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Scientific and Technical Subcommittee

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Draft report

Addendum

VIII. Near-Earth objects

1. In accordance with General Assembly resolution 59/116, the Scientific and Technical Subcommittee considered agenda item 10, "Near-Earth objects", under the three-year work plan adopted at its forty-first session (A/AC.105/823, annex II). Pursuant to the work plan, in 2005, international organizations, regional bodies and others active in the field of near-Earth object research were invited to report on their activities.
2. The Subcommittee had before it a note by the Secretariat (A/AC.105/839) containing information on research in the field of near-Earth objects carried out by the European Space Agency and the Spaceguard Foundation.
3. The representatives of China, the Czech Republic, Malaysia, the United Kingdom and the United States made statements on the item.
4. The Subcommittee heard the following scientific and technical presentations on the item:
 - (a) "Introduction to near-Earth objects", by the representative of the United Kingdom;
 - (b) "Near-Earth object activities of the European Space Agency", by the representative of ESA;
 - (c) "How to deal with a real near-Earth object impact possibility: the case of 2004 MN4", by the representative of the Spaceguard Foundation;



(d) “Report on the work of the Organization for Economic Co-operation and Development (OECD) on the near-Earth objects hazard”, by the representative of OECD;

(e) “OECD study on near-Earth objects: the United Kingdom perspective”, by the representative of the United Kingdom;

(f) “Proposals on the creation of the ‘Citadel’ international planetary defence system”, by the representative of the Russian Federation;

(g) “Comet/asteroid impacts and human society”, by the representative of the International Council for Science (ICSU);

(h) “The near-Earth object programme in the Republic of Korea”, by the representative of the Republic of Korea.

5. The Subcommittee noted that near-Earth objects were asteroids and comets with orbits that crossed the orbit of the planet Earth.

6. The Subcommittee noted that, although the probability of collisions of near-Earth objects with the Earth was very low, near-Earth objects nonetheless could pose a threat to the Earth.

7. The Subcommittee noted that collisions of near-Earth objects with the Earth had occurred in the past and that the largest and most recent collision had occurred when the Tunguska meteorite had fallen on the territory of Russia in 1908.

8. The Subcommittee noted that the most effective tools for the management of the risk posed by near-Earth objects were early detection and precision tracking. The Subcommittee noted the current and future work being conducted and planned by member States and observers of the Committee, through ground-based and space-based research, to discover and track near-Earth objects. The Subcommittee also noted that a number of member States were establishing specialized facilities for the observation of near-Earth objects.

9. The Subcommittee noted that some member States had implemented or were planning to implement fly-by and exploration missions to near-Earth objects. The Subcommittee also noted a number of international missions to near-Earth objects.

10. The Subcommittee noted that, given sufficient warning time, countermeasures to either fragment or deflect an incoming near-Earth object were possible. The Subcommittee also noted that such activities would require a large and coordinated international effort.

11. The view was expressed that a technical study outlining the history of near-Earth objects and the possibility of risk mitigation should be conducted.

12. The Subcommittee agreed to revise the work plan under this item for 2006 and 2007, as contained in annex II, para. [...], to the present report.

13. The Subcommittee agreed that international cooperation in monitoring near-Earth objects should be continued and expanded.

14. The view was expressed that, in 2006, the reports of member States, international organizations and regional bodies should focus on information on space missions, as well as on national or broader collaborative activities on the search for and follow-up of near-Earth objects.

15. The view was expressed that member States could include the threat of near-Earth objects in their disaster-preparedness planning.

IX. Space-system-based disaster management support

16. In accordance with General Assembly resolution 59/116, the Scientific and Technical Subcommittee considered agenda item 11, “Space-system-based disaster management support”, under the three-year work plan adopted at its forty-first session (A/AC.105/823, annex II).

17. The representatives of Canada, China, France, Germany, India, Indonesia, Japan, Nigeria, the Russian Federation, the United Kingdom and the United States made statements on the item.

