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Office for Outer Space Affairs

Capacity Building Programme

14-17 August 2012

Space Technology for improving Hazard Mapping in Sri Lanka

An event organised as a follow up of the UN-SPIDER Technical Advisory Mission to Sri Lanka - 17-21 October 2011



Jointly organised by
Disaster Management Centre (Sri Lanka)
UN-SPIDER (UN Office for Outer Space Affairs)

With support from
Uwa-Wellassa University of Sri Lanka,
United Nations Development Programme (UNDP) Sri Lanka, and
National Disaster Reduction Centre of China (NDRCC)



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Introduction

Disaster Management Centre (DMC) of the Ministry of Disaster Management (Sri Lanka) has coordinated hazard mapping activities with the funding support of UNDP since 2008. Under this program four major hazard mapping projects were launched which covered hazards namely coastal, landslides, cyclone and drought. The projects were implemented by relevant technical agencies and universities. While two projects are already completed, other projects will be completed in 2012. Flood hazard mapping was not launched, although the Department of Irrigation has mapped several river basins. Urban floods areas are mapped by Radar satellites to identify pockets of frequently flooding areas.

UN Office for Outer Space Affairs (UNOOSA), under the framework of UN-SPIDER carried out Technical Advisory Mission (TAM) to Sri Lanka in October 2011. The mission team had in-depth discussions with all agencies involved in hazard mapping and identified the need to upgrade technical know-how in using space technology to improve hazard mapping. As a follow-up the recommendations in the TAM report, these agencies and other institutions will be provided an exposure on advances in space technology and its applications in hazard mapping.

Dates and Venue

Dates: 14 to 17 August, 2012

Venue: Uva-Wellassa University of Sri Lanka, Badulla, which is about 5 hours travel by bus from Colombo. Transport will be arranged for the experts and participants on 13th August 2012.

Participants

Up to 30 participants (middle level managers and technical staff of agencies involved in disaster management and hazard mapping in Sri Lanka).

Agency Participation from Sri Lanka

1. Department Meteorology
2. Geological Survey and Mines Bureau
3. National Building Research Organization
4. Coast Conservation Department
5. Department of Irrigation
6. Disaster Management Centre
7. Department of Survey and Mapping
8. Department of Agriculture
9. Department of Census and Statistics
10. Universities



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Objectives and topics of the training:

The broad objective of the training is to implement recommendation made by the UN-SPIDER Technical Advisory Mission in order to strength the capacity of the national agencies to use Geo-Spatial Technologies for Hazard Mapping, Hazard Monitoring and Risk Assessments. The training programme will cover following topics during training by inviting international experts from the centres of excellence.

Flood Hazard Mapping : Flood is the frequent disaster experienced in Sri Lanka and more likely affected more than 50 % of the area. Flood mapping by ground verification and by satellite observation has been conducted last few years. However, flood modelling was not conducted as a research studies covering small geographical area. Participants will be exposed to flood risk modelling and hazard mapping techniques.

Coastal Hazard Mapping: The next most important area of hazards are originated from the coast. Coastal hazard mapping and modelling techniques will be delivered in this session in the form of theory and hands-on sessions. An objective of this module is also to expose participants in the area of modelling of coastal hazards.

DEM and LiDAR Analysis: Terrain modelling is very essential for most of the hazard mapping activities. Current trends on terrain acquisition and DEM data processing is one of the key area in hazard mapping. Participant will be exposed to identify suitable DEM, DEM processing and accuracy assessment prior to the hazard mapping activities.

NSDI Initiatives: Consistent means to share geographic data among all users could produce significant savings for data collection and use and enhance decision making. Open data concept and data sharing is essential to avoid duplication and increase productivity of geo-spatial users. GoSL intend to initiate NSDI framework with the leadership of the Ministry of Lands and Land Development, and assistance of ICTA. This session will discuss NSDI framework and its applications.

