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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Evaluation of the smoke injection height from wild-land fires using remote sensing data" *by* M. Sofiev et al.

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27944-22 : "Pf is the fire power released into the air as both sensible and latent heat energy."

27946-9 : "Secondly, the fire energy Pf spent on the air heating and the FRP observed from space are linearly related to the consumed biomass and close to each other (Kaufman et al., 1998; Sukhinin et al., 2005), thus allowing the switch Pf to FRP."

These are inconsistent definitions of Pf. Satellite measurements of FRP are based on estimating an increment (vs. background) to radiances at thermal wavelengths, mainly around 4um, which responds most strongly to energy release at ∼700C. Latent heat release will not be captured by the FRP retrieval.

It can still be valid to say (27951-25) that “the effect of both sensible and latent heat is automatically taken into account during the calibration step.” but what this really means, if I understand correctly, is that this method contains an implicit assumption about the ratio of latent to sensible heat flux from fires. This is a very significant assumption.

The authors should either explain how variations in latent vs sensible heat flux are captured in their empirical treatment, or explicitly model the sensitivity of their plume results to the assumed contribution of latent heat flux vs FRP.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 27937, 2011.

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Interactive Comment