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Office for Outer Space Affairs

United Nations and Outer Space

Programme on Space Applications

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Presentation Overview

- I. United Nations and Outer Space
- II. Space Activities
- III. Programme on Space Applications
- IV. ICG
- V. UN-SPIDER
- VI. UN-SPACE
- VII. Outlook & Conclusions

Note: United Nations documents quoted in this paper are available from the website of the Office for Outer Space Affairs at www.unoosa.org and from the Official Document System of the United Nations at documents.un.org.

Disclaimer: The views expressed in this paper are those of the authors and do not necessarily reflect the position of the United Nations and its Office for Outer Space Affairs.

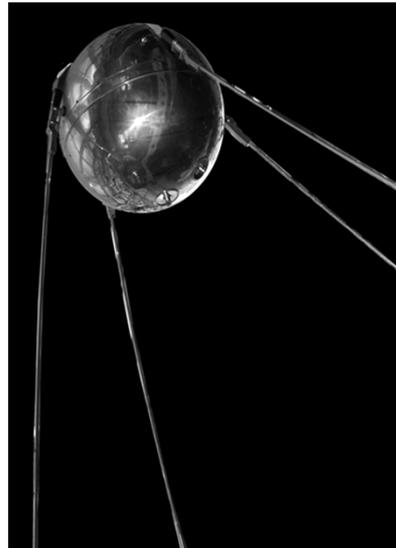


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I. United Nations and Outer Space

Beginning of the Space Age

- The Space Age began with the launch of Sputnik I satellite on 4 October 1957
- It raised several questions
 - How to prevent the extension of the cold war arms race into outer space?
 - Who should define rules and regulations for activities in outer space?
 - How to ensure that space activities benefit all humankind?
- Fortunately the main actors at that time reached a quick agreement that these questions should be addressed by the United Nations



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Committee on the Peaceful Uses of Outer Space

- **1958 UN General Assembly resolution 1348(XIII)**
 - Outer space to be used for peaceful purposes only and to be exploited to the benefit of mankind
 - Established an ad-hoc Committee on the Peaceful Uses of Outer Space (COPUOS) as an appropriate body for international cooperation

- **1959: UN General Assembly resolution 1472 (XIV)** reaffirmed the role of COPUOS and mandated the Committee to:
 - Review international co-operation
 - Study space-related activities that could be undertaken under United Nations auspices
 - Encourage and assist with national space research programmes
 - Study legal problems which may arise from the exploration of outer space



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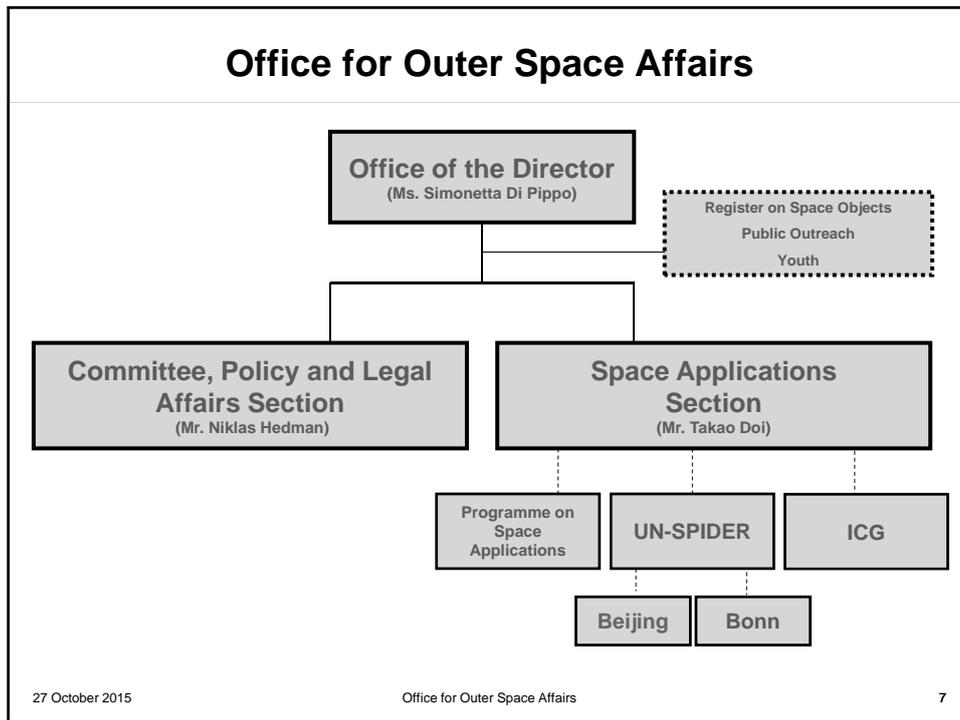


