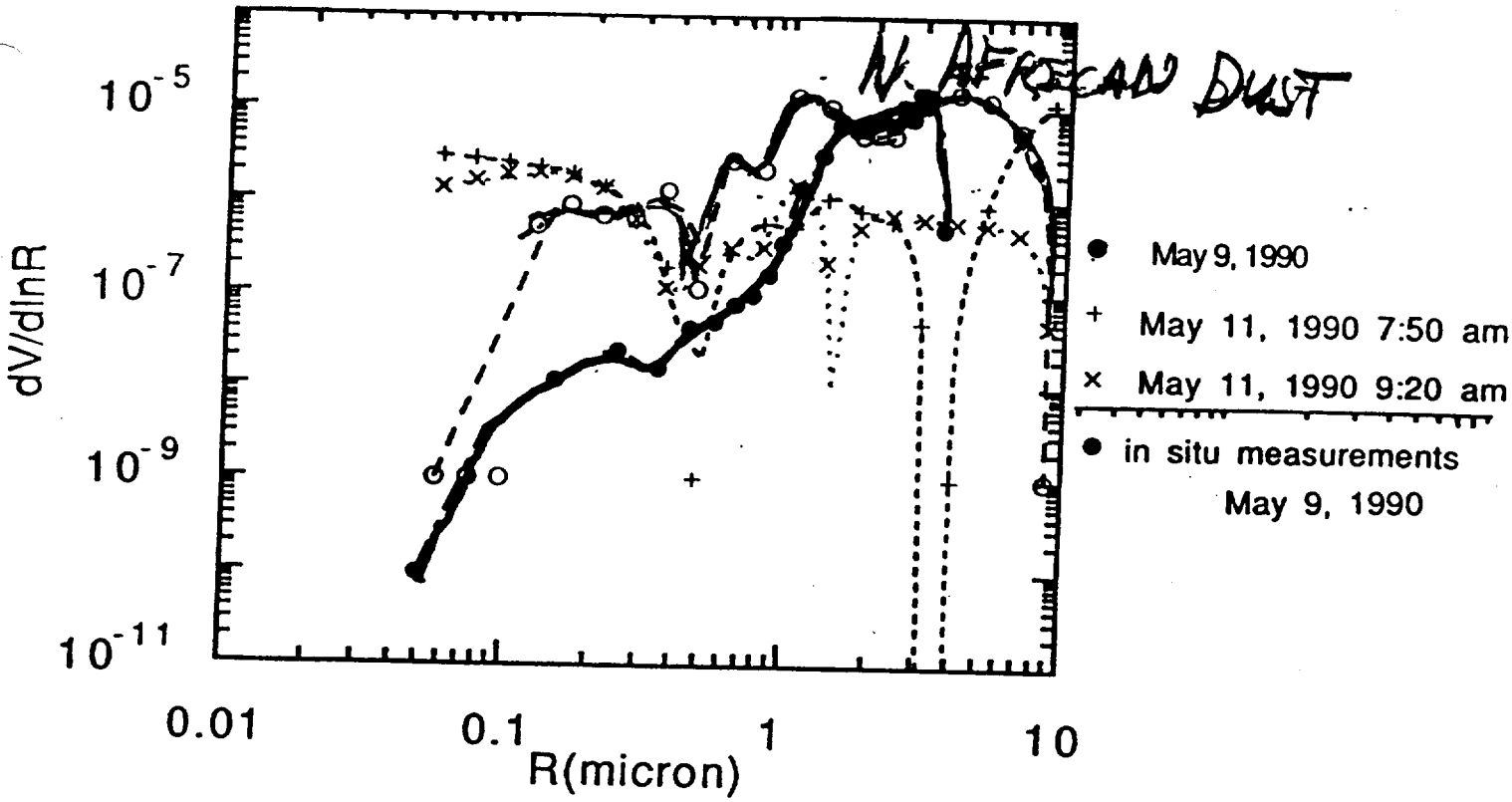
