AERONET
data samples
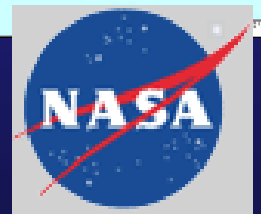
S. Kinne

MPI-Met Hamburg

AERONET-group

NASA-Goddard

AERONET

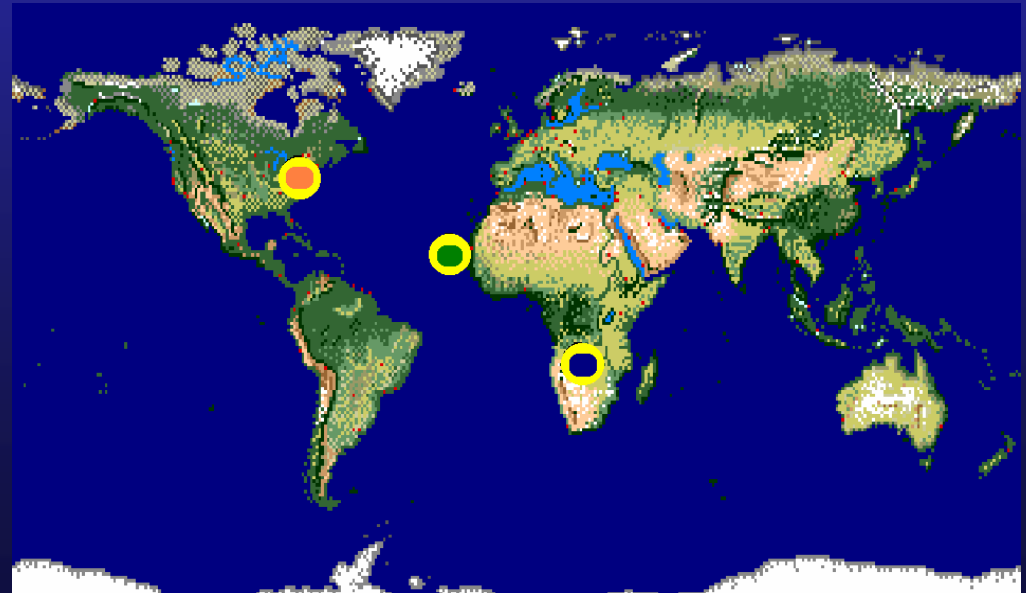- # Properties

    - τ - **optical depth**
    - **$(1 - \omega_0) \, \tau$**   - **absorption (better than ss-albedo ω_0)**
    -        - **water vapor**
    - **size-distribution [22 radii-bins between .5 and 15μm]**
        - **effective radius**
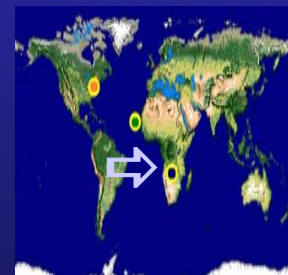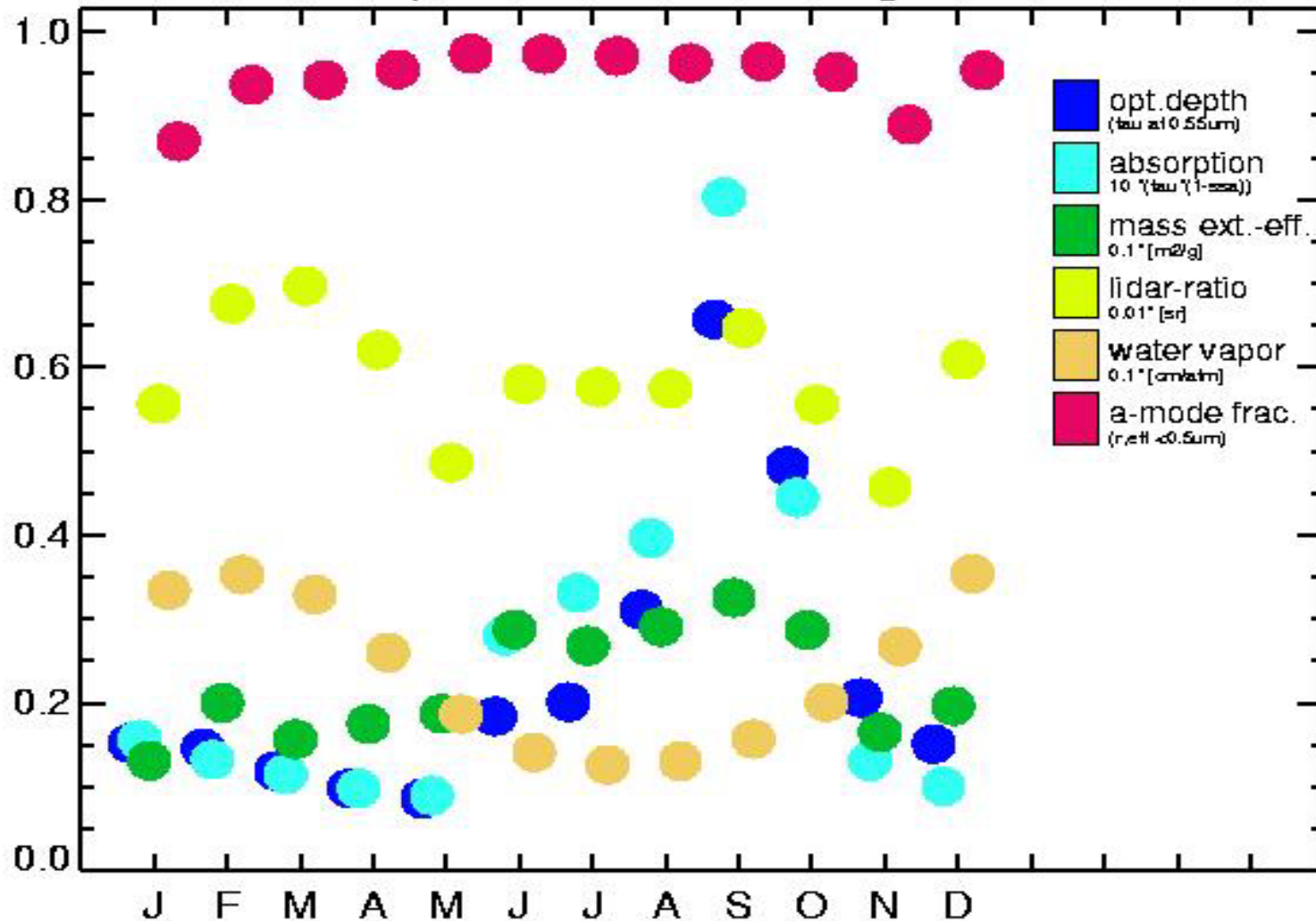   - **aerosol (wet) mass**

