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Use of space technology in the United Nations system

Report of the Inter-Agency Meeting on Outer Space Activities on its forty-third session and its twentieth open session

(New York, 28 and 31 October 2024, and Vienna, 20 November 2024)

I. Introduction

1. The Inter-Agency Meeting on Outer Space Activities (UN-Space) was established in the mid-1970s as a coordination mechanism with the aim of promoting synergies and avoiding duplication of efforts related to the use of space technology and applications in the work of United Nations entities.

2. The General Assembly, in its resolution 79/87, urged UN-Space, under the leadership of the Office for Outer Space Affairs of the Secretariat, to continue to examine how space science and technology and their applications could contribute to the 2030 Agenda for Sustainable Development, and encouraged entities of the United Nations system to increase their collaboration, including through UN-Space, with a view to better coordinating their data-sharing, building United Nations system capacity and cooperating on the procurement of space-based information, to achieve cost savings in that regard, to accelerate the application of space assets in order to achieve the Sustainable Development Goals, and to participate, as appropriate, in UN-Space coordination efforts.

3. The present document contains the report of UN-Space on the following activities:

(a) Forty-third session of UN-Space, held in New York on 28 and 31 October 2024;

(b) Twentieth open session of UN-Space, held in Vienna on 20 November 2024.

* A/AC.105/L.341.

II. Forty-third session of UN-Space

A. Background, attendance and opening of the session

4. The forty-third session of UN-Space was held in New York with the support of the Capacity Development and Operational Training Service of the Department of Operational Support of the Secretariat.

5. The main part of the Inter-Agency Meeting was held on 31 October 2024. It was chaired by the Director of the Office for Outer Space Affairs and attended by representatives of the following entities: Department of Economic and Social Affairs; Executive Office of the Secretary-General; Department of Operational Support; International Civil Aviation Organization; International Telecommunication Union; Office for Disarmament Affairs; Office of Information and Communications Technology; Office of Legal Affairs; Office for Outer Space Affairs; United Nations Development Programme; United Nations Institute for Disarmament Research; United Nations Satellite Centre; United Nations Office for Disaster Risk Reduction; United Nations Population Fund; World Health Organization; and World Meteorological Organization.

6. The session was opened on 28 October 2024 with welcoming remarks delivered by the Director of the Office for Outer Space Affairs and the Chief of the Capacity Development and Operational Training Service of the Department of Operational Support.

7. The Director of the Office for Outer Space Affairs recalled the Office's leadership role in UN-Space and referred to the Office's expertise in convening and facilitating meetings and in awareness-raising. Noting that the timing of the session was intended to tap synergies with other space-related work being conducted in New York that same week, she mentioned such related events as the consideration by the Fourth Committee of the General Assembly of an agenda item on international cooperation in the peaceful uses of outer space, the joint panel discussion of the First and Fourth Committees addressing possible challenges to space security and sustainability, the United Nations Space Bridge dialogue on global space traffic coordination, and an evening event entitled "Night at the museum: space for the Sustainable Development Goals", held at the Hayden Planetarium in the American Museum of Natural History.

8. The Chief of the Capacity Development and Operational Training Service highlighted that the Department – as an early adopter of space-based technologies, including at the United Nations Global Service Centre, which had hosted the UN-Space meeting in 2023 in Brindisi, Italy – had pioneered initiatives such as satellite-based telemedicine and had expanded satellite capacity to provide cost-effective, reliable communications and access to information technology for United Nations field missions in remote and challenging locations. The Service, in addition to promoting technological advances, championed organizational change by strengthening the development of human-centred approaches both at Headquarters and in the field, thus helping to bridge the gap between decisions, decision makers and related impacts. The programme portfolio of training and support ensured that teams across the United Nations were well equipped to meet the complex demands of the twenty-first century, thus fostering a more effective, agile and inclusive United Nations workforce.

9. As a complement to the welcoming remarks, the representative of the Executive Office of the Secretary-General emphasized the importance of the United Nations 2.0 initiative for UN-Space. The initiative focused on a forward-thinking culture and was designed around a quintet of cutting-edge skills for better United Nations system impact. It aimed to strengthen United Nations expertise and culture in the areas of data, digital transformation, innovation, strategic foresight and behavioural science to better support Member States.

