

Interactive comment on “The Alberta Smoke Plume Observation Study” by Kerry Anderson et al.

Anonymous Referee #2

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Though the topic of the study is rather important and interesting, the proposed approach is probably not the best one to tackle the issue. It is also unclear what is the real value of the presented data (even authors recognize subjectivity and large uncertainty of this approach). It is unclear how the observations were included in the fire modelling? What is the value of calculated correlation? Do they improve our understanding of the plume rise processes and if they do this is not articulated in the paper at all. Was meteorological/air quality equipment used to support these observations (e.g. ceilometers, or aerosol instruments for particle size distribution or chemical composition characterization)? p. 1, l.7 – did you use inverse modelling to adjust the source term? p. 1, l. 11 – how this human subjectivity is taken in consideration in calculation of uncertainty of your observations? p. 1, l. 13-14 – have the collected data been used in

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any assimilation system or compared with the model output? p. 2, l. 16 - “more difficult” – unclear more difficult than what? p. 2, l. 24 - The equipment used is very primitive. It is clear that research equipment is much more expensive, but probably use of lidars that measure back scatter can provide much more insights into the dynamics of the plume than presented here observations. p. 2 – “Methodology” How many points per plume was collected? How the position for the measurements was selected? p. 3, l. 10-15 – how do observers estimate the distance to the fire? p. 5, l. 13-16 - the inverse modelling part for the source term adjustment requires more explanations. p. 5, l. 25 – the statement is unclear p. 5, Section 3.1 – it is difficult to trust data presented in this section, because even authors recognize that different observers estimate the same plume differently. It is unclear what is the added value of this subjective information p. 7, l. 25-28 – what kind of relation did you check with this analysis? p. 7, l. 32-33 – correlation between which parameters was analyzed? Could you please also write your regression equation.

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