Cooperative Activities of APSCO related to Disaster Management

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Independent / Non-Profit / Inter-Governmental / Regional (Asia-Pacific Region)

Full International & Legal Status / Convention registered under Art. 102 of the UN CHARTER

APSCO Convention was Signed in 2005

APSCO was formally Established in 2008

APSCO Commemorates its10th Anniversary 2018

APSCO Development Vision-2030 was Signed in 2018

Multi-Lateral Cooperation in the Asia-Pacific Region

Member State

Associate Member

Signatory State

Observer State

- Vast Geographical Area
- Enormous Population
- Various Natural Disasters
- Mostly Developing Countries
- Powerful Driving Force
- High Technology, Risk, Investment
- Equitable Representation

Cooperative Networks of APSCO

1. Data-Sharing Network

2. Space Segment Network & Inter-connection of Ground Systems (SMMS)

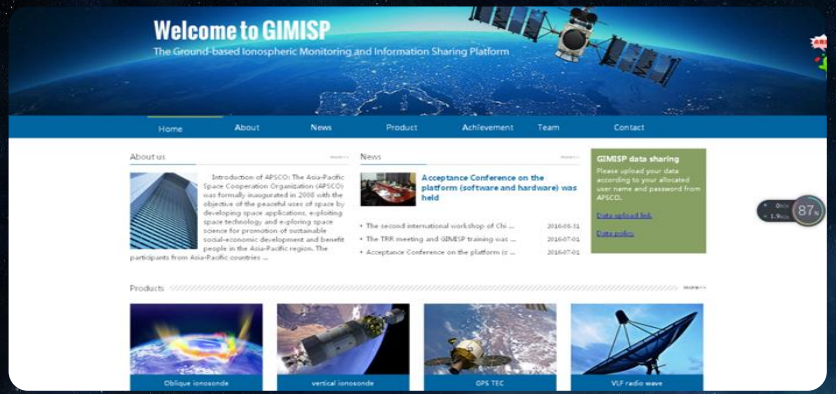
3. Ground-Based Object Observation Network (APOSOS)

