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UPDATE OUTLOOK FOR DECEMBER 2016– FEBRUARY 2017

HIGHLIGHTS

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GLOBAL SST FORECAST

- Weak La Niña conditions are favoured to persist .
- Negative sea surface temperature (SST) anomalies stretching across most of the eastern and central equatorial Pacific Ocean in early November.
- Positive SST anomalies persisted over the central and southern Indian Ocean..
- The Indian Ocean Dipole has returned to neutral levels, after being in a negative phase since May 2016

SEPTEMBER– NOVEMBER 2016 RAINFALL HIGHLIGHTS

- The season started slowly in some areas.
- During September to November, wetter than normal areas spread over the central and western Angola, eastern Botswana, north-eastern South Africa, northern Namibia, Lesotho and Swaziland.
- Seasonally average conditions occurred across north-western DRC, north and west of Tanzania, Madagascar and south Mozambique.

DJF2016/17 RAINFALL UPDATE OUTLOOK SUMMARY

For the period December 2016 to February 2017, there is an extension of below-normal rainfall conditions over Tanzania up to the extreme northern parts of Zambia, Malawi, Mozambique and the entire Madagascar. Other parts of the region are going to be the same as the previous projections from SARCOF-20, with the high likelihood of:

- **normal to above-normal rainfall conditions in the bulk of the SADC Region.**

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Climate driven factors

Three ocean—atmosphere patterns significant for SADC rainfall behaviour were active since the beginning of the rainy season:

1. Weak La Niña conditions were observed during October. Negative sea surface temperature (SST) anomalies stretching across most of the eastern and central equatorial Pacific Ocean, persisted into early November (Fig. 1).
2. The Indian Ocean Dipole (IOD) returned to neutral condition as the monsoon trough transitions into the southern hemisphere. The strong negative IOD is associated with diminution of rainfalls in parts of the southern Africa.
3. An active Madden Julia Oscillation (MJO) which is defined as an eastward moving 'pulse' of cloud and rainfall near the equator that typically recurs every 30 to 60 days. Strong MJO activity is often observed during weak La Niña years or during ENSO-neutral years.

The current phase 3 of MJO is related to enhanced rainfall over north-east of the SADC region.

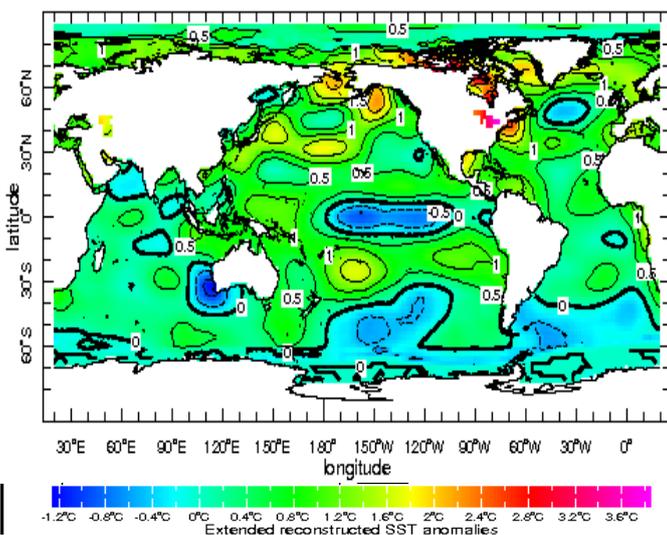


Fig. 1. Sept-Oct 2016 global SST [Source: NOAA]

**RAINFALL REVIEW
(01 September— 25 November 2016)**

The rainfall season began in September in the northern part of the region. It extended into the central and southeastern sections of the region into the first week of October. This early stage was followed by a dry spell period of consecutive 3 weeks (8 - 26 Oct 2016).

Rain-producing systems rebounded from the second week of November, heralding the start of the season in most of parts of the region. Wet portions spreading over the central and western Angola, eastern Botswana, northern Namibia, Lesotho Swaziland and north-east of South Africa were observed during this period. The latter was devastated by floods during the week of 7 to 16 November. Seasonal average conditions occurred over north-western DRC, north and west of Tanzania and the bulk of Madagascar (Fig. 2).

