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Monday, 20 February 2023

Intense Tropical Cyclone “Freddy” nears Mauritius.

Intense Tropical Cyclone “Freddy” has been a feature of the circulation of the South-West Indian Ocean region for about the last week. For the past few days, it has drifted slowly westwards, following a track roughly parallel to the Equator. Currently “Freddy” lies about 400 km to the north-east of Mauritius and is expected to pass relatively close to the islands of Mauritius and La Reunion as it continues to drift further westwards.

As at 08h00 SAST (06h00 UTC) “Freddy” was located at 20.1 South 51.7 East, moving westwards at 31 km/h. “Freddy” is a relatively compact, but nevertheless intense system, with a central pressure estimated to be 939 hPa and average winds of approximately 200 km/h. Maximum wind gusts in association with this system are however likely to be significantly stronger, estimated to be about 285 km/h. Interestingly, given the compact structure of “Freddy”, the most extreme winds will only be experienced within a 200km radius of the system.

In accordance with the latest track forecast for “Freddy”, issued by the WMO designated Regional Specialised Meteorological Centre (RSMC) located at La Reunion (refer Figure 1), “Freddy” is expected to continue along a predominantly west south-westward (WSW) track in the coming days, with a projected landfall along the east coast of Madagascar on Tuesday evening. Whilst there is some degree of uncertainty regarding the exact location of Madagascar landfall, according to RSMC La Reunion it will probably be between the coastal towns of Mahonoro and Mananjary.

During the latter half of this coming week, the remnants of “Freddy” will continue to swirl over the southern half of Madagascar. It is useful and relevant to keep in mind that tropical marine systems such as “Freddy” weaken significantly once they move overland. Such weakening is due to two physical processes. Firstly, the system is deprived of its primary source of energy, namely the release of latent heat in the moist lower atmosphere, overlying a warm ocean surface. Secondly, such systems typically encounter significant friction when interacting with a land surface. Therefore, once “Freddy” makes landfall over Madagascar, the intensity of the system, both in terms of central pressure and wind circulation, will lessen significantly. However, a potentially dangerous (and uncertain) phase during the life cycle of “Freddy” will occur later on Wednesday, 22 February and into the early hours of Thursday 23, February, when the system is expected to slide out into the very warm ocean waters of the southern Mozambique Channel.

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Currently, sea-surface temperatures (SST) in this part of the Channel are of the order of 28 to 29°C and will almost certainly lead to a re-intensification of “Freddy”, in a similar fashion to the intensification of “Cheneso”, another tropical system we witnessed in the same area, scarcely a month ago.

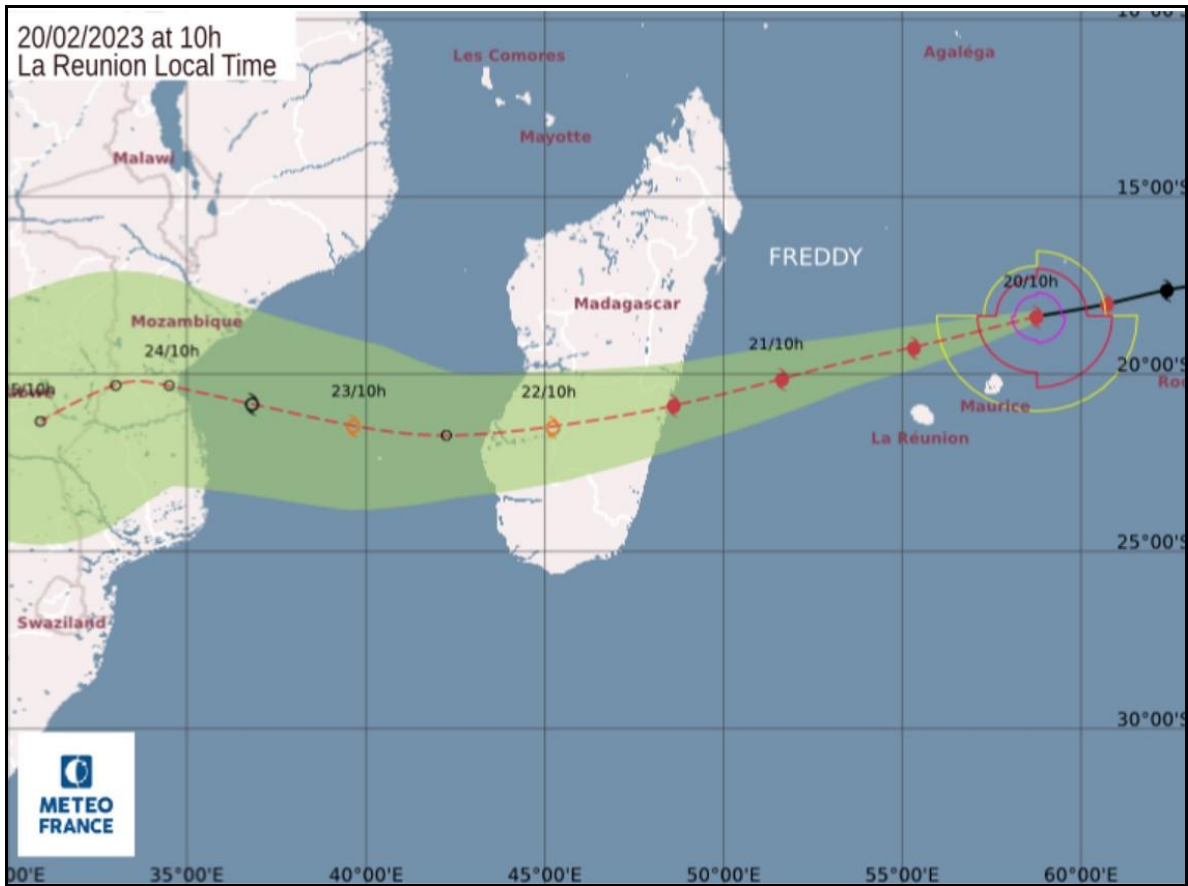


Figure 1: The latest forecast track for “Freddy”, issued by RSMC La Reunion. At this stage, “Freddy” may make landfall near Beira on the central Mozambican coast, on Friday afternoon, 24 February 2023. Source: RSMC La Reunion.

