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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 2006-2007****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 2006 and 2007. The report focuses on major new initiatives and activities that are being carried out through inter-agency coordination and cooperation. The report is intended 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.

The report indicates that a number of activities are being carried out through inter-agency cooperation on 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, food security, weather and climate forecasting, disaster management 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.

* The present report was reviewed and revised by the Inter-Agency Meeting on Outer Space Activities at its twenty-sixth session, held in Paris from 18 to 20 January 2006, and finalized following the session.



Recognizing the importance of the societal benefits of space science and technology and their applications, many entities of the United Nations system have started to incorporate space-related components into their activities aimed at implementing and supporting the goals identified in the United Nations Millennium Declaration and the decisions of global conferences and summits.

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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 thirtieth 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 of the Secretariat, the United Nations Office on Drugs and Crime, the United Nations Organization Satellite (UNOSAT) service of the United Nations Office for Project Services and the United Nations Institute for Training and Research, the secretariat of the International Strategy for Disaster Reduction (ISDR), the Economic Commission for Africa (ECA), the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Environment Programme (UNEP), the World Food Programme (WFP), 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), the International Telecommunication Union (ITU), the World Meteorological Organization (WMO) and the International Atomic Energy Agency (IAEA). The participation of these and other entities of the United Nations system in outer space activities 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, 30, 31				86		
United Nations Office on Drugs and Crime		51						
Secretariat of the International Strategy for Disaster Reduction	27	33, 39, 40, 41						
Office for Outer Space Affairs	14, 21, 22	28, 31, 52	58, 59, 60		82	83, 84, 87, 88	97, 98	
Economic Commission for Africa	22, 23	47, 48, 55		67, 74	82	85, 86		
Economic and Social Commission for Asia and the Pacific	14, 24, 27	49, 52		68				100
Economic Commission for Latin America and the Caribbean						86		
United Nations Development Programme	21	30, 42, 43, 45				95		
United Nations Environment Programme	14, 15, 16, 17, 18, 19, 20, 24	33, 40, 42, 43, 44, 45, 46, 47, 53	61	62, 66, 74		87, 88, 89, 90, 91, 96		
World Food Programme		30, 35, 36, 47, 56, 57		62, 63, 64				
Secretariat of the United Nations Framework Convention on Climate Change	15, 16							
Secretariat of the United Nations Convention to Combat Desertification	24							

<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>
United Nations Organization Satellite service of the United Nations Institute for Training and Research and the United Nations Office for Project Services	22	28, 31, 35, 36, 37, 38, 39, 41, 44, 51		62, 64, 73, 74				102
Food and Agriculture Organization of the United Nations	14, 15, 16, 18	35, 36, 53, 56	61	62, 63, 64, 65		88, 89, 94		
United Nations Children's Fund		30						
United Nations Educational, Scientific and Cultural Organization	14, 15, 18, 23, 27	39		71, 74		83, 92		
International Civil Aviation Organization		50	60		78, 79			
World Health Organization		30, 31, 32, 33, 34, 52, 54		62, 70, 74	80, 81	94		
International Telecommunication Union	25			71, 72	77, 78		98, 100	
World Meteorological Organization	14, 15, 16, 17, 18, 26, 27	34, 37, 50				94, 95		
International Maritime Organization					78			
United Nations Industrial Development Organization	21							
International Atomic Energy Agency			58					

^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 the recommendations of UNISPACE III (see A/AC.105/822, para. 2).

4. In 2005, following the review of the implementation of the recommendations of UNISPACE III, seven action teams completed their work (see General Assembly resolution 59/2 of 20 October 2004). In accordance with Assembly resolution 59/2, the action teams on an environmental monitoring strategy (recommendation 1), weather and climate forecasting (recommendation 4), knowledge-sharing (recommendation 9), sustainable development (recommendation 11) and near-Earth objects (recommendation 14) continued their work on the implementation of the recommendations of UNISPACE III. As at 1 January 2006, seven entities of the United Nations system were participating in one or more of the action teams.

5. In its resolution 60/99 of 8 December 2005, the General Assembly noted with satisfaction the increased efforts of the Committee and its Scientific and Technical Subcommittee, as well as the Office for Outer Space Affairs and 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 In that 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,³ particularly in the areas relating to food security and increasing opportunities for education. The Assembly also 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 sessions.

6. In its resolution 60/99, the General Assembly agreed that the Director of the Division for Sustainable Development of the Department of Economic and Social Affairs of the Secretariat should be invited to participate in the sessions of the Committee to inform it as to how it could best contribute to the work of the Commission. The Assembly also agreed that the Director of the Office for Outer Space Affairs should participate in the sessions of the Commission on Sustainable Development to raise awareness and promote the benefits of space science and technology for sustainable development.

7. The World Conference on Disaster Reduction held in Kobe, Hyogo, Japan, from 18 to 22 January 2005 under the aegis of ISDR, in its final document, the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and

Communities to Disasters,⁴ recognized the contribution of space technologies to disaster reduction. The World Conference emphasized the need to incorporate space-based services routinely to support and enhance risk assessment, monitoring and early warning systems.⁵ The Conference also called for promoting the use, application and affordability of recent information, communication and space-based technologies and related services, as well as Earth observations, in order to support disaster risk reduction, particularly for training purposes and for the sharing and dissemination of information.⁶

8. In response to the request of the General Assembly, contained in its resolution 59/2, an ad hoc expert group was established to conduct a study on the possibility of creating an international entity to provide coordination and the means of realistically optimizing the effectiveness of space-based services for use in disaster management. The ad hoc group, composed of experts from 26 Member States, two United Nations entities and three non-governmental organizations and coordinated by the Office for Outer Space Affairs, will submit the outcome of its study to the Scientific and Technical Subcommittee at its forty-third session, to be held in Vienna from 20 February to 3 March 2006.

