United Nations/China Forum on Space Solutions:

Realizing the Sustainable Development Goals

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Space for the Sustainable Development Goals

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UNITED NATIONS
Office for Outer Space Affairs

Vision

Bringing the benefits of space to humankind

Mission Statement

The core business of the Office is to advance

International Cooperation

in the use of outer space for a sustainable development

STS-131 and Expedition 23 crew members

"As part of the organization-wide quest for a better future worldwide, at UNOOSA we strive to bring more countries to the space community by delivering the benefits of and access to space to all UN Member States."

- Simonetta Di Pippo -

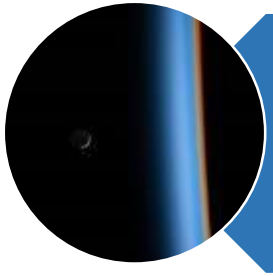
UNOOSA: the UN home of space

17 PARTNERSHIPS FOR THE GOALS

UNOOSA, as the only UN entity dedicated to space affairs, works with a range of partnerships from across the space sector:

- **National Governments**
- National and Regional **Space Agencies**
- **Private entities**
- **Civil Society**, including academia and NGOs
- Other **UN entities** in Vienna, New York, Geneva and in the field.

UNOOSA: supporting Member States



CAPACITY BUILDER: UNOOSA provides access to cutting edge space-data and information and builds capacity to use such data to accelerate sustainable development.

CONVENER: UNOOSA facilitates Member States in the development of new space policy.

GATEWAY: UNOOSA - the sole UN agency dedicated to space affairs - coordinates UN activities using space-related technology to support sustainable development.

Our activities – see www.unoosa.org

- Main programmes and platforms
  - Secretariat to COPUOS
  - Programme on Space Applications
  - Access to Space For All
  - UN-wide coordination - UN-Space
  - UN Register of Space Objects
  - UN-SPIDER
  - International Committee on Global Navigation Satellite Systems (ICG)
  - Space Mission Planning Advisory Group (SMPAG)

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www.un-spider.org

ICG International Committee on Global Navigation Satellite Systems

Our Work

At a Glance

UNOOSA has conducted so far 400+ capacity-building activities, reaching 24000+ participants

Our work is fundamental to the **three main international framework agreements**:

1. 2030 Agenda for Sustainable Development
2. The Sendai Framework for Disaster Risk Reduction 2015-2030
3. The Paris Climate Agreement

SUSTAINABLE DEVELOPMENT GOALS

Sendai Framework for Disaster Risk Reduction
2015 - 2030










Space: an evolving picture

The 2030 Agenda and the SDGs

Adopted by all UN Member States in **2015** and provides a shared blueprint for **peace and prosperity** for people and the planet, now and into the future.

The 17 Sustainable Development Goals (SDGs) are an **urgent call for action** by all countries - developed and developing - in a global partnership

17 Goals
169 Targets
232 Indicators

Space for SDGs

All countries and all stakeholders act in **collaborative partnership to implement the 2030 Agenda** for Sustainable Development.

UNOOSA is developing new approaches to address the targets enshrined in the SDGs.

One joint vision has to be employed to protect space as a limited resource **for the benefit of humankind.**

65 of the 169 SDG targets (almost 40%) are **reliant** on geolocation and Earth observation

Space for SDGs

2 ZERO HUNGER

Earth applications:
Monitoring and combating desertification and deforestation, ensuring sustainable land use, precision agriculture, improving crop yields, vegetation indices, crop health & development, drought effect mitigation, forest management, limit use of pesticides and irrigation optimize use of fertilizers…

- Globally, **one in nine** people in the world today (815 million) are **undernourished**
- **Poor nutrition** causes nearly half (**45 per cent**) of **deaths in children** under five – 3.1 million children each year.
- **52 per cent of the land** used for agriculture is moderately or severely **affected by soil degradation**
- As of 2008, land degradation **affected 1.5 billion people** globally

Space for SDGs

Earth applications:
Population mapping, distribution of medication, treatment of diseases, disease epidemiology, outbreak preparedness and response, tracking of vector-borne diseases, monitoring air quality, responding to epidemics, human health research and spin-off technologies, disaster preparedness and response, early warning of extreme weather…

- **Millions** still **die** from **preventable diseases** worldwide
- Computer, telecommunications and satellite communication technologies enable the **sharing of health and medical expertise**.
- **Tele-health and tele-medicine** technologies bring medical specialists into virtual contact with patients and health practitioners in remote, rural and underserviced areas.

