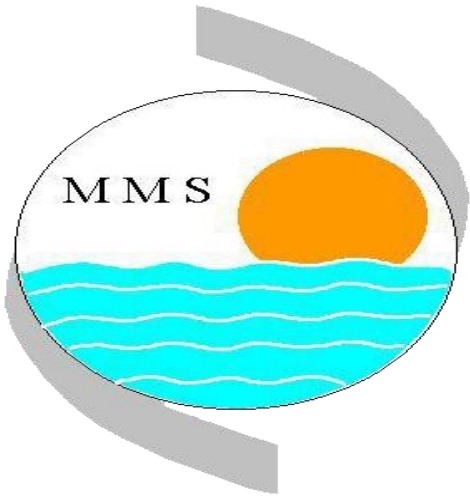
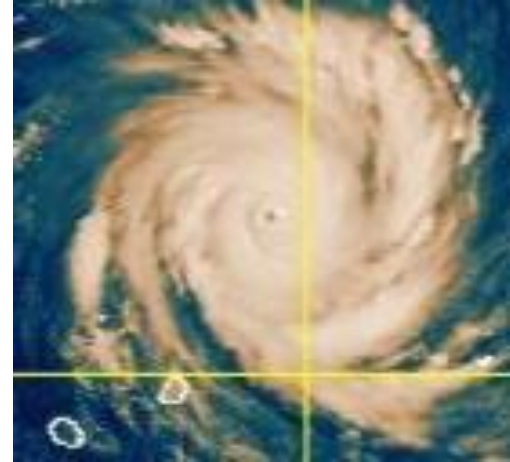


Mauritius Meteorological Services



Case Study: Intense Tropical Cyclone **GIOVANNA** 10-12 February 2012

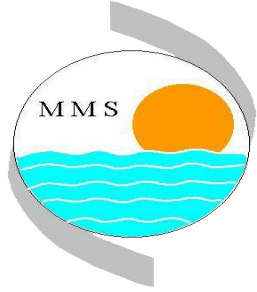


St Paul Road, Vacoas. Mauritius

Tel. (230) 686 1031, fax (230) 6861033

Email: meteo@intnet.mu

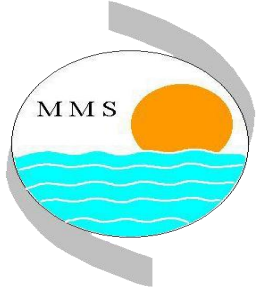
Web: <http://metervice.intnet.mu>



Mauritius Meteorological Services

Outline

- Introduction
- Cyclone Warning System
- Case study
 - Warnings issued
 - Disaster management strategies
 - Damages
 - Interaction with media and Dissemination of Warnings
 - Impacts
 - Conclusions

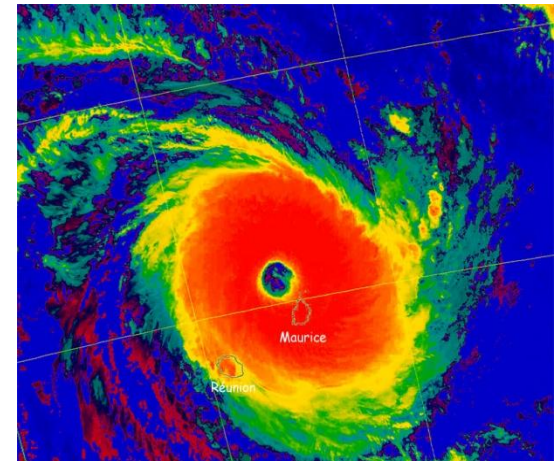


Mauritius Meteorological Services

Cyclone Over the Mascarene Islands

- Cyclone preparedness and damage
- Warning system since the mid-1950s
- On average 9 cyclone formation every year in the SWIO basin.
- One cyclone within 100 km of Mauritius or Rodrigues every year.
- On the average MMS issues 59 hours of warning for Mauritius, including 19 hours of Class III or IV warnings.
- On the average MMS issues 10 warning bulletins every year for Mauritius/Rodrigues
- The number of storm reaching tropical cyclone intensity in the SWIO shows an increasing trend.