9. FAO and WFP assumed the chairmanship of the United Nations Geographic Information Working Group (UNGIWG), which will be working towards building the United Nations spatial data infrastructure, needed to achieve sustainable development. UNGIWG will build on the work of its six task groups, on international and administrative boundaries, core geo-database, remote sensing, interoperable services, geographical information system (GIS) map production guidelines and global navigation satellite systems (GNSS).

10. The third Earth Observation Summit, held in Brussels on 16 February 2005, endorsed a 10-year implementation plan for the establishment of a Global Earth Observation System of Systems (GEOSS). The Summit established the intergovernmental Group on Earth Observations (GEO) to carry out the 10-year implementation plan and invited United Nations specialized entities and regional organizations to join the Group and contribute to the execution of the plan. During its second plenary session, held in Geneva on 14 and 15 December 2005, GEO adopted a work plan for 2006. Also in 2005, the GEO secretariat was established in Geneva. UNEP, the Office for Outer Space Affairs, UNESCO, UNOSAT, ISDR, WHO and WMO are participating in GEO and will be contributing to the work planned for 2006 through their involvement in the scientific and technical, data utilization, architecture and capacity-building committees of GEO.

11. FAO, the International Council for Science (ICSU), the Intergovernmental Oceanographic Commission (IOC) of UNESCO, UNEP and WMO established the United Nations Inter-agency Coordination and Planning Committee (UNICPC) to support the GEO/GEOSS process and to enable a coordinated response to GEO-related issues. UNICPC replaces the former Sponsors Group for the Global Observing System. The chair of UNICPC will represent the group of agencies in the Integrated Global Observing Strategy (IGOS) Partnership, serving at the same time as IGOS Partnership co-chair. The agencies will continue to be individual participating organizations in the GEO process and related technical bodies. UNICPC held its first meeting on 24 October 2005.

12. The subprogramme on information, communication and space technology of ESCAP will continue the implementation of the second phase of the Regional Space Applications Programme for Sustainable Development (RESAP II). The status and the state of RESAP II will be evaluated at the third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, scheduled for 2007. In preparation for the Conference, a meeting with the participation of eminent members of the space community in the region is scheduled for March 2006, and the twelfth session of the Intergovernmental Consultative Committee on RESAP, in conjunction with a high-level expert group meeting on preparations for the third Ministerial Conference, will be held at Taejon, Republic of Korea, in October 2006.

13. The World Radiocommunication Conference, to be held in 2007, will consider the allocations and regulatory issues related to the Earth exploration-satellite (passive) service, space research (passive) service and meteorological satellite service.

III. Current and forthcoming space-related activities

A. Protecting the Earth's environment and managing resources

14. The Office for Outer Space Affairs, ESCAP, UNEP, FAO, UNESCO, IOC and WMO will continue to contribute to the work of the Committee on Earth Observation Satellites as associate members. Members of that Committee's Working Group on Education, Training and Capacity-Building, which is chaired by UNESCO, include the Office for Outer Space Affairs, ESCAP, UNEP, FAO, IOC and WMO.

15. FAO, 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 Environment and Natural Resources Service of FAO (see A/AC.105/841, para. 13). GTOS supports, among others, the United Nations Framework Convention on Climate Change,⁷ whose Subsidiary Body for Scientific and Technological Advice invited GTOS to report on its progress relevant to the United Nations Framework Convention on Climate Change at the session of the Subsidiary Body to be held in May 2007.

16. WMO, IOC, UNEP, FAO and other national and international space agencies and intergovernmental organizations will continue to carry out the Implementation Plan for the Global Observing System for Climate in support of the United Nations Framework Convention on Climate Change, which calls for, among other things, the establishment and maintenance of reliable long-term satellite systems and the development of global data products based on the observations obtained through those systems. The Implementation Plan was developed by the Global Climate Observing System (GCOS), sponsored by ICSU, UNEP, IOC and WMO (see A/AC.105/841, para. 14). In November 2006 the Committee on Earth Observation Satellites will report to the Subsidiary Body for Scientific and Technological Advice on a coordinated response to the needs expressed in the Implementation Plan. In that regard, in January 2006 GCOS convened an expert meeting on satellite needs for climate, which examined the satellite-based requirements mentioned in the Implementation Plan.

17. ICSU, UNEP, IOC and WMO continue to cooperate closely in the development, planning and implementation of the Global Ocean Observing System (GOOS). The GOOS climate component is overseen by the Ocean Observations Panel for Climate, which is sponsored jointly by GOOS, GCOS and the World Climate Research Programme and is implemented by member States in the context of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology. The coastal component will continue to be implemented by a number of GOOS regional alliances.

18. The Committee on Earth Observation Satellites, 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 IGOS and various related themes. The IGOS Partnership, in the context of the IGOS themes (ocean, global carbon cycle, geohazards, global water cycle, atmospheric chemistry, coasts, land, cryosphere), is coordinating its activities with GEO to support the implementation of actions to achieve selected targets of the 10-year implementation plan for GEOSS.

