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வளிமண்டலவியல் திணைக்களம்
DEPARTMENT OF METEOROLOGY
ශ්‍රී ලංකාව இலங்கை SRI LANKA

Consensus Seasonal Weather Outlook

February, March and April (FMA) 2017

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

Equatorial sea surface temperatures (SSTs) are near-to-below average in the central and east-central Pacific Ocean. They are above-average in the far eastern Pacific Ocean (Fig 1 and 2).

The multi-model averages favor an imminent transition to ENSO-neutral, with ENSO-neutral lasting through August-October (ASO) 2017 (Fig. 3). A transition to ENSO-neutral is expected to occur by February 2017, with ENSO-neutral then continuing through the first half of 2017 (www.cpc.noaa.gov).

Recent forecasts from coupled models suggest neutral IOD conditions will prevail during the February to April 2017 (Fig 3 lower).

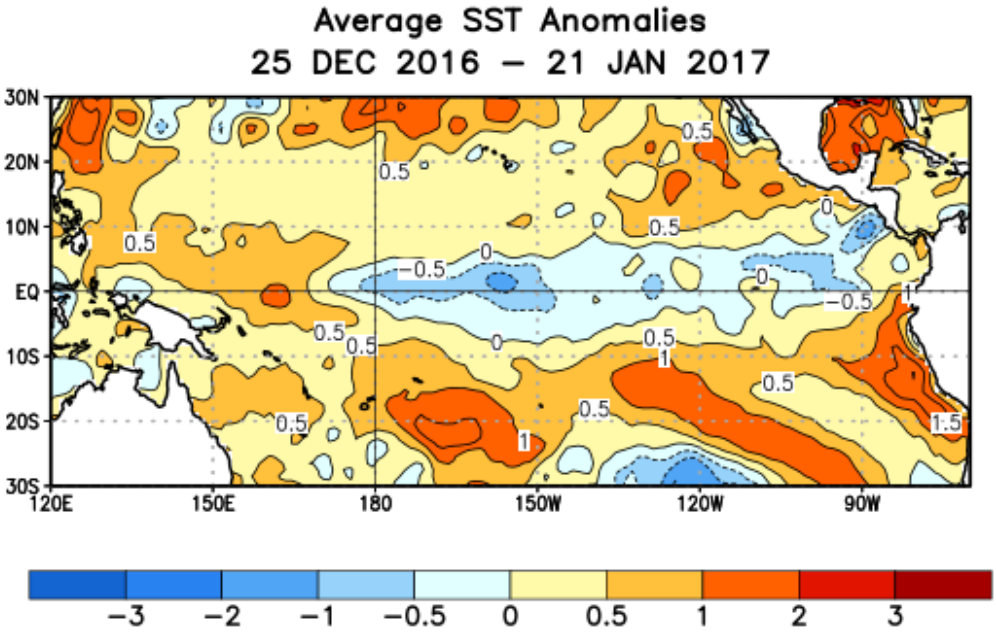


Fig 1:Observed Average sea surface temperature (SST) anomalies (°C)