18. The Subcommittee heard the following scientific and technical presentations on the item:

(a) “Activities of the Disaster Monitoring Constellation”, by the representative of Algeria;

(b) “The International Charter ‘Space and Major Disasters’”, by the representative of Canada;

(c) “Disaster monitoring from space: German support and experience related to the tsunami catastrophe”, by the representative of Germany;

(d) “Glimpses of the Indian response to the Asian tsunami disaster of 2004”, by the representative of India;

(e) “The role of remote sensing to support disaster management in Indonesia”, by the representative of Indonesia;

(f) “JAXA’s activities for space-system-based disaster management support”, by the representative of Japan;

(g) “Development of methods of space monitoring of potentially dangerous and catastrophic phenomena with the use of a micro-satellite universal platform”, by the representative of the Russian Federation;

(h) “UK activities in disaster management: the Disaster Monitoring Constellation”, by the representative of the United Kingdom;

(i) “World Meteorological Organization multi-hazard strategy for disaster reduction”, by the observer for WMO.

19. In the course of the discussion, delegations reviewed national and cooperative efforts in the use of space-based technologies to support disaster-preparedness and response activities. Examples were given of national initiatives and bilateral, regional and international cooperation, including forthcoming missions, that would increase the availability of space-based technologies.

20. The Office for Outer Space Affairs informed the Subcommittee of the status of preparations of the study referred to in paragraph [...] above. The Subcommittee noted with satisfaction that, as of the beginning of its forty-second session, 38 experts from 20 Member States, two specialized agencies of the United Nations

and three non-governmental organizations having permanent observer status with the Committee had been nominated by their Governments or organizations as members of the ad hoc expert group. The Subcommittee also noted that participation in the ad hoc group of experts was open to all Member States and relevant international organizations.

21. The Subcommittee further noted that the ad hoc group had presented its draft terms of reference and outline of its work plan for the preparation of the study (A/AC.105/C.1/2005/CRP.17). The Subcommittee approved the draft terms of reference and outline of the work plan, as amended.

22. The view was expressed that the exchange of information and experience among various space agencies on earthquake prediction using data and information from satellites should be an important element in the scope of work of the proposed “disaster management international space coordination entity”.

23. The Subcommittee noted with satisfaction that the World Conference on Disaster Reduction had been held in Kobe, Japan, from 18 to 22 January 2005. The Conference resulted in the Hyogo Declaration and the Hyogo Framework for Action 2005-2015, in which the importance of Earth observations in disaster management was stressed. The Conference also witnessed the launch of the international early warning programme.

24. The Subcommittee noted with satisfaction the progress made by 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”). In February 2005, the Japan Aerospace Exploration Agency (JAXA) had joined the Charter, increasing to seven the number of space agencies that had made their space assets available to civil protection authorities responding to a major disaster. The Subcommittee also noted that a proposal to enable the Disaster Monitoring Constellation to become a member of the Charter was in preparation.

25. The Subcommittee noted with satisfaction the commitment by the members of the Disaster Management Constellation to donate 5 per cent of all data gathered through the Constellation for the global management of disasters.

26. The view was expressed that, in addition to its use in disaster response, the Charter should also be activated for the prevention and forecasting of disasters.

27. The Subcommittee noted with satisfaction that the international workshop to draw conclusions at the national, regional and global levels from the series of United Nations regional workshops on space technology and disaster management, organized by the Office for Outer Space Affairs within the framework of the United Nations Programme on Space Applications, had been held in Munich, Germany, in October 2004. The Workshop was co-sponsored by ESA, hosted by the German Aerospace Center (DLR) and organized in conjunction with UNESCO and the International Strategy for Disaster Reduction. It had been attended by 170 participants representing 51 countries and various international organizations, whose final recommendations formed the “Munich vision”, a global strategy for improved risk reduction and disaster management using space technology.

28. The view was expressed that research on earthquake prediction using data and information from satellites must take into consideration historical, archaeological and palaeoseismological data on earthquakes. That delegation was of the view that a

few regions with clear earthquake recurrence data should be identified and a strategy should be developed to observe and monitor the earthquakes in those areas using satellites of all space agencies.

