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***Interactive comment on “13-month climatology of the aerosol hygroscopicity at the free tropospheric site Jungfraujoch (3580 m a.s.l.)” by L. Kammermann et al.***

**Anonymous Referee #2**

Received and published: 6 September 2010

The paper presents an extensive record of aerosol hygroscopicity observations from the Jungfraujoch site, a globally important site for climate relevant studies. The amount of data contained in this analysis is really quite impressive, as is the feat of maintaining this measurement campaign over the year plus timeframe. My compliments to the authors on this undertaking. The paper clearly written and presented, albeit somewhat length. The measurements were completed with requisite care and due diligence. A few improvements can be addressed before this is published.

The authors provide the best information on aerosol hygroscopicity for a free Tropospheric site which will be clearly useful for the modeling community. The seasonal

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consistency of the hygroscopic properties is certainly notable. Really the largest perturbation is the diurnally timed transport of PBL air masses, quite interesting. This is certainly a take home message of the analysis and should be emphasized.

At the same time, I agree with the first reviewer's comments directed at what really constitutes a significant seasonal, diurnal, dry size, meteorology class etc. variation. What might help here is a summary table (or added into table 2) an expression of the variability in a consistent metric (e.g. Coefficient of Variability). It will be clearer to see what is important and in what context a 'universal' constant kappa value can be applied without concern over the impacts. Is there a gauge given (e.g. by Petters et al.) as to what variations in kappa are of significance? Defining somehow what constitutes a significant variation in kappa or GF would help here. Overall, I do agree with the general conclusions of the general lack of strong variation as a function of season, dry size, meteorology class, but it just must be better quantified/substantiated.

Figure 2 takes a lot of looking to see which seasonal trace is which. Can it be improved? I don't see where it would help though to break this out into 4 times as many plots with each season on a separate panel. The point is the seasonal variation is not so important so leaving it as such is merited.

I would move the first paragraph of the results section to the instrument section of the paper.

Beyond these comments and the details covered by the other review, I believe this paper is ready for publication.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 13573, 2010.

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