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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 2008-2009

Report of the Secretary-General*

Summary

The present report contains information provided by entities of the United Nations system on their coordinated plans for space-related activities to be carried out in the biennium 2008-2009. The report has been compiled for the purposes of promoting inter-agency coordination and cooperation and preventing duplication of efforts related to the use of space applications by the United Nations.

The following key issues have been identified as issues for coordination during the biennium 2008-2009:

(a) Further strengthening of the Inter-Agency Meeting on Outer Space Activities as the central mechanism of the United Nations for the coordination of space-related activities;

(b) Reinforcement of contributions to the United Nations spatial data infrastructure;

(c) Enhancement of the use of space-based assets in support of disaster management and optimization of the use of opportunities such as the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters (also called the "International Charter 'Space and Major Disasters'") and the new United Nations Platform for Space-based

* The present report was reviewed and revised by the Inter-Agency Meeting on Outer Space Activities at its twenty-eighth session, held in Geneva from 16 to 18 January 2008, and finalized following the session.



Information for Disaster Management and Emergency Response (UN-SPIDER) programme;

(d) Reinforcement of contributions made by United Nations entities to the Global Earth Observation System of Systems (GEOSS) of the Group on Earth Observations (GEO) and optimization of the use of the benefits of GEOSS with a view to strengthening the capacity of the United Nations.

Information on the current space-related activities of United Nations entities is available on the website dedicated to the coordination of outer space activities within the United Nations system (<http://www.uncosa.unvienna.org>).

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I. Introduction

1. The Inter-Agency Meeting on Outer Space Activities serves as the 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,¹ the Inter-Agency Meeting has been assisting in the preparation of the report (A/AC.105/166, p. 3). The present report has been compiled for the purposes of promoting inter-agency coordination and cooperation and preventing duplication of efforts related to the use of space applications by the United Nations.

2. The present report, which is the thirty-second 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 United Nations Office on Drugs and Crime (UNODC), the Economic Commission for Africa (ECA), the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations Environment Programme (UNEP), the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations Institute for Training and Research Operational Satellite Applications Programme (UNOSAT) implemented in cooperation with the United Nations Office for Project Services, 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), the International Atomic Energy Agency (IAEA) and the International Strategy for Disaster Reduction (ISDR).

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

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

4. Space science and technology and their applications are increasingly being used to support a wide range of United Nations activities. At least 25 United Nations entities and the World Bank Group routinely use space applications. They

¹ *Official Records of the General Assembly, Thirtieth session, Supplement No. 20 (A/10020)*, para. 44.

make important and sometimes essential contributions to the work of the United Nations, including in the implementation of recommendations of major world conferences and those of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), in efforts towards sustainable development and in the implementation of the United Nations Millennium Declaration (General Assembly resolution 55/2 of 8 September 2000).

5. As a consequence, coordination, cooperation and synergy are essential for those activities to be effectively carried out by the United Nations system. The annual sessions of the Inter-Agency Meeting on Outer Space Activities are the main means of achieving that synergy. The effectiveness of the Meeting has been further enhanced by the holding, since 2004, of an open informal session immediately after the end of the Meeting, as a means of engaging Member States, in a direct and informal setting, in important space-related developments in the United Nations system. The agenda of the Inter-Agency Meeting is reviewed at each session and adapted to current operational needs.

6. In its resolution 62/217 of 21 December 2007, the General Assembly noted with satisfaction the increased efforts of the Committee on the Peaceful Uses of Outer Space and its Scientific and Technical Subcommittee, as well as the 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 on the development agenda, particularly in the areas relating to, inter alia, food security and increasing opportunities for education. The Assembly invited the Inter-Agency Meeting to continue to contribute to the work of the Committee and to report to the Committee and its Scientific and Technical Subcommittee on the work conducted at its annual sessions. It also encouraged entities of the United Nations system to participate fully in the work of the Inter-Agency Meeting on Outer Space Activities.

7. Specific policy frameworks, such as the Hyogo Framework for Action, 2005-2015: Building the Resilience of Nations and Communities to Disasters,³ call for the promotion of the use, application and affordability of recent information, communication and space-based technologies and related services, as well as Earth observations, to support disaster risk reduction, in particular for training and for the sharing and dissemination of information among different categories of users.

