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**Committee on the Peaceful  
Uses of Outer Space**  
**Sixty-second session**  
Vienna, 12–21 June 2019

**Report of the Scientific and Technical Subcommittee  
on its fifty-sixth session, held in Vienna from  
11 to 22 February 2019**

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## I. Introduction

1. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-sixth session at the United Nations Office at Vienna from 11 to 22 February 2019, with Pontsho Maruping (South Africa) as Chair.
2. The Subcommittee held 20 meetings.

### A. Attendance

3. Representatives of the following 73 States members of the Committee attended the session: Albania, Algeria, Argentina, Armenia, Australia, Austria, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czechia, Denmark, Ecuador, Egypt, El Salvador, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kenya, Libya, Luxembourg, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Oman, Pakistan, Paraguay, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Slovakia, South Africa, Spain, Sweden, Switzerland, Syrian Arab Republic, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Venezuela (Bolivarian Republic of) and Viet Nam.
4. At its 895th meeting, on 11 February, the Subcommittee decided to invite observers for Croatia, the Dominican Republic and Malta, at their request, to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.
5. At the same meeting, the Subcommittee decided to invite the observer for the Sovereign Order of Malta, at its request, to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.
6. At the same meeting, the Subcommittee decided to invite the observer for the African Union Commission, at its request, to attend the session and to address it, as appropriate, on the understanding that it would be without prejudice to further requests of that nature and that doing so would not involve any decision of the Committee concerning status.
7. Observers for the Economic and Social Commission for Asia and the Pacific (ESCAP), the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency (IAEA), the International Civil Aviation Organization (ICAO), the International Telecommunication Union (ITU), the World Food Programme and the World Meteorological Organization attended the session.
8. The session was attended by the observer of the European Union as permanent observer of the Committee and in accordance with General Assembly resolution 65/276 of 2011.
9. The session was attended by observers for the following intergovernmental organizations with permanent observer status with the Committee: Asia-Pacific Space Cooperation Organization (APSCO), European Southern Observatory, European Space Agency (ESA), International Mobile Satellite Organization, Inter-Islamic Network on Space Sciences and Technology (ISNET) and International Telecommunications Satellite Organization.
10. The session was attended by observers for the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG), in accordance with the agreement of the Subcommittee at its fifty-third session ([A/AC.105/1109](#), para. 182).

11. The session was attended by observers for the following non-governmental organizations having permanent observer status with the Committee: Association of Space Explorers, CANEUS International, Committee on Space Research (COSPAR), Eurisy, European Space Policy Institute (ESPI), For All Moonkind, International Academy of Astronautics (IAA), International Association for the Advancement of Space Safety, International Astronautical Federation (IAF), International Organization for Standardization (ISO), International Society for Photogrammetry and Remote Sensing, International Space University (ISU), Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), Secure World Foundation (SWF), Space Generation Advisory Council (SGAC), University Space Engineering Consortium-Global (UNISEC-Global) and World Space Week Association (WSWA).

12. A list of the representatives of States, United Nations entities and other international organizations attending the session is contained in [A/AC.105/C.1/2019/INF/48](#).

## **B. Adoption of the agenda**

13. At its 895th meeting, on 11 February, the Subcommittee adopted the following agenda:

1. Adoption of the agenda.
2. Statement by the Chair.
3. General exchange of views and introduction of reports submitted on national activities.
4. United Nations Programme on Space Applications.
5. Space technology for sustainable socioeconomic development.
6. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
7. Space debris.
8. Space-system-based disaster management support.
9. Recent developments in global navigation satellite systems.
10. Space weather.
11. Near-Earth objects.
12. Long-term sustainability of outer space activities.
13. Use of nuclear power sources in outer space.
14. Space and global health.
15. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union.
16. Draft provisional agenda for the fifty-seventh session of the Scientific and Technical Subcommittee.
17. Report to the Committee on the Peaceful Uses of Outer Space.

## C. General statements

14. Statements were made by representatives of the following member States during the general exchange of views: Algeria, Argentina, Armenia, Austria, Belarus, Brazil, Canada, Chile, China, Costa Rica, Cuba, Cyprus, Czechia, Egypt, Finland, France, Germany, Greece, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Kenya, Libya, Luxembourg, Mexico, New Zealand, Nigeria, Norway, Pakistan, Paraguay, Poland, Republic of Korea, Romania, Russian Federation, Saudi Arabia, South Africa, Switzerland, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States and Viet Nam. Statements were also made by the representative of Egypt on behalf of the Group of 77 and China, and by the representative of Chile on behalf of the Group of Latin American and Caribbean States. The observer for the European Union made a statement. The observers for ESCAP and the World Meteorological Organization also made statements. Further statements were made by the observers for APSCO, CANEUS International, Eurisy, For All Moonkind, IAF, ISNET, the International Society for Photogrammetry and Remote Sensing, ISU, SGAC, SWF, UNISEC-Global and WSWA. The observer for the African Union Commission made a statement.

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

(a) “China Seismo-Electromagnetic Satellite mission: Italy and China in space”, by the representative of Italy;

(b) “Implementation of the United States space traffic management policy”, by the representative of the United States;

(c) “The introduction of the Chang’e-4 mission”, by the representative of China;

(d) “Implementation of the Asia-Pacific space applications plan of action (2018–2030)”, by the observer for ESCAP;

(e) “HEPTA-Sat programme: international knowledge and technology transfer for CubeSat development”, by the observer for UNISEC-Global;

(f) “Introduction to the United Nations/China Forum on Space Solutions: realizing the Sustainable Development Goals”, by the representative of China;

(g) “Space-aided climate change adaptation”, by the observer for ISU;

(h) “Outcomes of the Space Generation Congress 2018”, by the observer for SGAC;

(i) “Subglacial liquid water on Mars”, by the representative of Italy;

(j) “Recent Indian space missions: update as of February 2019”, by the representative of India;

(k) “Expanding partnerships in space exploration: Developing technology for space habitation and its applications to Earth society”, by the representative of Japan;

(l) “Moon village design studio”, by the representatives of Austria;

(m) “The pioneering properties of the United Nations/Japan Post-Graduate Study on Nanosatellite Technologies (PNST) Fellowship Programme and of Kyutech’s BIRDS Programme”, by the representative of Japan;

(n) “Mars debate”, by the representative of Sweden;

(o) “India’s Human Spaceflight Programme: GAGANYAAN”, by the representative of India;

(p) “HABIT”, by the representative of Sweden;

(q) “Student space activities at the Warsaw University of Technology and the student satellite PW-Sat2”, by the representative of Poland;

(r) “UNNATI: India’s capacity-building programme on nanosatellite development”, by the representative of India;

(s) “Opportunities for science experiments in the fourth stage of India’s Polar Satellite Launch Vehicle (PSLV)”, by the representative of India;

(t) “Outcomes of the space generation workshops 2018”, by the observer for SGAC;

(u) “Polish contribution to the NASA InSight mission to Mars”, by the representative of Poland;

(v) “Opportunities for atmospheric studies through sounding rockets”, by the representative of India;

(w) “Artificial Intelligence for Good Global Summit 2018: the eye in the sky – space, and satellites”, by the observer for ITU.

16. At the 895th meeting, on 11 February, the Subcommittee observed a minute of silence to mark the passing of Christine Stix-Hackl of Austria and Georgiy Barsegov of the Russian Federation, who had been long-standing contributors to the work of the Committee and its subcommittees.

17. Also at the 895th meeting, on 11 February, the Chair of the Subcommittee made a statement outlining the work of the Subcommittee at its fifty-sixth session. She noted that, with the remarkable success of the celebration of the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50) in 2018, with its high-level segment held on 20 and 21 June and the adoption by the General Assembly on 26 October of its resolution 73/6, the Committee had set out on the road towards a “Space2030” agenda and an associated implementation plan. She stressed that space science and technology were essential drivers for opening up new domains in advancing global development efforts, that enhanced capacity-building was essential in that respect and that a stronger partnership should be promoted between spacefaring and emerging space nations. She underlined that it was the special and important task of the Subcommittee to consider many areas of space science and technology and their applications, and to take responsibility for examining challenges to space operations. She emphasized that regional and interregional cooperation was essential to strengthening the peaceful uses of outer space and recognized the importance of the African Space Policy and Strategy, adopted by the African Union. She also reiterated that the African continent could benefit greatly from strengthened space policy, capabilities and infrastructure.

18. At the same meeting, the Director of the Office for Outer Space Affairs made a statement in which she reviewed the work done by the Office since the fifty-fifth session of the Subcommittee, including the Office’s contribution to the achievement of the Sustainable Development Goals and the growing working alliances with governmental, intergovernmental and non-governmental organizations and entities, as well as with industry and the private sector. She introduced the current priorities in the work of the Office, which would be pursued following a conceptual approach aimed at achieving gender equality in the space sector. Furthermore, the Director stressed that the global space sector continued to evolve rapidly in all its political, legal and technical aspects and that the United Nations needed to keep pace.

19. The Subcommittee noted with satisfaction the information provided by the Director of the Office with regard to the presentation by the Secretary-General in 2018 of three key strategy documents, in which he had clearly emphasized the contribution of space and the role of the Office. Those were the Secretary-General’s strategy on new technologies; *Securing our Common Future: An Agenda for Disarmament*; and “Youth 2030: Working with and for young people – the United Nations youth strategy”. In that regard, the Subcommittee noted the plans specifying how the Office would contribute into the implementation of those strategic initiatives.

20. The Subcommittee reiterated that there was a need for gender equality and the empowerment of women, and noted that the 2030 Agenda for Sustainable

Development had created additional momentum and contained clear targets in that regard. The Subcommittee also noted the development by the Office for Outer Space Affairs of the “Space for women” initiative to promote gender empowerment and gender equality both at the United Nations and in the space sector.

21. The Subcommittee noted the work of the Office to raise awareness of fundamental space science research and space exploration efforts among the wider space community. In particular, the Subcommittee heard information about the cooperation established between the Office and COSPAR, and about the selection by the COSPAR Bureau of members of the Office’s staff with the relevant competence to serve as Vice-Chairs of the Panel on Planetary Protection and the Panel on Space Weather.

22. The Subcommittee noted that 20 July 2019 would mark the fiftieth anniversary of a momentous event, namely the first landing by humans on the Moon as part of the Apollo 11 lunar mission of the National Aeronautics and Space Administration (NASA).

23. The Subcommittee was informed about the successful landing on the far side of the Moon performed by the spacecraft Chang’e-4 of China, the successful touchdown on the surface of the target asteroid Ryugu by the spacecraft Hayabusa-2 of Japan, and the successful launch to the Moon of the spacecraft Beresheet of Israel.

24. The Subcommittee congratulated African States on the establishment, by decision of the African Union, of the African Space Agency, to be hosted by Egypt. It noted that the Agency would serve as a platform for transcontinental cooperation and would create an opportunity for all African States to reap the common benefits gained from the space field.

25. The Subcommittee agreed that the enlargement of the Committee in previous years demonstrated that the international community had confidence in the multilateral system, and that States Members of the United Nations attached increasing importance to it as a unique, intergovernmental platform.

26. The Subcommittee agreed that it, together with the Committee and the Legal Subcommittee, and with the support of the Office for Outer Space Affairs, remained a unique international forum tasked with promoting international cooperation in the exploration and peaceful use of outer space and offering an appropriate environment to discuss matters that had a great impact on the development of States for the betterment of humankind.

27. The Subcommittee recalled the success of UNISPACE+50, which had served to stress the importance of strengthening international cooperation in the exploration and use of outer space for peaceful purposes. The Subcommittee also recalled the continued relevance of the Committee as a unique platform to shape the global governance of outer space activities. The Subcommittee further recalled that UNISPACE+50 had been effective in raising awareness of the beneficial impact of space science and technology on sustainable development and reaffirmed that the quality of life on Earth was becoming increasingly dependent on activities carried out in outer space.

28. The Subcommittee agreed that space activities had substantial potential for innovation and economic advancement, which could benefit humankind by contributing to disaster management, environmental protection, efficient resource management and transport development and the resolution of other major global challenges, such as food security and the impact of climate change. In that respect, the Subcommittee agreed that the work relating to the “Space2030” agenda and its implementation plan would help in the mobilization of space activities for the implementation of the 2030 Agenda for Sustainable Development, as well as the Sustainable Development Goals and the targets contained therein.

29. Some delegations expressed the view that, for the Subcommittee to achieve its main objectives, it was important that it concentrate its work on areas such as the

building and promotion of technological capacities, the transfer of technology, the prevention and mitigation of natural disasters, and scientific and technological research in developing countries within the framework of international cooperation. The delegations expressing that view were also of the view that space technology applications should translate into concrete benefits for developing countries; such benefits could be achieved by promoting the transfer of technology, by building capacity and providing access to technology. Therefore, in the view of those delegations, the Office for Outer Space Affairs and States members of the Committee should work closely together to provide greater support to the enhancement of both North-South and South-South cooperation and thereby facilitate the transfer of technology among States. The delegations expressing that view further expressed the view that technology could be transferred by creating more opportunities for enhanced academic linkages, long-term fellowships and collaboration among international, national and regional academic and research centres and institutions working on space matters.

30. Some delegations expressed the view that international cooperation should be an essential component of peaceful activities in outer space, in particular in developing countries, and that international cooperation was essential to pursuing the sustainability of space activities as the common objective of all. In that connection, international cooperation in the scientific and technical aspects of the exploration and use of outer space for peaceful purposes would contribute to, among other things, the development of common understanding and to the strengthening of friendly relations among Member States.

31. The view was expressed that, regrettably, in matters related to space activities, a number of States frequently chose the path of unilateral action rather than international regulation. Such unilateral action had the potential to create conflict among space actors and thus adversely affect the entire security and safety system in outer space. In that connection, the absence of internationally agreed rules on a number of important aspects of the safety of space operations, the monitoring of objects and events in outer space, space traffic management and the utilization of mineral resources, continued to have a negative effect on the preservation of outer space as a functionally stable and safe environment. The delegation expressing that view was also of the view that that situation severely affected the interests of developing countries.

32. Some delegations expressed the view that continuous interaction between the Scientific and Technical Subcommittee and the Legal Subcommittee was important to promote the development of binding international standards and other regulatory mechanisms that addressed current challenges. In that regard, work under thematic priority 2 of UNISPACE+50 could enrich the work of the Committee within the framework of the "Space2030" agenda.

33. Some delegations recalled the established principles related to outer space activities, including the principle of exploration and use of outer space on the basis of equality, the principle of non-appropriation of outer space, including the Moon and other celestial bodies, and the peaceful use of outer space.

34. The view was expressed that the principles of non-intervention and non-interference in the activities of States in exploring and utilizing outer space for peaceful purposes should be fully observed.

35. Some delegations expressed the view that the long-term sustainability of space activities was becoming more topical than ever in view of various factors, including the wider involvement in space activities of various actors and the strategic importance of space for the economies of States. In that respect it was extremely important to ensure that all participants in space activities followed commonly agreed rules and had free and fair access to outer space.

36. Some delegations expressed the view that space exploration activities should be conducted with due regard to international peace and security and that outer space

should never become a theatre of war. The delegations expressing that view were also of the view that States should commit in earnest to the prevention of an arms race and refrain from placing and using weapons in outer space.

37. Some delegations recognized the benefits derived from the sustainable and exclusively peaceful uses of outer space and reaffirmed that such uses were essential for present and future generations. Those delegations noted that, in that connection, the international community should seek ways and means to avoid an arms race and should consider the broader perspective of space security and associated matters.

38. The view was expressed that the establishment of the United Nations Group of Governmental Experts on the Prevention of an Arms Race in Outer Space in accordance with General Assembly resolution 72/250, entitled “Further practical measures for the prevention of an arms race in outer space”, could be a positive outcome contributing to prevention of an arms race in outer space and keeping outer space free from weapons.

39. The Subcommittee noted with satisfaction that the first United Nations Conference on Space Law and Policy, organized by the Office for Outer Space Affairs jointly with the Government of the Russian Federation, was held in Moscow from 11 to 13 September 2018, with more than 200 diplomats, representatives of the space industry, the scientific community and the business sector from more than 40 States participating in the event.