B. Discussions

1. Space sustainability

10. The Meeting considered the topic of space sustainability, which had also been a core component of previous UN-Space work, as exemplified by the most recent special report of UN-Space, published in June 2024, which focused on interdisciplinary approaches to addressing space debris.[1]

11. The Meeting recalled that the long-term sustainability of outer space activities was defined as the ability to maintain the conduct of space activities indefinitely into the future in a manner that realized the objectives of equitable access to the benefits of the exploration and use of outer space for peaceful purposes, in order to meet the needs of the present generations while preserving the outer space environment for future generations.[2] It also recalled that the proliferation of space debris, the increasing complexity of space operations, the emergence of large satellite constellations and the increased risks of collision and interference with the operation of space objects continued to endanger space solutions that were essential to achieving many of the Sustainable Development Goals.

12. The Meeting noted that aspects of space sustainability had also been clearly addressed in action 56 of the Pact for the Future, following on the Secretary General's policy brief 7 entitled "For all humanity – the future of outer space governance".

13. The Meeting was informed about the Office's capacity-building efforts related to space sustainability, with a focus on those that supported decision-making by Member States. Such efforts included, but were not limited to, the United Nations Space Bridge dialogue on global space traffic coordination;[3] plans for United Nations Space Sustainability Days;[4] the Office's "Space law for new space actors" project;[5] and the Office's "Capacity-building and awareness-raising related to the Guidelines for the Long-term Sustainability of Outer Space Activities" project.[6]

14. The Meeting was also informed of recent developments related to space sustainability within the areas of work of the International Telecommunication Union (ITU). Such developments included the adoption by the Radiocommunication Assembly, in 2023, of Resolution ITU-R 74 on activities related to the sustainable use of the radio frequency spectrum and associated orbits used by space services; the development of a handbook on best practices for the sustainable use of frequencies and associated non-geostationary orbits by space radiocommunication services; the Space Sustainability Forum 2024, held in Geneva on 10 and 11 September 2024; and the Space Sustainability Gateway.[7]

15. The Meeting drew attention to the importance of United Nations entities working together, within their mandates, to support States on the key issue of space sustainability.

2. Satellite imagery and its acquisition

16. The Meeting considered satellite imagery to be a fundamental tool for United Nations programmes and activities. At its forty-second session, in 2023, UN-Space

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[1] See A/AC.105/1317.

[2] A/74/20, annex II, para. 5.

[3] The details of the United Nations Space Bridge platform can be found in conference room paper A/AC.105/C.1/2025/CRP.24, which was circulated at the sixty-second session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, held in February 2025.

[4] The United Nations Space Sustainability Days were held on 30 and 31 January 2025 in Vienna, organized by the Office for Outer Space Affairs and facilitated by the European Commission and The Aerospace Corporation.

[5] See www.unoosa.org/oosa/sk/ourwork/spacelaw/capacitybuilding/advisory-services/index.html.

[6] See https://spacesustainability.unoosa.org.

[7] See www.itu.int/space-sustainability.

had requested the Office for Outer Space Affairs to work towards coordinating data-sharing, building United Nations system capacity and cooperating on the procurement of space-based information, to accelerate the application of space assets to achieve the Sustainable Development Goals, and to raise extrabudgetary funds for human resources and technical capacities in order to lead in those efforts.[8] The Meeting noted that that request was further strengthened by General Assembly resolution 78/72.[9]

17. The Meeting also considered that the United Nations system and Member States were benefiting significantly from using Earth observation data for various technical applications, including in the areas of socioeconomic development, climate change mitigation, disaster management, healthcare and food security. The lack of a coordinated approach to imagery acquisition had, however, resulted in the utilization of costly single-use licences and a multiplicity of disjointed bilateral contracts. That, in turn, prevented tapping economies of scale and had added to the administrative burden.

18. The Meeting noted that enhancing coordination and improving access to satellite imagery would increase cost-effectiveness and minimize duplication of efforts across United Nations entities.

19. The Meeting was informed that in order to advance in the area of cooperation on the procurement of space-based information, the Office for Outer Space Affairs had proposed to Member States the creation of an Earth observation data procurement hub, the secretariat of which would be housed within the Office. The hub would aggregate the demand for and coordinate the supply of imagery, as well as enhance capacity-building for developing countries. It would also increase operational support, improve efficiency and reduce overall United Nations costs, thereby also reducing costs for Member States. The proposal by the Office sought to mobilize system-wide resources for the benefit of multiple United Nations programmes.

