

THANK YOU



UNITED NATIONS
Office for Outer Space Affairs
www.unoosa.org • @UNOOSA

EO for SDGs in the Atlantic Region

Jorge Del Rio Vera

United Nations Office for Outer Space Affairs

<http://unoosa.org>

Lisbon, 3 December 2019



UNITED NATIONS
Office for Outer Space Affairs



UNITED NATIONS
Office for Outer Space Affairs

Office for Outer Space Affairs





What does the Office do?

- Helps Member States to Discuss on Space Matters
- Bridge the “Space Divide”
- United Nations Gateway for Space



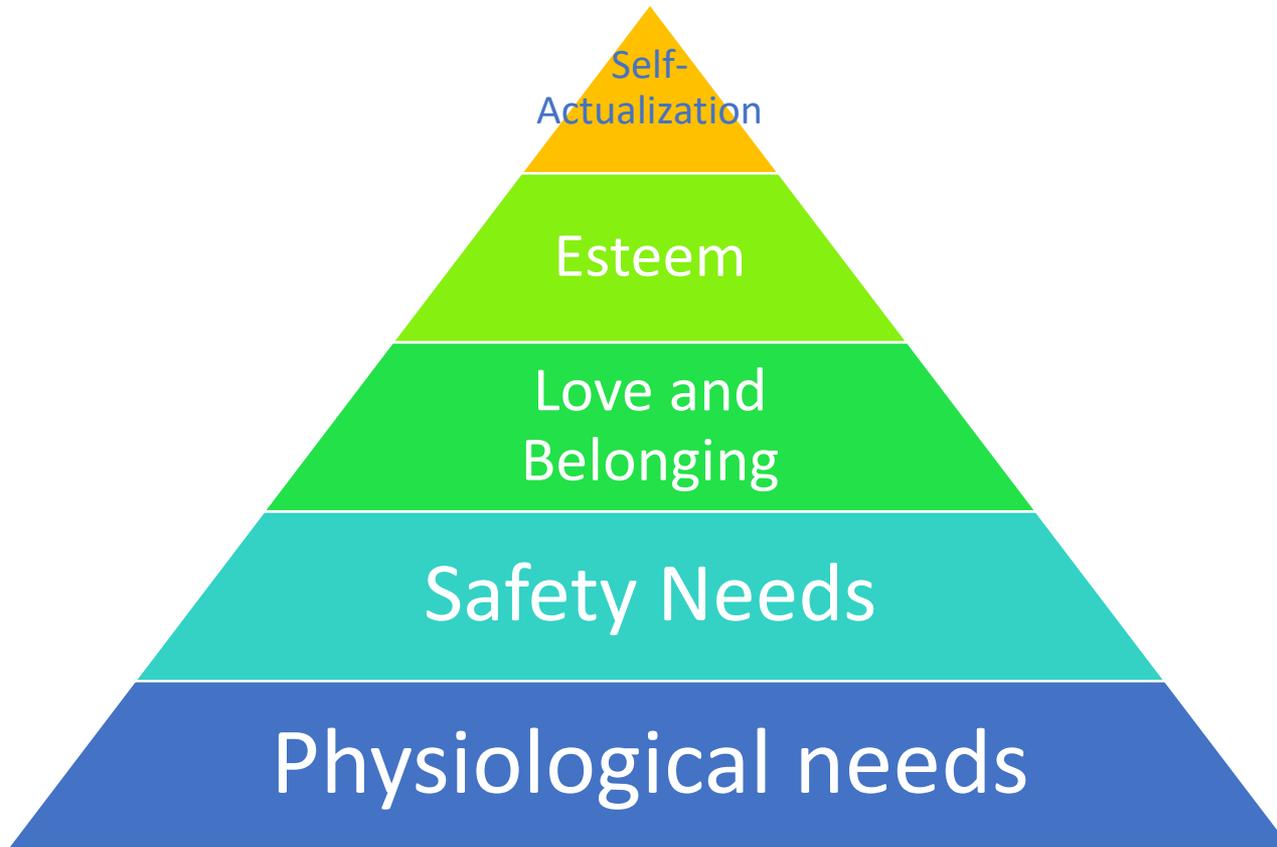
Bringing the benefits of space to humankind



What are the needs?



What do I want as a citizen?



Maslow's pyramid



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

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 AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

