

SWIOCOF – 14a

SWIO region forecast verification

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Regional Forum for South-West Indian Ocean countries

June 17-20 2025

- Mauritius -

Content

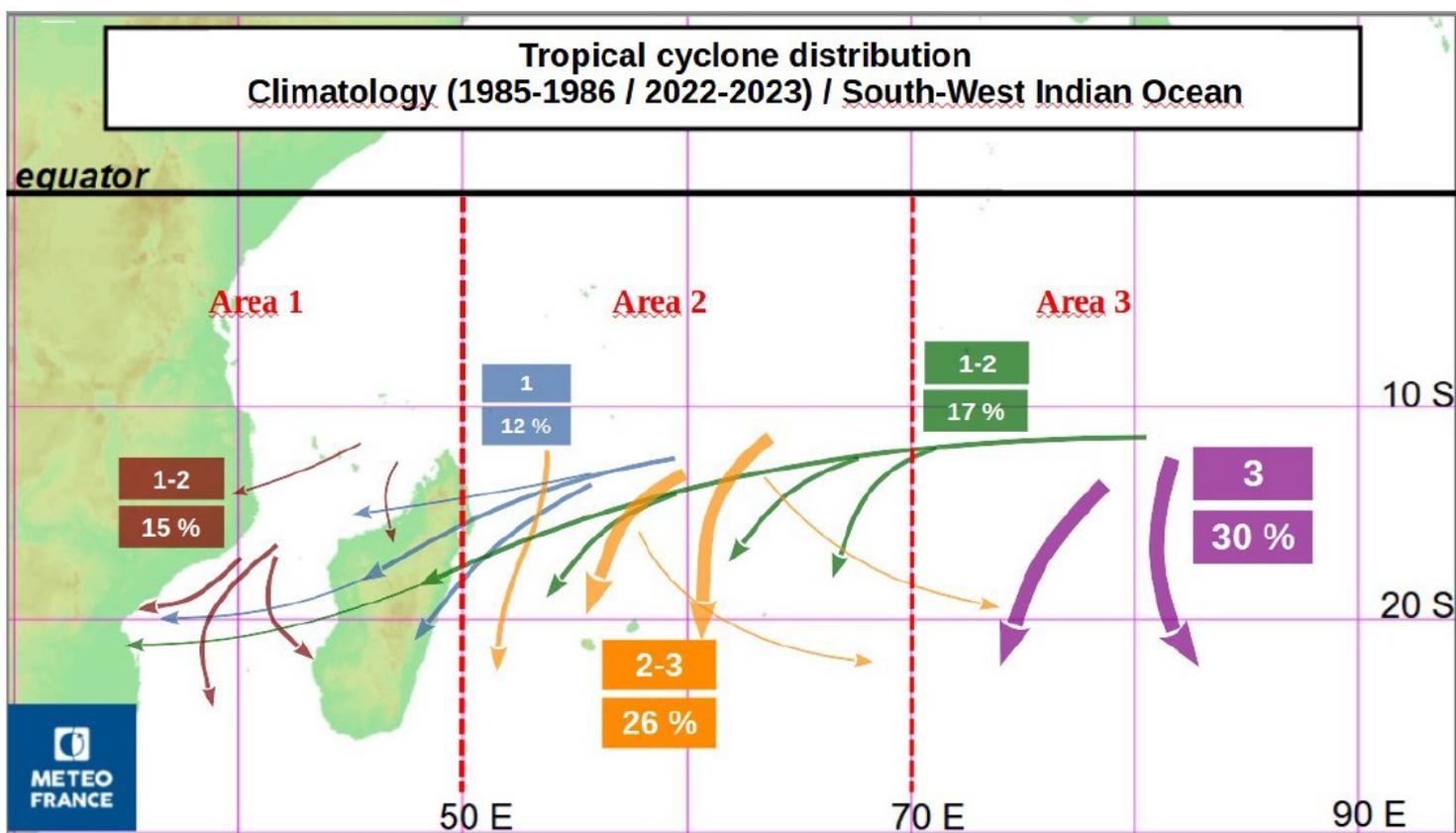
- 1 – Tropical cyclone season summary
- 2 – Verification of the forecast for OND 2024 & JFM 2025
- 3 – 2025/05 forecast for JJA & JAS

1 – Tropical cyclone season summary

Recall of the climatology (1985-2023)

- Average : 10 named systems / 5 TC
- Season : 15 Nov – 30 Apr

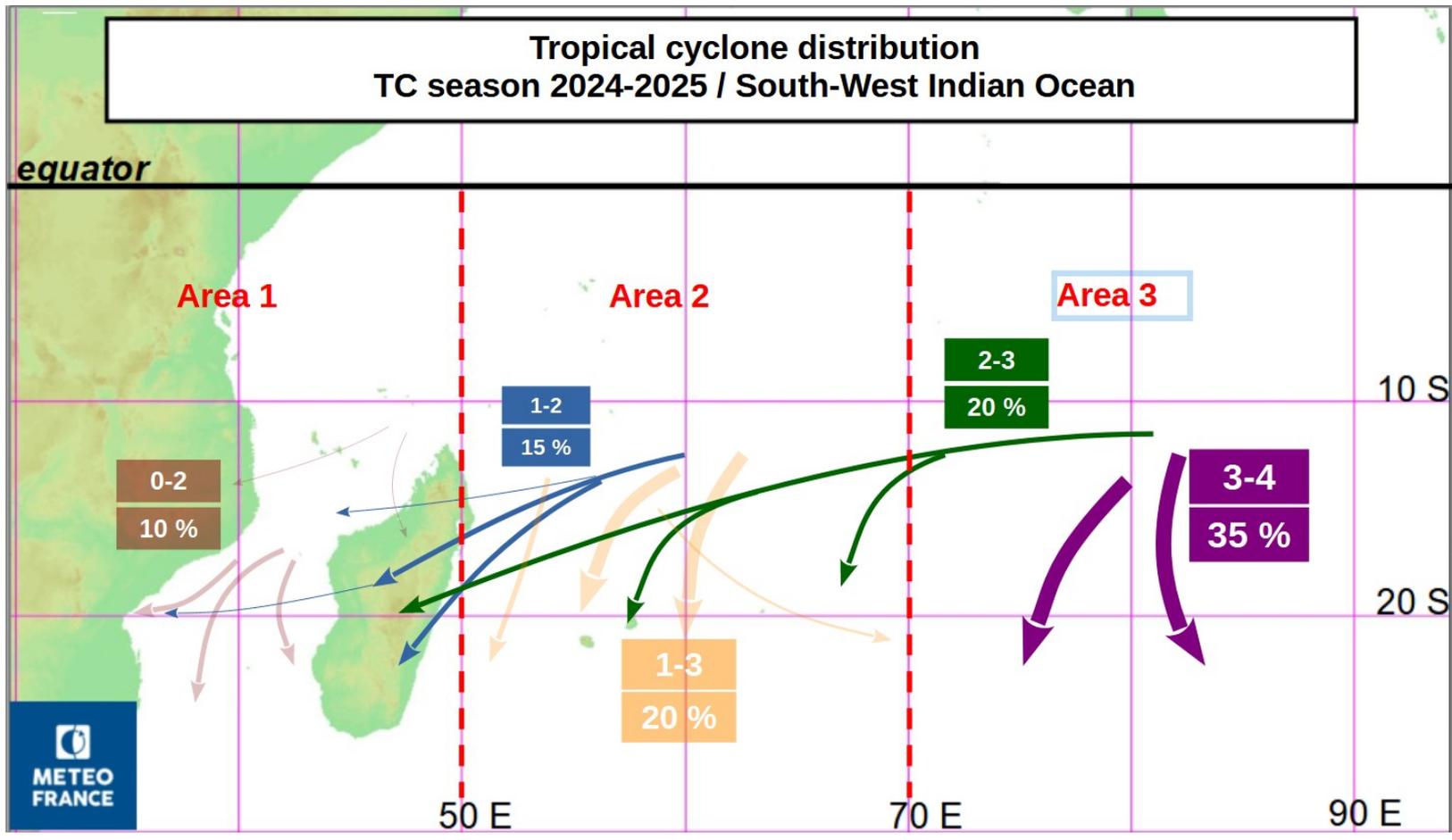
RSMC – La Réunion portal : http://www.meteo.fr/temps/domtom/La_Reunion/webcmrs9.0/



