

SWIOCOF – 14a

Forecast verification introduction

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SWIOCOF-14a : Forecast verification introduction

- 1 – General principles
- 2 – Regional and local forecast processing
- 3 – Forecast verification
- 4 – Case of cyclonic activity forecast
- 5 – Synthesis

General principles

- **Seasonal forecast should be produced through an objective process :**
 - Traceable, Reproducible, Documented

WMO 1246 « Guidance on operational practices for objective seasonal forecasting »
- **Seasonal forecast should be based on :**
 - Constitute a Multi Model Ensemble of GCM outputs
 - Assessment of GCM performance (scores)
 - Use additional information derived from climatology
 - Display of the forecast as probabilistic information + uncertainties
 - Implementation of post-processing to provide unbiased forecasts along with scores
- **SWIO region specific features :**
 - Island countries need a downscaling process of the forecasts
 - The regional scale is defined as a climatological zoning allowing to display large patterns of the forecast
 - NMHSs specific data allows to produce local scale patterns of the forecast
- ➔ **Development of an integrated tool to process all the different tasks: *SEAFORDS* suite**
> http://www.meteo.fr/temps/domtom/La_Reunion/meteoreunion2/climatologie/SWIO/swiocof-new.html
- **Seasonal forecasts are verified following two approaches:**
 - A verification of a serie of forecast (reliability, information potential)
 - **A verification of an individual forecast (particular case performance)**

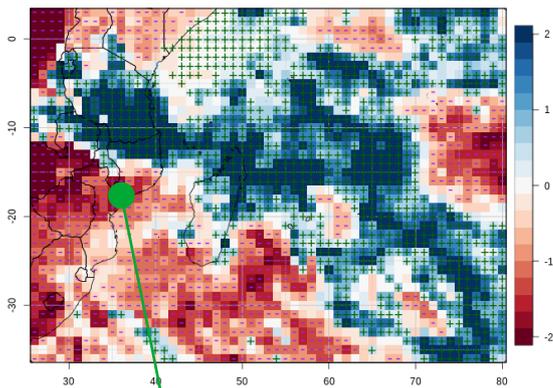
WMO 1220 « Guidance on verification of seasonal climate forecast »

