



**Committee on the Peaceful
Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-fourth session
Vienna, 30 January-10 February 2017****Draft report****II. United Nations Programme on Space Applications**

1. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 4, “United Nations Programme on Space Applications”.
2. The representatives of Chile, China, Costa Rica, Germany, Indonesia, Italy, Japan, Mexico, Nigeria, Pakistan, the Russian Federation and Venezuela (Bolivarian Republic of) made statements under agenda item 4. A statement was also made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were made by representatives of other member States.
3. The Subcommittee heard the following scientific and technical presentations:
 - (a) “Report on the First Advisory Committee Meeting of RCSSTEAP (China)”, by the representative of China;
 - (b) “Implementation of the Brazilian Science Data Center”, by the representative of Brazil;
 - (c) “The First International Space Forum 2016 in Trento (Italy)”, by the representative of Italy;
 - (d) “The space research projects of La Sapienza University of Rome, in the framework of the agreement with the Italian Space Agency”, by the representative of Italy.
4. At the 855th meeting, the Director of the Office for Outer Space Affairs, following the request made by the General Assembly in its resolution 71/90, apprised the Subcommittee of the status of the Office’s capacity-building activities, including the status of implementation of the Programme on Space Applications. She also informed the Subcommittee that, as part of the Office’s responsibilities to implement a number of important complex plans, activities and initiatives aimed at the development of UNISPACE+50, the Office had undertaken a number of important transitional measures, which included reassigning the function of the Expert on Space Applications to the post of the Director of the Office and conceptual reconsideration of planning and reporting on the activities conducted under the Programme on Space



Applications and UN-SPIDER, including overall capacity-building activities, in order to better accommodate numerous UNISPACE+50 themes and priorities within existing workshops, seminars, technical advisory missions and other relevant activities of the Office. She stressed that those transitional efficiency measures were aimed at strengthening existing collaboration and opening up new partnerships, with the goal of assuring a flawless process towards UNISPACE+50 and, at the same time, working towards a more resilient capacity-building programme for the Office.

5. The Subcommittee noted with appreciation that, since its previous session, in-cash and in-kind contributions had been offered for the activities of the Office, including the Programme on Space Applications, by the Asia-Pacific Space Cooperation Organization (APSCO); the Asian Disaster Preparedness Centre; Agustín Codazzi Geographical Institute of Colombia (IGAC); the Austrian Research Promotion Agency (FFG); Beihang University, China; CANEUS International; the Centre for Remote Sensing of Land Surfaces of the University of Bonn, Germany; the China Manned Space Agency; the China National Space Administration; the European Commission; the European Space Agency; the German Aerospace Centre (DLR) Galileo Control Centre; the Ministry for Transport, Innovation and Technology, Austria; the Government of China; the National Emergency Commission, Dominican Republic; the Federal Ministry for Economic Affairs and Energy, Germany; the Government of Japan; the Government of Kenya; the Survey Department, Ministry of Land Reform and Management, Nepal; IAF; the International Centre for Integrated Mountain Development; the International Water Management Institute; JAXA; the Mexican Space Agency (AEM); the National Disaster Reduction Centre of China; the National Institute of Aeronautics and Space of Indonesia; the Pakistan Space and Upper Atmosphere Research Commission; the Secure World Foundation; the Sierra Nevada Corporation; United Arab Emirates Space Agency and the Mohammed bin Rashid Space Centre; and the Department of Geoinformatics of the University of Salzburg, Austria.

6. The Subcommittee also noted with appreciation that Japan and JAXA had continued to provide staff on a non-reimbursable load basis, in support of the Human Space Technology Initiative.

7. The Subcommittee expressed its appreciation to the Government and the Ministry of Industry of Italy for continuing the second-level specializing master's programme on Navigation and Related Applications, a joint initiative between the Politecnico di Torino and the Istituto Superiore Mario Boella, in collaboration with the Istituto Nazionale di Ricerca Metrologica and the Office for Outer Space Affairs, and noted that the programme had begun in October 2016 and would last for 12 months, including three months for pilot projects.

