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வளிமண்டலவியல் திணைக்களம்
DEPARTMENT OF METEOROLOGY
இலங்கை இலங்கை SRI LANKA

Consensus Seasonal Weather Outlook
September, October and November (SON)
Seasonal Rainfall for Sri Lanka

This forecast was prepared using

- The prevailing global climate conditions.
- Forecasts from different climate models from around the world.
- Statistical downscaling of GCM output using CPT

Issued by Centre for Climate Change Studies (CCCS)

And

Research Division

(a) Prevailing global climate conditions

During August, ENSO-neutral continued, as equatorial sea surface temperatures (SSTs) were near average across most of the Pacific Ocean (Figs. 1 and 2). The lower-level trade winds were slightly enhanced near the International Date Line, and upper-level winds were near average over most of the tropical Pacific. Overall, the ocean and atmosphere system remains consistent with ENSO-neutral.

The majority of models favor ENSO-neutral and IOD neutral through the remainder of 2017 (Fig. 3). These predictions, along with the demise of the recent Pacific warmth and continued near-average atmospheric conditions over the Pacific, lead forecasters to favor ENSO-neutral through the winter. (Climate Prediction Center, USA).

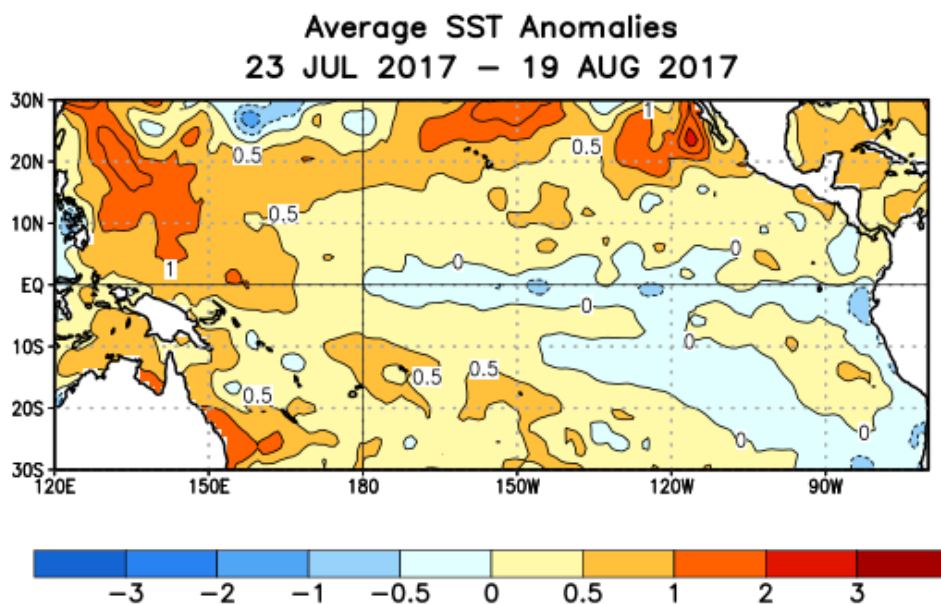


Fig 1: Observed Average sea surface temperature (SST) anomalies (°C)

Weekly SST Anomalies (DEG C)