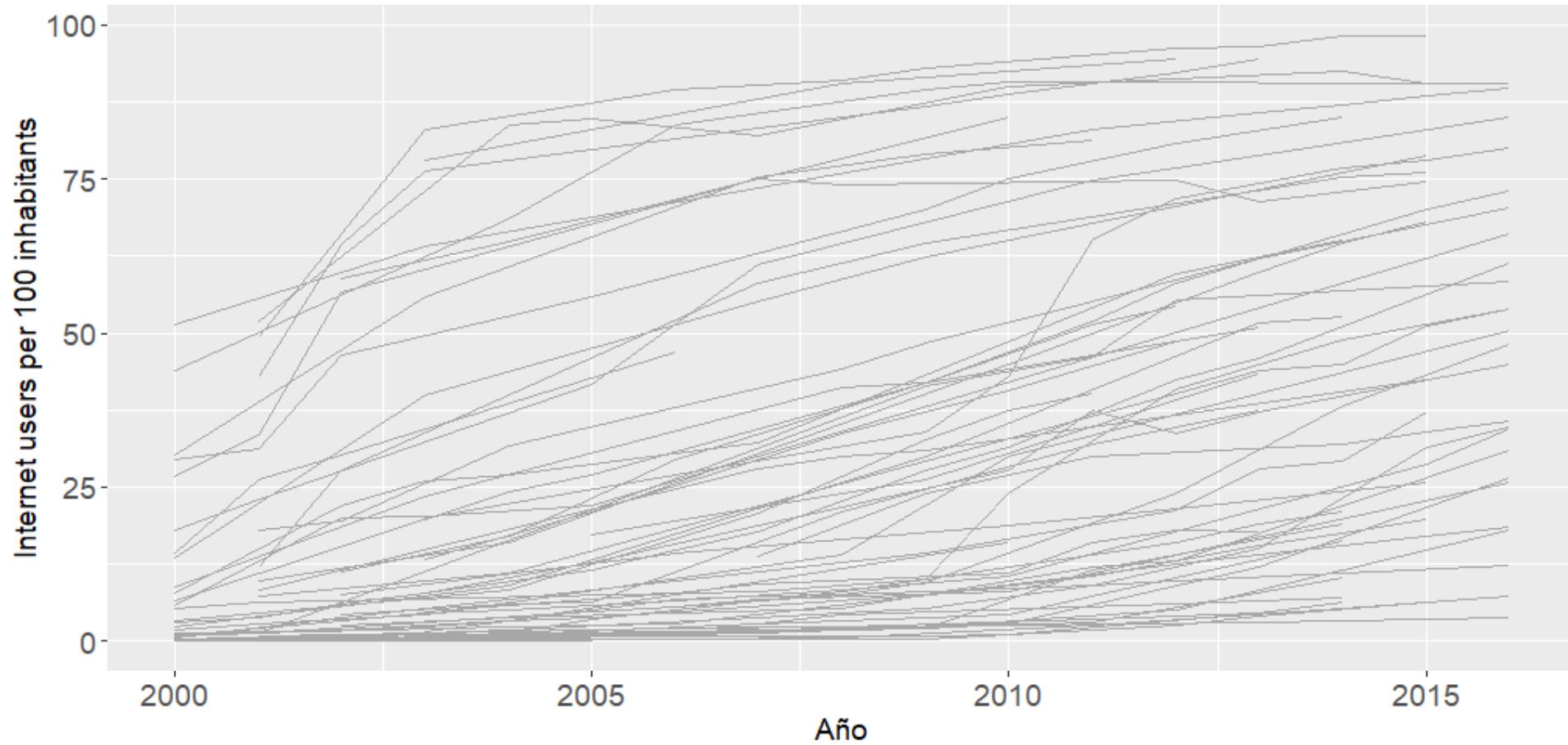

SUSTAINABLE DEVELOPMENT GOALS



Indicador
1.4.1 Proportion of population living in households with access to basic services
6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation
6.6.1 Change in the extent of water-related ecosystems over time
9.1.1 Proportion of the rural population who live within 2 km of an all-season road
11.3.1 Ratio of land consumption rate to population growth rate
11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities
11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city
13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
14.1.1 Index of coastal eutrophication and floating plastic debris density
14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches
14.5.1 Coverage of protected areas in relation to marine areas
15.3.1 Proportion of land that is degraded over total land area
15.4.1 Coverage by protected areas of important sites for mountain biodiversity
15.4.2 Mountain Green Cover Index



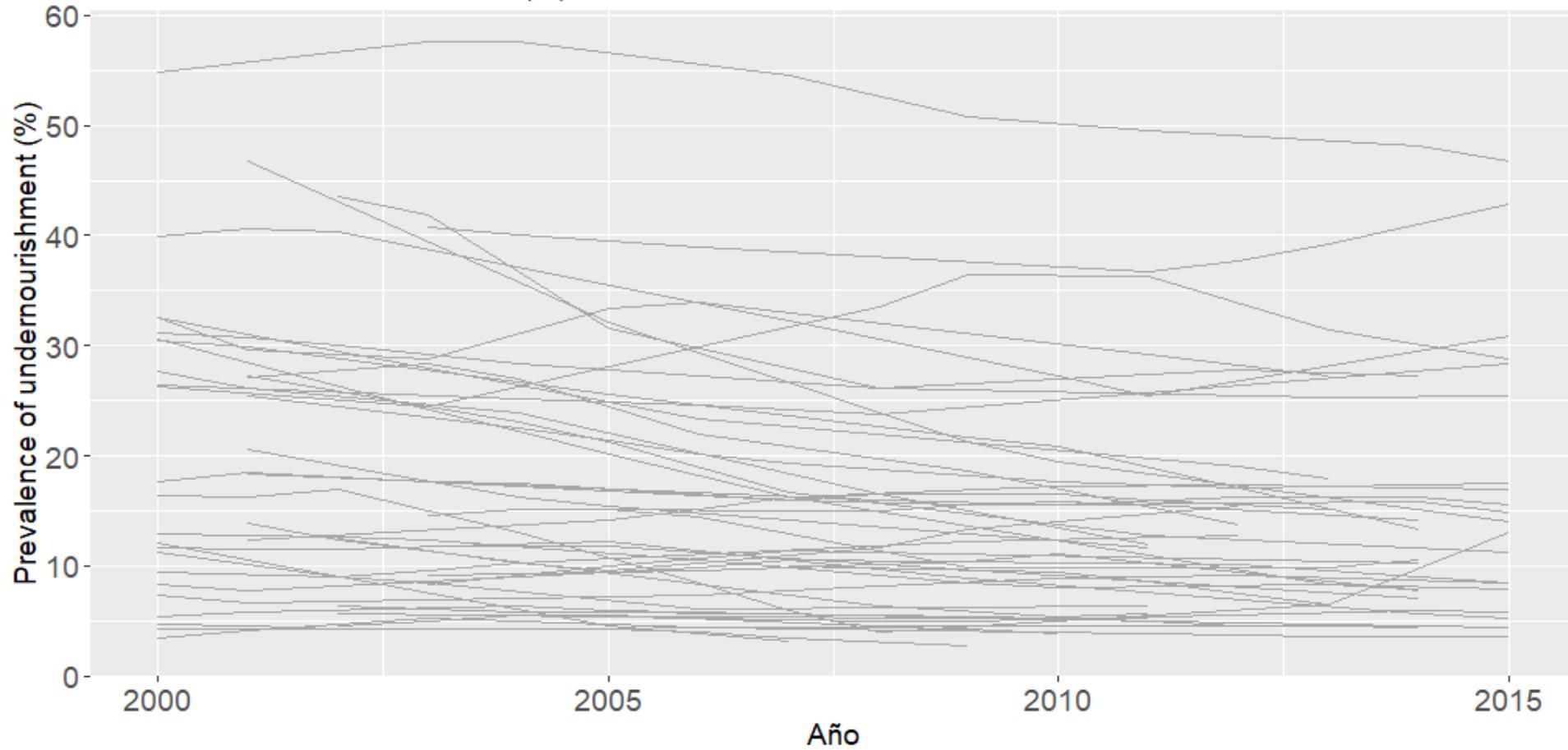
Evolution of indicator 17.8.1 Internet users per 100 inhabitants





