SPACE MATTERS

UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS

Bringing the benefits of space to humankind

UNITED NATIONS

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When the Earth is viewed from outer space, there are no visible boundaries dividing the territories and peoples of our planet. The awareness that we are all part of the same global community is what inspires the work of the United Nations.

The United Nations established the Committee on the Peaceful Uses of Outer Space to govern the exploration and use of space for the benefit of all humanity: for peace, security and development. Satellite-based services are an indispensable tool for addressing urgent global challenges such as climate change, disasters, global health and human security. In addition, there are significant milestones that offer opportunities for broader international cooperation. With this in mind, 2011 marked the 50th anniversaries of human space flight and of the Committee; both of these anniversaries may be used for a more meaningful collaboration in the future.

The United Nations Office for Outer Space Affairs helps States develop their capabilities to use space technologies to support sustainable development. Its work takes into account the evolving needs of developing countries, the advancement of space-faring nations and the emergence of new actors in space. The United Nations is thus committed to ensuring that all nations benefit from activities in outer space, now and in the future.

YURY FEDOTOV
Director-General, United Nations Office at Vienna

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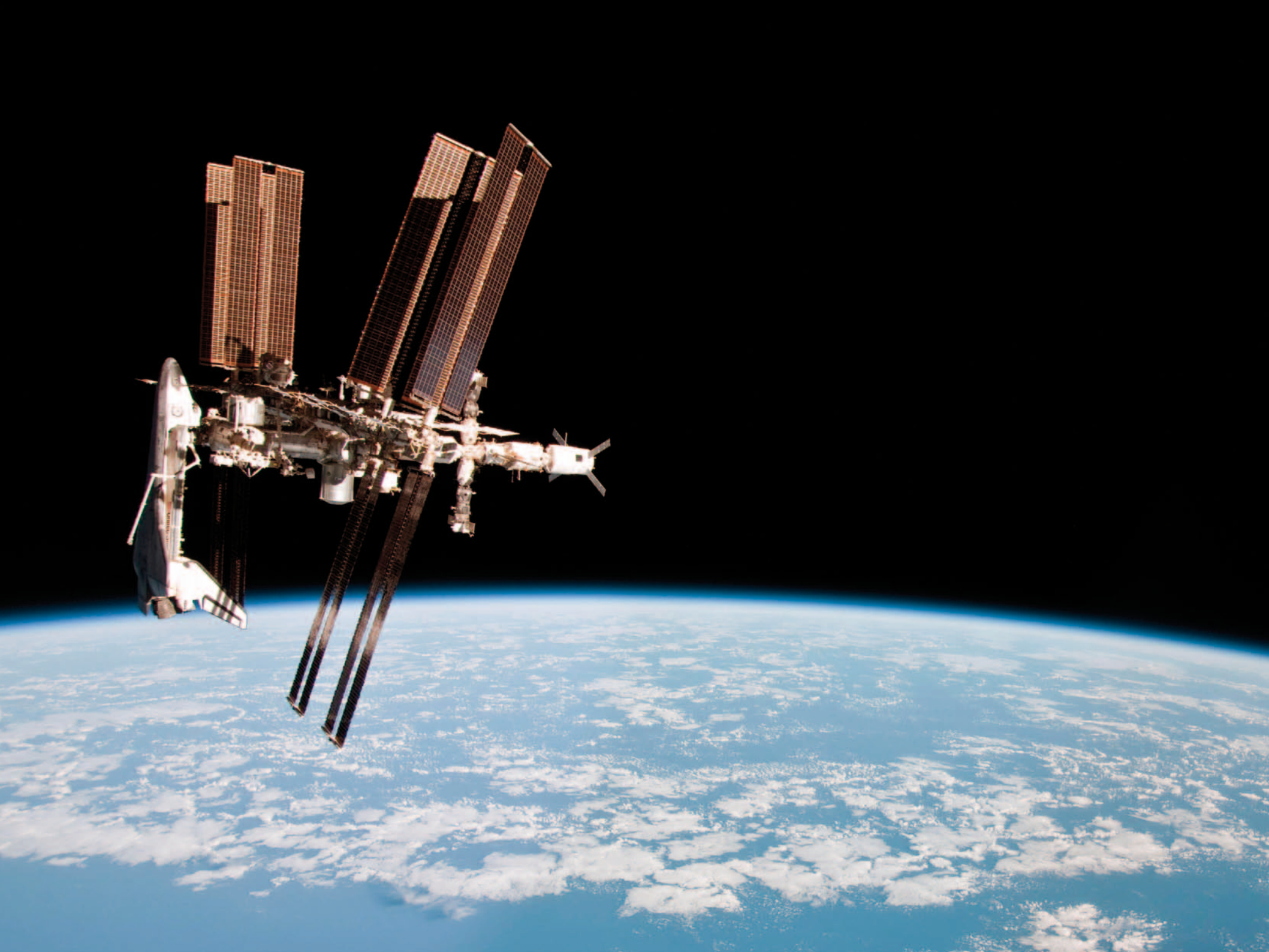
The United Nations is uniquely positioned to be the platform for international cooperation in the peaceful exploration and use of outer space and the Office for Outer Space Affairs has, for over half a century, dedicated itself to bringing the benefits of space to humankind. Since its inception, the Office has played an important role in fostering international cooperation for the benefit of all countries in a number of areas of space research, applications, operations and exploration.

The Office acts as a facilitator that brings actors together, a catalyst that galvanizes concerted actions, and a promoter that builds awareness of the importance of space solutions for dealing with local and global challenges. To achieve this, the Office services international discourse and dialogue against a backdrop of law and diplomacy, conducts capacity-building activities that harness space tools for development, and promotes awareness through the celebration of space achievements and milestones.

This publication is a reflection of the work of the Office which, at the same time, should also illustrate the vital contributions space science and technology make towards the betterment of humanity.

