54th Plenary Assembly of the SADC Parliamentary Forum

THEME

The Role of Parliaments in Promoting Coordination for Enhanced Disaster Risk Reduction and Recovery Planning in the SADC Region

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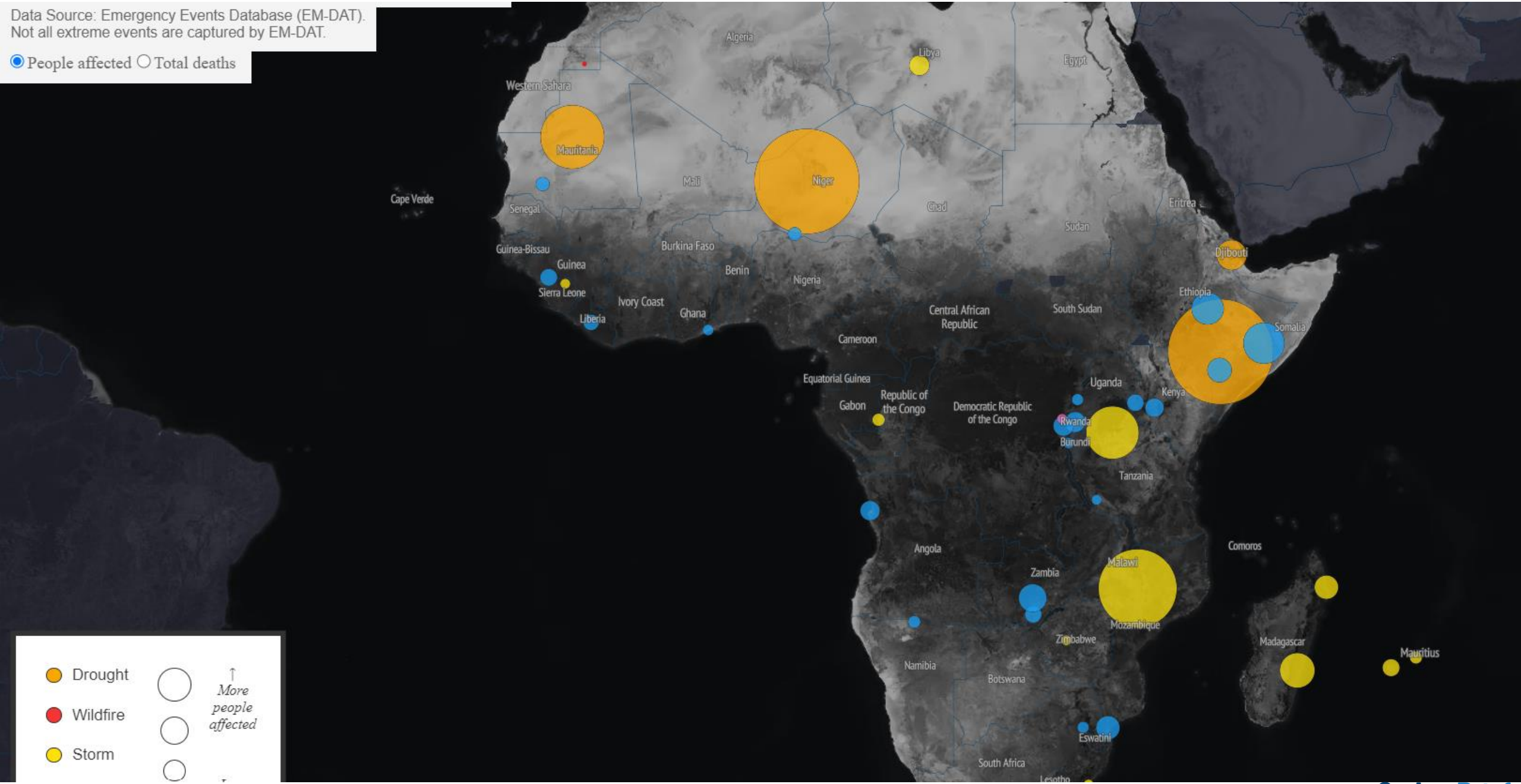
Mauritius, 22 to 26 November 2023

Outline

- Disasters caused by hazards
- Initiative
- Mauritius context
- Challenges and Best practices

Analysis: 34 Million affected and 15,700 lost live due to extreme weather events (Jan to Oct 2023)



Source CarbonBrief
CLEAR ON CLIMATE

Mauritius Case -brief

- Warming temperatures +1.14 since 1950
- Decreasing rainfall about 42mm/decade
- Accelerated sea level rise 3-4 mm/year

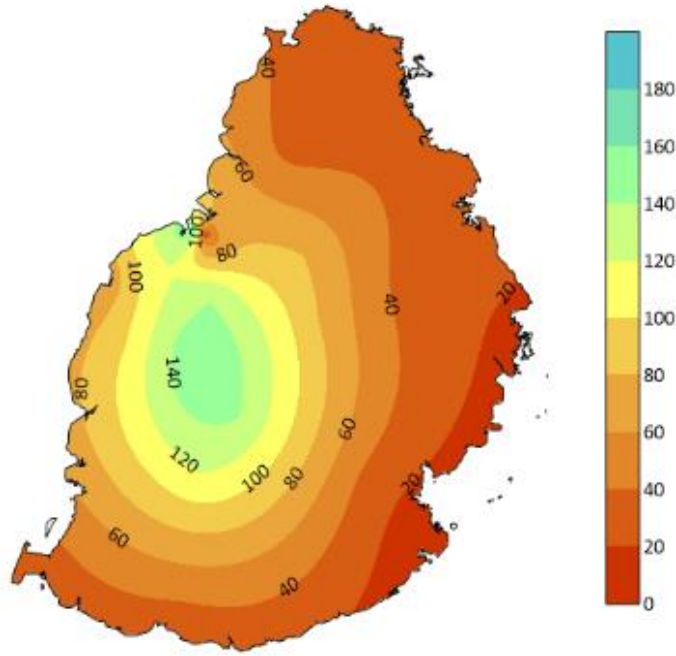
→ changes in the temperature and rainfall patterns

