

Geo-information in Disaster Situations

Satellite Analysis and Applied Research

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The increasing number and intensity of natural disasters in the past few years have had severe consequences in terms of human lives that were impacted, but also in terms of structural damage and economic losses. In years to come, extreme events will no longer be exceptions; therefore, it is essential for sovereign territories in the Caribbean region to strengthen both their preparedness and response capacities to efficiently cope with future disaster events. Geospatial information technology including satellite imagery analysis and data visualization play a vital role in understanding the geographic extent and severity of catastrophic events. Nevertheless, the ability of national and regional authorities as well as disaster management experts to seamlessly collect, integrate, analyze and distribute geospatial information in a comprehensible format to support evidence-based decision making remains a challenge that needs to be addressed with ad-hoc training and capacity development programs. To meet these challenges, UNOSAT is offering an introductory course in the use of Geo-Spatial Information Technology applications to support operational planning and decision making during emergency response. The course is designed to accommodate Master students on Disaster Management and selected participants from line ministries, national/regional authorities, UN and NGOs with little GIS experience.

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The aim of the course “Geo-Information in Disaster Situation” is to prepare the students to be able to effectively utilize geospatial tools and apply GIS methodologies for emergency response mapping. The course will provide a foundation for students interested in GIS-related applications in the field of disaster risk management.

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At the end of the course participants should be able to:

- Define and describe basic concepts and terminology related to Geospatial Information Technology (GIT);
- Explain the role of geo-information in the response phase of a disaster and identify suitable mechanisms for satellite imagery acquisition;
- Identify, search, collect, organize and analyse geospatial related information relevant for disaster mapping;
- Apply basic methods and functionalities of GIS software (ArcGIS) to manage and analyse spatial data;
- Apply basic functionalities of google earth engine;
- Apply basic GIS methodologies to perform impact analysis and preliminary damage assessment in the aftermath of a disaster event.
- Undertake the process of map-making in support of emergency response and post-disaster / recovery operations;

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The course will develop basic technical GIS skills amongst master level's students and selected participants so that they are able to collect, manage & analyse geospatial data and produce disaster maps using GIS software. During the first week of the training course delivered by the University of Copenhagen, focus will be given to impart basic concept and terminology relative to Geo-spatial Information Technology (GIT), and to learn basic functionalities of ArcGIS software to handle GIS datasets and to perform spatial analysis including the process to produce thematic maps. The second week of the course will be delivered by UNITAR-UNOSAT and will be focusing, through selected case studies (floods, tropical cyclones etc.), on specific GIT methodologies and applications to perform impact and damage analysis in the immediate aftermath of a disaster event. Mechanisms to collect pre and post disaster satellite images as well as GIS baseline data to produce disaster maps in support of emergency response operations will also be covered during the second week of the GIS course. The use of Google Earth Engine platform will be also performed by the students. During the third week, the participants will be asked to produce their own cartographic products from real case scenarios provided by UNOSAT.

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This is a full-time, remotely facilitated course with lectures and GIS lab exercises using local datasets and real case scenarios. This course is divided into several modules. Each module is structured into 4 sessions of 1.5 hour each. The average workload per week is likely to be around 25-30 hours. The course is designed in a way to have a balanced approach between theoretical and practical teaching methods consisting in PowerPoint presentations, live demos, videos, interactive sessions and GIS lab exercises. At the end of the course, the students will undertake an individual GIS assignment based on a selected disaster event scenario.

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Masters students in Disaster Management from the University of Copenhagen

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Grading according to the Danish 7 scale, internal moderation. The examination is based upon an assessment of written Individual/group deliverables along with printed maps in which the students will demonstrate acquired GIS skills. This course gives a right to 5 ECTS.

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