SUPARCO and its role in monitoring natural disaster in Pakistan

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National Space Agency of Pakistan
History

- A Space Science Research Wing was established, on advice of Dr. Abdul Salam, the Nobel Laureate, Chief Scientific Advisor to the President of Pakistan on 16th Sep 1964

- Acquired status of an independent Commission on 21st May 1981
Mandate

- Carry out R&D activities in the field of Space Sciences & Technology
- Promote space applications for socio-economic development of the country
Satellite Ground Station

- Established in 1989
- Acquires and processes SPOT constellation satellite data in both panchromatic & multispectral modes
- Capable of providing multi resolution imagery (2.5m to 20m)
Spot Receiving Station

Aqua / Terra Receiving Station
Flood /Rain 2010
During the summer of 2010, the worst flooding in Pakistan took place. This affected lives of millions of people and caused colossal damage to infrastructure.

There was an urgent need to point out the major affected areas and to quickly carry out damage assessment exercise.
A rapid mapping of the flood affected areas was carried out using pre-post MODIS data.

This was followed by use of SPOT 4 and SPOT 5 data for detailed damage analysis.

The information was supplied in regard to monitoring damages to infrastructure, settlements, canal breaches, roads, bridges, railways and cropped area.

Temporal flood inundation mapping, extent of flood water and statistics for various attributes regarding flood damage.

Geographic and agriculture area damaged and extent losses in crop yield and production for Kharif season.

The flood recession statistics.
- Flood Extent 13 August 2010
- Flood Extent 16 August 2010
- Flood Extent 21 August 2010
- Flood Extent 31 July 2010
- Flood Extent 27 August 2010
POST FLOOD SPOT SATELLITE COVERAGE

Province Boundary
District Boundary

Post Flood Spot-5 5m Imagery acquired at SUPARCO, Islamabad
Projection: UTM Zone 42 N
Spheroid: WGS 84
ALI PUR TEHSIL  FLOOD / RAIN 2010

Map showing flooded areas and classified land use in Ali Pur Tehsil, Pakistan. The map includes details such as flooded areas, settled land, bare soil, water bodies, and affected crops. The map is credited to SUPARCO and World Bank.
Settlement Sector
NOWSHERA CITY

Pre Disaster : 10 Feb 2010

Post Disaster : 05 August 2010
Irrigation Sector
CONFLUENCE OF KABUL & INDUS RIVER

Pre Disaster : 18 Jun 2010

Post Disaster : 02 August 2010
TORI BUND

Pre Disaster : 02 June 2010

Post Disaster : 22 Aug 2010
Delineation of Breached Areas - District Muzaffargarh

**Section 5 (Pre Flood)**

Source: SPOT Satellite
Acquisition Year: 2009

**Section 5 (Post Flood)**

Source: SPOT Satellite
Acquisition Date: 28 Aug 2010
Acquisition Time: 11:15 AM PST

**REMARKS:** Canal Breaches on T P Link and Muzaffargarh near Taunsa Barrage, Tehsil Kot Addu (Canal Breach is in white circle)
Railway Sector
Agriculture Sector
NOSHERO FEROZE

Pre Disaster : 07 June 2010
Post Disaster : 17 August 2010
Flood /Rain 2011
This map presents preliminary analysis of flood affected areas.

Data extracted from pre & post Flood Imagery acquired from MODIS Satellite Series at SUPARCO, Karachi.

This analysis has yet to be validated in the field.

Projection: UTM Zone 42 N
Spheroid: WGS 84
Mangroves monitoring
Conclusion

Space science and technology can be effectively used for socio-economic development. Pakistan would be pleased to share its knowledge and experience with other countries.
Thank you