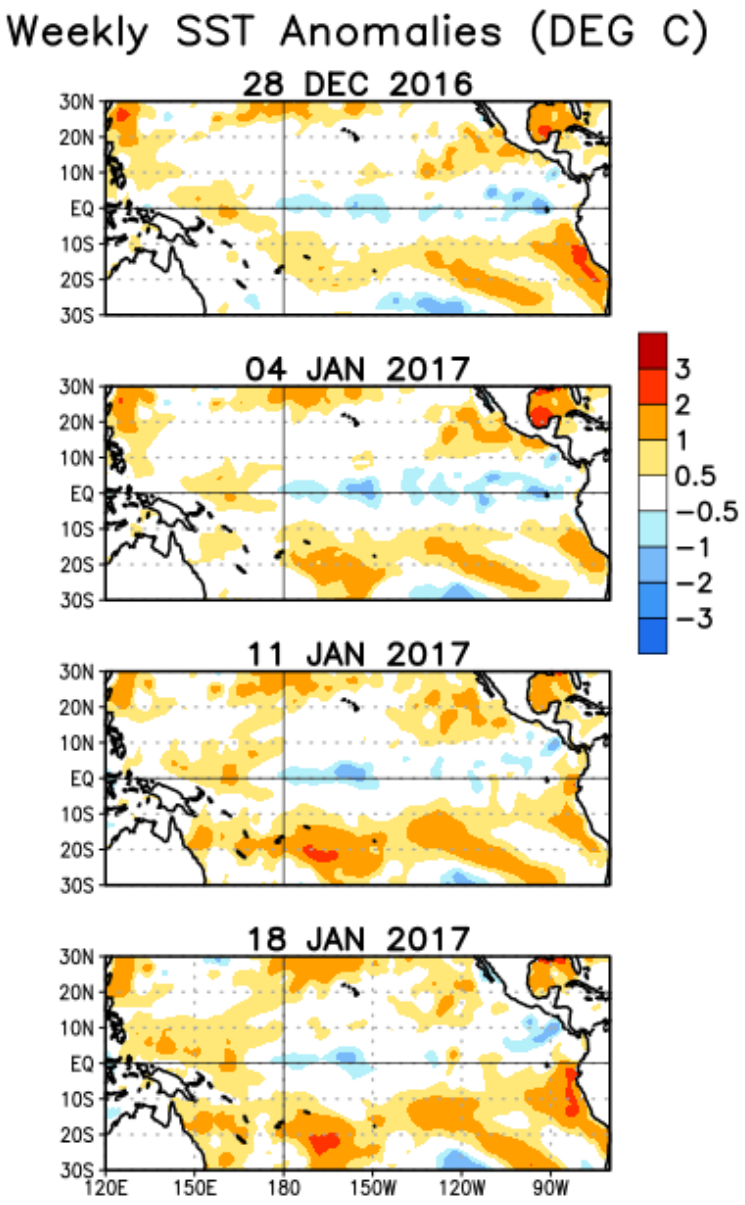
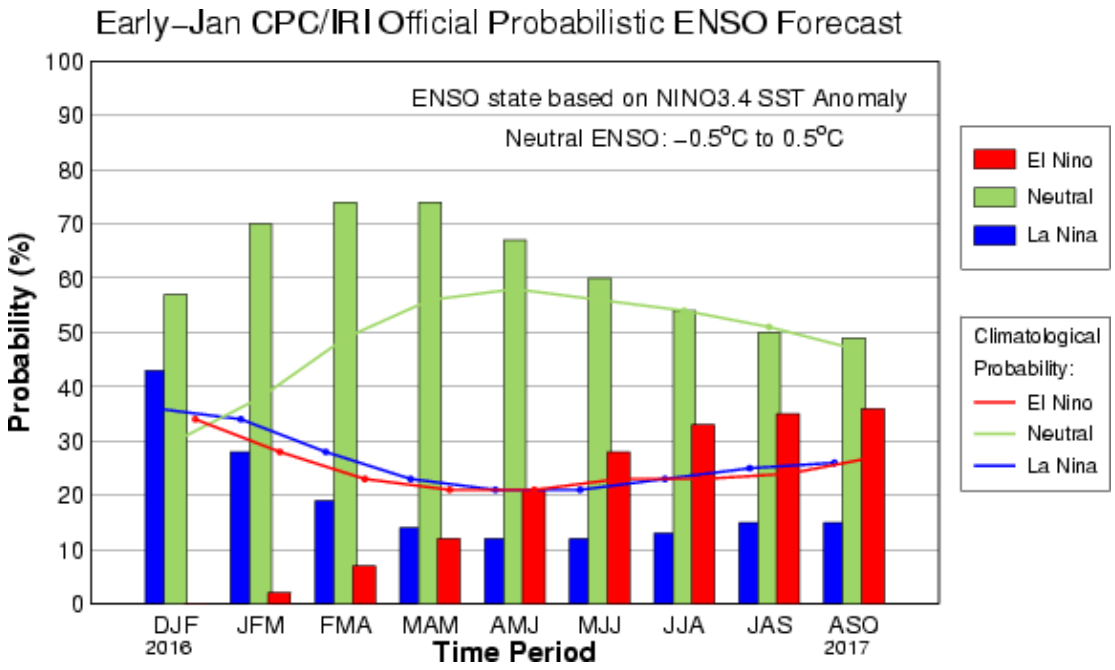


Fig 2 : Weekly Observed Average sea surface temperature (SST) anomalies (°C)



