
Intergovernmental Meeting on Asia-Pacific Years of Action for Applications of Space Technology and the Geographic Information System for Disaster Risk Reduction and Sustainable Development

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Country Report of Pakistan



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1. Background

Pakistan is a country of rivers, fertile lands, glaciers and snow covered mountains, deserts, mineral rich hills and a vast coastal belt and having a land area of 796,096 Sq Km with a population of approximately 180 million. Administratively, Pakistan is divided in five provinces i.e. Sindh, Baluchistan, Punjab, Khyber-Pakhtunkhwa and Gilgit-Baltistan. Pakistan falls in three geographical regions namely the northern highlands, the Indus River plain and the Baluchistan Plateau. Himalayas, Hindu Kush and Karakoram ranges constitute northern and north western highlands. Pakistan lies in temperate zone above the tropic of cancer. The climate varies from tropical to temperate. Bordering countries of Pakistan are China, Afghanistan, Iran and India.

SUPARCO – The national space agency

SUPARCO undertakes R&D in space science, space technology and their peaceful applications. It works towards developing indigenous capabilities in space technology and promoting space applications for socio-economic uplift of the country. These include remote sensing applications, atmospheric and environmental studies, development of satellites and it also closely collaborates with the academia.

2. Satellite data acquisition

In order to attain self sufficiency in acquisition of satellite remote sensing data, a satellite ground receiving station was setup in 1989

at Islamabad to acquire data from Landsat and SPOT series of satellites. This station was upgraded to acquire SPOT 5 data in 2004. Besides, a ground receiving station for reception of Aqua/Terra and other meteorological satellites data has been established in Karachi, Pakistan.

Currently SUPARCO is involved in the use of satellite remote sensing data for resource mapping; agriculture; forestry; land use and land cover mapping; water resource management; environmental change detection and impact assessment; snow and glaciers melt studies; natural hazards monitoring and impact assessment; urban planning; environment monitoring; and disaster management.

Some of the other major remote sensing application programs are as follows:

3. Remote Sensing Applications

The primary objective of this Program of SUPARCO is to promote remote sensing, GIS, telecommunication and navigation technology applications in the country, to develop indigenous capabilities for undertaking projects that contribute to that socio-economic development of the country and to develop a strong scientific and technological base.

Pakistan initiated its remote sensing applications program in 1973 after the launch of Landsat 1 satellite. Initially, remote sensing application projects were undertaken in the fields of flood monitoring; river course change mapping, and land use/ land cover classification.

Over the years the country has built competence and developed the necessary infrastructure in the field of satellite remote sensing

technology and its applications for undertaking important projects for government and private sector organizations and agencies. A National Centre for Remote Sensing and Geo-informatics has been established to promote space science and applications in the country. These efforts have borne fruit and the technology is now being extensively utilized for the socio-economic development and technological uplift.

Spatial Database Development

Development of integrated applications of remote sensing and GIS in fields that include cartography and mapping, spatial analysis and processing, spatial decision support system, geo-database management and development, surveying, web GIS, mobile GIS and location based services.

Environmental Applications

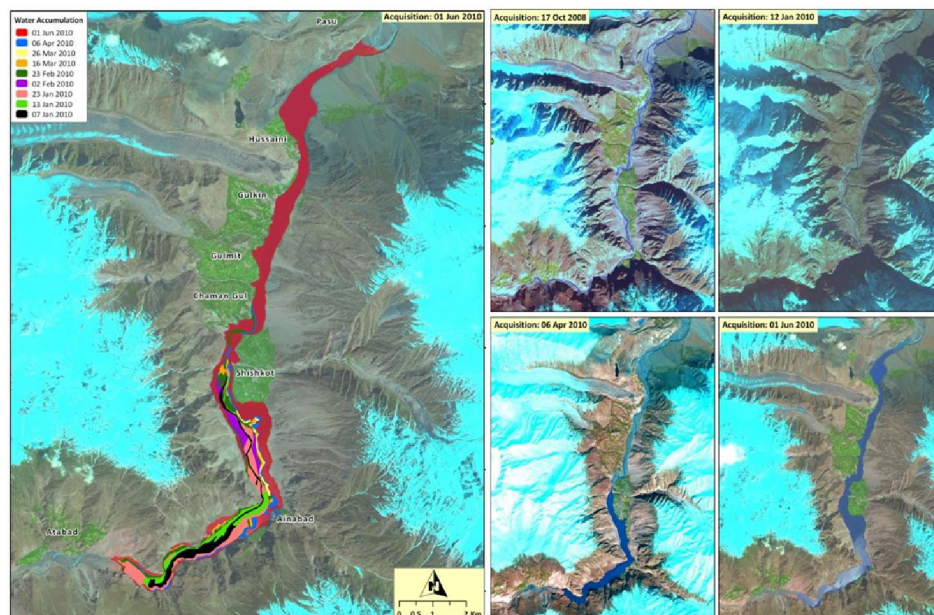
Laboratories for air and water quality sampling and testing have been established for country-wide environmental information management and database development. The environmental satellite remote sensing applications have also been developed for national and regional level studies.