- Frequent extremes:
  - 6 out 8 storms that formed over the SouthWest Indian Ocean were of intensity higher that tropical cyclone
  - on 7th November 2023, Mauritius recorded more than 350 mm of rainfall over 24 hours at a single station in the southern → localised flash flood and called for urgent response

Impact of Batsirai

- Rodrigues: 350km north northeast on 29 January without much damage.
- St Brandon: 110km southeast of St Brandon on 01 February and caused damage to the infrastructure with highest gust 106km/h and storm surge estimated to about 4 metres. The inhabitants were evacuated to safety (highest building) over the island itself.
- Mauritius: experienced cyclonic conditions as Batsirai passed 130km north north-west on 02 February

Station	Highest Gust Recorded from 01 to 04 February 2
Bell Village	108
Montagne Signaux	156
P Louis (C de Mars)	151
D. Les Pailles	155
Albion	101
Riviere Noire	108
Beaux Songes	108
Le Morne	115
Riche Terre	100
Pamplemousses	61
M. Loisir Rouillard	86
Q. Victoria	79
Belle Mare	72
Plaisance	85
St Felix	97
N. Decouverte	108
Q.Bornes	96
Vacoas	102
Grand Bassin	108



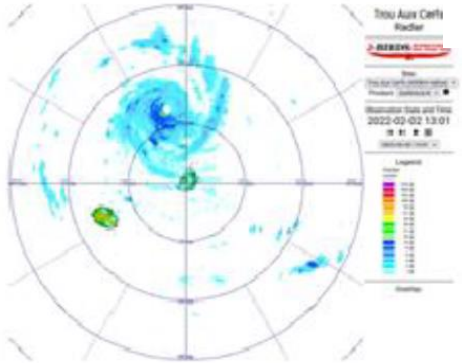
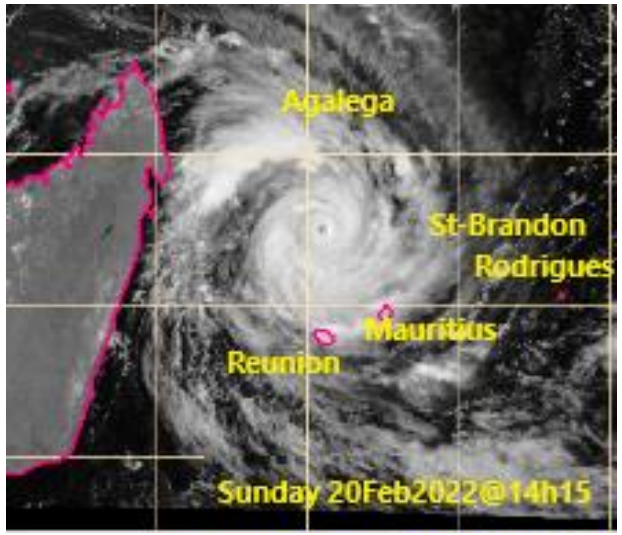


Fig 5e: Position of ITC Batsirai at 1301hours

Impact of Emnati

- Rodrigues: Cyclone warning was issued on 17 Feb.
- Agalega: on 18 Feb, Emnati was around 680km to the southeast of the island & MMS issued high wave warnings based on the storm surge model that was expecting waves of 4 to 5 metres (storm tide).
- St Brandon: at around 07h00 on 19 February, Emnati passed its closest distance with gusts of 129km/h.
- Mauritius: by 21h00 on 19 Feb ,Mauritius started to record cyclonic conditions

