Organized by:

Hosted by:

Norsk Romsenter
Norwegian Space Agency

GLOC 2023

IAF GLOBAL SPACE CONFERENCE ON CLIMATE CHANGE

23 - 25 MAY 2023 | OSLO, NORWAY

Fire and Ice – Space for Climate Action

FINAL PROGRAMME

esa

→ EUROPEAN SPACE AGENGY

TAKING THE PULSE OF OUR PLANET FROM SPACE

www.esa.int

https://twitter.com/ESA_EO

instagram.com/esa_earth

THE GERMAN AEROSPACE CENTER

Climate change is not a future scenario, it is the present-day reality. Satellites enable changes to be recorded on a global scale, and the information they acquire serves as a basis for political and societal decisions directed towards ensuring sustainable development here on Earth. Experts at the German Aerospace Center (DLR) process and analyse data from Earth observation satellites for better understanding and coping the effects of climate change. They measure numerous trace substances in the atmosphere and monitor the polar ice caps, provide data from our everyday environment, support the protection of habitats such as rivers and lakes, and contribute to better information on air quality.

DLR is the Federal Republic of Germany's research centre for aeronautics and space. We conduct research, development and technology transfer activities in the fields of aeronautics, space, energy, transport, security and digitalisation. The German Space Agency at DLR plans and implements the national space programme on behalf of the federal government. Two DLR project management agencies oversee funding programmes and support knowledge transfer. Our 10,000 employees share a mission – to explore Earth and space and develop technologies for a sustainable future.

DLR.de/en

DLR

WWW.IAC2023.ORG

IAC 2023 BAKU

74th INTERNATIONAL ASTRONAUTICAL CONGRESS

2-6 OCTOBER 2023
BAKU, AZERBAIJAN

Global Challenges and Opportunities: Give Space a Chance

The beautiful city of Baku is awaiting you!

Register today and meet the international space community in October!

ORGANIZED BY:

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azercosmos

SUPPORTED BY:

SGAC

Norsk Romsenter
Norwegian Space Agency

CONTENTS

1 WELCOME MESSAGES

1.1 Welcome Message from IAF

Dear esteemed attendees of the Global Space Conference on Climate Change - GLOC 2023,

On behalf of the International Astronautical Federation (IAF), the world's leading space advocacy body, it is my honor as President to extend a warm welcome to all of you for our conference with the captivating theme "Fire and Ice – Space for Climate Action."

As the world's largest space organization representing 468 members across 75 countries, including prominent space agencies, companies, research institutions, universities, societies, associations, institutes, and museums worldwide, the IAF is committed to advancing the peaceful exploration and utilization of space for the betterment of humanity. Our focus on climate action is a crucial step in addressing one of the most pressing challenges of our time.

The Global Space Conference on Climate Change 2023 promises to be a landmark event, bringing together distinguished experts, practitioners, and enthusiasts from various fields to explore innovative ways in which space can contribute to climate action. The theme "Fire and Ice - Space for Climate Action" signifies the urgency of addressing climate change, which affects both polar regions and the global atmosphere. Through stimulating discussions, informative presentations, and interactive sessions, we aim to foster an inclusive and collaborative environment that encourages new ideas and actionable solutions.

Our carefully curated programme features renowned speakers, cutting-edge research presentations, and engaging IAF Global Networking Forum (IAF GNF) sessions that will provide valuable insights into the interplay between space and climate change. We are confident that the conference will facilitate meaningful exchanges of ideas and knowledge, foster new collaborations, and pave the way for impactful initiatives to tackle climate change.

I would like to express my profound appreciation to our Host, the the Norwegian Space Agency (NOSA) – an IAF Member since 1987, to our International Programme Committee (IPC) Co-Chairs and Members and to the IAF Secretariat team, whose dedication and hard work have been instrumental in bringing this conference to fruition. I also extend my gratitude to all the participants for their valuable contributions and commitment to addressing the challenges posed by climate change through the lens of space exploration and utilization.

I urge each of you to actively engage in the conference, share your perspectives, and collaborate with fellow attendees to drive positive change. Together, we can harness the power of space to create a more sustainable and resilient future for our planet.

Once again, I extend my warmest welcome to all of you for the Global Space Conference on Climate Change – GLOC 2023. Let's come together to explore the possibilities of space for climate action and make a meaningful impact.

Best regards,

Clay MOWRY
President,
International Astronautical Federation (IAF)

1.2 Welcome Message from NOSA

Dear GLOC 2023 participants,

The Norwegian Space Agency (NOSA), together with the International Astronautical Federation (IAF), is very happy to finally welcome you to the Global Space Conference on Climate Change – GLOC 2023. The effects of climate change are increasingly being experienced around our precious planet. From the arctic regions to the tropical rainforests weather patterns are changing, habitats are affected and the life in exposed communities are being challenged through rising sea levels, drought, tropical storms and thawing tundra. Global leaders and local governments are seeking solutions to these challenges.

This year´s first-of-its-kind conference is bringing together politicians, industry leaders, heads of space agencies, NGOs and scientists from around the world to discuss solutions and identify concrete actions. "Fire and Ice – Space for Climate Action" is a fitting slogan for the event, as we set out to jointly identify concrete actions which may help in bringing the world forward in solving the challenges of climate change - by improving our understanding of effects of climate change, stopping tropical deforestation and illegal fisheries, adopting to a changing weather, or reversing damaging activities.

Finding new solutions are of little value if they do not include those who are affected. Closing the gap between political ambitions and local implementation is part of the challenge. Combining compensating actions with local value creation will contribute to creating jobs and improving daily life. Satellite infrastructure and services may help in this endeavor, either by providing unique solutions or as a supplement to other initiatives. At GLOC 2023 we will take the necessary dialogue to identify what these solutions may be. We will seek to bring the results from GLOC 2023 forward to the COP28 in Dubai.

I look forward to personally greet you in the vibrant city of Oslo. We hope you will enjoy the beauty of springtime, culture and hospitality of our beautiful capital.

Christian HAUGLIE-HANSSEN
Director General,
Norwegian Space Agency (NOSA)

1.3 Welcome Message from the IPC Co-Chairs

Dear GLOC participants:

It is an honor to welcome you to the 2023 Global Space Conference on Climate, here in Oslo, Norway, organized by the International Astronautical Federation (IAF) and hosted by the Norwegian Space Agency (NOSA).

The Conference theme of "Fire and Ice - Space for Climate Action" accurately reflects the two extremes of planetary processes in the equatorial and polar regions that are being impacted by human activity here on Earth. This Conference, a unique combination of policy makers, scientists, the space community, philanthropies, and the press, promises to advance the dialogue and, more importantly action, between and among parties that often do not connect with one another.

The space community continues to pioneer new measurements and to create the long time series of data that enable assessing climate change, predicting the future, and putting the critical information into the hands of decision makers. This conference is a forum for exchanging ideas and sharing future activities, and we all strive for creating meaningful content and lasting impact.

Plenaries, Highlight Lectures, IAF Global Networking Forum, Technical Sessions, and Interactive Presentation Sessions, provide ample opportunities for connecting and reconnecting across geographies, domains, sectors, and organizations.

Please take advantage of these opportunities to ensure that this Event advances Space for Climate Action!

James GRAF
Director,
Earth Science and Technology,
NASA Jet Propulsion Laboratory (JPL),
United States

Ole Morten OLSEN
Director,
Business development and Innovation,
Norwegian Space Agency (NOSA),
Norway

Barbara J. RYAN
Executive Director,
World Geospatial Industry Council (WGIC),
United States

2 ORGANIZER AND HOST INFORMATION

2.1 ORGANIZER: International Astronautical Federation (IAF)

Founded in 1951, the International Astronautical Federation is the world's leading space advocacy body with 468 members in 75 countries, including all leading space agencies, companies, research institutions, universities, societies, associations and institutes worldwide.

Following its theme *"A space-faring world cooperating for the benefit of humanity"*, the Federation advances knowledge about space, fostering the development and application of space assets by promoting global cooperation.

As organizer of the annual International Astronautical Congress (IAC) and other thematic meetings, the IAF actively encourages the development of astronautics for peaceful purposes and supports the dissemination of scientific and technical information related to space.

International Astronautical Federation (IAF)

100 Avenue de Suffren
75015 Paris
France

Phone: +33 1 45 67 42 60
Email: info@iafastro.org
Website: www.iafastro.org

Connecting @ll Space People
for a sustainable future

Be part of the conversation @iafastro

2.2 HOST: Norwegian Space Agensy (NOSA)

The Norwegian Space Agency (NOSA) is a government agency under the Ministry of Trade, Industry and Fisheries. NOSA promotes the development, co-ordination and evaluation of national space activities as well as supports Norwegian interests in the European Space Agency (ESA) and the space programmes of the European Union.

The Government has defined the following goals for Norwegian space activities: 1. Promoting profitable companies, growth and employment 2. Meeting important needs of society and user groups 3. Ensuring satisfactory protection of important space infrastructure 4. Securing Norwegian foreign, security and defence policy interests in space activities and in outer space.

Norwegian Space Agensy (NOSA)

Drammensveien 165 - P.O. Box 113 Skoyen
0212 Oslo
Norway

Phone: +47 22511800
Email: spaceagency@spaceagency.no
Website: https://www.romsenter.no/eng

3 INTERNATIONAL PROGRAMME COMMITTEE

3.1 International Programme Committee Co-Chairs

James GRAF
Director,
Earth Science and Technology,
NASA Jet Propulsion Laboratory (JPL),
United States

Ole Morten OLSEN
Director,
Business development and Innovation,
Norwegian Space Agency (NOSA),
Norway

Barbara J. RYAN
Executive Director,
World Geospatial Industry Council (WGIC),
United States

3.2 International Programme Committee Members

Ofira AYALON
University of Haifa and Samuel Neaman Institute, Israel

Krystal AZELTON
Secure World Foundation (SWF), United States

Tasso AZEVEDO
SatelliteVu, United Kingdom

Jonathan BAMBER
University of Bristol, United Kingdom

Christian BANK
European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), Germany

Andrea BERSAN
Maxar Technologies, United States

Lars-Anders BREIVIK
Norwegian Meteorological Institute (MET Norway), Norway

Alexandre CALDAS
UN Environment Programme (UNEP), Switzerland

Katherine CALVIN
National Aeronautics and Space Administration (NASA), United States

Thomas CERNEV
Centre for the Study of Existential Risk (CSER), United Kingdom

Rajae CHAFIL
Climate Change Competence Center of Morocco (4C Maroc), Morocco

Bruce CHESLEY
Teaching Science and Technology, Inc (TSTI), United States

Harry CIKANEK
NOAA's Center for Satellite Applications and Research (STAR), United States

Massimo Claudio COMPARINI
Thales Alenia Space, Italy

Paula DO VALE PEREIRA
Florida Institute of Technology, United States

Ole DOKKA
Spaceport Norway, Norway

Albertus J. (Han) DOLMAN
Egyptian Space Agency (EgSA), Egypt

Shimon ELKABETZ
Tomorrow.io, United States/ Israel

Nikki FELTHAM
Wasafari Consulting, United Kingdom

Lujia FENG
Nanyang Technological University, Singapore

Rune FLOBERGHAGEN
European Space Agency (ESA), Germany

Bernard FOING
ILEWG "EuroMoonMars", The Netherlands

Burcu GENÇ
Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats (TEMA), Turkey

Stéphane GERMAIN
GHGSAT Inc., Canada

Joe GIBBS
OirthirSAT, United Kingdom

Rei GOFFER
Tomorrow.io, United States / Israel

Mitch GOLDBERG
National Environmental Satellite, Data, and Information Service
(NOAA/NESDIS), United States

Beth GREENAWAY
UK Space Agency / Space4Climate, United Kingdom

Sonia GUAJARARA
Articulation of Indigenous Peoples of Brazil (APIB), Brazil

Steven HAMBURG
MethaneSAT, United States

Christian HAUGLIE-HANSSEN
Norwegian Space Agency (NOSA), Norway

Marcia HIROTA
Fundação SOS Mata Atlântica (SOSMA), Brazil

Uche IGWE
University of South Wales, Nigeria

Tørris JÆGER
The Rainforest Foundation, Norway

Johnny JOHANNESSEN
The Nansen Environmental and Remote Sensing Center, Norway

Claire JOLLY
Organisation for Economic Cooperation and Development (OECD), France

Frida KARANI
Sustainable Climate Action in Africa Conference, Kenya

Ruth KATTUMURI
Commonwealth of Nations, India / United Kingdom

Luke KEMP
The Centre for the Study of Existential Risk (CSER), University of Cambridge, United Kingdom

Adessou Kossivi NEVAEME
Climate Action Network International / Global Network of CSO for Disaster Reduction (GNDR), Senegal

Leo S. MACKAY, Jr
Lockheed Martin (LMC), United States

Pooja MAHAPATRA
Fugro/World Geospatial Industry Council, The Netherlands

Ryan MCKINNEY
Satellogic, United States

Christopher MERCHANT
University of Reading, United Kingdom

Andiswa MLISA
South African National Space Agency (SANSA), South Africa

Fiona MOEJES
Mawazo Institute, Kenya

Marianne MOEN
Norwegian Space Agency (NOSA), Norway

John E. MOORES
Canadian Space Agency (CSA), Canada

Sarah MUKHERJEE
Institute of Environmental Management & Assessment (IEMA), United Kingdom

Kumar NAVULUR
Maxar Technologies, United States

Hannes OTTÓSSON
Icelandic Centre for Research (Rannís), Iceland

Kim PEART
Space Pioneers Foundation, Australia

Clare PERRY
Environmental Investigation Agency, United Kingdom

Steven RAMAGE
Group on Earth Observations (GEO), United Kingdom

Giovanni RUM
Italian Space Agency (ASI), Italy

Paolo RUTI
European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), Germany / Italy

Robbie SCHINGLER
Planet, United States

Gunter SCHREIER
German Remote Sensing Data Center (DFD) of DLR, Germany

Brent SMITH
International and Interagency Affairs, National Oceanic and Atmospheric Administration (NOAA), United States

Sabrina SPEICH
Ecole Normale Supérieure, France

Kerstin STEBEL
Norwegian Institute for Air Research, Norway

Linda Anne STEVENSON
Asia-Pacific Network for Global Change Research (APN), United Kingdom

Jean-Noël THÉPAUT
European Center for Medium Range Weather Forecasts (ECMWF), France

Anna Maria TROFAIER
European Space Agency (ESA), Austria

John VAN AARDENNE
European Environment Agency (EEA), Denmark

Andrea VENA
European Space Agency (ESA), France

Sara VENTURINI
Group on Earth Observations (GEO), Switzerland

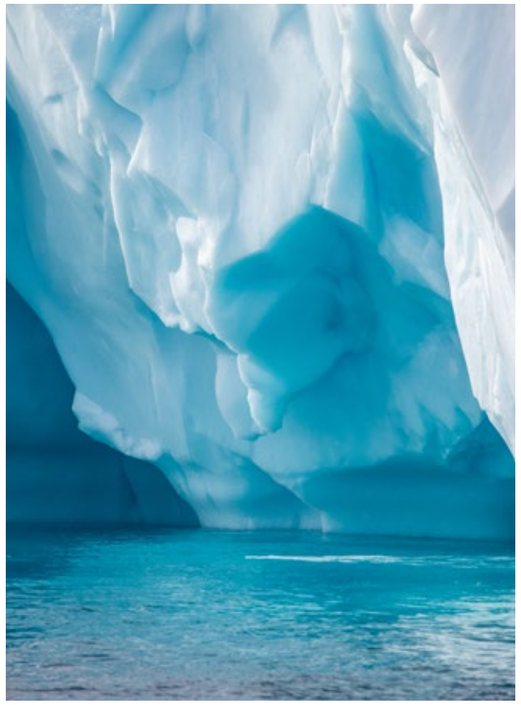
Kevin WARD
NASA Earth Observatory Group, United States

