

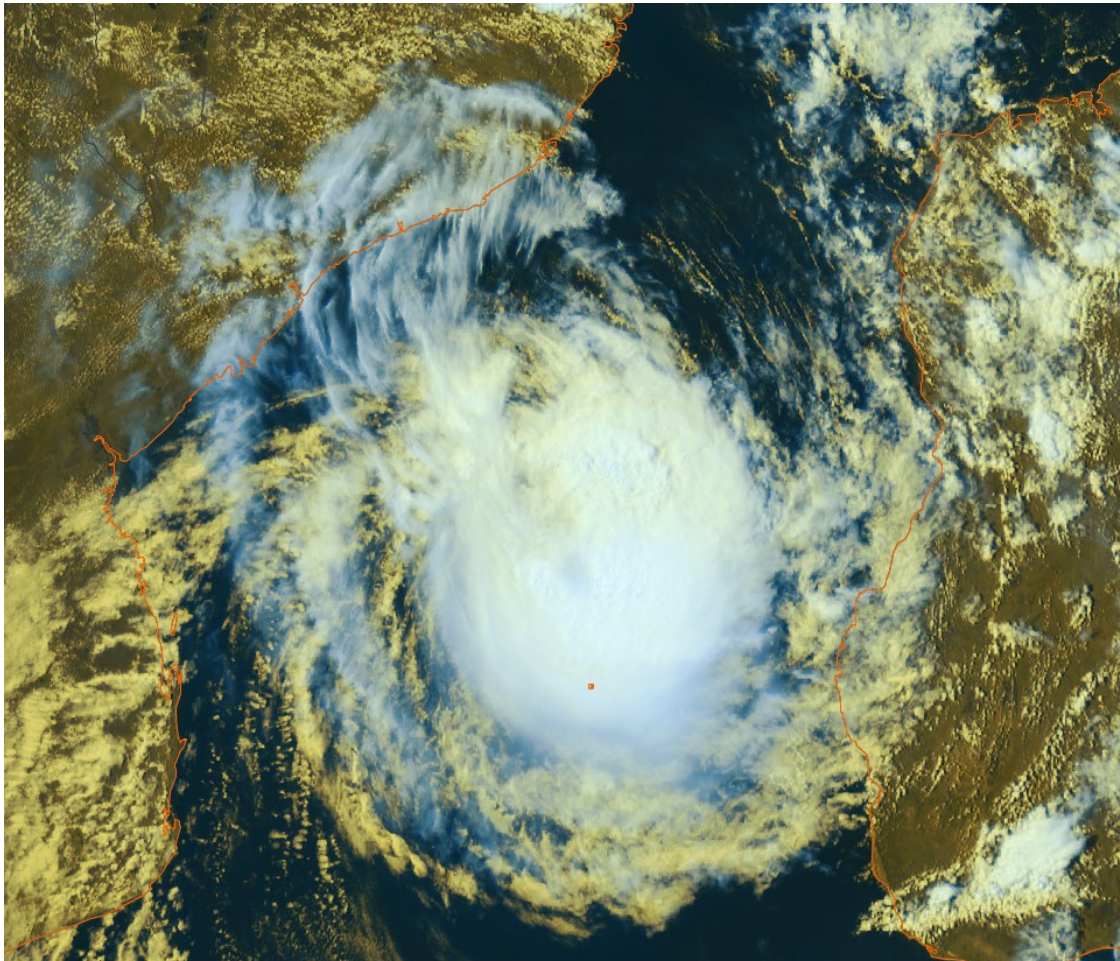
Exercise Impact : FREDDY

Tarik Kriat / Sébastien Langlade / Adrien Colomb
RAI Training Course on Tropical Cyclones – 11th session
September 2023

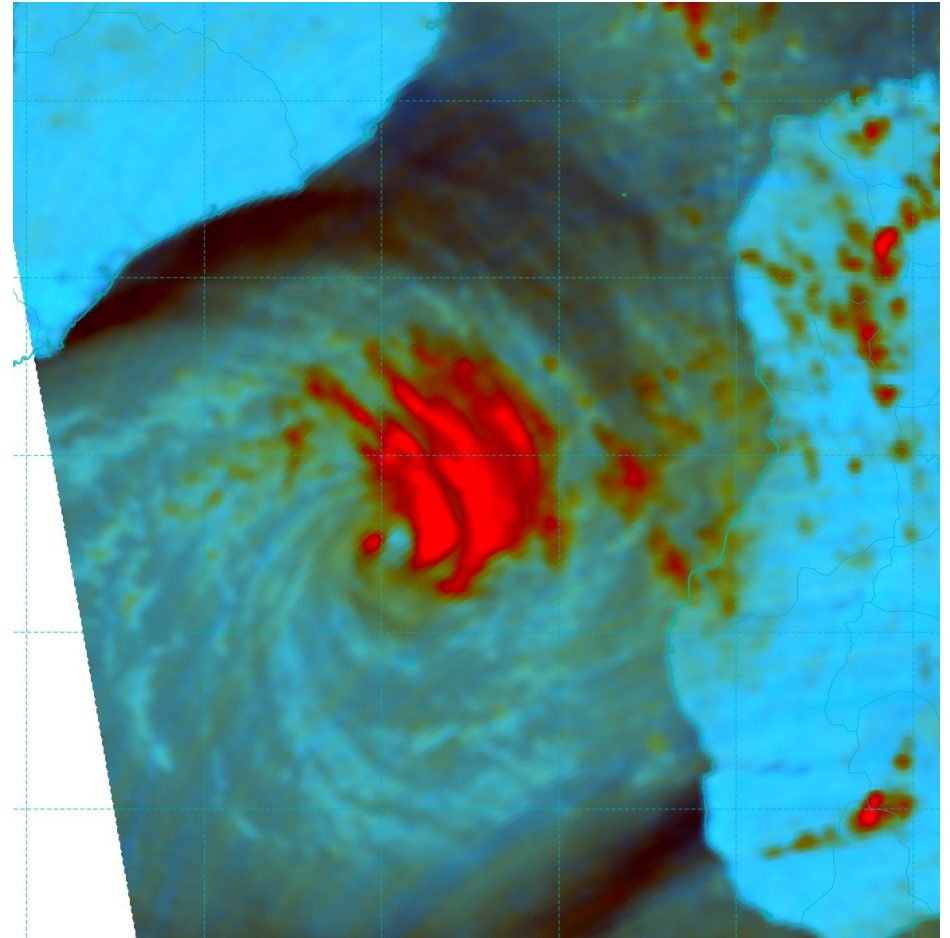
1. Wednesday 08/03 12UTC

Analysis

Tropical Cyclone FREDDY 975hPa 65kt moving NW 5kt at 12Z

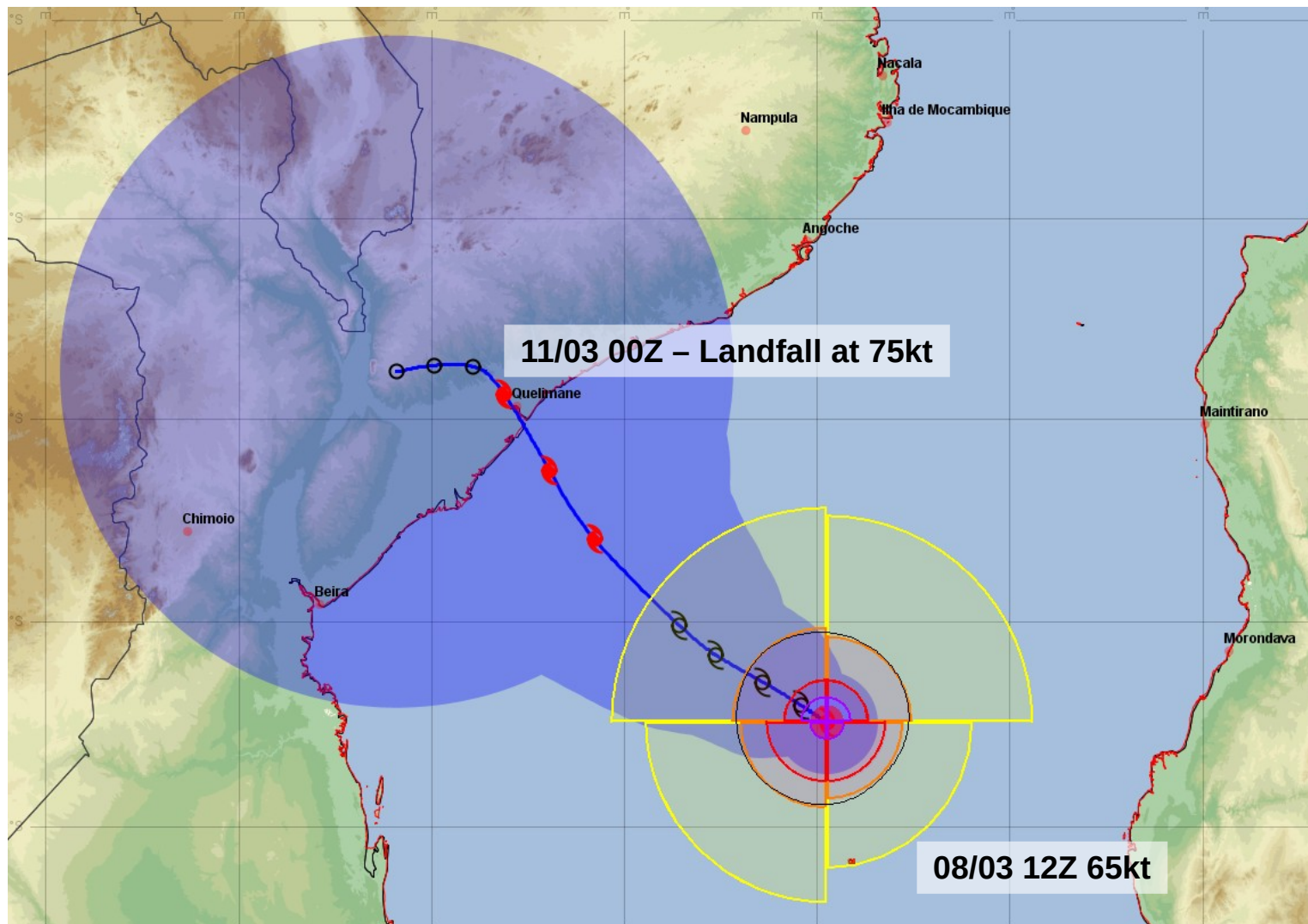


MSG2 08/03 1215Z



AMSR2 08/03 1045Z

RSMC Forecast



SpiCy Products

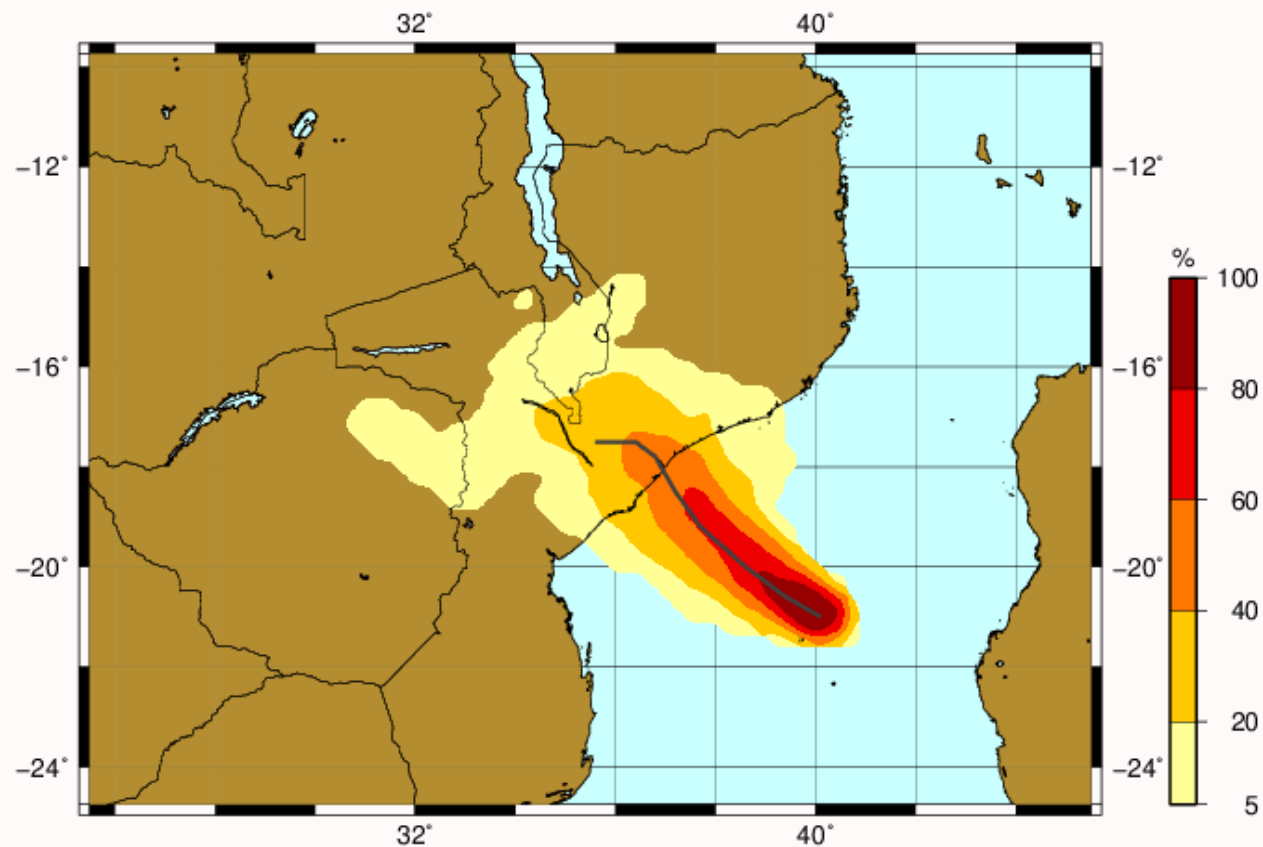
Probability of direct hit (<60km)