Evolution of indicator 2.1.1

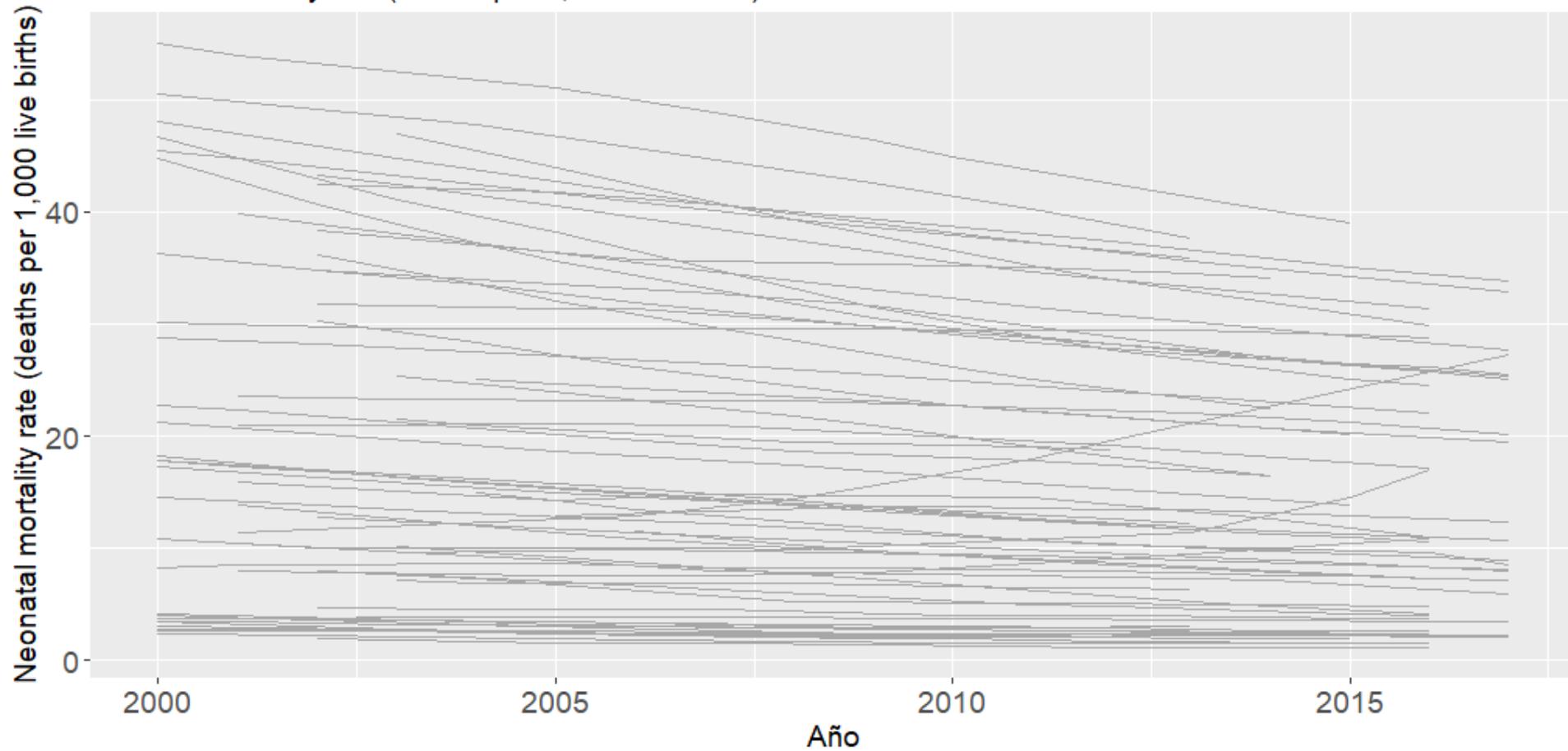
Prevalence of undernourishment (%)





