

# The United Nations Office for Outer Space Affairs: its role and the support it provides

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**UNITED NATIONS**  
Office for Outer Space Affairs

*“...satellite technology can help us protect people and the planet.”*

*Ban Ki-Moon*





UNITED NATIONS  
OFFICE FOR OUTER SPACE AFFAIRS

Space for  
Agriculture Development  
and Food Security

New UNOOSA-Publication

SPACE FOR AGRICULTURE DEVELOPMENT AND FOOD SECURITY. USE OF SPACE TECHNOLOGY WITHIN THE UNITED NATIONS SYSTEM

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In Focus



DIRECTOR'S CORNER



UN-SPACE



LONG-TERM SUSTAINABILITY



TENTH ICG MEETING



## United Nations Office for Outer Space Affairs: Mandate

- The Office **implements** the decisions of the **General Assembly** and of the United Nations **Committee** on the Peaceful Uses of Outer Space (COPUOS);
- Performs **functions** of substantive **Secretariat** of the Committee on the Peaceful Uses of Outer Space and its Scientific & Technical Subcommittee and Legal Subcommittee;
- **Coordinates** the inter-agency coordination within the United Nations on the use of space technology (**UN-SPACE**);
- **Maintains** coordination and cooperation with space agencies and intergovernmental and non-governmental organizations involved in space-related activities;
- **Implements** the United Nations **Programme on Space Applications**;
- Is **responsible for** the implementation of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (**UN-SPIDER**) programme;
- Maintains the **Register of Objects Launched into Outer Space** as per the Convention on Registration of Objects Launched into Outer Space which was enacted in 1976.



## Committee on the Peaceful Uses of Outer Space

- Committee on the Peaceful Uses of Outer Space (COPUOS)
  - Scientific and Technical Subcommittee (STSC)
    - 3 Working Groups (Whole; Use of Nuclear Power Sources in Outer Space; Long-term Sustainability of Outer Space Activities): Expert Groups on space weather; global health
  - Legal Subcommittee (LSC)
    - 3 Working Groups (Status of United Nations Treaties on Outer Space; Definition and Delimitation of Outer Space; and Review of International Mechanisms for Cooperation in the Peaceful Exploration and Use of Outer Space)
- Current issues - Space agenda today:

Space and  
climate change

Disaster  
Management

Space debris  
mitigation

National space  
legislation

International  
mechanisms for  
cooperation

Long-term  
sustainability of  
outer space activities

Definition and  
delimitation  
of outer space

Space applications  
for socioeconomic  
development

Near-Earth  
objects

Global Navigation  
Satellite Systems

Space  
Weather

GGE-report

## Towards UNISPACE+50 in 2018

- **2018** marks the 50<sup>th</sup> anniversary of the first UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE), held in Vienna in 1968
- **Committee on the Peaceful Uses of Outer Space (COPOUS)** decided in June 2015 to use this milestone anniversary to renew and strengthen its mandate as **a unique platform for interrelationship between major space faring nations and emerging space nations**, supported by the UN Office for Outer Affairs (**UNOOSA**)