- # 3 sample sites
    - **Goddard (urban)**
    - **Cape Verde (dust)**
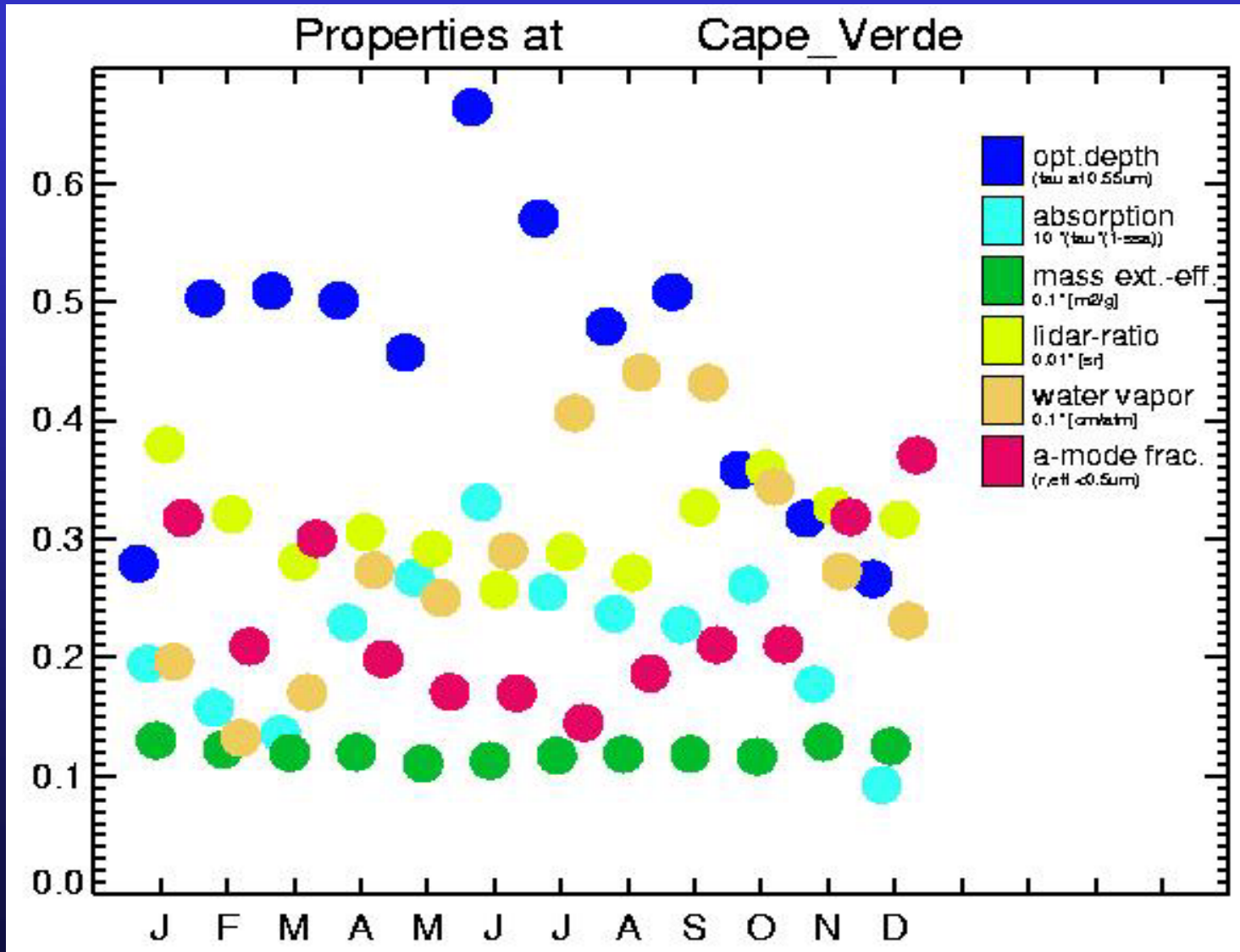   - **Mongu (biomass)**

