



INTERNATIONAL GLACIOLOGICAL SOCIETY
&
BASQUE CENTRE FOR CLIMATE CHANGE

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BASQUE CENTRE
FOR CLIMATE CHANGE
Klima Aldaketa Ikergai

International Symposium on Ice in a Sustainable Society



Conference Auditorium, Bizkaia Aretoa
Bilbao, Basque Country, Spain
5–10 June 2022

With the collaboration of:

- ❄ University of the Basque Country (Spain)
- ❄ Scott Polar Research Institute, University of Cambridge (UK)
- ❄ Salt Road, Birmingham (UK)
- ❄ University of Bristol, School of Geographical Sciences (UK)
- ❄ Pardee School of Global Studies, Boston University (USA)
- and others

SECOND CIRCULAR
December 2021

<https://iss.bc3research.org/>
<https://www.igsoc.org/symposia/2022/bilbao2022/>

The International Glaciological Society (IGS) and the Basque Centre for Climate Change (BC3) are glad to announce the International Symposium on Ice in a Sustainable Society (ISS), which will take place in Bilbao (Basque Country) from 5–10 June 2022.

During the Symposium there will be several social events and we will celebrate World Environment Day (5 June) and the 85th anniversary of the IGS. Come and attend* what will be a stimulating, innovative and productive symposium in a beautiful setting on the north coast of Spain!

THEME AND GOALS

The Symposium will focus on ‘interdisciplinary relations’ rather than isolated disciplines. Its main objective is to help the participants to look beyond their own specializations, identifying powerful interconnections and relationships that recognize no disciplinary borders, in order to highlight the extraordinary transdisciplinary potential of glaciology.

The goals of this symposium are:

- to assess the relevance of glaciology to a sustainable society, including the scientific, technological, social, economic and cultural dimensions.
- to serve as a transdisciplinary line of action and instrument to engage citizens, stakeholders and policymakers, promoting critical thinking about the climate crisis and providing them with the necessary tools to make better decisions, both personally and collectively.
- to encourage transdisciplinary ice research and activate participatory processes to solve complex problems.

We hope this symposium will attract experts in climate, engineering, environment, policy, economy, philosophy, arts and other specialities who will join forces to seek inter- and transdisciplinary solutions for sustainable development and climate change awareness.



Salt Road



Scott
Polar
Research
Institute



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COPENHAGEN



*Required and recommended COVID-19 prevention measures will be followed during all ISS-related activities and remote participation options will also be offered. More details will appear soon on the local website.



COMMITMENT TO CULTURE AND SOCIETY

Within the framework of the Symposium, innovative actions and ways to connect the sciences of ice and sustainability to society will be proposed and implemented by the participants and the organizers, with the aim of contributing to more scientifically informed communities capable of actively participating in democratic processes, understanding that education and awareness raising are essential for actions to reduce human adverse effects on climate.

Besides the Symposium itself, various coordinated scientific communication, co-production and dissemination activities will be organized before and during the Symposium, including citizen participation, exhibitions, artistic performances, meetings and interactions with international experts from various areas of knowledge, from the natural sciences to the humanities. The transdisciplinary nexus of all these actions will be ice, considered in all its forms, from the cryosphere as the most sensitive component of the climate system and one of the dominant contributors to the recent rise in sea level, to glaciers as the water towers of the planet and snow as a source of tourist and economic attraction, as well as artistic and cultural inspiration.

All participants are welcome to organize or collaborate in these actions.

