



Regional forecaster collaboration within SWFDP Southern Africa: Case of Irina, March 2012

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Introduction

- Tropical storm “Irina” formed as an area of disturbed weather, on February 22, in the South-West Indian Ocean basin, east of Madagascar.
- It then intensified into a tropical depression on February 25 and RSMC La Reunion named the system Moderate Tropical Storm Irina on February 26 as it intensified further.
- Irina then made landfall on Northern Madagascar and weakened into an overland depression.

Introduction

- It resulted in heavy rains over Northern Madagascar, an area which was hit by TC Giovanna a few weeks earlier.
- On February 27, Irina emerged off the northwestern coast of Madagascar, strengthened but then made landfall again affecting the central west coast of Madagascar.
- On March 1, Irina entered the Mozambique Channel and intensified into a Severe Tropical Storm.

Introduction

- It then headed in a SW direction and was projected to hit southern Mozambique, NE parts of South Africa and Swaziland.
- These were the areas which were hit by “Dando” less than 2 months before.
- **This is the fact that raised the alarms**

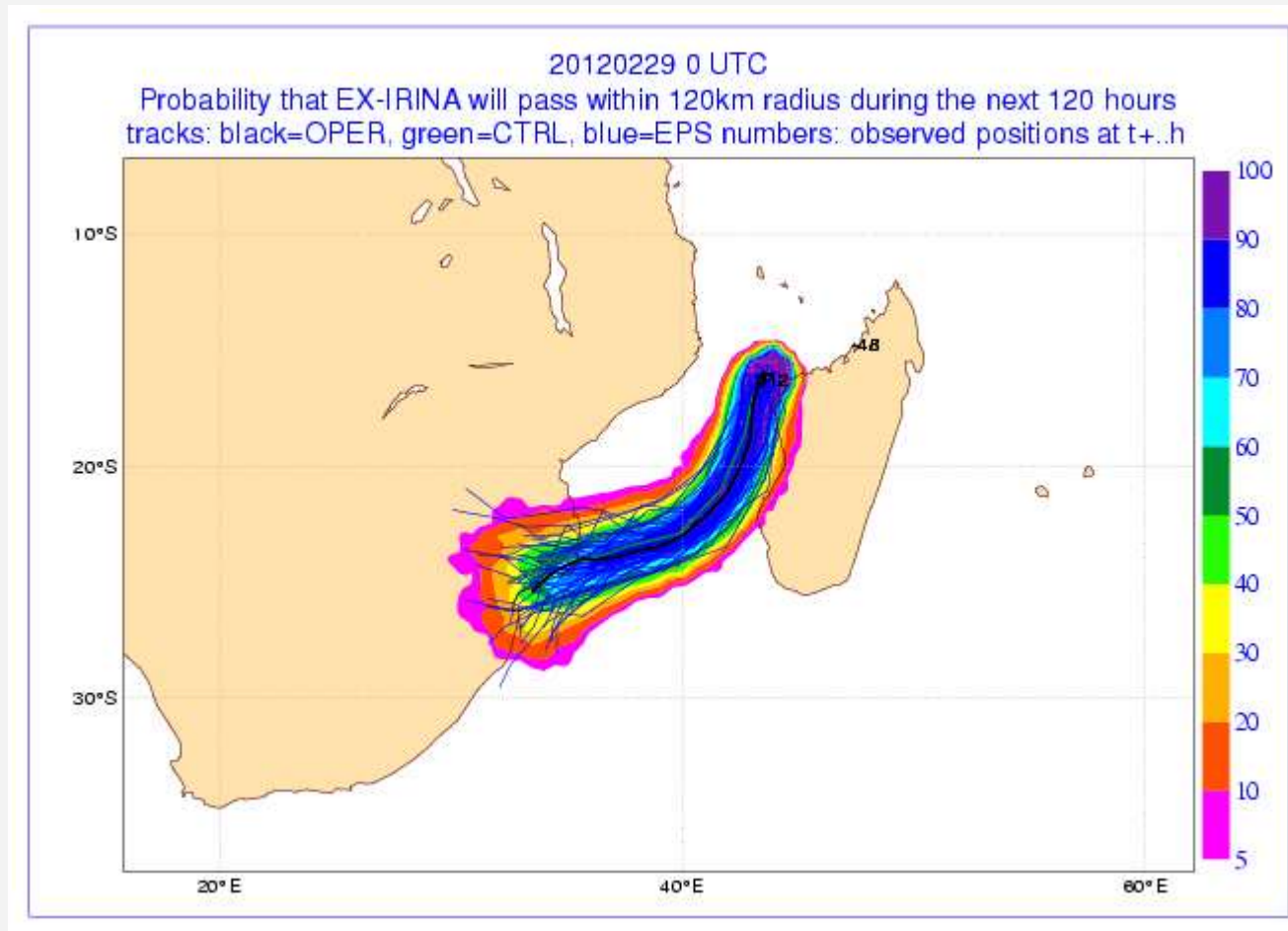
Effects of Irina

- Heavy rains were experienced over the northern and western Madagascar during the early parts of Irina's life span.
- Heavy rains and strong winds were also experienced over the southern Mozambique, Swaziland and north-eastern parts of South Africa.
- Irina resulted in the death of 4 fishermen at sea off Maputo. A tree also fell on to a house killing 3 people in southern Mozambique.
- Widespread damage to infrastructure was also caused over southern Mozambique, Swaziland and KwaZulu-Natal province of South Africa.