Charles WOOLDRIGE
International and Interagency Affairs Office, National Environmental Satellite, Data, and Information Service (NOAA/NESDIS), United States

Nigel YOCCOZ
Uniwersytet w Tromsø (UiT The Arctic University of Norway), Norway

Colin YOUNG
Caribbean Community Climate Change Centre (CCCCC), Belize

Andreas YTTERSTAD
Oslo Metropolitan University (OsloMet), Norway



4 PRACTICAL INFORMATION

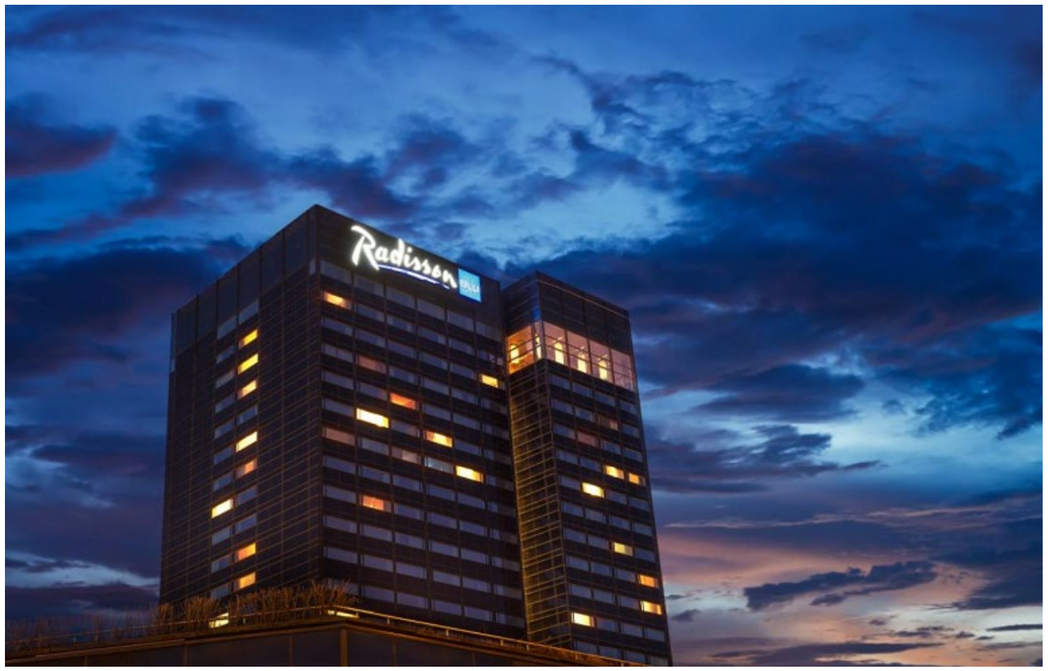
4.1 Conference Venue

Radisson Blu Scandinavia Hotel, Oslo

Address: Holbergsgate 30, Oslo, 166, Norway

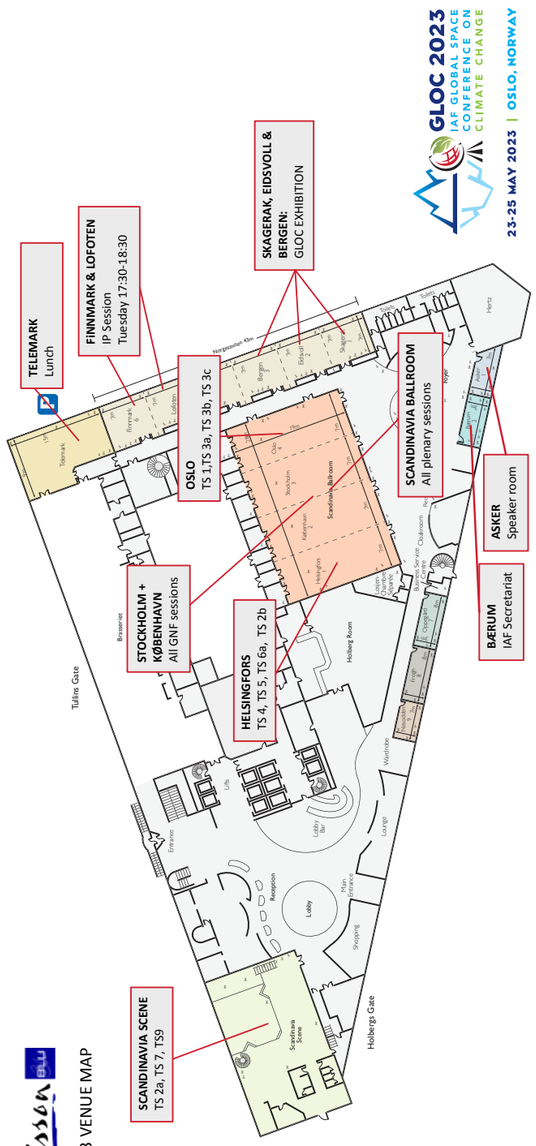
GLOC 2023 will take place at Radisson Blu Scandinavia Hotel, Oslo, a centrally located hotel in downtown Oslo in walking distance of all major sights and attractions. The venue offers a main conference hall in addition to two seminar halls, exhibition space, additional meeting rooms and luncheon areas.

For more info on the venue please visit:
https://www.radissonhotels.com/en-us/hotels/radisson-blu-oslo-scandinavia



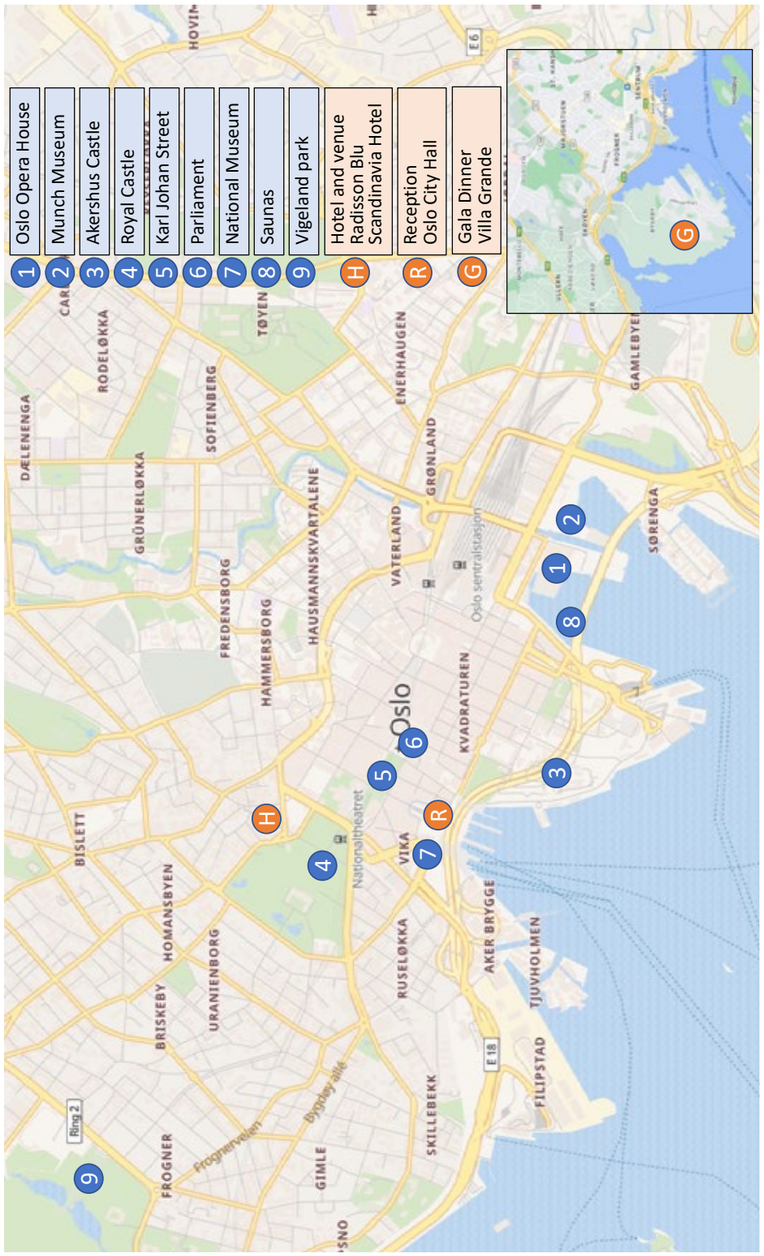
4.2 Floor Plan and Maps

Venue Floor Plan



GLOC 2023 VENUE MAP

Map of Oslo, Norway



4.3 Registration

Opening Hours

Monday 22 May: 14:00 - 20:00
Tuesday 23 May: 08:00 - 19:00
Wednesday 24 May: 08:00 - 18:00
Thursday 25 May: 08:00 - 13:00

4.4 Useful information

About Oslo

TRANSPORT

Oslo, the capital of Norway with a population of 700 000, is located in the Southeastern part of the country. It is accessible by airplane, train, bus, ferry and car.

General info on travel to Oslo https://www.visitoslo.com/en/transport/to-oslo/

Oslo Airport is located at Gardermoen, 47 kilometres (29 miles) north of Oslo's city centre.

Travelling between Oslo Airport (OSL) and the city centre by bus, train or taxi is easy. Train is most time efficient. The Airport Express train or regional lines takes you to Oslo Central Station in 22 minutes.

There is another airport located 110 km south of Oslo, Torp Sandefjord Airport, close to the city of Sandefjord. Transport options to Oslo are bus, train, taxi or rental car.

GETTING AROUND

Bus, metro or tram are convenient ways of getting around in Oslo. Or simply by feet, as most of the attractions are situated in or near the city centre.

Read more about how get around the city https://www.visitoslo.com/en/transport/in-oslo/

PHONE

Prefix for Norway is +47, or 0047. Telenor and Telia are the two main providers of mobile networks in Norway. Oslo has excellent 5G and 4G+ coverage.

MONEY

The Norwegian currency is NOK (Kroner) which is sometimes mistranslated into "crowns" in English. Approximately exchange rate (August 2022): 1 EUR = 10 NOK, 1 USD = 9,5 NOK
Cash is no longer king in Norway, and almost all establishments now accept debit or credit cards. Visa and MasterCard are the most commonly accepted credit cards, fewer accepting Amex or Diners.

OSLO – CULTURE, SKYLINE AND SAUNA

The capital of Norway is the country's most densely populated and most culturally diverse area. Located between the fjord and the surrounding forest Oslo is a town rich in culture – and unusually close to nature.

Since the new opera house put the town on the world's architectural radar in 2008, the city has gotten a brand-new skyline, and ambitious city development projects have transformed old areas and created whole new neighbourhoods.

Visual highlights in Oslo ranges from new landmark buildings to experimental street art. When you are done taking in the cityscape, it's time to explore the city's cultural attractions.

The MUNCH's collection, left to the city of Oslo by the artist himself, consists of paintings, graphical prints and drawings. Edvard Munch has a unique position among Nordic painters and is considered a pioneer in expressionism. The Munch museum opened in 2022 and of course you will find the famous painting «The scream» in the new museum.

The new National Museum also opened in 2022. It is the largest art museum in the Nordic countries. In the new exhibitions, older and modern art, architecture, design, arts and crafts, and contemporary art are presented under one roof and in new settings.

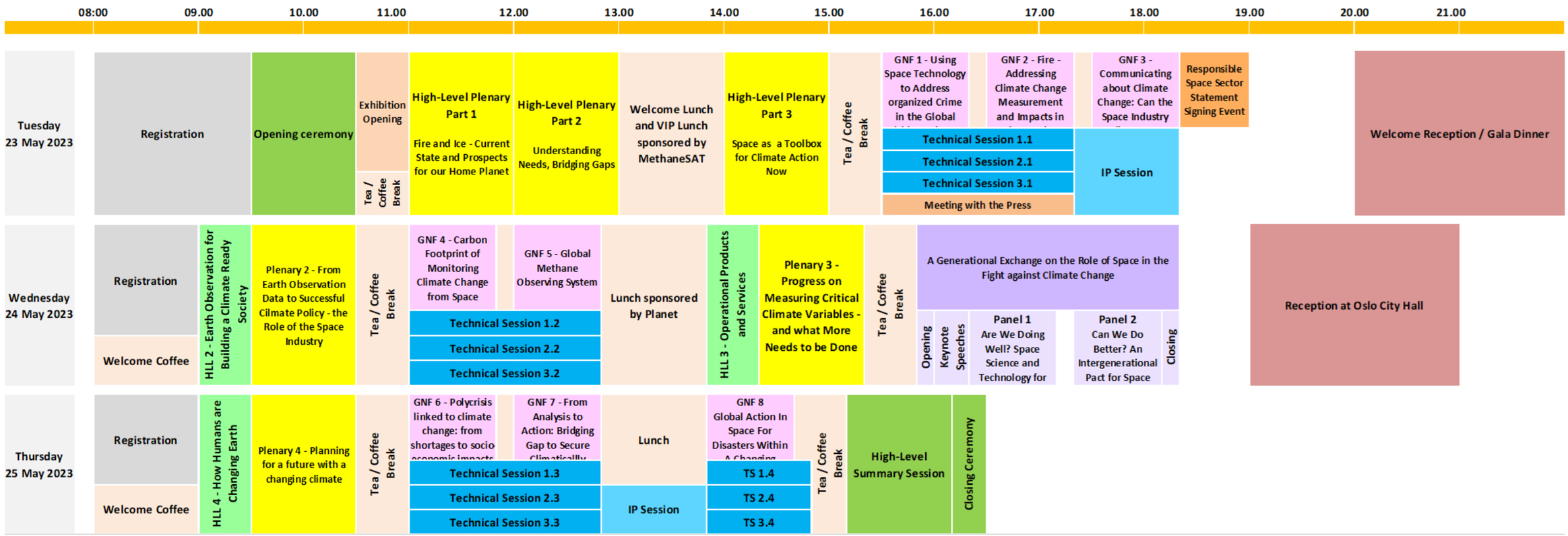
Urban sauna culture from our neighbours in Finland has taken Oslo by storm. The fjordside saunas are located along the harbour promenade and boasts several options for sauna sessions followed by refreshing dips in the fjord.

Other must-sees are the Royal Palace, the Akershus Fortress, the Vigeland Park and the islands.

