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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measured and modeled humidification factors of fresh smoke particles from biomass burning: role of inorganic constituents" *by* J. L. Hand et al.

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Review of Hand et al. Measured and modeled humidification factors of fresh smoke particles from biomass burning's role of inorganic constituents.

This paper presents results from the FLAME program with regard to measurement and modeling of smoke particle hygroscopicity. Focus is on the hypothesis that the fuel dependant particle hygroscopicity characteristics can be mostly explained buy particle inorganic fraction. The paper is clean, well written and to the point. The experimental design is well described and as far as I can tell well executed. In short, this paper could be accepted immediately. However, I do have a few suggestions which could

make this good clean paper much more easily applicable to the broader community. The inorganic fraction hypothesis they present is actually very is well established in the community-although never before has it been so cleanly displayed. The authors could improve the paper by adding a bit of context. They should hit the library and look over the previous work done for the 1997 Indonesia fires, and SCAR-B, as well as further research in the SAFARI-2000 campaign. In all of these cases increases in smoke particle hygroscopicity were hypothesized to be due to be related to higher inorganic fraction. Based on the current result, a simple parametric model could be proposed based on inorganic mass fraction. Compare that to some of the field result and see if it matches. If it does, you have something modelers will be tripping over themselves to apply.

My only other comment is the presentation in the text of f(RH) at 85 to 90% RH. 80% is more standard in the field, and more typical for the environment for people who apply these values. I suggest they present both.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 4225, 2010.