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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 2005-2006****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 2005 and 2006. The report focuses on major new initiatives or activities that are being carried out through inter-agency coordination and cooperation and aims to serve as a strategic tool for United Nations entities to further enhance inter-agency cooperation.

The report indicates that a number of activities are being carried out through inter-agency cooperation with the use of space science and technology and their applications, in particular in the areas of environmental research, monitoring and assessment, management of natural resources, weather and climate forecasting, disaster management, peacekeeping, refugee operations and public health, as well as enhancement of information and communication infrastructure. Capacity-building continues to be the focus of many space-related activities within the United Nations system. Many entities collaborate in their activities to strengthen the capacity of developing countries to use and benefit from space-related technologies. There have also been increased efforts among United Nations entities to share the available data sets and information derived from satellites.

Recognizing the importance of the societal benefits of space science and technology and their applications, many entities of the United Nations system have

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started to incorporate space-related components into their activities aimed at implementing and supporting the goals identified in the United Nations Millennium Declaration (General Assembly resolution 55/2) and the decisions of global conferences and summits.

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I. Introduction

1. The Inter-Agency Meeting on Outer Space Activities, which was first established in 1975 as a subcommittee of the Administrative Committee on Coordination (now the United Nations System Chief Executives Board for Coordination), 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 Committee's Scientific and Technical Subcommittee, the Inter-Agency Meeting has been assisting in the preparation of the report.

2. The present report, which is the twenty-ninth 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 Office for Outer Space Affairs, the Department of Peacekeeping Operations and the Department of Social and Economic Affairs of the Secretariat, the United Nations Office for Project Services (UNOPS), the Economic Commission for Africa (ECA), the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Environment Programme (UNEP), the United Nations Institute for Training and Research (UNITAR), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Civil Aviation Organization (ICAO), 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.

Participants in outer space activities and matrix of outer space programmes^{a, b}

| <i>United Nations entity</i> | <i>Protecting the Earth's environment and managing resources</i> | <i>Human security, humanitarian assistance, development and welfare</i> | <i>Development of law and guidelines</i> | <i>Information and communication technology</i> | <i>Satellite positioning and location capabilities</i> | <i>Capacity-building and education</i> | <i>Advancing scientific knowledge</i> | <i>Other activities</i> |
|--|--|---|--|---|--|--|---------------------------------------|-------------------------|
| Department of Peacekeeping Operations | | 29, 31, 32 | | 53, 54 | 60, 61 | | | |
| United Nations Office for Project Services | | 27, 29, 30 | | | | | | |
| Secretariat of the International Strategy for Disaster Reduction | | 34, 38 | | | | | | |
| Office for Outer Space Affairs | 11 | 27 | 45, 46 | | 59 | 66, 72, 79, 81 | | |
| Economic Commission for Africa | 17, 19, 21 | | | | | 67, 68 | | |
| Economic and Social Commission for Asia and the Pacific | 12, 20, 22 | 33, 38 | 47 | 55 | | 69 | 84 | 85 |
| United Nations Development Programme | 17, 18, 19 | 26, 35 | | | | 77 | | |
| United Nations Environment Programme | 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24 | 26, 34, 35, 36 | | 56, 57 | | 70, 71, 72, 73, 74, 75, 76 | | |
| Office of the United Nations High Commissioner for Refugees | | 29 | | 52 | | | | |
| World Food Programme | | | | 57 | | | | |
| Secretariat of the United Nations Framework Convention on Climate Change | 18 | | | | | | | |
| Secretariat of the United Nations Convention to Combat Desertification | 18, 19, 20 | | | | | | | |
| Secretariat of the United Nations Convention on Biological Diversity | 18 | | | | | | | |
| United Nations Institute for Training and Research | 19 | 26, 27, 29, 30 | | | | | | |
| Food and Agriculture Organization of the United Nations | 12, 13, 14, 16, 17, 18, 19, 22 | 26 | 49 | 57 | | | | |
| United Nations Educational, Scientific and Cultural Organization | 12, 13, 16, 17, 18 | 26, 37, 41 | 48 | 51, 52 | | 78, 79 | | |

| <i>United Nations entity</i> | <i>Protecting the Earth's environment and managing resources</i> | <i>Human security, humanitarian assistance, development and welfare</i> | <i>Development of law and guidelines</i> | <i>Information and communication technology</i> | <i>Satellite positioning and location capabilities</i> | <i>Capacity-building and education</i> | <i>Advancing scientific knowledge</i> | <i>Other activities</i> |
|--|--|---|--|---|--|--|---------------------------------------|-------------------------|
| International Civil Aviation Organization | | 42 | 46 | | 63, 64 | | | |
| World Health Organization | 18 | 43 | 50 | 58 | 62 | 80 | | |
| International Telecommunication Union | | | | 51, 52 | 59, 63 | 81 | | |
| World Meteorological Organization | 12, 13, 14, 15, 16, 17, 19, 25 | 26, 37, 38, 39, 40, 42 | | | | 77, 81 | | |
| International Maritime Organization | 17 | | | | 63 | 81 | | |
| United Nations Industrial Development Organization | 17 | | | | | | | |

^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

3. In its resolution 54/68 of 6 December 1999, the General Assembly endorsed the resolution of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) entitled “The Space Millennium: Vienna Declaration on Space and Human Development”,¹ and urged Governments and organizations of the United Nations system to take the necessary action for the effective implementation of the Vienna Declaration. In response to that call, the Committee on the Peaceful Uses of Outer Space established 12 action teams under the voluntary chairmanship of member States to implement recommendations of UNISPACE III (see A/AC.105/822, para. 2). As at 1 January 2005, 15 entities of the United Nations system were participating in one or more of the action teams, which aim to build upon work accomplished within the United Nations system.

