



**Committee on the Peaceful
Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-ninth session
Vienna, 7–18 February 2022**

Draft report

XIV. 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

1. In accordance with General Assembly resolution [76/76](#), the Subcommittee considered agenda item 17, 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.
2. The representatives of Algeria, Canada, China, India, Indonesia, Iran (Islamic Republic of), Pakistan, the Russian Federation, South Africa, the United Kingdom and the United States made statements under agenda item 17. 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.
3. In accordance with the invitation extended by the Subcommittee at its fifty-eighth session, in 2021 ([A/AC.105/1240](#), para. 259), 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 2021 of the Radiocommunication Bureau of ITU on the use of the geostationary satellite orbit and other orbits,¹ as well as other documents referred to in conference room paper A/AC.105/C.1/2022/CRP.18. The Subcommittee invited ITU to continue to submit reports to it.

¹ See www.itu.int/en/ITU-R/space/snI/Pages/reportSTS.aspx.



4. 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 exploitation 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 location of certain countries. Those delegations were also of the view that it was important to use the geostationary orbit in compliance with international law, in accordance with the decisions of ITU and within the legal framework established in the relevant United Nations treaties.
5. Some delegations expressed the view 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 become saturated. The delegations expressing that view were also of the view that, in 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.
6. Some delegations expressed the view that the utilization by States of the geostationary orbit on a “first come, first served” basis was unacceptable and that the Subcommittee, with the involvement of ITU, should therefore develop a regime guaranteeing States equitable access to orbital positions.
7. The view was expressed that the issue of equitable access to the geostationary orbit was a matter that should be coordinated between the Scientific and Technical Subcommittee and the Legal Subcommittee. The delegation expressing that view recalled conference room paper A/AC.105/C.1/2021/CRP.26, submitted to the Scientific and Technical Subcommittee at its fifty-eighth session of to that effect. The delegation expressing that view was also of the view that ITU aimed to provide equitable access to the geostationary orbit by establishing permanent orbital and frequency resources, called plan assignments, for all Member States. As many of those assignments had become unusable over time owing to the lack of proper regulations for long-term protection, the delegation expressing that view was also of the view that ITU should include in its annual report an additional section dedicated to the topic of equitable access to orbital and frequency resources, which would include a summary of the progress of the relevant discussions at ITU.
8. Some delegations expressed the view that, while megaconstellations of satellites would bring about new approaches to the establishment of nationwide telecommunication networks, for some States, geostationary satellites would continue to be irreplaceable, owing to the special geographical conditions for which they were used, and hence there was a need to preserve the geostationary orbit region. The active development of such megaconstellations would create a number of significant problems, such as radio frequency interference and overpopulation of orbits, and thus the matter should be expediently addressed by States, within both ITU and the Subcommittee.
9. Some delegations expressed the view that spectrum and geostationary orbit slot allocation was a subject within the remit of ITU.
10. The view was expressed that satellite services played a key role in a range of telecommunications links, such as fixed-to-fixed connections (e.g. between emergency response headquarters and the field), fixed-to-mobile connections (e.g. between emergency response headquarters and mobile response units), mobile-to-mobile and point-to-multipoint connections (e.g. for the dissemination of essential information to the population). In addition, satellite networks could provide direct connectivity to remote areas, provide a quick and convenient solution for emergency response or rescue teams in the short term and enable interoperability between user groups and between different systems and networks. The delegation expressing that view was of the view that it was important that States, operators of satellite telecommunications systems, humanitarian organizations, non-governmental

organizations and researchers were aware of the importance to be attached to that issue, and that therefore an analysis of the matter should be made by the Subcommittee, without prejudice to the role of ITU.

11. The view was expressed that the spread of the COVID-19 pandemic had severely affected the satellite programmes of developing countries in the past two years, which could result in the loss of their rights, as administered by ITU, to the geostationary orbit. If extensions of rights to the geostationary orbit were not granted, that might have serious effects on the development, through satellite technology, of information and communications technology infrastructure in developing countries. The delegation expressing that view was therefore of the view that international bodies should assist developing countries to the maximum extent possible.

12. Some delegations expressed the view that, in order to ensure the sustainability of the geostationary orbit, as well as to ensure 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 those issues on the agenda of the Subcommittee.

XV. General exchange of views on dark and quiet skies for science and society

13. The Subcommittee, at its 955th meeting, on 7 February, agreed to include item 18, entitled “General exchange of views on dark and quiet skies for science and society”, as a single issue/item for discussion on the agenda of the fifty-ninth session of the Subcommittee.

14. The representatives of Algeria, Australia, Austria, Chile, Czechia, France, Germany, Indonesia, Italy, the Russian Federation, South Africa, Spain, Turkey, the United Kingdom and the United States made statements under agenda item 18. The observers for IAU and the Square Kilometre Array Observatory also made statements under the item. During the general exchange of views, statements relating to the item were made by representatives of other member States.

15. The Subcommittee heard a scientific and technical presentation entitled “Dark and quiet skies in Australia: mitigating the impacts of terrestrial artificial light at night and radio frequency interference”, by the representative of Australia.