40. The Subcommittee expressed its gratitude to the organizers of the following events, held on the margins of the current session of the Subcommittee:

(a) Lunchtime high-level panel discussion celebrating the International Day of Women and Girls in Science, organized by the Office for Outer Space Affairs;

(b) Side event entitled “Guidelines for the long-term sustainability of outer space activities: implementation experiences and challenges”, organized by Austria, Brazil and South Africa, and supported by SWF and the European Centre for Space Law National Point of Contact for Space Law Austria;

(c) Side event entitled “Space as an enabler”, hosted by the Permanent Mission of Romania with the support of the Romanian Space Agency;

(d) Side event entitled “The way ahead towards operational space traffic management”, organized by ESPI;

(e) Side event entitled “Office for Outer Space Affairs/Japan cooperation on capacity-building initiatives: the example of Kenya through KiboCube and the PNST programme”, organized by Japan and the Office for Outer Space Affairs;

(f) Side event entitled “Space information corridor: win-win cooperation”, organized by China;

(g) Side event entitled “Open universe”, organized by Brazil, Italy and Uruguay;

(h) Side event entitled “Preparing for the future of work in the aerospace sector: the challenges of enhanced diversity”, co-organized by ESA and ESPI;

(i) Side event screening “Apollo 11: A cinematic event 50 years in the making” organized by the United States;

(j) The exhibit “The grand tour”, organized by the Permanent Mission of the United States.

## **D. National reports**

41. The Subcommittee took note with appreciation of the reports by Member States ([A/AC.105/1189](#), [A/AC.105/1189/Add.1](#) and [A/AC.105/1189/Add.2](#)) and of the conference room papers ([A/AC.105/C.1/2019/CRP.3](#), [CRP.5](#) and [CRP.6](#)) submitted

for its consideration under agenda item 3, entitled “General exchange of views and introduction of reports submitted on national activities”. The Subcommittee recommended that the Secretariat continue to invite Member States to submit annual reports on their space activities.

### **E. Summary of the work of the Working Group on the “Space2030” Agenda of the Committee on the Peaceful Uses of Outer Space**

42. In accordance with the decision of the Committee on the Peaceful Uses of Outer Space, made in 2018 at its sixty-first session, the Working Group on the “Space2030” Agenda has been established under a new agenda item of the Committee entitled “‘Space2030’ agenda”, which will remain on the Committee’s agenda until the sixty-third session of the Committee, in 2020 (A/73/20, paras. 358–364).

43. The Working Group held its meetings during the fifty-sixth session of the Scientific and Technical Subcommittee in accordance with the mandate given by the Committee. The summary of those meetings, together with the workplan and method of work agreed by the Working Group at its intersessional meeting held from 7 to 11 October 2018, is included in annex IV to the present report.

### **F. Symposium**

44. In accordance with the agreement reached by the Subcommittee in 2007 at its forty-fourth session (A/AC.105/890, annex I, para. 24), and by the Committee in 2018 at its sixty-first session (A/73/20, para. 218), a symposium organized by COSPAR on the topic “Space weather and small satellites” was held on 11 February 2019.

45. The symposium was chaired by Hermann Opgenoorth of the University of Umea, Sweden, who made introductory remarks and delivered a presentation on behalf of Masha Kuznetsova of NASA, United States. The other speakers were James Spann of NASA; Ian R. Mann of the University of Alberta, Canada; Clezio Marcos De Nardin of the National Institute for Space Research (INPE), Brazil; Mamoru Ishii of the National Institute of Information and Communications Technology, Japan; Christina Plainaki and the Space Weather Working Group of the Italian Space Agency; Mario M. Bisi of RAL Space, United Kingdom; and Sharafat Gadimova of the Office for Outer Space Affairs.

46. The Subcommittee noted with satisfaction that the symposium had contributed to raising awareness of the uses and applications of small satellites to further advance the technical knowledge of and scientific research on space weather events.

### **G. Adoption of the report of the Scientific and Technical Subcommittee**

47. After considering the items before it, the Subcommittee, at its 914th meeting, on 22 February 2019, adopted its report to the Committee on the Peaceful Uses of Outer Space, containing its views and recommendations, as set out in the paragraphs below.

## **II. United Nations Programme on Space Applications**

48. In accordance with General Assembly resolution 73/91, the Subcommittee considered agenda item 4, entitled “United Nations Programme on Space Applications”.

49. The representatives of Brazil, China, Germany, Japan, India, Indonesia and the Republic of Korea made statements under agenda item 4. A statement was also made under the item by the representative of Costa Rica 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.

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

(a) “Project of the United Nations-affiliated regional education centre for space science and technology”, by the representative of the Russian Federation;

(b) “Progress on the technical development and on the establishment of the Open Universe initiative”, by the representative of Italy.

## A. Activities of the United Nations Programme on Space Applications

51. The Subcommittee recalled that the General Assembly, in its resolution 73/91, had recognized the capacity-building activities under the United Nations Programme on Space Applications, which provided unique benefits for Member States, in particular developing countries, participating in those activities.

52. The Subcommittee also recalled that the United Nations Programme on Space Applications was one of the achievements of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE), and that both UNISPACE II (1982) and UNISPACE III (1999) had contributed to the development of the Programme’s mandates. The Subcommittee noted with satisfaction that the Programme had played an instrumental role in assisting developing countries in acquiring knowledge, skills and practical experience for the application of space technology for the purpose of economic, social and cultural development.

53. At the 895th meeting, on 11 February, the Director of the Office for Outer Space Affairs, following the request made by the General Assembly in its resolution 73/91, apprised the Subcommittee of the status of the Office’s activities under the United Nations Programme on Space Applications. Through the Programme, the Office had continued to deliver capacity-building that had been focused on the needs of developing countries and the global problems of humanity, while including more cross-cutting and topical issues and involving a wider circle of qualified experts, thereby enabling the delivery of capacity-building efforts at levels corresponding to the highest current standards and in accordance with the expectations of Member States.

54. The Subcommittee noted with appreciation that, since its previous session, in-cash and in-kind contributions, including the provision of staff on a non-reimbursable loan basis, had been offered for the activities of the Office, including the United Nations Programme on Space Applications, by the following: Airbus, APSCO; Austrospace; Beihang University, China; Brazilian Space Agency (AEB); CANEUS International; Centre for Remote Sensing of Land Surfaces (ZFL) of the University of Bonn, Germany; Centre for Space Science and Technology Education in Asia and the Pacific, India; China Manned Space Agency; China National Space Administration (CNSA); China Satellite Navigation Office; City of Graz; City of Vienna; National Commission on Space Activities (CONAE), Argentina; Delta State University, United States; DigitalGlobe; European Commission; ESA; German Aerospace Center (DLR); Government of Austria (Office of the President, Ministry for Europe, Integration and Foreign Affairs, Ministry for Transport, Innovation and Technology and Austrian Research Promotion Agency); Government of China (Ministry of Emergency Management); Government of Germany (Federal Ministry for Economic Affairs and Energy and Federal Ministry for Economic Cooperation and Development); Government of Israel; Government of New Zealand; Government of the United States (Bureau of Oceans and International Environmental and Scientific Affairs of the Department of State, and National Oceanic and Atmospheric Administration of the Department of Commerce); Graz University of Technology, Austria; Holy See; Federal University of Rio Grande do Norte (UFRN), Brazil; Federal Institute of Rio Grande do Norte (IFRN); ISNET; IAF; Abdus Salam International Centre for Theoretical Physics (ICTP); International Water

Management Institute; Japan Aerospace Exploration Agency (JAXA); Joanneum Research Forschungsgesellschaft mbH, Austria; Kyushu Institute of Technology, Japan; National Disaster Reduction Centre of China; INPE; National Point of Contact for Space Law Austria; National Space Agency of Pakistan; Prince Sultan bin Abdulaziz International Prize for Water (PSIPW); Sierra Nevada Corporation, United States; South Asian Association for Regional Cooperation Disaster Management Centre (Interim Unit), India; Space Trust; Federal Province of Styria, Austria; State Space Corporation “Roscosmos”, Russian Federation; University of Bonn, Germany; Women in Aerospace; World Vision International and ZARM-Fallturm-Betriebsgesellschaft mbH, Germany.

55. The Subcommittee noted that, since its last session, in 2018, the Office had concluded memorandums of understanding, funding agreements and framework agreements in relation to its capacity-building activities, which included the implementation of the United Nations Programme on Space Applications. The Office had also extended agreements with the Ministry of Science, Technology and Higher Education of Portugal; the Government of New Zealand; the China Manned Space Agency; CNSA; the Geo-Informatics and Space Technology Development Agency; DLR; the Italian Space Agency; the National Oceanic and Atmospheric Administration of the Department of Commerce, United States; COSPAR; Università Bocconi, Italy; WSWA; the Atlantic International Research Centre; Airbus Defence and Space GmbH; CANEUS International; and the Space Trust.

56. The Subcommittee also noted that the Government of Japan, through the Kyushu Institute of Technology, and the Government of Italy, through the Politecnico di Torino and the Istituto Superiore Mario Boella, in collaboration with the Istituto Nazionale di Ricerca Metrologica, had continued to provide long-term fellowship programme opportunities for students from developing countries under the United Nations/Japan Long-term Fellowship Programme on Nanosatellite Technologies, and the United Nations/Italy Long-term Fellowship Programme on Global Navigation Satellite Systems and Related Applications, respectively.

57. The Subcommittee further noted the Drop Tower Experiment Series, which was a fellowship programme of the Office for Outer Space Affairs undertaken in collaboration with the Centre of Applied Space Technology and Microgravity and DLR, in which students could study microgravity by performing experiments in a drop tower. In the fifth cycle of the fellowship programme, a team from the University of Bucharest had been awarded the fellowship through competitive selection.

58. 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. A team from the University of Nairobi had been selected to be the first to benefit from the programme. The team’s CubeSat named 1KUNS-PF had been deployed from Kibo in May 2018 as the first satellite of Kenya. CubeSats developed by teams from Guatemala, Indonesia and Mauritius, which had been selected for the second and third rounds of KiboCube, would come after the mission of Kenya. The objective of the cooperation programme was to promote international cooperation and capacity-building in space technology and its applications under the Human Space Technology Initiative by providing opportunities for educational and research institutions in developing countries to deploy CubeSats from Kibo.

59. The Subcommittee noted that the government of China and the Office for Outer Space Affairs had continued to implement the United Nations/China cooperation on the utilization of the China space station under the United Nations Programme on Space Applications and the Human Space Technology Initiative. This innovative and forward-looking cooperation was aimed at providing scientists around the world with an opportunity to conduct their own experiments on board the China space station and thus to open space exploration activities to all countries and create a new paradigm

for building capabilities in space science and technology. The first opportunity to conduct scientific experiments on board the China space station had been open to all Member States, in particular, developing countries. It had been announced in 2018; 42 applications had been received from organizations in 27 countries. The project evaluation and selection committee had shortlisted 18 applications; the final selection would be made in early June 2019.

60. 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.

61. 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 (GNSS), the Basic Space Science Initiative, climate change, the Basic Space Technology Initiative and the Human Space Technology Initiative, and biodiversity and ecosystems.

62. The Subcommittee also 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 establishing or strengthening capacity in those developing countries to use space technology; raising the awareness of decision makers of the cost-effectiveness and additional benefits to be obtained from such technologies and data; and strengthening outreach activities to disseminate awareness of those benefits.

63. The Subcommittee further noted the following activities under the United Nations Programme on Space Applications, conducted by the Office in 2018, together with Member States and international organizations:

(a) United Nations/Pakistan/PSIPW Fourth International Conference on the Use of Space Technology for Water Management, held in Islamabad from 26 February to 3 March 2018 ([A/AC.105/1206](#));

(b) United Nations/Argentina workshop on the applications of GNSS, held in Falda del Carmen, Argentina, from 19 to 23 March 2018 ([A/AC.105/1205](#));

(c) United Nations/Brazil Symposium on Basic Space Technology: Creating Novel Opportunities with Small-Satellite Space Missions, held in Natal, Brazil, from 11 to 14 September 2018 ([A/AC.105/1194](#));

(d) United Nations/Austria Symposium on Space for Sustainable Development Goals, Stronger Partnerships and Strengthened Collaboration, held in Graz, Austria, from 17 to 19 September 2018 ([A/AC.105/1196](#));

(e) Workshop on Space Technology for Socioeconomic Benefits, organized by IAF with the support of the Office for Outer Space Affairs and held in Bremen, Germany, from 28 to 30 September 2018 ([A/AC.105/1197](#));

(f) United Nations International Conference on Space-based Technologies for Disaster Risk Reduction: Enhancing Disaster Preparedness for Effective Emergency Response, held in Beijing from 24 to 26 October 2018 ([A/AC.105/1198](#));

(g) United Nations Expert Meeting on Human Space Technology on the theme "Providing access to space", held in Vienna from 4 to 6 December 2018 ([A/AC.105/1199](#)).

64. The Subcommittee noted that in addition to the activities under the United Nations Programme on Space Applications referred to above, the Office for Outer Space Affairs supported summer programmes organized by the Central European University (Hungary) and Samara University (Russian Federation).

65. The Subcommittee was informed that the Office for Outer Space Affairs had organized, and continued to organize, capacity-building events, including within the

United Nations Programme on Space Applications, with the Governments of Austria, China, Fiji, Jordan and Romania, as well as with ICTP and IAF. The Subcommittee was also informed that those events were to cover the following topics: GNSS, space applications for water management, space weather, basic space technology, human space technology, capacity-building in space technology and applications, disaster risk reduction and emergency response. The Subcommittee noted that the Office would present reports and further information on the events at its fifty-seventh session, in 2020.

66. The Subcommittee noted that, in addition to the United Nations conferences, training courses, workshops, seminars and symposiums conducted in 2018 and planned for 2019, the Office for Outer Space Affairs had conducted or was planning to conduct other activities under the Programme, with emphasis on:

(a) Providing support for capacity-building efforts 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;

(h) Applying an integrated and cross-sectoral approach to activities, as appropriate.

67. The Subcommittee also noted the highlights of the activities of the regional centres for space science and technology education, affiliated to the United Nations, namely the African Regional Centre for Space Science and Technology Education – in English Language; the African Regional Centre for Space Science and Technology – in French Language; the Centre for Space Science and Technology Education in Asia and the Pacific; 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 (China).

68. The Subcommittee noted the request made by the Group of Latin American and Caribbean States that the Committee and its Subcommittees strengthen cooperation with regional organizations and institutions, such as the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean, the Space Conference of the Americas and the Society of Latin American Experts in Remote Sensing and Space Information Systems (SELPER), and that the Office for Outer Space Affairs should support cooperation with such organizations through its activities and events.

69. Some delegations stressed the importance of the contribution made by space activities and the benefits that the use of space technology brought to sustainable development, in particular in such areas as the management of natural disasters, protection of the environment, meteorology, tele-education and telemedicine. In that connection, it was important to promote the development and capacity-building related to the use of space technology applications, together with related development and capacity-building.

70. Some delegations expressed the view that the United Nations Programme on Space Applications should focus on addressing inequalities, including the vast space technology divide between countries, and that by doing so, the Programme would create the conditions for the inclusive development of space activities, including in support of efforts to attain the Sustainable Development Goals.

71. Some delegations expressed the view that the United Nations had to continue to actively promote its role in the cooperation between developing and developed countries, as well as among developing countries, in order to strengthen the infrastructure and technology of the space sector, especially through capacity-building, information-sharing and the transfer of technology, which could accelerate development in various aspects of life. The delegations expressing that view were also of the view that it was important to promote collaboration between developing and developed countries in order to ensure equitable access to space science and technology.

## **B. Regional and interregional cooperation**

72. The Subcommittee recalled that the General Assembly, in its resolution 73/91, had emphasized that regional and interregional cooperation in the field of space activities was essential to strengthen the peaceful uses of outer space, assist Member States in the development of their space capabilities and contribute to the implementation of the 2030 Agenda for Sustainable Development. To that end, the Assembly had requested relevant regional organizations and their groups of experts to offer any assistance necessary so that countries could carry out the recommendations of regional conferences. In that regard, the Assembly had noted the importance of the equal participation of women in all fields of science and technology.

73. The Subcommittee noted that the Government of Nigeria had hosted the seventh African Leadership Conference on Space Science and Technology for Sustainable Development in Abuja from 5 to 9 November 2018 on the theme “Implementation of African space policy and strategy”.

74. The Subcommittee also noted that the fourth Space Conference had been conducted on the margins of the International Air and Space Fair held in Santiago from 3 to 8 April 2018, as had the Latin American Week of Remote Sensing, a technical and scientific conference organized by the air force of Chile. The Week of Remote Sensing had been aimed at promoting the use of space information with respect to phenomena in the biosphere, and had focused on the development of space applications for the civil and defence sectors.

75. The Subcommittee further noted that the twenty-fifth session of the Asia-Pacific Regional Space Agency Forum, on the theme “Innovative space technology for evolving needs”, had been held in Singapore from 6 to 9 November 2018. The twenty-sixth session would be held in Japan in November 2019.

