2-Day Workshop on Application of GIS and Remote Sensing in Disaster Management

Organized by: Disaster Research Training and Management Centre (DRTMC), Department of Geography and Environment, University of Dhaka
Date: 13 - 14 July 2025
Target Audience: Disaster Management Professionals, Volunteers, Academicians, and Researchers
Venue: DRTMC, Department of Geography and Environment, University of Dhaka

Overview

This 2-day workshop is designed to provide participants with a comprehensive understanding of Geographic Information Systems (GIS) and Remote Sensing technologies for effective disaster management. The module combines theoretical foundations, practical demonstrations, and hands-on exercises to equip participants with skills to apply these technologies in pre- and post-disaster scenarios.

Day 1: Theoretical Orientation and Practical Demonstrations

Date: 13 July 2025
Objective: Introduce core concepts of GIS and Remote Sensing, their applications in disaster management, and demonstrate real-world examples using relevant tools.

Morning Session (9:00 AM – 12:30 PM)

- **9:00 AM – 9:30 AM**: Welcome and Introduction: Overview of the workshop objectives and agenda. Introduction to DRTMC and its role in disaster management.
- **9:30 AM – 10:30 AM**: Introduction to GIS: Overview of GIS concepts and tools (ArcMap, ArcGIS Pro, ArcGIS Online, QGIS). Role of GIS in spatial data analysis for disaster management.
- **10:30 AM – 11:30 AM**: Introduction to Remote Sensing: Fundamentals of Remote Sensing and its applications. Introduction to Google Earth Engine for accessing and analyzing satellite imagery.
- **11:30 AM – 12:30 PM**: Integrated Disaster Management Approaches: Frameworks for risk and vulnerability analysis. Strategies for preparedness, emergency response, and post-disaster recovery. Role of GIS and Remote Sensing in each phase.

***Lunch Break**: 12:30 PM – 1:30 PM*

Afternoon Session (1:30 PM – 5:00 PM)

- **1:30 PM – 3:00 PM**: Applications of GIS and Remote Sensing in Disaster management: Cyclone and tidal surge mapping. Flood risk assessment and monitoring. Riverbank erosion monitoring. Water stress monitoring and mitigation. Fire incidence mapping. Drought monitoring and mitigation. Monitoring **salinity intrusion** in coastal areas
- **3:00 PM – 4:30 PM**: Practical Demonstrations: Live demonstrations using: ArcMap: Creating hazard maps. ArcGIS: 3D visualization of disaster-prone areas. ArcGIS Online: Sharing and collaborating on disaster data. Google Earth Engine: Real-time satellite data analysis for disaster monitoring.
- **4:30 PM – 5:00 PM**: Q&A and Wrap-Up: Discussion on demonstrated tools and their applicability. Instructions for setting up Google Earth Engine accounts.

Day 2: Hands-On Practice and Problem-Solving

Date: 14 July 2025

Objective: Enable participants to apply GIS and Remote Sensing tools through hands-on exercises and explore data sources for continued learning.

Morning Session (9:00 AM – 12:30 PM)

- **9:00 AM – 10:30 AM**: Hands-On Exercise – GIS Analysis for Flood Management: Participants will use ArcGIS, ERDAS Eamagine and Google Earth Engine
    - Import and process flood-related spatial data.
    - Perform spatial analysis (e.g., flood risk zoning, vulnerability mapping).
    - Generate maps and reports.
- **10:30 AM – 11:30 AM**: Hands-On Exercise – Remote Sensing with Google Earth Engine
- Participants will: 1) Access satellite imagery for a recent flood event. 2) Analyze land cover changes and flood extent. 3) Visualize results using Google Earth Engine's interface.
- **11:30 AM – 12:30 PM**: Preparing Maps and Reports: Guidance on creating professional maps and reports for disaster management. Best practices for data visualization and communication.

***Lunch Break**: 12:30 PM – 1:30 PM*

Afternoon Session (1:30 PM – 5:00 PM)

- **1:30 PM – 3:00 PM**: GIS and Remote Sensing Data Sources: Overview of open-access data sources (e.g., USGS, Copernicus, OpenStreetMap). How to access and integrate datasets for disaster management. Demonstration of data retrieval using Google Earth Engine and other platforms.
- **3:00 PM – 4:30 PM**: A Path Forward: Resources for continued learning (e.g., online courses, communities, documentation). Recommendations for integrating GIS and Remote Sensing into participants' workflows. Discussion on challenges and opportunities in disaster management.
- **4:30 PM – 5:00 PM**: Certificate Distribution and Closing: Awarding certificates to participants who completed all sessions and exercises. Closing remarks and feedback collection.

Hardware and Software Requirements

- Prerequisite: Each participant must bring a laptop with ArcGIS and ERDAS Imagine installed.
- Participant Responsibilities: Participants are required to create a Google Earth Engine (GEE) account prior to the training. Basic familiarity with GEE is highly encouraged.

Certificates

- Awarded to participants who attend all sessions and complete all exercises.