20. The Meeting noted that the Office for Outer Space Affairs would continue to raise awareness of and further develop its proposal with the overarching aims of cost efficiency, streamlined access and unified licensing.

3. Earth observation data and the threat to the relevant radio frequency spectrum

21. The Meeting considered that Earth observation data played a critical role in advancing global sustainable development and that acquisition of such data relied on continued and unlimited access to essential bands of the radio frequency spectrum. The radio frequencies used by Earth observation satellites were, however, susceptible to claims by the terrestrial mobile telecommunications industry, which sought access to more of the radio frequency spectrum to support the next generation of international mobile telecommunications.

22. The Meeting was informed about the Radio Regulations, which were maintained by ITU and were an essential and unique mechanism to, inter alia, ensure a stable environment and the equitable sharing of the radio frequency spectrum and orbits, which are limited natural resources. The Meeting was also informed about the World Radiocommunication Conferences and about how the ITU Radio Communication Sector (ITU-R) study groups convene Member States to undertake technical and regulatory studies that are then considered by the ITU member States and members of the Sector from the private sector and academia, which in turn leads to amendment of the Radio Regulations every four years. The Meeting was further informed that the agenda items for the World Radiocommunication Conference 2027 were 80 per cent related to space services.

23. The Meeting was also informed that the 10 GHz synthetic aperture radar band had been considered during the World Radiocommunication Conference 2023 and

[8] A/AC.105/1318, para. 34.

[9] The most recent General Assembly resolution on international cooperation in the peaceful uses of outer space (resolution 79/87) was adopted in December 2024, after the Meeting took place, but it further iterates the same points.

that, at that conference, the Office for Outer Space Affairs had, in coordination with industry partners, informed and successfully convinced national telecommunications regulators of the need to protect those frequencies for the acquisition of high-resolution imagery. Regulators had been invited to consider the extent to which multiple entities within the United Nations system relied on those frequencies to support key applications such as environmental monitoring, disaster management and climate action.

24. The Meeting was further informed that the 8 GHz band (the X Band), which was the workhorse of most Earth observation satellite downlinks, was being considered for international mobile telecommunication and fifth- and sixth- generation (5G and 6G) services. The loss of that band of the spectrum would jeopardize the ability of the United Nations to deliver timely and accurate data, which was crucial for monitoring climate change, managing disasters, protecting biodiversity and supporting sustainable agriculture, and ultimately impacted human life and sustainable development efforts.

25. The Meeting noted that the World Radiocommunication Conference 2023 had adopted, for the 2027 Conference, agenda item 1.7, on considering studies on sharing and compatibility and developing technical conditions for the use of international mobile telecommunications in the frequency bands 4,400–4,800 MHz, 7,125–8,400 MHz (or parts thereof) and 14.8–15.35 GHz, for the terrestrial component of international mobile telecommunications. During the 2023–2027 study cycle, the ITU Radio Communication Sector was conducting technical and regulatory studies on the subject with a view to preparing the related report on the agenda item, which was to be presented at the 2027 Conference.

26. The Meeting also noted that the Office for Outer Space Affairs would continue coordinating a related advocacy campaign, raising awareness with regulators of the importance of the X-band for Earth observation data, conducing outreach to other affected communities and collaborating with a consortium of companies.

4. Showcasing of the Capacity Development and Operational Training Service

27. As the host of the forty-third session and in addition to providing meeting facilitation services, the Capacity Development and Operational Training Service provided participants with a showcase of its work, underlining the services most relevant to UN-Space and related opportunities for collaboration.

28. The showcase was interactive in nature and highlighted, inter alia, the United Nations Knowledge Gateway, which was a source for administrative and operational guidance and communities of practice that could be accessed by staff globally; a mini documentary video series produced by the Department of Operational Support entitled “UNTold: Behind the Scenes of United Nations Operations”, which presented innovative operational support practices implemented in field missions, including through a segment devoted to enhancing remote healthcare through telemedicine; learning opportunities on Unite Aware[10] applications; and data analytics offered by the Service.