MAZLAN OTHMAN
Director, Office for Outer Space Affairs



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"SPACE IS HELPING US TO ADDRESS SOME OF TODAY'S MOST URGENT PROBLEMS. SPACE TECHNOLOGY HAS PRODUCED TOOLS THAT ARE TRANSFORMING WEATHER FORECASTING, ENVIRONMENTAL PROTECTION, HUMANITARIAN ASSISTANCE, EDUCATION, MEDICINE, AGRICULTURE AND A WIDE RANGE OF OTHER ACTIVITIES", Former United Nations Secretary-General Kofi Annan, on the occasion of World Space Week, 2001.

Coupled with advances in other fields of science and technology, space science and technology and their applications offer a wide range of specific tools and solutions that enable and support States in their efforts to overcome obstacles to sustainable development. Nowadays, applications such as earth observation, communications, navigation, timing and positioning provide strong support for the implementation of the actions called for in the United Nations development agenda. The work of the United Nations Office for Outer Space Affairs (UNOOSA) and its activities are influenced by the overall development goals of the United Nations as articulated by the United Nations Millennium Summit, the World Summit on Sustainable Development, and the World Summit on the Information Society.

With an increase in the awareness of the capabilities of space applications and a decrease in the cost of space products, a growing number of countries are already aware of the advantages of integrating space capabilities into their national development programmes. These applications have already been amply demonstrated in numerous fields. Capacity-building efforts of the Office could serve to establish the methodology and initial "know-how" within a space-related or non space-related national institution wishing to incorporate the use of the technology into their development programmes at an operational level.

Satellite imagery of the Sri Lankan coastline before and after the 2004 Indian Ocean tsunami. Photographs ©Digital Globe

SECURING GLOBAL PUBLIC GOODS

DISASTER RISK REDUCTION

In the event of a disaster, having the latest information can mean the difference between life and death. Satellites provide reliable and rapid communication, observation and positioning tools, especially when crucial on-the-ground infrastructure is damaged. Risk assessment, disaster mitigation and prevention can also benefit greatly from space-based data.

The United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) provides access to space-based information for countries and international and regional organizations, at all stages of the disaster cycle, including risk reduction and disaster mitigation. UN-SPIDER assists countries in developing national policies, plans and procedures to deal with disasters efficiently and significantly reduce the loss of lives and property. UN-SPIDER maintains a 24-hour hotline as the United Nations focal point for satellite imagery requests during disasters.

In the implementation of its activities, UN-SPIDER works closely with a well established network of Regional Support Offices (RSO). An RSO is a regional or national centre of expertise, set up by a member State or group of member States. These offices support and implement the UN-SPIDER work plan, covering outreach and capacity-building activities, communities of practice, knowledge management, information compilation, and technical advisory missions. RSOs have already been established in Algeria, Iran (Islamic Republic of), Nigeria, Pakistan, Romania, and Ukraine and within the Asian Disaster Reduction Centre (ADRC) and the Water Center for the Humid Tropics of Latin American and the Caribbean.

www.unoosa.org/oosa/en/unspider/index.html

HUMANITARIAN ASSISTANCE

Through its SpaceAid Framework, the Office will continue to ensure that disaster response communities are able to access and use space-based information, including derived maps, to respond to emergency situations in cooperation with international and regional mechanisms that provide such products and services.

The Office will continue to support training courses in the use of the global COSPAS-SARSAT search and rescue network. The Office will assist in bringing new member States, particularly developing countries, into partnership with countries and organizations that are formally associated with the COSPAS-SARSAT programme.

GLOBAL NAVIGATION SATELLITE SYSTEM OF SYSTEMS

Global navigation satellite systems (GNSS) are constellations of satellites that provide geo-spatial positioning data to users on a continuous and worldwide basis. To date, the United States' Global Positioning System (GPS), the Russian Federation's Global Navigation Satellite System (GLONASS), and elements of Europe's Galileo and China's Compass/BeiDou systems have been deployed. Satellite navigation, positioning and timing have applications in a wide variety of fields, such as surveying and mapping, transportation, precision agriculture, monitoring of the environment, leisure, recreation and disaster risk reduction.

The Office serves as the Executive Secretariat to the International Committee on Global Navigation Satellite Systems (ICG). ICG's goal is to ensure coordination and cooperation among providers and users, in order to improve overall GNSS services around the world. ICG is also working to develop compatibility and interoperability among the various existing and planned satellite systems, ensuring that global navigation services operate without disruption.

The activities of the Office focus on building capacity in the use of GNSS in support of sustainable development, including education and training in satellite navigation search and rescue and for scientific applications. The Regional Centres for Space Science and Technology Education, affiliated to the United Nations, act as ICG Information Centres with the aim of giving equal access to information on services provided by GNSS core systems and develop, through in-depth education programmes and indigenous capability for research and applications.

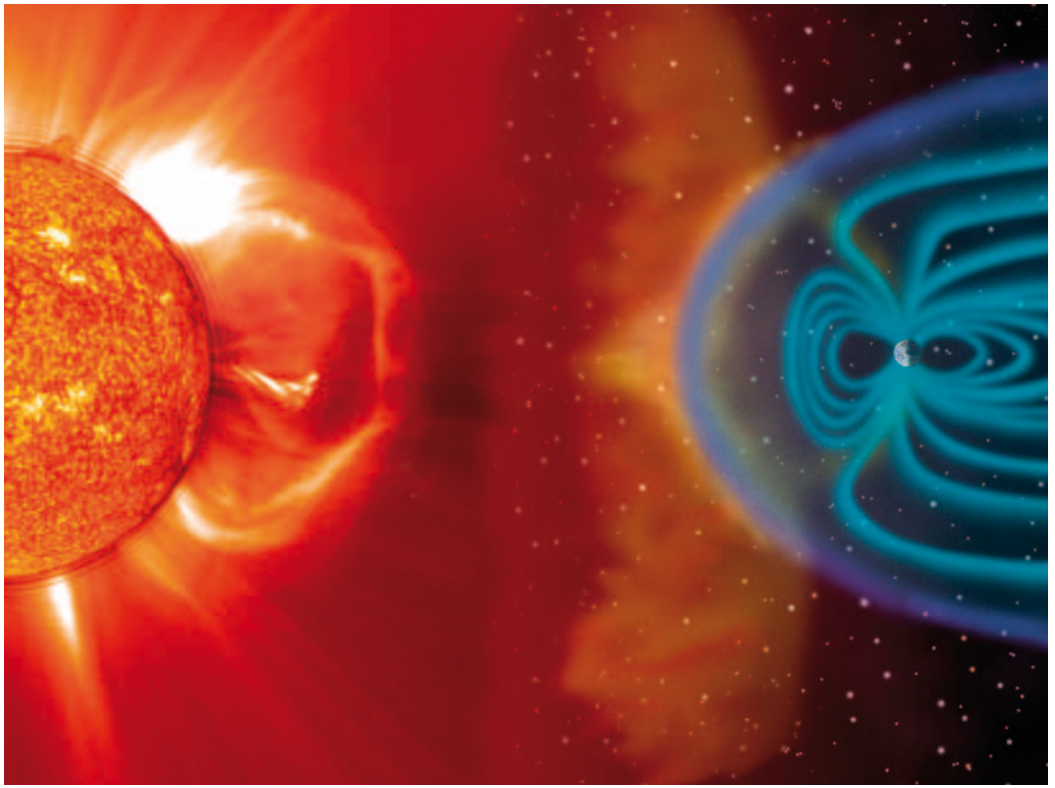
Global navigation satellite systems are used by aircraft for navigation and landing. Photograph ©ESA