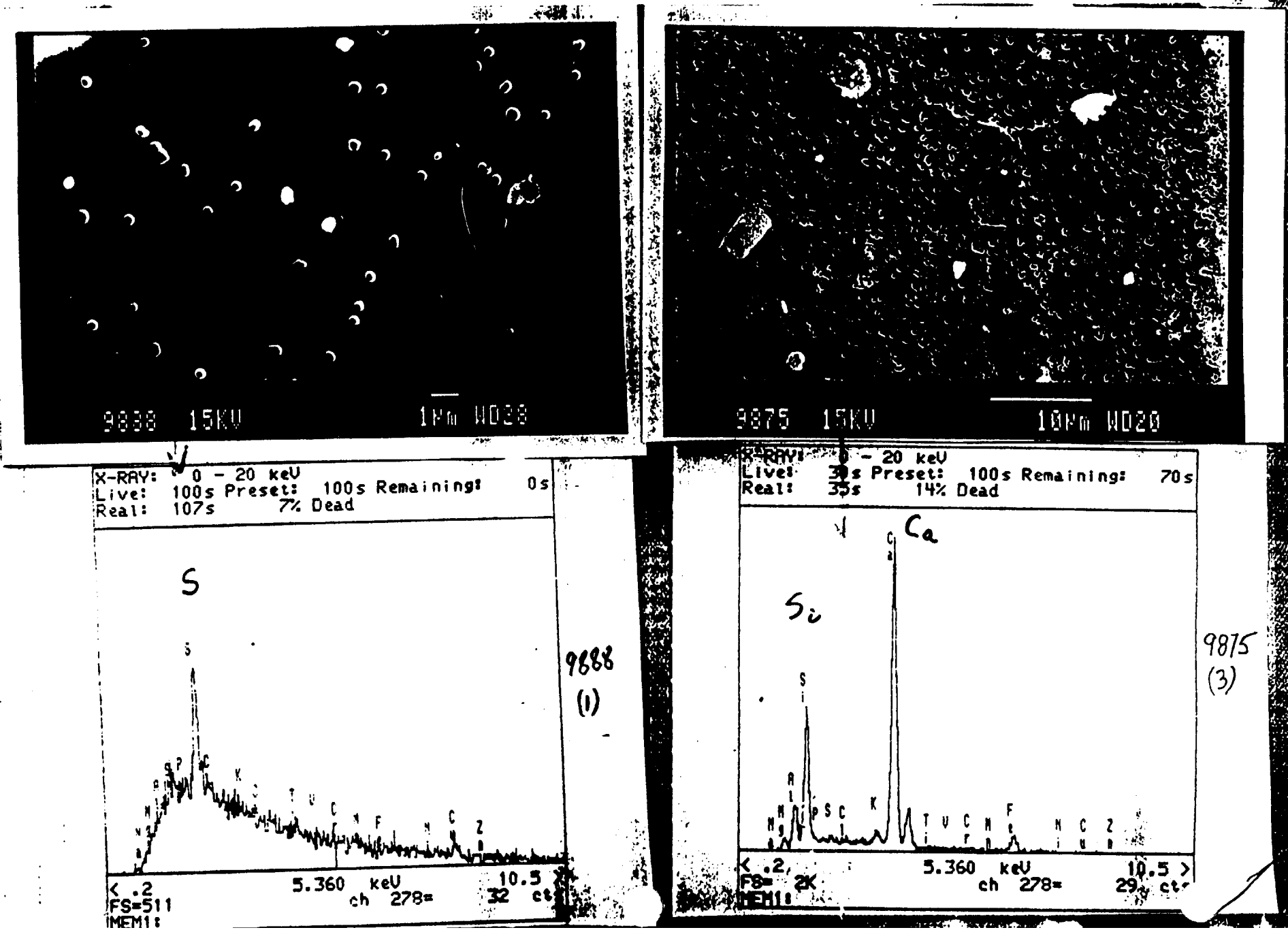
