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**Committee on the Peaceful
Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-seventh session
Vienna, 3–14 February 2020**

Draft report

I. Introduction

1. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its fifty-seventh session at the United Nations Office at Vienna from 3 to 14 February 2020, with Natália Archinard (Switzerland) as Chair.
2. The Subcommittee held [...] meetings.

A. Attendance

3. Representatives of the following [...] States members of the Committee attended the session: Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bolivia (Plurinational State of), Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czechia, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Lebanon, Libya, Luxembourg, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Singapore, Slovakia, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, 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 915th, 916th and 917th meetings, on 3 and 4 February, the Subcommittee decided to invite observers for Croatia, Guatemala, Honduras 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 its 915th 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. Observers for the International Civil Aviation Organization (ICAO), the International Telecommunication Union (ITU), the United Nations Industrial Development Organization (UNIDO), the United Nations Institute for Disarmament Research (UNIDIR), the United Nations Technology Innovation Labs, and the World Meteorological Organization (WMO) attended the session.
7. 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.
8. The session was attended by observers for the following intergovernmental organizations with permanent observer status with the Committee: Asia-Pacific Space Cooperation Organization, European Southern Observatory (ESO), European Space Agency (ESA), European Telecommunications Satellite Organization (EUTELSAT-IGO), Inter-Islamic Network on Space Sciences and Technology (ISNET), and Regional Centre for Remote Sensing of the North African States.
9. The session was attended by observers for the International Asteroid Warning Network and the Space Mission Planning Advisory Group, in accordance with the agreement of the Subcommittee at its fifty-third session ([A/AC.105/1109](#), para. 182).
10. The session was attended by observers for the following non-governmental organizations having permanent observer status with the Committee: CANEUS International, European Space Policy Institute (ESPI), For All Moonkind, International Academy of Astronautics (IAA), International Association for the Advancement of Space Safety (IAASS), International Astronautical Federation (IAF), International Organization for Standardization (ISO), International Society for Photogrammetry and Remote Sensing (ISPRS), International Space University (ISU), Moon Village Association, National Space Society (NSS), Prince Sultan Bin Abdulaziz International Prize for Water, 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).
11. A list of the representatives of States, United Nations entities and other international organizations attending the session is contained in document [A/AC.105/C.1/2020/INF/\[...\]](#).

B. Adoption of the agenda

12. At its 915th meeting, on 3 February, the Subcommittee adopted the following agenda:
 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. Future role and method of work of the Committee.
15. Use of nuclear power sources in outer space.
16. Space and global health.
17. 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.
18. Draft provisional agenda for the fifty-eighth session of the Scientific and Technical Subcommittee.
19. Report to the Committee on the Peaceful Uses of Outer Space.

C. Election of the Chair

13. At its 915th meeting, the Subcommittee elected Natália Archinard (Switzerland) as its Chair for the period 2020–2021, pursuant to General Assembly resolution [73/91](#).

D. General statements

[This subsection is contained in [A/AC.105/C.1/L.385/Add.1](#)]

E. National reports

14. The Subcommittee took note with appreciation of the reports by Member States (see [A/AC.105/1211](#), [A/AC.105/1211/Add.1](#) and [A/AC.105/1211/Add.2](#)) and the conference room paper ([A/AC.105/C.1/2020/CRP.3](#)) submitted for its consideration under agenda item 4, 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.

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

15. In accordance with the decision of the Committee on the Peaceful Uses of Outer Space, made at its sixty-first session, in 2018, the Working Group on the “Space2030” Agenda has been established under a new agenda item of the Committee entitled “‘Space2030’ agenda”, which is to remain on the Committee’s agenda until the sixty-third session of the Committee, in 2020 ([A/73/20](#), paras. 358–364).
16. The Working Group held its meetings during the fifty-seventh session of the Scientific and Technical Subcommittee in accordance with the mandate given by the Committee. A summary of those meetings is included in annex [...] to the present report.

G. Symposium

17. In accordance with the agreement reached by the Subcommittee at its forty-fourth session, in 2007 (A/AC.105/890, annex I, para. 24), and by the Committee at its sixty-second session, in 2019 (A/74/20, para. 185), a symposium organized by the Office for Outer Space Affairs on the topic “Access to space for all” was held on 11 February 2020.

18. The symposium on the topic “Access to space for all” comprised two segments. The first segment, on space for women, was chaired by Markus Woltran of the Office for Outer Space Affairs. Simonetta Di Pippo, Director of the Office for Outer Space Affairs, made introductory remarks to set the scene. The speakers on the first panel were Tamara Pataki of Freie Universität Berlin, Shimrit Maman of Ben-Gurion University of the Negev, Israel, Ersilia Vaudo of ESA, Benoit Delplanque and Fiorella Coliolo of TIMKAT, and Markus Woltran.

19. The second segment, on access to space, was chaired by Jorge Del Rio Vera of the Office for Outer Space Affairs; Luc St-Pierre of the Space Applications Section of the Office for Outer Space Affairs made introductory remarks. The speakers on the second panel were Wang Qian of the China National Space Administration (CNSA); Stefaan De Mey of ESA; P. Kunhikrishnan of the Indian Space Research Organization (ISRO), Akira Kosaka of the Japan Aerospace Exploration Agency (JAXA) and Steven Clarke of the National Aeronautics and Space Administration (NASA) of the United States.

