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Committee on the Peaceful Uses of Outer Space

Coordination of space-related activities within the United Nations system: directions and anticipated results for the period 2007-2008

Report of the Secretary-General*

Summary

The present report contains updated information provided by entities of the United Nations system on their plans for space-related activities to be carried out in 2007 and 2008. It aims to serve as a strategic tool for United Nations entities to further enhance inter-agency cooperation and avoid duplication of efforts related to the use of various space applications.

This report presents selected information on major, new initiatives and activities that involve coordination and cooperation among two or more United Nations entities. Activities to strengthen the capacity of developing countries to use and benefit from space-related technologies continue to be the focus of many space-related activities within the United Nations system. United Nations entities are continuing their efforts to increase efficiency in sharing their experiences and lessons learned from the use of space applications and in exchanging relevant data sets and information derived from satellites.

* The present report was reviewed and revised by the Inter-Agency Meeting on Outer Space Activities at its twenty-seventh session, held in Vienna from 17 to 19 January 2007, and finalized following the session.

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Contents

I. Introduction

1. The Inter-Agency Meeting on Outer Space Activities serves as a focal point for inter-agency coordination and cooperation in space-related activities. Since the Committee on the Peaceful Uses of Outer Space requested the Secretary-General in 1975 to prepare an annual, integrated report on the plans and programmes of United Nations entities related to outer space activities for consideration by the Scientific and Technical Subcommittee of the Committee, the Inter-Agency Meeting has been assisting in the preparation of the report.

2. The present report, which is the thirty-first annual report of the Secretary-General on the coordination of space-related activities within the United Nations system, was compiled by the Office for Outer Space Affairs of the Secretariat on the basis of submissions from the following United Nations entities: the Economic Commission for Africa (ECA), the Economic and Social Commission for Asia and the Pacific (ESCAP), the Food and Agriculture Organization of the United Nations (FAO), the International Telecommunication Union (ITU), the Office for the Coordination of Humanitarian Affairs, the United Nations Office for Outer Space Affairs, the United Nations Environment Programme (UNEP), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT) implemented in cooperation with the United Nations Office for Project Services (UNOPS), the United Nations Office on Drugs and Crime (UNODC), the World Health Organization (WHO) and the World Meteorological Organization (WMO). The participation in outer space activities of these and other entities of the United Nations system is summarized in the table below.

3. Ongoing activities listed in the previous report in this series (A/AC.105/858), covering the period 2006-2007, and for which no additional information is to be reported, are not duplicated in this report. For a complete picture of activities, that report can be consulted together with this report.

4. Up-to-date information on ongoing space-related activities of United Nations entities is available on the website dedicated to the coordination of outer space activities within the United Nations system (http://www.uncosa.unvienna.org). The website contains news and announcements related to the Inter-Agency Meeting on Outer Space Activities, a directory of organizations with contact information, a schedule of activities, a report archive and a database of space-related activities. The website is updated on a quarterly basis by the focal points of the United Nations entities represented in the Inter-Agency Meeting.

Participants in outer space activities and matrix of outer space programmes[a, b]

United Nations entity	*Protecting the Earth's environment and managing resources*	*Human security, humanitarian assistance, development and welfare*	*Development of law and guidelines*	*Information and communication technology*	*Satellite positioning and location capabilities*	*Capacity-building and education*	*Advancing scientific knowledge*	*Other activities*
Department of Peacekeeping Operations		46, 49						
Economic and Social Commission for Asia and the Pacific		34, 40, 42		60		75, 78		
Economic Commission for Africa	18	44, 47, 48		65	73	76, 77, 90		
Economic Commission for Europe		39	55					
Economic Commission for Latin America and the Caribbean		48						
Economic and Social Commission for Western Asia	22							
Food and Agriculture Organization of the United Nations		26, 40, 43, 46, 47		58, 59		78		
International Civil Aviation Organization					70			
International Maritime Organization	19				70			
International Telecommunication Union	19	30, 31, 33, 34, 35	56	60, 61	70	78		92
Office for Outer Space Affairs		26, 42	54		69, 71, 73	75, 78, 87, 88	91	
Office for the Coordination of Humanitarian Affairs	24	26, 27, 28, 29, 33, 46, 47, 48, 49, 50, 51, 52, 53		58, 66, 67				
Office of the United Nations High Commissioner for Refugees	24	29, 45, 46, 47, 48		61				
United Nations Office on Drugs and Crime		41						
Secretariat of the International Strategy for Disaster Reduction		38						
Secretariat of the United Nations Framework Convention on Climate Change	16							

United Nations entity	*Protecting the Earth's environment and managing resources*	*Human security, humanitarian assistance, development and welfare*	*Development of law and guidelines*	*Information and communication technology*	*Satellite positioning and location capabilities*	*Capacity-building and education*	*Advancing scientific knowledge*	*Other activities*
United Nations Institute for Training and Research Operational Satellite Applications Programme (UNOSAT), implemented in cooperation with the United Nations Office for Project Services		26, 27, 28, 29, 35, 41, 45						
United Nations Children's Fund		48						
United Nations Development Programme		26, 28, 36, 37, 39		60				
United Nations Educational, Scientific and Cultural Organization	17, 18	43				75, 87, 88		
United Nations Environment Programme	16, 17, 20, 21, 22	26, 28, 37, 38, 39, 43, 47		58, 59, 62		75, 79, 80, 81, 82, 83		
United Nations Industrial Development Organization						75		
World Food Programme		26, 44, 46, 47		58				
World Health Organization		36, 42, 46, 48		58, 63, 64	72	75, 89		
World Meteorological Organization	16, 23	28				84, 85, 86		

[a] The numbers in each column indicate the relevant paragraphs in the present report.

[b] For continuously updated information on the coordination of outer space activities within the United Nations system, see www.uncosa.unvienna.org.