29. The Subcommittee noted with satisfaction the contribution of space-based technologies to the recent Indian Ocean tsunami disaster relief efforts. The International Charter “Space and Major Disasters” had been activated three times in the period immediately following the tsunami, including once by the Office for Outer Space Affairs in its capacity as a cooperating body of the Charter. Data and information products from a number of Earth observation and meteorological satellites, including high-resolution satellite imagery, had been utilized by relief and disaster response agencies in the aftermath of the catastrophe. Additionally, satellite imagery had provided a unique opportunity to observe the propagation of the tidal wave itself during the time slot corresponding to its intense oceanic phase.

30. The Subcommittee noted that relief efforts conducted in response to the Indian Ocean tsunami disaster had shown that emergency satellite-based communications had been crucial in saving lives and reducing human suffering by establishing remote medical services. The Subcommittee also noted that very small aperture terminal networks had restored vital relief-related conferencing capabilities, in some cases in 24 hours, while Inmarsat stations and portable satellite-based telephone services had provided logistical support for the distribution of medical materials, as well as food and drinking water.

31. The Subcommittee welcomed the international efforts to set up an effective tsunami early warning system for the area of the Indian Ocean, as well as for other areas of the world, under the global coordination of the Intergovernmental Oceanographic Commission of UNESCO. The Subcommittee further noted that, at the Association of South-East Asian Nations leaders’ meeting on the aftermath of the massive earthquake and tsunami of 26 December 2004, held in early January 2005, participants had pledged their commitment to the establishment of a regional early warning system through the “Declaration on action to strengthen emergency relief, rehabilitation, reconstruction and prevention in the aftermath of the earthquake and tsunami disaster of 26 December 2004”.

32. The Subcommittee noted that the 10-year implementation plan for a Global Earth Observation System of Systems (GEOSS) had identified, as one of the nine societal benefits to which GEOSS would contribute, the reduction of loss of life and property from natural and human-induced disasters, and called for promoting the effective use of satellite data by developing better coordinated systems for monitoring, prediction, risk assessment, early warning, mitigation and response to hazards at the local, national, regional and international levels. The Subcommittee also noted that, at the third Earth Observation Summit, held in Brussels on 16 February 2005, a communiqué had been adopted relating to support for tsunami and multi-hazard warning systems within the context of GEOSS. The communiqué also called for the Group on Earth Observation, which had been established on a permanent basis by the Summit, to support the expansion of multi-hazard capabilities for disaster reduction at the national, regional and international levels.

33. The Subcommittee noted the work carried out by the GeoHazards Theme within the framework of the Integrated Global Observing Strategy (IGOS). The GeoHazards Theme concentrated on pre-disaster monitoring and prediction in the

areas of earthquakes, landslides and volcanoes and was being implemented jointly with the Geological Applications of Remote Sensing (GARS) programme of UNESCO.

34. The Subcommittee noted that the current chairperson of the Committee for Earth Observation Satellites (CEOS) had identified the promotion of better-coordinated space-based disaster management capabilities as a key objective for CEOS in 2005.

35. The Subcommittee noted that the “Respond” project, which was being developed within the Global Monitoring for Environment and Security initiative, was aimed at improving access to maps, satellite imagery and geographical information. The expected services from Respond would address all parts of the humanitarian crisis cycle and would cover both slow-onset crises such as famine and immediate disaster situations such as earthquakes.

XI. Support to proclaim the year 2007 International Geophysical and Heliophysical Year

36. In accordance with General Assembly resolution 59/116, the Scientific and Technical Subcommittee considered agenda item 13, “Support to proclaim the year 2007 International Geophysical and Heliophysical Year”, as a single issue/item for discussion.

37. The representatives of the Russian Federation and the United States made statements under the item.

38. The Subcommittee heard the following scientific and technical presentations under this agenda item:

(a) “Some results of the ‘CORONAS—SPIRIT’ experiment”, by the representative of the Russian Federation;

(b) “Plans for the International Heliophysical Year and the role of the United States”, by the representative of the United States.