FREDDY

Prévision du 08/03/2023 12:00 UTC

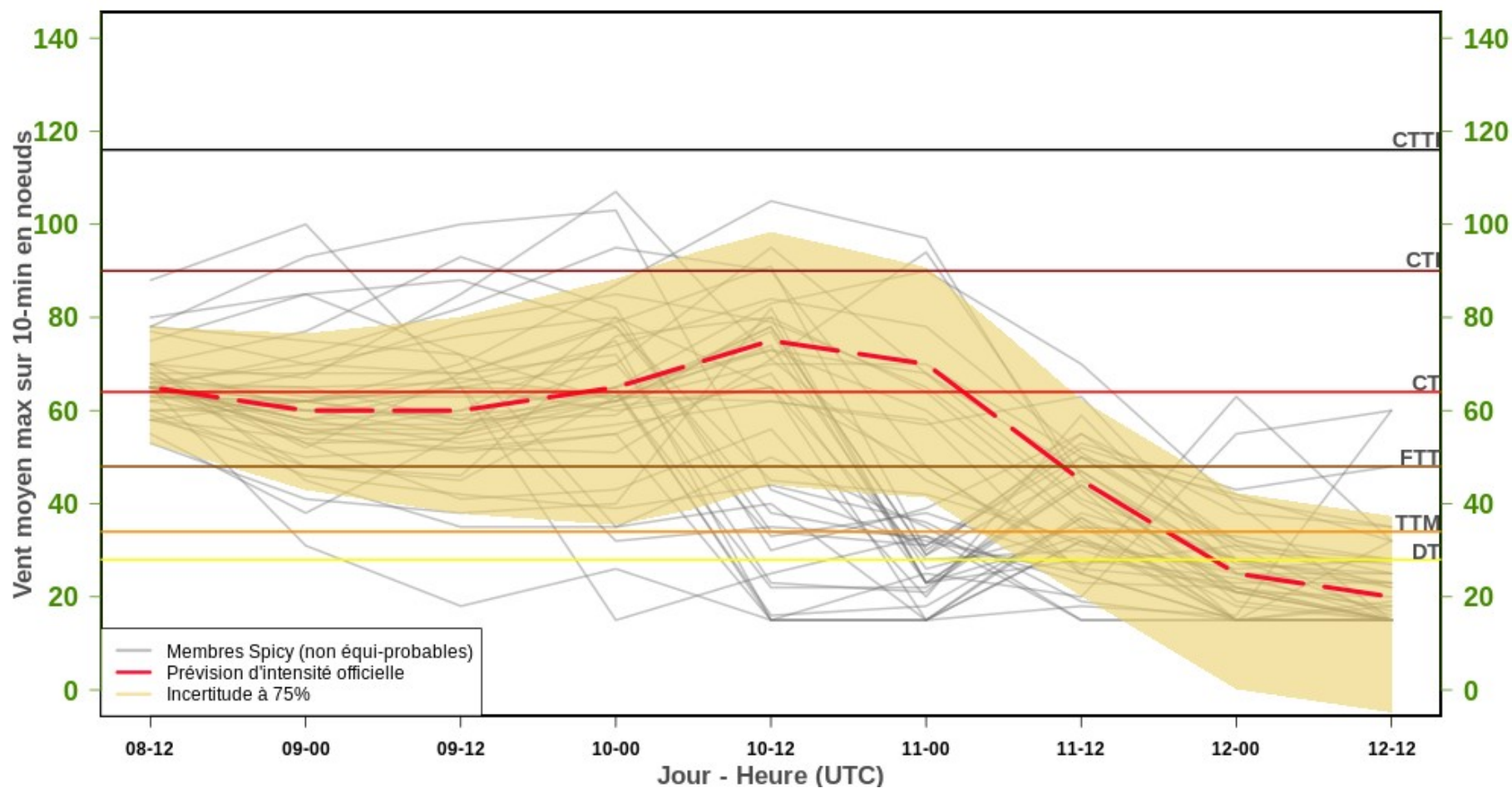
PROBABILITE D'IMPACT DIRECT
PASSAGE DU CENTRE A MOINS DE 60KM
DANS LES 96H (JUSQU'AU 12/03/2023 12:00 UTC)



SpiCy Products

Intensity forecast cone of uncertainty

FREDDY
Prévision d'intensité du 08-03-2023 12UTC



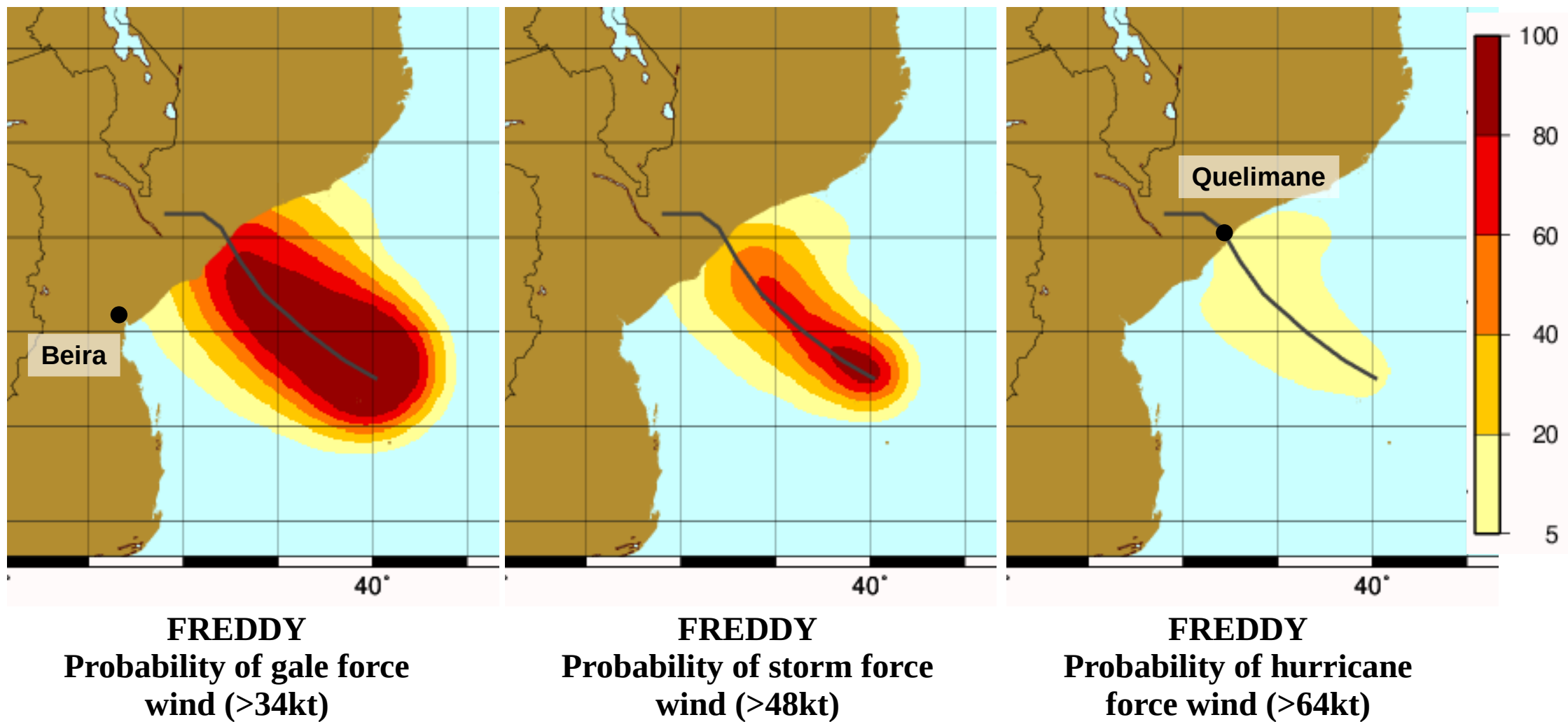
WTIO30

FREDDY'S EFFECTS WILL BE CONTAINED DUE TO THE SMALL SIZE OF THE SYSTEM.

- MOZAMBIQUE :

* GALE FORCE WINDS ARE LIKELY TO ARRIVE IN THE MORNING OF FRIDAY OVER ZAMBEZE PROVINCE AND THE NORTHERN PART OF SOFALA PROVINCE, FOLLOWED BY STORM FORCE WINDS IN THE AFTERNOON OR EVENING.

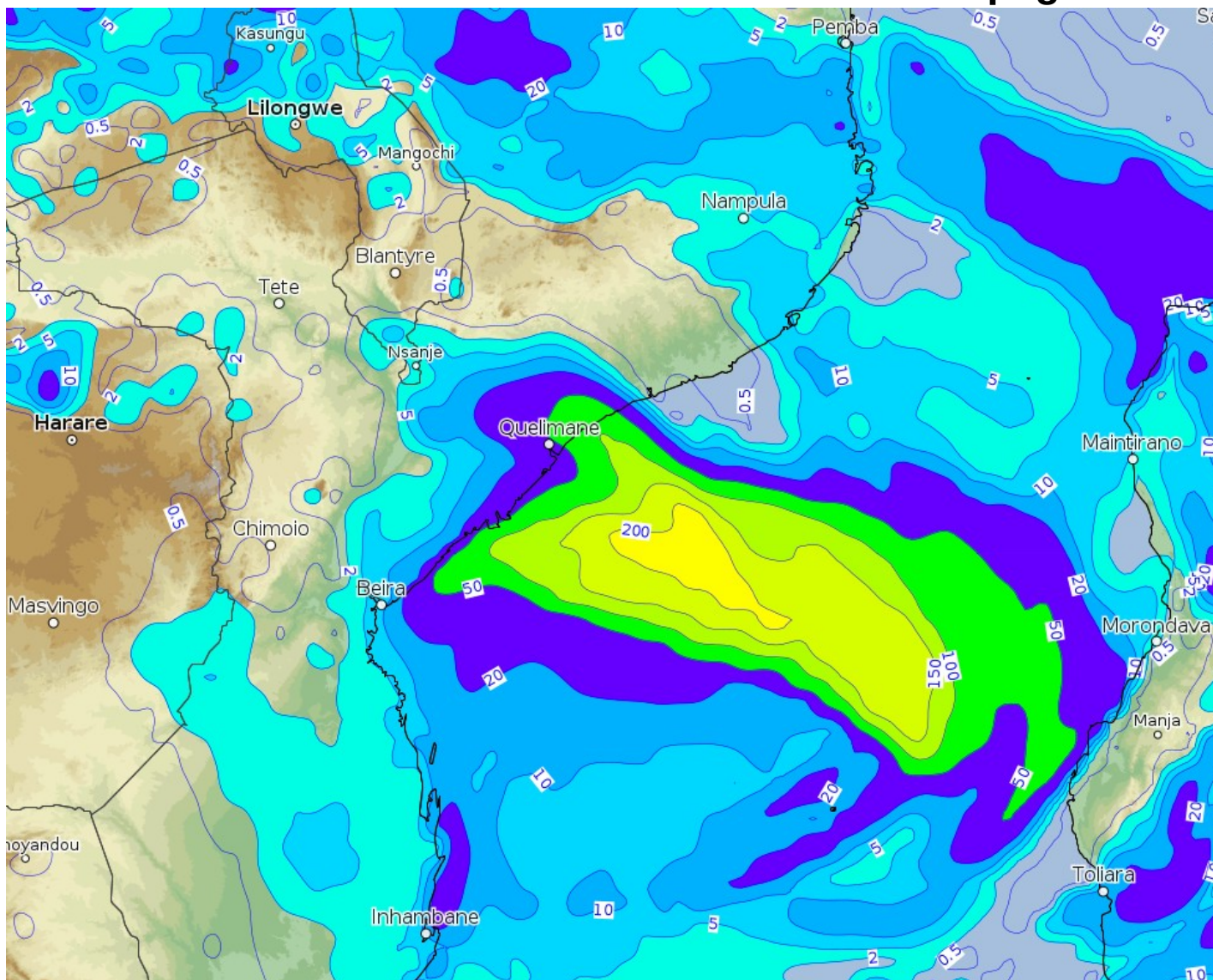
SpiCy Products



* HEAVY RAINS ARE LIKELY DURING THE DAY ON FRIDAY AND THE FOLLOWING NIGHT WITH THE ARRIVAL OF THE HEART OF THE SYSTEM ON THE COAST. EXPECTED RAINFALL OF 100 TO 150 MM, LOCALLY 200 MM NEAR THE HEART.