II. Policies and strategies pertaining to the coordination of space-related activities

5. In 2006, following its review of the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) (see A/59/174), the Committee on the Peaceful Uses of Outer Space agreed that the recommendations of UNISPACE III were being effectively implemented through the use of multi-year workplans, the establishments of action teams and reports from ad hoc and other groups on their activities. Several entities of the United Nations system continued to participate in one or more of the UNISPACE III action teams.

6. On the basis of the work performed by the Action Team on Global Navigation Satellite Systems, the International Committee on Global Navigation Satellite Systems (ICG) was established on a voluntary basis as an informal body to promote cooperation, as appropriate, on matters of mutual interest related to civil satellite-based positioning, navigation, timing and value-added services, as well as the compatibility and interoperability of global navigation satellite systems, while increasing their use to support sustainable development, particularly in developing countries. In its resolution 61/111, the General Assembly noted with appreciation the establishment of ICG.

7. In its resolution 61/110, the General Assembly decided to establish the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (SPIDER), to be implemented as a programme of the Office for Outer Space Affairs under the Director of the Office, as an open network of providers of disaster management support. The programme shall provide universal access to all countries and all relevant international and regional organizations to all types of space-based information and services relevant to disaster management to support the full disaster management cycle by being a gateway to space information for disaster management support, serving as a bridge to connect the disaster management and space communities and being a facilitator of capacity-building and institutional strengthening, in particular for developing countries.

8. In its resolution 61/111, the General Assembly noted with satisfaction the increased efforts of the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee as well as the Inter-Agency Meeting on Outer Space Activities to promote the use of space science and technology and their applications in carrying out actions recommended in the Plan of Implementation of the World Summit on Sustainable Development ("Johannesburg Plan of Implementation").[1] In its resolution, the Assembly urged entities of the United Nations system to examine, in cooperation with the Committee, how space science and technology and their applications could contribute to implementing the United Nations Millennium Declaration (General Assembly resolution 55/2), particularly in the areas relating to, inter alia, food security and increasing opportunities for education. The Assembly invited the Inter-Agency Meeting to continue to contribute to the work of the Committee and to report to the Committee and its Scientific and

[1] *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 2, annex.

Technical Subcommittee on the work conducted at its annual sessions. It also encouraged entities of the United Nations system to participate fully in the work of the Inter-Agency Meeting on Outer Space Activities.

9. In the same resolution, the General Assembly noted with satisfaction that the Committee had established a closer link between its work to implement the recommendations of UNISPACE III and the work of the Commission on Sustainable Development by contributing to the thematic areas that are addressed by the Commission.

10. The intergovernmental Group on Earth Observations (GEO) held its third meeting, GEO-III, in Bonn, Germany, from 28 to 29 November 2006, and agreed on a workplan for the period 2007-2009 for the establishment of a Global Earth Observation System of Systems (GEOSS), based on a 10-year implementation plan endorsed at its third Earth Observation Summit, held in 2005. The Inter-agency Coordination and Planning Committee, established by FAO, the International Council for Science (ICSU), the Intergovernmental Oceanographic Commission (IOC) of UNESCO, UNEP and WMO continued to support the process of GEO/GEOSS and to enable a coordinated response of United Nations entities to GEO-related issues.

11. The 2007 World Radiocommunication Conference of ITU will consider the allocations and regulatory issues related to the Earth exploration satellite (passive) service, space research (passive) service and the meteorological satellite service.

12. ESCAP will work closely with other United Nations bodies and specialized agencies; with ITU on pacific connectivity and on emergency communications; with the Office for Outer Space Affairs on SPIDER; with FAO on drought disaster management; and with the Secretariat of the International Strategy for Disaster Reduction (ISDR) on the follow-up activities of the Asian Conference on Disaster Reduction and other common, related topics and actions in Asia and the Pacific in the future.

13. The implementation status of the ESCAP Regional Space Applications Programme for Sustainable Development will be evaluated at the Third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, to be held in Malaysia in 2007. Commitments for further enhancing regional cooperation on the use of space technology for achieving internationally agreed development goals will be explored by ESCAP members, associated members and many United Nations entities. The major development trends of globalization, the convergence of space applications with other information and communication technologies and relevant institutional and policy issues on practical space technology applications to serve development goals will be elaborated. Through the adoption of a ministerial declaration, the Conference will recommend a strategy and action plan, which will provide a regional framework for the implementation of future cooperation programmes and mechanisms at the national and regional levels for the period 2008-2013.

14. In the period 2007-2008 and beyond, ECA will provide support for developing policies and strategies on national spatial data infrastructure. ECA will organize the fifth session of the Committee on Development Information including its Subcommittee on Information and Communication Technologies and the Subcommittee on Geo-information, in April 2007. As a subsidiary body of ECA, the

Committee on Development Information provides policy and technical guidance for the subprogramme “Harnessing Information for Development”.

III. Current and forthcoming space-related activities

A. Protecting the Earth’s environment and managing resources

15. In addition to the ongoing activities of United Nations entities within the framework created by the Committee on Earth Observation Satellites (CEOS), the Global Terrestrial Observing System, the Global Climate Observing System (GCOS), the Global Ocean Observing System, and the Integrated Global Observing Strategy, as reflected in last year’s report (A/AC.105/858), the new activities described below can be reported for the period 2007-2008.

16. Within GCOS, the Implementation Plan for the Global Observing System for Climate in Support of the United Nations Framework Convention on Climate Change (GCOS report No. 107, of September 2006) was developed by ICSU, UNEP, IOC and WMO. CEOS subsequently finalized a set of actions to be taken by space agencies in response to the Implementation Plan and, in November 2006, submitted its report to the Subsidiary Body for Scientific and Technological Advice of the United Nations Framework Convention on Climate Change.[2] WMO is incorporating the satellite-based requirements of GCOS in the redesign of its Global Observing System for the next two decades.

