**Hydrology and
Earth System
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Discussions

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Interactive comment on "**Bias correction schemes
for CMORPH satellite rainfall estimates in the
Zambezi River Basin**" *by* **W. Gumindoga et al.**

Anonymous Referee #2

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General comments: This study evaluate the performance of five bias correction techniques for CMORPH rainfall dataset in Zambezi River basin. The topic is certainly attractive and suits well within the scope of the journal. However, many descriptions in the manuscript is not clear enough, and some methods and results do not make sense.

Specific flaws:

Lines 104, I am interested which technique(s) consider the spatial patterns in bias, how about their performance?

Introduction, add simply some description about the CMORPH.

Figure 1, I recommend to re-plot the figure, remove the noisy line, and only show the information about the elevation, station location, lakes in the basin, and the boundary

of three hydrological region. Moreover, please check the station number, I don't think there are 54 rain gauging station in Figure 1.

Table 1 and 2, I suggest to show them as the Supplemental Information

Section 3.2 Bias correction schemes, I strongly suggest to unify the variable among 5 kinds of bias correction techniques (P* in equation 4 means CMORPH precipitation after bias correction, however, it was changed to SDT in equation 7 and PQME in equation 8.).

Section 3.2.4 I understand the process from equation 5-7, however, I don't think it belongs to the category of 'DT'.

The authors tried to bias-correct the daily rainfall by use of STB, EZB, QME, and bias-correct the monthly rainfall by use of PT, and then compare the performances of different bias-correction technique. In my opinion, it is unfair to compare them since that the methods were adopted to corrected the rainfall in different temporal scales (The author had not mentioned the temporal scale for DT).

Section 3.2.5, how to deal with the situation that no rainfall in CMORPH but rainfall in gauge? How to calculate the ecdf for the days without precipitation.

This research focused on the period 1998-2013, I have not found any statement about the calibration and validation period. Did the authors regard the period 1998-2013 as a whole? It doesn't make sense.

The title of this manuscript is 'Bias correction schemes for CMORPH satellite rainfall estimates in. . .', however, the most of the statements in section 4.1- section 4.3 has not related with the topic (bias correction).

Figure 9 – Figure 10, most of the bias-correction techniques showed the poor performances, with larger bias than that in R-CMORPH. It is opposite to our normal expectation, is it true? Please check the raw data carefully?