

## ***Interactive comment on “The Lagrangian particle dispersion model FLEXPART-WRF version 3.0” by J. Brioude et al.***

### **Anonymous Referee #1**

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This paper describes a new version of FLEXPART-WRF. Major additions have been made to the model both in terms of science with improved treatment of vertical velocities and turbulence and in terms of usability with improved input and output options. Furthermore, the model has been parallelized. Taken together, these changes are very significant both on the scientific front and on the usability front and are a great contribution to the research community.

The paper is well written and provides a thorough description of the model.

My only major comment would be that it would have been nice to see some evaluations / comparisons of trajectories from the new model with the previous version of FLEXPART-WRF, and possibly even FLEXPART itself. However I understand if the authors feel that this is beyond the scope of the current paper.

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Minor comments 3626: The discussion of CPU time was a bit confusing for the uninitiated: maybe clarify that CPU time is a function of number of particles, and that the number of particles necessary for a simulation is a function of the spatial and temporal resolution required and the number of sources? Note also that some runs are limited by the time to read the meteorological fields from disk.

3630: WRF uses eta levels, not sigma levels. I believe this should be corrected throughout the manuscript?

Technical details: 3618-9: shouldn't it be “grid-cell” instead of “grid-point”? 3618-13: of \*the\* simulated meteorological fields 3618-17: with \*the\* horizontal winds 3631-15: the last term is truly zero rather than negligible in the model isn't it? 3630-14: Do you mean: Therefore, no \*separate\* preprocessing of the WRF output is needed... or: simple preprocessing is done internally... 3632-23: in \*the\* case of ... 3635-6: advise \*using\* 3635-20: inconsistent use of UK/US spelling: neighbor or neighbour 3635-20: nearest neighbor – this part was a bit confusing – don't you mean interpolation to particle positions, or interpolation when using different grids for WRF and for FLEXPART-WRF? 3636-25: why not just state the minimum rainfall rate 3637-8: first not firstly 3643-2: Brioude not Briouden

Fig 1: the terminology of regular vs. irregular grids is meaningful in terms of the FLEXPART code but is a bit confusing here. I would recommend latitude/longitude grids vs. WRF grids, or something like that.

Table 2: The caption & labels could be expanded to make the information clearer.

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Interactive comment on Geosci. Model Dev. Discuss., 6, 3615, 2013.

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