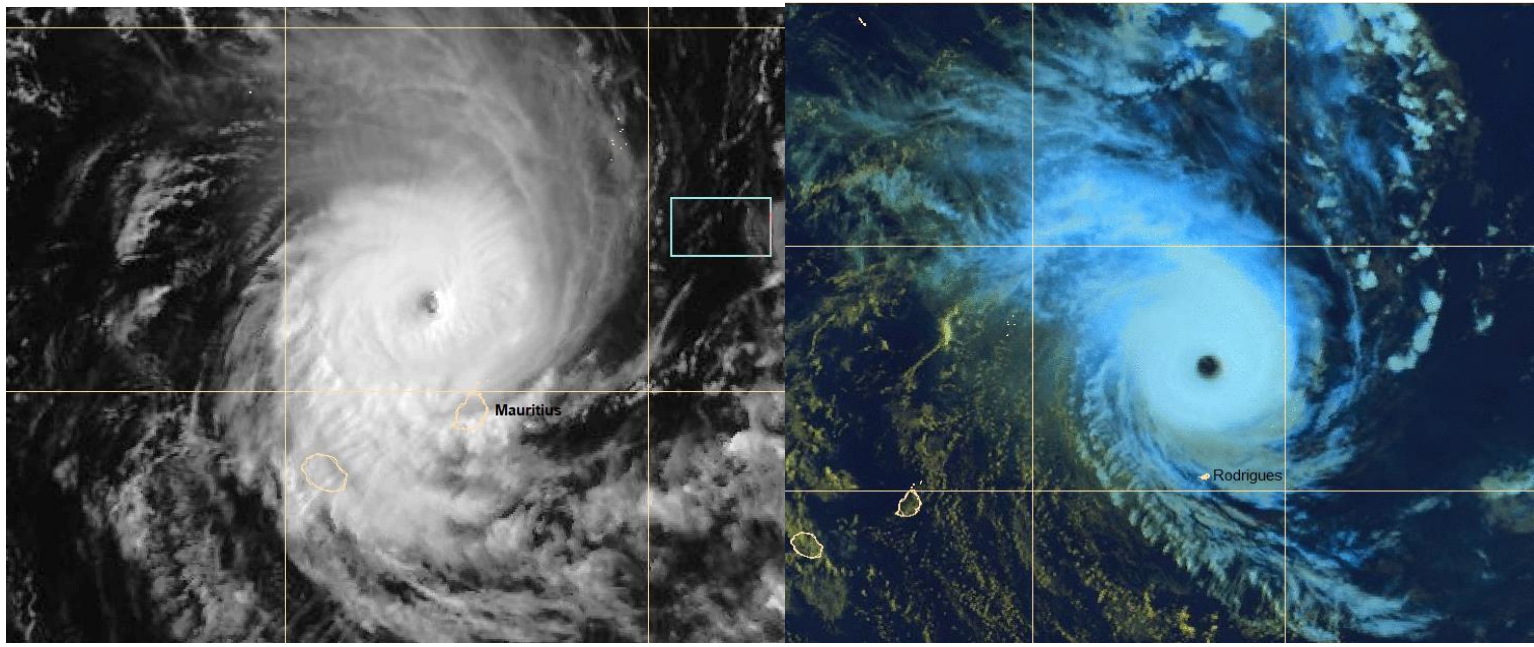


Station	Gusts Km/h	Station	Gusts Km/h
Champ de Mars	133	Vacoas	93
Nouvelle Découverte	122	Bel Village	89
Le Morne	119	Quatre Bornes	89
Beau Songes	97	Riche Terre	85

		17	18	19	20	21
WEST	Medine	0.0	5.5	55.5	5.5	0.0
	Pierrefonds	0.0	7.9	97.4		0.0
	Tamarin Estate	0.0	18.4	88.2		0.0
	La Chaumiere(1)	0.0	11.2	84.2		0.0
NORTH	St. Antoine	2.5	2.2	39.0	32.0	0.0
	Mon Loisir	10.1	10.0	50.0	7.0	0.0
	Labourdonnais	7.1	7.6	45.2	17.8	0.0
	Pamp AWS	3.2	11.3	42.5	6.1	0.0
	Valton	3.0	5.0	66.0		0.0
SOUTH	Plaisance	6.6	9.6	33.6	tr	0.6
	Britannia	4.8	9.2	45.2	1.2	0.6
	Union Park(siri)	6.0	23.0	61.4	12.4	8.0
	Bel Ombre	12.0	5.0	62.0		0.3
	Bois Cheri	11.5	19.1	81.3	12.9	3.1
EAST	FUEL	8.3	10.2	63.3	3.8	0.5
	Sans Souci	8.5	27.2	79.0	0.1	0.3
	Beau Champs Litt.	3.4	7.0	37.4	3.6	0.0
	Bel Etang	9.0	20.0	58.5	5.0	0.1
CENTRE	Vacoas	4.7	48.1	116.9	3.8	1.8
	Arnaud	16.4	53.6	142.0		5.6
	Mon Bois AWS	15.0	43.0	105.6	1.4	6.8
	Grande Providence	7.0	26.3	67.5	1.0	1.5
	Quatre Bornes	1.3	32.5	135.3	3.7	1.6

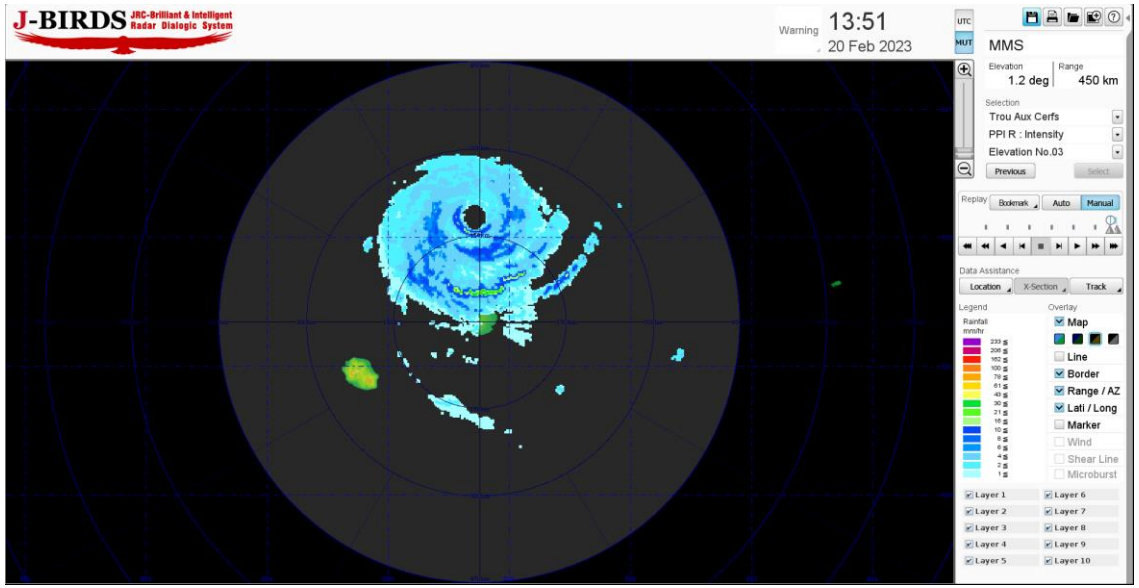
Impact of Freddy (1)

- Rodrigues: Cyclone warnings up to Class III were issued on 20/04h30. Safety Bulletin until 10h10. recorded neither heavy rain nor cyclonic conditions
- Mauritius. VITC approached Mauritius dangerously – isolated places experienced cyclonic conditions. Class III was maintained until 21/04h10. Safety Bulletin until 21/06h15.
- heavy swells caused coastal inundations in the northern and eastern part of the island – storm tides.