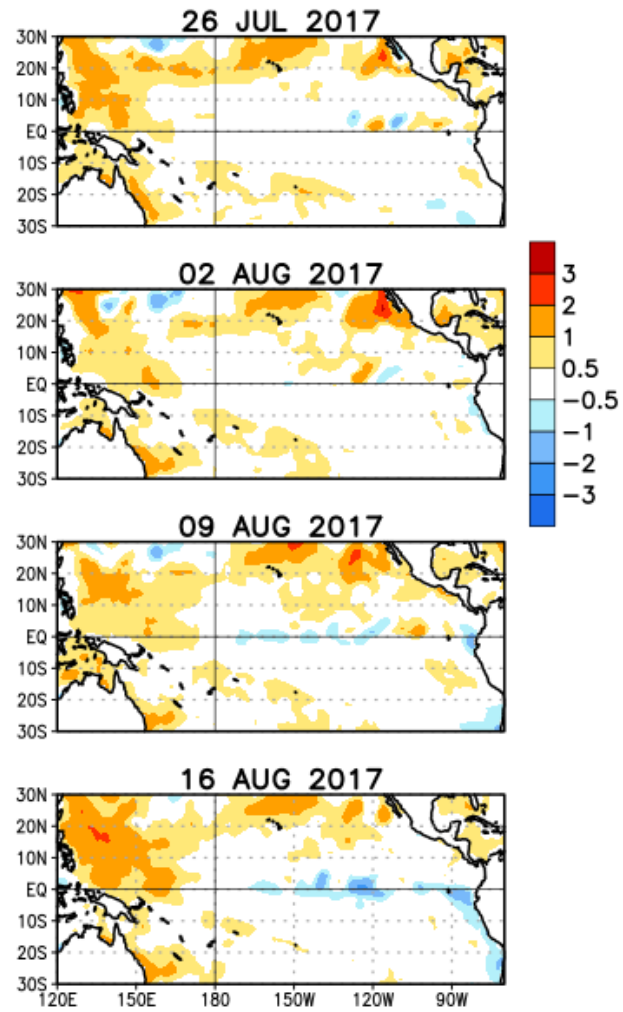
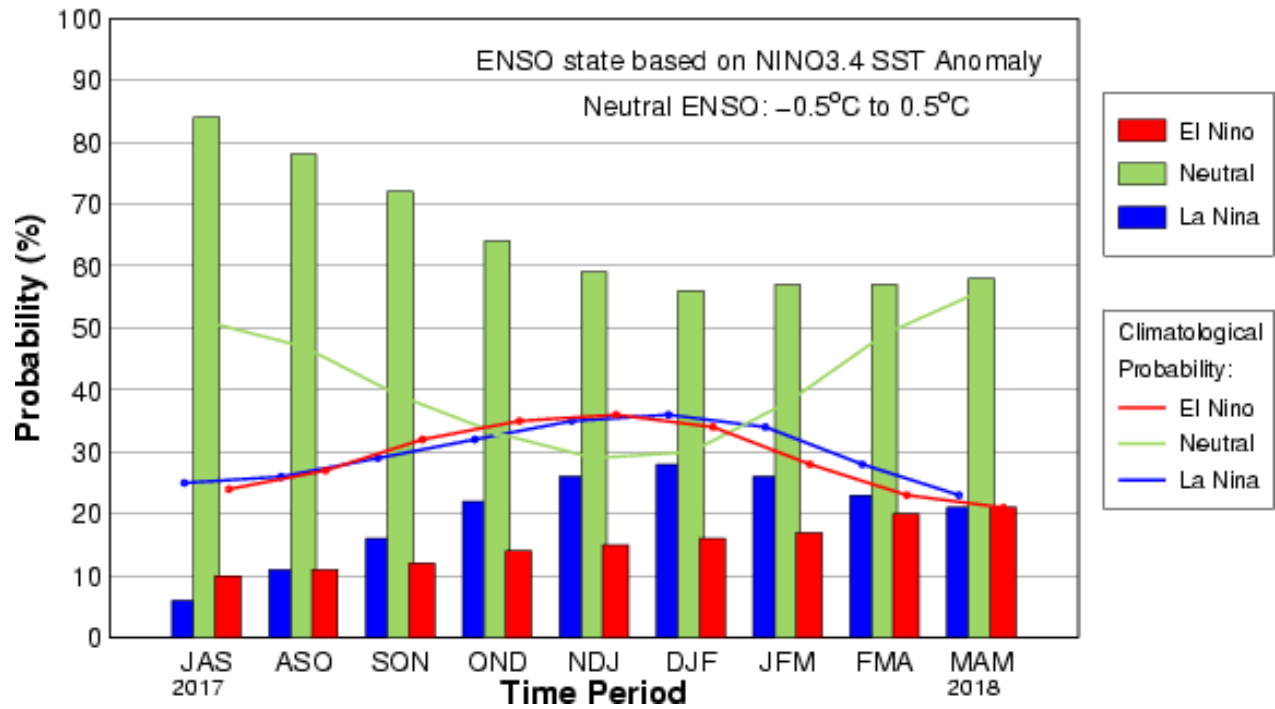
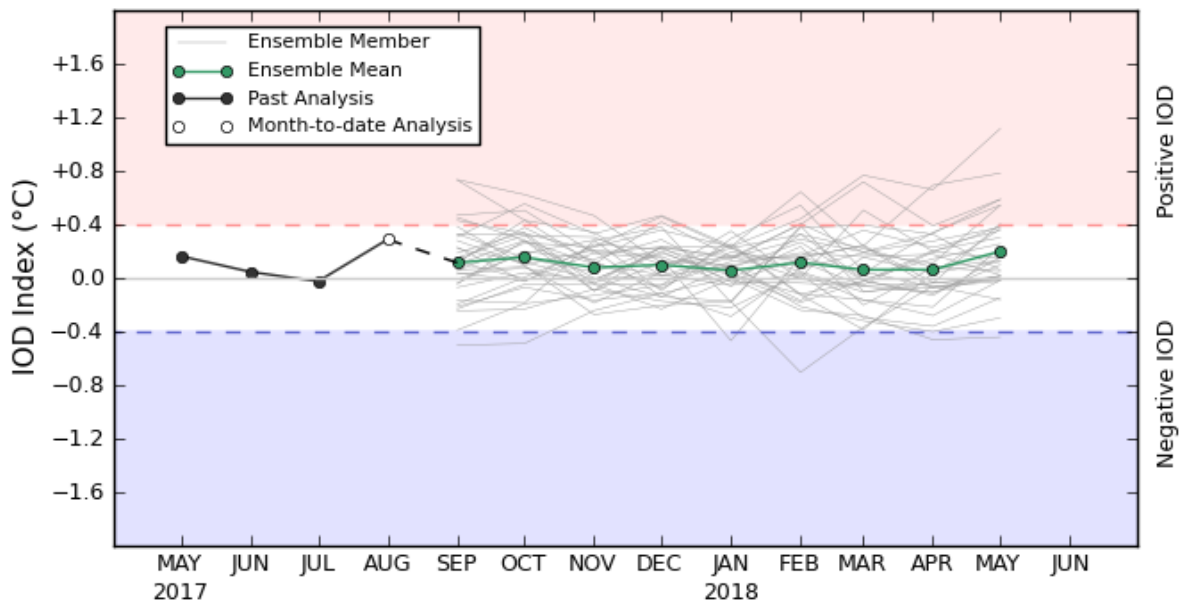


