Atmos. Meas. Tech. Discuss.,
doi:10.5194/amt-2016-22-RC2, 2016

Atmospheric Measurement Techniques Discussions

Interactive comment on "HOAPS and ERA-Interim precipitation over sea: Validation against shipboard in-situ measurements" *by* Karl Bumke et al.

Anonymous Referee #2

Received and published: 23 March 2016

The paper "HOAPS and ERA-Interim precipitation over sea: Validation against shipboard in-situ measurements" by K. Bumke and co-workers presents a validation study to assess the performances of two precipitation datasets (HOAPS and ERA-I) over ocean, after comparisons with ship measurements at global scale. The objective is challenging, since instantaneous areal precipitation (HOAPS) and grid-point cumulated precipitation (ERA-I) have to be matched with time integrated point-like measurements from moving platforms. The paper is interesting and presents significant results, deserving the publication on AMT. However, I recommend a moderate revision, focused on improving presentation and increasing the information content of the results.

Abstract. Line 11 (and throughout the paper), none of the two products validated in this

work are strictly "forecasts": I suggest to refer to the validated fields as "estimates" or "products" instead.

Introduction. This section has to be improved. First, no mention of the most popular satellite derived precipitation products is given. Global products such as TMPA (Huffman et al., 2007. J. Hydrometeor.,8, 38–55), C-MORPH (Joyce et al. 2004, J. Hydrometeor., 5, 487–503) PERSIANN (Behrangi et al. 2009, J. Hydrometeor., 10, 1414–1429), H-SAF (Mugnai et al., 2013, NHESS, 13, 1959–1981) and the newest IMERG (Huffmann et al. 2015, http://pmm.nasa.gov/sites/default/files/document_files/IMERG_doc.pdf, should be at least mentioned. Moreover, the introductory discussion of literature about evaporation (now on lines 23-30 on page 13) and HOAPS/ERA-I validation (lines 31-page 12 to line 14-page 13) should be moved here.

Section 2. Page 2. Here there is no real reason to mention the exact position of the data and I suggest not mentioning Figure 6 (it is also repeated in similar sentences at lines 24 and 28). Page 3, lines 9-10. Later in the paper, it is stated that that the ships' speed is 20 Kn. This information should be anticipated here, indicating if this value is a kind of average of the cruise speed or it is just an order of magnitude. Figure 2 is confusing, and does not help in understanding section 2.5. I suggest to better explaining all the features in the figure (e.g. what is the meaning of the colors?), to improve the caption and to improve the clarity of section 2.5.

Section 3. Page 7, lines 6-9. The discussion on the use of an interpolation system for rainrate data is probably out of the scope of the paper (many interpolators do not affect rainrate maxima and minima). I suggest to simply say that nearest neighbor is used following Bumke et al., 2012. Page 7, line 14. It is 30 km a weighted mean of the decorrelation distance? How it is computed? Since the data domain ranges over all latitudes and seasons, it would be possible (and useful) to apply different correlation lengths, according to the precipitation type (convective/stratiform)?

Section 4. Page 8, line 11. About the considered indices, I suggest the following. 1) avoid to use the “accuracy”: it depends on the number of correct negatives, and this number varies with the data acquisition strategy, affecting the results; 2) replace accuracy with some equitable skill score, such as the ETS or HSS (mentioned below in the manuscript) to assess the skill of the product with respect to random rain assignments; 3) rename hit rate with Probability of Detection (POD), and write explicitly that the success ratio can be considered as 1-FAR (False Alarm Ratio): POD and FAR are more self-explaining (and popular) names for these indicators (see, among others, Puca etal., 2014, NHESS, 14, 871-889).

Section 5. The discussion on the thresholds (Figs 4, 5) should include the analysis of the number of “wet” events in the database, that are expected to decrease rapidly with increasing thresholds, since rainrate should be distributed as a power-low. This is the reason I suggest using equitable skill scores instead of accuracy.

Section 6. The second part of this section (below line 31 on page 12) is a review of literature results and should go in the Introduction.

Section “Data availability”. I suggest to cancel this unnumbered section and to include data providers in the Acknowledgement section.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-22, 2016.