Access to Space for All
Webpage

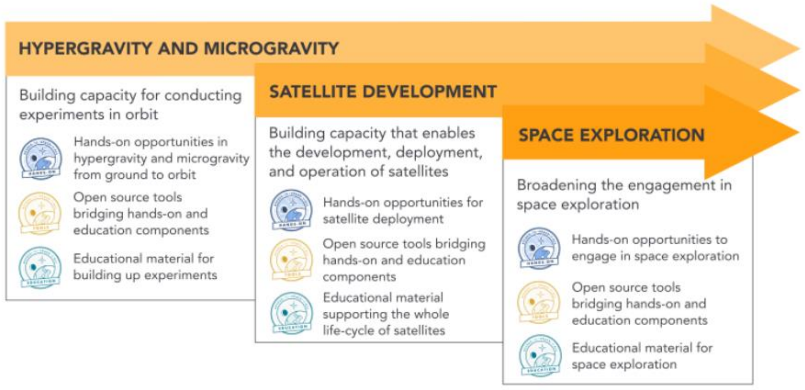
UNITED NATIONS
Office for Outer Space Affairs

ACCESS TO SPACE FOR ALL

A single opportunity has limited impact but a structured initiative has long-lasting effects permeating all societal pillars

What is Access to Space for All?

Access to Space for All is a joint initiative of UNOOSA and space agencies, research institutions and industry to offer access to space research facilities, infrastructure and information with the aim of developing technical know-how, engineering processes and infrastructure in the areas of **hypergravity and microgravity**, **satellite development** and **space exploration** and promote international cooperation in the peaceful uses of outer space.



Our Work
Secretariat of COPUOS
Programme on Space Applications
UN-SPIDER
International Committee on GNSS
UN-Space
UNISPACE+50
Space Law
Benefits of Space
Space4Health
Access to Space for All
For Member States
Partnerships
Opportunities
Awardees
Acknowledgement
Space for Persons with Disabilities
World Space Forum
Worldwide Space Agencies
Capacity Building Activities

FOR MEMBER STATES

Space technologies, data and applications are key enablers for development, in the same way access to internet is an enabler. Access to Space for All provides access to information, educational resources, tools and research infrastructure and facilities thanks to international collaboration.

read more

PARTNERSHIPS

Partnership is a distinctive feature of the Initiative. The Access to Space for All Initiative is only possible thanks to partnerships with various public and private actors, who are contributing to the initiative in various manners. **New contributions to the Initiative are possible and encouraged. Contact us at unoosa-access-to-space [at] un [dot] org**

OPPORTUNITIES

Access to Space for All offers opportunities for institutions to develop technical know-how, engineering processes and infrastructure. Learn more about our tracks:

Hypergravity/Microgravity Track

Satellite Development Track

- New index page
- More buttons on the index page
- Less click to the destination
- More visual website
- Less time to read text

ACCESS TO SPACE FOR ALL

A joint initiative to offer access to space research facilities, infrastructure and information, and to promote international cooperation in the peaceful uses of outer space.

For Member States | Partnerships | Hypergravity/Microgravity Track | Satellite Development Track | Space Exploration Track

Awardees | Contribution to the SDGs | Publications

Access to Space for All News

NEW! HyperGES 2nd announcement of opportunity webinar will be held on 23rd June, register here

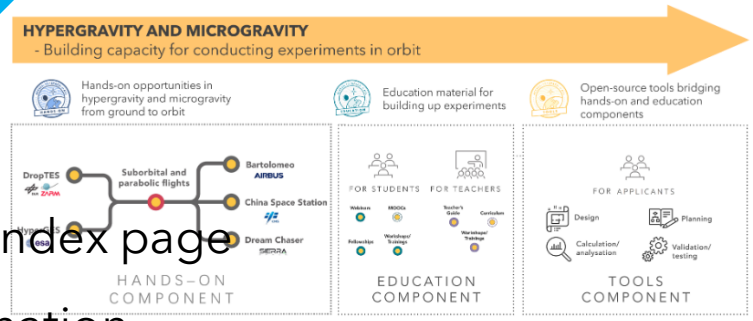
NEW! Access to Space for All brochure is published, read it to get a full view of the initiative, download it

NEW! Access to Space for All is holding a side event during the COPUOS. On Thursday 9 June 13:00 CEST, join us

NEW! UNOOSA and ESA open the opportunity to conduct hypergravity experiments in a ground-based centrifuge. read more

NEW! UNOOSA and IAF are co-organizing the 29th UN/IAF workshop in Paris in September. read more

avity/Microgravity Track



The Hypergravity/Microgravity Track is designed with the end goal of developing the capacity of running various space experiments onboard the orbital vehicles or space stations.

