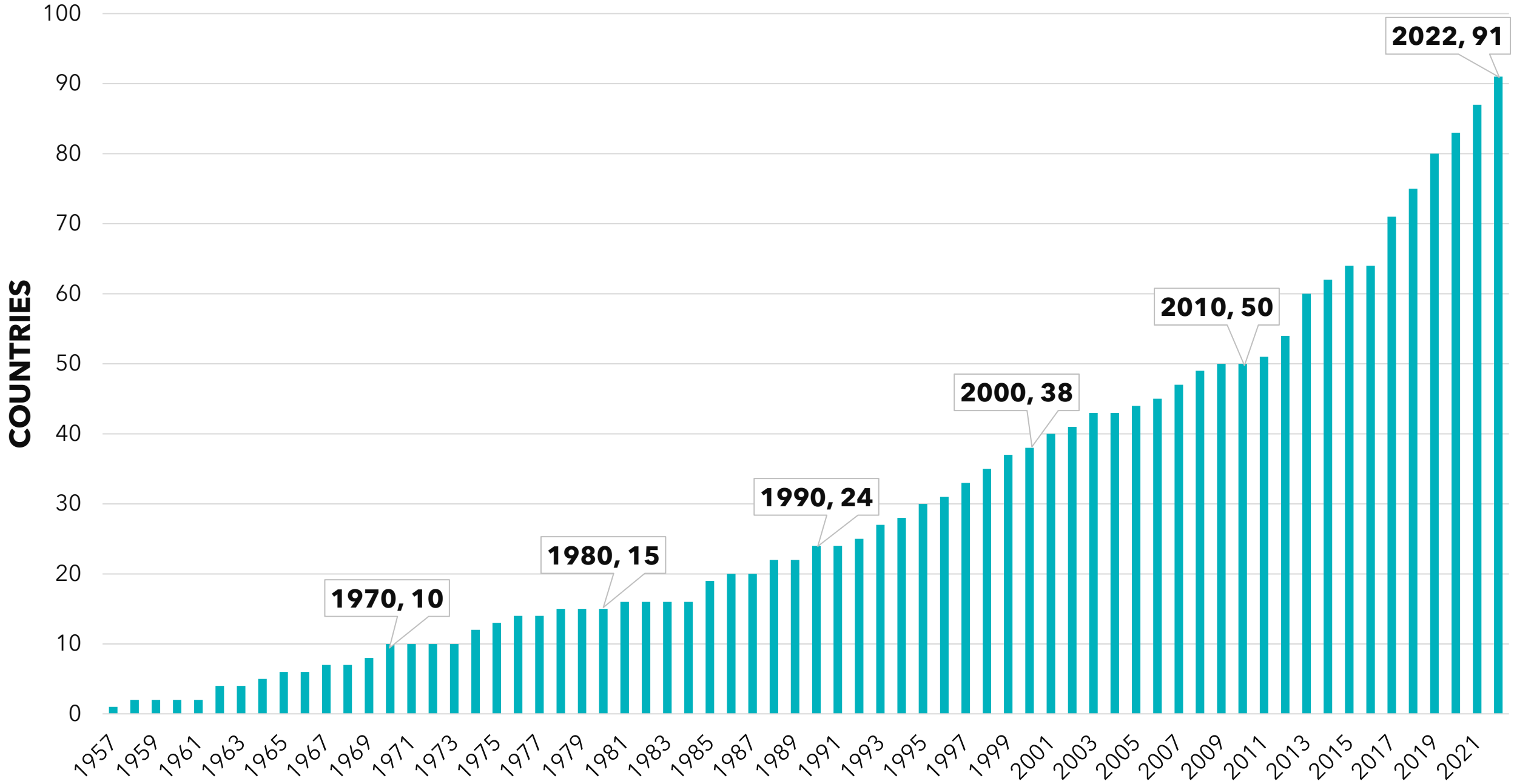


Space Technology for the Sustainable Development Goals

First Expert Meeting on Emerging Technologies and Pressing Issues relate
to the 2030 Agenda



Countries that have launched at least 1 satellite



Space in the United Nations System

Space as a driver for sustainable development

Space2030 Agenda (GA Res 76/3, 25 Oct 2021)

