Preparedness Plan for Space Hazards in Republic of Korea

Committee on the Peaceful Uses of Outer Space
Fifty-seventh session
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Ministry of Science, ICT and Future Planning
Korea’s Space Policy

- Space Development Promotion Act was enacted in 2005.
  - To promote the peaceful use and scientific exploration of outer space, to ensure national security and to further develop the national economy, and to raise the national standard of living through the systematic promotion of space development and the effective use and management of space objects

- Space Development Promotion Act Proposition including the preparedness plan for space hazards passed the national assembly in May 2014.
  - To prepare for the space hazards by crash and collision of space and natural objects
  - Establish master plan for preparation to space hazards every 10 years

**Establishment of Preparedness Plan for Space Hazards including strategies and policies for preemptive and systematic provision about space hazards**
Space Hazards Situation

- Risk to humans and property on ground due to re-entries of natural and artificial space objects
  - Chelyabinsk meteor (‘13.02)
  - GOCE satellite (‘13.11)
  - Jinju meteor (‘14.03)

- Increase the occurrence possibility of collision between space debris and satellites due to sustainable space development
  - Iridium 33 and Cosmos 2251 Collision (‘09.02)
  - Collision avoidance maneuver for safe distance between Chollian and Raduga 1-7 (‘11.03)
## Preparedness Plan for Space Hazards

### VISION

**Safety and Protection from Space Hazards**

### GOAL

- Prompt Action and Forecasting about Space Hazards
- Building up of National Space Hazards Monitoring System
- Enhancement of Preparedness Capability for Space Hazards

### Subject Projects

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<td>- Establishment and management of National Space Hazards Headquarters</td>
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<td>- Designation and management of Space Environmental Monitoring Agency</td>
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<td>- Establishment of Meteorite Management System</td>
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<td>Technology</td>
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<td>- Monitoring and warning of potential Earth impactors</td>
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<td>- Prediction of potential collisions between space objects</td>
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<td>- Advanced system for solar activity monitoring</td>
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<td>Infrastructure</td>
<td>- International cooperation to prepare in case of space hazards</td>
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<td>- Research and development for technology</td>
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<td>- Education for enhancement of Human resources</td>
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• Professional organization space hazards monitoring
  – Set up the organization dedicated to the space hazards correspondence with the ministry of Science, ICT and Future Planning and related ministries (~‘15)
  – Space hazards forecasting and warning
  – International cooperation needed for technology exchange and space risk monitoring

System: Space Environmental Monitoring Agency

- Executive Office
- Emergency Situation Room
- Space Hazards Monitoring Center
- Related Institute (KARI, RRA etc)
- Committee (Natural/Artificial Space Objects Crash)
- Committee (Natural/Artificial Space Objects Collision)
System: Space Hazards Monitoring Center

- Technical expertise to complement the space environmental monitoring agency
  - Operation the self-contained equipment to observe the space situation
  - Data processing and identification of space objects
  - Analysis of collision and crash

※ Korea Astronomy and Space Research Institute is designated as space hazards monitoring center
Technology: Monitoring System

OWL-Net Array Radar
Ultra-wide field optical telescope
Surveillance and Imaging Radar
2M-class optical surveillance telescope
Space Debris
GEO satellite
Asteroids fall
Satellite Crash
High-Energy Electromagnetic field Change
Solar Activity
Space Hazards
Collision Crash
Solar Activity Satellite Observer
Solar Activity Ground Observer
Ionosphere/geomagnetic Observer

System

All-sky surveillance complex camera
OWL-Net
Array Radar
Ultra-wide field optical telescope surveillance telescope
2m-class optical surveillance telescope
Surveillance Radar
Imaging Radar

OWL(Optical Wide-field PatroL): Electro-Optical Telescope System
Infrastructure: Research & Development

- Promotion of research & development of core technology for capabilities improvement of space hazards preparedness
- Development of software tools, applications and data systems for space risk analysis and evaluation
- Future space technology: Active debris removal
Infrastructure: International Cooperation

- Natural/Artificial Space objects Data Sharing
- Reliability Improvement of space hazards monitoring System through the establishment of joint surveillance
- Intercommunity of Observation and Facilities for Space Hazards
- Expansion of Participation for International Organization and Committee
- International Cooperation Research & Development

STSC AT#14: KASI joined from 2005
- MOU for space debris orbit control (2008)
- In the process of joining a member agency (2014)
- MOU for exchanging information about space hazards (2014)
Summary

The Preparedness Plan for Space Hazards in Republic of Korea (2014~2023) was established (2014. 05.30)

- Becomes a baseline for preparedness of space hazards
- Establishes Space Environmental Monitoring Agency
- Establishes Space Hazards Monitoring Center
- Develop the Space Hazards Monitoring System
- Develop the integrated risk analysis system
- Research and develop the core technology
- Develop human resources of space risk assessment
- Expand the international collaboration for preparing space hazards
Thank You for your attention