1 – Tropical cyclone season summary

Recall of the forecast made in october 2024 (SWIOCOF-TC MiniForum)

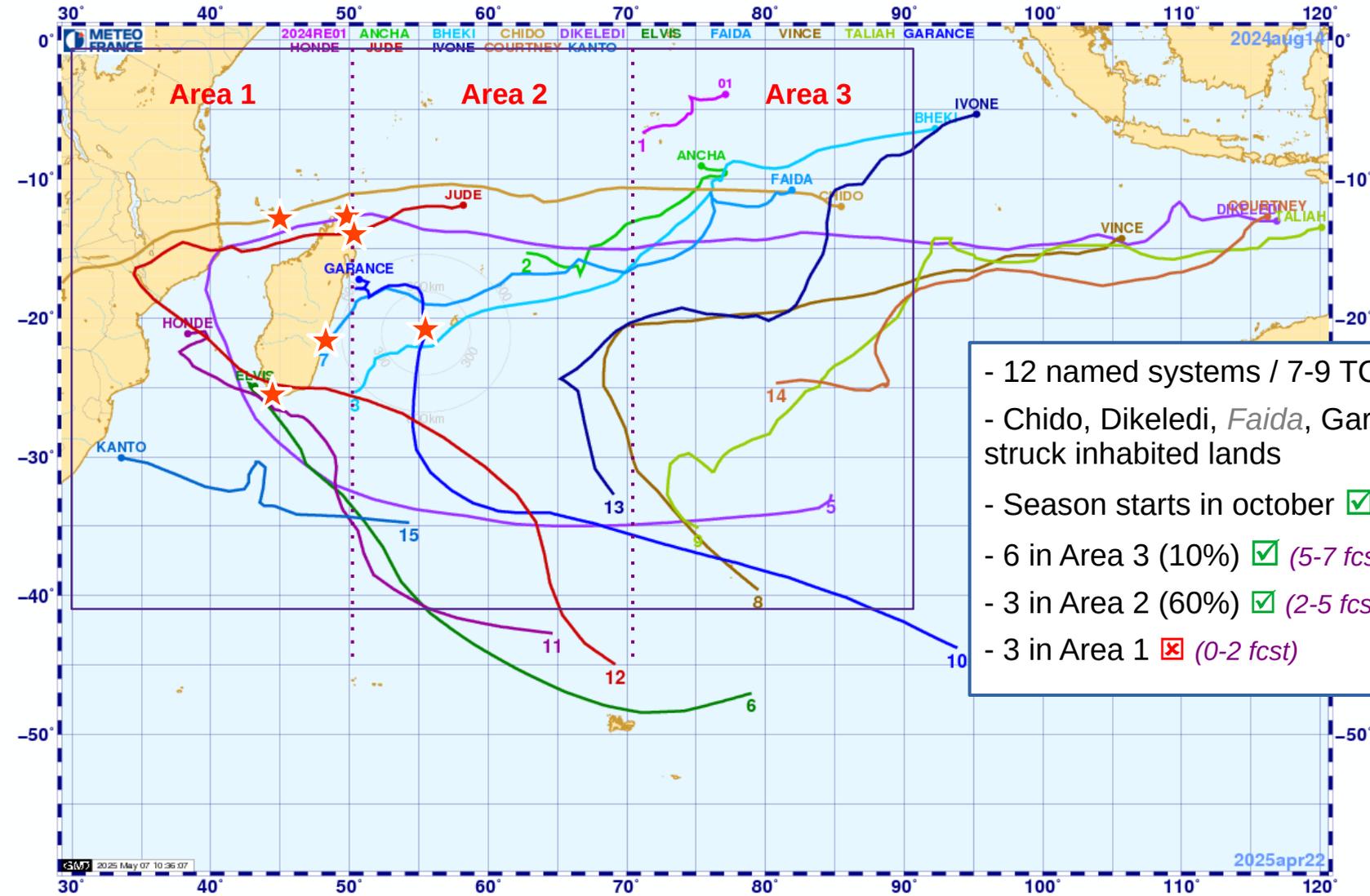
- Normal to above normal TC season (9 – 13 named systems / 4 – 7 TC)
- TC activity mainly in central and eastern parts of the basin with zonal to parabolic tracks
- Impacts on inhabited lands could start before the end of 2024



1 – Tropical cyclone season summary

TC analysis from RSMC - La Réunion

saison 2024–2025



- 12 named systems / 7-9 TC ✓ (9-13 *fcst*)
- Chido, Dikeledi, Faida, Garance, Honde, Jude struck inhabited lands
- Season starts in october ✓
- 6 in Area 3 (10%) ✓ (5-7 *fcst*) (Area of maximum activity)
- 3 in Area 2 (60%) ✓ (2-5 *fcst*)
- 3 in Area 1 ✗ (0-2 *fcst*)

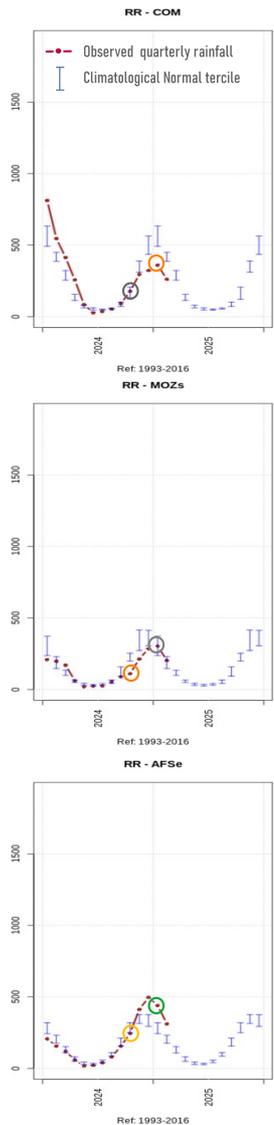
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2025apr22

