



Early seasonal outlook for cyclone activity in SWIO region (2021-2022 season)

Contribution from RSMC La Réunion

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Regional Outlook Forum for South-West Indian Ocean countries

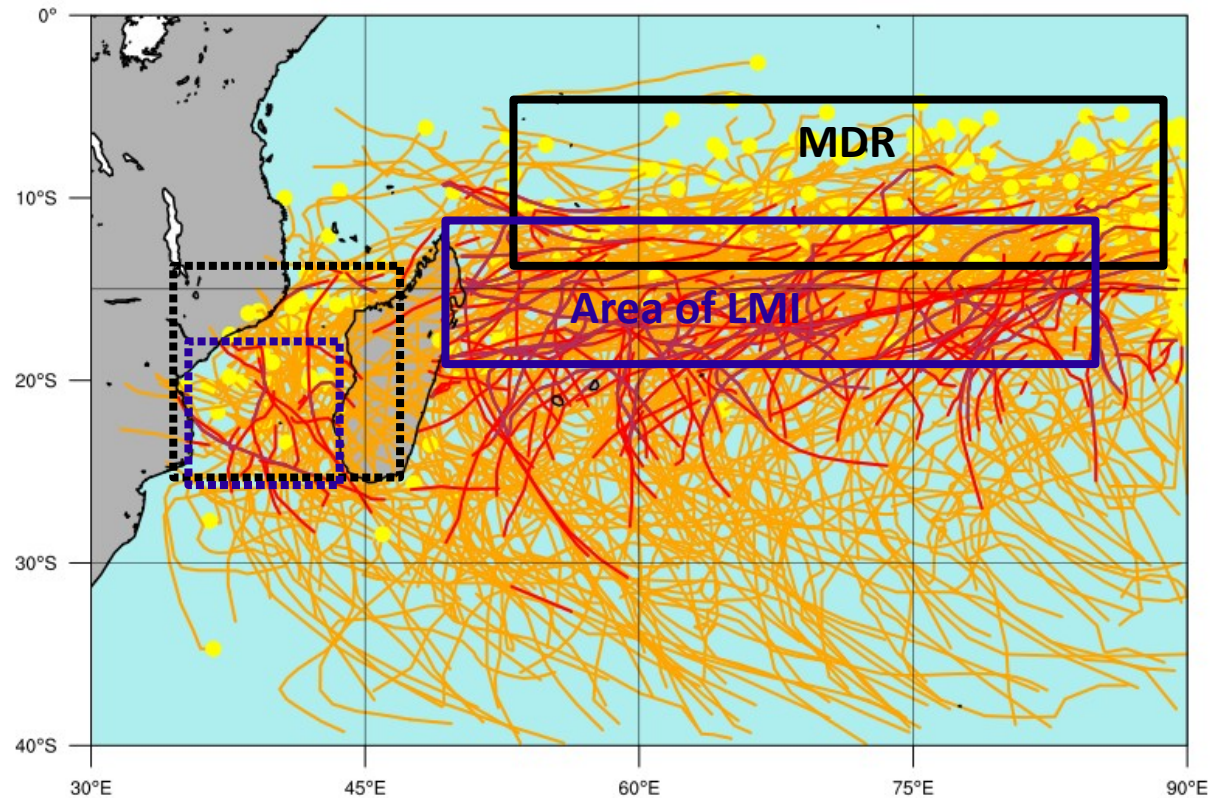
September 20-23 2021

- WebConference -

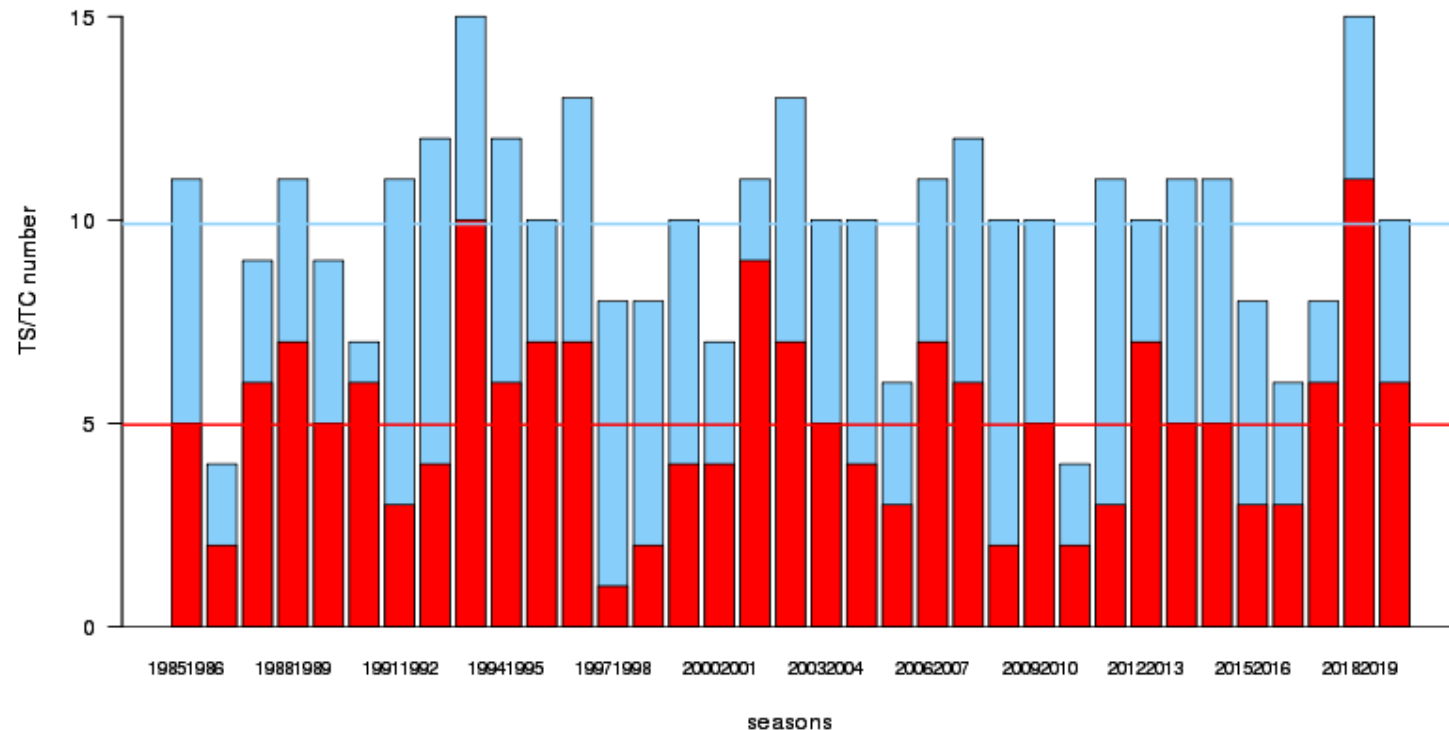
SWIO : Climatology and Interannual TC activity

RSMC best-tracks (1985-2018)

- Average of 10 named systems every year, 5 of which reach cyclone intensity
- Cyclonic season defined as from november to april
- Main Development Region north of 15°S and east of 55°E
- Life Maximum Intensity usually reached between 10°S and 20°S east of Madagascar
- Mozambique channel : ~15 % TC genesis with a local MDR and LMI area shifted southwards



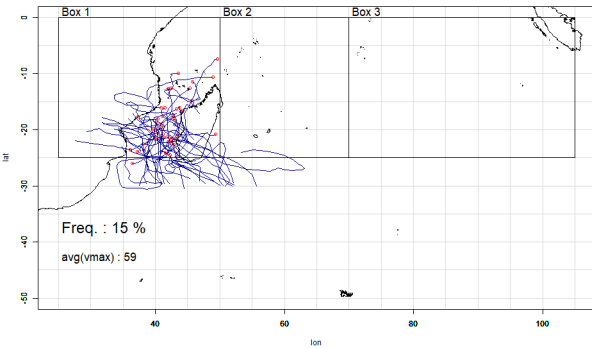
SWIO : Climatology and Interannual TC activity