Forecast verification

Régional / local monitoring

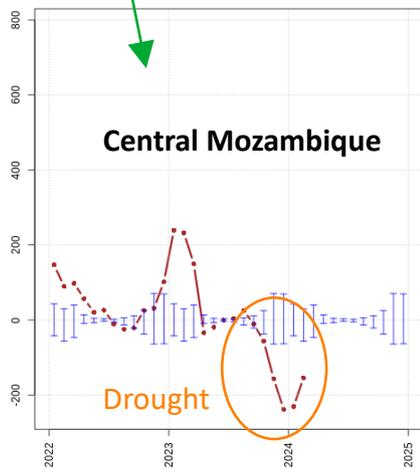
ex : JFM 2024 Reference data

PREC_ERA5_SWIO Std. Anom.: JFM 2024



Ref: 1993-2016

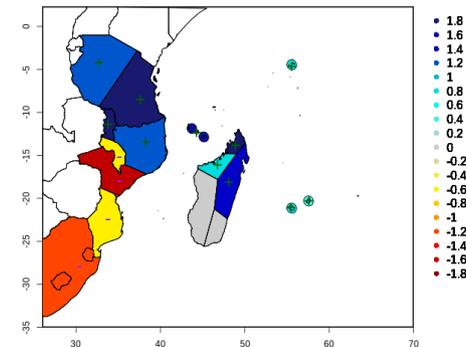
RR Anom. - MOZc



Ref: 1993-2016

Rainfall anomalies for JFM 2024 over SWIO zones

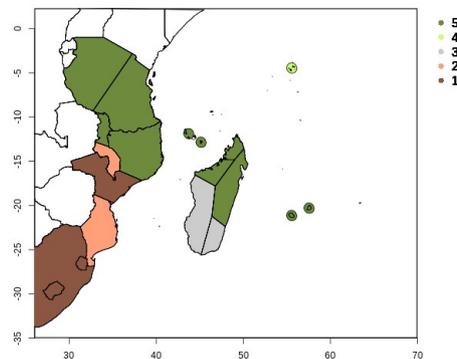
RR Std. Anom.: JFM 2024



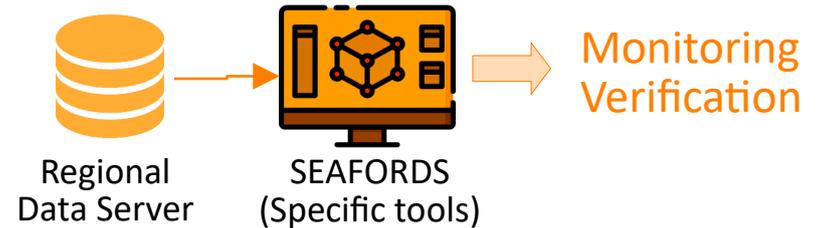
Ref: 1993-2016

Rainfall quintiles classes for JFM 2024 over SWIO zones

RR quintile class: JFM 2024



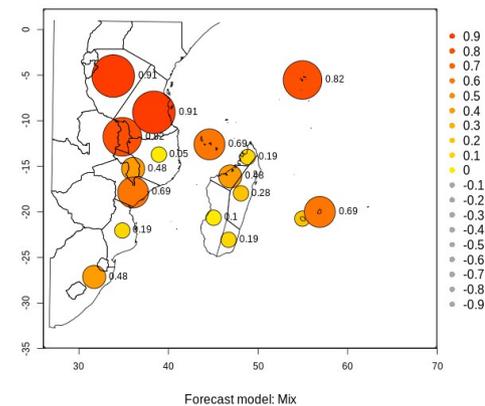
Ref: 1993-2016



Forecast verification : RPSS score

ex : RPSS for JFM 2024 regional forecast

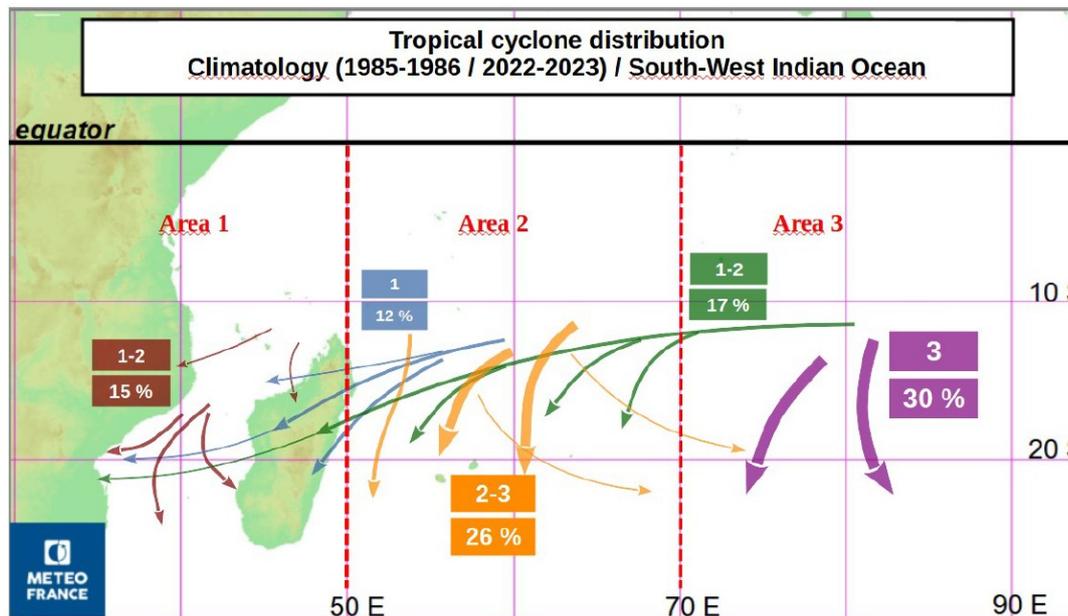
Score RPSS: RR JFM-2024 It1



NB : The verification of a forecast should take into account users constraints / objectives

Cyclonic activity forecast and verification

- **Seasonal forecast issued at the beginning of the season :**
 - first guess issued during SWIOCOF (september)
 - final outlook issued during TC-MiniForum (late october)



Avg : 10 named systems
(5 TC)

Classification following :