Rain forecast

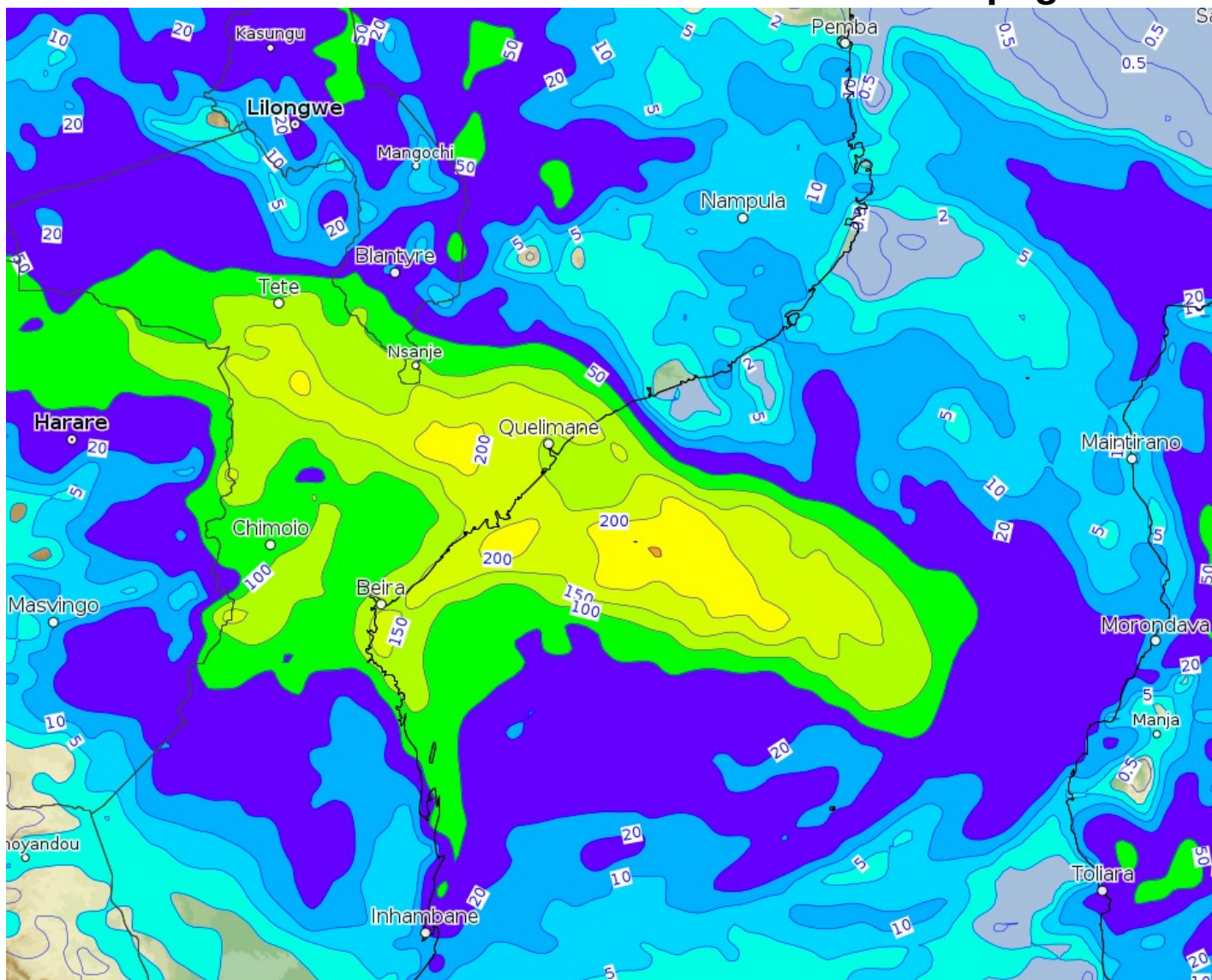
48h Accumulated rainfall 08 00Z – 10 00Z Arpege



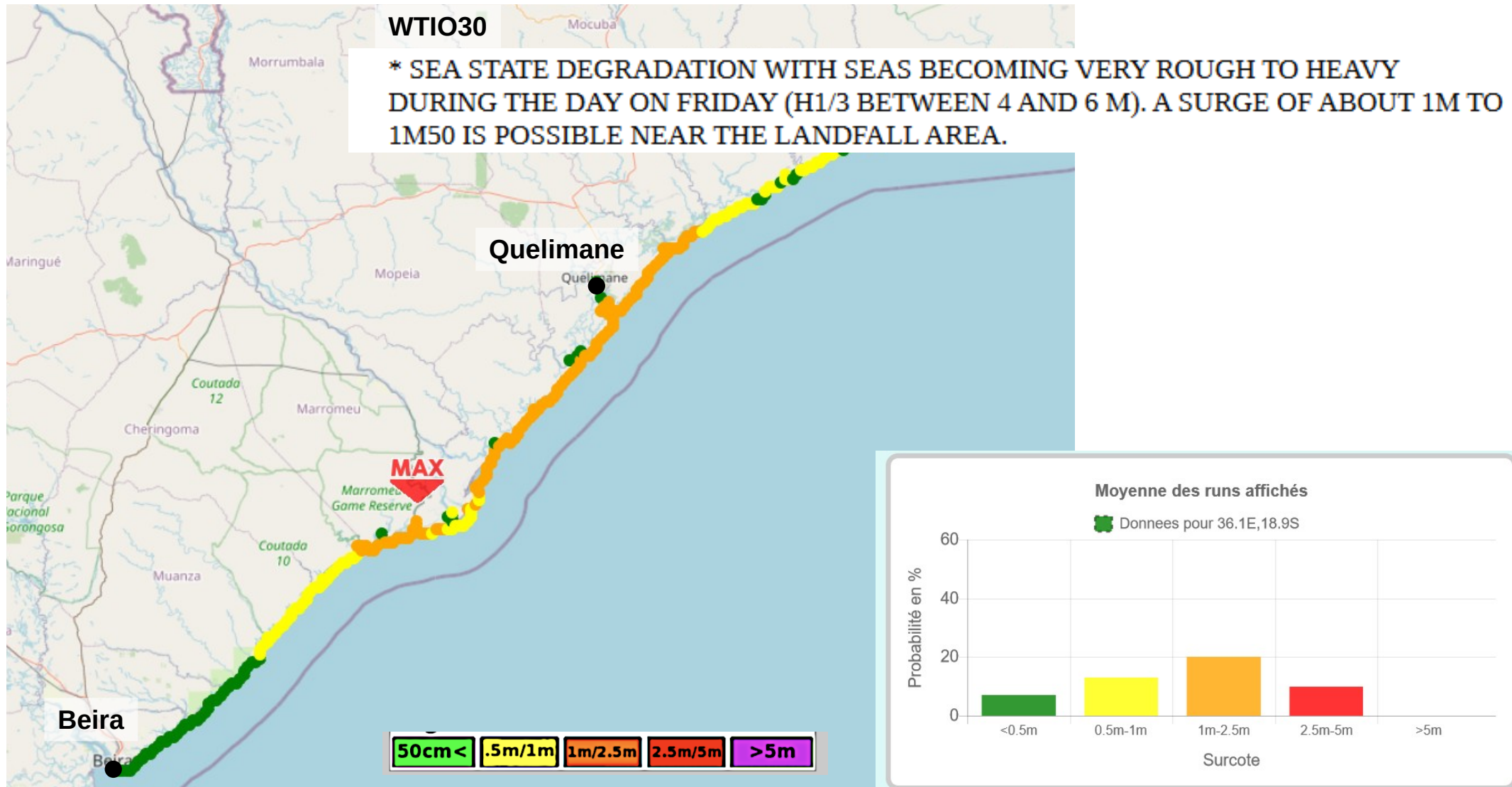
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Rain forecast

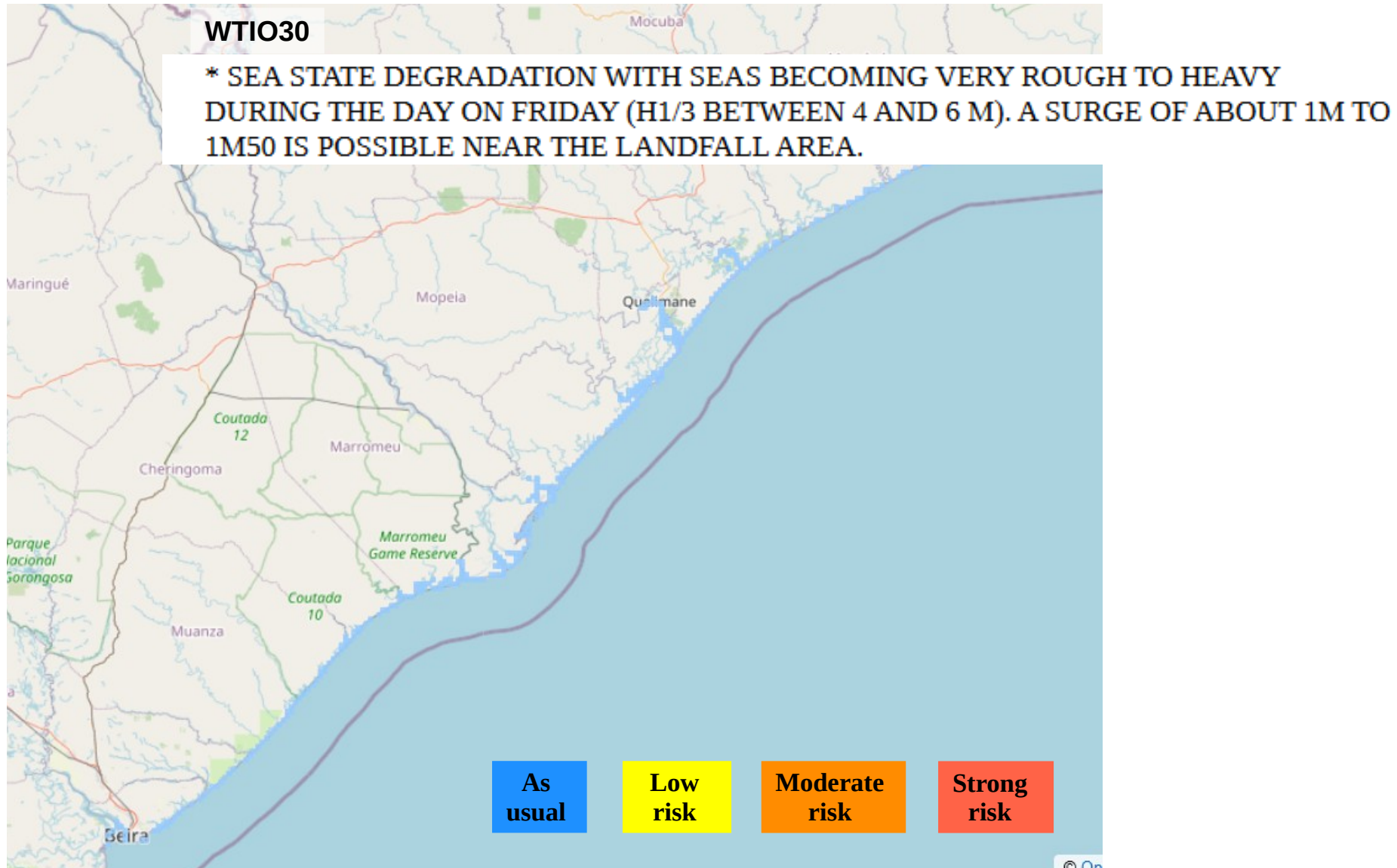
96h Accumulated rainfall 08 00Z – 12 00Z Arpege