76. The Subcommittee noted that, on the occasion of its tenth anniversary, APSCO had held a high-level forum on the theme “Community of shared future through space cooperation” in Beijing on 14 November 2018.

## **III. Space technology for sustainable socioeconomic development**

77. In accordance with General Assembly resolution 73/91, the Subcommittee considered agenda item 5, entitled “Space technology for sustainable socioeconomic development”.

78. The representatives of Canada, China, Colombia, Germany, India, Indonesia, Israel, Italy, Japan and Pakistan made statements under agenda item 5. A statement was also made under the item by the representative of Costa Rica 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.

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

(a) “Contribution of Chilean space capabilities to national development”, by the representative of Chile;

(b) “Socioeconomic benefits of space utilization”, by the representative of Canada;

(c) “BiomeSAT Project: monitoring forest health using nanosatellite technologies”, by the representative of Brazil;

(d) “ZACube-2 pioneering South Africa’s indigenous capability in maritime domain awareness solutions for the African continent”, by the representative of South Africa;

(e) “Space4Water Portal”, by the representative of the Office for Outer Space Affairs;

(f) “My planet, my future: space for sustainability – a unique, proven tool for national, regional and global capacity advancement”, by the observer for CANEUS International;

(g) “Realizing the promise of space technology for sustainability: making big data actionable on a daily basis”, by the observer for CANEUS International;

(h) “Innovative space technology approaches to serving the needs of developing countries for precision agriculture”, by the observer for CANEUS International;

(i) “Proposal for a global university space debris observation network (GUSDON)”, by the observer for UNISEC-Global.

80. The Subcommittee had before it the following:

(a) Report on the United Nations/Germany High-level Forum on the theme “The way forward after UNISPACE+50 and on ‘Space2030’”, held in Bonn, Germany, from 13 to 16 November 2018 ([A/AC.105/1204](#));

(b) Note by the Secretariat containing a categorization of topics relating to the governance and method of work of the Committee and its subsidiary bodies ([A/AC.105/C.1/L.377](#));

(c) Conference room paper containing a report on the launch, current scope and future plans of the Space4Water Portal of the Office for Outer Space Affairs ([A/AC.105/C.1/2019/CRP.11](#)).

81. The Subcommittee noted that the United Nations/Germany High-level Forum on the theme “The way forward after UNISPACE+50 and on ‘Space2030’” had been held in Bonn, Germany, from 13 to 16 November 2018. It had been jointly organized by the Office for Outer Space Affairs and the Government of Germany, through the DLR, and had continued to promote discussions on the role of space science and technology in fostering global development.

82. The Subcommittee noted that, in follow-up to the work undertaken by the Action Team on Exploration and Innovation, the Office and the Regional Centre for Space Science and Technology Education for Western Asia would organize the United Nations/Jordan Workshop on the theme “Global partnership in space exploration and innovation”, to be held in Amman from 25 to 28 March 2019.

83. The Subcommittee also noted that the United Nations/China Forum on Space Solutions would be organized by the Office for Outer Space Affairs and CNSA and held in Changsha, China, from 24 to 27 April 2019. The Forum would be aimed at promoting the use of outer space for realizing the Sustainable Development Goals.

84. The Subcommittee further noted the value of space technology and applications, as well as of space-derived data and information, to sustainable development, including in terms of improving the formulation and subsequent implementation of policies and programmes of action relating to environmental protection, land and water management, urban and rural development, marine and coastal ecosystems, health care, climate change, disaster risk reduction and emergency response, energy, infrastructure, navigation, seismic monitoring, natural resources management, snow and glaciers, biodiversity, agriculture and food security.

85. The Subcommittee noted that research had shown that using geolocation and Earth observation satellites would assist in the achievement of about 40 per cent of the 169 targets of the Sustainable Development Goals. With the inclusion of the use of telecommunication satellites, that figure would rise substantially.

86. The Subcommittee also noted the information provided by States on their actions and programmes aimed at increasing society's awareness and understanding of the applications of space science and technology for meeting development needs, and on cooperation activities aimed at building capacity through education and training on using space science and technology applications for sustainable development.

87. The Subcommittee welcomed the development by the Office for Outer Space Affairs of the Space4Water Portal, a multi-stakeholder web platform for interdisciplinary knowledge exchange on space solutions and technologies for water-related topics, with a special focus on capacity-building and on including actors from developing countries.

88. The Subcommittee noted with satisfaction the work by the Office on the "Space for women" initiative, which included the development of a web portal aimed at promoting networking and mentoring opportunities for the empowerment of women and achieving gender equality in the space sector through targeted capacity-building and technical advisory activities.

89. Some delegations expressed the view that it was essential to strengthen existing opportunities and create new ones to ensure that more and more States had access to space and to the benefits derived from it. The Committee had a fundamental role in that regard in terms of both the promotion of international cooperation and capacity-building.

90. Some delegations expressed the view that the Open Universe and Access to Space for All initiatives were crucial for promoting and facilitating open and transparent access to astronomy and scientific information, and that those initiatives, together with the "Space for women" initiative, were complementary and should be addressed in an interconnected way.

91. The view was expressed that it was necessary to build national capacities in the handling of Earth observation data; standard methodologies for handling synthetic-aperture radar data and derived automated information by means of cloud computing; addressing innovation challenges in the forestry, agriculture, fishery, marine, mining, urbanization and disaster response fields; strengthening the use of international cooperation and partnerships for the transfer of knowledge, experience and information; and cost-efficient outsourcing to local industry and stimulating start-ups and the growth of small and medium-sized enterprises.

92. The view was expressed that cooperation between ESA and the Office for Outer Space Affairs on the establishment of an online tool providing information on space solutions for sustainable development was beneficial. ESA had published a catalogue entitled "A toolbox for the Sustainable Development Goals", which was available on the ESA website.

93. The Working Group of the Whole was reconvened with P. Kunhikrishnan (India) as Chair, in accordance with paragraph 9 of General Assembly resolution 73/91. At

its 912th meeting, on 21 February, the Subcommittee endorsed the report of the Working Group of the Whole, which is contained in annex I to the present report.

#### **IV. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment**

94. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 6, entitled “Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment”.

95. The representatives of Belarus, Canada, China, India, Indonesia, Israel, Japan, the Russian Federation, South Africa and the United States made statements under agenda item 6. The observer for PSIPW also made a statement under the agenda item. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

96. The Subcommittee heard a scientific and technical presentation entitled “Remote sensing as the instrument of economic development of Ukraine”, by the representative of Ukraine.

97. In the course of the discussions, delegations reviewed national, bilateral, regional and international programmes on remote sensing, in particular in the following areas: monitoring the presence of aerosols and pollutants in air and water; monitoring atmospheric processes; climate change monitoring, including the monitoring of essential climate variables; Arctic and polar ice monitoring; disaster mitigation and vulnerability assessments; ozone loss monitoring; natural resource management; ecosystem management; fishery management; yellow sands and red tide predictions; forest degradation and deforestation monitoring; evapotranspiration and water use efficiency monitoring; hydrography and water resource management; meteorology and severe weather forecasting; human settlement and urban development monitoring; land use and land cover change monitoring; sea surface temperature and wind monitoring; environmental change monitoring; greenhouse gas monitoring and inventory; glacier mapping and snow cover and cryosphere monitoring; agricultural crop growth monitoring; irrigation monitoring; precision agriculture monitoring; groundwater detection; space weather monitoring; health impact monitoring; food security; supporting law enforcement and first responders; geology and mineralogy; and infrastructure assessment.

98. The view was expressed that responding to many natural disasters required the use of remote sensing data and that international collaboration was essential to ensure that data remained quickly accessible, especially when the provision of relevant data was backed up by early warning detection methods. The delegation expressing that view commended the Copernicus programme of the European Union for providing the Sentinel data series as a fast and easy-to-use system for accessing remote sensing data to be used in natural disaster mitigation.

99. Some delegations expressed the view that combining space-based technologies – such as advanced synthetic aperture radar for monitoring ground activities through atmospheric clouds – with mobile applications facilitated stakeholders' access to information on natural resources and the environment and consequently offered many advantages to disaster management and relief efforts, including online mapping that integrated geospatial data.

100. The view was expressed that Earth observation data derived from satellites could be effectively augmented with data from various airborne sensors and sources, including unmanned aerial vehicles, thereby providing more useful visual aids to decision makers at a lower cost.

101. Some delegations expressed the view that, given its wide-ranging uses and applications, the scientific field of remote sensing provided a great opportunity for developing the science, technology, engineering and mathematics skills and inspiration that future space scientists and entrepreneurs needed to encourage socioeconomic development in developing countries.

102. The view was expressed that, with global climate and environmental challenges, it had become even more pressing for the international community to work together, and in particular with the private sector, to develop innovative Earth observation products that would resolve challenges while boosting the global economy.

103. The view was expressed that new approaches to the number, size and lifespan of Earth observation satellites had allowed a greater frequency of the revisit rate over target areas, thereby fostering a greater range of applications involving the regular collection of data, including the creation of composite images that highlighted changes over time. The delegation expressing that view also noted that, in order to maximize the socioeconomic benefits of that new approach, its country intended to make the data from those new systems available, to the widest extent possible, so as to encourage the development of innovative products and services using those data.

104. The view was expressed that, in the era of big data and artificial intelligence systems, remote sensing data could be combined with social network, transport and socioeconomic data to create smart cities and systems.

105. Some delegations expressed the view that the Group on Earth Observations (GEO) and the Committee on Earth Observation Satellites (CEOS) and its working groups played an important role in improving the sharing of remote sensing data and in improving access to data worldwide, and also commended the commitment of member States to supporting those initiatives.

106. The Subcommittee noted the continued support for the activities of CEOS and that the Viet Nam National Space Centre was serving as Chair of CEOS for 2019. The Subcommittee also noted that the thirty-third plenary session of CEOS would be held in Hanoi from 14 to 16 October 2019.

107. The Subcommittee further noted the continued support for the activities of GEO. It further noted that the next GEO executive committee meeting would be held in Geneva on 19 and 20 March 2019 and that the next GEO plenary meeting and ministerial summit would be held in Canberra on 6 and 7 November 2019.

## V. Space debris

108. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 7, entitled “Space debris”.

109. The representatives of Brazil, Canada, China, Finland, Germany, India, Indonesia, Japan, Mexico, the Russian Federation, Thailand, the United Arab Emirates and the United States made statements under agenda item 7. A statement was made under the item by the representative of Costa Rica on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

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

(a) “2018 space debris activities in France: highlights”, by the representative of France;

(b) “Orbital debris mitigation and United States Space Policy Directive-3”, by the representative of the United States;

(c) “United Arab Emirates Space Agency space debris management research and development activities”, by the representative of the United Arab Emirates;

- (d) “Status update on the RemoveDEBRIS Mission”, by the representative of the United Kingdom;
- (e) “Space debris research at JAXA”, by the representative of Japan;
- (f) “Overview of Inter-Agency Space Debris Coordination Committee (IADC) annual activities”, by the representative of Italy;
- (g) “Observation of near-Earth space in Ukraine”, by the representative of Ukraine;
- (h) “Space debris mitigation activities at ESA in 2018”, by the observer for ESA.

111. The Subcommittee had before it information on research on space debris, the safety of space objects with nuclear power sources on board and problems relating to the collision of such objects with space debris, in replies received from Member States and international organizations (documents [A/AC.105/C.1/115](#) and [A/AC.105/C.1/115/Add.1](#) and conference room papers A/AC.105/C.1/2019/CRP.7 and CRP.8).

112. The Subcommittee noted with satisfaction that the endorsement by the General Assembly, in its resolution [62/217](#), of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space had proved vital in controlling the space debris problem for the safety of future space missions.

113. The Subcommittee also noted with satisfaction that many States and international intergovernmental organizations were implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee and/or the Space Debris Mitigation Guidelines of IADC and that a number of States had harmonized their national space debris mitigation standards with those guidelines.

114. The Subcommittee noted that some States were using the Space Debris Mitigation Guidelines of the Committee, the European Code of Conduct for Space Debris Mitigation, ISO standard ISO 24113:2011 (Space systems: space debris mitigation requirements) and ITU recommendation ITU-R S.1003 (Environmental protection of the geostationary-satellite orbit) as reference points in their regulatory frameworks for national space activities.

115. The Subcommittee also noted that, in the area of space debris, some States were cooperating under the space surveillance and tracking support framework funded by the European Union and in the ESA space situational awareness programme.

116. The Subcommittee further noted that, in the area of space debris, the Russian Federation has developed, and since 1 January 2006 put into operation, the first civilian monitoring and early warning system in the world for hazardous situations in near-Earth space.

117. The Subcommittee expressed concern at the increasing amount of space debris and encouraged States, agencies, industries and academic institutions that had not yet done so to consider voluntarily implementing the Space Debris Mitigation Guidelines of the Committee.

118. The Subcommittee noted that IADC, whose initial work had served as the basis for the Space Debris Mitigation Guidelines of the Committee, continued its work to characterize the space debris environment and evaluate improvements to its own Space Debris Mitigation Guidelines.

119. The Subcommittee noted with appreciation that States had undertaken a number of actions to mitigate space debris, such as improving the design of launch vehicles and spacecraft, developing special software, reorbiting satellites, passivation, life extension, end-of-life operations and disposal. The Subcommittee noted the evolving technologies related to the in-orbit robotic servicing of satellites, the extension of satellite lifespans and active space debris removal.

120. The Subcommittee noted the development and application of new technologies and ongoing research related to space debris mitigation; collision avoidance; protecting space systems from space debris; limiting the creation of additional space debris; re-entry and collision avoidance techniques; measuring, characterizing, continuous monitoring and modelling of space debris; prediction, early warning and notification of space debris re-entry and collision; and space debris orbit evolution and fragmentation.

121. Some delegations expressed the view that the outcome of the work of the Working Group on the Long-term Sustainability of Outer Space Activities, which included guidelines directly addressing issues of space debris, represented a significant step forward in preserving outer space for future generations.

122. Some delegations expressed the view that there was a need to evaluate the implementation of the Space Debris Mitigation Guidelines of the Committee and subsequently update them.

123. Some delegations expressed the view that the existing non-legally binding guidelines and standards currently represented the best way forward for space debris mitigation.

124. Some delegations expressed the view that the strict application of space debris mitigation measures during all missions was mandatory to safeguard the space environment.

125. The view was expressed that it was necessary to expand the scope of international agreements to include space debris so as to ensure security and public safety.

126. Some delegations expressed the view that space debris issues should be addressed in a manner that would neither impose an undue burden on the space programmes of developing nations nor jeopardize the development of the space capabilities of those States.

127. The view was expressed that, in addressing space debris issues, States should act in line with the principle of common but differentiated responsibilities, which was based on the recognition of historical differences in the contributions of developed and developing States to the creation of space debris and the acknowledgement of differences in States' economic and technical capacities.

128. The view was expressed that all States carrying out outer space activities should act in a responsible manner in order to prevent an increase in the amount of space debris.

129. Some delegations expressed the view that it was important for States with developed space programmes to comply with their responsibilities to provide complete and timely information and to prevent the creation of space debris, mitigate and remove space debris appropriately and provide special assistance to those countries with incipient or non-existent space programmes that could be affected by space debris.

130. Some delegations expressed the view that cooperation between spacefaring countries and countries with emerging space capabilities needed to be increased in order to strengthen national capabilities in addressing space debris and accommodate the transfer of knowledge and the sharing of data, information and analysis methods.

131. Some delegations expressed the view that it was essential for all information related to the entry of space debris into the atmosphere to be communicated with diligence and promptness to those countries that might be affected and that cooperation should be intensified to enable the measures necessary to prevent and mitigate damage to property and persons.

132. The view was expressed that it was important to strengthen the international observation network by, among others, increasing the participation of equatorial countries.

133. The view was expressed that no State alone could solve all the issues linked to the monitoring of space debris and the issuing of warnings of potentially hazardous situations, especially in higher orbits, and that there was a need for the development of an international platform for sharing information on space objects and events, which would make it possible to use the technical resources of States more efficiently and to guarantee the monitoring of space for improving the safety of space operations.

134. The view was expressed that all participants in IADC re-entry prediction campaigns should act in a spirit of cooperation and in line with the campaigns' objectives of preparing for and responding to high-risk re-entry events through the improvement of prediction techniques.

135. Some delegations expressed the view that IADC re-entry prediction campaigns were instrumental in sharing data and improving prediction techniques for high-risk re-entry events.

136. Some delegations expressed the view that international cooperation was necessary for the exchange of situational awareness and the management of space traffic.

