



**Maldives Meteorological Service**

## **Information dissemination and EWS**

**National Climate Outlook Forum (NCOF) Maldives  
April 26-27, 2015, Maldives**

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## Maldives Seismic Network

MMS's seismic network is linked to global seismic network to monitor earthquakes across the region.

We have 2 broadband and 1 short period seismic sensor installed in Maldives and others installed in the region.



-  Broadband seismometer
-  Short period seismometer

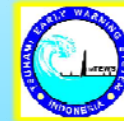
## Earthquake Monitoring – (RTWP)

Regional Tsunami Watch Providers (RTWP) for the Indian Ocean Region are;

- Regional Integrated Multi-Hazard Early Warning System (RIMES)



- Indonesian Tsunami Early Warning System (InaTEWS)



- Indian Tsunami Early Warning Center (ITEWC)



- Joint Australian Tsunami Warning Center (JATWC)



Maldives Meteorological Service is a National Tsunami Warning Center (NTWC)

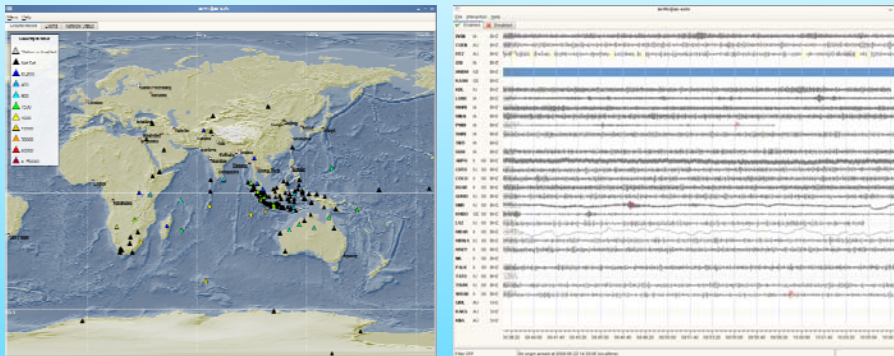
MMS issues warnings to the public solely based on the earthquake and tsunami information provided by RTWP's.

RTWP's will issue notification messages to NTWC's whenever a bulletin is issued.

MMS receives notification messages via the WMO Global Telecommunication System (GTS), e-mail, fax and SMS.

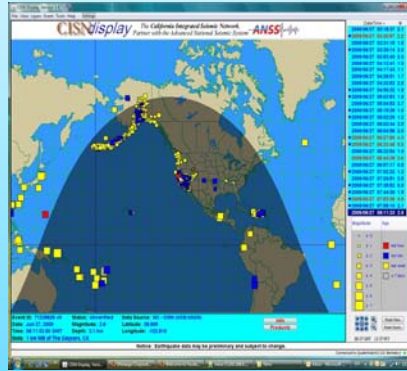
The full text of all Bulletins, plus some maps and graphical products are available for NTWC's on password-protected websites of RTWP's.

## Earth Quake monitoring – SeisComp3



The Seiscomp3 software is used to locate and calculate the epicenter, magnitude and other parameters.

## Earthquake monitoring - CISN



We also observe the California Integrated Seismic Network [CISN], to monitors earthquakes across the world

Meteorological Network is established with Regional Telecommunication Hub (RTH) New Delhi and RTH Melbourne to exchange meteorological data and tsunami information.

Different numerical weather prediction models are used to predict extreme weather events well in advance.

MMS has established redundant links for communicating with local, regional and international centers by using 256kbps VSAT, 10mbps Internet connection and satellite phones.



The screenshot displays a complex meteorological software interface with multiple panels:

- Warnings:** Includes a red alert for 'TSUNAMI Warning: 5', 'Seismic Warning', and 'Addressed Messages: 10'.
- Obs:** Contains buttons for 'Plotting', 'Vertical Profile', and 'Time Series'.
- MESSIR - VISION:** A central header with the COROBOR logo.
- Charts:** Features 'Models', 'BUFR-coded SIGWX', and 'T4 Charts'.
- Text:** Includes 'Reports', 'Bulletins', and 'Edit'.
- Admin:** Contains 'Monitoring', 'Rx / Tx monitoring', and 'Setup'.
- Forecast:** Includes 'SIGMET', 'AIRMET', and 'GAMET'.
- MESSIR-AERO:** A secondary header with the COROBOR logo.
- Urgent:** Displays critical alerts such as 'Cyclon advisory', 'Volcanic ash advisory', 'Volcanic ash dispersion chart: 8', 'Administrative message: 1', 'Special AIREP', 'Urgent SIGMET: 13', and 'Urgent SPECI: 74'.
- Admin (bottom):** Includes 'Circuits monitoring', 'Rx monitoring', and 'Circuits - Routing'.