8. The intergovernmental Group on Earth Observations (GEO) held its fourth plenary session, GEO-IV, in Cape Town, South Africa, on 28 and 29 November 2007 and the GEO Ministerial Summit on 30 November 2007 to review the progress made in implementing the Global Earth Observation System of Systems (GEOSS). The Office for Outer Space Affairs and the Inter-Agency Coordination and Planning

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

Committee for GEO/GEOSS made statements at the Ministerial Summit on behalf of the Food and Agriculture Organization of the United Nations (FAO), UNEP, UNESCO, including its Intergovernmental Oceanographic Commission (IOC), and WMO. The Inter-Agency Meeting is used as a framework to coordinate the GEO-related activities of the Inter-Agency Coordination and Planning Committee with the United Nations entities that are not part of that Committee.

9. The eighth meeting of the United Nations Geographic Information Working Group, held in Bangkok from 28 to 30 November 2007, initiated the definition of an institutional governance framework for the United Nations spatial data infrastructure so that strong partnerships could be developed to increase the interoperability of data, information and services among United Nations agencies and their partners from the public and private sectors (information on the United Nations Geographic Information Working Group is available from <http://www.ungiwg.org>). That inter-agency initiative allows individual agencies to strengthen their own spatial analysis capabilities, while promoting standards, protocols and mechanisms to ensure more consolidated and durable solutions.

III. Coordination of current and forthcoming space-related activities

A. Protection of the Earth environment and management of natural resources

10. United Nations entities continue to be involved in activities within the framework created by the Committee on Earth Observation Satellites (CEOS), GEO, the Global Climate Observing System (GCOS), the Global Terrestrial Observing System, the Global Ocean Observing System and the Integrated Global Observing Strategy. The latter is being merged into GEOSS. In addition to the activities as reflected in the report on the coordination of space-related activities for the period 2007-2008 (A/AC.105/886), the new activities described below can be reported for the period 2008-2009.

11. In 2008, UNOSAT will continue its engagement in the United Nations Geographic Information Working Group and its support for the strategy towards a United Nations spatial data infrastructure, while it will increase its coordination with several GEO task teams. UNOSAT will also continue its participation in the process, initiated in Lisbon in 2007, leading to a Global Monitoring for Environment and Security programme for Africa. Also in 2008, UNOSAT plans to bring to fruition its research partnerships in the area of integrated applications combining Earth observation with telecommunications and navigation systems.

12. The World Radiocommunication Conference, held in Geneva from 22 October to 16 November 2007, ended with the signing by 155 countries of the Final Acts, which will result in a revision of the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and satellite orbits. Over 2,800 delegates, representing 161 member States, and 94 observers attended. The Conference, inter alia, extended existing primary frequency allocations for the Earth-exploration satellite service, which provides key services to monitor the

planet, as well as to predict and monitor natural disasters, meteorology and climate change.

13. WMO, IOC of UNESCO and the International Council of Scientific Unions are jointly supporting the World Climate Research Programme, which includes the Global Energy and Water Cycle Experiment as one of its core programmes (information on the World Climate Research Programme can be found at <http://www.wmo.ch/pages/prog/wcrp/>). The Global Energy and Water Cycle Experiment project that was formerly entitled the “Coordinated Enhanced Observation Period” (CEOP) has resulted in snapshots of the remotely sensed high-resolution raw radiance data at the 35 in situ reference sites. Those data are now being archived. Geophysical products will be developed for those sites by international research teams. With the current establishment of the “new” Coordinated Energy and Water-Cycle Observations Project (a merger of the Global Energy and Water Cycle Experiment Hydrometeorology Panel and the Coordinated Enhanced Observation Period), more activities in that area will be undertaken. Besides an organizational restructuring, the period of data collection has been extended from January 2005 to December 2007. Furthermore, CEOP has also developed, in cooperation with CEOS, a data integration function called the Working Group on Information Systems Services-CEOP Distributed Data Integration System, developed at the Japanese Space Agency and the Remote Sensing Technology Center of Japan. The development of the system will continue for the next few years.

14. In response to the challenging requirements for satellite observations for climate change issued by the Global Climate Observing System (GCOS) in 2006 as a supplement to the GCOS implementation plan, WMO has initiated a redesign of the space-based Global Observing System (GOS). As agreed by the WMO Commission for Basic Systems, the future GOS shall extend its scope and benefits to wider application areas beyond operational meteorology. The new GOS will respond in particular to the requirements of GCOS and will address the monitoring of ocean surface parameters such as surface height, sea state, surface wind, temperature and colour, which are also required by the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology. A new vision for GOS in 2025 is being developed and will be refined in 2008 for submission at the next session of the Commission for Basic Systems. It will contribute to the evolution towards a WMO Integrated Global Observing System, as agreed by the fifteenth WMO Congress. WMO is conducting that effort in close coordination with the Coordination Group for Meteorological Satellites and CEOS. The new GOS is expected to be a major component of GEOSS, serving several GEO “Societal Benefit Areas”.