Evolution of indicator 3.2.2

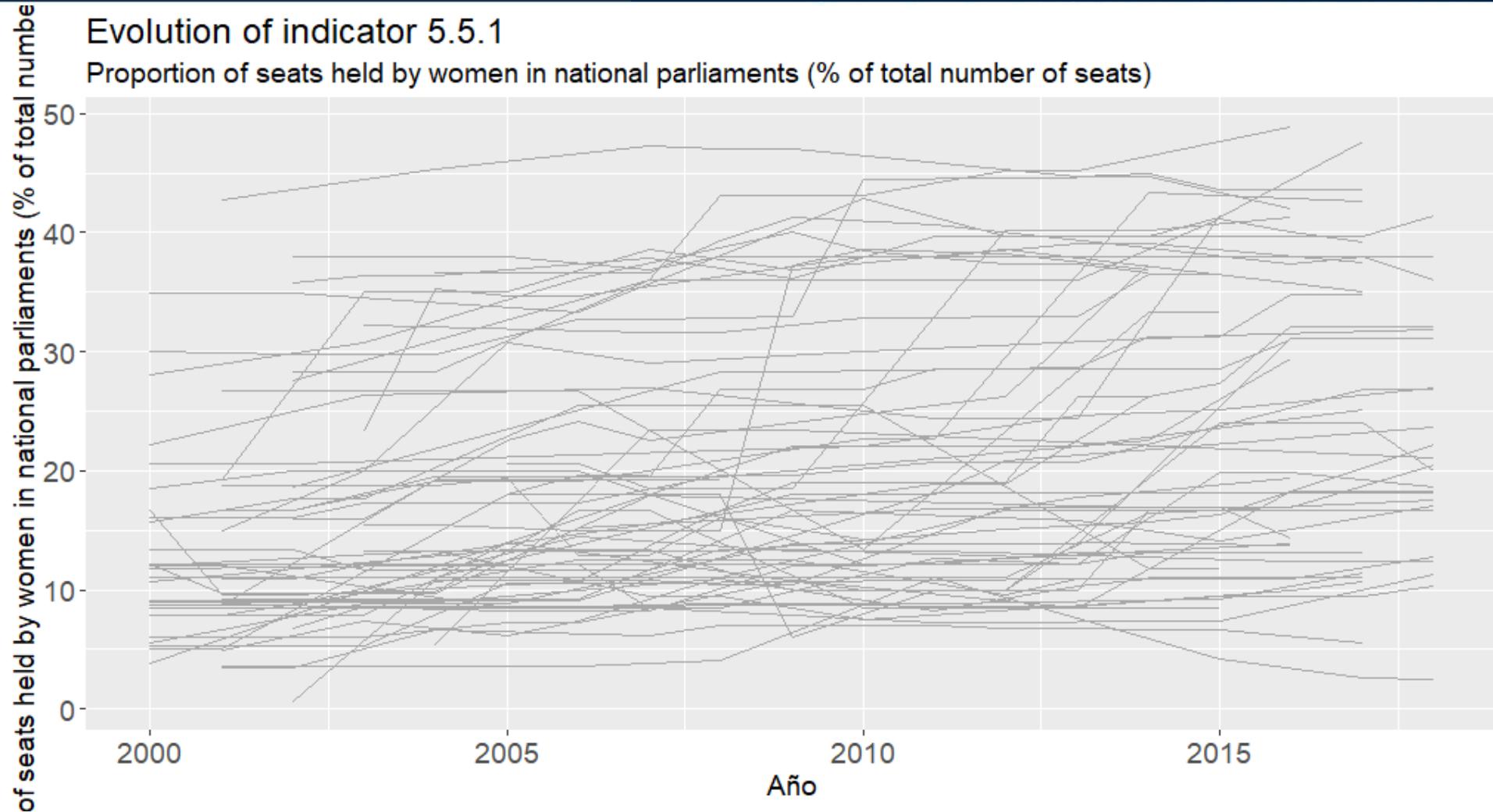
Neonatal mortality rate (deaths per 1,000 live births)