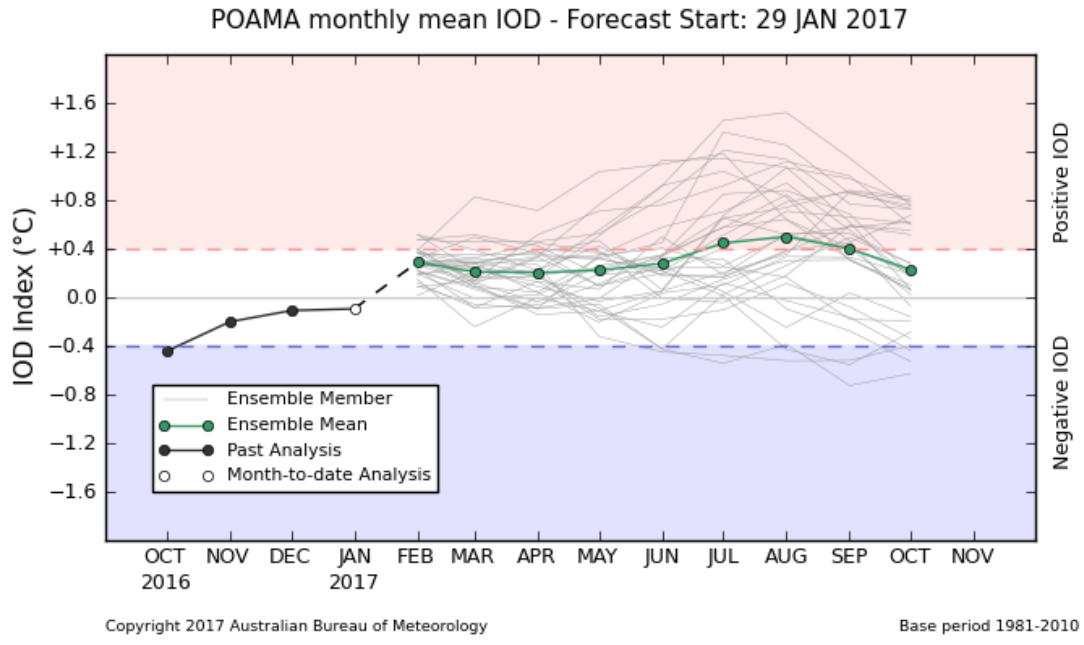


Fig 3: ENSO forecast from Climate Prediction Center (CPC)/ IRI Forecast (above) and IOD forecast from Australian Bureau of Meteorology (below).

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

(a.1) For FMA season

Figure 4 shows the probabilistic multi model ensemble forecast using dynamical models from 12 global producing centers (GPC) for FMA season. There is no signal for FMA season over Sri Lanka (Fig. 4). Out of 12 GPC individual forecasts 3 GPC forecasts give below normal rainfall and another 3 GPC forecasts above normal rainfall (Fig 5). There is no signal for FMA season over Sri Lanka from 6 GPC forecast outputs. Accordingly there is no clear signal for FMA season 2016. Climatological probability can be expected for FMA 2017.

