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Committee on the Peaceful Uses of Outer Space

Report of the Expert on Space Applications*

Contents

* It was necessary to summarize in the present report each of the activities organized during 2004 under the United Nations Programme on Space Applications, the last of which was concluded on 17 December 2004.

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I. Introduction

1. At its forty-first session, in 2004, 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 2003 activities of the Programme had been carried out satisfactorily. On the recommendation of the Committee, the activities of the Programme for 2004 had been endorsed by the General Assembly in its resolution 58/89 of 9 December 2003. The Subcommittee recommended to the Committee, for its approval, the activities scheduled for 2005 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, submitted to the Scientific and Technical Subcommittee at its fortieth session, in 2003 (A/AC.105/790 and Corr.1). Information on the activities carried out within the framework of the Programme in 2004 and those scheduled for implementation in 2005 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;

(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 as proposed by the Committee in its review of the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (A/59/174), and urged all Governments, entities of the United Nations system, as well as intergovernmental and non-governmental entities conducting space-related activities, to carry out the actions contained in the Plan of Action that was endorsed in resolution 59/2, on a priority basis, to further contribute to the 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 United Nations Programme on Space Applications 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 the 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 concentrate on a few areas of major importance for developing countries, defining and working towards objectives that can be achieved in the short and medium term. For each area, individual activities will build on the results of previous activities aimed at achieving concrete results in a period of two to five years. The priority areas of the Programme as noted by the Committee on the Peaceful Uses of Outer Space at its forty-seventh session[3] are (a) disaster management; (b) satellite communications for telemedicine and tele-education applications; (c) monitoring and protection of the environment, including the prevention of infectious diseases; (d) management of natural resources; and (e) education and capacity-building, including research areas in basic space sciences. Within each priority area, the Programme aims to promote capacity-building in space technology and awareness-raising among decision makers in order to strengthen local support for the operational use of space technologies.[4] Other areas that the Programme promotes include developing capability in enabling technologies, such as the use of global navigation and positioning satellite systems, spin-offs of space technology, promoting the participation of youth in space activities, applications of small satellites and microsatellites and promoting the participation of private industry in the activities of the Programme.[5]

6. At its forty-fourth session, the Committee identified the recommendations of UNISPACE III that had been given the highest priority. It also noted that, for some of the recommendations, offers had been made by interested member States to exercise leadership in conducting the work associated with the recommendations. The Committee agreed to establish action teams to implement those recommendations under the voluntary leadership of interested member States.[6] The activities of the Programme have supported, to the extent possible, the action teams established by the Committee.

7. The activities of the Programme will 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 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 advice, on 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

8. The Programme continues to emphasize cooperation with member States at the regional and international levels, aimed at supporting the regional centres for space science and technology education, affiliated to the United Nations. All the regional centres have entered into an affiliation agreement with the Office for Outer Space Affairs of the Secretariat.

9. In 2004, the Programme made efforts (a) to support the development of web pages for all the regional centres; (b) to disseminate information on the educational activities of the regional centres worldwide through established mail and e-mail databases; (c) to submit information on the regional centres for inclusion in international directories; (d) to develop information panels on regional centres for incorporation in the permanent space exhibit of the Office at the United Nations Office at Vienna; (e) to arrange for presentations on the accomplishments of the regional centres to be made at the sessions of the Committee and during activities organized under the Programme; and (f) to establish a common accounting mechanism for the financial resources provided by the Programme to the regional centres.

10. Highlights of the activities of the regional centres supported under the Programme in 2004 and planned activities for 2005 and 2006 are included in annex III.

2. Asia-Pacific Multilateral Cooperation in Space Technology and Applications short-term training courses in space technology applications

11. The Government of China established the secretariat of the Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA). Since 2001, the Programme has sponsored the participation of experts from the region of Asia and the Pacific in the annual short-term training courses in space technology and remote sensing applications for AP-MCSTA.

3. United Nations/Sweden international training courses on remote sensing education for educators

12. In 2004, the Swedish International Development Cooperation Agency (Sida), the Office for Outer Space Affairs and Stockholm University initiated a follow-up evaluation of the training courses that had been conducted between 1990 and 2003. The primary goals of the evaluation exercise were to evaluate the effectiveness of the courses and to identify the factors that led to the successful application of knowledge gained from the training course. The exercise included two evaluation missions in 2004 to several academic institutions in the regions covered by the Economic and Social Commission for Asia and the Pacific and the Economic Commission for Latin America and the Caribbean, and two regional evaluation workshops organized jointly by the Space and Upper-Atmosphere Research Commission of Pakistan and the Regional Centre for Space Science and Technology Education in Latin America and the Caribbean (Brazil campus). The evaluation included reviewing education curricula, facilities and ongoing research projects initiated by former participants at their academic institutions. The outcome of the evaluation will be used by co-sponsors to improve future courses. It is intended to identify the nature and scope of possible support to ensure that ongoing efforts have established firm roots within the educational communities in developing countries.

13. Participants in the Pakistan workshop agreed to compile an inventory of successful applications of remote sensing, geographical information systems (GIS) and global navigation satellite system (GNSS) technologies that resulted from attendance at these training courses between 1991 and 2004. In addition, participants established an Asian Regional Task Force on Risk Assessment for Natural Resources and Environmental Protection Using Remote Sensing and GIS Technologies. The Task Force assisted during the recent Indian Ocean tsunami disaster relief and rehabilitation effort by providing imagery analyses.

