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Committee on the Peaceful Uses of Outer Space

Report of the Expert on Space Applications*

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* It was necessary to summarize in the present report each of the activities organized during 2008 under the United Nations Programme on Space Applications, the last of which was concluded on 5 December 2008.



I. Introduction

1. At its forty-fifth session, in 2008, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space reviewed the activities of the United Nations Programme on Space Applications. The Subcommittee noted that the activities of the Programme for 2007 had been carried out satisfactorily. On the recommendation of the Committee, the activities of the Programme for 2009 were endorsed by the General Assembly in its resolution 63/90 of 5 December 2008. The Subcommittee recommended to the Committee, for its approval, the activities scheduled for 2009 and noted the other activities of the Programme. All of the activities were to be implemented as part of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) related to space applications,¹ as proposed in the report of the Expert on Space Applications (A/AC.105/900) submitted to the Scientific and Technical Subcommittee at its forty-fifth session, in 2008. Information on the activities carried out within the framework of the Programme in 2008 and those scheduled for implementation in 2009 are presented in annexes I and II.

II. Mandate of the United Nations Programme on Space Applications

2. In its resolution 37/90 of 10 December 1982, the General Assembly expanded the mandate of the United Nations Programme on Space Applications to include, in particular, the following elements:

(a) Promotion of greater exchange of actual experiences with specific applications;

(b) Promotion of greater cooperation in space science and technology between developed and developing countries as well as among developing countries;

(c) Development of a fellowship programme for in-depth training of space technologists and applications specialists;

(d) Organization of seminars on advanced space applications and new system developments for managers and leaders of space application and technology development activities, as well as seminars for users in specific applications;

(e) Stimulation of the growth of indigenous nuclei and an autonomous technological base with the cooperation of other United Nations organizations and/or States Members of the United Nations or members of the specialized agencies;

(f) Dissemination of information on new and advanced technology and applications;

¹ See *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).

(g) Provision or arrangements for provision of technical advisory services on space applications projects, upon request by Member States or any of the specialized agencies.

3. In its resolution 59/2 of 20 October 2004, the General Assembly endorsed the Plan of Action proposed by the Committee on the Peaceful Uses of Outer Space for implementation of the recommendations of UNISPACE III (A/59/174, sect. VI.B), and urged all Governments, entities of the United Nations system and intergovernmental and non-governmental entities conducting space-related activities to carry out the Plan of Action on a priority basis for the further implementation of the recommendations of UNISPACE III, in particular its resolution entitled “The Space Millennium: Vienna Declaration on Space and Human Development”.²

III. Orientation of the Programme

4. The Programme is aimed at further 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.

5. The overall strategy of the Programme is to focus on selected areas that are critical for developing countries, defining and working towards objectives achievable in two to five years and built on the results of previous activities. These priority areas of the Programme, as noted by the Committee on the Peaceful Uses of Outer Space at its forty-seventh session³ are: (a) disaster management; (b) satellite communications for tele-education and telemedicine applications; (c) monitoring and protection of the environment, including the prevention of infectious diseases; (d) management of natural resources; (e) developing capabilities in the use of global navigation and positioning satellite systems; (f) education and capacity-building, including research areas in basic space sciences; and (g) space law.

6. Additional Programme directions include spin-offs of space technology, promoting the participation of youth in space activities, small satellite applications and promoting the participation of private industry in the activities of the Programme.

7. At its forty-fourth session, in 2001, the Committee identified the recommendations of UNISPACE III that had the highest priority, noting that offers had been made by interested member States to exercise leadership in implementing some of those recommendations. The Committee agreed to establish action teams to implement those recommendations under the voluntary leadership of interested member States.⁴ Programme activities have supported those action teams as much as possible.

² Ibid., chap. I, resolution 1.

³ *Official Records of the General Assembly, Fifty-ninth Session, Supplement No. 20 and corrigenda (A/59/20 and Corr.1 and 2)*, para. 66.

⁴ Ibid., *Fifty-sixth Session, Supplement No. 20 and corrigendum (A/56/20 and Corr.1)*, paras. 50-55.

8. The activities of the Programme concentrate on:
 - (a) Providing support for education and training for capacity-building in developing countries through the regional centres for space science and technology education, affiliated to the United Nations;
 - (b) Organizing workshops and seminars on advanced space applications and short and medium-term training programmes;
 - (c) Strengthening its long-term fellowship programme to include support for the implementation of pilot projects;
 - (d) Promoting the participation of youth in space activities;
 - (e) Supporting or initiating pilot projects as follow-up to activities of the Programme in areas of priority interest to member States;
 - (f) Providing technical advisory services, upon request, to Member States, bodies and specialized agencies of the United Nations system and relevant national and international organizations;
 - (g) Enhancing access to space-related data and other information.