19. UNEP will continue its work on various initiatives involving the use of space-based data for environmental monitoring. The UNEP Division of Early Warning and Assessment-West Asia continues to work on the Arab Region Millennium Ecosystem Assessment: Supporting Decision-Making for the Sustainable Use of Ecosystems (see A/AC.105/822, para. 29, and A/AC.105/841, para. 24). The UNEP Regional Office for West Asia and the Division of Early Warning and Assessment-West Asia participated in an expert meeting on the development of a regional strategy on disaster management in the Arab region and helped in developing a framework for the strategy. They also initiated the development of a core GIS database for West Asia, based on existing spatial data sets available through international and regional organizations.

20. The UNEP Division of Early Warning and Assessment and the Global Resource Information Database (GRID)-Europe and the University of Geneva were mandated by the German Agency for Technical Cooperation to monitor climate-change impacts on water supplies around the Coropuna glacier in Peru. Landsat images were used to assess changes in glacier coverage, and a digital evaluation model from the European remote sensing satellite, the Shuttle Radar Topography Mission and the Advanced Spaceborne Thermal Emission and Reflection Radiometer was used to evaluate the decrease in ice volume. The interpretation of measurements taken during a ground mission in 2004 allowed the team to evaluate the remaining ice cover and depth.

21. The Office for Outer Space Affairs advised the Global Mercury Project, which is being carried out by the United Nations Industrial Development Organization and supported by the United Nations Development Programme (UNDP) and the Global Environment Facility, on the use of satellite-based remote sensing, to support project activities. The Global Mercury Project is aimed at promoting safer and cleaner practices in artisanal mining communities where mercury is used to process gold.

22. The Office for Outer Space Affairs, in cooperation with the European Space Agency (ESA) and the Government of Austria, is working towards launching a pilot project that will introduce space technology into the process of managing the water

resources of the Lake Chad basin in order to ensure its sustainable development. The initiative will bring together the national focal points of countries responsible for the administration of the resources of Lake Chad, experts on the use of space technology, regional and international development funding institutions, ECA and UNOSAT.

23. ECA, in its capacity as secretariat of UN-Water/Africa, and UNESCO will continue to support the further development of the ESA TIGER initiative, which is supported by the National Aeronautics and Space Administration (NASA) of the United States of America. Both entities will continue to support the initiative's Africa Water Vision 2025, whose long-term implementation plan is designed to coincide with the International Decade for Action, "Water for Life", 2005-2015".

24. ESCAP, UNEP and the secretariat of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa,⁸ will continue to implement a technical assistance project on the prevention and control of dust storms and sand storms in North-East Asia. ESCAP will promote the use of the Advanced Land Observing Satellite data through subregional pilot projects for environment-based applications. Those projects will be implemented in close cooperation with the Japan Aerospace Exploration Agency.

25. ITU is developing recommendations on ground-based meteorological aid systems using optical frequencies; spectrum aspects of active and passive sensors used for meteorological observations, vegetation cover assessment and detection of fires and oil leaks; data collection and dissemination; and interference mitigation techniques applicable in certain bands used by the Earth exploration satellite service. ITU is also developing a handbook on the Earth exploration satellite service.

26. In 2005, the World Climate Research Programme of WMO launched a new strategic framework for the period 2005-2015 entitled "Coordinated Observation and Prediction of the Earth System" (see A/AC.105/841, para. 25).

27. WMO will continue to use space-based facilities and data to promote various activities related to hydrology and water resources. The World Hydrological Cycle Observing System, which involves UNESCO, will continue to make use of the WMO Global Telecommunication System to transmit data shared among the participating countries. The International Flood Network, which is chaired by WMO and which involves ISDR and ESCAP, will continue to promote the Global Flood Alert System, an action programme for mitigation of flood damage. The system can generate precipitation maps worldwide every three hours and assist flood forecasting and warning systems in developing countries without telemetric networks. WMO will also continue to operate a capacity-building initiative on flash flood forecasting, which involves, among others, the Department of Economic and Social Affairs. The International Workshop on Flash Flood Forecasting, which will include the discussion of the use of satellite information to improve forecasting, will be held in Costa Rica from 13 to 17 March 2006.

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

28. 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 (International Charter “Space and Major Disasters”), a mechanism through which all 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, an explosion at a train station, earthquakes, landslides and volcanic eruptions. United Nations entities have used the Charter primarily through UNOSAT.

29. The Department of Peacekeeping Operations has established GIS units in major United Nations peacekeeping missions. The aim of the GIS units is to establish a capability to integrate information from various sources into digital maps of the theatre of peacekeeping operations, allowing the Department to enhance its operational readiness and capabilities. The units establish country-level GIS working groups among United Nations agencies, non-governmental organizations and host countries to improve the sharing of geospatial data and to enhance operational capabilities.

30. The Department of Peacekeeping Operations and the Office for the Coordination of Humanitarian Affairs of the Secretariat have established the Sudan Inter-agency Mapping (SIM) group. SIM is made up of GIS professionals working for non-profit humanitarian, developmental and peacekeeping initiatives. It functions in cooperation with local authorities to promote and facilitate the sharing of standardized geospatial information to enable all members to develop compatible and reliable products to assist in their operations. The members of the group include the United Nations Mission in the Sudan, the Office for the Coordination of Humanitarian Affairs, the United Nations Mine Action Service, the United Nations Joint Logistics Centre, UNDP, the United Nations Children’s Fund, WHO, WFP, the Humanitarian Information Centre for Darfur, the European Union Satellite Centre, the Sudan Central Bureau of Statistics and the New Sudan Centre for Statistics and Evaluation.

