Application of GIS and Remote Sensing Information for Disaster Risk Management in Viet Nam

Regional workshop on Geo-referenced Disaster Risk Management System for South-East-East Asia and Pacific
20-22 February 2013

By
Dang Quang Minh

Deputy Director, Disaster Management Center
Ministry of Agriculture and Rural Development (MARD)
No. 2, Ngoc Ha street, Ba Dinh District, Hanoi, Viet Nam
The major natural disasters in Vietnam are Tropical Storm and Flood, which take more than 80% of total damages caused by all kinds of natural disasters.

<table>
<thead>
<tr>
<th>No.</th>
<th>Disaster Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tropical Storm</td>
</tr>
<tr>
<td>2.</td>
<td>Flood</td>
</tr>
<tr>
<td>3.</td>
<td>Inundation</td>
</tr>
<tr>
<td>4.</td>
<td>Drought</td>
</tr>
<tr>
<td>5.</td>
<td>Salt water intrusion</td>
</tr>
<tr>
<td>6.</td>
<td>Whirlwind</td>
</tr>
<tr>
<td>7.</td>
<td>Shoreline erosion</td>
</tr>
<tr>
<td>8.</td>
<td>River bank erosion</td>
</tr>
<tr>
<td>9.</td>
<td>Flash Flood</td>
</tr>
<tr>
<td>10.</td>
<td>Landslide</td>
</tr>
<tr>
<td>11.</td>
<td>Storm Surge</td>
</tr>
<tr>
<td>12.</td>
<td>Forest Fire</td>
</tr>
<tr>
<td>13.</td>
<td>Earthquake</td>
</tr>
</tbody>
</table>
The Major Natural Disasters in Vietnam

Storm, flood, flash flood, drought, landslide, forest fire,...
The Institutional Framework for Disaster Management in Vietnam

- Government
  - National Committee for Search and Rescue
  - Central Committee for Flood and Storm Control
  - Ministerial Committees for Flood and Storm Control
  - Provincial Committee for Flood and Storm Control
    - District Committee for Flood and Storm Control
      - Commune Committee for Flood and Storm Control
Current application of GIS for Disaster Risk Management in Vietnam

- Hazard mapping for flood, drought, landslides and forest fire.
- Shoreline exposure
- Tropical storm tracking
- Wind field and Rainfall distribution
- Management of Hydro dams
- Management of dyke system in 19 provinces
- Tsunami Response Map
- Developing flood evacuation map in some river basins
Salinity intrusion Forecast

Salinity Intrusion

- > 4 G/L: 1,345,700 HA
- 2 G/L: 284,100 HA
- 1 G/L: 242,000 HA
Inundation
VinAWARE Decision Support System
Flood Modeling
T.S. Track Forecast and Rainfall Obs
Future application of GIS for Disaster Risk Management in Vietnam

- Earthquake potential area and impact zone
- Vulnerability Assessment
- Vietnam natural Hazards and Vulnerability Atlas
- Repository for all major disaster management related data
- Damage Assessment, forecasting and reports
- Multi-Hazard Risk Assessment and Multi-Hazard Early Warning
- Decision Support System
- Web-GIS functionality
Government activities on Space Technology Development

- Strategy for space research and application until 2020 - Approved by Prime Minister in 2006

- Satellite technology development: Project of Vietnam small satellite for natural resource, environment & disaster management (VNREDSat-1);

- National Research Program on Space Science and Technology

- Project for Building Vietnam Space Centre
Application of GIS and utilization of remote sensing information is still in beginning process but widely applied.

There is not good geospatial database for disaster risk management; difficulties in data collection, update and sharing.

Except meteorological satellite data there are little earth observation satellite data. At present, there are only two types of disaster are observing by satellites: tropical storm and forest fire.

Lack of experts working on application of GIS and remote sensing data for disaster risk management.

Mostly there is no application of existing communication satellite for disaster risk management.
Recommendations for development of Geo-DRM information in Viet Nam

- Development the strategy for setting up the basis of geo-spatial data, for application of remote sensing and GIS technology;
- Building and maintenance of geo-spatial databases, application of remote sensing and GIS technology in disaster risk management and climate change in Vietnam;
- Enhancing training on exploitation and application of GIS and satellite information for DRM
- Enhancing the capability of building disaster map and risk map by using GIS and remote sensing information
- Enhancing exploitation of data available from Internet
- Enhancing of international cooperation
THANK YOU
FOR YOUR ATTENTION