Global Navigation Satellite System (GNSS)

The integrated applications of remote sensing GIS and positioning technologies have been progressively introduced and developed in the country for location-based services; asset & fleet management and mapping.

Disaster Management

Satellite remote sensing and GIS is being extensively utilized by the National Disaster Management Authority (NDMA) as well as provincial authorities during crises and emergency situations from relief to early recovery, rehabilitation and reconstruction phases. SUPARCO, is also the regional support office for United Nation's Centre for Space based Information on Disaster & Emergency Response (UN-SPIDER). A call for major disaster was activated by UN-SPIDER on behalf of SUPARCO during calamitous floods of 2010. Besides, SUPARCO hosts a Local User Terminal and Mission Control Centre of international satellite aided COSPAS-SARSAT search and rescue programme.

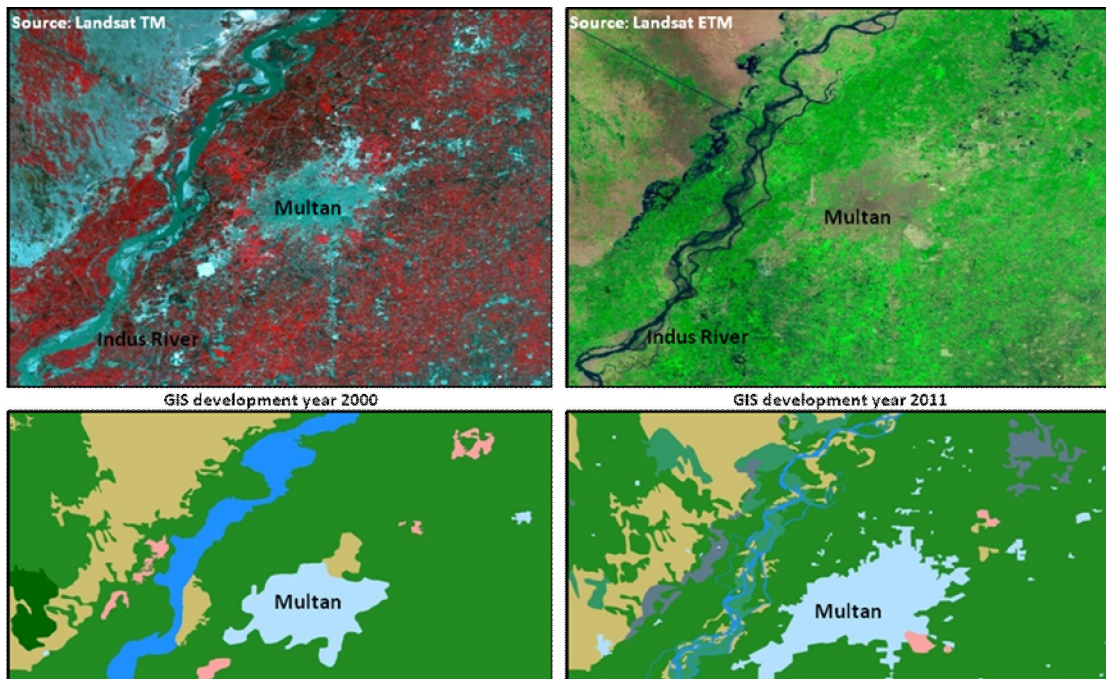


Temporal Analysis of Water Accumulation, Attabad Northern Pakistan

National Environmental Management Information System

In 2011 the Ministry of Disaster Management initiated a project for the effective implementation of the National Environmental

Information Management System (NEIMS) at the national level. The objectives of the project include development of temporal environmental monitoring applications at national level, analysis of dominant environmental changes covering parameters such as; air pollution, water, biodiversity (agriculture, forest), desertification (water logging, salinity), sea surface temperatures mapping and trend analysis. The project would contribute to the promotion of sustainable development through building of national capacity in developing, managing and utilizing environmental information for informed decision making.



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