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Earth System Dynamics
Discussions

Interactive comment on "A new moisture tagging capability in the Weather Research and Forecasting Model: formulation, validation and application to the 2014 Great Lake-effect snowstorm" *by* Damián Insua-Costa and Gonzalo Miguez-Macho

Anonymous Referee #2

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After reading the manuscript and the interactive comments by the other anonymous referee, I can say that my opinion about the paper submitted by Damian Insua-Costa and Gonzalo Miguez-Nacho is highly positive.

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Discussion paper

The origin of moisture to produce precipitation in a particular region is a very important meteorological problem. The authors of the present paper review some available methods of moisture origin assignation to the observed or modelled precipitation and/or precipitable water in their paper, and they propose a new method that they have incorporated to the WRF model. They validate the method through a month of integration (over US) and they apply it to analyse the interesting US Great Lakes snowstorm of November 2014. The paper is not only a good contribution to the main meteorological problem already mentioned, as well to the understanding of a very interesting particular case, but it is also a very well written paper, clear and with well-presented complementary figures.

I would accept the paper for publication almost as it is, although the comments of referee #1 can surely improve the text. I would only add a few small complementary details: Noting that the method is intrinsically coherent from the modelling point of view (the error of the addition of all the contributing origins into the total modelled precipitation is very small), it is worthy to compare the observed and modelled precipitation, in order to better evaluate the significance of the possible contribution of the different moisture origins to the observed/actual precipitation:

Fig. 12 does compare the observed and modelled total precipitation for the case of November 2014 in Great Lakes; why do not do it (in Fig. 5) to compare the observed and modelled precipitation (only on land, of course) during the whole validation month?

Although it is clear in the text, perhaps in Fig. 13 it would be convenient to specify that the amount and percentage of precipitation represented in it is the part which origin is the Great Lakes evaporation.

Pg. 11, line 11: a mistake, 2104 (2014)

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