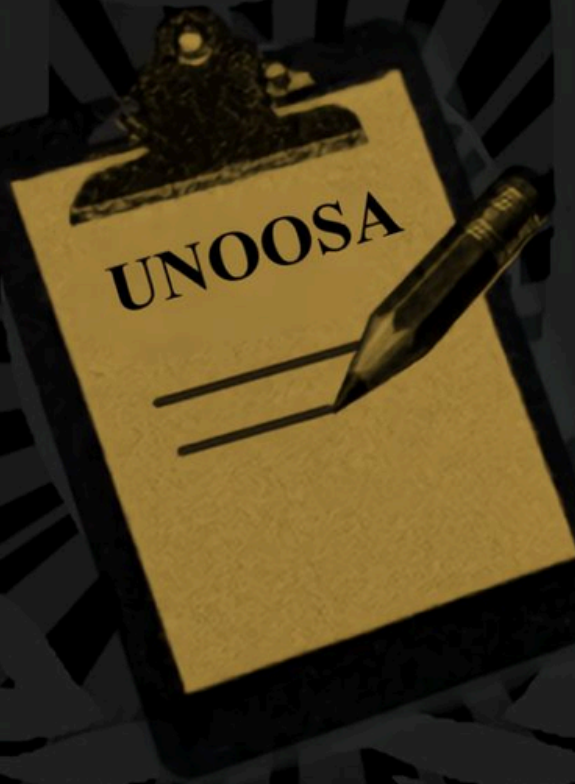
BACKGROUND GUIDES



WESMUN
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Letter from the DIAS

Welcome to UNOOSA at WESMUN'25. It is the absolute pleasure of ours to have you be part and join one of the most intellectually stimulating and globally significant bodies of the United Nations. As you go forth to move across this ever-evolving set of questions related to the governance of space, we hope you are ready for a uniquely challenging and deeply rewarding experience.

Outer space is no longer a dream that is often very far away, but rather an ever-expanding reality affecting communication, security, climate monitoring, disaster management, and fundamental scientific discovery. This progress comes with its price of responsibility. During the sessions of the committee, you will be faced with varied viewpoints, grand national interests, and soon-to-come ethical dilemmas.

As your dais, we are committed to creating an environment where each delegate feels welcomed , confident in speaking, questioning, negotiating, and innovating. Our commitment is to guide you through the process of creating resolutions that are not only well-researched and pragmatic but also compassionate and practical. The background guide attached to the end will form the basis of your preparation, but true excellence will come from your curiosity, initiative, and will to explore beyond the pages provided.

We truly look forward to seeing your ideas take flight and the passion you will bring to this committee. We hope that your preparation is extensive, your debates meaningful, and your time at WESMUN is truly memorable.

Wish you all the best for a very interactive and enlightening conference!

Warm regards Alishba Ahmed, Syeda Naba & Rohith John

Introduction to committee

The main UN organization that facilitates international collaboration in the field of peaceful use and exploration of outer space is the United Nations Office for Outer Space Affairs (UNOOSA). It dates back to 1958 when the first Ad Hoc Committee on the Peaceful Uses of Outer Space was established by the UN following the launching of Sputnik which ushered in the Space Age. This committee was renamed in 1962 as the permanent Committee on the Peaceful Uses of Outer Space (COPUOS), and in 1968 its Secretariat activity was combined with that of UNOOSA, which is now its name. In 1993, the Office relocated to Vienna and it has since aided COPUUS and other subsidiary bodies as the key place of discussion, coordination and policy development regarding space issues in the UN system.

The mandate of UNOOSA is relatively wide yet clear: it monitors the realization of the international space law, including the five fundamental UN space treaties of 1967 (Outer Space Treaty) and 1972 (Liability Convention), as well as takes care of whether Member States are fulfilling their duties as regards registration, use and operation of activities in outer space. It also facilitates capacity building globally and more so to the developing countries as it allows them to access satellite services, navigation and space based data. The Office assists countries to apply space technology to sustainable development, disaster risk reduction, and humanitarian requirements through programs like the United Nations Platform for Space-Based Information on Disaster Management and Emergency Response (UN-SPIDER). UNOOSA is also very critical in ensuring the protection of space as a peaceful, secure and accessible space to everyone.