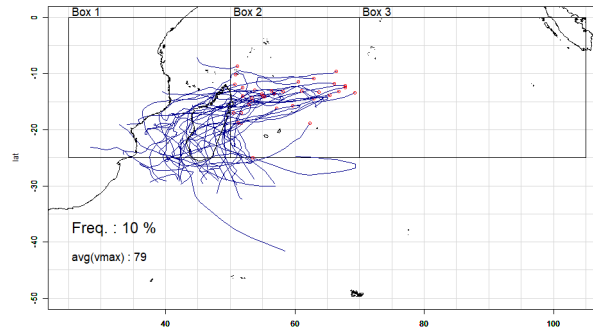
→ Large interannual variability is observed over the SWIO. A key point in TC seasonal forecast is to understand the relationship between climate drivers and SWIO TC activity

SWIO : Climatology and Interannual TC activity

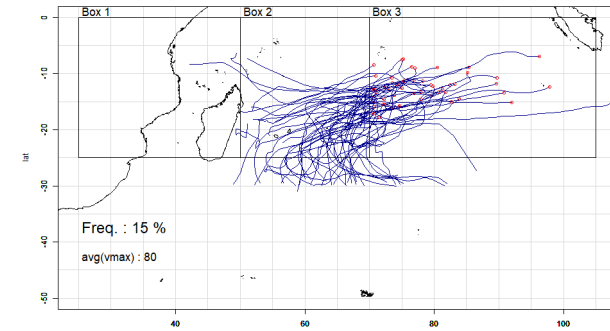
CLUSTER 111



CLUSTER 212



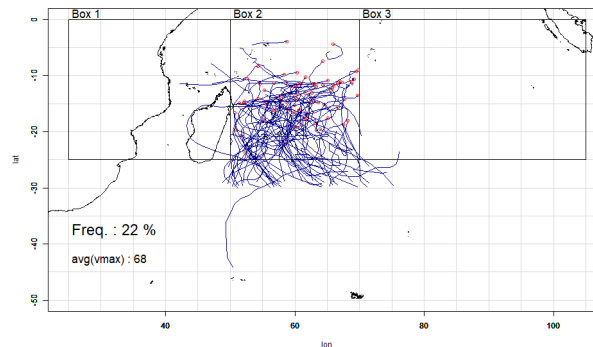
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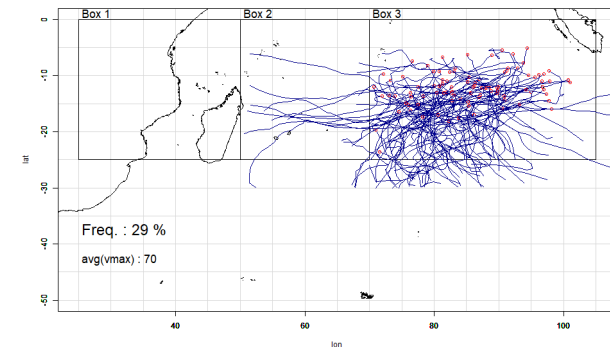
Classification of tracks with respect to :

- start longitude (box 1,2,3)
- min longitude (box 1,2,3)
- max longitude (box 1,2,3)

CLUSTER 222



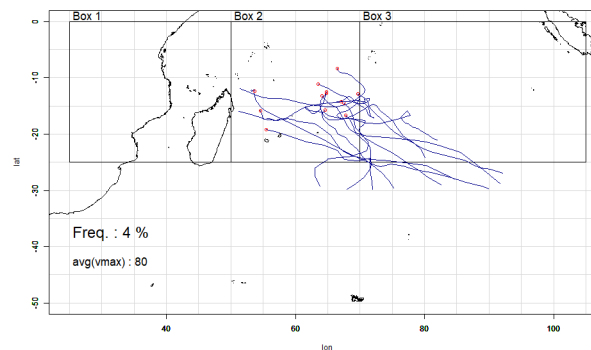
CLUSTER 333



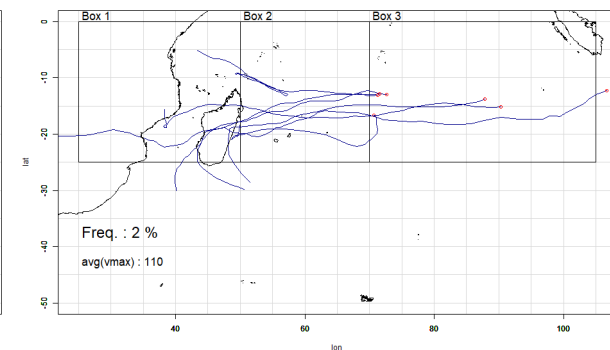
with

$V_{max} \geq 34\text{kt}$ (10 minutes avg wind)
 $25^{\circ}\text{S} \leq \text{latitude} \leq 0^{\circ}$