SUGGESTED TOPICS FOR CONTRIBUTIONS

The thematic focus of the Symposium is the recent interrelations of glaciology with the natural sciences, mathematics, applied and social sciences, and the humanities. All interpretations of this theme are welcome as submissions for presentation at the meeting. We organize the Symposium in five blocks of knowledge, whose structure follows the theme 'Glaciology meets X':

- 1. Glaciology meets Physical Sciences:** encompasses the fundamental physics and chemistry of ice in all its forms, including snow and ice mechanics, microstructure and geochemistry; snow and firn metamorphism; thermal,

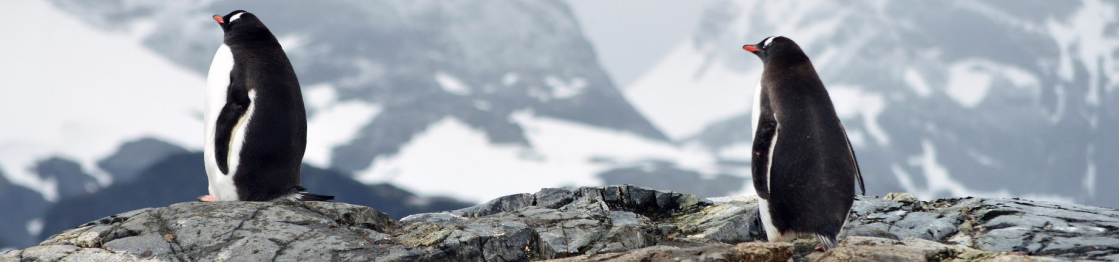


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optical and dielectric properties of ice; ice phases; solar system ices; and so on. It also hosts topics related to the physical foundations of low-temperature experimental techniques and technologies, such as cryo-geochemical analyses; neutrino detection; scanning electron microscopy (SEM); Raman spectroscopy; mass spectrometry (MS); atomic force microscopy (AFM); continuous flow analysis (CFA); neutron and X-ray crystallography (XRC), etc.

- 2. Glaciology meets Formal Sciences and Engineering:** includes several themes related to mathematics, modelling and engineering. It encompasses all aspects of 'theoretical glaciology', from mathematical and numerical problems to glacier and ice-sheet modelling. Furthermore, it hosts glaciological applications in engineering and technology, including the use of ice as model material for condensed matter and materials science; issues in cold-regions engineering; architectural challenges on/in/with ice and permafrost; transportation on ice and permafrost; iceberg towing; borehole and ice-core drilling; refrigeration and cryogenic processes; food technology; technological aspects of ice-related sports; etc.
- 3. Glaciology meets Life and Environmental Sciences:** covers several themes related to biology, ecology, medicine and the environment. In particular, it incorporates cryobiology and cryospheric ecology as a follow-up to the IGS Kyoto Symposium of 2018. Furthermore, it deals with the role of the cryosphere in the climate system, including the cryospheric contribution to global and regional climate models (including CMIP6, CORDEX, etc.); ice-core paleoclimate records; glacier inventories and mass balance; sea-ice loss; permafrost degradation; (sub-/supra-/pro-) glacial lakes; etc. Finally, it provides a forum to discuss the recent conclusions from the Sixth Assessment Report of Working Group I of the IPCC (AR6 WGI).
- 4. Glaciology meets Social Sciences:** covers the socio-economic importance and impacts of the cryosphere in a changing climate. It deals with topics related to climate-change adaptation, vulnerability, risk, resilience, mitigation, equity, litigation, governance and policy.





It also addresses sustainability and the role played by the cryosphere for achieving the sustainable development goals (SDGs) following different scenarios and pathways. Finally, it offers a forum to discuss the conclusions coming up in early 2022 from the Sixth Assessment Reports of Working Groups II and III of the IPCC (AR6 WGII and AR6 WGIII).

5. Glaciology meets the Humanities: unravels the fascinating role played by ice and glaciology in the history, philosophy and culture of mankind. It includes the significance of ice and the cryosphere for the history and philosophy of science, for scientific communication and journalism, and for climate-change sensibilization and awareness. It addresses also timely themes relating ice to sports and tourism, local and indigenous knowledge, minorities rights, gender equality, etc.; as well as ice in the visual and conceptual arts, performing arts, music, literature, film, interactive media, applied arts and crafts, and so on.

ABSTRACT AND PAPER SUBMISSION AND PAPER PUBLICATION

Participants wishing to present a paper (either oral or poster) at the Symposium will be required to submit an abstract by 4 March 2022.

