UNITED NATIONS
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United Nations/India Workshop

on the

Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience

Organized by

United Nations Office for Outer Space Affairs (UNOOSA)

Indian Space Research Organization (ISRO) Government of India

March 8 - 11, 2016
Hyderabad, India

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INFORMATION NOTE

United Nations/India Workshop on the Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience

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The United Nations Office for Outer Space Affairs (UNOOSA), through its Programme on Space Applications and the UN-SPIDER platform, and the Indian Space Research Organisation (ISRO) are jointly organising this workshop in order to share experiences from Asia and other parts of the World in using Earth observation for disaster management.

I. Background and partnerships

The Programme on Space Applications was established in 1971 on the recommendation of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE I)[1] that took place in Vienna, Austria in 1968. The Programme is aimed at promoting, through international cooperation, the use of space technologies and data for sustainable economic and social development in developing countries, by raising the awareness of decision makers of the cost-effectiveness and additional benefits to be obtained; establishing or strengthening capacity in developing countries to use space technology; and strengthening outreach activities to disseminate awareness of the benefits obtained. Among other thematic priorities, the Programme has put special emphasis on remote sensing and its applications for disaster management.

UN-SPIDER (the United Nations Platform for Space-based Information for Disaster Management and Emergency Response) was established in 2006, as one of the recommendations of UNISPACE III conference. UN-SPIDER is a UNOOSA programme, aimed at providing universal access to all countries and all relevant international and regional organizations to all types of space-based information and services relevant to disaster management to support the full disaster management cycle (General Assembly resolution 61/110).

[1] See Info Box: UNISPACE+50

The Department of Space (DOS) of the Government of India has embarked upon the Disaster Management Support (DMS) Programme as a prime application activity, to take advantage of the benefits of aerospace technology for application on disaster management in the country. Various centres of the Indian Space Research Organisation (ISRO) are involved in implementing different components of the DMS Programme, which is centrally coordinated by the DMS Programme office at ISRO headquarters. The Decision Support Centre (DSC) established at the National Remote Sensing Centre (NRSC) is the single-window delivery point for aerial and space enabled inputs together with other important data layers for its use in disaster management in all phases prior to, during and after a disaster takes place. For online transfer of space enabled inputs to the State and Central government user departments, a VSAT based satellite communication network has been put in place. In addition, this information is also made available through ISRO Bhuvan portal, under disaster services.

Infobox: UNISPACE+50

The year 2018 will mark the 50th anniversary of the first UN Conference on the Exploration and Peaceful Uses of Outer Space – UNISPACE+50. The Committee on the Peaceful Uses of Outer Space (COPUOS) endorsed at its fifty-eighth session in June 2015 the plan of work for UNISPACE+50.

UNISPACE+50 will take stock of the contributions of the three UNISPACE conferences (UNISPACE I, held in 1968, UNISPACE II, held in 1982 and UNISPACE III, held in 1999) to global space governance.

In line with the 2030 Agenda for Sustainable Development and Sustainable Development Goals, UNISPACE+50 aims to chart the future role of COPUOS, its subsidiary bodies and UNOOSA at a time of an evolving and more complex space agenda when more actors, both governmental and non-governmental, are increasingly involved in space activities.

The activities of the UN Programme on Space Applications are an integral part of the UNISPACE+50 thematic cycle, and are aimed at contributing to outputs under the following four pillars: space economy, space society, space accessibility and space diplomacy, in the lead-up to UNISPACE+50 in 2018.

Website: http://www.unoosa.org/oosa/en/ourwork/hlf/hlf.html

II. Rationale

UN-SPIDER has offered technical advisory support to several countries in Africa, Asia and the Pacific, Latin America and the Caribbean. After in-depth interaction and assessment with a wide range of stakeholders in these countries, it was noted that improving disaster risk management and emergency response by effective use of space technology applications involves not only having the technology in place but requires tackling several other issues related to policies, institutional coordination, data sharing, national spatial data infrastructure (NSDI), and capacity-building.

At the World Conference on Disaster Risk Reduction (WCDRR) in Sendai, Japan, the Sendai Framework for Disaster Reduction 2015-2030 identified the critical role of space based technologies in disaster risk reduction. The momentum gathered from this important milestone in disaster risk reduction should be used to strengthen cooperation and capacity-building in the field of space-based technologies internationally. This is particularly important for emerging markets in the Asia-Pacific Region in view of contributing to sustainable development and poverty eradication in this region.