Space for SDGs

- Satellite communications technologies are helping to **bridge the access gap** that is often found in rural and remote communities.
- Space technologies enable **distance learning** programs that allow students and educators to access web based course content on their own schedules from anywhere with internet access.
- Space exploration frequently spark students' **interest in the STEM field** and can be a springboard for young boys and girls to become increasingly involved in the sciences.

UNOOSA's programmes and initiatives are designed to provide capacity-building, education, research and development support and technical advisory services to countries. These have helped to reduce the capabilities gap between spacefaring, and emerging/non-spacefaring nations

UNOOSA is working on a dedicated **Space for Women Project**. Its objectives are to strengthen and deliver targeted capacity-building and technical advisory activities, and promote efforts to encourage women and girls' involvement in STEM education.

Space for SDGs

- At least **1.8 billion people** globally use a source of **drinking water** that is **contaminated**
- Unsafe drinking water, unsafe sanitation and lack of hygiene – one of the major contributors to global mortality (about 870,000 deaths in 2016)
- Approximately **70%** of water abstracted from rivers, lakes and aquifers is **used for irrigation**
- More than **80% of wastewater** is discharged into rivers or the sea

<u>4 major UN-sponsored events addressed space technology for water management in last 10 years</u>

Space4Water Portal

- By 2030, substantially **increase water-use efficiency** across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity
- By 2030, **improve water quality by reducing pollution**, and substantially **increasing recycling and safe reuse globally**

<u>Earth applications:</u>
Weather prediction and flood forecasting, water management, controlling water quality, water supply, controlling marine pollution, monitoring ocean acidification and heat content, ice movement and snow cover, sensing polar ice size, growth and decline…

Space for SDGs

Earth applications:
Monitoring and improving road traffic, safety and navigation, tracking the world's air quality, monitoring air pollution in urban areas, strengthening waste management, supporting disaster risk reduction in all phases of disaster management, directly supporting resilience of societies…

- More than **half the world's population lives in cities**.
- In the last decade, over **800-thousand people** lost lives in disasters and economy suffered losses of over **$3 trillion**
- By 2030, significantly **reduce the number of deaths and** decrease the **direct economic losses** relative to global gross domestic product **caused by disasters and reduce** the adverse per capita **environmental impact of cities**

Space for SDGs

13 CLIMATE ACTION

15 LIFE ON LAND

Earth applications:
Monitoring and combating desertification and deforestation, combating illegal wildlife traficking, degradation of natural habitats, quantifying and modelling biodiversity, forest management, monitoring climate variables, awareness raising on climate action and mitigation, optimizing use of resources, reduction of GHG emissions

- Overall **decline of 60%** in the population sizes of **vertebrates** worldwide **since 1970**
- The **biomass of insects** is **declining by 2% a year**, threatening the very survival of many species worldwide
- Average **sea levels** have swelled about **23 cm** since 1880, with about 9cm in the last 25 years.
- **14** of the 15 **hottest years** on record have occurred **since 2000**

United Nations/Kenya Conference on Space Technology and Wildlife Management

Benefits of entry-level technology development

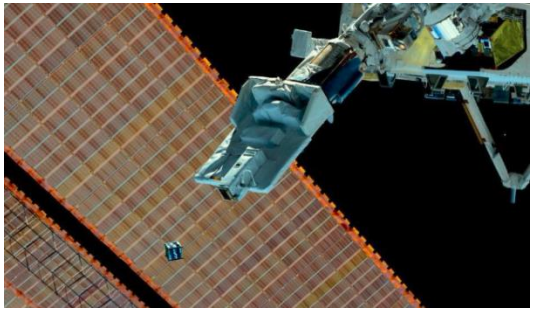
- **Affordable entry point** to establish a capacity for development in the space domain;
- **Limited** initial **infrastructure and** development **cost**;
- **Training and education** for engineers and project managers with transferable skills;
- Acquisition of technical capabilities, with potential **spin-offs** into other industrial sectors → workforce development;
- Establishment of **commercial businesses**;
- Opportunities for international space **cooperation**;
- **First stepping-stone** in developing and enhancing a country's space capacity;