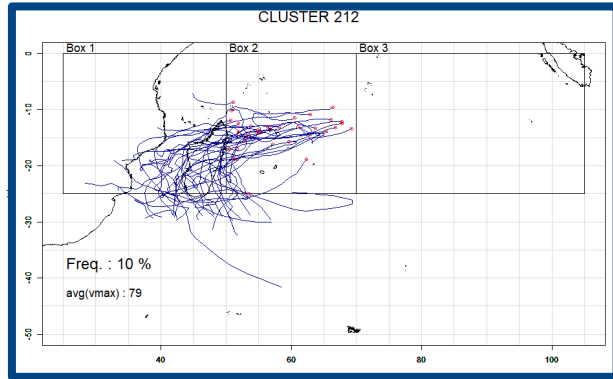
CLUSTER 223



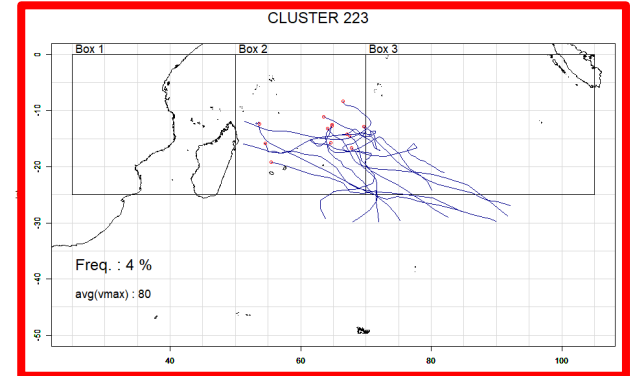
CLUSTER 313



SWIO : TC tracks typology against ENSO

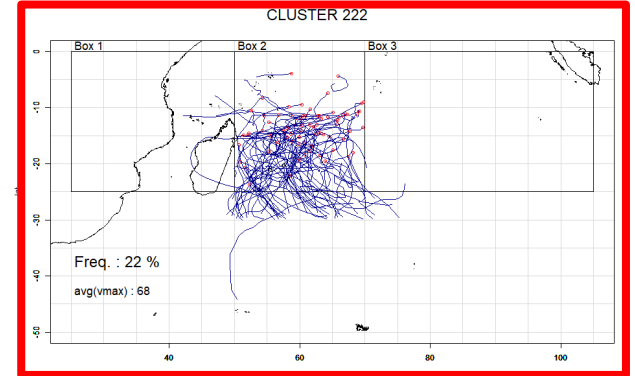
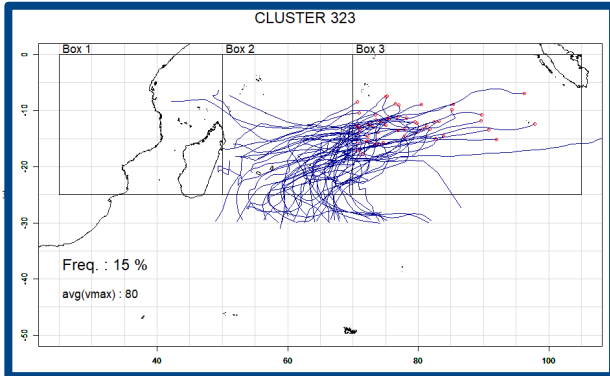