Hands-on Component
- *DropTES*
- *HyperGES*
- *Bartolomeo*

Education Component
- *Hyper/Microgravity Series of Webinars*
- *Teacher's Guide*
- *Common Webinars*

Tools Component
- *Tools component*

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Access to Space for All
Webpage – Awardees' page

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HYPERGRAVITY/MICROGRAVITY TRACK AWARDEES

- Bartolomeo Awardees
- China Space Station Awardees
- Dream Chaser Awardees
- DropTES Awardees

The Drop Tower Experiment Series is a fellowship programme of the United Nations Office for Outer Space Affairs (UNOOSA) in which students can learn and study microgravity science by performing experiments in a drop tower. The Bremen Drop Tower in Germany is a ground-based laboratory with a drop tube of a height of 146 meters, which can enable short microgravity experiments to be performed in various scientific fields, such as fluid physics, combustion, thermodynamics, material science and biotechnology.
For more information on how to apply to DropTES, check the Rounds page.

PRIVATE SECTOR

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read more

Round 7: Universidad Católica Boliviana "San Pablo" team

In 2020, the award went to Universidad Católica Boliviana "San Pablo" team. The objective is to determine the 3D printing feasibility, measure intra-structure remaining liquid resin after light exposure, and compare manufacturing time, amount of used material while processing in 2 different approaches.

read more

Round 6: Politecnico de Milano "Polimi" team

In 2019, the award went to Politecnico de Milano "Polimi analyze the lateral sloshing of a ferrofluid solution in low frequency while subjected to different magnetic field intens

read more

Round 5: University of Bucharest and Politeh

In 2018, the award went to the University of Bucharest objective of their experiment is to expose medicine dropl solution to both laser radiation and microgravity conditions

ACCESS TO SPACE FOR ALL
AWARDEE PAGE

- One page for each awardee
- Basic information, news, publications, photo
- A great place to showcase the achievement

Politecnico di Milano

StELIUM team with their drop tower capsule. Credit: Álvaro Romero-Calvo

"The UNOOSA DropTES 2019 program gave us the opportunity to study what, at the time, still was an unexplored physical phenomenon with promising space applications. Our international team, StELIUM, succeeded in developing a complex microgravity experiment and obtaining unprecedented data on the sloshing of ferrofluids in microgravity, gaining some invaluable real-life experience. As discussed in our publications, this has proven to be critical for the development of low-gravity magnetic positive positioning devices. Antonio, Francesco, Inés, Filippo, and I are extremely grateful to everyone who made this possible." **- Álvaro Romero-Calvo, StELIUM team leader.**

AWARDS

DropTES

Politecnico di Milano was the winner of the 6th round of DropTES opportunities in 2019.

NEWS

- A student team from DAER wins the UNOOSA DropTES fellowship (April 2019)

ACTIVITIES

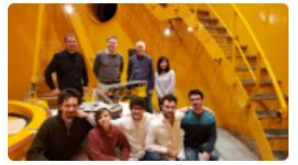
- StELIUM team member gives a lecture at International Space University Space Studies Program, Granada, Spain (August 2021)
- StELIUM team member speaks at UNOOSA Webinars on Hypergravity/Microgravity Research (27 May 2021)
- StELIUM team member speaks at 43rd COSPAR Scientific Assembly (January 2021)
- Celebration results of the international student competitions (16 December 2020)
- StELIUM team member speaks at UNOOSA Access to Space for All Initiative, "DropTES: Master the Microgravity Path" (8 December 2020)
- StELIUM team member attends Space Development Nexus (SDNx) Online Global Space Summit 2020 (September 2020)