The participants will benefit from the experience sharing by experts from centres of excellence, demonstration of the best practices in various countries and hands on sessions on the software tools. In addition, NDRCC is planning present HJ-1 satellite data archive of Sri Lanka and license free image processing software, which can be used for hazard mapping as well as for natural resources mapping.



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Experts

Following experts will contribute to the course:

| Experts | Organisation | Topics |
|---|--|--|
| Dr. Shirish Ravan Ms. Han Juanjuan | UN-SPIDER, UN Office for Outer Space Affairs | Outcomes of UN-SPIDER Technical Advisory Mission and Overall coordination of the programme |
| Prof. Wu Wei | National Disaster Reduction Centre of China, Beijing, China | Flood hazard modelling |
| Prof. Wang Chengyi | Institute of Remote Sensing, Chinese Academy of Sciences, Beijing, China | LiDAR DEM Applications |
| Prof. Nitin Tripathi | Asian Institute of Technology, Bangkok, Thailand | Coastal hazard mapping |
| Dr. Durairaju Kumaran Raju | Tropical Marine Science Institute, National University of Singapore | Hazard and Risk assessment |
| Prof. Teh Tiong Sa | Tropical Marine Science Institute, National University of Singapore | Coastal Zone Management |
| Dr. Giriraj Amarnath and other experts | International Water Management Institute (IWMI), Colombo, Sri Lanka | Flood Risk Mapping and Modeling GeoNetwork and Metadata Standards Overview on Spatial Data base |
| Mr. Udayakantha, Senior Assistant Secretary | Ministry of Lands and Land Development, Sri Lanka | National Spatial Data Infrastructure – Policy Framework for Sri Lankan Context |
| Prof. Ranjith Premalal de Silva | Uva Wellassa University, Sri Lanka | NSDI and its application in Sri Lanka |
| Abhineet Jain | Digital Globe, Singapore | Acquiring LiDAR DEM |
| Mikhail Petrov | Jena Instrument, Russia | |
| Dr. Sanjay Srivastava | UN ESCAP Bangkok, Thailand | Harnessing regional cooperation for DRM in Sri Lanka. Use of geo-informatics for post-disaster sector-wise damage and loss assessment (DaLA) |
| Info-Communication Technology Organization | Mr. Wasantha Deshapriya | NSDI policy and open government concepts |
| Ministry of Land and Land Development | Mr. PMP Udayakantha | NSDI policy and open government concepts |



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Schedule

| Day | Morning | Afternoon |
|--------|---|--|
| 13 Aug | Travel to Uva Wellassa University, Badulla | |
| 14 Aug | Opening and course overview. Current state of use of space based information for disaster management in Sri Lanka, NSDI, Advances in space technology for disaster management. (Mr. Udayakantha, Prof. Ranjith Premlal, Dr. Shirish Ravan) | Flood Risk mapping and training on GIS, metadata, geo-network and water data portal. (IWMI) |
| 15 Aug | LiDAR DEM and DEM applications (Digital Globe and Jena Instrument) | NSDI (Mr. Wasantha Deshapriya and Mr. PMP Udayakantha) Harnessing regional cooperation for DRM in Sri Lanka. Use of geo-informatics for post-disaster sector-wise damage and loss assessment (DaLA) (Dr. Sanjay Srivastava) |
| 16 Aug | Flood Hazard Mapping (NDRCC) Demonstration and Hands on, Demonstration of HJ1 satellite image archive of entire Sri Lanka (The data will be donated to the Government for the purpose of hazard mapping) - Prof. Wu Wei | LiDAR DEM and DEM applications - Prof. Wang Chengyi |
| 17 Aug | Coastal hazard mapping – Theory and hands-on exercises (Prof. Nitin Tripathi, AIT) Coastal Zone management in the face of rising sea – A case study of Singapore, Durairaju Kumaran Raju, TMSI, NUS Integrated Shoreline Management Plan –A case study of Malaysia – Mr Teh Tiong Sa, TMSI, NUS | |
| 18 Aug | Travel to Colombo | |

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