29. The showcase emphasized the importance of tools and services that shared stories, including on lessons learned, and thus made projects more efficient by helping to reduce the duplication of work, giving recognition to projects and personnel who played a vital role in mission operations but often went unnoticed, and better connecting Headquarters and field personnel.

[10] Unite Aware is the premier situational awareness platform for United Nations field missions and offers applications to aggregate, process and securely present trusted data. Its primary objectives are to provide a comprehensive approach to situational awareness and to support field missions in managing critical information effectively.

5. UN-Space reports, publications and communication channels

30. The Meeting was informed of the ongoing joint efforts by the Office for Outer Space Affairs and the Food and Agriculture Organization of the United Nations in developing a new publication, entitled *Leveraging Space Technology for Agricultural Development and Food Security*, through UN-Space as a coordination tool.[11]

31. The Meeting was also informed of the launch of the new UN-Space SharePoint site, which was available to personnel from all United Nations entities and had sections focused on space-derived information; space applications and products and related training and capacity-building; and normative frameworks related to space activities.

32. The Meeting considered what topic should be addressed in the next report of the Secretary-General to be prepared by UN-Space. The Meeting decided that the focus of that report would be on the theme "Ensuring access to space data for the United Nations and developing nations".

C. Dedicated training day for United Nations personnel

33. Following the joint meeting of the Committee on Earth Observation Satellites Working Group on Capacity-building and Data Democracy and UN-Space, held in March 2023, which focused on the identification of the needs of Member States and United Nations entities for capacity-building in relation to the use of space-based observations,[12] the UN-Space secretariat worked with the Capacity Development and Operational Training Service and the Applied Remote Sensing Training and Earth Science Data Systems Programmes of the National Aeronautics and Space Administration (NASA) of the United States of America, under the overarching framework of the Committee, to arrange a training day for United Nations staff as a stand-alone component of the forty-third session of UN-Space.

34. The training day, organized under the theme "Earth observations for societal benefit", was held on 28 October in New York. Focusing on Earth observations and satellite data analysis, it was open to United Nations staff from all backgrounds regardless of their level of knowledge of the topic. The focus was on open-source practical tools that could help inform and support the work of staff across United Nations entities by providing hands-on experience. The training day also represented a unique opportunity for United Nations staff to interact with and ask questions of NASA experts in a small group and an informal, in-person setting.

35. Following opening remarks by the Director of the Office for Outer Space Affairs and the Earth Observation Officer of NASA, and a brief orientation concerning logistics by the Capacity Development and Operational Training Service, the substantive training sessions were held. They were led by representatives of the Applied Remote Sensing Training and Earth Science Data Systems Programmes of NASA.[13]

36. The session entitled "Remote sensing observations for atmosphere, water and land applications" provided an introduction to remote sensing, discussed how NASA observed the planet and elaborated on both the advantages and limitations of remote sensing.

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[11] "Leveraging Space Technology for Agricultural Development and Food Security", a joint publication of the Food and Agriculture Organization of the United Nations and the Office for Outer Space Affairs, was subsequently published in January 2025 (see ST/SPACE/89). A related launch event was held on the margins of the sixty-second session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, in February 2025 (see A/AC.105/1338, para. 28).

[12] See A/AC.105/1291.

[13] See https://appliedsciences.nasa.gov/what-we-do/capacity-building/arset and www.earthdata.nasa.gov.

37. The session entitled "Monitoring disasters: population, fires, floods, heat – applicable NASA data sets" focused on conducting data searches in the Earthdata portal, Earthdata pathfinders and the Socioeconomic Data and Applications Centre of NASA.

38. The session entitled "Fires: applicable tools" offered demonstrations of Worldview, a visualization tool using data available in near real time; the Fire Information for Resource Management System, which offered near real-time and historical access to fire data; and Climate Engine, an analysis tool in the area of climatology.

39. The session entitled "Floods and heat: applicable tools" familiarized participants with the following tools and platforms: Google Earth Engine, Climate Engine, Black Marble, Giovanni and Disaster Alert.

40. The session entitled "Earth Observations Toolkit for Sustainable Cities and Human Settlements" focused on land use and land cover, population distribution and humanitarian applications.

41. The sessions drew on various delivery formats, such as hands-on exercises, demonstrations, games, discussions and question-and-answer components.