SPACE WEATHER

With society's growing dependence on satellites, it is essential to improve our understanding of "space weather"—that is the Sun's effects on near-Earth space. Space weather has caused disruptions and failures of communications satellites in the geostationary orbit. Its effects can also be felt on the ground, where it can cause severe damage to infrastructure, such as electricity transmission lines, oil pipelines and undersea communication cables.

Instruments at ground level and in space that continuously monitor space weather, including solar activity, are providing extraordinary insight into the Sun and the heliosphere, as well as its influence on the near-Earth environment.

Today 14 ground-based worldwide instrument arrays, consisting of more than 1,000 instruments, have been deployed to conduct research on climate change, space weather and the ionosphere.



Prediction of solar storms in the future: Through the United Nations International Space Weather Initiative, scientists from all over the world are watching the Sun in an effort to better predict space weather—blasts of particles and magnetic fields from the Sun that impact the magnetosphere, the magnetic bubble around the Earth. The white lines represent the solar wind; the purple line is the bow shock line; and the blue lines surrounding the Earth represent its protective magnetosphere. The magnetic cloud of plasma can extend to 30 million miles wide by the time it reaches Earth. Photograph ©NASA

LEVERAGING SPACE

NATURAL RESOURCES AND THE ENVIRONMENT

Space applications play an important role in the areas of natural resources management and environmental monitoring. Remotely sensed images, in particular, provide an unparalleled view of the Earth as a planet with the resulting data being used for operations such as inventory, surveying, and monitoring or applications for hydrology, geology, mineralogy, land use and the environment.

The United Nations Office for Outer Space Affairs organizes activities to assist developing countries in utilizing space-based solutions, in particular remote sensing data, for managing natural resources and monitoring the environment. These activities provide unique opportunities for bringing together experts, decision makers and practitioners to share their experience and knowledge with the aim of further enhancing the use of space technology and its applications.

Images taken from space are widely used in agriculture. Above is an image of the diverse crops growing in the fields of Minas Gerais, Brazil, taken by an astronaut aboard the International Space Station on 11 February 2011. Photograph ©NASA

CLIMATE CHANGE

Given their capacity to offer unparalleled views of the Earth, the use of satellites to monitor processes and trends on a global scale is indispensable in the context of climate change. Satellites allow climate change researchers to compare the dynamics of ice in polar caps and glaciers in Asia, America and Europe; track fluctuations in sea levels; monitor essential climate variables; and track changes in carbon stocks.

In cooperation with other United Nations entities, the Office conducts a variety of awareness training and capacity-building activities related to the collection of, access to, and use of satellite-based data and information in support of sustainable development in the context of climate change.

GLOBAL HEALTH

Of the approximately 1,400 known infectious diseases, some are among the most significant causes of death in developing countries. To combat epidemics with coordinated responses, there is a need to establish an integrated global alert system. Information derived from Earth observation and meteorological satellites, in combination with global navigation satellite systems and geographic information systems, makes it easier to integrate ecological, environmental and other information to predict the spread of some of these diseases.

The Office assists countries in making use of space-based solutions to fight the spread of diseases. It also promotes telehealth and telemedicine applications, which embrace computer and tele-communications technologies, including satellite communications, to bring medical experts into virtual contact with patients or doctors in remote and rural areas.

BUILDING CAPACITY

Since its inception, the Office has organized over 200 training courses, workshops, seminars and conferences, and provided funding support for approximately 11,000 participants, mainly from developing countries. In addition to the support given to the four Regional Centres for Space Science and Technology Education, the United Nations Programme on Space Applications also cooperates with academic institutions to offer long-term fellowship programmes.

Nearly forty years after its establishment, the United Nations Programme on Space Applications continues to evolve by taking into account the latest developments in the field of space activities to serve the capacity-building needs of countries and ensure that space-based solutions contribute to improving life on Earth.

www.unoosa.org/oosa/en/sapidx.html

UNITED NATIONS AFFILIATED REGIONAL CENTRES

Through the Programme on Space Applications, the Office established four Regional Centres for Space Science and Technology Education located in the regions that correspond to the United Nations Economic Commissions for Africa (Morocco, Nigeria), Asia and the Pacific (India), and Latin America and the Caribbean (Brazil and Mexico). The Regional Centres are affiliated to the United Nations and offer a number of educational and training opportunities to professionals from the respective regions.

With the support of prominent educators, the United Nations Programme on Space Applications has developed standard education curricula in remote sensing, communications, basic space science and meteorology, which were adopted by the Regional Centres. Additional model curricula in global navigation satellite systems and space law are being developed under the auspices of the United Nations.

www.unoosa.org/oosa/en/SAP/centres/index.html

BASIC SPACE TECHNOLOGY

A growing number of countries are undertaking activities for the development of indigenous basic space technology that will enhance their ability to make the most efficient and effective use of space applications. Universities and space-related organizations in these countries have established space technology courses and programmes on the development and operation of small satellites. In the near future, they are expected to play an increasingly important role in a wide range of operational applications.