4. Long-term fellowship programmes for in-depth training

14. In 2004, the Government of Italy, through Politecnico di Torino and Istituto Superiore Mario Boella, and with the collaboration of Istituto Elettrotecnico Nazionale Galileo Ferraris, offered five 12-month fellowships for postgraduate study on GNSS and related applications. The programme commenced on 17 January 2005. The co-sponsoring organizations jointly selected five representatives of government organizations and research and academic institutions from Argentina, the Islamic Republic of Iran, Jordan, Pakistan and Sri Lanka for the fellowship study at Politecnico di Torino in Turin, Italy.

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

1. Space technology for disaster management

15. As recommended by UNISPACE III, the Programme's priority thematic area of space technology and disaster management aims to promote the use of space technology for disaster management in developing countries. The Programme's renewed efforts in this area began in 2000 in Chile when the first of five regional workshops was organized on this topic. Additional regional workshops have been held in Ethiopia (2002), Thailand (2002) and Romania (2003). In 2004, the fifth regional workshop was held in Saudi Arabia and the final international workshop that built upon the results of the five regional workshops was held in Germany.

16. The fifth Regional Workshop on the Use of Space Technology for Disaster Management, held in Saudi Arabia, was organized jointly by the Office for Outer Space Affairs, the Space Research Institute of the King Abdulaziz City for Science and Technology (KACST) and Space Imaging Middle East. The discussions included issues and recommendations on capacity- and knowledge-building, networking and coordinating mechanisms, data access and data availability, spatial data infrastructures and awareness-raising. The participants developed a common plan of action that focused on identifying limiting factors in the use of space technology for disaster management in the region. A regional task force was proposed to advance the actions that were important to the region as a whole. The Space Research Institute of KACST offered to coordinate that effort. The task force agreed to develop a work plan that included information-gathering, the development of a database of regional talents for networking and a training curriculum with case studies.

17. The United Nations International Workshop on the Use of Space Technology for Disaster Management, held in Munich, Germany, in October 2004, was the final workshop of the series of five regional workshops mentioned above. The objective of the Workshop was to develop a global strategy aimed at promoting the use of space technologies for disaster management. The Workshop was co-sponsored by the European Space Agency (ESA), hosted by the German Aerospace Center (DLR) and organized in conjunction with the United Nations Educational, Scientific and Cultural Organization and the International Strategy for Disaster Reduction.

18. Three themes were discussed at the Workshop: helping developing countries use space technology for disaster management; coordinating the use of space technology for disaster management; and bringing space technology into Kobe. The final recommendations formed the "Munich Vision", which provided a strategy for the consolidation of a coordinating entity and national focal points and other international coordinating mechanisms such as the Global Earth Observation System of Systems (GEOSS). A partnership to coordinate support at the national and regional levels in the incorporation of space technology-based solutions in disaster management activities was proposed at the World Conference on Disaster Reduction, held in Kobe, Japan, from 18 to 22 January 2005. It was also recommended that the Office continue to maintain and expand the existing Global Network for Space Technology and Disaster Management.

19. In 2004, the Programme conducted the United Nations/United States of America Training Course on Satellite-Aided Search and Rescue in Miami, Florida, United States for the benefit of the countries in the Latin American and Caribbean region. The International Satellite System For Search and Rescue (COSPAS-SARSAT) has provided alerts that have assisted in the rescue of over 17,000 persons in distress in about 5,000 search and rescue events since 1982. In recent years, the Programme has organized a series of training courses designed to help improve interaction among the participating countries of COSPAS-SARSAT. The goals of those training activities were to contribute to the seamless operation of the system and to make the equipment more affordable to developing countries. The training course introduced participants to the basic system concept and applications and to new features of the system such as the Ship Security Alert System, personal location beacons and GNSS signal incorporation for combating terrorist and pirate attacks.

20. The Programme also organized the fourteenth United Nations/International Astronautical Federation Workshop on Capacity-Building in Space Technology for the Benefit of Developing Countries, with Emphasis on Natural Disaster Management, which was held in Vancouver, Canada, in October 2004. The primary objective of the Workshop was to review the disaster management initiatives employing space technology being carried out by various entities through international cooperation and to identify means of building synergies among them.

2. Natural resource management and environmental monitoring

21. The activities of the Programme conducted in support of the priority thematic area of natural resource management and environmental monitoring are described below.

22. The United Nations/European Space Agency/Sudan Regional Workshop on the Use of Space Technology for Natural Resource Management, Environmental Monitoring and Disaster Management was held in Khartoum in April 2004 and hosted by the Remote Sensing Authority of the Sudan. The presentations focused on agriculture and natural resource management; land use and land degradation; hydrology and water resource management; environmental monitoring and assessment; and food and human security. A “Khartoum Vision” was developed on the basis of the presentations and discussions and provided a common strategy for encouraging the use of space technology in the Sudan and the region by focusing on capacity-building, data access, networking, spatial data infrastructures, the coordination of national and regional space policies, awareness-raising and building upon existing initiatives. The participants recognized that knowledge-sharing and the establishment of partnerships would be greatly facilitated by the creation of a regional task force of focal points. Those focal points would be responsible for disseminating information on activities and information that could benefit all the institutions involved. The Remote Sensing Authority of the Sudan offered to take on a coordinating role in the proposed regional task force.

23. The United Nations/Islamic Republic of Iran Regional Workshop on the Use of Space Technology for Environmental Security, Disaster Rehabilitation and Sustainable Development, held at Tehran from 8 to 12 May 2004, was organized in conjunction with the Iran Space Agency and was supported by ESA. The Workshop focused on three aspects of space technology applications that had not been explored in the previous workshops: environmental security, disaster rehabilitation

and sustainable development. The Workshop participants developed a common strategy for encouraging the use of space technology in the region and called it the "Tehran Initiative". Its goals are the same as those of the Khartoum Vision mentioned above. The Iran Space Agency offered to assume a coordinating role in the regional task force that had been proposed during the discussions.