IV. Activities of the Programme

A. Training for capacity-building in developing countries

1. Regional centres for space science and technology education, affiliated to the United Nations

9. In its resolution 63/90 of 5 December 2008, the General Assembly recognized that, in accordance with paragraph 30 of its resolution 50/27 of 6 December 1995, the African regional centres for space science and technology education, in French language and in English language, located in Morocco and Nigeria, respectively, as well as the Centre for Space Science and Technology Education in Asia and the Pacific, located in India, and the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, located in Brazil and Mexico, entered into an affiliation agreement with the Office for Outer Space Affairs of the Secretariat and have continued their education programmes in 2008. The Assembly agreed that the regional centres should continue to report to the Committee on their activities on an annual basis.

10. The governing boards, which are the overall policymaking bodies, of all the regional centres are holding regular meetings.

11. The Office has invited all the regional centres to submit reports on their educational activities and operational status and on recent developments in their work. Reports and presentations on the activities of the regional centres are available on the Office's website (<http://www.unoosa.org/oosa/en/SAP/centres/index.html>). A summary of those reports is contained in *Capacity-Building in Space Science and Technology: Regional Centres for Space Science and Technology Education, Affiliated to the United Nations* (ST/SPACE/41). Based on those reports, the Office carries out an

annual global outreach campaign to raise the awareness of Member States and United Nations Development Programme offices on the activities of the centres.

12. The overall goal of the regional centres remains to develop, through in-depth education, an indigenous capability for research and applications in remote sensing and geographic information systems, satellite meteorology and global climate, satellite communications, and space and atmospheric science. Education curricula for those four disciplines have been developed through expert meetings held under the Programme. Two further model curricula are currently being developed under the auspices of the United Nations in the area of global navigation satellite systems (GNSS) and space law.

13. Highlights of the activities of all regional centres supported under the Programme are included in annex III.

14. The International Committee on Global Navigation Satellite Systems (ICG) held its third meeting in Pasadena, California, United States of America, from 8 to 12 December 2008. At the plenary of that meeting, the ICG decided that the regional centres would act as ICG information centres.

15. The Office is carrying out preparatory work to hold the fourth United Nations expert meeting on the regional centres for space science and technology education, in 2010. At that meeting, efforts will be made to revise, update and expand existing education curricula.

16. The Centre for Space Science and Technology Education in Asia and the Pacific prepared a comprehensive document on assessing performance and the outlook for the future, which was discussed at the thirteenth meeting of its governing board, held in November 2008. That document will be made available to all regional centres for space science and technology education, affiliated to the United Nations.

2. Fellowship programmes for training

17. In 2004, the Government of Italy, through the Politecnico di Torino and the Istituto Superiore Mario Boella and with the collaboration of the Istituto Elettrotecnico Nazionale Galileo Ferraris, initiated an offer of 12-month fellowships for postgraduate study on GNSS and related applications for specialists from developing countries. The fifth class of the fellowship programme commenced its studies in September 2008. The Office for Outer Space Affairs and the sponsoring organizations selected four representatives of governmental organizations and research and academic institutions from Egypt, Mongolia and Pakistan for fellowships to study at the Politecnico di Torino in Turin, Italy.

18. In 2007, the Programme and the National Commission on Space Activities (CONAE) of Argentina jointly established the United Nations/Argentina fellowship programme for advanced training in landscape epidemiology, an annual six-week training course held at the Mario Gulich Institute for Higher Space Studies in Córdoba, Argentina. It was established as a follow-up to the United Nations/European Space Agency/Argentina Workshop on the Use of Space Technology for Human Health for the Benefit of the Countries in Latin America, held in Argentina in 2005, and in support of the Action Team on Public Health of the Committee on the Peaceful Uses of Outer Space. The first class was held in

June 2007 and the second class in October 2008. The Programme provided support to participants from Cuba, Ecuador, Paraguay and Peru.

B. Promoting the use of and access to space-based technologies and information

1. Integrated space technology applications

19. The United Nations/Saudi Arabia/United Nations Educational, Scientific and Cultural Organization International Conference on the Use of Space Technology for Water Management was held in Riyadh from 12 to 16 April 2008. The Conference was organized jointly by King Abdulaziz City for Science and Technology and the General Secretariat of the Prince Sultan bin Abdulaziz International Prize for Water. At the Conference, participants explored applications of space technologies that provide cost-effective solutions or essential information for the management, protection and restoration of water resources and that contribute to mitigating water-related emergencies by providing safe drinking water and combating desertification. Follow-up project proposals were discussed by three working groups established during the Conference.