4. Disaster Monitoring Network

5. Space Application Network

6. Education & Training Centre / Network

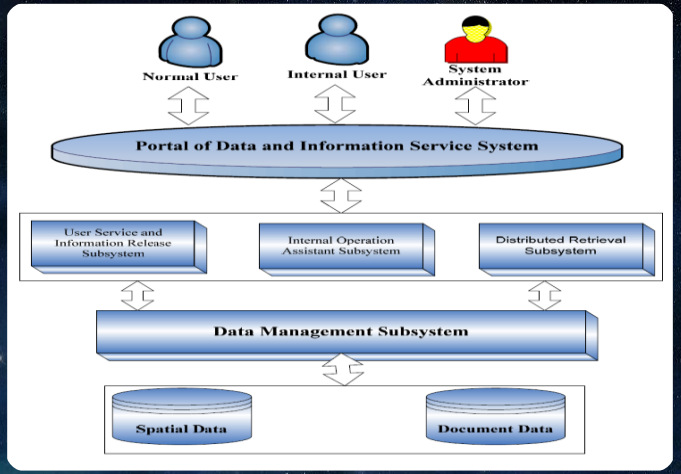
(1) Data Sharing Platforms



APSCO GIMI Sharing Platform

The Ground-Based Ionospheric Monitoring and Information Sharing Platform

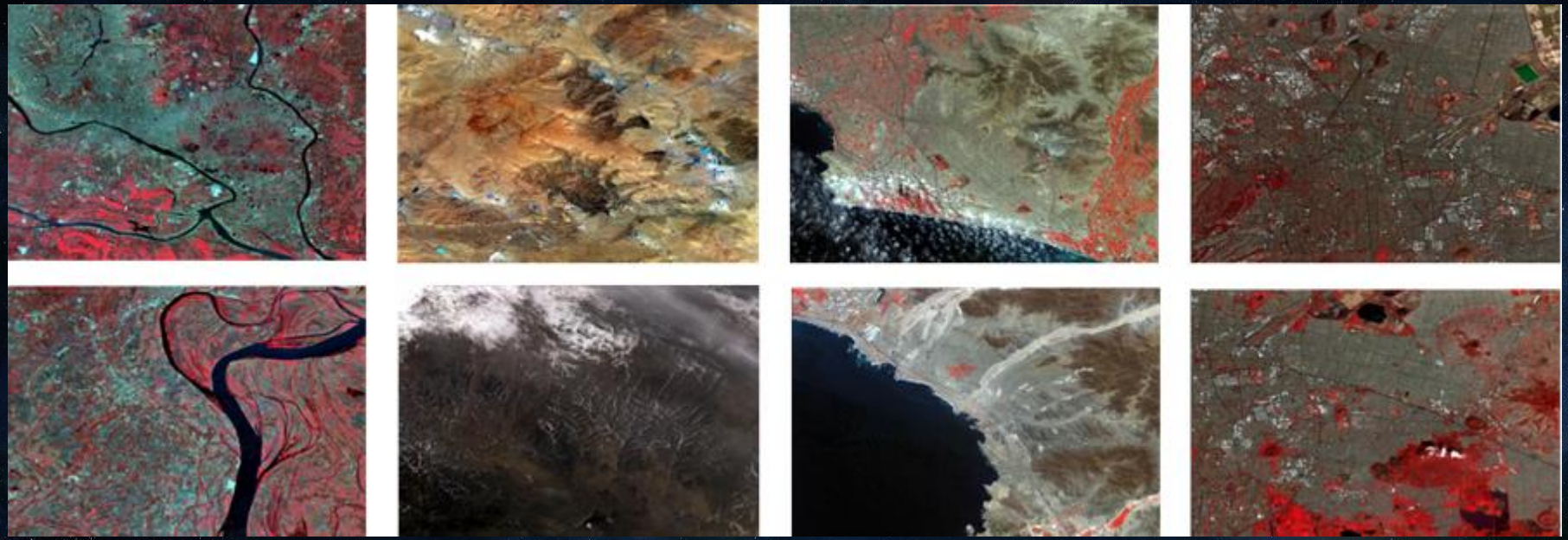
- ✓ *data processing*
- ✓ *analysis tools*
- ✓ *real-time user interaction by integrate the existing ionosphere altimetry, GPS TEC, VLF radio wave observations in MS.*



RS Data Sharing Service Platform

- ✓ *9 Earth-observation satellites from China*
- ✓ *More than 223,000 satellite images*
- ✓ *More than 20 million km2 coverage area*
- ✓ *35 Authorized Users in MS*
- ✓ *8000 images acquired*
- ✓ *DSSP Phase II: Enhanced data sources, more sophisticated data acquisition and processing tools with cloud-computing system, open sharing policy*

Data Sharing Service Platform



Land use monitoring in Bangladesh

Water and Snow Coverage In Mongolia

Flood monitoring in Peru

Earthquake damage assessment in Mexico

➢ Data Sharing Service Platform

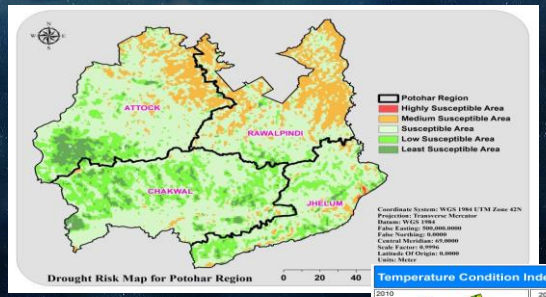
Enhanced Users and Applications

- ➢ *Air pollution assessment using satellite data: a case study of Bangkok*
- ➢ *Quantitative Assessment of Soil Moisture using SAR data*
- ➢ *Monitoring of Glaciers*
- ➢ *Mangrove Watch from Space*
- ➢ *Drought assessment and forecasting for smallholder farmers' adaptation to climate change in the Northern-Northeastern Thailand*
- ➢ *Built-up Feature Extraction and Urban Growth Monitoring in Pakistan*
- ➢ *…*