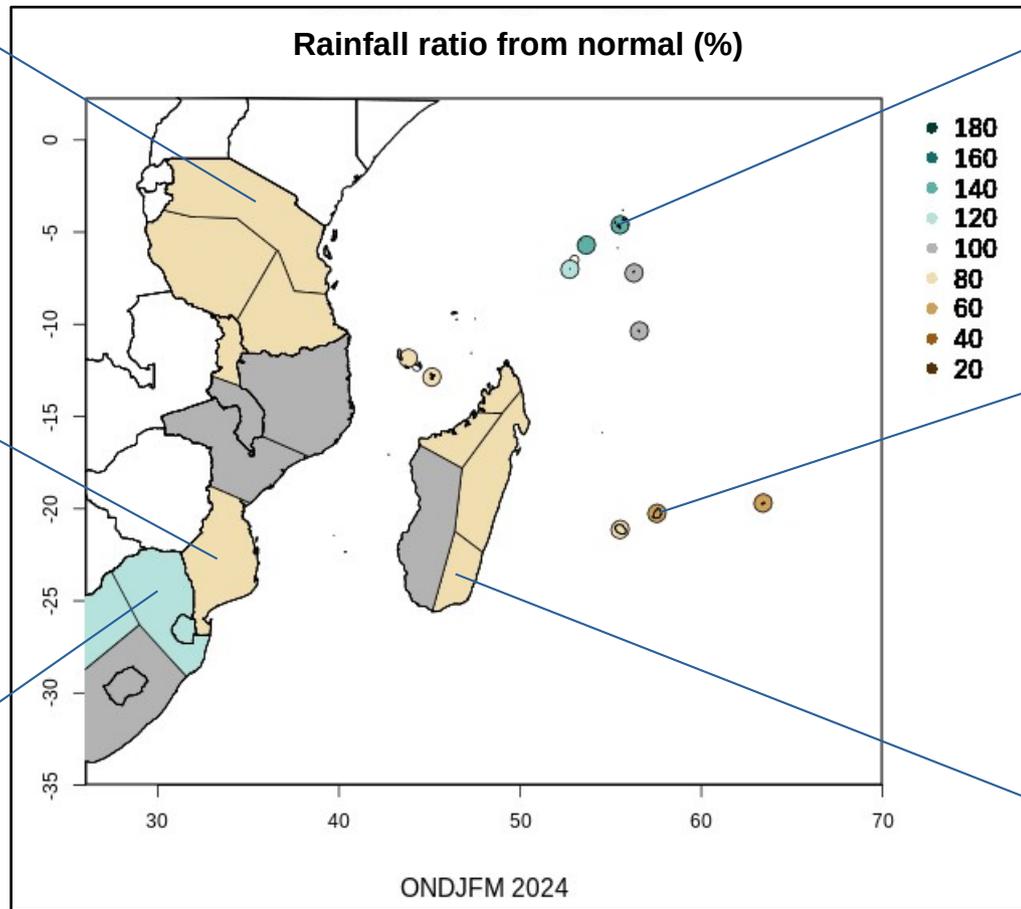


1 – Rainy season summary

Rainfall Anomalies (mm)

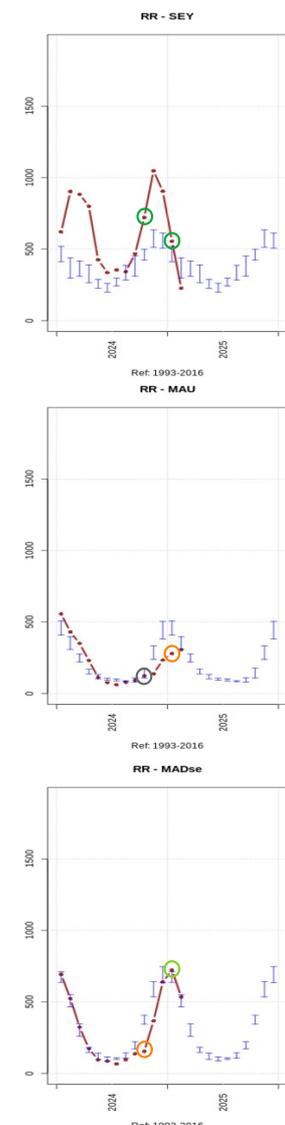


Present rainfall status : 6 months accumulation



This map displays the ratio (%) of 6 months accumulated rainfall with respect to its normal value. The time evolution of quarterly rainfall over some selected areas help to assess the hydrologic status of each area. (Data source : ERA5 reanalysis)

Rainfall Anomalies (mm)



The rainfall status over the SWIO region for the rainy season (from November 2024 to April 2025) is mainly near normal to below normal except for Seychelles islands and South Africa which shows above normal rainfall accumulation over the period. The lowest ratio are observed for Mauritius (66%), Rodrigues (66%) and Comoros (69%).



2 – Rainy season 2024-25 forecast verification

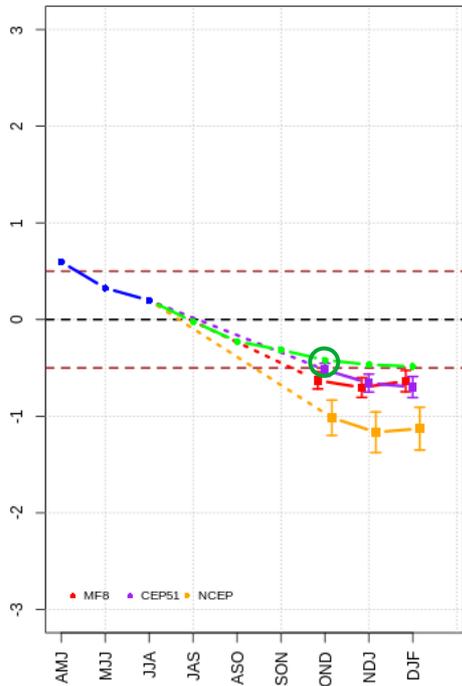
In this section we present the verification of the forecast issued in september 2024 and december 2024 for the quarters (OND 2024 & JFM 2025)

- First we recall the forecast produced at that time : It consist in the mixing of the statistical adaptation from 3 GCM (ECMWF, MF, NCEP)
- Then this forecast is compared to the corresponding verification data (Reference dataset for the region created from ERA5 reanalysis). The RPSS score issued from this comparison is also presented ;