20. The United Nations/Indonesia Regional Workshop on Applications of Integrated Space Technology in Water Resources Management, Environmental Protection and Disaster Vulnerability Mitigation was held in Jakarta from 7 to 11 July 2008. The Workshop was organized by the Office for Outer Space Affairs and co-sponsored and hosted by the National Institute of Aeronautics and Space of Indonesia. At the Workshop, international and regional initiatives and capacity-building in the thematic areas of water resources management, use of space technologies in environment-related emergencies, natural hazards and climate change were addressed. Working group discussion sessions resulted in the identification of actions for follow-up projects.

21. The United Nations/Kenya/European Space Agency Regional Workshop on the Use of Integrated Space Technology Applications in Monitoring the Impact of Climate Change on Agricultural Development and Food Security was held in Nairobi from 1 to 5 December 2008. The Workshop was co-hosted by the Kenya Meteorological Department and the Department of Resource Surveys and Remote Sensing of Kenya, in collaboration with the Climate Prediction and Applications Centre of the Intergovernmental Authority on Development and the Regional Centre for Mapping of Resources for Development. At the Workshop, prediction, monitoring and early warning of climate-related disasters and environmental hazards, and improvement of regional food security such as sustainable agricultural development, land use and land cover change, were addressed. Working group discussion sessions resulted in the identification of actions for follow-up projects.

2. Global navigation satellite systems and the International Committee on Global Navigation Satellite Systems

22. ICG was established in 2005. It held its first meeting in Vienna in November 2006, its second meeting in Bangalore, India, in September 2007 and its third meeting in Pasadena, California, United States, in December 2008. Within the framework of the ICG workplan, the Office for Outer Space Affairs has conducted

the following activities: (a) a session on ionospheric storms and space weather effects during the twelfth International Symposium on Equatorial Aeronomy, held in Heraklion, Greece, from 18 to 24 May 2008, co-organized with the Centre for Space Science and Technology Education in Asia and the Pacific, the United States and ICG; (b) the International Training Course on Satellite Navigation and Location-Based Services, held in Ahmedabad, India, from 18 June to 18 July 2008; and (c) the ICG expert meeting on global navigation satellite systems and services on 15 July 2008 during the thirty-seventh Scientific Assembly of the Committee on Space Research, held in Montreal, Canada, from 13 to 20 July 2008.

23. The United Nations/Colombia/United States of America Workshop on Applications of Global Navigation Satellite Systems was held in Medellin, Colombia, from 23 to 27 June 2008. The Workshop was co-organized by the Office for Outer Space Affairs, the Office of the Vice-President of Colombia and the satellite navigation group of the Colombian Commission on Space. At the Workshop, the use of GNSS applications for precision farming, food security, climate change, land use, forestry, agriculture, tele-health and e-learning was addressed. Participants in the Workshop also examined the functional principles of satellite navigation systems and the basics of reference systems. Participants established six working groups to pursue follow-up activities.

3. Tele-health and tele-education

24. The United Nations/Burkina Faso/World Health Organization/European Space Agency/Centre national d'études spatiales Workshop on the Use of Space Technology in Tele-health to Benefit Africa was held in Ouagadougou from 5 to 9 May 2008. The Workshop was hosted by the Ministry of Health of Burkina Faso, in cooperation with that country's Ministry of Foreign Affairs, Ministry of Post and Information and Communication Technologies, Ministry of Environment and Water, and Ministry of Secondary and Further Education and Scientific Research. At the Workshop, participants examined current tele-health practices in Africa and discussed issues, concerns and approaches in developing tele-health for the region, with a view to establishing a network to support the Action Team on Public Health of the Committee on the Peaceful Uses of Outer Space. Working group discussion sessions resulted in the identification of 11 actions and projects.

25. The United Nations/India/European Space Agency Regional Workshop on the Use of Space Technology in Tele-epidemiology to Benefit Asia and the Pacific was held in Lucknow, India, from 21 to 24 October 2008. The Workshop was co-organized with and hosted by the Indian Space Research Organisation. The Workshop focused on the use of space technology for public health surveillance and tropical diseases health care. Participants initiated actions to pursue future projects on the following topics: mobile health systems; capacity-building, training and education; and data collection, repository and sharing. Participants at the Workshop also discussed supporting the activities of the Action Team on Public Health.

4. Space applications for sustainable development

26. The United Nations/Austria/European Space Agency Symposium on Space Tools and Solutions for Monitoring the Atmosphere and Land Cover was held in Graz, Austria, from 9 to 12 September 2008. That Symposium was co-sponsored by the Office for Outer Space Affairs, the Ministry for European and International

Affairs of Austria, the Ministry for Transport, Innovation and Technology of Austria, the State of Styria, the city of Graz and the European Space Agency (ESA). The Symposium aimed at enabling and supporting participants in developing and implementing projects. Experts of the National Aeronautics and Space Administration (NASA) of the United States provided hands-on training on atmosphere monitoring. The Symposium was the fifteenth in a series of symposiums that had been held annually in Graz since 1994. A special session was held to celebrate the achievements attained to date in the framework of that series of symposiums.