42. By the end of the training day, participants were able to recognize how remote sensing observations could inform decision-making, to identify how to locate applicable NASA data sets and tools that supported decision-making and policymaking and implementation, and to apply workflows to access and visualize NASA data sets.

43. A total of 21 participants, representing the following United Nations offices and entities, benefited from the training: Department of Economic and Social Affairs; Department for General Assembly and Conference Management; Department of Global Communications; Department of Management, Strategy, Policy and Compliance; Department of Operational Support; Department of Peace Operations; International Civil Aviation Organization; Office for Disarmament Affairs; Office of Information and Communications Technology; Office of Internal Oversight Services; United Nations Development Coordination Office; United Nations Global Service Centre; United Nations Institute for Disarmament Research; United Nations Population Fund; and Counter-Terrorism Committee Executive Directorate.

44. It was only the second time that a dedicated training day had been organized as a component of a UN-Space meeting. The expertise that was shared added value to the Meeting, built United Nations system capacity and brought new stakeholders to the work of UN-Space. As there were many more United Nations staff interested in the training day than could be accommodated by the training facility, opportunities for additional training, either in the same or other formats, were to be explored.

45. Special appreciation was conveyed to the Committee on Earth Observation Satellites Working Group on Capacity-building and Data Democracy, NASA and the Capacity Development and Operational Training Service for their time and expertise and for making the unique learning opportunity for United Nations staff possible.

III. Twentieth open session of UN-Space

A. Background

46. The twentieth open session of UN-Space was held on 20 November 2024 in Vienna as a component of the 2024 United Nations Conference on Space Law and Policy.[14] It was convened under the theme "Meet the United Nations speed-dating".

47. The UN-Space open session was structured in a new way, acknowledging that dense conference programmes can cause presentation fatigue, that participants had

[14] The full report of the Conference is available in document A/AC.105/1352.

different communication styles and that not everyone might be comfortable openly stating their opinions or challenging others in a large plenary format. Following the format used at "speed dating" events, the session afforded participants the chance to join and move between several small group discussions led by staff representing different United Nations entities. The aim was to facilitate informal exchanges focused on the work of the United Nations and allow for relaxed and accessible networking opportunities.

B. Topics of discussion

48. To encourage reflection outside the boxes of traditional academic disciplines or fields of expertise, the small groups were led by personnel who worked for different organizations, worked in diverse areas and had diverse backgrounds. Participants thus had the chance to "date" scientists, engineers, information systems specialists and geographers, in addition to legal and policy experts.

49. Participants were invited to join a minimum of three different small groups to discuss a total of 11 topics, as follows:

(a) Intellectual property and space activities, led by a representative of the Patents and Treaties Law Section, Patent and Technology Law Division, of the World Intellectual Property Organization;

(b) Nuclear safety and outer space, led by a representative of the Safety Standards and Security Guidance Development Section of the International Atomic Energy Agency;

(c) Earth observation and geospatial analysis for crime monitoring, led by a representative of the United Nations Office on Drugs and Crime;

(d) Trends, developments and prospects in multilateral space security processes, led by a representative of the Office for Disarmament Affairs;

(e) Monitoring the Earth for nuclear explosions, led by a representative of the International Data Centre of the Comprehensive Nuclear-Test-Ban Treaty Organization;

(f) Detecting objects from outer space using infrasound, led by a representative of the International Data Centre of the Comprehensive Nuclear-Test-Ban Treaty Organization;

(g) Satellite imagery acquisition and disaster management, led by a representative of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) of the Office for Outer Space Affairs;

(h) Dark and quiet skies, led by a representative of the Space Applications Section of the Office for Outer Space Affairs;

(i) The Office-led project entitled "Space for women", led by a representative of the Space Applications Section of the Office for Outer Space Affairs;

(j) The Office-led project entitled "Space for water", led by a representative of the Space Applications Section of the Office for Outer Space Affairs;

(k) Space resources, led by a representative of the Committee, Policy and Legal Affairs Section of the Office for Outer Space Affairs.

50. Special appreciation was conveyed to the representatives of the United Nations entities involved for exploring the new UN-Space session format, for helping to raise awareness about different aspects of space-related work being conducted within the United Nations system and for making the various discussions inclusive and engaging.