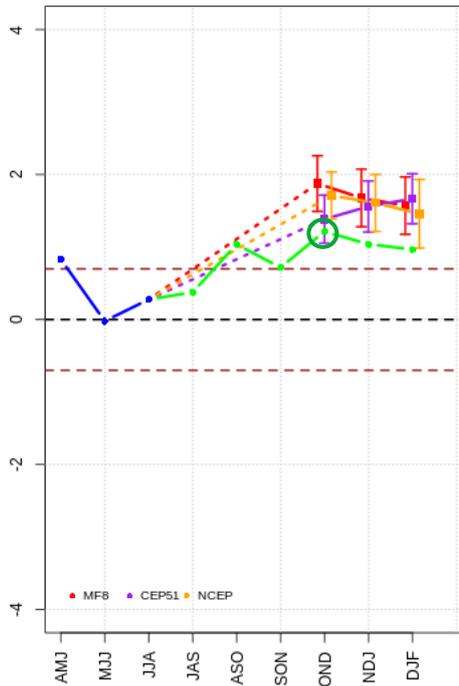
2 – OND 2024 forecast verification

September 2024 forecast and verification of oceanic indices for OND 2024

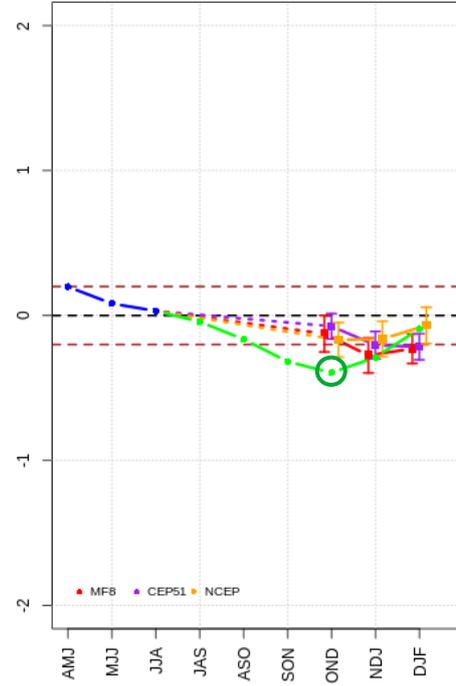
Forecast: NINO3.4 - 2024-09



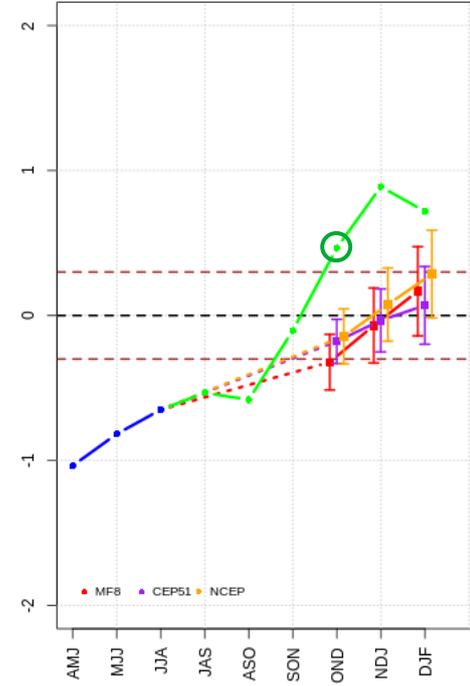
Forecast: SOI - 2024-09



Forecast: IOD - 2024-09



Forecast: SIOD - 2024-09



ENSO : Weak La Nina situation with feedback on the atmospheric circulation

IOD negative phase **slightly underestimated**

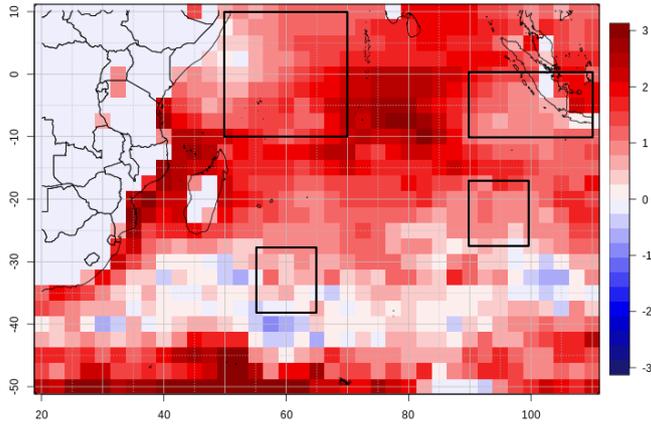
SIOD positive phase **underestimated**

2 – OND 2024 forecast verification

September 2024 forecast for **OND 2024** and verification of GCM parameters

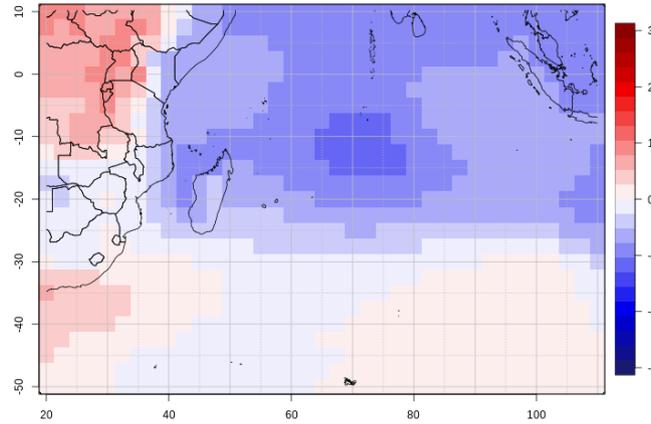
MME Forecast for : SST, MsIP, Wind 850hPa

Forecast Mix GCM SSTglobal - OND2024-It1



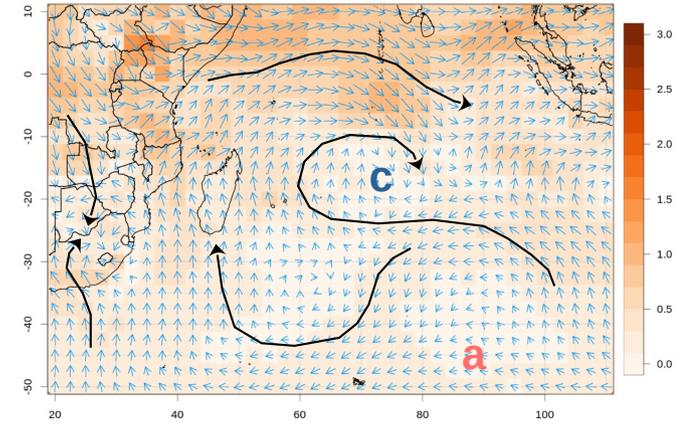
CEP51.MF8.NCEP

Forecast Mix GCM PMERglobal - OND2024-It1



CEP51.MF8.NCEP

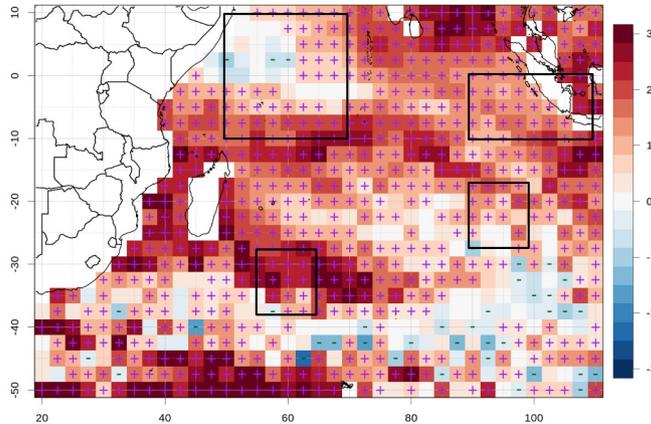
Forecast Mix GCM U850global - OND2024-It1