- ❑ Emphasizes that space tools are highly relevant for the attainment of the **2030 Agenda for Sustainable Development and its goals/targets**
- ❑ Promotes and supports the **uses of space technologies to enhance worldwide access to data and broadband technologies**
- ❑ Commits to **strengthen international cooperation** in the exploration and peaceful uses of outer space
- ❑ Aims to **enhance capacity-building, education and training** in space science and applications



United Nations

A/RES/76/3



General Assembly

Distr.: General
28 October 2021

Seventy-sixth session

Agenda item 30

Space as a driver of sustainable development

Resolution adopted by the General Assembly on 25 October 2021

[without reference to a Main Committee (A/76/L.3 and A/76/L.3/Add.1)]

76/3. The “Space2030” Agenda: space as a driver of sustainable development

The General Assembly,

Recalling its resolution 73/6 of 26 October 2018,

Adopts the following document:

The “Space2030” Agenda: space as a driver of sustainable development

Part A. Agenda

I. Introduction

1. The United Nations has been at the centre of international cooperation in space activities since the beginning of the space age. The Committee on the Peaceful Uses of Outer Space came into being as a result of the recognition by the General Assembly, in its resolution 1348 (XIII) of 13 December 1958, of the importance of using outer space for peaceful purposes and of the need to promote international cooperation in the conduct of space activities; in its resolution 1472 A (XIV) of 1959, the Assembly permanently established the Committee.

2. Owing to its unique mandate and position at the centre of international cooperation in the peaceful uses of outer space, and the global governance of outer space activities,¹ consistent with international law, the Committee played a key role in the organization of the first three United Nations conferences on the exploration and peaceful uses of outer space, held in 1968, 1982 and 1999.

Space in the Common Agenda

Global Governance

The report looks ahead to the **next 25 years** and **represents the Secretary-General's vision** on the future of **global cooperation** and **reinvigorating** inclusive, networked, and effective **multilateralism**.



United Nations



Outer Space is one of the **key proposals** under the **12 commitments**

- ❖ **multi-stakeholder dialogue** on outer space as part of a Summit of the Future
- ❖ seek **high-level political agreement** on the peaceful, secure and sustainable use of outer space
- ❖ move towards a **global regime to coordinate space traffic** and agree on principles for the future governance



Advancing Our Common Agenda

Policy Brief 7: For All Humanity – The future of Outer Space Governance

Purpose

Governance proposal so we can equitably benefit from increases in access to and operations in outer space, for achieving of the SDGs, while addressing potential risks

Background

Major developments in outer space can be observed including in the growing number of objects in orbit, the level of commercial activity, and the intentions of public and private actors to resume deep space exploration. With technological advances and lowering costs, these trends will accelerate and pose both risks and opportunities, including in security, safety and sustainability.

Specific challenges include:

- Uncoordinated space traffic,
- Accumulating space debris,
- Questions arising from possible resource exploitation and
- Potential military confrontation

SPACE-BASED CHALLENGES



Space Traffic Coordination



Space Debris



Space Resource Exploration



Conflict Prevention



UNOOSA and Space for Sustainable Development



Space for Women



Space Law for New Space Actors



UN-SPIDER



Access to Space for All



Space for Persons with Disabilities



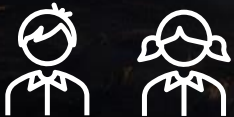
Space Economy



Space for Climate Action



International Committee on GNSS



Space for Youth



Space Sustainability



Space for Water



UNITED NATIONS
Office for Outer Space Affairs



Space Technology x SDGs

Question: How is space technology contributing to the SDGs?