4. In its resolution 59/2 of 20 October 2004, following the General Assembly’s review of progress made in the implementation of the recommendations of UNISPACE III, five years after the Conference, the Assembly urged entities of the United Nations system conducting space-related activities to carry out the actions contained in the Plan of Action proposed by the Committee on the Peaceful Uses of Outer Space in its report on the review of the implementation of the recommendations of UNISPACE III to the Assembly (see A/59/174). Those actions focus on using space to support overarching global agendas for sustainable development, developing coordinated global space capabilities, using space to support specific agendas to meet human development needs at the global level and developing overarching capacity.

5. In its resolution 59/116 of 10 December 2004, the General Assembly noted the increased efforts of 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”)² and the joint initiative taken by the Committee and the Inter-Agency Meeting to compile a list of space-related initiatives and programmes that correspond to recommendations contained in the Johannesburg Plan of Implementation;³ 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 reaching the goals of the United Nations Millennium Declaration (General Assembly resolution 55/2), in particular in the areas relating to, inter alia, food security and increasing opportunities for education; and 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 Technical Subcommittee on the work conducted at its annual session.

6. Two Earth Observation Summits, the first held in Washington, D. C. on 31 July 2003 and the second in Tokyo on 25 April 2004, promoted the development of a comprehensive, coordinated and sustained Global Earth Observation System of Systems with a view to, among other things, improving coordination of strategies and systems for observations of the Earth, identifying measures to minimize gaps and preparing a 10-year implementation plan. At present, 55 countries and 29 international organizations, as well as the European Commission, are working on

the 10-year implementation plan, which would contribute to enhancing capacity for sustainable development.

7. The Department of Peacekeeping Operations was instrumental in developing a United Nations system contract for purchasing very high-resolution satellite imagery from different commercial vendors. The contract has been effective since May 2004 and covers such satellite sensors as Ikonos, Quickbird, EROS and SPOT 5, which offer access to imagery at resolutions from 60 centimetres to 5 metres that can be integrated into other geographical information and mapping systems to support United Nations operations and other activities. The contract offers all United Nations entities the possibility of purchasing imagery at discounted prices, using multi-agency licensing options that allow sharing the data system-wide. The Cartographic Section of the Department is the focal point for the contract.

8. The Department of Peacekeeping Operations and other United Nations entities will increase cooperation with other institutions, such as the Joint Research Centre of the European Commission, the European Union Satellite Centre and the Committee on Earth Observation Satellites (CEOS), to leverage external resources for the benefit of United Nations operations. Invited to convey specific needs of the United Nations entities to space data providers, the Department will continue to participate, as user vice-chair, in the Working Group on Information Systems and Services of CEOS.

9. Under its subprogramme on information, communication and space technology, ESCAP will continue to implement the second phase of the Regional Space Applications Programme for Sustainable Development (RESAP II). ESCAP will organize the eleventh session of the Intergovernmental Consultative Committee on the Regional Space Applications Programme for Sustainable Development in Asia and the Pacific, to be held in the Islamic Republic of Iran in 2005, to follow up on the recommendations of the second Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, organized by ESCAP and hosted by the Government of India in New Delhi from 15 to 20 November 1999. The sixtieth session of ESCAP agreed to organize the third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific in 2007. Regional preparatory activities will be held in 2005 and 2006 with the participation of regional and international development organizations with space-related programmes.

10. ECA organized the African Regional Preparatory Conference for the second phase of the World Summit on the Information Society on the theme "Access: Africa's key to an inclusive information society", which was held in Accra from 2 to 4 February 2005. The Conference has ensured the establishment of a strategic and interdependent digital partnership to promote economic growth and human development on the continent. An ad hoc expert group meeting, on geographical data as a national asset, to be held in April 2005, will discuss how geographical information resources can support the creation and maintenance of national addressing systems in the context of national geographical data assets. In April 2005, ECA will also hold the fourth meeting of the Committee on Development Information, the Subcommittee on Information and Communication Technologies and the Subcommittee on Geo-Information.

11. In 2005, WHO will present to its Executive Board and to the General Assembly its newly developed e-health (formerly telemedicine) strategy for the Organization, which supports target 18 of the goals identified in the United Nations Millennium Declaration (see A/56/326). The first phase has already offered a platform for WHO and the International Telecommunication Union (ITU) to coordinate their strategy in this area, for example in the context of the Telemedicine Alliance Bridge, which is an initiative financed by the telemedicine activities of WHO, ITU, the European Commission and the European Space Agency (ESA). During the second phase, which has already begun, each WHO cluster will define its respective strategy regarding e-health. During the third phase, support and guidelines will be given to countries for the conception of their own strategy. During that last phase, it is, for example, planned to combine the infrastructure layers of information and communication technology with the availability of health services into a geographical information system (GIS) in order to consider the accessibility to health care and information and communication technology solutions that could be put in place in remote areas.

III. Current and forthcoming space-related activities

A. Protecting the Earth's environment and managing resources

12. The Office for Outer Space Affairs, ESCAP, UNEP, FAO, UNESCO, the Intergovernmental Oceanographic Commission (IOC) of UNESCO and WMO will continue to contribute to the work of CEOS as associate members. Members of the CEOS Working Group on Education, Training and Capacity-Building, which is co-chaired by the Office for Outer Space Affairs and UNESCO, include ESCAP, UNEP, FAO, IOC and WMO.

13. FAO, the International Council for Science (ICSU), UNEP, UNESCO and WMO will continue to participate in the Global Terrestrial Observing System (GTOS) with the GTOS secretariat, which is hosted by the FAO Environment and Natural Resources Service of FAO (see www.fao.org/gtos). Key activities of GTOS include the Terrestrial Ecosystem Monitoring Sites (TEMS) database, the Terrestrial Carbon Observation project, the Global Terrestrial Network and the Net Primary Productivity project.