27. 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 the 59th International Astronautical Congress. At the Workshop, a wide range of space-related technologies, services and information resources available for supporting hazard management were discussed. A round table was held on hazard management programmes in developing countries, the results of which were presented at the International Astronautical Congress plenary entitled "Space technology supporting management of natural hazards", held on 1 October 2008.

5. Micro- and nanosatellite technology applications

28. The Programme continued its cooperation with the International Academy of Astronautics, with which it co-organized the United Nations/International Academy of Astronautics Workshop on Small Satellites in the Service of Developing Countries, held in Glasgow, United Kingdom, on 30 September 2008 in the framework of the 59th International Astronautical Congress. At the Workshop, microsatellite programmes, the effectiveness and cost-saving of small satellites, and educational and training activities at universities in developing countries were discussed.

C. Increasing the awareness of knowledge-based themes

1. Basic space science

29. The Programme, in cooperation with NASA, ESA, the Japan Aerospace Exploration Agency (JAXA) and the secretariat of the International Heliophysical Year 2007, held international workshops in the United Arab Emirates in 2005, in India in 2006, in Japan in 2007 and in Bulgaria in 2008. Participants at the workshops supported the implementation of the four-year workplan of the Committee and focused their deliberations on two long-term follow-up projects: (a) astronomy projects in basic space science, for which Japan had donated astronomical telescopes (A/AC.105/902, annex III) and planetarium equipment (A/AC.105/902, annex IV) to developing countries; and (b) the deployment of International Heliophysical Year instrument arrays to measure ionospheric, magnetospheric and heliospheric phenomena. The operation of global instrument arrays has resulted in a partnership between providers of instrument arrays and host countries that provide manpower, facilities and operational support to obtain data with the instruments, typically at a local university. As a follow-up to International

Heliophysical Year 2007, the Office for Outer Space Affairs will support the International Year of Astronomy 2009 by acting as an organizational node.

30. The Programme provided advisory assistance and financial support to the thirty-seventh Scientific Assembly of the Committee on Space Research and associated events, held in Montreal, Canada, from 13 to 20 July 2008. Primary activities were the organization of the ICG expert meeting on global navigation satellite systems and services and the co-organization of a session on capacity-building strategies for success.

2. Space law

31. In the framework of the Programme, the Office for Outer Space Affairs is preparing the sixth United Nations workshop on space law, to be held in Bangkok during the first half of 2009. The workshop is being prepared together with the Government of Thailand and its Geo-Informatics and Space Technology Development Agency and ESA, in cooperation with the Asian Society of International Law.

3. Educational outreach to youth

32. In support of the Programme, the Space Generation Advisory Council finalized the second round of surveys for a project for determining what vision youths have with regard to the next 50 years of space exploration. The Council's working group on near-Earth objects (NEOs), conducted a survey entitled "NEOs: a youth perspective", the results of which were presented to the Scientific and Technical Subcommittee at its forty-fifth session, in 2008.

33. The theme of World Space Week, observed from 4 to 10 October 2008, was "Exploring the universe". The Office for Outer Space Affairs, the United Nations Information Service and the Austrian Space Forum jointly invited over 100 children aged 6-10 to the United Nations Office at Vienna, where they were given the opportunity to control a prototype robotic rover in a mock Mars terrain. The hands-on experience in tele-robotics was followed with a multimedia presentation on Mars exploration.

4. Space information

34. Information for the general public on the latest Programme developments, including on objectives, activity schedules, technical presentations, projects and links to relevant educational websites, is available on the Programme's website (www.unoosa.org/oosa/en/sapidx.html).

D. Providing technical advisory services and promoting regional cooperation

35. The Asia-Pacific Satellite Communications Council (APSCC) 2008 Satellite Conference and Exhibition was held in Jeju, Republic of Korea, from 22 to 25 September 2008. The Office for Outer Space Affairs provided technical advisory services to APSCC to extend its section on satellite applications to include the

International Satellite System for Search and Rescue (COSPAS-SARSAT), tele-health and landscape epidemiology to its future activities.

36. The Programme provided technical advisory services to the Centre for Infectious Diseases with Natural Foci of Mongolia on its development of tele-health activities, with technical support provided by the Public Health Agency of Canada. Fourteen local branches of the Centre have acquired satellite map imagery of Mongolia, along with ArcView 3.2 software and global positioning system (GPS) services. Mongolia plans to establish a network linking district health centres, hospitals, departments and family centres.