SUSTAINABLE DEVELOPMENT GOALS



Space Technology x SDGs

Smart Cities

7 AFFORDABLE AND CLEAN ENERGY

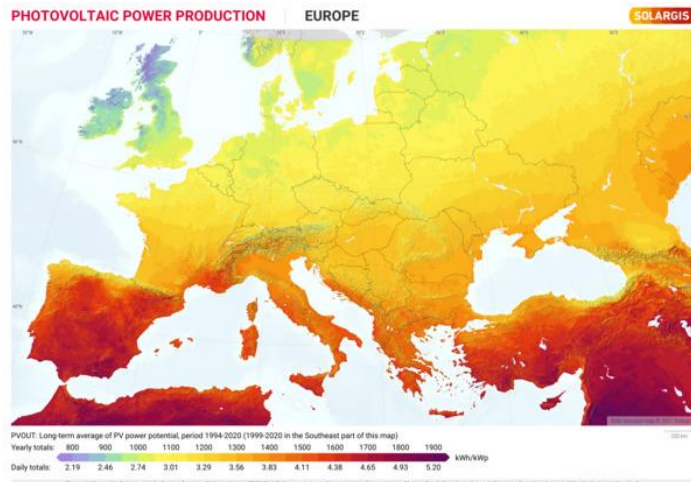


- ❑ **Critical infrastructure monitoring**, particularly with regards to energy networks
- ❑ Power grid synchronization
- ❑ Seismic surveying
- ❑ Identification of optimal sites for the production of renewable energy
- ❑ **Solar and wind energy production forecasting** to estimate the amount of energy that is needed from other sources

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



- ❑ **Infrastructure mapping and monitoring**, including maintenance of road infrastructure in rural environments, where the most reliable technology is satellite-based
- ❑ Construction surveying through machine automation
- ❑ Smart mobility, e.g. reduced fuel consumption by **smarter planning and monitoring** of driving behavior



© SOLARGIS



Space Technology x SDGs

Smart Cities

8 DECENT WORK AND ECONOMIC GROWTH



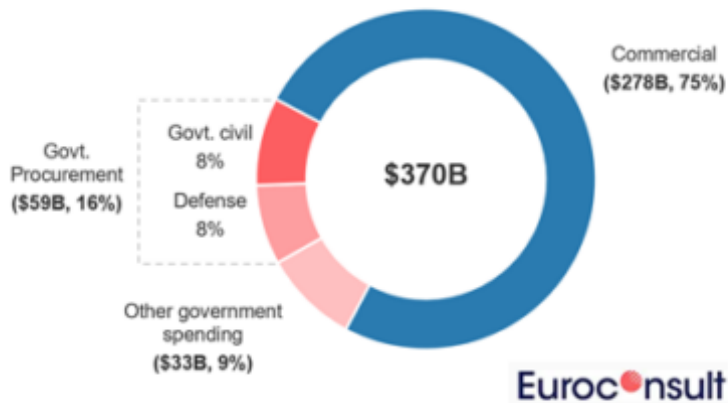
- Global economies and GDP growth, **contributing to a range of sectors, particularly service delivery, utilities, banking and finance, agriculture and communications**
- Establishing safe and secure working environments