15. The United Nations Programme on Space Applications continues to provide African space-related institutions with Landsat Multispectral Scanner, Landsat Thematic Mapper and Landsat Enhanced Thematic Mapper Plus satellite datasets donated by the United States of America, building upon the work carried out by UNEP and the Department of Peacekeeping Operations. The data are to be used for education, training and developing projects at the national and regional levels.

16. The UNEP Division of Early Warning and Assessment (DEWA)-West Asia is finalizing the Global Environment Outlook report for the Arab region, to be published in 2008. It has also begun work on an atlas of environmental change in

West Asia. The atlas will provide evidence of the environmental changes affecting the land, water and atmosphere in countries of West Asia; it also covers transboundary river basins and conservation areas. In addition, DEWA-West Asia is finalizing the Arab Millennium Ecosystem Sub-Global Assessment for three sites in Egypt, Morocco and Saudi Arabia. Those reports will be published in the first half of 2008.

17. FAO and UNEP continue to cooperate in the Global Land Cover Network (GLCN), with the objective of fostering global collaboration to develop a fully harmonized approach to make reliable and comparable land cover data and land cover change data accessible to local, national and international initiatives. GLCN has developed a number of applications to facilitate mapping activities and ensure the harmonization of and compatibility among local, national and regional products. A workshop entitled “Application of FAO/UNEP Land Cover Classification System (LCCS) for the study of Land Cover dynamics in Sagarmatha National Park and Buffer Zone” was held in Kathmandu by the International Centre for Integrated Mountain Development, from 11 to 13 April 2007. A regional training workshop on LCCS was held from 26 to 30 November 2007 in Turkey, with over 20 participants from Central and South-West Asia and the Caucasus.

B. Human security and welfare, humanitarian assistance and disaster management

18. Several new activities for the period 2008-2009 in the area of using space applications for human security and welfare, humanitarian assistance and disaster management can be reported. Many of the activities are continuations of activities included in the report on the coordination of space-related activities for the period 2007-2008 (A/AC.105/886).

19. The General Assembly, in its resolution 62/217, endorsed the plan of work for the period 2008-2009 of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) (information on UN-SPIDER may be obtained from its website at <http://www.unspider.org>). The new programme, which is being implemented by the Office for Outer Space Affairs, provides a platform that supports all United Nations agencies in accessing and using all types of space-based information and services relevant to disaster management and will contribute directly to ISDR, also contributing to the implementation of the Hyogo Framework for Action. When UN-SPIDER has been fully established, its staff will be distributed among four offices: Beijing, Bonn, Vienna and a liaison office in Geneva. The latter office, which will open in 2008, will contribute to improving coordination between UNOSAT and the new UN-SPIDER programme and will strengthen collaboration among Geneva-based organizations, both for disaster management and risk reduction.

20. The Office for Outer Space Affairs, as part of the implementation of UN-SPIDER and in collaboration with ESCAP, organized the fourth United Nations-wide meeting on the use of space technologies for emergency response and humanitarian assistance, which was held in Bangkok on 27 November 2007. At the meeting, participants discussed the operational aspects of accessing existing opportunities such as the Charter on Cooperation to Achieve the Coordinated Use of

Space Facilities in the Event of Natural or Technological Disasters (also called the “International Charter ‘Space and Major Disasters’”) and Sentinel Asia and agreed to establish a user focus group that would contribute to helping the United Nations system and partners build further upon such opportunities. The fifth United Nations-wide meeting on the use of space technologies for emergency response and humanitarian assistance will be held in Bonn, Germany, on 14 October 2008.

21. The Office will continue serving as a Cooperating Body of the Charter, maintaining the 24-hour, seven-days-a-week hotline service, which is used by United Nations agencies to fax in requests for Charter imagery. In 2007, a total of 11 requests for imagery were received, from the World Food Programme (WFP), the United Nations Development Programme (UNDP) and the Office for the Coordination of Humanitarian Affairs, bringing the total number of times entities of the United Nations system have benefited from the Charter to 44. Value-added services were provided to those United Nations agencies by UNOSAT, the Pacific Disaster Center, ESA and the Center for Satellite Based Crisis Information of the German Aerospace Center.