Numerical Weather Prediction during Irina

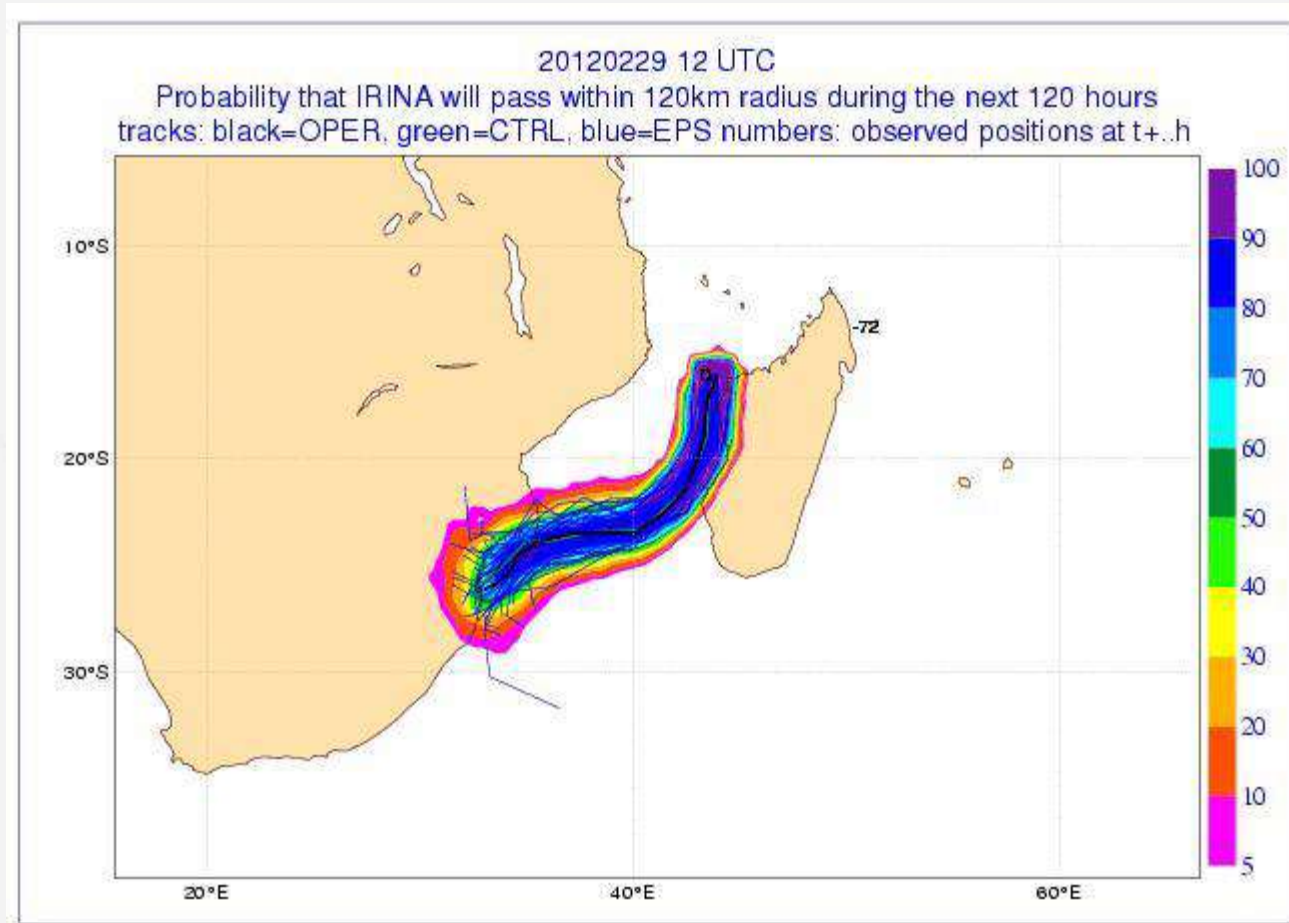
- Forecasting the track of Irina for more than 24 hours proved to be a challenging task, more difficult as compared to recent systems.
- This was due to the weak steering conditions present that time.
- Initially, Irina was projected to head west-wards into southern Mozambique, NE RSA and Swaziland but ended up making a loop in the sea SE of Maputo.
- Later runs of NWP proved to be useful in forecasting the track.
- Short-term rainfall and wind forecasts were also good.