Mongu

Properties at Mongu

Legend:
- opt.depth (tau at 0.55um)
- absorption 10 *(tau *(1-ssa))
- mass ext.-eff. 0.1 *[m2/g]
- lidar-ratio 0.01 *[sr]
- water vapor 0.1 *[cm/atm]
- a-mode frac. (r,eff <0.5um)
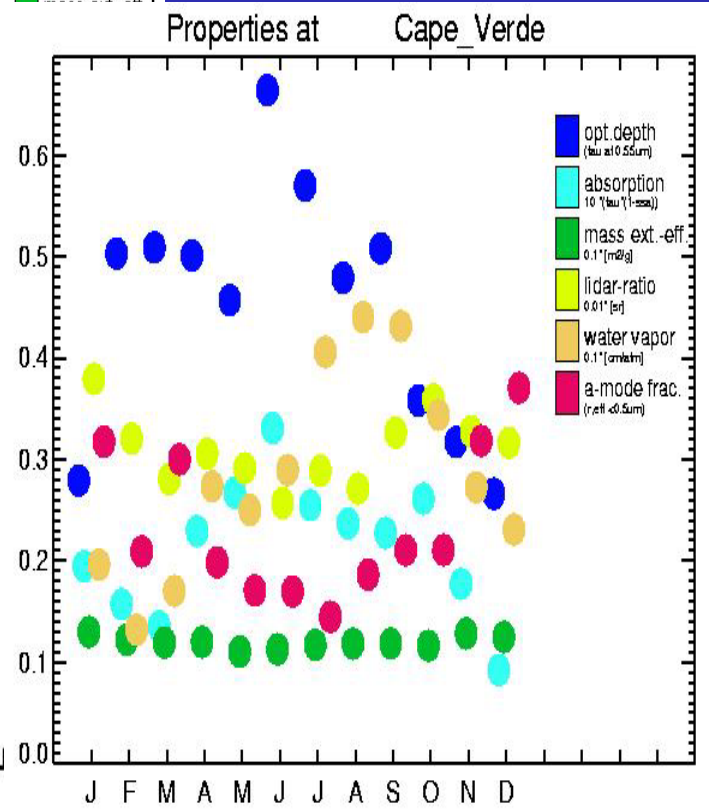
Cape Verde

Properties at Cape_Verde

Legend:
- opt.depth (tau at 0.55um)
- absorption 10 *(tau*(1-ssa))
- mass ext.-eff. 0.1 *[m2/g]
- lidar-ratio 0.01*[sr]
- water vapor 0.1 *[cm/atm]
- a-mode frac. (r.eff <0.5um)