- Originated as a small expert unit in the UN Secretariat to service the Ad Hoc COPUOS meeting
- Eventually transformed into the United Nations Office for Outer Space Affairs (UNOOSA)
- Relocated from New York to the UN Office at Vienna (UNOV) in 1993
- 25 staff members (scientists, lawyers, political scientists), plus several seconded staff and interns
- Offices in Bonn, Germany and Beijing, China (UN-SPIDER Programme)

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II. Space Activities



Examples of Space Activities



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Importance of Space Activities

- Space activities are important in many ways:
 1. Utilitarian Importance
 - Applications
 - Science
 - Exploration
 2. Strategic Importance - Dual Use
 3. Economic Importance
 4. Political Importance
 5. Existential Importance
- Today's society is in many ways dependent on space activities!

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Space Applications - Role and Potential

- Clean environment, water availability & food security are essential for human health
 - Agriculture & food security: predicting crop yield, land cover & use, soil moisture & type ...
 - Assessing extent of desertification, droughts and floods
 - Monitoring of water quality and assessment of wastewater salinity
 - Air composition and quality tracking, greenhouse gases monitoring
 - Ocean observations: sea level, surface winds, sea ice extent, ocean colour, etc.
 - Climate change monitoring
 - Mapping public health situation and environmental influences
 - Tele-medicine for remote and rural areas
- Addressing issues caused by increasing world population and energy demand
 - Optimising and directing the developments of cities
 - Minimising the damage of urban growth
 - Possible new energy sources & estimation of the volume of biomass
 - Coastal mapping and monitoring

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2030 Agenda for Sustainable Development

- The UN Sustainable Development Summit held 25-27 September 2015 adopted the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs): (see <https://sustainabledevelopment.un.org>)
 - **People:** end poverty and hunger and ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.
 - **Planet:** protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change.
 - **Prosperity:** all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.
 - **Peace:** foster peaceful, just and inclusive societies which are free from fear and violence.
 - **Partnership:** mobilize the means required to implement this Agenda.

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2030 Agenda for Sustainable Development

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE 	17 PARTNERSHIPS FOR THE GOALS 	SUSTAINABLE DEVELOPMENT GOALS

17 Goals, 169 Targets

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Space & Sustainable Development Goals

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION
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green – direct, black – indirect space contributions

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Role of UNOOSA

- **Act as a catalyser of global efforts** on the use of space-based information, including in monitoring and evaluation frameworks
- **Develop synergies** between the space community and the communities that work for a sustainable development, adapt to/mitigate climate change impacts and seek to reduce disaster risk
- **Increase the visibility of the benefits of space-based data**, tools and services in the 2030 Agenda for Sustainable Development
- UNOOSA is implementing this through
 - Programme on Space Applications, ICG, UN-Spider
 - UN-Space

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III. Programme on Space Applications



United Nations Programme on Space Applications



- Established in response to recommendations of the first UNISPACE conference in 1968
- Creation of the position of the United Nations Expert on Space Applications to promote space applications
- Operational from 1971 and implemented by OOSA
- UNISPACE conferences held in 1982 and 1999 updated the mandate of the Programme

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Mandate of the Programme

Promote
International
Cooperation

Support
Capacity Building

Disseminate
Information

Conduct Technical
Advisory Services

United Nations General Assembly Resolution 37/90 (§ 7), <http://www.unoosa.org/oosa/en/ourwork/psa/mandate.html>

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Implementation of the Programme

<p>Conferences and Workshops on thematic priorities:</p> <ul style="list-style-type: none">• Biodiversity/Ecosystems• Climate Change• Disaster Management• Environmental Monitoring and Natural Resource Management• Global Health• Global Navigation Satellite Systems• Satellite Communications	<p>Basic Space Science Initiative (BSSI)</p> <p>Basic Space Technology Initiative (BSTI)</p> <p>Human Space Technology Initiative (HSTI)</p>
<p>Support the Regional Centres for Space Science and Technology Education, affiliated to the United Nations</p>	<p>Administrate Long-Term Fellowship Programmes</p>

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Programme Activities 1971-2014



- 305 Expert Meetings/Seminars/Workshops/Conferences
- 75 countries, more than 21000 participants
- Topics covered: COSPAS/SARSAT, Environmental Monitoring, Global Navigation Satellite Systems, Mountain Regions, Natural Resources Management, Socio-Economic Benefit, Space Law, Space Science and Technology, Tele-Health/Tele-Medicine