Dina, 20 Jan 2002

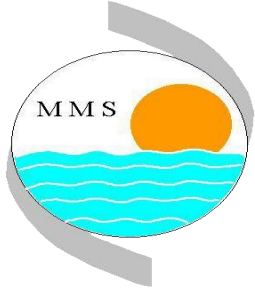




Mauritius Meteorological Services

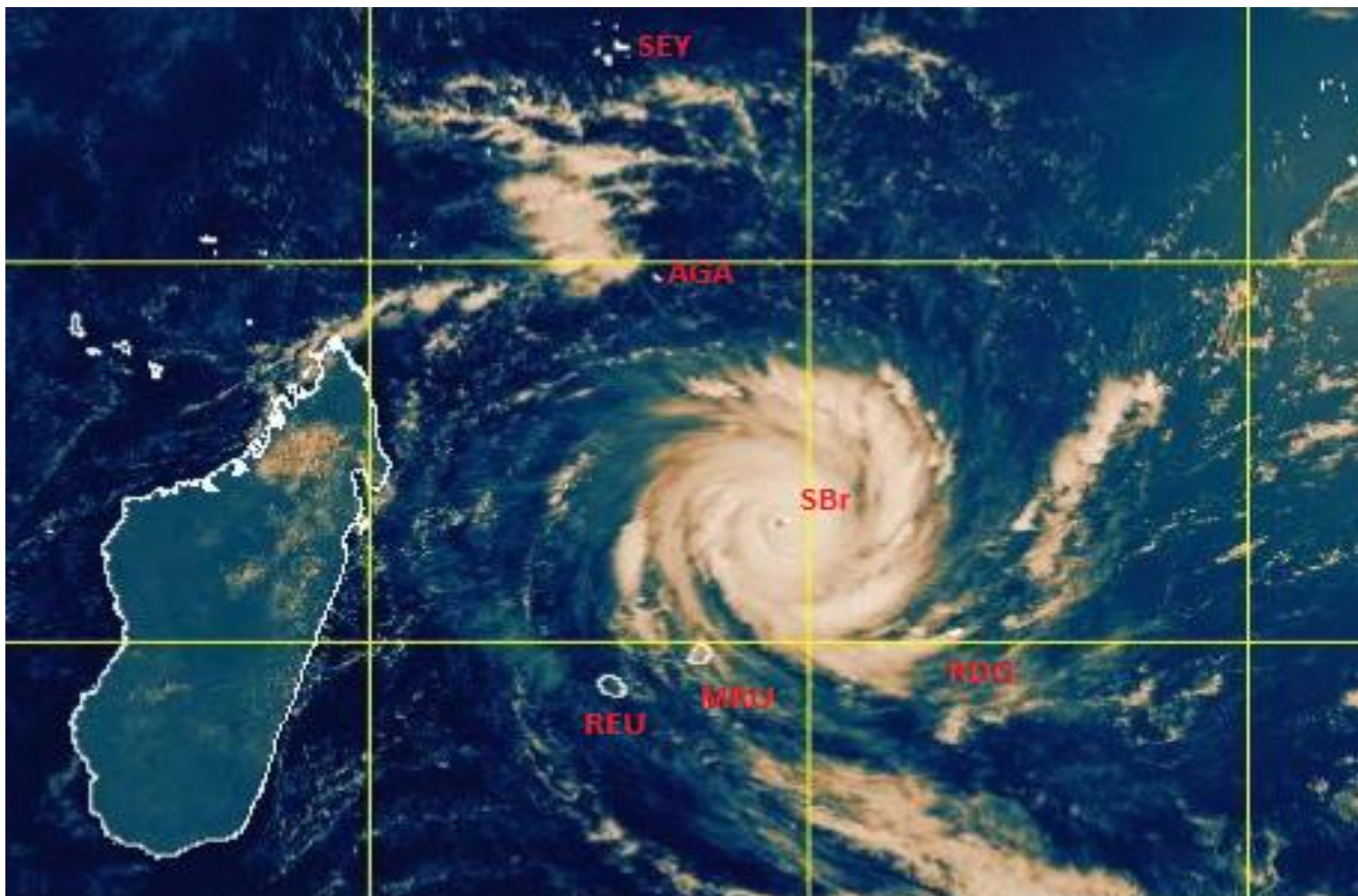
The Cyclone warning System

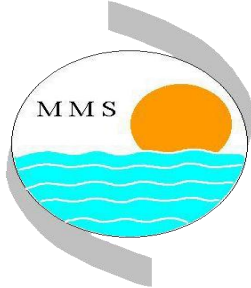
	CLASS I	is issued 36 - 48 hours before Mauritius or Rodrigues is likely to be affected by gusts reaching 120 km/h.
	CLASS II	is issued so as to allow, as far as practicable, 12 hours of daylight before the occurrence of gusts of 120 km/h.
	CLASS III	is issued to allow, as far as practicable, 6 hours of daylight before the advent of 120 km/h gusts.
	CLASS IV	is issued when gusts of 120 km/h have been recorded in some places and are expected to continue.
	TERMINATION	There is no longer any risk of gusts exceeding 120 km/h.