37. The Programme provided technical advisory services to the International Training Workshop on Telemedicine Network Design, Development and Application, held in Kunming, China, from 13 October to 2 November 2008. The Workshop was co-organized by the Ministry of Science and Technology of China and Yunnan Sunpa Image Tel Tech Co. The Workshop aimed at initiating international cooperation for the training of telemedicine personnel in developing countries. The training curricula presented at the Workshop dealt with a variety of issues, including telemedicine concepts and available systems, policy and management, services and workflow, requirements and medical informatics development, case studies and operational practices.

38. As a follow-up to the United Nations/Argentina/Switzerland/European Space Agency Workshop on Sustainable Development in Mountain Areas of Andean Countries, held in Mendoza, Argentina, from 26 to 30 November 2007, the Programme provided technical advisory services for initiating a project on satellite information for the sustainable development of high mountain regions in Andean countries that addresses hydrology, mineral resources, agriculture and protected areas. An Internet domain (<http://andessat.com>) has been registered to be used in project coordination activities and CONAE has established a real-time direct link with the Cotopaxi space station of the Centre for the Integrated Surveying of Natural Resources by means of Remote Sensing (CLIRSEN), in Ecuador.

39. The Programme continued to provide African space-related institutions with available Landsat multispectral scanner (MSS), Landsat thematic mapper (TM) and Landsat enhanced thematic mapper plus (ETM+) satellite data sets. The data are used for education and training and for developing projects at the regional and national levels. In 2008, Landsat data were provided to Kwame Nkrumah University of Science and Technology of Ghana, for the detection of shallow water areas using remote sensing data, and to the Department of Water Resources of Gambia, for water resources management using space technologies. The Landsat data were provided in order to follow-up on the recommendations made on the project "Data access, data-sharing and -mapping" initiated at the United Nations/Morocco/European Space Agency Workshop on the Use of Space Technology for Sustainable Development, held in Rabat from 25 to 27 April 2007 (A/AC.105/898).

40. The Office has provided technical and financial support to the series of space conferences of the Americas since 1990. The Office provided financial support to and was represented at the second meeting of the International Group of Experts of the Space Conferences of the Americas, hosted by the Government of Ecuador and held in the Galapagos Islands, Ecuador, on 28 and 29 August 2008 in preparation for the Sixth Space Conference of the Americas. The second meeting of the

International Group of Experts of the Space Conferences of the Americas was organized in conjunction with a regional seminar on space law, held in Quito, on 26 and 27 August 2008.

41. The 13th Symposium of the Latin American Society of Specialists in Remote Sensing (SELPER) was held in Havana from 22 to 26 September 2008. The Programme co-organized with CONAE two sessions on tele-epidemiology.

42. The Programme provided support to the International Academy of Astronautics for the organization of the first Mediterranean Astronautics Conference, held in Tunis from 17 to 19 November 2008. The Conference, whose main theme was “Shared exploitation of space applications”, aimed at bridging the technological gap through the use of space technologies and developing partnerships in the field of space applications in the Mediterranean area.

E. Summary of activities related to the United Nations Programme on Space Applications

1. Activities of the Programme carried out in 2008

43. In 2008, one symposium, one international conference and seven workshops were conducted within the framework of the Programme. The list of activities is presented in annex I.

2. Activities of the Programme scheduled for implementation in 2009

44. The meetings, seminars, symposiums, training courses and workshops scheduled for 2009, including their objectives, are listed in annex II.

3. Activities of the regional centres for space science and technology education, affiliated to the United Nations, for 2008, 2009 and 2010

45. The nine-month postgraduate courses to be offered by the regional centres for space science and technology education, affiliated to the United Nations, in 2007, 2008 and 2009 are listed in annex III.

V. Voluntary contributions

46. The successful implementation of the Programme activities in 2008 benefited from the support and voluntary contributions in cash and in kind from Member States and their institutions, as well as from the assistance and cooperation of regional and international governmental and non-governmental organizations.

47. The following Member States and governmental and non-governmental organizations provided support for the activities of the Programme in 2008:

(a) ESA provided US\$ 85,000 in support of those activities of the Programme in 2008 which it co-sponsored (see annex I);

(b) Austria, through its Ministry for European and International Affairs and its Ministry for Transport, Innovation and Technology, the State of Styria and the city of Graz, defrayed the costs of the international air travel of 23 participants,

local organization and facilities, and the room, board and local transportation of participants in the United Nations/Austria/European Space Agency Symposium on Space Tools and Solutions for Monitoring the Atmosphere and Land Cover, held in Graz, Austria, from 9 to 12 September 2008 (see annex I);

(c) The International Astronautical Federation provided €20,000 in support of the United Nations/International Astronautical Federation Workshop on Space Technology Support for an Integrated Approach to Address Potential Environmental Hazards, held in Glasgow, United Kingdom, on 26 and 27 September 2008 (see annex I);

