



# General Assembly

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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 2005 under the United Nations Programme on Space Applications, the last of which was concluded on 9 December 2005.



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## **I. Introduction**

1. At its forty-second session, in 2005, 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 2004 activities of the Programme had been carried out satisfactorily. On the recommendation of the Committee, the activities of the Programme for 2005 had been endorsed by the General Assembly in its resolution 59/116 of 10 December 2004. The Subcommittee recommended to the Committee, for its approval, the activities scheduled for 2006 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,<sup>1</sup> as proposed in the report of the Expert on Space Applications (A/AC.105/815), submitted to the Scientific and Technical Subcommittee at its forty-first session, in 2004. Information on the activities carried out within the framework of the Programme in 2005 and those scheduled for implementation in 2006 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 on the Peaceful Uses of Outer Space 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, 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 on a priority basis the actions contained in the Plan of Action so as 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”.<sup>2</sup>

### **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<sup>3</sup> 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; 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.<sup>4</sup> 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.<sup>5</sup>

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 implementing the recommendations. The Committee agreed to establish action teams to implement those recommendations under the voluntary leadership of interested member States.<sup>6</sup> The activities of the Programme have supported, to the extent possible, the action teams established by the Committee.

7. 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 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. All the regional centres have entered into an affiliation agreement with the Office for Outer Space Affairs of the Secretariat. In 2005, the Programme made efforts (a) to support the development of web pages for all 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 and newsletters; (d) to develop information panels on the regional centres for incorporation in the permanent space exhibit of the Office for Outer Space Affairs 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 on the Peaceful Uses of Outer Space 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.

9. This year is the tenth anniversary of the establishment of the Centre for Space Science and Technology Education in Asia and the Pacific. During the past 10 years, the Centre has flourished under the strong leadership of, and with the technical and financial support provided by, the Government of India and the Indian Space Research Organisation. The Centre has provided postgraduate education to more than 650 professionals from 46 countries in and beyond the region. These individuals have completed more than 350 pilot projects that contribute to space

technology applications for their respective countries. As a result of the decision made at the 2005 Governing Board Meeting, the Centre is developing a framework of space technology application-oriented courses on disaster management, tele-health and natural resource management.

10. Highlights of the activities of all the regional centres supported under the Programme in 2005 and planned activities for 2006 and 2007 are included in annex III.

## **2. United Nations/Sweden international training courses on remote sensing education for educators**

11. In 2005, the Swedish International Development Cooperation Agency (Sida), the Office for Outer Space Affairs and Stockholm University concluded the second part of the follow-up evaluation of the six-week training courses that had been conducted between 1990 and 2004. The primary goals of the exercise were to evaluate the effectiveness of the training, to identify the factors contributing to its success and to determine its future direction. The first part of the evaluation was performed in 2004 and made available to the Committee (A/AC.105/840). The second part was conducted in the form of a workshop held in Brazil (A/AC.105/853). The evaluation concluded that the course series has succeeded in training professionals capable of developing sustainable educational programmes and projects in remote sensing at the local level. The course series has also had a significant multiplier effect on disseminating knowledge in developing countries.

12. The Office for Outer Space Affairs, in cooperation with Sida and Stockholm University, published the *Decadal Proceedings 1990-2004* of the United Nations/Sweden International Training Course on Remote Sensing Education for Educators. This book is a collection of selected papers submitted by participants, describing the successful applications of remote sensing and global positioning system (GPS)/geographic information systems (GIS) technologies resulting from taking the training courses. The book was compiled with the voluntary assistance of Ranjith Premalal De Silva of the University of Peradeniya, Sri Lanka, who served as the chief editor, and Juerg Lichtenegger, aided by United Nations and Stockholm University experts for technical reviewing. The book covers the successful applications of the technology in Nepal, Sri Lanka, Thailand and Viet Nam.

## **3. Promoting the use of enabling technologies**

13. Within the framework of the Programme and with the cooperation of the Australian Maritime Safety Authority (AMSA), the United Nations/Australia Training Course on Satellite-Aided Search and Rescue was organized in Canberra from 14 to 18 March 2005 for the benefit of the countries in the Pacific. Since its creation in 1982, the International Satellite System for Search and Rescue (COSPAS-SARSAT) has been credited with more than 18,000 rescues worldwide. The objectives of the training were to increase the interface among the countries within the footprint of the COSPAS-SARSAT station in Canberra and to teach the necessary knowledge for implementation. The training introduced the basic concept of the system and its new features, such as the Ship Security Alert System, personal location beacons and global navigation satellite systems (GNSS) signal incorporation for combating terrorist and pirate attacks. The participants practised the COSPAS-SARSAT operations at the AMSA command centre. A white paper for

conducting future training courses was developed jointly by the Office for Outer Space Affairs and the National Oceanic and Atmospheric Administration of the United States of America. The Office for Outer Space Affairs assisted Malaysia in initiating the process of joining the COSPAS-SARSAT system. The report on this training course is contained in A/AC.105/851.