Mauritius Meteorological Services

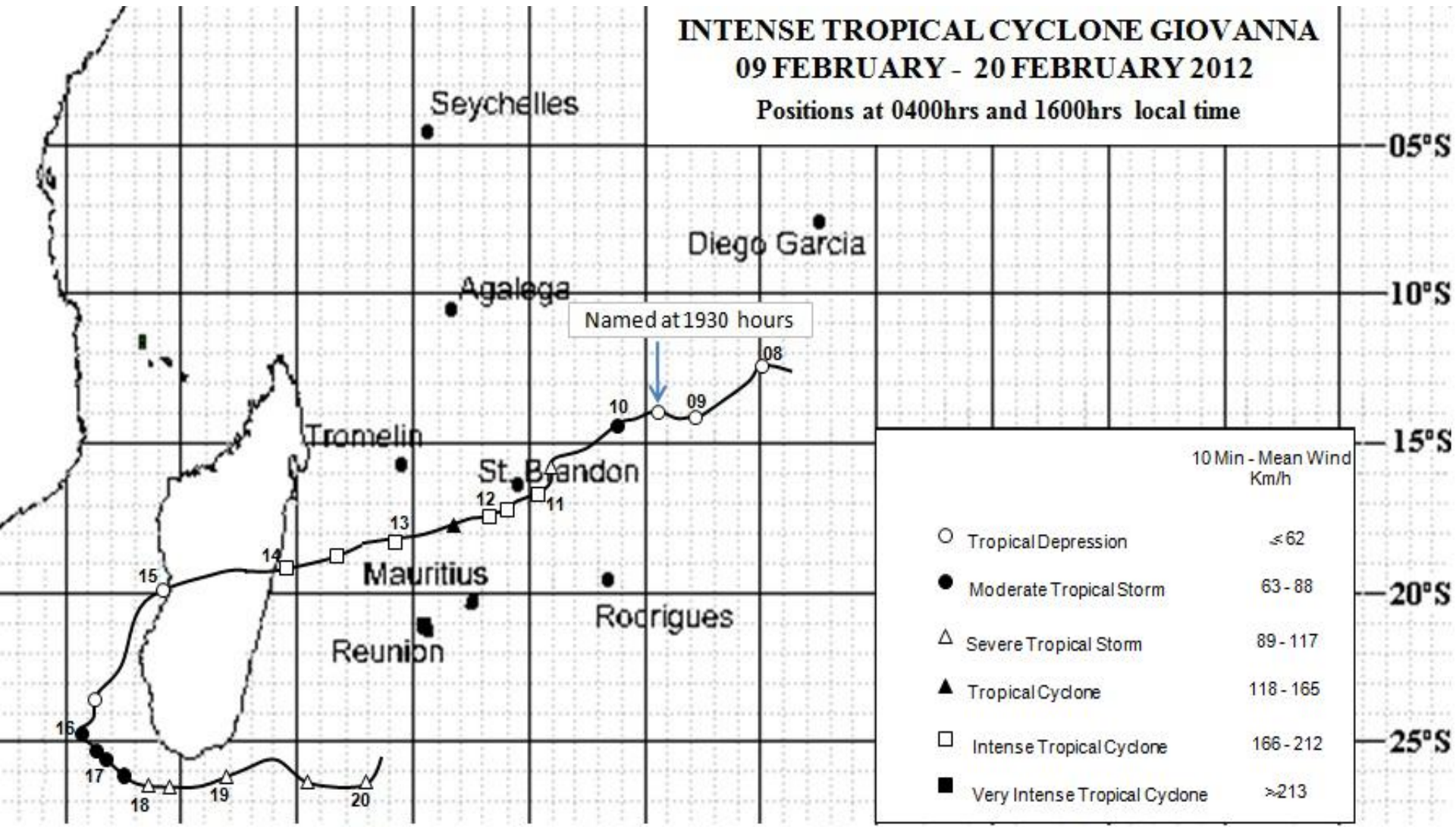
Case Study: Intense Tropical Cyclone Giovanna