Impacts	Amount
Death	Zero
Injured	22 carried to Hospitals
Displaced	1111 persons moved to refuge centers
Economic Losses	Not Available
Other Damages	Electric poles

VITC FREDDY


J-BIRDS JRC-Brilliant & Intelligent Radar Dialogic System
Warning 13:51
20 Feb 2023
MMS
Elevation 1.2 deg
Range 450 km
Trou Aux Cerfs
PPI R : Intensity
Elevation No.03
Previous
Replay
Bookmark
Auto
Manual
Data Assistance
Location
X-Section
Track
Legend
Overlay
Map
Line
Border
Range / AZ
Lati / Long
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Wind
Shear Line
Microburst
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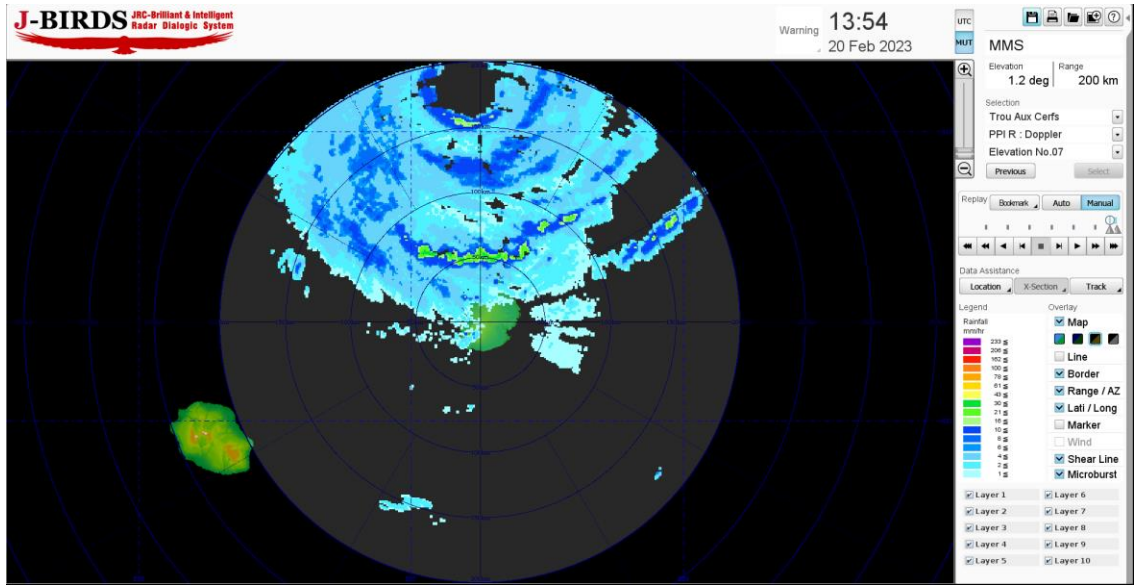
J-BIRDS JRC-Brilliant & Intelligent Radar Dialogic System
Warning 13:54
20 Feb 2023
MMS
Elevation 1.2 deg
Range 200 km
Trou Aux Cerfs
PPI R : Doppler
Elevation No.07
Previous
Replay
Bookmark
Auto
Manual