17. UNEP will continue its work on various initiatives involving the use of space-based data for environmental monitoring. The UNEP Regional Office for West Asia is cooperating with the Arab League Educational, Cultural and Scientific Organization and UNESCO on the development of the Arab strategy for disaster risk reduction management. After the strategy is developed in 2007, UNEP will work with States and partner institutions to implement it. The UNEP Regional Office for West Asia is also pursuing work on ecosystem assessment in three selected sites, in Egypt, Morocco and Saudi Arabia, including the application of geographic information systems and remote sensing.

18. ECA, as the secretariat of UN-Water/Africa, and UNESCO will continue to support the further development of the TIGER initiative led by the European Space Agency (ESA) and supported by the National Aeronautic and Space Administration (NASA) of the United States of America. The initiative has adopted the Africa Water Vision 2025 as its fundamental framework, within which a long-term implementation plan has been designed to coincide with the International Decade for Action, “Water for Life”, 2005-2015.

19. ITU is preparing a handbook on the Earth exploration satellite service, which will complement the existing handbook, written in conjunction with IMO, on the use of the radio spectrum for meteorology, including the description of modern meteorological systems, tools and methods.

20. The Global Resource Information Database (GRID)-Europe of the Division of Early Warning and Assessment, with the Division of Technology, Industry and

[2] United Nations, *Treaty Series*, vol. 1771, No. 30822.

Economics and the Post-Conflict Branch, all of UNEP, continued to assess the changing, post-war state of marshland in southern Iran (Islamic Republic of) and Iraq in the final phase of the Iraqi Marshlands Observation System (IMOS) project. It also provided technical assistance and training to Iraqi scientific experts. An intensive two-week training course was held in June 2006 for staff of the Iraq Foundation, the Centre for the Restoration of the Iraqi Marshlands and the Ministry of Water Resources of Iraq. In addition, during the project's final phase, the entire IMOS data archive and other relevant documents, as well as the hardware and software required to continue the IMOS monitoring in Iraq, were transferred to those Iraqi partners.

21. GRID-Europe is participating in the Lake Balaton Integrated Vulnerability Assessment, Early Warning and Adaptation Strategies project, in partnership with UNDP, the Global Environment Facility, the Lake Balaton Development Council and the International Institute for Sustainable Development. The project studies long-standing water quality and quantity problems and serious concerns about sustainability for the area and ecosystems of Lake Balaton, Hungary. The overall purpose of the project is to contribute to a better understanding of the vulnerability and resilience of the ecological and socio-economic systems of Lake Balaton and to build capacity for more effective policymaking and adaptation measures.

22. The UNEP Division of Early Warning and Assessment-West Asia initiated and convened an inception meeting for a report on the environment outlook for the Arab region. The report was requested by a decision of the seventeenth session of the Council of Arab Ministers Responsible for the Environment (CAMRE) and is being prepared under the umbrella of CAMRE and with the assistance of a number of collaborating centres in West Asia and Northern Africa. The report is expected to be completed in 2008. Selecting core sustainable development indicators for the Arab region was a key joint activity of the CAMRE Secretariat and the Economic and Social Commission for Western Asia (ESCWA), including an expert meeting held in December 2006.

23. The WMO Agricultural Meteorology Programme uses remote sensing data from satellites coupled with ground weather station data in the field of agricultural meteorology. The objective of the programme is to improve the operational capability of agrometeorological services worldwide. The Programme will help promote the participation of agricultural meteorologists working for national meteorological and hydrological services in the African Monitoring of the Environment for Sustainable Development project, which is intended to develop new applications using satellite technologies and ancillary data in support of sustainable development in Africa.

24. At the 2006 plenary meeting of the United Nations Geographic Information Working Group (UNGIWG) held in Santiago in early November, the 14 United Nations entities present (of the 33 United Nations entities that are members of UNGIWG) discussed a draft paper prepared by the UNGIWG Secretariat entitled "United Nations spatial data infrastructure: vision, implementation strategy and reference architecture". The United Nations Spatial Data Infrastructure initiative promotes a more effective and efficient use of spatial data and information within the United Nations, in support of the overall, reformed mission of the United Nations and the achievement of the Millennium Development Goals, by optimizing re-use and sharing practices, facilitating ease of access to new data, learning from

others and avoiding pitfalls. The 2006 plenary meeting elected the Office for the Coordination of Humanitarian Affairs and UNHCR to serve as co-chairs of UNGIWG for the period 2007-2008.

B. Using space applications for human security, humanitarian assistance, development and welfare

25. Several new activities in the area of using space applications for human security, humanitarian assistance, development and welfare, in particular relating to disaster management and emergency response, can be reported for the period 2007-2008. Ongoing activities are reported in the report of the Secretary-General for the period 2006-2007 (A/AC.105/858).

26. In 2006, the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (International Charter "Space and Major Disasters") was activated 11 times by United Nations entities, such as FAO, the Office for the Coordination of Humanitarian Affairs, UNDP, UNEP and the World Food Programme (WFP), through the Office for Outer Space Affairs, in cooperation with UNOSAT of UNITAR.[3] That constitutes nearly 50 per cent of the total Charter activations in 2006. Activations by United Nations entities in 2006 were mainly in response to floods, as well as to one landslide, one hurricane and one oil spill, in developing countries. In order to define a better modus operandi and to better coordinate the work of United Nations entities, the Office for Outer Space Affairs, together with UNOSAT, organized the third United Nations-wide meeting related to the Charter, held in Geneva in March 2006. At the meeting, United Nations representatives expressed their satisfaction with the system currently in place.

27. Building on its increased activities in 2006 in the two complementary areas of crisis mapping for humanitarian relief and support to United Nations agencies and Member States in the implementation of disaster prevention and sustainable development projects, UNOSAT is strengthening its agency cooperation with the Office for the Coordination of Humanitarian Affairs and all members of the Inter-Agency Standing Committee in the area of humanitarian coordination. The role of Earth observations in humanitarian assistance is widely recognized, reflected in the selection of UNOSAT for the UN 21 Award for team productivity.

