Introduction to Geospatial Information Technology for Disaster Risk Reduction/Management (DRR/M)

Satellite Analysis and Applied Research

**Type:** Course  
**Location:** Kigali, Rwanda  
**Date:** 16 Dec 2019 to 20 Dec 2019  
**Duration of event:** 5 Days  
**Programme Area:** Satellite Imagery and Analysis  
**Specific Target Audience:** No  
**Website:** [http://www.unitar.org](http://www.unitar.org)  
**Price:** No Fee  
**Event Focal Point Email:** luca.DELLORO@unitar.org

**BACKGROUND**

In recent years, a drop in poverty, child-mortality, and near-universal primary school enrolment, has accompanied Rwanda’s strong economic growth. Rising temperatures and variable rainfall may threaten these positive trends in the rural, landlocked, and densely populated country, which are likely to affect rain-fed agriculture, hydropower production, malaria transmission rates, and nature-based tourism.

On the steep slopes that dominate much of the country, floods, landslides, and soil erosion are already damaging agriculture, infrastructure, and services. Heavy rains in 2012, for example, led to extensive flooding in the northern and western provinces that caused extensive damage and affected about 11,000 people. In 2016, floods and landslides blocked roads, destroyed bridges, and damaged 1,425 homes in Gakenke district.

Geospatial Information Technology (GIT), now being also called an “enabling technology” due to the benefit it offers across different application domains, can be a very useful tool to support the whole disaster risk management cycle (Prevention/Mitigation, Preparedness, Response and Recovery/Reconstruction) as well as the operational planning and decision making of coherent disaster risk reduction (DRR) activities at both national and local scales. Quantifying level risk of expected future losses is a key step in any disaster risk reduction program. In addition, the outputs and scenarios generated from risk assessments contribute to inform overall risk reduction policies and planning. Risk assessment can be performed by applying geospatial methodologies that allow to quantify risk and identify the locations in need of risk reduction measures. The role of GIT does not stop there; in the immediate aftermath of a disaster, satellite based rapid response analysis enables the emergency response agencies to respond in a better and coordinated way.

Technology in its various forms, including Geospatial Information Technology (GIT), continues to redefine and
revolutionize the way we all live and work. Harnessing innovation and technology to advance gender equality and women’s empowerment is critical throughout the 2030 Agenda for Sustainable Development. The link between technology and women’s rights is clearly reflected in SDG 5 on gender equality and the empowerment of women, which includes a specific target on utilizing technology to realize women’s and girls’ empowerment. In addition, according to UNISDR, women are still too often absent from the development of disaster risk reduction strategies and decision-making processes. The Sendai Framework underline women’s participation is critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes.

**EVENT OBJECTIVES**

To increase women’s participation and representation in all levels of DRR operational planning and decision-making UNITAR-UNOSAT is offering a 50/50 gender-focused training on “GIT applications for DRR”. The overall aim of this one-week course is to provide selected women and men participants with introductory concepts of geospatial information technology and methodologies to support DRR/M related activities.

**LEARNING OBJECTIVES**

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

Define and describe the basic concepts and terminology related to Geospatial Information Technology (GIT)
Apply basic methods and functionalities of GIS software to manage and analyse spatial data
Identify, search, collect, organize geospatial data/information
Apply GIS methodologies and tools for DRR/M applications
Explain the advantages and limitations of using geospatial information in DRR/M
Undertake the process to create desktop thematic maps to support operational planning and decision making

**CONTENT AND STRUCTURE**

The course will provide selected participants with a theoretical understanding of basic principles of GIS and Remote Sensing (RS), how to search from web sources relevant datasets and to collect spatial data using geospatial tools such as GPSs, smartphones and basic skills for spatial analysis. Participants will also be challenged to solve DRR/M problems by developing/applying geospatial methodologies.

**METHODOLOGY**

1-week training:

This is a full-time, face-to-face course with lectures and GIS lab exercises using GIS datasets and real case scenarios (60% lab exercises, 40% lectures and discussions). This course is divided into 5 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 will be 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. A dedicated learning management platform will be set it up by UNOSAT to maximize the learning experience of participants and to provide all required technical backstopping during and after the training.

**TARGETED AUDIENCE**

Women working in DRR related ministries
ADDIONAL INFORMATION

Trainers Bio Data

Dr. Romy Schlögel is a Geo Information Trainer as individual contractor with UNITAR supporting the Disaster Risk Reduction/Management and Climate resilience section of the Division for Satellite Analysis and Applied Research (UNOSAT) in African countries.

She holds a MSc Geology from the University of Liege (Belgium) and 10 years’ practicing use of GIS and Earth Observation in slope processes monitoring and natural hazards assessment. Previously she was a research fellow studying climate change impacts on mountainous hazards with satellite imagery hosted by the European Space Agency (ESA Climate Office, ECSAT) in Harwell, UK. Prior to joining ESA, she was a senior research and manager of international projects related to natural hazards at the Earth Observation Institute of the Eurac Research in Bolzano, Italy.

Before that Italian experience, she was hired by CNRS as an Early Stage Researcher at the University of Strasbourg (IPGS/EOST), where she enrolled in the FP7 Marie Curie ITN focused on Changing Hydro-meteorological Risks. She completed her PhD in Earth Sciences and Geomorphology on "Quantitative landslide hazard assessment with remote sensing observations and statistical modelling".

Ms. Rispha Gicheha is a Geo Information Trainer and a Liaison officer with UNITAR Operational Satellite Applications Programme (UNOSAT) in Nairobi, Kenya. She holds a masters in GIS and Remote Sensing with more than 10 years’ working experience in the field of Geo Information. Her role in UNOSAT is to prepare and coordinate training workshops and she is the focal person in Nairobi office. Prior to joining UNOSAT, she worked with UN OCHA as an information management officer where she coordinated humanitarian partners during response to disasters, she also prepared information products i.e 3W maps, Humanitarian dashboards, Humanitarian snapshots and coordinated Information Management working group meetings. She also worked with FAO SWALIM as a Remote sensing officer where she did monitoring of infrastructure using remote sensing and did crop yield assessment for early warning and food security.