Data Assistance
Location
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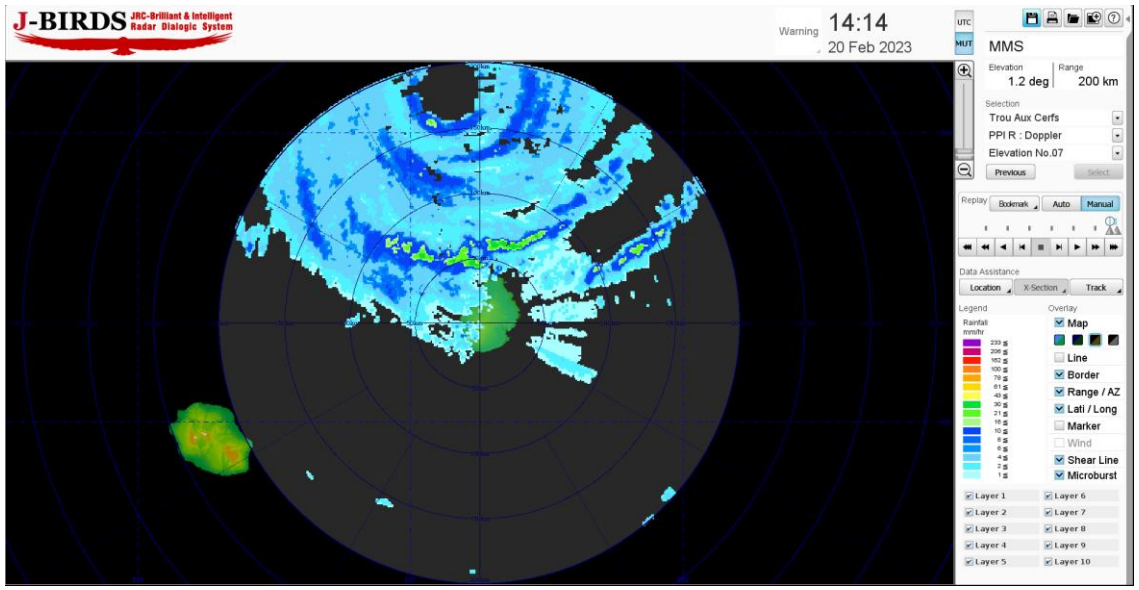
J-BIRDS JRC-Brilliant & Intelligent Radar Dialogic System
Warning 14:14
20 Feb 2023
MMS
Elevation 1.2 deg
Range 200 km
Trou Aux Cerfs
PPI R : Doppler
Elevation No.07
Previous
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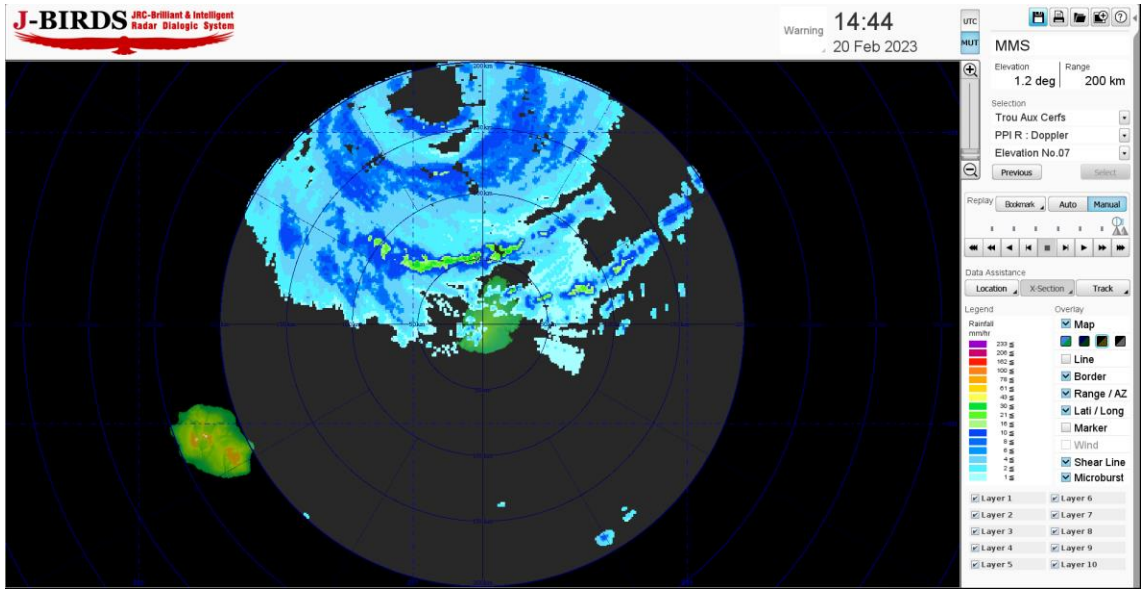
J-BIRDS JRC-Brilliant & Intelligent Radar Dialogic System
Warning 14:44
20 Feb 2023
MMS
Elevation 1.2 deg
Range 200 km
Trou Aux Cerfs
PPI R : Doppler
Elevation No.07
Previous
Replay
Bookmark
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Data Assistance
Location
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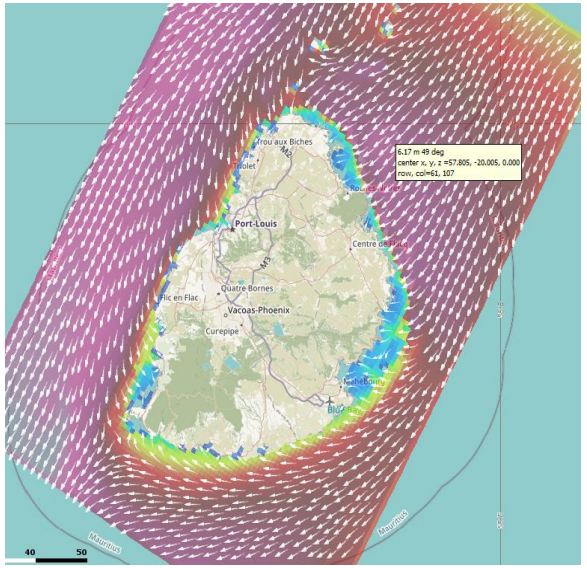
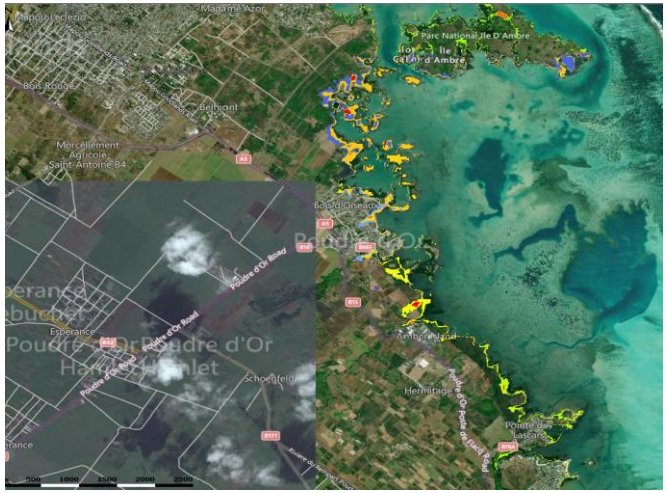
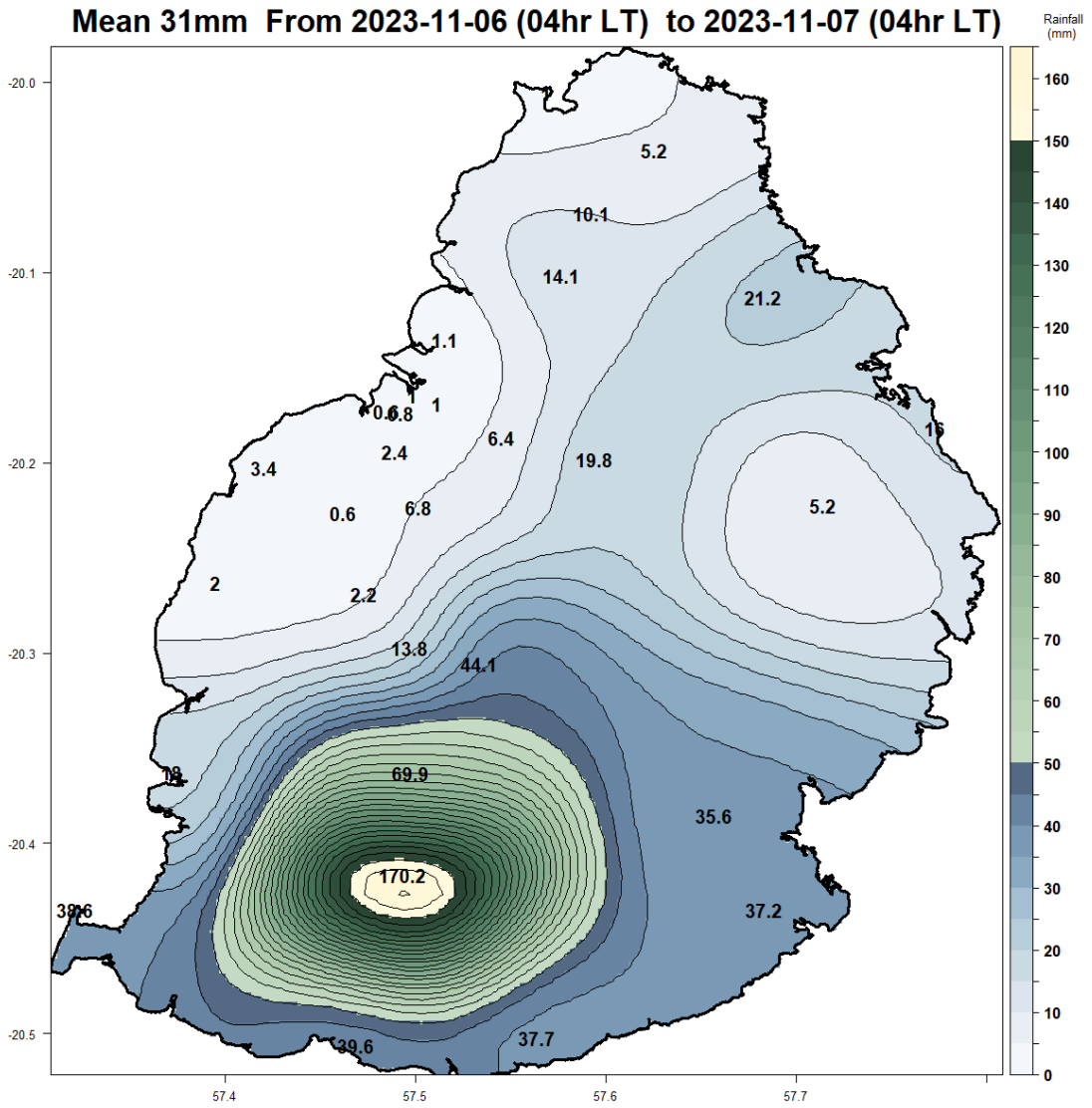
Impact of Freddy (2)

