

Interactive comment on “Forecasting wind-driven wildfires using an inverse modelling approach” by O. Rios et al.

Anonymous Referee #3

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The manuscript proposed by O. Rios et al. presents a numerical study of wildfire spread dynamics using a front tracking algorithm, a rate of spread model (Rothermel's model) and data assimilation. The relevance of the proposed approach fits in a trend of studies in the field using data assimilation, that is well documented, rather new and and on which the authors based their study.

Overall, the paper seems to be a good "proof or concept" paper, showing what can be done, with no real novelty from the literature but a good application. As such I will recommend it for publication, providing these two revision can be addressed :

- Invariants, I do agree with the other reviewer, and as correct as the terminology can be, it still raised some question to all people I asked. Personally, as "invariant are the

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set of governing parameters..." I would simply use "parameters" instead of "invariant". Since this choice, seems to be assumed and defended by the authors, I suggest a formulation like "We define the invariants as the set of governing parameters..." in order to avoid this ambiguity.

- Because the authors speak and use computation time, it is important to know or guess a little what/how it is computed. So, I would appreciate a paragraph devoted to the numerical method used. In particular, I could not found any information on numerical approach and setup. It seems to be Lagrangian tracers ? Or not ? How are managed topological problems (front merging, local refinement, filtering...) ? How is handles input data (lookup) ? What is the time step ? Resolution ? How are computed front normals ? If these problem are all in the simplest form (convex shape, no refinement....) it certainly simplifies the problem but these must be noted in the text to know at what stage is the study.

Other Minor corrections :

- Fig 1.: include labels on the axis. Overall, normalize figures (caption size, fonts) -
Biblio : Rossi et. al.: Rossi L. instead of Rossi J.

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