2 RSOs Cooperate to Conduct

Workshop on "Space Applications for Disaster Risk Reduction and Management"

7-19 September 2013, Tehran, Iran.

UN-SPIDER Regional Support Offices in Iran and Pakistan through Inter - Islamic Network on Space Sciences and Technology (ISNET) held a two week Workshop on Space Applications for Disaster Risk Reduction and Management during 7-19 September 2013 at Iranian Space Agency in Tehran, Iran.

The workshop was aimed at imparting hands-on training on six major disaster hazards, namely: floods, earthquakes, landslides, cyclones, tsunamis and avalanches.

The main Objectives of this workshop were:

- To provide participants with a broad overview of space-based technologies for disaster risk reduction and management
- To provide specialized training in the processing, interpretation and applications of satellite remote sensing data for disaster risk reduction and management
- To impart hands-on training on floods, earthquakes, landslides, cyclones, tsunamis and avalanches using space-derived optical, SAR and microwave remote sensing data
- To impart knowledge on the use of advanced disaster risk reduction and management techniques and methodologies in handling space-derived data
- To develop familiarization with techniques used to integrate optical and SAR data for applications in different disaster hazard areas
- To enhance horizontal cooperation and collaboration among the participants through the development of synergy

Target Audience:

- 28 Scientists and researchers from ISNET member states who work in matters related to applications of space technology for disaster risk reduction and management particularly on early warning, prevention, response and mitigation presently associated with space agencies, disaster management authorities and other space-related organizations from Iran ,Pakistan ,Iraq , Bangladesh, Senegal, Libya, Malaysia and Sudan.

Agenda:

1) Floods, 7-9 September 2013
Trainer: Mr. ZAFAR IQBAL (from Pakistan)

- Space Agency's Role in Disaster Management
- Operational Use of RS/GIS in all phases of Disaster Management Cycle
  - ✓ Early Warning/Contingency planning
  - ✓ Rescue/Relief
  - ✓ Early Recovery
  - ✓ Rehabilitation & Reconstruction

- ✓ Assistance to national agencies in developing Long term solutions for flood mitigation
- Hazard Risk & Vulnerability Assessment- Hazard mapping, etc
- Use of archived imagery – Identifying Erosion
- Hot Spots over time using Archived RS Imagery
- International/Regional Cooperation mechanisms in Disaster Management

2) Avalanches, 10 September 2013
Trainer: Mr. SHAHID PARVEZ (from Pakistan)

- Introduction to Avalanches
- Remote Sensing of Avalanches
- Monitoring Avalanches using Google Earth utilities – a case study of Gyari Sector Avalanche, Pakistan, with hands-on exercise.

3) Cyclone, 11 September 2013
Trainer: Dr. MAJID VAZIFEDOUST (from Iran)

- Tropical Cyclones and physical processes involved
- Meteorological satellite and cloud products
- Study of Cyclone Gonu on 1, Jun 2007 using EUMETSAT satellite images

4) Tsunmai, 12 September 2013
Trainer: Dr. ANDREAS HOECHNER (from Germany)

- Introduction to Tsunami
- Tsunami Early Warning based on GNSS
- TOAST: Tsunami Observation And Simulation Terminal

5) Landslide, 14-16 September 2013
Trainer-1: Dr. SIGRID ROESSNER (from Germany),

- Introduction to landslides
- Optical Remote sensing for landslide hazard assessment
- Optical Remote sensing for landslide inventories

Trainer-2: Dr. MARYAM DEHGHANI (from Iran)

- Introduction to Active Microwave Remote Sensing
- SAR Interferometry Principles
- SAR Interferometry Principles
- SAR Interferometry criteria for Landslide Monitoring
- Persistent Scatterer Interferometry
- Exercise 1
    - SAR Interferometry in GAMMA software

6) Earthquake, 17-19 September 2013
Trainer: Dr. MAHDI MOTAGH

- Earthquake cycle monitoring using radar observations:
- Coseismic deformation and fault slip distribution (plate tectonics and earthquake, dislocation theory, Okada model, inversion of geodetic data)
- Damage assessment using interferometry decorrelation
- Earthquake cycle monitoring:
    - ✓ Interseismic deformation monitoring and earthquake hazard assessment
    - ✓ Postseismic deformation processes (afterslip model, visco-elastic models, poro-elasticity)

- Exercise 1
    - Interferometry using public Domain tools
    - Installation of the DORIS software
    - The flowchart of repeat-pass InSAR processing (DORIS approach)
- Exercise 2
    - Practical examples of SAR Interferometry using Doris software with freely available ASAR data from European Space Agency (ESA)