31. In response to the Indian Ocean tsunami and the South Asia earthquake, WHO extended its GIS support to analyse information on temporary camps, displaced persons, numbers of deaths and injuries and impacts on primary health-care centres and hospitals in the region. The Department of Peacekeeping Operations supported various activities in response to the tsunami in the framework of UNGIWG and the Geographic Information Support Team. The activities included collecting various digital vector layers and satellite imagery, and processing high-resolution satellite imagery with support from the United Nations Monitoring, Verification and Inspection Commission to produce tiled, compressed and geo-referenced products that could increase image portability for the field and mobile applications. UNOSAT invested considerable resources in crisis mapping in 2005. For the tsunami response, the UNOSAT website recorded 350,000 map downloads. That led UNOSAT, in cooperation with the Office for Outer Space Affairs and United Nations

humanitarian relief entities, to develop recommendations for the enhancement of the International Charter “Space and Major Disasters”.

32. WHO is currently using GIS to support humanitarian relief efforts in connection with the Pakistan earthquake and the Sudan/Darfur crisis to identify vulnerable populations and to assess needs and priorities. The WHO Regional Office for the Eastern Mediterranean (EMRO) and its humanitarian partners will continue to work with member States to ensure the availability of relevant health and hazard information, its routine analysis and its sharing with humanitarian partners before disasters occur in order to promote the use of common standards for relief efforts.

33. WHO is using satellite imagery to revise the EMRO multi-hazard and risk atlas to ensure its ability to respond to disasters. In this context, a round-table discussion has been convened in order to discuss the way forward and possible collaboration with other United Nations agencies, including ISDR and UNEP.

34. WHO, WMO, the Southern African Development Community (SADC) Drought Monitoring Centre and the International Research Institute for Climate and Society of Columbia University will continue to collaborate in routinely monitoring rainfall, temperature, humidity and flooding during the rainy season. Such information is shared with the Southern Africa Malaria Control Programme and assists in early detection of and response to malaria epidemics.

35. In 2006, WFP, FAO, UNOSAT, the Famine Early Warning Systems Network (FEWSNET), the United States Geological Survey, the two ESA-funded Global Monitoring for Environment and Security (GMES) programme service elements on food security—Global Monitoring for Food Security (GMFS) and Humanitarian Global Mapping Services (RESPOND)—and ESA will enhance their collaboration to define and acquire relevant data layers. Strengthening data availability at the country level has been identified as a key priority area that requires collaboration among partner agencies. Having pre-defined multiple geographical layers and remotely sensed data in a standardized format will enable data-sharing, reduce duplication of efforts and facilitate the harmonization of data uses.

36. WFP, in collaboration with other United Nations entities, such as FAO and UNOSAT, will continue to use satellite imagery and advanced GIS applications to support its food security and vulnerability monitoring, needs assessment and contingency and operational planning.

37. In 2005, UNOSAT and WMO signed a memorandum of understanding that enables entities of the United Nations system to benefit from early weather forecasts that UNOSAT couples with satellite imagery. The humanitarian community has made use of daily snow-cover maps of the region affected by the South Asia earthquake.

38. UNOSAT will continue its research activity, jointly with the European Organization for Nuclear Research (CERN), on the use of parallel computing (known as grid technologies) and the development of compression algorithms. In this context, UNOSAT has developed the necessary infrastructure to host, safeguard and place online a substantial volume of satellite imagery for the use of entities of the United Nations system. In the technical field, UNOSAT has worked in the GMES Services Element and the RESPOND consortium, which is overseen by ESA

and is entirely devoted to developing the humanitarian relief support component of the GMES programme. UNOSAT is also actively involved in developing synergies with other GMES components such as food security and risk management.

39. UNOSAT has contributed its mapping capacity to ensuring effective and sustainable recovery and timely warnings of natural disasters to the International Recovery Platform, a mechanism developed by the ISDR secretariat, and the Global Disaster Alert and Coordination System, a joint initiative of the United Nations and the European Commission. UNOSAT will also continue to participate in the development of a global tsunami warning system, which is being developed by IOC of UNESCO.

40. The ISDR secretariat has continued to promote the use of satellite imagery for disaster risk reduction purposes and developed close collaboration with United Nations entities to this end. The UNEP Division of Early Warning and Assessment and GRID-Europe has developed and will continue maintaining an interactive application, the Project of 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 country. The resulting products are part of country profiles and are used as tools for the global information platform on disaster risk reduction.

41. The ISDR secretariat is working with the GeoHazards network of IGOS towards developing a reference information database for geohazard identification and monitoring systems. The ISDR secretariat and UNOSAT are collaborating in distributing updated satellite imagery for specific projects on the ground, such as the identification of mudslide susceptibility zones in Matagalpa, Nicaragua, and the enhancement of systems for monitoring the El Niño phenomenon in Guayaquil, Ecuador. The ISDR secretariat also participates in the discussions related to the development of new mechanisms to implement GEOSS, and in the European RESPOND programme, with the aim of promoting attention to disaster risk reduction issues in order to make satellite imagery and products accessible. The ISDR secretariat also participates in the development of the new mechanism to implement GEOSS. All this collaboration, data and information-sharing are part of the strategy under the Hyogo Framework for Action to reduce disaster risk and to develop the related disaster risk reduction clearing house.

42. The UNEP Division of Early Warning and Assessment and GRID-Europe is supporting 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 (GRIP). 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*,⁹ which was published in 2004. GRIP 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.

43. The UNEP Division of Early Warning and Assessment and GRID-Europe has developed a methodology for identifying flood-prone areas of the world. This project was mandated by the World Bank in order to increase the precision of global

hazard data sets for several projects, such as the World Bank project on disaster hot spots, PreView and the UNDP Disaster Risk Index. The methodology uses GIS and a statistical model, combining data on precipitation, soil types, presence of vegetation and slopes.