Fig 2 :Weekly Observed Average sea surface temperature (SST) anomalies (°C)

Early-Aug CPC/IRI Official Probabilistic ENSO Forecast



POAMA monthly mean IOD - Forecast Start: 13 AUG 2017



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Base period 1981-2010

Fig 3: ENSO forecast from Climate Prediction Center (CPC)/ IRI Forecast(above) and IOD forecast from Australian Bureau of Meteorology (below).

(a.) Forecasts from different climate models from around the world.

(a.1) For SON season

Figure 4 shows the probabilistic multi model ensemble forecast using dynamical models from 12 global producing centers (GPC) for SON season. There is higher chance of receiving above normal rainfall for SON season over Sri Lanka (Fig. 4). Out of 12 GPC individual forecasts 5 and 2 GPC forecasts give above and below normal rainfall for SON season respectively (Fig 5). There is no signal for SON season over Sri Lanka from 5 GPC forecast outputs. Accordingly there is a higher chance of receiving above normal rainfall for SON season 2017.

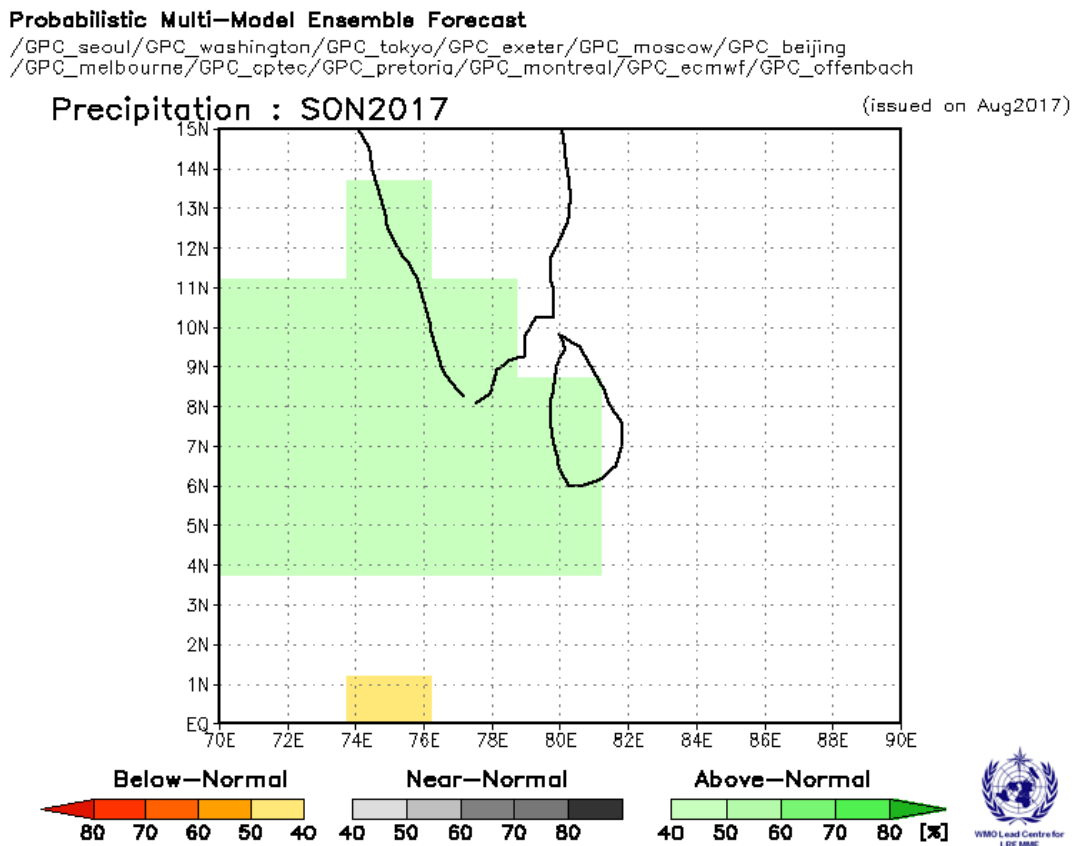


Fig 4 : Probabilistic multi model ensemble forecast for ASO using dynamical models from 12 WMO global producing centers (GPC).