28. Because the number of United Nations agencies and programmes requesting UNOSAT services has grown to levels requiring strengthened coordination efforts, UNOSAT and the Office for the Coordination of Humanitarian Affairs have established a collaboration framework and will discuss further arrangements in 2007. A number of coordination arrangements with other agencies, including WMO, UNEP, UN-Habitat and UNDP, have been concluded or are being discussed. The circle of beneficiaries of the work of UNOSAT extends beyond the United Nations system and includes the International Federation of Red Cross and Red Crescent Societies, the International Committee of the Red Cross, non-governmental organizations and government agencies.

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[3] http://www.unosat.org.

29. In 2007, UNOSAT, in cooperation with the Office for the Coordination of Humanitarian Affairs and UNHCR, will increase its efforts in the context of UNGIWG, which is a valued coordination mechanism at the technical level at a time when the United Nations system is increasing its use of satellite-derived applications. In addition, UNOSAT will support research and partnerships in the area of integrated applications and has initiated discussions with partners on the benefits of combining Earth observation with telecommunications and navigation systems. Integrated solutions are expected to benefit both emergency responses and sustainable development.

30. Studies on radiocommunication for emergency situations and for ensuring safety of life represent a major responsibility of the ITU Radiocommunication Sector. The Radiocommunication Study Groups carry out studies related to the continuing development of radiocommunication systems used in disaster mitigation and relief operations. The ITU Radiocommunication Sector was also invited to pursue studies on the further identification of suitable frequency bands that could be used on a global or regional basis for public protection and disaster relief.[4]

31. At the World Telecommunication Development Conference meeting in Doha in March 2006, participants called upon ITU to continue to play an active and leading role in the development and deployment of low-cost, affordable and appropriate technologies for disaster risk reduction and in the development of policies and strategies that could facilitate the use of information and communication technologies in disaster prevention, preparedness and relief.

32. Victims of disasters will now be able to benefit from faster and more effective rescue operations, thanks to the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, which came into force on 8 January 2005 and which was ratified by 35 States as at 30 November 2006.[5] Until now, the transborder use of telecommunication equipment by humanitarian organizations has often been impeded by regulatory barriers that make it extremely difficult to import and rapidly deploy telecommunication equipment for emergencies without the prior consent of local authorities.

33. ITU and the Office for the Coordination of Humanitarian Affairs jointly organized the International Conference on Emergency Communications 2006, held in Tampere, Finland, with the participation of United Nations agencies providing humanitarian assistance, the International Federation of Red Cross and Red Crescent Societies, the International Amateur Radio Union, entities from the private sector and non-governmental organizations.[6]

34. ITU and ESCAP jointly organized the Regional Workshop on Disaster Communications, held in Bangkok in December 2006. At the workshop, participants discussed technical, policy and institutional issues in the development of networks, systems and possible regional cooperation mechanisms for communications supporting disaster management, with an emphasis on emergency situations for countries in Asia and the Pacific.

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[4] http://www.itu.int/ITU-R/index.asp?category=information&link=emergency&lang=en.

[5] http://www.itu.int/ITU-D/emergencytelecoms/tampere.html.

[6] http://www3.hermia.fi/mp/db/file_library/x/IMG/12144/file/ConclusionsRecsICEC06.pdf.

35. Following the powerful earthquake of a magnitude of 6.3 that struck Java, Indonesia, on 27 May 2006, ITU, in partnership with UNOSAT, assisted the Government of Indonesia with the provision of satellite imagery, mapping services and training for post-disaster telecommunication network planning, rehabilitation and vulnerability reduction.

36. Hazard mapping is playing an increasingly important role in early warning systems. That, coupled with the ability to map out resources, enables accurate and tailored emergency planning. In that context, the Regional Office for the Eastern Mediterranean of WHO officially launched the first volume of its *Atlas of Disaster Risk*, entitled "Exposure to natural hazards", at the seventeenth United Nations Regional Cartographic Conference for Asia and the Pacific, held in Bangkok from 18 to 22 September 2006. That volume represents the first piece of a process leading to the spatialization of natural disaster risks for the 22 countries assisted by the Regional Office. Future steps will be aimed at developing the health component of the Atlas by illustrating the vulnerability of the population from a health perspective and at better connecting this activity with existing initiatives such as the Global Risk Identification Programme of UNDP.

37. GRID-Europe of UNEP continues to support the Bureau for Crisis Prevention and Recovery of UNDP and the Swiss Agency for Development and Cooperation in the development of the Global Risk Identification Programme of UNDP. The Programme is a follow-up to the work of GRID-Europe in the development of the disaster risk index for the UNDP report "Reducing disaster risk: a challenge for development" of 2004. The Global Risk Identification Programme is aimed at improving the availability of information on the analysis of disaster risks and risk factors. The resulting data, methods and analyses will be made available through a coordinated knowledge management programme intended to inform the design of disaster risk management and capacity-building activities in selected high-risk countries.

38. The ISDR Secretariat has continued to promote the use of satellite imagery to reduce disaster risks and has developed close collaboration with United Nations entities to that end, particularly in the follow-up to the United Nations flash appeal for the tsunami-affected Indian Ocean countries. GRID-Europe of UNEP developed and will continue to maintain an interactive application, the Project for Risk Evaluation, Vulnerability, Information and Early Warning (Preview) (see A/AC.105/841, para. 34). ISDR and UNEP are also developing online databases to identify selected good practices by Governments. The resulting products are incorporated into country profiles and are used as tools for the global information platform on disaster risk reduction.

39. GRID-Europe and GRID-Arendal, Norway, will continue their collaboration with UNDP, the Organization for Security and Cooperation in Europe, NATO and the collaboration that began in 2006 with the Regional Environmental Center for Central and Eastern Europe and the Economic Commission for Europe on environmental problems and security issues through the Environment and Security initiative. In 2006, major assessments of environmental hot spots and security issues were carried out for the Eastern European subregion countries of Belarus, Moldova and Ukraine.