44. The UNEP Division of Early Warning and Assessment and GRID-Europe made data sets on flood frequency available to ESA in order to facilitate the collection of radar satellite imagery on floods. It also supported the UNEP Asian Tsunami Disaster Task Force by downloading and analysing satellite imagery and other data. The data were then forwarded to the affected countries to help ease the recovery process. During this emergency, UNEP worked closely with UNOSAT in exchanging relevant data and image interpretation.

45. The UNEP Division of Early Warning and Assessment and GRID-Europe and GRID-Arendal (Norway) will continue their collaboration with UNDP, the Organization for Security and Cooperation in Europe and the North Atlantic Treaty Organization on environment and security through the Environment and Security Initiative. In 2005, major assessments of environmental hot spots and security issues were carried out for the Ferghana Valley region of Central Asia and old industrial and mining sites in South-Eastern Europe, as well as the Tisza River basin in South-Eastern Europe.

46. The UNEP Division of Early Warning and Assessment-Africa is coordinating the technical implementation of the Africa Environment Information Network (AEIN) in response to a request of the African Ministerial Conference on the Environment. AEIN focuses on developing infrastructure and a support mechanism for collating and storing geospatial and bibliographic data, along with professional expertise to analyse and generate policy-oriented information to be communicated to decision makers.

47. The pilot phase of AEIN, supporting the *Africa Environment Outlook* reporting process, has been completed in 12 countries. The UNEP Division of Early Warning and Assessment-Africa is also assisting the African Ministerial Conference on the Environment in preparing the second *Africa Environment Outlook* report, for which inputs are also provided by ECA, WFP and other partners, which will highlight the potential of the region's natural resource base to support the agenda of the New Partnership for Africa's Development.

48. In response to a direct request from the Department of Infrastructure and Energy of the Commission of the African Union, ECA is implementing a GIS database to support the production of an integrated all-mode transport infrastructure master plan for Africa. That master plan will foster regional integration and economic development. The GIS development will use remote sensing and Global Positioning System (GPS) technologies.

49. ESCAP will continue to promote and institutionalize regional cooperative mechanisms for operational access to and use of space-based information services and products originating from various sources in the region for hazard management and disaster reduction (see A/AC.105/841, para. 33).

50. ICAO and WMO will continue their involvement in the operation of the World Area Forecast System (see A/AC.105/841, para. 42).

51. The United Nations Office on Drugs and Crime will continue to use satellite imagery for monitoring the cultivation of illicit crops, specifically coca, opium poppy and cannabis. In this context, the Office will continue to cooperate with, inter alia, UNOSAT to optimize the acquisition of satellite imagery for the monitoring of illicit crops and determine the most suitable image sources. The Office will continue to improve the methodologies for the detection of illicit crops and develop guidelines for the interpretation and analysis of satellite images.

52. The Office for Outer Space Affairs and ESCAP will monitor the development and implementation of four follow-up projects that were selected during a workshop on telemedicine in China. The Office and WHO/Pan American Health Organization will oversee the work of the task force on health using space technologies for the Latin America and the Caribbean region, which was established following a workshop on telemedicine held in Argentina.

53. FAO and UNEP have jointly initiated the Global Land Cover Network, a global collaborative project to develop a fully harmonized approach to make reliable and comparable baseline land-cover data accessible to local, national and international initiatives. Regional collaborative networks have been, or will be, established for the subregions of Africa and the Americas, the Middle East, South-East Asia and Central Asia.

54. WHO is actively participating in a pilot project launched by the Permanent Committee on GIS Infrastructure for Asia and the Pacific in collaboration with 14 countries in South-East Asia for developing a seamless data set for the tsunami-affected area in which the Landsat global mosaic will be used as ground reference.

55. ECA is working with partners to agree on a consistent definition of fundamental spatial data sets for Africa to support strategic and programme-level decision-making. The provisional recommendations for the contents include imagery and other data sets that will be derived from remote sensing.

56. WFP and FAO assisted GMFS in the selection of three pilot countries—Ethiopia, the Sudan and Uganda—where a new methodology for estimating cultivated area, using radar data at the beginning of the cultivation season, will be applied on a pilot basis. That activity will be aimed at improving the ability to monitor area planted and crop yields throughout the season and assisting rural households—the population most affected by food insecurity—that predominantly rely on traditional agriculture.

57. In 2006, WFP will harmonize and make available for sharing a number of data sets, including infrastructure maps, population maps, livelihood zone maps, multi-temporal products, cropping season development status index maps per administrative unit, disaster risk maps and snow-cover change maps.

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

58. As agreed by the General Assembly in its resolution 60/99, the Office for Outer Space Affairs and IAEA will hold a joint technical workshop on the objectives, scope and general attributes of a potential technical safety standard for nuclear power sources in outer space. The workshop will be held in Vienna from

20 to 22 February 2006, during the forty-third session of the Scientific and Technical Subcommittee.

59. The Office for Outer Space Affairs will continue to organize a series of workshops dedicated to developing expertise and capacity in international and national space law and promoting education opportunities in space law. The next workshop on space law will be held in Ukraine in 2006.

60. In view of the consideration by the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space of the agenda item "Examination and review of the developments concerning the draft protocol on matters specific to space assets to the Convention on International Interests in Mobile Equipment", ICAO will continue to share with the Office for Outer Space Affairs its experience in becoming supervisory authority for the Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Aircraft Equipment.¹⁰

61. In 2006, FAO will finalize the second draft of the United Nations Minimum Field Subset for the International Organization for Standardization (ISO) metadata profile, which will be based on ISO 19139, Geographic information-Metadata-Implementation specification. The FAO land-cover classification system of FAO and UNEP is proposed as an ISO standard (see A/AC.105/841, para. 49).