lat=0 15
lon=70 90

Precipitation : SON2017

(issued on Aug2017) [Unit: mm/day]

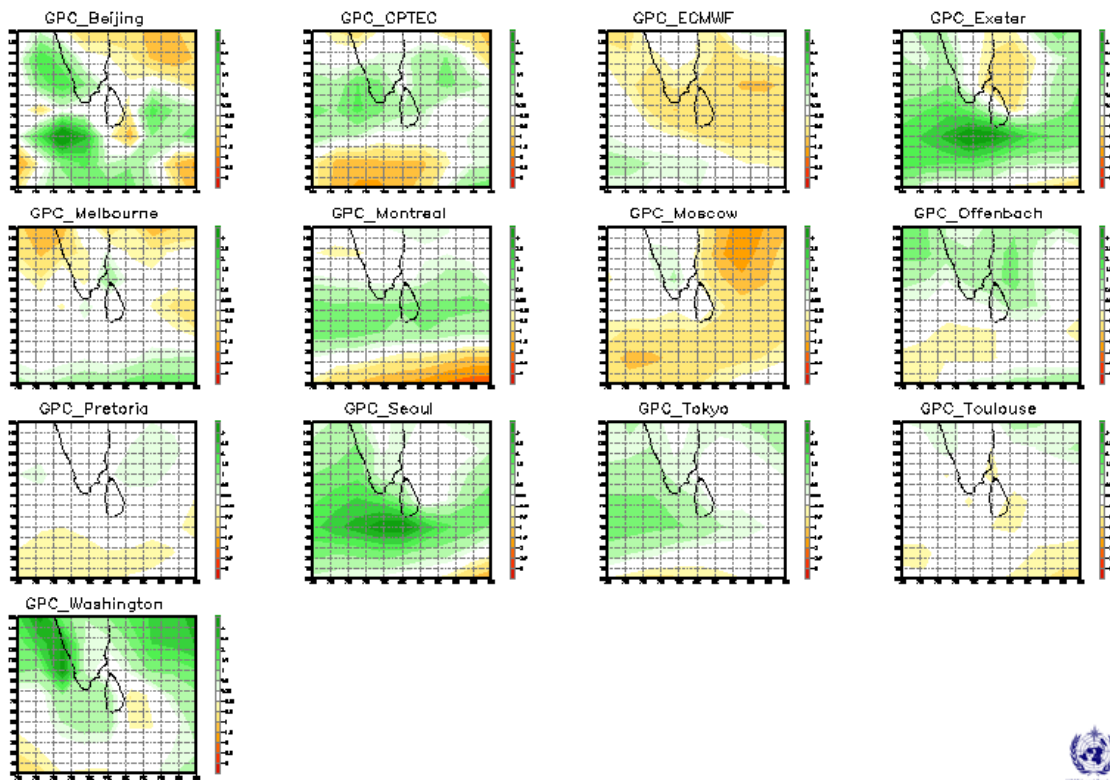


Fig 5 : Individual forecast for SON season by dynamical models from 13 WMO global producing centers (GPC).

(a.2) Forecast for September, October and November 2017

Figure 6 shows the probabilistic multi model ensemble forecast using dynamical models from 12 global producing centers (GPC) for, September, October and November 2017. There is a higher probability of receiving above normal rainfall for month of September 2017. There is no signal for month of October and November 2017 for Sri Lanka (Fig 6). It indicates that there are equal chances of receiving below normal, near normal and above normal rainfall for October and November 2017.

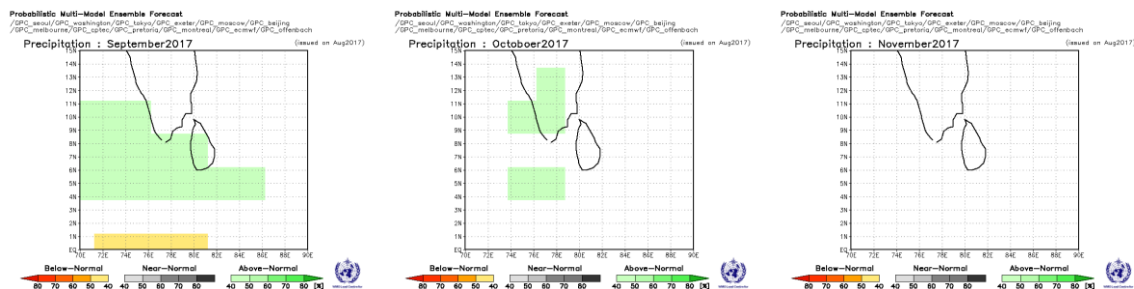


Fig 6: Probabilistic multi model ensemble forecast for September (left), October (middle) and November 2017 (right) using dynamical models from 12 WMO global producing centers (GPC).