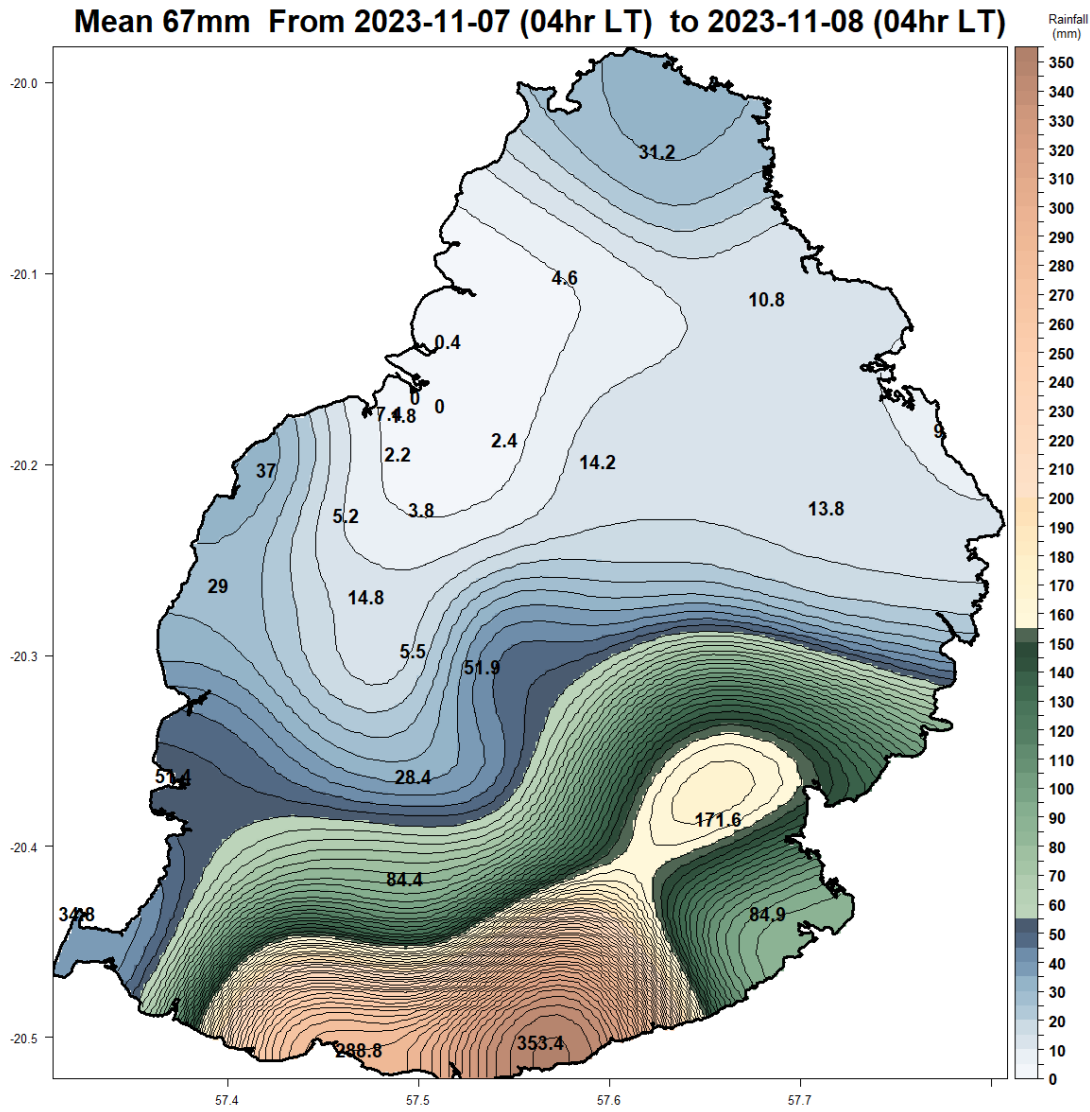




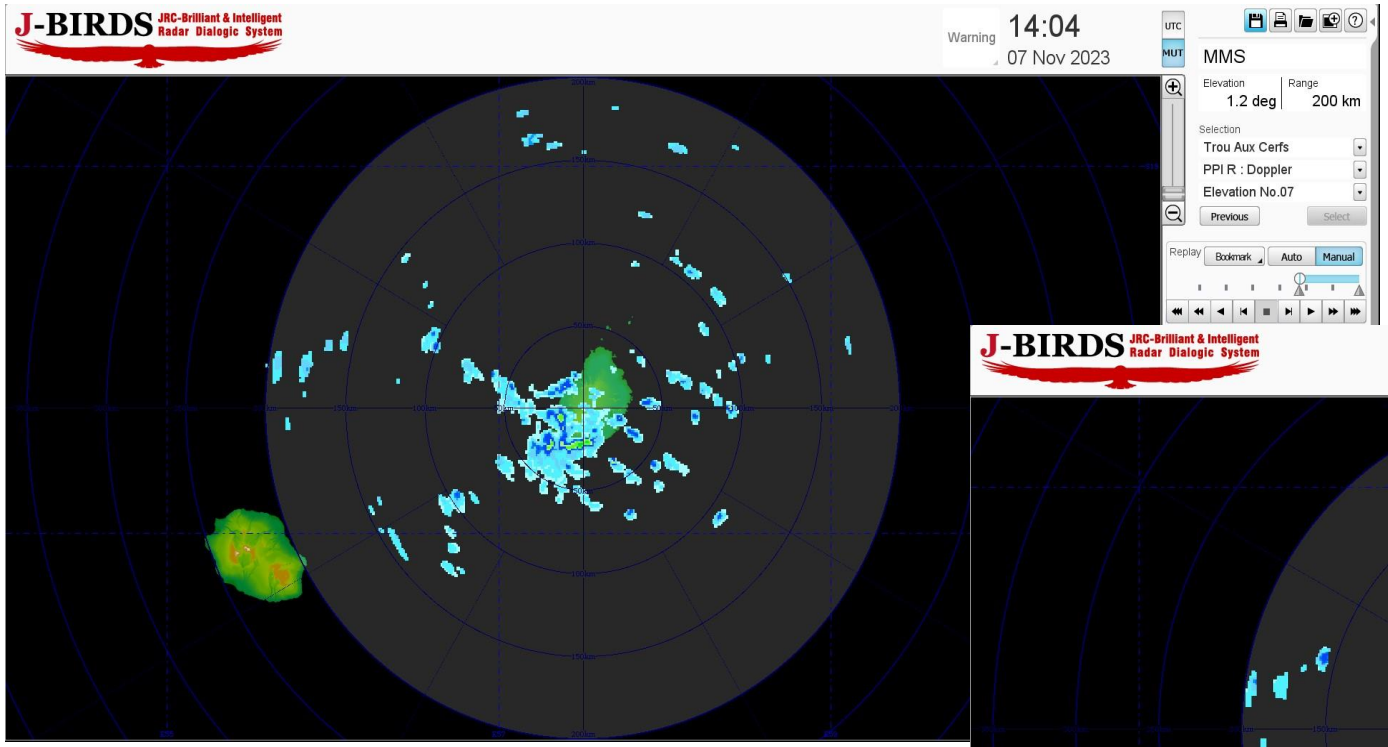
WMO IMO-WMO 150 1873 2023