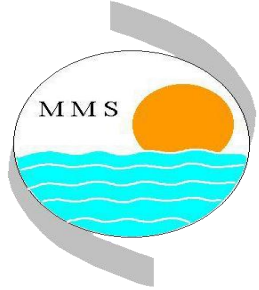




Mauritius Meteorological Services

Track and intensity of Intense Tropical Cyclone Giovanna

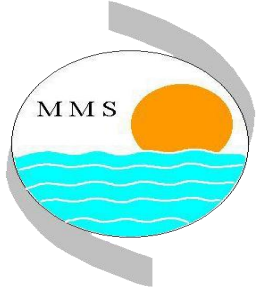




Mauritius Meteorological Services

Issuing of Warnings

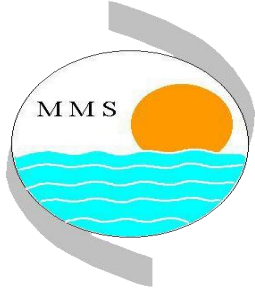
- The Warning were issued at the meteorological department. Prime Ministers Office was informed beforehand (DMC is under the PMO)
- Warnings for Mauritius were issued based on any impending southwesterly track and intensification of system.
- All warnings considered available ground and satellite observations and advisories from RSMC La Reunion. Consensus on both position and intensities were reached via telephone communication with RSMC La Reunion.
- Once the CLASS I warning was issued it was sent to different stakeholders as laid down in the our SOP and National Contingency Plan.
- Priority was given to Prime Ministers Office, Police information Room, Fire Services and Media.



Mauritius Meteorological Services

Managing The Disasters

- A National Disaster and Operations Coordination Centre (NDOCC) recently set up at the Police Headquarters to take in charge the management of disasters.
- The NDOCC is activated in the event of any natural or man made disaster.
- In some cases of national scale disaster, Police Divisional Headquarters may be converted into Local Disaster and Operations Coordination Room.



Mauritius Meteorological Services



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AVERTISSEMENT DE CYCLONE

UN AVERTISSEMENT DE CYCLONE DE CLASSE 1 EST EN VIGUEUR A MAURICE.

UN AVERTISSEMENT DE CYCLONE DE CLASSE 1 EST EN VIGUEUR A MAURICE.

PREMIER BULLETIN DE CYCLONE EMIS A 1600 HRS CE VENDREDI 10 FEVRIER 2012

LA FORTE TEMPETE TROPICALE GIOVANNA ETAIT CENTREE A 1600 HRS EN LATITUDE 15.5 DEGRES SUD ET LONGITUDE 61.5 DEGRES EST, SOIT A ENVIRON 650 KM AU NORD-EST DE MAURICE.

GIOVANNA SE DEPLACE A ENVIRON 20KM/H DANS UNE DIRECTION DE L'OUEST-SUD-OUEST.

SUR CETTE TRAJECTOIRE, GIOVANNA S'APPROCHE DE MAURICE ET DEVIENT UNE MENACE POUR L'ILE.

UN AVERTISSEMENT DE CYCLONE DE CLASSE 1 EST EN VIGUEUR A MAURICE.

LE TEMPS DEVIENDRA GRADUELLEMENT NUAGEUX CE SOIR AVEC DES ONDEES PASSAGERES PARTICULIEREMENT SUR LES HAUTS.

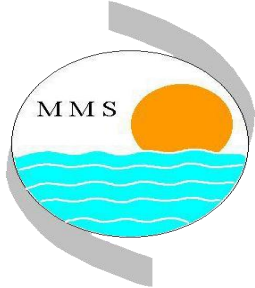
LE VENT SOUFFLERA D'EST-SUD-EST A 25 KM/H AVEC DES RAFALES DE 70 KM/H DEMAIN. LA MER DEVIENDRA FORTE.

IL EST CONSEILLE AU PUBLIC DE PRENDRE LES PRECAUTIONS PRELIMINAIRES ET DE NE PAS S'AVENTURER EN HAUTE MER.

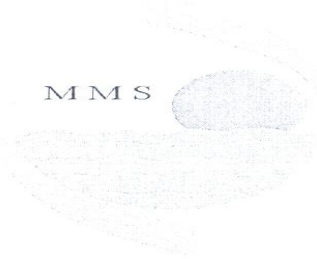
LE PROCHAIN BULLETIN SERA EMIS A 2200HRS.

UN AVERTISSEMENT DE CYCLONE DE CLASSE 1 EST EN VIGUEUR A MAURICE.