14. In July 2005 a workshop on Land Remote Sensing Satellite (Landsat) data sets was held in Rabat, at the African Regional Centre for Space Science and Technology—in French language (CRASTE-LF). The objectives of the workshop were to facilitate the distribution of the data in Africa and to introduce the format of the data sets, the methods of accessing the data through the Internet and the approach to performing image analysis. As an outcome of the workshop, a project on changes in land use and land cover was created by the participants from Algeria, the Libyan Arab Jamahiriya and Mauritania. The space technology institutes that they represented have received subsets of the data within their area of interest to carry out the project. Participants agreed that existing Landsat data should be widely disseminated to African institutions and that the data should be used to develop projects that benefit the region.

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

15. 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 five 12-month fellowships for postgraduate study on GNSS and related applications. The second class of the fellowship programme commenced in October 2005. The Office for Outer Space Affairs and the sponsoring organizations jointly selected four representatives of governmental organizations and research and academic institutions from Algeria, Ghana, Iran (Islamic Republic of) and Nigeria for the fellowship study at the 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**

16. As recommended by UNISPACE III, the activities in the area of space technology and disaster management are aimed at promoting the use of space technology for disaster management in developing countries, covering both emergency response and risk reduction. In 2005, the Programme organized jointly with the Algerian Space Agency the United Nations/Algeria/European Space Agency International Seminar on the Use of Space Technology for Disaster Management: Prevention and Management of Natural Disasters (see A/AC.105/852). It was held in Algiers from 22 to 26 May 2005 and co-sponsored by the European Space Agency (ESA) and the Islamic Educational, Scientific and Cultural Organization. Participants in the seminar identified the need for increasing interface among the civil protection and space institutions of Northern Africa and integrating space technology applications into disaster prevention and management through training at the national level.

17. In the area of information dissemination and partnership-building, the Programme consolidated a network of interested institutions and continued to bring them together in the Global Network for Space Technology and Disaster Management. It also disseminated quarterly newsletters and information to the space technology and disaster management discussion list, which involves over 8,000 end-users.

## **2. Natural resource management and environmental monitoring**

18. The fragile mountain environment has become increasingly vulnerable due to global warming and intensified human activities. Mountains cover about 25 per cent of the world's land surface. About 12 per cent of the world's people live in mountains, while over 50 per cent are directly or indirectly dependent on mountain resources, such as fresh surface water, up to 80 per cent of which comes from mountains. The Office for Outer Space Affairs participated in a conference on the theme "Benefits from space for sectoral policies for high mountain security", held in Geneva on 8 and 9 September 2005. The Office presented the results of the United Nations/Austria/Switzerland/European Space Agency/International Centre for Integrated Mountain Development Workshop on Remote Sensing in the Service of Sustainable Development in Mountain Areas, held in Kathmandu from 15 to 19 November 2004 (see A/AC.105/845), and organized a meeting with the workshop participants to discuss follow-up activities. The workshop participants concluded that space-borne applications were an indispensable tool for the long-term monitoring of environmental change, risk assessment and prevention, early warning, event mapping, search and rescue, and recovery operations, but that the space techniques needed to be better combined with spatial models and in situ measurements. Therefore, multi-sensor observations with improved spatio-temporal information were needed. It was also determined that there was a need to further develop integrated information systems that combined user services with Earth observation, positioning and communication data.

## **3. Tele-health and tele-education**

19. Despite the advances of modern medicine, infectious diseases such as malaria, tuberculosis and dengue fever still afflict millions of people each year. Advances in satellite communications, remote sensing, global positioning and geographic information systems, and image processing have made it easier to integrate ecological, environmental and health data to develop predictive models for infectious-disease surveillance and to provide telemedical services. In 2005, the Programme initiated two activities on the subject of tele-health and tele-education on public health. The objectives are to demonstrate the use of space technology for health, to share information on the status of tele-health and to launch regional or national projects that could be used to develop an implementation plan on tele-health and tele-education on public health.

20. The first activity was the United Nations/European Space Agency/Argentina Workshop on the Use of Space Technology for Human Health, held in Córdoba, Argentina, from 19 to 23 September 2005, co-organized with and hosted by the National Commission on Space Activities of Argentina for the benefit of the countries of Latin America. The participants in the workshop established a task force on health using space technologies for the Latin America and the Caribbean

region. The task force will initially focus its efforts on applying satellite technologies for health, including landscape epidemiology; identifying regional projects; capacity-building on tele-health and tele-education for public health; establishing telemedicine standards; and understanding legal issues. The task force will be monitored jointly by the Office for Outer Space Affairs and the World Health Organization (WHO)/Pan American Health Organization. A website and e-forum were established in October 2005 to allow for communication among team members.

21. The second activity was the Office for Outer Space Affairs Economic and Social Commission for Asia and the Pacific/China Workshop on Tele-Health Development in Asia and the Pacific. It was hosted and sponsored by the China National Space Administration, the Ministry of Health of China and the Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA) and was held in Guangzhou, China, from 5 to 9 December 2005. Participants in the workshop initiated four projects: (a) avian flu early warning methodology development using geospatial data and space technologies; (b) various tele-health training programmes to be provided by five voluntary parties to the medical service and tele-health operators; (c) a specification assessment for communication system network configurations for different applications of tele-health; and (d) a needs assessment on implementing a national tele-health programme. Participants identified coordinators for each project. A tentative schedule and products for each project were also determined by the group. The Office for Outer Space Affairs will remain in close contact with all the project participants and monitor progress.