8. The Subcommittee expressed its appreciation to the Government of Japan for continuing the United Nations/Japan Long-Term Fellowship Programme on Nanosatellite Technologies, in cooperation with the Kyushu Institute of Technology, and noted that the six fellows selected in the 2016 round had begun their studies in October 2016.

9. The Subcommittee expressed its appreciation to the Government of Germany, which, in collaboration with the Center of Applied Space Technology and Microgravity at Bremen University and DLR, had continued the Fellowship Programme for the Drop Tower Experiment Series and had successfully conducted the second cycle of the programme.

10. The Subcommittee continued to express its concern over the still-limited financial resources available for carrying out the capacity-building activities of the

Office, including the United Nations Programme on Space Applications, and appealed to Member States to provide support through voluntary contributions.

11. The Subcommittee noted that the priority areas of the Programme were environmental monitoring, natural resource management, satellite communications for tele-education and telemedicine applications, disaster risk reduction, the use of global navigation satellite systems, the Basic Space Science Initiative, climate change, the Basic Space Technology Initiative and the Human Space Technology Initiative, and biodiversity and ecosystems.

12. The Subcommittee noted the continued collaboration between the Office for Outer Space Affairs and the Government of Japan, in collaboration with JAXA, in implementing the United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station Japanese Experiment Module (Kibo), known as “KiboCube”. The programme had been launched in September 2015 and was currently open for applicants under a second round for 2017 and 2018. The objective of the programme was to promote international cooperation and capacity-building in space technology and its applications under the Human Space Technology Initiative by providing opportunities to educational or research institutions in developing countries to deploy small satellites (CubeSats) from the Japanese Experiment Module (Kibo).

13. The Subcommittee noted the following activities conducted by the Office in 2016:

(a) United Nations/Costa Rica Workshop on Human Space Technology, held in San José, Costa Rica, from 7 to 11 March 2016. The report was made available in document A/AC.105/1124;

(b) United Nations/India Workshop entitled “Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience”, held in Hyderabad, India, from 8 to 11 March 2016. The report was made available in document A/AC.105/1125;

(c) Discovery day on the benefits of very high-resolution imagery (in collaboration with DigitalGlobe), held in Geneva on 11 May 2016;

(d) Expert meeting on the benefits of space-based applications for environment and humanitarian affairs, held in Geneva on 12 and 13 May 2016;

(e) United Nations/Kenya Conference on Space Technology Applications for Wildlife Management and Protecting Biodiversity, held in Nairobi from 27 to 30 June 2016. The report was made available in document A/AC.105/1126;

(f) Central European University Workshop on Information and Communication Technologies for Sustainable Development Goal Indicators Monitoring, held in Budapest from 4 to 9 July 2016;

(g) United Nations/Austria Symposium on Integrated Space Technology Applications for Climate Change, held in Graz, Austria, from 12 to 14 September 2016. The report was made available in document A/AC.105/1127;

(h) United Nations/IAF Workshop entitled “Space Technology for Socioeconomic Benefits: Integrated Space Technologies and Applications for a Better Society”, held in Guadalajara, Mexico, from 23 to 25 September 2016. The report was made available in document A/AC.105/1128;

(i) Discovery day on the benefits of very high-resolution imagery (in collaboration with DigitalGlobe), held in New York on 11 October 2016;

(j) United Nations/Islamic Republic of Iran Workshop on the Use of Space Technology for Dust Storm and Drought Monitoring in the Middle East Region, held in Tehran from 5 to 9 November 2016. The report was made available in document [A/AC.105/C.1/2017/CRP.22](#);

(k) United Nations/United Arab Emirates high-level forum on space as a driver for socioeconomic sustainable development, held in Dubai from 20 to 24 November 2016;

(l) United Nations/Nepal Workshop on the Applications of GNSS, held in Kathmandu from 5 to 9 December 2016. The report was made available in document [A/AC.105/C.1/2017/CRP.19](#).