Evolution of indicator 5.5.1

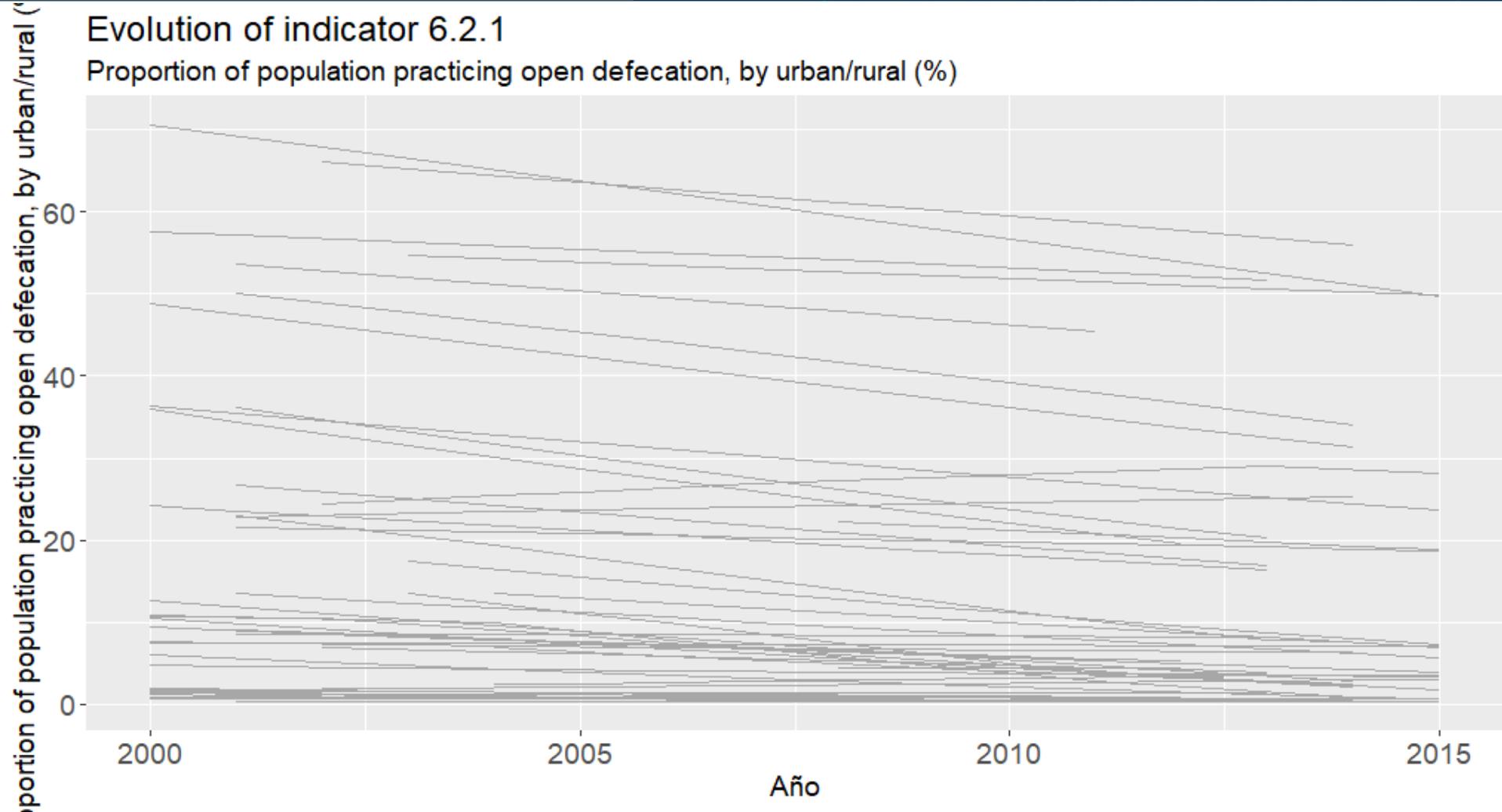
Proportion of seats held by women in national parliaments (% of total number of seats)





Evolution of indicator 6.2.1

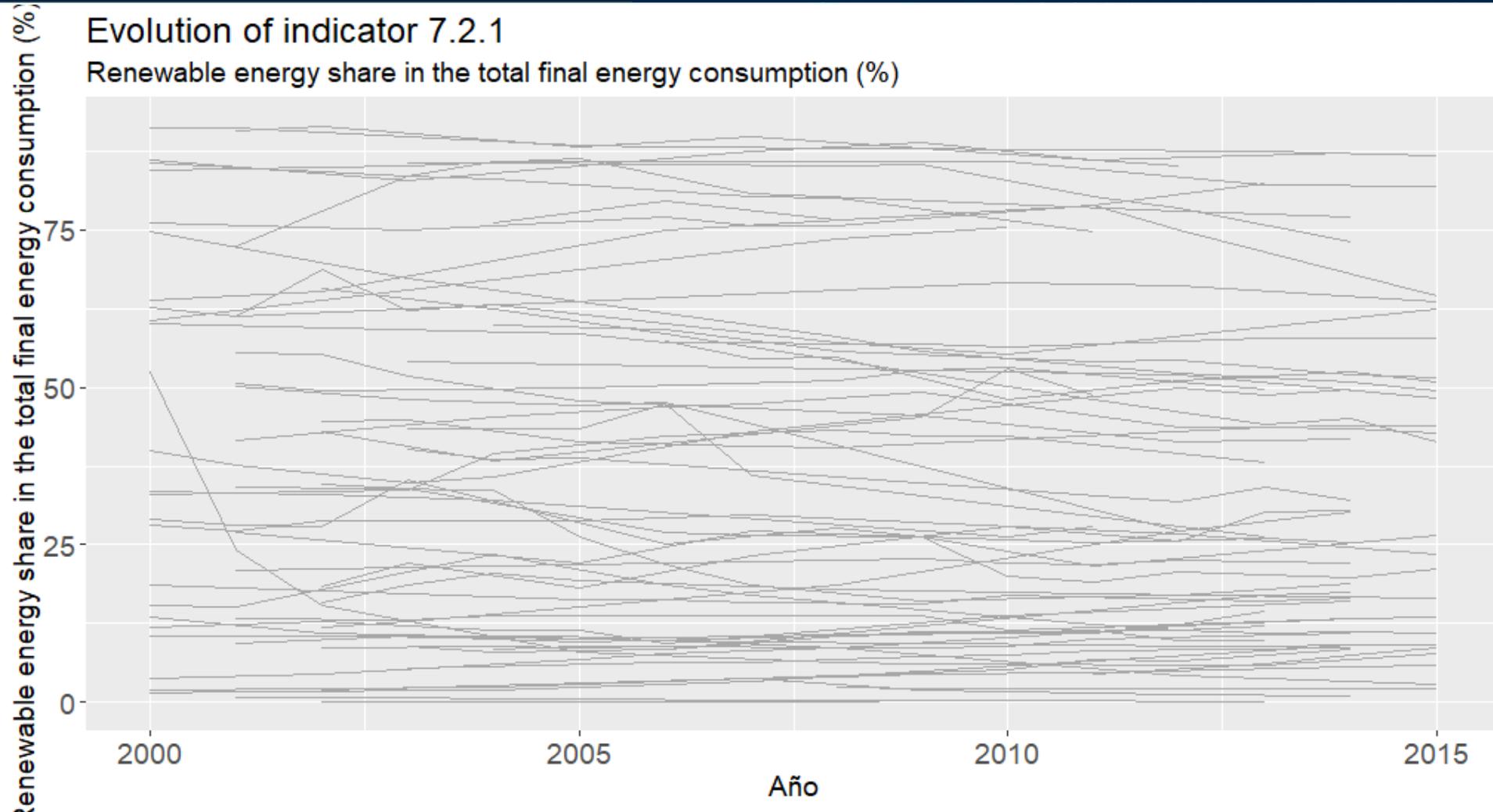
Proportion of population practicing open defecation, by urban/rural (%)