UN AVERTISSEMENT DE CYCLONE DE CLASSE 1 EST EN VIGUEUR A MAURICE.



Mauritius Meteorological Services



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CYCLONE WARNING

**A CYCLONE WARNING CLASS ONE IS IN FORCE IN MAURITIUS.
A CYCLONE WARNING CLASS ONE IS IN FORCE IN MAURITIUS.**

**FIRST CYCLONE BULLETIN ISSUED AT 1600 HRS ON FRIDAY 10
FEBRUARY 2012**

THE SEVERE TROPICAL STORM GIOVANNA WAS CENTRED AT 1600 HOURS IN LATITUDE 15.5 DEGREES SOUTH AND LONGITUDE 61.5 DEGREES EAST AT ABOUT 650 KM TO THE NORTH EAST OF MAURITIUS. IT IS MOVING IN A WEST SOUTH WESTERLY DIRECTION AT ABOUT 20 KM/H.

ON THIS TRAJECTORY SEVERE TROPICAL STORM GIOVANNA IS APPROACHING MAURITIUS AND THUS BECOMING A THREAT FOR THE ISLAND.

A CYCLONE WARNING CLASS ONE IS IN FORCE IN MAURITIUS.

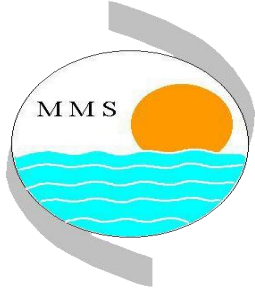
THE WEATHER WILL BECOME GRADUALLY CLOUDY TO OVERCAST WITH PASSING SHOWERS MAINLY OVER THE HIGH GROUNDS.

WIND WILL BLOW FROM AN EAST SOUTH EASTERLY DIRECTION AT A SPEED OF 25 KM/H WITH GUSTS OF THE ORDER OF 70 KM/H TOMORROW. SEA WILL BECOME GRADUALLY ROUGH. IT IS ADVISED NOT TO VENTURE IN THE OPEN SEAS.

PUBLIC IS ADVISED TO TAKE ALL PRELIMINARY PRECAUTIONS.

NEXT BULLETIN WILL BE ISSUED AROUND 2200 HOURS.

**A CYCLONE WARNING CLASS ONE IS IN FORCE IN MAURITIUS.
A CYCLONE WARNING CLASS ONE IS IN FORCE IN MAURITIUS.**



Mauritius Meteorological Services

M M S

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AVERTISSEMENT CYCLONE

**ENE WARNING CYCLONE CLASSE 1 EN VIGUER LORS MAURICE.
ENE WARNING CYCLONE CLASSE 1 EN VIGUER LORS MAURICE.**

**PREMIER BULLETIN CYCLONE KI FINE TIRE A 1600 HRS LE 10
FEVRIER 2012**

FORTE TEMPETE TROPICALE GIOVANNA TI CENTRE A 4 HRS TANTOT
AZORDI PRES ARE 15.5 DEGRES SUD ET 61.5 DEGRES EST, SOIT A
ENVIRON 650 KM DAN NORD-EST MAURICE.

GIOVANNA PE DEPLACE A ENVIRON 20 KM/H DAN ENE DIRECTION DE
L' OUEST-SUD-OUEST.

LORS SA TRAJECTOIRE LA GIOVANNA PE VINE PRES DE MAURICE ET LI
PE VINE ENE MENACE POU L' ILE.

ENE WARNING CYCLONE CLASSE 1 EN VIGUER LORS MAURICE.

LE TEMPS POU VINE GRADUELLEMENT NUAGEUX AVEC LAPLI
PASSAGERES SIRTOUT LOR BANNE TERRAINS ELEVES.

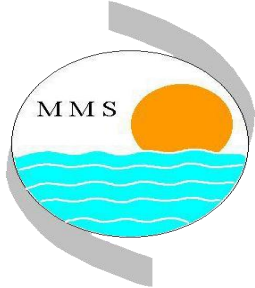
DIVENT POU SOUFFLER DE L' EST-SUD-EST 25 KM/H AVE RAFALES DE
70 KM/H DEMAIN.

LA MER POU VINE MAUVAIS. BANNE SORTIES EN HAUTE MER
DECONSEILLEES.

PUBLIK BISIN PREND BANNE PRECAUTIONS PRELIMINAIRES.

