Practices on Using Earth Observation Resources for Disaster Risk Reduction in China

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May 28 2015, Bonn
Contents

- Natural Disasters and Disaster Risk Management in China
- Earth Observation for Disaster Reduction
- Way Forward for Sendai Framework
Natural Disasters in China

- Wide variety
- Wide area distribution
- High frequency
- Heavy losses
- Deep social impact
- Difficult for relief
Disaster Risk Management in China

- National Commission for Disaster Reduction is Responsible for disaster prevention and reduction coordination and plan at national level.

- Comprehensive National Disaster Prevention and Reduction Plan (2011-2015) with earth observation addressed as one of the main technical support tool.
Disaster Risk Management in China

The State Council issued *Regulations on Natural Disaster Relief* and *the National Emergency Plan for Natural Disaster Relief*, set up the management system for disaster prevention, reduction and relief featuring the unified command, comprehensive coordination, level-to-level responsibility and territorial management, and established the disaster relief emergency command system at the central, provincial, municipal and county levels.

<table>
<thead>
<tr>
<th>Response Level</th>
<th>Death Toll (×1 person)</th>
<th>Evacuated Population (×10000 persons)</th>
<th>Collapsed Houses (×10000 houses)</th>
<th>Drought</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - Level</td>
<td>&gt; 200</td>
<td>&gt; 100</td>
<td>&gt; 20</td>
<td>30%</td>
</tr>
<tr>
<td>II - Level</td>
<td>100-200</td>
<td>80-100</td>
<td>15-20</td>
<td>25-30%</td>
</tr>
<tr>
<td>III - Level</td>
<td>50-100</td>
<td>30-80</td>
<td>10-15</td>
<td>20-25%</td>
</tr>
<tr>
<td>IV - Level</td>
<td>30-50</td>
<td>10-30</td>
<td>1-10</td>
<td>15-20%</td>
</tr>
</tbody>
</table>
Cooperated by operational center, data center, satellite department, assessment and emergency departments:
- Hazard monitoring and risk status updating based on the information from disaster related departments and local government;

- Disaster risk analysis based on historical disaster data, space-based data and other data;

- Possible damage assessment on people and properties based on existing information;

- Evaluate the possible disaster damage and issue the disaster early warning information to related provinces

Emergency Response Working Procedure- Early warning response part
Contents

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National Disaster Reduction Center of China (NDRCC) is one of leading scientific and technical centers to provide the support for government in addressing disaster-related issues by focusing on the whole cycle of disaster management by providing information, technical and consultation services.
Comprehensive Operational Platform in NDRCC

- Information Platform for Public Services
- Consultation Platform for Command and Deployment
- Information System
- RS System
- On-sit Support System
- Assessment System
- Comprehensive operation platform
- Database, information pool, knowledge base
  Products storages and raw database
- Computer Network Support Platform
Space-ground integrated information service

- **Information accessing**
  - Multi-source disaster information access and transmission

- **Information management**
  - Distributed disaster information database management

- **Information analysis**
  - Risk analysis, damage assessment and value-added product making

- **Information service**
  - Disaster information service based on traditional and new media
Exposure estimation
Hazard analysis
Vulnerability analysis
Open data sources
Hazard Monitoring and Risk Assessment
The 6.5-magnitude earthquake occurred at 16:30 (local time) on August 3, 2014 in Ludian County, Yunan Province has caused massive damage and losses with 617 death toll left.
325 frames of satellite images from 25 satellites, 6 countries, and 179 frames of UAV and airborne remote sensing images. Totally 245 frame of images of pre earthquake and 279 frame of images of post earthquake.
Building Damage Assessment
Evacuated Resident Monitoring
Integration and Comprehensive Damage Assessment
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- Natural Disasters and Disaster Management in China
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Sendai Framework for Disaster Reduction 2015-2030

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Space in Sendai Framework

Para 24  (f) Promote real-time access to reliable data, make use of space and in situ information, including geographic information systems (GIS), and use information and communications technology innovations to enhance measurement tools and the collection, analysis and dissemination of data;

(j) Strengthen technical and scientific capacity to capitalize on and consolidate existing knowledge and to develop and apply methodologies and models to assess disaster risks, vulnerabilities and exposure to all hazards;

Para 25  (c) Promote and enhance, through international cooperation, including technology transfer, access to and the sharing and use of non-sensitive data and information, as appropriate, communications and geospatial and space-based technologies and related services; maintain and strengthen in situ and remotely-sensed earth and climate observations; and strengthen the utilization of media, including social media, traditional media, big data and mobile phone networks, to support national measures for successful disaster risk communication, as appropriate and in accordance with national laws;
Way Forward

- From support to manage disaster to manage disaster risk: space-based disaster risk assessment (exposure, vulnerability, hazard) for better preparation;
- From information based on data to knowledge based on information: user requirement analysis and solution driven;
- From physical technology to social sciences involved: inclusive and innovative approaches;
- From separate to synergy: integration and standard on multi sourced data, information, mechanism;
- Long term strategy on main streaming space-based information for DRR under the Sendai Framework at different levels.
Thanks