Reviewer comments are shown in blue color fonts, and authors' responses are given black color fonts.

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.

Response: Thank you for identifying the importance of the study. Shortcomings of the paper identified by the reviewers will be rectified as suggested, for the next submission. Response for the detail comments are given below.

Specific comments:

1) (a) Line 95 says that the river basin rainfall was calculated using 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.

Response: The division of river basin into sub basins was limited by the information availability from the water resources agencies of Sri Lanka. This study does not aim to explore rainfall differences across sub-basins, so we did not need to define sub basins using DEMs.

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

Response: The two largest reservoir cascades of Sri Lanka are associated with Mahaweli and Kelani river basins. When selecting the 8 sub-basins from two river basins, we looked at the most important sub-basins for the reservoir catchment as well as water use. Kelani river basin's sub-basins: Laxapana, Norwood, Norton Bridge are main catchments for the two largest reservoirs (Moussakele and Norton Bridge) at the upstream of the reservoir cascade. For the Mahaweli, Morape represents the Kotmale reservoir catchment, Peradeniya represents the Victoria reservoir, Randenigala represents the Randenigala reservoir, Bowatenna represents the Bowatenna reservoir and Manampitiya represents the dry zone agricultural tanks.

We can add one or two sentence to the manuscript clarifying the basis for selecting 8 sub-basins.

2) (a) 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.

Response: Shapiro-Wilk's method is used to identify the normality of rainfall anomaly distribution. For example, Manampitiya NEM normality test results are given below.

Data 1: original data
W = 0.96675, p-value = 0.08185

Data 2: data transformed by square root
W = 0.98772, p-value = 0.7772
Data 3: data transformed by log
W = 0.91577, p-value = 0.0003325
Further, from data plots (Figure S *1*) and the S-W stastic, we conclude that the square root transfo rmed data is closer to being normally distributed than the other forms.