ECMWF strike probability map 29 Feb 00UTC run



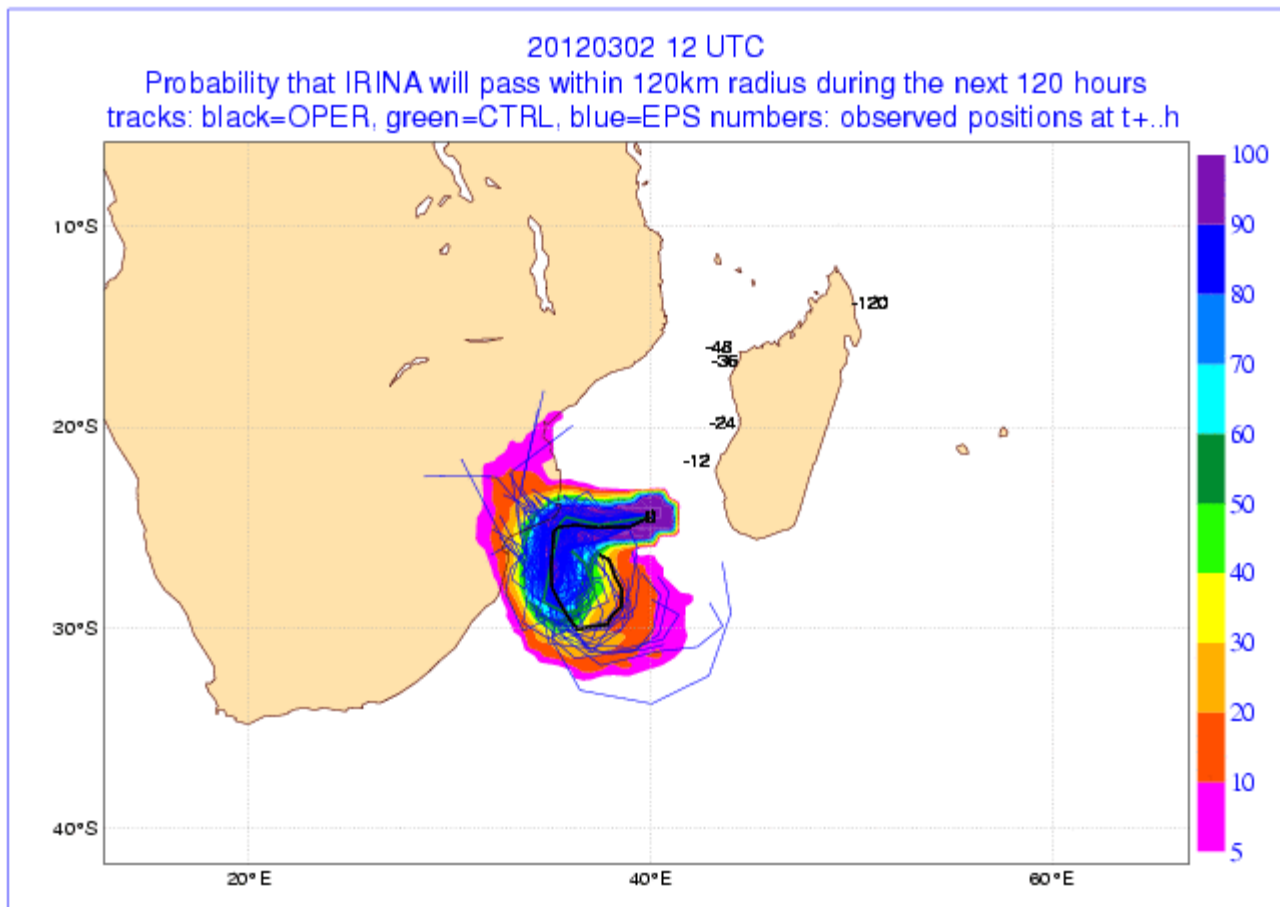
ECMWF strike probability map

29 Feb 12UTC run



ECMWF strike probability map

02 March 12UTC run

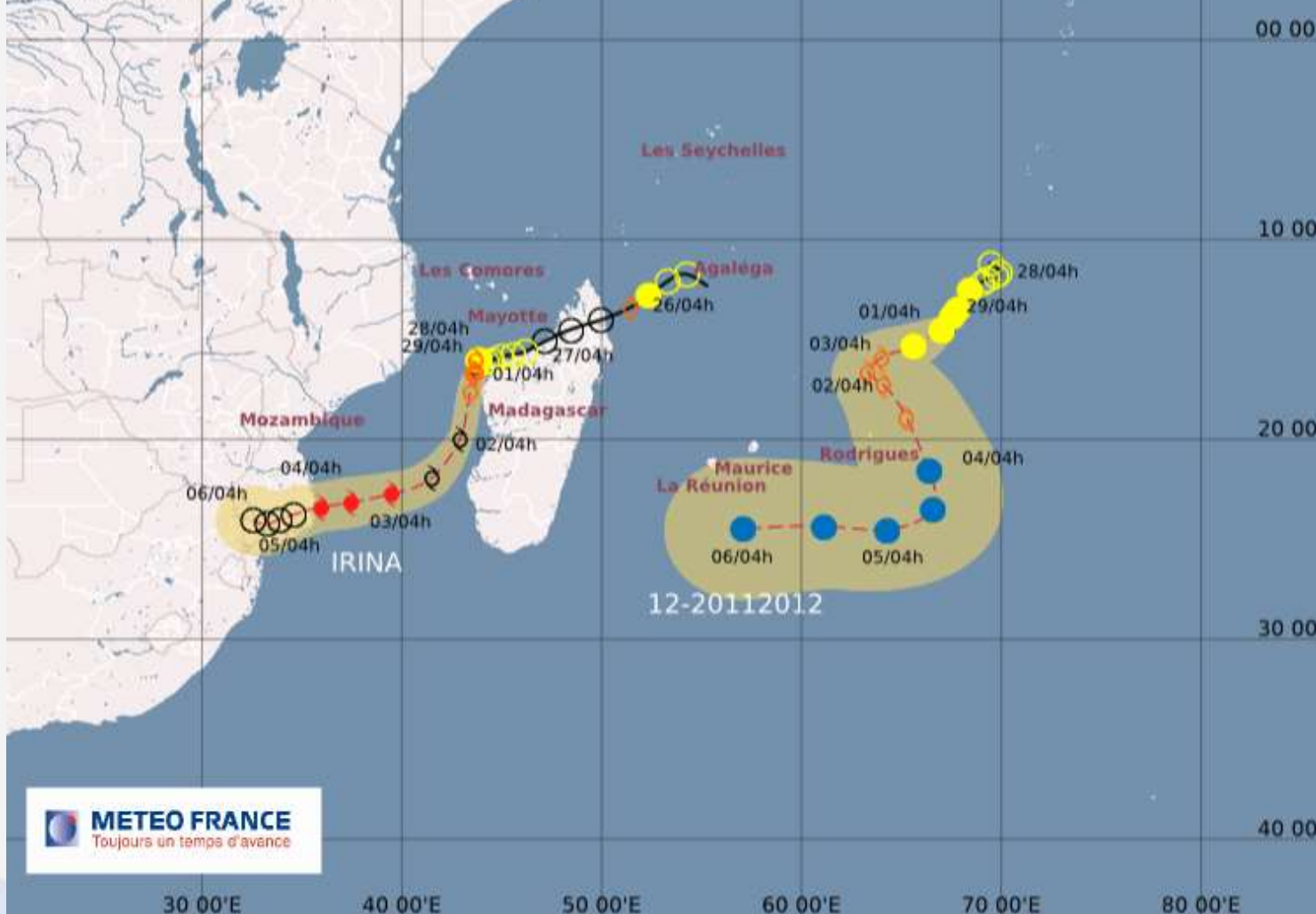


The role played by RSMC La Reunion

- RSMC La Reunion is the official tropical cyclone warning centre for the SW Indian Ocean Basin.
- It issues tropical cyclone guidance two times a day for up to 72hours ahead.
- Regular updates on forecast tracks during Irina were very crucial as the track kept changing.
- Guidance from RSMC La Reunion was very crucial in guiding the affected NMS's