Agenda 1: Governing Space Resource Exploitation & The Disastrous effects of space debris

Introduction to the Agenda

As the rate of extraction of resources in space rapidly increases across nations and companies, so is the need for regulations regarding them. At the same rapid rate at which resources are harvested, there has been a dangerous increase in space debris in orbit. Space debris, consisting of over a million pieces, now orbits the Earth and threatens satellites, space travellers, as well as other space missions. Without proper guidelines, internationalised to ensure minimal debris when extracting resources. The world risks turning space from a region of opportunity to an area of impending risk from space debris.

Historical context

Since the 1960s, human involvement in outer space has been increasing rapidly, although the regulation of outer space has remained minimal and vague. The Outer Space Treaty of 1967 declared outer space as "province of all mankind," which allowed exploration without understanding ownership, responsibility, or parameters governing resource use. Since the Outer Space Treaty, launchings of satellites, use of outer space resources on a gradual scale, have been going on steadily, although insufficient regulation has been developed to meet the growing threat of outer space resources and accumulating debris in outer space.

In the early 2000s, space agencies implemented voluntary mitigation guidelines aimed at reducing fragmentation, venting fuel, and ensuring satellites reentered Earth's atmosphere after mission completion. However, these guidelines were not binding and have been inconsistently followed. As private companies gained access to space through cheaper launches and miniaturised satellites, the number of objects in orbit increased drastically.

Introduction to the Agenda

More recently, there have been a series of political events that have further complicated defining and applying national space policies. In 2020, the United States declared that outer space is not a global commons and introduced the Artemis Accords, allowing commercial extraction of lunar and asteroid resources. Over thirty countries have signed on, raising concerns about unilateral interpretations of space law and the potential for uncontrolled exploitation. Simultaneously, the international community is beginning to recognise the imperative for debris mitigation, as demonstrated by the G7 Summit's call for sustainable space use.

Current situation :

Earth's orbit is becoming dangerously congested. More than 28,000 objects are routinely tracked, and 85% of them are non-functional debris. These fragments originate from over 560 documented breakups, explosions, and collisions. Beyond what is trackable, there are an estimated 900,000 pieces larger than one centimetre and more than 130 million pieces larger than one millimetre. Travelling at roughly 7.5 km/s, even a small fragment can disable or destroy a functioning satellite.

The risk of collisions is rising sharply as commercial companies put massive constellations of internet satellites into Low Earth Orbit. In the next five-year period alone, more satellites will go up than in the history of spaceflight. The companies already receive dozens of notices of potential collisions on a daily basis in highly congested orbital regions , and only the most critical can be avoided.

This congestion also poses a threat to Earth. Every year, from 100 to 200 metric tons of uncontrolled debris reenter the Earth's atmosphere, and some heat-resistant materials can survive reentry creating potential risks for populated areas.

Introduction to the Agenda

Technological solutions are being researched and developed; these range from de-orbiting kits, design-to-demise materials, laser-based tracking systems, to active removal missions as in ClearSpace-1. However, without a binding international framework, these efforts remain fragmented. Earth-orbit is increasingly seen as a common-pool resource vulnerable to the "tragedy of the commons," especially if a runaway cascade of collisions, the Kessler Syndrome, makes future space activity impossible.

Past UN actions:

The United Nations has always emphasised that space must be explored and used for the benefit of all of humankind. The formation of the Committee on the Peaceful Uses of Outer Space, or COPUOS, by the United Nations marked one of the most important milestones in the exploration and potential usage of space by the international community and all of humankind. In 2018, the General Assembly of the United Nations was also concerned about the vulnerability and impact of space due to space debris, which remains a serious concern for all states. In 2019, the COPUOS, whose secretariat is UNOOSA , has formulated guidelines referred to by the "Guidelines on the Long-Term Sustainability of Outer Space Activities (LTS) Guidelines." This remains the most crucial tool that has enabled the secure usage of space by humankind. This was followed by recognition by the General Assembly of the United Nations, which later constituted a new group in order to carry on the process of negotiations in the form of space at the international level.

The UN General Assembly continues to recognize the relevance of international space law and calls for broad support for any convention that oversees the peaceful use of space. The UN continues to assert that major space-faring countries need to be actively involved in the prevention of conflict and the responsible conduct of space. The UN has for a long time argued for the formulation of guidelines that will ensure the regulation of space and the use of space resources for the management of disaster and the achievement of the SDGs for the year 2030, in addition to the promotion of the space environment for the next generation.

