Unitar Online Catalogue

Advanced Training on the Use of Geospatial Information Technologies for Disaster Risk Management

卫星分析和应用研究

截止日期 : 1 11月 2024

种类 :	Course
位置 :	Web-based
日期 :	10 10月 2024 to 15 11月 2024
期限 :	35 Hours
项目领域 :	Satellite Imagery and Analysis
网址 :	http://www.unosat.org/
价格 :	US$0.00
活动协调人 email:	unosat-elearning@unitar.org
合伙 :	Norwegian Agency for Development Cooperation (NORAD)

背景信息

The "Strengthening Capacities in the Use of Geospatial Information for Improved Resilience in Asia-Pacific and Africa" project (2021-2024) aims to develop sustainable capacities and implement custom-tailored geospatial solutions to enhance policy and decision-making processes in resilience building. With the

support of the Norwegian Agency for Development Cooperation (NORAD), UNOSAT leverages technological advances and innovation to improve decision-making in Disaster Risk Reduction, Climate Resilience, Environmental Preservation, and Food Security in eight target countries: Bangladesh, Bhutan, Fiji, Lao PDR, Nigeria, Solomon Islands, Uganda, and Vanuatu.

One of the major disasters affecting Uganda is flooding, particularly riverine and flash floods. Riverine floods are common in rural river catchment areas, while flash floods occur mostly in urban areas (towns and cities). Kasese, Butaleja, Katakwi, Soroti, Serere, Ntoroko, and Kapchorwa are the most affected districts with floods.

Geospatial Information Technology (GIT) can be a very useful tool in supporting the whole disaster risk management (DRM) cycle from the preparedness to response, recovery, and reconstruction. GIT has proven to be efficient in implementing DRM activities at the national, regional, and local scales. Identifying and quantifying risk and expected future losses are key steps in any DRM program. Also, the outputs and scenarios of a risk assessment contribute to structuring the overall risk reduction policies and planning.

In the first training, the project team delivered the introductory course on strengthening capacities in the use of geospatial information technology (GIT) for disaster risk management focusing on emergency response. As a follow-up to this training and to address the needs of The Office of the Prime Minister (OPM), Department of Relief, Disaster Preparedness and Management, UNOSAT is offering an Advanced Training on the use of Geospatial Information Technologies for DRM. This training will focus on geospatial methodologies for hazard, vulnerability and risk assessment, which will contribute to OPM’s disaster preparedness activities. After attending the training participants will be able to update various products of Risk and Vulnerability Atlas.

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Upon completion of the advanced training, participants will be able to:

1. Develop flood susceptibility zonation using Height Above Nearest Drainage (HAND) technique.
2. Perform landslide susceptibility assessment using weight of evidence method.
3. Monitor drought using time series satellite imagery.

4. Develop strategies for disaster risk management with multi-criteria decision analysis technique.
5. Compute INFORM Decision Support System in the context of disaster risk management.

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This course is designed to provide advanced training in geospatial analysis, focusing on the utilisation of geospatial information technology for disaster risk management, specifically on hazard and risk assessments. Participants will gain hands-on experience on using various software and platforms and implementing data processing techniques, enabling them to extract valuable insights from geospatial data that can be used for DRM. The course covers a wide range of topics, including hydrological flood susceptibility mapping using Height Above Nearest Drainage technique, landslide susceptibility mapping using the open-source software, QGIS. Moreover, participants will further explore the real-world applications of remote sensing to support decision-making processes related to DRM. Finally, participants will investigate the application of multi-criteria decision analysis and decision support system (DSS) and tools that will empower participants to make informed decisions in the context of DRM.

Module 1: Introduction to Hydrological Modelling

The first module of this training is intended for participants who would like to perform hydrological analysis using open-source tools and plug-ins available in QGIS. This module will introduce the Height Above Nearest Drainage (HAND) technique to analyse flood susceptibility. Topics to be covered include DEM reconditioning, mapping of catchments, and flood susceptibility mapping.

Module 2: Introduction to Landslide Susceptibility Mapping

This module offers an in-depth insight into techniques for landslide susceptibility modelling. Participants will gain the skills in using the weight of evidence methodology to create detailed landslide factor maps and conduct thorough assessments of landslide susceptibility. This knowledge and skillset will enable participants to make informed decisions and implement effective measures in landslide-prone areas, contributing to disaster risk reduction efforts.

Module 3: Climate Engine for Drought Monitoring

In this module, participants will be introduced to Climate Engine and utilise it to take advantage of early warning systems and mitigate disaster risks. The session will include an in-depth lecture on the application of big data for drought monitoring. Participants will work through the Climate Engine Research App to monitor drought conditions by assessing climate and vegetation health. Time series analysis of drought indicators will also be covered to provide participants with a holistic understanding of drought monitoring techniques.

Module 4: Multi-criteria Decision Analysis tools for Disaster Risk Reduction

Participants will engage in practical exercises focused on familiarising themselves with Multi-Criteria Decision Analysis (MCDA) tools for disaster risk reduction. A Digital Disaster Risk Atlas for Uganda, developed in collaboration with the Office of the Prime Minister and UNOSAT, will be presented to the audience, allowing them to familiarize themselves with the application's use

Module 5: INFORM Decision Support System

This module offers an in-depth exploration of the INFORM Decision Support System for Uganda, featuring an engaging and interactive exercise. Participants will learn what is the important indicators, formulas, and practical applications. Furthermore, participants will have the opportunity for experiential learning through the utilization utilisation of the INFORM Decision Support System developed by UNOSAT, equipping them with valuable problem-solving skills and hands-on experience in applying the INFORM in real-world scenarios.

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This is a full-time, face-to-face course with lectures, image processing exercises using satellite imagery and real-world scenarios (60% lab exercises, 40% lectures and discussions), and collection of training samples using reference data. This course is divided into 5 modules. Each module is structured into 4 sessions of 1.5 hour each. The course is designed in a way to have a balanced approach between theoretical and practical teaching methods consisting of presentations, live demos, videos, interactive sessions, and lab exercises. At the end of the course, UNITAR-UNOSAT will set up a community of practice platform to maximise the learning experience of participants and to provide all required technical backstopping and assistance to training participants during and after the training.

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The course is designed to accommodate participants selected by the OPM with previous remote sensing and/or GIS experience. Since the main purpose of the training is to build the capacity of technical staff to apply useful GIT skills in their daily jobs, the suggested criteria of selection may include:

- Staff who have the commitment and mandate to use the knowledge and skills acquired to support disaster risk management operations.
- 50% female participants

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Language

Training delivery and materials will be in English.

Software

GIS lab exercises will be based on open-source QGIS software, and the Climate Engine Research App.