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Report on

UN-SPIDER Capacity Building Programme

“Space Technology for Improving Hazard Mapping in Sri Lanka”

as a Follow-up of Technical Advisory Mission to Sri Lanka in October 2011

14-17 August 2012





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Summary of the training programme

The 4-day capacity building training course was jointly organised by Disaster Management Centre (DMC) in Sri Lanka and UN-SPIDER with support from Uva-Wellassa University of Sri Lanka, United Nations Development Programme (UNDP) in Sri Lanka and National Disaster Reduction Centre of China (NDRCC). This event was a follow-up of UN-SPIDER technical advisory mission to Sri Lanka in October 2011. 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 contents of the programme were formulated based on the in-depth discussions between DMC, stakeholder agencies of DMC and the UN-SPIDER. The recommendations of the TAM were also considered while designing the sessions of the programme.

The experts from organizations of international repute were invited to conduct these sessions. 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.

The training catered specific requirements of the DMC and its partner organizations to enhance their knowledge on the best practices, latest approaches, tools and technologies to improve their services by incorporating space based and geospatial information in their work. The experts and participants conducted group discussions at the end of each session which were useful to the participants to plan their work programme by incorporating the space based inputs. These discussions will also have long-term impact such as

- networking of the Sri Lankan organizations with the organizations of experts
- exploring further possibilities of capacity building for Sri Lanka
- building specific projects based on the best practices demonstrated by the experts

Dates and Venue

Dates: 14 to 17 August, 2012

Venue: Uva-Wellassa University of Sri Lanka, Badulla and Hotel Bandarwela, Bandarwela



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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 covered 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.

Participants

The Disaster Management Centre (DMC) mobilized participation of 25 participants that are involved in disaster management and hazard mapping in Sri Lanka from below agencies:

- Department Meteorology
- Geological Survey and Mines Bureau
- National Building Research Organization



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- Coast Conservation Department
- Department of Irrigation
- Disaster Management Centre
- Department of Survey and Mapping
- Department of Agriculture
- Department of Census and Statistics
- Universities

Experts

Following experts contributed to the course by conducting specific sessions:

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
Fang Zhiyong	National Disaster Reduction Centre of China, Beijing, China	Satellite image archive of Sri Lanka and Image Processing Software – in kind contribution by China to Sri Lanka
Mr. Wu Wei	National Disaster Reduction Centre of China, Beijing, China	Flood hazard modelling
Mr. Wang Chengyi	Institute of Remote Sensing, CAS, 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
Mikhail Petrov	Jena Instrument, Russia	LiDAR DEM acquisition and latest technologies
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)
Mr. PMP Udayakantha	Ministry of Land and Land Development	NSDI policy and open government concepts



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In-kind contribution by NDRCC

NDRCC is presented 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. DMC is custodian of this data and software. DMC has already taken initiatives to distribute the satellite data archive and software to their partner organisation.



Programme Schedule (as it happened)

Day 01 (14 August 2012)

Opening ceremony

- Welcome address by the Vice Chancellor of Uva Velessa University and Head of UN-SPIDER Beijing Office
- Presentation and discussions on current use of space based information for disaster management in Sri Lanka, recommendations of the UN-SPIDER Technical Advisory Mission in 2011 and discussions - Dr. Shirish Ravan, UN-SPIDER.
- Harnessing regional cooperation for DRM in Sri Lanka and Use of geo-informatics for post-disaster sector-wise damage and loss assessment - Dr. Sanjay Srivastava from UN ESCAP



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Day 02 (15 August 2012)

- LiDAR acquisition and generation of Digital Elevation Models – Mr. Mikhail Petrov from Jena Instrument, Russia.
- LiDAR DEM and applications in Disaster Management - Prof. Chengyi Wang from IRSA, CAS, China

Day 03 (16 August 2012)

- National spatial data infrastructure policy framework for Sri Lanka - Mr. PMP Udayakantha from Ministry of Land and Land Development
- Group discussions on current situation on data, data gaps, mechanisms of information sharing etc. – Led by Dr. Shirish Ravan, UN-SPIDER.
- Presentation given by Mr. Wei Wu from NDRCC, China. (Global disaster, earth observation capacity and Flood Hazard Mapping)

Day04 (17 August 2012)

- Coastal Zone management in the face of rising sea – A case study of Singapore - Dr. Durairaju Kumaran Raju from the Institute of Marine Sciences, National University of Singapore
- Integrated Shoreline Management Plan –A case study of Malaysia - Prof. Teh Tiong Sa from Institute of Marine Sciences, National University of Singapore
- Coastal hazard mapping – Theory and hands-on exercises - Prof. Nitin Tripathi from Asian Institute of Technology
- Ceremony of donation
National Disaster Reduction Centre of China donated satellite image archive of Sri Lanka and license free image processing software which can be used for hazard mapping as well as for natural resources mapping to the Disaster Management Centre of Sri Lanka.