Hibiscus surge forecast



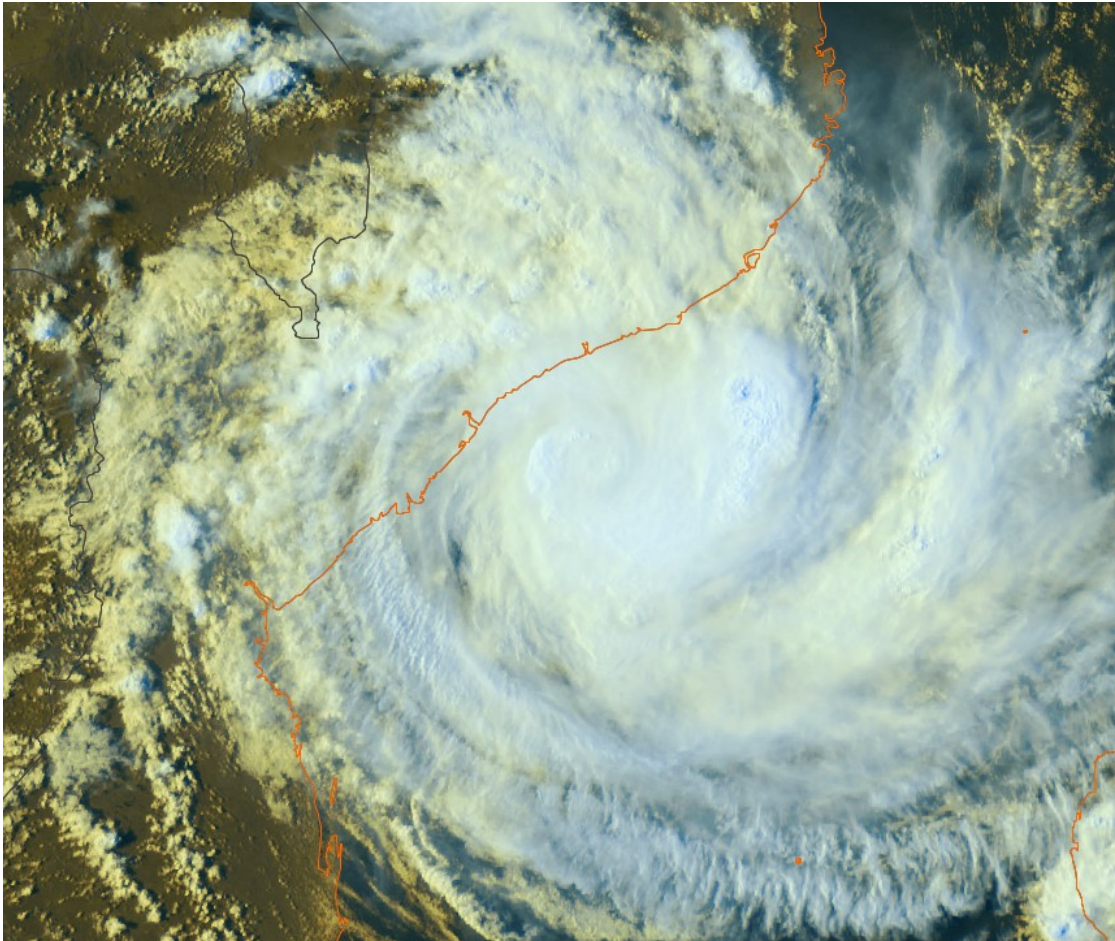
Hibiscus coastal flooding risk



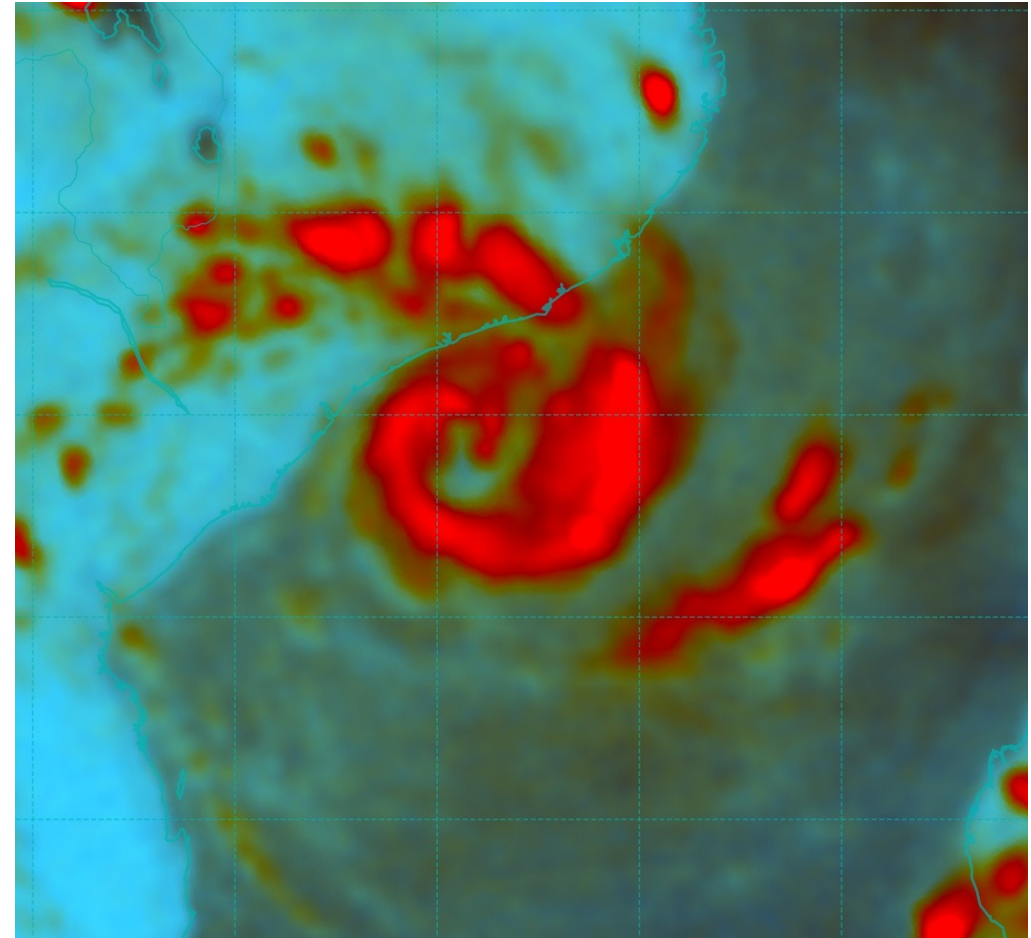
2. Friday 10/03 12UTC

Analysis

Tropical Cyclone FREDDY 973hPa 70kt moving NW 4kt at 12Z

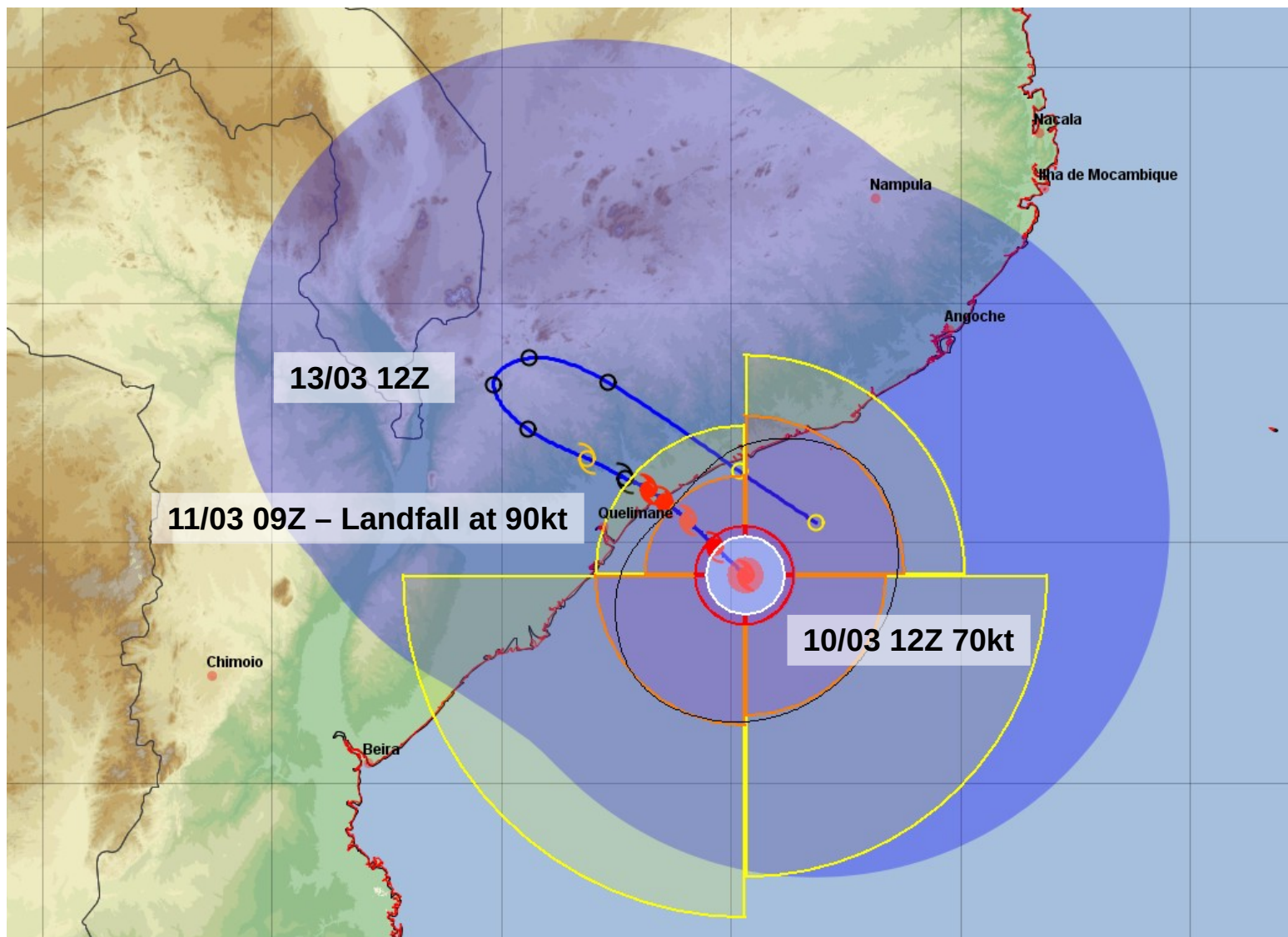


MSG2 08/03 14Z



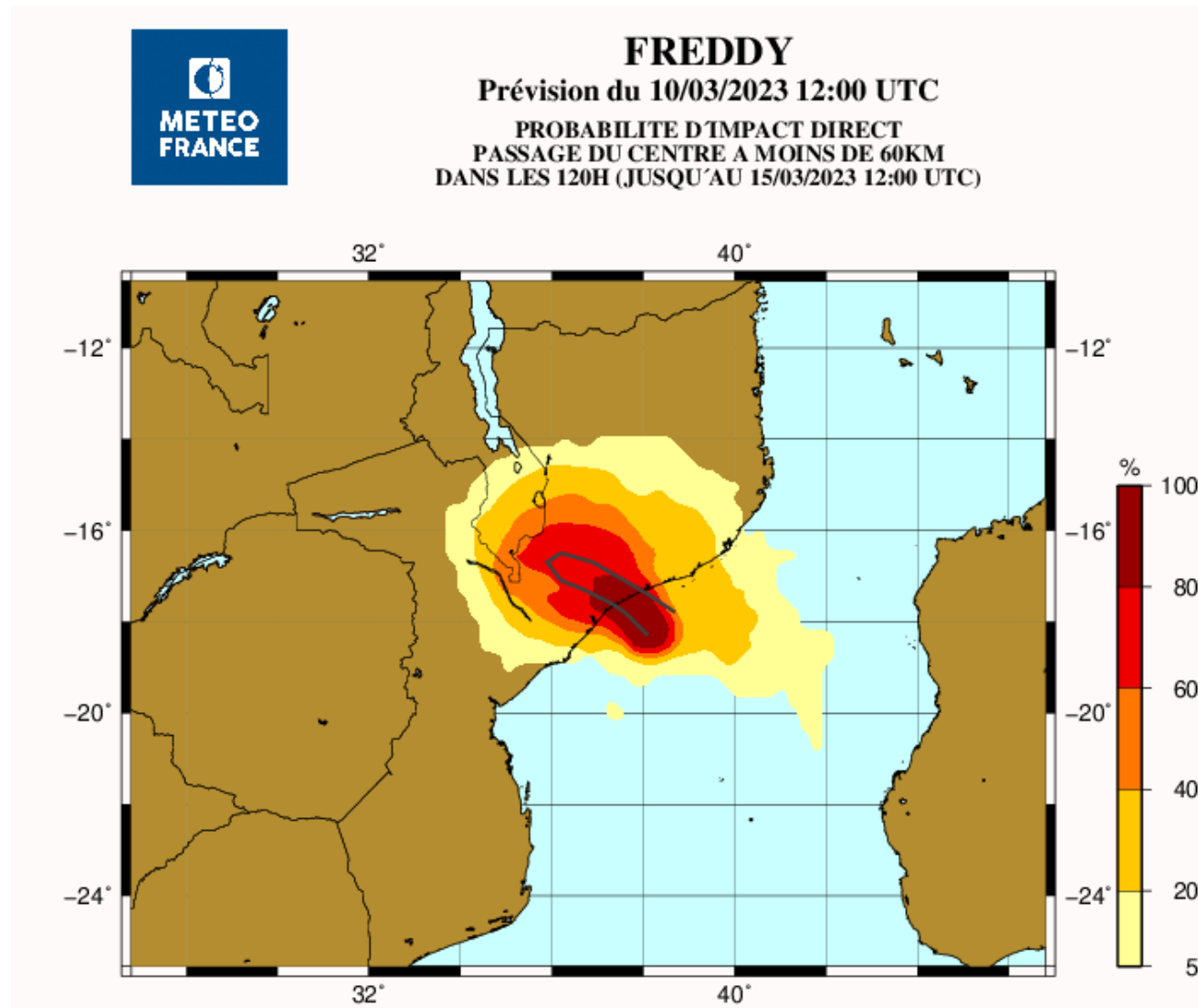
SSMIS 08/03 1455Z

RSMC Forecast



SpiCy Products

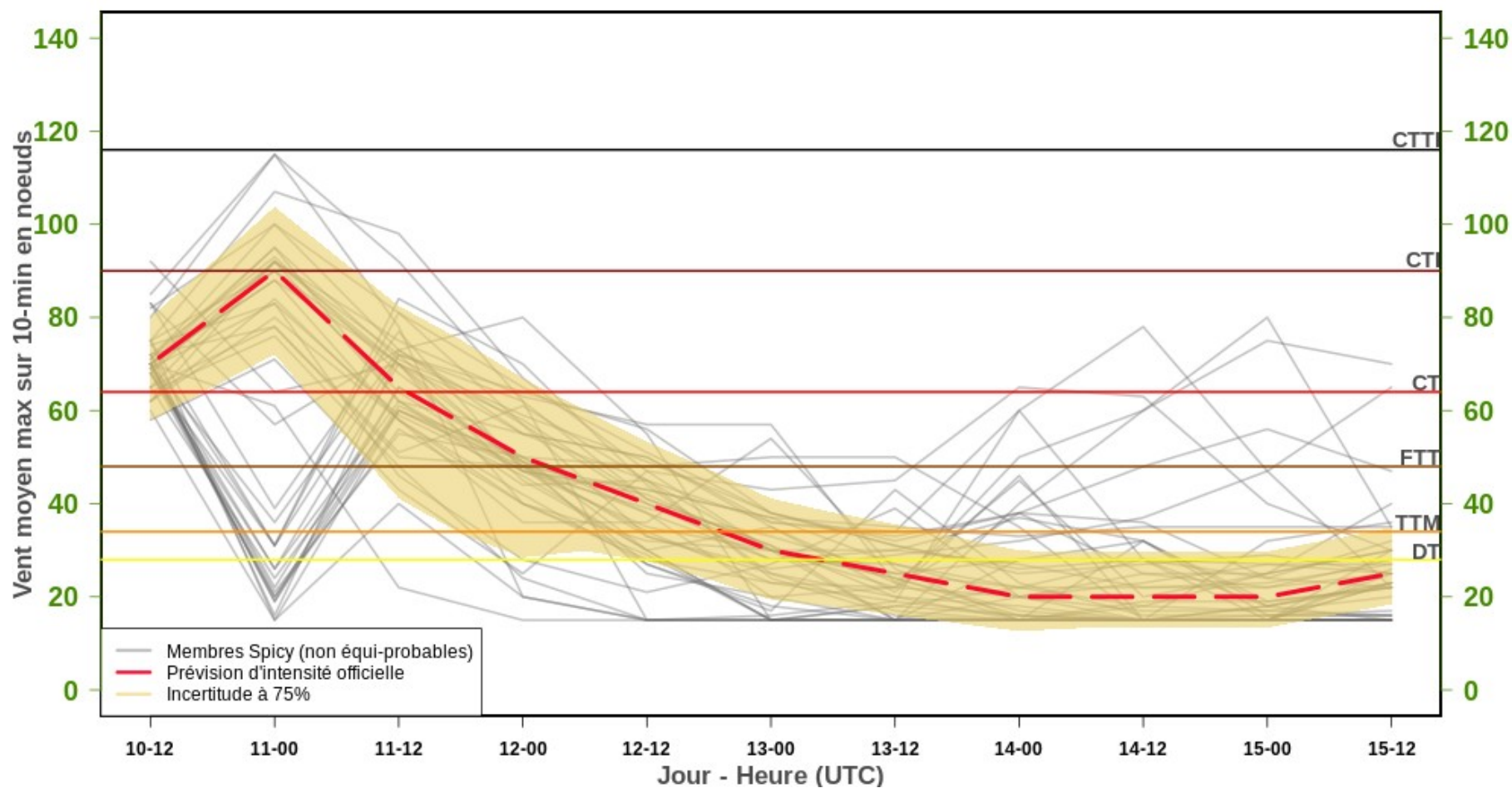
Probability of direct hit (<60km)