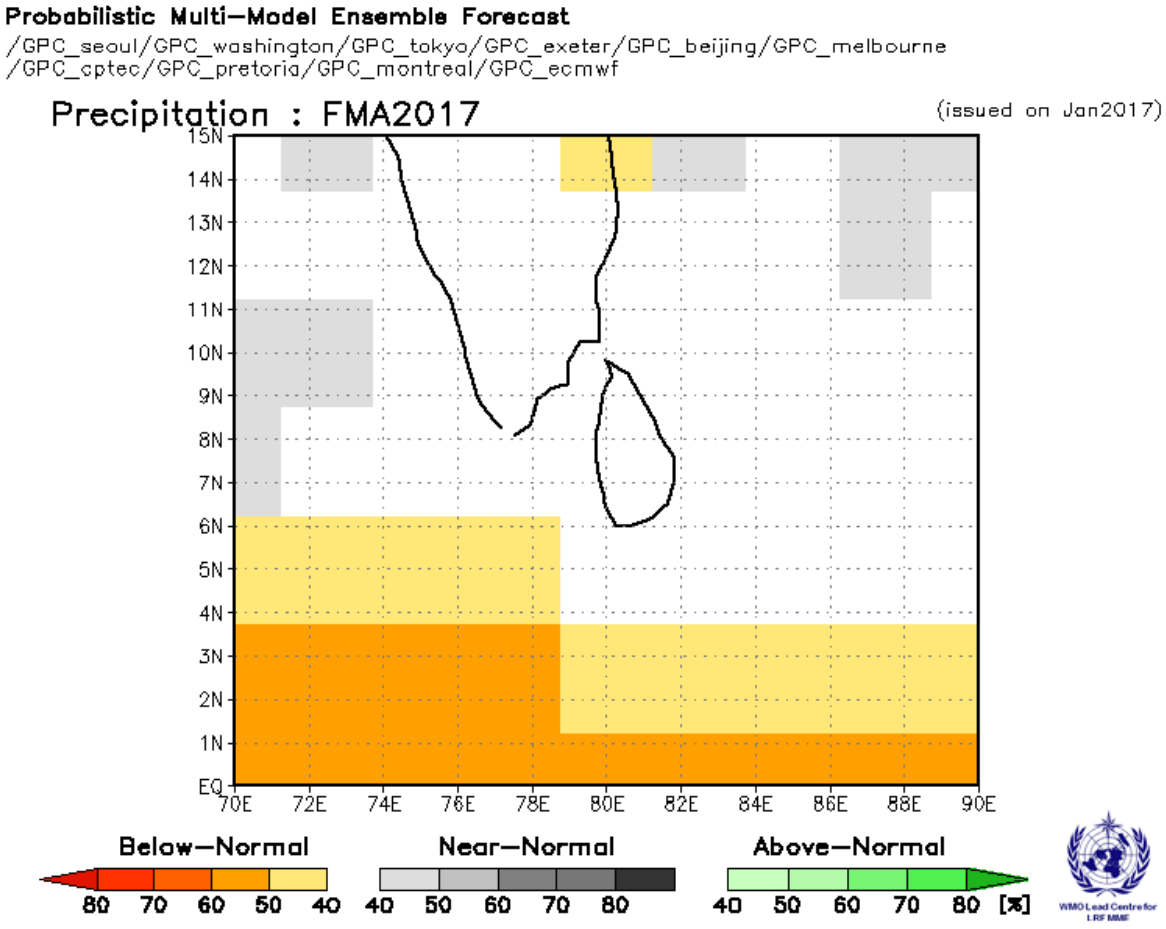


Fig 4 : Probabilistic multi model ensemble forecast for FMA using dynamical models from 10 WMO global producing centers (GPC).

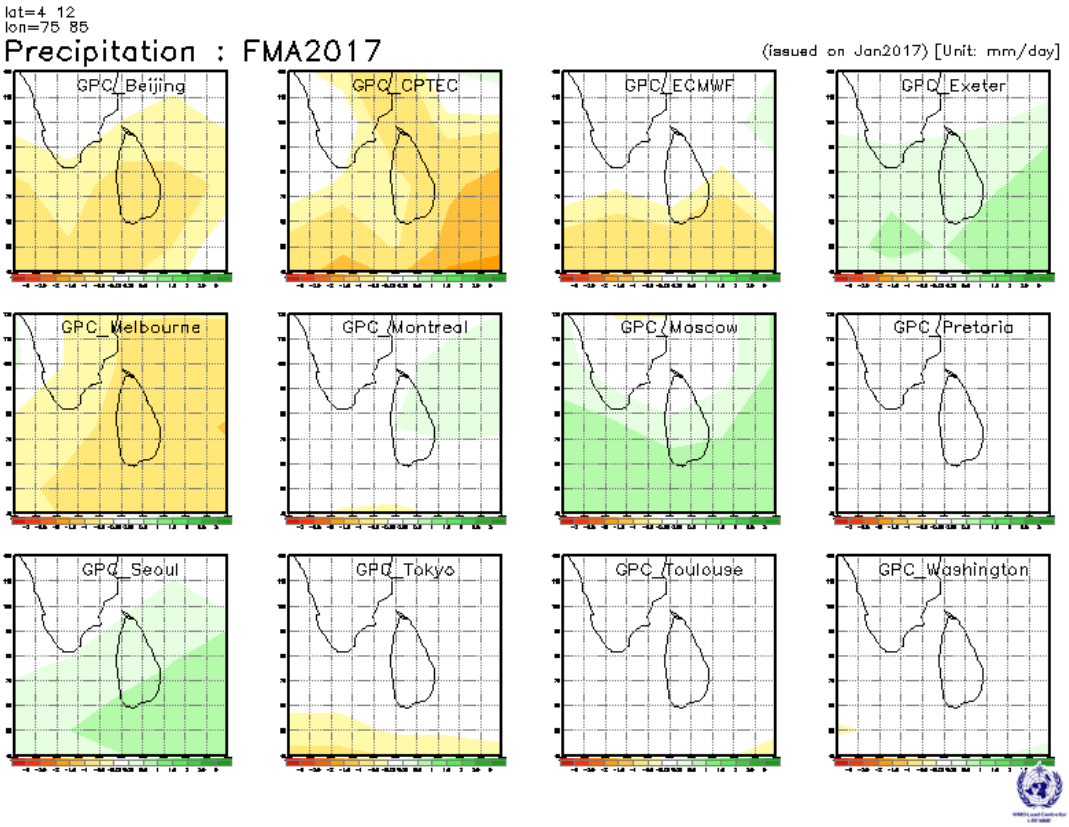


Fig 5 : Individual forecast for FMA season by dynamical models from 12 WMO global producing centers (GPC).

(a.2) Forecast for February, March and April 2017

Figure 6 shows the probabilistic multi model ensemble forecast using dynamical models from 12 global producing centers (GPC) for, February, March and April 2017. There is no clear signal over Sri Lanka for February, March and April 2017 (Fig 6). It indicates that there are equal chances of receiving below normal, near normal and above normal rainfall for February, March and April 2017.