PUBLICATIONS

- Álvaro Romero-Calvo, Antonio J. García-Salcedo, Francesco Garrone, Inés Rivoalen, and Filippo Maggi, Lateral and Axisymmetric Ferrofluid Oscillations in a Cylindrical Tank in Microgravity, AIAA Journal 0 0 : 0 , 1-6,11 Feb 2022, https://doi.org/10.2514/1.J061351
- Á. Romero-Calvo, F. Garrone, A.J. García-Salcedo, I. Rivoalen, G. Cano-Gómez, E. Castro-Hernández, F. Maggi, Free surface reconstruction of opaque liquids in microgravity. Part 2: Drop tower campaign, Acta Astronautica, Volume 189, 2021, Pages 269-277, ISSN 0094-5765, https://doi.org/10.1016/j.actaastro.2021.07.020.
- Á. Romero-Calvo, A.J. García-Salcedo, F. Garrone, I. Rivoalen, G. Cano-Gómez, E. Castro-Hernández, F. Maggi, Free surface reconstruction of opaque liquids in microgravity, Part 1: Design and on-ground testing, Acta Astronautica, Volume 189, 2021, Pages 250-259, ISSN 0094-5765, https://doi.org/10.1016/j.actaastro.2021.08.029.
- Á. Romero-Calvo, A.J. García-Salcedo, F. Garrone, I. Rivoalen, G. Cano-Gómez, E. Castro-Hernández, M.Á. Herrada Gutiérrez, F. Maggi, StELIUM: A student experiment to investigate the sloshing of magnetic liquids in microgravity, Acta Astronautica, Volume 173, 2020, Pages 344-355, ISSN 0094-5765, https://doi.org/10.1016/j.actaastro.2020.04.013.
- Á. Romero-Calvo et al., "Free and forced oscillations of magnetic liquids under low-gravity conditions", Journal of Applied Mechanics

PHOTOS

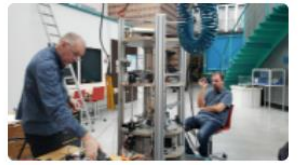
StELIUM team celebrating a great drop tower campaign!



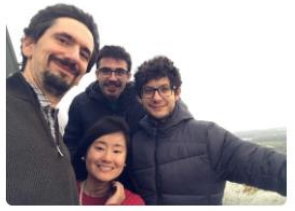
StELIUM team and ZARM/UNOOSA before the second launch

Taking a look inside ZARM's drop tower

Working on the capsule



Fred Oetken and Jan Siemer working on the integration of StELIUM



At the top of ZARM's drop tower with Ajami Kojima, UNOOSA project officer!

Access to Space for All
Webpage – Partner's page

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Partnerships

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read more ›

Acknowledgement ›

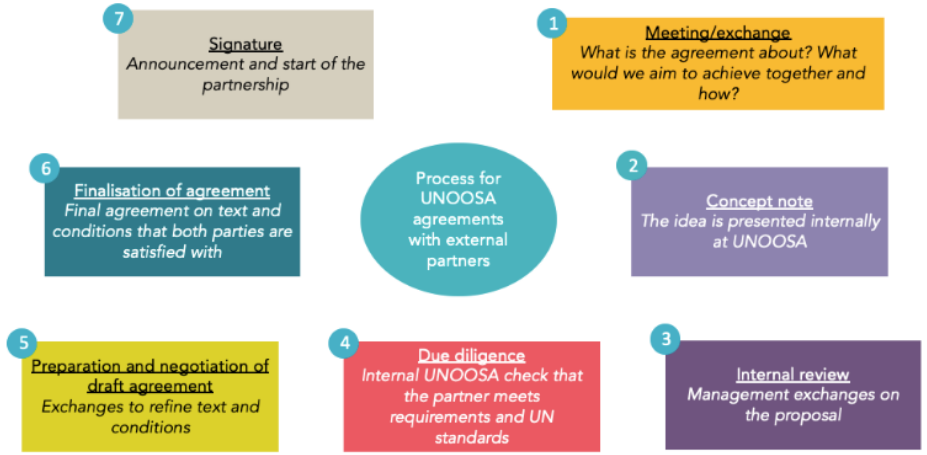
Why partnering with UNOOSA?

The United Nations Office for Outer Space Affairs (UNOOSA) works to help all countries, especially developing countries, access and leverage the benefits of space. By becoming a partner of Access to Space for All, your infrastructure/facilty/service will be part of a high impact and high visibility initiative and applicants will get familiar with the way your infrastructure/service works, helping them in understanding engineering and technical principles and procedures, so they have a starting point to further develop.

Offering an opportunity through Access to Space for All is cost efficient, UNOOSA has developed a streamlined process to manage the opportunity. The Office will work hand in hand with you to ensure the impact and reach of the opportunity, by for example, creating calls for interest to understand how many institutions would be interested in applying, developing the application forms and announcement of opportunities or reaching to our network of institutions so the opportuni UNOOSA, we will bring the benefits of space to humankind and support sus

How to partner with UNOOSA on Access to Space for All?

The partnership process is triggered by an initial exchange to find a common goal and a vision for the particular partnership. This initial exchange will trigger an internal process in UNOOSA, which will require further iterations with the potential partner, including a due diligence to check that the partner meets requirements and UN standards and negotiation of a draft agreement. If you are interested in partnering with UNOOSA on Access to Space for All, contact us at unoosa-access-to-space [at] un [dot] org.