Evolution of indicator 7.2.1

Renewable energy share in the total final energy consumption (%)





“Technology made large populations possible; large populations now make technology indispensable”

Joseph Krutch
(Writer)



Space and the SDGs

- Nearly 40 % of targets can benefit from space technologies, data, services and applications
- Modern societies are not possible without space technologies, data, services and applications





Can EO be used?



Space and the SDGs



Global Goals
for Sustainable
Development

EGNSS

Copernicus

Synergies

Examples of applications



Natural disaster forecast
Crop productivity optimisation

PRECISION AGRICULTURE

- Monitor humidity
- Monitor plant growth
- Reduce amount of fertilizer and water

DISASTER MANAGEMENT AND EMERGENCY

- Satellite communications
- GNSS track areas surveyed
- Damage assessment
- Risk assessment





Space and the SDGs



Global Goals
for Sustainable
Development

EGNSS

Copernicus

Synergies

Examples of applications



Natural disaster forecast
Crop productivity optimisation

UN-SPIDER

- Technical Advisory Missions
- Best Practices
- Trainings

<http://www.un-spider.org/>

INT. CHARTER SPACE AND MAJOR DISASTERS

- Provision of data
- Emergency Monitoring and Response

UNITED NATIONS
Office for Outer Space Affairs

UN-SPIDER KNOWLEDGE PORTAL

Space-based information for Disaster Management and Emergency Response

English Español Français

Search...

Home Space Application Risks & Disasters Links & Resources Advisory Support Network Projects News & Events About Us

Space-based data in emergency response at centre of UN-SPIDER Institutional Strengthening Mission to Cameroon

Meeting at the Department of Civil Protection of Cameroon. Image: Department of Civil Protection.

Previous Pause Next 4 of 5

Explore the Knowledge Portal

Home About Activations News Library

English Login

The International Charter Space and Major Disasters

Providing satellite data to those affected by natural or man-made disasters through registered organisations, for use in monitoring and response activities. [Read more](#)