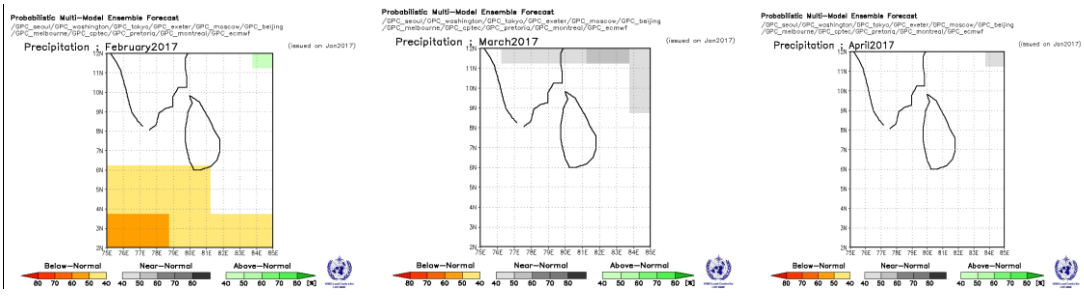


Fig 6:Probabilistic multi model ensemble forecast for February (left), March (middle) and April 2017 (right) using dynamical models from 10 WMO global producing centers (GPC).

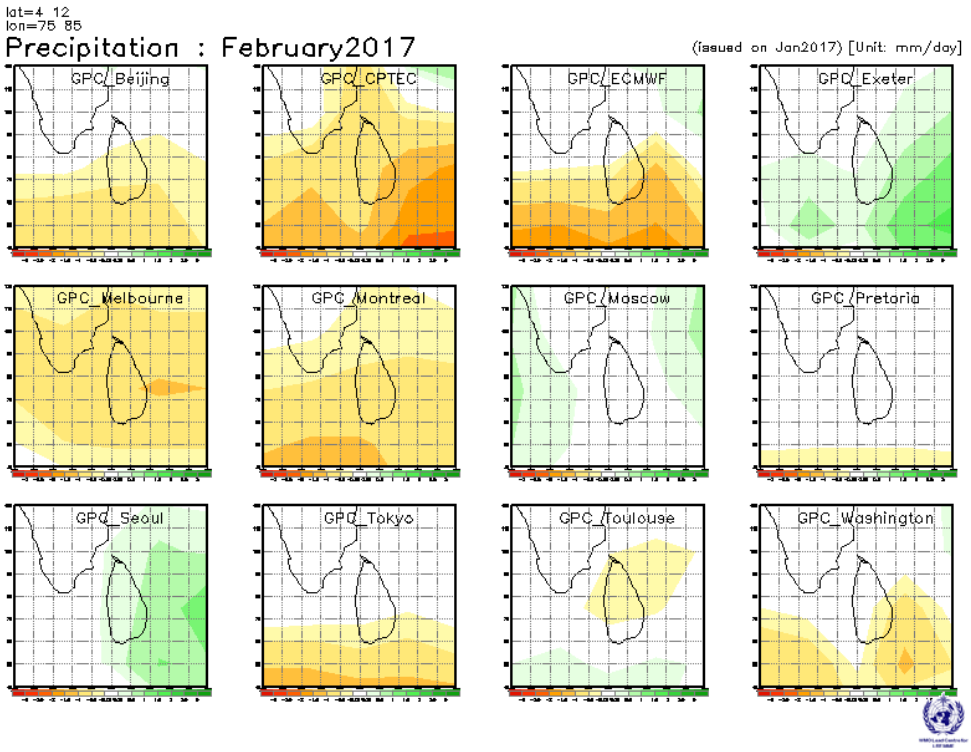


Fig 7 : Individual forecast for February by dynamical models from 12 WMO global producing centers (GPC).