A collection of submitted abstracts will be provided for all participants at the Symposium. The Council of the International Glaciological Society has decided to publish a thematic issue of the *Annals of Glaciology* on topics consistent with the Symposium themes. Participants are encouraged to submit manuscripts for this *Annals* volume.





REGISTRATION FEES

All fees are in euros, €

Early registration until 25 March 2022

– Participant (IGS member):	€535
– Participant (not IGS member):	€615
– Student or retired (IGS member):	€295
– Student or retired (not IGS member):	€345
– Accompanying person (≥18):	€190
– Accompanying person (7–17):	€155
– Accompanying person (≤6):	Free

Online options*

– Online participant (IGS member):	€335
– Online participant (not IGS member):	€415

Surcharges

– Registration after 25 March 2022:	add €40
– Registration after 8 May 2022:	add further €100

All prices will be charged in UK£ equivalent at the exchange rate valid near the date of transaction.

The fees include:

- **In-person participants:** attendance at the conference sessions and activities, the Icebreaker, the midweek excursion, the Banquet and coffee-break refreshments from Monday to Friday.
- **Online participants:** virtual attendance at the conference sessions and activities.[†]
- **Accompanying persons:** the Icebreaker, the midweek excursion and the Banquet (with alcoholic drinks for those ≥18). **Attendance at the presentation sessions is not included.**

Non-member registration includes a year's membership of the IGS.

*We encourage all participants to attend the Symposium on site. If there is a worsening of the COVID-19 situation, all in-person participants will become online participants and the fee difference (if applicable) will be refunded.

† Due to their nature, some of these activities will be face-to-face only, always following the required and recommended COVID-19 prevention measures.



GRANTS FOR STUDENTS AND EARLY CAREER SCIENTISTS

We anticipate being able to fund accommodation and registration for a limited number of early-career researchers (MSc/PhD students and early postdocs) up to and including the age of 30. Awards of full or partial scholarships will be given on a competitive basis. An announcement will be made when the early-career support budget is confirmed, and accommodation support applications will be posted at that time.

PROGRAMME & KEYNOTE SPEAKERS

On World Environmental Day (Sunday 5 June), there will be several celebration activities and a pre-symposium **icebreaker**. From Monday 6 June to Friday 10 June **oral sessions and additional forms of communication and expression** (performances, exhibitions, workshops, etc.) will cover the topics outlined above. These activities* will be interlaced with free time to facilitate the interaction and exchange of scientific and transdisciplinary knowledge between participants in an informal and entertaining manner. We anticipate more than a hundred oral presentations and several activities (workshops, performances, exhibitions). **Poster sessions** will be on Monday, Tuesday and Thursday afternoon and posters can be up all week.

On Wednesday afternoon the sessions will be replaced by the midweek excursion and on Thursday evening the **Banquet** will be held. In addition, optional tours are offered during the symposium for accompanying persons, and post-symposium for all attendees.

Keynote lectures by world-renowned experts will be delivered every day (except on Wednesday, because of the midweek excursion):

Monday: **Valérie Masson-Delmotte**, Co-Chair of IPCC AR6 WGI and CEA Senior Scientist at the Laboratoire des Sciences du Climat et de l'Environnement.

Tuesday: **Alexandre Anesio**, Professor in Arctic Biogeochemistry at the Department of Environmental Science, Aarhus University.

Thursday: **Catherine Ritz**, 2020 Seligman Crystal Award winner, CNRS Senior Researcher at the Institut des Géosciences de l'Environnement.

Friday: **Michael Bravo**, Convenor of Circumpolar History and Public Policy Research, and Histories, Cultures, Environments, Peoples, Scott Polar Research Institute, University of Cambridge.

*Due to their nature, some of these activities will be face-to-face only, always following the required and recommended COVID-19 prevention measures.



In addition to the activities during the symposium week, we will have an **Arctic environmental humanities workshop** taking place online some months ahead of the Symposium. More details will appear soon on the local website.* After the workshop, its participants will work on the conclusions drawn from the discussions and present them at the ISS Symposium.