+ possible applications targeting other goals

Access to Space for All: opening space to everyone

Research:

- ZGIP-Zero Gravity Instrument Project
- DropTES experiments
- ESA Large Diameter Centrifuge

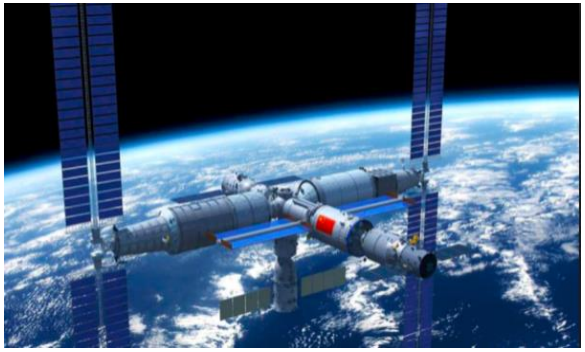


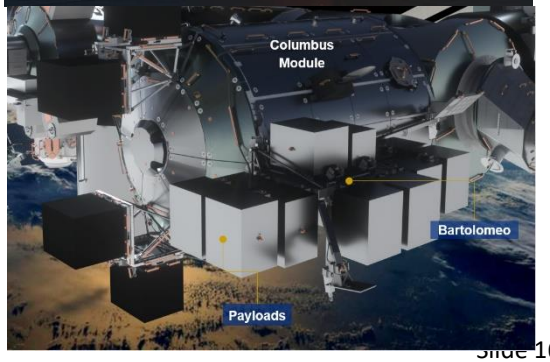
Access to the ISS:

- KiboCUBE
- Airbus/Bartolomeo

Orbital Opportunities:

- Sierra Nevada Corporation
- Chinese Space Station





UN-SPIDER

UNOOSA's **UN Space-based Information for Disaster Management and Emergency Response (UN-SPIDER)** programme was created in 2006 to help communities, particularly in developing countries, fully take advantage of disaster-risk management from space-based technologies.

Advisory Missions:

- **TAM**: Technical Advisory Mission
- **ISM**: Institutional Strengthening Mission
- **EM**: Expert Missions

<u>Recent missions :</u>

Myanmar (2019), Lao PDR (2019), Ghana (2018), Nepal (2017), Sierra Leone (2017), Haiti (2017), Dominican Republic (2016)

Around **40 countries** benefited from the various advisory missions

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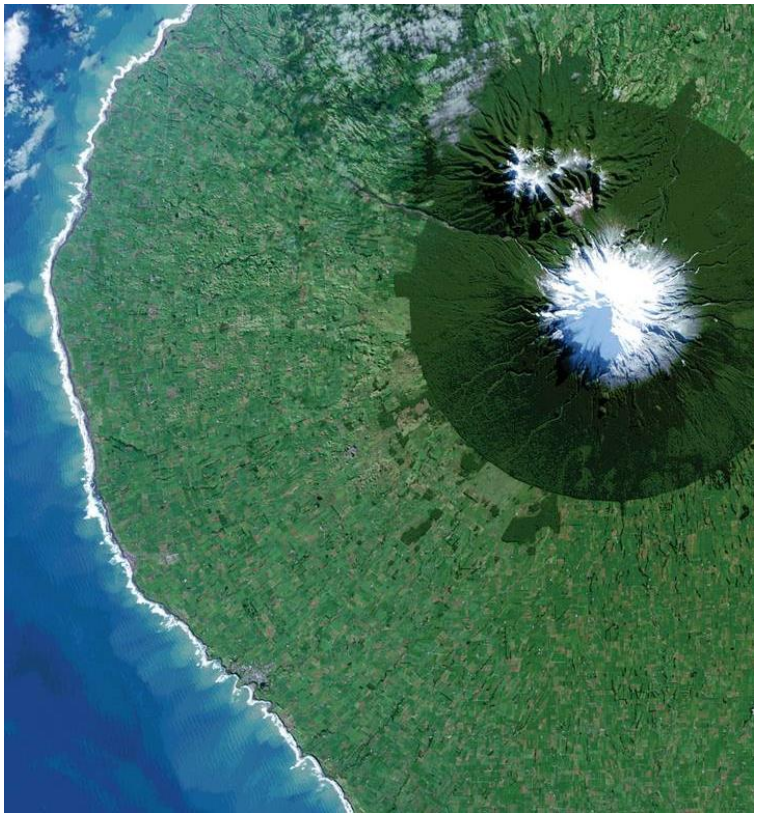
SPACE4SDGS