Below normal



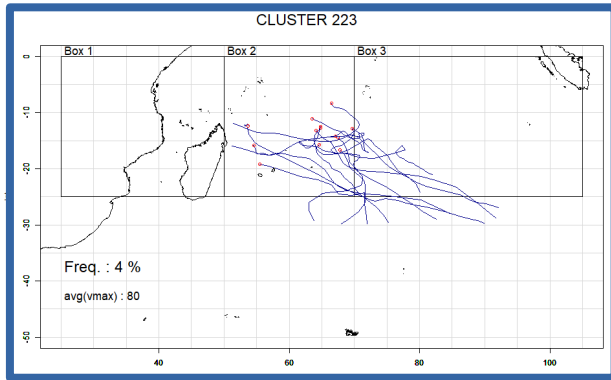
Above normal

EI NINO

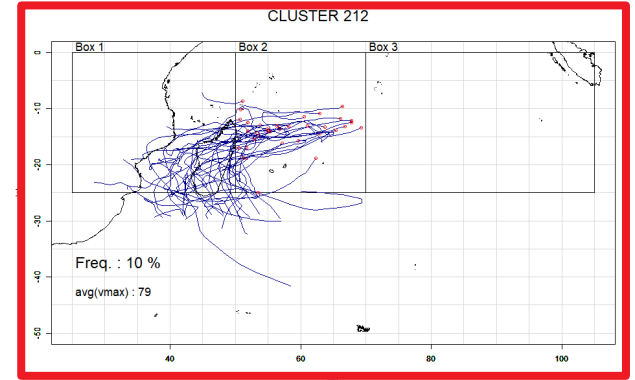


→ El Nino favors central genesis and polewards (southwards to south-eastwards) tracks.

SWIO : TC tracks typology against ENSO

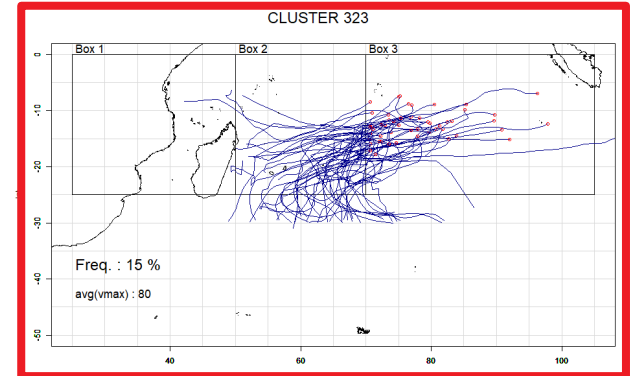
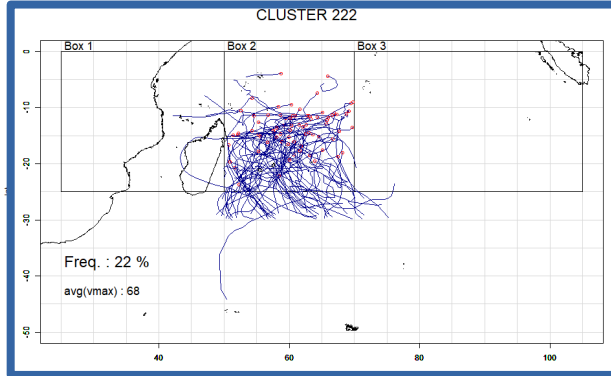


Below normal



Above normal

La Niña

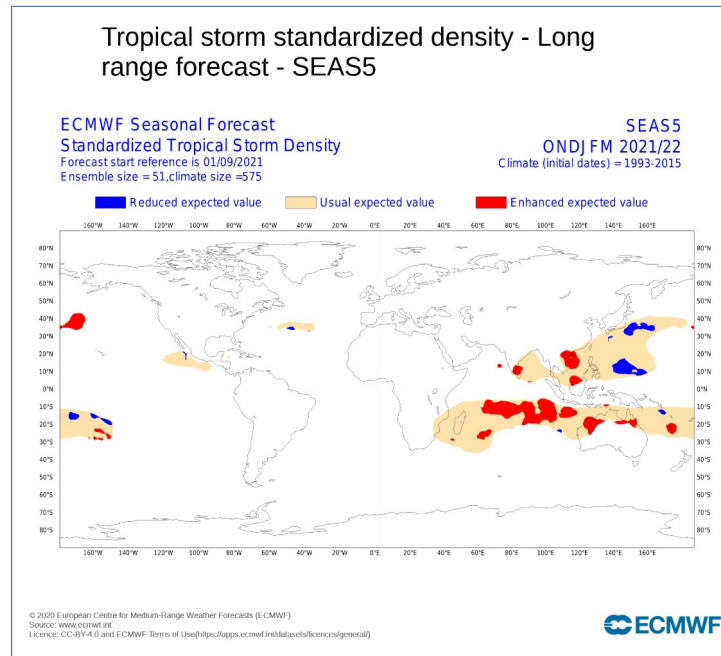


→ La Nina favors eastern to central genesis and zonal tracks (westwards to southwestwards)