(d) The United States provided US\$ 440,000 in support of the implementation of the ICG workplan, focusing on information dissemination and capacity-building, as well as selected activities related to GNSS applications;

(e) Those host Governments of events held in the framework of the Programme which defrayed the costs of local organization and facilities, and room, board and local transportation for some participants from developing countries (see annex I). The in-kind support given in 2008 by such Governments is estimated to have amounted to US\$ 700,000;

(f) Those Member States and their space-related institutions, as well as regional and international organizations, which provided sponsorship for experts to make technical presentations and participate in deliberations on activities of the Programme (see annex I and reports on activities).

VI. Financial provisions and administration of activities in the biennium 2008-2009

48. The activities of the Programme in 2009 covered in the present report will be implemented as follows:

(a) *Financial provisions.* Under the regular budget of the United Nations from the resource allocation for fellowships and grants in the programme budget approved by the General Assembly at its sixty-first session for implementing the activities of the Programme during the biennium 2008-2009, an amount of US\$ 487,300 will be used to implement the activities of the Programme in 2009. In order to carry out effectively its mandated and expanded activities, in particular those aimed at implementing the recommendations of UNISPACE III, the Programme must solicit additional funds, in the form of voluntary contributions, in support of its activities. Those contributions will be used to supplement the regular budget of the Programme;

(b) *Administration by and contributions and participation of staff.* The Office for Outer Space Affairs will carry out the activities described in the present report. In that connection, travel will be undertaken, as appropriate, by staff of the Office under the provisions of the travel budget of the Office for the biennium and, as may be necessary, from voluntary contributions.

Annex I

United Nations Programme on Space Applications: meetings, seminars, symposiums, training courses and workshops held in 2008

| <i>Title of activity and place and date held</i> | <i>Sponsoring country</i> | <i>Sponsoring organization</i> | <i>Host institution</i> | <i>Funding support</i> | <i>Number of countries and entities represented</i> | <i>Number of participants</i> | <i>Document symbol of report</i> |
|--|---------------------------|---|--|--|---|-------------------------------|----------------------------------|
| United Nations/Saudi Arabia/United Nations Educational, Scientific and Cultural Organization International Conference on the Use of Space Technology for Water Management Riyadh 12-16 April 2008 | Saudi Arabia | United Nations, United Nations Educational, Scientific and Cultural Organization (UNESCO) | King Abdulaziz City for Science and Technology (KACST), General Secretariat of the Prince Sultan bin Abdulaziz International Prize for Water (PSIPW) | The United Nations covered the costs of round-trip air travel for 25 participants from developing countries; UNESCO provided daily subsistence allowance for 30 participants; the Government of Saudi Arabia, through KACST and PSIPW, provided all participants with room and board for the duration of the Conference. | 38 | 100 | A/AC.105/914 |
| United Nations/Burkina Faso/World Health Organization/European Space Agency/Centre national d'études spatiales Workshop on the Use of Space Technology in Tele-health to Benefit Africa Ouagadougou 5-9 May 2008 | Burkina Faso | United Nations, World Health Organization (WHO), European Space Agency (ESA), Centre national d'études spatiales (CNES), Ministry of Health of Burkina Faso | Ministry of Health, Ministry of Foreign Affairs, Ministry of Post and Information and Communication Technologies, Ministry of Environment and Water, Ministry of Secondary and Further Education and Scientific Research of Burkina Faso | The United Nations and co-sponsors provided full or partial financial support for 13 participants. | 17 | 200 | A/AC.105/915 |
| Fourth United Nations/European Space Agency/National Aeronautics and Space Administration/Japan Aerospace Exploration Agency Workshop on the International Heliophysical Year 2007 and Basic Space Science Sozopol, Bulgaria 2-6 June 2008 | Bulgaria, Japan | United Nations, National Aeronautics and Space Administration (NASA) | Solar-Terrestrial Influences Laboratory of the Bulgarian Academy of Sciences | The United Nations, NASA, Japan Aerospace Exploration Agency (JAXA) and Bulgaria provided full financial support for 60 participants. | 50 | 150 | A/AC.105/919 |