Goddard
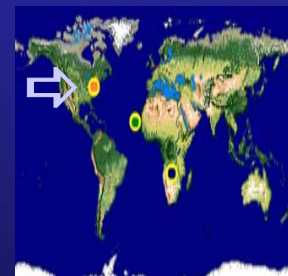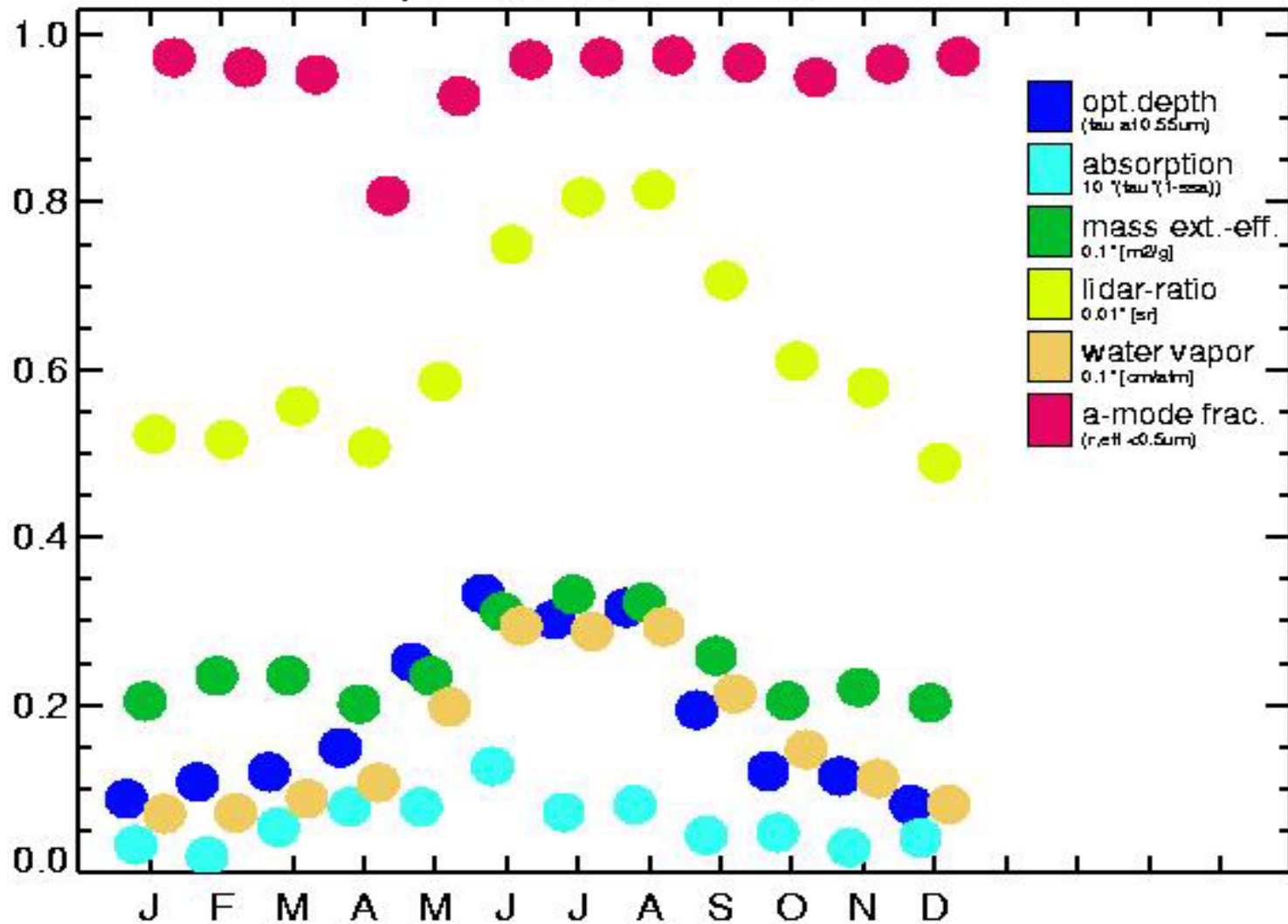
… when comparing
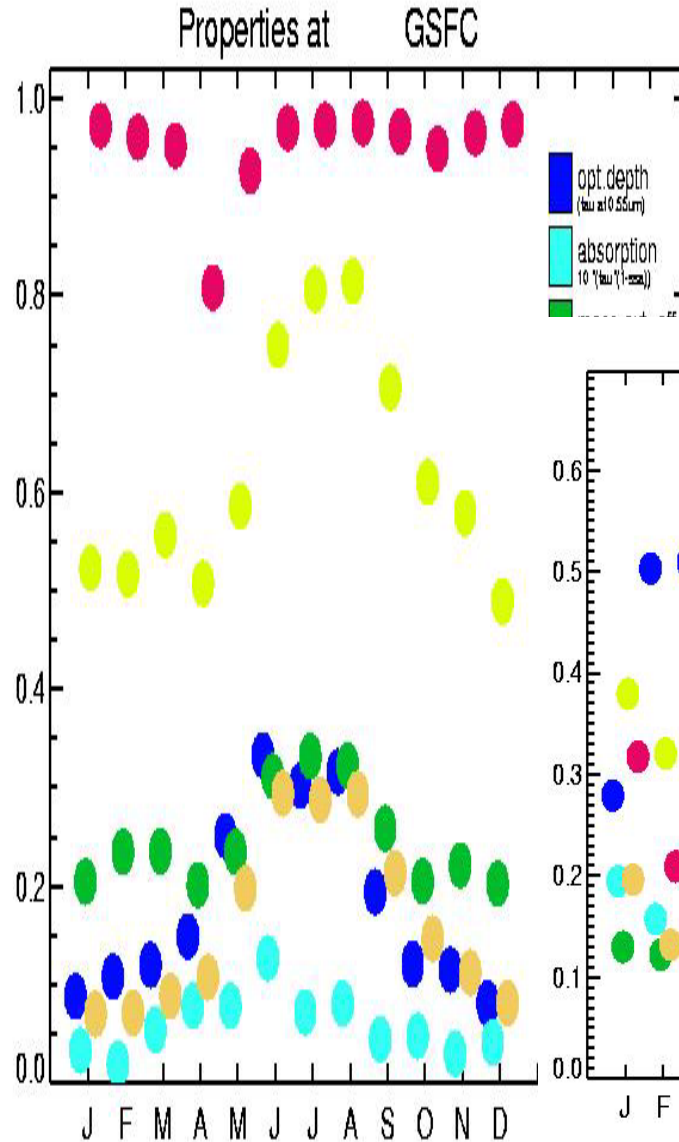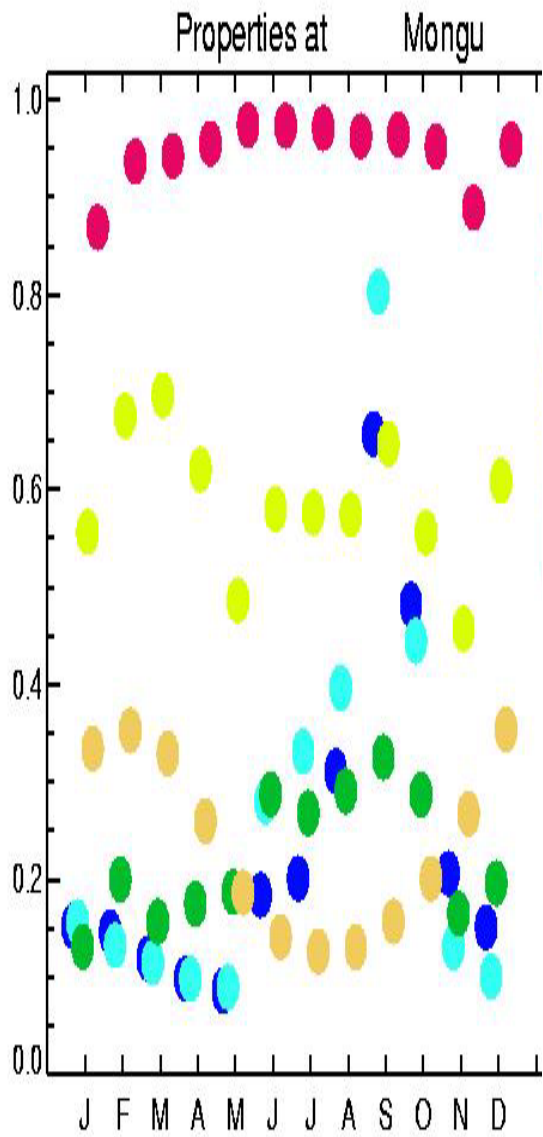
size-distributions