Network of UN-SPIDER

Space Solutions for the Pacific

- Project objectives:
  - Link space users and space solution providers;
  - Raise awareness of the needs of developing countries;
  - Contribute to the planning of future global space development such as the “Space2030” agenda.
  - Strengthen UNOOSA links with Pacific Island Countries and other key regional stakeholders.
- Initial phrase will run from October 2018 – November 2019.
- Deliverable: a publicly accessible space user needs report and space for development profiles drafted for Pacific Island Countries



Project is performed with the generous support of the Government of New Zealand

UNOOSA and the Belt and Road Initiative

June 2018, UNOOSA/China National Space Administration (CNSA) signed a declaration of intent to cooperate on the Belt and Road 'Space Information Corridor' to achieve the SDGs using space technology and its applications.

The declaration outlines joint efforts to support countries along the Belt and Road, and other developing countries, through UNOOSA/CNSA cooperation on :

- Access data and data sharing for monitoring SDG indicators.
- Development integrated space solutions for sustainable development.
- Access to ground and in-orbit space facilities.
- Capacity building on satellite-related technologies development.

UNOOSA Information Portals

- UN-SPIDER Knowledge Portal: Space4DisasterManagement

un-spider.org

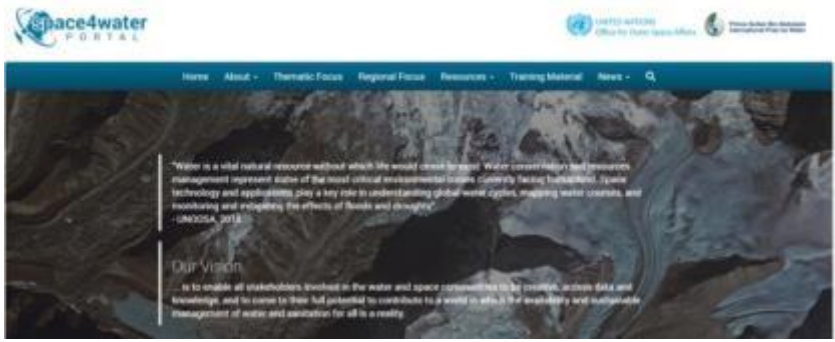
- Space4Water Portal in collaboration with Prince Sultan Bin Abdulaziz International Prize for Water. *Launched in October 2018*

space4water.org

- Space4SDGs Portal (Under Construction)

space4sdgs.org

- Space Solutions Compendium (Open Database) – in collaboration with ESA
- Global space user need repository – Under Planning