CEP51.MF8.NCEP

ERA5 SST Std. Anom. : OND 2024

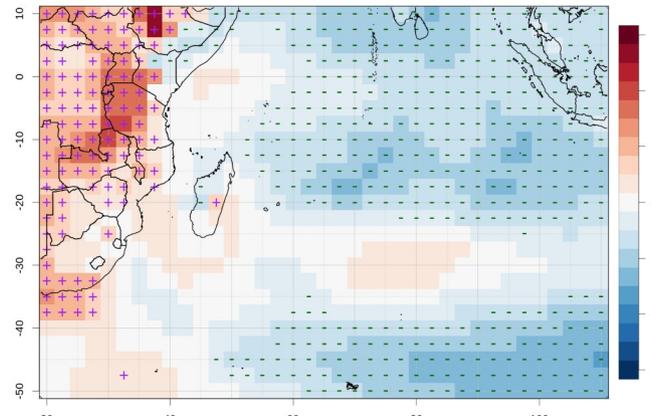
IOD



Ref: 1993-2016

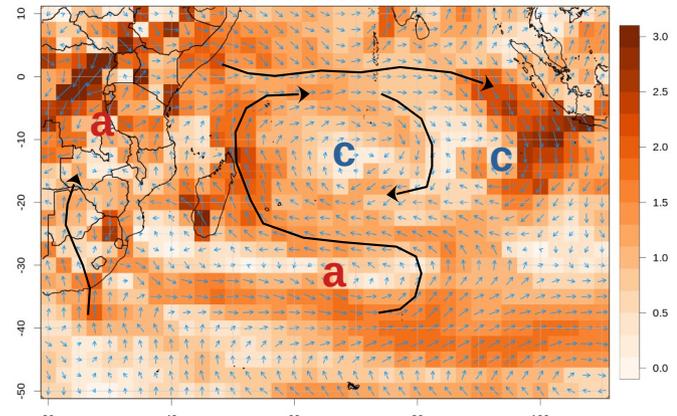
SIOD

ERA5 PMER Std. Anom. : OND 2024



Ref: 1993-2016

ERA5 850hPa Wind anomaly : OND

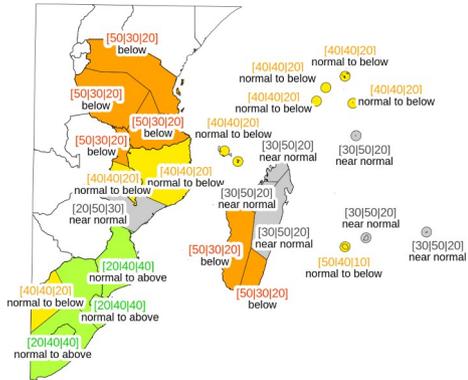


Ref: 1993-2016

2 – OND 2024 forecast verification

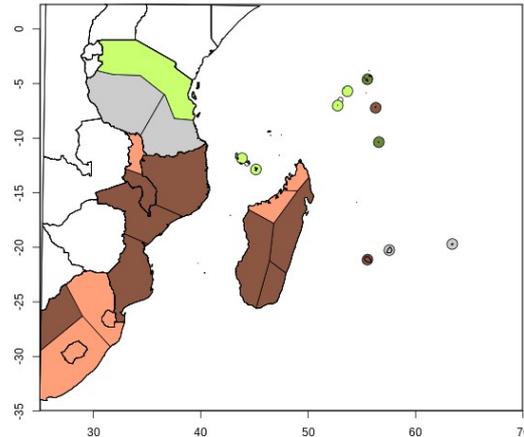
Rainfall Forecast

Rainfall Seasonal forecast **OND 2024**



Observed anomalies (verification Dataset ERA5)

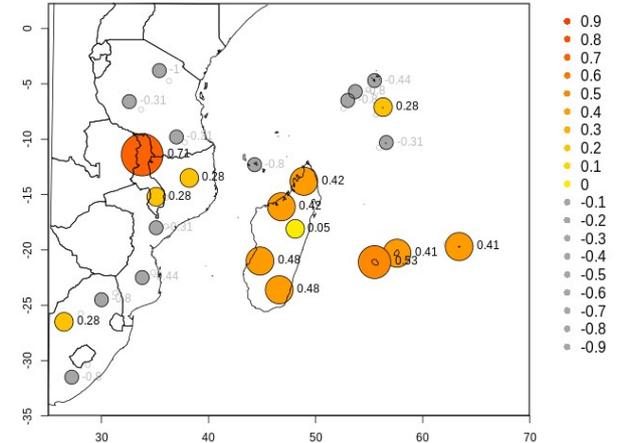
RR quintile class: OND 2024



Ref: 1993-2016

RPSS score

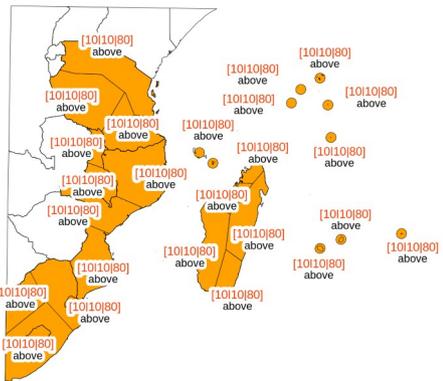
Score smooth RPSS: RR OND-2024 It1



Final forecast

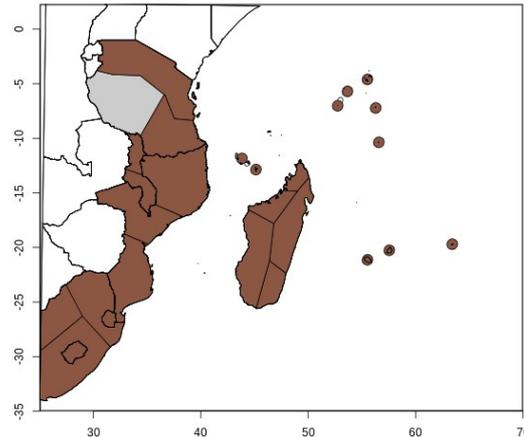
Temperature Forecast

Temperature Seasonal forecast **OND 2024**



Observed anomalies (verification Dataset ERA5)