SpiCy Products

Intensity forecast cone of uncertainty

FREDDY
Prévision d'intensité du 10-03-2023 12UTC

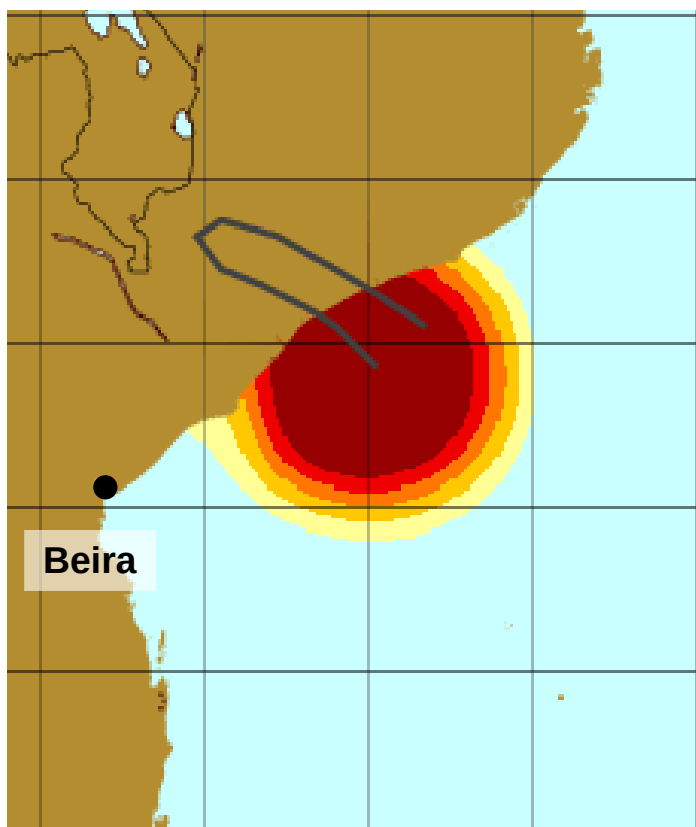


WTIO30

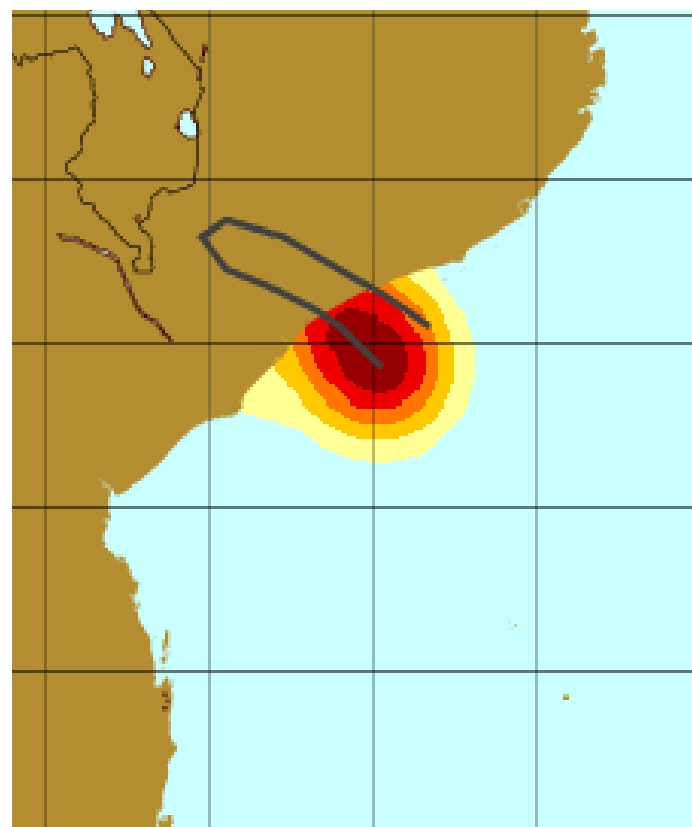
SpiCy Products

FREDDY'S EFFECTS WILL BE CONTAINED DUE TO THE SMALL SIZE OF THE SYSTEM, BUT THE SLOW MOTION WILL AMPLIFY THE IMPACTS NEAR THE LANDING ZONE
- MOZAMBIQUE:

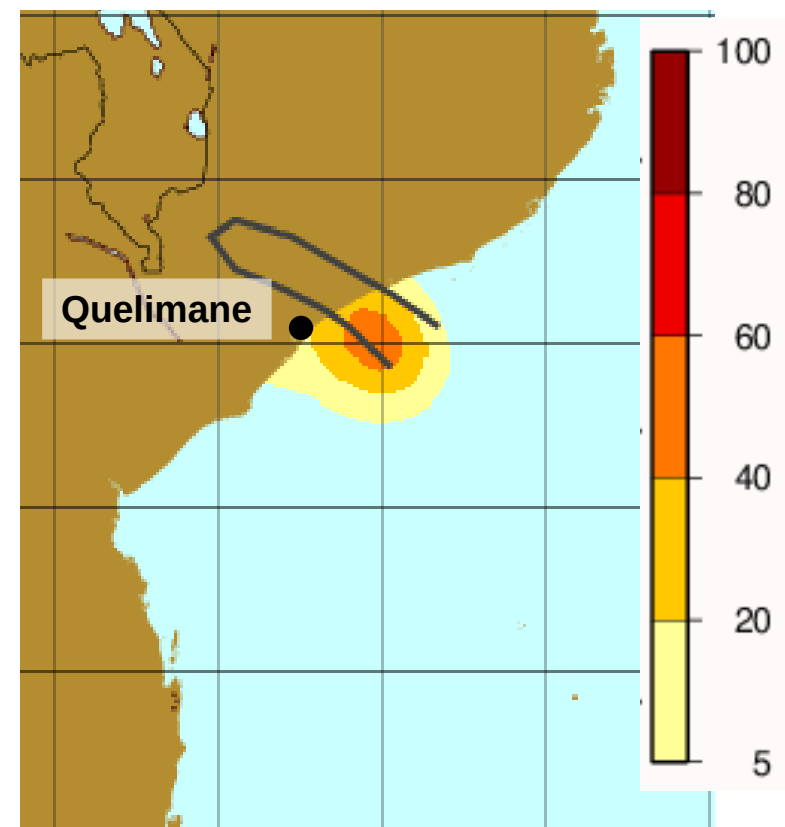
* GALE FORCE WINDS ARE LIKELY TO ARRIVE MID-DAY FRIDAY OVER ZAMBEZE PROVINCE AND THE NORTHERN PART OF SOFALA PROVINCE, FOLLOWED BY STORM FORCE WINDS DURING THE EVENING AND NIGHT. HURRICANE WINDS POSSIBLE IN THE IMMEDIATE VICINITY OF THE CENTER.



FREDDY
Probability of gale force
wind (>34kt)



FREDDY
Probability of storm force
wind (>48kt)



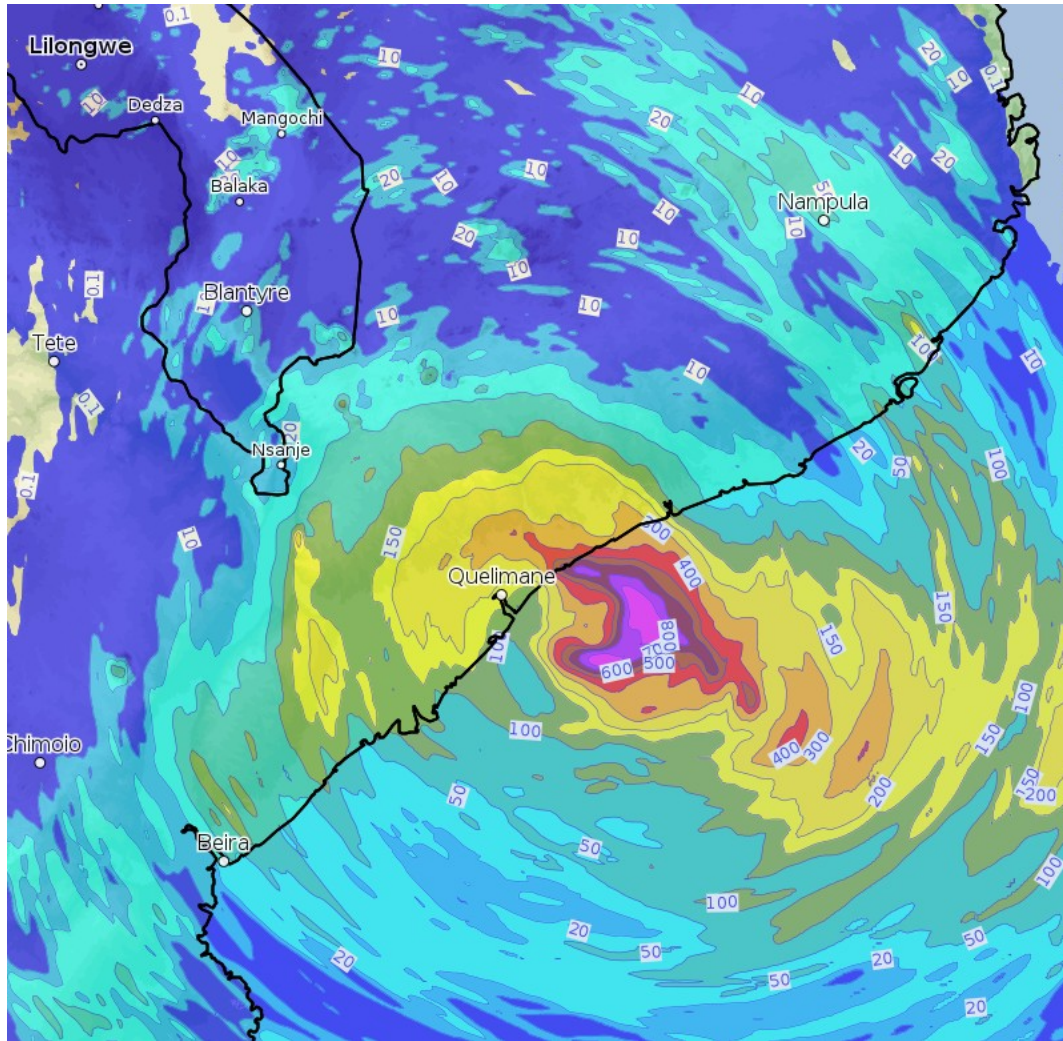
FREDDY
Probability of hurricane
force wind (>64kt)