Methodology

Seasonal forecast for cyclone activity relies on a blending of different approach

- Identification of the main climate drivers, large scale conditions assessment
- Analog approach : find years in the passed with « similar » large scale conditions
- Composites / Canonical Correlation Analysis
- ECMWF TC products



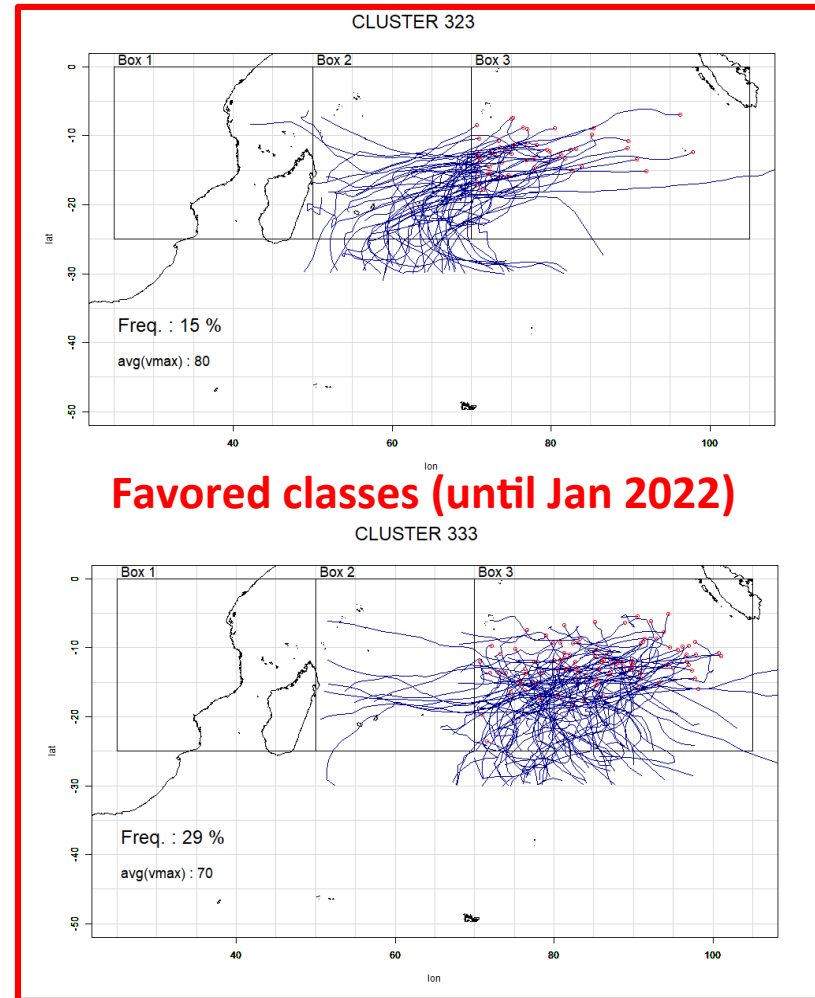
Outlook for season 2021-2022

→ Near or below average TC season (7 to 11 systems) overall

→ For the first part of the season (up to Jan), TC activity expected mainly over the eastern bassin

→ Zonal or parabolic tracks favored : Most of them should remain far from land but parabolic tracks over the Mascarene region are not excluded

→ For the second part of the season (Feb and beyond) : Activity may develop further west and closer to land over the southern Moz channel or North-East of Madagascar but will largely depends on how SIOD+/La Nina develop.



Next step

→ **TC-outlook mini-forum end of october**

→ event co-organized by WMO, PIROI and RSMC (La Réunion)

→ update of this early outlook, more detailed information, discussions with stakeholders...