During October– November, the north-eastern parts of the region received below rainfall (Fig. 2, circle labeled 1, in red), while the southern parts experienced normal to above rainfalls (Fig. 2, two circles labeled 2 in green)

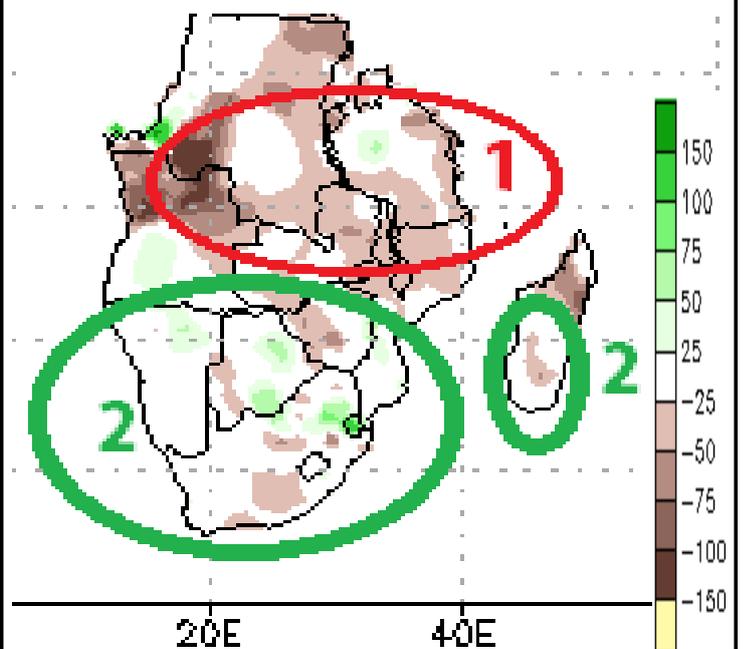


Fig. 2. Precipitation different from normal (mm) , 28 Oct — 26 Nov 2016 [Source: CPC]

MEDIUM-TERM FORECAST (01 - 31 December 2016)

The consistent movement of the ITCZ zone southward over the subcontinent and the active phase 3 MJO over the Indian Ocean will enhance rainfall across the entire SADC region for the next three weeks (Fig.5, Fig.6).

Some portions will experience dry conditions during the next week over Angola and south Tanzania, (Fig.6a.,b,c,d).

Due to its slowly evolving nature, it is possible to accurately predict the MJO. The medium range forecasts are premised on behaviour of MJO.

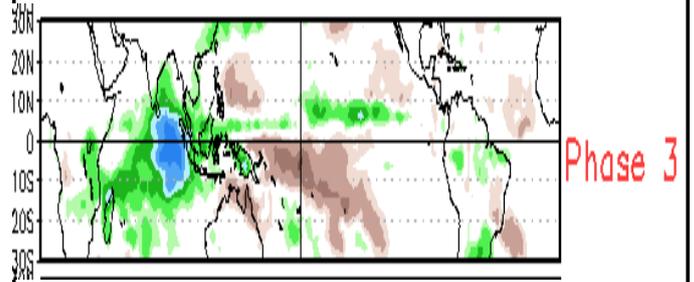


Fig.5: : MJO Phase 3 weekly anomaly OLR (W/m2)
source: NOAA/NCEP

**SADC CSC will
continue to monitor
and timely update
you**

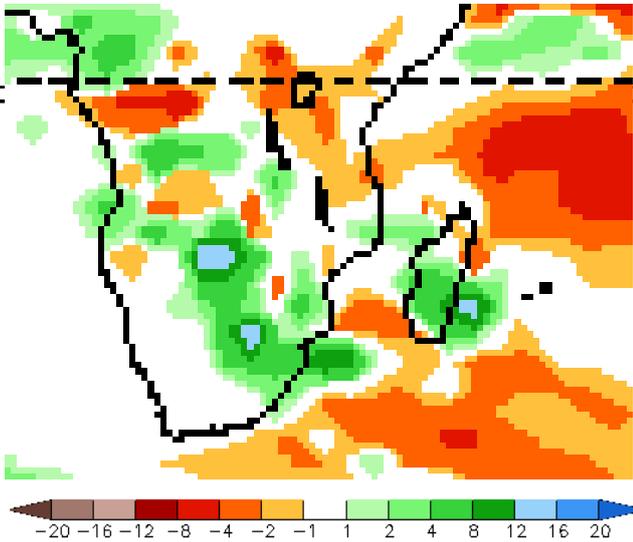


Fig.6.a: : Weekly Precipitation anomaly (mm/day) forecast for 5 - 11 Dec. 2016 (source: NOAA/NCEP)