monthly variations
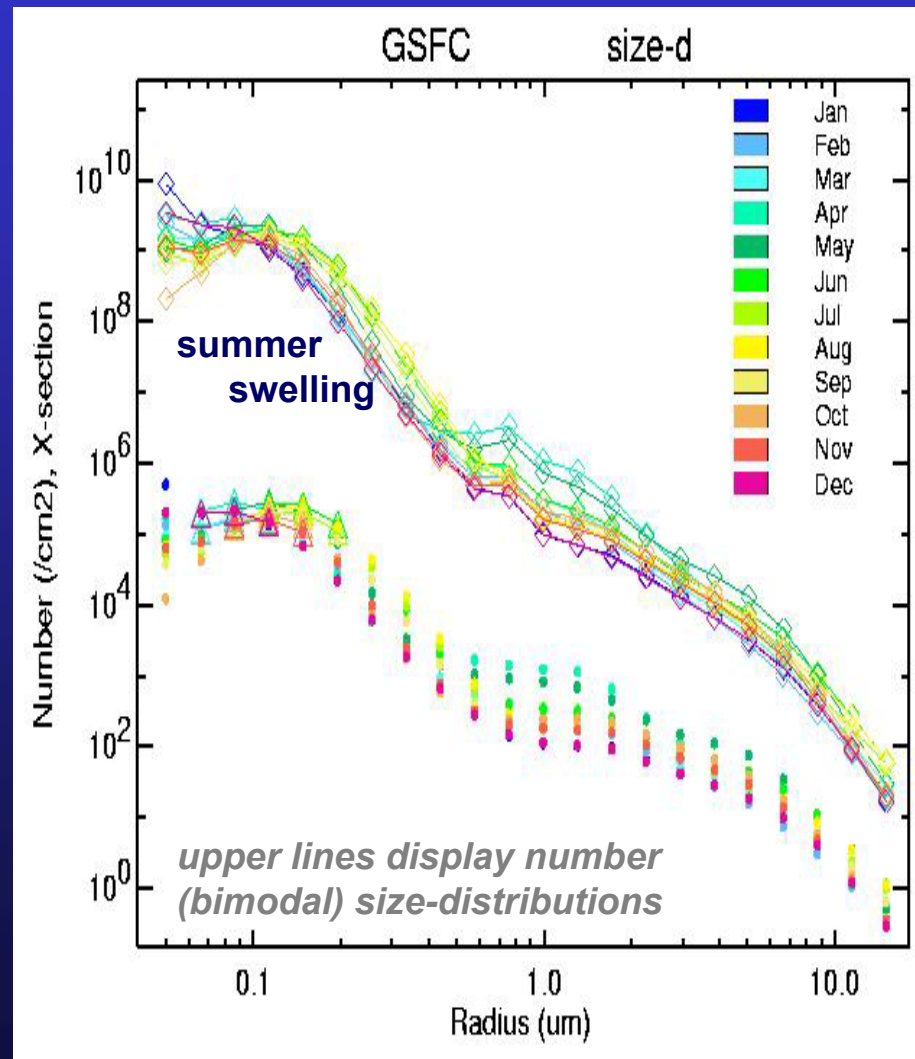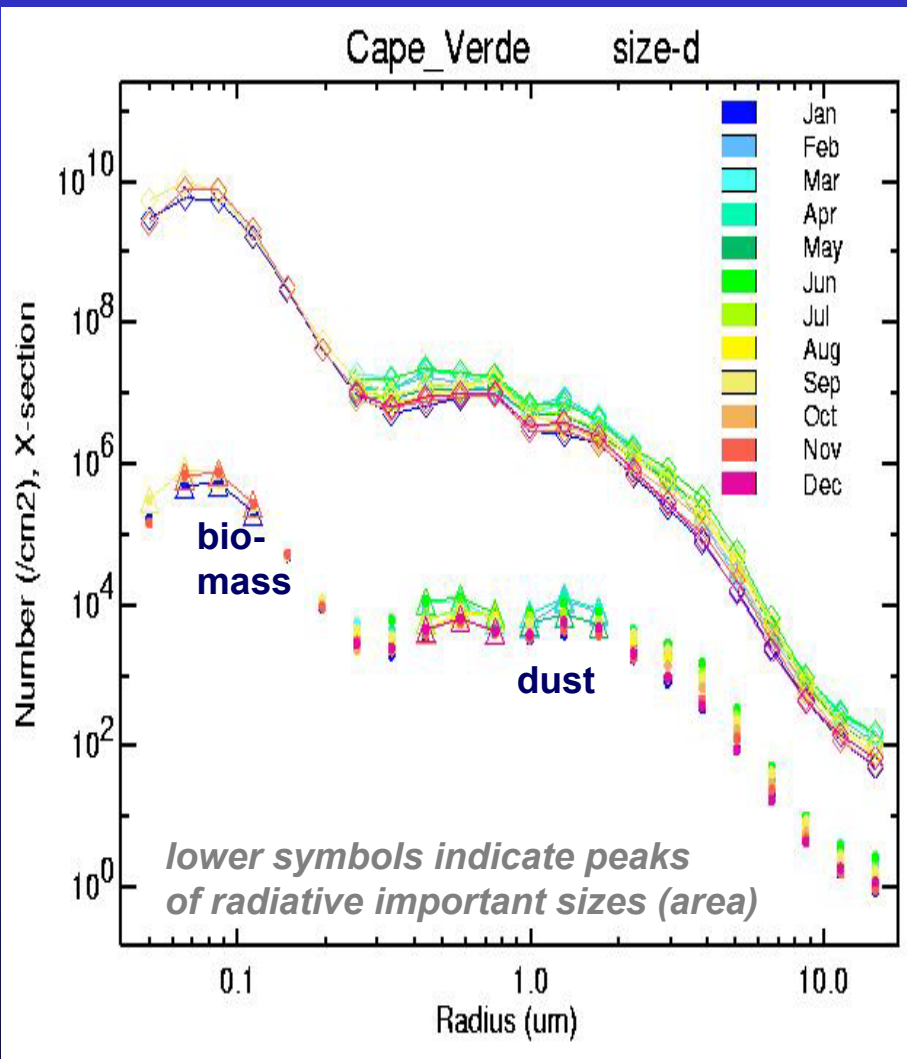
direct forcing

