Interactive comment on "Modeling the Changes in Water Balance Components of Highly Irrigated Western Part of Bangladesh" *by* A. T. M. Sakiur Rahman et al.

Anonymous Referee #1

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Overall Comments: This paper by A.T.M. Sakiur Rahman et al (the authors) describes the development of wavelet autoregressive moving average models to forecast changes in water balance components. The approach is applied to a highly-irrigated area in Western Bangladesh using data collected between 1982 and 2013. The authors show that the approach can be used to forecast short term changes in water balance components but suggest that models could be further improved using different combinations of wavelet analysis.

Overall, the paper is well structured, although the level of English used, and the wording of some sentences could be refined. This paper fits well within the scope of HESS

and the described methodology provides a useful approach to investigating changes in water balance. I would recommend this paper is published, subject to some minor corrections, including improvement in the quality of English used, along with consideration of the elements described below.

Specific Comments: This is a technical paper with a strong methodological focus. While the approaches used are well described, I would recommend the authors more clearly define the importance of the work in a broader hydrological context; for example, the relevance to hydrology and water resource management regionally and globally as this is only mentioned briefly.

This study is applied to a region of Bangladesh, however, both the approach and the paper would benefit if the transferability of the methodology could be highlighted by the authors; i.e. in what environments and under what conditions would the methods described work well.

The paper would also benefit from a separate limitations section; for example, as an additional section 3.4. Limitations, in addition to those found within the methods, should also be highlighted. This may include, for example, scarcity of data. Also, data from 11 stations are used to represent over 61,000 km2. A comment on how representative this data is would be welcome.

Some of the text in Figure 6 is difficult to read. Also, please be consistent with the font.

Some examples of typos and where sentence rephrasing would be beneficial: The following list is by no means exhaustive and the paper would greatly benefit from a detailed proof read before re-submission.

Line 53: "Almost most of the studies found. . .." Please rephrase.

Line 71/72: "Water balance study has not attracted much attention in Bangladesh too." Please rephrase.

Line 144: "The reaming amount of rainfall has been applied to calculation". Possibly

change or rephrase to "The remaining amount of rainfall has been included in the calculation".

Line 430: ". . .it is necessary to do detailed analysis. . .".

Line 437: ". . .as a result. . .".