VENUE

The Symposium will be held at the **Bizkaia Aretoa Convention Centre** in Bilbao (Basque Country, Spain). This venue is located on one of the most emblematic sites of Bilbao, which opens out onto the estuary and the Guggenheim Museum, right in the centre of Avenida Abandoibarra, between two of Bilbao's iconic bridges: the Padre Arrupe Footbridge and the Puente de Deusto.

The venue is set up to follow all the required and recommended COVID-19 prevention measures for the event.

The neighborhood of Bizkaia Aretoa is a tourist zone with numerous restaurants, cafés and bars. It is within walking distance of many of Bilbao's attractions and close to a shopping centre. It is also very well served by public transport. More information about how to get to the venue can be found on the local website: <https://iss.bc3research.org/travel-and-accommodation/>

LOCATION

Bilbao, with the Guggenheim Museum as its most iconic symbol, is the gateway to the Basque cultural universe. Since the 1990s it has been internationally recognized as a major example of urban transformation and revitalization, receiving numerous international prizes and serving as inspiration for many urban projects worldwide.

Bilbao is one of the three capitals of Euskadi, as the autonomous community of the Basque Country is known in Basque. With a history stretching back over 5000 years, Euskadi has a distinctive culture and a language that is unique in the world. Euskadi has managed to adapt to the times and is among the forefront regions of Europe in terms of quality of life and sustainable human development. It also maintains a strong link with the natural environment, with the sea and the mountains being the Basque traditional hallmarks of identity.

*The workshop will be moderated by Adriana Craciun (Pardee School of Global Studies, Boston University, USA), Michael Bravo (Scott Polar Institute, University of Cambridge, UK), Mark Jackson (University of Bristol, UK), Martyn Tranter (Aarhus University, Denmark), and S.H. Faria (BC3, Spain).



ACCOMMODATION

A number of rooms have been reserved in the following hotels, to provide convenient accommodation for participants (links and more information are available on the local website):

Hotel Mercure Bilbao Jardines de Albia (**):**

- Individual use double room (VAT 10% included): €130
- Double room (VAT 10% included): €148

Hotel Silken Indautxu (**):**

- Individual use double room (VAT 10% included): €155
- Double room (VAT 10% included): €165

Hotel Ibis Budget Bilbao City (*):

- Individual use double room (VAT 10% included): €55
- Double room (VAT 10% included): €60

You must contact these hotels and **make the bookings yourself** (if you have any problems please contact the local organization). Please note that rates may vary depending on property and the specific dates requested. To guarantee your room you must book **before 25 March 2022**.

This is the **booking procedure** to make your reservation using the telephone number/e-mail address that appears on the website of each hotel:

- Use the promo code ISS2022BILBAO.
- Provide them with your telephone number and credit card details.

Alternative affordable accommodation options are also available, e.g.: Pohstel – Premium hostel; Pil-Pil Hostel; Bilbao Akelarre Hostel; Bilbao Central hostel; Botxo Gallery – Youth Hostel; Moon Hostel Bio; and others. Please contact the local organization for more information.

SOCIAL EVENTS

Icebreaker

The Icebreaker will be held on World Environment Day, Sunday 5 June, at 18:00 at the venue (Bizkaia Aretoa). Food and beverages will be available.





Participants can also use this opportunity to complete their registration, collect their conference materials and mount posters (if applicable).

Midweek excursion: Flysch and Gaztelugatxe

A Bio-Geo field trip to the flysch and cliffs of the Basque coast will be organized in the afternoon of Wednesday 8 June. This tour will take us from Bakio beach along the coast to one of the most emblematic and touristic places in the Basque Country: the hermitage of San Juan de Gaztelugatxe.

Banquet

The Banquet will be held on Thursday evening 9 June at the Guggenheim Museum. Several activities will take place during the Banquet, including the award of prizes for the best student presentations, the celebration of IGS's 85th anniversary and the presentation of the 2020 Seligman Crystal Award (see additional information below).

IGS 85th Anniversary

On several occasions during the Symposium, and in particular at its start and during the Banquet at the Guggenheim Museum, we will celebrate the 85th anniversary of the International Glaciological Society (IGS).

