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Committee on the Peaceful Uses of Outer Space

Report on the United Nations/International Astronautical Federation Workshop on Space Technology Support for an Integrated Approach to Address Potential Environmental Hazards

(Glasgow, United Kingdom of Great Britain and Northern Ireland, 26 and 27 September 2008)

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I. Introduction

A. Background and objectives

1. The Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), in particular through its resolution entitled "The Space Millennium: Vienna Declaration on Space and Human Development",[1] recommended that activities of the United Nations Programme on Space Applications should promote collaborative participation among Member States at the regional and international levels, emphasizing the development of knowledge and skills in developing countries.[2]

2. At its fiftieth session, in 2007, the Committee on the Peaceful Uses of Outer Space endorsed the programme of workshops, training courses, symposiums and conferences of the United Nations Programme on Space Applications for 2008. Subsequently, the General Assembly, in its resolution 62/217 of 21 December 2007, endorsed the activities to be carried out under the auspices of the United Nations Programme on Space Applications in 2008.

3. Pursuant to General Assembly resolution 62/217 and in accordance with the recommendations of UNISPACE III, the United Nations/International Astronautical Federation Workshop on Space Technology Support for an Integrated Approach to Address Potential Environmental Hazards was held in Glasgow, United Kingdom of Great Britain and Northern Ireland, on 26 and 27 September 2008, in conjunction with and as an associated event of the 59th International Astronautical Congress, which was also held in Glasgow, United Kingdom, from 29 September to 3 October 2008.

4. The Workshop was organized by the Office for Outer Space Affairs of the Secretariat, as part of the activities of the United Nations Programme on Space Applications in 2008, and the International Astronautical Federation (IAF). It was co-sponsored by the European Space Agency (ESA) and the British National Space centre (BNSC).

5. The Workshop was the eighteenth workshop organized jointly by the Office for Outer Space Affairs and IAF. It built upon the recommendations and experience gained from the previous 17 workshops, held between 1991 and 2007.

6. Participants of the Workshop discussed a wide range of space-related technologies, services and information resources available to support hazard management, from short-term emergency activation of resources to help for the long-term planning of mitigation activities. Presentations were also made on national, regional and international initiatives such as the Integrated Application Promotion Programme of ESA, the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (also called the International Charter on Space and Major Disasters) and

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[1] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[2] Ibid., chap. II, para. 409 (d) (i).

the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) programme.

7. The primary objectives of the Workshop were (a) to increase awareness among decision makers and representatives of the research and academic community of the use of space technology applications for sustainable development programmes supporting hazard management in developing countries; (b) to examine what low-cost, space-related technologies and information resources were available for addressing hazard management; (c) to strengthen capacity-building in the area of hazard management and space technology; and (d) to strengthen regional and international cooperation in the field of hazard management.

8. The Workshop and the accompanying round-table discussion provided opportunities for direct dialogue among space technology experts, policy- and decision makers and representatives of the academic community and private industry from both developing and industrialized countries. Participants were encouraged to share their experiences and to examine opportunities for better cooperation.

9. The present report describes the background, objectives and programme of the Workshop. It has been prepared for submission to the Committee on the Peaceful Uses of Outer Space at its fifty-second session and to its Scientific and Technical Subcommittee at its forty-sixth session, both in 2009.

B. Programme

10. The programme of the Workshop was developed jointly by the Office for Outer Space Affairs and the programme committee of the Workshop, which included representatives of a number of national space agencies, international organizations and academic institutions. A substantial contribution was made by the honorary committee of the Workshop, which consisted of prominent representatives of the Committee on the Peaceful Uses of Outer Space, IAF and the United Nations Secretariat. The input received from both the honorary committee and the programme committee, as well as the direct participation of members of those committees in the Workshop, ensured that the aims of the Workshop were achieved.

11. The programme of the Workshop focused on the use of various applications of space technology to address potential environmental hazards and on ways that the capacity of developing countries in that area could be increased by developing human and technical resources at various levels, enhancing regional and international cooperation, promoting public awareness and developing appropriate infrastructure.