RSMC La Reunion guidance 01 March 06Z

Le 01/03/2012 à 04h
Heures locales La Réunion



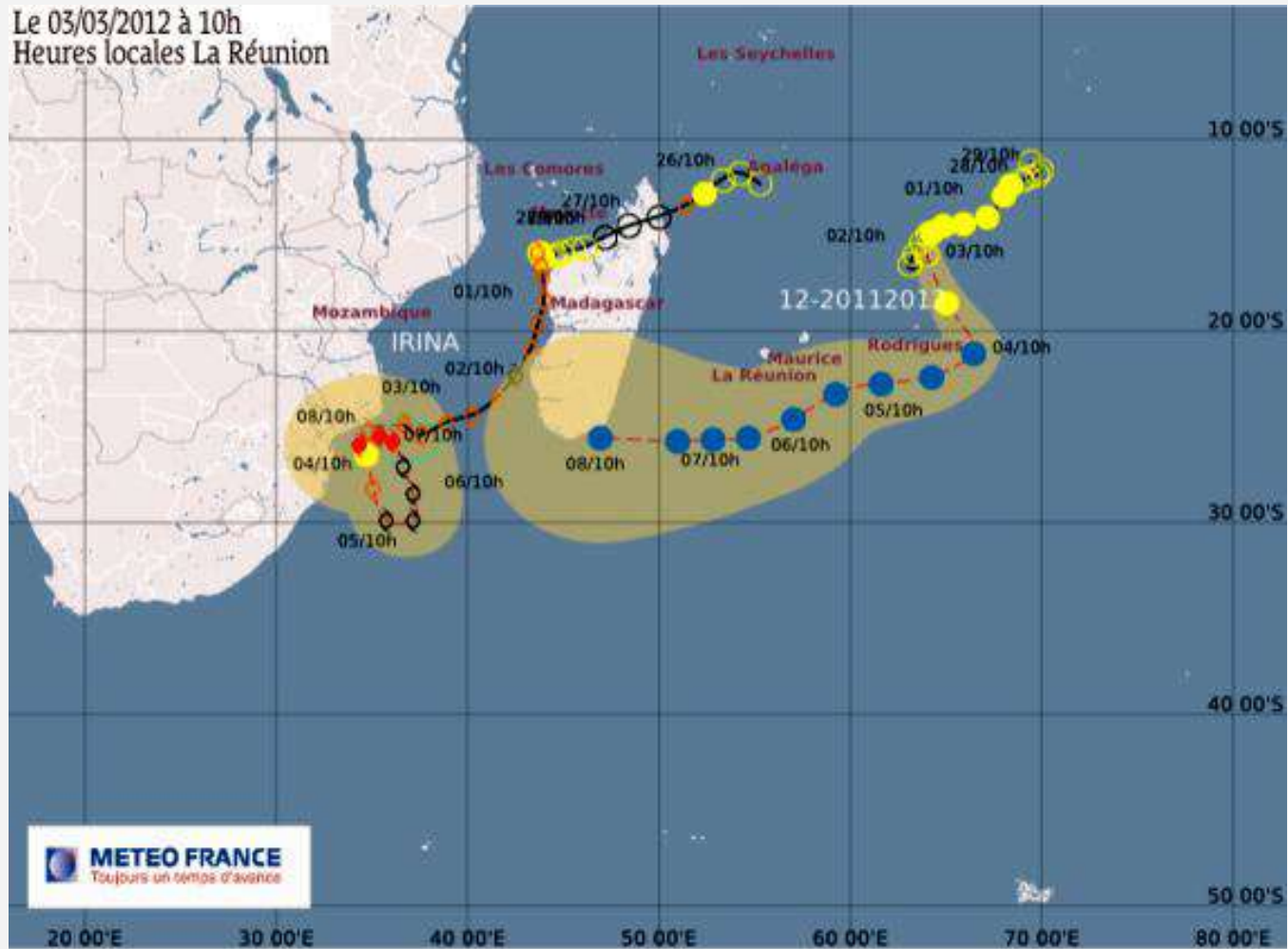
RSMC La Reunion guidance

02 March 12Z

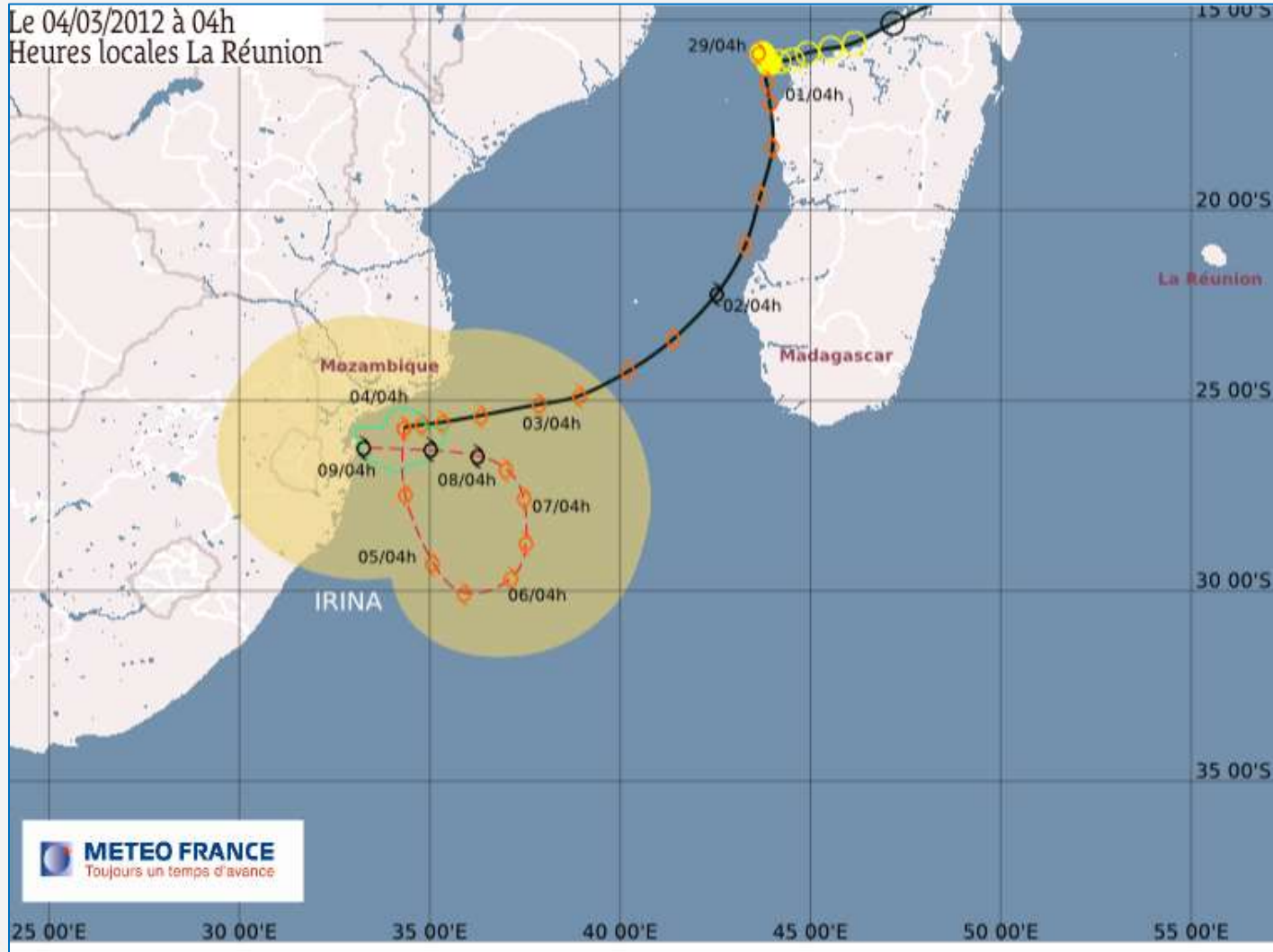


RSMC La Reunion guidance

