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Geoscientific Model Development Discussions
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# *Interactive comment on* "A new Lagrangian in-time particle simulation module (ltpas v1) for atmospheric particle dispersion" *by* Matthias Faust et al.

**Anonymous Referee #2**

Received and published: 3 December 2020

The authors presented new Lagrangian particle dispersion model (ltpas) for particle transport within a boundary layer which can be, possibly, turbolent. The model is online coupled with weather forcast model COSMO (German Weather Servise). The ltpas model is applied to two fields experiments studing the behavior of particles released by the agricultural activities (fertilization and cultivation with tractor). The paper is well writen and clear to understand, however, my main concern is regarding the validation of the ltpas model, see comments.

Specific comments:

1. p.3 l.31 and p.5 l.16: please, specify the probability function, is it normal distribution



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with mean 0 and variance 1? Could you please, briefly verify this choice?

2. p.9 l.10: I am quite confused by the assumption that "the particle concentration becomes zero at a height of 5 m". Is this realistic? Could you, please, discuss this choice? Maybe, it can be seen from photos.

3. I am not sure about the role of two measurement points mentioned in the Experiment part. Are the roles of these points only to concstruct the source function? If this is the case, than I do not see the merit of the simulation experiment in Sec. 3.3 regarding validation of the Itpas model itself (although the simulation itself is interesting with discussion on Fig. 6). However, this means that the Itpas model is not validated in the paper. Please, clarify.

Minor comments:

1. Eq. (5): u, v, and w are probably spatial directions but it should be stated in the text.

2. Eq. (17): $erf$ should be probably $erf(\gamma)$.

3. p.15 l.20: crating –> creating

4. Reference (Pisso et al., 2019) is already published, please, update the citation.

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