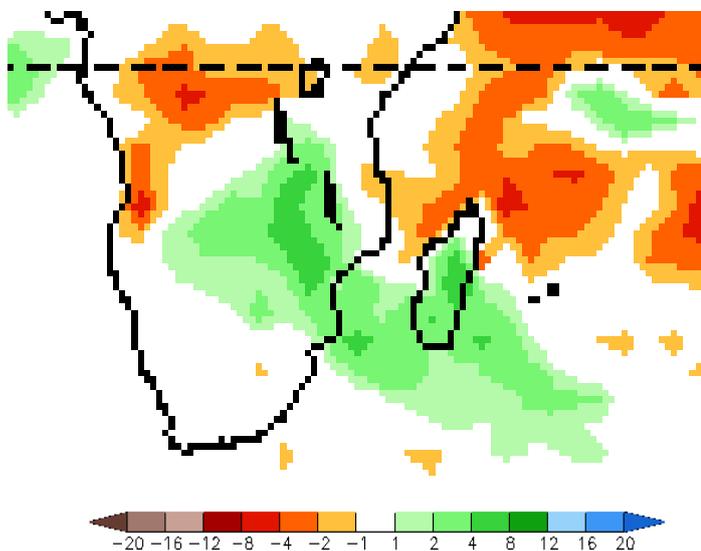


Fig.6.b : Weekly Precipitation anomaly (mm/day) forecast for 12 Dec - 18 Dec . 2016 (source: NOAA/NCEP)

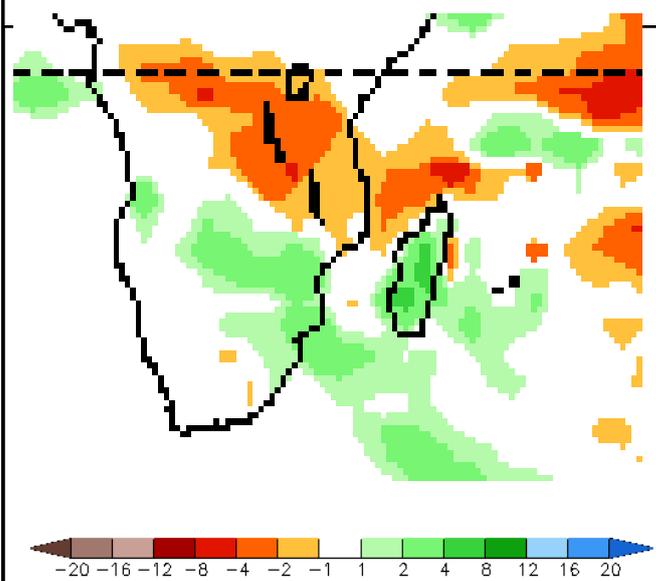


Fig. 6.c. Weekly Precipitation anomaly (mm/day) forecast for 19 Dec - 25 Dec . 2016 (source: NOAA/NCEP)