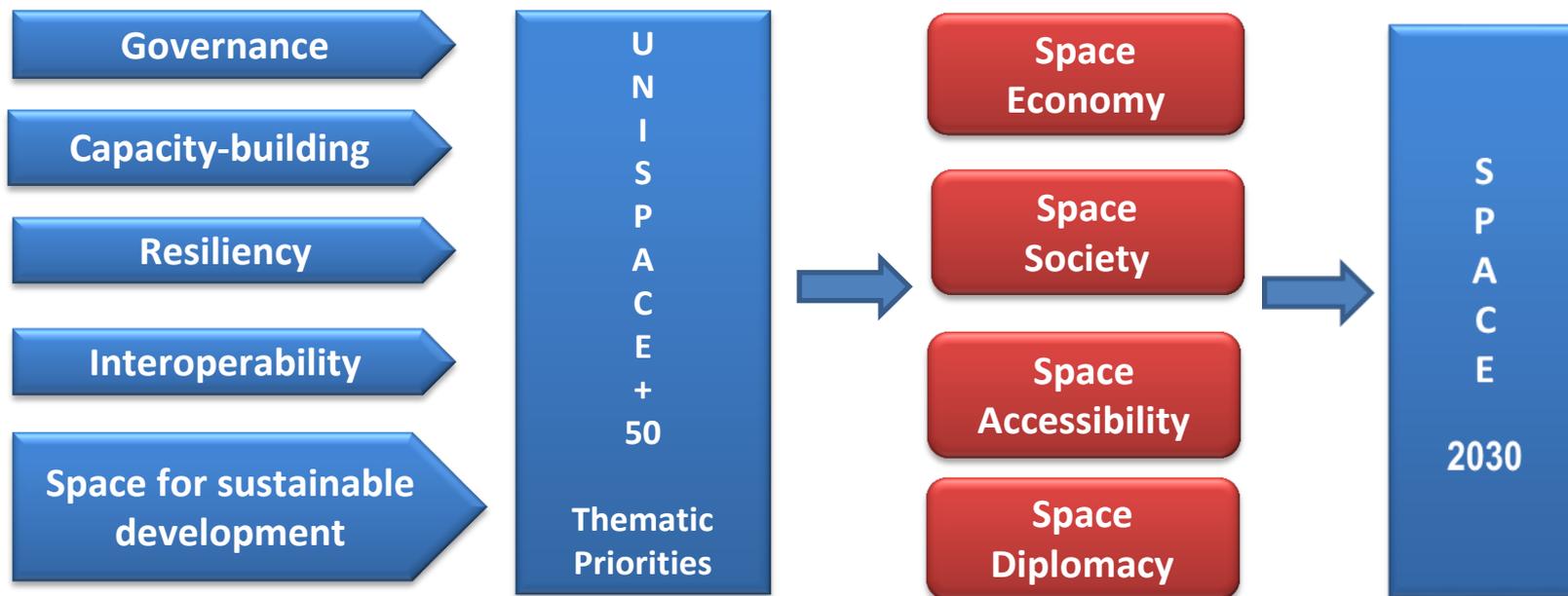


@UN Photo

- **UNISPACE+50 will articulate a long-term vision for Space:** from a domain of States towards a domain of a commonly shared human experience

# UNISPACE+50

## UNISPACE+50 Process



People



Planet



Prosperity



Peace



Partnership

## 4 PILLARS

**SPACE ECONOMY** / SPACE SOCIETY / SPACE ACCESSIBILITY / SPACE DIPLOMACY

- to touch topics around space technologies and infrastructure, aim at increasing awareness of the **benefits of space economy** for global **sustainable developments**;
- to address the **economic rationale** for space activities;
- to discuss framework possibilities for the **cooperation of private and public entities**.

## 4 PILLARS

SPACE ECONOMY / **SPACE SOCIETY** / SPACE ACCESSIBILITY / SPACE DIPLOMACY

to raise the awareness of the **benefits of space technologies and space-based services** during decision making processes and among governments for a **sustainable society**.

Integrated use of space applications as well as topics around the linkages of our space technology for a sustainable treating of our planet are essential an our common way forward.

## 4 PILLARS

SPACE ECONOMY / SPACE SOCIETY / **SPACE ACCESSIBILITY** / SPACE DIPLOMACY

**Space Accessibility** is geared towards the **benefits of open space data** policies and practices to provide access to space.

Capacity-building and education will support the **global effort** in the development of the space sector for the benefit of humanity.

