

## ***Interactive comment on “Dependence of solar radiative forcing of forest fire aerosol on ageing and state of mixture” by M. Fiebig et al.***

### **Anonymous Referee #2**

Received and published: 31 March 2003

#### General comments:

The paper presents aerosol size distributions observed in a biomass burning plume over Lindenberg, Germany, which originated from forest fires in northern Canada. The effect of the state of mixing of the aerosol in the biomass burning plume on the aerosol radiative forcing has been investigated. The same biomass burning plume, has been intensively investigated in several other studies, and the authors summarise the most relevant findings of these studies. The paper is well written and shows the importance of the state of mixing and coagulation rate for radiative forcing calculations.

#### Specific comments:

1. In Figure 1 the uncertainty of the observed particle size distributions due to a varying refractive index is included, however, no indication is given of the values of the refractive index which are used to determine this uncertainty.

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2. The accumulation mode contributes more than 90% to the layers extinction coefficient at 550 nm (page 1277). The authors should indicate how they determined this.

3. On page 1283 the different scenarios for the model calculations are described. It is not clear what is assumed as dilution air: particle free air or background free tropospheric air? What does this mean for the uncertainty in the coagulation calculations?

4. Page 1286: The radiative transfer model is not well described, it should be described in more detail.

Technical comments:

Page 1281, line 18: value should be values

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Interactive comment on Atmos. Chem. Phys. Discuss., 3, 1273, 2003.

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