24. The United Nations/European Space Agency/Switzerland/Austria Workshop on Remote Sensing in the Service of Sustainable Development in Mountain Areas was held in Kathmandu, from 15 to 19 November 2004. The Workshop was co-sponsored by the Governments of Austria and Switzerland and the European Space Agency and hosted by the International Centre for Integrated Mountain Development. It was the first in a new series of activities dedicated to sustainable development in mountain areas. The primary objective of the Workshop was to discuss the potential uses of remote sensing and other space-related technologies for mountain areas. During the Workshop, four working groups were established and eight project proposals were submitted to the co-sponsors for further consideration and financial support. The four working groups were (a) the sustainable development working group, which focused on land use, land cover and food security assessment in the region of the Hindu Kush and Himalayas; (b) the environment and natural resources working group, which focused on South Asian land cover mapping and dynamics in mountain areas, glacier monitoring for water resources and climate change detection; (c) the disaster management working group, which focused on remote sensing applications for a regional disaster information network; and (d) the education, training and capacity-building working group, which focused on remote sensing in education and the module entitled "Himalayas from Space" of the ESA Eduspace programme. The co-sponsors of the Workshop were invited to join the Mountain Partnership, which is a global alliance of practitioners and organizations involved in mountain issues. It aims at initiating concrete activities to improve mountain livelihoods and environments. The co-sponsors have stated their willingness to help mobilize resources to implement the selected pilot projects.

25. The Programme is working with the United States to ensure that the United Nations and the African community fully utilize the Land Remote Sensing Satellite (Landsat) data that were donated to the United Nations by the United States Department of State in 2001. The Programme has held two subregional expert meetings and one subregional workshop in Africa with the intent of consolidating and implementing a unified strategy to ensure that the data are distributed to the end-user and are competently used. The first subregional expert meeting was held during the International Conference on Geographical Information Systems in Africa, held in Dakar in October 2003. The second subregional expert meeting was held during the fifth African Association of Remote Sensing of the Environment conference, held in Nairobi from 18 to 21 October 2004. At the conference, the status of data distribution was ascertained and the further efforts needed to ensure use of the data by African institutions identified. The participants affirmed the need to evaluate the access to the donated Landsat data and the impact on Africa of the availability and use of the data. It was agreed that, in the year following the conference, efforts should focus on continuously raising awareness of the availability of the data and on ensuring that the data reached academic institutions and other centres of excellence. The participants proposed that a special session be

organized during the following year's conference, in 2005, to assemble presentations that would show how the donated data had been used in Africa.

3. Promoting the use of enabling technologies

26. UNISPACE III emphasized the potential social and economic benefits of GNSS, which constitute an important space-based enabling technology for applications in such areas as GIS, aviation, maritime and land transportation, mapping and surveying, agriculture, power and telecommunication networks, disaster warning and emergency response. For developing countries and countries with economies in transition, GNSS applications can offer cost-effective solutions to pursue economic growth without compromising the need to preserve the environment in the present and future, thus promoting sustainable development, including training and education in space science and technology applications.

27. In the period from 2001 to 2004, with the sponsorship of the Government of the United States, the Programme held four regional workshops on GNSS, in Austria, Chile, Malaysia and Zambia, and three international meetings in Austria. ESA co-sponsored the workshops held in 2002. The series of meetings contributed significantly to the work of the Action Team on Global Navigation Satellite Systems established by the Committee on the Peaceful Uses of Outer Space on improving universal access to and the compatibility and interoperability of space-based navigation and positioning systems. In December 2004, the United Nations/United States of America International Meeting on the Use and Applications of Global Navigation Satellite Systems was held in Vienna. The meeting reviewed the progress made in the implementation of the recommendations of the previous meetings and of the Action Team on Global Navigation Satellite Systems in terms of prioritizing and further developing follow-up projects. Ways and means of funding projects were also addressed. Further steps were taken in the preparation of the terms of reference for the establishment of an international committee on GNSS for the purpose of promoting and coordinating the use and applications of GNSS.

28. For about 10 years, several space agencies, at the request of the medical community, have been involved in pilot studies on public health using space systems, that is, Earth observation including meteorological observation, navigation and telecommunication satellites. Initially, the following three medical fields were involved: (a) medical consultations in isolated areas, including both mobile applications (boats, planes, terrestrial expeditions) and stationary applications (in inaccessible locations or in places of natural disaster); (b) epidemiology of communicable diseases in relation to environmental variables, in a particular climate; and (c) future applications such as tele-robotics, tele-surgery and home health care.

29. In July 2004, the Programme, together with the European Association for the International Space Year and other sponsors, organized a Conference on Tele-health and Satellites in Rabat. The main purpose of the Conference was to compare the various approaches adopted by the different space agencies and national, international and non-governmental organizations and to enhance international cooperation in the field of tele-health. The most recent approaches in the fields of tele-epidemiology, tele-consultation, tele-robotics, tele-surgery and health education in remote areas were presented and discussed. Real-time demonstrations of the applications via communications satellite were also given.

4. Space applications for sustainable development

30. Over several years, the Programme has organized workshops and symposiums aimed at increasing awareness among policy makers and the general public of the important role that space science and technology and their applications play in promoting sustainable development. Starting in 2003, with sponsorship from the Government of Austria, the Programme began a series of three symposiums to examine how space applications could contribute to implementing the actions recommended in the Plan of Implementation of the World Summit on Sustainable Development.[7] The first symposium identified various areas in which space applications could make important contributions to the follow-up to the World Summit.