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ACKNOWLEDGEMENT

Hypergravity/Microgravity Track Partners and Supporters

PARTNERS

Space Agencies

- China Manned Space Agency
- Deutsches Zentrum für Luft- und Raumfahrt (German Aerospace Center)
- European Space Agency

Research Institutes

- Center of Applied Space Technology and Microgravity

Private Companies

- Airbus Defence and Space
- Sierra Space

SUPPORTERS

- American Society for Gravitational and Space Research
- China National Space Administration
- European Low Gravity Research Association
- Indian Space Research Organisation
- Japan Society of Microgravity Application
- The National Aeronautics and Space Administration
- Student European Low Gravity Research Association
- Swedish Space Corporation

Access to Space for All
Brochure

UNITED NATIONS
Office for Outer Space Affairs

- First brochure talking all about the Access to Space for All initiative
- Over 30 pages bringing readers necessary information
- In-detailed opportunities we are offering
- Success stories from our awardees
- Available in English
- Clickable URL to webpages

Access to Space for All
Brochure

UNITED NATIONS
Office for Outer Space Affairs

Awardee's story - Kenya

- First Kenyan satellite launched through the Access to Space for All initiative
  - "1KUNS-PF" won the first round of KiboCUBE in 2015 and was launched in 2018.
- A cooperation project "ClimCam" between Egypt, Kenya, and Uganda will fly with ISS for Climate Change in Eastern Africa
- A Kenyan team led by KSA won the ISONscope and will cooperate with KIAM RAS for astronomical observation

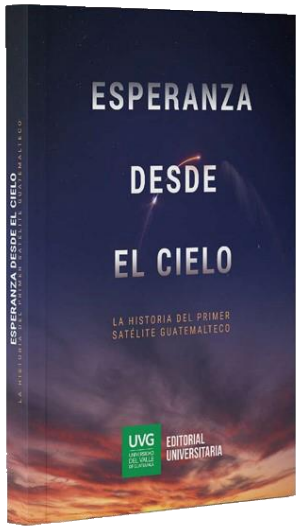
Read page 6: AWARDEE'S STORY - KENYA
Benefit from the initiative for development

Access to Space for All
Brochure

UNITED NATIONS
Office for Outer Space Affairs

Awardee's story - Guatemala

- First Guatemalan satellite launched through the Access to Space for All initiative
  - "Queztal-1" won the second round of KiboCUBE in 2017 and was launched in 2020.
  - "Queztal-1" project caused change in attitude among the university students in Guatemala.
  - The team was recognized as Person of the Year in 2019 because of their scientific achievement.
  - Two books and a documentary published.



Read page 7: AWARDEE'S STORY - GUATEMALA
Inspiring youth and research in the country

Access to Space for All
Brochure

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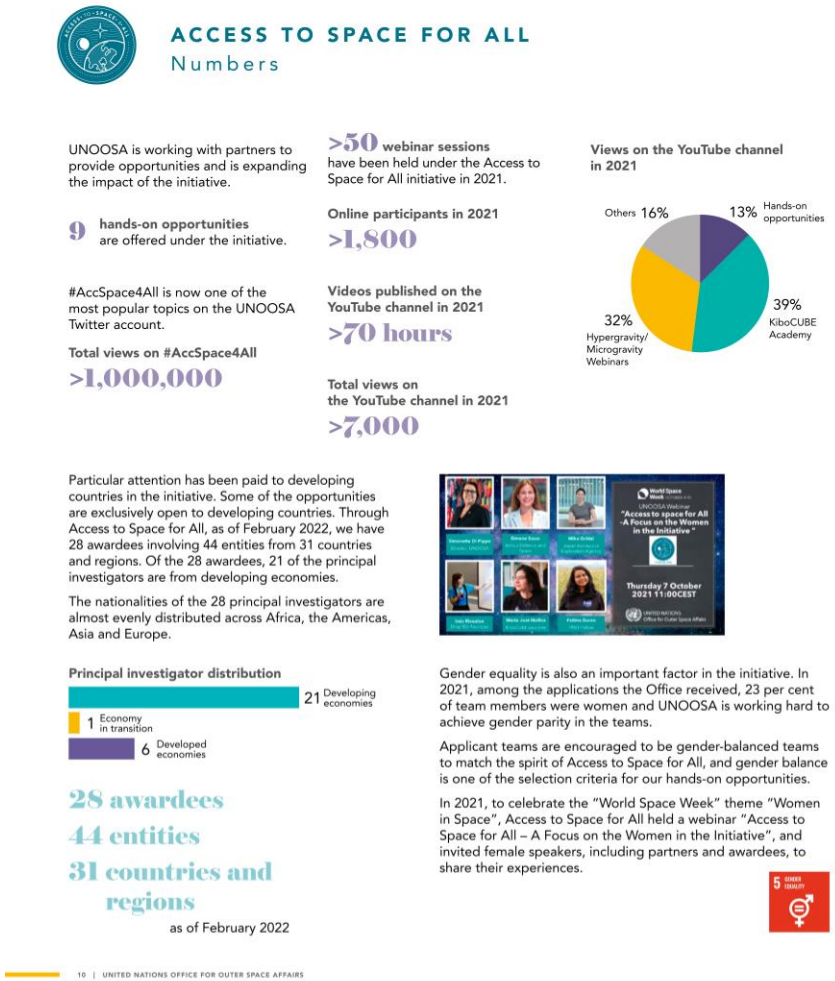
Access to Space for All Numbers and Impact

