Geoscientific Model Development Discussions

Geosci. Model Dev. Discuss., referee comment RC1
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Comment on gmd-2021-334

Anonymous Referee #1

Referee comment on "Representing low-intensity fire sensible heat output in a mesoscale atmospheric model with a canopy submodel: a case study with ARPS-CANOPY (version 5.2.12)" by Michael T. Kiefer et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2021-334-RC1, 2021

Here is yet another paper, of a growing number of papers, which shows us breaking free the of the simple models of fire behaviour of the last 40 years.

This paper makes several contributions first and probably most important is that this is a controlled burn i.e., a management burn of low intensity and low rate of spread. Its mesoscale weather affect is rather limited compared to most of the published studies of large area fires with turbulent sensible heat fluxes that penetrate much higher into the atmosphere.

In general, I found the paper very detailed and complete in its discussion and interpretation of the model and data. It is an excellent example of how to organize and evaluate fire models with specific research question. I suspect we will hear more of the studies related to this fire. These approaches are the future so we must recruit managers and researchers who do not necessarily have any experience or limited experience with this now more mechanistic approach.

It would have been useful for some more information on the distribution and density of the groundcover, shrubs and trees(height). Also on the amount of necrosis, mortality and litter and duff removed.