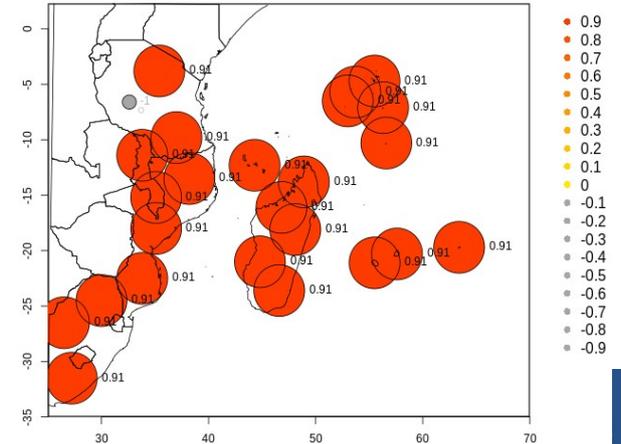
T2M quintile class: OND 2024



Ref: 1993-2016

RPSS score

Score smooth RPSS: T2M OND-2024 It1

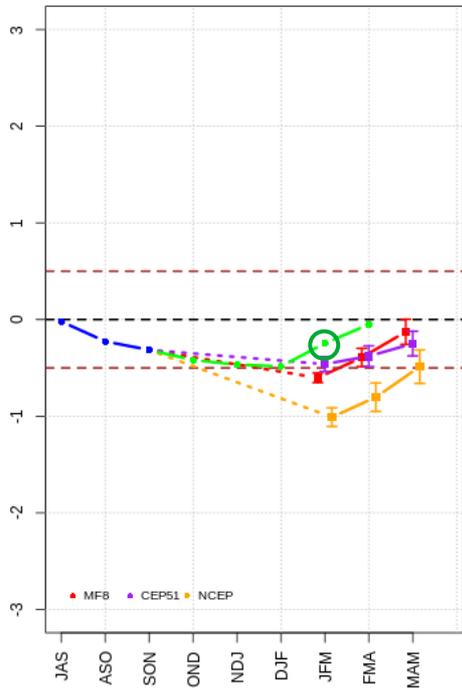


Final forecast

2 – JFM 2025 forecast verification

December 2024 forecast and verification of oceanic indices for JFM 2025

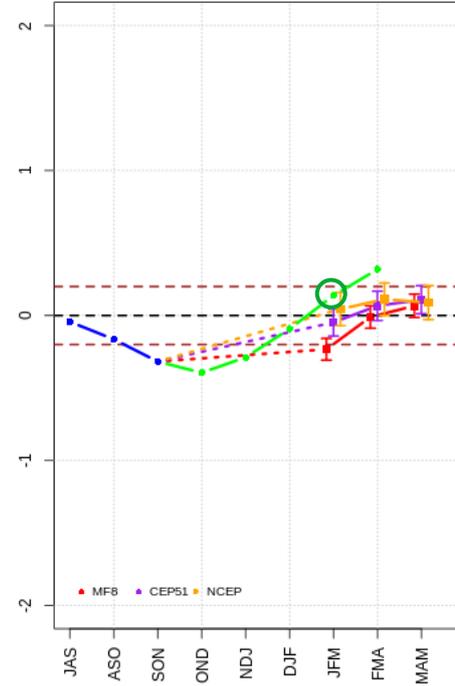
Forecast: NINO3.4 - 2024-12



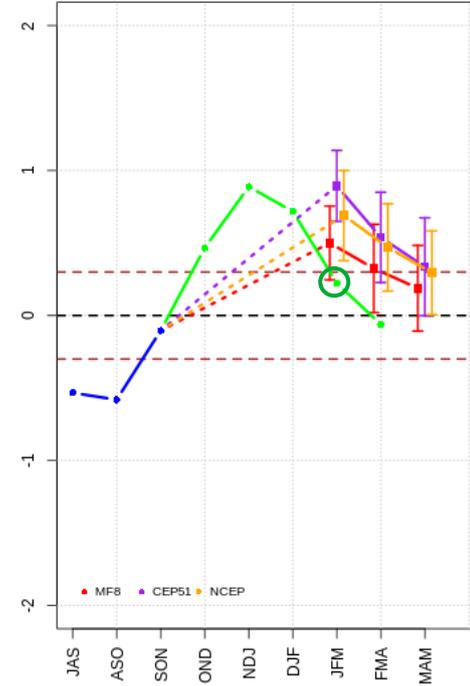
Forecast: SOI - 2024-12



Forecast: IOD - 2024-12



Forecast: SIOD - 2024-12



ENSO : Weak La Nina situation with feedback on the atmospheric circulation

IOD neutral phase (positive trend)

SIOD neutral phase ***misrepresented***

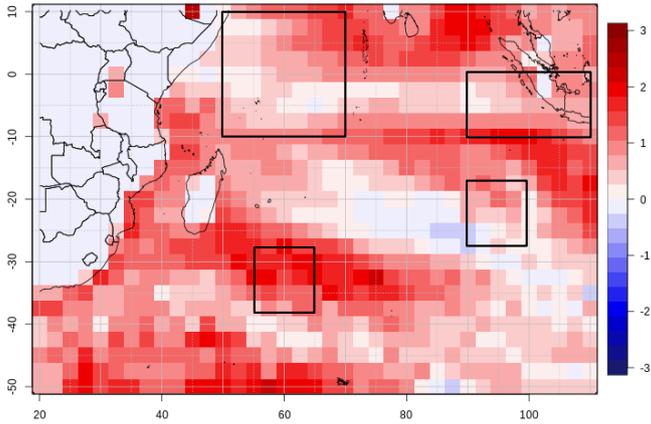


2 – JFM 2025 forecast verification

December 2024 forecast for **JFM 2025** and verification of GCM parameters

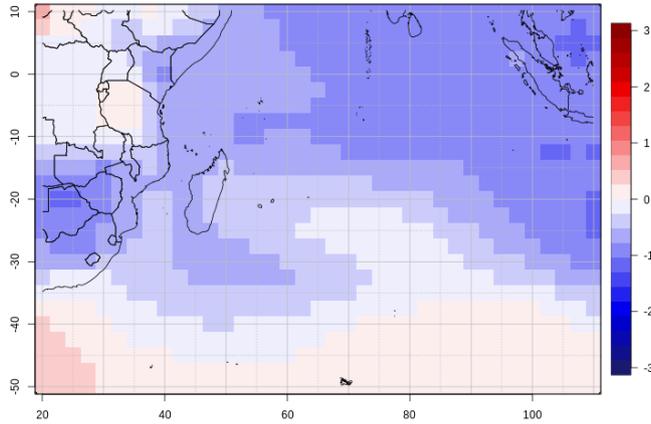
MME Forecast for : SST, MsIP, Wind 850hPa

Forecast Mix GCM SSTglobal - JFM2025-It1



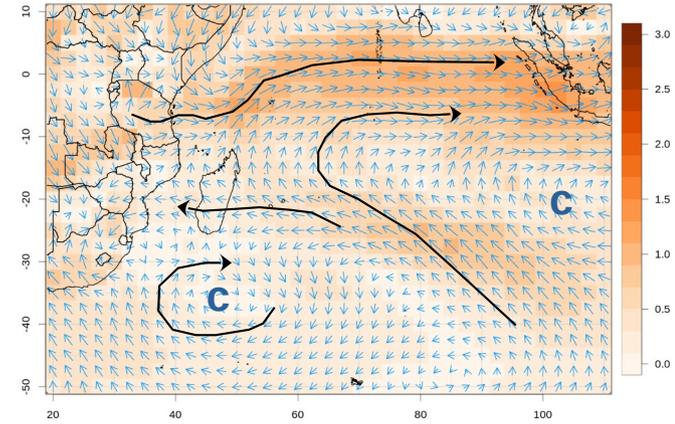
CEP51.MF8.NCEP

Forecast Mix GCM PMERglobal - JFM2025-It1



CEP51.MF8.NCEP

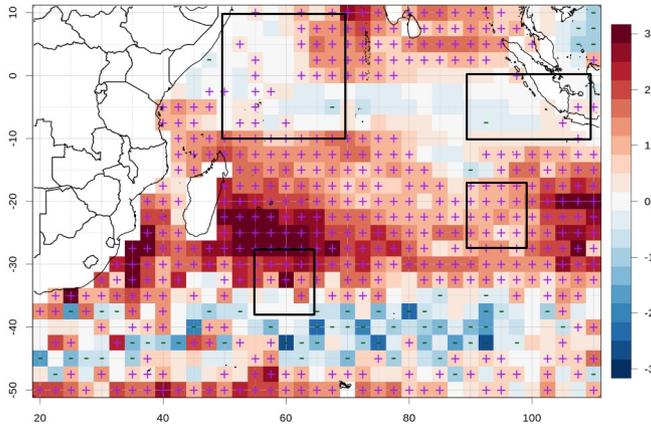
Forecast Mix GCM U850global - JFM2025-It1



