

Interactive comment on “Estimates of global dew collection potential” by H. Vuollekoski et al.

Anonymous Referee #1

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The paper “Estimates of global dew collection potential”, by H. Vuollekoski et al. , deals with an estimation of dew yield around the world from a physical model and reanalyses of meteorological data.

This is undoubtedly an interesting attempt as such world estimation is expected for long from the community interested in dew formation. The paper is well and clearly written and agreeable to read. Unfortunately, the present study suffers from some important problems and inconsistency with experimental observation (difference can reach a factor of 4), which could give false hopes and misleading interpretations to people who are not expert in the field and makes the present version of the study not worth of publication.

Below are listed the general and specific comments.

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General

1. p. 9527. The re-analysis of meteo data is crucial for the results. More information about the final uncertainty and level of confidence have to be given. In particular, how such data can be extrapolated to areas where no local measurements are available (e.g. Africa)?
2. p. 9529-30. The exchange coefficients h and k that have been used do not correspond to what is measured, as the authors themselves are noting. Thus the dew yield that is calculated is far from the reality and can give to erroneous interpretations. As a matter of fact, it is well known that dew does not form for wind larger than typically 4-5 m/s, but is at maximum for zero-wind (which is not zero because of the natural convection) . This is in contradiction with the model, presumably because of the wrong values chosen for the exchange coefficients.
3. p. 9531. Due to the model that does not account properly of the exchanges and the extrapolation of the meteo data, it is not surprising to see a difference with the collected dew. It would be interesting to have both and simulated values, to figure out what is the difference. In the Zangvil paper, the mean dew yield is on order of 0.08 mm/day, in the present model, it is about 0.3 mm/day. There is nearly a factor of 4 between both values.

More specifics

4. p. 9520, L28. There are studies based on measurements in some countries (India). There is a recent study based on another approach (artificial neural networks) for Morocco, see I. Lekouch, Lekouch et al., Journal of Hydrology 448–449, 60–72 (2012).
5. p. 9520, L6. The paper is not published, this ref. is not useful

Others: 6. Abstract. It has to be noted that the estimation is based on a calculation and reanalysis of meteo data. A level of confidence (uncertainty) has to be given.

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