lat=0 15
lon=70 90

Precipitation : September 2017

(issued on Aug2017) [Unit: mm/day]

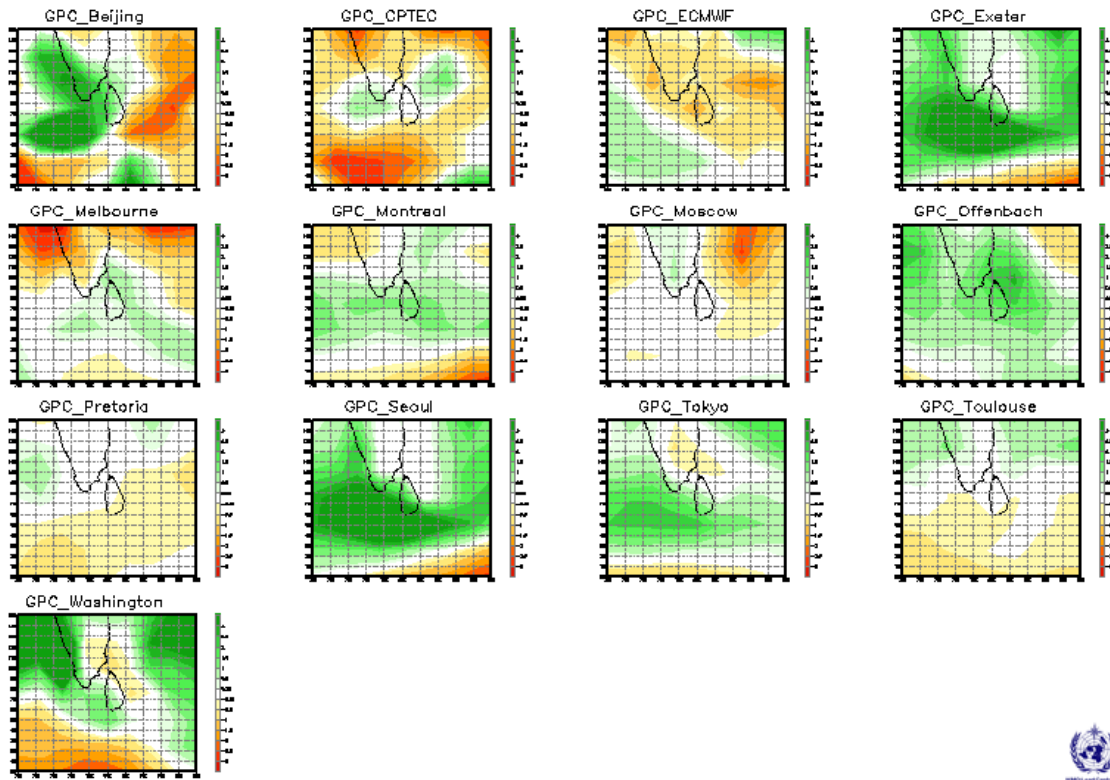


Fig 7 : Individual forecast for September 2017 by dynamical models from 13 WMO global producing centers (GPC).

lat=0 15
lon=70 90

Precipitation : October2017

(issued on Aug2017) [Unit: mm/day]