D. Utilizing and facilitating information and communication technology for development

62. UNEP, FAO and WFP completed the development of version 2.0 of GeoNetwork, an Internet-based spatial information catalogue, which allows data storage, documentation of spatial information with standard metadata and easy data-sharing protocols. It has been released as free and open-source software and is available at the GeoNetwork website (<http://geonetwork.sourceforge.net>). FAO, WFP, UNEP, WHO, the Office for the Coordination of Humanitarian Affairs, UNOSAT, ESA, the Global Ministerial Environment Forum, the Somalia Water and Land Information Management System FEWSNET and the Consultative Group on International Agricultural Research currently implement and operate GeoNetwork.

63. In 2006, WFP, FAO and GMFS will install GeoNetwork spatial information environment (SIE) for the Southern African Development Community, the Regional Centre for Mapping of Resources for Development and the Regional Training Centre for Agrometeorology and Operational Hydrology and their Applications (AGRHYMET). Following the set-up of SIE in six WFP regional bureaux and several countries, WFP has developed the concept of setting up mapping task forces, composed of GIS practitioners, at the country level, which will make it possible to complement the mandate of each agency or local institution by sharing knowledge, information/data and capacity in order to ensure a better understanding of the country's situation. Such mapping task forces have been successfully established in Afghanistan, Ethiopia and the Sudan.

64. In 2006, WFP, FAO, UNOSAT, RESPOND, GMFS and FEWSNET will harmonize the processes they use to monitor food security and livelihoods. WFP and FEWSNET will also document the spatial layers they use in that work in order to merge livelihood information with the basic data layers. FEWSNET and WFP are

supporting the establishment of comprehensive food security databases and livelihood zones/profiles in various countries. The multiple geographical layers and remotely sensed data integrated with other field data are used to support comprehensive food security and vulnerability analysis and monitoring.

65. FAO 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, serves the Advanced Real-Time Environmental Monitoring Information System image archive. WMS and WCS will continue to be provided through the FAO GeoNetwork.

66. The UNEP Division of Early Warning and Assessment-West Asia has completed the development of a knowledge base on environmental assessment for 12 countries in West Asia. It includes key documents and links related to the work of the International Energy Agency of the Organization for Economic Cooperation and Development for each country. The Division of Early Warning and Assessment-West Asia also developed three knowledge-base compact disks on environmental assessment for Bahrain, Jordan and the United Arab Emirates.

67. In 2007 ECA will organize the fifth session of the Committee on Development Information and its Subcommittee on Information and Communication Technologies and Subcommittee on Geo-Information. ECA will continue to hold two ad hoc expert group meetings of the African Technical Advisory Committee on Information and Communications Technology in order to promote the implementation of the African Information Society Initiative. ECA will also support the organization of the conferences of the African Association of Remote Sensing of the Environment and AfricaGIS, which will be hosted by Egypt and Burkina Faso, respectively.

68. Within the framework of RESAP II, ESCAP will continue to develop and implement technical cooperation projects on the operational applications of satellite communications for sustainable development. ESCAP will also continue to prepare the countries of the region for satellite broadband-based services and applications and carry out relevant activities. In particular, in 2006 and 2007, ESCAP will continue to organize meetings of the Regional Working Group on Satellite Communication Applications with greater participation from the private sector. The eleventh meeting of the Regional Working Group is scheduled to take place in Bangkok in June 2006.

69. In May 2005, the World Health Assembly adopted resolution WHA58.28, entitled "e-Health", in which it called on countries to carry out a number of activities aimed at promoting and developing the use of information and communication technologies (ICT) in countries. The resolution could serve as a policy basis for promoting the use of space technology for improving health on a global scale.

70. WHO will continue to use space-based telecommunications in the context of its Global Private Network (GPN), which is a platform for delivering communications information and knowledge services within WHO. GPN provides the fundamental requirements for addressing any health crisis, such as those related to tsunami relief or avian flu. It also helps achieve WHO strategies, including knowledge management, e-learning and e-medicine. At present, 85 out of a total of 140 planned locations are connected. GPN will be completed in 2006 and 2007.

71. UNESCO and ITU will continue initiating pilot projects on educational applications of interactive television (see A/AC.105/841, para. 51).

72. ITU will provide Internet-based services and applications to developing countries in order to enable cost-efficient and secure communication and exchange of information for intergovernmental agencies using ICT, involving such matters as secure e-mail, e-transactions, videoconferences and visa and passport web-based application forms. ICT could play an important role in extending government services to citizens in urban areas where the physical administrative infrastructure does not exist.

73. UNOSAT is working with CERN, ESA and Télécoms Sans Frontières to develop the use of satellite telecommunications to deliver crisis-mapping products to the field via satellite-based broadband Internet for the benefit of the humanitarian community at large.

74. ECA, UNESCO, UNOSAT, UNEP and WHO participated in the second phase of the World Summit on the Information Society, held in Tunis from 16 to 18 November 2005. They, along with the Office of Outer Space Affairs, are closely following the outcome of the process and are expected to support developments in countries through improved access to ICT.

