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RSMC / TROPICAL CYCLONE CENTER / LA REUNION
TROPICAL CYCLONE FORECAST WARNING (SOUTH-WEST INDIAN OCEAN)

0.A WARNING NUMBER: 28/7/20222023
1.A TROPICAL CYCLONE 7 (FREDDY)

2.A POSITION 2023/02/21 AT 0600 UTC:
WITHIN 20 NM RADIUS OF POINT 20.1 S / 51.1 E
(TWENTY DECIMAL ONE DEGREES SOUTH AND
FIFTY ONE DECIMAL ONE DEGREES EAST)
MOVEMENT: WEST 16 KT

3.A DVORAK ANALYSIS: 5.0/5.5/D 0.5/12 H

4.A CENTRAL PRESSURE: 959 HPA
5.A MAX AVERAGE WIND SPEED (10 MN): 85 KT
RADIUS OF MAXIMUM WINDS (RMW): 20 KM

6.A EXTENSION OF WIND BY QUADRANTS (KM):
28 KT NE: 165 SE: 295 SW: 240 NW: 165
34 KT NE: 150 SE: 220 SW: 205 NW: 130
48 KT NE: 95 SE: 95 SW: 90 NW: 75
64 KT NE: 45 SE: 55 SW: 55 NW: 35

7.A FIRST CLOSED ISOBAR (PRESSURE / AVERAGE DIAM): 1009 HPA / 400 KM
8.A VERTICAL EXTENSION OF CYCLONE CIRCULATION: DEEP

1.B FORECASTS (WINDS RADII IN KM):
12H: 2023/02/21 18 UTC: 20.9 S / 48.1 E, VENT MAX= 080 KT, OVERLAND DEPRESSION
28 KT NE: 220 SE: 285 SW: 175 NW: 100
34 KT NE: 140 SE: 185 SW: 150 NW: 75
48 KT NE: 75 SE: 85 SW: 65 NW: 45
64 KT NE: 45 SE: 65 SW: 0 NW: 0

24H: 2023/02/22 06 UTC: 21.6 S / 44.8 E, VENT MAX= 035 KT, MODERATE TROPICAL STORM
28 KT NE: 100 SE: 195 SW: 120 NW: 95
34 KT NE: 0 SE: 130 SW: 75 NW: 0

36H: 2023/02/22 18 UTC: 21.9 S / 42.1 E, VENT MAX= 035 KT, MODERATE TROPICAL STORM
28 KT NE: 150 SE: 230 SW: 195 NW: 150
34 KT NE: 95 SE: 150 SW: 95 NW: 75

48H: 2023/02/23 06 UTC: 21.6 S / 39.5 E, VENT MAX= 045 KT, MODERATE TROPICAL STORM

28 KT NE: 240 SE: 305 SW: 285 NW: 150
34 KT NE: 150 SE: 195 SW: 185 NW: 75

60H: 2023/02/23 18 UTC: 21.5 S / 37.6 E, VENT MAX= 050 KT, SEVERE TROPICAL STORM
28 KT NE: 240 SE: 285 SW: 260 NW: 215
34 KT NE: 150 SE: 185 SW: 185 NW: 140
48 KT NE: 55 SE: 65 SW: 95 NW: 45

72H: 2023/02/24 06 UTC: 21.8 S / 35.4 E, VENT MAX= 060 KT, SEVERE TROPICAL STORM
28 KT NE: 240 SE: 305 SW: 185 NW: 120
34 KT NE: 150 SE: 195 SW: 155 NW: 75
48 KT NE: 65 SE: 85 SW: 95 NW: 45

2.B LONGER-RANGE OUTLOOK:
96H: 2023/02/25 06 UTC: 22.4 S / 31.9 E, VENT MAX= 025 KT, OVERLAND DEPRESSION

120H: 2023/02/26 06 UTC: 23.3 S / 30.7 E, VENT MAX= 020 KT, OVERLAND DEPRESSION

2.C ADDITIONAL INFORMATION:
T=5.0 CI=5.5-

DURING THE LAST 6 HOURS, THE EYE CONFIGURATION HAS CONTINUED TO DEGRADE WITH A VERY WEAKENED INNER EYE WALL AS SHOWN BY THE 01H20UTC SSMIS PASS, WHICH SUGGESTS A WEAK EYE WALL CYCLE.
THE DVORAK ANALYSIS IS DOWNGRADED WHICH IS VALIDATED BY THE LAST SMAP DATA OF 02Z OF 87KT, WHICH CONFIRMS THE DOWNGRADING TO TROPICAL CYCLONE.