Key Terms

- **Outer space:** the expanse that exists beyond Earth's atmosphere and between celestial bodies.
- **Space resource exploitation:** the utilisation of materials and energy found in outer space, including on asteroids, the Moon, and other celestial bodies. It involves extracting, processing, and using these resources to support space activities and potentially benefit terrestrial needs
- **Space debris:** non-functional, man-made objects, including fragments and elements thereof, in Earth orbit or re-entering into Earth's atmosphere.
- **Kessler syndrome:** a chain reaction scenario in which the number of satellites and orbital debris is so high that collisions occur, each one generating more and more space debris and, in turn, cascading collisions
- **Low Earth orbit, (LEO):** the orbital region of satellites that usually lies between 500 and 2000 km above the Earth's surface, heavily used and most at risk from the accumulation of debris.
- **Outer Space Treaty (OST):** Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, is one of international space law's foundational documents with the overall purpose to keep space peaceful
- **Long-Term Sustainability Guidelines (LTS Guidelines):** UN-endorsed voluntary guidelines that encourage safe, responsible and transparent space operations to reduce debris.

Key Issues

- **Lack of a Clear Legal Framework for Space Mining:**

A strong legal framework is essential for the advancement of sustainable development of space resources and their utilisation. Without clear regulations, many disputes over allocating resources and ownership of them could take place, therefore disturbing the peaceful exploration of space. International collaboration is needed to ensure that space resources are equitably managed while considering the balance of national versus universal benefit Although the development of space law has been significant, challenges persist. The issue of the ownership of space resources is contentious. While Article 2 of the OST prohibits national appropriation of celestial bodies, as countries enact laws on the granting of ownership of resources, questions arise on how space resources can be legally owned and used.

- **Risk of Unequal Access and Resource Monopolisation:**

The extraction and use of space resources has the potential not only to create inequalities of wealth and access through a first-mover advantage. As the space-for-space economy grows, it will have advanced space technology resulting from innovation. The ownership and usage of this technology could contribute to deepening inequalities between nations. As nations develop the space-for-space economy and settle different areas of the solar system,c onflict becomes much more likely with the development of technologies with destructive potential

Key Issues

- **Rapid Increase in Space Debris:**

The quantity of space debris is growing exponentially in orbit. As more and more countries and actors initiate activities in space, satellite operations become more complex, and the number of objects launched–including those into large constellations rapidly growing, so are the challenges facing our space environment. This increasingly presents the risk of collisions that threaten operational spacecraft and human missions.

- **Threat of the Kessler Syndrome:**

The weaponisation of outer space and the creation of space technologies is an increasing concern now, especially in light of the fact that thousands of satellites are increasingly entering space. Direct ascent anti-satellite missile weapons and tests can create an especially high risk for the potential for uncontrolled debris in space, thus making space unsuitable for use. The more uncontrolled objects in space, the increased risk for an increase in space collisions leading to the Kessler syndrome

- **Limited Capacity for Debris Removal:**

Current debris removal is limited by technological, operational, and cost challenges. Due to the fact that the LEO debris population is increasing, only a few high-risk objects can be removed every year. Spent upper stages and large-sized debris concentrated in specific orbits require such complex missions that the environment cannot be stabilised for the protection of operational spacecraft effectively.

- **Militarisation and Dual-Use Technology Concerns:**

Many technologies used for space mining and debris removal can also be used for military purposes, raising concerns about disguised weaponisation in The rockets used to launch a satellite into outer space can also carry a nuclear warhead or other offensive military device. In order to avoid the proliferation of this technology, an attempt to create an international regulation for missiles has been realised by the Missile Technology Control Regime (MTCR), promoted by the G7 in 1987. It does have a significant limitation: The MTCR is not legally binding, and it is not a treaty. Regulating a dual-use technology at the international level is difficult because of the "indirect" application of satellites in war. This is the main obstacle that needs to be tackled.

Major Parties

- **United States:**

The United States plays a central role in governing space resource exploitation and addressing the risks of space debris. Grounded in the 1967 Outer Space Treaty and the United States seeks international recognition from both the private and intergovernmental levels, including signing the Artemis Accords (Artemis Accords, 2020) and utilising the work outcomes of the Hague Working Group on Space Resources Governance of States, promoting civil space exploration and responsible use of extraterrestrial resources. The United States continues to establish, revise, and improve its legal regulatory system for the commercial exploitation of outer space resources, aiming to rationalise its current commercial development and future needs in this area.