E. Utilizing and improving satellite positioning and location capabilities

75. Following the recommendations of the Action Team on Global Navigation Satellite Systems, as endorsed by the Committee and by the General Assembly in its resolution 59/2, the International Committee on GNSS (ICG) was established during the United Nations International Meeting for the Establishment of the International Committee on Global Navigation Satellite Systems, held in Vienna on 1 and 2 December 2005. ICG was established on a voluntary basis as an informal body for the purpose of promoting cooperation, as appropriate, on matters of mutual interest related to civil satellite-based positioning, navigation, timing and value-added services, as well as compatibility and interoperability among GNSS systems, while increasing their use to support sustainable development, particularly in developing countries.

76. The purpose of the UNGIWG task group on GNSS is to harmonize and facilitate field data collection activities undertaken by the various United Nations agencies. In 2006, the group plans to conduct a survey on GPS usage by the various entities and develop a common training programme.

77. In 2006, ITU will hold the fourth consultation meeting for administrations operating or planning to operate the Radio Navigation Satellite Service (RNSS) systems. Such consultation meetings have been held since 2003, following the agreement of the World Radiocommunication Conference on the frequency allocation and sharing criteria for satellite systems in RNSS. In order to achieve the level of protection for aeronautical radio-navigation service systems, the level of equivalent power-flux density produced by all space stations of the RNSS systems was determined and agreed upon during the 2005 consultation meeting. The

consultation meetings, which cover only real systems, ensure that the process is fully visible to all potential RNSS system operators.

78. Following the ICAO Eleventh Air Navigation Conference, held in Montreal, Canada, in 2003, ICAO will continue to pursue the transition to satellite-based navigation for all phases of flight (see A/AC.105/841, para. 63). On matters related to navigation policy and the radio frequency spectrum, ICAO will continue to coordinate its work with IMO and ITU, respectively.

79. ICAO will continue 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 (see A/AC.105/841, para. 64).

80. WHO will continue to use GPS devices extensively for collecting data on the location of households and/or health facilities in countries. This is the case in the context of, for example, the malaria control programme conducted in Botswana, Malawi, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe, where the location of both types of infrastructure is identified and integrated in GIS in order to monitor and map the spatial distribution of a number of malaria and other health indicators by household or health facility. This allows a better understanding of the malaria situation in countries and assists in cross-border malaria control. WHO also use GPS devices in the context of the Service Availability Mapping (SAM) initiative to assess and monitor the availability and coverage of health services. Having initially been implemented in some African countries, SAM will be implemented in other countries in the near future.

81. In 2006, WHO will further develop and improve the GIS component of the malaria prevention and control programme in the Americas, which is part of the Global Environment Facility DDT project. The programme uses GPS technology extensively. Greater emphasis will be placed on analysis of malaria data in order to detect potential risk factors among households, assessment of the impact of interventions, including those carried out by communities, and enhancement of the monitoring process, including in respect of capacity-building and the instrumentation of better methods and tools.

82. ECA and the Office for Outer Space Affairs continue to support the project to implement a common geodetic reference frame for Africa (AFREF) using GNSS technology. In that regard, ECA is providing financial support for a workshop on AFREF for West African stakeholders during the Regional Conference of the International Federation of Surveyors, to be held in Accra in March 2006. A technical workshop will be organized in Cape Town, South Africa, in July 2006.

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

83. In its resolution 60/99, the General Assembly noted with satisfaction that the Government of Ecuador will be hosting the Fifth Space Conference of the Americas in Quito in July 2006 and that the Government of Chile will organize a preparatory meeting for the Conference, with the support of the Government of Colombia, UNESCO and the Office for Outer Space Affairs, during the International Air and Space Fair to be held in Santiago in March 2006.

84. The Office for Outer Space Affairs will continue to organize workshops, seminars and training activities, as well as facilitate the development of various pilot projects in developing countries that use space technologies for sustainable development, within the United Nations Programme on Space Applications (see A/AC.105/841, para. 66).

85. ECA, in collaboration with the Regional Centre for Training in Aerospace Surveys, will organize long-term courses in geo-information production and management at the post-graduate diploma, technologist diploma and technician diploma levels, with specializations in photogrammetry, remote sensing, GIS and cartography. In cooperation with the Regional Centre for Mapping of Resources for Development, ECA will carry out training programmes in geo-information technologies and their applications in resource assessment, planning, management and monitoring for resource technicians, managers and scientists.

86. Under the aegis of UNGIWG, the Department of Peacekeeping Operations has developed the international boundaries data set at scales of 1:1 million, 1:5 million, 1:10 million and 1:25 million, and it is now available to United Nations entities upon request. In addition to providing the international community with validated information regarding the administrative structure of Member States (historical changes, maps) the Second Administrative Level Boundaries (SALB) data set project is now providing contact information for national mapping agencies in collaboration with other United Nations partners, such as ECA, the Department of Public Information of the Secretariat and the Economic Commission for Latin America and the Caribbean, as well as several regional and global initiatives. Information on the progress of SALB is now available through a quarterly newsletter, distributed through the project's mailing list.

87. UNEP Division of Early Warning and Assessment regional centres, along with the Office for Outer Space Affairs, continue the distribution of NASA-donated series of Landsat data sets from the 1970s, 1990s and 2000 to developing and transitional countries in all regions. In Africa alone, the Landsat data have been distributed to 22 countries, and more than 75 persons have received technical training in related data management and analysis. Similar Landsat data distribution and training are also being carried out for countries in Asia and the Pacific, Latin America and the Caribbean, and West Asia and transitional countries in Europe, with the end results being increased capacity for better monitoring of the environment and early warning of emerging environmental problems and threats.

