The use of space technologies in disaster risk management

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Environmental pollution

War

Natural Disasters

Food Security

Forest Fire

Lack of water resources

Increasing need for energy
Quick Look Terra/MODIS

False color composite 1-4-3/ modis/AQUA  

date: 2017-11-18

False color composite 7-2-1/modis/AQUA
Dust Storm Monitoring
Water body Monitoring
Urmia Lake water level fluctuations over 20 years
Agricultural Land Monitoring
Field Observation

Download Landsat8 Imagery & Quality control
Agricultural Crop Map
Fire Monitoring System
Fire Monitoring System

Objectives

• Automation
• Detect Fires with at least 100 sq m
• Detect & Warning in shortest time
• Web GIS
• SMS & E-Mail system for Warning
Golestan Province
Forest Fire
Flood Mapping

Flood Map
Derived from Gaofen-1
Acquisition date: 16 April 2016

Flood Map
Derived from Sentinel-1A
Acquisition date: 16 April 2016

Water Body
Muddy River
Flooded Area
Maximum movement in horizontal direction was 4 cm. Maximum movement in vertical direction was 14.75 cm.
Kermanshah Earthquake Monitoring
Kermanshah Earthquake Monitoring Using Radar Satellite Imagery
Capacity Building

- Booklet on “Effective use of Space-based information to monitor disasters and its impacts: Lessons Learnt from Drought in Iran”
Capacity Building

**UN-SPIDER KNOWLEDGE PORTAL**

**Recommended Practice: Agricultural drought monitoring**

Objective:
The purpose of this recommended practice is to monitor impacts of meteorological drought on natural vegetation (rain fed, range land & forest). Availability, simplicity, free of charge data, good research literature and citation, minimum requirements of inputs are main criteria, which have been followed in this practice. The purpose is to monitor impacts of meteorological drought on natural vegetation (rain-fed, range land & forest). The data is free of charge and requires minimum requirements of inputs.

**Step by Step**

**Related Practices**
- Flood Hazard Mapping
- MODIS Vegetation Product (NASA)
- MODIS Vegetation Product (NASA)

**Related Data**
- MODIS Vegetation Product (NASA)
- MODIS Vegetation Product (NASA)
Capacity Building
Including World Space Week programs, a short training course on remote sensing applications and GIS applications was successfully held during 8-9 October, 2017 in National Disaster Management Organization of Iran. Topics included:

- Remote sensing
- GIS
- GNSS, GPS
- International data sharing systems
- Flood mapping using SAR data
- Fire monitoring and detection using satellite imagery
In the process of distributing and producing information for disaster management, we can define four stages:

- **Primary data**: it is data capturing, which due to the fast approach of technology trend, is improving very fast. Of course for some hazards like earthquakes are still low.

- **Data management**: for data management, we need data management tools and databases, while many countries do not have the proper infrastructure for it.

- **Information**: In order to obtain information, a proper model and analysis is required. At this point, we need to come up with a functional model. Today, there are no difficulties about plenty data processing software. Real challenge is the methods and application models that are suitable for the end user. Many scientific articles talk about various models, however, in fact, they are far from being implemented. It seems that there is a need for more interaction between executive agencies and research and academic centers.

- **Product**: this is the theme of “applicable systems”. In stage 3, applicable model will be designed and developed mostly through academic and research centers. In this stage, the model will be implementing. In fact, the user offers a positive or negative feedback for the end product. Now, the underlying issue is the application models that have undergone their research process and have reached the stage of implementation.

Thanks