31. In September 2004, the Symposium on Water for the World: Space Solutions for Water Management was held in Graz, Austria. It was co-sponsored by the Federal Ministry for Foreign Affairs and the Ministry for Transport, Innovation and Technology of Austria, the State of Styria, the City of Graz and ESA. The objectives of the Symposium were (a) to review the needs of end-users engaged in the management of water resources and to examine how space technology could help enhance water resource management; (b) to examine what type and level of training is required for specific target groups in using space technology for water resource management; (c) to identify a functional partnership that could be established; and (d) to identify the steps needed to initiate demonstration pilot projects. A working group in the Symposium identified elements that could be incorporated in possible pilot projects and formed a plan to develop such projects. Participants in the Symposium agreed to develop those elements further with a view to initiating pilot projects in the near future.

5. Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters ("the International Charter 'Space and Major Disasters'")

32. The Office for Outer Space Affairs has been a cooperating body to the International Charter "Space and Major Disasters" since 1 July 2003, an arrangement through which the United Nations system has requested satellite imagery from space agencies a total of 14 times to deal with disasters, including for the recent tsunami in the Indian Ocean, hurricane Jeanne in Haiti, hurricane Ivan in Grenada, floods in the Dominican Republic and Haiti, a train crash in the Democratic People's Republic of Korea and an earthquake in Afghanistan. In October 2004, the Programme organized, in Geneva, Switzerland, the second one-day meeting of United Nations agencies and Charter members for the purpose of carrying out an assessment of the first year of activities and to revise the "common vision" for the second year of activities. The meeting participants agreed on a strategy of consolidating a network of partnerships (humanitarian organizations, civil protection agencies and space technology institutes) in each country. United Nations agencies that have stated their interest in such a partnership are the Office for Outer Space Affairs, the Office of the High Commissioner for Refugees, the United Nations Institute for Training and Research, the World Food Programme and the World Meteorological Organization. The partnerships would include advocacy activities (awareness-raising) and capacity-building. The participants also agreed

that the United Nations should continue to work towards the goal of the Charter being used also for epidemiological disasters and humanitarian crises.

6. Space information

33. Information for member States and the general public on the latest developments in the activities carried out under the Programme can be found on the web pages of the Programme (www.oosa.unvienna.org/sapidx.html), which are part of the website of the Office for Outer Space Affairs. Activity schedules, objectives and programmes of planned activities and projects are also included on the web pages devoted to the Programme.

C. Promoting the dissemination and increasing the awareness of knowledge-based themes

1. Basic space science

34. The Programme organized the twelfth United Nations/European Space Agency Workshop on Basic Space Science held in Beijing from 24 to 28 May 2004 and hosted by China. Future workshops on basic space science will focus on preparations for the International Heliophysical Year 2007, and how they may benefit developing countries.

35. Since 2001, in conjunction with the United Nations/European Space Agency workshops on basic space science, the Committee on Space Research and the International Astronomical Union have organized annual regional workshops for astronomers and space scientists on data processing from the Chandra and the X-Ray Multi-Mirror-Newton space missions. In 2004, the Programme contributed to the planning of the third workshop in the series, held at the University of Kwazulu-Natal, South Africa, and sponsored the participation of a number of scientists from African countries.

2. Space law

36. The Programme organized, in cooperation with the Government of Brazil and the Associação Brasileira de Direito Aeronáutico e Espacial, the third United Nations Workshop on Space Law in Rio de Janeiro, Brazil, in November 2004. The Workshop was hosted by the Government of Brazil and was entitled "Disseminating and developing international and national space law: the Latin American and Caribbean perspective". The Workshop aimed at developing expertise and capability in national and international space law, promoting education in space law and providing a platform for discussing questions of specific interest to the Latin American and Caribbean region. Among the observations, recommendations and conclusions of the Workshop was the recommendation that States not yet parties to the United Nations treaties on outer space should take the necessary steps to ratify or accede to them. The Workshop also agreed on the importance of promoting wider understanding of international space law, on the need to disseminate information on existing international space law to professionals in the legal, space science and technology fields, particularly in developing countries, and recommended that the United Nations continue its efforts to support and promote

education and capacity-building in space law to ensure the availability of qualified professionals required for the implementation of space law and policies by States.

D. Providing technical advisory services and promoting regional cooperation

1. Asia-Pacific Satellite Communications Council

37. Since its establishment in 1994 with the assistance of the Programme, the Asia-Pacific Satellite Communications Council (APSCC) has grown considerably. It currently has 80 members, of which 10 joined in the first half of 2004. The largest conference in Asia devoted to the satellite and space industry, the Asia-Pacific Satellite Communication and Broadcasting Conference and Exhibition 2004, was held in Seoul from 3 to 4 September 2004. The Office for Outer Space Affairs submitted proposals for the programme of the conference, which were adopted.

2. Survey on satellite broadband resources in the Asian and Pacific region

38. The Programme participates in an ongoing survey conducted jointly by the Economic and Social Commission for Asia and the Pacific, the International Telecommunication Union and APSCC. The survey aims to discover the underlying reasons behind the current lack of satellite broadband Internet service in the Asian and Pacific region in order to find a means by which such a service could begin to penetrate both the commercial markets and the less profitable, but socially important, disadvantaged regions. The results of the survey will help Governments pursue their national priority information and communication technologies projects and help prepare the way for individuals and communities of users to access crucial information and applications via broadband technologies. The results would also enable suppliers to access new markets and initiate negotiations aimed at forming new sustainable user communities and services using broadband satellite communications. It is hoped that the final outcome of this activity will be the creation of the necessary mechanism to provide sustainable and affordable broadband access to potential users throughout Asia and the Pacific.