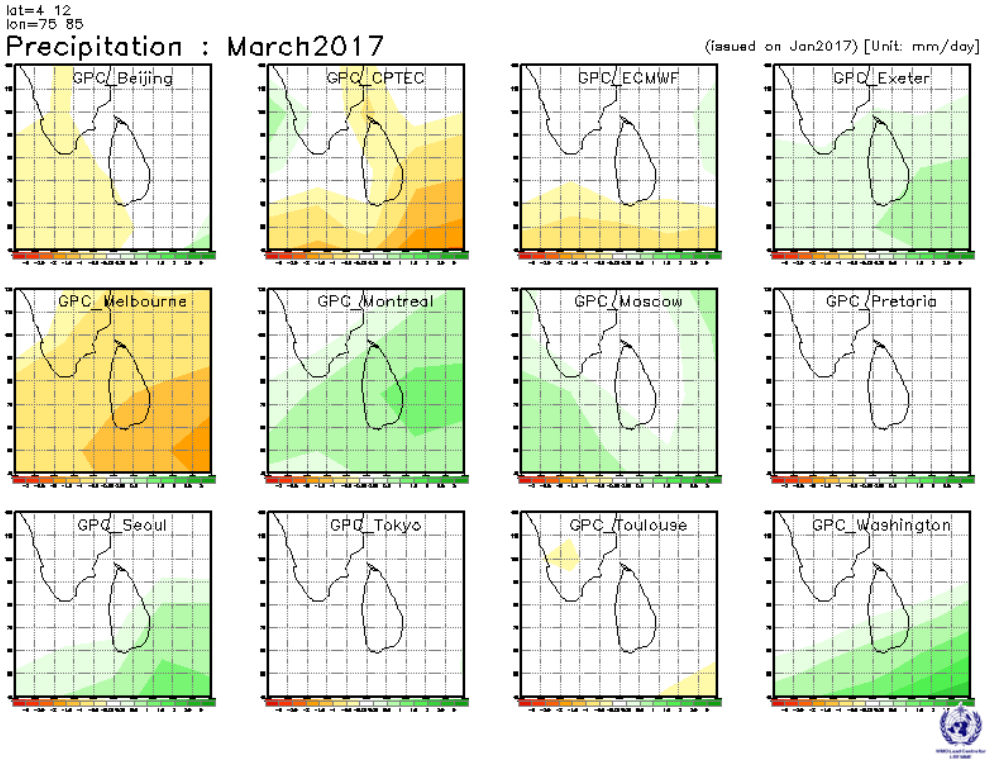


Fig 8 : Individual forecast for March 2017 by dynamical models from 12 WMO global producing centers (GPC).

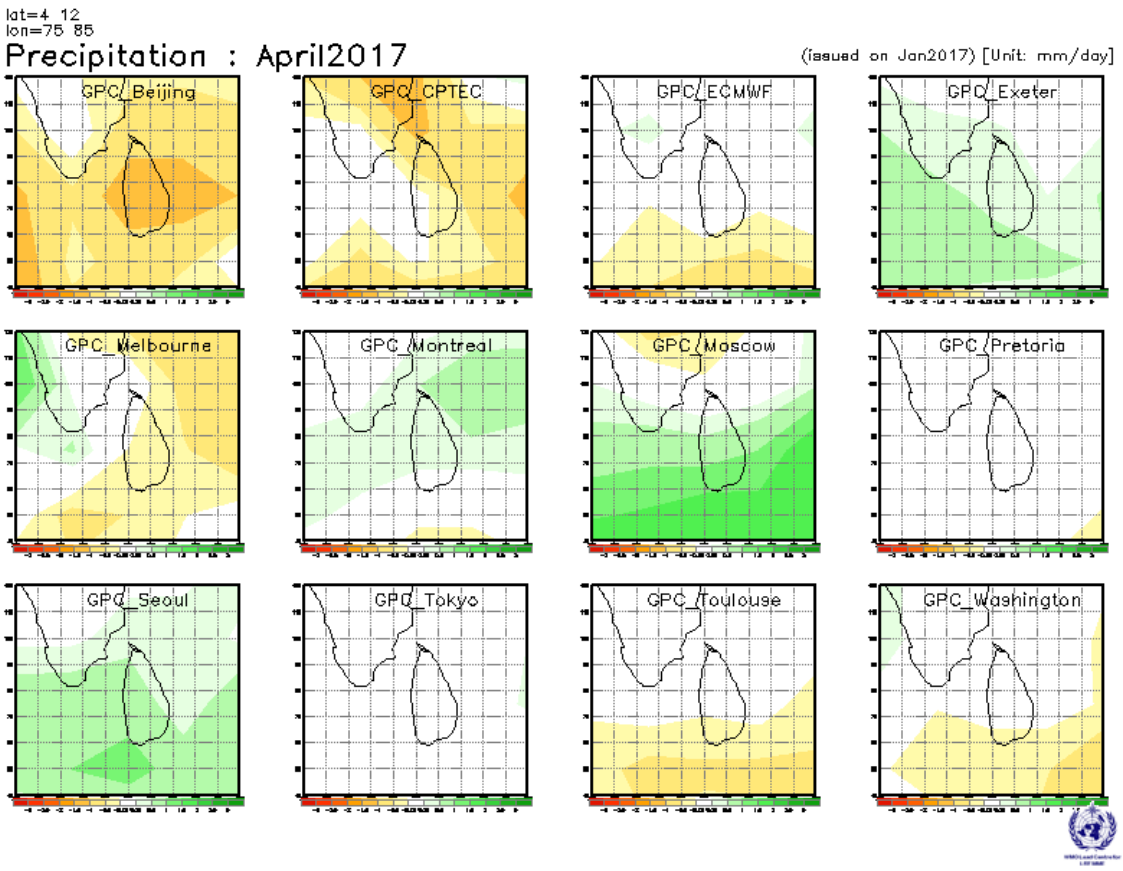


Fig 9 : Individual forecast for April 2017 by dynamical models from 12 WMO global producing centers (GPC).

