



**Committee on the Peaceful
Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-fourth session
Vienna, 30 January-10 February 2017****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 71/90, the Subcommittee considered agenda item 6, "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, Egypt, Japan, Mexico, Oman, Sri Lanka, the Russian Federation and the United States made statements under agenda item 6. During the general exchange of views, statements relating to the item were also made by representatives of other member States.
3. The Subcommittee heard the following scientific and technical presentations:
 - (a) "NOAA meteorological satellite update", by the representative of the United States;
 - (b) "Research and application of spatial information technology in the health field in China", by the representative of China;
 - (c) "GMES and Africa state of play", by the observer for the African Union Commission.
4. In the course of the discussions, delegations reviewed national, bilateral, regional and international programmes on remote sensing, notably in the following areas: monitoring climate change; disaster management; oil spills; civil security; managing ecosystems and natural resources; air and water quality monitoring for aerosols and pollutants; meteorology and weather forecasting; archaeology, agriculture and forestry; ground water detection; irrigation, drought and wetland monitoring; coastal zone, reef and mangrove monitoring, watershed development and land use; land change detection; mineral exploration, ice-cover and glacial monitoring; oceanography, temperature and colour monitoring; rural development and urban planning; infrastructure development; medical science and epidemiology studies; and crop yield quantification.



5. The Subcommittee noted the efforts by developing countries to use Earth observation data to build national capacity to reduce poverty, advance socioeconomic development through the rational and sustainable use of resources and improve the quality of life of their citizens.
6. The Subcommittee also noted that the expanding use of Earth observation data by decision makers at the national and local levels required greater availability of, and access to, Earth observation information from satellite operators.
7. The Subcommittee noted with appreciation the capacity-building initiatives, series of training workshops and other activities organized by space agencies of developed countries in cooperation with partners in developing countries, addressing satellite imagery processing or the use of Earth observation data in disaster management.
8. The Subcommittee noted the high interest of member States in cooperating internationally in the collection, processing and dissemination of Earth observation data and applications, in particular for the benefit of developing countries, to promote well-informed decisions. In that regard, the Subcommittee noted that the availability of numerous Earth observation data and application service providers, such as the Regional Visualization and Monitoring System (SERVIR), offered opportunities for national and local decision makers to utilize satellite-derived information.
9. The Subcommittee noted a number of planned next-generation Earth observation satellites that would provide greater resolution, accuracy and sustained observation of the Earth environment. The Subcommittee also noted plans of member States to coordinate and develop individual satellites and constellations to provide greater coverage and capability to meet increasing demands for more accurate Earth observation data and services.
10. The Subcommittee also noted the support provided by a number of member States through their respective space agencies to the United Nations Committee of Experts on Global Geospatial Information Management initiative to raise awareness of the possibilities offered by satellite-based remote sensing for improving baseline geospatial data and developing other required datasets globally.
11. Some delegations emphasized the importance of radar imagery and that of hyperspectral imaging in better managing and mapping mineral resources and geological features over large areas, while noting that more affordable access to high-resolution satellite imagery, both hyperspectral and optical, was still needed in that regard. The use of in-situ observations and data to improve information derived from satellite imagery and the development of new applications based on Earth observation data using machine learning and “deep learning” were also highlighted.
12. The view was expressed that, in order to increase the use of remote sensing data and associated technology tools, particularly in developing countries, partnerships with satellite operators should be encouraged in order to construct and operate ground station infrastructure at the local and national levels.
13. The view was expressed that all member States should be encouraged to put in place an appropriate legal framework to monitor and safeguard the collection and use of potentially sensitive Earth observation data.
14. The Subcommittee noted the cooperation agreement between the Office for Outer Space Affairs and the Prince Sultan Bin Abdulaziz International Prize for Water related to the advancement of space science and technology to address the growing problem of water scarcity around the globe, and for the establishment of a “space and water” knowledge portal to highlight the benefits of remote sensing technology in water management.

15. The Subcommittee also noted various water monitoring and water management efforts using remote sensing, emphasizing that water was essential to human activities in every aspect and that too many people around the world were suffering from water shortages or had no access to clean water. Water-related disasters such as typhoons, tsunamis, droughts and floods were a constant threat to populations globally, making it imperative to use remote sensing technology to resolve such water-related problems.

16. The Subcommittee further noted the continued support for the activities of the Committee on Earth Observation Satellites (CEOS) and that the United States Geological Survey had taken up the chairmanship of CEOS for 2017. The Subcommittee also noted that the thirty-first plenary session of CEOS would take place in Rapid City, South Dakota, United States, from 18 to 20 October 2017.

17. The Subcommittee noted the continued support for the activities of the Group on Earth Observations (GEO) and that the new GEO Initiative 18 was aimed at supporting countries in integrating Earth observation data with global and national statistical systems to help them achieve the Sustainable Development Goals. The Subcommittee also noted that the next GEO executive committee meeting would be held in Washington, D.C., in October 2017.

XII. 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. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 14, "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.

19. The representatives of Indonesia, Oman, Pakistan, Russian Federation, South Africa, Switzerland and Venezuela (Bolivarian Republic of) and the representative of Argentina, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 14. During the general exchange of views, statements relating to the item were made by representatives of member States and by the observer for ITU.