## 4 PILLARS

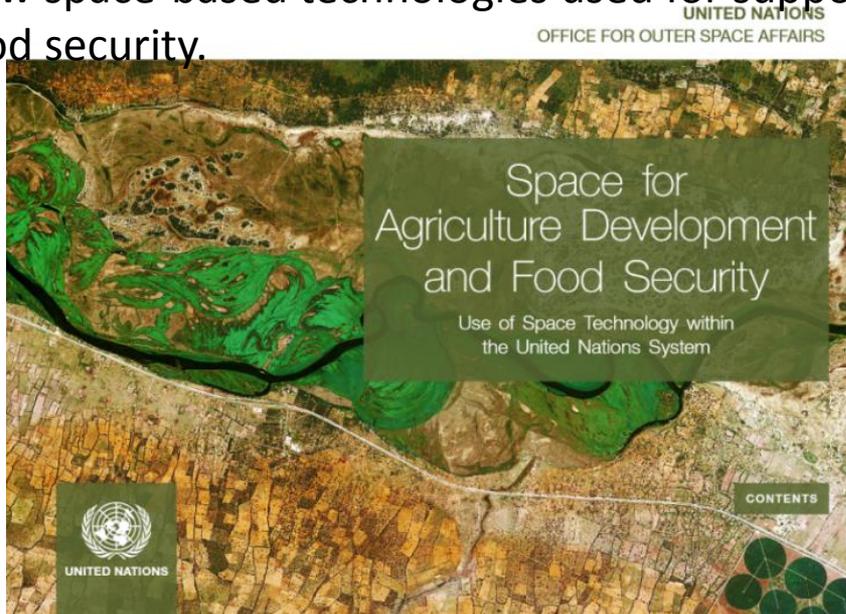
SPACE ECONOMY / SPACE SOCIETY / SPACE ACCESSIBILITY / **SPACE DIPLOMACY**

- to discuss mechanisms for **effective governance**, for the inclusion of emerging space countries;
- to increase awareness in the global development diplomacy of **the benefits of space tools** for the implementation of the **2030 Agenda for Sustainable Development**;
- to raise the awareness of **COPUOS** as the UN platform for space diplomacy and decision-making at the global level.



## “Space for Agriculture Development and Food Security”

- New UNOOSA publication outlines how the UN uses space-based technology for agriculture and food security
- Covers thematic areas related to food security & sustainable food production such as: Desertification, Drought, Floods, Irrigation & Water, Vegetation fires etc.
- How space-based technologies used for supporting decision-making for agriculture and food security.



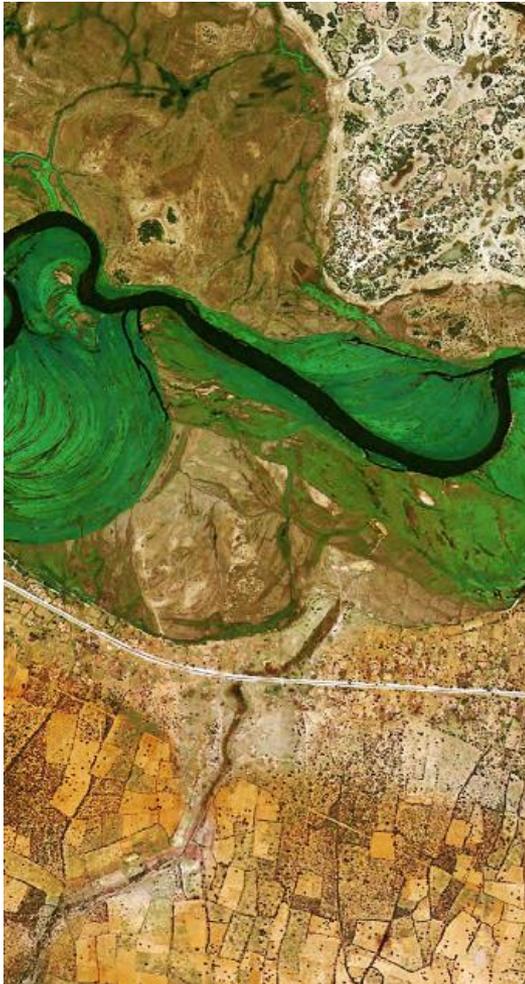
Available at:

[http://www.unoosa.org/pdf/publications/Space\\_for\\_agricultural\\_development\\_and\\_food\\_security.pdf](http://www.unoosa.org/pdf/publications/Space_for_agricultural_development_and_food_security.pdf)





## Involvement of the UN



### UNITED NATIONS CONVENTIONS, ENTITIES AND PROGRAMMES RELATED TO APPLICATIONS OF SPACE TECHNOLOGY FOR AGRICULTURE

Convention on Biological Diversity (CBD)	6
Convention to Combat Desertification (UNCCD)	6
Economic Commission for Africa (ECA)	9
Economic Commission for Latin America and the Caribbean (ECLAC)	10
Economic and Social Commission for Asia and the Pacific (ESCAP)	12
Economic and Social Commission for Western Asia (ESCWA)	13
Food and Agriculture Organization of the United Nations (FAO)	15
International Atomic Energy Agency (IAEA)	16
United Nations Educational, Scientific and Cultural Organization (UNESCO)	19
United Nations Environment Programme (UNEP)	20
United Nations Office for Disaster Reduction (UNISDR)	22
United Nations Institute for Training and Research/Operational Satellite Applications Programme (UNITAR/UNOSAT)	23
United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER)	25
United Nations Programme on Space Applications	27
World Food Programme (WFP)	29
World Meteorological Organization (WMO)	29