LITTLE CHANGE IN TERMS OF TRAJECTORY FORECAST UNTIL LANDING ON MADAGASCAR: FREDDY MAINTAINS ITS COURSE TOWARDS THE WEST-SOUTHWEST UNTIL TUESDAY EVENING, SKIRTING THE NORTHERN FACADE OF THE HIGH GEOPOTENTIALS OF THE MIDDLE TROPOSPHERE. IN THE SHORT TERM, THE FORECASTS OF THE VARIOUS MODELS REMAIN LITTLE DISPERSED AND STABLE, WITH A GOOD CONFIDENCE ON A TRAJECTORY ACCELERATING IT UNTIL A LANDING ON TUESDAY EVENING ON THE MALAGASY EAST COAST, AT THE LEVEL OF THE PROVINCES OF ATSINANA AND VATOVAVY-FITOVINANY.
WHEN THE SYSTEM EMERGED OVER THE MOZAMBIQUE CHANNEL, THE DISPERSION OF THE MODELS WAS CLEARLY REDUCED ON THE LAST AVAILABLE RUNS. THE CMRS TRAJECTORY PREDICTION CAME BACK TO THE SCENARIO OF A MORE SOUTHERN TRAJECTORY AS PROPOSED BY IFS AND JOINED BY THE LAST GFS RUN AS WELL. THIS REINFORCES THE CONFIDENCE IN THIS FORECAST.

WITH A RATHER WEAKENED INNER EYEWALL STRUCTURE AT PRESENT, THE RESUMPTION OF AN INTENSIFICATION PHASE REMAINS UNCERTAIN BEFORE THE EVENING LANDING ON THE MALAGASY COAST. NEVERTHELESS, THE POSSIBILITY OF A CHANGE OF STRUCTURE COULD INDUCE A MODIFICATION OF THE EXTENT OF THE IMPACT ZONE OF THE PHENOMENON DURING THE LANDING. FREDDY SHOULD MAINTAIN AT LEAST THE UPPER THRESHOLD OF A TROPICAL CYCLONE DURING ITS RAPID PATH TOWARDS MADAGASCAR.
AT THE END, AFTER A CLASSICAL WEAKENING OVER THE MALAGASY LANDS, THE CENTRAL CORE OF FREDDY SHOULD RESTRUCTURE BEFORE A REINTENSIFICATION OVER THE MOZAMBIQUE CHANNEL IN MIXED ENVIRONMENTAL CONDITIONS

(OCEANIC POTENTIAL LESS RICH THAN OVER THE INDIAN OCEAN BASIN, AND ESPECIALLY A STRENGTHENING OF THE SHEAR IN THE MIDDLE AND UPPER TROPOSPHERE). IT COULD HOWEVER REACH THE STAGE OF STRONG STORM BEFORE ITS LANDING ON THE COAST OF MOZAMBIQUE BY FRIDAY. ACCORDING TO THE CMRS FORECAST, THE VORTEX SHOULD THEN WEAKEN SIGNIFICANTLY OVER LAND.

IMPACTS ON INHABITED LANDS DURING THE NEXT 72 HOURS :

- MADAGASCAR: LANDING EXPECTED TUESDAY EVENING BETWEEN 15UTC AND 18UTC PROBABLY OVER THE NORTH OF THE PROVINCE OF VATOVANY-FITOVINANY.
* PROBABLE ARRIVAL OF THE GALE FROM TUESDAY 12UTC.
* VERY BIG TO HUGE SEA OFF THE COAST NEAR THE LANDING ZONE DURING THE AFTERNOON OF TUESDAY (WAVES OF 9 TO 12M) WITH A SURGE ARRIVING LATER AND MAY REACH 2M LOCALLY.
* INTENSE RAIN DURING THE NEXT 36 HOURS, CUMULATED RAINFALL COULD BE AROUND 200 MM NEAR THE IMPACT AREA. WHEN THE SYSTEM CROSSES THE LAND, THE ACCUMULATIONS WILL REMAIN AROUND 100MM DURING THE EPISODE.

- MOZAMBIQUE : LANDING EXPECTED ON FRIDAY EARLY IN THE DAY PROBABLY BETWEEN BEIRA AND MAXIXE.
* PROBABLE ARRIVAL OF THE GALE IN THE NIGHT OF THURSDAY TO FRIDAY AT THE COAST.
* HEAVY SEA NEAR THE LANDING ZONE DURING THE DAY ON FRIDAY.
* INTENSE RAINFALL RAPIDLY SPREADING INLAND WITH ACCUMULATIONS LOCALLY EXCEEDING 300 MM IN 72 HOURS.