12. The Programme included three technical sessions. The first focused on capacity-building programmes and plans in the area of hazard management and space technology, as well as regional and international initiatives and cooperation. The second and third sessions focused on the use of applications of space-related technologies and the information resources available for addressing hazard management, with presentations being given by representatives of various countries and regions and discussions being held on practical experiences, results and challenges.

13. A total of 24 technical presentations were delivered during the Workshop. All the presentations and papers focused on national, regional and international projects and initiatives in the area of the use of space-related technologies for hazard management and the contribution of those technologies to sustainable development programmes in developing countries.

14. Opening statements were made by representatives of the University of Glasgow, the local organizing committee of the International Astronautical Congress, IAF, ESA and the Office for Outer Space Affairs. At the opening session, keynote addresses were made by Gérard Brachet (IAF) and Richard Tremayne-Smith (local organizing committee of the International Astronautical Congress), and an introductory lecture was given by A. Ginati (ESA). Closing remarks were made by representatives of IAF, the Office for Outer Space Affairs and the representatives of the local organizing committee for the 60th International Astronautical Congress, to be held in Daejeon, Republic of Korea, in 2009.

15. Each of the technical sessions was followed by open discussions, which focused on topics of particular interest and provided additional opportunities for participants to voice their opinions. The discussions were continued in depth and summarized by two working groups established by the participants in order to develop a set of questions to be presented to panellists at a round-table discussion, which was held after the meetings of the working groups.

16. Details of the programme of the Workshop and its proceedings, together with the list of participants, are available from the website of the Office for Outer Space Affairs.[3]

C. Attendance and financial support

17. The United Nations, on behalf of the co-sponsors, invited developing countries to nominate candidates to participate in the Workshop. Participants were required to have a university degree or well-established professional working experience in a field related to the overall theme of the Workshop. Participants were selected on the basis of their experience in programmes, projects or enterprises that were already using space technology applications or that could potentially benefit from using space technology. The participation of specialists at the decision-making level from both national and international entities was particularly encouraged.

18. Funds allocated by the United Nations, IAF, ESA and the local organizing committee of the Workshop were used to provide financial support for the participation in both the Workshop and the 59th International Astronautical Congress, which was held immediately after the Workshop, of 22 participants from 21 developing countries. Full financial support was received by 16 participants for international round-trip air travel, hotel accommodation, living allowance for the duration of the Workshop and the Congress and for the registration fee of the Congress. Six participants received partial funding (air travel or hotel accommodation and living allowance and/or Congress registration).

[3] The website of the Office for Outer Space Affairs is available at www.unoosa.org.

19. The local organizing committee provided conference facilities, secretarial and technical support and local transportation to and from the airport for funded participants, and organized a number of social events for all Workshop participants.

20. The Workshop was attended by approximately 70 participants from the following 32 countries: Argentina, Australia, Austria, Bangladesh, Cambodia, Canada, China, Colombia, France, Germany, India, Indonesia, Kenya, Nigeria, Pakistan, Peru, Philippines, Poland, Republic of Korea, Russian Federation, Singapore, South Africa, Spain, Sri Lanka, Syrian Arab Republic, Thailand, Tunisia, United Kingdom, United Republic of Tanzania, United States of America, Uruguay and Viet Nam. The following international organizations and other entities were also represented at the Workshop: IAF, the International Academy of Astronautics, the Space Generation Advisory Council and the Office for Outer Space Affairs.

II. Round-table discussion

21. A concluding round-table discussion was held on the second day of the Workshop, with the participation of heads or senior managers of space agencies, civil protection agencies and other relevant national, regional and international institutions and organizations from both spacefaring and non-spacefaring nations, in order to establish a direct dialogue between decision makers and Workshop participants on how space technologies and policies could contribute to hazard management programmes in developing countries.

22. The round-table discussion was moderated by Ciro Arevalo Yepes (Colombia, Chairman of the United Nations Committee on the Peaceful Uses of Outer Space), and included the following panellists: Gabriel Platzeck (National Commission on Space Activities, Argentina), Joseph Akinyede (National Space Research and Development Agency, Nigeria), Wolfgang Dupeyrat (National Space Agency, Peru), Sanath Panawennage (Arthur C. Clarke Institute for Modern Technologies, Sri Lanka), Bruno Louis Meyer (Satellite Applications Centre, Council for Scientific and Industrial Research, South Africa), Chanchai Peanvijarnpong (Geo-Informatics and Space Technology Development Agency, Thailand) and Chris De Cooker (Head, Department of International Relations, ESA).