- **Urban**
  - **stronger if polluted**
  - **sum. max**
- **Biomass**
  - **strong at surf. and in atmosphere**
- **Dust**
  - **large, as opt depths are large**
- **Clouds**
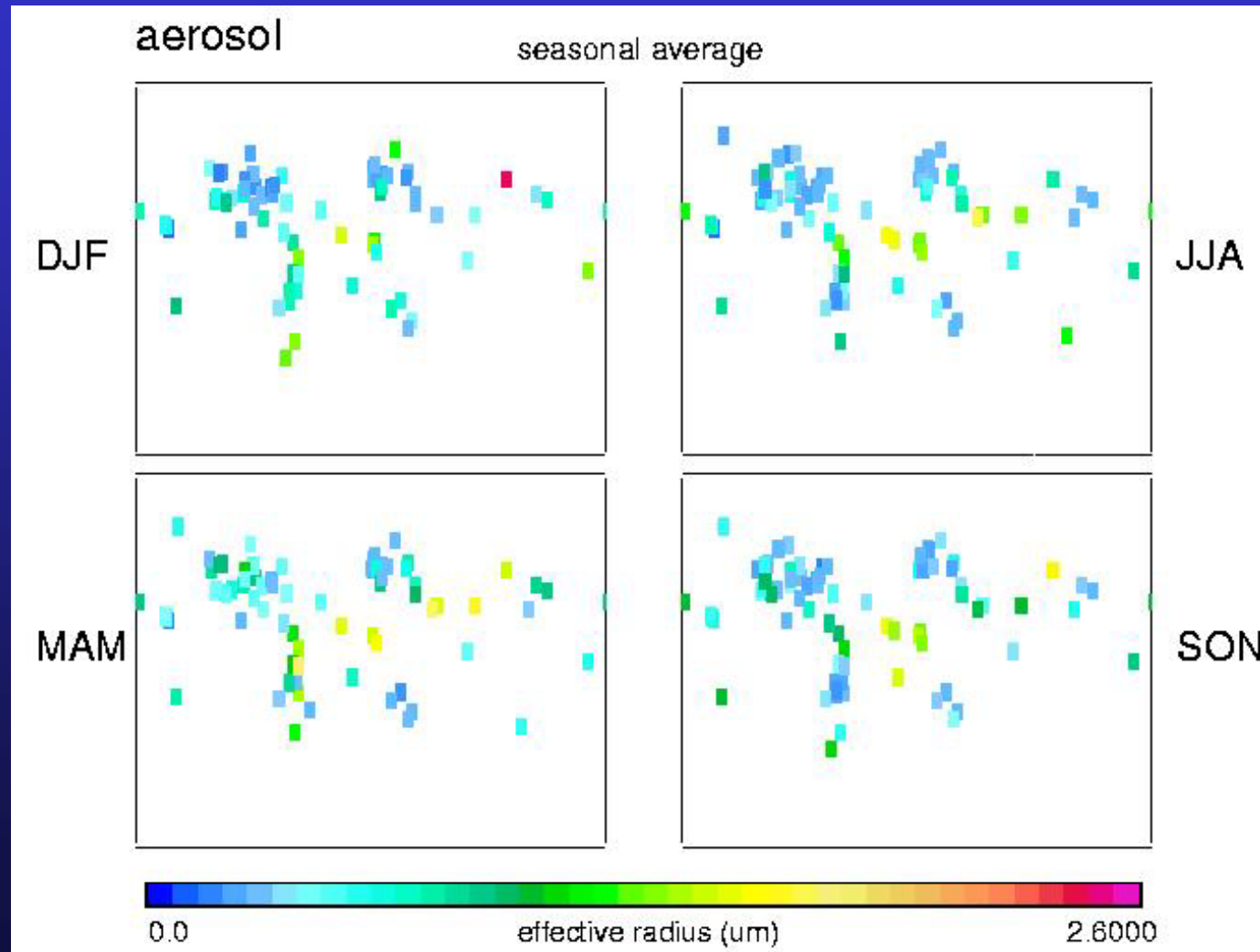 - **reduce forcings**