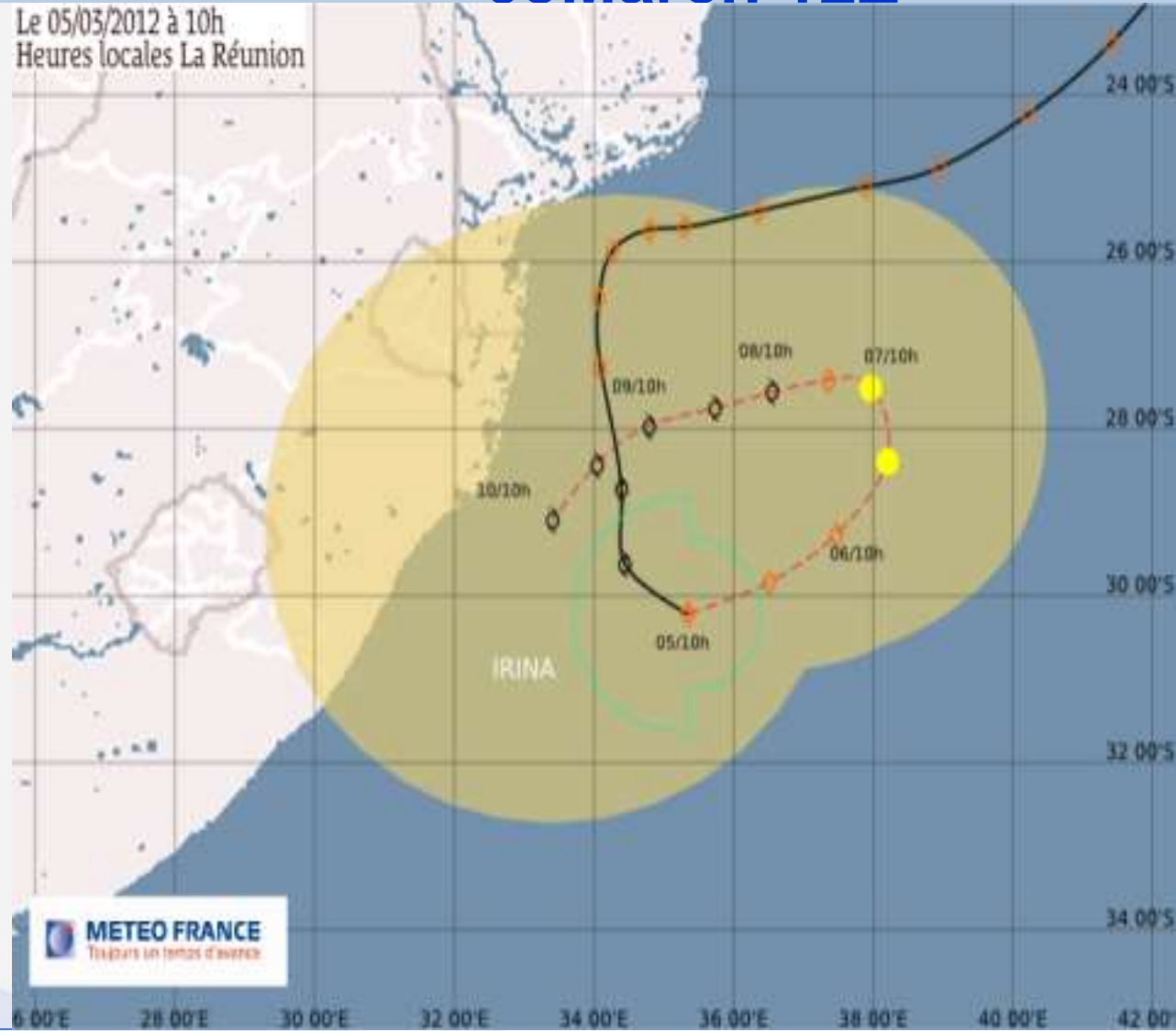
3March 12Z



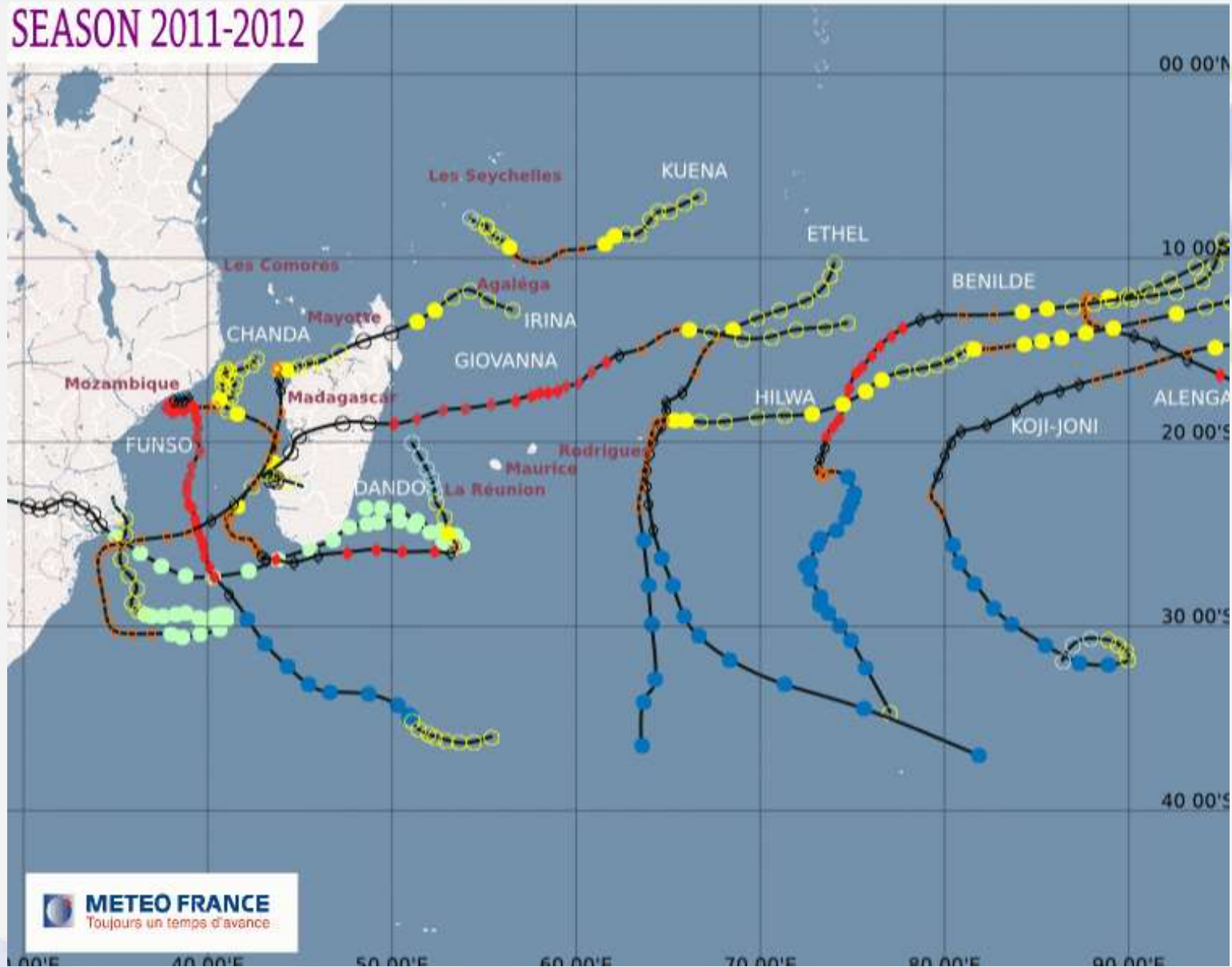
RSMC La Reunion guidance 04March 06Z



RSMC La Reunion guidance 05 March 12Z



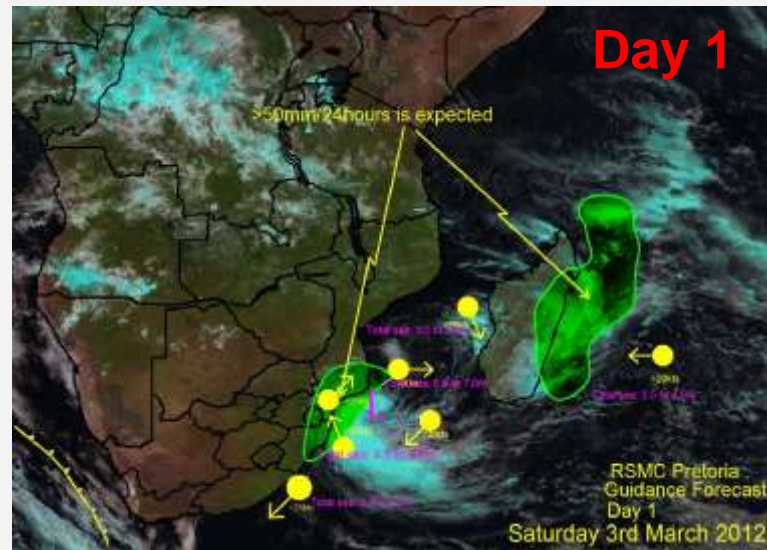
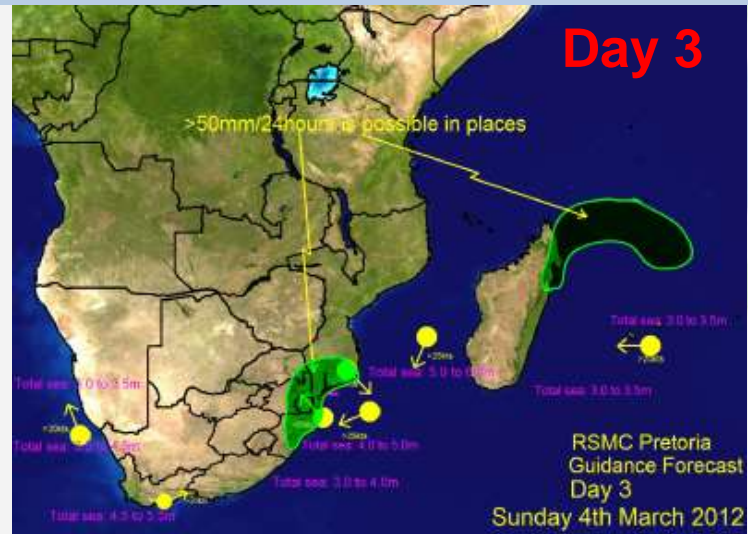
