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**Committee on the Peaceful  
Uses of Outer Space  
Scientific and Technical Subcommittee  
Fifty-sixth session  
Vienna, 11–22 February 2019**

## Draft report

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

1. 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”.
2. The representatives of Belarus, Canada, China, India, Indonesia, Israel, Japan, the Republic of Korea, 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.
3. The Subcommittee heard a scientific and technical presentation entitled “Remote sensing as the instrument of economic development of Ukraine”, by the representative of Ukraine.
4. 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.



5. 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.
6. Some delegations expressed the view that combining technologies, such as advanced synthetic aperture radar for monitoring ground activities through atmospheric clouds, with mobile applications to facilitate stakeholders' access to information on natural resources and the environment offered many advantages to disaster management and relief efforts, including online mapping that integrated geospatial data.
7. 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.
8. 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.
9. The view was expressed that, with global climate and environmental challenges, it had become even more critical 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.
10. 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, their 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 that data.
11. 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.
12. 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.
13. 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.
14. The Subcommittee also 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 would be held Canberra on 6 and 7 November 2019.

### **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**

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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.

21. 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. Studies had 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 Radio Communication 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.

22. 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 Radio Communication Conference.

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

24. 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**

25. 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”.

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

27. 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.

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