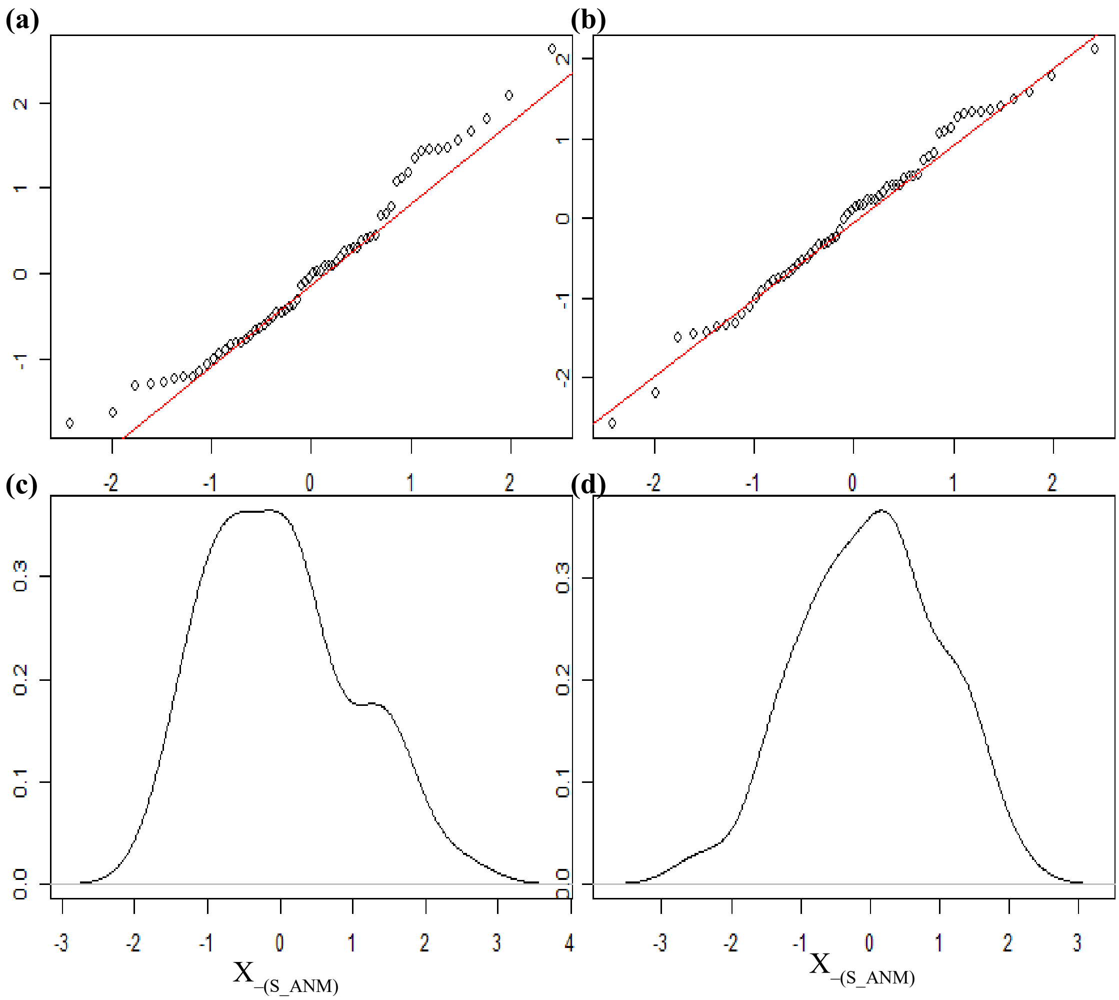

Figure S 1: Manampitiya NEM standardized data (a) original form qqplot (b) square root form qqplot (c) original form density plot (d) square root form density plot

(b) In Table1, the use of 0.5 appears like a random choice. Please justify.

Response: The choice of 0.5 (or any cutoff) is a choice. Using 0.5 as a threshold for a normal distribution defines portions of the data that are fairly evenly distributed into three categories – about 31%, 38%, and 31% for a normal distribution. We deemd this a reasonable choice for our analysis.

3) (a) Line 122 says average of MEI and DMI were used but the figures 4 and 5 show that you have used them separately.

Response: MEI and DMI values are originally in a monthly time step. Since we analyzed the data in rainfall seasons, MEI and DMI values over the season are averaged. For example for the NEM season, the MEI value is the average of January and February monthly values. For SWM season, DMI is the average of May, June, July and September values.

(b) Authors should support the choice of MEI and DMI over several other climate indices which they could have used as predictors.

Response:

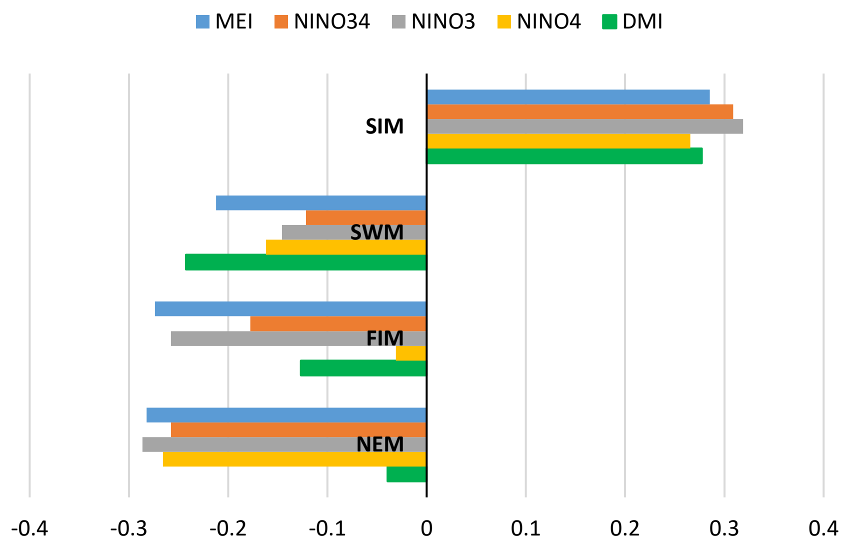

Figure S 2: Correlation between Norwood rainfall anomalies with multiple climate indices

Table S 1: Correlation analysis of rainfall anomalies and climate indices

Rainfall			**Morape**					**Peradeniya**		
Month	MEI	NINO34	NINO3	NINO4	*DMI*	MEI	NINO34	NINO3	NINO4	*DMI*
NEM	-0.35	-0.35	-0.34	-0.38	*-0.09*	-0.38	-0.40	-0.39	-0.42	*-0.11*
FIM	-0.28	-0.19	-0.28	-0.07	*-0.11*	-0.27	-0.18	-0.30	-0.06	*-0.06*
SWM	-0.35	-0.24	-0.23	-0.26	*-0.29*	-0.35	-0.26	-0.25	-0.27	*-0.31*
SIM	0.21	0.23	0.27	0.19	*0.12*	0.17	0.19	0.21	0.15	*0.09*
Rainfall			**Laxapana**					**Norwood**		
Month	MEI	NINO34	NINO3	NINO4	*DMI*	MEI	NINO34	NINO3	NINO4	*DMI*
NEM	-0.27	-0.26	-0.28	-0.27	*-0.01*	-0.28	-0.26	-0.29	-0.27	*-0.04*
FIM	-0.28	-0.16	-0.27	-0.03	*-0.07*	-0.27	-0.18	-0.26	-0.03	*-0.13*
SWM	-0.3	-0.23	-0.21	-0.25	*-0.31*	-0.21	-0.12	-0.15	-0.16	*-0.24*
SIM	0.1	0.10	0.14	0.06	*0.08*	0.29	0.31	0.32	0.27	*0.28*
Rainfall			**Randenigala**					**Bowatenna**		