| <i>Title of activity and place and date held</i> | <i>Sponsoring country</i> | <i>Sponsoring organization</i> | <i>Host institution</i> | <i>Funding support</i> | <i>Number of countries and entities represented</i> | <i>Number of participants</i> | <i>Document symbol of report</i> |
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| United Nations/Colombia/ United States of America Workshop on Applications of Global Navigation Satellite Systems Medellin, Colombia 23-27 June 2008 | Colombia, United States of America | United Nations | Office of the Vice- President of Colombia, Colombian Space Commission | The United Nations and co- sponsors provided full or partial financial support for 19 participants. | 19 | 110 | A/AC.105/920 |
| United Nations/Indonesia Regional Workshop on Applications of Integrated Space Technology in Water Resource Management, Environmental Protection and Disaster Vulnerability Mitigation Jakarta 7-11 July 2008 | Indonesia | United Nations | National Institute of Aeronautics and Space (LAPAN) | The United Nations provided full or partial support for 20 participants from developing countries. LAPAN provided those 20 participants with room and board for the duration of the Workshop. | 19 | 90 | A/AC.105/921 |
| United Nations/Austria/ European Space Agency Symposium on Space Tools and Solutions for Monitoring the Atmosphere and Land Cover Graz, Austria 9-12 September 2008 | Austria | United Nations, ESA | Austrian Academy of Sciences, Space Research Institute, and Joanneum Research | The United Nations and co-sponsors provided full or partial financial support for 23 participants. | 29 | 52 | A/AC.105/924 |
| 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 26-27 September 2008 | United Kingdom | United Nations, International Astronautical Federation (IAF), ESA | University of Glasgow | The United Nations and co-sponsors provided full financial support for 16 participants and partial support for 6 participants. IAF waived the Congress registration fees for 22 participants. | 35 | 75 | A/AC.105/930 |

| <i>Title of activity and place and date held</i> | <i>Sponsoring country</i> | <i>Sponsoring organization</i> | <i>Host institution</i> | <i>Funding support</i> | <i>Number of countries and entities represented</i> | <i>Number of participants</i> | <i>Document symbol of report</i> |
|--|---------------------------|---|--|---|---|-------------------------------|----------------------------------|
| United Nations/International Academy of Astronautics Workshop on Small Satellites in the Service of Developing Countries Glasgow, United Kingdom 30 September 2008 | United Kingdom | United Nations, International Academy of Astronautics (IAA) | IAA | N/A | N/A | 60 | A/AC.105/943 |
| United Nations/India/European Space Agency Regional Workshop on the Use of Space Technology in Tele-Epidemiology to Benefit Asia and the Pacific Lucknow, India 20-23 October 2008 | India | United Nations, ESA | Indian Space Research Organisation, Sanjay Gandhi Postgraduate Institute of Medical Sciences | The United Nations and co-sponsors provided full and partial financial support for 10 participants. | 40 | 180 | A/AC.105/935 |
| United Nations/Kenya/European Space Agency Regional Workshop on the Use of Integrated Space Technology Applications in Monitoring the Impact of Climate Change on Agricultural Development and Food Security Nairobi 1-5 December 2008 | Kenya | United Nations, ESA | Intergovernmental Authority on Development, Climate Prediction and Applications Centre | The United Nations and co-sponsors provided full and partial financial support for 14 participants. | 37 | 70 | A/AC.105/936 |

Annex II

United Nations Programme on Space Applications: schedule of meetings, seminars, symposiums, training courses and workshops for implementation in 2009

| <i>Activity</i> | <i>Title</i> | <i>Place and date</i> | <i>Objective</i> |
|-----------------|--|---|--|
| 1 | United Nations/United States of America Training Course on Satellite-Aided Search and Rescue | Miami, United States of America 19-23 January 2009 | To raise awareness about new developments related to the International Satellite System for Search and Rescue (COSPAS-SARSAT) and improve interface protocol among user countries for a better understanding and coordination of the system's activities and operations; to benefit countries in Latin America and the Caribbean. |
| 2 | United Nations/Thailand/European Space Agency Workshop on Space Law | Bangkok April 2009 | To build capacity in space law and strengthen regulatory frameworks governing space activities, in particular for countries in Asia and the Pacific. |
| 3 | United Nations/Azerbaijan/European Space Agency/United States of America Workshop on Applications of Global Navigation Satellite Systems | Baku 11-15 May 2009 | To introduce global navigation satellite systems (GNSS) technology and explain how GNSS can be applied to the fields of transport, communications, aviation, surveying, mapping, Earth science, natural resources management, precision agriculture, environment and disasters management; to strengthen regional information and data exchange networks on the use of GNSS technology. |
| 4 | United Nations/Austria/European Space Agency Symposium on the Use of Small Satellites for Sustainable Development | Graz, Austria 8-11 September 2009 | To promote the use of space technology, in particular the use of small satellites for sustainable socio-economic development. |
| 5 | United Nations/Peru/ European Space Agency/United Nations Environment Programme/ United Nations Educational, Scientific and Cultural Organization Workshop on Integrated Space Technologies Applications for Sustainable Development in the Mountain Areas of Andean Countries | Lima, Peru 14-19 September 2009 | To introduce the concept of using space-based technologies for promoting the development of the mountain areas of Andean countries. |
| 6 | United Nations/European Space Agency/National Aeronautics and Space Administration/Japan Aerospace Exploration Agency Workshop on the International Heliophysical Year 2007 and Basic Space Science | Jeju, Republic of Korea 22-25 September 2009 | To implement the low-cost, ground-based, worldwide International Heliophysical Year instrument arrays; to address satellite missions that provide data for the International Heliophysical Year 2007; to review the implementation of the workplan of the Scientific and Technical Subcommittee for the period 2006-2009 on the International Heliophysical Year; to observe the International Year of Astronomy 2009. |