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Programme Activities Planned in 2015

Activity	Location, Date
UN/Japan Workshop on Space Weather "Science and Data Products from ISWI Instruments"	2-6 March 2015 Fukuoka, Japan
UN/Russian Federation Workshop on the Applications of Global Navigation Satellite Systems	18-22 May 2015 Krasnoyarsk, Russian Federation
UN/Austria Symposium on Integrated Space Technology Applications for Sustainable Development in Mountain Regions	7-10 September 2015 Graz, Austria
UN/Islamic Republic of Iran Workshop on the Use of Space Technology for Dust Storm and Drought Monitoring in Middle East Region	26-30 September 2015 Tehran, Islamic Republic of Iran
UN/South Africa Symposium on Basic Space Technology	September 2015 Cape Town, South Africa
UN/International Astronautical Federation Workshop on Space Technology for Socio-Economic Benefits	9-11 October 2015 Jerusalem, Israel
UN/Costa Rica Workshop on Human Space Technology	9-13 November 2015 San Jose, Costa Rica
UN/Kenya Workshop on Space Technology and Applications for Wildlife Management and Protecting Biodiversity	November 2015 Kenya
UN/United Arab Emirates High Level Forum: Space as a Driver for Socio-Economic Sustainable Development	15-17 November 2015 Dubai, United Arab Emirates
UN/International Meeting on Global Navigation Satellite Systems	14-18 December 2015 Vienna, Austria

See <http://www.unoosa.org/oosa/en/SAP/sched/index.html>

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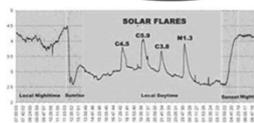
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Basic Space Science Initiative (BSSI)



- Int. Space Weather Initiative (2010-2012)
- Coordination of ISWI Instrument Networks
- Deployment and operation of 14 ground-based, world-wide instrument networks



<http://www.unoosa.org/oosa/en/ourwork/psa/bssi/index.html>

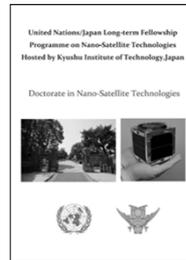
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Basic Space Technology Initiative (BSTI)

- **Objective:**
 - Support capacity building and international cooperation in basic space technology development, particularly in the field of small satellite development
- **Projects:**
 - Annual international space technology symposiums
 - Long-term fellowship programme
 - Space engineering education curriculum



<http://www.unoosa.org/oosa/en/ourwork/psa/bsti/index.html>

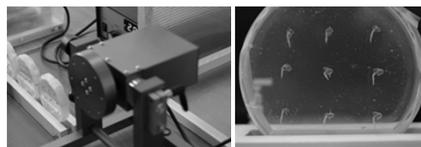
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Human Space Technology Initiative (HSTI)

- **Objectives:**
 - Create awareness among Member States on the benefits of human space technology and its applications;
 - Promote international cooperation in human space flight and space exploration-related activities;
 - Support capacity-building in microgravity research and education
- **Projects:**
 - Zero-Gravity Instrument Project (ZGIP)
 - Drop Tower Experiment Series (DropTES)
 - KiboCube – Satellite Deployment from ISS



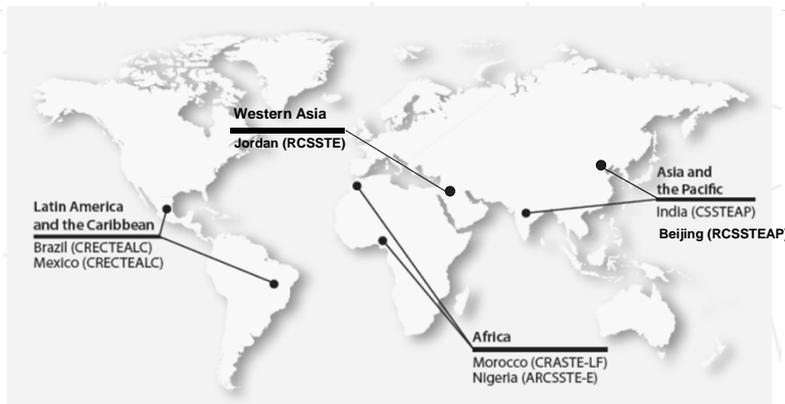
<http://www.unoosa.org/oosa/en/ourwork/psa/hsti/index.html>

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Regional Centres, affiliated to the United Nations



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United Nations Education Curricula