- **9** hands-on opportunities are offered under the initiative;
- Over **50** webinar sessions have been held in 2021; **70** hours video contents published on the YouTube;
- Over **1,800** online participants, and over **7,000** views on YouTube channel;
- Over **1,000,000** views on #AccSpace4All, which makes it now one of the most popular topics on UNOOSA social media.
- **28** awardees involving **44** entities from **31** countries and regions, they are almost evenly distributed across Africa, the Americas, Asia and Europe.
- **21** awardees are from developing economies;



ACCESS TO SPACE FOR ALL
Numbers

UNOOSA is working with partners to provide opportunities and is expanding the impact of the initiative.

9 hands-on opportunities are offered under the initiative.

#AccSpace4All is now one of the most popular topics on the UNOOSA Twitter account.

Total views on #AccSpace4All
>1,000,000

>50 webinar sessions have been held under the Access to Space for All initiative in 2021.

Online participants in 2021
>1,800

Videos published on the YouTube channel in 2021
>70 hours

Total views on the YouTube channel in 2021
>7,000

Views on the YouTube channel in 2021

Particular attention has been paid to developing countries in the initiative. Some of the opportunities are exclusively open to developing countries. Through Access to Space for All, as of February 2022, we have 28 awardees involving 44 entities from 31 countries and regions. Of the 28 awardees, 21 of the principal investigators are from developing economies.

The nationalities of the 28 principal investigators are almost evenly distributed across Africa, the Americas, Asia and Europe.

Principal investigator distribution

28 awardees
44 entities
31 countries and regions
as of February 2022

Gender equality is also an important factor in the initiative. In 2021, among the applications the Office received, 23 per cent of team members were women and UNOOSA is working hard to achieve gender parity in the teams.

Applicant teams are encouraged to be gender-balanced teams to match the spirit of Access to Space for All, and gender balance is one of the selection criteria for our hands-on opportunities.

In 2021, to celebrate the "World Space Week" theme "Women in Space", Access to Space for All held a webinar "Access to Space for All – A Focus on the Women in the Initiative", and invited female speakers, including partners and awardees, to share their experiences.

Read page 8-10:
Access to Space for All Numbers

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Contribution to the SDGs

- Key in raising awareness about what space technology can do for the Sustainable Development Goals.
- Few examples that SDGs are supported by our awardees.
  - ClimCam for Climate Change;
  - Queztal-1 for Clean Water
  - Ventilators for Good Health
- More examples can be found on our website – awardees.

ACCESS TO SPACE FOR ALL

Serving the 2030 Sustainable Development Goals

From the beginning of the initiative, UNOOSA has received applications spanning all the Sustainable Development Goals (SDGs), including improving communications in areas subject to disasters using CubeSats, cancer prevention and treatment, and the development of high-efficiency solar cells.

The pictures here show examples of awardee projects and the SDGs they are connected to.

Access to Space for All requires applicants to make the link between what they try to achieve with their application and the SDGs.

Among others, Access to Space for All contributes to the SDGs, especially Goal 4 on Quality Education, Goal 8 on Decent Work and Economic Growth, and Goal 9 on Industry, Innovation and Infrastructure.

SPACE for SDGS

4 QUALITY EDUCATION
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Workshop for women on Quetzal-1 © Ivan Castro

Antenna-building workshop held in Mauritius © MRIC

QUETZAL-1 Project for water quality © UVG

Outreach activity at Mahidol University © Mahidol University

Bartolomeo awardee, ClimCam Team © Airbus

Ventilator designed by DropTES awardee team © UCB

ACCESS TO SPACE FOR ALL INITIATIVE | 11

Read page 11: Serving the 2030 Sustainable Development Goals

Access to Space for All
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- More contents available in the brochure.
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- http://www.unoosa.org/oosa/en/ourwork/access2space4all/index.html
- Contact us: unoosa-access-to-space@un.org