14. The Global Climate Observing System (GCOS), supported by ICSU, UNEP, IOC and WMO, has completed the development of the Implementation Plan for the Global Observing System for Climate in support of the United Nations Framework Convention on Climate Change.⁴ The Plan calls for 131 actions to address the critical issues related to global observing systems for climate, to be implemented over five years. At least 10 of the actions are focused directly on establishing and maintaining reliable, long-term satellite systems, which adhere to the GCOS climate monitoring principles, and on producing global data products from the observations that those systems obtain. The Plan identified "agents for implementation", which include WMO, IOC, UNEP, FAO and other national and international space agencies and intergovernmental organizations.

15. ICSU, UNEP, IOC and WMO continue to cooperate closely in the development, planning and implementation of the Global Ocean Observing System (GOOS).
16. A number of partners, including CEOS, UNEP, FAO, UNESCO, IOC, WMO, ICSU and the International Group of Funding Agencies for Global Change Research, will continue to work on the implementation of the Integrated Global Observing Strategy (IGOS) and various related themes.
17. The IOC Regional Ocean Observing and Forecasting System for Africa (ROOFS-AFRICA) project, which aims at improving forecasts in environmental changes and disaster management in Africa using satellite images and in situ instruments, is now implemented jointly by UNESCO, ECA, UNEP, the United Nations Development Programme (UNDP), FAO, the International Maritime Organization (IMO), WMO and the United Nations Industrial Development Organization. The ROOFS-AFRICA project was developed in line with the Action Plan of the Environment Initiative of the New Partnership for Africa's Development and the development goals set out in the United Nations Millennium Declaration.
18. UNEP, UNDP, FAO, UNESCO, WHO, the secretariats of the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa,⁵ and the Convention on Biological Diversity,⁶ are involved in the Millennium Ecosystem Assessment project.
19. ECA, UNEP, the UNDP Drylands Development Centre, UNITAR, FAO, UNESCO, WMO and the secretariat of the United Nations Convention to Combat Desertification continue to support the Sahara and Sahel Observatory, which runs the Long-term Ecological Monitoring Observatories Network (ROSELT) to promote and support long-term programmes for environmental monitoring in arid zones affected by land degradation with the use of remote sensing data.
20. Jointly with the secretariat of the United Nations Convention to Combat Desertification and UNEP, ESCAP implements a technical assistance project of the Asian Development Bank and the Global Environment Facility on the prevention and control of dust and sand storms in North-East Asia. In 2005 and in later years, ESCAP plans to promote and carry out a subregional project on the use of the Advanced Land Observing Satellite (ALOS) and the Environmental Satellite (ENVISAT) for Earth's environmental applications, in close cooperation with the Japan Aerospace Exploration Agency (JAXA).
21. ECA, as a secretariat of United Nations–Water-Africa (formerly the Inter-agency Group for Water in Africa), will continue to support the further development of the Earth Observation for Integrated Water Resources Management in Africa (TIGER) Initiative of ESA. The Initiative has adopted the Africa Water Vision 2025 as its fundamental framework. The long-term implementation programme of the Vision is designed to coincide with the International Decade for Action, "Water for Life", 2005-2015.
22. ESCAP and FAO will work on the second phase of the project on development and applications of a multi-purpose environmental and natural resource information base for food security and sustainable development in South-East Asia (ASIACOVER).

23. The Africa regional office of the Division of Early Warning and Assessment of UNEP continues to coordinate the technical implementation of the Africa Environmental Information Network in response to the request of the African Ministerial Conference on the Environment.

24. The West Asia regional office of the Division and the UNEP Regional Office for West Asia continue to work with the secretariat of the Millennium Ecosystem Assessment project and partner institutions in Egypt, Morocco and Saudi Arabia on the Arab Region Millennium Ecosystem Assessment: Supporting Decision-Making for the Sustainable Use of Ecosystems. The project, which is expected to be completed in 2006, aims at providing policy makers with a targeted overview of the state of knowledge on critical questions that confront decision makers in the context of environmental conventions, sustainable development planning and national environmental policy.

25. The World Climate Research Programme of WMO has proposed a new strategic framework for its activities in the period 2005-2015 entitled "Coordinated Observation and Prediction of the Earth System", which aims at facilitating the prediction of Earth system variability and change for use in practical applications of direct relevance, benefit and value to society. In coordination with GCOS, WMO has developed a project that deals with integration of satellite data into global, high-quality climate products that are used to characterize the present climate, to validate climate simulations and to serve as a reference for climate change projections. A major component of the project, which is at present under discussion with space agencies, is the reprocessing of satellite data, covering the last 20-30 years, in order to obtain key climate variables with the best possible accuracy and temporal homogeneity.

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

26. UNEP, UNDP, UNITAR, FAO, UNESCO and WMO will continue to support the Regional Training Centre for Agrometeorology and Operational Hydrology and Their Applications (AGHRYMET), which aims at increasing agricultural production in the member countries of the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS).

27. The Office for Outer Space Affairs continues to act as a cooperating body of the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (the "International Charter 'Space and Major Disasters'"), a mechanism through which United Nations entities can request and receive satellite images to support their disaster response activities in the field. Since the Office became a cooperating body of the Charter in 2003, the United Nations system has requested imagery in response to the Indian Ocean tsunami disaster; floods in the Dominican Republic, Haiti, Namibia and Nepal; an explosion at a train station in the Democratic People's Republic of Korea; earthquakes in Afghanistan, Indonesia and Morocco; and landslides in the Philippines. United Nations entities have used the Charter, primarily, through the United Nations Organization Satellite (UNOSAT) service, which is coordinated by UNITAR and implemented by UNOPS. The UNOSAT service is a single point of

entry for facilitating the use of satellite imagery in combination with geographical information systems (GIS) by the United Nations humanitarian agencies.