40. ESCAP will continue to develop regional cooperative mechanisms as part of global partnerships on space information for disaster reduction, placing the initial focus on drought and flood disasters. China, India, Thailand and FAO have expressed their commitment to partner with ESCAP in developing a regional cooperative mechanism on drought disaster management. The Sentinel Asia project is under development, in close cooperation with the members of the Asia-Pacific Regional Space Agency Forum, with an initial focus on floods and wildfires. The project is aimed at developing a regional disaster-reduction support platform utilizing space information, to be supported by space-faring countries in the region and other regional and international initiatives, such as GEOSS and SPIDER.

41. The United Nations Office on Drugs and Crime, in cooperation with UNOSAT, through its global illicit-crop-monitoring programme, is transferring the technical know-how of illicit crop detection to national counterpart agencies in seven countries. The Office has established cooperation agreements with selected research institutes and universities for the purpose of improving and updating the methodologies for the interpretation and analysis of satellite images, taking into account new developments in satellite technology and the dynamics of illicit crop cultivation.

42. The Office for Outer Space Affairs initiated four pilot projects during the workshop on tele-health held in China in 2005. Two projects were completed by China in 2006, and the other two are ongoing. One of the two completed projects is entitled “Avian flu early warning methodology development using geospatial data and space technologies”. The Office, ESCAP and WHO will collaborate and disseminate the validated methodology developed in the project, to be used regionally. The Office, WHO and the Pan American Health Organization will continue to oversee the work of the task force on health using space technologies for Latin America and the Caribbean region, which was established following a workshop on telemedicine held in Argentina. The Office for Outer Space Affairs and WHO will continue to assist the Action Team on Public Health in overseeing the development of tele-health implementation approaches.

43. In 2004, FAO and UNEP jointly initiated the Global Land Cover Network (GLCN), a global collaborative project to develop a fully harmonized approach to making reliable and comparable baseline land-cover data accessible at the local, national and international levels, especially for the user community in developing countries. Regional collaborative networks have already been established for subregions in Africa and the Americas, the Middle East, South-East Asia and Central Asia. Through an ongoing memorandum of understanding, FAO and UNEP have supported a number of GLCN outreach and capacity-building activities, including a bimonthly e-newsletter, publications on GLCN and the Land Cover Classification System (LCCS), multilingual software for LCCS, documents to promote LCCS as a standard of the International Organization for Standardization (ISO), support to a regional training workshop held in India in 2006 and preparations for further training workshops to be held in China, Morocco, Namibia, Oman and Uruguay in 2007. Land-cover mapping for the Libyan Arab Jamahiriya was completed in 2006. After the success of those initiatives, GLCN is now launching a new project to carry out mapping and capacity-building activities in 13 countries in West Africa. A project involving land-cover mapping in Afghanistan will be initiated in 2007. GLCN staff are also currently involved in the update of the

Mangrove Atlas of the World, an initiative undertaken in collaboration with the International Society for Microbial Ecology, the International Tropical Timber Organization, the Man and the Biosphere Programme of UNESCO, the UNEP World Conservation Monitoring Centre and the International Network on Water, Environment and Health of the United Nations University.

44. ECA is collaborating with the African Union to prepare a transport infrastructure master plan for Africa. The main objective of that programme of activities is to produce an integrated, optimum all-mode transport infrastructure master plan for Africa. Producing the master plan will require access to data on all existing and planned networks and corridors of development, including railways, airports, roads, ports, harbours and waterways, and related social and economic information. Those transport components need to be depicted using their correct spatial locations and cross-referenced with one another in order to carry out a full analysis of all relevant factors. Since there is currently no database containing those necessary data sets, another major objective of the project is to create a database (using remote sensing and global positioning system techniques) in a geographic information system in order to support the proper planning, design, operations and maintenance of infrastructure facilities. ECA works with WFP in sharing relevant data and satellite images.

45. UNHCR uses high-resolution imagery to map refugee camps and settlements of internally displaced persons. Those maps are linked to population databases in order to plan for and monitor population needs and their protection. A partnership with UNOSAT facilitates access to remote sensing data and services.

46. In 2006, the Office for the Coordination of Humanitarian Affairs leveraged the resources made available through the Geographic Information Support Team (GIST) to service the geospatial data requirements of the humanitarian community, especially by channelling satellite imagery obtained from United States Government sources. GIST membership consists of United Nations agencies with humanitarian operations, including the Department of Peacekeeping Operations, FAO, UNHCR, WFP and WHO, United States agencies, representatives of donor countries, non-governmental organizations and academic institutions, with the Office for the Coordination of Humanitarian Affairs providing secretariat services. Most notable among past geospatial humanitarian information management and coordination efforts were those in response to the earthquake in South Asia, the earthquake in Indonesia, the Lebanon crisis and the floods in the Horn of Africa.

47. UNGIWG has received an offer from Google, Inc., to prioritize the acquisition of high-resolution satellite data for incorporation into the Google Earth database, in accordance with the requirements of United Nations bodies. UNEP, FAO, the Office for the Coordination of Humanitarian Affairs, WFP, ECA, UNHCR and others have established an open-ended coordinating working group within UNGIWG to act as a single point of contact with Google, Inc., for consolidating requests and requirements of United Nations bodies. Google, Inc. has also offered, where appropriate, to place orders with commercial providers to acquire areas not previously imaged that have been identified by United Nations bodies as being of significant interest.

48. Through a collaborative effort among several United Nations bodies (the Department of Public Information, ECA, ECLAC, the Office for the Coordination of

Humanitarian Affairs, UNHCR, UNICEF and WHO) to offer continuous support to capacity-building and to improve connections with national institutions, contact information for the national mapping agencies of more than 140 countries can now be downloaded from the website of the Second Administrative Level Boundaries project.[7] The project, launched in the context of the activities of UNGIWG, also provides access to geographic information system format maps and other useful information about the administrative structure of Member States that may be relevant to institutions requiring access to geographic information for those countries.