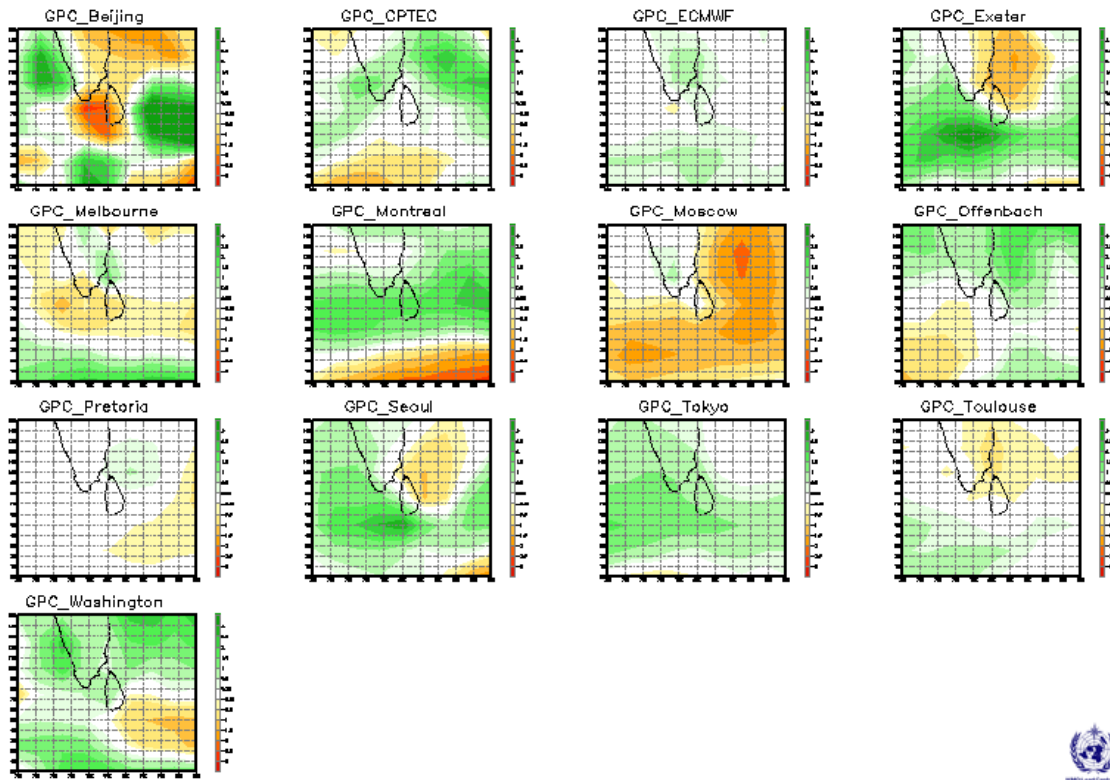


Fig 8 : Individual forecast for October 2017 by dynamical models from 13 WMO global producing centers (GPC).

lat=0 15
lon=70 90

Precipitation : November 2017

(issued on Aug 2017) [Unit: mm/day]

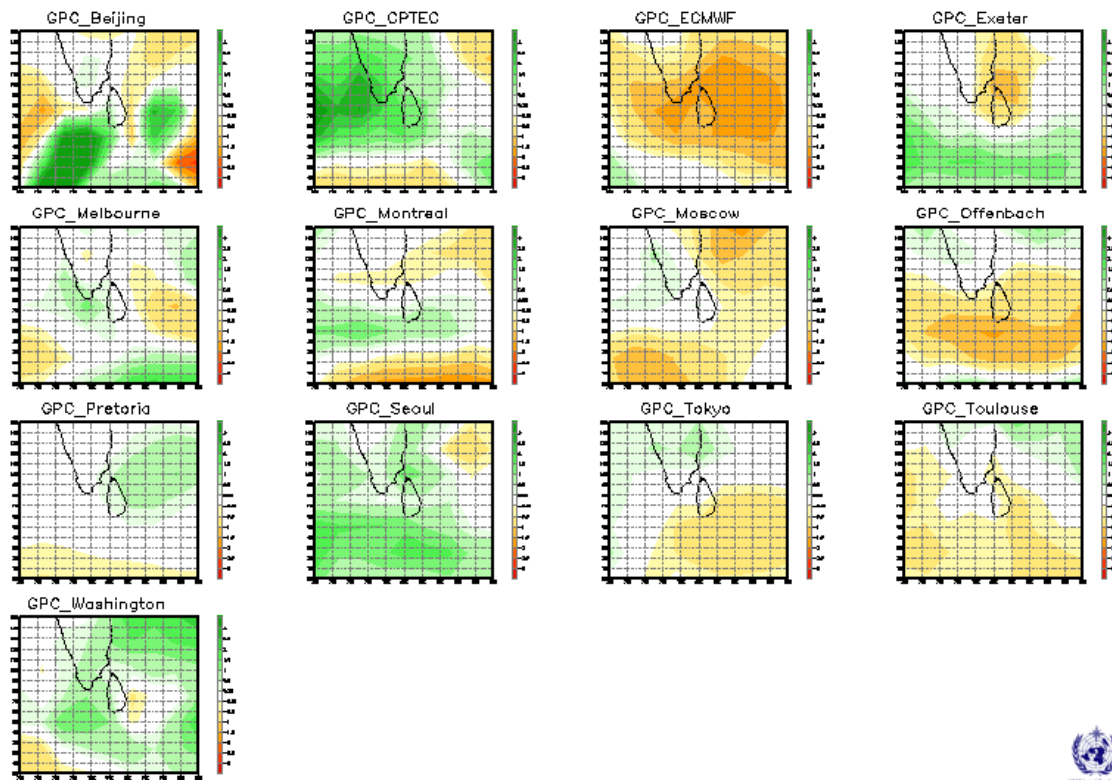


Fig 9 : Individual forecast for November 2017 by dynamical models from 13 WMO global producing centers (GPC).

Figures 7, 8 and 9 show the monthly forecast from individual global producing centers (GPC) centers for September, October and November 2017 respectively.

Out of 13 GPC forecasts 6 GPC forecasts provide above normal rainfall and 3 GPC forecasts provide below normal rainfall for September (Fig 7). There is no signal for September over Sri Lanka from 4 GPC forecast outputs. Accordingly there is a chance of receiving above normal rainfall for month of September 2017.

Out of 13 GPC forecasts 4 GPC forecasts give below normal rainfall for October 2017 (Fig 8). Out of 13 GPC forecasts 4 GPC forecasts provide above normal rainfall, for October 2017. There is no signal for October 2017 over Sri Lanka from 5 GPC forecast outputs. Accordingly there is no signal for October 2017.