—— Application Projects

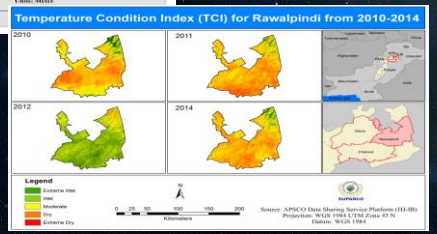
Estimation of Rice Field

- Successfully implemented by Kasetsart University, Thailand
- Combined sensors from HJ1A/1B and SAR satellites
- The rice field estimation has been substantially improved with >80% reliability



Drought Study

- Successfully implemented by SUPARCO, Pakistan
- Combined sensors from HJ1A/1B and AQUA satellite
- Time-series of different indices, such as NDVI, VCI, TCI were studied



First Batch of DSSP Application Projects (2021-2022)

Project 1: "Disaster Management System Application and Service Based on Wide Band Multispectral Remote Sensing Data"
Dr. Zhong Xing, Chang Guang Satellite Technology CO.,LTD., China

Project 2: "Establishing and Operating Flood Monitoring and Warning System Using Satellite Imageries"
Dr. Abdolreza Ansari Amoli, ISA, Iran

Project 3: "Mangrove Watch from Space"
Dr. Atif Shahzad, SUPARCO, Pakistan

Project 4: "Spectral Characterization of Forest Cover for the Evaluation of Amazonian Ecosystems"
Mr. Carlos Eche, Remote Sensing experts, CONIDA, Peru

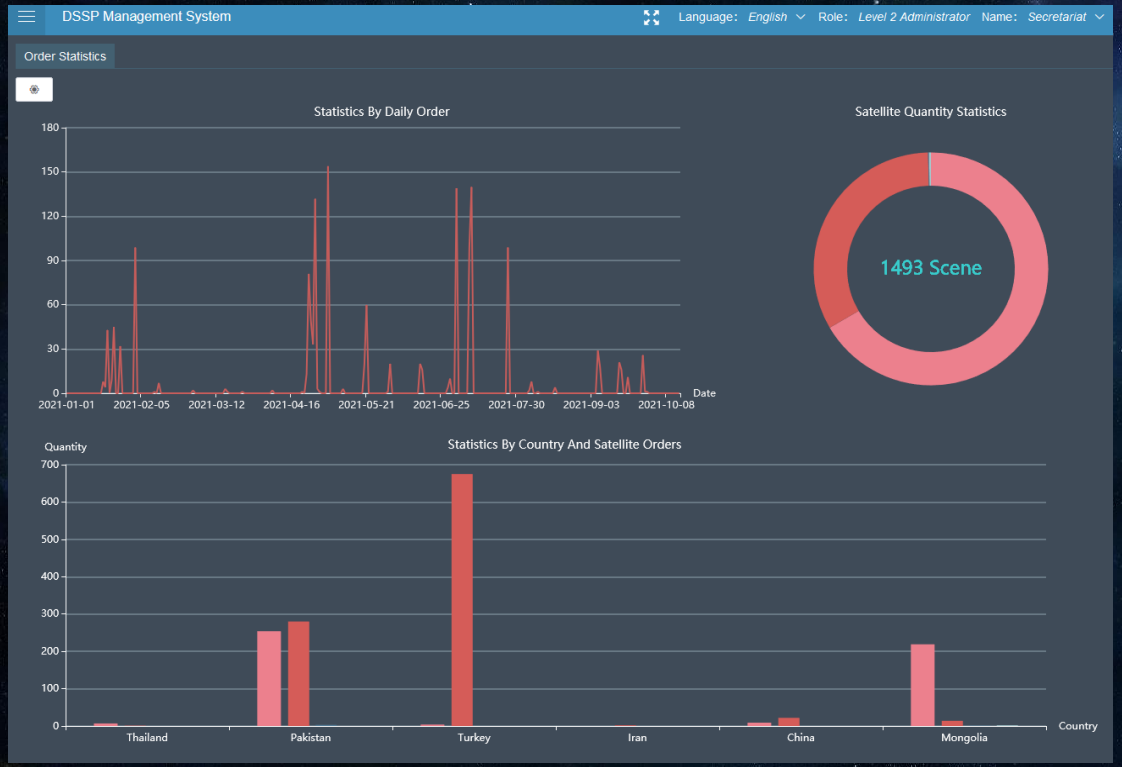
Project 5:"Air Pollution Assessment Using Satellite Data: A Case Study Of Greater Bangkok"
Dr. Kasemsan Manomaiphiboon, The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi(KMUTT), Thailand