22. The Office of the United Nations High Commissioner for Refugees (UNHCR) has developed refugee camp mapping guidelines based on the interpretation of high-resolution satellite imagery and global positioning system field programmes. In 2008 and 2009, UNHCR will develop collaborative tools not only to increase the coverage, but also to ensure a continuous maintenance of that geographic information system (GIS) to better serve the daily management needs of its field operations and with a view to longer-term planning with partners and donors. The GMES “Respond” initiative is among those partners. UNHCR has been a user of the satellite-imagery-derived products of Respond since 2005 and will, in 2008 and 2009, develop and maintain GIS layers of refugee camps in Chad, the Democratic Republic of the Congo, Kenya, Namibia, the Sudan and Uganda. Large-scale mapping of locations of internally displaced persons in Somalia and Uganda and the distribution of refugees in complex urban environments such as Cairo, Damascus and Nairobi will also be monitored.

23. Following its consolidation in 2006 and 2007, UNOSAT reinforced the delivery of satellite solutions ranging from Earth-observation-based products to navigation and telecommunications. With an enlarged donor base, UNOSAT has accentuated its inter-agency service vocation and maintains close coordination with United Nations agencies and programmes, for project support activities (for example with the Office of the United Nations High Commissioner for Human Rights, the United Nations Human Settlements Programme (UN-Habitat), UNDP, UNEP, the International Labour Organization, ITU, WMO and ISDR), or for the provision of support to humanitarian relief coordination and emergency response (for example OCHA, UNHCR, WFP and the United Nations Children’s Fund (UNICEF)).

24. The consolidation included the establishment of a fully fledged Humanitarian Rapid Mapping Service, which is now fully funded, and the establishment of navigation and telecommunications project segments. UNOSAT rapid mapping support was activated 45 times in 2007 alone, bringing the total number of emergencies on which UNOSAT has worked to 103. A new area of inter-agency cooperation arose from the inclusion of UNOSAT as a member of two clusters of the Humanitarian Reform process (the Early Recovery Cluster and the Emergency

Telecommunications Cluster). Cluster members work in close coordination to devise methods and practices to make humanitarian response more efficient.

25. The Office for Outer Space Affairs and ESCAP jointly organized the Regional Expert Meeting on Using Space Technology for Avian Influenza Monitoring and Early Warning in Asia, which was held in Bangkok from 3 to 5 August 2007. The Expert Meeting agreed to establish a working group to address the use of space applications for those purposes. WHO and FAO expressed their support for the effort by making their relevant data and information available. ESCAP will work with the Office for Outer Space Affairs to support the work of the working group and the network in the coming years. Those activities also contribute to the work of the UNISPACE III Action Team on Public Health established by the Committee on the Peaceful Uses of Outer Space, which includes representatives of ESCAP, FAO, WHO and the Asia-Pacific Regional Hub of the United Nations System Influenza Coordination. In 2008 and 2009, the Action Team on Public Health will focus its activities on using space technologies to establish a system for avian flu early warning. The Office for Outer Space Affairs is inviting other United Nations entities to participate in those activities.

26. ESCAP is working closely with the International Center for Drought Risk Reduction, which was established by China in April 2007 under the aegis of ISDR, on the development of a regional cooperative mechanism for drought disaster monitoring and early warning for the Asia-Pacific region using space technology, including the sharing of operational space information products and services for drought disaster monitoring and early warning and exploring the possibility of extending existing national services to cover neighbouring countries. The mechanism is also supported by FAO. The establishment of the regional cooperative mechanism is one of the follow-up activities of the Asian Conference on Disaster Reduction, which was held in Seoul from 15 to 17 March 2006 and jointly organized by China, ESCAP, ISDR and the Asian Disaster Preparedness Center.

27. ECA has developed a mapping tool, called the “MDG Mapper”, to enable at-a-glance visualization of the status of countries with regard to meeting the time-bound targets of the Millennium Development Goals (see <http://geoinfo.uneca.org/mdg/> for further information). The Mapper includes the functionality to thematically map the progress of countries in meeting the Millennium Development Goals, view the raw and derived data, chart and sort the indicators, download the data, and produce a rich set of summary statistics and metrics of spatial association.

28. ITU, in collaboration with OCHA and other organizations, will develop and arrange the dissemination of standard emergency communication procedures and relevant spectrum management practices for use in the event of a disaster situation.