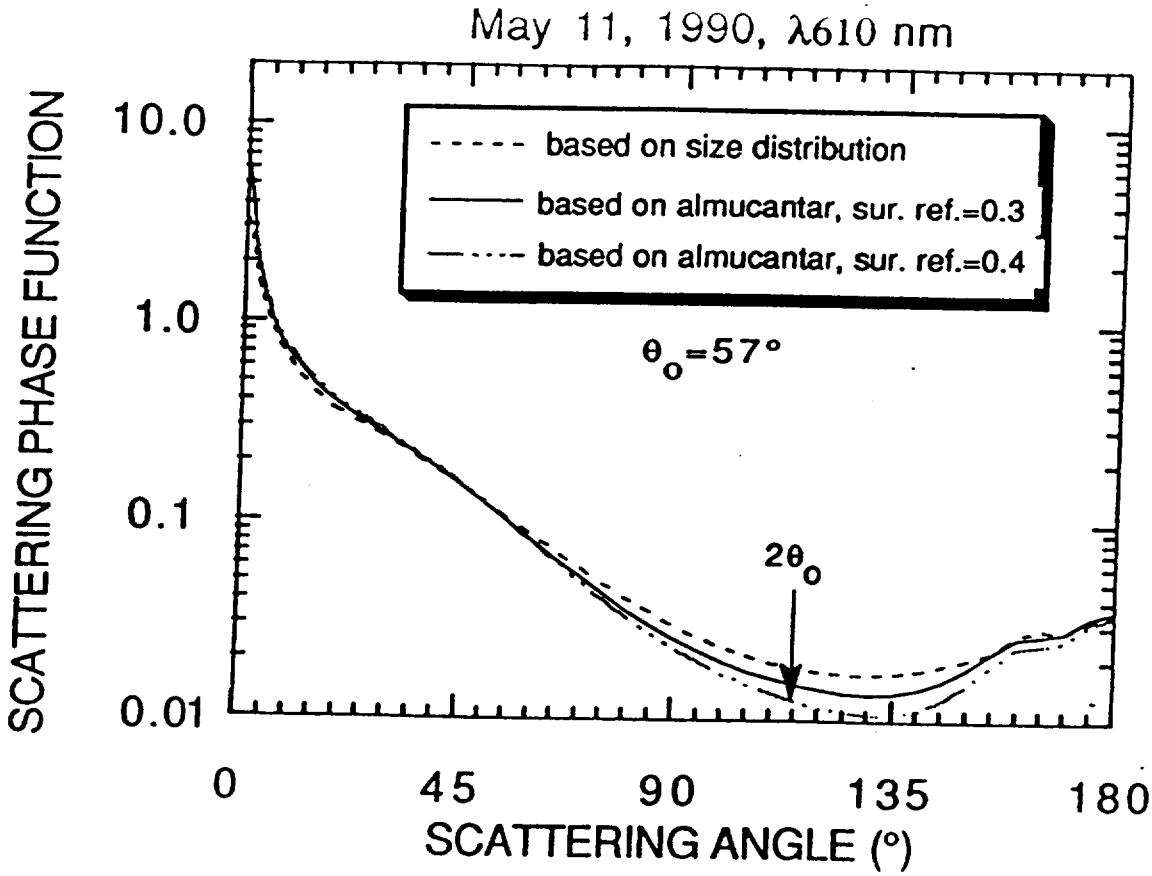