  (unless below aerosol !)
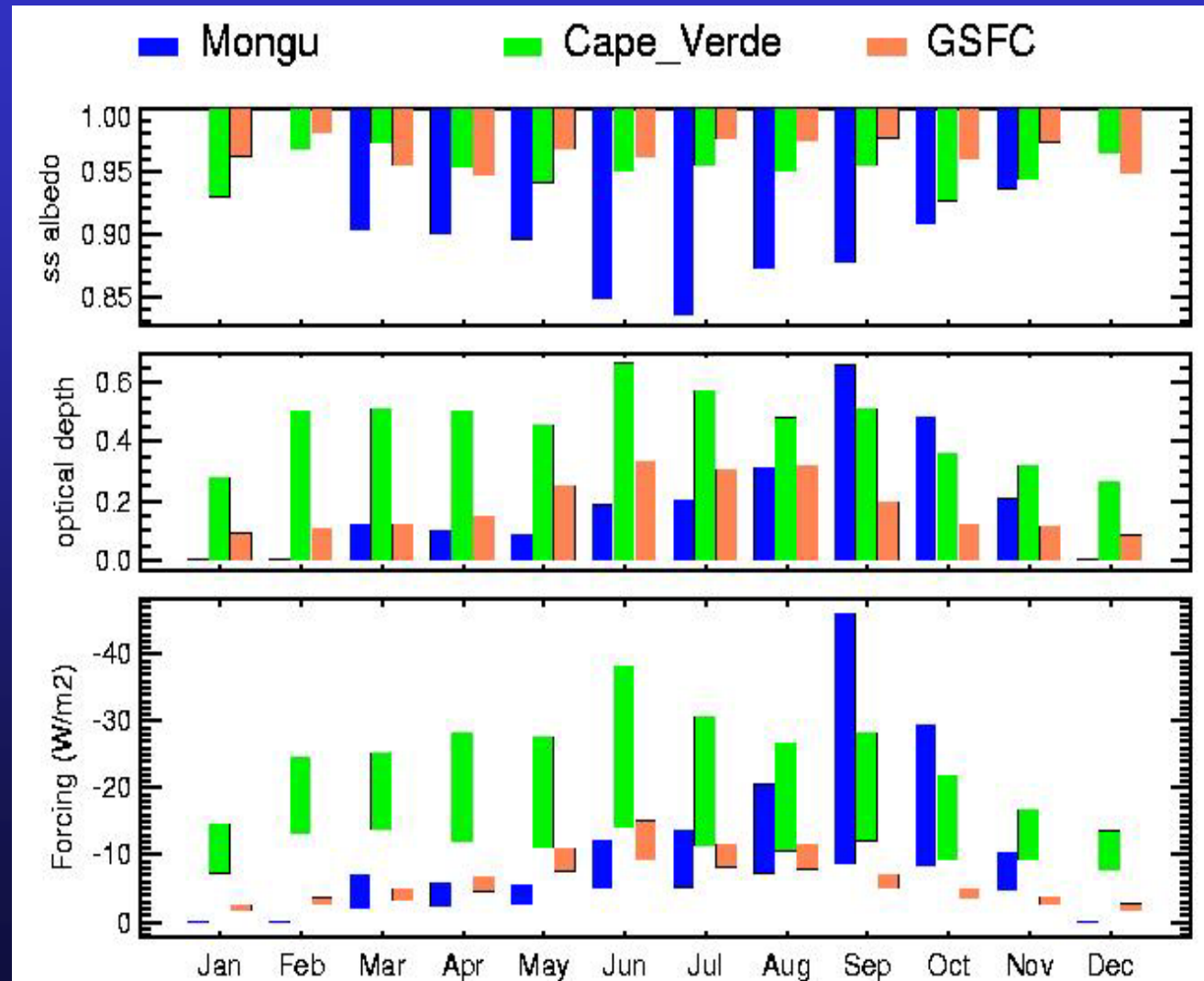
effective radius