- **China:**

China is one of the countries that has signed the Outer Space Treaty, actively fulfils its obligations under the treaty, committed to outer space peace and security. China has actively participated in international conferences focusing on the United Nations, such as the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).. In a 2017 declaration, China stated that they strictly adhere to the appropriate principles defined by the United Nations, emphasize the important legal role of international law relating to the exploration and use of outer space resources, actively support the establishment of international mechanisms for sharing benefits and international coordination among nations, firmly protect the peaceful development of the exploration and use of outer space resources, and generally look for a consensus, based on the United Nations, for the establishment of international mechanisms and institutions for outer space. Regarding the international regulation of the commercial utilisation and exploitation of outer space resources, China generally follows the principles of the international space law. China enforces the relevant norms accepted by the United Nations, such as "peaceful use," "non-appropriation," and "seeking benefits and interests for all countries

Major Parties

- **Russia:**

Russia plays a significant role in the discourse regarding the governance and use of space internationally. Russia's space law is based on several conventions, including the Outer Space Treaty of 1967, which prohibits any country from claiming ownership of space. Russia strongly opposes the US-led “Artemis Accords” as they are extremely US-focused and do not conform to the UN multilateral approach and ideas of joint use and management. Rather than joining the Artemis group, Russia has so far been closely working with China, signing a 2021 Memorandum of Understanding on joint development of the International Lunar Research Station (ILRS), which is a joint project for a long-term research base on the Moon, with aims of pursuing and utilising the resources of the Moon. It represents a major shift in space geopolitics and raises questions about who controls and benefits from space resources.

- **European Union (EU):**

The EU encourages holding the Conference to promote discussion and provide clear guidance on space traffic, debris, and space resources through COPUOS, inviting the participation of the private sector, civil society, as well as other actors in appropriate ways to intergovernmental meetings on ensuring increased safety in outer space. The EU welcomes the work of Morocco as the current COPUOS Chairman and of Italy as the future COPUOS Chairman to facilitate this discussion. Furthermore, the EU stresses the importance of providing UNOOSA with the necessary resources for its realisation.

Previous attempts to resolve the issue

Most efforts to govern space resource exploitation and mitigate space debris have been driven by international treaties and voluntary guidelines. The 1967 "Outer Space Treaty" stated the "province of all mankind" status of outer space and made any national appropriation illegal; however, it did not provide any credible rules for resource usage and debris removal. Later treaties such as the 1979 "Moon Agreement" attempted to impose more credible regulation on lunar resource use; therefore, it lacked any international support and had not been adopted by any leading space nations. Debris removal guidelines included "best practices in post-mission debris removal techniques" and "limits of debris creation" in the "IADC and UNCOPUOS Long-Term Sustainability Guidelines." However, these are not enforceable and are not widely adopted. The "Artemis Accords" of 2020 are one of the latest regulations of resource usage in modern times. It defined the "safety zones" and "safety principles"; however, it had not received international acceptance yet and was considered U.S.-centric by countries such as Russia and China. There was one more prominent regulation adopted in 2002 by "IADC" with "The Space Debris Mitigation Guidelines." It had "proactive strategies" with the intention of "removing congestion in high-orbit areas such as LEO and GEO to prevent long-term degradation of these highly valued orbits by spacecraft." The United Nations adopted "The Space Debris Mitigation Guidelines" in 2007. These seven guidelines necessitate any nation-state to limit debris created during "normal spacecraft operations"; "minimize the potential for break-up"; "prohibit deliberate and accidental collisions"; "minimize break-ups caused by post-mission break-ups from stored energy"; and finally limit "spacecraft and launch vehicle orbits in LEO and GEO orbits post-launch" when overall "space missions are completed." However, still many challenges exist. The lack of regulation strength in existing treaties and technological limitations remain a barrier in debris removal.

Questions a Resolution Must Answer:

1- What are the principles that should be followed in governing the use of space resources with the aim of assessing their consistency with the international law that applies in space and the Outer Space Treaty?

2- How can governments control private companies that participate in space mining and, at the same time ensure that their activities do not breach international norms or destabilise the space environment?

3- How can governments make sure that in these resource-extraction-related activities, satellites and spacecraft will follow strict debris-prevention practices to avoid further congestion of LEO?