3. Space-based telemedicine and tele-health

39. The Programme is planning to organize activities in the field of space-based tele-health. On 20 October 2004, the Office for Outer Space Affairs entered into an alliance partnership with the International Society for Telemedicine.

40. The United States, India and the Office for Outer Space Affairs are identifying areas suitable for a project on space-based tele-health. The Indian Space Research Organization proposed to establish a satellite-based communications network with potential applications in a broad range of teleconnectivity initiatives such as tele-health and telemedicine, tele-education and e-governance.

4. United Nations Institute for Disarmament Research conference

41. In 2004, the Office for Outer Space Affairs participated in the United Nations Institute for Disarmament Research (UNIDIR) conference for the first time. The Office was invited by UNIDIR to deliver a presentation on the civil uses of outer

space. The Office presented examples of the civil applications within the framework of the Programme, advising the member States of UNIDIR on the current status of space technologies that are being applied in the civil and peaceful uses of outer space.

5. Fourth Space Conference of the Americas

42. In 2004, the Office assisted the Government of Colombia, in its role as pro tempore secretariat for the Fourth Space Conference of the Americas, in identifying and structuring pilot projects in application areas included in the plan of action of the Conference. The Office also assisted in organizing a seminar entitled "Agenda of Space Activities for Colombia: the Latin-American Experience", as well as in preparing a white paper on the need to establish a national entity to coordinate space activities in Colombia and the benefits of appointing a focal person to act as a counterpart in international cooperation activities. In 2005, the Office will also co-sponsor the Space Camp of the Americas, an event organized by the Chilean Space Agency within the framework of the Fourth Space Conference.

6. Committee on Earth Observation Satellites

43. The Director of the Office for Outer Space Affairs continued to act as Chairperson of the Working Group on Education, Training and Capacity-Building of the Committee on Earth Observation Satellites (CEOS). In 2004, the Working Group completed the development of the CEOS education, training and capacity-building resources portal and demonstrated its functions to the eighteenth CEOS plenary meeting. Initially, the education portal will make the Earth observation education and training resources of CEOS members and associates more accessible, particularly to developing countries. It will provide numerous links to websites where educators, students and professionals may access education materials, including satellite data, free of charge. The Working Group identified four categories of Earth observation data to which educators, students and practitioners should obtain increased access. Data sets from three categories are available through the Internet and through ad hoc arrangements. For the fourth category, the principles of satellite data provision in support of Earth-observation training and education, proposed by the Working Group and adopted by the seventeenth CEOS plenary meeting, provide a framework for agencies to support Earth-observation capacity-building consistent with agency data policies. The work planned for 2005 includes inviting space-related entities to submit education materials for inclusion in the database of the education portal, revising a draft plan of implementation of the CEOS data provision principles and carrying out a pilot project as a practical test of the revised draft plan of implementation of the data provision principles, to be presented at the nineteenth CEOS plenary meeting.

7. Follow-up activities of training courses sponsored by the United Nations and the European Space Agency

44. The Programme continues to support the joint United Nations and ESA follow-up programme on the use of remote sensing technology in sustainable development, initiated in 1998 by ESA, the Office for Outer Space Affairs and the Department of Economic and Social Affairs of the Secretariat, as a follow-up to the courses conducted in Frascati, Italy, in 1993, 1994, 1995 and 1997.

45. In 2002, the Programme and ESA concluded a follow-up project in Asia and the Pacific (Viet Nam) and another in 2003 in Latin America and the Caribbean (Argentina, Bolivia and Chile). The Programme and ESA are currently collaborating in carrying out a project in Africa on the development of an information system for determining, monitoring and assessing flood areas and compiling an inventory of superficial waters in the Nakambé river basin of Burkina Faso. The project formally commenced in 2004. A progress report was made at the United Nations/ Austria/European Space Agency Symposium on Water for the World: Space Solutions for Water Management in September 2004.

8. Follow-up to the Earth Observation Summit

46. The Office for Outer Space Affairs participates in the work of the intergovernmental ad hoc Group on Earth Observations (GEO) as a member of the sub-group on capacity-building. The Group was established following the First Earth Observation Summit, held in Washington, D.C., on 31 July 2003, with the purpose of developing a 10-year implementation plan for GEOSS. The plan entails the coordination of a wide range of space-, air-, land- and ocean-based environmental monitoring platforms, resources and networks that currently often operate independently. The Second Earth Observation Summit, held in Tokyo on 25 April 2004, established a framework for GEOSS, aiming to achieve advances in nine priority thematic areas expected to yield socio-economic benefits. The Office contributes by creating synergy between the efforts made by GEO and those made by the Committee on the Peaceful Uses of Outer Space, in particular through its action teams to implement recommendations of UNISPACE III.

E. Meetings, seminars, symposiums, training courses and workshops organized by the Programme and the regional centres for space science and technology education, affiliated to the United Nations

1. Activities of the Programme carried out in 2004

47. In 2004, one conference, one symposium, two training courses and 10 workshops were conducted under the auspices of the Programme. The list of activities is presented in annex I.

2. Activities of the Programme scheduled for implementation in 2005

48. The meetings, seminars, symposiums, training courses and workshops scheduled for 2005, 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 2004, 2005 and 2006

49. The nine-month postgraduate courses to be offered by the regional centres for space science and technology education, affiliated to the United Nations, in 2004, 2005 and 2006 are listed in annex III.

V. Voluntary contributions

50. The successful implementation of the activities of the United Nations Programme on Space Applications in 2004 benefited from the support and voluntary contributions in cash and in kind of member States and their institutions, as well as from the assistance and cooperation of regional and international governmental and non-governmental organizations.