2020 Seligman Crystal Award

On Thursday, 9 June 2022, the Seligman Crystal Keynote Lecture will be given by Catherine Ritz, who will receive the 2020 Seligman Crystal Award from IGS during the Banquet at the Guggenheim Museum.

OPTIONAL TOURS

Mid- & post-symposium one-day tour: Bilbao+ boat trip to the Bridge of Bizkaia

A one-day optional guided tour of Bilbao + boat trip to the Bridge of Bizkaia will be offered on 06 June (Monday) for accompanying persons and on 11 June (Saturday) for attendees and their accompanying persons.

Mid-symposium one-day tour: La Rioja

An optional one-day tour to La Rioja (historic wine region) will be offered on 07 June (Tuesday) for accompanying persons.





*Post-symposium one-day tour: **San Sebastián***

We offer an optional post-symposium tour on 11 June (Saturday) for symposium attendees and their accompanying persons. It will be a one-day trip to San Sebastián (one of the three Basque capitals) that will include a visit to the Chillida Leku Museum and to the San Telmo Museum.

SYMPOSIUM ORGANIZATION

Sérgio Henrique Faria (BC3) Magnús Már Magnússon (IGS)

CULTURAL AND SCIENTIFIC STEERING COMMITTEE (CSSC)

Chair and Chief Editor: Sérgio Henrique Faria

Cultural Committee: Marcela Brugnach (BC3, Spain), Mark Carey (University of Oregon, USA), Jaime Jackson (Salt Road, UK), Sally Payen (Salt Road, UK), Neelambari Phalkey (University of Birmingham, UK)

Scientific Editors: Carolina Adler (MRI & University of Bern, Switzerland), Mark Carey (University of Oregon, USA), Christine Schøtt Hvidberg (University of Copenhagen, Denmark), Douglas R. MacAyeal (University of Chicago, USA), Muthukumara Mani (World Bank, Vietnam), Francisco Navarro (Universidad Politécnica de Madrid, Spain), Neelambari Phalkey (University of Birmingham, UK), María José Sanz (BC3, Spain), Shin Sugiyama (Hokkaido University, Japan), Martyn Tranter (Aarhus University, Denmark), Marcela Brugnach (BC3)

LOCAL ORGANIZING COMMITTEE (LOC)

Scientific Coordination: Sérgio Henrique Faria (Chair), Coordinator of Physical and Applied Sciences; María José Sanz (Vice-chair), Coordinator of Social, Life and Environmental Sciences; Marcela Brugnach, Coordinator of Humanities

Administrative Coordination: Ainara Fernández, Communications and Social Media Manager; Patricia Muñoz Marzagon, Programme and Technical Manager; Nerea Ortiz, Operations Manager

Committee: Nerea Bilbao, Alejandro Cearreta, Nicolás González, Eñaut Izagirre, Susana Jodra, Carmen Marín Ruiz, Ibai Rico, María Santolaria-Otín

FURTHER INFORMATION

If you wish to attend the Symposium, please **express your interest online** at <https://www.igsoc.org/symposia/2022/bilbao2022/>

Information will also be updated on the **local website:**

<https://iss.bc3research.org/>



CONTACT

Local organization

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Registration, abstracts and publication

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IMPORTANT DATES

Ice in a Sustainable Society

Opening of online abstract submission:	15 January 2021
Opening of online registration:	21 February 2022
Abstract submission deadline:	4 March 2022
Notification of abstract acceptance:	14 March 2022
Early registration deadline:	25 March 2022
Deadline for full refund:	22 April 2022
Deadline for refund on a sliding scale:	8 May 2022
Late registration surcharge starts:	9 May 2022
Symposium starts:	5 June 2022

Annals of Glaciology volume 64, issue 88

Paper submission deadline:	1 September 2022
Final revised papers deadline:	1 March 2023

The Call for Papers for the *Annals of Glaciology* is posted on https://www.igsoc.org/annals/call_4_papers/a88_call_4_papers.pdf. Accepted papers will be published as soon as authors have returned their proofs and all corrections have been made.