For this reason, the Office has launched a series of activities related to basic space technology development by organizing workshops and training courses, providing long-term fellowships, developing an education curriculum, and providing a framework for international cooperation in space technology development.

The Basic Space Technology Initiative (BSTI) of the Office is aimed at building the indigenous technological capacity and capability of countries that will optimize and sustain the use of space applications for achieving development goals. Such capacity and capability can create spin-offs for other science and technology developments at the national level.

The Office undertakes hands-on training activities on the development of small satellites and, where possible, leverages other existing activities conducted by intergovernmental and non-governmental organizations. While BSTI focuses on technology, equal emphasis is also placed on regulatory issues. A basic space technology curriculum is envisaged which will be used by the Regional Centres.

HUMAN SPACE TECHNOLOGY

The Human Space Technology Initiative (HSTI) aims to promote the benefits of human space technology, such as those developed on the International Space Station (ISS), in the areas of medicine, material and life sciences and technology spin-offs, in particular for developing countries. The Office builds awareness and indigenous capability in the use of microgravity conditions for education and research.

Through dedicated activities, it will facilitate the participation of non-partner ISS countries in scientific activities in the ISS.

SPACE AND DIPLOMACY

"DEEPLY CONVINCED OF THE COMMON INTEREST OF MANKIND IN PROMOTING AND EXPANDING THE EXPLORATION AND USE OF OUTER SPACE, AS THE PROVINCE OF ALL MANKIND, FOR PEACEFUL PURPOSES AND IN CONTINUING EFFORTS TO EXTEND TO ALL STATES THE BENEFITS DERIVED THEREFROM"
(Second preambular paragraph of General Assembly Resolution 65/97 of 10 December 2010)

Ever since the first human-made satellite orbited the Earth in 1957, the first human space flight in 1961 and the first human presence on the Moon in 1969, the United Nations has been at the centre of promoting international cooperation in space activities. For the past 50 years, space activities among nations have undergone extensive developments in view of unprecedented technical advancements in space exploration, geopolitical changes, and the evolving use of space science and technology for sustainable development. In the interests of global economic, social and cultural development, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) serves as a unique platform for maintaining outer space for peaceful purposes at the international level.

The overall mandate of COPUOS and its two Subcommittees aims at strengthening the international legal regime governing outer space, resulting in improved conditions for expanding international cooperation in the peaceful uses of outer space, and supporting efforts at the national, regional and global levels, including those of entities of the United Nations system and international space-related entities, to maximize the benefits of the use of space science and technology and their applications, and to increase coherence and synergy in international cooperation in space activities at all levels.

Every year, the United Nations General Assembly discusses the work of COPUOS and adopts a resolution entitled "International Cooperation in the Peaceful Uses of Outer Space".
Photograph ©UN Photo/Paulo Filgueiras

SPACE FOR PEACEFUL PURPOSES

COPUOS was established by the General Assembly in 1959. It has two subsidiary bodies: The Scientific and Technical Subcommittee and the Legal Subcommittee. COPUOS reports to the Fourth Committee of the General Assembly, which adopts an annual resolution on international cooperation in the peaceful uses of outer space.

COPUOS reviews the scope of international cooperation in the peaceful uses of outer space and was instrumental in the creation of the five treaties and five principles of outer space. Central to the work of COPUOS is space exploration and the use of space technology applications to meet global development goals. Owing to rapid advances in space technology, the space agenda is constantly evolving. COPUOS therefore provides a unique platform at the global level to monitor these developments.

Each year, COPUOS and its subcommittees deal with a wide range of issues concerning current and future activities in space. These include maintaining outer space for peaceful purposes, safe operations in orbit, spin-off benefits of space technology, climate change, water management, space weather, space debris, the threat from asteroids, the safe use of nuclear power in space, global navigation satellite systems, capacity-building in space law and national space legislation.

Within the framework of COPUOS, its secretariat UNOOSA has organized three major United Nations conferences on the exploration and peaceful uses of outer space, all held in Vienna in 1968, 1982 and 1999. The third conference (UNISPACE III) outlined a wide variety of actions to protect the global environment and manage natural resources; increase the use of space applications for human security, development and welfare; protect the space environment; increase developing countries' access to space science and its benefits; and enhance training and educational opportunities, especially for young people. As a result of UNISPACE III, UN-SPIDER and the International Committee on Global Navigation Satellite Systems (ICG) were established.

REGIONAL PARTNERSHIPS

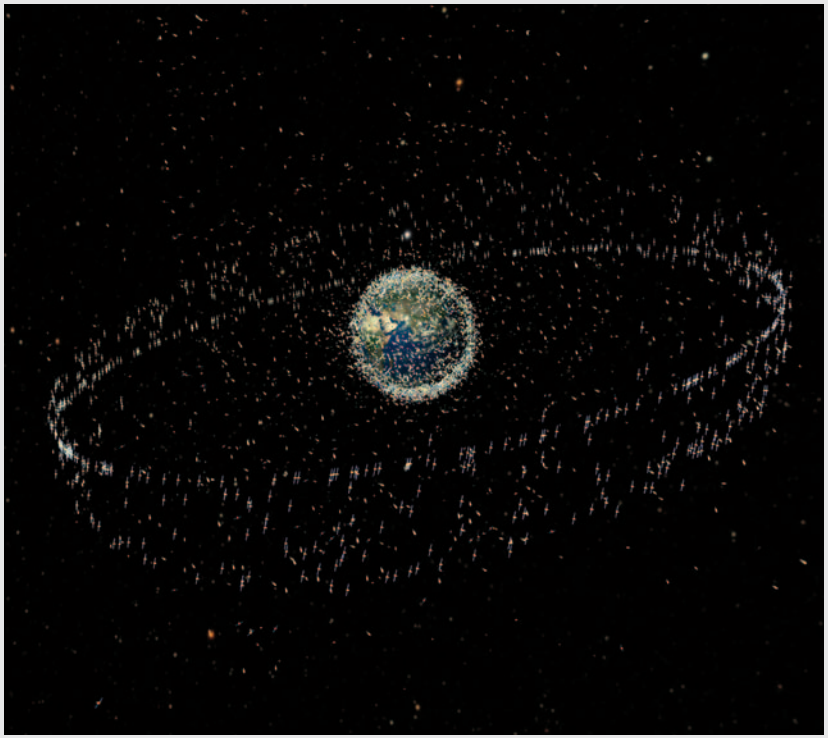
Major regional initiatives directly related to space-related cooperation mechanisms include the Asia Pacific Space Cooperation Organization (APSCO); the Asia-Pacific Regional Space Agency Forum (APRSAF); the African Leadership Conference on Space Science and Technology for Sustainable Development (ALC), and the Space Conference of the Americas.