WTIO30

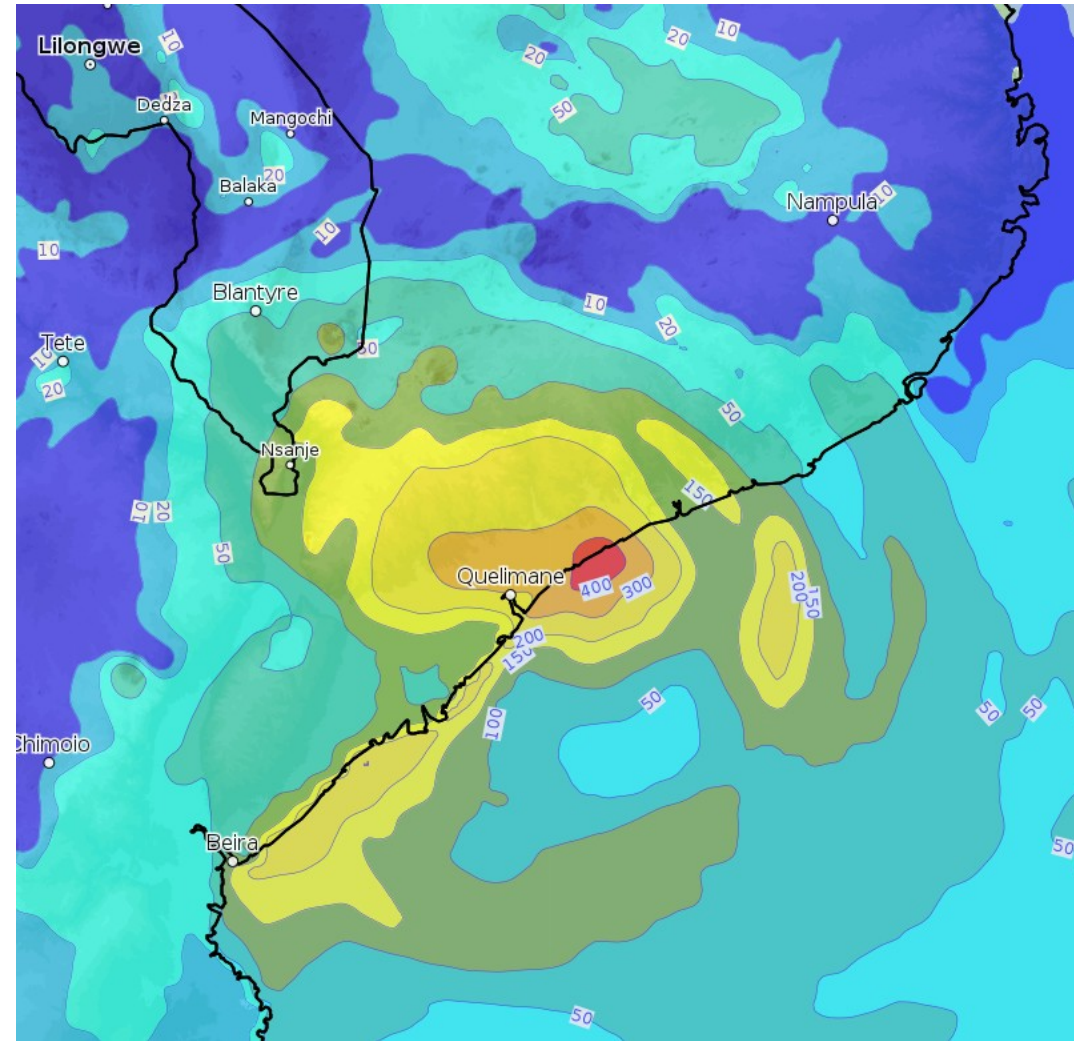
* HEAVY RAINS ARE LIKELY TO START DURING THE DAY ON FRIDAY AND THE FOLLOWING NIGHT WITH THE ARRIVAL OF THE CORE OF THE SYSTEM ON THE COAST. OVER ZAMBEZIA AND SOFALA REGIONS EXPECTED RAINFALL TOTALS IN THE ORDER OF 100 TO 200 MM BUT MORE MARKED OVER THE SOUTH OF ZAMBERIA REGION LOCALLY WITH MORE THAN 400-500 MM OVER THE LANDING AREA, CLOSE TO THE HEART OF THE PHENOMENON.

Rain forecast

48h Accumulated rainfall 10 00Z – 12 00Z



Arome IO 10 00Z



Arpege 10 00Z

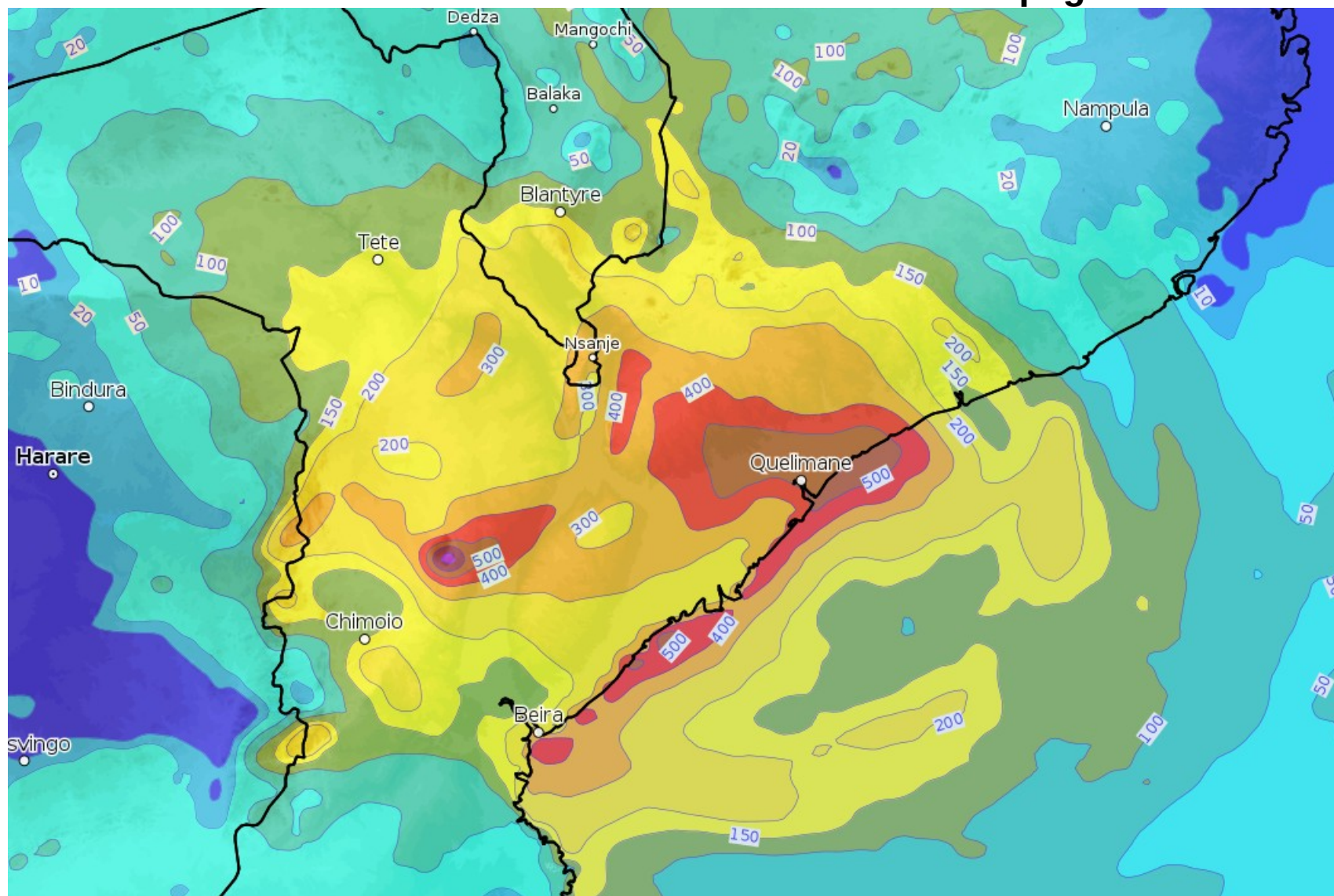
WTIO30

-MALAWI:

* POSSIBLE ARRIVAL OF HEAVY RAINS RELATED TO FREDDY OVER THE EXTREME SOUTH OF THE COUNTRY DURING SATURDAY AND PERSISTING SUNDAY AND MONDAY. CUMULATIVE RAINFALL OF MORE THAN 150 MM IN 24 HOURS IS EXPECTED.

Rain forecast

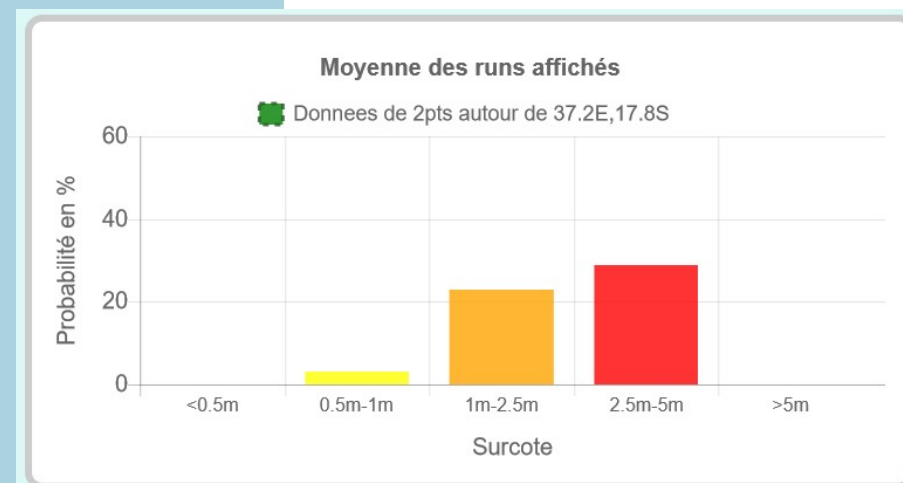
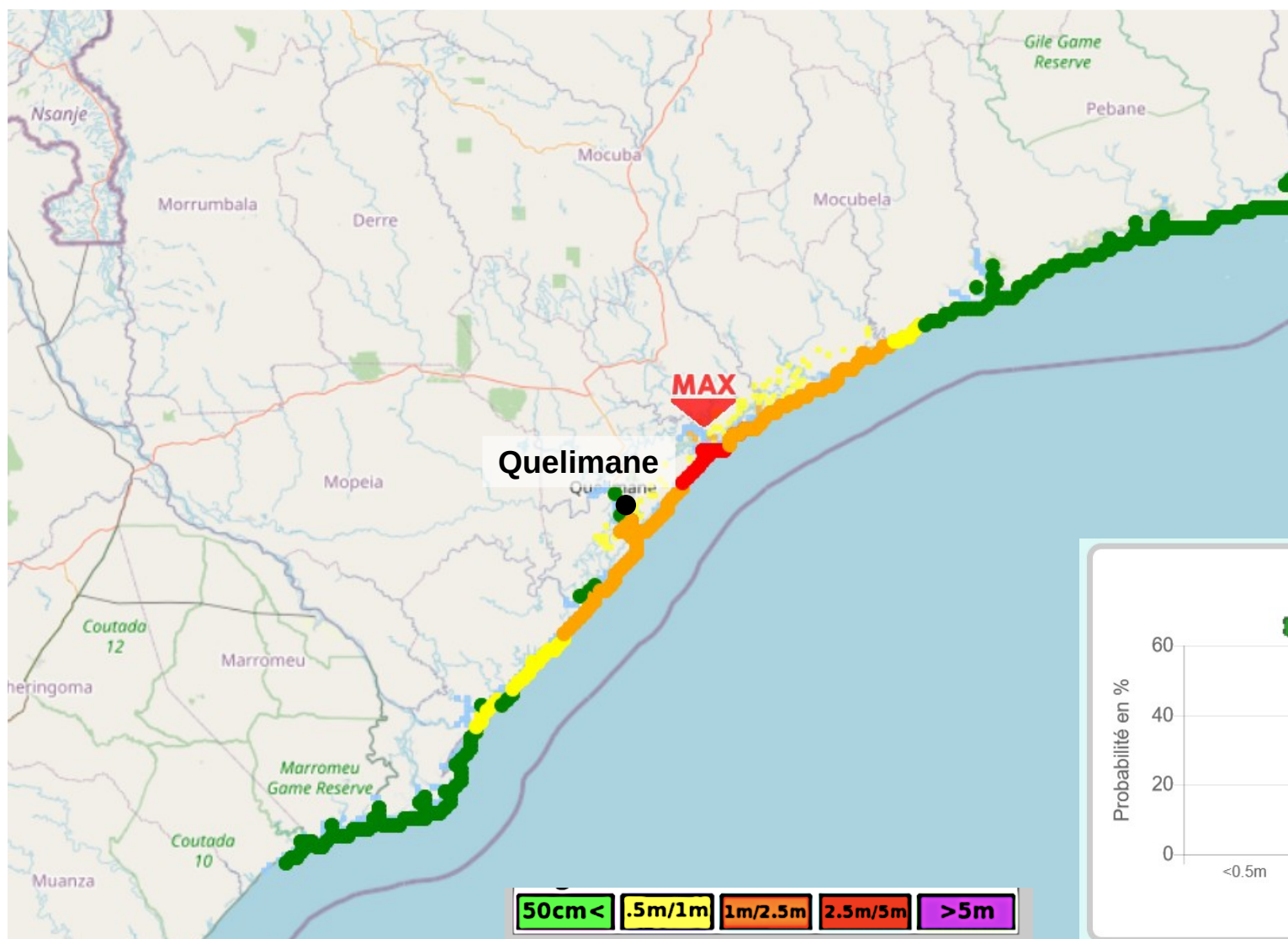
96h Accumulated rainfall 10 00Z – 14 00Z Arpege



WTIO30

* DEGRADATION OF THE SEA STATE WITH A SEA BECOMING VERY ROUGH TO BIG DURING THE DAY ON FRIDAY (H1/3 BETWEEN 4 AND 6 M). A SURGE OF ABOUT 2M50 TO 4M IS POSSIBLE NEAR THE LANDING ZONE AT QUELIMANE LEVEL.