- Remote Sensing and Geographical Information Systems
- Satellite Communications
- Satellite Meteorology and Global Climate
- Space and Atmospheric Sciences as well as data management
- Global Navigation Satellite Systems
- Space Law
- Space Engineering (under development)

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IV. International Committee on Global Navigation Satellite Systems (ICG)

International Committee on GNSS

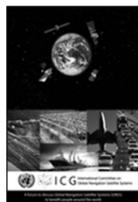
- Global Navigation Satellite Systems (GNSS) and their applications are overarching, enabling space technologies
- ICG Membership is open to GNSS providers or users of GNSS services
 - 9 nations and the European Community
 - 15 organizations (UN system entities, IGOs, NGOs)
- Regular ICG meetings
 - Adopted the ICG Work Plan and Terms of Reference
 - Established a Providers Forum
- <http://www.unoosa.org/oosa/en/ourwork/icg/icg.html>



International Committee on
Global Navigation Satellite Systems

International Committee on GNSS

- Promoting the use of GNSS technologies as tools for scientific applications, including space weather effects on GNSS



2007: The way forward to provide positioning, navigation and timing globally



2010: Report on planned or existing GNSS and relevant policies & procedures



2011: Achievements of providers and users of PNT services, under the umbrella of the UN



2012: Education Curriculum & Glossary of GNSS Terms

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V. United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER)

UN-SPIDER Programme

- Ensure that all countries and regional and international organisations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle
 - being a gateway to space information for disaster management support;
 - serving as a bridge to connect the disaster management and space communities; and
 - being a facilitator of capacity-building and institutional strengthening.
- Builds on existing capacities
- <http://www.un-spider.org>

The screenshot shows the UN-SPIDER website interface. At the top, there are navigation tabs for Home, Space Application, Advisory Support, Think-2008 Blue, Networks, Projects, and About Us. Below this, there are several content blocks: 'IN FOCUS' with a group photo, 'UN-SPIDER WORLD' with a world map, 'NEWS AND UPDATES' with a list of recent news items, 'SPACE APPLICATION MATRIX' with a circular diagram, and 'NETWORK' with logos of various organizations. At the bottom, there are three boxes representing regional offices: UN-SPIDER in Vienna, UN-SPIDER Beijing Office, and UN-SPIDER Bonn Office.

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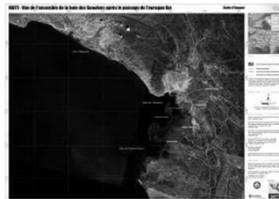
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UN-SPIDER Programme

- UN-SPIDER uses all types of space-based information:

- Earth Observation



- Satellite Communication



- Navigation and Positioning

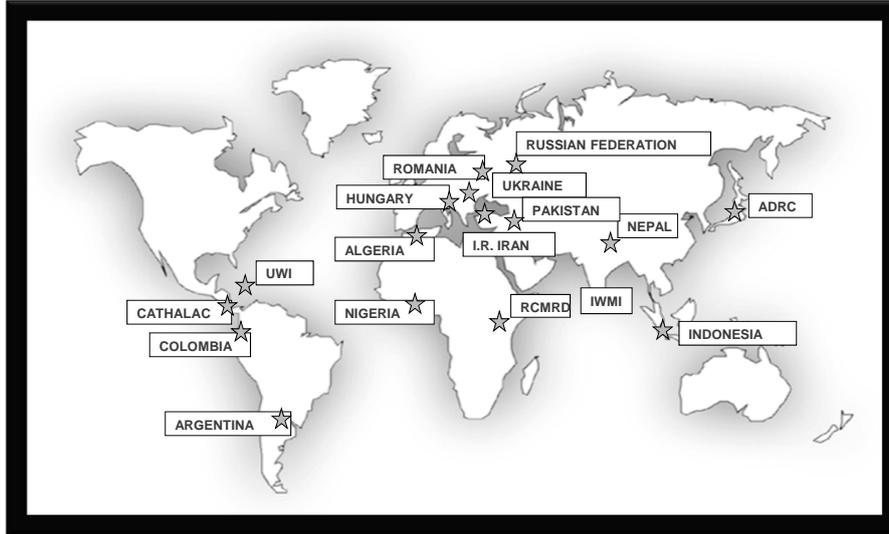
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UN-SPIDER Network of Regional Support Offices