28. Fifteen entities of the United Nations system participated in the second meeting “United Nations and the International Charter ‘Space and Major Disasters’”, held in Geneva on 15 October 2004. At that meeting, United Nations entities agreed to continue to build upon the opportunities provided by the Charter and to work with United Nations resident representatives and humanitarian coordinators in order to support national institutions through the United Nations field offices. Such cooperation could consolidate a partnership of institutions committed to helping individual countries build capacity, raise awareness and use satellite imagery for emergency response. The United Nations entities that participated in the meeting also committed themselves to working together to extend the work carried out so far for natural and technological disasters to complex emergencies and epidemiological, humanitarian and security disasters.

29. The UNOSAT service continues to develop and disseminate satellite-based services and products for humanitarian relief and disaster prevention. In the Darfur region of the Sudan, the UNOSAT service and its partners are disseminating imagery for field activities to bring humanitarian relief to the displaced populations. In the context of the same crisis, the UNOSAT service and the Office of the United Nations High Commissioner for Refugees (UNHCR) conducted an innovative activity to search for underground potable water in eastern Chad to cover the needs of the increasing refugee population from the Sudan. In 2004, the UNOSAT service assisted the Department of Peacekeeping Operations in conflict prevention and peacemaking programmes. The UNOSAT service carried out humanitarian relief and disaster management activities in the context of the “Respond” consortium lead by Global Monitoring for Environment and Security, a joint initiative of the European Commission and ESA.

30. The UNOSAT service continues to provide satellite imagery for risk assessments in the Matagalpa river basin of Nicaragua, for improved planning to minimize the risk of damage from landslides. The UNOSAT service is seeking donor funding to expand the project and replicate it in other regions. In that context, the UNOSAT service launched the Global Mapping Grant Facility, a global initiative aiming at gathering funding and capacity to transfer knowledge, imagery and skills to developing countries where the benefits of Earth observation applications hold the greatest potential.

31. The Department of Peacekeeping Operations uses satellite and aerial imagery for the development of large-scale maps to support the movements, operations and planning of peacekeeping troops and to improve staff security and emergency preparedness in the field. In 2005, such mapping projects will be carried out for peacekeeping missions in Burundi, the north of Liberia, the Sudan and the Golan Heights between Israel and the Syrian Arab Republic. The Department will use satellite imagery to prepare boundary demarcation maps in the ongoing Eritrea-Ethiopia Boundary Commission and the Cameroon-Nigeria preliminary boundary demarcation.

32. In anticipation of future crises and for any emergency requirements, the Department actively collects, acquires and stores different space-borne data sets of large geographical areas, including full country satellite image mosaics, often in

time series, to be able to respond quickly. Such data, including very high-resolution coverage (as licensed) or detailed geographical feature (vector) data extracted from very high-resolution imagery by the Department are available to other United Nations entities, if requested.

33. ESCAP is promoting institutionalization of regional cooperative mechanisms for operational access and utilization of disaster management-oriented space information services and products. Under RESAP II, ESCAP continues to develop and implement regional cooperative projects and activities on space technology applications for natural disaster monitoring and reduction at the national and regional levels, including a project on capacity-building for disaster management in Asia and the Pacific, supported by the Government of France and ESA.

34. The UNEP Division of Early Warning and Assessment and the Global Resource Information Database (GRID)-Europe, supported by the secretariat for the International Strategy for Disaster Reduction (ISDR), continue to maintain the interactive application, known as the Project for Risk Evaluation, Vulnerability, Information and Early Warning (Preview). Using both UNEP and ISDR resources, most Preview data sets were updated to incorporate 25 years of data (1979-2003). Preview now includes data on cyclones, earthquakes, floods, forest fires, tsunamis and volcanoes, as well as a new application providing frequency and exposure to hazards (see <http://www.grid.unep.ch/preview>). The Preview-Internet Map Server (IMS) application is now used by ISDR for its country profiles, which were developed with the technical support of GRID-Europe (see www.unisdr.org/eng/country-inform/philippines-hazard.htm and www.unisdr.org/eng/country-inform/introduction.htm).

35. UNEP, the Division of Early Warning and Assessment/GRID-Europe has provided modelling and technical support to the Bureau for Crisis Prevention and Recovery of UNDP to prepare the Disaster Risk Index in order to identify risk and vulnerability through comparing countries. The report, entitled *Reducing Disaster Risk: A Challenge for Development*,⁷ launched officially by UNDP in February 2004 and jointly presented with GRID-Europe (see www.undp.org/bcpr/disred/rdr.htm). An online interactive application has been designed by GRID-Europe for UNDP to provide access and full visibility to the statistics (see <http://gridca.grid.unep.ch/undp/>).

36. The UNEP Regional Office for Europe, the Division of Early Warning and Assessment/GRID-Europe and GRID-Arendal in Norway will continue their collaboration on environment and security. In 2004, major assessments of environmental “hot spots” and security issues were carried out for the southern Caucasus, Central Asia and old industrial and mining sites in South-Eastern Europe.

37. The UNESCO and WMO Flood Initiative, which focuses on integrated flood management, will use information obtained from satellite observations. In October 2004, the Intergovernmental Council of the International Hydrological Programme of UNESCO and the WMO Commission for Hydrology endorsed a concept paper that defined the mission of the Initiative. The first joint meeting of the WMO/UNESCO task team for the development of the Initiative will be held in early 2005. Some countries have already expressed interest in supporting the Initiative.

38. The International Flood Network (IFNet), which is chaired by WMO and involves ISDR and ESCAP, is promoting the Global Flood Alert System, a

programme for mitigating flood damage. The system will be operated by various cooperating parties, including JAXA. This project can create precipitation maps worldwide every three hours and thereby assist flood forecasting and warning systems in developing countries without telemetric networks.