Figures 7, 8 and 9 show the probabilistic forecast from individual global producing centers (GPC) for February, March and April 2017 respectively. Out of 12 GPC forecasts 4 GCP forecasts provide below normal rainfall, for February (Fig 7). There is no signal for February over Sri Lanka from 6 GPS forecast outputs. Only 2 GPC forecasts above normal rainfall for February. Accordingly there is no signal for February 2017.

Out of 12 GPC forecasts 2 GCP forecasts give below normal rainfall for March 2017 (Fig 8). Out of 12 GPC forecasts 2 GCP forecasts provide above normal rainfall, for March 2017. There is no signal for March 2017 over Sri Lanka from 8 GPS forecast outputs. Accordingly there is no signal for March 2017.

Out of 12 GPC forecasts 2 GCP forecasts give below normal rainfall for April 2017 (Fig 9). Another 3 GCP forecasts give above normal rainfall for April 2017. There is no signal for April 2017 over Sri Lanka from 7 GPS forecast outputs. Accordingly there is no signal for April 2017.

(c) Statistical downscaling of CFSv2 global forecast output

(c.1) Probabilistic Forecast for FMA season 2017 using Climate Predictability tool (CPT)

The probabilistic rainfall forecast for FMA 2017 for 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. All districts except Colombo, Kalutara, Galle, Matara, Gampaha, and Kegalle, have more chance (higher probability) of receiving slightly above average rainfall during FMA season 2017. There is no signal for Colombo, Kalutara, Galle, Matara, Gampaha, and Kegalle districts for FMA 2017.

District	**Average rainfall (mm) –FMA**		**Probability %**	
		Below	Normal	Above
Colombo	540.8	35	35	30
Kalutara	695.1	35	35	30
Galle	633.9	35	35	30
Matara	494.4	35	35	30
Hambantota	255.3	25	25	50
Ampara	330.5	25	30	45
Batticaloa	266.1	25	25	50
Trincomalee	199.2	25	25	50
Mullaithivu	178.9	25	25	50
Jaffna	93.1	25	25	50
Killinochchi	141.8	25	25	50
Mannar	195.3	25	25	50
Puttalam	264.2	25	25	50
Gampaha	474.4	35	35	30
Kegalle	647.2	35	35	30
Ratnapura	644.0	25	25	50
Monaragala	389.5	25	25	50
Badulla	509.8	25	30	45
Pollonnaruwa	300.5	20	30	50
Vavuniya	212.8	20	30	50
Anuradapura	244.9	20	30	50
Kurunegala	362.1	25	30	45
Matale	394.6	25	25	50
Kandy	448.9	25	30	45
Nuwaraeliya	475.7	25	25	50

Table 1

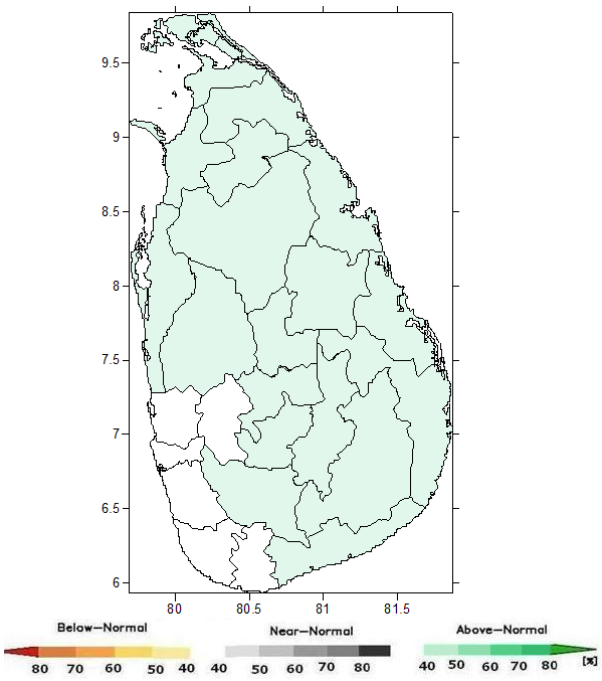


Fig 10. Probabilistic rainfall forecast for February -April2017 using CPT

(d) (c.2) **(c.1) <u>Probabilistic Forecast for FMA season 2017 using RIMES FOCUS System</u>**