137. The view was expressed that the international community should identify and reduce the barriers to and risks of feasible orbital debris removal missions. The delegation expressing that view was also of the view that increased international agreement on the appropriate framework for debris removal missions would be essential to ensuring the positive and transparent contributions of such missions to the sustainability of the space environment.

138. The view was expressed that it was important to address all legal and technical issues relating to space debris, such as space traffic management, active debris removal and the servicing of space vehicles orbiting the Earth.

139. The view was expressed that there was no legal basis for active debris removal, as an internationally agreed legal definition of the term "space debris" had not yet been developed.

140. Some delegations expressed the view that a legal framework should be developed for space debris remediation measures.

141. Some delegations expressed the view that the Safety Framework for Nuclear Power Source Applications in Outer Space and the Space Debris Mitigation Guidelines of the Committee could enrich the activities of the Legal Subcommittee and the work of the Committee to promote the safety and sustainability of activities in outer space.

142. The Subcommittee noted with satisfaction that the compendium of standards adopted by States and international organizations to mitigate the creation of space debris was being continuously updated. The compendium had been initiated by Canada, Czechia and Germany and had contained at its inception information on the space debris mitigation standards adopted by Algeria, Argentina, Australia, Austria, Belgium, Canada, Chile, Czechia, France, Germany, Italy, Japan, Mexico, the Netherlands, Nigeria, Poland, Slovakia, Spain, Switzerland, Ukraine, the United Kingdom and the United States. In addition to those national standards, the compendium contained five international standards. The Subcommittee also noted with satisfaction that input to the compendium had been provided by Thailand in 2016, Indonesia in 2017, Denmark, Finland, Myanmar and ISO in 2018 and Azerbaijan and the Russian Federation in 2019. The Subcommittee noted that the compendium could be consulted on the website of the Office for Outer Space Affairs and encouraged Member States to continue to provide contributions and updates to it.

143. The Subcommittee took note of paragraph 12 of General Assembly resolution [73/91](#) and agreed that Member States and international organizations having permanent observer status with the Committee should continue to be invited to provide reports on research on space debris, the safety of space objects with nuclear power sources (NPS) on board, problems relating to the collision of such space objects

with space debris and the ways in which debris mitigation guidelines were being implemented.

## VI. Space-system-based disaster management support

144. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 8, entitled “Space-system-based disaster management support”.

145. The representatives of Canada, China, Germany, India, Indonesia, Israel, Japan, Mexico, the Republic of Korea, the Russian Federation and the United States made statements under agenda item 8. A statement was also made under the item by the representative of Chile on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

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

(a) “RaioSAT Project: detecting lightning discharges from space based on nanosatellite technologies”, by a representative of Brazil;

(b) “Disaster management support at INPE: Brumadinho dam collapse”, by a representative of Brazil;

(c) “Space-based technology application on disaster reduction in China in 2018”, by a representative of China;

(d) “International Charter on Space and Major Disasters: space satellite data for relief organizations in the event of disasters”, by a representative of France;

(e) “Recent progress of Sentinel Asia: Japan’s contribution to disaster management in the Asia-Pacific region through cooperation”, by a representative of Japan.

147. The Subcommittee had before it the following:

(a) Report on the United Nations International Conference on Space-based Technologies for Disaster Risk Reduction: Enhancing Disaster Preparedness for Effective Emergency Response, held in Beijing from 24 to 26 October 2018 ([A/AC.105/1198](#));

(b) Report on activities carried out in 2018 in the framework of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response ([A/AC.105/1190](#)).

148. The Subcommittee noted with satisfaction the progress achieved through activities held in 2018 in the framework of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), including the continuing advisory and other support provided through UN-SPIDER to emergency response efforts.

149. The Subcommittee noted that, with the continued support of its network of partners, representatives of UN-SPIDER had carried out the following activities: (a) a technical advisory mission to Zimbabwe; (b) follow-up activities in Ghana, Guatemala, Nepal, Sri Lanka and Viet Nam; and (c) an advisory support activity in Cambodia. During those activities, specific requirements had been addressed and follow-up had been provided to the UN-SPIDER technical advisory missions carried out in previous years.

150. The Subcommittee noted with satisfaction the capacity-building efforts that had been made in generating tailor-made space-based information for three countries facing floods (Ghana, Nigeria and Viet Nam) and countries experiencing droughts (Bolivia (Plurinational State of), Ecuador, El Salvador, Guatemala, Nigeria and Peru).

151. The Subcommittee noted that the international capacity-building programme on space-based technologies for emergency response had been conducted back-to-back with the United Nations International Conference on Space-based Technologies for Disaster Risk Reduction held in Beijing from 24 to 26 October 2018. It also noted the regional workshop and capacity-building programme for the utilization of space-based and geospatial information for achieving the targets of the Sendai Framework for Disaster Risk Reduction that had been conducted at the Disaster Management Centre of the South Asian Association for Regional Cooperation in New Delhi.

152. The Subcommittee also noted the planned outreach activities of the Office for Outer Space Affairs, represented by UN-SPIDER, and its developing partnerships with United Nations entities, international organizations and Member States to continue promoting the use of space-based tools and information in global and regional initiatives, such as under the Sendai Framework for Disaster Risk Reduction 2015–2030, the 2030 Agenda for Sustainable Development and the Paris Agreement.

153. The Subcommittee noted with satisfaction the ongoing activities of States members of the Committee to increase the availability and use of space-based solutions in support of disaster risk reduction. Those activities included promoting emergency observation and cartography during natural or technological disasters under 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 on Space and Major Disasters), and under the Sentinel Asia programme and the Copernicus Emergency Management Service.

154. The view was expressed that the efforts conducted by Member States under the Charter and Sentinel Asia to support disaster response efforts had been substantial and it was noted that the Charter had adopted the principle of universal access, meaning that disaster management authorities from all countries could use the Charter. In that regard, it was also noted that Madagascar, Paraguay and Peru had become members of the Charter, while Eswatini, Ghana, South Africa, the Sudan, Tunisia and Zimbabwe had submitted applications.

155. The view was expressed that the activities conducted by several Member States, directly or through the Charter or Sentinel Asia, to facilitate access to satellite imagery and space-based information had been successful in supporting disaster response efforts following a volcanic eruption in Guatemala, floods in the Lao People's Democratic Republic, a typhoon, floods and landslides in Viet Nam, floods in Nigeria and floods in Ghana. The delegation expressing that view also was of the view that efforts to raise awareness of the Charter and of the Copernicus Emergency Management Service were important to encourage States to utilize such services.

156. The view was expressed that the activities of Sentinel Asia, in which more than 100 organizations in the Asia-Pacific region participated and which had conducted approximately 300 emergency observations since its launch in 2006, continued to be highly useful.

157. The view was expressed that space-based emergency mapping could be achieved more effectively with the help of international collaboration, and that a multilateral approach to disaster and climate change management should be encouraged.

158. Some delegations commended the efforts of signatories to the Charter to provide satellite images during major disasters.

159. The Subcommittee noted with satisfaction other activities of Member States in the same area, such as the promotion, with the support of UN-SPIDER, of the universal access initiative of the Charter and the provision of national and regional data portals for the dissemination of information in near-real time.

160. Some delegations expressed the view that the Office for Outer Space Affairs, through UN-SPIDER, should intensify capacity-building, coordination and

international cooperation through training programmes in disaster management, in particular in Latin America and the Caribbean.

161. Some delegations expressed the view that the efforts of Member States to develop mobile applications to provide early warnings to communities were good examples of tailoring disaster management information to the needs of those who would be most affected by natural disasters.

162. Some delegations expressed the view that the practice of national space agencies working closely with their national disaster management agencies had proved to be effective in responding to emergency situations following natural disasters.

163. The view was expressed that search and rescue missions were a useful part of disaster management, as was the commitment of providers of search and rescue data for disaster management through the International Charter on Space and Major Disasters. It was highlighted that the activities of the International Satellite System for Search and Rescue (COSPAS-SARSAT) in the search and rescue field saved thousands of lives every year.

164. The view was expressed that space systems were essential to support the management of disasters caused by natural or anthropogenic phenomena, and that only through international cooperation could such systems be leveraged to the greatest effect.

165. The view was expressed that, with regard to the development of disaster management tools, advances in data analytics and communication capabilities, especially those integrating Earth observation science and socioeconomic information, contributed to understanding the specific vulnerabilities of those affected and made it possible to provide better support to communities and infrastructure.

166. The Subcommittee noted the international expert meeting on the theme “Towards big (space) data in support of disaster risk reduction and emergency response in Africa” that had been organized by UN-SPIDER and held prior to the United Nations/Germany High-level Forum on the way forward after UNISPACE+50 and on “Space2030” that had been held in Bonn, Germany, from 13 to 16 November 2018.

167. The Subcommittee also noted the in-kind contributions, including the provision of experts, made by States members of the Committee and regional support offices in 2018 to the technical advisory missions and related activities conducted by the Office for Outer Space Affairs through UN-SPIDER, and their efforts to share experiences with other interested countries.

168. The Subcommittee noted with appreciation the voluntary contributions made to the Office for Outer Space Affairs and its UN-SPIDER programme by member States, including the cash contributions from China and Germany, and again encouraged other member States to provide the Office’s activities and programmes, including UN-SPIDER, with all necessary support on a voluntary basis, including increased financial support, to enable it to better respond to Member States’ requests for assistance and to fully carry out its workplan for the next biennium.

## VII. Recent developments in global navigation satellite systems

169. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 9, entitled “Recent developments in global navigation satellite systems”, and reviewed matters related to the International Committee on Global Navigation Satellite Systems (ICG), the latest developments in the field of GNSS and new GNSS applications.

170. The representatives of China, India, Indonesia, Japan, Mexico, the Republic of Korea and the Russian Federation made statements under agenda item 9. During the

general exchange of views, statements relating to the item were also made by representatives of other member States.

171. The Subcommittee heard a scientific and technical presentation entitled “Quantum communications in space”, given by the representative of Italy.

172. The Subcommittee had before it the following documents:

(a) Note by the Secretariat on the thirteenth meeting of the International Committee on Global Navigation Satellite Systems ([A/AC.105/1191](#));

(b) Report of the Secretariat on activities carried out in 2018 in the framework of the workplan of the International Committee on Global Navigation Satellite Systems ([A/AC.105/1192](#)).

173. The Subcommittee noted with appreciation that, through ICG, all providers had agreed on the information presented in the publication entitled *The Interoperable Global Navigation Satellite Systems Space Service Volume (ST/SPACE/75)*, and on a number of recommendations on continuing the development, support and expansion of the multi-GNSS space service volume concept.

174. The Subcommittee was informed that the Office for Outer Space Affairs, as the executive secretariat of ICG, handled coordination for the planning of meetings of ICG and its Providers’ Forum, in conjunction with sessions of the Committee and its subsidiary bodies. It was noted that the Office also maintained a comprehensive information portal for ICG and users of GNSS services and continued to play an active role in facilitating cooperation and communication among the providers and users of GNSS.

175. The Subcommittee expressed its appreciation to the Office for its efforts in promoting the use of GNSS through its capacity-building and information dissemination initiatives, in particular in developing countries.

176. The Subcommittee noted with satisfaction that the thirteenth meeting of ICG and the twenty-first meeting of the Providers’ Forum, organized by the China Satellite Navigation Office on behalf of the Government of China, had been held in Xi’an, China, from 4 to 9 November 2018.

177. The Subcommittee noted that the fourteenth meeting of ICG would be hosted by India and would be held in Bengaluru, India, from 9 to 13 December 2019. The Subcommittee also noted the expression of interest by the Office for Outer Space Affairs to host the fifteenth meeting of ICG, in 2020, and by the United Arab Emirates to host the sixteenth meeting, in 2021.

178. The Subcommittee also noted that the Global Positioning System (GPS) of the United States continued to provide a reliable and accurate space-based positioning, navigation and timing service to the international community.

179. The Subcommittee further noted that the civilian services of the Global Navigation Satellite System (GLONASS) were provided free of direct user charges and were available to all users on a continuous, worldwide basis, and that the launch of the latest two GLONASS-M navigation satellites into orbit in 2018 supported the space segment of the system. It was noted that the fully operational constellation with global coverage consisted of 24 satellites.

180. The Subcommittee noted that the GLONASS open service performance standard, specifying the minimum level of performance, would be completed by the end of 2019. The revised edition of the GLONASS interface control document, containing recommended models for the evaluation of tropospheric and ionospheric delays that would further improve navigation accuracy, was expected to be released in 2019. It was noted that a major milestone would be the launch of the GLONASS-K2 satellites, which would provide code division multiple access (CDMA) signals in the L1, L2 and L3 bands and the traditional signals with frequency division multiple access (FDMA). High-orbit GLONASS, consisting of six satellites

located in inclined geosynchronous orbits, would be developed to provide a navigation solution for densely constructed urban areas.

181. The Subcommittee also noted that the data and services provided by the European GNSS Galileo and the regional space-based augmentation system European Geostationary Navigation Overlay Service (EGNOS) were available worldwide on an open basis and free of direct user charges. It was noted that the four new Galileo satellites, launched into orbit by Arianespace in 2018, had brought the number of satellites in orbit as part of the constellation from 22 to 26. The full Galileo constellation would consist of 30 satellites and was expected to be completed by 2020.

182. The Subcommittee further noted that the BeiDou Navigation Satellite System (BDS), a global navigation satellite system compatible with other GNSS, had been established and was being operated by China. The system provided all users with high-precision and high-reliability positioning, navigation and timing services. BDS had been widely adopted in fields such as smart cities, disaster risk reduction, agriculture, forestry, fisheries and meteorology, yielding significant economic and social benefits.

183. The Subcommittee noted that the BeiDou system had been developed in three stages named BDS-1, BDS-2 and BDS-3, respectively, and had progressed from a regional to a global service. The BDS-3 basic system had been completed at the end of 2018, and global service had been activated. The service of BDS-2 to countries of the Asia-Pacific region had been further developed. The system would constitute a complete space constellation and would provide global coverage by 2020.

184. The Subcommittee also noted that India was currently implementing its satellite navigation programme, which consisted of two systems: the GPS-aided Geostationary Augmented Navigation System (GAGAN), which as the name implied was a satellite-based augmentation system, and the Indian Regional Navigation Satellite System (IRNSS), which was an independent regional system. GAGAN had been certified for a service level with a required navigation performance of 0.1 nautical mile (RNP0.1) and for approaches with vertical guidance (APV) by the Directorate General of Civil Aviation of India, thus enabling en route navigation and precision approach services using GAGAN.

185. The Subcommittee further noted that the IRNSS constellation, also known as “navigation with Indian constellation” (NavIC), provided satellite-based navigation services. It consisted of seven satellites: three in geostationary orbits and four in geosynchronous orbits. It was envisaged that it would provide a position accuracy of better than 20 metres in the primary service area. IRNSS-1A, the first IRNSS satellite, had been used exclusively for messaging services. In April 2018, the IRNSS-1I satellite had been launched. The signal-in-space interface control document had been released to the public to facilitate research and development and aid the commercial use of the NavIC signals for navigation-based applications.

186. The Subcommittee noted that Japan was currently constructing its Quasi-Zenith Satellite System (QZSS), also known as Michibiki. QZSS, a navigation satellite system that was compatible and interoperable with GPS, extended availability time by sharing the same positioning signals. Formal operation had begun in 2018 with a constellation of four satellites. The constellation of seven satellites, to be completed by 2023, would enable sustainable positioning.

187. The Subcommittee also noted that QZSS had enabled accuracy and reliability of positioning to be improved by sending error correction data for both GPS and QZSS signals measured by ground stations. QZSS was also expected to contribute to disaster risk reduction with its short messaging service.

188. The Subcommittee further noted that the programme of the Republic of Korea to establish a satellite-based augmentation system named “Korea Augmentation Satellite System” (KASS), had been initiated in 2014. Its APV1 class safety-of-life service for use in civil aviation would be initiated by the end of 2022. It was noted that the KASS programme office, established at the Korea Aerospace Research

Institute, was managing the technical side of the development process and had completed the first part of the critical design review.

189. The Subcommittee noted that, following the KASS programme, a regional satellite navigation system, the Korea Positioning System (KPS), would be built and deployed over the Korean Peninsula, and would thus make a contribution to the international community as a regional provider of GNSS services.

190. The Subcommittee noted with appreciation that Indonesia and Mexico had reported on their projects and activities focused on helping to bring GNSS technology to the widest possible user community, as well as on the participation of international partners in those projects and activities. It was noted that GNSS had been used for research purposes, including studies on the characteristics of the troposphere, water vapour, scintillation monitoring and ionospheric delay observation. In the future, research would be undertaken into disaster mitigation in the form of tsunami monitoring and GNSS reflection.