49. The Office for the Coordination of Humanitarian Affairs, in collaboration with the Department of Peacekeeping Operations, initiated the installation of software to generate a satellite imagery catalogue and online imagery storage space for United Nations Headquarters and to provide that imagery to local clients through an easy, customized interface. The Department of Peacekeeping Operations will provide imagery, data visualization and three-dimensional simulation services at United Nations Headquarters, based on the Google Earth Enterprise Server.

50. The Office for the Coordination of Humanitarian Affairs, through its ReliefWeb service[8] will continue to collect, produce and distribute, to the benefit of the humanitarian response community, various information and map products, including a variety of satellite-based image maps. ReliefWeb data sources include the majority of United Nations agencies working in the area of humanitarian response, as well as many hundreds of other external sources from Governments, non-governmental organizations and the media.

51. The Office for the Coordination of Humanitarian Affairs, through its ReliefWeb map centre, will continue to participate in the work of the CEOS Working Group on Information Systems and Services, together with other United Nations agencies and, in the capacity of Co-User Vice Chair, will also champion the rapid development of a higher, 30-meter resolution global digital elevation data set to be produced from available satellite imagery.

52. The Lebanon Humanitarian Information Centre, a Humanitarian Common Service run by the Office for the Coordination of Humanitarian Affairs, assisted the United Nations Mine Action Service by making data on unexploded ordnance areas publicly available using Google Earth technology, thus giving significant human security value to operational data that has traditionally had a very limited circulation.

53. Also using Google Earth technology, the Lebanon Humanitarian Information Centre, assisted by the ReliefWeb map centre of the Office for the Coordination of Humanitarian Affairs, was able to verify the existence and the size of settlements in southern Lebanon by comparing location data from Lebanese officials with more recent satellite imagery and able to detect unpaved roads. Both actions assisted humanitarian relief and logistics operations by United Nations agencies and partners. In December 2006, the Office for the Coordination of Humanitarian Affairs was awarded a UN 21 Award for the services that the humanitarian

[7] http://www3.who.int/whosis/gis/salb/salb_contact.htm.

[8] http://www.reliefweb.int/.

information centres provided to the humanitarian community through innovative applications integrating satellite imagery with operational data.

C. Development of law, guidelines and codes of ethics relating to space activities

54. The Committee on the Peaceful Uses of Outer Space is the only international forum for the development of international space law. Since its inception, the Committee has concluded five international legal instruments and five sets of legal principles governing activities in the area of the peaceful uses of outer space. The Office for Outer Space Affairs, as its secretariat, continues to organize workshops dedicated to developing expertise and capacity in international and national space law and to promoting educational opportunities in space law. The fifth United Nations Workshop on Space Law was held in Kyiv from 6 to 9 November 2006.

55. In the period 2007-2008, ECA will publish reports and handbooks on land management information systems in the knowledge economy and in collaboration with the Network for the Cooperative Management of Environmental Information in Africa (EIS-AFRICA), will publish in 2007 a geospatial metadata profile for Africa, as well as a background document on spatially-enabled government, to appear in 2008.

56. ITU published the *Handbook on Emergency Telecommunications* and a special ITU Radiocommunication Sector supplement on emergency and disaster relief, written for field use.[9]

D. Utilizing and facilitating information and communication technology for development

57. Satellite-based telecommunications and data and information dissemination are an integral part of the global telecommunications infrastructure. In disaster and emergency situations where ground-based telecommunications infrastructure is not operable, satellite-based telecommunications are often the only means of communication. Several new activities in that field can be reported for the period 2007-2008. Additional information on ongoing activities are reported in the report of the Secretary-General for the period 2006-2007 (A/AC.105/858).

58. UNEP, FAO, WFP, the Office for the Coordination of Humanitarian Affairs and the Consultative Group on International Agricultural Research completed version 2.1 of GeoNetwork, a free, open-source catalogue application used by several other agencies and institutions, including WHO, to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. The software is available at the GeoNetwork website.[10] Further information on the GeoNetwork project is provided in the report of the Secretary-General for the period 2006-2007 (A/AC.105/858, paras. 62-65).

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[9] http://www.itu.int/pub/R-HDB-48/en.

[10] http://geonetwork-opensource.org.

59. FAO and UNEP, along with other members of UNGIWG, will continue to implement the Open Geospatial Consortium interoperability standards. FAO makes its spatial data available through such standards, with more than 100 layers currently accessible through the Web Map Service (WMS), which, together with the Web Coverage Service (WCS), serves the Advanced Real-Time Environmental Monitoring Information System image archive. WMS and WCS will continue to be provided through the FAO GeoNetwork.

60. ESCAP places great importance on the development needs of Pacific island developing countries, including the crucial issue of connectivity. In cooperation with the relevant United Nations organs, including the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, the UNDP Special Unit for South-South Cooperation, ITU and the Pacific Islands Forum Secretariat, ESCAP has initiated a study on enhancing connectivity among the Pacific islands and with the outside world. The study will suggest technical, policy and financial options, including satellite-communication-based options, for consideration by the leaders of Pacific island developing countries and territories. Coordination with ITU has been initiated to ensure that the study complements relevant ITU initiatives and ensures future cooperation on the issue.

61. ITU and UNHCR jointly established an information and communication technology training centre in Monrovia. It supports the rehabilitation of returnees in post-conflict situations and their integration into the information society by equipping them with technological skills. The training centre was launched on 19 April 2006 and is now preparing to train for free the second group of a further 60 returnees. Funding permitting, similar centres will be established in other parts of the country, as well as in other African countries where post-conflict situations exist.

