United Nations A/AC.105/C.1/L.304/Add.2

General Assembly

Distr.: Limited
16 February 2010

Original: English

Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
Forty-seventh session
Vienna, 8-19 February 2010

Draft report

Addendum

I. Recent developments in global navigation satellite systems

1. In accordance with General Assembly resolution 64/86, the Scientific and Technical Subcommittee considered agenda item 10, "Recent developments in global navigation satellite systems".

2. The representatives of China, Germany, India, Italy, Japan, Nigeria, the Russian Federation and the United States made statements under agenda item 10.

3. The Subcommittee heard the following scientific and technical presentations:

(a) "Introduction of the Quasi-Zenith Satellite System (QZSS)", by the representative of Japan;

(b) "Highlights of the space communications and navigation symposium", by the representative of Austria.

4. The Subcommittee had before it the following documents:

(a) Note by the Secretariat on the Fourth Meeting of the International Committee on Global Navigation Satellite Systems (A/AC.105/948);

(b) Report of the Secretariat on activities carried out in 2009 in the framework of the workplan of the International Committee on Global Navigation Satellite Systems (A/AC.105/950).

5. The Subcommittee reviewed issues related to the International Committee on Global Navigation Satellite Systems (ICG), the latest developments in the field of global navigation satellite system (GNSS) science and innovative technology applications, and new GNSS applications.

V.10-51084 (E)

Please recycle

6. The Subcommittee noted with appreciation that ICG had been established on a voluntary basis as a forum to promote cooperation, as appropriate, on matters of mutual interest to its members related to civil satellite-based positioning, navigation, timing and value-added services, as well as compatibility and interoperability of GNSS, while increasing their use to support sustainable development, particularly in developing countries.

7. The Subcommittee noted with satisfaction that the fourth meeting of ICG was held in Saint Petersburg, Russian Federation, from 14 to 18 September 2009 and that the fifth meeting of ICG would be held in Turin, Italy, from 18 to 22 October 2010 in cooperation with the European Union. The Subcommittee also noted that the sixth meeting of ICG would be hosted by Japan, in 2011, and the seventh meeting would be hosted by China, in 2012.

8. The Subcommittee commended the Office for Outer Space Affairs for the support it continued to provide in its role as the executive secretariat of ICG and its Providers' Forum.

9. The Subcommittee noted the progress made with regard to the ICG workplan and welcomed the adoption of a new principle on transparency for open services.

10. The Subcommittee noted that participants in the Providers' Forum continued to discuss the enhancement of the compatibility and interoperability of current and future regional and global navigation satellite systems, to consider proposals on open service information dissemination and on service performance monitoring, and to exchange views on issues related to the spectrum of radio-navigation satellite services (RNSS). The Subcommittee also noted that the Providers' Forum had held its fourth meeting in conjunction with the fourth meeting of ICG.

11. The Subcommittee noted that the United States was committed to keeping the global positioning system (GPS) as a central pillar in an emerging international system of GNSS. The Subcommittee also noted that new applications for GPS were constantly being introduced and that in addition to having 30 operational satellites the system would also have the GPS Block III spacecraft, which would be launched during 2010.

12. The Subcommittee noted with appreciation the cash contributions made by the United States, which enabled the Office for Outer Space Affairs to undertake a number of activities relating to GNSS, ICG and the Provider's Forum, including the organization of regional workshops.

13. The Subcommittee noted that the baseline 24-satellite constellation of the Global Navigation Satellite System (GLONASS) of the Russian Federation would be deployed in 2010 and would operate in the framework of the GLONASS federal mission-oriented programme, to be extended through 2020.

14. The Subcommittee noted that Galileo, Europe's future satellite navigation system, was scheduled to become available with as many as 18 of the planned 30 satellites in 2014 and that innovative receiver technologies and Galileo-based application programmes were being developed. The Subcommittee took note of the test beds of Germany's Galileo test and development environment for land mobile applications and for the maritime Galileo test and development environment for nautical navigation solutions and port-oriented traffic guidance systems.