## VIII. Space weather

191. In accordance with General Assembly resolution [73/91](#), the Scientific and Technical Subcommittee considered agenda item 10, entitled “Space weather”.

192. The representatives of Canada, Chile, China, Colombia, Germany, India, Indonesia, Italy, Japan, Mexico, Norway, the Russian Federation, South Africa and the United States made statements under agenda item 10. During the general exchange of views, statements relating to the item were made by representatives of other member States.

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

(a) “Opportunities in space and atmospheric science at INPE”, by the representative of Brazil;

(b) “The next scientific program of SCOSTEP: 2019–2023”, by the observer for SCOSTEP;

(c) “2018 space weather activities in Ukraine”, by the representative of Ukraine;

(d) “Recent and future solar-terrestrial physics activities in Switzerland”, by the observer for SCOSTEP;

(e) “Operational space weather practices as a service to society in South Africa”, by the representative of South Africa.

194. The Subcommittee welcomed the COSPAR symposium on space weather and small satellites, held on 11 February 2019 on the margins of the current session, at which the participants had analysed needs relating to and opportunities offered by the use of small satellites to monitor and research space weather.

195. The Subcommittee noted that space weather, which was caused by solar variability, was an international concern owing to the potential threat it posed to space systems, human space flight and the ground- and space-based infrastructure upon which society increasingly relied. As such, it needed to be addressed in a global manner, through international cooperation and coordination, in order to be able to predict potentially severe space weather events and mitigate their impact to guarantee the long-term sustainability of outer space activities.

196. In that regard, the Subcommittee underlined the importance of constructing an international space weather framework and noted that the matter was addressed under UNISPACE+50 thematic priority 4 (International framework for space weather services). The Subcommittee expressed its appreciation for the work of the Expert Group on Space Weather of the Scientific and Technical Subcommittee.

197. The Subcommittee noted that there was a need for a reliable, high-quality and accurate means of forecasting space weather and for the participation of countries around the world in space-based and ground-based measurements and forecast services.

198. The Subcommittee also noted a number of national and international activities undertaken in the fields of research, training and education to improve the scientific and technical understanding of the adverse effects of space weather and thus strengthen global resilience to it.

199. Some delegations expressed the view that they were in favour of the establishment of a dedicated international coordination group for space weather, within existing resources. Such a group could improve international collaboration and coordination and contribute to enhancing global resilience to the adverse effects of space weather under the space society pillar of the “Space2030” agenda.

200. Some delegations expressed the view that activities related to space weather could have an impact on aviation and, in particular, could interrupt high-frequency communications and satellite navigation.

201. In that regard, the Subcommittee noted the establishment of the Pan-European Consortium for Aviation Space Weather User Services (PECASUS). PECASUS had been selected by ICAO as one of three global space weather information centres tasked with providing information to the civil aviation sector about space weather that might affect communications, navigation and the health of passengers and crew. The Subcommittee also noted the establishment of regional warning centres for space weather in China, the Russian Federation and South Africa.

202. Some delegations expressed the view that space weather monitoring and the dissemination of space weather warnings required a high degree of integration of ground- and space-based observation data. Therefore, when considering the establishment of global space weather information centres to provide space weather information services to ensure flight safety, ICAO should fully take into account the monitoring capabilities of member States and the advantages created by their geographical location.

203. The view was expressed that, in spite of the scientific progress made in the field of space weather, further work should be done to develop an alternative plan to mitigate the effect of high-impact solar explosions, regardless of whether their time, intensity and impact on Earth could be forecast.

204. The Subcommittee noted that the steering committee of the International Space Weather Initiative (ISWI) had held a meeting on the margins of the current session. Topics of discussion had been the ISWI instrument arrays and their status of operation and coordination, and the operational use of space weather data. The Subcommittee also noted that ISWI was to hold a workshop at ICTP in Trieste, Italy, from 20 to 24 May 2019. The purpose of the workshop, which was supported by the Office for Outer Space Affairs, was to raise awareness among Member States of the impact of space weather.

205. At the 903rd meeting of the Subcommittee, on 15 February, the Rapporteur of the Expert Group on Space Weather reported on the progress made by the Expert Group during the meetings it had held on the margins of the current session of the Subcommittee.

206. The Expert Group had reiterated its commitment to the goal of improved international space weather services, which was to be reached by facilitating enhanced coordination between relevant international stakeholders as they implemented specific joint projects.

207. In that connection, the Expert Group had identified the following areas of focus:

(a) Encouraging the enhancement and development of an international space weather warning network;

- (b) Promoting the efficient further development of space weather services in response to user needs;
- (c) Promoting the recognition by member States of the importance of space weather and the risks it carried;
- (d) Encouraging member States to develop national space weather plans;
- (e) Promoting the maintenance of space weather services and the meeting of key measurement needs;
- (f) Encouraging member States to complete space weather risk and impact assessments;
- (g) Supporting and encouraging new research and the transition to improved operational services.

208. The Expert Group had continued to highlight the value of implementing voluntary guidelines B.6 and B.7 for the long-term sustainability of outer space activities, which related to space weather and for the text of which consensus had been reached. The guidelines are contained in the working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities (A/AC.105/C.1/L.366).

209. The Subcommittee heard a report by the Rapporteur of the Expert Group on Space Weather on the progress made in the work of the Expert Group during the fifty-sixth session of the Subcommittee.

## **IX. Near-Earth objects**

210. In accordance with General Assembly resolution [73/91](#), the Scientific and Technical Subcommittee considered agenda item 11, entitled “Near-Earth objects”.

211. The representatives of Canada, China, Germany, Indonesia, Italy, Japan, Mexico and the United States made statements under agenda item 11. Statements were also made by the observers for IAWN and SMPAG. During the general exchange of views, statements relating to the item were made by representatives of other member States.

212. The following presentation was made under the item: “Research into near-Earth asteroids with the participation of the Russian Federation”, by the representative of the Russian Federation.

213. 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.

214. The Subcommittee noted that nearly 22.5 million observations of asteroids and comments had been collected in 2018 by the worldwide network of astronomical observatories, based in 41 countries. It also noted that the number of known near-Earth objects had exceeded 19,574 as at 1 February 2019, of which 1,837 had been discovered in 2018, with 1,963 asteroids now catalogued whose orbits took them within 8 million kilometres of Earth’s orbit.

215. The Subcommittee also noted further progress and milestones in asteroid observation missions: the JAXA sample return mission Hayabusa-2 had arrived at the target asteroid, Ryugu, in June 2018, and the NASA sample return mission OSIRIS-REx, an international mission involving Canada, France and Japan, had arrived at the target asteroid, Bennu, in October 2018.

216. The Subcommittee further noted that the rover carried by Hayabusa-2, MINERVA-II, had landed on the target asteroid, Ryugu, in September 2018, becoming the world’s first successful rover exploring the surface of the asteroid. The robotic

lander Mobile Asteroid Surface Scout (MASCOT), which had also been carried by Hayabusa-2 and had been developed by DLR and Centre national d'études spatiales (CNES), France, had landed on the surface of Ryugu in October 2018.

217. The Subcommittee noted efforts to pursue research in technological options to mitigate the impact of asteroids, such as the NASA Double Asteroid Redirection Test (DART) mission, planned to impact the 160 metre-sized moonlet of the binary near-Earth asteroid Didymos and demonstrate that the kinetic impact orbit deflection technique could change the motion of an asteroid while still deep in space. The mission was in full development and flight operations were scheduled to start in mid-2021.

218. The Subcommittee noted a number of national policy activities and preparedness plans relating to near-Earth objects. Those included work by the NASA Planetary Defense Coordination Office, which led the efforts of the Government of the United States to coordinate the response to any actual threat of a near-Earth object impact on Earth, and the release of the national near-Earth object preparedness strategy and action plan in June 2018 by the Government of the United States, which was aimed at improving national preparedness to cope with the hazard of near-Earth object impacts. The five goals of that strategy included: international cooperation and further efforts to build international support for acknowledging and addressing the potential of an impact on Earth by a near-Earth object as a global challenge; and fostering more international consultation, coordination and cooperation in that area.

219. The Subcommittee noted that the IAWN steering committee had held its seventh meeting on 14 February 2019, on the margins of the current session of the Subcommittee. There were currently 15 signatories to the Statement of Intent for Participation in IAWN, representing observatories and space institutions in China, Colombia, Croatia, Mexico, the Republic of Korea, the Russian Federation and the United States, as well as countries in Europe, and even an amateur observer in the United Kingdom.

220. The Subcommittee also noted that signatories to the IAWN Statement of Intent were international experts from a variety of disciplines relevant to the detection, characterization and notification 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. It was further noted that more information was available on the IAWN website, hosted by the University of Maryland (United States), at <http://iawn.net>.

221. The Subcommittee further noted that, since the previous session of the Subcommittee, SMPAG had held two meetings: the 11th meeting had been held in Knoxville, United States, on 18 October 2018 and had been hosted by NASA; and the 12th meeting had been held on 13 February 2019, on the margins of the current session of the Subcommittee. Both meetings had been supported by the Office for Outer Space Affairs, as the secretariat to SMPAG, pursuant to General Assembly resolution 71/90. The Subcommittee was informed of the progress made in the work of SMPAG, as contained in the summary reports of the meetings, available at <http://smpag.net>.

222. The Subcommittee also noted that Czechia (in particular, the Ministry of Transport, the coordinator of space activities in Czechia) had become the nineteenth member of SMPAG, and that COSPAR had become its sixth permanent observer.

223. The Subcommittee further noted that the SMPAG Ad Hoc Working Group on Legal Issues, established by SMPAG in 2016 and coordinated by DLR, had presented to SMPAG at its 12th meeting a report containing an initial assessment of the current legal context and of relevant legal questions and issues regarding planetary defence.

224. The Subcommittee noted a number of events and workshops dedicated to the topic of near-Earth objects, such as the four-week workshop held by the Munich Institute for Astro- and Particle Physics in Munich, Germany, from 14 May to 8 June 2018; the Near-Earth Object and Debris Detection Conference, held at the European Space Operations Centre in Darmstadt, Germany, from 22 to 24 January

2019; and the 2018 Erice Seminar on Planetary Emergencies, held in Erice, Italy, from 18 to 26 August.

225. The Subcommittee also noted that IAWN, SMPAG and the Office for Outer Space Affairs were planning to collaborate in the organization of an international seminar on the topic of near-Earth objects, to be held in Erice, Italy, from 20 to 24 April 2020.

226. The Subcommittee further noted that the sixth IAA International Planetary Defense Conference would be held from 29 April to 3 May 2019 in the Washington, D.C., area.

227. The Subcommittee noted with appreciation that a brochure on near-Earth objects and planetary defence ([ST/SPACE/73](#)) had been made available at the UNISPACE+50 event in June 2018, as well as at the current session of the Subcommittee, to raise awareness among member States and the wider space community of all the aspects of ongoing activities in international cooperation to effectively address potential risks from hazardous near-Earth objects. The brochure had been jointly produced by IAWN, SMPAG and the Office for Outer Space Affairs, with funding from ESA in its capacity as the Chair of SMPAG.

228. The Subcommittee noted that the next meetings of the IAWN steering committee would be held on 27 April 2019, in conjunction with the sixth IAA International Planetary Defense Conference, and on 12 September 2019, to be followed by the SMPAG meeting on 13 September 2019, at the European Southern Observatory, in Garching, Germany.

## X. Long-term sustainability of outer space activities

229. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 12, entitled “Long-term sustainability of outer space activities”.

230. The representatives of Argentina, Australia, Austria, Belarus, Brazil, Canada, China, Colombia, Costa Rica, Cuba, France, Germany, India, Indonesia, Japan, Mexico, New Zealand, Nigeria, the Republic of Korea, the Russian Federation, South Africa, Switzerland, the United Kingdom, the United States and Uruguay made statements under agenda item 12. Statements were also made under the item by the representative of Costa Rica on behalf of the Group of Latin American and Caribbean States and the representative of Nigeria on behalf of the Group of African States. During the general exchange of views, further statements relating to the item were made by representatives of other member States.

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

(a) “ISO standardization activities for the sustainability of space activities”, by the observer for ISO;

(b) “Consortium for Execution of Rendezvous and Servicing Operations”, by the representative of the United States and the observer for SWF;

(c) “ESA activities in clean space”, by the observer for ESA;

(d) “Private sector contributions to the long-term sustainability of outer space activities”, by the representative of the United States;

(e) “Encouraging the sustainable exploration of space by means of in-situ resource utilization to mitigate the plume effect”, by the observer of For All Moonkind.

232. The Subcommittee had before it the following:

(a) Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled “Guidelines for the Long-term Sustainability of Outer Space Activities” ([A/AC.105/C.1/L.366](#));

(b) Working paper by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities entitled “Draft guidelines for the long-term sustainability of outer space activities” ([A/AC.105/C.1/L.367](#));

(c) Conference room paper by China and the Russian Federation entitled “Proposal on the way forward to address various aspects of the long-term sustainability of outer space activities in the Scientific and Technical Subcommittee” ([A/AC.105/C.1/2019/CRP.14](#)).

233. The Subcommittee agreed that it was important to continue work on the long-term sustainability of outer space activities.

234. The Subcommittee noted with appreciation the efforts of the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities, who had guided delegations during eight years of discussions and whose mandate had now come to an end.

235. The view was expressed that the Working Group on the Long-term Sustainability of Outer Space Activities had done crucial and excellent work to promote non-binding practical norms, which was a much-needed exercise in space diplomacy and had contributed to building transparency and confidence among member States.

236. The view was expressed that, in recent years, the work undertaken on the long-term sustainability of outer space activities had influenced the work of the Committee in a considerable way, as it had revitalized the Committee’s negotiating capacity and reinforced an important principle guiding the discussions in Vienna, namely the search for and achievement of consensus.

237. Some delegations welcomed the consensus reached in 2018 on a preamble and 21 voluntary guidelines for the long-term sustainability of outer space activities.

238. Some delegations expressed the view that the preamble and those 21 guidelines on which consensus had been reached, which were contained in document [A/AC.105/C.1/L.366](#), should be adopted by the Committee and referred to the General Assembly for endorsement.

239. Some delegations expressed the view that the preambular paragraphs and the 21 guidelines on which consensus had been reached ([A/AC.105/C.1/L.366](#)) should be presented for adoption by the Committee at its sixty-second session and that at the same session, a mechanism to address various aspects of the long-term sustainability of outer space activities should be established. The delegations expressing this view also noted that the Chair of the Committee and the delegation of South Africa would be willing to convene related informal consultations to work with all interested delegations.

240. Some delegations expressed the view that the preamble and 21 guidelines ([A/AC.105/C.1/L.366](#)) should not be considered a final product to be adopted either by the Subcommittee or the Committee, as the Working Group on the Long-term Sustainability of Outer Space Activities had not succeeded in reporting the result of its work as had been mandated. The delegations expressing this view were also of the view that the preamble and 21 guidelines should be considered as guidelines on whose text consensus had been reached, while the remaining seven guidelines ([A/AC.105/C.1/L.367](#)) should be considered as guidelines on whose text consensus could not be reached and for which negotiations should continue. Those delegations further expressed the view that work on the guidelines for the long-term sustainability of outer space activities should be continued with patience.

241. The view was expressed that the evolution of and rapid changes in the outer space environment and related technologies made the guidelines for the long-term sustainability of outer space activities increasingly relevant as a tool for upholding the rule of law in outer space.

242. The view was expressed that the work on long-term sustainability should be pursued in a more operational framework than through the plenary item in order to discuss in greater depth some of the issues raised by the implementation of the 21 finalized guidelines and the evolution of the space sector.

243. The view was expressed that, to achieve the Sustainable Development Goals, it was crucial to maintain access to outer space. Therefore, implementation of the guidelines was important not only for launching States, but also for all of humankind.

244. Some delegations expressed the view that States should press ahead and implement, at the national level, the guidelines on which consensus had been reached, and share their experiences. The delegations expressing this view were also of the view that implementation of the guidelines would encourage the safe and responsible use of outer space and further legitimize the work of the Committee, while increasing the active engagement of member States with that unique body.

245. The Subcommittee noted that some delegations had shared information at the present session on a number of measures taken or being taken to implement the 21 voluntary guidelines on the text of which consensus had been reached under the categories: (a) policy and regulatory framework for space activities; (b) safety of space operations; (c) international cooperation, capacity-building and awareness; and (d) scientific and technical research and development. The measures consisted of, inter alia, revision of relevant domestic legislation; improved registration of space objects; implementation of national space policy directives; conduct of debris research; plans to start operating a new space situational awareness radar and optical telescope system; completed construction of the optical wide-field patrol system for monitoring space assets; participation in a multilateral consortium appointed by ICAO to be a global space weather centre for the provision of space weather advisories; leadership of the Asia-Pacific Regional Space Agency Forum; and public engagement across all media platforms.