- seasons -

largest sizes are associated with dust

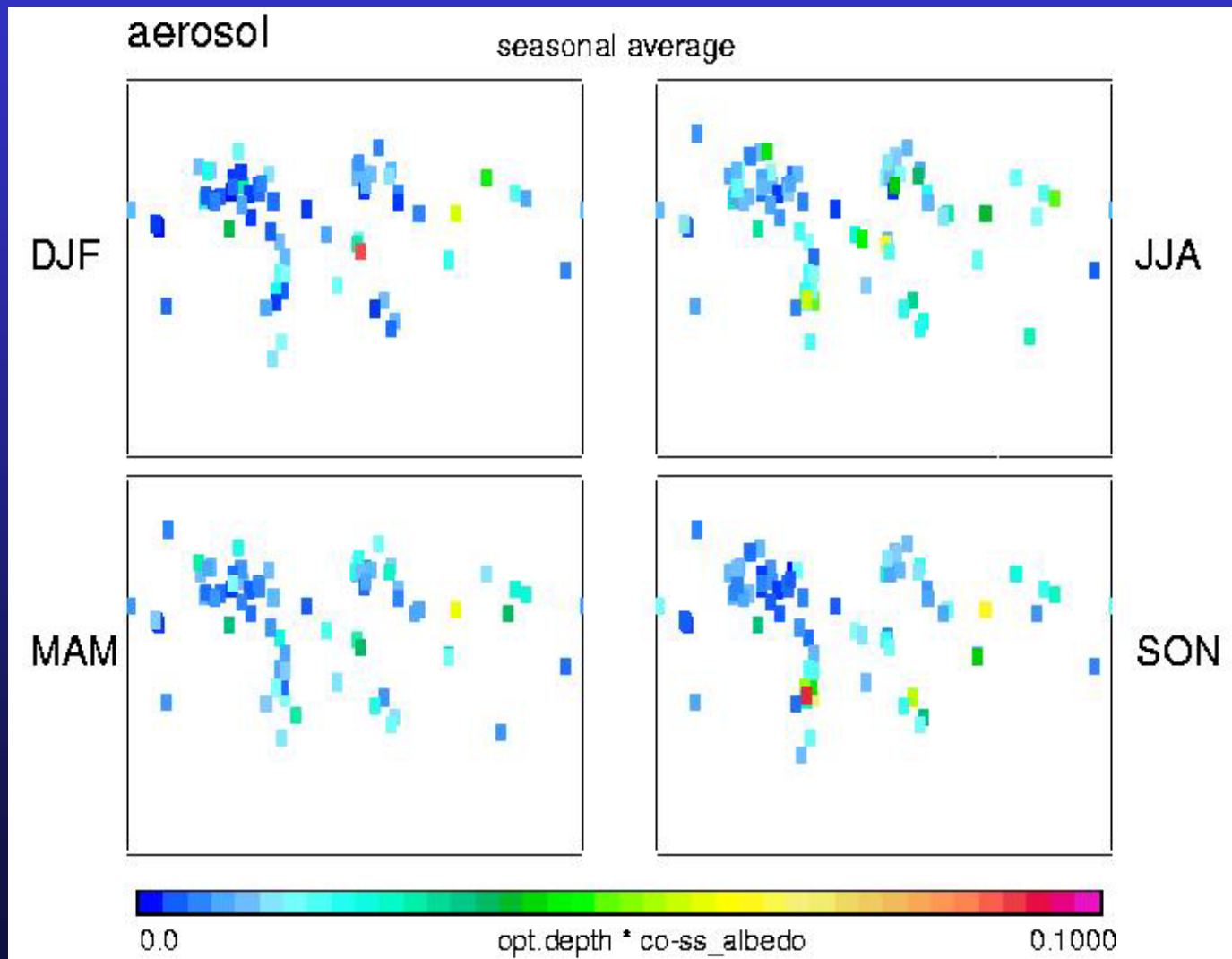*smallest sizes are at biomass burning and urban pollution*

absorption $\tau\,(1-\omega_0)$

- seasons -

Europe aerosol appears more absorbing than for eastern US

absorption max during biomass burn. in tropics

aerosol   seasonal average

DJF   JJA

MAM   SON

0.0   opt.depth * co-ss_albedo   0.1000

where to get data

- **website: http://aeronet.gsfc.nasa.gov**

  – **'quality' level 2.0 data are recommended**
  – **concurrent MODIS data are available**
  – **5 day-back trajectories can be provided**
  – **co-located micro-pulse lidar at 11sites**

- **Quick-look statistics of aerosol properties at ca. 100 sites (based on 1998-2001 data) are available on request from kinne@dkrz.de**