The Office actively supports these regional mechanisms, which are instrumental in reaching communities and thus narrow the gap between developing and developed countries. Such mechanisms provide a bridge between users and potential providers of space-based development and services via partnerships established with States, intergovernmental organizations and international non-governmental organizations.

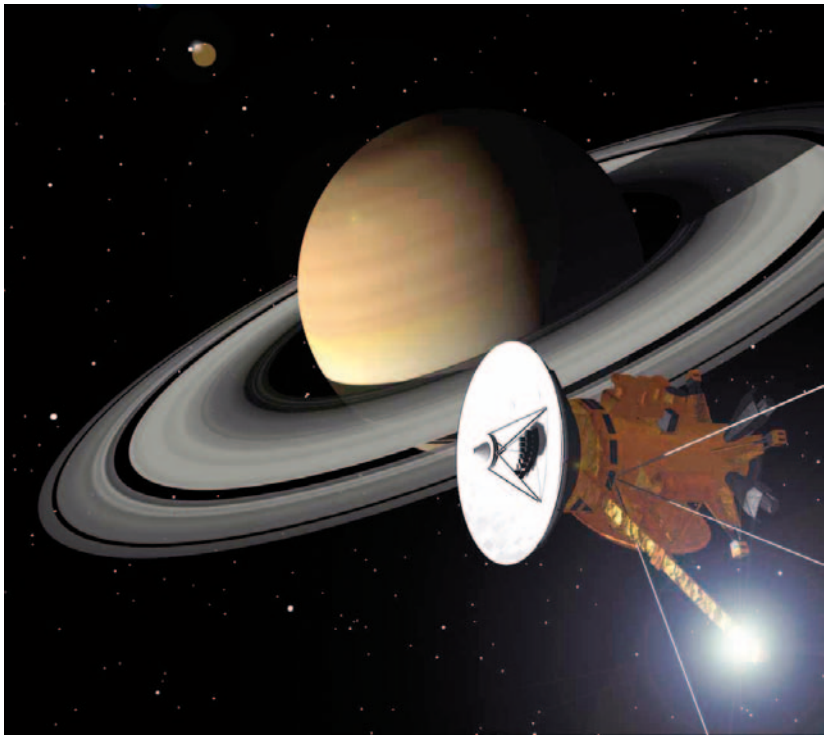
SPACE AGENDA TODAY

GREENING SPACE: MITIGATING SPACE DEBRIS

Space debris includes defunct satellites, discarded sections of rockets and parts of satellites that have exploded. Most numerous of all are tiny particles such as paint chips and liquid droplets. Space debris orbits the Earth at incredibly high speeds, normally several kilometres per second, making even small particles a hazard to active satellites and space missions. In 2007, COPUOS achieved a major result by adopting its own Space Debris Mitigation Guidelines. There is general agreement among States that the implementation of these voluntary guidelines for the mitigation of space debris at the national level would increase mutual understanding on acceptable activities in space, thus enhancing stability in space and decreasing the likelihood of friction and conflict.



Over 22,000 man-made objects are being tracked in Earth orbit. Fewer than 2,000 of these are operational. The ring around the Earth is the satellite orbit used for satellite television and other purposes. Image: Artist's impression ©ESA



The joint Europe-US Cassini probe presently orbits distant Saturn and carries a NPS to provide power and heat for its instruments. An equivalent solar panel would have to be 500 square metres in size. Photograph ©ESA/NASA

SAFE USE OF NUCLEAR POWER IN SPACE

Nuclear power sources (NPS) have been used in various space missions since the 1960s. As NPS continue to be used in deep space missions in particular, an effective mechanism that provides for their safe use in outer space is of paramount importance. NPS safety in outer space has been the focus of COPUOS and its Subcommittees since the late 1970s. In 2006, the Scientific and Technical Subcommittee of COPUOS and the International Atomic Energy Agency (IAEA) joined forces to develop an international technically-based framework of goals and recommendations for the safety of planned and currently foreseeable NPS applications in outer space. The final text of the framework was adopted by COPUOS in 2009.

THREATS FROM ASTEROIDS

Near-Earth objects (NEOs) are asteroids, comets and large meteoroids whose orbit intersects the Earth's orbit and may therefore pose a danger of collision. NEOs with a diameter of over 1 km hit the Earth a few times in a million years. Though the risk is small, the potential damage caused by a 1 km or larger NEO is sufficiently severe that several States have expressed interest in the detection and potential deflection of a NEO, should an object on a collision course be detected. A few smaller NEOs (less than 50 m) enter the Earth's atmosphere every month and burn up as shooting stars. Given the global consequences of a NEO impact and the enormous resources required to prevent a collision, the United Nations has been seen as the forum to coordinate such efforts. Since 2008, COPUOS has reviewed policies and procedures on the NEO threat with the aim of establishing international procedures and decision-making mechanisms for dealing with a potential NEO threat.

Japan's Hayabusa space probe travelled to the Itokawa asteroid and in 2010 returned the first samples of an asteroid to Earth. Photo ©JAXA

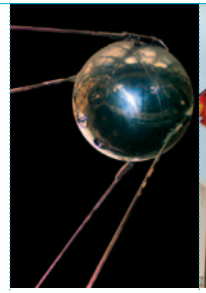
SPACE MILESTONES

OUR ACHIEVEMENTS IN THE REALM OF SPACE ARE MANIFESTED IN HALF A CENTURY OF TECHNOLOGICAL TRIUMPHS AND THE GLORY OF THE HUMAN SPIRIT, AGAINST A BACKDROP OF DÉTENTE AND DIALOGUE AND GOOD CONDUCT AND COOPERATION.