# End hunger, achieve food security and improved nutrition and promote sustainable agriculture

- Monitoring crop growth & forecasts of planted crops are hugely important to planners and policymakers at the national level in areas related to food security
- Enables policy makers to effectively plan for deficits and surpluses of food crops
- Spectral analysis of high-res satellite images can play a vital role in providing such information. Information gained from satellites, such as vegetation indices, crop health & development, facilitates informed decision-making relating to agricultural interventions.
- UNOOSA's Programme on Space Applications organizes workshops aimed at Building capacity in the use of **space technologies** that contribute to sustainable socioeconomic development **programmes supporting agricultural and water security**, primarily in developing countries

## Example Workshops:

- Use of space technology for sustainable development towards food security (India)
- Integrated space technology applications for monitoring the impact of climate change on agricultural development and food security (Kenya)
- Integrated use of space technology for food and water security (Pakistan).



# Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- Sustainable land use is required to curtail poverty, facilitate food and nutrition security and safeguard water supplies
- Earth observation technology can play a vital role in monitoring various elements of the desertification process such as surface albedo, moisture and vegetation cover
- Space-imagery can also provide information for quantifying and modelling biodiversity e.g. species composition, land cover, chlorophyll, soil moisture, biomass structure
- Request from Member States to UNOOSA for active involvement in space technology advocacy and applications for the biodiversity and ecosystems domain
- UNOOSA participation in Group on Earth Observations
- UNOOSA workshops to train & build capacity in using Earth Observation data to monitor desertification and biodiversity



Goal 1	End poverty in all its forms everywhere	<p><b><u>Space for Poverty Reduction:</u></b></p> <ul style="list-style-type: none"> <li>➤ Promote the use of space science, technology and applications for poverty alleviation</li> <li>➤ Mitigate disasters and alleviate their consequences that aggravate poverty</li> </ul>
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	<p><b><u>Space for Food Security:</u></b></p> <ul style="list-style-type: none"> <li>➤ Promote the use of space-based data and information in national efforts to develop sustainable agriculture and to advance technological development</li> <li>➤ Promote use of remote sensing and other space-based applications for to monitor agricultural production</li> </ul>
Goal 3	Ensure healthy lives and promote well-being for all at all ages	<p><b><u>Space for Global Health:</u></b></p> <ul style="list-style-type: none"> <li>➤ Promote universal health coverage, especially in remote and rural areas, through satellite communications, meteorological and remote sensing technologies</li> <li>➤ Promote use of spatial analyses to identify the ecological, environmental, climatic and other factors that can have a negative effect on public health or can contribute to the spread of diseases</li> <li>➤ Key terms: Telemedicine, tele-health, improved access to health care, capacity-building through e-learning for health-care professionals</li> </ul>
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	<p><b><u>Space and Education (Law and STEM):</u></b></p> <ul style="list-style-type: none"> <li>➤ Capacity-building: organization of workshops and meetings bringing together experts in space science and technology, as well as decision makers and practitioners to share experiences and knowledge with aim of having space-based data used for sustainable development; tele-education</li> <li>➤ Long-term space science and technology education provided by UN affiliated regional centers in Brazil/Mexico, China, India, Morocco and Nigeria</li> </ul>
Goal 5	Achieve gender equality and empower all women and girls	<p><b><u>Space for Gender Equality:</u></b></p> <ul style="list-style-type: none"> <li>➤ Encourage increased participation of women in the capacity-building and other activities organized by the Office</li> <li>➤ Highlight participation of females in national space programmes</li> </ul>
Goal 6	Ensure availability and sustainable management of water and sanitation for all	<p><b><u>Space and Water:</u></b></p> <ul style="list-style-type: none"> <li>➤ Promote use of remote sensing for water management, including the use of radar altimeters to monitor worldwide water levels and trace the rate of a river’s downhill flow</li> <li>➤ Promote use of spectrometers to measure water quality</li> <li>➤ Highlight work of UN-SPIDER assisting countries in drought monitoring through the use of space technologies</li> </ul>

Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all	<u>Space and Energy:</u> <ul style="list-style-type: none"> <li>➤ Promote spinoffs from space technology, including Earth observation satellites that enable the mapping of available solar radiation by monitoring the spatially and temporally highly variable clouds and aerosols that impact it</li> <li>➤ Promote continuous assessment of the Earth’s solar resources through solar power mapping.</li> </ul>
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	<u>Space and Employment:</u> <ul style="list-style-type: none"> <li>➤ Increase awareness of the high volume of jobs created by governmental and industry space sector stakeholders, including STEM education and manufacturing of component parts for space systems (communications, remote sensing, broadcasting, launch services, etc)</li> </ul>
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	<u>Resilient Infrastructure, sustainable industrialization and innovation:</u> <ul style="list-style-type: none"> <li>➤ Promote use of space technologies for disaster risk reduction, including UN-SPIDER contributions to the harnessing of geospatial data for sustainable development, in particular by supporting resilience to disasters and emergency relief efforts.</li> </ul>
Goal 10	<b>Reduce inequality within and among countries</b>	<u>Space for Inequality Reduction:</u> <ul style="list-style-type: none"> <li>➤ Foster international cooperation for increased use of space-derived data and information for planning and decision-making processes</li> <li>➤ Facilitate cooperation among developed and developing countries</li> <li>➤ Promote access to free data</li> <li>➤ Develop, through the frameworks of ICG and UN_SPIDER, education curricula to enhance capacity-building, training and education</li> </ul>
Goal 11	<b>Make cities and human settlements inclusive, safe, resilient and sustainable</b>	<u>Space for cities and human settlements:</u> <ul style="list-style-type: none"> <li>➤ Promote planning for resilient human settlements, urbanism</li> </ul>
Goal 12	Ensure sustainable consumption and production patterns	<u>Sustainable Consumption:</u>

Goal 13	<p><b>Take urgent action to combat climate change and its impacts</b></p>	<p><b><u>Space and Climate change:</u></b></p> <ul style="list-style-type: none"> <li>➤ Enhance capacities for employment of space-derived data to monitor processes and trends on a global scale for informed decision-making within their respective mandates</li> <li>➤ Coordinate Earth observation through global climate, ocean and terrestrial observing systems</li> <li>➤ Increase awareness of space-based observation capabilities for needed to make significant progress in the generation of global climate products and derived information</li> </ul>
Goal 14	<p><b>Conserve and sustainably use the oceans, seas and marine resources for sustainable development</b></p>	<p><b><u>Space and Marine Resources:</u></b></p> <ul style="list-style-type: none"> <li>➤ Promote monitoring of marine areas and oceans through Earth observations, yielding regular systematic reference information on the state of the oceans and seas.</li> </ul>
Goal 15	<p><b>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</b></p>	<p><b><u>Ecosystems and Biodiversity:</u></b></p> <ul style="list-style-type: none"> <li>➤ Foster earth observation for evaluating the nature and extent of illegal logging and mining or of wildlife crime</li> <li>➤ Promote the Programme on Space Application’s new thematic priority of monitoring and protecting biodiversity and ecosystems</li> </ul>
Goal 16	<p>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</p>	<p><b><u>Peace and Inclusivity:</u></b></p> <ul style="list-style-type: none"> <li>➤ Ensure long-term sustainability of outer space activities</li> <li>➤ Support international cooperation in the peaceful uses of outer space</li> <li>➤ Foster the inter-relationship and dialogue among major space-faring nations and emerging space nations relating to increased use of space science and technology for the benefit of developing countries</li> <li>➤ Contribute to enhanced global governance and institutional development of international mechanisms addressing the evolving space agenda</li> <li>➤ Strengthen the international legal regime governing outer space</li> </ul>
Goal 17	<p>Strengthen the means of implementation and revitalize the global partnership for sustainable development</p>	<p><b><u>Partnerships for Implementation:</u></b></p> <ul style="list-style-type: none"> <li>➤ Enhance regional and international knowledge sharing in the field of space technology</li> <li>➤ Promote international cooperation for increased use of space-derived data and information for planning and decision-making processes</li> <li>➤ Assist developing countries in building capacities in using space-based data and technologies to monitor progress.</li> <li>➤ Establish a national spatial data infrastructure to foster international cooperation in the use of space-derived geospatial data for sustainable development</li> </ul>

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*Thank you*

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