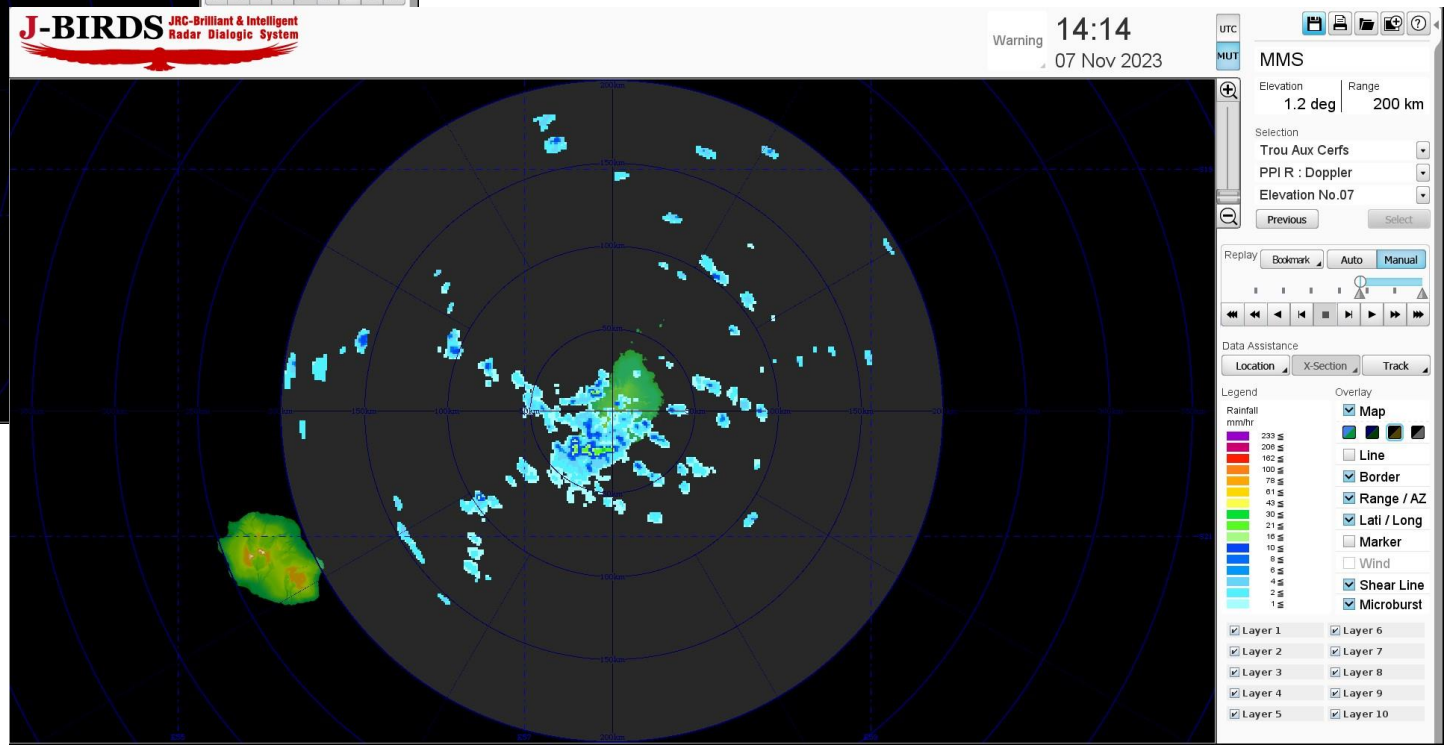
Extreme rainfall event 7-8 November 2023