The interface also shows a status bar at the bottom right indicating 'Thu 25 18:41 UTC'.

We receive Meteorological and tsunami information via Global Telecommunication System (GTS)

## Warning Dissemination

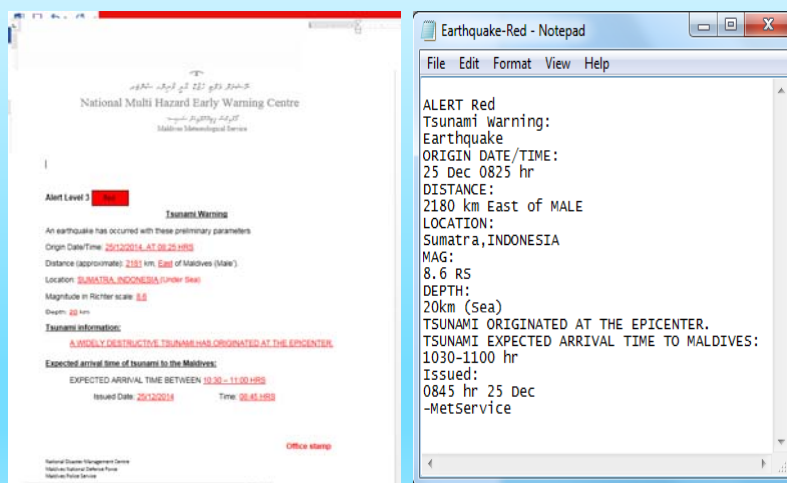
- Hot lines
- Telefax
- Mass media (TV , Radio)
- Public Alert (cell broadcast & fixed line phone)
- SMS to selected users
- Email
- Web site

5 Hotlines had been established between MET and, Maldives National Defense Force (MNDF), T.V Maldives (TVM), Voice of Maldives (VOM) Maldives Police Service (MPS) and National Disaster Management Centre (NDMC)

Once a natural disaster is predicted, immediately duty officials will inform about the disaster to MNDF, TVM, VOM and MPS by hotlines.

Fax

SMS



## Standard Operating Procedure (SOP)

For responding quickly and efficiency, standard operating procedures (SOP) should be in place and has to be practiced to take the timely actions in most appropriate ways.

The Objective of the SOP is to provide guidance and action steps to be followed in responding to a Natural Hazards.

The SOP provide emergency phases and corresponding colours. Each phase will be announced by the MET for the possible natural disaster to Maldives.

The Center uses 4 different colours , White, Yellow, Red and Green for each level of emergencies.

Stage 1 – Alert Level 1(Lookout-White), information bulletin

Stage 2 – Alert Level 2 (Advisory - Yellow) Advisory bulletin

Stage 3 – Alert Level 3 (Warning - Red) Warning bulletin

Stage 4 – Step Down (Green) Downgraded or cancellation bulletin

MMS will be on Alert if there is an EQ of Magnitude 7.0 or higher over the Indian Ocean.

MMS can make announcements, without consultation to National Disaster Management Centre (NDMC) in cases of:

- Undersea/Inland Earthquakes of 7.0 or higher on Richter scale in the Indian Ocean region.

## **Earthquake & Tsunami Alert Levels: Stage 1 – Lookout (White)**

An earthquake occurred with magnitude of 7.0 in Richter Scale over the Indian Ocean but there is no immediate threat from earthquake.

Earthquake information



## **Earthquake & Tsunami Alert Levels:**

### **Stage 2 – Advisory (Yellow)**

An earthquake occurred with magnitude of >8.0 in Richter Scale over the Indian Ocean. The earthquake has the possibility to generate a regional tsunami in the Indian ocean or near the epicentre

Earthquake and Tsunami Advisory, concerning authorities and people are advised to be on alert and be ready to move safer areas and high rising buildings .

## **Earthquake & Tsunami Alert Levels:**

### **Stage 3 – Warning (RED)**

An earthquake occurred with magnitude of >8.0 in Richter Scale over the Indian Ocean. It is confirmed a regional destructive tsunami has originated and it is expected to affect Maldives.

Tsunami warning, concerning authorities and people are advised to be on alert and evacuation of threatened population to high rising buildings and safe areas strongly recommended.