How the Charter Works How to become a user



Space and the SDGs



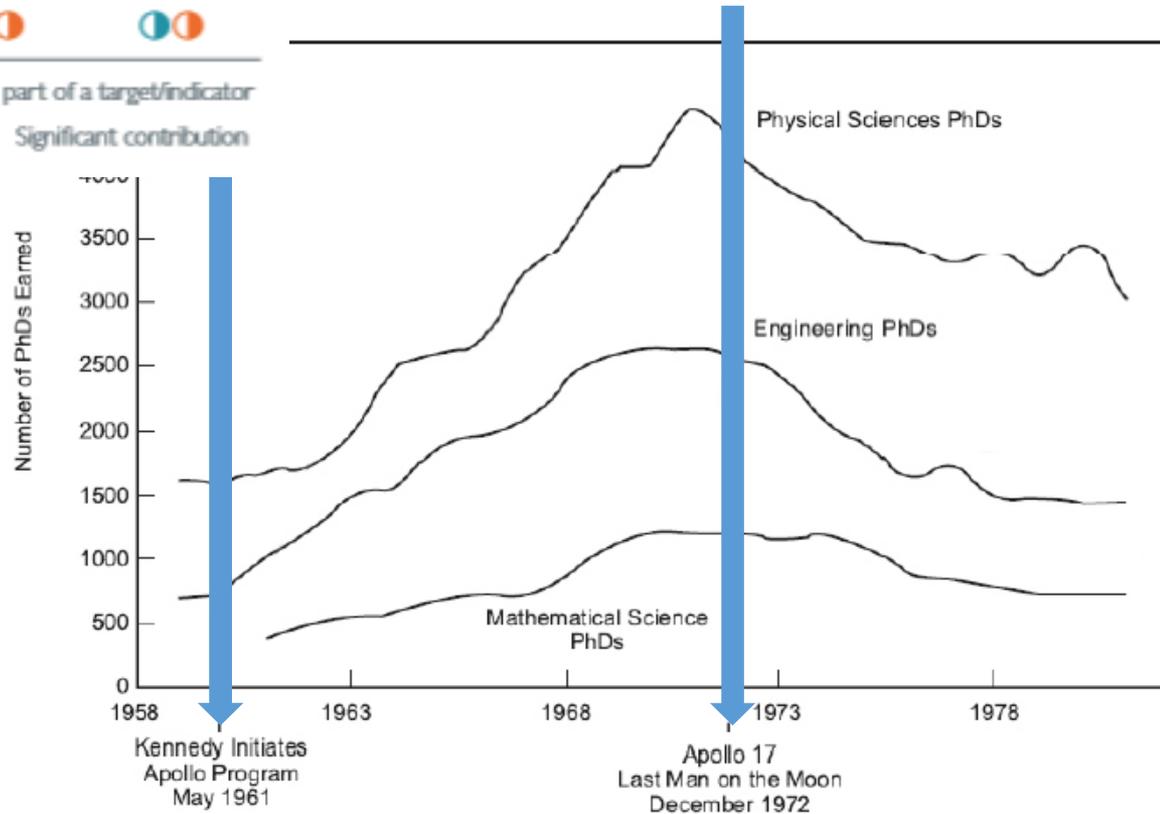
Targets	EGNSS	Copernicus	Synergies
4.a			

Level of contribution in **monitoring** **achieving** part of a target/indicator

Limited contribution Significant contribution

SPACE FOR WOMEN

- Role Model and Mentorship
- <http://www.un-spider.org/>





Space and the SDGs



Targets	EGNSS	Copernicus	Synergies
4.a			

Level of contribution in **monitoring** **achieving** part of a target/indicator

Limited contribution Significant contribution

OPEN UNIVERSE

- Broadening space Science user base
- Resurfacing data
- Transparency

<http://www.un-spider.org/>



SPACE FOR YOUTH

<http://www.unoosa.org/oosa/en/ourwork/topics/space4youth/index.html>

REGIONAL CENTRES

- Fellowships for students from developing countries

<http://www.unoosa.org/oosa/en/ourwork/space4sdgs/sdg4.html>



Space and the SDGs



Targets	EGNSS	Copernicus	Synergies
I2.2			
I2.b			

Level of contribution in monitoring/achieving part of a target/indicator
 Limited contribution Significant contribution



QUICK FACTS

- 93 % of water in the international space station is reclaimed
- 40 % of oxygen is recycle although NASA is researching on technologies that can increase that to 75 %

<http://www.unoosa.org/oosa/en/ourwork/space4sdgs/sdg12.html>





Space and the SDGs



Targets	EGNSS	Copernicus	Synergies
9.1			
9.4			
9.c			

Level of contribution in **monitoring**/**achieving** part of a target/indicator
 Limited contribution Significant contribution

INTERNATIONAL COMMITTEE ON GNSS

- Compatibility
- Interoperability
- Applications of GNSS

<http://www.unoosa.org/oosa/en/ourwork/icg/icg.html>



International Committee on
Global Navigation Satellite Systems

CHINESE SPACE STATION

- Experiment in microgravity fluid physics and combustion. Three institutions from two countries, which are: the Sapienza University, In Quattro s.r.l. in Italy, and the Machakos University in Kenya.





SUSTAINABLE DEVELOPMENT GOALS



And we have not talked about Clean Water and Sanitation, Climate Change, Global Health...

And many others!



*Space is the internet of ~~tomorrow~~
today*



if you have free data...

The screenshot shows the Copernicus Open Access Hub interface. On the left, there is a search bar and a list of search results. The results are ordered by ingestion date and show details for several Sentinel-3 products, including download URLs, mission names, instruments, and sensing dates. On the right, a map displays the geographical area covered by the search results, with various colored overlays representing different data layers or orbits.





If you apply artificial intelligence...



Artist rendition of the Mars Rover exploring the surface of Mars
Credit:NASA

AEGIS

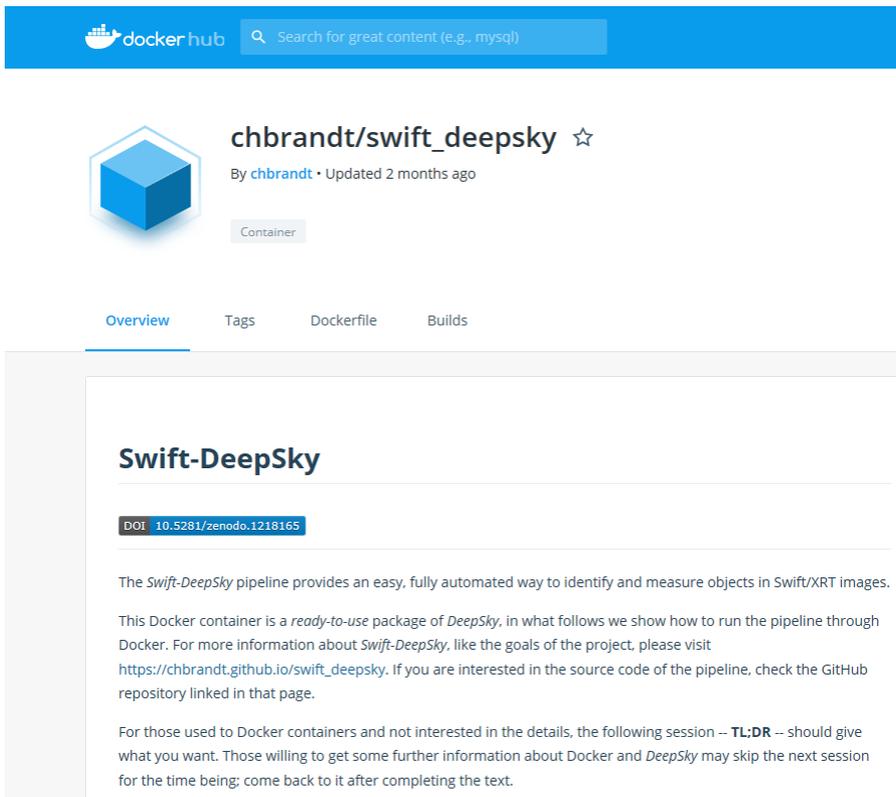
(Autonomous Exploration for Gathering Increased Science)