14. The Subcommittee noted the following activities planned by the Office for 2017:

(a) United Nations/Italy Workshop on the OpenUniverse initiative, to be held in Rome from 10 to 12 April 2017;

(b) United Nations/Argentina Workshop on the Applications of Global Navigation Satellite Systems, to be held in Cordoba, Argentina, from 8 to 12 May 2017;

(c) United Nations/Switzerland Workshop on Strengthened Space Cooperation for Global Health (dates and location to be decided);

(d) United Nations/United States of America Workshop entitled “Space Weather: the Decades after the International Heliophysical Year 2007”, to be held in Boston, United States of America, from 31 July to 4 August 2017;

(e) Workshop on Capacity-building for the Twenty-First Century, to be held in Graz, Austria, in September 2017;

(f) United Nations/IAF Workshop on Space Technology for Socioeconomic Benefits, to be held in Adelaide, Australia, from 22 to 24 September 2017;

(g) Expert Meeting on Space for Women, to be held in New York from 4 to 6 October 2017;

(h) United Nations/Russian Federation Workshop entitled “Capacity-Building for the Twenty-first Century: Space Science and Technology for Sustainable Social and Economic Development”, to be held in Samara, Russian Federation, from 30 October to 2 November 2017;

(i) United Nations/United Arab Emirates 2017 high-level forum entitled “Space as a driver for socioeconomic sustainable development”, to be held in Dubai from 6 to 9 November 2017;

(j) United Nations/South Africa Symposium on the Basic Space Technology Initiative entitled “Small Satellite Missions for Scientific and Technological Advancement”, to be held in Stellenbosch, South Africa (date to be decided).

15. The Subcommittee noted that, since the last session of the Committee, in 2016, in the framework of implementation of the Programme on Space Applications, the Office had concluded memorandums of understanding, funding agreements and framework agreements with the Prince Sultan bin Abdulaziz International Prize for Water, MEA, CANEUS International and the Government of El Salvador.

16. The Subcommittee noted that the Programme was aimed at promoting, through international cooperation, the use of space technologies and space-related data for sustainable economic and social development in developing countries by raising the awareness of decision makers of the cost-effectiveness and additional benefits to be obtained; establishing or strengthening the capacity in developing countries to use

space technology; and strengthening outreach activities to disseminate awareness of the benefits obtained.

17. The Subcommittee noted that, in addition to the United Nations conferences, training courses, workshops, seminars and symposiums conducted in 2016 and planned for 2017, the Office for Outer Space Affairs had conducted, and planned to conduct, other activities under the Programme, placing emphasis on:

(a) Providing support for capacity-building in developing countries through the regional centres for space science and technology education, affiliated to the United Nations;

(b) Strengthening its long-term fellowship programme to include support for the implementation of pilot projects;

(c) Ensuring the mainstreaming of the gender perspective into all of its activities;

(d) Promoting the participation of young people in space activities;

(e) Supporting or initiating pilot projects as a follow-up to activities of the Programme in areas of priority interest to member States;

(f) Providing technical advice, upon request, to Member States, bodies and specialized agencies of the United Nations system and relevant national and international organizations;

(g) Enhancing access to space-related data and other information.

18. The Subcommittee noted the highlights of the activities of the regional centres for space science and technology education, affiliated to the United Nations: the Centre for Space Science and Technology Education in Asia and the Pacific; the African Regional Centre for Space Science and Technology Education — in French Language; the African Regional Centre for Space Science and Technology Education — in English Language; the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean; the Regional Centre for Space Science and Technology Education for Western Asia; and the Regional Centre for Space Science and Technology Education in Asia and the Pacific.

III. Space technology for sustainable socioeconomic development

19. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 5, “Space technology for sustainable socioeconomic development”.

20. The representatives of Egypt, France, Germany, Japan, Pakistan, South Africa and Venezuela (Bolivarian Republic of) made statements under agenda item 5. A statement was also made under the item by the representative of Argentina on behalf of the Group of Latin American and Caribbean States. The observer for Eurisy also made a statement. During the general exchange of views, statements relating to the item were made by representatives of other member States.