246. The Subcommittee noted with appreciation that a lunchtime side event had been held under the title “Guidelines for the long-term sustainability of outer space activities: implementation experiences and challenges”. It had been co-organized by Austria, Brazil and South Africa, and supported by SWF and the European Centre for Space Law National Point of Contact for Space Law Austria. The event had included contributions by panellists representing Brazil, Canada, China, France, Germany, New Zealand and South Africa, and had focused on implementation plans and on related experiences and challenges that States with different technical and regulatory capabilities in the space domain were facing.

247. Some delegations expressed the view that States could begin to voluntarily implement the guidelines for the long-term sustainability of outer space activities on the text of which consensus had been reached to the greatest extent practicable, consistent with their needs, conditions and capabilities.

248. The view was expressed that the preamble to the guidelines created a positive, enabling framework within which the guidelines should be interpreted and implemented. The delegation expressing that view also noted that many elements incorporated in the African Space Policy and Strategy were reflected in the preamble and applicable guidelines.

249. Some delegations expressed the view that the discussion of the guidelines for which consensus had not yet been reached could help to strengthen the work already done and that the implementation of the guidelines for which consensus had been reached represented considerable challenges, particularly for countries that were emerging participants in space activities. The delegations expressing that view were also of the view that the support of the international community would be essential, as addressing those challenges would require global solutions and the commitment of all countries.

250. The view was expressed that States should be able to decide independently how to implement the guidelines for the long-term sustainability of outer space activities

in accordance with their domestic legal regimes, stages of development, technological capabilities and regulatory proficiency, so as to avoid both insufficient regulation and unnecessary excessive regulation of the space industry, taking into account acceptable and reasonable financial and other considerations and the needs and interests of developing countries.

251. Some delegations expressed the view that work should continue on those guidelines on which no consensus had been reached during the mandate of the Working Group on the Long-term Sustainability of Outer Space Activities. In their view, discussions on those guidelines could strengthen the work already done.

252. Some delegations expressed the view that, as a complement to the Subcommittee's agenda item on the long-term sustainability of outer space activities – under which member States could share their experiences in implementing the guidelines – it would be appropriate to establish a working group to develop clear procedures for reviewing and updating the guidelines and introducing and considering proposed new guidelines.

253. Some delegations expressed the view that a permanent working group should be established, either under the Scientific and Technical Subcommittee or under the Committee on the Peaceful Uses of Outer Space, with the following goals and objectives: (a) exchange views on the implementation of the guidelines for the long-term sustainability of outer space activities; (b) identify challenges emerging from new areas of space activities and thus requiring additional guidelines for the long-term sustainability of outer space activities to be possibly introduced and negotiated (c) continue consideration of the remaining draft guidelines on the topics that had been approved by the Scientific and Technical Subcommittee, but on the text of which no consensus had been reached; (d) develop recommendations on the enhancement of the exchange of information between States, with the goal of improving the safety of space operations; and (e) establish procedures for the review and update of the previously agreed guidelines as well as for the consideration of proposals on possible new guidelines.

254. The view was expressed that, if a new working group was to be established, its mandate should not be restricted to the seven guidelines on which no consensus had been reached, and that it should instead be open to considering new items and ideas, such as space traffic management.

255. The view was expressed that a permanent working mechanism should be established under the agenda item on the long-term sustainability of outer space activities to resolve new problems and challenges in the governance of outer space activities. The delegation expressing that view was also of the view that such a mechanism should be based on real needs and developments in space technology and should enhance mutual trust and cooperation.

256. Some delegations expressed the view that the Subcommittee's existing agenda item on the long-term-sustainability of outer space activities was sufficient as a platform for sharing information and exchanging views on the national implementation of the 21 guidelines on which consensus had been reached and that there was no need to establish another mechanism on the long-term-sustainability of outer space activities at the present time. Those delegations were also of the view that it was important to have time for reflection and implementation at the national level.

257. The view was expressed that States should be open to resuming their dialogue with other interested States on an initiative that could build on the preamble and the 21 guidelines on which consensus had been reached, as doing so would give political shape to the universal commitment to responsible behaviour in space.

258. The view was expressed that support should be given to proposals made under UNISPACE+50 thematic priority 2 to address the interlinkages between the outcome of the Working Group and the treaties, principles and other instruments under the international legal regime governing outer space activities. The delegation

expressing this view was also of the view that support should be given to the establishment of a mechanism to further address the topic in the Committee as well.

259. The view was expressed that achieving consensus on approaches and solutions that would provide for the safety and security of outer space activities required real political will. The delegation expressing that view was also of the view that participants in space activities needed, *inter alia*, to responsibly choose those tools and means – from among those they may use to conduct their activities in outer space – that would ensure the safety of space operations and would prevent harmful interference with the space activities of other States.

260. The view was expressed that, in the future, a set of norms of behaviour and good practices in space would be needed more than ever. It would be necessary to formulate a clear, common vision of present and future challenges and to identify norms, best practices, recommendations or guidelines to improve the space environment, whether in the form of legally binding rules, voluntary rules or measures to enhance transparency and build confidence. The delegation expressing this view was also of the view that it would be necessary to develop a shared understanding of responsible behaviour in space.

261. The view was expressed that actions by the international community related to the long-term sustainability of outer space activities should be based on the following principles: (a) the Charter of the United Nations and applicable international law, both of which provided an adequate and pertinent legal framework, must be respected in the development of space activities; (b) the dual nature of space activities should be taken into account, as well as the need to promote the responsible use of space in the pursuit of both civilian and military space programmes; (c) any responses must be effective, pragmatic and sustainable, and must be able to bring about concrete and immediately measurable benefits; and (d) actions by the international community must be part of the search for practices aimed at increasing trust and transparency between actors and at limiting the possibilities of misunderstanding or escalation.

262. The Subcommittee noted that the incoming Chair of the Committee would hold informal consultations prior to and during the sixty-second session of the Committee to discuss any possible ways forward on the topic of the long-term sustainability of outer space activities, taking into account the views of all delegations.

263. The Subcommittee noted that the delegation of Switzerland would hold a one-day brainstorming session at the expert level with a view to making progress on finding common ground on possible further work on the long-term sustainability of outer space activities, to be held in Vienna on 11 June 2019 immediately prior to the sixty-second session of the Committee. States members of the Committee would be duly informed of the brainstorming session's programme and venue, which could be the Vienna International Centre.

## **XI. Use of nuclear power sources in outer space**

264. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 13, entitled "Use of nuclear power sources in outer space".

265. The representatives of China, the Russian Federation and the United States, as well as the representative of Costa Rica, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 13. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

266. The Subcommittee noted the tenth anniversary of the adoption of the Safety Framework for Nuclear Power Source Applications in Outer Space. The Commission on Safety Standards of IAEA had also agreed to the Safety Framework at its twenty-fifth meeting, in April 2009. In that connection, the Subcommittee welcomed the fact that some States and an international intergovernmental organization were developing, or considering to develop, legal and regulatory instruments on the safe

use of NPS in outer space, taking into account the content and requirements of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space and of the Safety Framework.

267. The view was expressed that the Principles and the Safety Framework provided a comprehensive foundation for supporting the safe use of NPS in outer space, and that the guidance provided in the Safety Framework enabled new approaches to safety on the basis of continuing advances in knowledge and practice since the adoption of the Principles. Furthermore, the Safety Framework allowed for States and international intergovernmental organizations to come up with new approaches on the basis of the expansion of knowledge and best practices gained from experience, and therefore continuously improve safety. The delegation expressing that view was also of the view that, to date, the Working Group on the Use of Nuclear Power Sources in Outer Space had not identified any challenges to implementing the Safety Framework that would require any modifications or additions to the Safety Framework. Thus, the practical application of the Safety Framework satisfied the safety intent of the Principles and therefore provided sufficient guidance to States and international intergovernmental organizations seeking to ensure the safe development and use of nuclear power in space.

268. The view was expressed that nuclear power could ensure the effectiveness of space programmes in both near-Earth and deep space and that it was a matter of priority to ensure the nuclear and radiological safety of NPS in outer space during the entire cycle of their development and use. In that connection, relevant documents developed under the auspices of the United Nations assisted greatly in the drafting and implementation at the national level of norms relating to the safety of NPS in outer space.

269. Some delegations expressed the view that, for more than five-and-a-half decades, NPS applications had played a critical role in the exploration of outer space, enabling missions of scientific discovery to destinations across the solar system.

270. Some delegations expressed the view that it was important to continue to study, analyse and evaluate various aspects, practices and regulations pertinent to the use of NPS in space, and that such activities must be beneficial, not detrimental, to humanity. The delegations expressing that view were also of the view that States were responsible for regulating the use of nuclear energy in space and that it was their duty to observe the relevant international legal regime. In that connection, and taking into account the Safety Framework, it was important for the Subcommittee to continue to address the issue through the application of appropriate strategies, long-term planning and the establishment of adequate and updated regulatory frameworks.

271. Some delegations expressed the view that more consideration should be given to the use of NPS in terrestrial orbits, specifically in the geostationary orbit and low-Earth orbit, in order to address the problem of potential collisions of nuclear-powered space objects in orbit and the incidents or emergencies that could be created by the accidental re-entry of such objects into the Earth's atmosphere, as well as the impact of such a re-entry on the Earth's surface, human life and health and the ecosystem.

272. Pursuant to General Assembly resolution [73/91](#), the Subcommittee, at its 895th meeting, on 11 February, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space, with Sam A. Harbison (United Kingdom) as Chair.

273. The Working Group on the Use of Nuclear Power Sources in Outer Space held three meetings. At its 911th meeting, on 21 February, the Subcommittee endorsed the report and recommendations of the Working Group.

## **XII. Space and global health**

274. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 14, entitled "Space and global health".

275. The representatives of China, Germany, India, Indonesia, Japan, the Russian Federation, Switzerland and the United States made statements under agenda item 14. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

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

(a) “Tele-epidemiology: which contribution for Earth observation satellite data; CNES activities in tele-epidemiology”, by the representative of France;

(b) “Australian initiatives for capacity-building and knowledge translation from space technologies to global health”, by the representative of Australia.

277. The Subcommittee had before it the following:

(a) Working paper by the Chair of the Working Group on Space and Global Health entitled “Proposed multi-year workplan of the Working Group on Space and Global Health of the Scientific and Technical Subcommittee” ([A/AC.105/C.1/L.376](#));

(b) Conference room paper containing a proposal by the Chair of the Working Group for a tentative draft questionnaire of the Working Group on Space and Global Health ([A/AC.105/C.1/2019/CRP.9](#)).

278. The Subcommittee noted a broad array of activities relevant to space and global health, such as telemedicine, space life sciences, space technologies, tele-epidemiology and disaster management (including responding to epidemics). The Subcommittee acknowledged the contribution of space science, space technology and space applications to the prevention and control of diseases, the promotion of human health and welfare, the addressing of global health issues, the advancement of medical research, the advancement of health practices and the provision of health-care services to individuals and communities.

279. Pursuant to paragraph 9 of General Assembly resolution [73/91](#), the Subcommittee, at its 895th meeting, on 11 February, convened its Working Group on Space and Global Health, with Antoine Geissbühler (Switzerland) as Chair.

280. The view was expressed that there was a need for enhanced inter-institutional and interdisciplinary cooperation and coordination among all stakeholders, such as States, United Nations entities, relevant intergovernmental and non-governmental organizations and the medical and space communities, for the attainment of the health-related goals of the 2030 Agenda for Sustainable Development, and that Geneva could be the ideal location to host a platform for such cooperation and coordination.

281. The view was expressed that the establishment of the Working Group on Space and Global Health should contribute to the expansion of access to health services, in particular in developing countries with isolated and difficult-to-reach areas.

282. The view was expressed that the Committee on the Peaceful Uses of Outer Space should work closely with the World Health Organization and the World Organization for Animal Health to prevent and mitigate crises caused by interaction between humans, animals and environment.

283. The Subcommittee noted that 44 scientists from 16 developing countries involved in the Belt and Road Initiative had taken part in a two-week training course on space and global health organized by China in April 2018.

284. At its 911th meeting, on 21 February, the Subcommittee endorsed the report of the Working Group on Space and Global Health, which is contained in annex III to the present report.

### **XIII. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union**

285. In accordance with General Assembly resolution 73/91, the Subcommittee considered agenda item 15, entitled “Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union”, as a single issue/item for discussion.

286. The representatives of Indonesia, the Russian Federation and South Africa made statements under agenda item 15. A statement was also made under the item by the representative of Costa Rica on behalf of the Group of Latin American and Caribbean States. The observer for ITU also made a statement. During the general exchange of views, statements relating to the item were made by representatives of other member States.

287. In accordance with the invitation extended by the Subcommittee at its fifty-fourth session, in 2017 (A/AC.105/1138, para. 277), the observer for ITU presented a report concerning the contribution of ITU to the peaceful uses of outer space, including the use of the geostationary satellite orbit and other orbits. In that connection, the Subcommittee took note with appreciation of the information provided in the annual report for 2018 of the Radiocommunication Bureau of ITU on the use of the geostationary satellite orbit and other orbits (see [www.itu.int/en/ITU-R/space/snl/Pages/reportSTS.aspx](http://www.itu.int/en/ITU-R/space/snl/Pages/reportSTS.aspx)), as well as other documents referred to in conference room paper A/AC.105/C.1/2018/CRP.7. The Subcommittee invited ITU to continue to submit reports to it.

288. Some delegations expressed the view that the geostationary orbit was a limited natural resource that was at risk of becoming saturated, thereby threatening the sustainability of space activities in that environment; that its use should be rationalized; and that it should be made available to all States, under equitable conditions, irrespective of their current technical capabilities, taking into particular account the needs of developing countries and the geographical position of certain countries. Those delegations were also of the view that it was important to use the geostationary orbit in compliance with international law and with the legal framework established by the United Nations and ITU.

289. Some delegations expressed the view that the geostationary orbit, as a limited natural resource clearly in danger of saturation, must be used rationally, efficiently, economically and equitably. That principle was deemed fundamental to safeguarding the interests of developing countries and countries with a certain geographical position, as set out in article 44, paragraph 196.2, of the Constitution of ITU, as amended by the Plenipotentiary Conference held in Minneapolis, United States, in 1998.

290. The view was expressed that the geostationary orbit was an integral part of outer space and possessed strategic and economic value for States, and that it should be used in a rational, balanced, efficient and equitable manner, so as to ensure that it would not be saturated. The delegation expressing that view was also of the view that, in order to defend the interests of developing countries, and equatorial countries in particular, the geostationary orbit should be regulated under a special legal framework or sui generis regime, in line with article 44 of the ITU Constitution.

291. The view was expressed that the issues relating to the effective use of the geostationary satellite orbit and equitable access to it were present in article 44 of the ITU Constitution. Those issues were the focus of Study Group 4 (Satellite services) of the ITU Radiocommunication Sector (ITU-R). In order to facilitate the access of the broadcasting satellite service to the limited resource that was the geostationary orbit, the World Radiocommunication Conference held in 2015 had adopted resolution 557, in which it had invited ITU-R to conduct studies on, review and identify possible revisions to, if necessary, the limitations mentioned in annex 7 to appendix 30 of the ITU Radio Regulations, while ensuring the protection of, and without imposing additional constraints on, assignments in the broadcasting satellite service plan and in the list of additional uses and the future of broadcasting satellite service networks and existing fixed-satellite service networks. There had been studies in which it had been concluded that if the World Radiocommunication Conference to be held in 2019 should decide to remove the limitations on the use of the geostationary orbit arc by the broadcasting satellite service in Africa and Europe (region 1) and Asia and Australasia (region 3), the developing countries in those regions should be given priority to use the new geostationary orbital positions in order to obtain a resource in the frequency bands of the broadcasting-satellite service plan. Therefore, in the view of the delegation expressing that view, such a decision by the World Radiocommunication Conference to be held in 2019 would support the fundamental principle of using the frequency bands of the plan and the geostationary orbit, thereby ensuring guaranteed and equitable access to the spectrum and the associated geostationary orbit for all interested States members of ITU, paying particular attention to the needs and interests of developing countries.

292. The view was expressed that utilization by States of the geostationary orbit on the basis of “first come, first served” was unacceptable and that the Subcommittee, with the involvement of ITU, should develop a regime guaranteeing equitable access to orbital positions for all States, in particular developing States. The first step in addressing the issue could be the establishment of communication between the Subcommittee and ITU-R Study Group 4 in order to include an item on increasing the efficiency of the use of the geostationary and non-geostationary orbits on the agenda of a future World Radiocommunication Conference.