Out of 13 GPC forecasts 3 GPC forecasts give below normal and 3 GPC forecasts give above normal rainfall for November 2017 (Fig 9). There is no signal for November 2017 over Sri Lanka from 7 GPC forecast outputs. Accordingly there is no signal for November 2017.

(c) Statistical downscaling of CFSv2 global forecast output

(c.1) Probabilistic Forecast for SON season2017 using Climate Predictability tool (CPT)

The probabilistic rainfall forecast for SON 2017for Sri Lanka by downscaling CFSv2 SST using CPT is given below.

The district wise average rainfall is given in the column 2 of the table 1. Chance (probability) of receiving below/about/above average is given in the columns 3, 4, and 5 respectively in the table 1. Majority of districts have more chance (higher probability) of receiving slightly below average rainfall during SON season 2017 except Matale and Mannar Districts and inSoutheastern parts.

District	Average rainfall (mm) –SON	Probability %		
		Below	Normal	Above
Colombo	1022.3	55	25	20
Kalutara	1254.9	60	20	20
Galle	1140.4	60	20	20
Matara	939.6	50	25	25
Hambantota	469.3	45	25	30
Ampara	521.5	45	25	30
Batticaloa	571.9	45	25	30
Trincomalee	621.1	55	25	20
Mullaithivu	596.6	50	25	25
Jaffna	615.2	50	20	30
Killinochchi	601.5	55	25	20
Mannar	474.3	45	30	25
Puttalam	531.9	55	20	25
Gampaha	907.8	60	20	20
Kegalle	1215.6	60	20	20
Ratnapura	1025.8	50	25	25
Monaragala	610.7	50	25	25
Badulla	716.5	50	25	25
Pollonnaruwa	610.9	55	25	20
Vavuniya	598.1	55	25	20
Anuradapura	549.5	50	25	25
Kurunegala	675.2	55	20	25
Matale	663.8	45	30	25
Kandy	841.8	60	20	20
Nuwaraeliya	872.3	50	25	25

Table 1

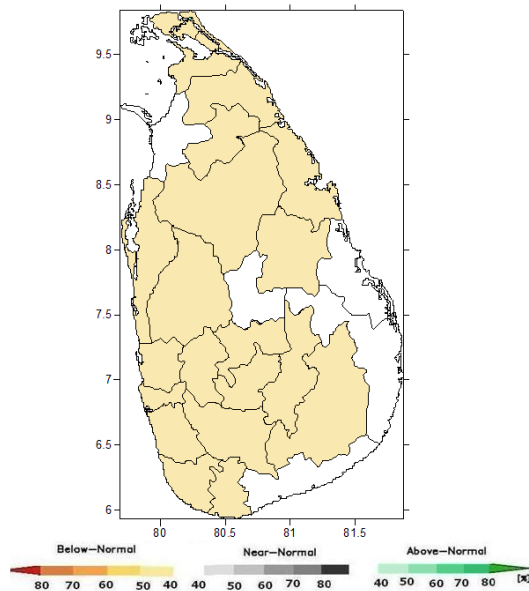


Fig 10. Probabilistic rainfall forecast for September-November 2017 using CPT

(d) (c.2) (c.1) **Probabilistic Forecast for SON season 2017 using RIMES FOCUS System**

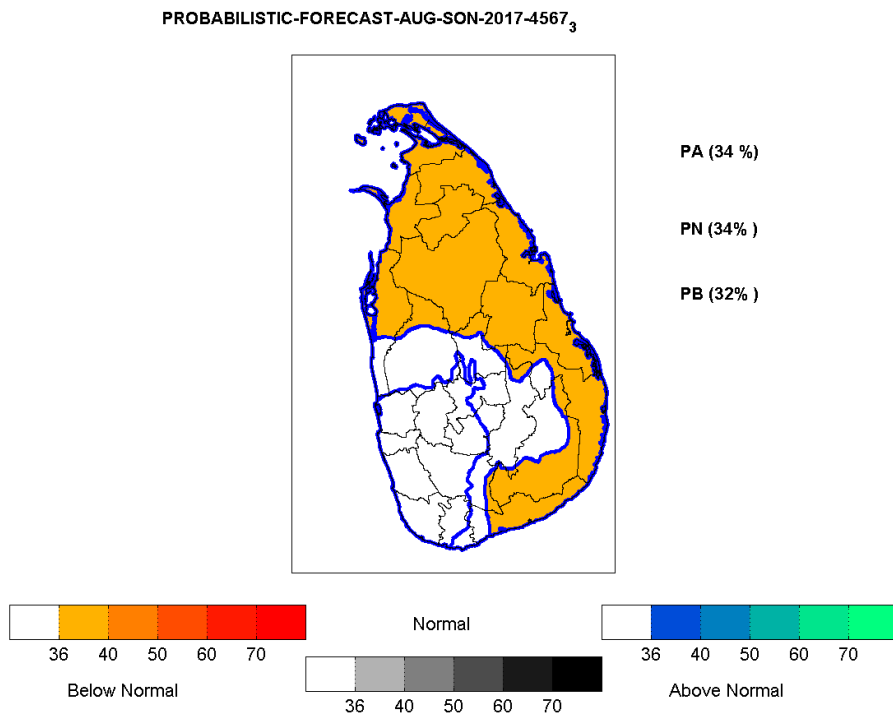


Fig 11. Probabilistic rainfall forecast for September-November 2017 using RIMES FOCUS System