51. A number of member States and governmental and non-governmental organizations provided support for the activities of the Programme in 2004, as follows:

(a) ESA provided $100,000 in support of the specific activities of the Programme in 2004 that it co-sponsored (see annex I);

(b) The Government of Sweden, through Sida, defrayed the costs of international air travel for 27 participants, as well as the costs of local organization and facilities, room and board and local transportation for all participants in relation to the training course organized in Stockholm and Kiruna, Sweden (see annex I). The Government of Sweden, through Sida, also defrayed the costs of room and board for some participants of the workshop in Islamabad (see annex I);

(c) Austria, through its Ministry for Foreign Affairs and the Ministry for Transport, Innovation and Technology, the State of Styria and the City of Graz, defrayed the costs of the international air travel of 35 participants, local organization and facilities, room and board and local transportation in relation to the symposium organized in Graz, Austria (see annex I);

(d) The International Astronautical Federation provided $20,000, ESA provided $15,000 (as part of their total contribution to activities of the Programme) and the Canadian Space Agency provided Can$10,000 (in kind) to co-sponsor the United Nations/International Astronautical Federation workshop held in Vancouver, Canada (see annex I);

(e) The Government of the United States provided $175,000 for 2004 and 2005 in support of the United Nations/United States of America International Workshop on GNSS and selected pilot projects (see annex I);

(f) The Government of the United States provided $90,000 in support of meetings and workshops held in 2003 and 2004 to train and facilitate the delivery and distribution of available global Landsat data sets for sustainable development in Africa;

(g) The Government of the United States provided $50,000 in financial support for the joint United Nations/India/United States of America telemedicine/tele-health project;

(h) The host Governments of activities of the Programme defrayed the costs of local organization and facilities, room and board and local transportation for some participants from developing countries (see annex I);

(i) The member States and their space-related institutions, as well as regional and international organizations, provided sponsorship for experts to make

technical presentations and participate in deliberations during activities of the Programme (see annex I and reports on the activities).

VI. Financial provisions and administration of activities in the biennium 2004-2005

52. The activities of the United Nations Programme on Space Applications in 2005 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 fifty-eighth session for implementing the activities of the Programme during the biennium 2004-2005, an amount of $406,100 will be used to implement the activities of the Programme in 2005. 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 and, in particular, the Expert on Space Applications and her staff will carry out the activities described in the present report. In that connection, travel will be undertaken as appropriate by the Expert and the 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.

Notes

[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).

[2] Ibid., chap. I, resolution 1.

[3] *Official Records of the General Assembly, Fifty-ninth Session, Supplement No. 20* (A/59/20), para. 66.

[4] Ibid., para. 65.

[5] Ibid., para. 66.

[6] *Official Records of the General Assembly*, *Fifty-sixth Session, Supplement No. 20* and corrigendum (A/56/20 and Corr.1), paras. 50-55.

[7] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 1, annex.

Annex I

United Nations Programme on Space Applications: meetings, seminars, symposiums, training courses and workshops held in 2004

Title of activity and place and date held	*Sponsoring country*	*Sponsoring organization*	*Host institution*	*Funding support*	*Number of countries and territories represented*	*Number of participants*	*Document symbol of report*
United Nations/United States of America Training Course on Satellite-Aided Search and Rescue Miami, Florida, United States 2-6 February 2004	United States of America	United Nations, National Oceanic and Atmospheric Administration (NOAA)	NOAA	Funding support to 15 participants was provided by the United Nations and NOAA	21	100	A/AC.105/827
United Nations/European Space Agency/Sudan Regional Workshop on the Use of Space Technology for Natural Resource Management, Environmental Monitoring and Disaster Management Khartoum 4-8 April 2004	Sudan	United Nations and the European Space Agency (ESA)	Remote Sensing Authority, National Centre for Research of the Sudan	Funding support to 14 participants was provided by the United Nations and ESA	16	160	A/AC.105/828
Fourteenth United Nations/Sweden International Training Course on Remote Sensing Education for Educators Stockholm and Kiruna, Sweden 3 May-11 June 2004	Sweden	United Nations, Swedish International Development Cooperation Agency (Sida)	Stockholm University and Metria Satellus AB	Air travel for 13 participants and en route expenses for all participants were defrayed by the United Nations; all other expenses, including room and board and local travel, were covered by Sida.	27	27	A/AC.105/830

Title of activity and place and date held	*Sponsoring country*	*Sponsoring organization*	*Host institution*	*Funding support*	*Number of countries and territories represented*	*Number of participants*	*Document symbol of report*
United Nations/Islamic Republic of Iran Workshop on the Use of Space Technology for Environmental Security, Disaster Rehabilitation and Sustainable Development Tehran 8-12 May 2004	Islamic Republic of Iran	United Nations and ESA	Iran Space Agency	Funding support to 16 participants was provided by the United Nations and ESA	23	120	A/AC.105/833
United Nations/European Space Agency Workshop on Basic Space Science Beijing 24-28 May 2004	China	United Nations and ESA	China National Space Adminis-tration (CNSA)	Air travel, en route expenses and daily subsistence allowance for 25 participants were defrayed by the United Nations and ESA; room and board and local travel were covered by CNSA	28	75	A/AC.105/829
United Nations/Pakistan Regional Workshop on Monitoring and Protection of the Natural Environment: Educational Needs and Experience Gained from United Nations/Sweden Training Courses on Remote Sensing Education for Educators Islamabad 30 August-4 September 2004	Pakistan	United Nations, Sida and ESA	Space and Upper-Atmosphere Research Commission (SUPARCO)	Air travel, en route expenses and daily subsistence allowance for 16 participants were defrayed by the United Nations; conference facilities, room and board, and local travel were covered by SUPARCO and Sida	5	91	A/AC.105/831
United Nations/ Austria/European Space Agency Symposium on Water for the World: Space Solutions for Water Management Graz, Austria 13-16 September 2004	Austria	United Nations and ESA	Austrian Academy of Sciences, Institute of Space Research and Joanneum Research	The United Nations and the other co-sponsors covered the cost of air travel and living expenses for 35 participants	31	71	A/AC.105/844