Commemorating the fiftieth anniversary of human spaceflight, the United Nations issued 54 souvenir stamps in April 2011.
Photo ©UNPA

SPACE FIRSTS

1957



First artificial satellite, “Sputnik-1”

1958

First discussions on the peaceful uses of outer space in the United Nations General Assembly

1960

First Earth observation satellite, “Tiros-1”(USA)

1961

First man to orbit the Earth, Yuri Gagarin (USSR)

1961

First meeting of the United Nations Committee on the Peaceful Uses of Outer Space

1963

First woman to orbit the Earth, Valentina Tereshkova (USSR)

1965

First spacewalk, Alexei Leonov (USSR)

1967

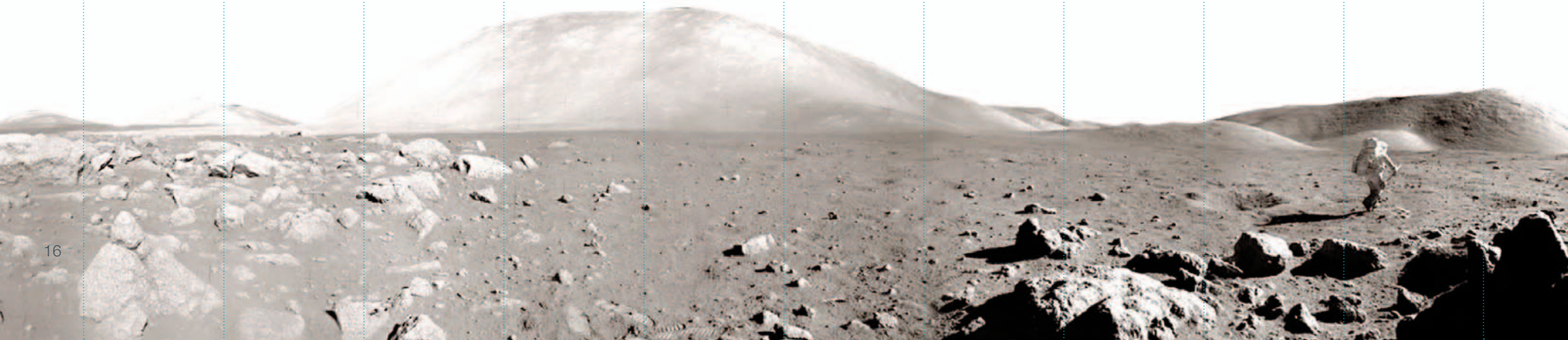
First space treaty, the “Outer Space Treaty” signed

1968

First international space conference, “UNISPACE”, held in Vienna, Austria

1969

First humans on the Moon, Neil Armstrong and Edwin Aldrin (USA)



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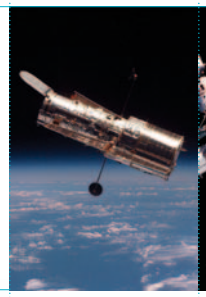
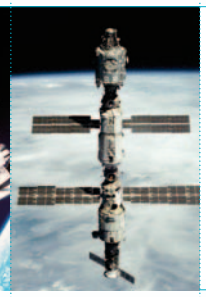
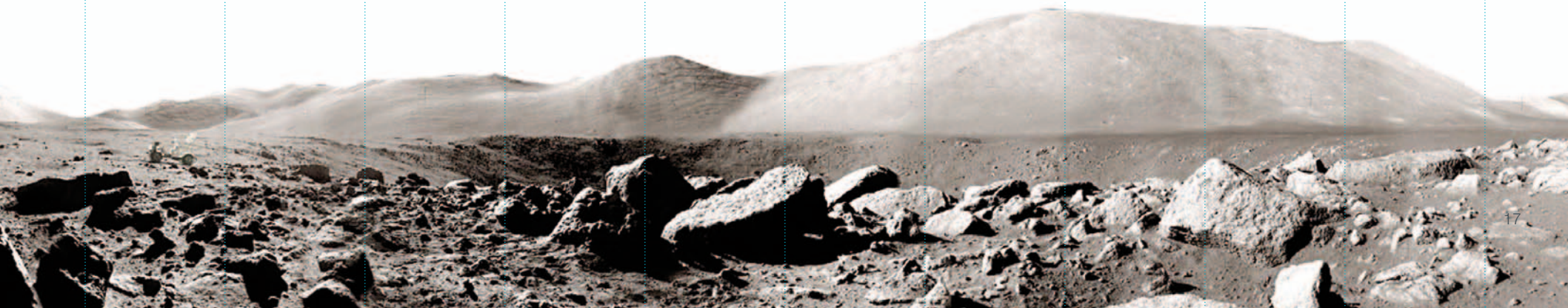
									
First space station launched, “Salyut-1”(USSR)	First international space mission, “Apollo Soyuz Test Project” (USA and USSR)	Launch of the first reusable spacecraft, “Columbia” (USA)	Second international space conference, UNISPACE-82, held in Vienna, Austria	Launch of the Hubble Telescope (USA and Europe)	First Shuttle-Mir mission (USA and Russian Federation)	First element of the International Space Station “Zarya” launched	Third international space conference, UNISPACE III, held in Vienna, Austria	First Chinese manned mission, “Shenzhou-V”	First decade of a continuous human presence in outer space aboard the International Space Station



SPACE AND LAW

THE EXPLORATION AND USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES, SHALL BE CARRIED OUT FOR THE BENEFIT AND IN THE INTERESTS OF ALL COUNTRIES, IRRESPECTIVE OF THEIR DEGREE OF ECONOMIC OR SCIENTIFIC DEVELOPMENT, AND SHALL BE THE PROVINCE OF ALL MANKIND (Article I, Outer Space Treaty).