PROCHAIN BULLETIN POU TIRE VERS 10 HRS ASOIR.-

**ENE WARNING CYCLONE CLASSE 1 EN VIGUER LORS MAURICE.
ENE WARNING CYCLONE CLASSE 1 EN VIGUER LORS MAURICE.**



Mauritius Meteorological Services



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CYCLONE WARNING

**A CYCLONE WARNING CLASS II IS IN FORCE IN MAURITIUS.
A CYCLONE WARNING CLASS II IS IN FORCE IN MAURITIUS.**

**FOURTH CYCLONE BULLETIN ISSUED AT 0900 HRS ON SATURDAY 11
FEBRUARY 2012.**

INTENSE TROPICAL CYCLONE GIOVANNA WAS CENTRED AT 0900 HRS
IN LATITUDE 16.9 DEGREES SOUTH AND LONGITUDE 59.6 DEGREES
EAST, AT ABOUT 400 KM TO THE NORTH-NORTH-EAST OF MAURITIUS.

IT IS MOVING IN A GENERAL WEST-SOUTH-WESTERLY DIRECTION AT
ABOUT 16 KM/H. ON THE PRESENT TRAJECTORY GIOVANNA CONTINUES
TO APPROACH MAURITIUS. IN VIEW OF ITS POSITION, INTENSITY AND
POSSIBILITY OF RECURVATURE TOWARDS THE SOUTH, THE RISK THAT
IT WILL PASS CLOSER TO MAURITIUS HAS INCREASED.

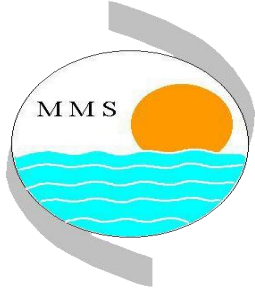
**A CYCLONE WARNING CLASS II IS THEREFORE IN FORCE IN
MAURITIUS.**

THE PUBLIC IS ADVISED TO TAKE ALL PRECAUTIONS.

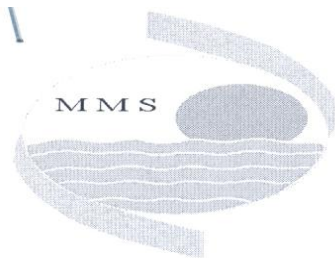
WEATHER WILL BE CLOUDY TO OVERCAST WITH PASSING SHOWERS
BECOMING MORE FREQUENT AND HEAVY IN THE AFTERNOON WITH
THUNDERSTORMS.

WIND WILL BLOW FROM THE EAST-SOUTH-EAST AT A MEAN SPEED OF
40 KM/H STRENGTHENING GRADUALLY AND WITH GUSTS OF 100 KM/H
IN THE AFTERNOON.

SEA WILL BECOME HEAVY WITH SWELLS. THE PUBLIC IS ADVISED NOT
TO VENTURE AT SEA AND ON BEACHES.



Mauritius Meteorological Services



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CYCLONE WARNING

**A CYCLONE WARNING CLASS III IS IN FORCE IN MAURITIUS.
A CYCLONE WARNING CLASS III IS IN FORCE IN MAURITIUS.**

**FIFTH CYCLONE BULLETIN ISSUED AT 1510 HRS ON SATURDAY 11
FEBRUARY 2012.**

INTENSE TROPICAL CYCLONE GIOVANNA WAS CENTRED AT 1500 HRS
IN LATITUDE 17.2 DEGREES SOUTH AND LONGITUDE 59.0 DEGREES
EAST, AT ABOUT 350 KM TO THE NORTH-NORTH-EAST OF MAURITIUS.

IT IS MOVING IN A GENERAL WEST-SOUTH-WESTERLY DIRECTION AT
ABOUT 12 KM/H. ON THE PRESENT TRAJECTORY GIOVANNA CONTINUES
TO APPROACH MAURITIUS.

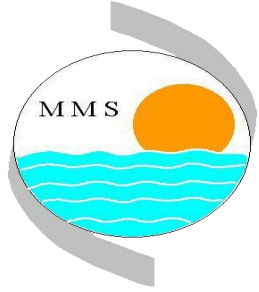
IN VIEW OF ITS POSITION, INTENSITY AND
POSSIBILITY OF RECURVATURE TOWARDS THE SOUTH, THE RISK THAT
IT WILL PASS CLOSER TO MAURITIUS AND CAUSE CYCLONIC
CONDITIONS HAS INCREASED CONSIDERABLY.