29. ITU organized a Global Forum on Effective Use of Telecommunications/ICT for Disaster Management: Saving Lives, which was held in Geneva from 10 to 12 December 2007. The event brought together stakeholders in disaster management; the participants agreed to launch a number of practical initiatives, principal among them being the “ITU Framework for Cooperation in Emergencies”, which seeks to deploy on demand information and communications technology (ICT) applications and services at any location in the immediate aftermath of a disaster (details of the Framework are available at http://www.itu.int/ITU-D/emergencytelecoms/events/global_forum/itu-ifce.pdf). A Workshop on the Role of

Remote Sensing in Disaster Management was also held as an integral part of the forum (details of the Workshop are available from http://www.itu.int/ITU-D/emergencytelecoms/events/global_forum/remotesensing.html).

30. During the period 2008-2010, the Global Resource Information Database (Europe) of UNEP DEWA (GRID-Europe) will continue its collaboration with the UNDP Bureau for Crisis Prevention and Recovery in support of its Global Risk Identification Programme (GRIP). Following activities carried out since 2005, GRID-Europe will assist UNDP in the development of the Capacity Development Platform, an important component of GRIP. The goal of the Platform is to provide the conceptual framework, as well as a platform, for enhancing the exchange, storage and generation of knowledge on disaster risk assessment as a major contribution to implementing the Hyogo Framework for Action. The Platform will offer free access to relevant risk assessment resources, including concept definitions, publications, software tools, training materials and contacts with experts. The content of the Platform should provide communities, decision makers and the general public with general and theoretical information, as well as with specialized tools and know-how on risk assessment.

31. GRID-Europe and GRID-Arendal, Norway, will continue their collaboration with UNDP, the Organization for Security and Cooperation in Europe, the North Atlantic Treaty Organization and the collaboration that began in 2006 with the Regional Environmental Center for Central and Eastern Europe and the Economic Commission for Europe on environmental problems and security issues through the Environment and Security initiative. In 2007, major assessments of environmental hot spots and security issues were carried out for the subregions of the Caucasus, Central Asia and Eastern Europe.

32. The Regional Office for Latin America and the Caribbean of UNEP and DEWA Latin America and the Caribbean will contribute to the production of a Central American hurricane vulnerability assessment with information derived from remotely sensed data. The assessment will be finalized in 2008, prior to the tenth anniversary of Hurricane Mitch.

33. Through its Illicit Crop Monitoring Programme, UNODC is transferring the technical know-how of illicit crop detection to national counterpart agencies in seven countries. In that context, UNODC will continue its cooperation with the Office for Outer Space Affairs to improve the technical capacity of national counterparts through training events organized by the Office. UNODC will continue to contribute to the development of a United Nations-wide metadata database for satellite imagery to facilitate the possible future joint use of images by several United Nations agencies and participate in the technical events of the Committee on the Peaceful Uses of Outer Space and its subcommittees, where appropriate.

34. The Health Mapping Project is an initiative of the WHO Collaborating Centre for Health Promoting Water Management and Risk Communication, located at the Institute for Hygiene and Public Health at the University of Bonn, Germany. It focuses on the Web-GIS-based mapping of diseases, in particular waterborne diseases, by integrating data from different WHO databases. Further mapping features include access to water and waste-water infrastructure and visualization of the ratification status of the Protocol on Water and Health to the Convention on the

Protection and Use of Transboundary Watercourses and International Lakes.⁴ The Health Mapping Project also comprises other health mapping projects such as the European Union Influenza Mapping Project, incorporating data from the European Influenza Surveillance Scheme or the Malaria Information System developed by the Institute for Hygiene and Public Health.

35. In Zambia, a project initiated by WHO, the Research on Equity and Community Health trust of Malawi and the Southern African Network on Equity in Health has now developed into a capacity-building exercise aimed at addressing the needs in terms of geographic information and GIS capacities to support HIV/AIDS monitoring, evaluation and response. A total of 17 local and international institutions, including WHO and ECA, are now part of a working group that has been created in order to fill the existing gaps. A similar process is also under way in Malawi (further information on the Malawi project may be found at http://www.who.int/whosis/database/gis/EQU/GIS_HIV_AIDS_MWI.htm).

36. There is potential for widening the use of the currently available satellite data for all stakeholders involved in decision-making in the area of disaster risk reduction. Requirements for satellite-based information could be identified for the most significant segments of those stakeholders and for different stages of disaster risk management.