In September, the world leaders from 193 Member States of the United Nations adopted the outcome document of a new sustainable development agenda entitled "Transforming Our World: The 2030

Agenda for Sustainable Development". This agenda contains 17 Sustainable Development Goals (SDGs) and 169 targets, and will stimulate action over the next 15 years in the areas of critical importance: people, planet, prosperity, peace and partnership.

Space technologies are critical to facilitating the implementation of several SDGs. This workshop is closely related to the attainment of several SDGs, including the Goal 6, which is aimed at ensuring availability and sustainable management of water and sanitation for all. Floods, namely, account for 15% of all deaths related to natural disasters. Remote sensing applications for water management purposes are vital of the attainment of this goal. The use of space technologies for disaster risk reduction, in particular for supporting resilience to disasters and emergency relief efforts, is closely related to the attainment of the Goal 9 on building resilient infrastructure. Furthermore, Earth observation is critical to ensuring sustainable growth, which is in focus of the Goal 8, particularly in disaster prone areas.

With the rapid development of the Asian economy and the increasing impact of climate change, natural disasters affect people's livelihoods more than ever. According to the study on "Disasters in Asia and the Pacific: 2014 Year in Review", developed by the Economic and Social Commission for Asia and the Pacific (ESCAP), over half of the world's natural disasters occurred in the Asia and the Pacific region, the most frequent being hydro-meteorological hazards, which cause most fatalities and economic losses. The Asia and the Pacific region faces double the challenge of increasing exposure of its population and economic assets, and particularly high vulnerabilities of the poor and other disadvantaged groups to disasters.

In Asia, the technological capability and know-how to use Earth observation in disaster management varies greatly. Countries like India, China and Japan have developed excellent remote sensing related infrastructure and have integrated Earth observation to support disaster management and emergencies. Indonesia, Thailand, South Korea and Vietnam have also developed good capacity and infrastructure to use remote sensing data in disaster management. Countries such as Pakistan, Bangladesh and Sri Lanka have demonstrated effective use of remote sensing data in their disaster management programmes.

However, there is a greater need to learn from each other and establish international cooperation for the purpose of saving lives and mitigate damage to infrastructure due to disasters.

III. Objectives and expected outcomes

The **United Nations/India Workshop on the Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience** aims to:

- Demonstrate operational programmes and tools that make use of Earth observation data to address the disaster management cycle, including understanding disaster risks, responding to emergencies, assessing damage and loss and providing inputs to mitigate disasters;
- Synthesize experiences and lessons learnt by Asian countries, the most vulnerable region, in using Earth observation in disaster management;
- Promote the use of Earth observation in disaster prone areas in order to prepare, mitigate and respond to natural disasters, plan and build more resilient infrastructure and allow for a more sustained, inclusive and sustainable growth, in line with the 2030 Agenda for Sustainable Development; and
- Discuss the way forward in international cooperation on space technologies and disaster management in preparation for UNISPACE+50.

The workshop should provide an insight on technology, models, methods, tools and operational programmes utilizing Earth observation data in natural disasters management, especially covering important stages such as mitigation planning (hazard and risk assessment), early warning, emergency response, disaster recovery and damage assessment.

The expected outcomes include the following:

- Exchange knowledge and lessons learnt by experts and disaster managers
- Understand technology trends including upcoming satellites and sensors
- Discuss ways to access advanced Earth observation data
- Provide a platform for the countries and intergovernmental organisations to develop bilateral and multilateral cooperation
- Provide opportunities for enhanced collaboration among Asian countries for effective utilization of Earth observation in disaster management.

IV. Workshop Sessions

In this context, the workshop will cover the following topics:

Key note session:

Presentations by eminent experts and practitioners

Session 1: Addressing challenges in utilizing Earth Observation in disaster management – Recent Experiences

The applications of Earth observation in all stages of disaster management are well known. Most of the countries in the Asian subcontinent have dedicated agencies for disaster management. However, barring a few countries like China, Japan and India, Earth observation data is not yet regularly used in decision making for disaster management. The immense potential that Earth observation data holds in the field of disaster management from providing immediate response to reconstruction needs to be shared / percolated. The session will provide a platform for sharing the experiences learned and challenges in addressing recent catastrophic disasters, highlighting the role of space technology in bridging the gaps for better disaster management.

