United Nations Institute for Training and Research

Unitar Online Catalogue

Introduction to Remote Sensing and Field Data collection Techniques for Disaster Risk Reduction

Type:	Course
Emplacement:	Nairobi, Kenya
Date:	10 juin 2013 to 21 juin 2013
Durée:	2 Weeks
Zone du programme:	Satellite Imagery and Analysis
Site internet:	http://www.unitar.org/unosat
Prix:	0.00 $US
Personne de référence de l'évenement:	unosat@unitar.org
Partenariat:	ICPAC, RCMRD

CONTEXTE

East Africa is a region facing multiple challenges from natural disasters like drought, floods, earthquakes and complex emergencies. Building capacity at regional level to reduce adverse effects of such events is fundamental for sustainable development. Geographic information systems (GIS) have proven to be efficient for implementing coherent disaster risk reduction (DRR) activities at regional, national and local scale. Quantifying risk and expected future losses is a key step in any disaster risk reduction program. Moreover, the outputs and

scenarios of a risk assessment contribute to structuring overall risk reduction policies and planning. Geospatial risk assessment can be performed with GIS tools and techniques which can not only quantify risk but also identify the locations in need of risk reduction measures, thus making the whole risk reduction framework efficient. In November 2012, UNOSAT undertook two fact-finding missions to Djibouti and Nairobi, Kenya to explore needs and interests in improving geo-spatial capacities in support to DRR activities in east Africa. Based on discussions with the Intergovernmental Authority on Development (IGAD) Secretariat, IGAD’s Climate Prediction and Application Centre (ICPAC), IGAD's Conflict Early Warning and Response Mechanism (CEWARN) and other IGAD actors, the following activities will be implemented within the framework of this project: A number of different technical training courses, awareness-raising events and ad-hoc technical support will be delivered throughout the project to strengthen IGAD’s capacities for mainstreaming geospatial information technologies into DRR activities and implementation plans. A first technical training “Introduction to GIS for DDR” was held in Nairobi from 8 to 19 April 2013. This training was attended by 18 professionals from the IGAD Secretariat, ICPAC, ICPALD, CEWARN, IGAD-Somalia and Kenya Polytechnic University. As a continuation to this capacity building activity, a second technical training “Introduction to Remote Sensing (RS) for DRR” will be held in Nairobi from 10 to 21 June 2013 to further develop the expertise of IGAD technical staff members.

OBJECTIFS DU COURS

The aim of the course is to provide participants with concepts and methodologies related to Remote Sensing (RS) with specific applications on DRR. During the first week of this training, participants will get familiar with basic concepts of remote sensing, satellite imagery, basic image processing and raster analysis techniques including gathering earth observation data from different geo-data portals. During the second week, the focus will be on field data collection techniques using geo-spatial tools (i.e. GPS, GPS embedded cameras, etc.), field data integration for GIS analysis and mapping and means for data sharing through web mapping applications and Google Earth.

OBJECTIFS D'APPRENTISSAGE

Upon completion of the course, participanst will be able to:

- Define and describe basic concepts and terminology related to remote sensing
- Explain advantages and limitations of using remote sensing data for disaster risk reduction
- Identify, access, search, collect, organize and analyze satellite imagery relevant to disaster risk reduction
- Apply basic methods and tools for image processing
- Apply basic methods for feature extraction including supervised and unsupervised classification
- Perform field data collection using geo-spatial tools and integrate field data into a GIS for analysis and mapping
- Sharing data and analysis results through web-mapping and Google Earth

CONTENU ET STRUCTURE

The course is extended over 10 work days structured around the following topics:

- Introduction to Remote Sensing and its applications in DRR
- Introduction to Satellite Imagery
- Gathering EO data from the web
- Methods for image enhancement
- Understanding Band combinations
- Geo-referencing Satellite Imagery
- Image Fusion
- Raster Math/Calculation
- Remote Sensing Indices for drought monitoring
- Feature Extraction
- Image Classification: supervised & Unsupervised classification
- Introduction to Field Data Collection and Sharing
- Planning field data collection
- Introduction to Aerial Photography and UAV
- Introduction to GPS Data Collection (JUNO/Trimble)
- Field data collection with geo-spatial tools
- Field data integration into GIS
- Accuracy assessment of image classification
- Sharing geospatial data

This course is divided into 10 Modules. Each module is structured into 4 sessions of 1.5 hours each, which make a workload of 6 hours on average per day and, an overall workload of 60 hours for the entire duration of the course. It is considered that the length of the course well reflects its scope and is adequate to enable participants to achieve the learning objectives.

MÉTHODOLOGIE

This is a full time, face-to-face course comprising lectures and lab exercises using local datasets and real scenarios (80% lab exercises, 20% lectures and discussions).

AUDIENCE CIBLE

Participants are preferably technical professionals working in the Intergovernmental Authority on Development (IGAD) Secretariat, IGAD’s Climate Prediction and Application Centre (ICPAC), IGAD's Conflict Early Warning and Response Mechanism (CEWARN), IGAD’s Centre for Pastoral Areas and Livestock Development (ICPALD), IGAD Somalia and Kenya Polytechnic University. We highly recommend that participants taking this course have successfully attended and completed the previous training “Introduction to GIS for DRR” or should already possess work exposure to basic levels of GIS, RS, database and other information management systems.

INFORMATIONS SUPPLÉMENTAIRES

Language:

English

Certificate:

Participants will be given a UN training participation certificate from UNITAR.

Software:

ESRI ArcGIS version 10.1 with extensions (spatial analyst). Google Earth, Access to internet.

Class Size:

The number of participants is limited to 18.

Course Coordination:

Mr. Luca Dell’Oro, Specialist, UNITAR/UNOSAT (luca.delloro [at] unitar.org (luca[dot]delloro[at]unitar[dot]org))