

SW monsoon Preparedness on 11th May 2023

Seasonal Outlook for South West Monsoon (MJJAS)

Department of Meteorology

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Outline


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Introduction

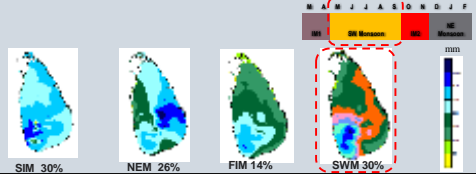
Climate Seasons

- First Inter Monsoon Season (FIM) March-April
- South West Monsoon Season (SWM) May – September
- Second Inter Monsoon Season (SIM) October-November
- North East Monsoon Season (NEM) December – March



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Rainfall Pattern in Four Seasons



SEASON	Second Inter-monsoon	Northeast Monsoon	First Inter-monsoon	Southwest Monsoon
PERIOD	Oct-Nov	Dec-Feb	Mar-Apr	May-Sep
RAINFALL	548 mm	459 mm	260 mm	546 mm

SW slopes of hills 750-1200 mm eastern slopes at approx. 1400 mm Varies between 100 to over 3000 mm excess of 250 mm

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DoM Seasonal Prediction Procedure

The prevailing global climate conditions. Forecasts from different climate models around the world.


- Ensemble forecast from WMO GPC (10)
- 13 Individual Dynamical models from WMO
- Statistical downscaling of GCM output using CPT
- Probabilistic Forecast using RIMES FOCUS System
- probabilistic rainfall forecast using a regression model developed with guidance provided by Tokyo Climate Center (TCC)
- Dynamic ensemble forecast (CLICK)

Seasonal forecast is prepared by using various climate modal outputs together with the prevailing global climate conditions and research outcomes done by the DoM.

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Different Climate Models

WMO uses WMO-Global Producing Centres (global models, regional models)



- WMO has officially designated GPCs/CRFs:
 - China Meteorological Administration (CMA) / Beijing Climate Centre (BCC)
 - European Centre for Medium-Range Weather Forecasts (ECMWF)
 - Met Office, United Kingdom
 - Bureau of Meteorology (BOM), Australia
 - Meteorological Service of Canada (MSC)
 - Hydrometeorological Centre of Russia
 - South African Weather Service (SAWS)
 - Korea Meteorological Administration (KMA)
 - Japan Meteorological Agency (JMA) / Tokyo Climate Centre (TCC)
 - Météo-France
 - Climate Prediction Center (CPC) / National Oceanic and Atmospheric Administration (NOAA), United States of America

Ensemble forecast from WMO GPC
 13 Individual Dynamical models from WMO
 Probabilistic forecast using RIMES FOCUS system
 Probabilistic rainfall forecast using CPT
 Multi-model ensemble mean forecast of NMMF models

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Global climate Drivers

ENSO - El Niño-Southern Oscillation

IOD - Indian Ocean Dipole

Global Climate Drivers

El Niño-Southern Oscillation (ENSO)

La Nina

El Nino

IOD - Indian Ocean Dipole

-ve

+ve

MJO - Madden Julian Oscillation

Probability of Rainfall

The MJO can be characterized as an eastward moving 'pulse' of cloud and rainfall near the equator that typically recurs every 30 to 60 days.

Global climate condition-ENSO Influence

Figure: Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-120°E).

- ENSO-neutral conditions are observed.
- Equatorial sea surface temperatures (SSTs) are near-to-above average across most of the Pacific Ocean.
- 62% chance of El Niño developing during May - July 2023.

Figure - Forecasts of SST anomalies for the Niño 3.4 region by the International Research Institute (IRI) for Climate and Society.

Source: Climate Prediction Center / NCEP -

Global climate condition-IOD Influence

Source: <http://www.imr.gov.au/climate/ensoi/nino-ioda/p4/5.htm>

Positive IOD phase

- Westerly winds weaken along the equator.
- Resulting in less rainfall over the western slopes of the central hills and higher than normal temperatures over Sri Lanka during SW monsoon.

South Asian climate Outlook Forum (SASCOF) OUTLOOK

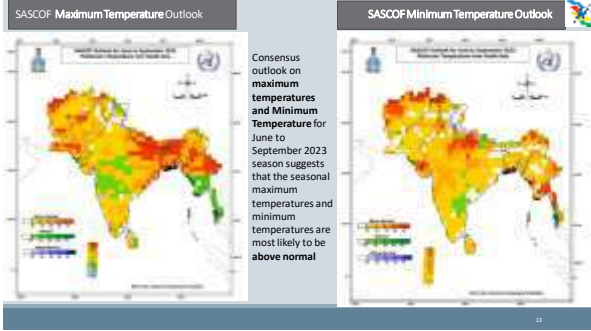
SASCOF Rainfall Outlook

The outlook suggests that normal to below normal rainfall is likely during the 2023 southwest monsoon season (June – September) over most parts of the South Asia.