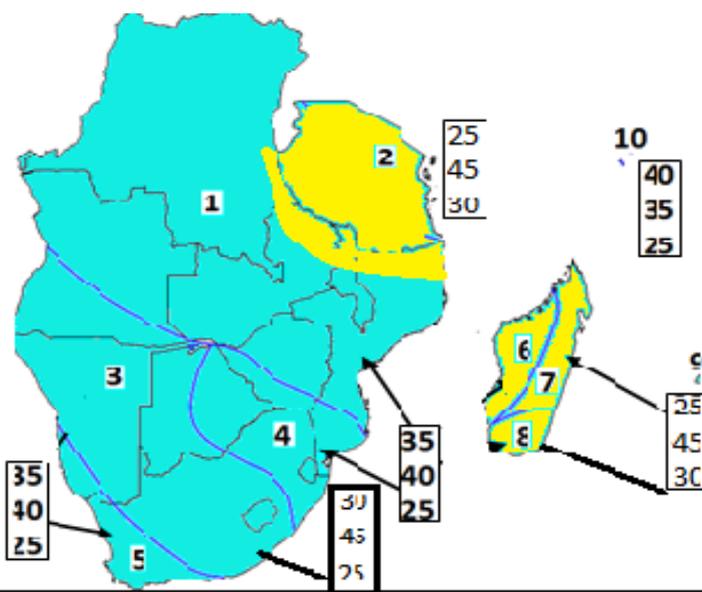


Fig 8. a. SADC rainfall outlook for December 2016 to February 2017

DJF FORECAST DETAILS

For December, 2016 to February, 2017, most parts of the SADC region are expected to receive normal to above-normal rainfall, consistent with SARCOF-20 Statement. The exceptions are Tanzania and Madagascar where there is greater likelihood of normal to below-normal rainfall.

Zone 1: DRC, Zambia, Malawi, bulk of Angola, most of Zimbabwe, greater part of Mozambique and south-western half of Tanzania.

Increased chances of normal to above-normal rainfall

Zone 2: Extreme north of Malawi, extreme northern Mozambique, extreme north Zambia and Tanzania.

Increased chances of normal to below-normal rainfall

Zone 3: South-western Angola, most of Namibia, western half of Botswana, most of central and western parts of South Africa and Lesotho.

Increased chances of normal to above-normal rainfall

Zone 4: South-western Zimbabwe, eastern half of Botswana, north and central South Africa, eastern Lesotho, Swaziland and southern Mozambique.

Increased chances of normal to above-normal

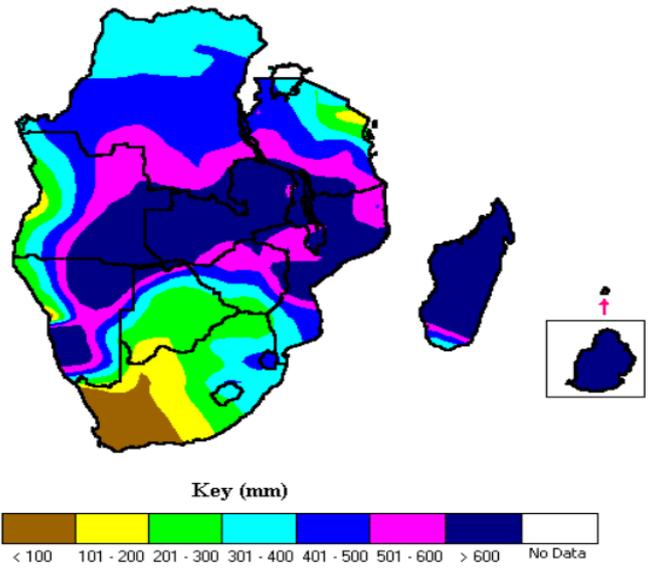


Fig 8. b. SADC 30-year mean rainfall for DJF 1961-1990

rainfall

SADC mean rainfall for DJF for 1961-1990

Zone 5: South-western fringe of Namibia and south-western South Africa.

Increased chances of normal to above-normal rainfall

Zone 6: Western Madagascar.

Increased chances of normal to below-normal rainfall

Zone 7: Eastern Madagascar.

Increased chances of normal to below-normal rainfall

Zone 8: Southernmost Madagascar.

Increased chances of normal to below-normal rainfall

Zone 9: Mauritius.

Increased chances of normal to below-normal rainfall

Zone 10: Seychelles.

Increased chances of above-normal to normal rainfall

The long-term mean for December-January-February rainfall shows maxima of above 600 millimetres over much of Malawi, Zambia, Angola, southern half of DRC, central and northern Mozambique as well as Mauritius and Madagascar Figure 7. The remainder of the region receives rainfall less than 400 millimetres gradually decreasing south-westwards to southwest South Africa and Namibia where the mean rainfall is below 100 millimetres.

Notes:

1. The season is expected to have normal rainfall over the whole SADC Region.

2. The numbers in each zone (Fig. 8) indicate the probabilities of each of the three categories: Above-normal, Normal and Below-normal relative to the 1961-1990 climatological baseline (Fig. 7). The top number indicates the probability of rainfall occurring in the Above-normal category, the middle number for Normal and the bottom number for Below-normal category.

3. The users are strongly advised to contact their NMHSs for interpretation of this Outlook, finer details, updates and additional guidance.

4. Acknowledgements:

- SADC NMHSs,
- Global climate monitoring and prediction centres
- WMO