10 REDUCED INEQUALITIES



- Connectivity in remote and isolated areas**
- Reliable access to information

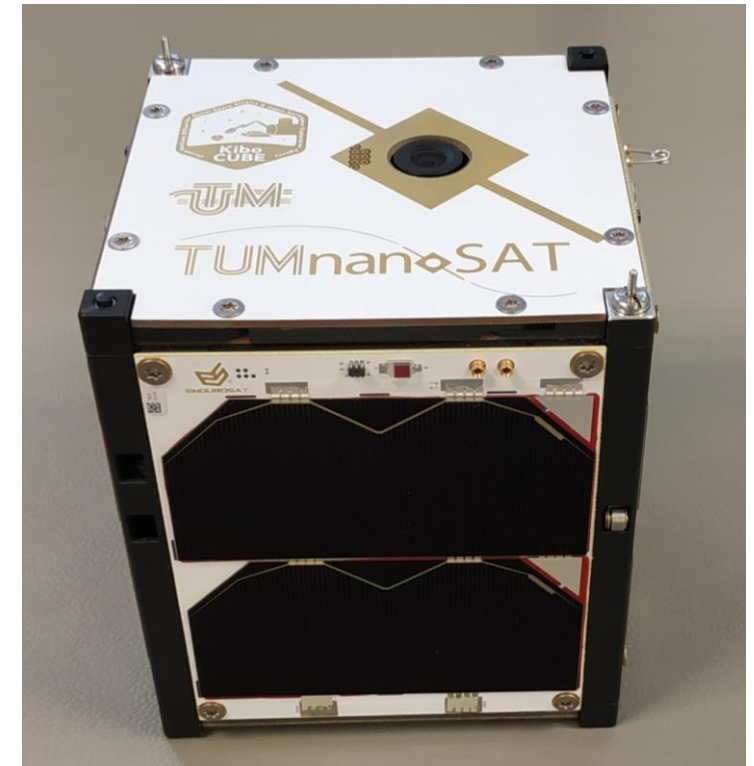
Space economy by client type 2021



Evolution of the space economy 2016-2030



© Euroconsult



© Technical University of Moldova

Space Technology x SDGs

Water Security

6 CLEAN WATER AND SANITATION

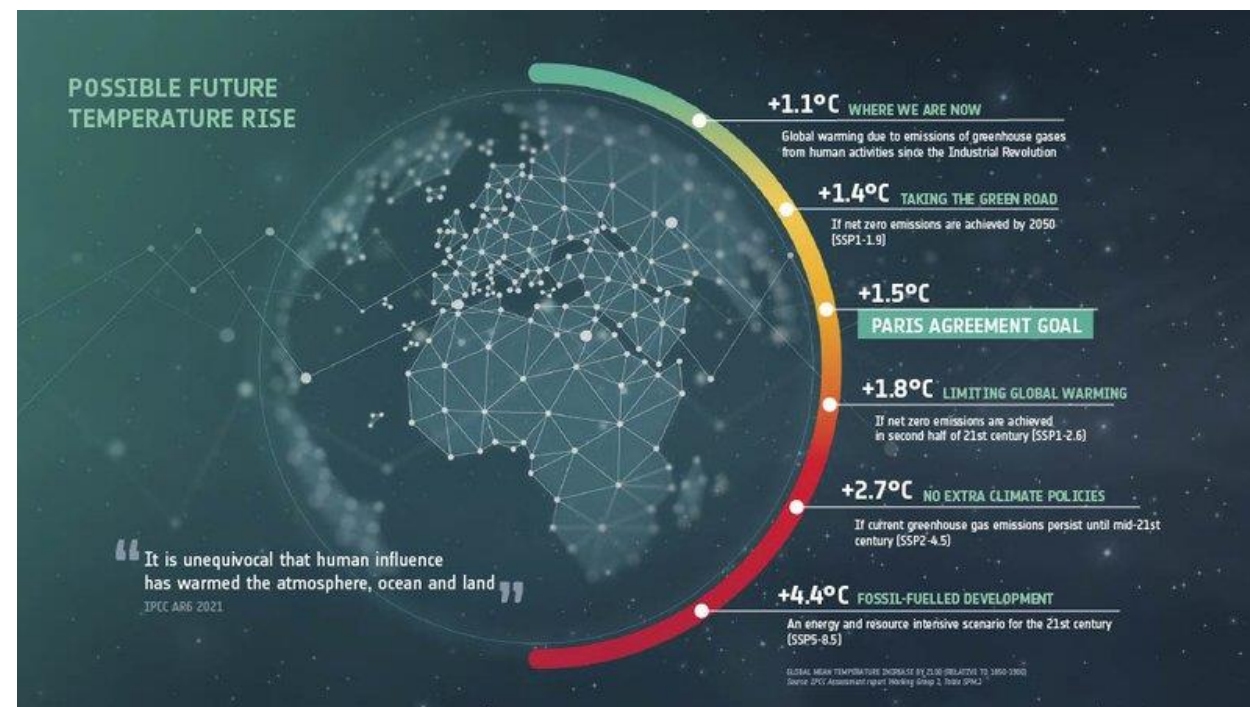


- Water quality monitoring
- Meteorological forecasting
- Access to infrastructural support and technical know-how

13 CLIMATE ACTION



- Climate change monitoring
- Weather forecasting
- Disaster management
- Search and rescue operations



Space4Water

Space Technology for Increased Access to Water

The Space4Water Project fosters collaboration and knowledge exchange to address the water challenge. It helps you tap into the full potential of space-based technology and data for any water related topic.



Portal



Community



Conferences

Using
Space Tech 4 Water?
Apply here



77
Stakeholders



30
Professionals



> 100 featured actors are actively using space-based technology and data to address water issues.

Stakeholder meetings allow the community to meet and exchange

- identifying shared objectives;
- addressing user needs;
- matchmaking gaps and solutions.