As mentioned in previous media releases issued by the South African Weather Service (SAWS), accurate and timely prediction of tropical cyclone movement is invariably associated with high levels of uncertainty, despite significant recent advancement in numeric weather prediction (NWP) models. The current ensemble model projection (Figure 2) issued by the European Centre for Medium Term Weather Forecasts (ECMWF) suggests an initial track for “Freddy”, which is unlikely to deviate much from the current west south-westerly track. However, with reference to Figure 2, note the broadening of the ensemble track forecast (especially the yellow and green areas, associated with lower confidence outcomes), once “Freddy” enters the Mozambique Channel. In other words, the intensity and movement of “Freddy”, as well as later possible landfall by the system, somewhere along the coast of Mozambique, is highly uncertain.

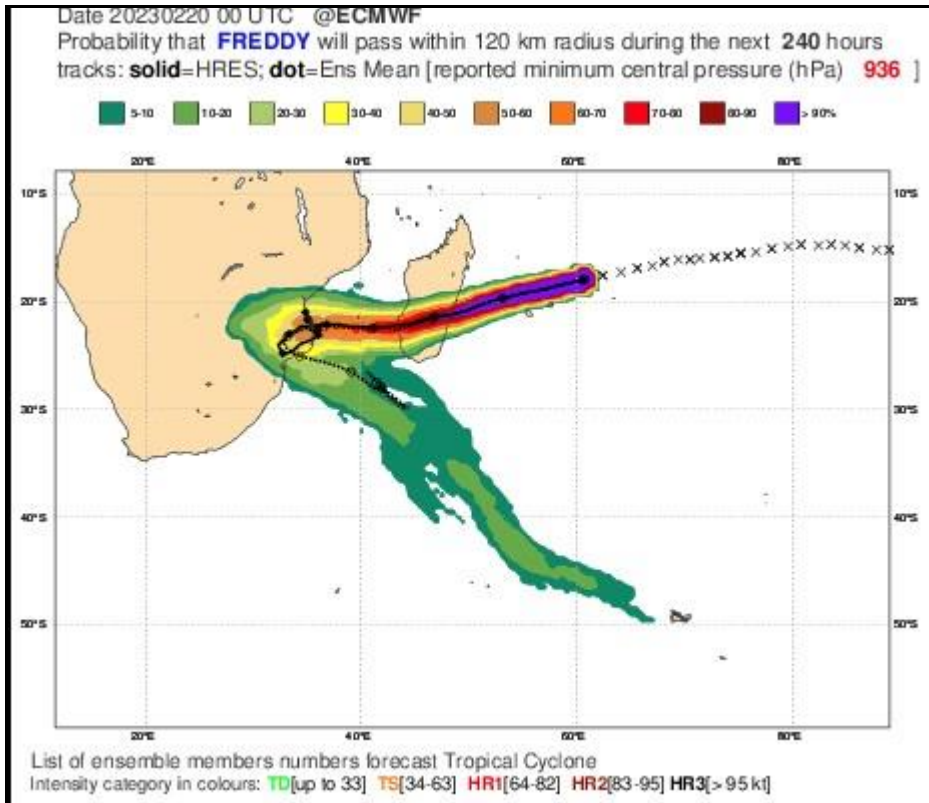


Figure 2: The latest ECMWF ensemble model track for “Freddy”. Note the initial high confidence, narrow purple-coloured track. By contrast, the latter movement of “Freddy” is far more uncertain, with a wide “spread” of lower confidence forecast outcomes (indicated in yellow and green shades). Source: ECMWF.

Notwithstanding the above, the current official, highest confidence track from RSMC La Reunion suggests that “Freddy” MAY make landfall this Friday afternoon 24 February near Beira, a large port city roughly midway along the Mozambican coastline. Thereafter, there is a possibility (albeit small) that “Freddy” might move inland, possibly affecting eastern Zimbabwe and perhaps including the north-eastern sector of Limpopo province. In the event of the latter scenario, even the weakened, dissipating remnants of “Freddy” would still have the capacity to deliver significantly heavy rainfall as well as the possibility of extensive flooding. In the light of the recent (unrelated) flooding event which affected Limpopo and Mpumalanga last week, any renewed flooding over last-mentioned regions could potentially be catastrophic.

The public can rest assured that SAWS, in consultation with National and Provincial Disaster Management structures, will continue to monitor developments on a 24/7 basis and will issue regular updates in this regard, across a variety of media and social media platforms.

Furthermore, the public is urged and encouraged to regularly follow weather forecasts on television and radio. Updated information in this regard will regularly be available at www.weathersa.co.za as well as via the SA Weather Service Twitter account @SAWeatherServic

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