Visit Oslo, the best site to pick up tourist information and tips for Oslo

5 CONFERENCE PROGRAMME

5.1 Conference at a Glance



5.2 Day-by-day Programme

Tuesday 23 May 2023

Master of Ceremony

Christian FEICHTINGER
Executive Director,
International Astronautical Federation (IAF),
France

09:30 - 10:30 Opening Ceremony

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Speakers:

Clay MOWRY
President,
International Astronautical Federation (IAF),
Chief Revenue Officer,
Voyager Space Holdings,
United States

Christian HAUGLIE-HANSSEN
Director General,
Norwegian Space Agency (NOSA),
Norway

Espen Barth EIDE
Minister,
Ministry of Climate and Environment,
Norway

IAF Special Award on Space for Climate Protection Ceremony Speakers:

Josef ASCHBACHER
Director General,
European Space Agency (ESA),
France

Simonetta CHELI
Director of Earth Observation Programmes and Head of ESRIN,
European Space Agency (ESA),
Italy

Susie Perez QUINN
Chief of Staff,
National Aeronautics and Space Administration (NASA),
United States

Karen ST. GERMAIN
Director for Earth Science,
National Aeronautics and Space Administration (NASA),
United States

Koji TERADA
Vice President,
Japan Aerospace Exploration Agency (JAXA),
Japan

Anthony TSOUGRANIS
Vice President for Honours and Awards,
International Astronautical Federation (IAF),
Europe Team Lead,
National Aeronautics and Space Administration (NASA)
United States

MODERATOR
Ru A. KERMANI
Journalist,
BBC/CNN,
United Kingdom

10:30 - 11:00 Exhibition Opening

Location: Radisson Blu Scandinavia Hotel

10:30 - 11:00 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

11:00 - 12:00 HIGH-LEVEL PLENARY PART 1: Fire and Ice - Current State And Prospects For our Home Planet

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

This High-Level Plenary will discuss the current state the future prospect for our planet Earth. The session will establish what we know about the current state of climate change, what we are doing and what we are not doing. During the session, panelists will present the hard up to date facts, the global impact (societal and economic), as well as the different developing trends and scenarios, and will ultimately discuss how all of these aspects are connected to space: (60% of the 54 ESV (Essential Climate Variable) is addressed by satellite infrastructure) and how can space support an even faster action. Panelists will engage and discuss the way forward, and the roles that governments and international organizations must play.

Speakers:

Espen Barth EIDE
Minister,
Ministry of Climate and Environment,
Norway

Josef ASCHBACHER
Director General,
European Space Agency (ESA),
France

Susie Perez QUINN
Chief of Staff,
National Aeronautics and Space Administration (NASA),
United States

Richard SPINRAD
Under Secretary of Commerce for Oceans and Atmosphere & Administrator,
National Oceanic and Atmospheric Administration (NOAA),
United States

Koji TERADA
Vice President,
Japan Aerospace Exploration Agency (JAXA),
Japan

MODERATOR
Ru A. KERMANI
Journalist,
BBC/CNN,
United Kingdom

12:00 - 13:00 HIGH-LEVEL PLENARY PART 2: Understanding Needs, Bridging Gaps

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

This High-Level Plenary will present what developed and developing countries need to do in order to face the current climate change impacts. It will highlight the current barriers and will help understand how to bridge the gaps and enable faster climate actions. During this session the panellists are invited to discuss how space can become more accessible and develop platforms for new solutions. The aim of this session is to focus the discussion on what countries have to do in order to ensure that end users (government, companies) can better understand the needs in order to lower the barriers and increase the adoption of solutions.

Speakers:

Bjørnar Selnes SKJÆRAN
Minister,
Minister of Fisheries and Ocean Policy,
Norway

Julian FOX
Team Leader National Forest Monitoring, MRV and platforms,
Food and Agriculture Organization of the United Nations (FAO),
Italy

Tom GARDNER
Head of Strategic Partnership,
Maldives Space Research Organization (MSRO),
Maldives

Nicole QUIJANO-EVANS
Deputy Director,
Crimes that Affect the Environment Program, Border Management Branch, United Nations Office on Drugs and Crime (UNODC),
Austria

Harshbir SANGHA
Missions and Capabilities Delivery Director,
UK Space Agency,
United Kingdom

MODERATOR
Emma GATTI
Editor in Chief,
SpaceWatch.Global,
Italy

13:00 - 14:00 Welcome Lunch

Location: Brasseriet, Radisson Blu Scandinavia Hotel

13:00 - 14:00 VIP Welcome Luncheon

Location: Holberg Room, Radisson Blu Scandinavia Hotel

Sponsored by: MethaneSAT™

WELCOME REMARKS
Clay MOWRY
President,
International Astronautical Federation (IAF),
Chief Revenue Officer,
Voyager Space Holdings,
United States

SPEAKER
Steven HAMBURG
Executive Manager,
MethaneSAT LLC,
United States

14:00 - 15:00 HIGH-LEVEL PLENARY PART 3: Space As A Toolbox For Climate Action Now

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

With an established understanding of the current state of needs and gaps, this High-Level Plenary will discuss the climate actions that need to be defined and implemented in order to face the climate crisis. This session will present Space as a tool for climate action, focusing on remote sensing, earth observation, open data platforms, programs and more. The goal of the discussion is to connect countries, industries, agencies, in order to shape the foundation for new partnerships. This High-Level Plenary will finally define possible outcomes for GLOC 2023, as the first Space Climate Action Plan as deliverable.

Speakers:

Einar BJØRGO
Director,
United Nations Satellite Centre (UNOSAT),
Switzerland

Phil EVANS
Director General,
EUMETSAT,
Germany

Christian HAUGLIE-HANSSEN
Director General,
Norwegian Space Agency (NOSA),
Norway

Anke KAYSSER PYZALLA
Chair of the Executive Board, Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR),
Germany

Éric LALIBERTÉ
Director General for Space Utilization,
Canadian Space Agency (CSA),
Canada

Lionel SUCHET
Chief Operating Officer,
Centre National d'Etudes Spatiales (CNES),
France

MODERATOR
Emma GATTI
Editor in Chief,
SpaceWatch.Global,
Italy

15:00 - 15:30 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

Sponsored by: OHB

15:30 - 16:20 IAF GNF SESSION: IUU Fishing - Using Space Technology To Address Organized Crime In The Global Fishing Industry

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

According to the UN Food and Agriculture Organization (FAO), Fisheries and Aquaculture Department, illegal fishing has caused losses estimated at US$23 billion per year. This panel will discuss how one can use space technology to monitor and safeguard global oceans, to facilitate for a fair and sustainable use of our oceans. The panel will consist of Gunnar Stølsvik, Director Blue Justice, Nina Buvang Vaaja, Director BarentsWatch, and Marte Indregard, CCO KSAT. The panel will be moderated by Martin Skedsmo, Key Account Manager EO, KSAT.

Organized by: KSAT – KONGSBERG SATELLITE SERVICES

Speakers:

Nina BUVANG VAAJA
Director,
BarentsWatch,
Norway

Marte INDREGARD
Chief Commercial Officer,
Kongsberg Satellite Services (KSAT),
Norway

Gunnar STØLSVIK
Director,
Blue Justice,
Norway

MODERATOR
Martin SKEDSMO
Key Account Manager EO Sales,
Kongsberg Satellite Services (KSAT),
Norway

15:30 - 17:20 Technical Sessions

No.	Title	Room
T.2A	Climate Change Impacts and Challenges (Biodiversity, Forests and Land, Ocean/Marine Ecosystems, the Artic and beyond) [1]	Scandinavia Scene
T.3A	Earth Observing Missions and Systems to Address Climate Change and Its Impacts [1]	Oslo
T.6A	Space Technology for Climate Adaptation and Mitigation [1]	Helsingfors

15:30 - 17:30 Meeting with the Press

Location: Holberg Room, Radisson Blu Scandinavia Hotel

This session has been designed specifically for journalists as an opportunity to interview all the high-level speakers present at the conference. Contact media@iafastro.org to book an interview.

16:30 - 17:20 IAF GNF SESSION: Fire - Addressing Climate Change Measurement And Impacts In The Tropics

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

Climate Change is the greatest environmental challenge in the 21st century, and with worsening impact predicted for generation to come, climate change is high on economic, strategic, and political agendas worldwide. Climate change has dramatic impacts connected with extreme weather events like heatwaves, floods, and violent hurricanes but also with more longer-term effects such as the melting ice sheets and glaciers, sea level rise. These impacts can be devastating for populations living in high-risk areas, and tropical areas are certainly more exposed than others. In addition, the key role of tropical forests in absorbing and storing large amounts of CO2 from the atmosphere is dramatically at stake due to continuous deforestation and degradation from fire and selective logging. Earth observation satellite's global view capacity, high repetitivity and increased spatial resolution, provide key resources to monitor the impact of climate change and support policies aiming at mitigating and adapting to its effects. How can satellite data support climate change adaptation and mitigation in the Tropics? How can they help in attenuating root causes like anthropogenic harm to tropical forests? This panel brings together leading scientists and scholars from space and development agencies and universities to discuss how space data can offer concrete solutions to tackle climate changes risks in the Tropics.

Organized by: esa

Speakers:

Dominic FAWCETT
Earth Observation Scientist and Research Fellow,
Landscape and Ecosystem Dynamics Group, University of Exeter,
United Kingdom

Julian FOX
Team Leader National Forest Monitoring, MRV and platforms,
Food and Agriculture Organization of the United Nations (FAO),
Italy

Susanne MECKLENBURG
Head of the ESA Climate Office,
European Space Agency (ESA),
United Kingdom

Karen ST. GERMAIN
Director for Earth Science,
National Aeronautics and Space Administration (NASA),
United States

Alessia TRICOMI
Senior Remote Sensing Data Scientist,
E-Geos,
Italy

MODERATOR
ANDREA VENA
Chief Climate and Sustainability Officer,
European Space Agency (ESA),
France

17:20 - 18:20 IP Session

Location: Brasseriet, Radisson Blu Scandinavia Hotel

Please see page 56 for full list of presentations.

17:30 - 18:20 IAF GNF SESSION: Communicating About Climate Change: Can The Space Industry Tell Our Story Better?

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

Climate change is one global challenge where use of space based Earth observations can have the most help because of the ability to capture environmental and socio-economic data over a range of spatial, spectral and temporal resolutions. But how do the public, policymakers, and other stakeholders understand this value of Earth observation and other space data and assets to addressing climate change? What can the space community to do increase awareness and engagement around climate change mitigation and adaptation efforts? This session will feature a variety of communications, space and climate change experts to discuss outreach and community understanding of how space assets and data serve as a tool for climate action.

Organized by: SECURE WORLD FOUNDATION

Speakers:

Camille BERGIN
Senior Business Development, Vast & @TheGalacticGal,
Orbit Fab,
United States

Emma GATTI
Editor in Chief,
SpaceWatch.Global,
Italy

Wu LEI
Producer and Senior Space Correspondent,
CGTN,
China

Aravind RAVICHANDRAN
Founder,
TerraWatch Space,
France

MODERATOR
Krystal AZELTON
Director of Space Applications Programs,
Secure World Foundation (SWF),
United States

18:30 - 19:00 SCO Signature Event & Responsible Space Sector Charter Signing Event

Location: Kobenhavn & Stockholm, Radisson Blu Scandinavia Hotel

20:00 - 22:00 Gala Dinner

Location: Villa Grande, Huk Aveny 56, 0287 Oslo

Wednesday 24 May 2023

09:00 - 09:30 HIGHLIGHT LECTURE: Earth Observation For Building A Climate Ready Society

HLL

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Space-based products and services can be used to monitor key aspects of the Earth system and identify how and where climate impacts are occurring. This lecture will discuss how Earth observations contribute to climate change adaptation strategies and play a key role in increasing climate resilience for communities worldwide. It will also provide an outlook on expectations for future satellite capabilities and emphasize the importance of international partnerships - across all sectors - for advancing climate observation capabilities and building climate ready societies.

Speaker:

Richard SPINRAD
Under Secretary of Commerce for Oceans and Atmosphere & Administrator,
National Oceanic and Atmospheric Administration (NOAA),
United States

09:30 - 10:30 PLENARY: From Earth Observation Data to Successful Climate Policy - The Role Of The Space Industry

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Available Earth Observation (EO) data monitors the whole surface of the Earth in real time. The resulting transparent and objective data can fill critical gaps in our understanding of the changing, dynamic planet. EO can therefore be a valuable ally to policymakers responding to climate change.

The value of EO for climate policy is already leveraged by policymakers globally. A growing number of pioneering governments are integrating EO technology into successful climate mitigation policies, for example, in the fight against tropical deforestation or mitigating global emissions. Likewise, EO is strengthening climate resilience programmes, improving prevention, preparedness, response and recovery from climate-related hazards such as forest fires and extreme weather events. These developments make EO indispensable for efficient monitoring, reporting, and verification systems, upholding informed policy decisions and driving progress towards defined climate targets.

The Earth Observation industry is an integral contributor to the space sector's value for climate policy. Upstream, commercial EO data goes beyond filling gaps in the public provision of spatial, spectral, and temporal resolution. Through relentless innovation and breakthrough advancements it offers enormous complementary and stand-alone value to monitor the impact of climate change. Downstream, value-added service providers are indispensable in transforming the combined wealth in public-private space data into practical insights for policymakers.

This session will explore the role commercial provision of EO data and services plays in developing, implementing, and evaluating climate policy. We will present and assess public programmes and policy initiatives leveraging industrial EO capabilities, forming the basis for a discussion on the opportunities and gaps to be addressed by the EO industry in the future of successful climate policy.

Speakers:

Julian FOX
Team Leader National Forest Monitoring, MRV and platforms,
Food and Agriculture Organization of the United Nations (FAO),
Italy

Will MARSHALL
Co-Founder and Chief Executive Officer,
Planet,
United States

Dyveke ROGAN
Deputy Director,
Norway's International Climate and Forest Initiative,
Norway

Rolf SKATTEBOE
President and Chief Executive Officer,
Kongsberg Satellite Services (KSAT)
Norway

Niels WIELAARD
Chief Executive Officer,
Satelligence,
Netherlands

MODERATOR
Charlotte BISHOP
Senior Projet Manager,
Kongsberg Satellite Services (KSAT),
Norway

10:30 - 11:00 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

11:00 - 11:50 IAF GNF SESSION: Carbon Footprint of Monitoring Climate Change from Space

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

The observation of Earth from Space has been key to evidence climate change. However, as any human activity, this contribution may come at a price and has its own impact on climate change.

As the activity in the space sector and the number of satellites and launches increases, the impact in terms of carbon footprint shall become a concern. The intent of this GNF session is to set up a roundtable with different actors of the space industry and agencies, in order to review which levers are already being addressed, both directly by industrials, but also at sectorial or agency levels, in order to mitigate the impact on climate change over the value chain.

A first point of view on the current generation of launchers and it evolutions could be given by ArianeGroup, which has performed its first carbon footprint analysis on all the scopes (including upstream and downstream activities) and is defining its climate roadmap, policies and action plans. This presentation would shed the light on the levers identified, but also on the main difficulties in order to reduce its footprint, through a Strengths, Weaknesses, Opportunities and Threats analysis.

A second point of view could be given from satellite manufacturing perspective (TAS, Airbus DS, OHB...).

A third point of view could be given by satellite operators.

This roundtable will also be an opportunity to highlight the recent signature of the "joint statement for a responsible space sector" under the lead of ESA, and especially focusing on the work of the "decarbonisation working group" with all the key players of the space sector in order to define common targets and roadmaps.

Organized by: arianeGROUP

Speakers:

Sabrina ALAM
Head of Space Sustainability and ESG Programme Manager,
SES,
Luxembourg

Cédric BALTY
Director Innovation & Chief Sustainability Officer,
Thales Alenia Space France,
France

Matthieu DERREY
Space Products Sustainability Manager,
Airbus Defence and Space SAS,
France

Aurélie GALLICE TANGUY
Climate and Sustainability Officer,
European Space Agency (ESA),
France

Thomas MARCEAU
Head of Sustainability and Corporate Support,
ArianeGroup SAS,
France

MODERATOR
Pascale EHRENFREUND
President,
International Space University (ISU),
France

11:00 - 12:50 Technical Sessions TS

No.	Title	Room
T.3B	Earth Observing Missions and Systems to Address Climate Change and Its Impacts [2]	Oslo
T.5	An Outer Space Perspective on Climate Change (Space Law and Policy)	Helsingfors
T.7-8	Next Generation of Climate Services / Business Models and Cooperation for Missions, Data and Services	Scandinavia Scene

12:00 - 12:50 IAF GNF SESSION: Global Methane Observing System

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

Methane is a potent greenhouse gas, second only to carbon dioxide in its contribution to global warming. It is a short-lived climate pollutant with a lifetime of about 12 years in the atmosphere, which means that reducing methane emissions can provide rapid benefits in limiting the global temperature increase. Reducing methane emissions is also increasingly recognized as one of the most cost effective ways of fighting climate change.

Satellite-based measurements are a critical part of the emission quantification, tracking, and reporting system. They also provide actionable information to mitigate emissions, for example by detecting and localizing fugitive emissions. Together with bottom-up inventories, ground measurements, and airborne sensors, they form the basis of a global methane observing system, which is crucial to inform policy and drive climate actions.

It is estimated that methane emissions must be reduced by about 40-45% by 2030 to limit the temperature increase below 1.5° C. This is a significant endeavour that faces many technological, economical, and political challenges. This panel brings together a diversity of actors from private, public, and nonprofit organizations, who will present the current capabilities for methane monitoring and discuss their vision for how some of those challenges can be addressed in the future. The aim is to encourage the development of creative solutions and raise awareness about this global problem.

Organized by: GHGSAT

Speakers:

Antoine BENOIT
Product Manager,
Kayrros,
France

Manfredi CALTAGIRONE
Head,
UNEP International Methane Emissions Observatory,
Switzerland

Jean-Francois GAUTHIER
Vice President, Measurements and Strategic Initiatives,
GHGSAT,
Canada

Steven HAMBURG
Executive Manager,
MethaneSAT LLC,
United States

Mackenzie HUFFMAN
Director for Strategy and Partnerships,
Carbon Mapper,
United States

MODERATOR
Barbara J. RYAN
Executive Director,
World Geospatial Industry Council (WGIC),
United States

12:50 - 13:50 Lunch

Location: Brasseriet, Radisson Blu Scandinavia Hotel

Sponsored by: planet.

WELCOME REMARKS
Clay MOWRY
President,
International Astronautical Federation (IAF),
Chief Revenue Officer,
Voyager Space Holdings,
United States

SPEAKER
Will MARSHALL
Co-Founder and Chief Executive Officer,
Planet,
United States

13:50 - 14:20 HIGHLIGHT LECTURE: Operational Products And Services

HLL

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Climate change is directly affecting our lives, as changing weather patterns, more frequent and extreme natural events disrupt the order of ecosystems. The contribution of human activity to the augmented greenhouse effect, the pollution of ecosystems, the resulting loss of biodiversity, and the rapid depletion of natural resources are all reasons for concern. To combat and halt the adverse effects of climate change, prompt and coordinated action at international level is ongoing, aligning EU climate strategy with the United Nations' 2030 Agenda, the Paris Agreement and the Sustainable Development Goals (SDGs).

In this context, the overarching set of strategic policies, key objectives and transformative actions of the Green Deal are supporting the development of a new green economic model which will transform Europe in the first climate-neutral continent by 2050. Driven by growing concern and awareness of the climate crisis, governments, businesses, financial institutions and individuals have taken major actions to ensure a transition towards a more sustainable economy. Several policies are stimulating companies to get greener, impacting the development of EU Space based solutions and innovative products in different market segments including Agriculture, Energy, Infrastructures, Forestry and Mobility. Space application companies are leveraging the unprecedented availability of EU Space data together with the numerous funding opportunities stemming from the Green Deal, to create innovative solutions addressing climate change, including a drastic reduction in carbon emissions and a significant increase in sustainability practices.

The EU Space Programme, including Copernicus, Galileo and EGNOS, can play a critical role in supplying the information companies need to monitor environmental indicators and reduce carbon footprint. EU Space data and services are a key tool to understand and mitigate the impact of climate change, paving the way towards a climate-resilient society, helping to make the European Union's economy sustainable by turning climate change challenges into opportunities.

Speaker:

Rodrigo DA COSTA
Executive Director,
European Union Agency for the Space Programme (EUSPA),
Czech Republic

14:20 - 15:20 PLENARY: Progress On Measuring Critical Climate Variables – And What More Needs To Be Done

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

The Plenary session will feature Earth Observation leaders from around the globe discussing progress to date and critical needs for the future. 20 years ago, the world was just beginning to understand the value of space in observing the Earth and our climate; the first half of the session will focus on the progress across agencies in understand our climate enabled by the power of partnerships over the last 20 years.

Given that the world has advanced its space capabilities to help with climate change mitigation and adaption, the second half of the session will look forward to identifying the next critical actions space agencies must take based on needs of humanity and the unique capabilities offered by space. Throughout the session, speakers will focus their discussion on the urgent science questions before us and the ways we can make the answers most useful to decision-makers who increasingly need this information.

Speakers:

Simonetta CHELI
Director of Earth Observation Programmes and Head of ESRIN,
European Space Agency (ESA),
Italy

Selma CHERCHALI
Head of the Earth Observation Department,
Centre National d'Etudes Spatiales (CNES),
France

Éric LALIBERTÉ
Director General for Space Utilization,
Canadian Space Agency (CSA)
Canada

Francesco LONGO
Head of the Earth Observation Division,
Italian Space Agency (ASI),
Italy

Godela ROSSNER
Head of Earth Observation Department,
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR),
Germany

Koji TERADA
Vice President,
Japan Aerospace Exploration Agency (JAXA),
Japan

MODERATOR
Karen ST. GERMAIN
Director for Earth Science,
National Aeronautics and Space Administration (NASA),
United States

15:20 - 15:30 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

15:50 - 18:20 NEXT GENERATION PANEL:
Saving Our Future On Earth Through Our Presence In Space:
A Generational Exchange On The Role Of Space In The Fight Against Climate Change

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

The session is organized by the IAF Workforce Development - Young Professional Programme (WD-YPP) Committee and the Space Generation Advisory Council (SGAC). It will feature a result-oriented generational exchange on the role of space in the fight against climate change across: one Keynote speech of the highlights from SGAC Report on Space & Climate Change and two panel discussions between next generation representatives and senior space officials.

OPENING REMARKS

Christian FEICHTINGER
Executive Director,
International Astronautical Federation (IAF),
France

Clay MOWRY
President,
International Astronautical Federation (IAF),
Chief Revenue Officer,
Voyager Space Holdings,
United States

Davide PETRILLO
VP: Education and Workforce Development,
IAF Bureau,
Managing Director of Nanoracks Europe,
Nanoracks,
Italy

KEYNOTE SPEAKERS

Setting the scene with the highlights from SGAC Report on Space & Climate Change

Giulia BORDACCHINI
Space for Climate Action Co-Lead,
Space Generation Advisory Council (SGAC),
Italy

Sahba EL SHAWA
Ethics & Human Rights and Space for Climate Action Lead,
Space Generation Advisory Council (SGAC),
Italy

PART 1: Are We Doing Well? Space Science and Technology for Climate Action

What benefits do we get from space science and technology in the fight against climate change and what is the current involvement of the youth?

Speakers:

Sahba EL SHAWA
Ethics & Human Rights and Space for Climate Action Lead,
Space Generation Advisory Council (SGAC),
Italy

Rune FLOBERGHAGEN
Head of the Science, Applications & Climate Department,
European Space Agency (ESA),
Italy

Milica MILOSEV
Winner of Space4Youth Competition,
Space4Youth Competition,
Republic of Serbia

Allison LEIDNER
Program Manager, Climate & Resilience,
National Aeronautics and Space Administration (NASA),
United States

Agnieszka ŁUKASZCZYK
Vice President Government Affairs EMEA,
Planet,
Belgium

Lew TÖPFER
German UN Youth Delegate to the General Assembly,
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)
Germany

MODERATOR
Tanja MASSON-ZWAAN
VP: Science and Academic Relations,
IAF Bureau,
Assistant Professor and Deputy Director of the International Institute of Air and Space Law (IIASL),
Leiden University,
Netherlands

PART 2: Can We Do Better? An Intergenerational Pact for Space and Climate Action

What is the responsibility of the space community in prioritizing climate action and how can we work across generations to implement real solutions?

Speakers:

Giulia BORDACCHINI
Space for Climate Action Co-Lead,
Space Generation Advisory Council (SGAC),
Italy

Joe LANDON
Special Advisor to President on the Sustainability, Investment and Security (SIS) Agenda
IAF Bureau,
Chief Executive Officer,
Crescent Space,
France

Ana RAPOSO
Space Applications Engineer,
European Space Agency (ESA),
France

Dominique TILMANS
Special Advisor to President on Parliamentarian and Ministerial Relations,
IAF Bureau,
President,
EURISY,
Belgium

Sathesh Raj V. PERIASAMEY
Malaysia

Sabine VON DER RECKE
Board Member for Communication and Political Relations,
OHB System AG-Bremen,
Germany

MODERATOR
Clay MOWRY
President,
International Astronautical Federation (IAF),
Chief Revenue Officer,
Voyager Space Holdings,
United States

19:00 - 20:30 Reception at Oslo City Hall

Location: Oslo City Hall, Rådhusplassen 1, 0037 Oslo

Thursday 25 May 2023

09:00 - 09:30 HIGHLIGHT LECTURE: How Humans Are Changing Earth

HLL

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Human activities have increased emissions of greenhouse gases into the atmosphere. This has led to a warming trend around the globe which has led to effects such as declining Arctic sea ice, sea-level rise, shifts in animal migration patterns and more extreme events, like wildfires becoming more severe. This lecture will discuss the current understanding of human-induced global climate change over time, and how it interacts with Earth's natural processes. It will also provide insight on mitigation efforts as communities around the world respond to the most pressing issues in climate change

Speaker:

Katherine CALVIN
Chief Scientist and Senior Climate Advisor,
National Aeronautics and Space Administration (NASA),
United States

09:30 - 10:30 PLENARY: Planning For A Future With A Changing Climate

PE

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Earth's climate is changing, and space provides one of the best places to observe these impacts. Climate change is becoming more evident, with more intense and more frequent extreme weather events and very visible impacts such as wildfires and melting ice sheets. In this context, Earth observation from space provides a critical and timely resource for advancing research, monitoring a dynamic environment, and providing guidance into how communities around the world can manage climate mitigation and adaptation. What critical tipping points are upon us and how can information guide a way forward, especially with the new satellite resources coming online? This panel brings together leading scientists and science advisors from space agencies around the world to discuss the climate challenges of today, advancements in research and technology, and understanding and solutions to help people plan for the future in a changing climate.

Speakers:

Katherine CALVIN
Chief Scientist and Senior Climate Advisor,
National Aeronautics and Space Administration (NASA),
United States

Prakash CHAUHAN
Director,
National Remote Sensing Centre (NRSC),
India

Rune FLOBERGHAGEN
Head of the Science, Applications & Climate Department,
European Space Agency (ESA),
Italy

John MOORES
Science Advisor to the President,
Canadian Space Agency (CSA),
Canada

MODERATOR
Sarah GALLAGHER
Director,
Institute for Earth and Space Exploration, University of Western Ontario,
Canada

10:30 - 11:00 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

11:00 - 11:50 IAF GNF SESSION: Polycrisis Linked To Climate Change: From Shortages To Socio–Economic Impacts On Future Generations

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

The climate change phenomenon is triggering a series of global polycrisis. Natural disasters and extreme weather are increasing the natural resources crisis that is providing a collapse of a systemically important supply chain and raising living costs. Some of these risks are already reaching the tipping point. The extreme events, the heat and the drought our planet is already experiencing are warning signals that our lives' sustainability is incompatible with the available resources. What are the main challenges these risks are causing? Can governments, global actors and civic society play in advance and prevent the escalation of new threats? How can civil actors build a long-term plan to minimize the impacts of these shortages on future generations? This panel aims to address the responsibility of several civil actors towards future generations, looking at the effects of climate change from different angles.

Organized by: esa

Speakers:

Jean François DONZIER
Secretary General and Former General Director of the International Office for Water,
Global Alliance for Water and Climate,
France

Thomas MARCEAU
Head of Sustainability and Corporate Support,
ArianeGroup SAS,
France

Laurence MONNOYER-SMITH
Head of Sustainable Development,
Centre National d'Etudes Spatiales (CNES),
France

Hilde RØED
Senior Vice President Climate and Sustainability,
Equinor,
Norway

Laetitia THIRION
Professor in Remote Sensing, Specialist in Forest Fires,
Centrale Supelec Engineering School,
France

MODERATOR
Maria Gabriella SARAH
Strategy and Foresight Department,
European Space Agency (ESA),
Italy

11:00 - 12:50 Technical Sessions

No.	Title	Room
T.1	Understanding and Predicting the Climate Change for our Planet	Oslo
T.4	Weather, Climate and Environmental Intelligence	Helsingfors
T.9	The Social, Communications, Economic and Cultural Dimensions of Environmental Change	Scandinavia Scene

12:00 - 12:50 IAF GNF SESSION: From Analysis To Action: Bridging Gap To Secure Climatically Vulnerable Communities

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

The catastrophic effects of climate change have already started to take place in some of the most climatically vulnerable areas. The IAF's values of 3G diversity and the promise of sharing of GIS data gives the relevant stakeholders a humanistic foundation to make a difference. However, when identifying actual impact of manifesting these values among the most vulnerable communities, there exists a huge gap. For example, small farmers in Ecuador (host of GLEC 2022) who are significant contributors towards the fresh flowers, sugar, banana, and cacao industries get little to no information regarding weather and other conditions. In most cases, the government run institutions that are in charge of providing information regarding weather and other conditions do not have the capabilities to share or provide the information to the end users.

In the 2022 catastrophic floods of Pakistan, the most vulnerable communities were unaware of the quantum of flood water that was predicted. People were not prepared and even at the onset of floods were not made aware of the severity of the incumbent disaster. Although, the magnitude of most severe climate catastrophes of recent times have surpassed their predicted values, yet there still exists significant value in modeling the earth observation data and simulating different climate change scenarios to better equip the most vulnerable communities. This panel discussion will highlight opportunities to bridge the gap between the incredible capabilities offered by earth observation systems and those most vulnerable to extreme climatic events.

Organized by: TEACHING SCIENCE AND TECHNOLOGY, INC.

Speakers:

Magdalena GUTOWSKA
Principal Lead Climate and Energy Portfolio,
Polytechnic University of Turin,
Italy

Mahhad NAYYER
Manager, Space Sustainability Center,
National Aerospace Science & Tech Park,
Pakistan

Sita SONTY
Partner and Associate Director,
Boston Consulting Group,
United States

Sebastien TAILHADES
Domain Manager Earth Observation,
OHB System AG-Munich,
Germany

Grzegorz WROCHNA
President,
Polish Space Agency (POLSA),
Poland

MODERATOR
Bruce CHESLEY
Senior Associate,
Teaching Science and Technology, Inc (TSTI),
United States

12:50 - 13:50 Lunch

Location: Brasseriet, Radisson Blu Scandinavia Hotel

12:50 - 13:50 IP Session

Location: Brasseriet, Radisson Blu Scandinavia Hotel

Please see page 56 for full list of presentations.

13:50 - 14:50 IAF GNF SESSION: Global Action In Space For Disasters Within A Changing Climate And The Role Of The International Charter For Space And Major Disasters

Location: Kobenhavn & Stockholm room, Radisson Blu Scandinavia Hotel

The UN Office for Disaster Risk Reduction (UNDRR) advises building resilience, and the need to both understand and address systemic risk and climate change impacts to create sustainable development pathways. This event seeks to explore the critical role that Earth orbiting satellites play in understanding and managing disaster risk and specifically the role of the 'International Charter for Space and Major Disasters', a collaboration between the worlds Space Agencies and partners, which provides satellite data services for emergency response during major disasters

Organized by: UK SPACE AGENCY

Speakers:

Abdulla AHMAD ALSHEHHI
Head of Strategic Research,
UAE Space Agency,
United Arab Emirates

Éric LALIBERTÉ
Director General for Space Utilization,
Canadian Space Agency (CSA)
Canada

Godela ROSSNER
Head of Earth Observation Department,
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR),
Germany

Harshbir SANGHA
Missions and Capabilities Delivery Director,
UK Space Agency,
United Kingdom

MODERATOR
Sarah-Jane GILL
Head of International Relations,
UK Space Agency,
United Kingdom

13:50 - 14:50 Technical Sessions

No.	Title	Room
T.2B	Climate Change Impacts and Challenges (Biodiversity, Forests and Land, Ocean/Marine Ecosystems, the Artic and beyond) [2]	Scandinavia Scene
T.3C	Earth Observing Missions and Systems to Address Climate Change and Its Impacts [3]	Oslo
T.6B	Space Technology for Climate Adaptation and Mitigation [2]	Helsingfors

14:30 - 15:00 Tea/Coffee Break

Location: Radisson Blu Scandinavia Hotel

15:10 - 16:10 High-Level Summary Session

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Speakers:

Christian FEICHTINGER
Executive Director,
International Astronautical Federation (IAF),
France

Emma GATTI
Editor in Chief,
SpaceWatch.Global,
Italy

James GRAF
Director,
Earth Science and Technology,
NASA Jet Propulsion Laboratory (JPL),
United States

Ru A. KERMANI
Journalist,
BBC/CNN,
United Kingdom

Ole Morten OLSEN
Director,
Business development and Innovation,
Norwegian Space Agency (NOSA),
Norway

Barbara J. RYAN
Executive Director,
World Geospatial Industry Council (WGIC),
United States

MODERATOR
Christian HAUGLIE-HANSSEN
Director General,
Norwegian Space Agency (NOSA),
Norway

16:10 - 16:30 Closing Ceremony

Location: Scandinavia Ballroom, Radisson Blu Scandinavia Hotel

Speakers:

Christian FEICHTINGER
Executive Director,
International Astronautical Federation (IAF),
France

Christian HAUGLIE-HANSSEN
Director General,
Norwegian Space Agency (NOSA),
Norway

Samaddin ASADOV
Chairman of the Board,
Azercosmos Space Agency of the Republic of Azerbaijan,
Azerbaijan

6 SOCIAL & CULTURAL PROGRAMME

Gala Dinner

Date: Tuesday 23 May

Hour: 20:00 - 23:00

Location: Villa Grande, Huk Aveny 56, 0287 Oslo

Immerse yourself in a night of elegance, sophistication, and enchanting entertainment at the GLOC 2023 Gala Dinner, hosted in the majestic Villa Grande. Nestled on the tip of idyllic Bygdøy, just a stone's throw from Huk, Villa Grande boasts a spectacular location right by the Oslo fjord, offering breathtaking views and a serene atmosphere.

The Gala Dinner will be held in the exquisite "Den Engelske Hagen" (The English Garden), a stately and elegant venue that perfectly complements the refined atmosphere of this enchanting evening.

The evening will be elevated by the captivating performance of Kari Kleiven, a renowned soprano from The Norwegian Opera and Ballet. Her mesmerizing voice will weave a spellbinding ambiance, enhancing the allure of the Gala Dinner and creating an unforgettable experience for all GLOC 2023 guests.

Reserve your spot today and embark on a magical journey at the GLOC 2023 Gala Dinner at Villa Grande in Oslo.

Buses will leave from the hotel at 19:00 CET

Reception at Oslo City Hall

Date: Wednesday 24 May

Hour: 19:00 - 20:30

Location: Oslo City Hall

The City of Oslo will host a reception for the conference delegates in the Oslo City Hall on May 24th, 2023, 19:00 – 20:30. The guests are welcomed by Marianne Borgen, mayor of Oslo. The City Hall opened in 1950 and is one of the country's most iconic buildings, and after a light meal, the guests are invited for a guided tour.

Please note that spaces are limited.

Technical Tour

Exclusive GLOC 2023 Tech Tour: Journey Through the Cosmos Facilities in Kongsberg

Date: Friday 26 May 2023

Embark on the exclusive GLOC 2023 tech tour, available to only 30 GLOC 2023 participants, as we delve into the heart of the Cosmos Facilities in Kongsberg.

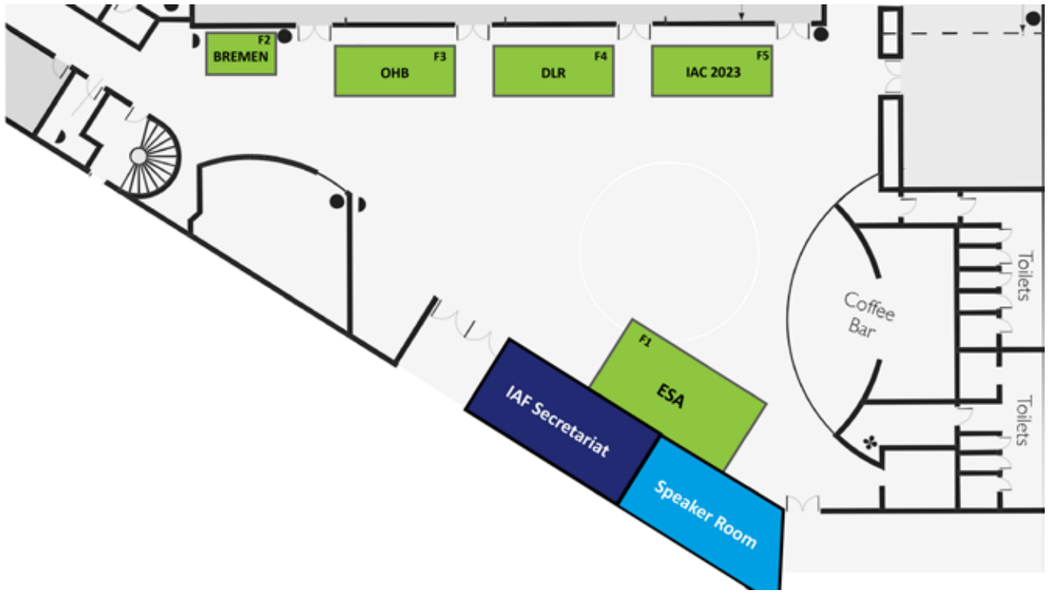
Space & Surveillance, a division of Kongsberg Defence & Aerospace (KONGSBERG), will showcase their new 4-story, 6000 sqm production and office facility, Cosmos.

To ensure a seamless journey, all participants will travel by train from Oslo to Kongsberg and back, a scenic ride that takes approximately one hour each way. Upon arrival in Kongsberg, a dedicated bus will be waiting to transport attendees to the Cosmos Facilities. After the 2-3 hour tech tour, the bus will return participants to the train station for their journey back to Oslo.

Don't miss out on this limited opportunity – secure your spot today and be part of the select few who will explore the future of the space industry at this exclusive GLOC 2023 Tech Tour.

7 SPONSORS AND EXHIBITORS

7.1 Exhibition Area Floorplan



7.2 List of Sponsors & Exhibitors

Absolut Sensing

Contact:
Tristan Laurent

Address:
34, Boulevard de la Méditerranée,
31400 Toulouse,
France

Tel: +33 (0)788311209
Mail: contact@absolut-sensing.com
Web: absolut-sensing.com
LinkedIn: https://www.linkedin.com/company/absolut-sensing/
Twitter: twitter.com/AbsolutSensing

Absolut Sensing's objective is to develop technologies to monitor, understand and predict global changes. For this, we are redefining miniaturized remote sensing systems integrated with Smallsats platforms to provide planetary intelligence services. In order to accelerate the energy transition, ensure the monitoring of our planet monitoring our planet and enable major scientific advances, we work with both institutional players and large groups. Our expertise and our ability to innovate enable us to design and enable us to design and propose effective solutions adapted to the needs of our clients, particularly in the in the field of energy transition.

Bremen City of Space

Contact:
Bianka Hanssen

Address:
Ansgaritorstraße 11, 28195
Bremen,
Germany

Mail: Bianka.hanssen@wfb-bremen.de
Web: www.aviaspace-bremen.de
LinkedIn: https://www.linkedin.com/company/aviaspace-bremen/
Twitter: https://twitter.com/Aviaspace_eV
Facebook: https://www.facebook.com/aviaspaceHB/
Instagram: https://www.instagram.com/aviaspace_bremen/

Bremen_Bremerhaven CITY OF SPACE

Bremen hosts 140 companies and 20 institutes in the space and aeronautic industry. About 12,000 employees generate more than 4 billion euros per year. Considering its population, Bremen has the highest employment density within these sectors in Germany.

Centre National d'Etudes Spatiales (CNES)

Contact:
Frédéric Bretar

Address:
CNES - Centre Spatial de Toulouse :
18 avenue Edouard Belin -
31401 Toulouse Cedex 9,
France

Tel: +33 (0)561273253
Mail: Frederic.Bretar@cnes.fr
Web: www.cnes.fr
LinkedIn: https://www.linkedin.com/company/cnes/
Twitter: https://twitter.com/CNES
Facebook: https://fr-fr.facebook.com/CNESFrance
Twitch: https://www.twitch.tv/cnes_france
Tiktok https://www.tiktok.com/@cnes_fr

For the last 60 years, CNES has played a pivotal role in the French, European and international space arena.

CNES's mission is to foster new initiatives, nurture innovation and employ its technical expertise to further the design, development and operation of orbital systems. It is also instrumental in maintaining France and Europe's sovereignty in access to space and strategic data. With its four centres of excellence in Paris, Toulouse and French Guiana, CNES is working to extend France's scientific influence, promote its industry and more broadly encourage uptake of space applications.

German Aerospace Center (DLR)

Address:
German Aerospace Center (DLR)
Linder Höhe
51147 Cologne,
Germany

Tel: +49 2203 601-0
Mail: contact-dlr@dlr.de
Web: https://www.dlr.de/en
LinkedIn: https://www.linkedin.com/company/dlr
Twitter: https://twitter.com/DLR_en
Facebook: https://www.facebook.com/DLRen/
Instagram: https://www.instagram.com/dlr.en/

DLR is the Federal Republic of Germany's research centre for aeronautics and space. We conduct research and development activities in the fields of aeronautics, space, energy, transport, security and digitalisation. The German Space Agency at DLR plans and implements the national space programme on behalf of the federal government. Two DLR project management agencies oversee funding programmes and support knowledge transfer. Climate, mobility and technology are changing globally. DLR uses the expertise of its 55 research institutes and facilities to develop solutions to these challenges. Our 10,000 employees share a mission – to explore Earth and space and develop technologies for a sustainable future. By transferring technology, DLR contributes to strengthening Germany's position as a prime location for research and industry.

Eidsvoll Electronics AS

Contact:
Alexander Høiberget

Address:
Smed Hagens Veg 11, 2080
Eidsvoll,
Norway

Tel: +47 63 95 97 00
Mail: ah@eidel.no
Web: https://www.eidel.no
LinkedIn: https://www.linkedin.com/company/eidsvoll-electronics-as
Twitter: https://twitter.com/eideldotno?s=09
Facebook: https://www.facebook.com/eidsvollelectronics

Eidsvoll Electronics (EIDEL) is a Norwegian pioneer in remote sensing and telemetry. Between the 1960-1990s EIDEL delivered remote sensing and telemetry for environmental research used by weather balloons, satellite and land based radio systems for monitoring wildlife in the Arctic regions, securing offshore installations, monitoring glaciers and avalanche warning. Currently we are planning to launch a demonstrator of EIDEL and UiO's multi-needle Langmuir probe to the ISS for space weather monitoring. EIDEL core competencies are within telemetry, remote control and secure communication for space, defence and utilities. EIDEL also has competencies and provide services in the domains of space mission design, system design, electrical engineering, software development to assembly, integration, test and verification of space systems.

EMROD

Contact:
Natalie Robinson,

Address:
Textile Centre, Level 3, 1 Kenwyn Street, Parnell, Auckland 1052,
New Zealand

Tel: +64 22 0696 288
Mail: natalie.robinson@emrod.energy
Web: www.emrod.energy
LinkedIn: https://www.linkedin.com/company/emrodenergy
Twitter: https://twitter.com/EmrodEnergy

Re-imagining the movement of energy with commercially viable power beaming technology.

European Space Agency (ESA)

Contact:
Ioana Lung

Address:
ESA - ESRIN
Via Galileo Galilei, 1,
00044 Frascati
RM, Italia

ESA HQ
8-10 Rue Mario Nikis
CS 45741
75738 Paris Cedex 15,
France

Tel: +39 3356497207
Mail: ioana.lung@esa.int
Web: https://www.esa.int/
LinkedIn: https://www.linkedin.com/company/european-space-agency/
Twitter: https://twitter.com/ESA_EO
https://twitter.com/esa
Facebook: https://www.facebook.com/EuropeanSpaceAgency/?locale=it_IT
Instagram: https://www.instagram.com/esa_earth/
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ESA is Europe's gateway to space. Our mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world.

EU Space Imaging (EUSI)

Contact:
Ossi Karjalainen

Address:
European Space Imaging
Arnulfstrasse 199, 80634 Munich,
Germany

Tel: +49 89130142-0
Mail: info@euspaceimaging.com
Web: www.euspaceimaging.com
LinkedIn: https://www.linkedin.com/company/european-space-imaging@European SpaceImaging
Twitter: https://twitter.com/EUSPACEIMAGING@EUSPACEIMAGING
Facebook: https://www.facebook.com/europeanspaceimaging@Europeanspaceimaging
Instagram: https://www.instagram.com/europeanspaceimaging@Europeanspaceimaging

European Space Imaging (EUSI) has led the earth observation sector in Europe for more than 20 years, providing the best Very High Resolution (VHR) satellite imagery commercially available. The first to bring 30 cm resolution satellite imagery to the European market, EUSI is firmly established as the most trusted source for efficient collection and Near Real-Time (NRT) delivery of high-quality satellite imagery products. Through their ground station at the German Aerospace Center, EUSI continues to directly access the most advanced optical imagery satellites in the world and propel Europe into the next age of remote sensing technologies.

GHGSAT

Contact:
Jean-Francois Gauthier

Address:
3981 St Laurent Blvd Suite MEZ,
Montreal, H2W 1Y5, Quebec,
Canada

Tel: +1 438-500-6700
Mail: info@ghgsat.com
Web: https://www.ghgsat.com/en/
LinkedIn: https://www.linkedin.com/company/ghgsat/
Twitter: https://twitter.com/ghgsat

GHGSat provides actionable greenhouse gas emissions data and insights to businesses, governments, financial markets, and regulators worldwide. The firm is the first to combine its own satellite and aircraft sensors, offering greater data accuracy and facilitate timely strategic decision-making insights at a fraction of the cost of other technologies. With proprietary remote-sensing capabilities and patented technology, GHGSat can monitor emissions from individual facilities. These high resolutions, frequent measurements are complemented by industry-specific analytics services to deliver valuable emission data and predictive insights to support business profitability, operational agility, environmental imperatives as well as health and safety objectives. GHGSat's mission is to become the global reference for remote sensing of greenhouse gas (GHG), air quality gas, and other trace gas emissions from any source in the world.

IAC 2023 Baku

Contact:
Gulnaz Guliyeva

Address:
U. Hajibayli str. 72, Baku,
Azerbaijan

Mail: hello@iac2023.org
Web: iac2023.org
Twitter: https://twitter.com/Iac2023
Facebook: https://www.facebook.com/IAC2023
Instagram: https://www.instagram.com/iac2023baku

The International Astronautical Congress returns to Baku exactly half a century after the capital of Azerbaijan hosted it for the first time. The 74th edition of the Congress will be coupled with an engaging agenda as well as unique exposure to an emerging market, accompanied by genuine cultural immersion and the diverse charms of Azerbaijan. Make sure to register now for the IAC 2023 to forge meaningful connections to drive the space industry forward and enjoy the unmatched hospitality of Azerbaijan on 2-6 October 2023!

IAC 2024 Milan

Contact:
Erasmo Carrera

Address:
A.I.D.A.A. APS, Via Salaria 851
00138 Rome,
Italy

Tel: +39 366 1442131
Mail: info@iac2024.org
Web: https://www.iac2024.org
LinkedIn: https://www.linkedin.com/company/iac-2024/?viewAsMember=true
Twitter: https://twitter.com/IAC2024
Facebook: https://www.facebook.com/IAC2024
Instagram: https://www.instagram.com/iac2024milan/

IAC 2024 represents the 75th edition of the International Astronautical Congress and will be held in Milan, Italy. The Italian Association of Aeronautics and Astronautics, one of the oldest Astronautical Associations worldwide and a founding member of IAF, is pleased to serve as the host of IAC 2024. The Italian Space Agency and Leonardo co-host the 75th edition of IAC. The synergy among the national agency, the leading Italian aerospace company, and the academia, represented by AIDAA, was the primary strength of Milan's bid and perfectly embodies the spirit of IAC, i.e., an event to gather all space players, share ideas and shape the future of the space exploration and responsible exploitation.

Kongsberg Satellite Services (KSAT)

Contact:
Laura Abuja

Address:
Prestvannveien 38, 9011, Tromsø, Norway

Tel: +47 48270632
Mail: laura@ksat.no
ksat@ksat.no
Web: www.ksat.no
LinkedIn: https://www.linkedin.com/company/kongsberg-satellite-services/
Twitter: https://twitter.com/KSAT_Kongsberg

Kongsberg Satellite Services (KSAT) is a world leading provider of communication services for spacecraft and launch vehicles from our uniquely located global ground network, and provides advanced monitoring services with rapid delivery based on multiple satellite missions.

KSAT owns and operates a truly global cost-effective multi-mission Ground Station Network of both polar and mid-latitude stations. The three polar ground stations are located in Tromsø at 69°N, Svalbard Satellite Station (SvalSat) at 78°N and the Antarctic station (TrollSat) at 72°S.

KSAT has established ground stations in Svalbard, Tromsø, Vardø, Antarctica, Punta Arenas, Hawaii, Los Angeles, Panama, Awarua, Tokyo, Puertollano, Athens, Singapore, Dubai, Mauritius, Hartebeesthoek, Bangalore, Inuvik, Fairbanks and Nuuk. We also have partner stations in Cordoba, Azores, Tolhuin and Bangalore.

KSAT provides services such as:

SATELLITE OPERATIONS

- Telemetry, Tracking and Command (TT&C)
- Data acquisition, processing, distribution and archiving
- Launch and early orbit phase support (LEOP), sounding rocket support and launch support
- Hosting and operation of Customer Furnished Equipment

EARTH OBSERVATION

- Near-Real Time Maritime Monitoring Services
- Multi-mission Rapid Response satellite imagery

Lockheed Martin

Contact:
Lauren Duda

Address:
12257 S Wadsworth Blvd, Littleton, CO 80127,
United States

Mail: lauren.e.duda@lmco.com
Web: http://www.lockheedmartin.com/
LinkedIn: https://www.linkedin.com/company/lockheed-martin/
Twitter: https://twitter.com/LockheedMartin
Facebook: https://www.facebook.com/lockheedmartin

Headquartered in Bethesda, Maryland, Lockheed Martin Corporation is a global security and aerospace company that employs approximately 116,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

MethaneSAT

Contact:
Jon Coifman / Silke Rechenbach

Address:
301 Congress Ave.
Suite 1300
Austin, TX 78701,
United States

Mail: jcoifman@edf.org
srechenbach@edf.org
Web: www.methanesat.org
LinkedIn: https://www.linkedin.com/company/methanesat/
Twitter: https://twitter.com/MethaneSAT

MethaneSAT will be the most advanced methane-tracking satellite in space, measuring methane emissions virtually anywhere on Earth. MethaneSAT will locate and quantify methane emissions from oil and gas operations and track progress over time. The data will enable both companies and countries to identify, manage and reduce their emissions, and allow investors, gas buyers and the public to see and compare results.

OHB

Contact:
Sandra Müller

Address:
OHB SE, Manfred Fuchs Platz 2-4,
28359 Bremen,
Germany

Tel: +49 421 2020 8
Mail: GLOC@ohb.de
Web: www.OHB.de
LinkedIn: https://www.linkedin.com/company/ohb-se/
Twitter: https://twitter.com/OHB_SE
Instagram: https://www.instagram.com/ohb_se/

OHB SE is a German space and technology group and one of the leading independent forces in the European space industry. With many years of experience in the implementation of demanding projects, the OHB Group is able to offer its customers a broad portfolio of innovative products. With almost 3,000 highly qualified employees in Europe and overseas, the OHB Group is excellently positioned to face international competition and has made a name for itself as a reliable partner for government institutions and private companies. OHB SE's activities are spread across three business units: Space Systems, Aerospace and Digital. While satellite systems and space missions are realised in the Space Systems segment, the Aerospace segment is a major supplier to the European aerospace industry. The third and newest business unit, Digital, combines launch services, satellite operations and the development of IT applications based on satellite data. We.Create.Space.

Planet

Contact:
Regina Kozyra

Address:
Planet Labs Germany GmbH,
Kurfürstendamm 22, 10719 Berlin,
Germany

Tel: +49 306 098 300 100
Mail: berlin-info@planet.com
Web: www.planet.com
LinkedIn: https://www.linkedin.com/company/planet-labs
Twitter: https://twitter.com/planet
@planetlabs

Planet is the leading provider of global, near-daily satellite imagery data and insights. Planet is driven by a mission to image all of Earth's landmass every day, and make global change visible, accessible and actionable. Founded in 2010 by three NASA scientists, Planet designs, builds, and operates the largest earth observation fleet of satellites, and provides the online software, tools and analytics needed to deliver data to users.

UK Space Agency

Contact:
Eva Georgiou

Address:
UK Space Agency, Polaris House,
North Star Avenue, Swindon,
Wiltshire, SN2 1SZ,
United Kingdom

Mail: correspondence@ukspaceagency.gov.uk
Web: gov.uk/spaceagency
@spacegovuk
LinkedIn: https://www.linkedin.com/company/uk-space-agency
Twitter: https://twitter.com/spacegovuk
Instagram: https://www.instagram.com/spacegovuk

The UK Space Agency inspires and leads the UK in space to benefit our planet and its people. Space4Climate, chaired by the UK Space Agency, spans government, industry and academia, uniting those with expertise in the development of satellites, analysis and exploitation of data they gather, and production of quality assured global data and climate services.

8 TECHNICAL PROGRAMME

Download the IAF App to get the latest update

8.1 Technical Sessions

Technical Programme Coordinator

Gunter Schreier, German Aerospace Center (DLR), Germany

Technical Programme Chairs

- *Xing Yi Ang,* United Nations Office for Outer Space Affairs (UNOOSA), Austria – Session 5
- *Krystal Azelton,* Secure World Foundation (SWF), United States – Session 9
- *Cristian Bank, EUMETSAT,* Germany – Session 7-8
- *Irene Benito,* Planet, Germany – Session 3B
- *Thomas Cernev,* Shoal Group, Australia – Sessions 6A, 6B
- *Bruce Chesley,* Teaching Science and Technology, Inc (TSTI), United States – Session 4, IP
- *Andy Court,* TNO, The Netherlands – Sessions 3B, 3C, IP
- *Bernard Foing, I*LEWG "EuroMoonMars", The Netherlands, Sessions 1, 6A, 6B, IP
- *Joe Gibbs,* School of Engineering, University of Glasgow, United Kingdom – Sessions 2A, 2B, 4
- *Johnny Johannessen,* Nansen Environmental and Remote Sensing Center (NERSC), Norway – Sessions 2A, 2B
- *Ruth Kattumuri,* Commonwealth of Nations, India – Sessions 2A, 2B, 9, IP
- *Michael Kern,* European Space Agency (ESA), France – Sessions 5, IP
- *Agnieszka Lukaszczyk,* Planet, Belgium – Session IP
- *Pooja Mahaptra,* World Geospatial Industry Council (WGIC), The Netherlands – Sessions 3A, 3C
- *Tanja Masson-Zwaan,* International Institute of Air and Space Law (IIASL), Leiden University, The Netherlands – Session 5
- *John Moores,* Canadian Space Agency (CSA), Canada – Session 7-8
- *Annamaria Nassisi,* Thales Alenia Space Italia, Italy – Session 3B
- *Masami Onoda, J*apan Aerospace Exploration Agency (JAXA), Japan, Sessions 6A, IP
- *Antoine Ramier,* GHGSat Inc., Canada – Sessions 3A, 3C
- *Joanna Ruiter,* Netherlands Space Office (NSO), The Netherlands – Sessions 3A, 3C, IP
- *Maria-Gabriella* Sarah, European Space Agency (ESA), France – Sessions 6B, IP
- *Sebastien Tailhades,* OHB, Germany – Session 7-8
- *Oana van der Togt,* Antwerp Space NV, Belgium, Sessions 1, 6A, IP
- *Parag Vaze,* National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States – Sessions 5, 9
- *Frank Webb,* National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States – Sessions 3B, 9
- *Charles Wooldridge,* National Oceanic and Atmospheric Administration (NOAA), United States – Session IP

T.1. Understanding and Predicting the Climate Change for our Planet

May 25 2023, 11:00 — Oslo

Session Chairs:
- Bernard Foing, ILEWG "EuroMoonMars", The Netherlands;
- Oana van der Togt, TNO, The Netherlands.

GLOC-2023.T.1.1
WHAT THE 30 YEAR SATELLITE ALTIMETRY RECORD OF SEA LEVEL CHANGE IS TELLING US ABOUT THE FUTURE
R. Steven Nerem, Colorado Center for Astrodynamics Research, University of Colorado, United States

GLOC-2023.T.1.2
CROWNING THE KING IN THE NORTH: THE NORTHWARD GREENBELT MIGRATION AND THE QUEST FOR THE MOST RESILIENT PLANT
Sathesh Raj V Periasamey, Malaysia

GLOC-2023.T.1.3
SATELLITE OBSERVATIONS PROVIDE A GLOBAL PICTURE OF GLOBAL CHANGES IN 24-HR RAINFALL
Andreas Dobler, Norwegian Meteorological Institute, Norway

GLOC-2023.T.1.4
ESA'S CLIMATE CHANGE INITIATIVE: HOW SPACE DATA SUPPORT OUR UNDERSTANDING OF CLIMATE CHANGE AND SUPPORT POLICY ACTION
Susanne Mecklenburg, European Space Agency (ESA), United Kingdom

GLOC-2023.T.1.5
SPACE AND THE UNDERSTANDING OF THE SUNS INFLUENCE ON CLIMATE CHANGE
Bo Andersen, University of Oslo, Norway

GLOC-2023.T.1.6
DEEP LEARNING-BASED SUPRAGLACIAL LAKE DEPTH DETECTION ON THE GREENLAND ICE SHEET BY COMBINING ICESAT-2 AND SENTINEL-2 DATA
Abigail Robinson, Science & Technology, Sweden

GLOC-2023.T.1.7
MONITORING OF SEA ICE CONCENTRATION, AREA, AND EXTENT IN THE POLAR REGIONS : 40+ YEARS OF DATA FROM EUMETSAT OSI SAF AND ESA CCI
Thomas Lavergne, Norway

T.2A. Climate Change Impacts and Challenges (Biodiversity, Forests and Land, Ocean/Marine Ecosystems, the Arctic and beyond) [1]

May 23 2023, 15:30 — Scandinavia Scene

Session Chairs:

- Joe Gibbs, School of Engineering, University of Glasgow, United Kingdom;

- Johnny Johannessen, Nansen Environmental and Remote Sensing Center, Norway;

- Ruth Kattumuri, Commonwealth of Nations, India.