293. The view was expressed that the deployment of very large constellations of non-geostationary, low-Earth orbit satellites led to very serious negative consequences for the long-term sustainability of outer space activities and for the creation of space debris. Therefore, the relevant item of the agenda of the Subcommittee should be amended to allow for the consideration of matters relating to both the geostationary and non-geostationary orbits.

294. Some delegations expressed the view that, in order to ensure the sustainability of the geostationary orbit, as well as to assure guaranteed and equitable access to the geostationary orbit based on the needs of all nations, taking into particular account the needs and interests of developing countries, it was necessary to keep the issue on the agenda of the Subcommittee.

#### **XIV. Draft provisional agenda for the fifty-seventh session of the Scientific and Technical Subcommittee**

295. In accordance with General Assembly resolution [73/91](#), the Subcommittee considered agenda item 16, entitled “Draft provisional agenda for the fifty-seventh session of the Scientific and Technical Subcommittee”.

296. The Subcommittee noted that the Secretariat had scheduled its fifty-seventh session to be held from 3 to 14 February 2020.

297. The Subcommittee agreed that the following items be proposed to the Committee for inclusion in the agenda of the Subcommittee at its fifty-seventh session:

1. Adoption of the agenda.
2. Election of the Chair.
3. Statement by the Chair.
4. General exchange of views and introduction of reports submitted on national activities.
5. United Nations Programme on Space Applications.
6. Space technology for sustainable socioeconomic development.
7. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
8. Space debris.
9. Space-system-based disaster management support.
10. Recent developments in global navigation satellite systems.
11. Space weather.
12. Near-Earth objects.
13. Long-term sustainability of outer space activities.
14. Use of nuclear power sources in outer space.  
(Work for 2020 as reflected in the multi-year workplan of the Working Group ([A/AC.105/1138](#), annex II, para. 9))
15. Space and global health.  
(Work for 2020 as reflected in the multi-year workplan of the Working Group (see annex III, para. 5, and appendix I of the present report))
16. Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries, without prejudice to the role of the International Telecommunication Union.  
(Single issue/item for discussion)
17. Draft provisional agenda for the fifty-eighth session of the Scientific and Technical Subcommittee.
18. Report to the Committee on the Peaceful Uses of Outer Space.

298. The Subcommittee agreed that the topic for the symposium to be held in 2020 by the Office for Outer Space Affairs should be "Access to space for all".

## Annex I

### Report of the Working Group of the Whole

1. In accordance with paragraph 9 of General Assembly resolution [73/91](#), the Scientific and Technical Subcommittee, at its fifty-sixth session, reconvened its Working Group of the Whole.
2. From 15 to 21 February 2019, the Working Group held three meetings, with P. Kunhikrishnan (India) as Chair. The Working Group considered the following items:
  - (a) Space technology for sustainable socioeconomic development;
  - (b) Governance and method of work of the Committee and its subsidiary bodies;
  - (c) Draft provisional agenda for the fifty-seventh session of the Scientific and Technical Subcommittee.
3. The Working Group had before it the documents listed in paragraph 80 of the report of the Subcommittee on its fifty-sixth session.
4. The Working Group of the Whole noted that, in accordance with General Assembly resolution [73/91](#), the Scientific and Technical Subcommittee would submit to the Committee its proposal for the draft provisional agenda for the fifty-seventh session of the Subcommittee, to be held in 2020.
5. The Working Group considered the list of substantive items contained in the provisional agenda for the fifty-sixth session of the Subcommittee ([A/AC.105/C.1/L.373](#)) and recommended that the same substantive items should be considered at the fifty-seventh session of the Subcommittee.
6. The Working Group noted that, in accordance with the agreement reached by the Subcommittee at its forty-fourth session, in 2007 ([A/AC.105/890](#), annex I, para. 24), the Office for Outer Space Affairs of the Secretariat would organize a symposium to strengthen the partnership with industry, to be held at the fifty-seventh session of the Subcommittee. The Working Group agreed that the topic for the 2020 symposium would be “Access to space for all”.
7. The view was expressed that, in organizing the symposium, the Office should aim to ensure balanced geographical, gender and generational representation.
8. The view was expressed that, inter alia, the criteria used by the Office to select private sector partners when organizing events or arranging other activities could be covered at the symposium.
9. The Working Group recalled that, at its sixty-first session, in 2018, the Committee on the Peaceful Uses of Outer Space had agreed to the multi-year workplan on the governance and method of work of the Committee and its subsidiary bodies.
10. The Working Group noted that, in accordance with the multi-year workplan, consideration of the note by the Secretariat on the governance and method of work of the Committee and its subsidiary bodies ([A/AC.105/C.1/L.377](#)) would continue at the sessions of the Legal Subcommittee and the Committee to be held in 2019.
11. The Working Group heard proposals by delegations on the governance and method of work of the Committee and its subsidiary bodies. Those proposals are summarized in the appendix to the present report.
12. In that regard, the Working Group noted that the Secretariat would consult with the Conference Management Service of the United Nations Office at Vienna on possible measures to be instituted in order to enhance the administration and logistical arrangements of the sessions of the Committee and its Subcommittees, and would

explore practices used by the secretariats of other intergovernmental bodies in Vienna. As far as practicable, the Secretariat would inform the Committee of the progress of those consultations at its sixty-second session, in 2019, in the context of work under the present multi-year workplan.

13. At its 3rd meeting, on 21 February, the Working Group adopted the present report.

## Appendix

### **Summary of proposals on the governance and method of work of the Committee and its subsidiary bodies**

An indicative list of proposals made by delegations during the meetings of the Working Group of the Whole on the governance and method of work of the Committee and its subsidiary bodies is set out below.

#### *Organization of work*

1. Provide the schedule of meetings well before the sessions, including the schedule of meetings of working groups.
2. Include the schedule of meetings of working groups in the annotated provisional agenda.
3. Take into account the needs and special requirements of small delegations.

#### *Statements*

4. Reduce the time allotted for statements by States members of the Committee to 7 minutes; to 5 minutes for observer States and organizations; and to 10 minutes for regional groups under the item on the general exchange of views.
5. Upload statements on a voluntary basis to the website of the Office for Outer Space Affairs of the Secretariat in a timely manner.

#### *Presentations and scientific and technical presentations*

6. Hold presentations during lunchtime to allow more time for deliberations of the Committee and its Subcommittees and their working groups.
7. Hold presentations during plenary meetings to ensure that interpretation is provided.
8. Limit the number of technical presentations per delegation.
9. Limit the number of technical presentations per permanent observer.
10. Limit the number of technical presentations per meeting.
11. Allow only those presentations that are closely linked to the agenda items.
12. Reduce the length and quantity of technical presentations.
13. Establish selection criteria for presentations.
14. Finalize the schedule of technical presentations before the session.
15. Cluster presentations by topic.
16. Allow presentations to be delivered only after 5 p.m. and limit the number to five presentations per day.
17. Request presenters to provide abstracts.
18. Implement electronic forms for the submission of requests for presentations.

#### *Time management*

19. Use time management devices to implement time control.

#### *Document management*

20. Provide delegations with the opportunity to opt out of receiving paper copies of pre-session documents for sessions of the Committee and its subsidiary bodies.

21. Do not distribute paper copies of documents by default, but provide delegations with the opportunity to opt in to receiving documents in hard copy.
22. Distribute documents only to States members of the Committee and organizations with permanent observer status with the Committee.
23. Review the system of assigning symbol numbers to clearly reflect the relevant agenda item for each document.
24. Use the PaperSmart system.
25. Publish documents related to decision items at least two weeks in advance of the sessions.
26. Indicate on documents the date of their publication on the website of the Office.
27. Upload documents distributed in session to the website at the time of their physical distribution.
28. Ensure that new documents made available in session are brought to the attention of delegations by the Chair.

#### *Agenda*

29. Start addressing decision items earlier in the session.
30. Deal with agenda items in order.
31. Examine one item per meeting.
32. Cluster agenda items.
33. Maintain a balance between predictability and flexibility in the scheduling of agenda items.
34. Continue to apply maximum flexibility in the scheduling of items.
35. Make sure that decision items are clearly indicated in the provisional agenda and that reference is made to previous pertinent decisions by the Committee and the General Assembly.

#### *Working groups*

36. Allocate more time to the meetings of working groups.
37. Review and evaluate the mandates of working groups every five years.
38. Include the schedule of the working group meetings in the indicative schedule of work annexed to the annotated provisional agenda.
39. Allow working groups to meet before technical presentations are given at each meeting.

#### *Method of work*

40. Prepare a guidance document containing information on the working methods, practices, rules and procedures of the Committee and its subsidiary bodies, and those of the General Assembly.
41. Prepare guidelines on the length of written statements and presentations.
42. Provide practical information on how to follow the work of existing working groups, in particular for the benefit of new States members of the Committee.
43. Ensure that reform-related decisions are implemented on a trial basis and can be reversed if they prove ineffective or detrimental to the work of the Committee and its subsidiary bodies.

#### *Decision-making*

44. Maintain consensus-based decision-making.

45. Consider the possibility of voting on procedural matters such as those on which no consensus can be reached and which are forwarded for consideration to the Fourth Committee of the General Assembly.
46. Consider alternative ways of advancing decision-making on matters such as those mentioned in the previous paragraph.

*Duration of sessions*

47. Instead of shortening the sessions of the Legal Subcommittee, establish more working groups or consider a wider range of agenda items.
48. Review the possibility of adjusting the duration of Subcommittee sessions to align them with the needs of the Subcommittees.
49. Revisit the working paper submitted by Germany containing a proposal for a renewal of the structure of the agenda and organization of work of the Legal Subcommittee ([A/AC.105/C.2/L.293](#)).

*Interaction with non-governmental entities, in particular those from industry and the private sector*

50. Do not hold dialogues with non-governmental entities during the sessions of the Committee and its Subcommittees; hold such dialogues only in the intersessional periods and within existing resources.
51. Find new ways to better engage with non-governmental entities in view of the limited resources for conference services.
52. Increase engagement with non-governmental entities in view of the value of their contribution to the work of the Committee and its Subcommittees.
53. Organize events on the Monday and Tuesday before the session of the Committee to promote dialogue with the private sector and civil society.
54. Strengthen the criteria for international non-governmental organizations becoming permanent observers of the Committee and provide regular updates on their status with the Economic and Social Council.

*Synergies and coordination*

55. Recommend strengthened cooperation between the First and Fourth Committees of the General Assembly through the organization of regular joint meetings of those Committees.
56. Enhance interaction and cooperation between the Committee, the Scientific and Technical Subcommittee and the Legal Subcommittee, especially with regard to cross-cutting matters.
57. Introduce measures within the Scientific and Technical Subcommittee in order to enhance cooperation with the Legal Subcommittee.
58. Include an item devoted to the work of the Legal Subcommittee in the agenda of the Scientific and Technical Subcommittee and vice versa to allow for discussion of cross-cutting issues.
59. Organize joint sessions or meetings of both Subcommittees.
60. Establish working groups of the Committee and give them a mandate to meet during sessions of the Subcommittees.

## Annex II

### Report of the Working Group on the Use of Nuclear Power Sources in Outer Space

1. Pursuant to General Assembly resolution [73/91](#), the Scientific and Technical Subcommittee, at its 895th meeting, on 11 February, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space, with Sam A. Harbison (United Kingdom of Great Britain and Northern Ireland) as Chair.

2. The Working Group recalled the following objectives of its multi-year workplan for the period 2017–2021, adopted by the Subcommittee at its fifty-fourth session, in 2017 ([A/AC.105/1138](#), annex II, paras. 8 and 9):

Objective 1. Promote and facilitate the implementation of the Safety Framework for Nuclear Power Source Applications in Outer Space by:

(a) Providing an opportunity for member States and international intergovernmental organizations considering or initiating involvement in space nuclear power source (NPS) applications to summarize and discuss their plans, progress to date and any challenges faced or foreseen in implementing the Safety Framework;

(b) Providing an opportunity for member States and international intergovernmental organizations with experience in space NPS applications to make presentations on challenges identified under subparagraph (a) above, and on their mission-specific experiences in implementing the guidance contained in the Safety Framework.

Objective 2. Discuss within the Working Group advances in knowledge and practices and their potential for enhancing the technical content and scope of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space through presentations from member States and international intergovernmental organizations based on one or more of the following:

(a) Their practical experience in implementing the Principles;

(b) Their knowledge of advances in science and technology relating to space NPS;

(c) Their knowledge of internationally accepted norms, standards and practices regarding radiation protection and nuclear safety.

3. The Working Group also recalled that 2019 marked the tenth anniversary of the adoption of the Safety Framework by the Scientific and Technical Subcommittee, at its forty-sixth session, in February 2009. The Working Group further recalled the subsequent agreement to the Safety Framework of the Commission on Safety Standards of the International Atomic Energy Agency, at its twenty-fifth meeting, in April 2009. In that connection, the Working Group:

(a) Recalled that the purpose of the Safety Framework was to promote the safety of space NPS, and noted with satisfaction that a number of States and one international intergovernmental organization had been implementing the Safety Framework;

(b) Noted the value and importance of implementing the Safety Framework;

(c) Noted with satisfaction that, following consideration of objective 1 of the current multi-year workplan, to date, Member States and international intergovernmental organizations had not identified any challenges to implementing the Safety Framework that would require any modification or additions to the Safety Framework;

(d) Expressed the view that the Safety Framework provided all the necessary information pertinent to the challenges of the safe use of space NPS faced by Member States and international intergovernmental organizations;

(e) Called upon Member States and international intergovernmental organizations to continue, or to begin, the implementation of the Safety Framework.

4. The Working Group had before it a conference room paper entitled “Implementation of the guidelines provided for in the international safety framework for nuclear power source applications in outer space for ESA space missions: the ESA safety policy on the use of nuclear power sources” (A/AC.105/C.1/2019/CRP.10), which had been prepared by ESA under objective 1 of the multi-year workplan of the Working Group.

5. The Working Group noted with satisfaction that ESA had become the first international intergovernmental organization to implement the Safety Framework and thanked it for its long-standing and active participation in the work of the Working Group.

6. Under objective 2 of its multi-year workplan, the Working Group continued its discussion of advances in knowledge and practices and their potential for enhancing the technical content and scope of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space. In accordance with the agreement reached at its meeting during the fifty-fifth session of the Subcommittee, in 2018 (A/AC.105/1167, annex II, para. 8), the Working Group continued to exchange views on practical experiences in implementing the Principles in relation to enhancing the safety of space NPS applications.

7. In relation to the work referred to in paragraph 6 above, the delegation of the United States of America presented an informal paper for discussion at an informal meeting, concluding that, in its country’s view, the practical application of the Safety Framework satisfied the safety intent of the Principles, and therefore provided sufficient guidance to States and international intergovernmental organizations seeking to ensure the safe development and use of nuclear power in outer space. That conclusion was supported by the experience of the United States in practical application to a range of space NPS missions.

8. The delegations of China and the Russian Federation indicated, informally, that according to their countries’ experiences, the application of the practical guidance contained in the Safety Framework satisfied the intent of the Principles and, in their view, provided sufficient guidance to member States and international intergovernmental organizations seeking to ensure the safe development and use of nuclear power in outer space. The Working Group invited the delegations of China and the Russian Federation to prepare informal papers for discussion during its work at the fifty-seventh session of the Subcommittee, in 2020, providing further details on their experiences of how the Safety Framework and Principles contributed to promoting the safety of their space NPS applications.

9. The Working Group continued to discuss a number of aspects of the Principles, including their structure and scope and the treatment of space NPS safety in principles 3 and 4. The Working Group noted that the Principles reflected technical knowledge and practices relevant to the safety of space NPS applications at the time of their drafting and adoption. The Working Group also noted that the scope of the Principles was different to the scope of the Safety Framework.

10. The Working Group agreed that intersessional work would be required to be successful in meeting the objectives of its multi-year workplan, including the discussion of the matters referred to in paragraph 9 above, and decided to conduct its intersessional work in 2019 by teleconferences, the first of which would be held on 6 June 2019.

11. In accordance with its multi-year workplan, the Working Group requested the Secretariat to invite, by no later than April 2019, States members of the Committee

and international intergovernmental organizations to make technical presentations and/or prepare informal papers for discussion pursuant to objective 1 and/or objective 2 of the workplan. The Working Group requested the Secretariat to allocate sufficient time for its work during the fifty-seventh session of the Subcommittee, in 2020, in order to ensure the effective delivery of technical presentations, to be followed by an exchange of views and discussions.