#### **4. Global navigation satellite systems**

22. In its resolution 54/68 of 6 December 1999, the General Assembly endorsed the resolution of UNISPACE III entitled “The Space Millennium: Vienna Declaration on Space and Human Development”. The Vienna Declaration called for action to improve the efficiency and security of transport, search and rescue, geodesy and other activities by promoting the enhancement of, universal access to and compatibility of space-based navigation and positioning systems. In response to that call, in 2001 the Committee on the Peaceful Uses of Outer Space established the Action Team on Global Navigation Satellite Systems (GNSS) to carry out those actions under the chairmanship of Italy and the United States. The Action Team on GNSS, consisting of 38 Member States and 15 intergovernmental and non-governmental organizations, recommended, among other things, that an international committee on GNSS (ICG) be established to promote the use of GNSS infrastructure on a global basis and to facilitate the exchange of information. The Committee on the Peaceful Uses of Outer Space included this recommendation in the Plan of Action proposed in its report to the General Assembly on the review of the implementation of the recommendations of UNISPACE III.

23. In 2004, in its resolution 59/2, the General Assembly endorsed the Plan of Action. In the same resolution, the Assembly invited GNSS and augmentation providers to consider establishing an international committee on GNSS as proposed in the Plan of Action in order to maximize the benefits of the use and applications of GNSS to support sustainable development. At the United Nations International Meeting for the Establishment of the International Committee on Global Navigation Satellite Systems, held in Vienna on 1 and 2 December 2005, ICG was established

on a voluntary basis as an informal body for the purpose of promoting cooperation, as appropriate, on matters of mutual interest related to civil satellite-based positioning, navigation, timing and value-added services, as well as compatibility and interoperability among GNSS systems, while increasing their use to support sustainable development, particularly in developing countries.

#### **5. Space applications for sustainable development**

24. In 2003, with the sponsorship of the Government of Austria and ESA and within the framework of the Programme, a series of three symposiums was begun to examine how space applications could contribute to implementing the actions recommended in the Plan of Implementation of the World Summit on Sustainable Development.<sup>7</sup> From 13 to 16 September 2005, a symposium on the theme “Space systems: protecting and restoring water resources” was held in Graz, Austria. It was co-sponsored by the Federal Ministry of Foreign Affairs and the Ministry of Transport, Innovation and Technology of Austria, the State of Styria, the city of Graz and ESA. The main objective was to identify ways of using space technology for water resource management. The group discussed the development of a pilot project for the restoration and management of the Lake Chad basin.

25. The Office for Outer Space Affairs, ESA, the Islamic Educational, Scientific and Cultural Organization and the Institut scientifique of Mohammed V - Agdal University co-sponsored a workshop on the theme “Spatial information and sustainable development” in Rabat from 14 to 16 November 2005. The workshop was aimed at increasing technical exchange at the regional level. Participants defined areas of cooperation in research, training and applications in the field of Earth observation techniques. The participants also recommended an increase in education and training opportunities and the establishment of a network to share information. It was proposed that CRASTE-LF host the discussion forum.

26. The fifteenth United Nations/International Astronautical Federation Workshop on Space Education and Capacity-Building for Sustainable Development was held in Kitakyushu, Japan, on 14 and 15 October 2005 (see A/AC.105/854), in conjunction with and as an associated event of the 56th International Astronautical Congress, which was held in Fukuoka, Japan, from 17 to 21 October 2005. The workshop was co-sponsored with the International Astronautical Federation, ESA, the Ministry of Education, Culture, Sports, Science and Technology of Japan, the Japan Aerospace Exploration Agency, the city of Kitakyushu and the United Nations Educational, Scientific and Cultural Organization (UNESCO). The primary objectives of the workshop were to introduce the international space education and capacity-building initiatives and to establish synergies among them. Built upon the recommendations of this workshop, an immediate outcome is that the Global Learning and Observations to Benefit the Environment (GLOBE) programme initiated collaboration with the three regional centres for space science and technology education, affiliated to the United Nations, that have been established in Africa and Latin America and the Caribbean. The GLOBE programme involved the regional centres in its training sessions and multinational field campaigns. GLOBE is currently formulating strategies for the further integration of its new Integrated Earth Systems Science environmental education programmes, funded by the United States National Science Foundation, with all the regional centres to define strategies for collaboration and sustainability.

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

### **1. Basic space science**

27. Within the framework of the Programme, the United Nations/European Space Agency/National Aeronautics and Space Administration of the United States of America Workshop on the International Heliophysical Year 2007 was held in Abu Dhabi and Al-Ain, United Arab Emirates, from 20 to 23 November 2005 (see A/AC.105/856). The workshop was hosted by United Arab Emirates University and co-organized by the International Astronomical Union, the Committee on Space Research and the National Astronomical Observatory of Japan. The workshop implemented elements of the three-year workplan of the Scientific and Technical Subcommittee, as reflected in the report of the Subcommittee (A/AC.105/848, paras. 181-192). The workshop continued cooperation with Japan in aiding astronomy in developing nations through the Japanese official development assistance cooperative programme and initiated low-cost, ground-based, worldwide instrument deployment opportunities under the United Nations Basic Space Science Initiative. Also within the framework of the Programme, a brochure entitled “International Heliophysical Year (IHY 2007): Developing Nations Participation in International Global Studies of the Sun-Earth System through the United Nations”, was developed and published for distribution through United Nations Development Programme offices, particularly taking into account how IHY 2007 might benefit developing countries. The brochure is available in the six official languages of the United Nations. In cooperation with the IHY secretariat, a booklet entitled “Putting the ‘I’ in IHY”, a comprehensive overview of the worldwide organization of IHY 2007, was also developed and published.