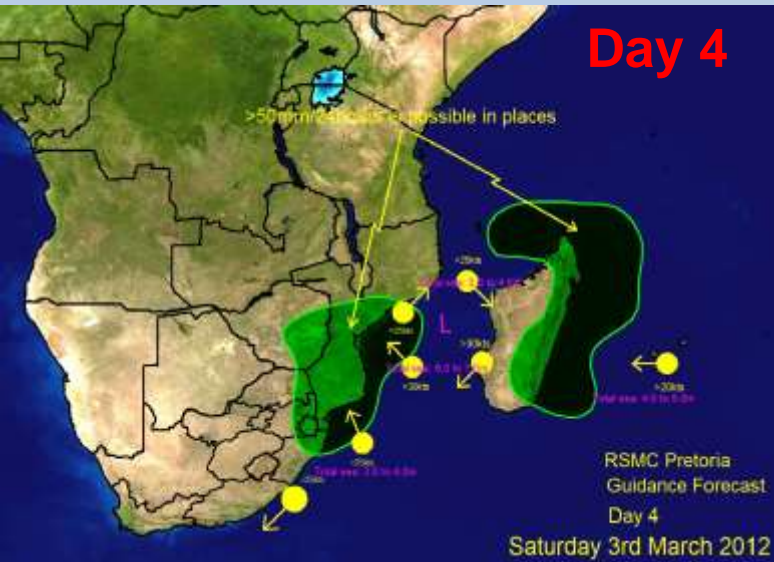
SEASON 2011-2012



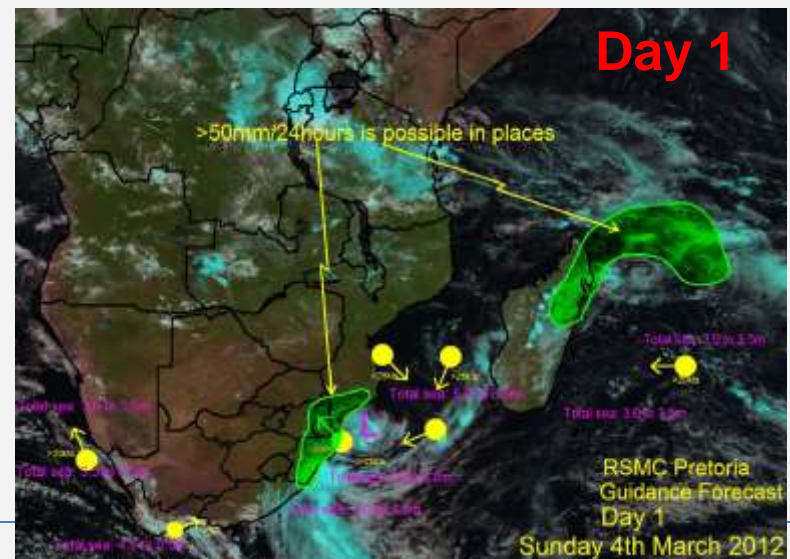
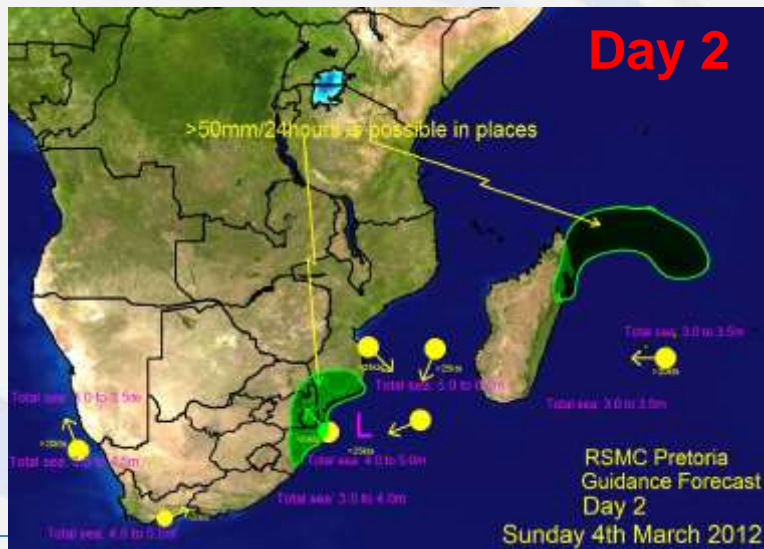
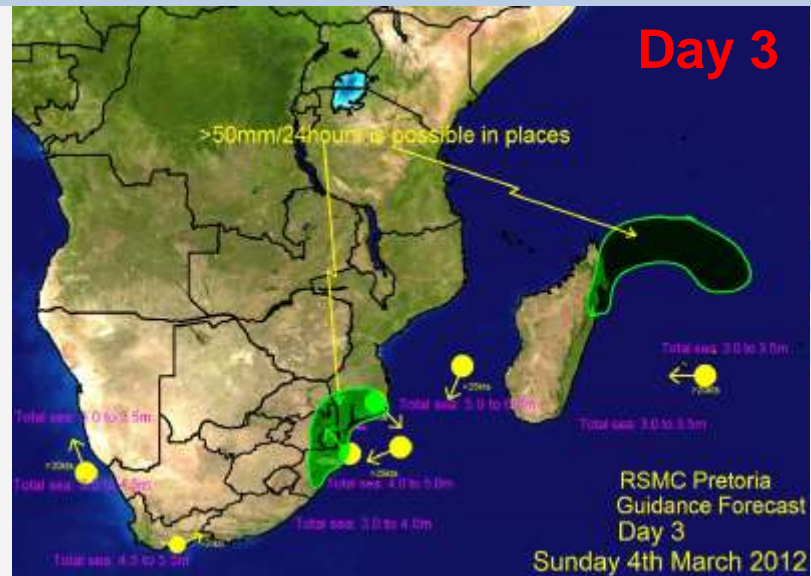
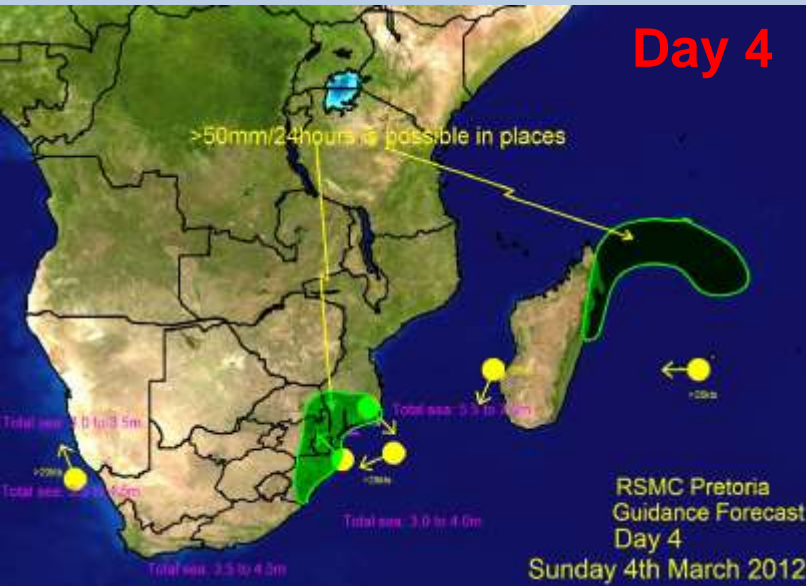
Observed rainfall