Title of activity and place and date held	*Sponsoring country*	*Sponsoring organization*	*Host institution*	*Funding support*	*Number of countries and territories represented*	*Number of participants*	*Document symbol of report*
United Nations/International Astronautical Federation Workshop on Capacity-Building in Space Technology for the Benefit of Developing Countries, with Emphasis on Natural Disaster Management Vancouver, Canada 2 and 3 October 2004	Canada	United Nations, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Canadian Space Agency, ESA and the International Astronautical Federation (IAF)	IAF	The sponsors fully covered air travel and living expenses (for the duration of the Workshop and the International Astronautical Federation Congress) for 20 speakers and participants from developing countries and countries with economies in transition. In addition, 5 participants were provided with partial funding to cover either air travel or living expenses or congress registration. The co-sponsors also covered the cost of registration fees for 22 participants to participate in the fifty-fifth International Astronautical Congress, which was held immediately after the Workshop	33	91	A/AC.105/834
Fifth United Nations/International Academy of Astronautics Workshop on Small Satellites in the Service of Developing Countries Vancouver, Canada 5 October 2004	Canada	United Nations and the Subcommittee on Small Satellites for Developing Nations of the International Academy of Astronautics	IAF	The Workshop was held as part of the fifty-fifth International Astronautical Congress and was open to all participants of the Congress, therefore no additional funding was required		60	A/AC.105/835

Title of activity and place and date held	*Sponsoring country*	*Sponsoring organization*	*Host institution*	*Funding support*	*Number of countries and territories represented*	*Number of participants*	*Document symbol of report*
United Nations Regional Workshop on the Use of Space Technology for Disaster Management for Western Asia Riyadh 2-6 October 2004	Saudi Arabia	United Nations and Space Imaging Middle East	The Space Research Institute of the King Abdulaziz City for Science and Technology of Saudi Arabia (KACST)	Funds provided by the United Nations and KACST covered air travel and room and board for 18 partici-pants	19	90	A/AC.105/836
United Nations International Workshop on the Use of Space Technology for Disaster Management Munich, Germany 18-22 October 2004	Germany	United Nations, UNESCO, the International Strategy for Disaster Reduction and ESA	German Aerospace Center (DLR)	Air travel, en route expenses and daily subsistence allowance for 24 participants were defrayed by the United Nations; room and board and local travel were funded by DLR	51	170	A/AC.105/837
United Nations/European Space Agency/Austria/Switzerland Workshop on Remote Sensing in the Service of Sustainable Development in Mountain Areas Kathmandu 15-19 November 2004	Nepal	United Nations, Austria, Switzerland, ESA	International Centre for Integrated Mountain Development	Funds provided by the United Nations, ESA, Austria and Switzerland covered air travel and room and board for 20 participants from developing countries	20	120	A/AC.105/845
United Nations/United States of America International Meeting on the Use and Applications of Global Navigation Satellite Systems Vienna 13-17 December 2004	United States	United Nations	Office for Outer Space Affairs	The United Nations and the United States covered the cost of air travel and living expenses for 32 participants and the cost of the use of conference facilities and services	34	73	A/AC.105/846

Annex II

United Nations Programme on Space Applications: schedule of meetings, seminars, symposiums, training courses and workshops for implementation in 2005

Activity	*Title*	*Place and date*	*Objective*
1	Second Regional Workshop on Evaluating the Impact of the 1990-2004 Series of the United Nations/Sweden International Training Course on Remote Sensing Education for Educators	São José dos Campos, Brazil 21-25 February 2005	The objective of the workshop is to evaluate a local impact of the series of United Nations/Sweden training courses in order to find the major reasons for a high or low rate of success in implementing the knowledge obtained in Sweden and to identify the nature and scope of possible support to ensure that ongoing efforts have established firm roots within the educational communities in developing countries of the region. Participants will review the present course content and format with a view to implementing changes if necessary and update their knowledge of current remote sensing techniques and teaching methods.
2	United Nations/Australia Training Course on Satellite-Aided Search and Rescue	Canberra 14-18 March 2005	The primary objectives of the training course are to promote awareness of the international COSPAS-SARSAT satellite-aided search and rescue programme and to establish a formal interface with user countries to promote understanding and coordination of programme activities and operations within the Oceania region.
3	United Nations/Algeria/ European Space Agency International Seminar on the Use of Space Technology for Disaster Management: Prevention and Management of Natural Disasters	Algiers 22-26 May 2005	The objective of the seminar is to increase awareness among national and regional users of the potential of space technology for preventing and managing natural disasters and thereby contribute to the incorporation of space-based technology solutions in disaster reduction and management. The seminar will build upon the work being carried out by the United Nations Programme on Space Applications within its space technology and disaster management programme and strengthen the work being carried out in Africa.
4	United Nations/Austria/European Space Agency Symposium on Space Applications for Sustainable Development: Supporting the Plan of Implementation of the World Summit on Sustainable Development	Graz, Austria September 2005	The symposium will examine the benefits of space science and technology and their applications to address various issues relating to United Nations global agendas for development.

