

# **APSCO and Its GEO Activities**

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# **Overview of APSCO**





- The Asia-Pacific Space Cooperation Organization (APSCO) is an intergovernmental organization with full international juridical personality;
- Convention signed in 2005, and inaugurated in 2008;
- Its main objective is to promote the peaceful uses of outer space in Asia-Pacific Region, and to carry out the cooperation in the fields of space science, space technology and space applications among Member States and regional countries.



Member



# International Recognition

- APSCO is the second space multilateral inter-governmental organization certified by UN after ESA
- UNOOSA Observer since 2009.
- Permanent Observer of UN-COPUOS
- Observer of GEO
- Observer of ICG
- Collaboration with other organizations.
   UN-ESCAP, UN-SPIDER, UN-RCSSTEAP, ISSI-BJ and ESA







# 2015 Beijing Declaration

### 1. Improve Space Capacity Building

build capacities by Education and Training and undertaking activities in Space Science and Technology and its Applications, as well as formulate Space Policies, Law and Regulations

#### 2. Improve Sharing Service Capability

Sharing of data, jointly developing products and applications, developing APSCO Telemetry, Tracking and Command (TT&C) ground station network and sharing services

#### 3. Improve the Quick Response Capability

 cooperative data acquisition, analysis and judgment for emergency rescue, and improve emergency response capability

#### 4. Improve the Industry Driving Capability

build the cooperation and exchange platform among the related enterprises providing space-based information services in all Member States

#### 5. Improve Information Inter-Connection

improve infrastructure construction and information services through space technology such as remote sensing, telecommunication and navigation





# **APSCO Cooperative Projects**

Domain	Project	Current Status
Space Technology	•APSCO Joint Small Multi-Mission Satellite Constellation (SMMS) Programme	Implementation
	•APSCO Geo-Telecommunication Satellite and its Application	Feasibility Study
	•Radiometric Calibration of Satellite Sensors	Implementation
Space Science	•Development of Asia-Pacific Ground-Based Optical Space Objects Observation System (APOSOS)	Implementation
	<ul> <li>Research on Atmospheric Effects on</li> <li>Ka-Band Rain Attenuation Modeling</li> <li>Ionospheric Modeling through Study of Radio Wave Propagation and Solar Activity</li> </ul>	Implementation
	•Research on Determining Precursor Ionospheric Signatures of Earthquakes by Ground Based Ionospheric Sounding	Implementation
Space Application	•Data Sharing Service Platform and Its Application Pilot Projects	Operation
	•Applications of Compatible Navigation Terminal System	Implementation
	•Communication Satellite Applications Project -Telemedicine	Feasibility Study
	•Establishment of a Framework for Researches on Application of Space Technology for Disaster Monitoring in the APSCO Member State	Implementation
Education & Training	•Establishment of the Education and Training Center of APSCO	Operation
	•APSCO Small Student Satellites (SSS)	Implementation



- Established in 2012
- Network for sharing satellite remote sensing data
  - Data provided by fleet of 9 Earth-observation satellites from China
  - More than 70,000 satellite images acquired by MS
  - ➢ More than 20 million km<sup>2</sup> coverage area
- DSSP Pilot Projects
  - Estimation of Rice Field using Multiple Satellite Sensors
  - Evaluation of Different Remote Sensing Techniques for Drought Study

> etc.







## *Estimation of Rice Field using Multiple Satellite Sensors*

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







Wet Moderate

Dry

Extreme Dry

## Remote Sensing Techniques for Drought Study



- Conducted by SUPARCO, Pakistan
- Combined sensors from HJ1A/1B and AQUA satellite
- Time-series of different indices, such as NDVI, VCI, TCI were studied
- Monitoring and mapping of satellite based drought indices is reliable and would play an important role in predicting drought conditions





## Enhanced Data Sharing Service Platform



**APSCO Member States** 



## **APSCO Joint SMMS Constellation Program**

## • The space segment

- 3 operating satellites donated by China (GF-1, GF-2, CBERS-04)
- 2 newly developed EO satellites
  - > 1 Hi-Resolution
  - > 1 Hyperspectral
- 6 nano/micro satellites for quick response communication
- participating satellites from MS
- Asia-Pacific Ground Station Network
  - Existing network in China
  - Compatible upgraded stations in APSCO Member States
- Shared AIT Facilities
- Hands-on technology transfer



#### Small Multi-mission Satellite Constellation System



# **APSCO Cloud Service Platform**





## APSCO Disaster Monitoring and Emergency Rescue Network

- Compatible GNSS Terminals for Emergency Management and Disaster Rescue Project
- Determining Precursor Ionospheric Signatures of Earthquakes by Ground-Based Ionospheric Sounding Project
- Framework for Researches on Application of Space Technology for Disaster Monitoring in the APSCO Member States
- Quick response among Member States, and actively support the International CHARTER





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!