Month	MEI	NINO34	NINO3	NINO4	*DMI*	MEI	NINO34	NINO3	NINO4	*DMI*
NEM	-0.30	-0.31	-0.29	-0.34	*-0.11*	-0.35	-0.36	-0.35	-0.38	*-0.2*
FIM	-0.29	-0.23	-0.33	-0.10	*-0.04*	-0.23	-0.17	-0.25	-0.09	*-0.02*
SWM	-0.17	-0.12	-0.09	-0.18	*-0.24*	-0.18	-0.09	-0.05	-0.11	*-0.12*
SIM	0.37	0.38	0.41	0.36	*0.35*	0.35	0.41	0.40	0.40	*0.36*
Rainfall			**Norton Bridge**					**Manampitiya**		
Month	MEI	NINO34	NINO3	NINO4	*DMI*	MEI	NINO34	NINO3	NINO4	*DMI*
NEM	-0.32	-0.30	-0.33	-0.33	*-0.01*	-0.26	-0.28	-0.26	-0.28	*-0.16*
FIM	-0.18	-0.12	-0.21	-0.01	*-0.08*	-0.2	-0.17	-0.31	-0.06	*-0.14*
SWM	-0.31	-0.22	-0.21	-0.22	*-0.37*	-0.07	0.08	0.08	-0.01	*-0.03*
SIM	0.02	-0.02	0.03	-0.04	*-0.15*	0.45	0.46	0.44	0.46	*0.51*

We examined the correlation between rainfall anomalies and multiple climate indices to choose the two climate indices MEI and DMI (Figure S 2, Table S 1). ENSO phenomenon is represented by MEI, NINO34, NINO3, NINO4 indices, and Indian Ocean dipole phenomenon is represented by DMI index. Correlation analysis indicates that MEI and sub-basins' rainfall anomalies demonstrates higher correlation for all the rainfall seasons compared to the NINO34, NINO3 and NINO4. DMI represents the intensity of IOD, the gradient of the sea surface temperature. MEI is estimated using several climate factors such as sea-level pressure, zonal and meridional components of the surface wind, sea surface temperature, surface air temperature, and total cloudiness fraction of the sky (National Oceanic and atmospheric administration 2017). Therefore, considering high correlation values between MEI and rainfall anomalies as well as MEI based on several climate parameters in addition to the sea surface temperature, we selected MEI as the indicator for ENSO with DMI as the indicator for IOD.

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.

Response: As indicated in the Lines 253-258; ENSO forecasts are available from the International Research Institute for Climate and Society (International Research Institute, 2017b) and IOD forecasts are available in the Bureau of Meteorology (BOM), Australian Government (Bureau of Meteorology, 2017). We do not know of the availability of archives of MEI and DMI past forecasts that could be used to evaluate the skill of the season-ahead forecasts of rainfall. Thus we could not evaluate the degree to which our analysis would improve overall skill.

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?

Response: Because our analysis is for seasonal precipitation, we think it is most appropriate for considering dry conditions. Extreme wet conditions are most important for flooding in this region and such analyses would best be done on a much shorter time scale. For very low conditions, the QDA method produces results that are promising (Table S2).

Table S 2: Extreme dry (very low rainfall) and wet (very high rainfall) events identifying skill

Class	Range	NortonBridge SWM		Manampitiya NEM	
		tree	QDA	tree	QDA
Very low	$X_{S\_ANM} < -1.0$	10/11	10/11	6/11	11/11
low	-1.0 <= $X_{S\_ANM} < -0.5$	9/11	6/11	5/11	9/10
normal	-0.5 <= X_{S_ANM}<0.5	8/22	9/22	9/25	11/25
high	0.5 <= X_{S_ANM}<= 1.0	5/11	5/11	1/5	0/5
Very high	1.0 <= X_{S_ANM}	6/11	6/11	7/11	1/11

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.

Response: We will use three rainfall classes as high, normal and low instead of dry, average and wet.

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

Response: Caption will corrected as including (d) (b) Manampitiya NEM rainfall classification by QDA

Reference:

Bureau of Meteorology. (2017). Indian Ocean, POAMA monthly mean IOD forecast. Retrieved March 30, 2017, from http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean

International research institute. (2017). IRI ENSO forecast. Retrieved January 1, 2017, from http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current

National oceanic and atmospheric administration. (2017). Cold & Warm Episodes by Season. Retrieved March 30, 2017, from http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml