WATER SCARCITY WEBINAR

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Agenda

ESA Welcome and Introduction

About ESA's *Water Scarcity* Competition

Water Scarcity and Space

How to Apply to the *Water Scarcity* Competition

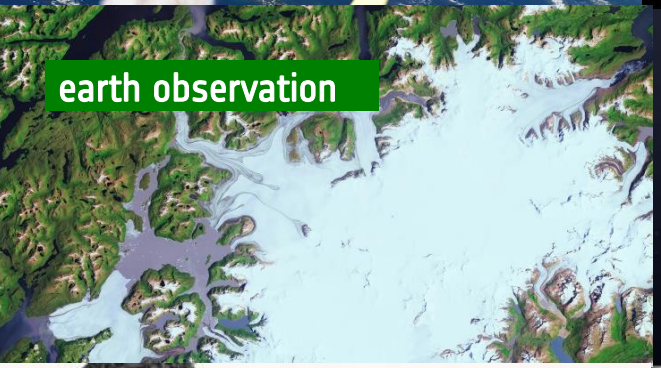
Quest Speaker - Nina Kickinger United Nations Office for Outer Space Affairs Space4water

Q&A Session


space transportation


science


human spaceflight


earth observation

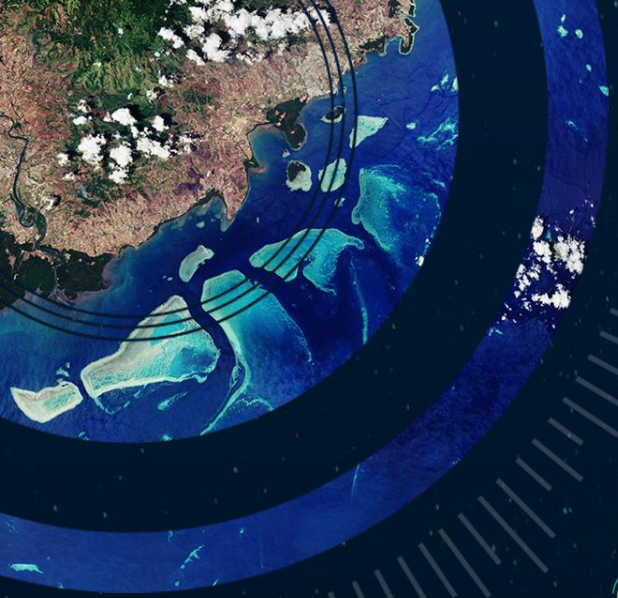

telecommunications
and applications


navigation


exploration


operations


technology



MARITIME

HEALTHCARE

TRANSPORT

ENVIRONMENT

AGRICULTURE

MEDIA

ENERGY

EDUCATION

AVIATION

FINANCIAL

SPACE WEATHER

EARTH OBSERVATION

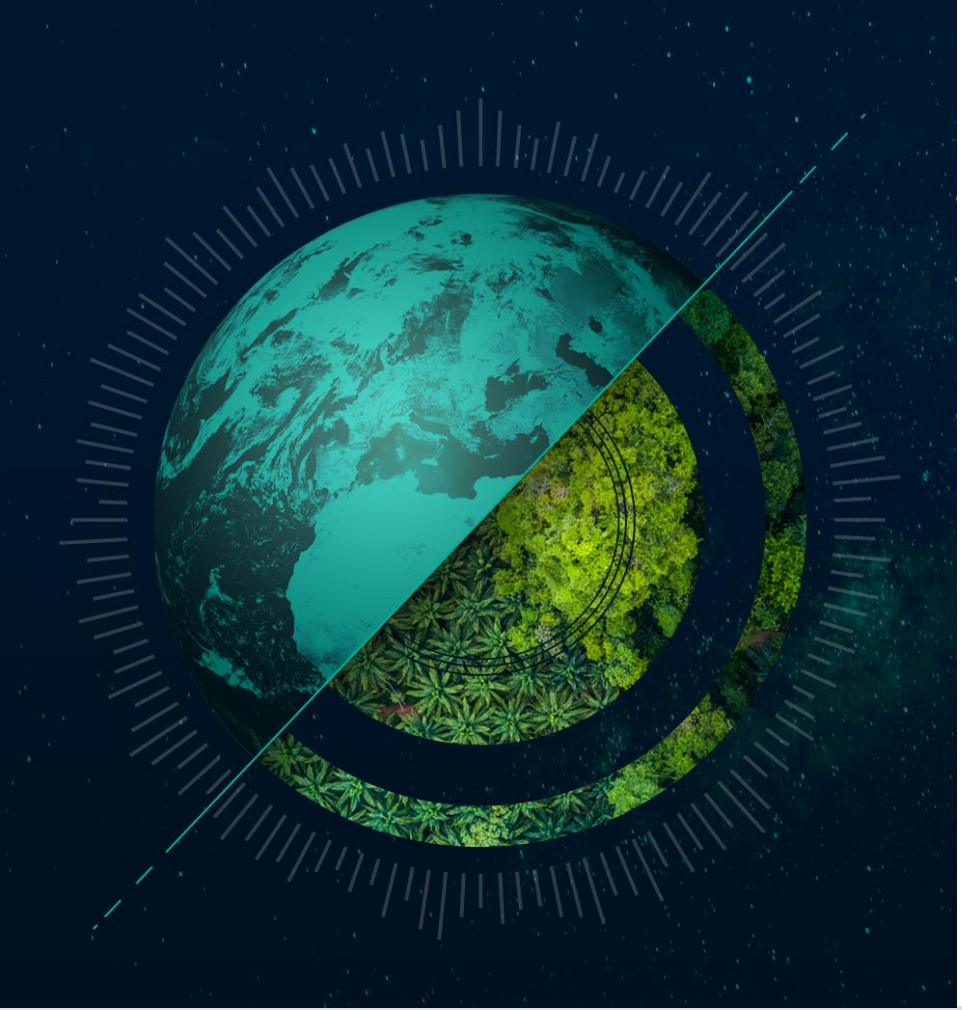
SATELLITE NAVIGATION

SATELLITE COMMUNICATION

HUMAN SPACEFLIGHT TECHNOLOGIES

esa
space solutions

Supporting the Development of
Services on Earth that Involve Space



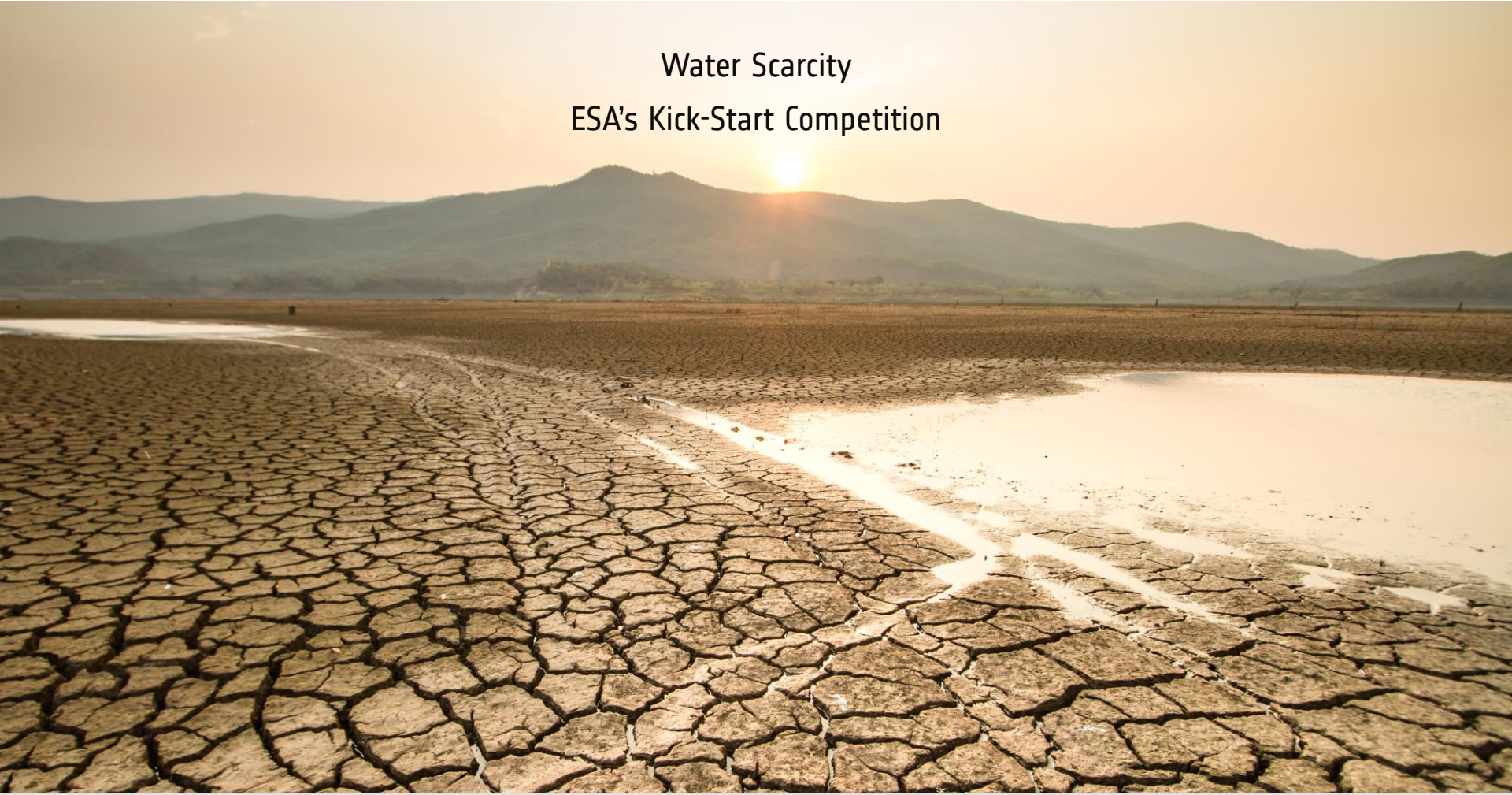
ESA SPACE SOLUTIONS

esa space solutions

- Zero-equity funding (from €50k to €2M+ per activity)
- A personalised ESA consultant
- Technical support and commercial guidance
- Tailored project management support
- Access to our international network of ESA and partners
- Access to our network of investors
- Credibility of the ESA brand

Water Scarcity

ESA's Kick-Start Competition



Water Scarcity: An Introduction

Water is one of the most important substances on Earth and covers 70% of the planet.

However, freshwater makes up a very small fraction with 97% being saline and ocean-based.

While the amount of freshwater on the planet has remained fairly constant over time, the world's population has exploded, meaning that freshwater is threatened by significant forces, like overdevelopment, polluted runoff, and global warming.

Water Scarcity: About the Kick-Start

The “Water Scarcity” Kick-Start offers support and funding to companies developing services to help alleviate water scarcity problems.

The competition opens on Monday 20 September 2021 and closes on Friday 29 October 2021

If you are interested in applying please submit a proposal between the opening and closing date.

Water Scarcity: About the Kick-Start

Winners of the competition will run a 6 month study, called a Kick-Start.

During the Kick-Start teams will:

1. Engage with users and potential customers of the proposed service
2. Assess the technical feasibility of the service
3. Develop the business model and plan

ESA will provide funding of 75% for a maximum of €60K to each winning team.

Visit: https://business.esa.int/funding/intended-tender/water-scarcity

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

1. Desalination Plants

Desalination plants – which turn seawater into freshwater – can be vital in water-stressed countries with coastlines.

However, they can have a negative impact on the surrounding environment.

Space solutions to help in planning, monitoring and operations of desalination plants, as well as to mitigate the environmental impact of desalination plants.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

2. Groundwater Depletion

Groundwater is vital across the world, especially where surface water supplies are not available.

However, society is drawing down these groundwater supplies at unsustainable rates.

Space applications to help assess the loss of storage capacity for given aquifers, determine the rate of groundwater depletion, and monitor infrastructure impacted by land subsidence (when soil drops due to groundwater overuse) are needed.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

3. Modernising the water and wastewater industry

During wet times, it is essential to effectively control the surplus of water, and during dry times, it is key to distribute water optimally.

Smart technologies and space data could change conventional water and wastewater systems into instrumented, interconnected, and intelligent systems.

Satellite downstream applications could improve water revenue, support sustainable water production and recycling, reduce operating costs, and handle water usage peaks.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

4. Reducing water loss during distribution

Clean water is often lost in the water distribution system, never reaching its destination. One of the primary causes of water loss is leaking pipes and equipment due to bursts or breaks.

When a leak occurs, it can take weeks before it is noticed, and can be difficult to localise the exact problem area in a huge, wide-reaching network.

To reduce water loses, satellite downstream applications could be used to monitor landscapes and infrastructure, detect leaks, and help to repair seepages.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

5. New farming techniques that use less water

Aeroponic and hydroponic systems do not require soil to grow plants.

They require up to 95% less water than traditional growing systems, and reduce the need for pesticides and fertilisers.

Plants can be cultivated indoors and outdoors but rely on a controlled environment for temperature and lighting.

Satellite applications to monitor and optimise outdoor aeroponic and hydroponic systems would be beneficial.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

6. Water harvesting

In arid and semi-arid regions, the scarcity of water can be alleviated by water harvesting.

Water harvesting, or rainwater harvesting, is the activity of collecting and storing rainwater and surface runoff, so that it can be distributed.

Satellite applications to optimise water harvesting techniques would be advantageous.

Topics of Relevance

We would like to see ideas covering the following topics submitted to the Water Scarcity Kick-Start:

7. Data-driven water conservation applications

The use of satellite applications, smart devices, Internet of Things (IoT), and sensors could help large users of water (e.g. farmers, enterprises, etc.) to optimise water use.

They could do this by measuring water saturation in soil, managing irrigation, and helping to ensure that water is not overused on crops.

8. Water purification applications

New space applications to optimise freshwater filtration and encourage utilisation and filtration of wastewater would be advantageous.

The Value of Space

Spaceflight Techologies

Satellite Communication

Satellite Navigation

Satellite Earth Observation

Space Weather

Satellite Earth Observation (SatEO) - SatEO can be beneficial in a range of applications for water scarcity. It can be used for:

- surface water monitoring to ensure efficient planning and decision-making
- basin monitoring to monitor rainfall, soil moisture, vegetation, evapotranspiration, land surface temperature, flood frequency, water extent, water quality, land cover, tree cover percentage, tree cover loss, etc.
- monitoring and mapping irrigation to improve water efficiency
- evaluating the impacts on water bodies and ensuring water quality
- providing accurate information on flood and drought risks, as well as mitigation planning during natural and man-made disasters.

The Value of Space

Satellite Communication (SatCom)

- SatCom can enable communications between central hubs and remote locations when no terrestrial network is available. This is key in remote regions. SatCom can ensure system robustness and resilience by providing communication capabilities when terrestrial systems are down or not yet operational. It can also support Internet of Things (IoT)/ Machine-to-Machine Communication (M2M), by connecting networks of sensors used to monitor equipment.

Satellite Navigation (SatNav)

- Satellite Navigation is instrumental in tracking and tracing users, and geo-locating different objects. Global Navigation Satellite Systems (GNSS) are the main source of geo-referenced location data.

Who can apply?

- To be eligible for funding, your team must be based in one of the following countries: Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Spain, or Sweden.

- If you are considering applying, you must inform your National Delegation to obtain a letter of authorisation allowing the funding of the proposed activity.

- Contact details of each National Delegate can be found here: https://business.esa.int/national-delegations-0

- However, if your team is based in Luxembourg, Norway, Germany or Ireland you do ***not*** have to contact your National Delegate. The Luxembourgish Norwegian, German and Irish Delegations have pre-authorised this Kick-Start opportunity.

How to apply

1. Register your team on esa-star Registration today! https://esastar-emr.sso.esa.int

2. When the Kick-Start opens on 20 September 2021 visit esa-star Publication and search for this Water Scarcity opportunity to download the official competition documents. https://esastar-publication.sso.esa.int

3. Use the official documents to prepare your proposal

4. Reach out to your National Delegate (if applicable) to request a Letter of Authorisation. Contact details of each National Delegate can be found here: https://business.esa.int/national-delegations-0

5. Submit your proposal via esa-star Tendering before the deadline of 29 October 2021. https://esastar.sso.esa.int

Proposal Template

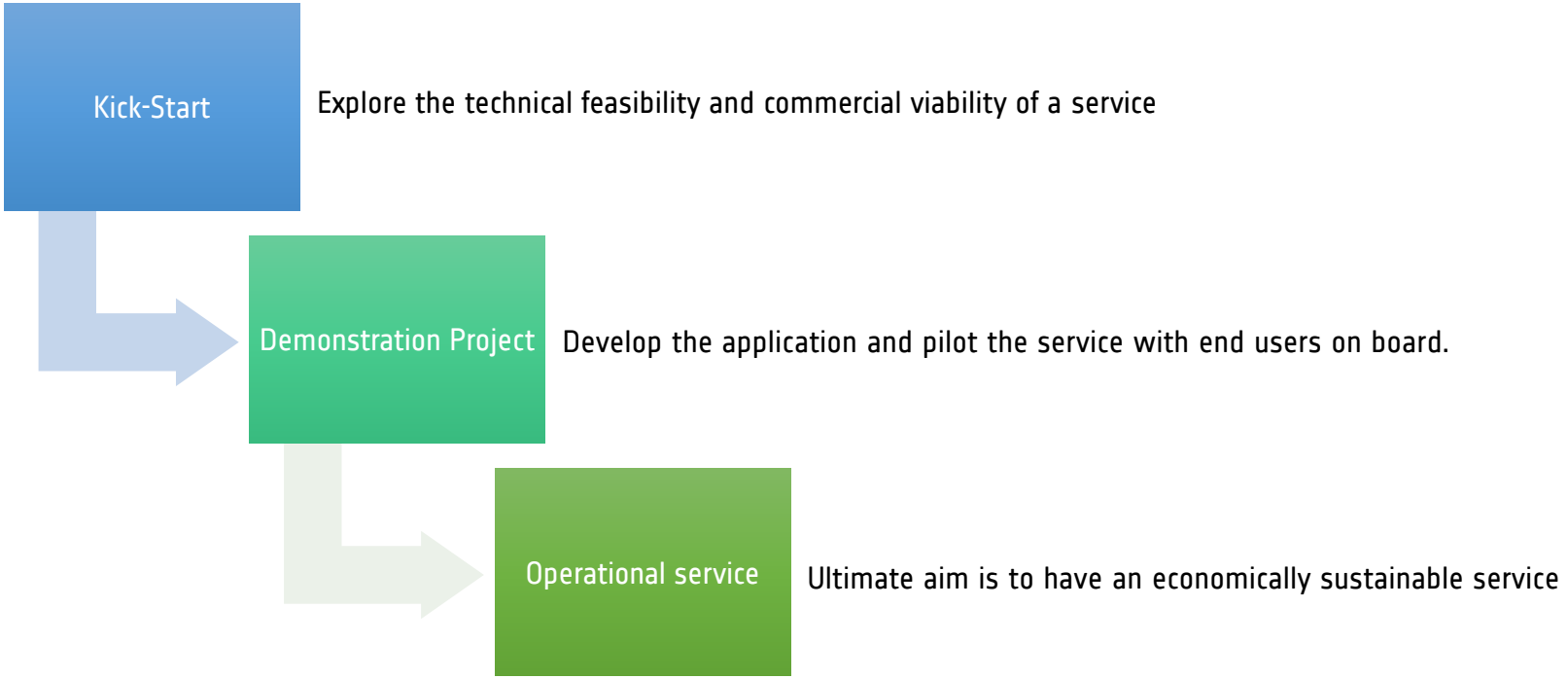
Your Proposal should include the following information:

1. Executive Summary (max 1 page)
2. Business Potential (max 5 pages)
3. Technical Concept (max 5 pages)
4. Team and Resources (max 3 pages)
5. Management (max 4 pages)
6. Financials (max 2 pages)

Kick-Start Study Tasks

	Study Kick Off Month 0	Mid-Term Review Month 3	Final Review Month 6	Study Outputs
Task 1	Engage with Users and Customers			Service Requirements
Task 2	Investigate Technical Feasibility			Service Architecture Definition
Task 3	Explore Economic Viability			Business Plan

Overall Aim of the Kick-Start



Checklist

Before applying, check that:

1. Your team is proposing a service that could become operational in the near future (1-4 years)
2. Your idea tackles a challenge relating to water scarcity
3. Your idea uses satellite data or space technology like satellite communication, Earth observation or navigation.
4. Your team is eligible for funding and has attained a letter of authorisation from the National Delegate (if applicable).
5. There is a market for your service and potential users/customers will be involved in the Kick-Start

Q&A Session

	Opening Date	Closing Date
Water Scarcity Kick-Start	20 September 2021	29 October 2021

Visit:

https://business.esa.int/funding/intended-tender/water-scarcity

To learn more about Space and Green Applications download this report:
https://business.esa.int/sites/default/files/Space%20For%20Green%20Applications.pdf