12. At its 3rd meeting, on 21 February, the Working Group adopted the present report.

## Annex III

### Report of the Working Group on Space and Global Health

1. In accordance with paragraph 9 of General Assembly resolution 73/91, the Scientific and Technical Subcommittee, at its fifty-sixth session, convened its Working Group on Space and Global Health.
2. From 14 to 21 February 2019, the Working Group held three meetings, with Antoine Geissbühler (Switzerland) as Chair.
3. The Working Group had before it the documents listed in paragraph 277 of the report of the Subcommittee on its fifty-sixth session.
4. The Working Group noted that, in addition to the meetings that the Working Group had held during the present session of the Subcommittee with the benefit of interpretation services, the Chair and interested delegations had held extensive informal consultations on the margins of the session. The informal consultations had enabled experts to assess progress in the use of space in support of global health, and to devise mechanisms in order to facilitate the sharing of information, strengthen capacity-building and foster new synergies between the space and health sectors.
5. The Working Group agreed on the workplan, prepared by the Chair of the Working Group on Space and Global Health, as contained in appendix I to the present report, and noted that the workplan provided a structured pathway towards enhancing national capacities in harnessing the contribution of space to the global health agenda. The Working Group also agreed on the questionnaire, as contained in appendix II to the present report, that would be circulated by the Secretariat to States members of the Committee and international intergovernmental and non-governmental organizations (see appendix I, para. 9).
6. The Working Group noted that the Office for Outer Space Affairs of the Secretariat would organize two workshops, in 2020 and 2021, subject to the availability of resources. The workshops would be related to the work of the Working Group and organized in collaboration with the World Health Organization and the World Organization for Animal Health, and in consultation with States members of the Committee, regional commissions and other international intergovernmental entities, as well as international non-governmental organizations, as appropriate. The workshops would be on space and global health and would be aimed at raising awareness and sharing national, regional and interregional experiences and practices in increasing the use of space science and technology for global health and attaining the health-related Sustainable Development Goals, among other objectives to be defined by the Working Group.
7. The Working Group also noted that the Office for Outer Space Affairs would establish and maintain a dedicated page on its website, subject to the availability of resources, to make available information on key activities, reference documents and plans relevant to space and global health by United Nations entities, international intergovernmental organizations, States members of the Committee and, to the extent possible, international non-governmental organizations and other non-governmental actors conducting activities in the area of global health. That information could also include the use of space for “One Health”, which referred to an interconnected framework encompassing human health, animal health, plant health, environmental health and ocean health. The web page could also provide links to relevant open educational resources.
8. The Working Group further noted that the University of Koblenz-Landau (Germany) would help the Working Group in setting up a shared information resource to promote the development of free and open educational resources on space and global health. That resource would provide an additional source of information and would be set up in coordination with the establishment of the web page for the Working Group by the Office.

9. The Working Group requested the Secretariat to invite States members of the Committee to provide the details of national points of contact for the Working Group.
10. At its 3rd meeting, on 21 February, the Working Group adopted the present report.

## Appendix I

### **Multi-year workplan of the Working Group on Space and Global Health**

#### **I. Establishment of the Working Group on Space and Global Health**

1. The Scientific and Technical Subcommittee endorsed, at its fifty-fifth session, the agreement of its Working Group of the Whole to establish a new item on the agenda of the Subcommittee, entitled “Space and global health”, under a multi-year workplan yet to be determined. The Committee on the Peaceful Uses of Outer Space, at its sixty-first session, noted the crucial role of space data and technology in the public health domain and welcomed the establishment of the new agenda item.
2. Also at its sixty-first session, the Committee agreed that a working group under the item on space and global health should be convened, with Antoine Geissbühler (Switzerland) as Chair, at the fifty-sixth session of the Scientific and Technical Subcommittee. The Committee also agreed that the Chair of the newly established working group, together with the Secretariat, would present to the Subcommittee at its fifty-sixth session a proposal for a multi-year workplan for the working group, taking into account the role of the Expert Group on Space and Global Health, which had been established in 2014 and had held four meetings in the period 2015–2018.

#### **II. Method of work**

3. The Working Group on Space and Global Health will work with a view to achieving the following vision: enhance the capacities of States Members of the United Nations in meeting the health-related Sustainable Development Goals through the increased use of space science, technology and applications for global health; and strengthen the collaborative engagement of Member States, international intergovernmental organizations and international non-governmental organizations with a view to achieving tangible and long-lasting solutions regarding the contribution of space to the global health agenda.
4. The Working Group will take into account considerations in the Committee and its Subcommittees on space and global health, the work done under thematic priority 5 (Strengthened space cooperation for global health) of the fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE+50); the work completed by the Action Team on Public Health of the Committee (action team 6), which was set up in 2001 and issued its final report in 2011; the action team 6 follow-up initiative, which was launched in 2012 and issued its final report in 2015; and the Expert Group on Space and Global Health.
5. The Working Group will meet during the annual sessions of the Scientific and Technical Subcommittee for the duration of its multi-year workplan; interpretation services will be provided. The Working Group may hold informal consultations on the margins of those sessions, convened by the Chair of the Working Group, as needed.
6. The Working Group will engage with permanent observers of the Committee in accordance with the rules of procedure, methods of work and established practices of the Committee.
7. The Working Group will take advantage of the establishment of a web page for it on the website of the Office for Outer Space Affairs to assist it in its work under the multi-year workplan.
8. The Bureau of the Working Group on the “Space2030” agenda will, in accordance with the methods of work of the Group, liaise with the Chair of the

Working Group on Space and Global Health with a view to creating synergies and avoiding duplication of effort. The Chair will report back to the Working Group on possible synergies.

### III. Multi-year workplan

9. The multi-year workplan under the item “Space and global health” for the period 2019–2022 is as follows:

2019 Agree on methods of work and workplan.

Develop a questionnaire, to be circulated by the Secretariat, to elicit the contributions of States members of the Committee, international intergovernmental and non-governmental organizations with permanent observer status with the Committee, United Nations entities, the Group on Earth Observations, the World Organization for Animal Health, the International Federation of Red Cross and Red Crescent Societies and Doctors Without Borders on experiences and practices in the use of space science and technology for global health, and on practices and initiatives, current or planned (concepts, science, capacity-building and operations) in the use of space (technology, applications, practices and initiatives) in support of global health and for attaining the health-related Sustainable Development Goals of the 2030 Agenda for Sustainable Development.

2020 Review contributions received in response to the questionnaire. Hold a general exchange of views on possible existing gaps in national, regional and international capacities in using space science and technology and their applications for global health.

Prepare possible contributions by the Working Group to the Working Group on the “Space2030” Agenda of the Committee.

The Chair of the Working Group to prepare a draft set of recommendations on specific topics of interest within the health and space domains that could provide an orientation for analysing possible existing gaps in national, regional and international capacities in using space science and technology and their applications for global health, taking into account the “Space2030” agenda, with a view of presenting those recommendations to the General Assembly in the form of a draft resolution.

The Secretariat to continue to invite contributions to the questionnaire.

The Chair of the Working Group to prepare a first draft of the report of the Working Group to the Subcommittee.

2021 Review the draft set of recommendations presented by the Chair of the Working Group on current uses of space (technology, applications, practices and initiatives) in support of global health.

The Chair of the Working Group to submit a first draft of the report of the Working Group to the Subcommittee and a corresponding draft resolution to be submitted to the General Assembly.

2022 Review and finalize the report of the Working Group to the Subcommittee, and review and finalize a draft resolution, to be considered for endorsement by the Committee with a view to its adoption by the General Assembly.

Determine whether the workplan should be extended to cover potential future work. If the workplan is not extended, discontinue the Working Group.

## Appendix II

### **Questions regarding policies, experiences and practices in the use of space science and technology for global health**

1. Please describe existing or planned formal cooperative agreements and other institutional arrangements (memorandums of understanding, letters of agreement, frameworks of collaboration, etc.) between the health sector and other sectors directly involved in space activities at the national level.
2. Please provide recommendations regarding the establishment of a dedicated platform for effective coordination among United Nations entities, other international organizations and relevant actors on space and global health issues.
3. Please describe existing or planned policy-enabled environmental and governance mechanisms for removing barriers to the effective use of space-based technologies in support of global health.
4. Please describe existing or planned policies on open data-sharing and participatory approaches to developing and improving access to geospatial information relevant to global health.
5. Please describe existing or planned efforts related to the geotagging of all assets relevant to health systems, including health information systems.
6. Please describe existing or planned intersectoral coordination and cooperation for effective international, regional, national and subnational capacity-building activities relevant to the application of space science and technology in the field of global health.
7. Please describe existing or planned mechanisms to engage educational institutions and other capacity-building mechanisms in motivating young health professionals to acquire skills and abilities required to efficiently use advantages provided by space technology, science and applications at an early stage in their careers.
8. Please describe existing or planned mechanisms to better integrate space-derived data and information into decision-making processes related to global health, and to harmonize and share such data.
9. Please describe how space technology and applications are integrated into health-related emergency planning and management and disaster management plans.
10. Please describe key activities, reference documents and plans relevant to the topic "Space for global health".
11. Please provide an overview of existing and planned practices and initiatives in the current uses of space (technology, applications, practices and initiatives) in support of global health and identify gaps, if any, in the following areas:
  - (a) Telemedicine and tele-health;
  - (b) Tele-epidemiology and environmental health;
  - (c) Space life sciences;
  - (d) Disaster and health emergency management;
  - (e) Other.

## Annex IV

### **Summary report of the Working Group on the “Space2030” Agenda of the Committee on the Peaceful Uses of Outer Space**

1. In accordance with the decision of the Committee on the Peaceful Uses of Outer Space at its sixty-first session, held from 20 to 29 June 2018, the Working Group on the “Space2030” Agenda was established under a new agenda item of the Committee, entitled ““Space2030” agenda”, which will remain on the Committee’s agenda until its sixty-third session, in 2020 ([A/73/20](#), paras. 358–364).
2. The Working Group met during the fifty-sixth session of the Scientific and Technical Subcommittee, during the plenary meetings and in informal consultations, with a view to finalizing a draft structure of a “Space2030” agenda that would serve as a guidance document for the future work of the Working Group in developing a “Space2030” agenda and implementation plan.
3. The Working Group had before it the following documents:
  - (a) Proposal by the Bureau of the Working Group on the “Space2030” Agenda on a draft structure of a “Space2030” agenda ([A/AC.105/C.1/L.372](#));
  - (b) Conference room paper containing the method of work and workplan of the Working Group on the “Space2030” Agenda ([A/AC.105/C.1/2019/CRP.4](#));
  - (c) Several non-papers by the Bureau of the Working Group on the “Space2030” Agenda containing revised versions of a draft structure of a “Space2030” agenda as well as a compilation of elements of a future “Space2030” agenda and implementation plan.
4. The Working Group noted with appreciation the preparatory work by the Bureau of the Working Group, assisted by the Secretariat, in advance of the current session and also noted with appreciation the Bureau’s efficient leadership in conducting the meetings at the current session of the Subcommittee to advance its work.
5. The Working Group exchanged ideas on a “Space2030” agenda and implementation plan and agreed that a “Space2030” agenda should be developed as a high-level, forward-looking document, intended to raise awareness around the world of the contributions of space technologies and applications to sustainable development and of the importance of global governance of outer space activities. It should highlight the role of space and the broad societal benefits it brings, serving as a source of inspiration and significantly contributing to the everyday lives of people on Earth.
6. The Working Group agreed that a “Space2030” agenda should demonstrate the continuous relevance of the Committee on the Peaceful Uses of Outer Space and its Subcommittees as a unique platform for international cooperation in the exploration and uses of outer space for peaceful purposes, able to demonstrate responsiveness to new realities and challenges in the space sector. The document would also demonstrate the important role of space in the United Nations system-wide efforts to support the 2030 Agenda for Sustainable Development.
7. The Working Group agreed that a “Space2030” agenda should promote a sense of ownership over its implementation by States and support joint efforts, global partnerships and strengthened cooperation among Member States, United Nations entities, intergovernmental and non-governmental organizations, industry and private sector entities. As such, the document should be written, in clear, understandable language and should contain concrete overarching objectives.
8. The Working Group took note with appreciation of the revised text of a draft structure of a “Space2030” and implementation plan prepared by the Bureau following discussions during the present session, and noted that those would be made

available to the Working Group at its meetings during the fifty-eighth session of the Legal Subcommittee as guidance for developing a “Space2030” agenda and implementation plan.

9. The Working Group agreed that, on the basis of the guidance received, the Bureau, assisted by the Secretariat, would prepare a zero draft of a “Space2030” agenda and implementation plan, to be submitted to the Working Group for further consideration during its meetings at the fifty-eighth session of the Legal Subcommittee.

10. The appendix to the present summary report contains the method of work and workplan established by the Working Group at its intersessional consultations that were held in Vienna from 8 to 12 October 2018, in accordance with the decision of the Committee ([A/73/20](#), para. 361), and will be put before the Committee for endorsement at its sixty-second session, to be held from 12 to 21 June 2019.

## Appendix

### **Method of work and workplan of the Working Group on the “Space2030” Agenda of the Committee on the Peaceful Uses of Outer Space**

#### **I. Introduction**

1. In accordance with the decision of the Committee on the Peaceful Uses of Outer Space at its sixty-first session, held in Vienna from 20 to 29 June 2018, the Working Group on the “Space2030” Agenda has been established under a new agenda item of the Committee, entitled “‘Space2030’ agenda”, that will remain on the Committee’s agenda until the sixty-third session of the Committee, in 2020.
2. The Working Group is chaired by members of the Bureau, comprising the Chair, Awni Mohammad Khasawneh (Jordan), and the two Vice-Chairs, Maria Assunta Accili Sabbatini (Italy) and Dumitru Dorin Prunariu (Romania), and is assisted by the Secretariat.
3. The Working Group will develop a “Space2030” agenda and implementation plan, pursuant to the mandate contained in General Assembly resolution 73/6, entitled “Fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space: space as a driver of sustainable development”.

#### **II. Method of work**

4. The Working Group will report to the Committee on the Peaceful Uses of Outer Space.
5. The meetings of the Working Group are to be guided by the rules of procedure and methods of work related to the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies, and to be held in accordance with established practice. The Working Group is to take decisions by consensus.
6. The Working Group will meet, with interpretation, during the sessions of the Committee on the Peaceful Uses of Outer Space and during the sessions of the Scientific and Technical Subcommittee and the Legal Subcommittee in 2019 and 2020. The Working Group may hold informal consultations on the margins of the sessions. The Working Group may also decide to meet intersessionally in Vienna, as necessary, to advance its work.
7. The Working Group will engage with permanent observers of the Committee in accordance with the rules of procedure and methods of work related to the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies, and in accordance with established practice.
8. The Working Group will take advantage of electronic communication and will use the list of focal points of the Working Group to share information. It will have a dedicated web page on the website of the Office for Outer Space Affairs of the Secretariat.
9. The Bureau of the Working Group will liaise with the Chairs of relevant working and expert groups of the two Subcommittees in a transparent manner, with a view to creating synergies and avoiding duplication of effort, and with the overall objective of developing a “Space2030” agenda and implementation plan. It will inform the Working Group accordingly.

### III. Workplan (2018–2020)

- 2018 Establish the method of work and workplan of the Working Group at its intersessional meeting.

Exchange ideas on possible elements for a draft structure of a “Space2030” agenda and implementation plan. The Bureau will prepare a draft structure of a “Space2030” agenda on the basis of the ideas exchanged in the intersessional meeting and any further consultations with States members of the Committee. That document will be used as the starting point for negotiations within the Working Group in 2019, including on the implementation plan of the agenda, and will be made available in all the official languages of the United Nations in advance of the fifty-sixth session of the Scientific and Technical Subcommittee.

- 2019 Consider the draft structure of a “Space2030” agenda and implementation plan with a view to finalizing it by the end of the fifty-sixth session of the Scientific and Technical Subcommittee.

Start developing a draft “Space2030” agenda and implementation plan and submitting a consolidated draft “Space2030” agenda and implementation plan to the Committee on the Peaceful Uses of Outer Space at its sixty-second session. The Working Group may hold intersessional meetings, as necessary, to advance its work.

- 2020 Continue to consider and consolidate the draft “Space2030” agenda and implementation plan during the sessions of the Scientific and Technical Subcommittee and the Legal Subcommittee to be held in 2020. The Working Group may hold intersessional meetings, as necessary, to advance its work. Present a final, consolidated draft of the “Space2030” agenda and implementation plan to the Committee at its sixty-third session, in 2020, for consideration and submission to the General Assembly at its seventy-fifth session, in 2020.

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