Station	03/03/2012	04/03/2012
Makhatini Research Centre	52.2	5.2
Mbazwana Airfield	202.2	3.6
Charters Creek	245.8	16.4
Riverview	152.0	11.4
Richards Bay	136.6	53.8
Mtunzini	94.6	32.8
King Shaka International Airport	41.0	118.4
Virginia	41.8	119.8
Durban	23.0	140.8
Margate	1.8	15.8
Pongola	25.2	2.4
Ulundi	52.4	1.8

Guidance from RSMC Pretoria for 3 March

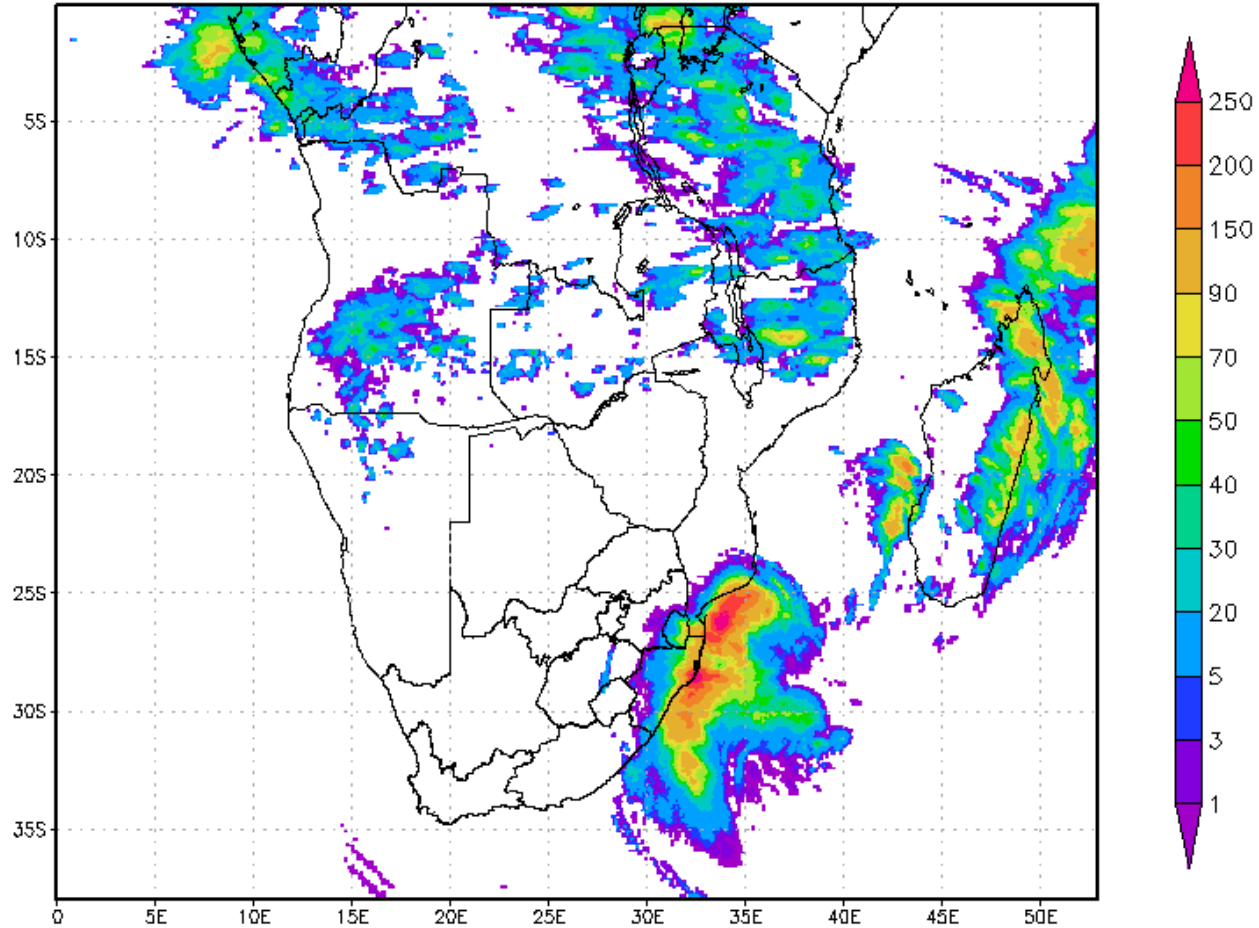


Guidance from RSMC Pretoria for 4 March



Hydro-Estimator Observed rainfall 3 March 2012

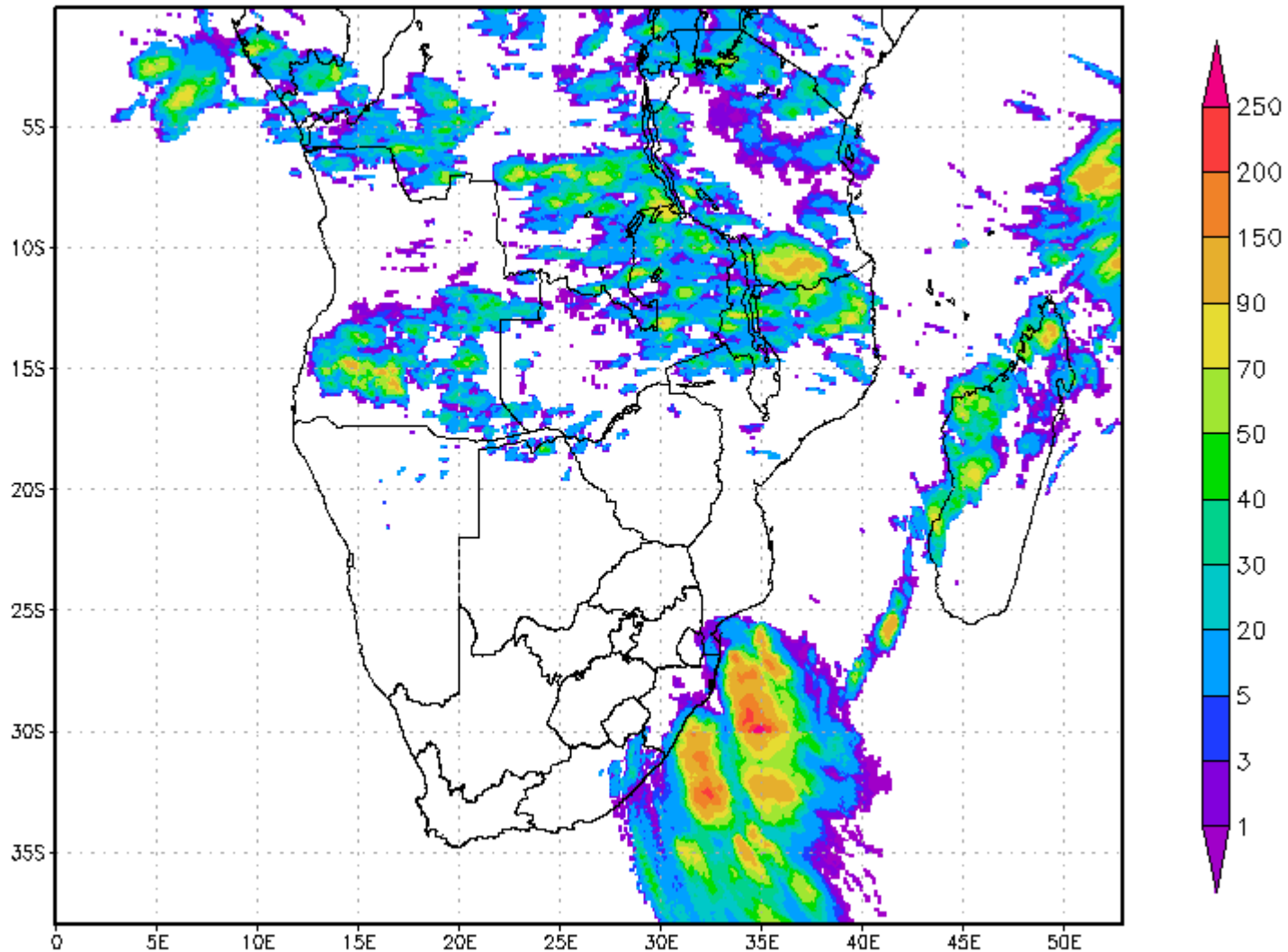
24 Hour Hydro-Estimator Rainfall Total mm
06Z04MAR2012



GRADS: COLA/IGES

Hydro-Estimator Observed rainfall 4 March 2012

24 Hour Hydro-Estimator Rainfall Total mm
06Z05MAR2012



The role played of Global NWP/EPS Centers

- ECWMMF, NCEP and UKMO supports the SWFDP Southern Africa by making available the NWP+EPS products.
- These products were available and useful during Tropical Storm “Irina”.
- Their continued support is greatly appreciated

Communication between INAM, SWAZIMET and RSMC Pretoria

- The initial communication was by email from RSMC Pretoria on 01st March 2012 to both INAM and SWAZIMET.
- This extra effort was a way of making sure that all affected NMS's are aware of the impending severe weather and should start alerting the Disaster Management authorities.
- A media release was prepared at RSMC Pretoria on the 29th February, updated on the 01st March and also sent to INAM and SWAZIMET.

Communication between INAM, SWAZIMET and RSMC Pretoria

- Further information was carried through on the regular SWFDP guidance products.
- More discussions then followed between the 2 NMS's and RSMC Pretoria via emails and a number of telephone calls.

Communication between NMS's and Stakeholders

South African Weather Service

- Several Media releases were issued between the 29th February 2012 until after the event.
- This proved to be a useful tool in getting the attention to the impending extreme weather.
- It was followed by many media interviews
- In addition to the media releases and interviews, SAWS also sent a chief forecaster to the National Joint Operations Center (NATJOC) to keep the authorities up to date with the evolution of the system.

- The NATJOC is made up of the Police, Defence Force, Disaster Management and many other Government departments.
- The regional manager of KwaZulu-Natal also attended the Provincial Joint Operations Centre (ProvJOC).

INAM Mozambique

- INAM started alerting disaster management authorities from 28th February 2012.