GLOC-2023.T.2A.1
EARTH OBSERVATION FOR THE MONITORING OF ANTARCTIC SUPRAGLACIAL MELTWATER DYNAMICS AND LINKS TO CLIMATE CHANGE
Mariel Dirscherl, German Aerospace Center (DLR), Germany

GLOC-2023.T.2A.2
MEASURING THE IMPACT OF SEA-LEVEL RISE ON SMALL-ISLAND NATIONS - A GLOBAL PROBLEM WITH LOCAL URGENCY.
Pooja Mahapatra, World Geospatial Industry Council (WGIC), The Netherlands

GLOC-2023.T.2A.3
SPACE BASED MONITORING OF SNOW MELT DISTRIBUTION, ITS RELATION WITH ENSO AND AI/ML BASED PREDICTION OVER ANTARCTICA
Rajashree Vinod Bothale, National Remote Sensing Centre, Indian Space Research Organisation, India

GLOC-2023.T.2A.4
CLIMATE CHANGE AND THE CHALLENGES OF GENERATING SOCIOECONOMIC BENEFITS IN BRAZIL
Michele Cristina Silva Melo, Brazilian Space Agency (AEB), Brazil

GLOC-2023.T.2A.5
PREDICTION & ESTIMATION OF SPATIO-TEMPORAL CHANGE IN GETZ ICE SHELF WEST ANTARCTICA
Aakriti Srivastava, India

GLOC-2023.T.2A.6
SATELLITE-BASED SUPPORT FOR SEA LEVEL DYNAMIC ADAPTATION POLICY PATHWAYS
Anjali Tripathi, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

GLOC-2023.T.2A.7
THE EUROPEAN UNION SPACE PROGRAMME CONTRIBUTION TO UNDERSTANDING AND TACKLING THE EFFECTS OF CLIMATE CHANGE.
Christina Giannopapa, European Union Agency for the Space Programme (EUSPA), Czech Republic

T.2B. Climate Change Impacts and Challenges (Biodiversity, Forests and Land, Ocean/Marine Ecosystems, the Arctic and beyond) [2]

May 25 2023, 13:50 — Scandinavia Scene

Session Chairs:

- Joe Gibbs, School of Engineering, University of Glasgow, United Kingdom;

- Johnny Johannessen, Nansen Environmental and Remote Sensing Center, Norway;

- Ruth Kattumuri, Commonwealth of Nations, India.

GLOC-2023.T.2B.1
GEOSPATIAL AND REMOTE SENSING TECHNOLOGIES FOR MANGROVE FORESTS MONITORING; STUDY CASE OTCHIVA MANGAIS ANGOLA PROJECT
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

GLOC-2023.T.2B.2
ADVANCES IN BURNED AREA DETECTION FROM REMOTE SENSING: THE FIRECCI PRODUCTS
Clement Albergel, European Space Agency (ESA), United Kingdom

GLOC-2023.T.2B.3
EARTH OBSERVATION ENABLES HIGH RESOLUTION MODELLING OF FIRE RELATED EMISSIONS IN THE AMAZON AND CERRADO BIOMES
Dominic Fawcett, University of Exeter, United Kingdom

GLOC-2023.T.2B.4
THE ROLE OF SPACE-BASED EARTH OBSERVATION FOR ASSESSMENT OF POLLUTION IN THE CASPIAN SEA UNDER CLIMATE CHANGE EFFECTS
Sona Guliyeva, Azercosmos, Space Agency of Republic of Azerbaijan, Azerbaijan

T.3A. Earth Observing Missions and Systems to Address Climate Change and Its Impacts [1]

May 23 2023, 15:30 — Oslo

Session Chairs:

- Pooja Mahapatra, World Geospatial Industry Council (WGIC), The Netherlands;

- Antoine Ramier, GHGSat Inc., Canada;

- Joanna Ruiter, Netherlands Space Office (NSO), The Netherlands.

GLOC-2023.T.3A.1
NOAA OBSERVING SYSTEM EVOLUTION FOR A RESILIENT CLIMATE READY SOCIETY
Stephen Volz, National Oceanic and Atmospheric Administration (NOAA), United States

GLOC-2023.T.3A.2
NASA'S EARTH SYSTEM OBSERVATORY FORMULATION OVERVIEW
Karen St. Germain, National Aeronautics and Space Administration (NASA), United States

GLOC-2023.T.3A.3
SYSTEM DESIGN AND APPLICATION RESULTS OF THE TERRESTRIAL ECOSYSTEM CARBON INVENTORY SATELLITE (TECIS)
Jin Huang, Institute of Remote Sensing Satellite, China Academy of Space Technology, China

GLOC-2023.T.3A.4
METEOSAT THIRD GENERATION (MTG) SATELLITES SERIES - THE LAUNCH AND IN-ORBIT CHARACTERISATION OF THE FIRST IMAGERY SATELLITE SERIES OF MTG
Donny M. A. AMINOU, European Space Agency (ESA), The Netherlands

GLOC-2023.T.3A.5
CONTRIBUTION OF NOAA'S POLAR ORBITING ENVIRONMENTAL SATELLITES TO CLIMATE DATA RECORDS
Satya Kalluri, National Oceanic and Atmospheric Administration (NOAA), United States

GLOC-2023.T.3A.6
ENTERING THE THIRD DECADE OF GLOBAL MASS CHANGE OBSERVATIONS: CLIMATE AND APPLICATIONS CONTRIBUTIONS FROM GRACE, GRACE-FO AND BEYOND
Felix Landerer, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States

GLOC-2023.T.3A.7
THE ARCTIC OBSERVING MISSION (AOM): IMPROVING METEOROLOGICAL, GREENHOUSE GASES AND AIR QUALITY DATA TO BETTER UNDERSTAND AND MITIGATE CLIMATE CHANGE
Genevieve Gariepy, Canadian Space Agency (CSA), Canada

T.3B. Earth Observing Missions and Systems to Address Climate Change and Its Impacts [2]

May 24 2023, 11:00 — Oslo

Session Chairs:

- Irene Benito, Planet, Germany;

- Andrew Court, TNO, The Netherlands;

- Annamaria Nassisi, Thales Alenia Space Italia, Italy;

- Frank Webb, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States.

GLOC-2023.T.3B.1
HIGH-RESOLUTION METHANE DETECTION WITH THE GHGSAT CONSTELLATION
Antoine Ramier, GHGSat Inc., Canada

GLOC-2023.T.3B.2
SERVICES FOR DETECTION AND QUANTIFICATION OF METHANE EMISSIONS VIA SATELLITE
Manuel Montesino, Satlantis Microsats S.A., Spain

GLOC-2023.T.3B.3
THE METHANESAT MISSION
Peter Vedder, United States

GLOC-2023.T.3B.4
THERMAL INTELLIGENCE FOR A SUSTAINABLE EARTH
Martin Langer, OroraTech, Germany

GLOC-2023.T.3B.5
DISASTER RESPONSE IN A CHANGING CLIMATE - HOW THE WORLD'S LARGEST SAR SATELLITE CONSTELLATION CAN HELP US RESPOND MORE EFFECTIVELY.
Jeffrey Apeldoorn, ICEYE Oy, France

GLOC-2023.T.3B.6
HIGH RESOLUTION THERMAL MONITORING IN CLIMATE; OPPORTUNITIES AND CHALLENGES
Manuel Sanabria, Satellite Vu, United Kingdom

GLOC-2023.T.3B.7
THE EARTHDAILY CONSTELLATION - A GLOBAL DAILY SCIENTIFIC MONITORING MISSION FOR THE ENVIRONMENT
Christopher Rampersad, EarthDaily Analytics, Canada

T.3C. Earth Observing Missions and Systems to Address Climate Change and Its Impacts [3]

May 25 2023, 13:50 — Oslo

Session Chairs:

- Andrew Court, TNO, The Netherlands;

- Pooja Mahapatra, World Geospatial Industry Council (WGIC), The Netherlands;

- Antoine Ramier, GHGSat Inc., Canada;

- Joanna Ruiter, Netherlands Space Office (NSO), The Netherlands.

GLOC-2023.T.3C.1
MONITORING OCEANIC ACTIVITIES USING MULTISPECTRAL AND MULTI-TEMPORAL NOSTRUM CUBESATS FOR IMPROVED CLIMATE CHANGE MITIGATION
Abdelmalek Saadi Drissi, Space Generation Advisory Council (SGAC), Morocco

GLOC-2023.T.3C.2
CONSTELLATION OF SMALL SATELLITES FOR A COST-EFFECTIVE AND LONG-TERM OBSERVATION OF GLACIERS
Alessandro Filippeschi, University of Pisa, Italy

GLOC-2023.T.3C.3
METHANESAT SPACE MISSION: DELIVERING CLIMATE IMPACT THROUGH NOVEL PARTNERSHIPS
Isaac Holliss, New Zealand Space Agency, New Zealand

GLOC-2023.T.3C.4
SURVEYING THE MALDIVES AND THE LOWER LATITUDES (SMOLLSOT): A LOW-INCLINATION EARTH OBSERVATION MISSION FOR CLIMATE RESILIENCE AND MARITIME AWARENESS
Louis Le Breuilly, Maldives Space Research Organisation (MSRO), United Kingdom

T.4. Weather, Climate and Environmental Intelligence

May 25 2023, 11:00 — Helsingfors

Session Chairs:

- Bruce Chesley, Teaching Science and Technology, Inc (TSTI), United States;

- Joe Gibbs, School of Engineering, University of Glasgow, United Kingdom.

GLOC-2023.T.4.1
EARTH OBSERVING DASHBOARD FOR SOCIETAL BENEFITS: THE DEVELOPMENT OF TRILATERAL COLLABORATION AND BEYOND
Naoko Sugita, Japan Aerospace Exploration Agency (JAXA), Japan

GLOC-2023.T.4.3
THE NOAA SATELLITE FLOOD PORTAL
Satya Kalluri, National Oceanic and Atmospheric Administration (NOAA), United States

GLOC-2023.T.4.5
AGRICULTURAL REGULATION AND COMPLIANCE - EARTH OBSERVATION IN INTENSIVE FARMING
Rushanka Amrutkar, Environment Agency, United Kingdom

GLOC-2023.T.4.6
IICAS FABLAB AND ENVIRONMENTAL INTELLIGENCE FOR FOREST FIRES IN CENTRAL AMERICA.
Luis Monge, Inter-American Institute for Cooperation on Agriculture (IICA), Costa Rica

GLOC-2023.T.4.7
DETECTING ILLEGAL MINING ACTIVITIES IN ZIMBABWE THROUGH EARTH OBSERVATION
Kumbirai Matingo, Space Generation Advisory Council (SGAC), Zimbabwe

T.5. An Outer Space Perspective on Climate Change (Space Law and Policy)

May 24 2023, 11:00 — Helsingfors

Session Chairs:

- Xing Yi Ang, United Nations Office for Outer Space Affairs (UNOOSA), Austria;

- Michael Kern, European Space Agency (ESA), France;

- Tanja Masson-Zwaan, International Institute of Air and Space Law (IIASL), Leiden University, The Netherlands;

- Parag Vaze, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States.

GLOC-2023.T.5.1
UNOOSA EFFORTS IN “SPACE FOR CLIMATE ACTION”
Xing Yi Ang, United Nations Office for Outer Space Affairs (UNOOSA), Austria

GLOC-2023.T.5.2
RECOMMENDATIONS ON SPACE FOR CLIMATE ACTION FROM THE OFFICIAL POLICY POSITION OF THE SPACE GENERATION ADVISORY COUNCIL
Sahba El-Shawa, Space Generation Advisory Council (SGAC), Jordan

GLOC-2023.T.5.3
STRATEGIES IN SUPPORT OF SPACE DEBRIS MITIGATION FOR SUSTAINABLE SPACE ENVIRONMENT
Jamila Mendoza, University of Oslo, Norway

GLOC-2023.T.5.4
LEGAL, POLICY, REGULATORY, AND LICENSING CONSIDERATIONS FOR SPACE SOLAR POWER
Peter Schubert, Indiana University - Purdue University Indianapolis, United States

GLOC-2023.T.5.5
SPACE FOR SUSTAINABILITY: A MULTI-FACETED AWARENESS-RAISING APPROACH
Lew Töpfer, German Aerospace Center (DLR), Germany

GLOC-2023.T.5.6
THE CONTRIBUTION OF SATELLITE DATA TO LOCAL AUTHORITIES’ CLIMATE ACTION PLANS
Luinaud Mathieu, PricewaterhouseCoopers Advisory (PwC), France

GLOC-2023.T.5.7
THE LEGAL FRAMEWORK APPLICABLE TO SPACE ACTIVITIES FOR CLIMATE CHANGE MITIGATION AND ADAPTATION
Gianfranco Gabriele Nucera, Sapienza University of Rome, Italy

T.6A. Space Technology for Climate Adaptation and Mitigation [1]

May 23 2023, 15:30 — Helsingfors

Session Chairs:

- Thomas Cernev, Shoal Group, Australia;

- Bernard Foing, ILEWG “EuroMoonMars”, The Netherlands;

- Masami Onoda, Japan Aerospace Exploration Agency (JAXA), Japan;

- Oana van der Togt, TNO, The Netherlands

GLOC-2023.T.6A.1
EARTH OBSERVATION TECHNOLOGIES FOR CLIMATE CHANGE ADAPTATION AND MONITORING: FUTURE PROJECTIONS FROM DECADAL TRENDS
Afreen Siddiqi, Massachusetts Institute of Technology (MIT), United States

GLOC-2023.T.6A.3
KEY SPACE TECHNOLOGIES NEEDED FOR MONITORING AND MITIGATING CLIMATE CHANGE
Azita Valinia, National Aeronautics and Space Administration (NASA), United States

GLOC-2023.T.6A.4
SPECTRA: AN INTUITIVE PORTAL COMBINING THE BEST SATELLITE METHANE EMISSIONS DATA AVAILABLE TO GUIDE INDUSTRIES ON THEIR DECARBONIZATION JOURNEY
Jean-Francois Gauthier, GHGSat Inc., Canada

GLOC-2023.T.6A.5
SPACE AND UNDERWATER PNT FOR CLIMATE CHANGE MONITORING
Giuseppe Tomasicchio, Telespazio, Italy

GLOC-2023.T.6A.6
SWARM TECHNOLOGY FOR OCEAN ACIDIFICATION: A SURVEY OF THE EVIDENCE
SHAMBHAVI A S, Nitte Meenakshi Institute of Technology, India

GLOC-2023.T.6A.7
THE LAUNCH OF SWOT AND ITS IMPACT ON THE INTERNATIONAL REGULATORY FRAMEWORK FOR SEA LEVEL RISE
Gabriele Redigonda, University of Firenze, Italy

T.6B. Space Technology for Climate Adaptation and Mitigation [2]

May 25 2023, 13:50 — Helsingfors

Session Chairs:

- Thomas Cernev, Shoal Group, Australia;

- Bernard Foing, ILEWG “EuroMoonMars”, The Netherlands;

- Maria-Gabriella Sarah, European Space Agency (ESA), France.

GLOC-2023.T.6B.1
ENERGY FROM SPACE - HOW SPACE-BASED SOLAR POWER COULD MAKE A SIGNIFICANT CONTRIBUTION TO MITIGATING CLIMATE CHANGE
Sanjay Vijendran, European Space Agency (ESA), The Netherlands

GLOC-2023.T.6B.3
A SPACE-BASED WIRELESS POWER BEAMING ARCHITECTURE FOR RENEWABLE ENERGY TRANSMISSION
Change author to Avinash Rao, Emrod, New Zealand

GLOC-2023.T.6B.4
SUSTAINABLE ROCKET PROPELLANTS: A COSTLESS CONTRIBUTION OF THE SPACE INDUSTRY TO CLIMATE CHANGE MITIGATION
Luinaud Mathieu, PricewaterhouseCoopers Advisory (PwC), France

GLOC-2023.T.6B.5
SPACE EXPLORATION AND SUSTAINABLE TECHNOLOGY
Arturo Pulido Balderas, Universidad Nacional Autónoma de México (UNAM), Mexico

T.7-8. Next Generation of Climate Services / Business Models and Cooperation for Missions, Data and Services

May 24 2023, 11:00 — Scandinavia Scene

Session Chairs:

- Cristian Bank, EUMETSAT, Germany;

- John Moores, Canadian Space Agency (CSA), Canada;

- Sebastien Tailhades, OHB, Germany.

