Role of Asia Pacific Space Cooperation Organization in Developing Tools and Applications using Geo-referenced Disaster Risk Management Information System in the Asia-Pacific Region

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Sequence of Presentation

• Introduction
• Remote Sensing Monitoring of Dust and its Applicative Demonstration in the Arid and Semi-arid Areas
• Evaluation of Different Remote Sensing Techniques for Drought Study
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Introduction
Initial APSCO Projects

- APSCO Data Sharing Service Platform and its Application Pilot Project,
- APSCO Applied Remote Sensing Satellite,
- Asia Pacific Ground Based Optical Space Objects Observation System,
- Applications of Compatible Navigation Terminal System,
- Research on Atmospheric Effects of: Ka Band Rain attenuation Modeling, Ionosphere Modeling using Radio Wave Propagation and Solar activity, and
- Education and Training Activities.
Remote Sensing Monitoring of Dust and its Applicative Demonstration in the Arid and Semi-arid Areas

- Background
- Methodology
Dust comes from arid and dry regions where high velocity winds are able to remove mostly silt-sized material, deflating susceptible surfaces.

- In the Middle East, dust has been a historic phenomenon, and recently, the problem is dramatically increased.
- In East Asia, dust is a seasonal meteorological phenomenon which affects much during the springtime.
Dust is transported through the troposphere, and it can:

- produce strong local radiative forcing
- decrease visibility and cause a variety of health problems
- contaminants including croplands, aquifers... be correlated to significant loss of economic activity
• Investigate the spatial distribution of dust in Asia and dynamic research on remote sensing monitoring of dust.

• Analyze the radiation characteristics of dust particles in Asia, and carry out the research on dust inversion algorithms.

• Collect the remote sensing images of dust centers in Asia and carry out image preprocessing.

• Produce the dust distribution thematic map in Asia and report relevant research results.
Evaluation of Different Remote Sensing Techniques for Drought Study

• Background
• Methodology
Background

• Pakistan has a diversified climate, ranging from arid and semi arid to hyper arid

• Pakistan lies in the western end of summer monsoon belt

• The present study will be carried out with the aim to integrate Satellite RS data and GIS for the identification and monitoring of drought vulnerable areas in Sindh
Methodology

• Exploration of Remote Sensing data for drought monitoring in Pakistan
• Identification of severe drought affected areas and mapping
• Generation of vulnerability maps
• Suggest possible strategies towards mitigation of drought related impacts
• Sharing of the results with APSCO member States through data sharing platform
Development and Demonstration Applications of Compatible GNSS Terminals for Emergency Management and Disaster Rescue

• Requirement
• Project Contents
There is a requirement of quick information gathering, positioning, information transferring and responding to disasters and incidents, enhancing the efficiency and technical level of calamity preparedness, emergency management and disaster rescue, through integrated utilization of Global Navigation Satellite System (GNSS), Geographical Information System (GIS), Remote Sensing (RS) and communication technologies.
Project Contents

- Requirement Analysis
  - Terminal Design
  - Terminal Development
  - Terminal Test

- Technical Training

- Personnel Training
  - Application Demonstration
  - Terminal Production
Requirement Analysis

These requirements will be analyzed specifically for Natural disasters, emergencies and public safety accidents. Realizing that the traditional means cannot achieve quick response and does not provide efficient process of information for emergency management and disaster rescue, there is a need to improve the technical level and efficiency of emergency management, disaster relief and to carry out the application research on compatible GNSS in emergency management.
EMDR should provide the following basic and supplementary functions

- compatible GNSS satellite positioning and navigation function,
- embedded GIS function (supporting raster and vector map data),
- UMTS/GPRS communications and data transmission function,
- on-site surveys and disaster information collection capabilities,
- disaster emergency command and dispatch capabilities for disaster relief, delivery and emergency rescue,
- one-key alarm function to send alarm to the Alarm Center
EMDR application demonstration systems will be set up in areas which have serious natural disasters in participating APSCO member countries.
Activities for EMDR application demonstration and technology communication will be organized. Bilateral or multilateral cooperation mechanism under APSCO umbrella will be set up and GNSS technology and application training courses (especially for EMDR) will also be organized for the GNSS related researchers and engineers of APSCO member states to promote APSCO GNSS technology and application capabilities.
Conclusion
Thank You!

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