39. The WMO Hydrology and Water Resources Programme supports capacity-building in flash flood forecasting, an activity lead by WMO with the support of the National Weather Service of the National Oceanographic and Atmospheric Administration of the United States of America and the Department of Social and Economic Affairs of the Secretariat. An international conference to address various facets of flash floods will be held in Costa Rica in September 2005. The conference will discuss the use of satellite information to improve the forecasting of flash floods.

40. The Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology continues to use oceanographic satellites for both marine data collection and the dissemination of information to marine users.

41. The Division of Water Sciences of UNESCO will develop a regional strategy for the implementation of national projects in Africa as part of the TIGER/Space Hydrology International Partnership (SHIP) project. The project, which is based on the recommendations of the World Summit on Sustainable Development, aims at building national capacities in water resource management.

42. ICAO and WMO continue to be involved in the operation of the World Area Forecast System (WAFS). WMO will contribute to the development of the meteorological component of the ICAO communications, navigation and surveillance/air traffic management (CNS/ATM) systems, which involve the use of satellite systems to support the required air navigation performance and will contribute to increased aviation safety. WMO will continue to provide satellite-based information on volcanic ash, tropical cyclones and other severe weather hazards, in particular in the tropics, which is critical for enhancing the safety, regularity and efficiency of aviation operations.

43. The WHO Regional Office for the Eastern Mediterranean will assess, using satellite images and GIS, the vulnerability of the countries in the region by overlaying the mapped extension of various natural hazards over population distribution maps. The project will help countries develop natural disaster reduction programmes. The WHO Regional Office for the Americas will use large-scale images to depict the limits of localities in the project on sustainable alternatives to DDT-pesticides for malaria control in Mexico and Central America.

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

44. On 8 January 2005, the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, adopted by the International Conference on Emergency Telecommunications in 1998 in Tampere, Finland, came into force. The Tampere Convention describes the procedures for telecommunication assistance, recognizing the right of a State to direct, control and coordinate assistance provided under the Convention within its territory. It requires

States to make an inventory of resources, both human and material, available for disaster mitigation and relief and to develop a telecommunication action plan that identifies the steps necessary to deploy those resources. The Convention is the first treaty to provide privileges and immunities to the staff of non-governmental organizations and it exempts relief agencies from taxation and duties. It also facilitates non-governmental organizations' and implementing partners' use of telecommunications when they are working in tandem on disasters with United Nations entities or the International Federation of Red Cross and Red Crescent Societies. The United Nations Emergency Relief Coordinator acts as operational coordinator of the Tampere Convention.

45. The Office for Outer Space Affairs will continue to organize workshops on space law within the framework of the United Nations Programme on Space Applications. The objectives of the workshops include developing expertise and capacity in national and international space law and increasing international cooperation in space law. The 2004 workshop on space law, entitled "Disseminating and developing international and national space law: the Latin America and Caribbean perspective", was co-organized and hosted by the Associação Brasileira de Direito Aeronáutico e Espacial and the Government of Brazil and was held in Rio de Janeiro, Brazil, from 22 to 25 November 2004. A similar workshop is planned for Nigeria in 2005.

46. At its forty-third session, the Legal Subcommittee established an open-ended ad hoc working group to continue, between its forty-third and forty-fourth sessions, the consideration of the question of the appropriateness of the United Nations acting as supervisory authority under the preliminary draft protocol on matters specific to space assets to the Convention on International Interests in Mobile Equipment, opened for signature at Cape Town, South Africa, on 16 November 2001. ICAO will continue to share with the Office its experience in becoming supervisory authority for the Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Aircraft Equipment.⁸ The ad hoc working group will prepare a report and the text of a draft resolution to be submitted to the Subcommittee at its forty-fourth session, in 2005.

47. ESCAP will continue to promote the operationalization of space technology applications, in particular for rural development, improved quality of life and efforts to bridge the digital divide. Recognizing the importance of policy and institutional issues and strategies in the operationalization process in developing countries, in particular least developed countries, ESCAP will continue to conduct studies aimed at developing policies and guidelines, to be adopted by ESCAP members and associate members, for integration of space-based information and communication technologies in national development programmes.

48. Based on the recommendations of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) and the comments on those recommendations received from the Committee on the Peaceful Uses of Outer Space, UNESCO will develop activities on education, research and awareness-raising in the ethics of outer space, both within and outside the space community. Following the success of the Conference on a Legal and Ethical Framework for Astronauts in Space Sojourns, held on 29 October 2004 at UNESCO headquarters, in Paris, and co-organized with the European Centre for Space Law, UNESCO will organize similar events on other space-related topics.

49. In 2005, FAO will finalize a second draft of the United Nations Minimum Field Subset for the International Organization for Standardization (ISO) metadata profile, which will be based on the ISO 19139 Geographic information-Metadata-Implementation Specification. The FAO land cover classification system (LCCS) is proposed as an ISO standard (www.glcen-lccs.org/). FAO also plans to expand LCCS to quantify carbon stores allowing the future prospect of being able to model carbon fluxes to a degree of spatial accuracy that has been previously impossible.

50. Through the United Nations Geographic Information Working Group, WHO will continue to participate in one of the ISO technical committee's working groups for standard representation of latitude, longitude and altitude for geographic point locations.

D. Utilizing and facilitating information and communication technology for development

51. UNESCO and ITU continue to initiate pilot projects on educational applications of interactive television. UNESCO and the ITU Telecommunication Development Bureau will continue interactive television distance learning via very small aperture terminal (VSAT) pilot projects for primary teachers in India and Morocco.