62. The Regional Office for West Asia of the UNEP Division of Early Warning and Assessment held a regional consultation meeting on piloting environmental information networking in September 2006. At the meeting participants recommended the establishment of a regional environmental information network for the Arab region and two subregional networks, one for the countries of Cooperation Council for the Arab States of the Gulf and the other for the countries of the Arab Mashreq. Based on the outcomes of the meeting and the interest of the countries involved, piloting information networks will take place in four countries in the region: Bahrain, Jordan, Kuwait and the Syrian Arab Republic.

63. The Pan Africa e-Network is a joint project of the African Union and the Government of India to provide the 53 States members of the African Union with information and communication technology services and content in the areas of telemedicine, tele-education and connectivity among the seats of government. Permanent project subcommittees have been set up, with WHO designated as Chair of the subcommittee on telemedicine, with responsibility for leading the health aspects of the project.

64. Several other new activities or developments have taken place in the area of telemedicine, including continued collaboration between the WHO Regional Office for Europe and ESA in the Telemedicine Alliance consortium under the auspices of the Information Society and Media Directorate-General of the European

Commission;[11] the publication of the ESA Telemedicine via Satellite Programme;[12] the setting-up of a task force on telemedicine in sub-Saharan Africa, composed of regional African organizations, WHO, the European Commission and ESA; the extension of the Health Telematics Programme of the WHO Regional Office for South-East Asia, which is implemented in Nepal and Myanmar.

65. In 2007, ECA will hold at its headquarters two ad hoc expert group meetings of the African Technical Advisory Committee (ATAC) on information and communications technology. ATAC provides advice on implementation of the African Information Society Initiative. ATAC members play an advocacy role, identifying best practices in information and communications technology and assisting ECA to mobilize resources for the benefit of its member States.

66. In 2006, in operations where it was the first on the ground, the Office for the Coordination of Humanitarian Affairs installed its own very small aperture terminal (VSAT) infrastructure supplemented by wireless local area networks (WLANs), and in some situations it also provided services to other United Nations agencies and humanitarian partners. In 2006, VSATs were installed in five offices in the Sudan (Khartoum, Juba, Zalingi, Yei and Bentiu).

67. In 2006, the Office for the Coordination of Humanitarian Affairs began providing personal information and communications technology kits to staff on mission in deep field, where there was no connectivity. The personal kits contain a satellite communication terminal (Inmarsat RBGAN), a satellite phone (Thuraya) and a global navigation satellite system receiver.

E. Utilizing and improving satellite positioning and location capabilities

68. Ongoing activities of United Nations entities in the area of utilizing and improving satellite positioning and location capabilities have been reported in the report of the Secretary-General for the period 2006-2007 (A/AC.105/858, paras. 75-82). The following new activities can be reported.

69. The International Committee on Global Navigation Satellite Systems held its first meeting, in Vienna on 1 and 2 November 2006. The Office for Outer Space Affairs served as the focal point for matters relating to the organization of the meeting. The report of the meeting is contained in document A/AC.105/879.

70. The workplan adopted at the meeting foresees the possible need to address the issue of the adoption of common guidelines to ensure the compatibility and interoperability of global navigation satellite systems, because such compatibility and interoperability are highly dependent on the establishment of standards for service provision and user equipment. The Committee will not set guidelines but, instead, identify applications where no guidelines currently exist and recommend possible organizations that could appropriately set new guidelines. Consultations with existing standard-setting bodies such as the International Civil Aviation Organization, IMO, ITU and ISO will also be required.

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[11] http://www.euro.who.int/telemed/Publications/20060718_2.

[12] http://telecom.esa.int/telecom/www/object/index.cfm?fobjectid=16684.

71. A further element of the workplan is the aim to implement, with the support of the Office for Outer Space Affairs, common geodetic reference frames for Africa, Europe and Latin America and the Caribbean.

72. WHO will use global positioning system devices in the context of a new household survey that is part of the Study on Global Ageing and Adult Health[13] and in new countries in the context of the Service Availability Mapping exercise for locating and mapping health facilities and their resources.[14]

73. ECA and the Office for Outer Space Affairs will continue the effort to develop the African Reference Framework by using global positioning system technology to promote the rehabilitation, extension and harmonization of geodetic networks in Africa. In 2007 ECA will support coordination arrangements for the Western and Central African components.

F. Capacity-building and education in space applications for sustainable development

74. In addition to the ongoing activities reported in the report of the Secretary-General for the period 2006-2007 (A/AC.105/858, paras. 83-96), the following new activities can be reported for the period 2007-2008.

75. The Office for Outer Space Affairs, with other United Nations entities, such as ESCAP, UNEP, UNESCO, the United Nations Industrial Development Organization and WHO, will continue to organize workshops, seminars and training activities and facilitate the development of various pilot projects in developing countries that use space technologies for sustainable development, within the framework of the United Nations Programme on Space Applications (see A/AC.105/874).

76. ECA is committed to the development of an African regional geospatial data infrastructure and the deepening of ongoing work on the development and maintenance of the standards-based African geo-information clearing house at its headquarters. In 2007, it will organize a workshop on spatial data standards, the clearing house and metadata and, in 2008, a subregional seminar on information management and services, with special attention to geo-spatial products.

77. In collaboration with other organizations, ECA will continue to support a web-based distance-learning programme to enable the alumni of the Regional Centre for Training in Aerospace Surveys and the general geo-information community in Africa to keep abreast of new developments in information and communication technology and space technology.

78. In the context of the Regional Space Applications Programme for Sustainable Development (RESAP), ESCAP will continue organizing regional training workshops and training courses on space applications in the areas of disaster reduction, emergency communications and distance education and e-health supported by satellite-based connectivity. Some of those activities will be jointly organized with FAO, ITU and the Office for Outer Space Affairs. To support those efforts, ESCAP plans to provide a number of fellowships for participants from least

[13] http://www.who.int/healthinfo/systems/sage/en/.

[14] http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/.

developed countries in training courses offered to RESAP by member States of ESCAP and the Centre for Space Science and Technology Education in Asia and the Pacific.

