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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Combining fire radiative power observations with the fire weather index improves the estimation of fire emissions" *by* Francesca Di Giuseppe et al.

Anonymous Referee #2

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This is an important contribution to the literature on estimating emissions from fire radiative energy (FRE). The implications for existing methods of emissions estimates is timely, relevant, important, and perhaps most importantly, relatively straightforward to implement. The writing is very concise, perhaps in some places too much so. The authors only refer to fire radiative power (FRP), and not FRE, the integration of FRP over time, which is used to estimate biomass combustion, from which emissions estimates for various species are calculated. The use of a lagged FWI is an interesting choice, as several fire weather indices from the FWI family already have 'memory' from the previous day (fine fuel moisture code, duff moisture code and drought code). Also, FWI was developed for Canadian temperate and boreal forests, is it really appropri-

ate to apply this method of inferring FRP to tropical and subtropical systems as the authors do (without good result)? It requires justification. Some terminology seems unclear, such as reference to "overestimation" (which implies some reliable reference) when comparing GFAS and MODIS data. Also, I'm not sure how "missing data" were identified, as no cloud masking algorithm is described. Is it possible that real zeros are being filled in with data using this method? This should be addressed in the text. Finally, is this a global analysis? The study area should be stated explicitly or if it's a global analysis it should say so.

Specific comments: P9L4: Why is this remarkable? Can you be more explicit? P9L7: Why is this the expectation? Couldn't it have just as easily underestimated emissions if peaks were missed? (Indeed, could this not still be happening if overpasses occur outside of peak burning hours?) P9L15: I'm not sure that "assumptions" is the right word here? Operator versus non-operator? These aren't assumptions, exactly, maybe "methods"? P9L16: Not sure about "experiment", as that's not really what this is, again "method" may be more appropriate. P9L18: This is great (40% result), it should be highlighted in the abstract.

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