52. In a project for refugees in the Lukole refugee camps in the United Republic of Tanzania, ITU, UNHCR and UNESCO continue to support the development of multi-purpose community telecentres making use of WorldSpace content and the low-Earth orbit electronic mail system of Volunteers in Technical Assistance and VSAT facilities.

53. In 2005, the Department of Peacekeeping Operations of the Secretariat will make available approximately 20 terabytes in central data storage capacity for storing satellite imagery for future needs. The available data will be connected to online map services and/or three-dimensional visualization tools for the available data in order to contribute to decision support systems both at the headquarters level and in the field missions. In cooperation with other United Nations entities and if resources permit, such services and tools may be made available on the United Nations Intranet and Extranet.

54. The Department will continue to use space-based communications between its headquarters, the United Nations Logistics Base at Brindisi, Italy, and its 16 current peacekeeping missions. Dedicated communications teams manage large allocations of satellite bandwidth for effective communications between missions. The Department's satellite communications capacity is also used for the benefit of all the other United Nations entities present in the field.

55. Within RESAP II, ESCAP will develop and implement regional cooperation projects on applications of satellite communications for sustainable development. ESCAP will continue to prepare the region for satellite broadband services and applications and carry out activities related to that. In that regard, in 2005, ESCAP will organize a meeting of the Regional Working Group on Satellite Communication Applications, in conjunction with the expert group meeting on broadband satellite electronic centres. In cooperation with other organizations, ESCAP will continue to

implement the road map towards an information society in Asia and the Pacific,⁹ with space applications playing an integral part in bridging the digital divide in Asia and the Pacific.

56. In the framework of the strategic partnership between UNEP and the Environmental Research and Wildlife Development Agency of the United Arab Emirates, the Division of Early Warning and Assessment and the UNEP Regional Office for West Asia have carried out global and regional studies on experiences and best practices in development and the management of environmental data and information systems for the Abu Dhabi Global Environmental Data Initiative (AGEDI). The studies are used in guiding the design, development and implementation of AGEDI. At the regional level, 16 country and regional institution studies were prepared and incorporated into one regional integrated report. The outcomes of the studies will also be used to develop a regional environmental information strategy and regional design for AGEDI, addressing the spatial environmental data infrastructure.

57. FAO is committed to implementing the Open Geospatial Consortium interoperability standards. FAO makes its spatial data available through such standards with over 100 layers currently accessible through the Web Map Service (WMS). WMS, together with the Web Coverage Service (WCS), will serve the Advanced Real-Time Environmental Monitoring Information System (ARTEMIS) image archive. WMS and WCS are provided through the FAO GeoNetwork, an Internet-based spatial information catalogue. GeoNetwork provides a dynamic user access to a wide range of spatial data and information within and outside FAO. GeoNetwork also provides a data management and storage facility (www.fao.org.geonetwork). UNEP, FAO and the World Food Programme are developing the second version of GeoNetwork.

58. In line with providing countries with guidelines for development and implementation of an e-health strategy and as an example of the initiatives undertaken as part of the WHO e-health strategy, WHO will launch a Global Observatory of e-Health systems. The Global Observatory will work with cross-sectoral and national partners to document and analyse developments and trends in e-health systems in order to provide information on policies and practices in member States. The Observatory will be designed to capture current status and anticipate emerging challenges and to accommodate the rapid pace of technology change in countries. In this regard, WHO and the International Society for Telemedicine plan to develop a joint work plan for the period 2005-2006.

E. Utilizing and improving satellite positioning and location capabilities

59. In cooperation with the Government of the United States, the Office for Outer Space Affairs organized a series of regional and international workshops and meetings from 2001 to 2004 related to global navigation satellite systems (GNSS). Those activities have served to support recommendations made by the Action Team on Global Navigation Satellite Systems, established by the Committee on the Peaceful Uses of Outer Space to promote GNSS applications, in particular in developing countries. In 2005, ITU and the Office for Outer Space Affairs will

contribute to the establishment of an international committee on GNSS that will, among other things, serve to exchange information between providers of GNSS systems and their augmentations and major user groups, address issues of interference with the electromagnetic signal and build capacity in developing countries.

60. The Department of Peacekeeping Operations continues to actively use the Global Positioning System (GPS) in its peacekeeping missions, for their military and civilian components. The Department will participate in the work of the new United Nations Geographic Information Working Group GPS Task Force to improve the procedures to address GPS data collection and storage. Data corrections could then be uniformly applied using the newly available European Satellite Navigation System/European Geostationary Navigation Overlay Service (Galileo/EGNOS) or the Navigation Satellite Timing and Ranging (Navstar)/wide-area augmentation system (WAAS) data, which will lead to very accurate and valuable ground truth data that is needed to improve other geographical data used by United Nations entities in the same operational areas.

61. The Department is evaluating options and plans to test and install GPS differential base stations, on a pilot basis, in some of its missions. One such GPS differential base station is planned for 2005. The stations will be used to provide real-time corrections to staff in the field as well as to vehicles on missions in the area of operations. Several missions have expressed an urgent need for such real-time navigational aids, especially in harsh weather conditions, at high altitudes and in difficult terrain. The corrections, combined with more accurate map data provided to the field missions, will help improve the efficiency and security of United Nations staff and military teams of peacekeeping missions during their operations in the field. Based on agreements and coordination with other United Nations entities, the corrections broadcast could be used by those entities operating in the areas of coverage.

62. The WHO Regional Office for the Americas will continue to develop technical guidelines and operational procedures for GPS surveillance of households located in malaria high-risk areas. For 2005 and 2006, the Regional Office and the Ministry of Health of Brazil are developing a project, which will use GIS and GPS devices to reduce morbidity and mortality due to road accidents in Brazil.