Session 2: Operational systems and tools to support disaster management

Countries need to set up operational systems and tools to support disaster management. Setting up such systems requires unified efforts of the disaster management agencies and providers of Earth observation information. Successful disaster management support system should be based on in-depth understanding of needs of the disaster management in all phases and be able to serve these needs by providing appropriate map products and information that caters needs of preparedness, early warning, emergency response and damage and loss assessment. The session will share success stories of operational system and tools for disaster management.

Session 3: Earth observation for pre-disaster risk assessment to contribute to prevention and mitigation planning

As elaborated in the report Sendai Framework for Disaster Risk Reduction 2015-2030, policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. This calls for pre-disaster risk assessment to provide inputs for disaster prevention and mitigation. Earth observation is one of the key sources of information to prepare hazard, risk and

vulnerability maps needed for pre-disaster risk assessment. The session will focus on national missions/programmes and methodologies involving use of Earth observation for assessing risk from major disasters in Asia.

Session 4: Earth observation for early warning, emergency response and damage assessment

The session will focus on the lessons learnt from experiences from mega-disasters such as the recent Earthquake in Nepal and cyclones in India. The session intends to provide guidance on how to integrate Earth observation data to provide precise early warning, generate the products needed for effective response, and address issues such as information preparedness, accessing Earth observation images, emergency mapping products and product dissemination. This session will also discuss the methods and present case studies demonstrating the use of Earth observation for damage assessment.

Session 5: Advanced Earth observation technologies, research and innovations in disaster management

Many advanced technologies like crowd source mapping, mobile technologies and unmanned aerial vehicle are becoming an integral part of disaster management. This session will allow exposure to the recent advances in earth observation technologies, research, innovations, emerging technologies, open source data and tools which can help in better response in times of disaster.

Session 6: Opportunities for capacity-building (training and institutional)

A lot of advanced technologies are emerging and access to earth observation data is not a limitation. However, training people to make use of these technologies remains a big challenge. Until the planners know how to interpret and use the hazard maps, the effort remains incomplete. The session will provide access to the opportunities for capacity-building in the field of disaster management.

Session 7: Foster international cooperation in Asia for promoting use of Earth observation in disaster management

This session will seek to identify concrete needs of the countries to support disaster management and promote international cooperation. This may involve sharing best practices, providing access to satellite images for assessment pre-disaster and during emergencies, exchanging methodologies, contributing to capacity-building and developing infrastructure etc. This session will provide opportunity to have a dialogue among India, other countries, and intergovernmental organisations.

Special sessions, meetings and institutional visit

Special sessions, meetings and institutional visit may be planned to provide a platform for international cooperation.

V. Target audience

Disaster managers, policy makers, providers of space technology solutions/tools/applications from governments, academia, research, NGO and corporate sector.

VI. Financial support to selected participants

Taking into consideration the limited financial resources available for this conference, a number of qualified applicants from developing countries, who have expressed the need for financial support, will be offered financial support to attend the Workshop. This may include the provision of a round-trip air ticket between Hyderabad and the applicant's international airport of departure and/or daily

subsistence allowances to cover board and lodging for the duration of the International conference. Any additional costs or changes made to the air tickets must be the responsibility of the participants.

Due to this limited availability of financial resources, applicants and their nominating organizations are strongly encouraged to find additional sources of sponsorship to allow them to attend the Workshop. Qualified participants whose nominating agency/organization agrees to fund round-trip travel and/or living expenses will be considered on a priority basis.

VII. Language of the Workshop and Presentations by Participants

The working language of this Workshop is English.

VIII. Dates and Location

The Workshop will be held in Hyderabad, India, from 8 to 11 March 2016. All selected and invited participants will receive information with details on board, lodging and other local options.

IX. Deadline for Submission of Applications

Detailed information for applications will be made available in a timely manner on the UNOOSA website. Deadline for applications for those requesting financial assistance is **11 January 2016**. Only complete applications, with all requested information and signatures, will be considered. Information on the application process will be made available at:

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2016/workshop_india.html

X. Point of Contact

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