| <i>Activity</i> | <i>Title</i> | <i>Place and date</i> | <i>Objective</i> |
|-----------------|--|---|--|
| 7 | United Nations/International Astronautical Federation Workshop on Integrated Space Technologies and Space-based Information for Analysing and Predicting Climate Change | Daejeon, Republic of Korea 9-11 October 2009 | To promote the use of space technologies and information for monitoring and predicting climate change in order to avoid and solve social and economic problems caused by climate change; to discuss opportunities for increasing regional and international cooperation. |
| 8 | United Nations/Islamic Republic of Iran Workshop on Space Law | Tehran November 2009 | To build capacity in space law and strengthen regulatory frameworks governing space activities, in particular for countries in West Asia. |
| 9 | United Nations/European Space Agency/United States of America Training Course on Satellite Navigation and Location-Based Services at the African Regional Centre for Space Science and Technology—in French Language | Rabat 29 September- 24 October 2009 | To raise awareness about the potential benefits of using satellite navigation technology and about its applications, in particular with regard to location-based services. |

Annex III

Regional centres for space science and technology education, affiliated to the United Nations: schedule of nine-month postgraduate courses, 2008-2010

1. Regional Centre for Space Science and Technology Education in Asia and the Pacific

| <i>Year</i> | <i>Venue</i> | <i>Activity</i> |
|-------------|--|---|
| 2009-2010 | Indian Institute of Remote Sensing, Dehra Dun, India | Fourteenth Postgraduate Course on Remote Sensing and Geographic Information Systems (GIS) |
| 2009-2010 | Space Applications Centre, Ahmedabad, India | Seventh Postgraduate Course on Satellite Communications |
| 2008-2009 | Indian Institute of Remote Sensing, Dehra Dun, India | Thirteenth Postgraduate Course on Remote Sensing and GIS |
| 2008-2009 | Space Applications Centre, Ahmedabad, India | Sixth Postgraduate Course on Satellite Meteorology and Global Climate |
| 2008-2009 | Physical Research Laboratory, Ahmedabad, India | Sixth Postgraduate Course on Space and Atmospheric Science |

2. African Regional Centre for Space Science and Technology—in French language

| <i>Year</i> | <i>Venue</i> | <i>Activity</i> |
|-------------|---|---|
| 2008-2009 | Mohammadia School of Engineers, University of Mohamed V, Agdal, Rabat | Sixth Postgraduate Course on Remote Sensing and GIS |
| 2008-2009 | Mohammadia School of Engineers, University of Mohamed V, Agdal, Rabat | Third Postgraduate Course on Satellite Meteorology and Global Climate |

3. African Regional Centre for Space Science and Technology Education—in English language

| <i>Year</i> | <i>Venue</i> | <i>Activity</i> |
|-------------|--|---|
| 2009 | Obafemi Awolowo University, Ile-Ife, Nigeria | Seventh Postgraduate Course on Remote Sensing and GIS |

4. Regional Centre for Space Science and Technology Education in Latin America and the Caribbean

| <i>Year</i> | <i>Venue</i> | <i>Activity</i> |
|-------------|--|--|
| 2008-2009 | National Institute for Space Research, Santa Maria, Rio Grande do Sul, Brazil | Sixth Postgraduate Course on Remote Sensing and GIS |
| 2008-2009 | National Institute for Space Research, Santa Maria, Rio Grande do Sul, Brazil | Second Postgraduate Course on Satellite Communications |
| 2008-2009 | National Institute for Space Research, Santa Maria, Rio Grande do Sul, Brazil | Second Postgraduate Course on Satellite Meteorology and Global Climate |
| 2008-2009 | National Institute for Space Research, Santa Maria, Rio Grande do Sul, Brazil | Second Postgraduate Course on Space and Atmospheric Science |
| 2008-2009 | National Institute of Astrophysics, Optics and Electronics, Tonantzintla, Puebla, Mexico | Fourth Postgraduate Course on Remote Sensing and GIS |
| 2008-2009 | National Institute of Astrophysics, Optics and Electronics, Tonantzintla, Puebla, Mexico | Third Postgraduate Course on Satellite Communications |