20. The Subcommittee noted with satisfaction that the symposium had contributed to the work of the Subcommittee and to raising awareness of issues concerning inclusiveness in space activities.

H. Adoption of the report of the Scientific and Technical Subcommittee

21. After considering the items before it, the Subcommittee, at its [...] meeting, on [...] February 2020, 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.

VIII. Space weather

22. In accordance with General Assembly resolution 74/82, the Scientific and Technical Subcommittee considered agenda item 11, entitled “Space weather”.

23. The representatives of Austria, Canada, China, Colombia, Germany, India, Indonesia, Iran (Islamic Republic of), Japan, Mexico, Pakistan, Peru, Republic of Korea, Thailand, the Russian Federation, South Africa and the United States made statements under agenda item 11. The observer for the World Meteorological Organization also made a statement under the item. During the general exchange of views, statements relating to the item were made by representatives of other member States.

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

- (a) “PRESTO (predictability of the variable solar-terrestrial coupling): the new scientific programme for SCOSTEP”, by the observer for SCOSTEP;
- (b) “Japan’s activities on space weather”, by the representative of Japan;
- (c) “PECASUS: global operational space weather forecasting for the mitigation of space weather effects”, by the representative of Finland;
- (d) “System and service for management of space weather risk in Korea”, by the representative of the Republic of Korea;

- (e) “2019 space weather activities in Ukraine”, by the representative of Ukraine;
- (f) “Space weather monitoring in Pakistan”, by the representative of Pakistan;
- (g) “Space weather activities in Austria”, by the representative of Austria.

25. The Subcommittee noted that space weather, caused by solar variability, was an international concern, owing to its potential threat 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, so that potentially severe space weather events could be predicted and their impact mitigated to guarantee the long-term sustainability of outer space activities.

26. The view was expressed that it was necessary for countries with developed space weather capacity to cooperate with emerging spacefaring nations by sharing lessons learned on national space weather plans, evaluations of the risks and impacts of space weather, and other analyses necessary for the development of investigations to ensure the safety of space systems, crewed space flights and other developing space missions.

27. The Subcommittee noted a number of national and international activities undertaken in space weather research, training and education to improve the scientific and technical understanding of adverse space weather effects, with the aim of strengthening space weather resilience.

28. The Subcommittee expressed its appreciation for the efforts of the Expert Group on Space Weather to enhance collaboration and coordination between national and international space weather organizations.

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

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

31. The view was expressed that the work to develop international standards for the exchange of space weather data was important and that the Guidelines for the Long-term Sustainability of Outer Space Activities served as an excellent example in that regard.

32. The view was expressed that the Committee and other international organizations should conduct activities to strengthen their role in promoting synergy in space weather. It was anticipated that such activities, including the updating of information in a timely manner, would be conducted continuously and would involve various countries.

33. The view was expressed that artificial intelligence could improve the forecasting process and the stability and accuracy of space weather forecasts.

34. The Subcommittee noted with appreciation the workshop on the International Space Weather Initiative, supported by the Office for Outer Space Affairs, held at the Abdus Salam International Centre for Theoretical Physics in Trieste, Italy, from 20 to 24 May 2019 (see [A/AC.105/1215](#)), which had helped to raise awareness among Member States about the importance of the impact of space weather. The Subcommittee welcomed the proposal to hold a workshop on space weather in November 2020 under the aegis of the United Nations.

35. At the 924th meeting of the Subcommittee, on 7 February, the Rapporteur of the Expert Group on Space Weather presented a report on the progress made by the Expert Group during its meetings held on the margins of the fifty-seventh session of the Subcommittee.

36. The Expert Group recognized a continuing need for better coordination and collaboration among national and international space weather actors to address the threats arising from the adverse impacts of space weather, given the ever-increasing understanding of the importance and potentially catastrophic impacts of space weather.

37. The Expert Group recognized the importance of ensuring the coordination of national space weather activities with relevant international organizations, including WMO and ICAO, in particular with their respective permanent representatives. The Expert Group noted in particular the importance of the work of WMO, including the development of its technical and regulatory framework for space weather and the opportunities offered by its Integrated Global Observing System and related systems, as well as the importance of Member States' engagement with the Committee on Space Research in developing international space weather action teams for scientific research in support of transitional efforts related to research for operations, and the designation by ICAO of global space weather information providers for international air navigation, which became operational on 7 November 2019.

38. The Expert Group highlighted the importance of the implementation by Member States and international intergovernmental organizations of the Guidelines for the Long-term Sustainability of Outer Space Activities, in particular guidelines B.6 and B.7, on space weather, and the related guidelines C.1–C.4, on, respectively, international cooperation, information exchange, capacity-building and awareness-raising, and recommended that Member States provide regular updates to the Committee on progress towards their implementation.

39. The Expert Group agreed to prepare and submit to the Subcommittee for consideration at its fifty-eighth session a report that contains recommendations highlighting opportunities for the efficient coordination of space weather activities undertaken at the international level towards implementation of the relevant Guidelines for the Long-term Sustainability of Outer Space Activities. The report was expected to map the international space weather actors and their mandates and linkages, identify gaps and recommend actions to be taken by States members of the Committee and other relevant space weather actors to improve coordination.

40. The Subcommittee took note of the report on the work of the Expert Group, which had brought relevant entities together. In that regard, the Subcommittee recommended that the Expert Group continue its work, in accordance with the recommendations contained in the Expert Group's progress report (A/AC.105/C.1/2020/CRP.13).