CEP51.MF8.NCEP

ERA5 SST Std. Anom. : JFM 2025

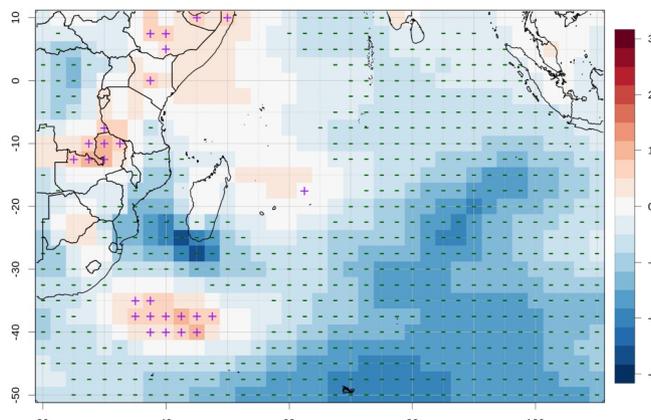
IOD



Ref: 1993-2016

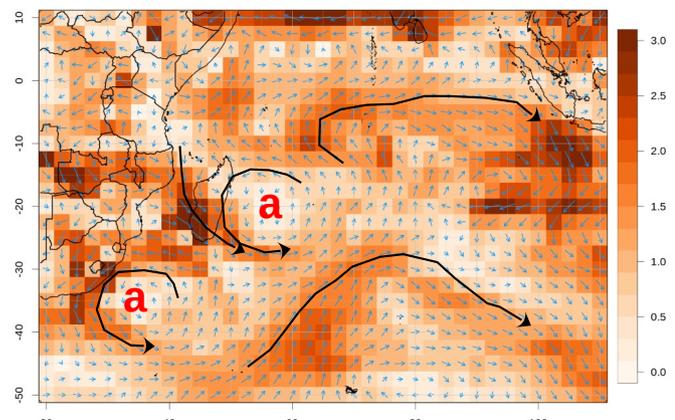
SIOD

ERA5 PMER Std. Anom. : JFM 2025



Ref: 1993-2016

ERA5 850hPa Wind anomaly : JFM



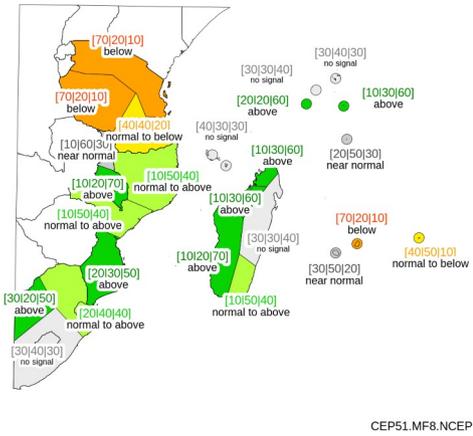
Ref: 1993-2016



2 – JFM 2025 forecast verification

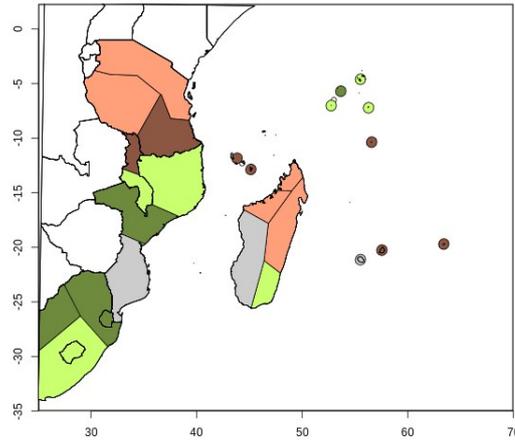
Rainfall Forecast

Rainfall Seasonal forecast - **JFM 2025** - It 1



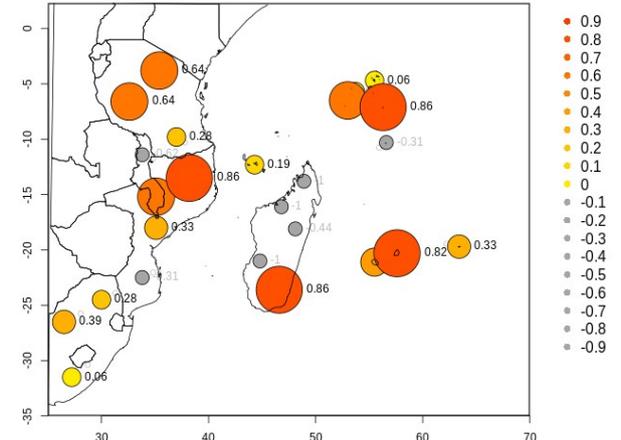
Observed anomalies (verification Dataset ERA5)

RR quintile class: JFM 2025



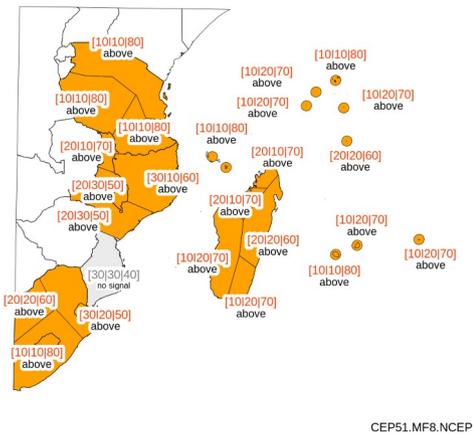
RPSS score

Score smooth RPSS: RR JFM-2025 It1



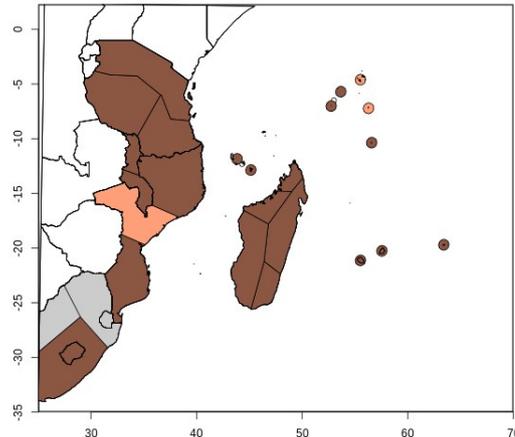
Temperature Forecast

Temperature Seasonal forecast - **JFM 2025** - It 1



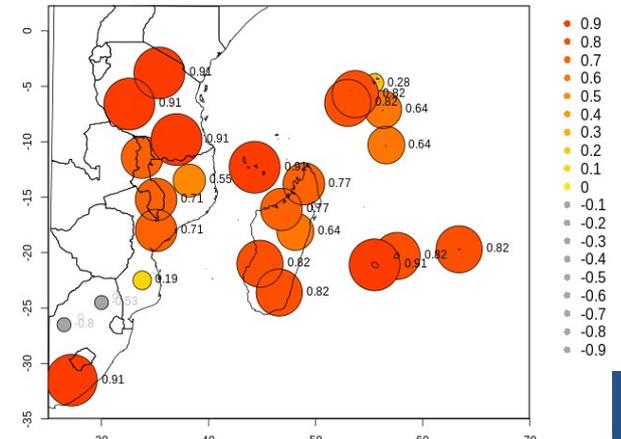
Observed anomalies (verification Dataset ERA5)

T2M quintile class: JFM 2025



RPSS score

Score smooth RPSS: T2M JFM-2025 It1





Thank you for your attention

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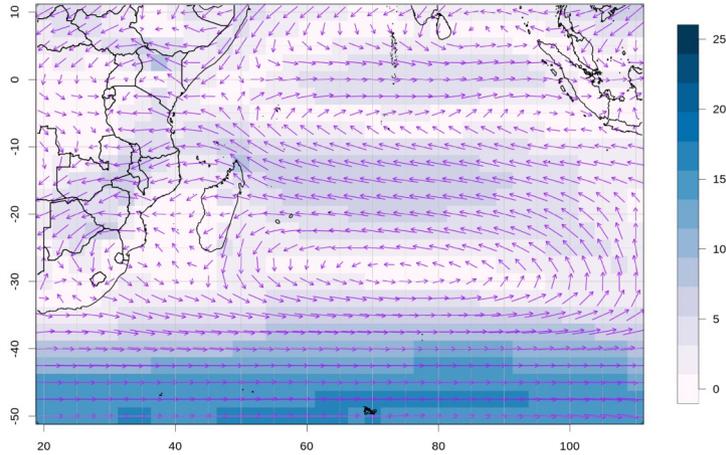