### **2. Space law**

28. The Programme organized, in cooperation with the Government of Nigeria and its National Space Research and Development Agency (NASRDA), the fourth United Nations Workshop on Space Law, in Abuja from 21 to 24 November 2005. The workshop was hosted by the Government of Nigeria and was entitled “Meeting international obligations and addressing domestic needs”. It was aimed at developing expertise and capability in international and national space law and promoting education opportunities in space law in the African region. The workshop identified benefits of becoming party to the United Nations treaties on outer space and recommended that States not yet parties to the treaties take the necessary steps to ratify or accede to them. The workshop also agreed on the following conclusions, observations and recommendations: that there was a need to establish national regulatory environments to optimize the utilization of space technologies; that national space laws should establish a regime for, among other things, licensing, registration of space objects launched into outer space, liability and safety, and a system for financial responsibility, including indemnification and insurance; that developing countries should harness existing skills and educational experiences to overcome the challenges of developing capacity in space law; and that Governments should include individuals with space law expertise in their delegations to space-related intergovernmental organizations to enhance their capacity to promote the

development agenda in those organizations and should encourage their youth to pursue professional careers in space law.

### **3. Educational outreach to youth**

29. Held every year from 4 to 10 October, World Space Week celebrates the contribution that space science and technology can make to the betterment of the human condition. The theme of World Space Week 2005 was “Discovery and imagination”. The Programme invited school classes made up of children aged 10-14 to participate by designing a base on Mars that would be suitable for human living and research. Classes from Croatia, Hungary, Slovenia and the United States participated, and photos of the Mars bases they designed were displayed on the website of the Office for Outer Space Affairs.

30. From 23 to 27 May 2005, the Office for Outer Space Affairs joined the UNESCO space education team for space education workshops in Nigeria. The series of educational outreach activities in three cities was co-organized with NASRDA. Approximately 650 students from 32 schools participated in the series of activities. The Office distributed educational materials donated by the Aerospace Education Services Program of the National Aeronautics and Space Administration of the United States of America. The materials are useful for both science teachers and students of all ages for gaining knowledge, skills, perspectives and values related to space applications. Information related to World Space Week was also presented.

### **4. Space information**

31. 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 devoted to the Programme ([www.oosa.unvienna.org/sapidx.html](http://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.

## **D. Providing technical advisory services and promoting regional cooperation**

### **1. Asia-Pacific Satellite Communications Council**

32. The Asia-Pacific Satellite Communications Council (APSCC) 2005 Satellite Conference and Exhibition was held under the aegis of the Office for Outer Space Affairs in Singapore from 27 to 29 September 2005. The theme was “Satellites: new opportunities in Asia”. Major topics were business strategy, regulatory issues, disaster relief, emergency communications, broadband space applications, satellite manufacturing and new technologies. The Office for Outer Space Affairs continues to provide technical advice to the Council in regard to its collaboration with the international satellite industry.

## **2. Survey on satellite broadband resources in the Asia and the Pacific region**

33. The Programme provides advisory services for the ongoing survey of satellite broadband resources in the Asia-Pacific region. The survey is conducted jointly with the Economic and Social Commission for Asia and the Pacific, the International Telecommunication Union (ITU) and APSCC. This effort is aimed at discovering the underlying reasons for the current lack of satellite broadband Internet service in Asia and the Pacific and at suggesting the means by which such service could begin to penetrate both the commercial markets and the less profitable, but socially important, of disadvantaged regions. The survey will be finalized in early 2006.

## **3. Space-based telemedicine and tele-health**

34. The Programme joined the International Society for Telemedicine and eHealth as a partner and co-hosted, with the Medical Informatics and Technology Applications Consortium of the United States, a plenary session at the Med-e-Tel conference in April 2005. Experts from Romania, WHO, the United States of America and Zambia served as panellists. The theme of the plenary session was "Space-based technology applications to e-health". It introduced the objectives of the Programme in utilizing space-based technologies to advance health services in developing countries.

35. The Programme provided advisory assistance to the Iran Space Agency, the Ministry of Health and Medical Education and the Academy of Medical Sciences through a seminar on tele-health organized in November 2005. The seminar was followed by a round-table discussion and resulted in the initiation of a national pilot project to perform a needs assessment in three categories: e-health policy and requirements, requirements and preparation for information and satellite-based technologies, and medical informatics. An action plan was generated to guide the progress of the project.

## **4. World Summit on the Information Society, second phase**

36. The World Summit on the Information Society was held in two phases. The first phase took place in Geneva from 10 to 12 December 2003 and the second phase in Tunis from 16 to 18 November 2005. The Office for Outer Space Affairs supported the second phase of the Summit by providing a technical presentation on the joint Office for Outer Space Affairs/Colombia project on the GEO Occupancy Analyser Tool (GOAT), satellite bandwidth and very small aperture terminal platform concepts. The presentation addressed how GOAT is used in analysing the geostationary Earth orbit, what impact it has on the costs of satellite services and how to improve it to achieve a better satellite bridging of the digital divide.