Event 07 NOV 2023





Weather and Climate extremes: New Norms

- No surprise: extremes continue from mountain tops to ocean depth
- Main driver: Global warming – due to human induced GHG emissions → climate change (high confidence -IPCC);
  - WMO State of Climate Report global temperature in 2022 : 1.15^{o}C above the 1850-1900 average
  - Unprecedented Increased frequency and intensity of many extremes – cyclone/heavy rainfall
  - Warmer temperatures: Heat waves that fuel unprecedented wildfire & disrupt marine ecosystem
  - Changing rainfall pattern: Droughts in new areas; Floods transform deserts
  - Increasing sea level
- New tipping points being observed earlier

→ World Economic Forum: failure to mitigate climate change, failure of climate change adaptation and natural disasters represent the highest risks for the global economy in the next 10 years

→ "*Early Warning are low-hanging fruits of climate change adaptation*": $1invested in surface-based observations &Early Warning System realise at least $25 in socioeconomic returns

Major Initiatives on Meteorology Sector

- **Global:**
  - Early Warning for All (EW4All) – WMO/UNDRR/ IFRC/ITU
  - Systematic Observation Financing Facility (SOFF)

- **Continental /Regional**
  - Climate Risk and Early Warning System (CREWS - WMO)
  - Climate Services and Related Applications (ClimSA – SADC & AUC)
  - HYDROMET (Indian Ocean Commission)

- **National**
  - S-Band Weather Radar (since 2019) – Cofinanced GoM and GoJ – Tech co-operation meteorological observation networks, weather forecasting and warning capabilities
  - New Warning Regulations under the MMS Act 2019 – Improved Early Warning System
  - Automatic Weather Stations – Near real-time observations & in line with Minamata Convention on Mercury

Mauritius Meteorological Services Best Practices

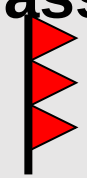
- Aim is in Improving its resilience
- Timely information and better services delivery
- enhances its meteorological observation networks, weather forecasting and warning capabilities with the objective that Meteorological

- Constant capacity building of staff
- Frequent review of EWS – based on impact on ground
- Timely dissemination of warnings to stakeholders and media
- Work very closely with the Disaster Management Centre and the Crisis Committee (headed by the Ministers) + Land Drainage Authority (Flood Prone Area)
- 3 daily FC updated with local mobile service providers

- Way forward
  - Enhancing meteorological observations network, Warning and forecasting Capabilities
  - Upgrading Infrastructure
  - Modelling capabilities – upgrade storm surge model + invest in Limited Area Modelling

Early Warning System (1)

Cyclone Warning System (since 1960s)

Class I 	**Issued 36 to 48hrs before Mauritius or Rodrigues is likely to be affected by gusts reaching 120 km/h**
Class II 	**Issued so as to allow, as far as practicable, 12hrs of daylight before the occurrence of gusts of 120 km/h**
Class III 	**Issued so as to allow, as far as practicable, 6hrs of daylight before the occurrence of gusts of 120 km/h**
Class IV 	**Issued when gusts of 120 km/h have been recorded and are expected to continue to occur**
Termination 	**Issued when there is no longer any appreciable danger of gusts exceeding 120 km/h**

Improved Cyclone Warning System (Warning Regulation Jan 2023 under MMS Act 2019)

Class I	**Issued 36 to 48hrs before Mauritius or Rodrigues is likely to be affected by gusts reaching 120 km/h**
Class II	**Issued so as to allow, as far as practicable, 12hrs of daylight before the occurrence of gusts of 120 km/h**
Class III	**Issued so as to allow, as far as practicable, 6hrs of daylight before the occurrence of gusts of 120 km/h**
Class IV	**Issued when gusts of 120 km/h have been recorded and are expecte**
Termination	**Issued when there is no lo danger of gusts exceedin**

Includes **safety bulletin (*Avis de Sécurité*)** for the purpose of

a. lifting of the cyclone warning class III or cyclone warning class IV, as the case may be; and
b. informing public of the existence of any severe weather conditions associated with the cyclone or other environmental risk, depending on the nature and extent of damage occurred during the passage of the cyclone;

Following the issue of a cyclone warning class I, a cyclone warning class II or a Safety Bulletin, as the case may be, issue a termination bulletin after consultation with, and following advice from, the National Crisis Committee to the effect that outdoor risks have considerably decreased

Improved Early Warning System (2)

B. In the event of **heavy rain** (*rainfall resulting in a minimum of 25mm in 30 minutes*), issue a

(i) heavy rain watch (*a communique issued not less than 12 hrs, nor more than 24 hrs, before heavy rain*) – *veille de forte pluie*;

(ii) heavy rain warning, as far as practicable, not lass than 30 minutes, nor more than 6 hrs, before the occurrence of heavy rain – *avis de forte pluie*;

(iii) torrential rain warning, following observations indicating accumulated rainfall has reached 100 in a given region or is likely to reach 100mm in a given region in the ensuing hour, and the rain is expected to continue – *avis de pluie torrentielle.*

C. In the event of a **heavy swell**, issue a heavy swell warning, as far as practicable, about 12 hrs in advance before swell waves of 4.0 m or above are likely to affect the sea state in the vicinity of the Island of Mauritius, Rodrigues, Agalega or St Brandon.

D. In the event of a **storm surge**, issue a storm surge warning, which may be included in a cyclone warning when a TD, MTS, STS, TC, ITC or VITC are evolving close to the Island of Mauritius, Rodrigues, Agalega or St Brandon.

E: In the event of a **strong wind**, issue a strong wind warning, as far as practicable, about 12 hrs in advance before wind speed of not less than 40 km/h with gusts of 90 km/h, is likely to affect the Island of Mauritius, Rodrigues, Agalega or St Brandon.

Thank you
for your kind attention

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