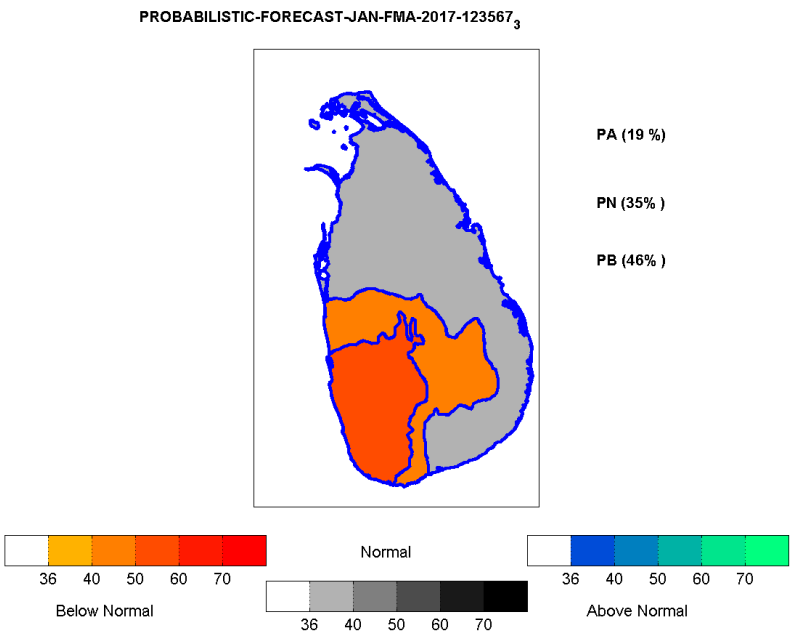


Fig 11. Probabilistic rainfall forecast for February - April 2017 using RIMES FOCUS System

The probabilistic rainfall forecast for FMA 2017 for Sri Lanka by downscaling for 3 climatic zones (Fig 11) indicates higher chances of receiving below normal rainfall for the wet zone, and intermediate zone. Near normal rainfall can be expected for dry zone.

Summary

SUMMARY of MODEL FORECAST for FMA season for SRI LANKA					
Season	WMO LC MME	WMO GPC	RIMES FOCUS	CPT	Final
For FMA season	No Signal	No Signal	N for dry zone and BN elsewhere	No signal Southwest Quarter, AN elsewhere	Near Normal
For February2016	No Signal	No Signal	N	BN Southwest coastal region, N elsewhere	Near Normal
For March 2016	No Signal	No Signal			Climatological Probability
For April2016	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

Most of the global model forecasts provide no clear signal over Sri Lanka for FMA season. The multi-model averages favor ENSO neural conditions during FMA season. Recent forecasts from coupled models suggest to neutral IOD conditions will prevail during the February and March.

Considering the ENSO and IOD neutral conditions and global model predictions, near normal rainfall can be expected for FMA season 2017 (Fig 12).

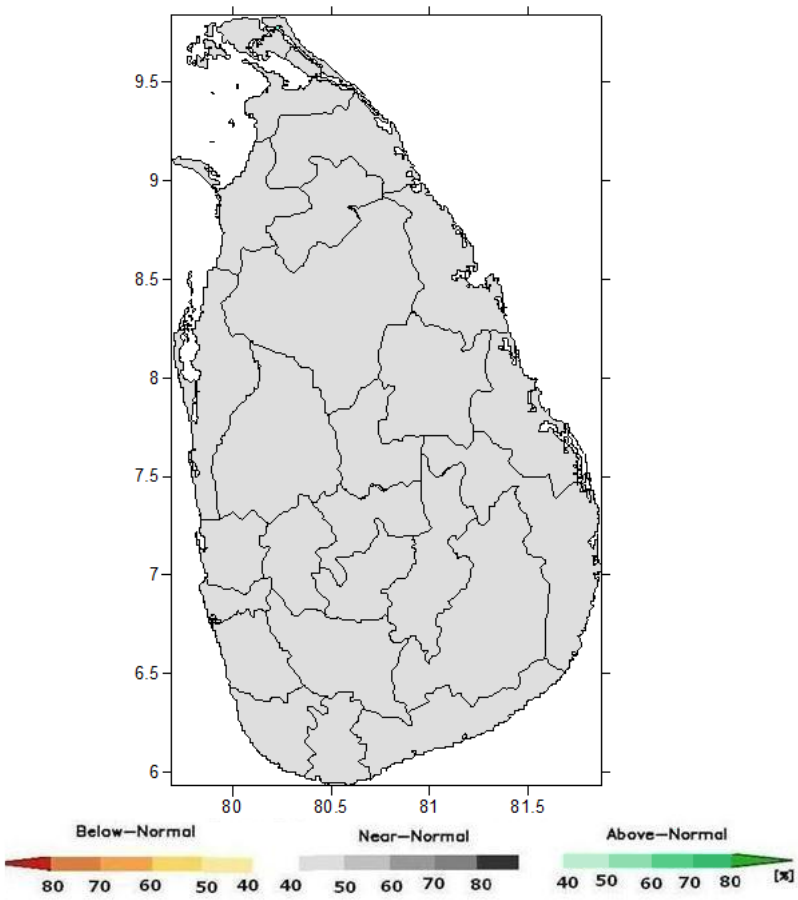


Fig 12. Consensus Probabilistic rainfall forecast for February-April 2017