## **5. Fourth Space Conference of the Americas**

37. The Office for Outer Space Affairs and the Governments of Colombia and the United States co-sponsored the International Workshop on the Use and Applications of Global Navigation Satellite Systems. The workshop was held in Bogota from 26 to 29 September 2005. It was part of the activities organized by Colombia as the pro tempore secretariat of the Fourth Space Conference of the Americas. The workshop was a follow-up activity to the United Nations/United States series of activities on the use and applications of GNSS, which have been held within the

framework of the Programme in various regions since 2001. The workshop was aimed at forming concepts for projects that could benefit the region of the Americas.

#### **6. Committee on Earth Observation Satellites**

38. The Office for Outer Space Affairs continues to participate and provide advisory assistance to the Working Group on Education, Training and Capacity-Building of the Committee on Earth Observation Satellites (CEOS). In 2005, the Working Group invited space-related entities to submit educational materials for inclusion in the database of the education portal; revised a draft plan of implementation of the CEOS data-provision principles; and carried out a pilot project as a practical test of the revised draft plan.

#### **7. First African Space Leadership Conference**

39. The Office for Outer Space Affairs provided support and participated in the first African Space Leadership Conference, held in Abuja from 23 to 25 November 2005. The Conference provided a forum for exchange of ideas on African needs and problems and the impact that space technology could have in solving those problems and in addressing those needs. Participants also examined global activities and capacity-building in space science and technology and their impact on societal development and identified contributions of African countries, to date, to space technology development and applications and collaborative steps African countries should take to enhance those efforts for the express purpose of developing Africa. Participants also agreed that the Conference should be held every two years; South Africa offered to host the second conference in 2007 and Algeria offered to host the third in 2009.

#### **8. United Nations Industrial Development Organization project—Global Mercury Project**

40. The Programme provided support to the United Nations Industrial Development Organization for its Global Mercury Project, on the removal of barriers to the introduction of cleaner artisanal gold mining and extraction technologies, through its participation in the Global Task Force Meeting held in Salvador, Brazil, from 26 to 28 September 2005, at which it contributed to the study of the incorporation of space-based technologies in the area of reclamation strategies, satellite imaging and mercury mobility.

### **E. Follow-up activities and operational initiatives**

#### **1. Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters**

41. Since 1 July 2003 the Office for Outer Space Affairs has been a cooperating body of the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters, a mechanism through which any entity of the United Nations system responding to an emergency can request and receive free satellite data. Up to December 2005, the Charter had been activated over 90 times in response to natural disasters. Of that total, the Office had activated the Charter 22 times. Statistics show that nearly 80 per cent of the

activations were in response to disasters in developing countries and nearly 60 per cent were initiated by the United Nations. This clearly demonstrates the importance of the role of the Office in providing developing countries access to disaster management.

## **2. Space technology for disaster management in South-East Asia**

42. The Programme called for proposals for projects related to space technology for disaster management in South-East Asia. Forty-eight expressions of interest were received, and the Steering Committee, composed of experts from the Programme, the Korean Aerospace Research Institute (KARI) of the Republic of Korea, the Australia Commonwealth Scientific and Industrial Research Organisation, ESA and the Economic and Social Commission for Asia and the Pacific, agreed on a selection of six. The Programme subsequently sent out letters of invitation to those who had submitted the six preliminary proposals selected, asking them to submit full project proposals. It is expected that one or two projects will be selected and initiated in early 2006 using funds donated by KARI to the Trust Fund for the United Nations Programme on Space Applications.

## **3. Space technology for water resources management of the Lake Chad basin**

43. The Office for Outer Space Affairs, in cooperation with ESA and the Government of Austria, is launching a pilot project that will introduce space technology, in particular the use of data from Earth observation satellites, into the water resources management process of the Lake Chad basin in order to ensure its sustainable development. Planning meetings were held in June and September 2005, at which all stakeholders developed the concept for the pilot project. The project will comprise the establishment of an inventory of the existing data and acquisition of required data.

## **4. Data-sharing**

44. The Office for Outer Space Affairs continues to support the distribution of Landsat images to African institutions, building upon the work being carried out by the United Nations Environment Programme and other United Nations entities. The project entitled “Distribution and use of available global Landsat data sets for sustainable development in Africa” fulfils the objective of consolidating the use of space technologies—more specifically, remotely sensed data—to support sustainable activities in environmental monitoring and disaster management. In 2005, this project provided Landsat data to a number of stakeholders, including the following institutions: University of Cape Town, South Africa, for creating an online database of selected World Heritage sites, including models of architectural structures and GIS mapping; Remote Sensing Centre, Burkina Faso, for land management activities, such as mapping of desertification and inundation zones; Remote Sensing Authority, Sudan, for land-use/change mapping; and African Regional Centre for Space Science and Technology—in French language in Rabat, African Regional Centre for Space Science and Technology Education—in English language, in Ile-Ife, Nigeria, and Regional Centre for Training in Aerospace Surveys (RECTAS), in Ile-Ife Nigeria, for education and training. The Programme is also supporting the University Network for Disaster Risk Reduction in Africa (<http://www.itc.nl/unu/dgim/unedra/>) of the United Nations University’s Institute for

Environment and Human Security by providing Landsat imagery to all members of the network.

