

## ***Interactive comment on “Climatology of daily rainfall semivariance in The Netherlands” by C. Z. van de Beek et al.***

### **Anonymous Referee #1**

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Title: Climatology of daily rainfall semivariance in the Netherlands

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This paper provides a detailed analysis of the climatology of rainfall semivariance in the Netherlands for a 30-year period. The paper is well written, the topic interesting and well suited for Hydrology and Earth System Sciences. I think that the analyses are well done and comprehensive. I have few comments (see below), and I think that the paper can be accepted for publication after a moderate revision.

General comments:

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- There is no discussion about the quality control of this rain gage network. Can the Authors provide some discussion about it?
- Pg. 2088, line 23: can the Authors elaborate on this sentence (and add one or more references)?
- Could it be possible to add in Figure 1 a plot with the yearly cycle of rainfall?
- Pg. 2089, section 2.1: could it be possible to add the value of the average intergage distance?
- Pg. 2089, section 2.1: can the Authors please explain why values of rainfall less than 0.05mm are set to 0.05 mm rather than zero?
- Pg. 2090, lines 6-7: I personally don't have any particular problem with the isotropy assumption. However, could the Authors support this statement in a more extensive way, and add few references?
- In estimating the semivariogram, do the Authors use any robust fitting procedure? Can they please mention their fitting procedure?
- In Equation 3, the Authors simplify the equation by removing the nugget. Is there any information about the quality of the 29 rain gages to suggest that measurement errors are negligible, therefore supporting their model simplification?
- Pg. 2093 (Figure 3): can the Author provide any insight on why the signal in the standard deviation is much clearer than in the mean? Any physical reason for the 40-day differences between mean and standard deviation?
- Pg. 2095: I think that Figure 5 should be 6, and vice versa (see line 5 and rest of the text). Please check the figure numbering. See also Figure 10 on pg. 2098 (line 23): I think it should be Figure 11.
- Figure 5: as far as the range is concerned, it is not clear to me why the Authors fitted the cosine function to the data after sqrt-sqrt transformation, since the data is much

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more skewed. Please explain.

- Figure 5: can the Authors please add the histogram of the RMSE before and after sqrt-sqrt transformation?

Editorial/Minor comment

- Please be consistent by either using “semivariance” or “semi-variance”

- Pg. 2086, line 14: I would probably remove the adjective “closely”

- Pg. 2086, line 25: the Authors may want to add the following reference: Villarini, G., J.A. Smith, M.L. Baeck, P. Sturdevant-Rees, and W.F. Krajewski, Radar analyses of extreme rainfall and flooding in urban drainage basins, *Journal of Hydrology*, 381(3-4), 266-286, 2010.

- Pg. 2087, line 16: it should be “satellites (e.g., Uijlenhoet”

- Pg. 2087, line 23: the Authors may want to add the following reference: Villarini, G., and W.F. Krajewski, Review of the different sources of uncertainty in single-polarization radar-based estimates of rainfall, *Surveys in Geophysics*, 31, 107-129, 2010.

- Pg. 2088, line 18: the Authors may want to add the following reference: Kirstetter, P.E., G. Delrieu, B. Boudevillain, and C. Obled, Toward an error model for radar quantitative precipitation estimation in the Cevennes-Vivarais region, France, *Journal of Hydrology*, doi:10.1016/j.jhydrol.2010.01.009, 2010 (in press).

- Pg. 2086, line 11: Can the Author please explain the acronym “KNMI”?

- Pg. 2093, line 18: please explain the acronym “CV” in the previous line

- Pg. 2094, line 14: why is there the word “semi” in front of “climatological”?

- Pg. 2095, line 5: the word “Figure” is missing in the brackets.

- For consistency, do not use the capital letter when referring to a season.

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- Figure 5: please add the values to the x-axis.

- Figure 9: Please add in the figure and the caption that the means are in the left panels and the standard deviations in the right ones.

- Figure 13: shouldn't it be “semivariance/km” in the y-axis label? Also, please translate the labels on the x-axis into English.

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Interactive comment on *Hydrol. Earth Syst. Sci. Discuss.*, 7, 2085, 2010.

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