15. The Subcommittee noted that Italy, as one of the founders of the Galileo and the European Geostationary Navigation Overlay Service (EGNOS) projects, continued to promote and develop national application projects aimed at fostering the use of satellite navigation, harmonizing them with European projects.

16. The Subcommittee noted that the GPS-aided GEO-Augmented Navigation System (GAGAN), a space-based augmentation system, was being implemented over Indian airspace. The final operational phase of this system had been approved and was expected to be commissioned by 2011. The Indian Regional Navigation Satellite System (IRNSS), capable of providing optimal position accuracy using a stand-alone satellite system, was also going to be implemented and would comprise seven satellites: three in geostationary orbit and four in geosynchronous orbit. That system was expected to be commissioned during the period 2012-2013.

17. The Subcommittee noted that Japan was promoting the Quasi-Zenith Satellite System (QZSS) and the Multi-functional Transport Satellite (MTSAT) Satellite-based Augmentation System (MSAS), both of which were augmentation systems of GPS. While the first QZSS satellite would be launched in 2010, MSAS had been commissioned for air navigation in September 2007 and, since then, had been providing aircraft with high-quality service.

18. The Subcommittee noted that the third satellite in the Compass/BeiDou Navigation Satellite System of China was successfully launched in January 2010 and that the System had been put to use in a wide variety of fields, such as mapping, telecommunications, water conservation, fishery, transportation and the prevention of forest fires.

19. The Subcommittee noted that Nigeria was establishing 13 continuously operating reference stations as part of the ground segment of a future space-based augmentation system for Africa.

II. Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)

20. In accordance with General Assembly resolution 64/86, the Subcommittee considered agenda item 6, “Implementation of the recommendations of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)”.

21. The representatives of Canada, Iran (Islamic Republic of), Japan, Nigeria and the United States made statements under agenda item 6.

22. The Subcommittee heard the following scientific and technical presentations:

(a) “ASI and bi/multilateral space astronomy facilities”, by the representative of Italy;

(b) “Recent Earth observation/space technology applications for societal benefits in India”, by the representative of India;

(c) “Advances of space medicine and biology research in Russia”, by the representative of the Russian Federation;

(d) “Training experience in Italy under the cooperation agreement between Kenya and Italy”, by the representative of Italy;

(e) “World Space Week in Iran”, by the representative of the Islamic Republic of Iran;

(f) “Opening a new window to other worlds with spectropolarimetry: SEARCH”, by the representative of Austria;

(g) “Action team 6 on improving public health: an overview”, by the representative of Canada;

(h) “Tele-health/telemedicine in Burkina Faso”, by the representative of Burkina Faso;

(i) “The youth space vision for the next decade: looking back to look forward”, by the observer for SGAC.

23. The Subcommittee expressed its appreciation for the flexible approach adopted in implementing the recommendations of UNISPACE III. By making use of multi-year workplans and action teams, the Committee was able to address a wide range of issues, thereby enabling maximum implementation of those recommendations.

24. The Subcommittee noted with satisfaction that further progress had been made in the implementation of the remaining recommendations of UNISPACE III and that a number of activities and initiatives had been undertaken by Member States, United Nations entities and other observers of the Committee in the past year.

25. The Subcommittee noted that the Action Team on Public Health (action team 6) and the Action Team on Near-Earth Objects (action team 14) had held meetings during its forty-seventh session.

26. The Subcommittee noted with appreciation that the Action Team on Public Health, co-chaired by Canada and India, had included in its workplan the use of telecommunications in the context of tele-health and Earth observation applications in the context of tele-epidemiology, with an emphasis on improving public health and infectious disease management. The Subcommittee noted that the action team would update its workplan for the period 2010-2011 and would report on its implementation at the forty-eighth session of the Subcommittee.

27. The view was expressed that the Subcommittee should consider organizing a fourth United Nations conference on the exploration and peaceful uses of outer space in order to address present and future challenges to humanity, such as climate change.

