



Ministry of Social Welfare, Relief and Resettlement



Relief and Resettlement Department

Geo-informatics Applications in Disaster Management (Facilitator's Guide)



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This module carries pre-training entry level assessment as well as hands on exercise manual on Geographic Information Systems, Remote Sensing, Geographic Positioning System (GPS) and some applications of these technologies on Disaster Risk Management (DRM) especially for hazard mapping, monitoring and risk assessment module as well as the damage assessment module. Practical manual developed using open source products like Quantum GIS , RStudio, Google Earth Pro and Google Earth Engine.

This module can also can be used by other training facilitators, non-technical professionals and self-learners as well. However, it is strongly recommended that training participants and self-learners already have some basic knowledge of Computer Basic, Geoinformatics and disaster management.

Each module also contains Learning Units with suggested training methods and exercises based on that module's content. The modules are developed using training material from technical international and local workshop as well as training as references. The exercises enhanced the skill of participants to new concepts and current practices on applications of Geo-informatic on Disaster Risk Management. The training activities include interactive lectures, presentation, review sessions, guided hands on exercises, group exercises and presentations. The training can be facilitated by staff officers of Relief and Resettlement Department as well as related departments, Faculty members of Universities and so on. Facilitators should have some background in both geo-informatics and disaster management in order to be most effective delivery of the course, so they are able to answer the technical questions which may arise from the participants.

We hope the information presented in this module would enable participants on how the Geo-informatic technology can be used to solve the problems faced by people and make their lives easy. And also, participants have been improving capability to acquire knowledge and basic skills of effectively utilizing Geoinformatics in managing disasters.

Kyaw Zaya Htun

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List of Acronyms

AVHRR	Advanced Very High Resolution Radiometer
DIP	Digital Image Processing
DMIS	Disaster Management Information System
DMP	Disaster Management Plan
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSS	Decision Support Systems
EMR	Electro Magnetic Radiation
FCC	False Color Composite
GAD	General Administrative Department
GEE	Goggle Earth Engine
GIS	Geographical Information System
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning Systems
ICIMOD	International Centre for Integrated Mountain Development
KML	Keyhole Markup Language
NDVI	Normalized Difference Vegetation Index
QGIS	Quantum GIS
ROI	Region of Interest
RRD	Relief and Resettlement Department
RS	Remote Sensing
SBI	Space Based Information
SCP	Semi-automatic Classification Plugin
SDRN	State Disaster Resource Network
SPOT	Système Pour l'Observation de la Terre
STRM	Shuttle Radar Topography Mission
UAV	Unmanned Aerial Vehicle
UN	United Nations
UNSPIDER	United Nations Platform for Space-based Information for Disaster Management and Emergency Response
VCI	Vegetation condition Index

1.0

Salient features of the Module

Name : Geoinformatics Applications in Disaster Management

Total Number of modules : 4

Target Group: Technical Professionals, Subject specialists (Geologist, Environment, Agricultural Specialist, Watershed Professional and so on) Trainers and Administrators working on Disaster Management.

Duration: 7 days training depending upon the target groups and their training needs.

Infrastructure Requirements

- Geoinformatics lab with high end computers (it is advisable to have PCs with RAM of 2 GB or more with more than 50 GB unused disk space)
- GIS and Image Processing Software Quantum GIS., google earth pro, and Microsoft excel also may be required for hazard specific programs.
- Number of trainers required is minimum 4-5 for each course. A technical assistant for handling GIS and Remote Sensing Lab is also needed.
- Sitting arrangement is Class Room Type (U shape table is better if possible)
- Training materials include data in desired format, hand-outs and Practical Manuals
- High speed internet connectivity

2.0

INTRODUCTION TO THE MODULE

1. Introduction

There is an increasing trend in disasters both in frequency as well as in the damage caused in terms of human casualties, economy and environment. In Myanmar, as of 15 August, according to the National Natural Disaster Management Committee (NNDMC), a total of 1,615,335 people has been affected (including 264 people in Tanintharyi); cumulatively, 333,178 households have been displaced and 110 people have died. The basic information for disaster reduction (technical studies, geographical data, etc.) are very important for damage assessments and humanitarian response activities. There is an urgent need to share the data and information required for DRR with local authorities and other stakeholders for better decision-making. With the use of GIS and remote sensing the possible effects of natural phenomena like floods, drought, earthquakes, landslides, volcanic eruptions and forest fires on buildings, population, infrastructure etc. can be modelled and made visible in a spatial and interactive manner. GIS and remote sensing can be used as a powerful tool for analysis of hazard, vulnerability and risk, resulting in the development of different scenarios and concrete measures for disaster prevention. Simple, low-cost GIS systems allow local authorities to properly plan the areas under their jurisdiction, and to incorporate the local knowledge and ensure community participation, combined with modeling results from experts. To achieve this, professionals need to be trained in the application of GIS and remote sensing for disaster management.

2. Title of the Module

Training Module on Geoinformatics Applications in Disaster Management

3. Target Group

- Officials from RRD, GAD and other departments involved in DRR and Emergency Response.
- Technical Professionals from ministry of education and faculty members of Universities (for Master Trainers).

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