Building footprints in Santiago de Chile
Credit:MAXAR

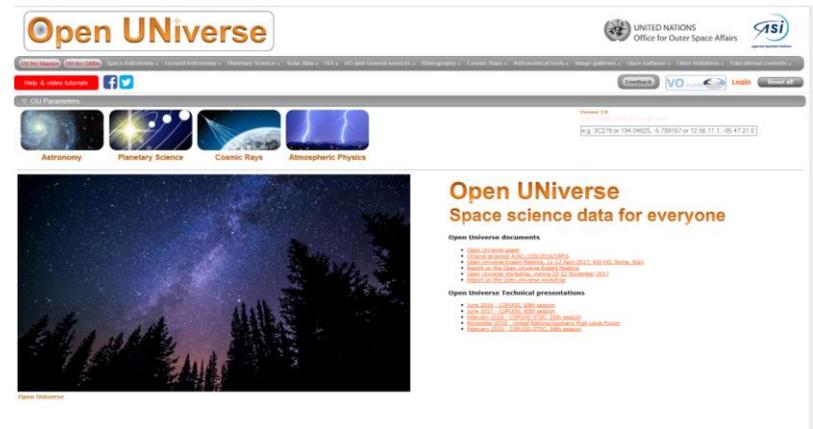


How to apply new tools...



The screenshot shows the Docker Hub page for the container `chbrandt/swift_deepsky`. The page includes a search bar at the top, the container name with a star icon, and the author `chbrandt` with an update date of 2 months ago. Below this are tabs for Overview, Tags, Dockerfile, and Builds. The main content area is titled "Swift-DeepSky" and features a DOI link: `10.5281/zenodo.1218165`. The text describes the `Swift-DeepSky` pipeline as an easy, fully automated way to identify and measure objects in Swift/XRT images. It states that this Docker container is a *ready-to-use* package of `DeepSky`, and provides instructions on how to run the pipeline through Docker. For more information, it directs users to the project's GitHub repository. A note at the bottom suggests that those familiar with Docker containers should skip the next session for the time being.

DOCKER CONTANERS FOR ASTRONOMY



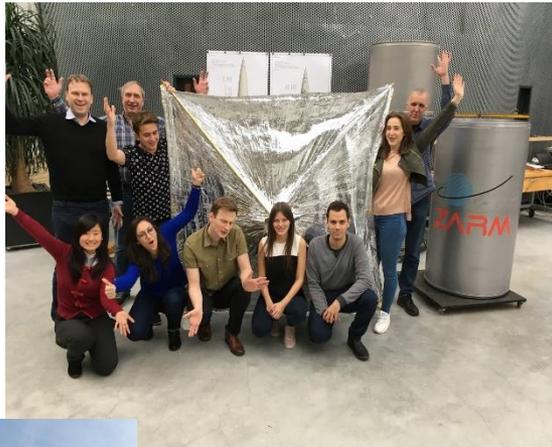
The screenshot shows the Open Universe website, which is a platform for sharing and accessing space science data. The website features a navigation bar with the Open Universe logo and the United Nations Office for Outer Space Affairs logo. Below the navigation bar are social media links and a search bar. The main content area is titled "Open Universe Space science data for everyone" and includes a list of "Open Universe documents" and "Open Universe Technical presentations". The website also features a large image of the Milky Way galaxy and a navigation menu with categories like Astronomy, Planetary Science, Cosmic Rays, and Atmospheric Physics.



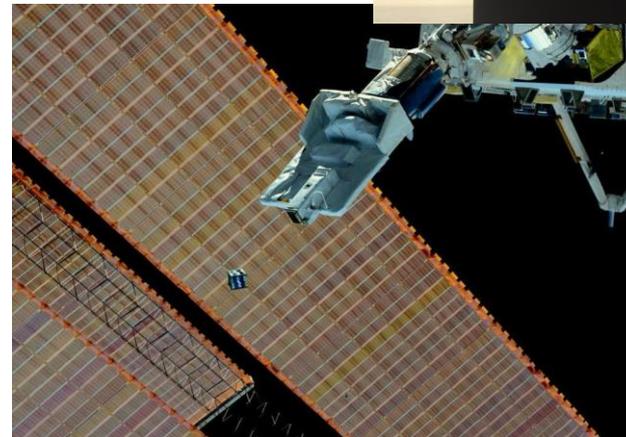
If you had the opportunity...

Access to Space for All

DropTES
(UNOOSA/ZARM)



KiboCUBE
(UNOOSA/JAXA)





*Space is the internet of ~~tomorrow~~
today*

THANK YOU



UNITED NATIONS
Office for Outer Space Affairs
www.unoosa.org • @UNOOSA