GLOC-2023.T.7-8.1
COPERNICUS CLIMATE CHANGE SERVICE (C3S): FROM DATA TO ACTIONABLE CLIMATE INFORMATION
Chiara Cagnazzo, ECMWF, Germany

GLOC-2023.T.7-8.2
TOWARDS SPACE-ENABLED EARTH ACTION FOR CLIMATE RESILIENCE: EVOLUTION AND TRANSFORMATION IN THE DEVELOPMENT OF NEXT GENERATION CLIMATE-RELATED SERVICES
Alexander MacDonald, National Aeronautics and Space Administration (NASA), United States

GLOC-2023.T.7-8.3
TRANSATLANTIC LAND REMOTE SENSING SATELLITE COLLABORATION FOR CLIMATE CHANGE ADAPTATION AND MITIGATION
Timothy Stryker, Committee on Earth Observation Satellites, United States

GLOC-2023.T.7-8.4
TROPISCO: REAL-TIME DETECTION OF TROPICAL FOREST LOSS USING SENTINEL-1 DATA
Frédéric Brétar, Centre National d’Etudes Spatiales (CNES), France

GLOC-2023.T.7-8.5
APPLIED ARTIFICIAL INTELLIGENCE FOR URBAN HEATH ISLANDS PREDICTABILITY
Alina Vizireanu, Space Generation Advisory Council (SGAC), United Kingdom

GLOC-2023.T.7-8.6
SAR BASED LEAK DETECTION AND CARBON FOOTPRINT REDUCTION
Yuval Lorig, ASTERRA, Israel

GLOC-2023.T.7-8.7
HOW WILL WE ACCESS SATELLITE AND MODELLED DATA \\ IN THE NEAR FUTURE: A GLIMPSE FROM THE PERSPECTIVE OF A PROVIDER OF CLOUD COMPUTING INFRASTRUCTURES AND BIG EARTH OBSERVATION DATA REPOSITORIES
Jedrzej Bojanowski, CloudFerro, Poland

T.9. The Social, Communications, Economic and Cultural Dimensions of Environmental Change

May 25 2023, 11:00 — Scandinavia Scene

Session Chairs:

- Krystal Azelton, Secure World Foundation (SWV), United States;

- Ruth Kattumuri, Commonwealth of Nations, India;

- Parag Vaze, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States;

- Frank Webb, National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory, United States.

GLOC-2023.T.9.1
THE VALUE OF SPACE COMMUNICATIONS IN ADDRESSING CLIMATE CHANGE
Camille Bergin, United States

GLOC-2023.T.9.2
USING EFFECTIVE SCIENCE COMMUNICATION TO INCREASE THE UPTAKE OF EARTH OBSERVATION DATA IN CLIMATE POLICYMAKING
Clémence Poirier, European Space Policy Institute (ESPI), Austria

GLOC-2023.T.9.3
DEFINING THE LEGAL RIGHT TO EDUCATION AS WE EXPLORE NEXT NEW WORLDS IN OUTER SPACE AND THE POLAR REGIONS
Ellery Saluck, United States

GLOC-2023.T.9.4
THE ROLE OF INTERNATIONAL YOUTH COMMUNITIES IN INCREASING SPACE-BASED DATA ACCESS FOR SOCIAL ENGAGEMENT IN CLIMATE ACTION
Niki Sajjad, Space Generation Advisory Council (SGAC), Iran

GLOC-2023.T.9.6
CLIMATE RISK INDICATORS FOR INDUSTRY
Amanda Hall, Telespazio UK, United Kingdom

GLOC-2023.T.9.7
ADVANCING YUROK TRIBE CLIMATE IMPACT MITIGATION ACTIONS THROUGH THE COLLABORATIVE DEVELOPMENT AND EVALUATION OF A SATELLITE REMOTE SENSING DECISION SUPPORT SYSTEM
Seamus Lombardo, Massachusetts Institute of Technology (MIT), United States

8.2 Interactive Presentations

23 MAY 2023 IP Sessions

Time	Screen	Title	Speaker name
17:20 - 17:30	01	Space-based Mitigation of Global Warming with a Planetary Sunshade - Limit global warming to 1.5 °C; and reduce the risks from climate tipping points	Uwe Brauer
17:20 - 17:30	02	Impact of climate change on Aeronautics and Aviation	Erasmo Carrera
17:20 - 17:30	03	Digital Twins, Planes, and Drones: Bridging the Gap in Arctic Polar Altimetry Data	Finnegan Sougioultzoglou
17:20 - 17:30	04	Media and communication language a crucial role in shaping public perceptions and policy agendas	Annamaria Nassisi
17:20 - 17:30	05	TRUTHS Ground Segment to improve confidence in climate change forecasts	Alexandra Gravereaux
17:20 - 17:30	06	ESA's Business Applications and Space Solutions to develop green and commercially sustainable climate services	Ana Raposo
17:20 - 17:30	07	Development of University-based Ground Stations for LEO SmallSat Constellations Supporting Global Climate Change Monitoring	Benjamin Malphrus
17:20 - 17:30	08	Climate Change, a Pressing Need for Global Monitoring - EDC Constellation	Nicos Spyropoulos
17:20 - 17:30	09	Narrowing the Gap of Legal Norms for Combating Climate Change from Space Applications	Wei Zhang
17:20 - 17:30	10	Cloud Characterization for Improved Climate Predictions by the Satellite Formation CloudCT	Klaus Schilling
17:30 - 17:40	01	Coordination, Cohesion, Collaboration – Inspiring and driving innovation and success by convening the Earth Observation for Climate community	Shannon Jones
17:30 - 17:40	02	Gravimetric Satellite Measurement Corrections with EOT20 Tidal Model	Suditi Chand
17:30 - 17:40	03	Assessing Almond’s Flowering Phenology Using Multi-Spectral Satellite Imagery	Oren Lauteman
17:30 - 17:40	04	Space-Based Technology for Addressing Climate Change and Biodiversity Loss - An Environmental Perspective	Milica Milosev
17:30 - 17:40	05	Remote Sensing Satellites Planning and Scheduling Based on the Improved Particle Swarm Optimization Algorithm	Diyang Sheng
17:30 - 17:40	06	Heat to Harvest: an innovative approach to quantify harvest loss for reduced labor capacity caused by heat stress in the context of climate change	Martina Anna Maggioni
17:30 - 17:40	07	The Benefit of International Relations Critical Theory to Highlight Lessons Learned: Guidelines for Media and Policymakers to Steer the Course for Humanity’s Future, Hopes and Dreams	Edythe Weeks
17:30 - 17:40	08	GESat: Supporting the establishment of a Near-Real Time methane emissions monitoring system	Grégoire Hein
17:30 - 17:40	09	Investigating the use of Linear Variable Filters for Gas detection on Earth Observation Instruments	Lucy Berthoud
17:30 - 17:40	10	Monitoring of Volcanic Ash Clouds and Ice Floes by the CubeSat Formation Mission TOM	Klaus Schilling
17:40 - 17:50	01	Assessment of Self-Organising Maps for the Unsupervised Classification of Sentinel-3 SRAL Data for Lead Detection in the Arctic Ocean	Joshua Bernard-Cooper
17:40 - 17:50	02	IRIS mission: tackling the problem of climate change by monitoring water area’s; pollution	Alessio Bocci
17:40 - 17:50	03	Powering the Global Economy with Sunlight, Water, and Asteroids	Peter Schubert
17:40 - 17:50	04	Towards a Continuity Framework for Satellite Observations of Earth’s Climate and for Supporting Societal Resilience	Duane Waliser
17:40 - 17:50	05	Space Exploration and Sustainable Technology	Arturo Pulido Balderas
17:40 - 17:50	06	Tackling Climate Change through commercial satellite-based projects: a taxonomy of the ESA Business Applications program	Alessandro Paravano
17:40 - 17:50	07	The Copernicus earth observation programme cooperation model; The secret of an enduring success	Giancarlo Filippazzo
17:40 - 17:50	08	A metrics framework for GHG monitoring	Francesco Bordi
17:40 - 17:50	09	How Norway's NICFI Satellite Data Program is helping reduce tropical forest deforestation	Charlotte Bishop
17:40 - 17:50	10	Climate research using earth observation cubesats: the PRETTY satellite	Andreas Johann Hörmer
17:50 - 18:00	01	A new Earth Observation Climate Information Service in the UK	Christopher Merchant
17:50 - 18:00	02	Assessment of climate change impacts in special protected areas based on earth observation data.	Ismat Bakhishov
17:50 - 18:00	03	Monitoring and assessment of climate change using an optimal reconfigurable flower constellation	Fahimeh Barzamini
17:50 - 18:00	04	ArcticSat: Making Space for Arctic Climate Change Research	Philip Ferguson
17:50 - 18:00	05	ESA Climate Change Initiative Terrestrial Essential Climate Variables in support of climate services and terrestrial carbon	Clement Albergel
17:50 - 18:00	06	Radio Sensing of the Atmosphere in an Intersatellite Constellation of Small Satellites	Ramson Nyamukondiwa
17:50 - 18:00	07	The Assimilation of Earth Observations in C3S Atmospheric Reanalyses	William Bell
17:50 - 18:00	08	ESA's Earth Explorer mission Harmony - resolving climate stress in the Earth system	Andreas Kääb
17:50 - 18:00	09	A Mechanism for Seeing Invisible Barriers: The Secret to Assuring Compliance with International Legal Climate Change Regimes	Edythe Weeks

17:50 - 18:00	10	ALMA: Balloon borne aerosol counter for volcanic plumes	Antoni Eritja Olivella
18:00 - 18:10	01	Measuring the fever of the planet: HiVE, a land surface temperature monitoring mission, addressing the future sustainability of food production and water supply in agriculture.	Catherine Welling
18:00 - 18:10	02	a flexible of the shallow water equation systems algorithms modelling of the large-scale sea current	Rustam Rustamov
18:00 - 18:10	03	Metrics for Global Emissions Reduction using Solar Power Beamed from Orbit	Peter Schubert
18:00 - 18:10	04	The Expanding Constellation of Sea Level Observing Satellites and the Need for More	Benjamin Hamlington
18:00 - 18:10	05	Quantum Accelerometer Climate Explorer (Q-Ace)	David Summers
18:00 - 18:10	06	An Appraisal of the Indian Space Research Organization’s; efforts to monitor and mitigate climate change	Aaditya Vikram Sharma
18:00 - 18:10	07	Earth observation and science satellite critical infrastructure developed by Airbus Defence and Space for climate change monitoring and weather forecasting	Faris Ustamujic
18:00 - 18:10	08	The role of space observation technology in understanding planetary boundaries, and climate change impacts and challenges	Thomas Cernev
18:00 - 18:10	09	Is a net-zero space industry truly possible: A legal and engineering perspective	Alex Marinova
18:00 - 18:10	10	Nanosatellite platforms for generation of responsive and targeted datasets on coastal dynamism	Joe Gibbs
18:10 - 18:20	01	Space geodesy- the technique that enables earth observation	Per Erik Opseth
18:10 - 18:20	02	The german space programme and climate change	Albrecht von Bargen
18:10 - 18:20	03	Canadian Space Agency activities related to Climate Change	John Moores
18:10 - 18:20	04	The Thawing of Permafrost, consequences and space monitoring possibilities	Abdel Hamid Sherief

25 MAY 2023 IP Sessions

Time	Screen	Title	Speaker name
12:50 - 13:00	01	Real-time Forest Fire Monitoring in the Guanacaste Conservation Area: A LoRa-based Sensor Node System with Satellite Data Integration	Bryan Martínez
12:50 - 13:00	02	Satellite Design to Observe and Quantify Ocean Color using Push-broom Spectrometer based on Planar Lightwave Circuit MZI array	Surinder Kaur Chawla
12:50 - 13:00	03	Use of Landsat satellite technology for the analysis of the effects of climate change on the mangroves of Mexico and their socio-environmental derivatives at a global level.	Miguel Lopez Minakata
12:50 - 13:00	04	Snow avalanche detection and mapping by satellite remote sensing	Regula Frauenfelder
12:50 - 13:00	05	A Framework for Understanding the role of Earth Observation for Climate Adaptation	Aravind Ravichandran
13:00 - 13:10	01	The Space for Climate Observatory: an international alliance promoting the use of Earth Observation-based services to empower local administrators in reaching territorial resilience to climate change	Frédéric Bretar
13:00 - 13:10	02	Credit where credit is due: Outer space solutions for carbon market challenges	Gavin Choong
13:00 - 13:10	03	Space for Environmental Disaster Management: Flood Mitigation and Adaptation Case Study	Sahba El-Shawa
13:00 - 13:10	04	Costa Rica's dry tropical forest preservation: Integration of satellite technologies and terrestrial sensor nodes to early forest fire detection	Francisco Eduardo Salazar Lopez
13:10 - 13:20	01	Littoscope: a satellite-based solution to support coastal resilience	Frédéric Bretar
13:10 - 13:20	02	The International Planetary Sunshade – A Space-based Climate Mitigation Concept Combining In-space Manufacturing and Assembly with the Integration of Space Resources	Tharshan Maheswaran
13:10 - 13:20	03	Preparing a Pre-Commercial Procurement for end-user services based on environmental observation in the area of climate change adaptation and mitigation-PROTECT: The role of Earth Observation providers	Ioana-Simona Rosca
13:10 - 13:20	04	Fast Earth Observation Data Exploration Platform to Optimize Value-adding and Climate-positive Applications	Hannes Baeuerle
13:10 - 13:20	05	A Climate Data Record of Global Sea-Ice Drift from the EUMETSAT OSI SAF	Thomas Lavergne
13:20 - 13:30	01	The value of Geo-data in a changing Arctic - if we don’t measure, we don’t know.	Pooja Mahapatra
13:20 - 13:30	05	A New Structure for the Sea Ice Essential Climate Variables of the Global Climate Observing System	Thomas Lavergne
13:40 - 13:50	04	Survey and Comparison of In-Space and In-Atmosphere Geo-engineering Concepts for Climate Change Mitigation	Marcello Romano
13:40 - 13:50	05	The role of space technology in climate adaptation and mitigation	Elliott Wobler

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International Astronautical Federation (IAF)

100 Avenue de Suffren
75015 Paris
France

Phone: +33 1 45 67 42 60
Email: info@iafastro.org
Website: www.iafastro.org

Norsk Romsenter
Norwegian Space Agency

Norwegian Space Agency (NOSA)

Drammensveien 165 - P.O. Box 113 Skoyen
0212 Oslo
Norway

Phone: 0047 22511800
Email: spaceagency@spaceagency.no
Website: https://www.romsenter.no/eng

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