63. The ICAO Eleventh Air Navigation Conference, held in Montreal, Canada, from 22 September to 3 October 2003, reconfirmed the ultimate goal of transition to satellite-based navigation for all phases of flight and developed guidance for gradual introduction of GNSS. Following adoption of the initial set of standards and recommended practices for GNSS, ICAO is developing similar standards and recommended practices for ground-based regional augmentation systems and for new GNSS elements such as the modernized Global Positioning System of the United States, the Global Navigation Satellite System (GLONASS) of the Russian Federation and the European Galileo system. On matters related to navigation policy and the radio frequency spectrum, ICAO coordinates its work with IMO and ITU, respectively.

64. ICAO continues to coordinate closely with the International Satellite System for Search and Rescue (COSPAS-SARSAT) in matters relating to the carriage by aircraft of emergency locator transmitters (ELTs). ICAO provisions require

progressive implementation of new design ELTs operating on 406 megahertz (MHz) and 121.5 MHz simultaneously. The 121.5 MHz signal emanates from a low-powered transmitter to facilitate final homing procedures. This requirement ensures that full advantage is taken of the current COSPAS-SARSAT system, which provides more reliable, accurate and timely accident alert and location data through digitized transmissions from 406 MHz ELTs, and that civil aviation will not be affected by the COSPAS-SARSAT decision to terminate the satellite processing of 121.5 MHz signals from 1 February 2009. At the same time, research and tests that were carried out for 406 MHz ELTs demonstrated that technical requirements for such beacons could be relaxed without affecting system performance, allowing for lower cost designs.

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

65. At its twenty-fifth session, the Inter-Agency Meeting on Outer Space Activities started to consider the possibility of creating inventories of equipment, education and training materials, satellite data sets and other capacity-building resources that were provided by United Nations entities carrying out national or regional technical cooperation projects in the field. If created through an inter-agency effort, the inventories would be available to all entities of the United Nations system so that future technical cooperation projects or other development activities could build upon the existing capacity.

66. In its resolution 59/2 of 20 October 2004, the General Assembly agreed that the activities of the United Nations Programme on Space Applications should be clustered, to the extent feasible, to address a few priority themes to be selected by the Committee for each year. In 2004, the Office for Outer Space Affairs streamlined the activities of the United Nations Programme on Space Applications. The priority areas of the Programme 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. Other areas that the Programme will focus on include developing capability in enabling technologies, such as the use of GNSS and GPS; disseminating spin-off benefits of space technology; promoting the participation of youth in space activities; promoting the applications of small satellites and micro-satellites; and promoting the participation of private industry in the activities of the Programme.

67. In cooperation with the Regional Centre for Training in Aerospace Surveys and the Regional Centre for Mapping of Resources and Development, ECA will provide advisory and consultancy services to member countries, regional bodies and other institutions concerned with the application of remote sensing and GIS and education. In cooperation with the Regional Centre for Training in Aerospace Surveys, ECA will also continue to work with various Nigerian government agencies on issues related to GIS, especially on the implementation of the National Geospatial Data Infrastructure, for which the Regional Centre serves as consultant to an agency that coordinates the project.

68. In collaboration with other organizations, ECA continues to provide educational opportunities in information and communication technology and space technology. In 2005, ECA will organize a seminar on cooperative mechanisms for management of information resources and services and two subregional training workshops on spatial data standards, clearing houses and metadata. In 2006, ECA will organize a subregional seminar on information management and services with special attention to geospatial products.

69. In the context of its Regional Space Applications Programme for Sustainable Development, ESCAP will continue to organize regional workshops and seminars on space technology applications for natural disaster management, poverty alleviation, broadband satellite communication distance education and telemedicine, aiming at building national capacity in using space-based technologies for improved quality of life in Asia and the Pacific. Under its technical cooperation among developing countries programme, ESCAP will provide fellowships to applicants from the least developed and developing countries in the region to attend training courses at educational institutions in China, India and Indonesia. ESCAP will also provide, upon request by Governments in the region, technical advisory services on space technology applications for sustainable development and ICT, through its Regional Adviser on Information and Communication Technology Policies and Strategies.

70. UNEP will continue to develop data access agreements in Asia and the Pacific with cooperating institutions of the Association of South-East Asian Nations, the Mekong River Commission, the International Centre for Integrated Mountain Development, the South Asia Cooperative Environment Programme in Colombo and the South Pacific Regional Environment Programme, as well as with other small intergovernmental organizations.

71. UNEP/GRID-Europe of the Division of Early Warning and Assessment published five early warning briefing notes under the general theme of "Early warning on emerging environmental threats" in both English and French, and finalized an assessment on global landslides in collaboration with the Norwegian Geotechnical Institute for the "Hot spots" project.

72. UNEP/GRID-Sioux Falls, in cooperation with the National Aeronautics and Space Administration of the United States, the United States Geological Survey, the Earth Satellite Corporation (EarthSat) and the University of Maryland, continue to distribute Land Remote Sensing Satellite (Landsat) data sets containing 1970s, 1990s and 2000 Landsat series of satellite information (over 23,000 images with complete coverage of the Earth's surface) to 168 countries to strengthen their capacity to monitor environmental changes and enhance the scientific basis for decision-making. The Office for Outer Space Affairs will assist in distributing those Landsat data sets directly to interested African institutions, which will also be provided with support in the use of the data. In 2005, together with UNEP, the Office for Outer Space Affairs plans to evaluate the effective access and use of those data.

73. UNEP/GRID-Sioux Falls studied rapid environmental changes in Lake Chad in West Africa, the Sundarbans along the India-Bangladesh border, Irian Jaya in Indonesia, the Paranaense Forest near the Iguazú Falls at the juncture of Argentina, Brazil and Paraguay and the Atatürk Dam and the Harran Plain in south-eastern

Turkey. The studies are highlighted in a publication entitled “Analysing environmental trends using satellite data: selected cases”.¹⁰ Analysing the changes, by examining satellite data over various periods, can provide scientific evidence and an early warning of the potential long-term consequences of development decisions.