Fig. 2: Same as in Fig. 1. Only data from May 9, 1990 and May 11, 1990 are shown and compared volume distribution derived from X ray analysis of dust samples, collected with a cascade impactor (•).

Fig. 3: X ray photographs of the collected aerosol, in two scales (see the size of 1 μm in the right image and of 10 μm in the left image). The elemental composition of each of the particles indicated in each photograph by a black circle, is given below the photograph.





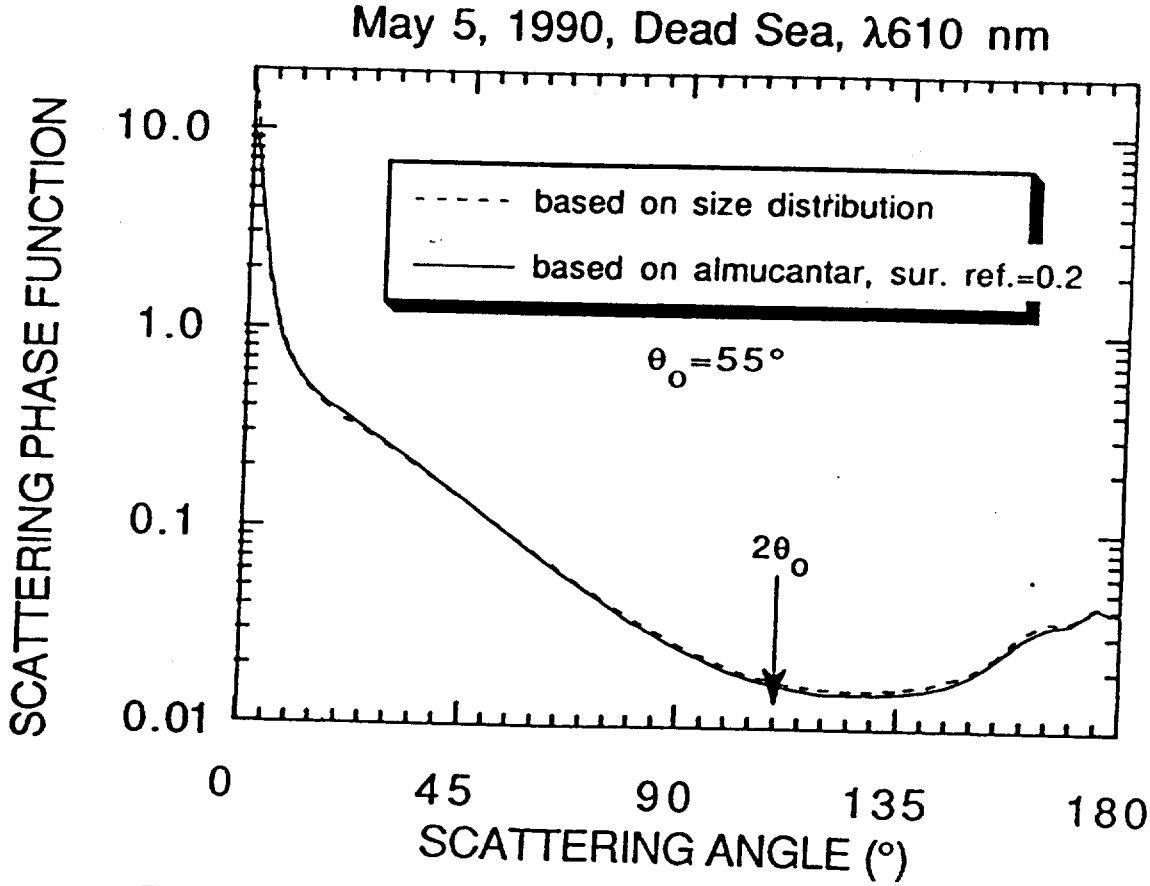
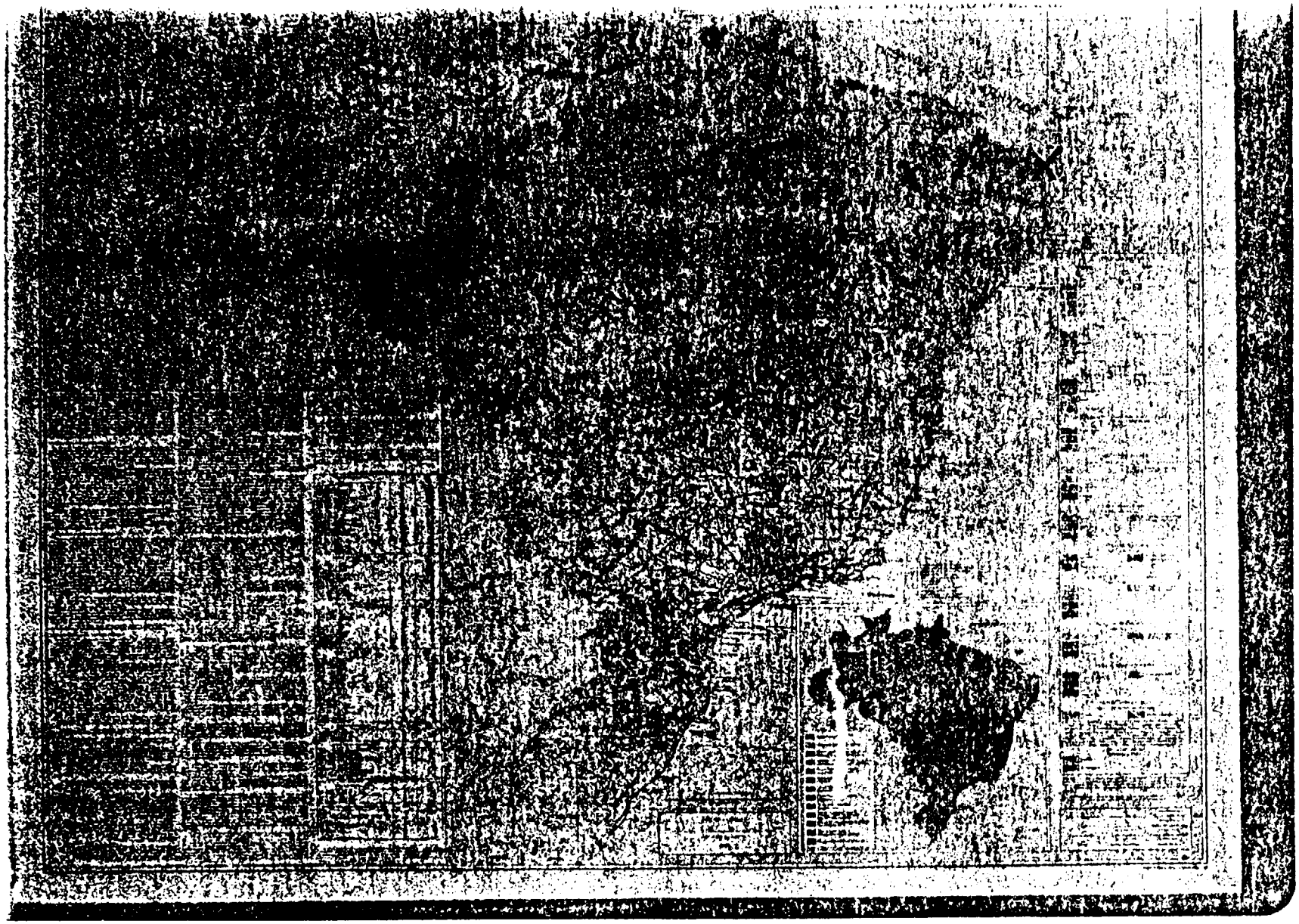