Promoting Knowledge Exchange and Community Building

**By 2050 ~6 billion people will experience clean water scarcity.
Climate change is mainly experienced by water-related extremes.**



The vision is to **enable** all stakeholders and communities to **access data and knowledge** and realize their full potential to **achieve availability and sustainable management of water and sanitation for all.**

Collaborative effort with the **Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW)**



UN Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) programme was created to **help communities**, particularly in developing countries, **fully take advantage of space-based technologies** for disaster-risk management.

Overview

3 - Types of advisory missions under UN-SPIDER:

- Technical Advisory Mission (TAM)
- Institutional Strengthening Mission (ISM)
- Expert Missions (EM)

2020 Online Course on Geospatial Applications for Disaster Risk Management

- Developed by UN-SPIDER and Regional Centre for Asia and Pacific
- **20 sessions**, 18 speakers, 12 organizations
- **29,727 participants** from 140+ countries
- 95% rated as Good or Outstanding

99 - Number of missions UN-SPIDER has undertaken

55 - Number of countries supported with missions

39 - Number of Technical Advisory Missions

+ satellite imagery support, Private Sector engagement, training provision to requesting countries

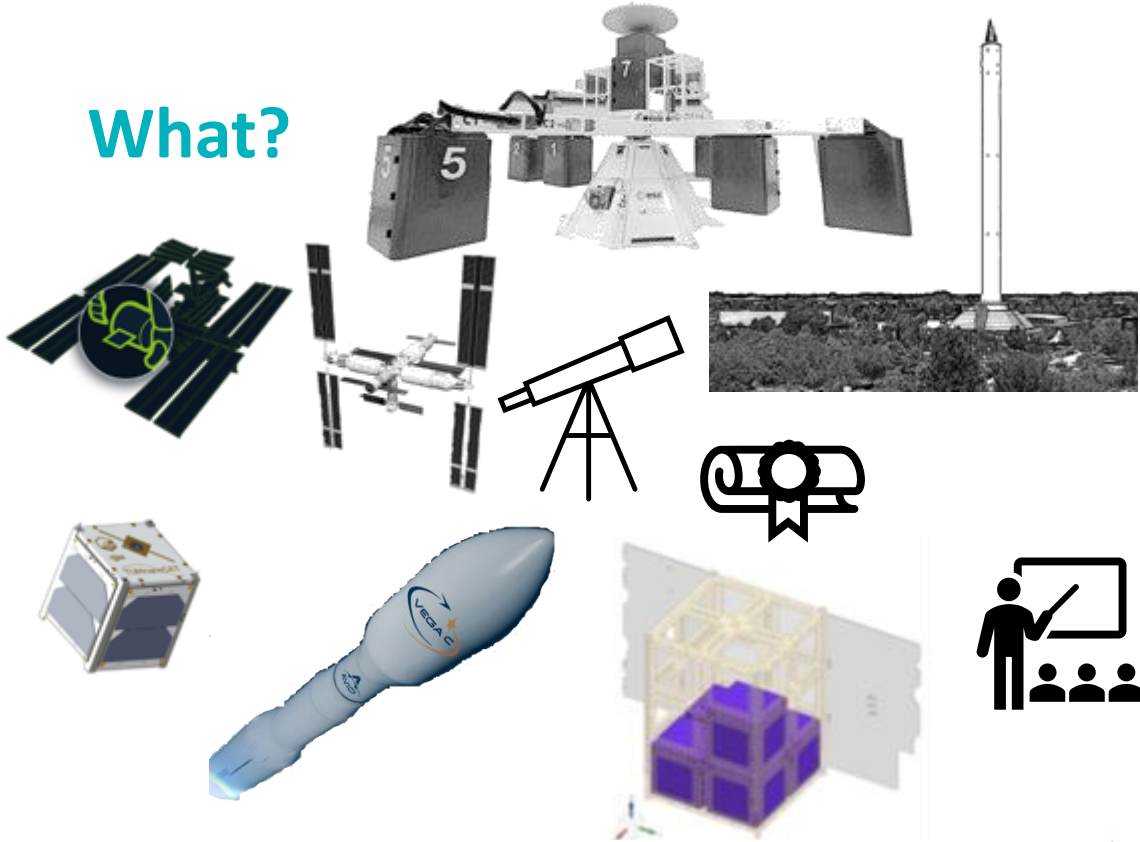
UN-SPIDER is generously supported by the Governments of **China, Germany, Austria, Turkey**, with in-kind support from **France, the RSOs**.