45. A workshop on the theme “Evaluation of the distribution and use of Landsat data in Africa”, was organized within the framework of the Programme during the AfricaGIS 2005 Conference, held in Tshwane, South Africa, from 31 October to 4 November 2005. Ten panellists representing institutions distributing or planning to distribute the available Landsat data provided an update on progress so far and a plan for the next couple of years. Significant progress has been made in such distribution, particularly by the regional centres. The work of the Office for Outer Space Affairs was highlighted by institutions such as RECTAS and Makerere University of Uganda, demonstrating the success of its efforts in making data available to African institutions.

#### **5. Telemedicine in the reconstruction of Afghanistan**

46. The Office for Outer Space Affairs, India and the United States co-sponsored a project on telemedicine applications in Afghanistan. Phase I of the project focused on training and was completed in August 2005. Five specialists from the Ministry of Public Health of Afghanistan received training on telemedicine principles and practices in Indian hospitals in Bangalore, Chennai and Delhi. The project is now in phase II and will be concluded in August 2006. Phase II focuses on the planning involved in implementing telemedicine for Afghanistan on the basis of the knowledge and skills gained from phase I training.

#### **6. GEO Occupancy Analyser Tool project**

47. A project for in-depth analysis of the geostationary Earth orbit (GEO) occupancy is being conducted jointly by the Office for Outer Space Affairs and Colombia, in cooperation with ITU, with the aim of providing historical measurements of GEO occupancy. The GOAT project is now in the first phase of development. The tool, upon completion, will be able to display the active satellites in GEO in any given year, both fully operational and inclined. It will provide analyses of the historical evolution of GEO exploitation that can be used to identify new challenges. It shows incoming, outgoing and inclined satellites and can also select a country or region to analyse the numbers of satellites/transponders that it deployed in GEO. GOAT will be placed on the website of the Office for Outer Space Affairs upon completion.

### **F. Summary of activities related to the United Nations Programme on Space Applications**

#### **1. Activities of the Programme carried out in 2005**

48. In 2005, one conference, one symposium, one training course, one international meeting 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 2006

49. The meetings, seminars, symposiums, training courses and workshops scheduled for 2006, 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 2005, 2006 and 2007

50. The nine-month postgraduate courses to be offered by the regional centres for space science and technology education, affiliated to the United Nations, in 2005, 2006 and 2007 are listed in annex III.

## V. Voluntary contributions

51. The successful implementation of the activities of the Programme in 2005 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.

52. A number of Member States and governmental and non-governmental organizations provided support for the activities of the Programme in 2005, as follows:

(a) ESA provided \$90,000 in support of the specific activities of the Programme in 2005 that it co-sponsored (see annex I);

(b) Austria, through its Ministry for Foreign 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 27 participants, local organization and facilities, room and board and local transportation in relation to the symposium organized in Graz from 13 to 16 September 2005 (see annex I);

(c) The International Astronautical Federation provided €20,000 in support of the United Nations/International Astronautical Federation Workshop on Space Education and Capacity-Building for Sustainable Development, held in Kitakyushu, Japan, on 14 and 15 October 2005 (see annex I);

(d) The Government of the United States provided \$175,000 for 2004 and 2005 in support of the United Nations/United States International Workshop on the Use and Applications of Global Navigation Satellite Systems held in Bogota from 26 to 29 September 2005 and selected pilot projects (see annex I);

(e) The Government of the United States provided \$90,000 in support of meetings and workshops held in 2003, 2004 and 2005 to train and facilitate the delivery and distribution of available global Landsat data sets for sustainable development in Africa;

(f) The Government of the United States provided \$50,000 in financial support for the joint United Nations/India/United States pilot project "Telemedicine in the reconstruction of Afghanistan" to be carried out in 2005 and 2006;

(g) 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); the total estimated

in-kind support amounted to \$693,100, excluding the man-hours involved in the handling of the workshop events;

(h) 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 2006-2007**

53. The activities of the Programme in 2006 covered in the present report will be implemented as follows:

(a) *Financial provisions.* Pursuant to General Assembly resolutions 60/247 A to C of 23 December 2005, an expenditure of \$213,100 has been authorized for fellowships and grants for implementing the activities of the Programme in 2006. This amount represents only part of the funds approved for the Programme by the General Assembly under the regular budget of the United Nations for 2006. While it is expected that the Assembly will act to ensure the availability of resources for programme delivery, the resources expected under the regular budget of the United Nations will nevertheless be insufficient to enable the Programme 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, in order to supplement the expected regular budget of the Programme;

(b) *Administration by and contributions and participation of staff.* The staff of the Office for Outer Space Affairs, in particular the Expert on Space Applications, will carry out the activities described in the present report. In that connection, travel will be undertaken as appropriate by 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*

<sup>1</sup> 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).

<sup>2</sup> *Ibid.*, chap. I, resolution 1.

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

<sup>4</sup> *Ibid.*, para. 65.