37. WMO is currently involved in two projects related to the identification of observation requirements and provision of added-value products, based on the integration of satellite information with meteorological, hydrological and climate information and forecasts. The aim of the first is to support humanitarian response and recovery, working with regional and international humanitarian agencies such as OCHA, UNICEF, WFP, those involved in the ISDR system and the International Federation of Red Cross and Red Crescent Societies (IFRC); the aim of the second is to support the development of financial risk transfer markets, including catastrophe insurance and bonds and weather risk management markets, in partnership with WFP, the World Bank, the Weather Risk Management Association and Munich-Re insurance company.

38. Currently, UNOSAT and ISDR, working in collaboration with the International Center for the Research of the El Niño Phenomenon, are facilitating space-based applications for hazard identification and land-use planning in Nicaragua and for the development of risk reduction measures and land-use planning to mitigate future impacts of El Niño in vulnerable countries in South America.

39. Following the multi-agency Symposium on Multi-Hazard Early Warning Systems for Integrated Disaster Risk Management, co-sponsored by OCHA, UNDP, IOC of UNESCO, the World Bank, WMO, IFRC and the ISDR secretariat in May 2006, several projects have been initiated to demonstrate and document good practices where early warning systems are properly supported by governance and legislation, as well as organizational coordination mechanisms and operational frameworks. The Second Symposium on Multi-Hazard Early Warning Systems is planned for the first quarter of 2009. That meeting will involve national, regional and international stakeholders and will address ways to improve contributions from satellite networks consisting of the four components of early warning: (a) risk

⁴ United Nations, *Treaty Series*, vol. 1936, p. 269.

identification, (b) hazard observation, monitoring and forecasting, (c) emergency response and preparedness, and (d) communication and dissemination.

40. WMO will initiate projects for the development of “hazard programmes”, through which national meteorological and hydrological services would provide in situ and satellite-based hazard information. That hazard information would support risk assessment and sectoral planning through appropriate collaboration with national counterparts of the United Nations and international agencies involved in the ISDR system and the biennial sessions of the Global Platform for Disaster Risk Reduction, which provides the global venue for discussing disaster risk reduction, including space-based contributions.

C. Capacity-building, training and education

41. The Office for Outer Space Affairs invites all Members of the Inter-Agency Meeting either to continue or to establish cooperation and coordination through the Office with all the United Nations-affiliated regional centres for space science and technology education (information on the regional centres may be obtained from the website of the Office at <http://www.unoosa.org/oosa/en/SAP/centres/index.html>).

42. ESCAP and the Asian Institute of Technology have now joined the network of institutions that contribute to the development and updating of the Second Administrative Level Boundaries data set. Through those efforts, the contact information of the national mapping agencies of more than 160 countries can now be downloaded from the project website (http://www.who.int/whosis/database/gis/salb/salb_home.htm). That resource, as well as the historic changes tables and GIS format maps, continues to represent an additional support to United Nations agencies and the international community requiring access to geographic information in countries.

43. The Virtual Laboratory for Satellite Training and Data Utilization, which was established by WMO and the Coordination Group for Meteorological Satellites, is the cornerstone of the efforts made by the WMO Space Programme to promote capacity-building in pursuit of its strategic aim of maximizing the benefit of environmental satellite products to the worldwide user community (further information on the virtual laboratory is available from its website at http://www.wmo.int/pages/prog/sat/CGMS/CGMS_virtuallab.html). The range of activities pursued by the Virtual Laboratory will widen in future years to embrace GEO Societal Benefit Areas other than weather. The Virtual Laboratory will be expanded in the coming years to include further centres of excellence in satellite meteorology training, based at WMO regional training centres and sponsored by meteorology satellite agencies, to complement the centres of excellence that already exist at Buenos Aires, Melbourne (Australia), Bridgetown (Barbados), São Jose dos Campos (Brazil), Beijing, San José, Nairobi, Niamey and Muscat. Following the success of the High Profile Training Event in October 2006, during which more than 2,000 people received training in satellite meteorology, the centres of excellence are planning further similar events, but on a regional basis. Those events will involve a blend of classroom-based and distance-learning techniques and will exploit the wealth of resources that are accumulating in the Virtual Laboratory libraries. The Programme on Space Applications of the Office for Outer Space Affairs recognizes

and uses the Virtual Laboratory as a primary source of training resources for satellite meteorology for its regional centres for space science and technology education.

44. ILO, ISDR and UNOSAT are strengthening their joint capacity development initiative for local development, integrating disaster reduction concerns, which include components in the use of satellite-based solutions.