Access to Space for All Initiative

What?



How?

SPACE AGENCIES



RESEARCH INSTITUTIONS AND UNIVERSITIES



PRIVATE SECTOR



HYPERGRAVITY AND MICROGRAVITY

Building capacity for conducting experiments in orbit

SATELLITE DEVELOPMENT

Building capacity that enables the development, deployment, and operation of satellites

SPACE EXPLORATION

Broadening the engagement in space exploration



Access to Space for All Initiative




Who has been awarded?


DropTES

-  **2014** German Jordanian University
-  **2015** Universidad Católica Boliviana "San Pablo"
-  **2016** Universidad de Costa Rica
-  **2017** Warsaw University of Technology
-  **2018** University of Bucharest Politehnica
-  **2019** Politecnico de Milano "Polimi"
-  **2020** Universidad Católica Boliviana "San Pablo"

HyperGES

-  **2020** Mahidol University, Thailand

PHI

-  **2022** Antarikchya Prathistan, Nepal
-  **2022** National Space Science Agency, Bahrain

-  **2018** University of Nairobi, Kenya
-  **2020** Universidad del Valle de Guatemala
-  **2021** Mauritius Research and Innovation Council
-  **2022** Technical University, Moldova





Bartolomeo

-   
- 2021** Egyptian Space Agency, Kenya Space Agency, Uganda National Space Programme

















ISONscope

-  **2022** Kenya Space Agency
-  **2022** National Space Research and Development Agency, Nigeria

KiboCUBE

-  **2022** Surya University, Malaysia
-  **2023** Central American Integration System (SICA)
-  **2023** Universidad Popular Autónoma del Estado de Puebla, México
-  **2023** École Supérieure Privée d'Ingénierie et de Technologie Appliquée, Tunisia

China Space Station

-    
-    
-    
-    
- 2022** 8 proposals from 21 institutions from 16 different countries: China, France, Germany, India, Italy, Japan, Kenya, Mexico, Netherlands, Norway, Peru, Poland, Russia, Saudi Arabia, Spain, Switzerland



Hypergravity/Microgravity Track

DropTES



- Partners: ZARM (Center of Applied Space Technology and Microgravity) and DLR (German Aerospace Center)
- Established: 2014
- Aims to provide educational or research institutions with opportunities to conduct a series of microgravity experiments at the Bremen Drop Tower in Germany.
- The drop tower experiment series consists of 5 drops or catapult launches to be conducted within one week. Each experiment series is accompanied by an on-site experiment integrations taking place one week prior to the campaign.
- 6 experiments have successfully been conducted with the programme.

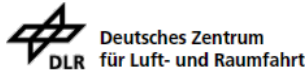


Photo credit: ZARM



Hypergravity/Microgravity Track



HyperGES



- Partner: ESA (European Space Agency)
- Established: 2019
- Aims to provide educational or research institutions with opportunities to conduct a series of hypergravity experiments at the Large Diameter Centrifuge (LDC) facility at the European Space Research and Technology Centre (ESTEC) in the Netherlands.
- The LDC allows samples to be exposed to acceleration forces of 1-20 times Earth's gravity. The experiment series consists of 1-2 weeks for on-site experiment integration/preparation and actual experiment campaign.
- The first round awardee is a university in Thailand.

Photo credit: ESA





Satellite Development Track



KiboCUBE

- Partner: JAXA (Japan Aerospace Exploration Agency)
- Established: 2015
- Aims to provide educational or research institutions from developing countries with opportunities to deploy CubeSats from the Japanese Kibo module of the International Space Station
- 3 CubeSats have been deployed; the first satellite of Kenya: "1KUNS-PF" in 2018, Guatemala: "Quetzal-1" in 2020 and Mauritius: "MIR-SAT 1" in 2021.
- 5 CubeSats are under development from Indonesia, Moldova, the Central America Integration System (SICA), Mexico, and Tunisia.