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

(a) “From COP 21 to COP 22, new challenges for space agencies on climate: greenhouse gas and water resources measurements from space”, by the representative of France;

(b) “Space to manage changes in wildlife pathways faced to environment and climate”, by the representative of France;

(c) “Overview of the Emirates Mars Mission”, by the representatives of the United Arab Emirates;

(d) “Engaging with stakeholders in preparation for UNISPACE+50”, by the observer for the European Space Policy Institute.

22. The Subcommittee had before it the following documents:

(a) Note by the Secretariat entitled “Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: the Committee on the Peaceful Uses of Outer Space and global governance of outer space activities” ([A/AC.105/1137](#));

(b) Report on the United Nations/United Arab Emirates High-level Forum: Space as a Driver for Socioeconomic Sustainable Development ([A/AC.105/1129](#));

(c) Report on the United Nations Workshop on Space Law on the theme “Contribution of space law and policy to space governance and space security in the twenty-first century” ([A/AC.105/1131](#));

(d) Conference room paper entitled “UNISPACE+50: Status of preparations” ([A/AC.105/C.1/2017/CRP.5](#));

(e) Conference room paper containing a progress report by the Office for Outer Space on the UNISPACE+50 thematic priority entitled “International cooperation towards low-emission and resilient societies” ([A/AC.105/C.1/2017/CRP.6](#));

(f) Conference room paper containing a progress report by the Office for Outer Space on the UNISPACE+50 thematic priority entitled “Capacity-building for the twenty-first century” ([A/AC.105/C.1/2017/CRP.7](#));

(g) Conference room paper entitled “Action Team on Exploration and Innovation” ([A/AC.105/C.1/2017/CRP.15](#));

(h) Conference room paper entitled “The ‘Dark and quiet skies’ proposal as an initiative under the auspices of the Committee on the Peaceful Uses of Outer Space for protecting the environmental observing conditions for large astronomical observatories and world citizens, submitted by the International Astronomical Union (IAU)” ([A/AC.105/C.1/2017/CRP.17](#));

(i) Conference room paper entitled “Strengthening the means for the Office for Outer Space Affairs to cooperate with non-governmental entities in the space arena for the benefit of developing countries” ([A/AC.105/C.1/2017/CRP.20](#));

(j) Conference room paper containing a working paper submitted by the Russian Federation entitled “Considerations aimed at facilitating a broader systemized understanding of the objective dimensions of issues and the functional dimensions of solutions related to sharing information on the situation in outer space in the context of deciding on the establishment of a working group on enhanced information exchange on space objects and events” ([A/AC.105/C.1/2017/CRP.27](#));

(k) Conference room paper entitled “Report of the expert group on space and global health” ([A/AC.105/C.1/2017/CRP.28](#)).

23. The Subcommittee noted the ongoing efforts by the international community to implement the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015-2030 and the Paris Agreement.

24. The Subcommittee recalled the preamble of General Assembly resolution 71/90 and noted in that context that space science and technology and their applications held immense potential to provide benefits to both developed and developing countries in areas such as agriculture and food security, climate change adaptation and mitigation,

disaster management and emergency response, education, environment and natural resources, navigation, development of human settlements, humanitarian assistance, meteorology, global health, communications, water and transport, and that they served as important enablers of economic, social and cultural development and contributors to poverty eradication.

25. The Subcommittee recalled the entry into force of the Paris Agreement on 4 November 2016 and noted that many essential climate variables used by the Intergovernmental Panel on Climate Change were observable only from space.

26. The Subcommittee recalled the adoption of the African Space Policy and Strategy in January 2016 and noted that the African Union had extended the time frame for its Space Working Group, chaired by South Africa, to continue with the exercise of drafting governance and implementation frameworks.