39. The Subcommittee noted that in proclaiming 2007 International Heliophysical Year, an international programme of scientific collaboration aimed at understanding the external drivers of planetary environments would be conducted involving the deployment of new instrumentation, new observations from the ground and in space and an educational component.

40. The Subcommittee noted that 2007 would also be the fiftieth anniversary of International Geophysical Year, organized in 1957 to study global phenomena of the Earth and the near-Earth space environment and involving about 60,000 scientists from 66 countries, working at thousands of stations around the world to obtain simultaneous, global observations from the ground and space.

41. The Subcommittee noted that International Heliophysical Year, building on results obtained during International Geophysical Year 1957, would involve the study of the universal processes in the solar system that affected the interplanetary and terrestrial environments. Such a study would pave the way for safe human space

travel to the Moon and planets and would serve to inspire the next generation of space physicists.

42. The Subcommittee noted that the specific objectives of International Heliophysical Year would be:

(a) To provide benchmark measurements of the response of the magnetosphere, the ionosphere, the lower atmosphere and Earth's surface to heliospheric phenomena, in order to identify global processes and drivers that affected the terrestrial environment and climate;

(b) To further the global study of the Sun-heliosphere system outwards to the heliopause, in order to understand the external and historical drivers of geophysical change;

(c) To foster international scientific cooperation in the study of heliophysical phenomena;

(d) To communicate the unique scientific results of International Heliophysical Year to interested members of the scientific community and the general public.

43. The Subcommittee noted that International Heliophysical Year would strongly complement the International Living with a Star programme by drawing more attention to the programme at the national, regional and international levels.

44. The Subcommittee noted with satisfaction that the United Nations Basic Space Science Initiative was playing a major role in internationalizing International Heliophysical Year. A major thrust of International Heliophysical Year was to deploy arrays of small instruments, such as magnetometers, radio antennas, Global Positioning System (GPS) receivers and all-sky cameras around the world, in order to provide global measurements of heliospheric phenomena.

45. The Subcommittee invited Member States to provide government support to enable local scientists to participate in the analysis and interpretation of data from space-based missions on Earth and heliospheric phenomena.

46. The Subcommittee noted with satisfaction the progress already made in the preparations for International Heliophysical Year, including the worldwide outreach to disseminate basic information on the Year, as carried out by the United Nations Basic Space Science Initiative, in cooperation with the International Heliophysical Year organizers through a website, dedicated pages on the website of the Office for Outer Space Affairs, a newsletter and a flyer. The websites provided basic information on International Heliophysical Year and were particularly useful for scientists in developing countries.

47. The Subcommittee also noted with satisfaction that the United Nations/European Space Agency Workshop on Basic Space Science: International Heliophysical Year, to be held in Al-Ain, United Arab Emirates, from 20 to 23 November 2005, would be the first workshop organized within the framework of the United Nations Programme on Space Applications addressing International Heliophysical Year.

XII. Draft provisional agenda for the forty-third session of the Scientific and Technical Subcommittee

48. In accordance with General Assembly resolution 59/116, the Scientific and Technical Subcommittee considered proposals for a draft provisional agenda for its forty-third session to be submitted to the Committee on the Peaceful Uses of Outer Space. Pursuant to paragraph 16 of that resolution, the Subcommittee requested the Working Group of the Whole, established at its 622nd meeting, on 23 February, to consider the draft provisional agenda for the forty-third session of the Subcommittee.

49. At its [...] meeting, on 3 March, the Subcommittee endorsed the recommendations of the Working Group of the Whole concerning the draft provisional agenda for the forty-third session of the Subcommittee, as contained in the report of the Working Group of the Whole (see annex [...] to the present report).

50. The Subcommittee noted that the Secretariat had scheduled the forty-third session of the Subcommittee to be held from 20 February to 3 March 2006.