The General Assembly, in its resolution 65/97, reaffirmed the importance of international cooperation in developing the rule of law, including the relevant norms of space law and their important role in international cooperation for the exploration and use of outer space for peaceful purposes, and of the widest possible adherence to international treaties that promote the peaceful uses of outer space in order to meet emerging new challenges, especially for developing countries, and urged States that have not yet become parties to the international treaties governing the use of outer space to give consideration to ratifying or acceding to those treaties in accordance with their domestic law, as well as incorporating them in their national legislation.

The progressive development and codification of international law constitutes one of the principal responsibilities of the United Nations. The formulation of international law to regulate the activities of States in the space environment, whose nature is not only extraordinary but also unique from a legal point of view, has been the task of the Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee since its establishment in 1959.

Under international law, outer space is not subject to national appropriation by claim of sovereignty and nations bear international responsibility for national activities in outer space whether they are carried out by governmental or non-governmental entities.
Photograph ©NASA

GOVERNANCE

Several multilateral treaties have been adopted by the United Nations General Assembly to enable the orderly conduct of activities in outer space. The cornerstone of these governance instruments is the Outer Space Treaty of 1967. Among the principles embodied in the Treaty are the freedom of exploration and use of space for the benefit and interest of all countries, the non-appropriation of outer space, including the Moon and other celestial bodies, and the prohibition of the deployment of nuclear weapons or other kinds of weapons of mass destruction in outer space.

Four other treaties were adopted to reinforce the framework set by the Outer Space Treaty. The Rescue Agreement of 1968 requires States to assist an astronaut in case of accident, distress, emergency or unintended landing. The Liability Convention of 1972 establishes the standards of liability for damage caused by space objects. The Registration Convention of 1975 requires States to register all objects launched into outer space with the United Nations. The Moon Agreement of 1979 elaborates on the provisions of the Outer Space Treaty as they apply to the Moon and other celestial bodies.

Five sets of principles support that body of law. These are the declaration of legal principles governing the activities of States in Outer Space (1963), the principles relating to international direct television broadcasting (1982), the principles relating to remote sensing of the Earth (1986), the principles on the use of nuclear power sources (1992) and the declaration on international cooperation in the exploration and use of outer space (1996). Other resolutions adopted by the Assembly to strengthen the framework include a means for States that are not party to the Registration Convention to provide information on their satellites (1721 B of 1961) and recommendations to facilitate the application of the concept of the “launching State” (59/115 of 2004) and for the enhancement of registration practices (62/101 of 2007).

United States President Lyndon Johnson watches as Secretary of State Rusk signs the Outer Space Treaty at the White House, January 1967. Photo ©US National Archives

CONFIDENCE-BUILDING

To ensure effective governance of space activities, the space treaties include a number of confidence-building mechanisms that the States have asked the United Nations to act upon. These mechanisms, which are implemented by the Office for the Secretary-General, involve the global distribution of information relating to space activities and range from notifications on the launch of satellites to identifying pieces of space debris that have fallen to Earth. The United Nations Register of Objects Launched into Outer Space is among the mechanisms provided for by the treaties.

Established in 1962, the Register is the central repository of official information provided by States on space objects in accordance with the Registration Convention or, on a voluntary basis, under General Assembly resolution 1721 B of 1961.

All information contained in the Register is publicly available via the UNOOSA website. The website also serves as the central clearinghouse for other data provided under the space treaties and includes a list of space objects that nations have discovered in their territory, information on nuclear-powered satellites and also on the deorbiting of satellites. As part of its responsibilities, the Office maintains close contact with governments and agencies that conduct space activities.

As the main focal point for space-related matters in the United Nations System, the Office is also member of the Joint Radiation Emergency Management Plan of International Organizations, which is maintained by the International Atomic Energy Agency (IAEA). In the event of a nuclear-powered satellite crashing back to Earth, the Office would draw on its contacts and resources to assist States and organizations in effectively responding to the emergency.

Since 1957, over 7,000 satellites, space probes and landers, manned spacecraft and space station modules have been placed in Earth orbit or beyond. Over 93 per cent have been registered with the United Nations in accordance with international law. Photo ©NASA

ADVOCACY

Promoting greater acceptance of the Treaties and Principles is one of the areas of focus for the Legal Subcommittee and the Office. A key component of the support the Office provides for promoting understanding and application of international space law is its programme on space law. The programme comprises activities dedicated to providing research assistance to the Legal Subcommittee, disseminating information, building capacity in space law and assisting States implement the treaties.

Among the main activities conducted are annual workshops to increase understanding of the international legal framework governing the activities of States in outer space. The workshops address a variety of legal issues, including the responsibilities of States parties to the treaties, mechanisms for implementing treaty obligations and promoting international cooperation in outer space, the development of space policy frameworks and national laws, the promotion of indigenous capacity related to space law.

Other activities include the development of a curriculum on space law, the provision of technical assistance and guidance on the practical implementation of the treaties and the preparation and distribution of documents and publications relating to space law.

UNOOSA promotes the application of international space law through meetings, workshops and conferences, such as the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space, held in 1968. Photo ©UN Photo

DELIVERING AS ONE

"THE WORLD IS CHANGING; THE CHALLENGES TO HUMANITY BECOME MORE AND MORE PRESSING; AND THE UNITED NATIONS SYSTEM IS CONSTANTLY MAKING CONCERTED EFFORTS TO RESPOND TO THESE CHANGES AND CHALLENGES", Mazlan Othman, Director of UNOOSA at the 30th Inter-Agency Meeting, Geneva, Switzerland, March 2010.

At least 25 United Nations entities routinely use space applications tools. Space-based assets such as satellites for telecommunications, global navigation tools and Earth observation and their applications provide operational solutions, data and information that help implement a wide range of United Nations-mandated activities. Satellite communications and satellite navigation have become indispensable tools, in particular for operations in the field, but also for applications such as health and mapping projects. Weather forecasts, observation of the environment for climate change monitoring, among other activities, are dependent on the reliable and uninterrupted collection of global data by satellites.