27. The Subcommittee welcomed with satisfaction the efforts of the Office for Outer Space Affairs, the Steering Committee and member States with regard to the preparations for the UNISPACE+50 process, carried out in accordance with document [A/AC.105/L.297](#).

28. The Subcommittee noted with appreciation the report of the tenth United Nations Workshop on Space Law ([A/AC.105/1131](#)), held in Vienna from 5 to 8 September 2016 on the theme “Contribution of space law and policy to space governance and space security in the twenty-first century”, and noted that the report contained a comprehensive set of observations, conclusions and recommendations pertaining to UNISPACE+50 and to the work of the Committee and its two Subcommittees, including in relation to the safety, security and sustainability of outer space activities.

29. Some delegations welcomed the organization of joint events by the First and Fourth Committees of the General Assembly and recommended that it would be appropriate for the Committee on the Peaceful Uses of Outer Space to suggest to the General Assembly the desirability of maintaining such meetings as an established practice for the future.

30. The view was expressed that strong and sustained knowledge-sharing was needed between developed and developing countries for the effective use of emerging space technologies in addition to traditional approaches to sustainable development.

31. The view was expressed that it was necessary to promote exchange and cooperation in scientific and technical research and capacity-building in space activities, with the involvement of the space sector, academia and industry, and to increase awareness of the potential of space technology for development.

32. The Subcommittee noted the crucial role of space data and technology in decision-making and early warning measures in the public health domain and reaffirmed the importance of the work of its expert group on global health and space.

33. The Working Group of the Whole was reconvened under the chairmanship of Mylswamy Annadurai (India), in accordance with paragraph 8 of General Assembly resolution 71/90. At its [...] meeting, on [...] February, the Subcommittee endorsed the report of the Working Group of the Whole, which is contained in annex I to the present report.

IX. Near-Earth objects

34. In accordance with General Assembly resolution 71/90, the Scientific and Technical Subcommittee considered agenda item 11, “Near-Earth objects”.

35. The representatives of China, Germany, Indonesia, Japan, Mexico, Pakistan, the Republic of Korea, the Russian Federation and the United States, as well as the representative of Argentina, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 11. Statements were also made by the observers for the Association of Space Explorers and the International Astronomical Union, the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG). During the general exchange of views, statements relating to the item were made by representatives of other member States.

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

(a) “Evolution of a (fictional) asteroid threat: preparing for planetary defence”, by the observer for the International Academy of Astronautics;

(b) “Status report on the work of IAWN and SMPAG”, by the observers for IAWN and SMPAG;

(c) “NEO-related activity in Indonesia: assessment of present and future projections”, by the representative of Indonesia;

(d) “ESO’s role in ground-based observations of NEOs”, by the observer for the European Southern Observatory (ESO).

37. The Subcommittee had before it a conference room paper entitled “Status report by the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG)”, submitted by the Chairs of IAWN and SMPAG ([A/AC.105/C.1/2017/CRP.25](#)).

38. The Subcommittee heard status reports by IAWN and SMPAG and noted with appreciation the efforts being made by IAWN and SMPAG to share information with regard to discovering, monitoring and physically characterizing potentially hazardous near-Earth objects in order to ensure that all nations, in particular developing countries with limited capacity to predict and mitigate an impact of a near-Earth object, were aware of potential threats. The Subcommittee also noted with appreciation their efforts to develop activities and build consensus on mitigating a potential near-Earth object threat, which, in the interest of public safety, required cooperative action by the global community.

39. The Subcommittee noted that, pursuant to General Assembly resolution 71/90, the Office for Outer Space Affairs was to serve as the permanent secretariat to SMPAG. It was informed by SMPAG about the finalization of funding arrangements with the Office in that regard.

40. The Subcommittee was informed about initial agreements by IAWN and SMPAG on the criteria and thresholds for impact response actions, which were reflected as recommendations in conference room paper [A/AC.105/C.1/2017/CRP.25](#).