45. On 20 December 2007, the General Assembly, at its sixty-second session, proclaimed 2009 International Year of Astronomy (IYA) and designated UNESCO as the lead agency and the International Astronomical Union (IAU) as the facilitating body (further information on IYA is available from the IYA website at <http://www.astronomy2009.org/>). UNESCO and IAU, together with the Office for Outer Space Affairs, will carry out educational and capacity-building activities in celebration of the International Year of Astronomy and generate, in particular, astronomy-related materials for students and teachers for distribution to developing countries. The Office for Outer Space Affairs will provide expertise and access to the benefits obtained from the implementation of the three-year workplan of COPUOS (2006-2008) for the observation of the International Heliophysical Year (2007).

46. UNEP/GRID-Sioux Falls (United States), in collaboration with Google Earth, released images of 120 environmental hot spots as part of the Global Awareness layer of Google Earth in April 2007. Through that project, a series of “before” and “after” satellite images of the Earth’s changing environment was presented to over 100 million Google Earth users worldwide. The project builds upon the success of the popular UNEP atlas entitled *One Planet, Many People: Atlas of Our Changing Environment*.

47. UNEP/DEWA-Europe conducted a training workshop on Earth observation and environmental data-sharing and information networking, focusing on space-based data applications, in Tirana from 3 to 7 November 2007, for national agencies. A second, similar, training workshop is planned to be held in Tbilisi from 3 to 7 March 2008 for the southern Caucasus countries (Armenia, Azerbaijan and Georgia). UNEP/DEWA-West Asia will also continue capacity-building activities in the area of integrated environmental assessment. As a follow-up to a jointly organized regional expert meeting with the League of Arab States and other partners, it will be developing guidelines for the development and use of sustainable development indicators, to be piloted by the countries of the region.

D. Enabling technologies for development, including information and communications technology and global navigation satellite systems

48. ICAO and the International Maritime Organization (IMO) will continue their involvement in the operation of the World Area Forecast System. ICAO will also continue to pursue the transition to satellite-based navigation for all phases of flight. On matters related to navigation policy and the radio frequency spectrum, ICAO will continue to coordinate its work with IMO and ITU respectively. It will also 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.

49. ESCAP, through its Regional Space Applications Programme for Sustainable Development in Asia and the Pacific (RESAP), has been working closely with other United Nations bodies and specialized organizations in promoting regional cooperation so that countries might achieve easier access and operational utilization of space technology for addressing major internationally agreed development issues. In the course of preparing for the Third Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific, which was planned for November 2007 but postponed owing to difficulties in concluding the host country agreement, ESCAP and its member States developed a strategy and action plan for the implementation of RESAP in the coming years. When it identified the priority areas of disaster management, environment and natural resources management, and education and health development, it also indicated the importance of cooperation among and coordination of entities of the United Nations system and other regional and international initiatives in the development of such cooperative mechanisms.

50. In response to interest expressed in improved information and communication services by participants of the Pacific Leaders' United Nations ESCAP Special Session, held in conjunction with the sixty-second session of ESCAP in 2006, ESCAP conducted a study, in cooperation with ITU and the secretariat of the Pacific Islands Forum, of the Pacific connectivity situation and of the opportunities for improved benefits to Pacific States from enhanced connectivity infrastructure, products and services. The study was also supported by the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, and the UNDP Special Unit for South-South Cooperation, and will be presented to Pacific leaders in 2008.

51. ITU is organizing a global multi-stakeholder partnership, called "Connect Africa" to mobilize the human, financial and technical resources required to bridge major gaps in ICT infrastructure across the region, with the aim of supporting affordable connectivity and applications and services to stimulate economic growth, employment and development throughout Africa. Connect Africa was launched at a Summit of leaders held in Kigali on 29 and 30 October 2007. It was organized by ITU, the African Union, the World Bank and the Global Alliance for Information and Communication Technologies and Development of the United Nations Department of Economic and Social Affairs, in partnership with the African Development Bank, the African Telecommunication Union, ECA and the Global Digital Solidarity Fund. The collaborative effort seeks to involve various stakeholders active in the region, including China, India, the European Commission, the Group of Eight, the Organization for Economic Cooperation and Development, Arab countries, major ICT companies, UNDP and other international organizations.

52. The Telemedicine Task Force (TTF), which comprises representatives of the European Commission, ESA, WHO, the African Union Commission, the New Partnership for Africa's Development, the African Development Bank, the Central African Economic and Monetary Area, the Organization of Coordination for the Control of Endemic Diseases in Central Africa, the East African Community, the Economic Community of West African States, and the secretariat of the African, Caribbean and Pacific Group of States, released a report entitled "eHealth for Sub-Saharan Africa: Opportunities for Enhancing the Contribution of ICT to Improve Health Services" in July 2007. The European Commission has accepted the

recommendations of TTF to implement two pilot projects, respectively entitled “Medical e-content via satellite for the African health work force” and “Satellite-based tele-consultation service for rural areas”, the results of which will form the basis for long-term actions to support the gradual development of an e-health network covering sub-Saharan Africa. ESA has been selected as the implementing agency for the pilot projects and a “statement of work” is being finalized.