4- What kind of international framework is required to support active debris removal, given the legal barrier that removed objects may remain the property of the launching state?

5- How can the Member States contribute to mitigating the long-term risk of cascading the Kessler Syndrome-and ensure the sustainability of key orbital regions?

6- How might the resolution best address the dual-use nature of space technologies to ensure that extraction systems are not repurposed for military advantage?

7- What kind of mechanisms can be introduced to avoid conflict over resource-rich regions, especially between major spacefaring powers?

8- How does a resolution ensure there are clear, transparent rules for the declaration, management, and verification of "safety zones" or operational areas around extraction sites?

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Agenda 2: Addressing cybersecurity threats to global satellites & The Sovereignty of Earths observational data

Introduction to the Agenda

With the growing reliance of the world on satellite based infrastructure, security and control of outer space has become a critical international issue. Satellites are now assisting in the following areas; global communications, navigation, disaster response, financial systems, monitoring of climates and military operations. This increased dependency also renders satellites good targets in cyber attacks, interference and data manipulation. Cyber intrusions are also transmissible in a remote, anonymous, and cross-boundary manner, which makes them difficult to attribute or hold accountable as compared to other more traditional physical threats.

The Earth observation satellites are, simultaneously, gathering a tremendous quantity of information on the climate of the planet, its environment, natural resources and human activity. Although such data is crucial to sustainable development, disaster management, and scientific research, it also brings about important questions of ownership, access, sovereignty, and misuse. The absence of a distinct global system of cybersecurity in space and the right to privacy over Earth observation systems turns space risks not only to a common instrument of overall good but also a territory of national interest and cybersecurity vulnerability. Unless there is a concerted effort internationally, cyber threats on satellites and disputes on data control would destroy trust, increase geopolitical tensions, and disadvantage developing states who depend on common space-based services.

Introduction to the Agenda

Historical Context

Outer space has stopped being a scientific frontier as it ever used to be, and has become the mainstay of contemporary life since the first artificial satellites were launched in the middle of the 20th century. The 1967 Outer Space Treaty (OST) established some fundamentals, including peace of use, the good of humankind, yet it was drafted prior to the development of cyber warfare, digital infrastructure, and large-scale earth-observation systems. Those omissions present numerous regulatory loopholes in the present day. In the Cold War concern on satellites was on material threat like the use of kinetic anti-satellite armaments and electronic jamming. The advent of the 20th and 21st centuries rendered satellites susceptible to cyber attacks due to the presence of digital command and control systems. New points of cyber exploitation were created by ground stations, data links, and software networks.

Meanwhile, the Earth-observation capabilities increased at a high rate. The level of information including the weather, land use, infrastructure, and population movements is provided in detail with the help of high-resolution images, live tracking, and sophisticated analytics. Although such information is invaluable to climate science, disaster management, this data casts doubt on national security, commercial applications, privacy, and sovereignty. The international space law has been unfortunate to lag behind. Current treaties are silent on the issue of cyber threats and defining the ownership and control of Earth-observation data. The voluntary rules and building confidence actions have been debated in the UN but there are few regulations that are binding and states have been left to interpret what they are expected to do themselves

Introduction to the Agenda

Current Situation

More than 8,000 working satellites orbit the Earth today, many of which are important in civil life and world security. Cyber threats to these satellites are on the rise such as signal spoofing, interception of data, malware injection, ransomware, and gaining unauthorised command access. Cyber incidents have a potential to remain concealed over a considerable duration as opposed to physical crime where perpetrators can tamper with data or destroy services without being detected.

A number of reported cases prove the fact that satellites are real targets. Aviation, maritime navigation, and emergency services already suffered as a result of cyber intrusions into ground stations, interference with communications, and navigation-signal spoofing. With the growing size of constellations and the increasing interconnection between systems, there is a disruption that increases exponentially.

Earth-observation information has turned into a strategic asset. Satellite information assists governments, private enterprises, and international bodies to make climate projections, border patrol, farmlands, town planning and security investigations. There is controversy over the entities that can gather, manipulate, market or limit this information. Others are concerned that the sovereignty is undermined by the lack of restrictions in the observation, and some believe that open-data facilitates transparency and collaboration.

Third world economies have specific challenges. Most of them do not have their own satellite systems and rely on the foreign systems to get the vital data. The attack or unilateral censorship of data may have disastrous effects on disaster management, food security, and climate resilience in these areas. In the absence of clear international norms, technological inequalities stand to be consolidated instead of being minimised.