- The PWS focal point attended meetings at National Center for Emergency Operation (CENOE), a operative branch of our Disaster Management Center, which coordinates the Early Warning System in Mozambique from 1 March 2012.
- The authorities informed during the briefing included Water Authority, Disaster Management Center, other Government departments and NGO's.

- Two days before the severe weather, the NMS conducted a briefing call with Disaster Management Agency, Police, Government and the local media.
- Additionally, on the first day of the event a conference call was established with local media and emergency managers in order to further ensure these groups were aware of the impending severe weather threats.
- Furthermore, live radio interviews were conducted early in the event with both the English and vernacular language stations.

Conclusion and recommendations

- Through the SWFDP, all NMS's in the region have access to many NWP and EPS products from Global centers to help in timely forecasts of severe weather.
- Extensive use of all the NWP/EPS products that have been provided through SWFDP is encouraged.
- Training has also been provided (and is cont.) on the use of these products as well as on enhancing relationships with emergency authorities and the media.
- Communication between NMS's and RSMC is key to achieving the objectives of SWFDP, and is also encouraged.

Cont...

- The communication that took place between RSMC Pretoria (or RSA NMS), INAM and SwaziMET during Irina can be used during other high impact weather events in the region, with equally good results.
- This could be between forecasters from different NMHS's or between RSMC and affected NMHS'
- The case of Tropical storm Irina has demonstrated what could be achieved in a challenging situations when different NMS's communicate.
- The framework that has been put in place by SWFDP helps a lot in overcoming the challenges that may arise.

Cont...

- Regular updates to Disaster Management/Civil Defence and Media during Irina was crucial as the forecast track kept changing at short notice.
- Communication/Feedback from participating NMHS's to Global centers is also encouraged.
- RSMC's La Reunion and Pretoria played their respective roles during this period.
- INAM and SWAZIMET also played their roles in communicating all the information to their Disaster Management Authorities.

Closing comment

During “Irina” all of the cascading processes of SWFDP were realized, it’s a model that works well!!!

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