- 3 development areas
- tracks direction

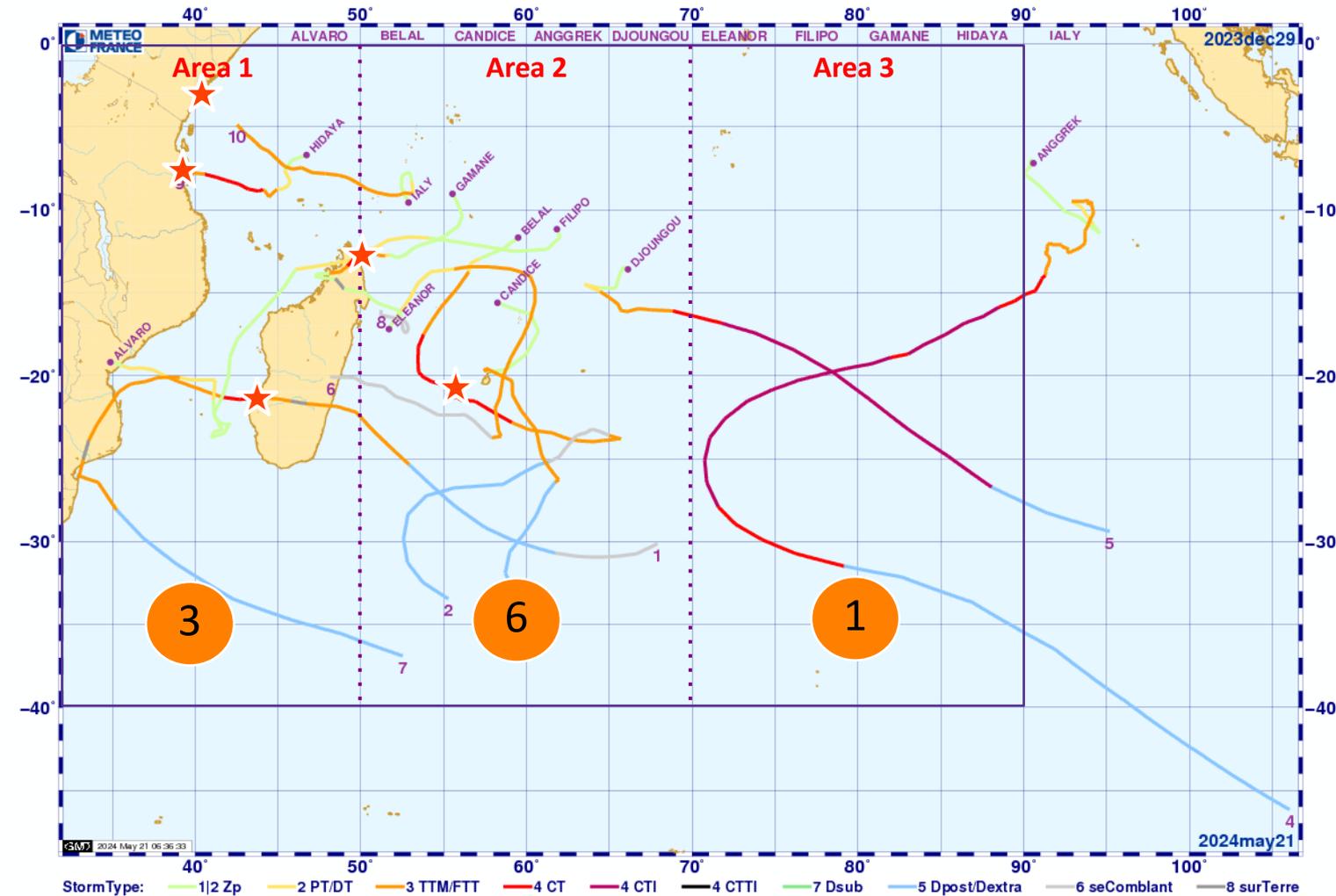
- **TC seasonal forecast after expert analysis considering:**
 - ECMWF TC products
 - Statistical adaptation (*SEAFORDS*) of Multi-GCM parameters for TC activity (number, ACE)
 - Tracks composites associated to climate drivers status

➡ **Guidance outlook for TCC member states and regional users
(Humanitarian sector, PIROI)**

Cyclonic activity forecast and verification

- **Verification performed after the end of the season :**
 - RSMC best tracks of the systems observed during the season (may-june)

besttrack 2023-2024



- Named systems (*ex : 10*)
- Count by development area
- Count regions affected by TC

Synthesis

- In the SWIO region, the seasonal forecast activity is carried out through a process involving the *SEAFORDS* toolbox in order to :
 - Constitute and update a regional dataset needed for LRF production and verification, and for basic monitoring
 - Produce rainfall and temperature forecast
 - Verify past forecast
 - Make these datasets and results available through a web portal :
http://regionalclimate-change.sc/swiocof_data_portal/
 - During **SWIOCOF** (september) the national forecasts are issued following the same process. Their results are collected to form the regional forecast.
 - The cyclonic activity seasonal prediction is displayed as departures from the climatology (october)

Thank you for your attention

Any questions ?