Introduction to the Agenda

Past UN Actions

The United Nations has long appreciated the value of outer space being a peaceful and secure place. The UN must have promoted global discussion on space governance, sustainability, and collaboration through the Committee on the Peaceful Uses of Outer Space (COPUOS) with the Secretariat being the UNOOSA.

The UN General Assembly has reiterated severally that outer space ought to be deployed to peaceful missions and the good of the entire nations, irrespective of their development. In recent years, the increasing concern has been given to the emerging threats, such as the security of space systems and responsible behaviour in space.

The 2019 Guidelines to the Long-Term Sustainability of Outer Space Activities (LTS Guidelines) provided by COPUUS cover information-sharing guidelines, risk-reduction guidelines and space infrastructure protection guidelines. Although these rules promote transparency and responsible behavior, they are voluntary and do not formally control cybersecurity and data sovereignty.

Also, the responsibility of behaviour in outer space has been discussed by the UN including through the Open-Ended Working Group (OEWG) which has pointed to cyber threats, outer-space systems interference and the necessity to build confidence. Nevertheless, there is no common opinion on legally binding norms in the fields of satellite cybersecurity and governance of Earth observation data.

Key Terms

- **Cyberspace (out of space):**

Securing satellite systems, ground stations, data connections, and other digital infrastructure against cyber attacks like hacking, spoofing, jamming and unauthorized access.

- **Earth observation data:**

Satellite-gathered information about the surface, atmosphere and the oceans of the Earth, such as imagery and sensor data applied in climate surveillance, disaster control and management, agribusiness and security.

- **Satellite interference:**

Any deliberate or inadvertent interference with satellite communication, activities, or data transfer, such as cyber attacks and electronic jamming.

- **Data sovereignty:**

The idea that information is liable to the rules and regulations of the place, state or organization that collects, stores or is impacted by the data especially when the data is in reference to the national land or national security.

- **Outer Space Treaty (OST):**

It was the creation of the space law in the year 1967 in the form of an international treaty which takes into consideration peaceful use, non-appropriation and cooperation of the outer space by the international community.

- **Dual-use technology:**

Technology applicable in civilian applications as well as military application meaning satellite communication systems or earth observation platforms.

Key Issues

- **Absence of a Clear International Cybersecurity Framework of Space**: Satellite systems are not covered by any binding international law that cushions them against cyber threats. The current treaties such as the Outer Space Treaty precede cyber operations and fail to determine the act of hacking or manipulation of space assets. This loophole makes the state accountable, acceptable behaviour, and proportional reactions ambiguous. The issue of attribution causes additional difficulties with enforcement because the perpetrators are difficult to detect. The lack of common norms or rules binding states would allow them to make independent decisions on security interpretation, increasing the threat of wrong calculation and amplification. It is thus important that governance of cyber behaviour in space is developed internationally by agreeing on principles to be applied in space.

- **Critical Global Infrastructure Vulnerability:** Satellites contribute to major infrastructures in the world: navigation, telecommunication, finance, weather prediction, and disaster recovery. The increased reliance of these services by the society makes satellites the high-value cyber targets. Attack on satellite command, ground stations, or data connections may interfere with civilian services, loss of revenue and endanger the lives of people. Cyber incidents can be long lasting unlike ground infrastructure, which is difficult to recover or substitute in case of damage to satellites. Since satellite systems can deal with numerous nations simultaneously, interruptions tend to border. Therefore, satellite cybersecurity is not a technical problem only but a global security problem.

Key Issues

- **Everlasting Sovereignty and Command Over Earth Observations:** Earth-observation satellites gather great volumes of information about the national territories, natural resources, infrastructure, and environmental conditions. Despite the importance of this data to climate monitoring, disaster management, and sustainable development, it provokes sovereignty, national security and privacy issues. The issue to some states is that free high-resolution data erodes their authority over sensitive information. Such issues are increasing with the accumulation of Earth-observation data by the private companies who process and commercialize the data outside the state control. The international space law does not provide much on how data ownership, access rights or restrictions should be used and instead it is up to states to have different approaches at national levels. The main policy issue is the balance between the openness of data globally and the attention to the sovereignty of states.