**A CYCLONE WARNING CLASS III IS THEREFORE IN FORCE IN
MAURITIUS.**

THE PUBLIC IS ADVISED TO COMPLETE ALL PRECAUTIONS AND STAY
INDOORS.

WEATHER OVERCAST WITH INTERMITTENT SHOWERS, HEAVY AT
TIMES WITH THUNDERSTORMS.

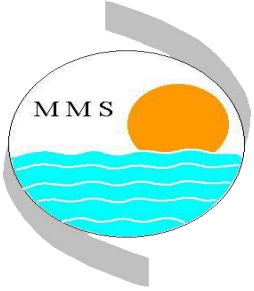
WIND WILL BLOW FROM THE EAST-SOUTH-EAST AT A MEAN SPEED OF
40 KM/H STRENGTHENING GRADUALLY WITH GUSTS OF 100 KM/H
TONIGHT



Mauritius Meteorological Services

Number and Duration of Warnings

Class	From (L.T)	To (L.T)	Duration of warnings
I	10/1600	11/0900	17 hours
II	11/0900	11/1510	6 hours 10 mins
III	11/1510	12/1330	22 hours 20 mins

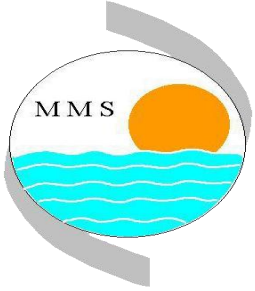


Mauritius Meteorological Services

Coordination between MMS and NDOCC

- NDOCC was responsible to monitor and take necessary action on the field.
- There were constant communications between meteorological office and NDOCC for updates and regions where sudden deterioration or more severe weather were expected . There were special mobilisation in such region.
- Frequent communication with the Fire Services who remained on laert for any imminent flood.
- The Police arranged for key points which were linked by wireless in case of telephone communication breakdown:
 - PMO- President office
 - NDOCC- MMS
 - Hospitals- MBC/TV
 - Harbour-Airport
 - All police Divisional Headquarters

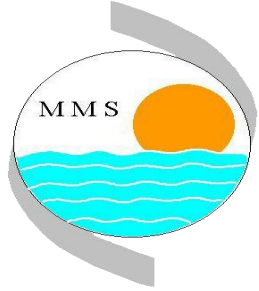




Mauritius Meteorological Services

Coordination between MMS and Other Institutions

- **Frequent communication with the Fire Services who remained on alert for any imminent flood.**
- **Point of contacts were designated by the PMO in different Ministries particularly that of Education and Social Security, the Central Electricity Board and the Water Authorities and those were requested to remain contact with the MMS.**
- **NGOs such as Red Cross and Scouts also kept themselves updated.**



Mauritius Meteorological Services

Dissemination of Warnings

- Internet: Website and email
- Fax
- Radio and TV
- Mobile-SMS
- Newspaper
- Personal Intervention by Meteorologist on radio and TV

Written Media Coverage

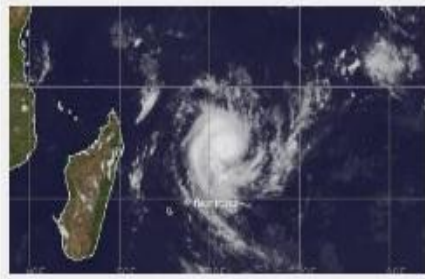
Home

CYCLONE TROPICAL: Maurice sous la menace de Giovanna



Une alerte de classe 1 en vigueur depuis hier

ARTICLE PARU DANS LE MAURICIEN | 11 FÉVRIER 2012 - 08:00



Maurice est depuis hier sous la menace du cyclone tropical Giovanna, qui s'approche dangereusement de l'île à une vitesse de 18 km/heure. Une alerte de classe 1 est en vigueur depuis hier. Les services météorologiques prévoient hier soir un possible passage en classe 2

ce matin. « On s'attend à beaucoup de pluies durant le week-end. Des rafales atteignant 70 km/heure pourraient être ressenties samedi après-midi et pourraient s'intensifier durant la nuit », explique un prévisionniste.