Project 6: "Context-Based Satellite Imagery Search Engine （CoSISE）"
Dr. Kaan Kalkan, TÜBİTAK UZAY, Turkey

Project 7: "Investigation on the Applicability of Microwave and Optical Satellite Images for Assessment of Major Crop Acreages at Early Stage of Crop Life Cycle "
Dr. Md. Abdus Salam, SPARRSO

Project 8: "Wildfire Monitoring of Natural Disaster and Its Risk Assessment Using Remote Sensing Methods in Mongolia"
Dr. Byambakhuu Gantumur, NUM

Usage Status of DSSP Platform



- **Statistic Period: Jan-Oct, 2022**

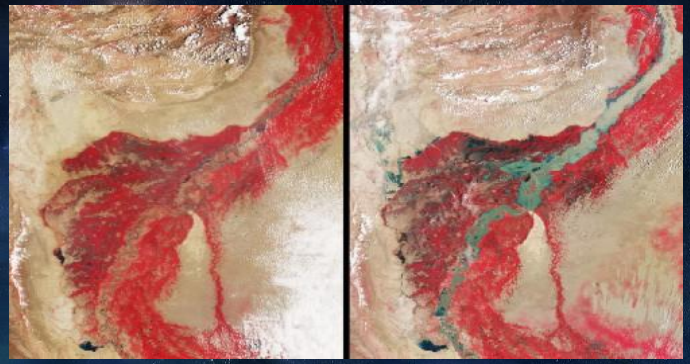
- **Bangladesh: 31 Scenes**
- **China: 54 Scenes**
- **Iran: 2 Scenes**
- **Mongolia: 292 Scenes**
- **Pakistan: 537 Scenes**
- **Peru: 0 Scenes**
- **Thailand: 8 Scenes**
- **Turkey: 679 Scenes**