Activity	*Title*	*Place and date*	*Objective*
5	United Nations/Argentina Training Course on Applications of Space Information and Technology to Health Issues	Gulich Institute of Advanced Space Studies, Tabanera Space Center Córdoba, Argentina 19-23 September 2005	The objectives of the training course are to demonstrate the use of space technology for health, in particular landscape epidemiology; and to share information on health-related activities and applications for Latin America and the Caribbean with a view to launching a regional project on landscape epidemiology.
6	United Nations/International Astronautical Federation Workshop on Space Education for Sustainable Development	Kitakyushu, Japan 14-15 October 2005	The objective of the workshop is to review a number of educational and capacity-building initiatives being carried out by various entities through international cooperation and look for ways to build synergies among them.
7	United Nations/European Space Agency/Austria/Switzerland Expert Group Meeting on Remote Sensing in the Service of Sustainable Development in Mountain Areas	Nepal October 2005	The objective of the meeting is to launch a pilot project for sustainable mountain development in the region of the Hindu Kush and Himalayas.
8	United Nations/European Space Agency Workshop on Basic Space Science: International Heliophysical Year	Al-Ain, United Arab Emirates University 20-23 November 2005	The objective of the workshop is to explore how preparations for the International Heliophysical Year are contributing to sustainable development and capacity-building (internationally, regionally and nationally), particularly in developing countries, drawing on short- and long-term experience and the results of international space-related years organized since 1957 under the umbrella of the United Nations. Particular attention will be paid to the results of the International Geophysical Year of 1957 and the International Space Year of 1992.
9	United Nations/China Expert Group Meeting on Tele-health	Kunming, China 21-24 November 2005	The objective of the meeting is to exchange information on the current status of tele-health practices in the Asian and Pacific region and to discuss issues, concerns and approaches in developing tele-health for the region with a view to establishing a network and stimulating the development of a plan of implementation. The tele-health application will include the use of space-based technologies to provide medical services as well as health education for the prevention and treatment of infectious diseases such as malaria and HIV/AIDS.

Activity	*Title*	*Place and date*	*Objective*
10	United Nations/Colombia Workshop on Global Navigation Satellite System Applications for Transportation	Colombia May 2005	The workshop will be organized for the benefit of Latin America and the Caribbean within the framework of the follow-up initiatives to the Fourth Space Conference of the Americas. The main objective of the workshop will be to increase awareness among policy and decision makers of the potential benefits of global navigation satellite system applications to all modes of transportation.
11	United Nations Workshop on Space Law	Nigeria November 2005	The main objective of the workshop will be to build capacity in space law, particularly with reference to United Nations treaties and principles on outer space.
12	United Nations/Greece Regional Workshop on the Use of Space Technology for Disaster Management: Monitoring and Assessing Seismic and Volcanic Hazards	Athens 2005	The objective of the workshop is to assess the current status of research and current activities on the use of space-based technology for addressing seismic and volcanic hazards. The workshop will build upon the work being carried out in Europe and Western Asia by the United Nations Programme on Space Applications within its space technology and disaster management programme.

Annex III

Regional centres for space science and technology education, affiliated to the United Nations: schedule of nine-month postgraduate courses 2004, 2005 and 2006

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

Year	*Venue*	*Activity*
2003-2004	Space Applications Centre Ahmedabad, India	Fourth Postgraduate Course on Satellite Communications
2003-2004	Indian Institute of Remote Sensing Dehra Dun, India	Eighth Postgraduate Course on Remote Sensing and geographical information systems (GIS)
2004-2005	Indian Institute of Remote Sensing Dehra Dun, India	Ninth Postgraduate Course on Remote Sensing and GIS
2004-2005	Physical Research Laboratory Ahmedabad, India	Fourth Postgraduate Course on Space and Atmospheric Science
2004-2005	Space Applications Centre Ahmedabad, India	Fourth Postgraduate Course on Satellite Meteorology and Global Climate
2005-2006	Indian Institute of Remote Sensing Dhera Dun, India	Tenth Postgraduate Course on Remote Sensing and GIS
2005-2006	Space Applications Centre Ahmedabad, India	Fifth Postgraduate Course on Satellite Communications

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

Year	*Venue*	*Activity*
2004-2005	Mohammadia School of Engineers University of Mohamed V Rabat	Second Postgraduate Course on Satellite Meteorology and Global Climate
2005	Mohammadia School of Engineers University of Mohamed V Rabat	Fourth Postgraduate Course on Remote Sensing and GIS

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

Year	*Venue*	*Activity*
2004-2005	Obafemi Awolowo University Ile-Ife, Nigeria	First Postgraduate Course on Basic Space Science and Atmospheric Sciences
2004-2005	Obafemi Awolowo University Ile-Ife, Nigeria	Second Postgraduate Course on Satellite Meteorology
2004-2005	Obafemi Awolowo University Ile-Ife, Nigeria	Third Postgraduate Course on Satellite Communications
2004-2005	Obafemi Awolowo University Ile-Ife, Nigeria	Fourth Postgraduate Course on Remote Sensing and GIS

4. Regional Centre for Space Science and Technology Education in Latin America and the Caribbean (Brazil campus)

Year	*Venue*	*Activity*
2004	National Institute for Space Research São José dos Campos, Brazil	Second Postgraduate Course on Remote Sensing and GIS
2005	National Institute for Space Research São José dos Campos, Brazil	Third Postgraduate Course on Remote Sensing and GIS
2006	National Institute for Space Research São José dos Campos, Brazil	Fourth Postgraduate Course on Remote Sensing and GIS
2006	National Institute for Space Research São José dos Campos, Brazil	First Postgraduate Course on Satellite Meteorology and Global Climate

5. Regional Centre for Space Science and Technology Education in Latin America and the Caribbean (Mexico campus)

Year	*Venue*	*Activity*
2004	National Institute of Astrophysics, Optics and Electronics Tonantzintla, Puebla, Mexico	First Postgraduate Course on Remote Sensing and GIS