<sup>5</sup> *Ibid.*, para. 66.

<sup>6</sup> *Ibid.*, *Fifty-sixth Session, Supplement No. 20 and corrigendum (A/56/20 and Corr.1)*, paras. 50-55.

<sup>7</sup> *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 2005

<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>
Second Regional Workshop on Evaluating the Impact of the 1990-2004 Series of United Nations/Sweden International Training Courses on Remote Sensing Education for Educators  São José dos Campos, Brazil 21-25 February 2005	Brazil	United Nations and the Swedish International Development Cooperation Agency (Sida)	Brazil Campus of the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, affiliated to the United Nations (CRECTEALC)	Air travel and en route expenses for 21 participants were defrayed by the United Nations; air travel for 10 participants, room and board and daily subsistence allowance for 35 participants, as well as local transportation for all participants, were covered by Sida. CRECTEALC provided conference facilities and technical support.	16	42	A/AC.105/853

<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/Australia Training Course on Satellite-Aided Search and Rescue  Canberra 14-18 March 2005	Australia	United Nations, and the Government of Australia	Australian Maritime Safety Authority (AMSA)	Air travel, miscellaneous and en route expenses for 13 participants were defrayed by the United Nations; room and board for these participants, as well as local transportation and transportation to the training at the sea for all participants, were covered by AMSA. AMSA also provided conference facilities and technical support.	17	50	A/AC.105/851
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	Algeria	United Nations, the Government of Algeria and the European Space Agency (ESA)	Algerian Space Agency (ASAL)	The United Nations, ESA, ASAL and the Islamic Educational, Scientific and Cultural Organization jointly provided the cost of air travel and living expenses for 25 participants.	39	128	A/AC.105/852

<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/Austria/ European Space Agency Symposium on Space Applications to Support the Plan of Implementation of the World Summit on Sustainable Development  Graz, Austria 13-16 September 2005	Austria	United Nations, the Government of Austria, the State of Styria, the city of Graz and ESA	Austrian Academy of Sciences, the 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 34 participants.	33	75	A/AC.105/844
United Nations/European Space Agency/Argentina Workshop on the Use of Space Technology for Human Health  Córdoba, Argentina 19-23 September 2005	Argentina	United Nations, the Comisión Nacional de Actividades Espaciales (CONAE) of Argentina and ESA	Gulich Institute of Advanced Space Studies and Tabanera Space Center	The United Nations and the European Space Agency covered the cost of air travel, miscellaneous and en route expenses of 15 participants; CONAE covered the cost of room and board for these participants. In addition, the co- sponsors covered the cost of the facilities for the workshop and the cost of local transportation for all participants.	24	150	To be issued

<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 Astronautical Federation Workshop on Space Education and Capacity-Building for Sustainable Development  Kitakyushu, Japan 14 and 15 October 2005	Japan	United Nations and the United Nations Educational, Scientific and Cultural Organization (UNESCO), Ministry of Education, Culture, Sports, Science and Technology of Japan, the Japan Aerospace Exploration Agency (JAXA), ESA and the International Astronautical Federation (IAF)	MEXT and JAXA	The sponsors fully covered air travel and living expenses for the duration of the workshop and the 56th International Astronautical Congress for 20 speakers and participants from developing countries and countries with economies in transition. In addition, 7 participants were provided with partial funding to cover either air travel or living expenses or congress registration. IAF waived the Congress registration fees for 25 participants to participate in the 56th Congress, which was held immediately after the Workshop.	35	75	A/AC.105/854

<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>
Sixth United Nations/International Academy of Astronautics Workshop on Small Satellites in the Service of Developing Countries  Fukuoka, Japan 19 October 2005	Japan	United Nations, IAF and the Subcommittee on Small Satellites for Developing Nations of the International Academy of Astronautics	IAF	The Workshop was held as part of the 56th International Astronautical Congress and was open to all participants of the Congress; therefore no additional funding was required.	..	60	A/AC.105/855
United Nations/European Space Agency/National Aeronautics and Space Administration of the United States of America Workshop on the International Heliophysical Year 2007  Abu-Dhabi and Al-Ain, United Arab Emirates 20-23 November 2005	United Arab Emirates	United Nations, ESA, the National Aeronautics and Space Administration (NASA) of the United States of America and the Government of the United Arab Emirates	United Arab Emirates University	Funds provided by United Nations, ESA, NASA and United Arab Emirates University were used to cover the travel, living and other costs of participants from developing countries.	39	150	A/AC.105/856
United Nations/Nigeria Workshop on Space Law on the theme "Meeting international responsibilities and addressing domestic needs"  Abuja 21-24 November 2005	Nigeria	United Nations, the National Space Research and Development Agency (NASRDA) and the Government of Nigeria		The United Nations and the Government of Nigeria covered the cost of air travel and living expenses for 24 participants.	21	75	A/AC.105/866
United Nations International Meeting for the Establishment of the International Committee on Global Navigation Satellite Systems  Vienna	..	United Nations	Office for Outer Space Affairs of the Secretariat	The United Nations covered the cost of air travel and living expenses for 6 participants and the cost of the use	18	50	To be issued