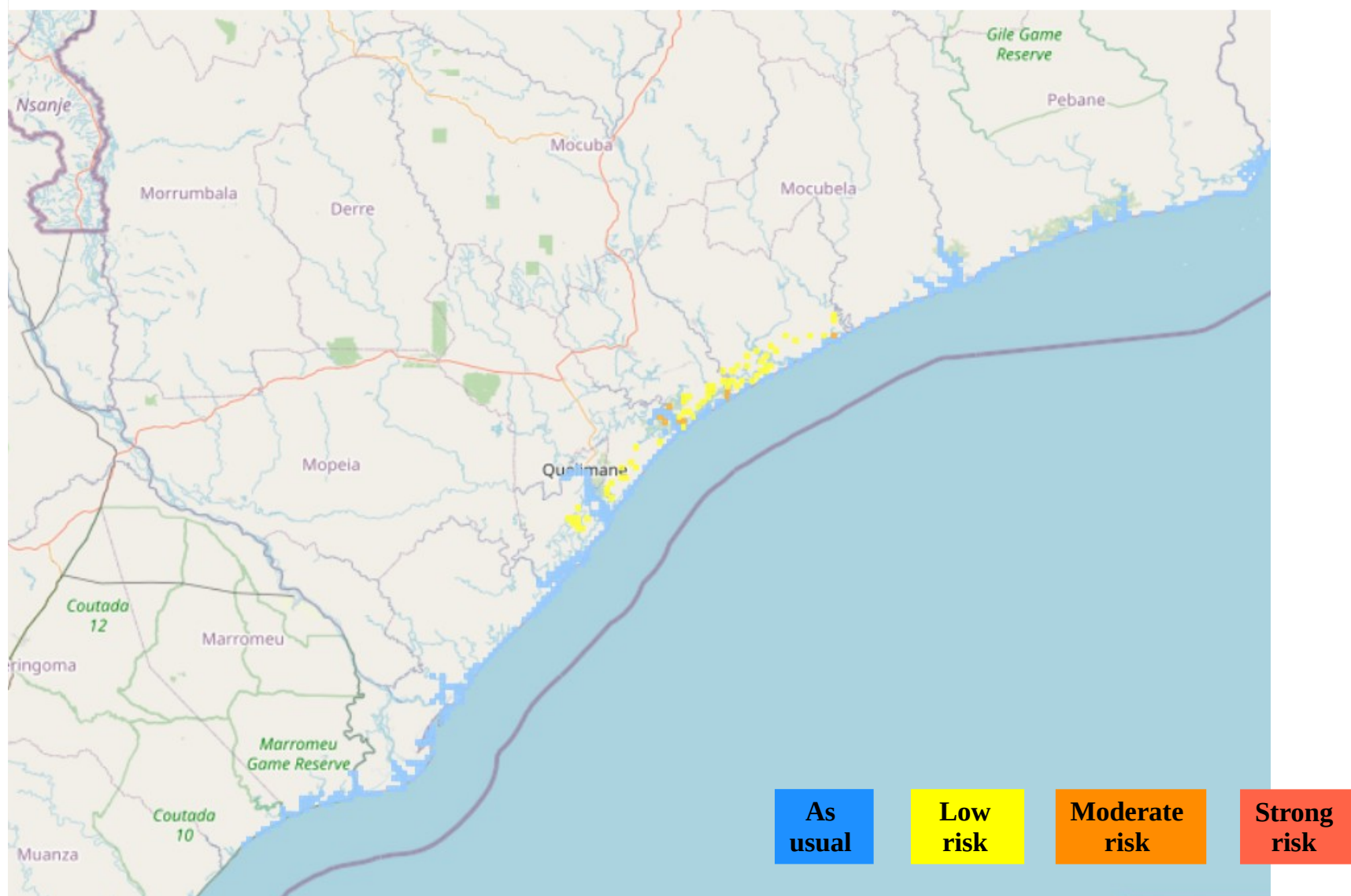
Hibiscus surge forecast



WTIO30

* DEGRADATION OF THE SEA STATE WITH A SEA BECOMING VERY ROUGH TO BIG DURING THE DAY ON FRIDAY (H1/3 BETWEEN 4 AND 6 M). A SURGE OF ABOUT 2M50 TO 4M IS POSSIBLE NEAR THE LANDING ZONE AT QUELIMANE LEVEL.

Hibiscus coastal flooding risk



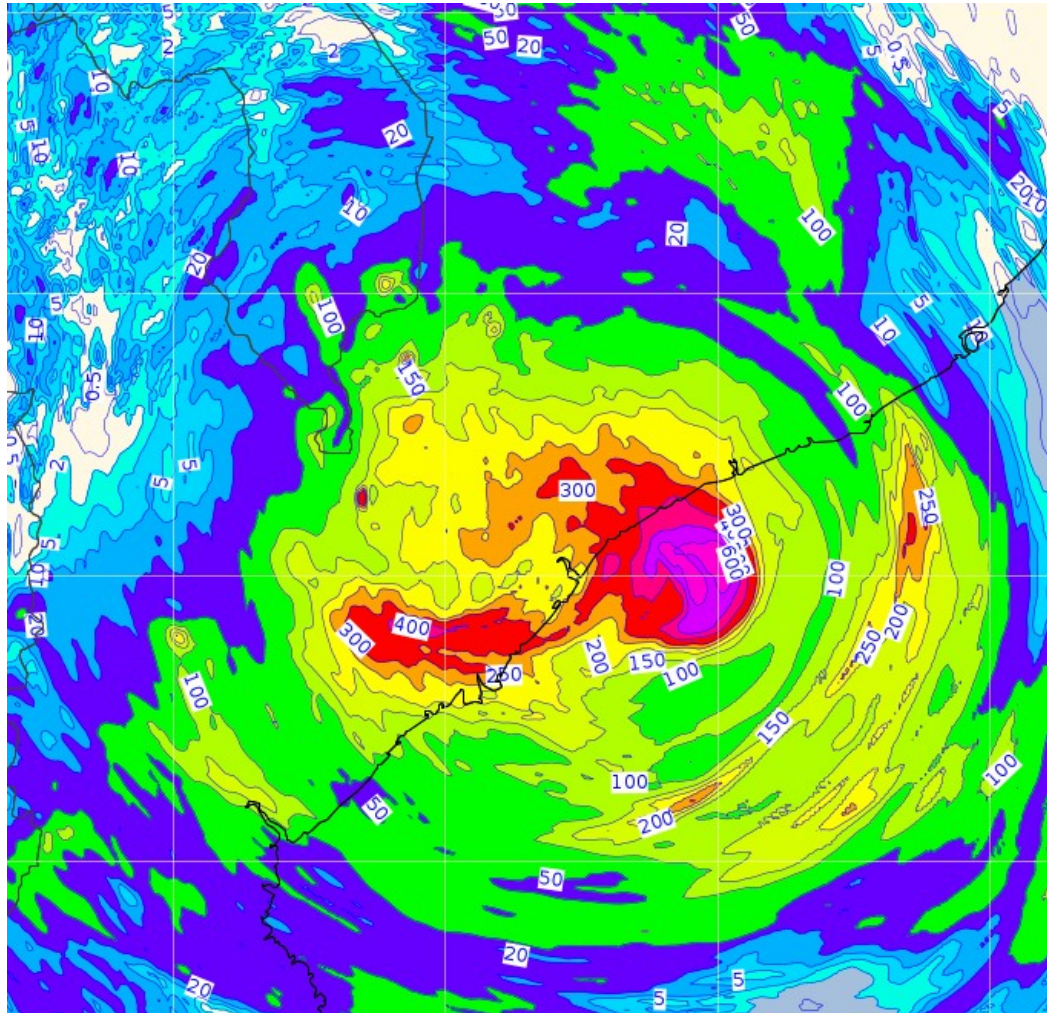
3. More rainfall forecast

WTIO30

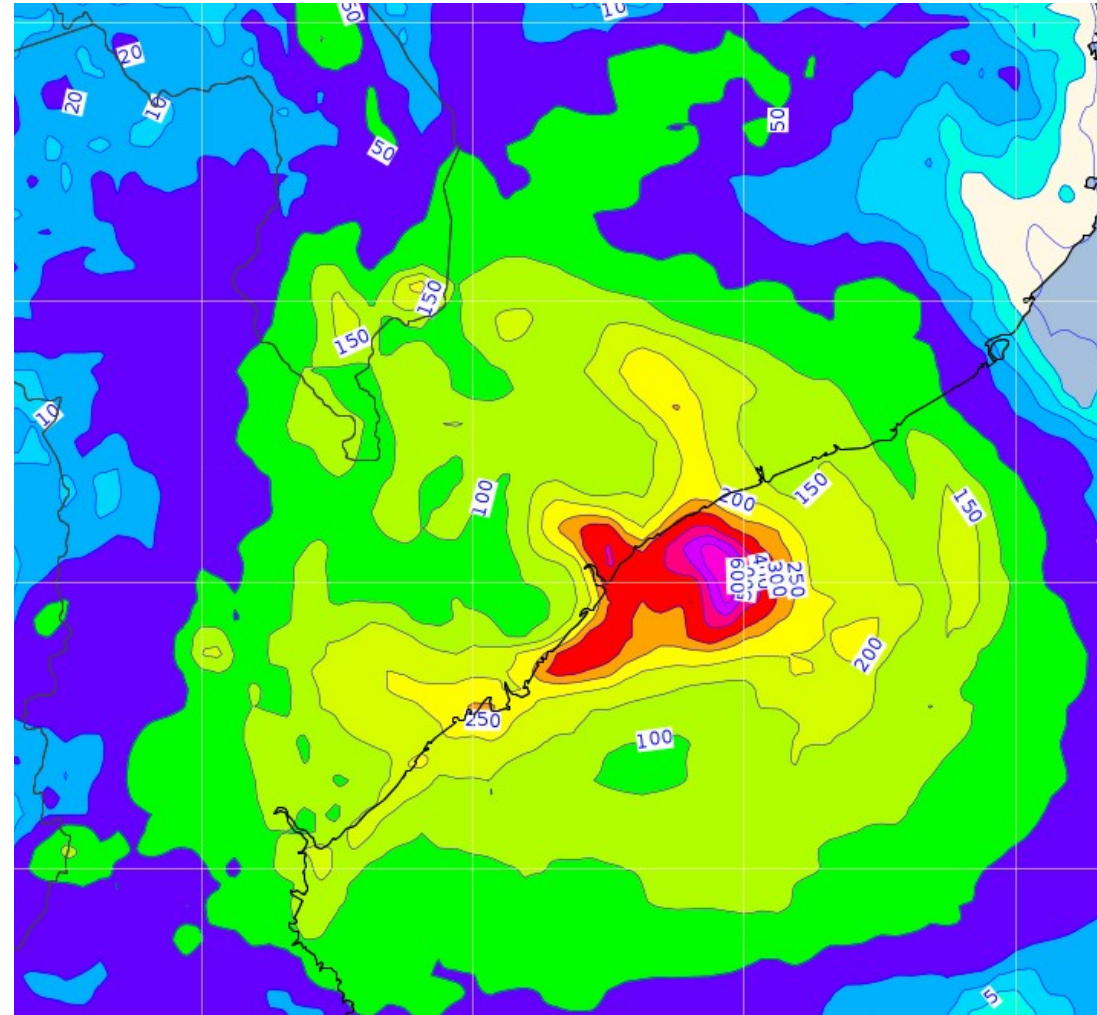
* HEAVY RAINS CONTINUE IN ZAMBEZIA DISTRICT. IN THE NEXT 24 HOURS, BETWEEN 300 AND 400 MM ARE EXPECTED ON THE NEAR COAST AND BETWEEN 100 AND 200 MM IN THE INTERIOR (ZAMBEZIA AND NORTHERN SOFALA DISTRICTS).

Rain forecast

48h Accumulated rainfall 11 00Z – 13 00Z



Arôme IO 11 00Z

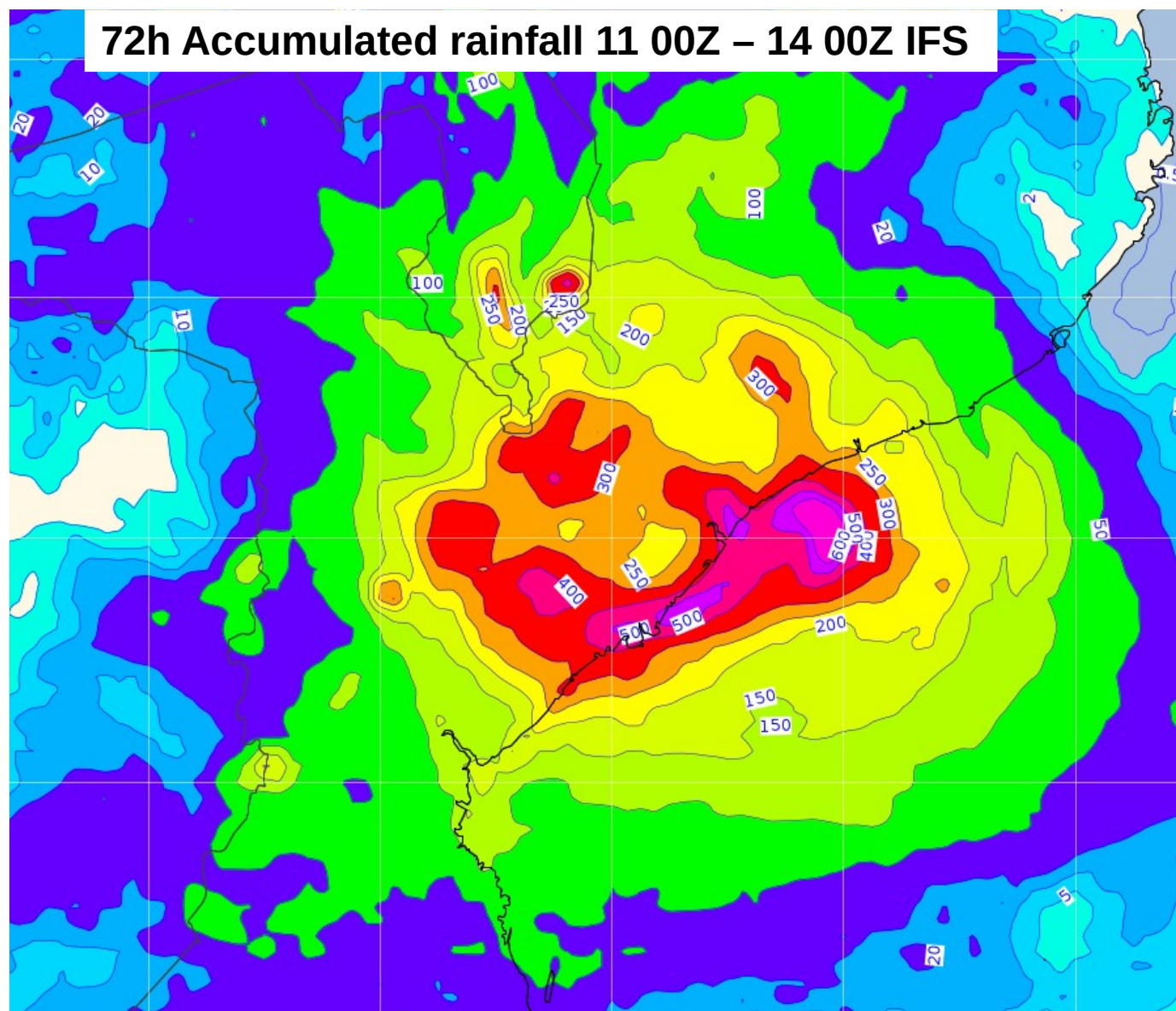


IFS 11 00Z

WTIO30

WITHIN 72 HOURS, BETWEEN 100 AND 300 MM POSSIBLY SPREAD OVER THE TWO REGIONS MENTIONED ABOVE WITH TOTALS THAT COULD REACH UP TO 500 MM LOCALLY, INCLUDING OVER SOUTHERN MALAWI.