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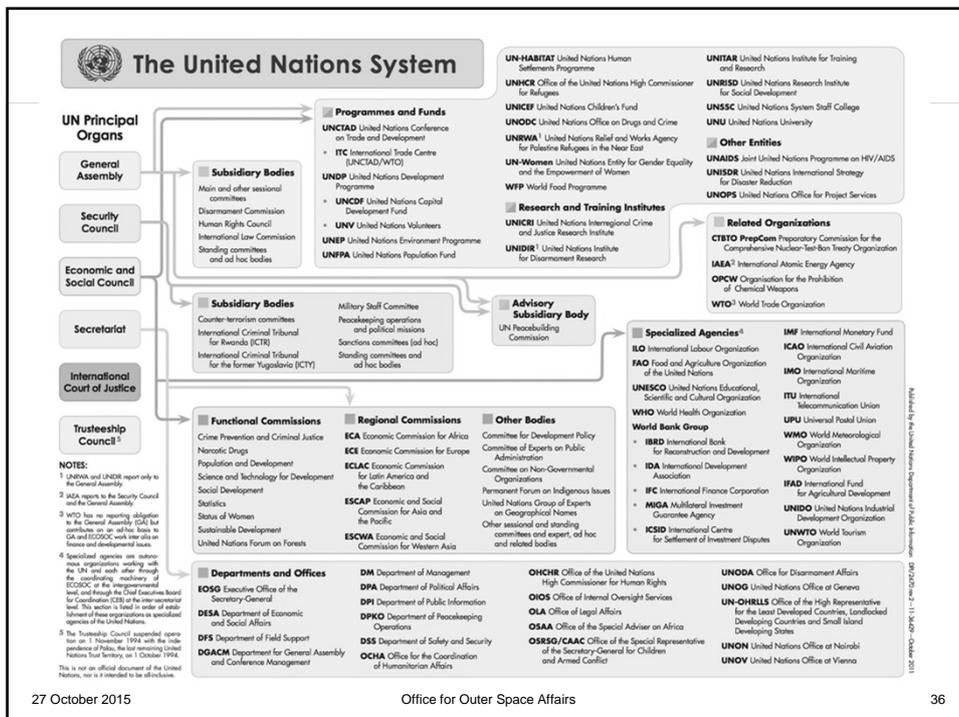
UN-SPIDER Technical Advisory Missions



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Examples of Space Applications Use in the UN

United Nations Entity	Space-related Activities
United Nations Educational, Scientific and Cultural Organization (UNESCO)	UNESCO Space Education Programme, World Climate Research Programme (Intergovernmental Oceanographic Commission of UNESCO)
World Health Organization (WHO)	Health Mapping Project
World Meteorological Organization (WMO)	WMO Space Programme and the space-based Global Observing System (GOS)
World Bank Group	Co-financing of space applications-based projects, Environmental monitoring, project assessments
Economic and Social Commission for Asia and the Pacific (ESCAP)	Regional Space Applications Programme (RESAP)
International Atomic Energy Agency (IAEA)	Safety of space nuclear power sources (NPS)
Office of the United Nations High Commissioner for Refugees (UNHCR)	Refugee Camp Mapping
World Food Programme (WFP)	Vulnerability Analysis and Mapping (VAM)
United Nations Institute for Training and Research (UNITAR)	Operational Satellite Applications Programme (UNOSAT)
CTBTO (Preparatory Commission)	Global Communications Infrastructure

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UN Coordination of Outer Space Activities



- Originated as a Sub-Committee on Outer Space Activities of the Administrative Committee on Co-ordination in 1974
- Annual Inter-Agency Meeting on Outer Space Activities (UN-Space)
- Participation of up to 26 UN entities
- Bi-annual Report of the UN Secretary General and other special reports
- See <http://www.uncosa.unvienna.org>

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VII. Outlook & Conclusions



UNISPACE+50

- In 2015 the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), adopted the **UNISPACE+50 initiative**
- UNISPACE+50, to be held in 2018, seeks to **develop stronger space governance and supporting structures at all levels**, building on the **2030 Agenda for Sustainable Development**
- UNISPACE+50 will consider ways and means for **strengthening the role of UNOOSA** and the Committee within the United Nations system and the global space community
- It prioritises improved governance, capacity-building, resilience, interoperability of systems and space for sustainable development.

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Conclusions

- Space-based data and information is making increasingly more important contributions to inform policy- and decision making in support of sustainable development
- UNOOSA has the unique mandate from the UN Member States for the global coordination of international cooperation of outer space activities
- The space community wishes to demonstrate how it can play a stronger role in the global development agenda, using space technology and applications to help implementing the 2030 Agenda for Sustainable Development and to monitor its progress
- The UNISPACE+50 initiative of COPUOS will be the next major step to ensure that space activities contribute to sustainable development of humankind

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Thank you for your attention!

Questions?



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