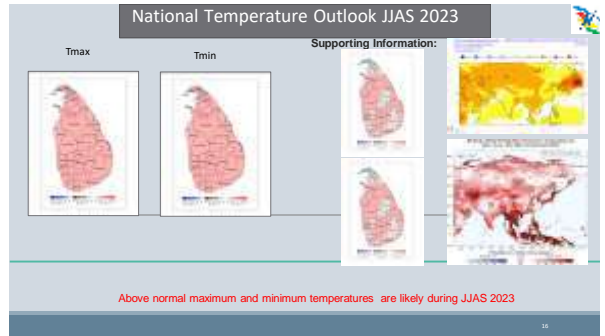
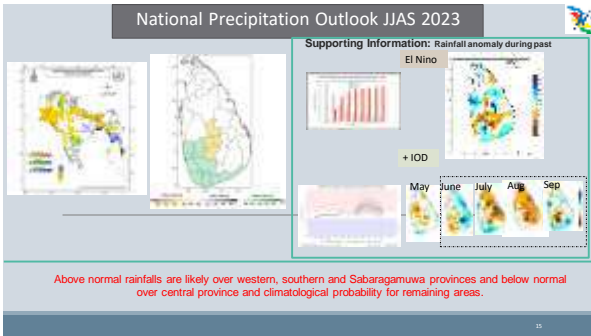
Geographically, **above-normal rainfall** is likely over extreme north and northwest of the region as well as parts of eastern and **southern regions of South Asia**.

However, below normal rainfall is likely over some areas northwest, central and north-eastern parts of the region. The seasonal rainfall is likely to be normal or of climatological probabilities over the remaining areas of the region.

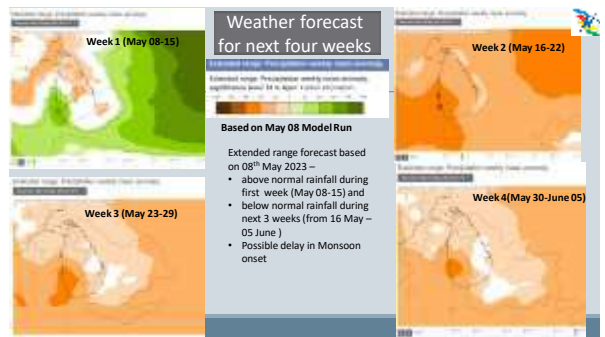
Fig.1a. Probability of the most likely category for the 2023 southwest monsoon rainfall over South Asia



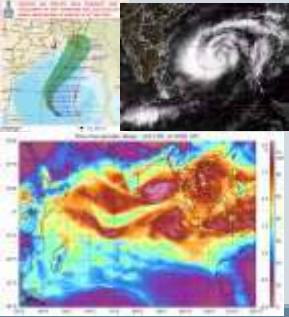
National (DoM) OUTLOOK



Weather forecast for next four weeks



Cyclone in BoB



1. A cyclonic disturbance has formed over Southeast Bay of Bengal around 6th May, 2023.
2. It has intensified into a low pressure area on 08th, and then into a Depression on 09 and Deep Depression on 10th.
3. cyclonic storm "Mocha" lay centered near 11.4°N and 88°E at 03UTC 11 th May.
4. It is very likely to move north-northwestwards and gradually intensify into a severe cyclonic storm around midnight of today, the 11th May.
5. Thereafter, it is likely to recurve gradually, move north-northeastwards from 12th May morning and intensify further into a very severe cyclonic storm around 12 th May evening over central Bay of Bengal.
6. The system likely to weaken slightly from 14th May morning and cross southeast Bangladesh and north Myanmar coasts around forenoon of 14th May.

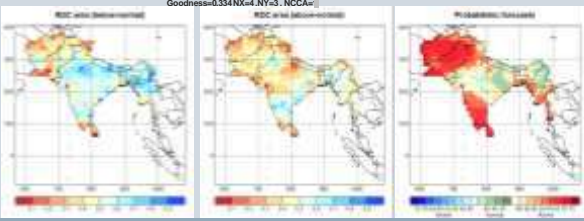
Summary & Conclusion

- > After the multi-year La Niña which began in September 2020 has ended in March 2023 and currently a neutral ENSO conditions are observed over the tropical Pacific and El Niño conditions are likely to develop during the upcoming monsoon season.
- > Neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean and positive IOD conditions are likely to develop during the monsoon season.
- > Positive IOD and El Niño is favorable for less rain activity over the western slopes of the central hills.
- > Above normal rainfalls are likely over western, southern and Sabaragamuwa provinces and below normal over central province and climatological probability for remaining areas.
- > Above normal Maximum & Minimum Temperatures is likely over the country.
- > Seasonal predictability is limited due to synoptic scale systems such as lows and depressions etc. and Intra-seasonal Oscillations such as Madden Julian Oscillations (MJO).
- > Extended range forecast - above normal rainfall during this week and below normal rainfall during next 3 weeks- Possible delay in Monsoon onset
- > The cyclonic storm "MOCHA" IN THE SE BoB is likely to intensify further into a severe cyclonic storm by 11th May evening and very severe cyclonic storm by 12th over southeast and adjoining central Bay of Bengal, and cross southeast Bangladesh and north Myanmar coasts around forenoon of 14th May, 2023
- > Keep in touch with updates of every 10 day and weekly forecasts

THANK YOU!

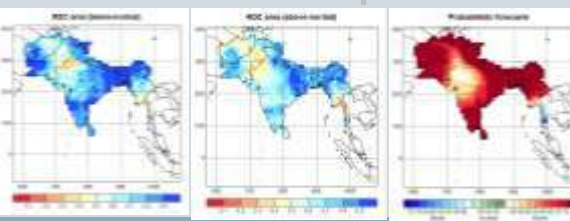
National Temperature Outlook – CPT Output CanSIPS (from April)

T max
Goodness=0.334 NX=4 NY=3 , NCCA=



National Temperature Outlook – CPT Output GFDL (from April)

Tmin
Goodness=0.580 NX=3 NY=2 , NCCA=2



Additional information