28. The Working Group of the Whole, reconvened in accordance with General Assembly resolution 64/86, also considered agenda item 6, “Implementation of the recommendations of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)”. At its [...] meeting, on [...] February, the Subcommittee endorsed the recommendations of the Working Group of the Whole concerning the implementation of the recommendations of UNISPACE III, which are contained in annex I to the present report.

29. The Subcommittee welcomed the decision by the Working Group of the Whole to focus its efforts relating to the implementation of the recommendations of

UNISPACE III on the Committee's contribution to the work of the Commission on Sustainable Development.

III. Near-Earth objects

30. In accordance with General Assembly resolution 64/86, the Scientific and Technical Subcommittee considered agenda item 12, "Near-Earth objects".

31. The representatives of Germany, Japan, Mexico and the United States made statements under agenda item 12.

32. The Subcommittee heard the following scientific and technical presentations:

(a) "Legal aspects of NEO threat response and related institutional issues", by the representative of Australia;

(b) "The NEO problem: activities in Russia", by the representative of the Russian Federation;

(c) "Near-Earth object observations program", by the representative of the United States;

(d) "Global project on the anti-asteroid protection of the Earth", by the representative of Ukraine;

(e) "On the possible approach to formation of echelon short-term reaction of the international planetary defense system", by the representative of the Russian Federation;

(f) "The Hayabusa mission: challenge to near-Earth asteroid sample return and new insights into solar system origin", by the representative of Japan;

(g) "Apophis 2029: a unique mission opportunity", by the representative of France;

(h) "Current status of ESA's space situational awareness near-Earth object programme", by the observer for ESA;

(i) "NEO IAWN workshop summary", by the observer for SWF;

33. The Subcommittee had before it the following documents:

(a) Note by the Secretariat on information on research in the field of near-Earth objects carried out by Member States, international organizations and other entities (A/AC.105/949);

(b) Interim report of the Action Team on Near-Earth Objects (2009-2010) (A/AC.105/C.1/L.301).

34. The Subcommittee noted that near-Earth objects were asteroids and comets with orbits that could cross the orbit of the Earth. The Subcommittee also noted that interest in asteroids was largely fuelled by their scientific value as remnant debris from the formation process of the inner solar system, the potentially devastating consequences of such objects colliding with the Earth and the wide range of natural resources they contained.

35. The Subcommittee noted that early detection and precision tracking were the most effective tools for the management of threats posed by near-Earth objects. The

Subcommittee also noted that any measures to mitigate such threats would require coordinated international efforts and increased knowledge of the properties of near-Earth objects.

36. The Subcommittee noted with satisfaction that ASE and SWF, with support from the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean (CRECTEALC), had organized a workshop on the establishment of a near-Earth object information, analysis and warning network, which had been held in Mexico City, under the auspices of the Government of Mexico, in January 2010.

37. The Subcommittee also noted with satisfaction that the University of Nebraska-Lincoln (United States), in order to assist the intersessional work of the Action Team on Near-Earth Objects and the Working Group on Near-Earth Objects, had prepared a report entitled "Legal aspects of NEO threat response and related institutional issues", in which key legal and institutional issues linked to potential future threats posed by near-Earth objects were examined.

38. The Subcommittee noted with appreciation the international projects undertaken by Member States to detect and characterize near-Earth objects, such as the Panoramic Survey Telescope and Rapid Response System (Pan-STARRS), the Large Millimeter Telescope, the Large Synoptic Survey Telescope and the Pulkovskaya Observatory. In that regard, the Subcommittee also noted with satisfaction the progress made in the ESA Space Situational Awareness programme, which included a segment dedicated to the assessment and classification of impact risks of near-Earth objects.

39. The Subcommittee noted with satisfaction that the Romanian Space Agency would co-organize the IAA Planetary Defence Conference to be held in Romania, in May 2011.

40. 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 welcomed past and upcoming missions investigating near-Earth objects, including the Dawn, Deep Impact and Stardust spacecraft missions of the United States; the Near Earth Object Surveillance Satellite mission of Canada; the Marco Polo near-Earth object sample return mission of ESA and JAXA; the Hayabusa near-Earth object sample return mission of Japan; and the prospective AsteroidFinder spacecraft mission of Germany.

