

Interactive comment on “Identifying ENSO Influences on Rainfall with Classification Models: Implications for Water Resource Management of Sri Lanka” by Thushara De Silva M. and George Hornberger

Anonymous Referee #1

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General comments:

This study demonstrates application of different classification models to predict monthly rainfall using climate indices MEI and DMI. The findings of this study will be highly relevant for water managers of Sri Lanka. Below are my comments for Authors. Some of the similar comments I found that Authors have already addressed in the Discussion forum but please address all the points below.

Specific comments: 1) Line 95 says that the river basin rainfall was calculated using

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the Thiessen polygon method. Why not divide the basin into sub-basins (using any GIS tool) based on digital elevation model and use sub-area averaged rainfall? Is this choice due to the fact that there are many reservoirs in the basin? Please clarify.

Out of 16 polygons in Mahaweli river basin and 11 in Kelani, what was the basis of selecting only 8 sub-basins?

2) Lines 104 to 109 describe how anomalies were calculated. Did you apply any of the transforms mentioned in line 108 to get normally distributed rainfall? Some plots/results can be included to clarify the rainfall anomaly classification. In Table 1, the use of 0.5 appears like a random choice. Please justify.

3) Line 122 says average of MEI and DMI were used but the figures 4 and 5 show that you have used them separately. Authors should support the choice of MEI and DMI over several other climate indices which they could have used as predictors.

4) 64 years of historical data have been used, 75% of which are used for training and rest for testing model performance. If I understood properly, there is no demonstration of season-ahead forecast of rainfall and how those can be classified as dry or wet, the information useful for water managers. Authors write about forecast in Lines 240 to 246, but there is no assurance of enhancement in future skill using the three classification models used in this study.

5) Water managers will be mostly interested in extreme events. Would it be possible to obtain information about extreme dry or wet season/months from the three classification models used here?

Technical corrections:

(i) There are nomenclatures like dry and wet which are used for dividing the zones and also for classifying rainfall anomaly (see Lines 100, 160 to 177). It would be better if Authors can use different nomenclature.

(ii) In Figure 4, caption of part (d) is missing.

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