41. The Subcommittee noted that SMPAG had held its 8th meeting on 1 February, on the margins of the current sessions of the Subcommittee, supported by the Office for Outer Space Affairs, and was informed of the progress made in work under the SMPAG workplan as contained in the report on its eighth meeting, available at <http://smpag.net>. The Subcommittee was also informed that the SMPAG Ad Hoc Working Group on Legal Issues, established by SMPAG in 2016, had held its first meeting on 2 February, on the margins of the current session of the Subcommittee, to discuss its terms of reference and to identify and agree on the scope of questions and plan of work, in particular with regard to addressing possible legal questions related to SMPAG workplan items.

42. The Subcommittee noted that IAWN and the Office for Outer Space Affairs had initiated the establishment of an interface to facilitate general communication on

near-Earth objects by the public, as well for communication with Member States in the event of an impact warning. This was also linked to the UNISPACE+50 process, which was aimed at reinforcing some of the existing global coordination mechanisms in order to work towards strengthening the resiliency of societies and ensuring the long-term sustainability of outer space activities.

43. The Subcommittee welcomed with appreciation the proclamation by the General Assembly in its resolution 71/90 of International Asteroid Day, which would be observed annually on 30 June, the anniversary of the 1908 Tunguska impact over Siberia, Russian Federation. International Asteroid Day was intended as a global awareness-raising campaign to provide the public with information about the possible asteroid impact hazard and about the crisis communication efforts at the global level in case of a credible NEO threat; the work undertaken by SMPAG and IAWN, facilitated by the Office for Outer Space; and the work undertaken in that area by the Committee on the Peaceful Uses of Outer Space and its member States.

44. The Subcommittee noted that nearly 19 million observations of asteroids had been collected in 2016 by the worldwide network of astronomical observatories in 76 countries; that the number of known near-Earth objects had exceeded 15,000 in October 2016 and currently totalled 15,688, of which 1,894 had been discovered in 2016, with 1,781 asteroids catalogued whose orbits took them within 8 million kilometres of Earth's orbit.

45. The Subcommittee noted a number of national and regional networks and projects whose work contributed to IAWN efforts in terms of enhancing capabilities to observe near-Earth objects. They included the Asia-Pacific Asteroid Observation Network and the Deep Ecliptic Patrol of the Southern Sky (DEEP-South) project by the Korea Astronomy and Space Science Institute.

46. The Subcommittee also noted a number of cooperative projects and asteroid observation missions, such as the JAXA sample return mission Hayabusa-2, scheduled to arrive at the target asteroid "Ryugu" in 2018, and the NASA sample return mission OSIRIS-Rex, launched in 2016 as an international mission with Canada, France and Japan and scheduled to arrive at the target asteroid "Bennu" in 2018.

47. The Subcommittee was informed of the progress of a number of international cooperative endeavours to pursue asteroid impact mitigation technology options, such as the European Union-funded NEOShield-2 project, coordinated by Airbus Defence and Space, Germany, with 11 partner organizations, the aim of which was to develop the demonstration mission concept to test the potential efficacy of the kinetic-impactor deflection method; and the double asteroid redirection test, as part of the Asteroid Impact and Deflection Assessment mission jointly undertaken by ESA and NASA.

48. The Subcommittee noted a number of national activities and preparedness plans relating to near-Earth objects, including the National Near-Earth Objects Preparedness Strategy of the United States, issued on 30 December 2016 and prepared by the Interagency Working Group for Detecting and Mitigating the Impact of Earth-Bound Near-Earth Objects of the National Science and Technology Council of the United States.

49. The Subcommittee noted that the International Academy of Astronautics would hold its 5th International Planetary Defense Conference in Tokyo from 15 to 19 May 2017. That well-established biennial conference would bring together international experts across a variety of relevant disciplines to discuss the detection and characterization of the potential hazard to the Earth posed by asteroids and comets, and actions that could be taken to prevent or minimize the devastating effects of an asteroid impact.

50. The Subcommittee also noted that the next meetings of the IAWN steering committee and SMPAG would take place during the week beginning 9 October 2017, either in Europe or the United States, to review progress, current issues and future milestones.
