Geosci. Model Dev. Discuss., 5, C458–C459, 2012
www.geosci-model-dev-discuss.net/5/C458/2012/


**Geoscientific
Model Development
Discussions**

# *Interactive comment on* "Numerical uncertainty at mesoscale in a Lagrangian model in complex terrain" *by* J. Brioude et al.

**J. Brioude et al.**

jerome.brioude@noaa.gov

Received and published: 23 July 2012

We would like to thank the reviewer for taking the time to review our manuscript and for her/his positive answer. Our answers are given below:

Introduction, Line 14-15: the uncertainty in atmospheric transport due to uncertainties in the Eulerian meteorological models can be assessed because the same set of trajectories can be calculated using the same Lagrangian model, but with different meteorological model. Hence, differences in concentration (forward trajectories) or residence time (backward trajectories) will be directly the consequence of the differences in atmospheric transport in those Eulerian models. If each meteorological model can be considered independent, those differences can be considered as an uncertainty estimate of atmospheric transport in those meteorological models.



Section 3.1, Line 11-12: Thanks for pointing this out. We have corrected the sentence.

Page 975, Line 28: You are right, Wf has also inconsistencies because the gradient terms in the divergence estimate include numerical uncertainty. Table 1 and 2 show that Wf has more inconsistency than eta dot (or its time-average equivalent), but it has less inconsistency than W, the cartesian vertical velocity. Wf should be used if only W is available in a WRF output. In view of the uncertainty estimates, we advise to use Wf if no alternative solutions are available. We will add a comment in the conclusion.

Interactive comment on Geosci. Model Dev. Discuss., 5, 967, 2012.