74. The Division of Early Warning and Assessment and UNEP regional resource centres in Europe, North America and elsewhere have contributed to the preparation of a publication “One Earth: many people; images of change” that focuses on telling the story of environmental change through satellite imagery, photos and text. The publication, which will be printed in 2005, includes a brief history of population growth, culture, energy consumption, land use and mining and eco-regions, and is followed by a section on changes in Earth cover over time.

75. UNEP has assisted Bahrain, Jordan and Yemen in developing frameworks for national state-of-the-environment reports. It also developed a regional strategy for capacity-building and a database on training assessment institutions in West Asia. UNEP has been assisting the Environment Protection Authority in Yemen and the Regional Organization for the Protection of Marine Environment in developing their frameworks for environmental information system. To advance the development and use of environmental indicators, the Division of Early Warning and Assessment and the Regional Office for West Asia developed guidelines on the development and use of environmental indicators in the region.

76. The Division of Early Warning and Assessment and the Regional Office for West Asia has developed three knowledge-base compact discs on environmental assessment for Bahrain, Jordan and the United Arab Emirates. The Regional Office for West Asia is preparing to distribute to countries and relevant regional organizations in the region the Landsat thematic mapper (TM) data coverage from 1990 and 2000.

77. WMO will continue to grant fellowships under its Voluntary Cooperation Programme and its regular budget, as well as through UNDP and trust funds, for studies or training in meteorology, climatology and operational hydrology, including studies and training in satellite meteorology. Fellowships will be provided to trainers in WMO regional meteorological training centres and to representatives of WMO member States participating in training courses jointly organized or co-sponsored by other agencies and organizations.

78. Within its Space Education Programme, UNESCO plans to organize pilot training courses for educators on space science and technology in selected test areas, in cooperation with the regional centres for space science and technology education, affiliated to the United Nations, located in Asia and in Latin America.

79. In line with the recommendations of the forty-seventh session of the Committee on the Peaceful Uses of Outer Space, held in June 2004, the Office for Outer Space Affairs and UNESCO will produce a series of thematic awareness-raising materials underlining the contribution of space technology to sustainable development and its benefits for society. Those materials will be a contribution to the United Nations Decade of Education for Sustainable Development (2005-2014) (see General Assembly resolution 57/254), which is being coordinated by UNESCO.

80. In the area of user-friendly decision-support tools and software, WHO will continue to support the development and customization of GIS software and to

provide technical training on various GIS applications. In 2004, several WHO regional offices prepared the HealthMapper tool in local languages, including in Chinese and Vietnamese. The WHO Regional Office for the Americas will upgrade the English version of the booklet entitled “GIS: basic concepts” with the most recent procedures related to the current applications of GIS in public health in the Americas. WHO will also merge various training materials that have already been developed within the Organization in order to standardize practices. It will be carried out in the context of a task group on GNSS, which has been recently created within the United Nations Geographic Information Working Group.

81. The Office for Outer Space Affairs, ITU, WMO and IMO contributed posters as well as audio-visual and printed material to the exhibition entitled “Space technology for human development”, organized at United Nations Headquarters in October 2004. The exhibition was organized by the Office for Outer Space Affairs on the occasion of the General Assembly’s five-year review of the implementation of the recommendations of UNISPACE III.

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

82. In its resolution 59/116, the General Assembly recommended that more attention be paid and political support be provided to all matters relating to the protection and the preservation of the outer space environment, especially those potentially affecting the Earth’s environment.

83. The United Nations Programme on Space Applications will organize a workshop on the International Heliophysical Year. The thirteenth in a series of United Nations/ESA workshops on basic space science will be held in the United Arab Emirates, in November 2005. The workshop will explore how preparations for the International Heliophysical Year can contribute to sustainable development and capacity-building, in particular in developing countries, drawing on short- and long-term experience and the results of international space-related years, organized since 1957 under the umbrella of the United Nations. Particular attention will be paid to the results of the International Geophysical Year (1957) and the International Space Year (1992).

84. ESCAP will organize a meeting of the Regional Working Group on Space Science and Technology Applications, to be held in Pakistan in 2005.

H. Other activities

85. As part of its regular information service, ESCAP will prepare and disseminate publications on studies conducted within the framework of RESAP. ESCAP will launch the *Asian-Pacific Journal on Information, Communication and Space Technology*. The *Journal* will contain articles on policies, best practices and cooperation opportunities related to operationalizing space technology in Asia and the Pacific.

86. As presented at the fifth plenary meeting of the United Nations Geographic Information Working Group, the second administrative level boundaries data set

project will enter a new phase during the period of 2005-2006. Having collected a substantial amount of information on naming, historic evolution and extension of the administrative units in a large number of the Member States, the objective of the new phase will be to make the data set “reach the present” in order to answer future emergency response needs in countries.

Notes

- ¹ See *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.
- ² *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.
- ³ See *Official Records of the General Assembly, Fifty-ninth Session, Supplement No. 20* and corrigenda (A/59/20 and Corr.1 and 2), para. 28; and A/AC.105/2004/CRP.8.
- ⁴ United Nations, *Treaty Series*, vol. 1771, No. 30822.
- ⁵ United Nations, *Treaty Series*, vol. 1954, No. 33480.
- ⁶ United Nations, *Treaty Series*, vol. 1760, No. 30619.
- ⁷ United Nations publication, Sales No. E.04.III.B.2.
- ⁸ DCME Doc. No. 75 (ICAO).
- ⁹ *Regional Road Map towards an Information Society in Asia and the Pacific* (United Nations publication, Sales No. E.04.II.F.10).
- ¹⁰ United Nations Environment Programme, *Selected Satellite Images of Our Changing Environment*, 2003.