The probabilistic rainfall forecast for SON 2017 for Sri Lanka by downscaling for 3 climatic zones (Fig 11) indicates higher chances of receiving above normal rainfall for the Dry zone, and Intermediate zone. There is no signal in the Wet zone.

Summary

SUMMARY of MODEL FORECAST for ASO season for SRI LANKA					
Season	WMO LC MME	WMO GPC	RIMES FOCUS	CPT	Final
ASO season	AN	AN	BN in Dry and No signal elsewhere	BN except Southeastern parts and Matale and Mannar districts	Near Normal
September 2017	AN	AN	AN in Intermediate zones son signal in wet and Dry zone	AN	AN
October 2017	No Signal	No Signal			Climatological Probability
November 2017	No signal	No signal			Climatological Probability

BN: Below Normal **N:** Normal **AN:** Above Normal **CP:** Climatological Probability

Table 2 : Summary of Model forecasts for Sri Lanka

ENSO-neutral IOD-neutral conditions persisted and will be continued through the remainder of 2017.

Most of the global model forecasts provide above normal rainfall for September 2017, and no clear signal over Sri Lanka for October and November months. WMO multi model ensemble prediction is favorable for above normal rainfall for SON. Climate predictability tool provides higher chance of receiving below normal rainfall in majority of districts. RIMES FOCUS System indicates higher chances of receiving below normal rainfall for the Dry zone and no signal elsewhere.

Considering the prevailing global climate conditions, forecasts from different global climate models and statistical downscaling of GCM output using CPT, near normal rainfall can be expected for most parts of the island in SON season 2017 (Fig 12).

However, the predictability is also limited to some extent due to the strong day to day atmospheric variability caused by the passage of the synoptic scale systems such as lows, and depressions etc. The seasonal predictability of the SON season over Sri Lanka is also influenced by the Madden Julian Oscillation (MJO), which represents the major global scale of intraseasonal variability pattern.

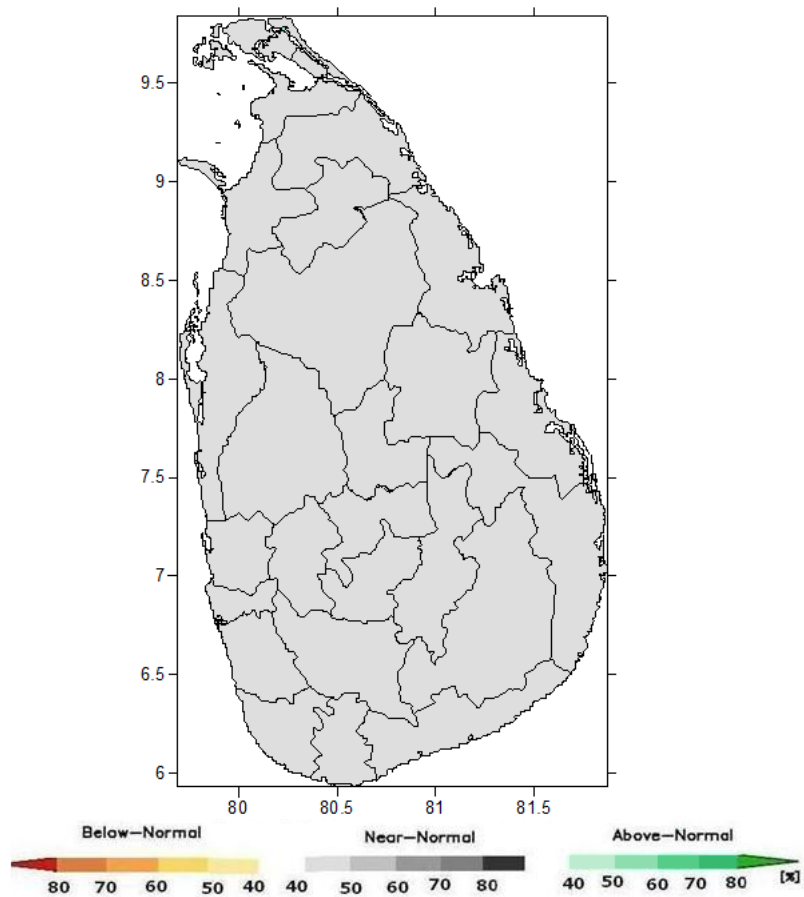


Fig 12.Consensus Probabilistic rainfall forecast for September-November 2017