16. The Subcommittee had before it the following:

(a) Report on the United Nations/Spain/International Astronomical Union Conference on Dark and Quiet Skies for Science and Society ([A/AC.105/1255](#));

(b) Note by the Secretariat containing a summary of discussions on dark and quiet skies for science and society ([A/AC.105/1257](#));

(c) Working paper entitled “Protection of dark and quiet skies”, prepared by Austria, Chile, the Dominican Republic, Slovakia, Spain, IAU, ESO and the Square Kilometre Array Observatory ([A/AC.105/C.1/L.396](#)).

17. The Subcommittee noted that, as an ever-increasing number of stakeholders, including private entities, were launching spacecraft into orbit, concerns had been raised about spacecraft that reflected sunlight into astronomical telescopes or crossed their field of view, thereby degrading astronomical observations.

18. Some delegations expressed the view that astronomical observations for both optical and radio astronomy were an essential aspect of space activities and should be protected from interference. Astronomical observations from space and Earth-based installations supported the ability to understand the universe, enabled deep space navigation and exploration and provided early warning detection of near-Earth objects. Some regions had already established practices to preserve the darkness of the sky. The delegations expressing that view encouraged States to follow the examples of those that had implemented regulatory actions to protect astronomy from

artificial light at night in defined areas. Mitigation measures against interference from satellite constellations had been implemented by industry in some cases, especially when it had been possible to engage with astronomers early in the project cycle. In addition, astronomers were devising other ways to reduce the impact of constellations.

19. Some delegations welcomed the review by the astronomy community and the space sector of the feasibility of implementing the measures outlined, and also welcomed mutual policy coherence with space debris mitigation considerations.

20. The view was expressed that some States provided a legal and regulatory framework enabling private operators to launch large satellite constellations, despite the risks that such constellations might have an impact on astronomical observations, the safety of space operations and space debris mitigation.

21. The view was expressed that the deployment of large satellite constellations could have a number of negative consequences, which were far from being limited to the impact on astronomical observations. In that regard, it was important to ensure non-interference with the information sovereignty of States when implementing projects to provide Internet access services.

22. The view was expressed that there would need to be trade-offs between the needs of the astronomical community and the needs of orbital operators.

23. The view was expressed that collaboration between the satellite industry and astronomers had led to concrete recommendations and that a set of best practice guidelines, which included modifying orbital altitudes, voluntary changes to satellite designs, the provision of telemetry information for astronomical observations, and the modification of satellite orientation in orbit-raising and -lowering procedures to minimize the reflected light produced by satellites, could be voluntarily included in satellite design and development.

24. Some delegations welcomed the initiative taken by IAU in inviting delegations to engage with its recently opened Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference.

25. Some delegations expressed the view that some of the issues relating to the topic of dark and quiet skies were matters to be addressed by ITU.

26. The view was expressed that issues identified in relation to artificial light at night would be best discussed at the national level.

27. Some delegations expressed the view that, owing to the rapid evolution in launches of satellite constellations, the ongoing exchange of views on dark and quiet skies should continue to take place in the Subcommittee, with an agenda item on dark and quiet skies for science and society to be included in future sessions of the Subcommittee.

XVI. Draft provisional agenda for the sixtieth session of the Scientific and Technical Subcommittee

28. In accordance with General Assembly resolution [76/76](#) and the decision of the Subcommittee at its 955th meeting, on 7 February, the Subcommittee considered agenda item 19, entitled “Draft provisional agenda for the sixtieth session of the Scientific and Technical Subcommittee”.

29. The representatives of Chile and Spain made statements under agenda item 19. During the general exchange of views, statements relating to the item were made by representatives of other member States.

30. The Subcommittee noted that the Secretariat had scheduled its sixtieth session to be held from 6 to 17 February 2023.

31. The Subcommittee agreed that the following items would be proposed to the Committee for inclusion in the agenda of the Subcommittee at its sixtieth session:

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.

(Work for 2023 as reflected in the multi-year workplan of the Working Group on the Long-term Sustainability of Outer Space Activities (see para. [...] above and para. [...] of the appendix to annex IV)

13. Future role and method of work of the Committee.
14. Space and global health.
15. Use of nuclear power sources in outer space.

(Work for 2023 as reflected in the extended multi-year workplan of the Working Group on the Use of Nuclear Power Sources in Outer Space (see para. [...] above and annex II, para. [...]))

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. General exchange of views on dark and quiet skies for science and society.
- (Single issue/item for discussion)

18. Draft provisional agenda for the sixty-first session of the Scientific and Technical Subcommittee.

19. Report to the Committee on the Peaceful Uses of Outer Space.

32. The Subcommittee noted that, in accordance with the agreement that it had reached at its forty-fourth session, in 2007 ([A/AC.105/890](#), annex I, para. 24), the symposium at the sixty-first session of the Subcommittee, in 2023, was to be organized by COSPAR, and that the topic of the symposium would be proposed to and decided upon by the Committee at its sixty-fifth session, to be held from 1 to 10 June 2022.