79. UNEP/GRID-Sioux Falls, United States, in collaboration with Google Earth (a three-dimensional virtual world browser), launched, on 13 September 2006, the interactive Atlas of our Changing Environment. Through that project a series of "before" and "after" satellite images of our changing environment is presented to over 100 million Google Earth users worldwide. The project builds on the success of the popular atlas of UNEP *One Planet, Many People: Atlas of Our Changing Environment*. With 8,000 hard copies sold and distributed and almost 6,000 copies downloaded from the Internet, *One Planet, Many People: Atlas of Our Changing Environment* received unprecedented worldwide media coverage and three international awards.

80. GRID-Sioux Falls continues building capacity and carrying out training activities related to web-mapping and environmental change analysis tools. Working in line with the aim of UNEP to educate and raise awareness, including networking among universities with programmes of excellence in the field of the environment, GRID-Sioux Falls hosted 30 visiting scientists from 16 countries in the period 2005-2006.

81. GRID-Sioux Falls provided research and support in satellite image classification for the assessment of mangrove forests in tsunami-impacted areas of Asia, in a joint study of UNEP and the United States Geological Survey. UNEP is in the process of finalizing a report entitled "Mangrove forest distribution and dynamics (1975-2005) in the tsunami-impacted area of Asia", to be released in January 2007.

82. The UNEP publication *Africa's Lakes: Atlas of Our Changing Environment* was launched at World Water Week in Stockholm in August 2006. The atlas presents an overview of the location of the lake resources of Africa and human impact on them. The atlas features a series of case studies documenting specific changes taking place on or near 17 lakes in Africa. The central element of all those studies is a series of remote sensing images providing visual evidence of environmental change.

83. UNEP Regional Office for West Asia continued its capacity-building activities in the area of early warning and assessment. It carried out training on integrated environmental assessment, mostly with the State of Qatar, and continued to support the preparation of national state of the environment reports for Bahrain, the Syrian Arab Republic, the United Arab Emirates and Yemen. It also has been supporting the Regional Organization for the Protection of the Marine Environment (ROPME) in enhancing national guidelines for the preparation of a report on the state of the marine environment for the ROPME sea area.

84. One of the priority training areas of the WMO education and training programme relates to the use of satellite imagery and products by a range of operational staff working in weather analysis and forecasting, climate monitoring and prediction, and to various meteorological and hydrological applications used to monitor fires, floods, hurricanes, thunderstorms, sand storms and winter storms. The training is supported through short-term fellowships under the WMO regular budget and its Voluntary Cooperation Programme, as well as through training events jointly

organized or cosponsored by other agencies and organizations. WMO also assist trainers of WMO regional training centres and training units of national meteorological and hydrological services in order to update their scientific base in satellite meteorology.

85. The WMO Agricultural Meteorology Programme will organize a workshop on fire danger warning indices in order to review state-of-the-art technologies and methodologies in the field, including the integration of ground-based station and remotely sensed data.

86. The WMO Space Programme leads training on the use of satellite data and imagery for specialized staff working in areas such as research and development in satellite remote sensing, information systems technology and data processing and observations and measurements. In that regard, the Virtual Laboratory for Satellite Training and Data Utilization has been established to maximize the exploitation of satellite data worldwide. It is a collaborative effort joining the major operational satellite operators across the globe with WMO centres of excellence in satellite meteorology. Those centres of excellence, which include five WMO regional training centres (in Barbados, China, Costa Rica, Kenya and the Niger), serve as a satellite-focused training resource for WMO members. The very successful High Profile Training Event organized by the WMO Space Programme from 16 to 28 October 2006 in the framework of the Virtual Laboratory, provided a challenging benchmark in outreach efficiency and cost-effectiveness for future WMO training activities.

87. At the invitation of the Office for Outer Space Affairs, UNESCO presented its Space Education Programme at the Fifth Space Conference of the Americas, held in Ecuador in July 2006 and participated in the deliberations of the education committee for the enhancement of space education in Latin America. UNESCO, with the participation of the Office for Outer Space Affairs, will conduct a workshop for secondary students and teachers in Ecuador in mid-2007. Similar workshops will be organized by UNESCO in Morocco, the Syrian Arab Republic and Tanzania in 2007.

88. UNESCO participated in the Workshop on the Use of Space Technology for Water Resources Management, organized by the Office for Outer Space Affairs and held in Valencia, Spain, on 29 and 30 September 2006. UNESCO will continue to provide expertise in that field in the future in the framework of the TIGER initiative in Africa. UNESCO will publish a handbook for decision makers on the use of space technology for water resource management in 2007.

89. WHO is improving the capacity of the existing tools such as the SIGEPI software, which uses geographic information systems for epidemiology, and developing new ones such as the web-based geographic information system, the regional alert, surveillance and detection of outbreak system, developed by the Regional Office for the Eastern Mediterranean of WHO to serve as one of the key tools linking the regional office with the field.

90. ECA will continue providing support for regional conferences, in particular the conferences of African Association of Remote Sensing of the Environment (AARSE) and AfricaGIS. AfricaGIS 2007, tentatively scheduled for November 2007, will be hosted by Burkina Faso. The next conference of AARSE will be held in October/November 2008.

G. Advancing scientific knowledge of space and protecting the space environment

91. The Office for Outer Space Affairs promotes and supports activities organized within the framework of the International Heliophysical Year 2007. Information on workshops related to the International Heliophysical Year 2007 organized by the Office, in the framework of its Programme on Space Applications, is contained in documents A/AC.105/856 and A/AC.105/882.

H. Other activities

92. At the 2007 World Radiocommunication Conference of ITU, participants will consider allocations and regulatory issues related to the Earth exploration satellite (passive) service, space research (passive) service and the meteorological satellite service. In that regard, it is essential that frequencies allocated to passive services of advanced meteorological and Earth exploration satellite systems for the remote sensing of ocean temperatures, whose variations can be linked to seismic activity, remain free of interference.