- **The Inequality in Access and Dependence on Foreign Systems:** The availability of Earth-observation and satellite infrastructure is not even distributed across the planet. A lot of developing nations do not have enough technical and financial means to operate their own satellite systems and rely on the governments of other nations or commercial television companies. Such dependence introduces weaknesses in the event that access to data is limited by a cyber attack, a business decision, or political disputes. During emergencies such as natural disasters, inadequate access to satellite will paralyze the response. The cyber threats compound such inequalities, with one failed foreign system likely impacting several dependent states. Devoid of comprehensive global systems that could ensure proper and fair access, satellite cybersecurity threats enforced by them support prevailing global development and technology disparities.

Key Issues

- **Dual Use Cyber Capabilities and Militarisation:** The majority of satellite technologies are dual-use, which are applied both in civilian and military affairs. There is also a possibility to use cyber tools designed to protect satellites to offensive purposes, including interference or disruption of foreign space assets. This twofold use makes it more difficult to regulate, since states might regard transparency as a threat to security. With the introduction of cyber capabilities in military doctrines, the issue of the gradual militarisation of outer space is of concern. Self-defense can be co-opetition with aggressive intentions, which would increase the distrust between spacefaring countries. In the absence of assurance building provisions and consensus rules, the use of cyber tools in space would lead to an arms race, derailing the principle of peaceful use that is the main idea of space governance.

- **Impossibility of Attribution and Accountability:** It is not easy to attribute cyberattack on satellites as cyber activities are anonymous and transnational. Attacks may be diverted across more than one network, and be perpetrated by non-state or state-based actors, and thus it may be difficult to identify who was responsible. Such uncertainty undermines accountability and prevents states to act proportionately. In the absence of sound attribution, deterrence fails and bad actors will be able to operate in impunity. The absence of formal international mechanisms of investigation, sharing of information and resolving disputes also limits enforcement. Addressing the issue of attribution is a necessary step to gain trust, encourage responsible behaviour and stabilize the ever more crowded and contentious space environment.

Major Parties

- **China** – China has established a major navigation system (BeiDou) with precision accuracy and systems that rival that of the US GPS systems which enhances its influence worldwide. Its rapidly expanding satellite systems and development of counterspace equipment such as jamming spoofing and cyber operation pose a threat to the cybersecurity and control of earth's observational data.

- **Russia** – Russia housing one of the most capable space programmes operates advanced space surveillance networks and have been observed to be tracking European military officials and interfering with foreign satellites such acts demonstrate the potential for signal jamming and more as part of the competition that comes along with being in orbit

- **Germany** – Germany being one of the leading European space programmes is actively improving its satellite and security capabilities, after warnings about foreign interference with military and civilian satellite systems and Russia’s tracking and jamming of satellites used by German forces which shows the cybersecurity threat posed to critical space assets

- **Brazil** – as Brazil strongly depends upon satellite observation data for monitoring and its own territorial management it has a strong interest in securing access to observational data and protecting its own space infrastructure, being a member of the international coordination body for earth satellites Brazil participates actively in shaping data sharing and sovereignty

Previous attempts to resolve the issue

All previous attempts to address the issue at hand have been largely scattered and non-binding. At the highest level the 1967 Outer Space Treaty has established principles for the peaceful use of outer space but it did not anticipate cyber threats or concerns relating to the sovereignty of such data, recently UN processes such as the GGE on ICTs have conducted discussions with the UN COPUOS and have come to promote ethical state behaviour when it comes to space and avoiding harmful interference with satellites, the EU has also taken concrete steps and has proposed regulations such as the EU Space Act which aims to protect satellite infrastructure. Many governments have proposed acts, one notable example is the US Satellite Cybersecurity act to strengthen protection for commercial satellites however these acts do not fully resolve disputes relating to data ownership, access and the sovereignty of such data.

Questions a Resolution Must Answer:

- How can states mitigate cyberattacks, jamming and other forms of hostile interference targeting satellite systems?
- Who holds ownership and control over Earth's observational data and how can state sovereignty over such data be safeguarded whilst allowing appropriate public access?
- What regulatory frameworks should govern commercial and private satellite operators to ensure cybersecurity and system integrity without impeding innovation and development?
- What measures can be taken to ensure that data obtained through satellites is used responsibly and not misused by public or private sectors?
- How can responsibility and accountability be determined when cyber interference with satellites is difficult to be traced back to a source?
- What safeguards are required to ensure that the use of these satellites are not tools for military or political benefit?

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