23. Prior to the round table, two working groups were established for the purpose of summarizing the critical issues or themes identified in the presentations delivered at the technical sessions of the Workshop, with a view to having those issues or themes addressed by the round-table panellists. The first working group focused on issues related to capacity-building and international cooperation, while the second discussed practical aspects of the use of space technology applications for managing potentially hazardous events.

24. Within the limited time available for discussion, the round-table panellists discussed the following issues, which were brought to their attention by the moderator and the audience:

(a) Awareness-raising activities and educational programmes;

(b) Capacity-building efforts from regional and international perspectives;

(c) Evaluation of the effectiveness of existing disaster management mechanisms;

(d) Relations between providers of space applications and services and civil protection organizations and ways of improving the common interface for communication between these two communities;

(e) Participation of the private sector in providing data and services required for disaster management;

(f) Data acquisition and dissemination, including access to the historical data required for base mapping;

(g) The role of UN-SPIDER and the United Nations Programme on Space Applications in supporting national and international efforts in the use of space technologies for disaster management.

III. Conclusions

25. The major conclusions reached by the working groups and round-table panellists are summarized below.

26. There are a number of space tools and applications that may effectively address disaster mitigation, relief and prevention. Data from Earth observation satellites are indispensable for disaster risk estimations and assessment of disaster impact: space meteorology contributes to disaster prediction; satellite communications provide the most reliable method of communication during disaster situations and constitute an important segment of disaster warning networks; global navigation satellite systems, as well as geographical information system tools, may be of great assistance for disaster impact assessments and during relief operations; telemedicine (using space communications technology) can help to save lives in locations affected by disaster. However, the following should be borne in mind: firstly, supporting a full disaster management cycle using space tools and technologies will require an integrated applications approach. Secondly, efforts should be made to bridge the gap between the two communities of space and disaster management by establishing a common interface for communication between the two groups. And thirdly, appropriate spatial data infrastructure is important and should include data standardization, at both the national and international levels.

27. Since disasters do not respect national boundaries and in many cases affect whole regions, regional and international cooperation, as well as such international efforts as the International Charter on Space and Major Disasters, the Disaster Management Constellation, Sentinel-Asia and UN-SPIDER, are important and should be given maximum support by both space and disaster management institutions. However, at present there is insufficient coordination in integrating national disaster management systems into international cooperation structures and better information should be provided for disaster management institutions on how they can benefit from participation in regional and international programmes.

28. All countries should be able to rely on their own capabilities in disaster management, especially in the first phase of a disaster. For that purpose, the

capacity of developing countries to deal with such disasters should be strengthened by developing appropriate human and budgetary resources and mechanisms for analysing disaster risk and vulnerability such as computer modelling, disaster prediction and early warning systems, and greater efforts should be made to raise awareness of the use of integrated applications of space technologies for managing hazardous events among both decision- and policymakers and the general public.

29. These conclusions were put forward as a contribution to the discussions that took place during the International Astronautical Congress plenary event devoted to disaster management, which was attended by approximately 200 Congress participants.

IV. Follow-up action

30. At the meeting of the IAF Committee for Liaison with International Organizations and Developing Nations, which was held during the International Astronautical Congress and which was attended by representatives of the Office for Outer Space Affairs, it was decided that the nineteenth United Nations/IAF Workshop should be held in Daejeon, Republic of Korea, from 9 to 11 October 2009, as an associated event of and in conjunction with the 60th International Astronautical Congress, to be held in Daejeon from 12 to 16 October 2009.

31. The theme suggested for the nineteenth United Nations/IAF Workshop was "Integrated space technology applications and space-based information for analysis and prediction of climate change". Discussion on the objectives and programme of the nineteenth workshop would be continued at a planning meeting, to be held during the forty-sixth session of the Scientific and Technical Subcommittee, in 2009.

32. It was also decided that further round-table discussions between participants and heads or senior managers of space agencies and relevant institutions or organizations should be held during future United Nations/IAF workshops.