The Inter-Agency Meeting on Outer Space Activities is the central coordination mechanism in the United Nations system for United Nations organizations to cooperate and create synergy in space-related programmes, avoid duplication in these programmes and foster new inter-agency initiatives. The Office, as the Secretariat and coordinator of the Inter-Agency Meeting, has been organizing its annual meetings since 1975.

The Inter-Agency Meeting has produced a number of reports on the use of space applications by United Nations entities. Its annual report, prepared by the Office for the Secretary-General on the coordination of space-related

The United Nations continues to use space technology as a means of making efficient use of its resources. In 1978, the United Nations tested the use of satellites for video-conferencing and simultaneous interpretation between United Nations Headquarters in New York, United States and Buenos Aires, Argentina. Photo ©UN Photo/Yutaka Nagata

activities within the United Nations, serves as a strategic tool and targets overall policies and strategies pertaining to the coordination of space-related activities, particularly in meeting global development goals and sustainable development. The publication *Space Solutions*, produced by the Office in cooperation with participating United Nations entities, highlights how the United Nations family uses space technology to achieve development goals.

Protection of the Earth's environment and management of natural resources, human security and welfare, humanitarian assistance and disaster management are central thematic areas. The United Nations family also identifies challenges faced in space-related activities and monitors progress in addressing these challenges.

United Nations entities regularly contribute to the work of the Inter-Agency Meeting by participating at its annual meeting, identifying challenges faced in the space-related activities of the United Nations system and monitoring progress in addressing those challenges. Regular participants in the meeting include: Economic Commission for Africa, Economic Commission for Europe, Economic and Social Commission for Asia and the Pacific, Food and Agricultural Organization of the United Nations, International Atomic Energy Agency, International Civil Aviation Organization, International Telecommunication Union, United Nations Department of Peacekeeping Operations, United Nations Office for the Coordination of Humanitarian Assistance to Afghanistan, United Nations Environment Programme, United Nations Educational, Scientific and Cultural Organization, United Nations High Commissioner for Refugees, United Nations Industrial Development Organization, United Nations Institute for Training and Research, United Nations Office on Drugs and Crime, United Nations Framework Convention on Climate Change, World Health Organization, World Intellectual Property Organization, World Meteorological Organization.

During the annual session of the Inter-Agency Meeting, an informal dialogue with Member States is held to promote exchange of information on important space-related developments in the United Nations system.

The Inter-Agency Meeting is a flexible mechanism which is adapting and constantly evolving in response to the inputs provided by participating United Nations entities in order to meet the goals set by the United Nations development agenda. New inter-agency cooperation initiatives, coordination mechanisms and joint cooperation projects are discussed within this forum.

CELEBRATING SPACE

The Office strives to raise awareness of how space improves daily life by organizing public outreach events and activities around the world with partners in the United Nations system, governments, space agencies, international organizations, private industry, the media, and non-governmental organizations.

World Space Week marks the anniversary of two milestones in human exploration and use of outer space: the launch of the first artificial satellite, Sputnik I, on 4 October 1957, and 10 October 1967, the date when the Outer Space Treaty entered into force. Declared by the United Nations General Assembly in 1999, World Space Week is a week where many nations and organizations set up special space events that raise awareness of how space technology influences daily life and, especially, seeks to inspire the interest of youth in all areas of space, from astronomy to human spaceflight.

In 2011, the General Assembly declared 12 April as the International Day of Human Space Flight. It marks the anniversary of the space flight of cosmonaut Yuri Gagarin in 1961.

Opening of the International Space Exhibition at UNOV Rotunda, commemorating the 50th anniversary of human space flight and the 50th anniversary of COPUOS.
Photo ©N. Rodrigues

WHO WE ARE

The United Nations Office for Outer Space Affairs was established in 1962 to support the work of the Committee on the Peaceful Uses of Outer Space (COPUOS) and implements a multifaceted programme that covers the legal, scientific and political aspects of space-related activities. The Office works closely with national space agencies, international space organizations, the private sector, non-governmental organizations and the media.

The Office consists of multinational staff members who are drawn from a wide spectrum of fields, ranging from aerospace engineering to international law. The core staff is supplemented by young professionals and experts, who are provided on a short-term basis by nations to supplement the Office's expertise in areas such as remote sensing and global navigation satellite systems. The Office also offers internships to postgraduate students in the areas of space applications, international relations and space law.

The Office is headed by a Director and comprises two sections: the Committee Services and Research Section, and the Space Applications Section which includes the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) Programme. Staff are based in Beijing, Bonn and Vienna.

The Committee Services and Research Section is responsible for providing substantive secretariat services to COPUOS, its two subcommittees and the Fourth Committee of the General Assembly on the item dealing with international cooperation in the peaceful uses of outer space. The Section prepares policy

As part of its public outreach activities, the Office maintains the permanent United Nations Space Exhibit at its headquarters in Vienna, Austria.
Photo ©UNOOSA

reports and legal studies for the inter-governmental bodies, discharges the responsibilities of the Secretary-General under the United Nations Treaties on Outer Space, provides technical legal advice on space-related matters, implements the Office's activities aimed at building capacity in space law, and provides substantive secretariat services to the United Nations Inter-Agency Meeting on Outer Space Activities, which is the central mechanism for coordinating space-related activities among United Nations entities. The Section also supports the Office of the Director in programme management and budget-related matters.

The Space Applications Section is responsible for implementing the United Nations Programme on Space Applications, which was established in 1971 to assist countries in developing the human and technical resources to optimize the benefits of space technology. The Section promotes the use of space technologies and data for sustainable economic and social development in developing countries and organizes workshops, seminars and training programmes in a broad range of thematic areas, including climate change, search and rescue, space weather, natural resources and environment, mountain areas, global health, basic space technology and human space technology. The Section also supports the four regional centres for space science and technology education affiliated to the United Nations and serves as the Executive Secretariat of the International Committee on Global Navigation Satellite Systems (ICG).

The United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), was established by General Assembly Resolution 61/110 of 14 December 2006, with the mission to "ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle". The programme works to bridge the gap between the space and the disaster management communities and to facilitate access to space-based information in support of all phases of the disaster management cycle. It has offices in Beijing and Bonn and a network of Regional Support Offices worldwide.

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