<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 Meeting for the Establishment of the International Committee on Global Navigation Satellite Systems  Vienna 1 and 2 December 2005	..	United Nations	Office for Outer Space Affairs of the Secretariat	The United Nations covered the cost of air travel and living expenses for 6 participants and the cost of the use of conference facilities and services.	18	50	To be issued
United Nations/Economic and Social Commission for Asia and the Pacific/China Workshop on Tele-Health Development in Asia and the Pacific  Guangzhou, China 5-9 December 2005	China	United Nations, the China National Space Administration (CNSA), the Ministry of Health of China and Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA)	CNSA and AP-MCSTA	The United Nations covered the cost of air travel, miscellaneous and en route expenses of 16 participants; co-sponsors covered the cost of room and board for these participants. In addition, the co-sponsors covered the cost of the facilities for the workshop and the cost of local transportation for all participants.	20	60	To be issued

## Annex II

## United Nations Programme on Space Applications: schedule of meetings, seminars, symposiums, training courses and workshops for implementation in 2006

<i>Activity</i>	<i>Title</i>	<i>Place and date</i>	<i>Objective</i>
1	United Nations/European Space Agency/International Centre for Integrated Mountain Development Expert Meeting on Remote Sensing Projects for the Hindu Kush Himalaya	Kathmandu 6-10 March 2006	The expert meeting will review satellite-based remote sensing projects relevant to the Hindu Kush Himalaya. The primary objective is to implement the new module for the European Space Agency (ESA) Eduspace programme entitled "Himalayas from Space". The module will contain appropriate case studies.
2	United Nations/Syrian Arab Republic/European Space Agency Regional Workshop on the Use of Space Technology for Disaster Management in Western Asia and Northern Africa	Damascus 22-26 April 2006	The overall objective of the regional workshop is to increase the awareness of policymakers, planners and managers in the area of disaster management and civil protection in Northern Africa and Western Asia regarding the benefits of using space technology for preventing and managing disasters and also to build upon the recommendations put forward in the Munich Vision (A/AC.105/837, annex).
3	United Nations/South Africa Training Course on Satellite-Aided Search and Rescue	South Africa May 2006	The primary objectives of the training course are to raise awareness of the International Satellite System for Search and Rescue (COSPAS-SARSAT) programme and to establish a formal interface with the user countries for better understanding and coordination of the programme activities and operations within the region of responsibility of South Africa.

<i>Activity</i>	<i>Title</i>	<i>Place and date</i>	<i>Objective</i>
4	United Nations/Zambia/ European Space Agency Regional Workshop on the Application of Global Navigation Satellite System Technologies for Sub-Saharan Africa	Zambia 26-30 June 2006	The workshop will focus on the application of global navigation satellite system (GNSS) technologies that benefit the social and economic growth of sub- Saharan Africa, aims at action planning for implementing specific applications for the region.
5	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 2006	The symposium will examine the benefits of space science and technology and their applications to address various issues relating to the United Nations global agenda for development.
6	United Nations/International Astronautical Federation Workshop on Bringing Space to Classrooms	Valencia, Spain 29-30 September 2006	The objectives of the workshop are to exchange experiences in space science and technology education and to discuss opportunities for increasing regional and international cooperation among developing countries and between developed and developing countries.
7	United Nations/European Space Agency/National Aeronautics and Space Administration Workshop on Basic Space Science: International Heliophysical Year 2007	Bangalore and Pune, India November 2006	The objective of the workshop is to explore how basic space science and preparations for International Heliophysical Year are contributing to sustainable development and capacity-building, in particular in developing countries.
8	United Nations Workshop on Space Law	Ukraine November 2006	The main objective of the workshop is to build capacity in space law, particularly with reference to the United Nations treaties and principles on outer space.

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<i>Activity</i>	<i>Title</i>	<i>Place and date</i>	<i>Objective</i>
9	United Nations/European Space Agency Workshop on the Use and Applications of Global Navigation Satellite Systems	Vienna December 2006	The workshop will review the progress made in the follow-up projects and initiatives pursued since the United Nations/United States of America International Meeting on the Use and Applications of Global Navigation Satellite Systems held in Vienna in December 2004.

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## Annex III

### Regional centres for space science and technology education, affiliated to the United Nations: schedule of nine-month postgraduate courses, 2005-2007

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

<i>Year</i>	<i>Venue</i>	<i>Activity</i>
2005-2006	Indian Institute of Remote Sensing, Dehra Dun, India	Tenth Postgraduate Course on Remote Sensing and Geographical Information Systems (GIS)
2005-2006	Space Applications Centre, Ahmedabad, India	Fifth Postgraduate Course on Satellite Communications
2006-2007	Indian Institute of Remote Sensing, Dehra Dun, India	Eleventh Postgraduate Course on Remote Sensing and GIS
2006-2007	Space Applications Centre, Ahmedabad, India	Fifth Postgraduate Course on Satellite Meteorology and Global Climate
2006-2007	Physical Research Laboratory, Ahmedabad, India	Fifth 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>
2005-2006	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

<i>Year</i>	<i>Venue</i>	<i>Activity</i>
2006	Obafemi Awolowo University, Ile-Ife, Nigeria	Fifth 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>
2006	National Institute for Space Research, São José dos Campos, Brazil	Fourth Postgraduate Course on Remote Sensing and GIS