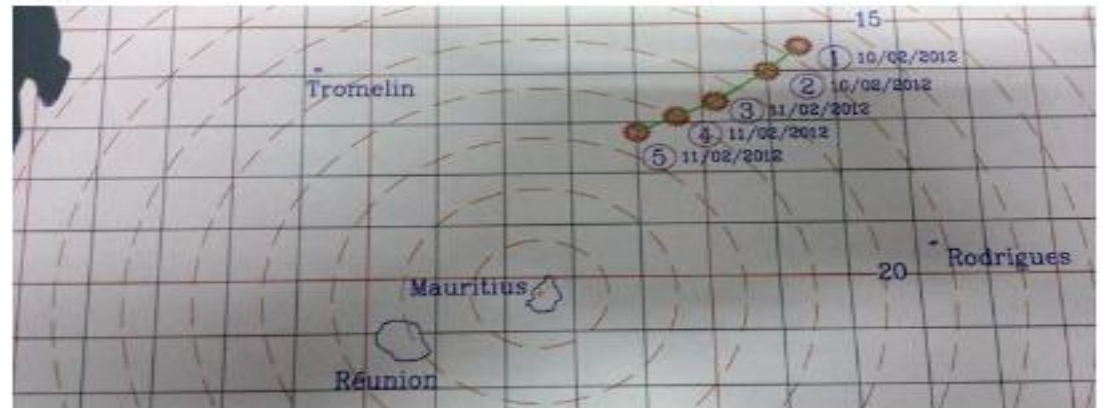
Selon le bulletin météorologique émis à 22h10 hier soir, la forte tempête tropicale Giovanna s'est intensifiée en un cyclone tropical. Ce dernier était centré à 22 heures en latitude 16° Sud et 61° de longitude est, soit à environ 560 km au nord-est de Maurice. Le système se déplace dans une direction générale de l'ouest-sud-ouest à environ 18 km/h. Sur cette trajectoire, le cyclone s'approche davantage de Maurice et représente une menace directe pour le pays.

Pour sa part, Météo France prévoyait hier soir que le cyclone passerait à son point le plus rapproché au nord de Maurice ce soir pour s'éloigner ensuite en direction de l'ouest vers Madagascar. L'émission d'un avertissement de classe 3 durant la nuit n'est pas à écarter.

Des vents de l'ordre de 118 à 165 km/h sont observés autour du centre du cyclone. Les services météorologiques conseillent donc au public de prendre toutes les précautions nécessaires.

Cyclone Giovanna : réunion d'urgence du National Disaster Coordination Committee

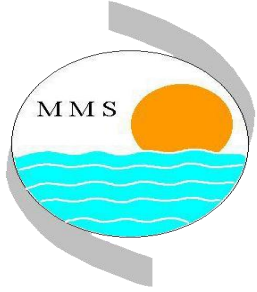
Bertrand Hérisson
02/11/12



Modifier la taille du texte: A | A



Le National Disaster Coordination Committee (NDCC) s'est réuni, en fin d'après-midi, ce samedi 11 février, aux Casernes centrales, Port-Louis, pour s'assurer que toutes les autorités concernées ont pris les dispositions qui s'imposent. A 18 heures, la station météorologique de Vacoas a annoncé que l'alerte 3 est maintenue.



Mauritius Meteorological Services

Warnings for St Brandon

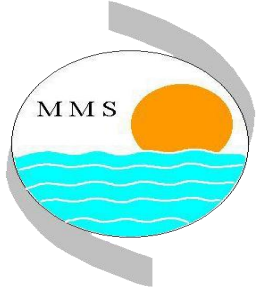
- Warning is usually shorter.
- Warning was transmitted via radio (VHF) to personnel over the island . Resident fisherman take necessary action particularly avoid venturing in seas and securing boats.
- Hourly contact between the Meteorologist and the meteorological technician over the island.
- Coast Guard was in constant contact with their personnel over the island for updates received from the MMS.

Mauritius Meteorological Services

ITC Giovanna Impact over St Brandon

Closest Distance	50 Km to the East (11 February)
Highest mean wind	130 km/h
Highest Gust	157 Km/h (approx.)
Lowest Pressure	975.9 hPa
Highest Rainfall	204 mm (18 hours)

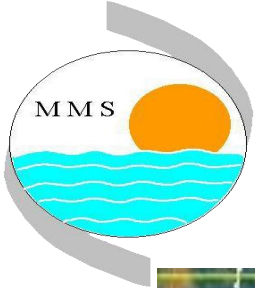
Only an approximate highest gust was available since anemometer was damaged.



Mauritius Meteorological Services

Conclusions

- Ideal situation to test the synergies between the MMS and other main stakeholders of the DMC.
- Ideal situation to have the public perception on our warning system.



Mauritius Meteorological Services