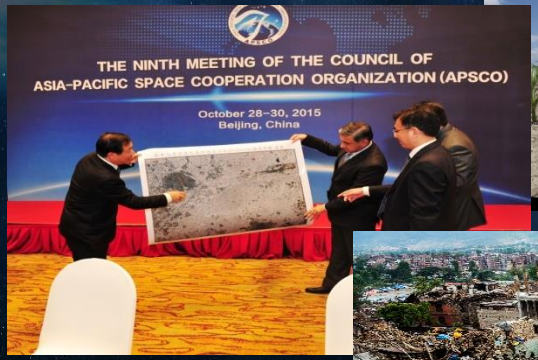
Total Order from MSs: 1493 Scenes

Cooperative networks of APSCO

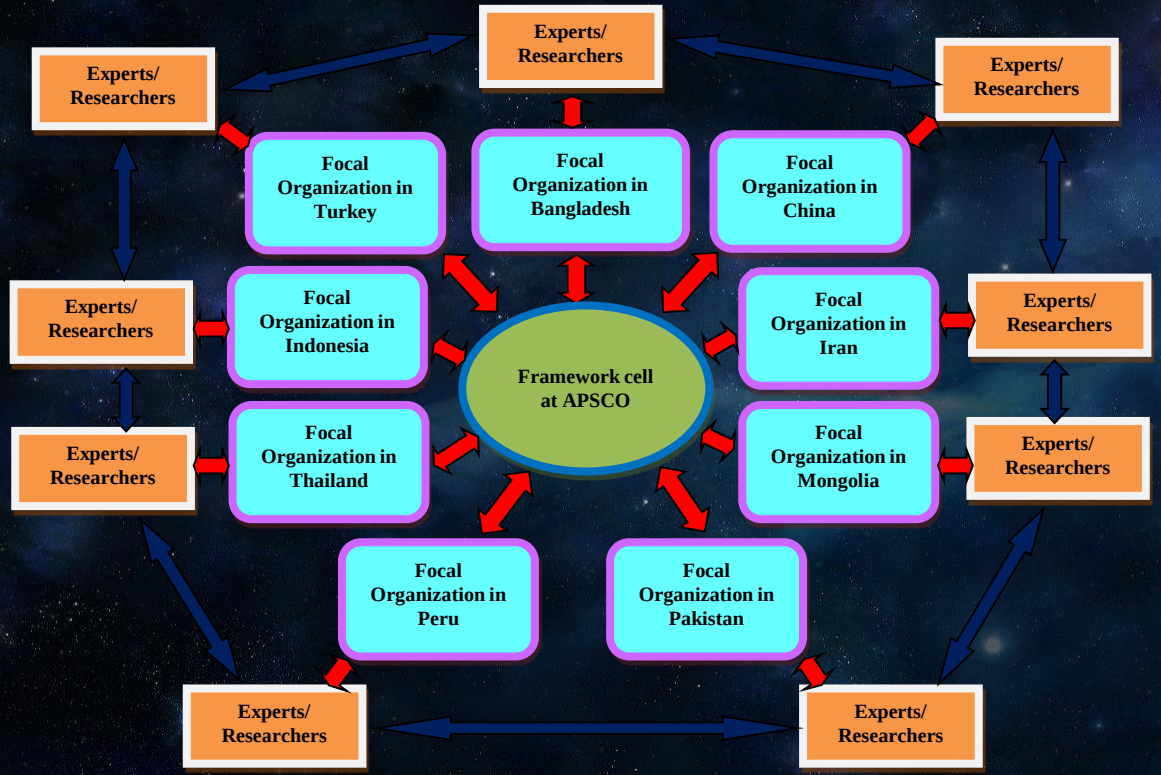
④ Disaster Monitoring Network

- Remote Sensing Techniques for Drought Study (Pakistan)
- Estimation of Rice Field Using Satellite Sensors (Thailand)
- Compatible GNSS Terminals for Emergency Management and Disaster Rescue (EMDR)
- Determining Precursor Ionospheric Signatures of Earthquakes by Ground-Based Ionospheric Sounding (Earthquake)
- Framework for Researches on Application of Space Technology for Disaster Monitoring in the APSCO Member States (Framework)
- CHARTER similar mechanism & Seek to become a member of CHARTER (long-term policy)





The Establishment of the Framework for Researches on Application of Space Technology for Disaster Monitoring Project (Framework)



Organizational structure of the Framework

Disaster theme	Activity	
	Kick-Off Meeting	
Flood and Earthquake	1st technical session	
	Joint research programs	Data collection and generation
		Analysis
		Field work
		Report preparation
Landslide/Avalanches and Drought	2nd technical session	
	Joint research programs	Data collection and generation
		Analysis
		Field work
		Report preparation
All disasters mentioned above	3rd technical session	

Cooperating with UN-SPIDER for Beijing Conference/Workshop & back to back training program since 2014

….. to be continued

APSCO Plan of Action on Regional Space Cooperation Enhancement Driven by SDGs

1. Making full use of the existing resources and promoting resource-sharing while strengthening information inter-connection;
2. Promoting capacity-building by taking full advantage of the wide geographic coverage area of its MS, and adhering to the principle of equally sharing of achievements from our joint efforts;
3. Promoting talent cultivation by constantly conducting various education and training programmes.
4. Enhancing cooperation with space-related organizations, and promoting APSCO's international leading role in the region.

—《Development Vision 2030 of APSCO》

Active Involvement in international space affairs
Peaceful use of outer space
Sharing knowledge and experiences
Collaborative gains with its Member States
Open worldwide to international space communities

THANK YOU