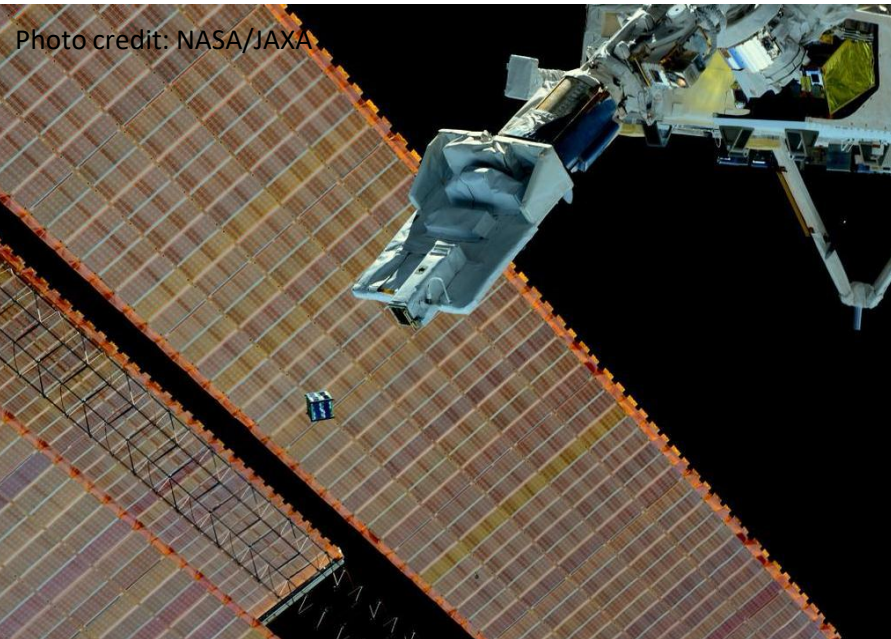


Photo credit: NASA/JAXA



Photo credit: JAXA

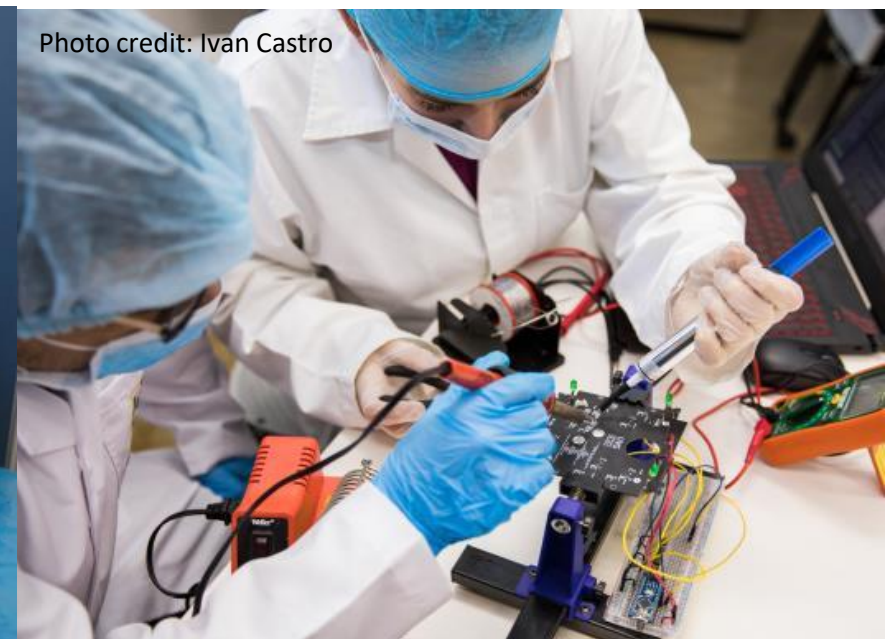


Photo credit: Ivan Castro



Hypergravity/Microgravity Track



China Space Station



- Partner: CMSA (China Manned Space Agency)
- Established: 2018
- Aims to provide scientist from around the world with opportunities to conduct their own experiments on board the China Space Station (CSS) either inside or outside the CSS.
- 9 projects involving 23 institutions from 17 UN Member States has been selected for the first round. The research areas vary from life science, biotechnology, fluid physics, combustion, astronomy to space technologies.

Photo credit:
CMSA



Space Technology for the Sustainable Development Goals

Thank you!

www.unoosa.org

www.space4water.org

www.unspider.org



UNITED NATIONS
Office for Outer Space Affairs

luc.st-pierre@un.org
Chief, Space Applications Section