If a Regional Tsunami is generated, warning will be issued including the estimated time of arrival to the Maldives.

As soon as we confirm that the tsunami is not going to affect the country the warning will be downgraded and cancelled immediately.

MMS will issue announcements advisories warnings alerts in cases of:

- Tropical cyclones, Heavy rain, Gale force winds, Swell / Tidal Waves, Storm surges and Flood threats.  
(Level of Emergency – 1 **WHITE** , 2 **Yellow**,  
3 **RED**, 4 **Green**)

## **Weather Related hazard Alert Levels:**

### **Stage 1 – Lookout (White)**

Heavy rainfall of 50 mm expected within 24 hrs, Gale force wind speed of 23 to 30 mph forecast / Observed.

Weather Alert for information but no immediate threat .

## **Weather Related hazard Alert Levels:**

### **Stage 2 – Advisory (Yellow)**

Tropical cyclones, Heavy rain, Gale force wind has been forecast and it's expected to affect in the country.

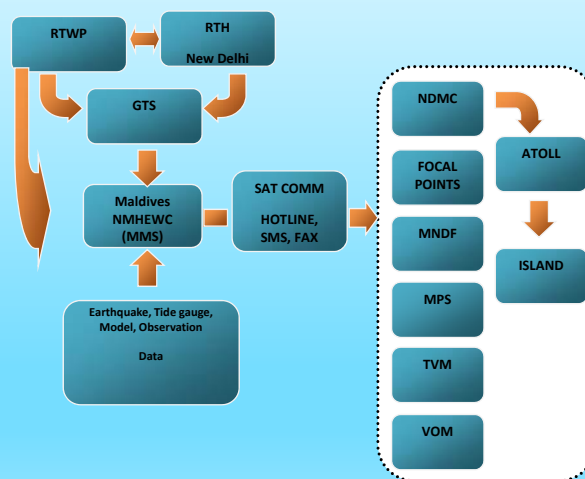
Weather Advisory, concerning authorities and people living in those areas are advice to be on alert and be ready to take necessary action. Its not advisable to travel by sea during this condition

## Weather Related hazard Alert Levels: Stage 3 – Warning (RED)

Tropical cyclones, Heavy rain, Tidal waves, Gale force wind has been forecast and it's expected to affect in the country. Storm Surge is predict/observe and it is expected to have significant impact over the country.

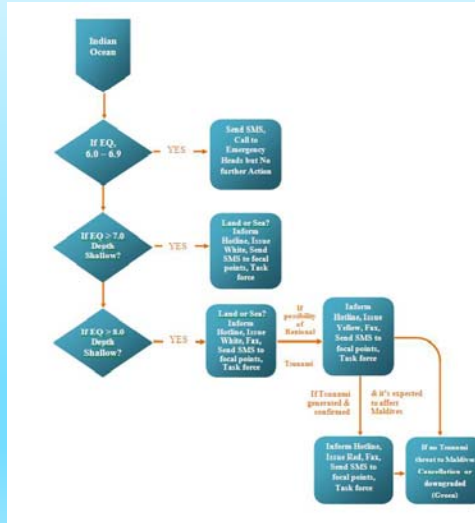
Weather Warning, Evacuation of population from threatened areas or islands to safe shelters or strong buildings. Prohibition of sea transport is highly recommended.

## Warning Dissemination flow chart

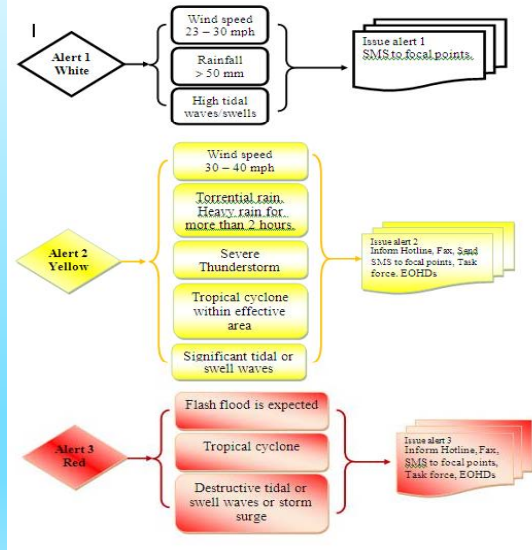


## Quick reference flow chart

The flow charts clearly indicate stepwise action required to carry out by duty officials.



### Weather advisories and warnings flow chart



**THANK YOU**