Fig. 4: The aerosol scattering phase function retrieved from the almucantar data. (a) - In May 11, 1990 in Sde-Boker. The dashed line indicates phase function computed from the size distribution derived from the aureole data, assuming spherical particles. The solid and semi-solid line indicate the phase function from the almucantar analysis for surface reflectance of 0.3 and 0.4 respectively.



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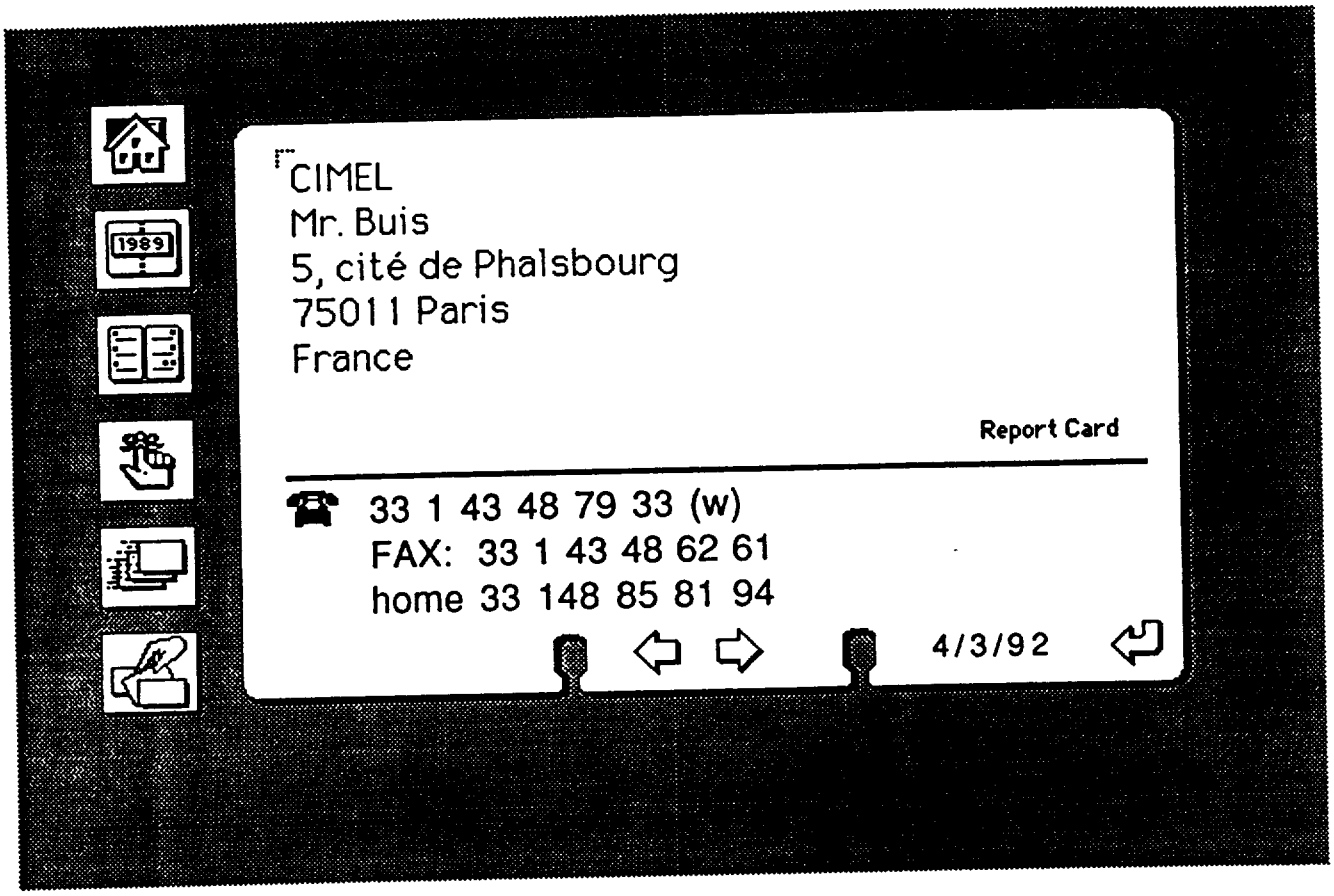
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home 33 148 85 81 94
4/3/92

Expected Results

Climatology $f(t, D)$

Aerosol (conc + opt. properties)

Precipitable Water

Ozone

Transport of Atmospheric Variables

Relation to Biomass Burning Emissions

Ground Truth for Satellite Derived Atmospheric Variables

Atmospheric Correction for Satellite Data

Relation of Aerosols to cloud properties