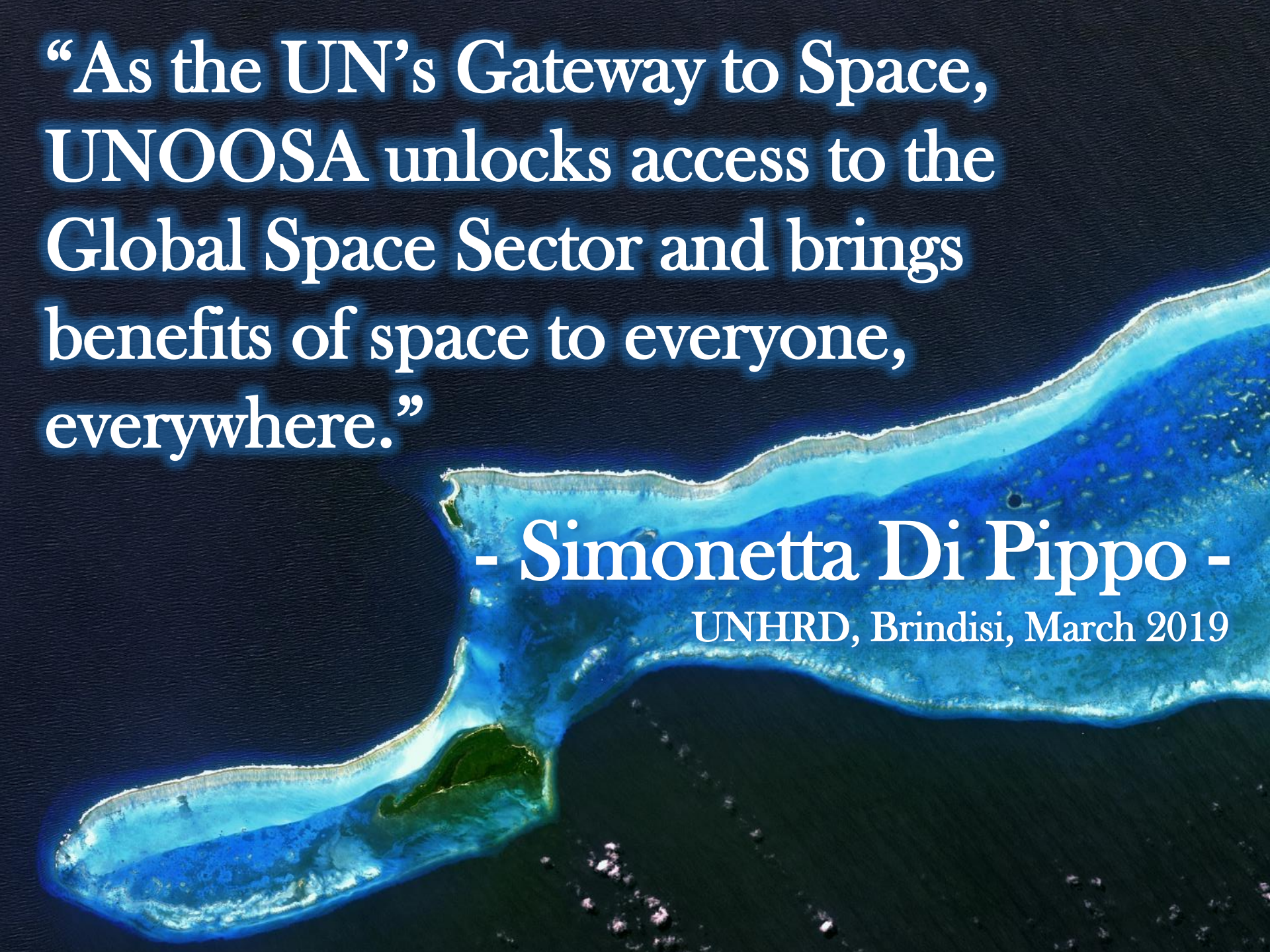
UNISPACE+50: the Space2030 agenda

- **Dedicated resolution** endorsed by COPUOS and then adopted at the 2018 UNGA, inviting MS to **develop the "Space2030"**
- **Space agencies** to **support elaboration** of "Space2030" and are keen on working with the United Nations
- New **Agenda item** and new **Working Group** in COPUOS with mandates until 2020

Special focus on **non-state actors** as major drivers of the future space sector

Aim **to strengthen international cooperation** in the peaceful uses of outer space to bridge the space divide

UNISPACE+50


“As the UN’s Gateway to Space, UNOOSA unlocks access to the Global Space Sector and brings benefits of space to everyone, everywhere.”
- Simonetta Di Pippo -
UNHRD, Brindisi, March 2019

THANK YOU

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