Vanuatu Multi-Hazard Risk Assessment and Early Warning System

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Outline

- Background Information
- Multi-Hazard Early Warning System
- Multi-Hazard Risk Assessment
- Gaps, challenges and new initiatives
Vanuatu Meteorology and Geo-Hazards Department (VMGD) and NDMO within the Ministry of Climate Change, which also includes Climate Change, Energy, and Environment
Background Information

- Amalgamation of Geo-Hazards into Vanuatu Met Service in 2009
- Creation of the Ministry of Climate Change in 2013
- Creation of the National Advisory Board on Climate Change and DRR
- 2016-2017, transfer of Hydrology/Flood Forecasting into VMGD
VMGD has a current Act, however it did not cover current developments. A new draft bill in place, should be enacted later this year

NDMO has a current act, also developing a draft bill

Climate change policy developed in 2015
Multi-Hazard Early Warning and Dissemination System

Warning / Information Dissemination

Warning / Information messages disseminated to the public and the targeted communities through Vanuatu Media and Communication Network

Monitoring Natural Hazards in real-time

Monitoring Stations / Observers

Transmission Network from station to relay tower

Use of Global Network (eGov, Digicel) to transmit Real-Time information back to Data Center

Real-Time data process 24/7 by on-duty staffs

National Warning Centre

Data Center

Meteorological and/or Geohazards Department

Gov. Agencies

NDMO

Media

Use of Global Network (eGov, Digicel) to transmit Real-Time information back to Data Center

Warning / Information bulletin issue to NDMO, Media, Gov. Agencies and Public
- Early Warning System are made of 3 sub-systems:
  - Multi-Hazards Monitoring Network
  - National Warning Center / Datacenter
  - Warning and Information Dissemination System
National Warning Center / Data Center

- National Warning / Data Center:
  - Common Data Analysis Software
    - Seiscomp3
    - Tide Tool
    - Clide
    - TC Module
    - Smart Met / Smart Alert
    - Synergie / MeteoFactory
  - Standard Operating Procedures
  - Data Center installation and maintenance documentation
National Warning Centre

National Emergency Operation Centre
Vanuatu Meteorology & Geo-Hazards Department

Protecting Lives and Property

Diagram showing the flow of information from the public to Local Authorities, Emergency Services, National Emergency Operation Centre (NDMO), National Warning Centre (VMGD), and Regional Warning Centre.
VMGD Warning & Information Dissemination Platform – Technical specifications

Geohazards

SeiscomP3 / Volcanic Analysis Programs

Climate

Climate Data Analysis Programs (CLiDe DESC, Data Processing ...)

VMGD Early Warning Dissemination System

Synergie / MeteoFactory

Weather Forecasting

TV Banner

Media Broadcast Platform

Radio Warning System

Internet Dissemination Platform

Sirens Dissemination Platform

SMS Dissemination Platform

Website & Webservices

Platform → Alert System / Communications API

Telephone Emergency Number
Multi-Risk Assessment

- Traditional assessment practice and processes
  - Post disasters - manual or field assessments on the impact base on observation and community participatory process
  - Use of devices such as unmanned flying machines (Drones) to assess with aerial overview of disaster impacts on development and livelihood

- Aerial surveillance conducted during and post-disaster impact assessment

- Basic GIS application tool is used for acquiring demographic data and assessing logistic capacity
Challenges

- Limited use of space technology to monitor hazards
- Spatial data capacity issues
- Data sharing and coordination issues
Multi-Hazards Risk Assessment

- New initiative undertaken at National level to address the Multi-Risk Assessment
  - Pilot projects targeting main urban areas
  - Introduction of new GIS tools (PACSAFE, RISKSCAPE and QGIS) to strengthen our pre-disaster spatial data
  - Recruitment/capacity building of GIS officers in main government departments to strengthen technical capacity
  - Looking into Space technology to improve our data collection pre-disaster and post-disaster
  - Information Management cluster to strengthen coordination and data sharing among all stakeholders
Additional Initiatives

- NAB Portal
- Lidar Data
- Himawari 8, used mostly by weather forecasters (VMGD)
- Satellite Derived Bathymetry - RESTEC
- Pcrafi data
- Taping into the Green Climate Fund to strengthen and improve our multi hazard warning system, particularly climate related hazards
Multi-Risk Assessment

Tsunami Inundation Water Depth
Maximum Depth from all Scenarios
Port Vila Study Area
Map 34: Overview

The Tsunami Inundation Water Depth shown on this map was developed by taking the maximum modelled tsunami depth resulting from 15 scenario events that includes both local and distant earthquakes. The inundation depths are considered to be the 'worst case' for the Port Vila Study Area and are found to result from a magnitude Mw 0.4 rupture of the Nine Hours Trench west of Vanuatu. For more detail on how to interpret this map please read the accompanying report.
Multi-Risk Assessment

Tsunami Inundation Water Depth
Maximum Depth from all Scenarios
Luganville Study Area

Map 35: Overview

Water depth (m)

NOTE
The Tsunami Inundation Water Depth shown on this map was developed by taking the maximum modelled tsunami depth resulting from 15 scenario events that included both local and distant earthquakes. The inundation depths are considered to be the 'worst case' for the Luganville Study Area and in most areas are found to result from a magnitude Mw 7.4 rupture of the New Hebrides Trench west of Vanuatu. For more detail on how to interpret this map please read the accompanying report.
Thank you