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

(a) "Management of the geostationary orbit and cleaning of end-of-life objects", by the representative of Israel;

(b) "Report of the International Telecommunication Union (ITU) on the use of the Geostationary Satellite Orbit (GSO) and other orbits", by the observer for ITU.

21. The Subcommittee noted with appreciation the information provided in the annual report for 2016 of the Radiocommunication Bureau of ITU on the use of the geostationary satellite orbit and other orbits (see www.itu.int/ITU-R/space/snl/report/), as well as other documents referred to in conference room paper

[A/AC.105/C.1/2017/CRP.14](#). The Subcommittee invited ITU to continue to submit reports to it.

22. 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 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, in accordance with the decisions of ITU and within the legal framework established in the relevant United Nations treaties.

23. 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.

24. Some delegations expressed the view that the geostationary orbit provided unique potential for access to communications and information, in particular for assisting developing countries in implementing social programmes and educational projects, disseminating knowledge and providing medical assistance.

25. Some delegations expressed the view that the 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 therefore develop a regime guaranteeing equitable access to orbital positions for States.

26. The view was expressed that the current regime for the exploitation and utilization of the geostationary orbit provided opportunities mostly to the countries with greater financial and technical capabilities and, in that connection, there was a need to take anticipatory measures to address the potential dominance of such countries in the utilization of space in order to address the needs of developing countries and of countries in particular geographical areas, such as those in equatorial regions.

27. Some delegations expressed the view that the current system of reserving slots in the geostationary orbit was abused by a number of satellite operators, which obtained dozens or even hundreds of orbital positions for the purpose of reselling them at more expensive prices, thereby hindering the development of the space programmes of those willing to utilize that unique orbit diligently. The delegations expressing that view were also of the view that the distribution of those critical locations should be made fairly, in accordance with the principle of equality and taking into account the limited character of the orbit, and that each State should have at least two orbital slots reserved in the location near its national territory.

28. The view was expressed that the exchange of information on the use of the geostationary orbit could be an effective measure serving the needs of States with regard to its efficient use. The delegation expressing that view was also of the view that the first step could be the establishment of communication between the Subcommittee and ITU-R study group 4, or inclusion of an item on increasing the efficiency of the use of the geostationary orbit in the agenda of the World Radiocommunication Conference 2019.

29. 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 that issue on the agenda of the Subcommittee and to explore it further, through the creation of appropriate working groups and legal and technical intergovernmental panels, as necessary.

XIII. Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee

30. In accordance with General Assembly resolution 71/90, the Subcommittee considered agenda item 15, "Draft provisional agenda for the fifty-fifth session of the Scientific and Technical Subcommittee".

31. The Subcommittee noted that the Secretariat had scheduled the fifty-fifth session of the Subcommittee to be held from 29 January to 9 February 2018.

32. The Subcommittee also noted that, in accordance with General Assembly resolution 71/90, it would submit to the Committee its proposal on the draft provisional agenda for the fifty-fifth session of the Subcommittee and recommended that the following items be included in the draft provisional 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. Use of nuclear power sources in outer space.

(Work for 2018 as reflected in the multi-year workplan of the Working Group (see para. [...] and annex II, para. 9 to the present report of the Subcommittee))

14. Long-term sustainability of outer space activities.

(Work for 2018 as reflected in the extended multi-year workplan of the Working Group ([A/71/20](#), para. 137))

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.

(Single issue/item for discussion)

16. Draft provisional agenda for the fifty-sixth session of the Scientific and Technical Subcommittee, including identification of subjects to be dealt with as single issues/items for discussion or under multi-year workplans.
33. The Subcommittee agreed that the topic for the symposium to be organized in 2018 by the Office for Outer Space Affairs should be “Expanding horizons: the case for industry engagement in UNISPACE+50 and beyond”.
34. The Subcommittee took note of the proposal made by the International Committee on Global Navigation Satellite Systems (ICG) ([A/AC.105/C.1/2017/CRP.18](#)) and agreed that, under the current agenda item on recent developments in global navigation satellite systems, a general exchange of information should be included on issues related to GNSS spectrum protection and interference detection and mitigation, with a view to raising awareness of efforts to achieve the overall goal of promoting effective use of GNSS open services by the global community. In that context, the Subcommittee encouraged States members and permanent observers of the Committee to participate in the focused exchange of information under the item.
35. The Subcommittee noted that the Action Team on Space Exploration and Innovation had held two meetings on the margins of the present session of the Subcommittee under the co-chairmanship of China, Jordan and the United States, with a view to preparing its terms of reference and finalizing its report for UNISPACE+50, in 2018. The Subcommittee encouraged States members and permanent observers of the Committee to nominate focal points for the Action Team.
36. The Subcommittee recalled the agreement reached at its fifty-second session, in 2015 ([A/AC.105/1088](#), para. 275), and considered that it was necessary to add further measures related to the management of scientific and technical presentations. The Subcommittee therefore decided that: (a) States members and observers of the Committee should communicate to the Secretariat no later than one week before each session of the Subcommittee their wish to make scientific and technical presentations; and (b) the Secretariat would take the necessary decisions in the scheduling of presentations in the interest of the smooth running of the sessions.