88. The Office for Outer Space Affairs, building upon the work of UNEP, will continue to distribute Landsat imagery to African institutions. The project entitled "Distribution and use of available global landsat data sets for sustainable development in Africa" is aimed at consolidating the use of space technologies to support activities in the area of environmental management, disaster mitigation and sustainable development. FAO has also promoted the distribution of Landsat images and Shuttle Radar Topography Mission-based elevation data at the global level to support outreach activities in the framework of the GLCN programme.

89. UNEP continues building capacity and carrying out training activities related to integrated environmental assessment in West Asia. National training courses were conducted in the Syrian Arab Republic and the United Arab Emirates. UNEP also conducted regional training on policy analysis in the framework of integrated

environmental assessment in West Asia. In collaboration with FAO, UNEP conducted training activities for West Asia and North Africa on land-use and land-cover mapping through GLCN.

90. UNEP/GRID-Sioux Falls (United States) studied rapid environmental changes in five locations around the world and highlighted them in a 2005 publication entitled *Analyzing Environmental Trends Using Satellite Data: Selected Cases*. The locations studied were Lake Chad in West Africa; the Sundarbans along the India-Bangladesh border; Papua (Irian Jaya) in Indonesia; the Paranaense Forest near Itaipú falls at the juncture of Argentina, Brazil and Paraguay; and the Ataturk dam and the Harran plain in south-eastern Turkey. Analysing the changes by examining satellite data over various time periods provides scientific evidence and early warning of the potential long-term consequences of development decisions.

91. The UNEP publication *One Planet, Many People: Atlas of our Changing Environment*¹¹ was launched on 3 June 2005 in San Francisco, United States, during the World Environment Day celebrations and rapidly became the best-selling UNEP publication ever. The atlas provides a comprehensive, visual presentation of scientific information on changes in the global environment, both negative and positive, acquired and assessed through state-of-the-art remote sensing technology. UNEP has signed a memorandum of understanding with Google Keyhole for a Google Earth implementation of fly-in navigation for each of the 85 sites featured in the atlas.

92. In order to raise awareness of the importance of outer space in daily life and to enhance the study of space subjects in schools and universities, UNESCO will continue to organize workshops for students and teachers at various levels on best teaching practices and hands-on projects on various themes, in the framework of the Space Education Programme (see A/AC.105/859, para. 30). Similar workshops will be held in the Syrian Arab Republic and Viet Nam in 2006.

93. WHO will continue the development of several tools, including the next generation of a global health information mapping system, which will consolidate the current tools (global atlas, HealthMapper, remote field data collection tool) into a single coordinated global health system. In addition, the new version of the Geographic Information System in Epidemiology and Public Health will be released and will include new features and analytical methods in response to demands of users for applications and projects currently under development.

94. As a follow-up to numerous training activities on satellite remote sensing and GIS applications in agricultural meteorology conducted by WMO, FAO, AGRHYMET, SADC and the Climate Prediction and Applications Centre of the Intergovernmental Authority on Development, new methodologies and mediums, such as e-learning, interactive DVDs and the Internet, WMO will explore ways to reach more users willing to use remote sensing applications in agricultural meteorology.

95. WMO, in collaboration with UNDP, will continue to grant fellowships under its Voluntary Cooperation Programme in satellite meteorology and support trainers in WMO Regional Meteorological Training Centres (see A/AC.105/841, para. 77).

96. UNEP Division of Early Warning and Assessment-Africa organized a three-week regional capacity-building training workshop for 25 participants from

environment ministries and survey departments from 13 English-speaking African countries. The workshop was held in collaboration with the Regional Centre for Mapping of Resources for Development, based in Nairobi. A similar training workshop for francophone countries in Africa is scheduled to be held in the first quarter of 2006, in collaboration with AGRHYMET, based in Niamey.

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

97. The Office for Outer Space Affairs and ITU, with the support of the Government of Colombia, developed the Geo Occupancy Analyser Tool (GOAT), which provides analyses of the historical evolution of geostationary orbit exploitation. GOAT can show the occupancy of the geostationary orbit for any year, or for a given time span. The tool was presented to the second phase of the World Summit on the Information Society.

98. The Office for Outer Space Affairs will continue to promote and support the activities being organized within the framework of the International Heliophysical Year 2007. The Office will continue to facilitate the deployment of small, inexpensive instruments around the world to provide global measurements of ionospheric and heliospheric phenomena.

99. In 2007 the ITU World Radiocommunication Conference will consider the development and protection of science services, including those using passive sensors. The consideration of this matter by the Conference is related to the potential use of more advanced meteorological and Earth exploration satellite systems that would involve remote sensing of the ocean temperature, whose variations can be linked to seismic activity. In that regard, it is essential that the frequencies allocated to these passive services remain free of interference.

H. Other activities

100. ESCAP has developed a comprehensive website on RESAP II activities (<http://www.unescap.org/icstd/space/index.asp>). The contents of the website are being updated regularly.

101. In line with its inter-agency service vocation, UNOSAT will continue to offer procurement services to the United Nations system, which in 2005 procured satellite imagery worth more than \$1 million through UNOSAT.

Notes

¹ *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 General Assembly resolution 55/2.

⁴ A/CONF.206/6 and Corr.1, chap. I, resolution 2.

⁵ Ibid., para. 17 (k).

⁶ Ibid., para. 18 (d).

⁷ United Nations, *Treaty Series*, vol. 1771, No. 30822.

⁸ Ibid., vol. 1954, No. 33480.

⁹ United Nations publication, Sales No. E.04.III.B.2.

¹⁰ DCME Doc. No. 75 (ICAO).

¹¹ United Nations publication, Sales No. 05.III.D.37.