Climatological context

Large scale ERA5 climatology maps - **OND**

Wind 850

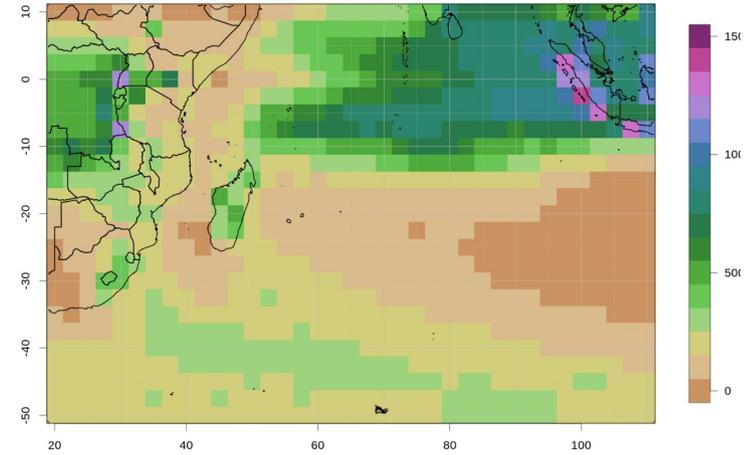
ERA5 Wind 850 Avg. : OND



1993-2016

Rainfall

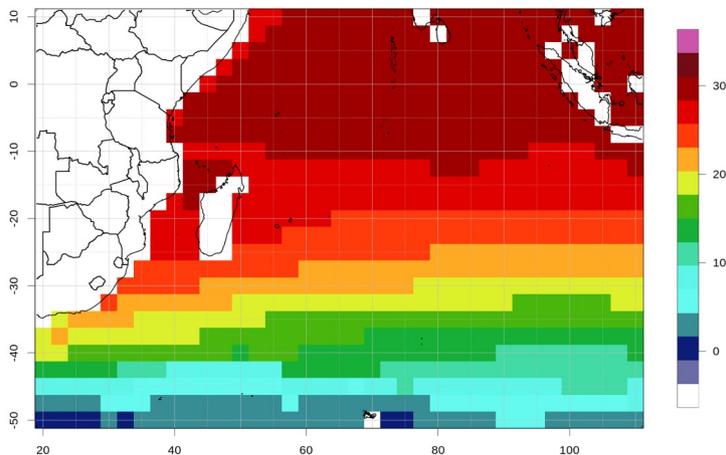
ERA5 PREC Avg. : OND



1993-2016

SST

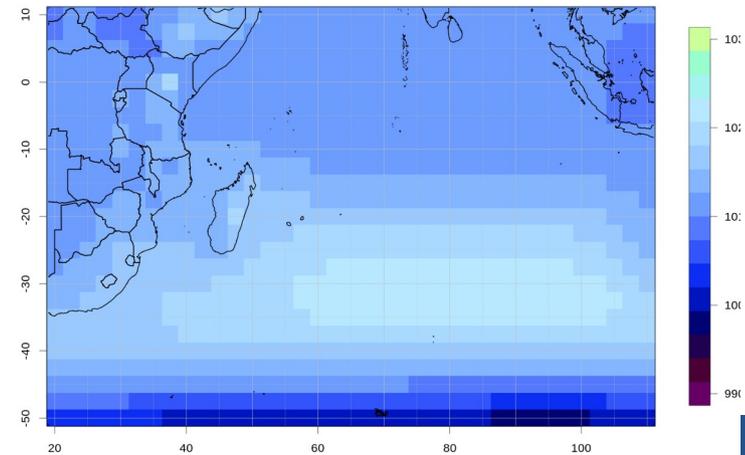
ERA5 SST Avg. : OND



1993-2016

MSLP

ERA5 PMER Avg. : OND



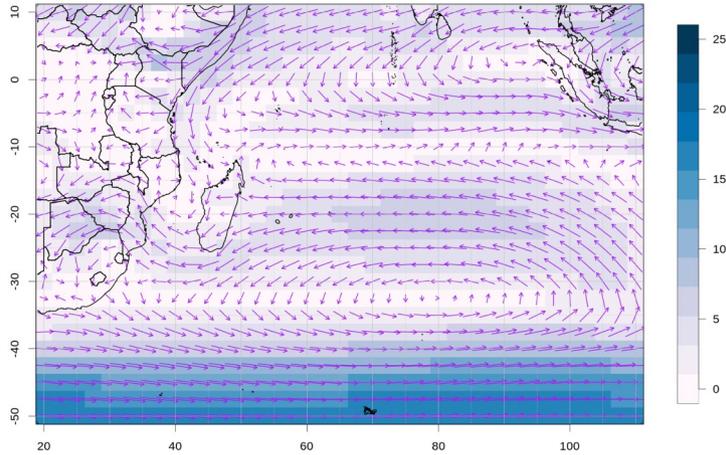
1993-2016

Climatological context

Large scale ERA5 climatology maps - JFM

Wind 850

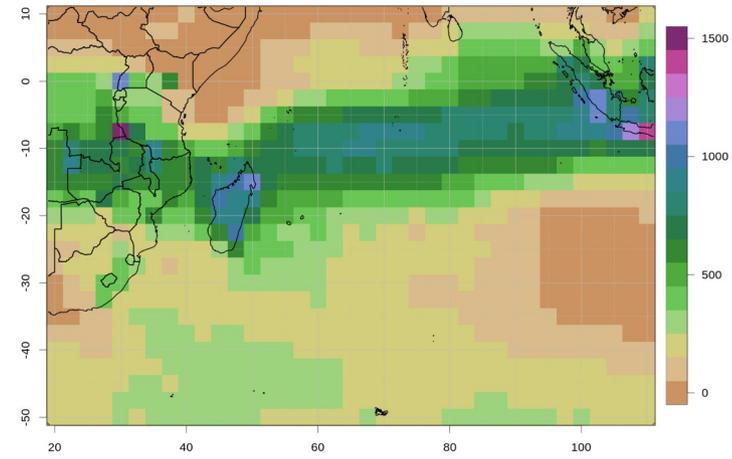
ERA5 Wind 850 Avg. : JFM



1993-2016

Rainfall

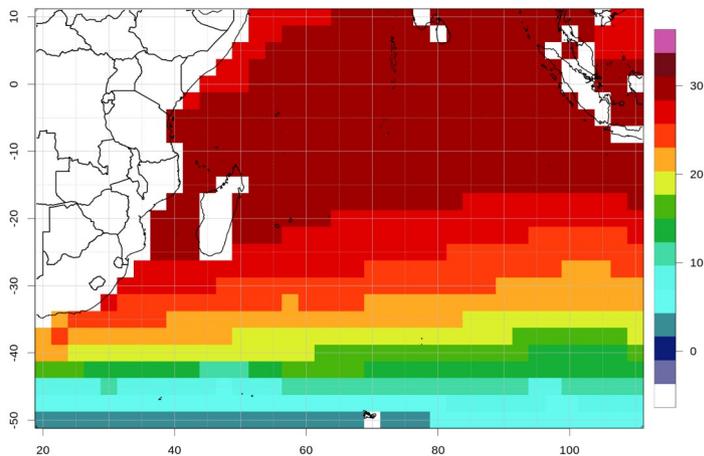
ERA5 PREC Avg. : JFM



1993-2016

SST

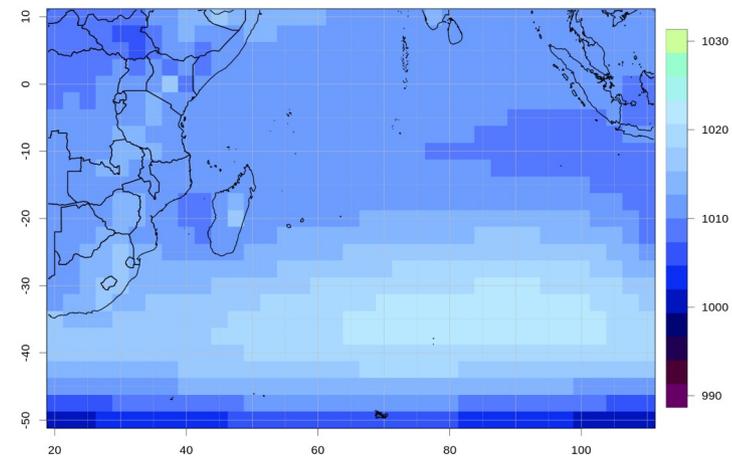
ERA5 SST Avg. : JFM



1993-2016

MSLP

ERA5 PMER Avg. : JFM



1993-2016