53. WHO intends to strengthen health information management at the district level in Africa through an “Africa Health Infoway” (AHI) initiative. AHI covers 53 African countries and is focused on district-level health data collection and processing and evidence-based decision-making in health. ICTs appropriate for rural district communities, such as satellite-based communication, long-distance wireless connectivity and solar-powered computing devices are among technology solutions planned for launch in the countries. Integrated district-based health information systems are also planned for potential deployment in 7,000 districts, in close coordination with relevant WHO units and external partners. AHI is a WHO-led effort and pursued in close partnership with ECA, ITU, the African Union Commission and a number of IT companies with technologies appropriate for the African environment.

54. GEONETCast is a global, environmental information delivery system utilizing communications satellites and digital video broadcasting by satellite (DVB-S) transmission standards (for further information, see the GEONETCast website at <http://www.geonetcast.org>). GEONETCast was initially established by WMO, the European Organization for Meteorological Satellites (EUMETSAT) and the United States National Oceanic and Atmospheric Administration (NOAA) as an enabling technology project in the context of GEOSS promoted by GEO. Earth-observation-satellite or surface-based data and products are transmitted to users via a satellite multicast, access-controlled, broadband capability. It enables those users to rely on relatively low-cost receiving systems that are commercially available on a highly competitive global market. No Internet connection is required and the receiving station is simply a personal computer with a DVB card and corresponding software, and an off-the-shelf satellite television dish with low noise block (LNB) and cable. The system will facilitate and expand access to information for users worldwide and thus has the potential to support numerous United Nations programmes.

55. UNHCR will implement an operational data portal, with an Internet-based GIS at its core. The portal will become the sharing and exchange platform in support of field operations and provide a set of collaborative tools for UNHCR and its partners in the field and at the global level. The portal will be compatible with the United Nations spatial data infrastructure standards, protocols and recommendations.

56. Taking stock of new tools such as Google Earth and Virtual Earth, UNHCR, UNOSAT and other participants in the Inter-Agency Meeting on Outer Space Activities are studying and testing, through various field activities, the development of reliable operational and geographic databases, as well as the dissemination of information to specialized forums and to the general public.

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

57. As noted by the fifteenth WMO Congress, space weather has a significant impact on technical systems and human activities and there is potential for synergy between meteorology and space weather monitoring. In particular, space weather events affect meteorological satellites and, reciprocally, meteorological satellites are providing space weather measurements. WMO will investigate, in 2008, the possibility of supporting international coordination in the area of space weather in collaboration with the International Space Environment Service in order to provide the best operational service to major application areas such as aviation and related ICAO activities or telecommunications and related ITU activities.

IV. Other activities

58. The schedule of activities of the United Nations Programme on Space Applications for 2008 is described in the report of the Expert on Space Applications (A/AC.105/900) and on the website of the Office for Outer Space Affairs (<http://www.unoosa.org/oosa/index.html>). In 2008, the Office for Outer Space Affairs will, in particular, cooperate with UNESCO on the International Conference on the Use of Space Technology for Water Management, to be held in Riyadh from 15 to 19 March 2008, and with WHO on the Workshop on Using Space Technologies for Tele-health to Benefit Africa, to be held in Ouagadougou from 5 to 9 May 2008.

59. Since 2003, IAEA has participated in the work of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space on developing the objectives, scope and attributes of an international technically based framework of goals and recommendations for the safety of planned and currently foreseeable space nuclear power source (NPS) applications in outer space. The Scientific and Technical Subcommittee strongly supported the view that the development of such a safety framework would benefit from the expertise and well-established procedures of IAEA for developing safety standards, which would complement the expertise of the Subcommittee. To that end, a joint expert group, consisting of representatives of the Subcommittee and of IAEA, was established in early 2007. In accordance with IAEA procedures, the proposal was described in a document preparation profile, which was reviewed by the IAEA Safety Standards Committees and approved by the IAEA Commission on Safety Standards in June 2007. The framework is expected to be issued in 2010 as a joint publication of the Scientific and Technical Subcommittee and IAEA.