41. The Subcommittee noted the significant progress achieved by the United States in reaching its target of detecting 90 per cent of all near-Earth objects larger than one kilometre in diameter. The Subcommittee noted that the United States had determined that fewer than 150 of the 900 near-Earth objects with a diameter larger than one kilometre could pose a hazard of collision with the Earth.

42. The Subcommittee agreed that efforts to detect, track and characterize near-Earth objects should be continued and expanded at the national and international levels.

43. In accordance with General Assembly resolution 64/86, the Working Group on Near-Earth Objects was reconvened, under the chairmanship of Sergio Camacho (Mexico). The Working Group on Near-Earth Objects held […] meetings.

44. At its […] meeting, on […] February, the Subcommittee endorsed the report of the Working Group on Near-Earth Objects, which is contained in annex III to the present report.

IV. International Space Weather Initiative

45. In accordance with General Assembly resolution 64/86, the Scientific and Technical Subcommittee considered agenda item 13, "International Space Weather Initiative" under the workplan contained in the annex to document A/AC.105/933 (para. 16).

46. The representatives of Canada, China, India, Indonesia, Japan and the United States made statements under agenda item 13. The observer for the World Meteorological Organization (WMO) also made a statement.

47. The Subcommittee heard the following scientific and technical presentations:

(a) "International experiments of the Russian Academy of Sciences in the framework of the space weather programme", by the representative of the Russian Federation;

(b) "International Space Weather Initiative", by the representative of the United States;

(c) "Space weather impact on radio systems", by the representative of Germany;

(d) "Canadian space weather activities in support of the International Space Weather Initiative", by the representative of Canada;

(e) "Japan's contribution to the ISWI", by the representative of Japan;

(f) "Space debris, near-Earth objects and space weather research and observation in Indonesia", by the representative of Indonesia.

48. The Subcommittee had before it notes by the Secretariat containing reports on regional and international activities related to the International Space Weather Initiative (A/AC.105/967 and Add.1 and A/AC.105/C.1/2010/CRP.8).

49. The Subcommittee noted that the International Space Weather Initiative would contribute to the observation of space weather through the deployment of instrument arrays and the sharing of observed data among researchers around the world.

50. The Subcommittee noted that the Initiative would explore the solar corona; deepen understanding of the function of the Sun and the effects that the variability of the Sun could have on the Earth's magnetosphere, environment and climate; explore the ionized environments of planets; and determine the limits of the heliosphere and deepen understanding of its interaction with interstellar space.

51. The Subcommittee welcomed the fact that participation in the Initiative was open to scientists from all countries, as instrument hosts or instrument providers.

52. The Subcommittee noted that the Initiative offered Member States the opportunity to coordinate global monitoring of space weather using space- and ground-based assets, assist in consolidating common knowledge and develop essential forecast capabilities to improve the safety of space-based assets.

53. The Subcommittee noted that events related to space weather were of significant concern to all countries, owing to technological and economic interdependence and the growing dependence on space assets to deliver vital services.

54. The Subcommittee noted with appreciation that information on the ground-based worldwide instrument arrays was being distributed through a newsletter being published by the Space Environment Research Centre of Kyushu University (Japan) and through the International Space Weather Initiative website (www.iswi-secretariat.org).

55. The Subcommittee noted with appreciation that the Office for Outer Space Affairs had joined the study of the effect of sudden disturbances on the ionosphere and had installed a sudden ionospheric disturbance monitor at its permanent outer space exhibit. The daily data sets produced by that instrument and recorded by the Office were being transferred to Stanford University (United States) for scientists worldwide to use in their analysis of the complex relationship between the Earth and the Sun.

56. The Subcommittee welcomed the fact that the United Nations Programme on Space Applications had organized the first of a series of United Nations workshops, co-sponsored by ESA, NASA and JAXA and held in the Republic of Korea in 2009, to consider the International Space Weather Initiative, and that the next workshop was scheduled to take place in Egypt in November 2010. The third and fourth workshops in the series would be hosted by Nigeria in 2011 and Ecuador in 2012.