

Svalbard Science Conference 2023

Call for Abstracts, 22 March 2023

Session 1: Four times faster

Recent publications show that the Arctic is warming faster than anticipated. The summer season is getting longer, the winter shorter, sea temperatures are on the rise, sea ice is disappearing, glaciers are melting, and the permafrost is thawing. Svalbard and its surrounding ocean may go into a spiral of changes that will drastically change the archipelago. Climate change is happening all over the Arctic. Svalbard may be unique in some respects and typical for the Arctic in others. When can Svalbard research help us understand the future of the Arctic system and when can it not?

To this session we invite abstracts on climate change and the consequences of a warmer climate on a broad range of themes with special focus on interactive effects within and between the different spheres.

Session 2: Earth System Science and Svalbard

Svalbard is an excellent platform for Earth System Science focusing on the changing Arctic environment, to understand and predict the Arctic's impact on climate change globally as well as extreme events regionally. Understanding the Earth System in and around Svalbard on process- and system levels requires empirical approaches (monitoring and experimental) and modelling. Integration and collaboration between these approaches is highly beneficial and is something that has been gaining traction in the previous years.

We invite abstracts discussing different types of approaches for carrying out research on the Svalbard Earth System as well as in a wider pan-Arctic context: advances in monitoring and predictive capacity for the Arctic, including new observational tools, improved data collection and data integration, and applications of modelling from global to regional scales. We are also interested in research combining different approaches, for example ecosystem models, numerical weather prediction, remote sensing, in-situ studies, and monitoring.

Session 3: Svalbard and its neighbours

Building Bridges: Svalbard – Fram Strait – Greenland

The Fram Strait, the region between Svalbard and Greenland, is a key region for meridional transport in ocean and atmosphere. The northward inflow of warm Atlantic water contributes to sea ice melting and is associated with heat release into the atmosphere. Sea ice export from the Central Arctic is happening through the Fram Strait, and cold polar water masses flow southwards along the East Greenland coast. Changing conditions in sea ice and water properties affect the overlying atmosphere, and consequently have an impact on the adjacent terrestrial and glacier environment.

We invite talks that compare and bridge knowledge from studies from Svalbard and Greenland glaciers, terrestrial systems biochemistry, environmental toxins and the ocean, sea ice and atmosphere processes that occur in the Fram Strait that separate Svalbard and Greenland.

Session 4: How to bring it all together

Panel discussion. No calls for abstract to this session.

A Polar Bear ate my Zodiac

We have all been there; something, some things, nothing worked out as planned...

As a recurrent feature of the SSC this fast-moving mini session explores the unexpected. Take the chance to get your 3 minutes of fame. It can be related to anything extraordinary; wild animals or colleagues, equipment or experiments that did not work out exactly as their description said, weather and vessels not co-operating as you wanted. Present your 3 minutes story together however you wish, for example with 3x3 pictures or in combination with a video.

What can we all learn from your story? How to avoid troubles in the future or how to have a good laugh together?

You are welcome to hand in your story.

Session 5a: Polar Ocean

The ocean is important in determining the local climate and we need to understand the inflow and outflow of water masses into and out of the Arctic Ocean to understand, explain and predict ecosystem responses, sea ice dynamics, local weather, sea ice extent and volume. There are many interactions, and some are poorly understood. Changes are often associated with detrimental effects, but they may also open new opportunities and challenges.

We invite abstracts on process studies, the state and further projections of the polar ocean in a broad range of themes important for the understanding of the polar ocean and future challenges.

Session 5b: Toolbox

Novel technologies can provide improvements to current ways of observing, enhancing the tools available to scientists and science communicators. It could be in terms of better coverage in space or time, or perhaps adding a previously unavailable dimension through using UAV-mounted instrumentation. Newly developed algorithms can improve analysis quality, and new modelling approaches can help better understand complex processes. Efficient data management is another aspect of science with several ongoing developments for both tools and practices on how to better produce, format, store and share data. New methods for both doing and communicating science are also rapidly changing how we as society engage with and understand polar environments (e.g., citizen science initiatives).

This interdisciplinary session invites abstracts describing tools and methods worth disseminating to showcase the new toolbox available to polar scientists. It could be a new way of using existing platforms, improving on efficiency through better software, how to plan field campaigns efficiently, methods of citizen science or outreach, and other aspects on tools not explicitly mentioned here.

Session 6a: Thawing ground and below

Permafrost thaw and coastal erosion are among of the most relevant problems in the Arctic (IPCC, 2014) since they can affect the life and well-being of people. Moreover, thawing permafrost modifies geological, chemical, hydrological and ecological processes, and contributes to a positive feedback loop accelerating the warming of Earth (methane release).

We welcome abstracts on the effects of thawing permafrost on erosion, infrastructure, methane release, geochemistry, wetlands, microbial activity and terrestrial ecosystems, and geology.

Session 6b: From mountain tops to seafloor

Traditionally, scientists have been specialists within one, narrow field. Nevertheless, to solve and understand big issues, several fields need to be linked and explored together, whether they are technology applications within geology, challenges within social sciences, or studies of how glacial processes affect marine life.

Inter-disciplinary research has become more and more common, and we look for abstracts where several scientific fields, geographical areas, habitats and/or different ecosystems are linked together, and research is conducted across these boundaries.

Session 7: Human footprints

“Take nothing but photos, leave nothing but footprints” is an old travel advice. However, the footprints humans leave today are not only their tracks in the snow. Some of our footprints are reversible, some are not, and some may pose a risk to people and environment.

We invite abstracts on human footprints from a broad perspective: pollution, safety measurements to avoid accidents impacting both humans and the environment, area management and usage, decreasing footprints through efficient use of remote observations and combining logistical efforts.

We also invite talks on how we can balance and manage industrial and other commercial interests in nature areas against preservation of biodiversity and important ecological habitats.

Session 8: Svalbard in the future

What challenges and opportunities does Svalbard face in light of a new geopolitical reality and a changing climate?

Svalbard is changing. Not only in terms of what we can observe and measure, but also when it comes to societal relations and the role Svalbard plays in both Norwegian and international politics. The transition away from coal, towards research, tourism, and new forms of activity, brings up questions concerning the *purpose* of the communities on Svalbard. How do these changes challenge, or reinforce, Norwegian policies concerning Svalbard? How do the Norwegian Svalbard policies link to its wider High North ambitions? And what possible flashpoints may arise, both locally – in Svalbard – and regionally – beyond Svalbard – in the near-future?

This panel will discuss these topics, bringing in a political, sociological, and economic perspective to the conference. No calls for abstract to this session.