Rain forecast



WTIO30

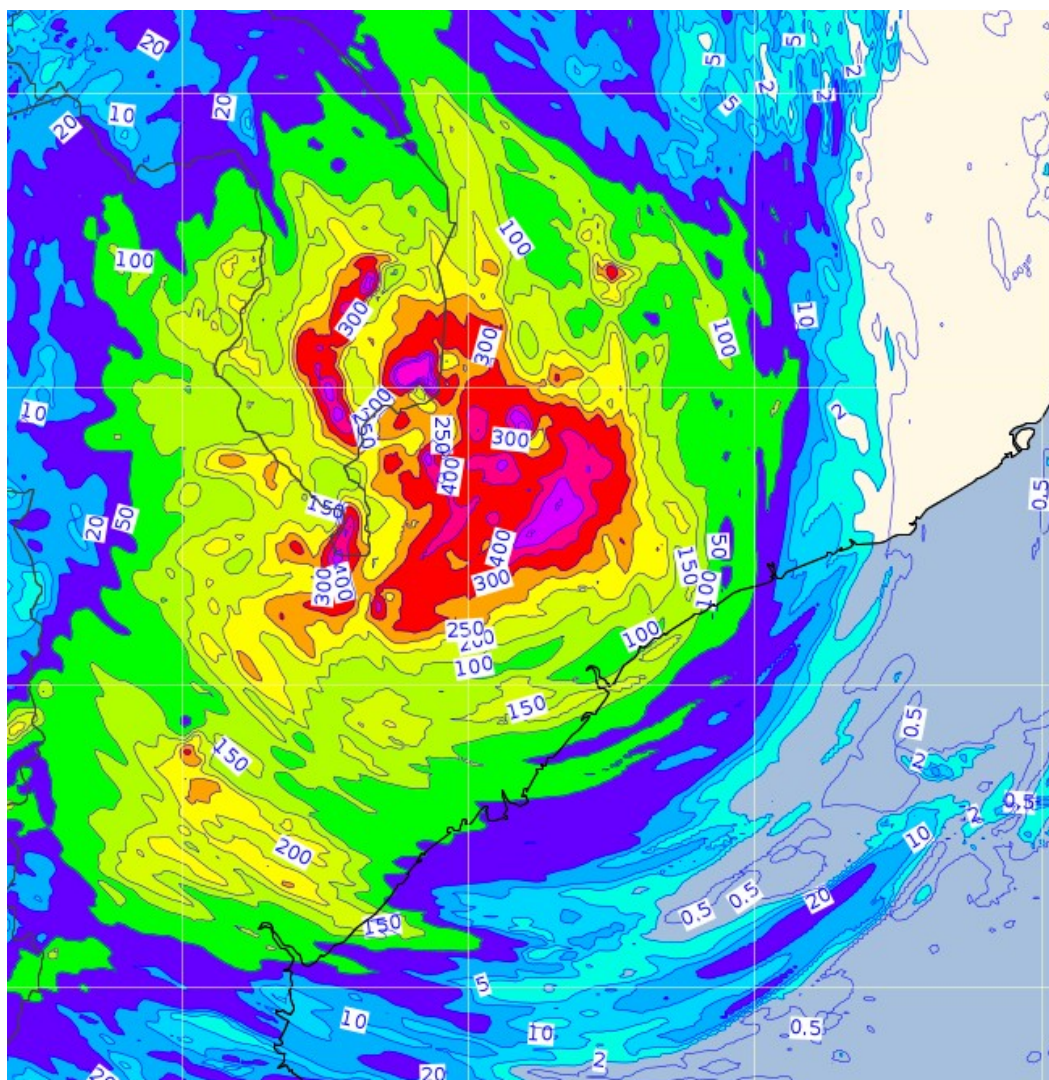
* CONTINUATION OF THE EPISODE OF HEAVY RAINS OVER THE PROVINCE OF ZAMBEZIE AND NORTHERN SOFALA. IN THE NEXT 48 HOURS, BETWEEN 200 AND 350 MM ARE EXPECTED ON THE AREA.

-MALAWI:

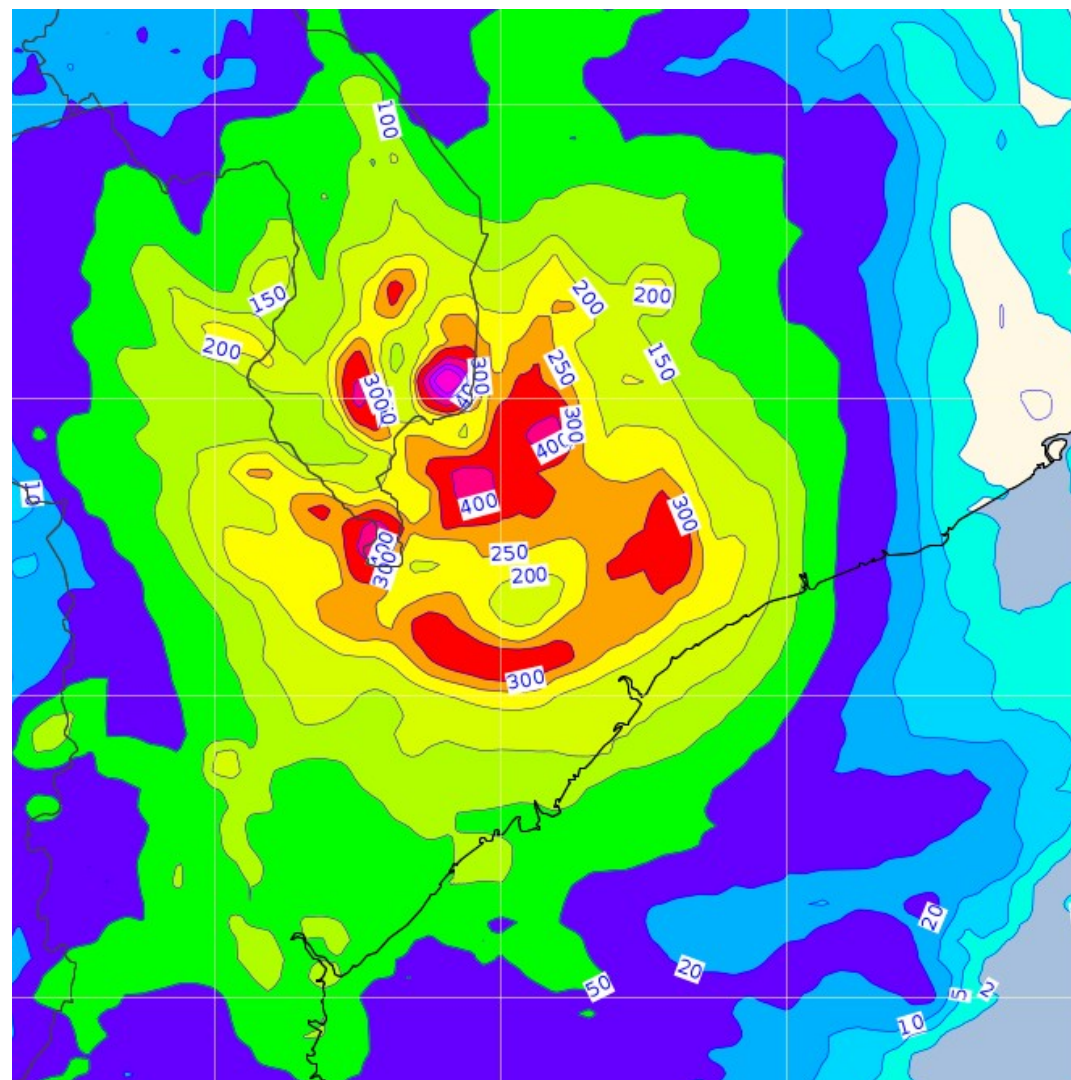
THE RAINY EPISODE STARTS TODAY WITH ACCUMULATIONS OVER 48 HOURS THAT COULD REACH 200 TO 300 MM OVER THE SOUTH OF THE COUNTRY, LOCALLY MORE OVER THE RELIEF. THE RAINIEST DAY SHOULD BE MONDAY.

Rain forecast

48h Accumulated rainfall 12 00Z – 14 00Z

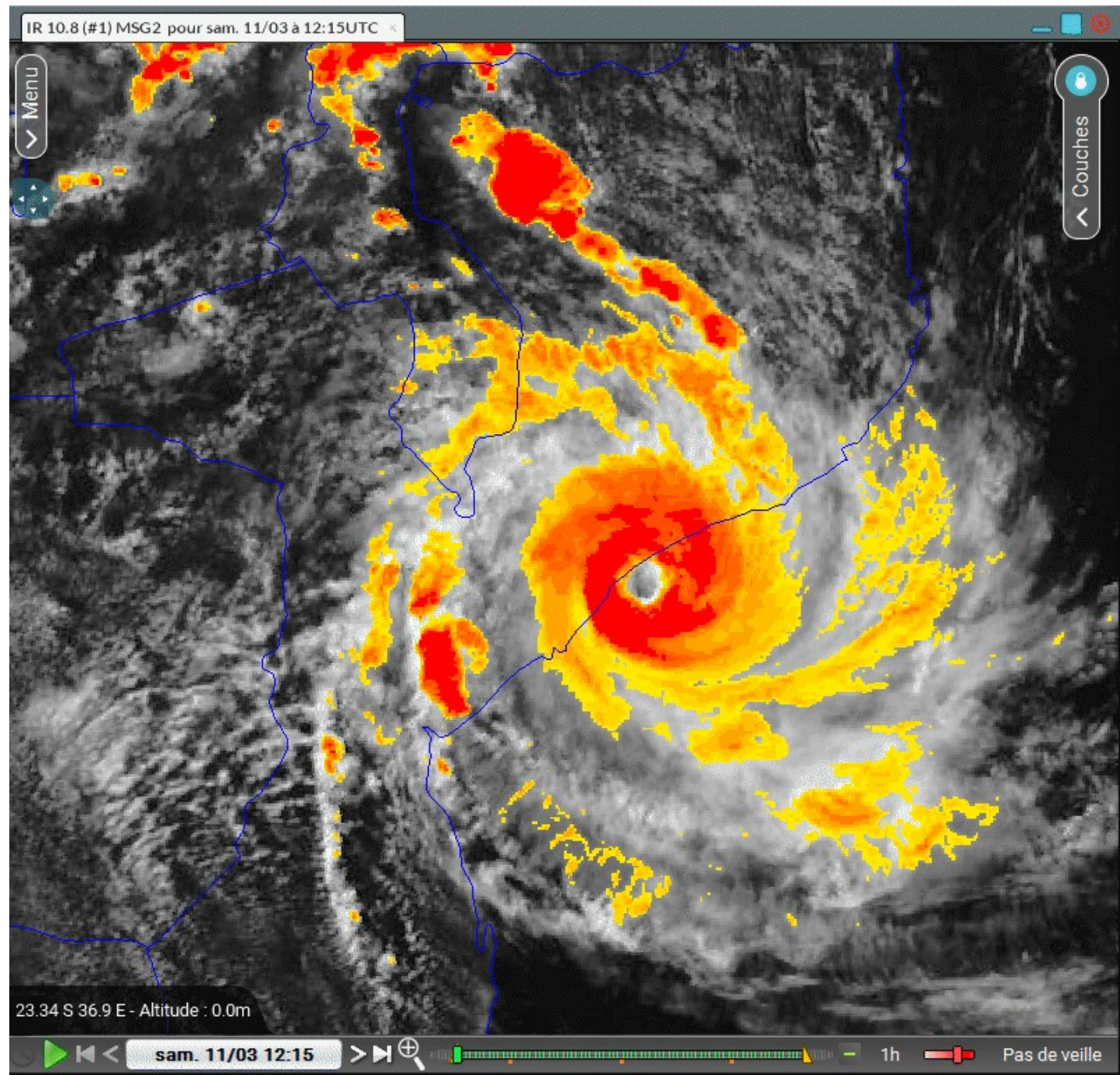


Arôme IO 12 00Z



IFS 12 00Z

In reality



In reality

2023-03-15 14:00 UTC : Total 7day accumulated rainfall
GPM IMERG product – <http://pmm.nasa.gov/category/keywords/imerg>

