

CASCADES EXPEDITION

INSTITUT NORDIQUE DU QUÉBEC • INQ
SWISS POLAR INSTITUTE • SPI
INSTITUT PAUL-ÉMILE VICTOR • IPEV

CASCADES is a collaborative polar expedition uniting scientists from Canada, France, Greenland, and Switzerland to confront a critical climate challenge: the accelerating melt of Greenland's glaciers and its far-reaching impacts on the Atlantic Ocean and climate systems worldwide.

FEDERATING EXPERTISE

CASCADES is coordinated by the Institut Nordique du Québec (INQ), the Swiss Polar Institute (SPI), and the Institut polaire français Paul-Émile Victor (IPEV), in collaboration with Greenlandic institutions. It is a rare opportunity for **comprehensive and interdisciplinary work** for the Swiss, Canadian, French, and Greenlandic research communities.

CRITICAL SCIENCE

CASCADES will explore how melting glaciers, sea ice, and ocean ecosystems interact and shape the environment and communities in the Arctic. This research is essential to better understand and **anticipate both global and local climate challenges**.

CRITICAL REGION

The Arctic, spanning over eight sovereign countries and the Arctic Ocean, is warming three to four times faster than the global average. It harbours **four critical climate tipping points**:

- the accelerated melt of the Greenland Ice Sheet,
- the thawing of boreal permafrost,
- the collapse of winter Arctic sea ice,
- and the weakening of the Labrador-Irminger Seas convector.

CRITICAL TIMING

CASCADES will take place in two legs, aligned with **two key Arctic phases**: the melt and the freeze-up of sea ice. Studying these dynamics will bring a better understanding of ongoing climate shifts in the Arctic that affect the entire world.

GLOBAL IMPLICATIONS

As **'vertical polar nations'**, France and Switzerland are affected by comparable mechanisms including fast glacier melt and permafrost degradation. Learning from the Arctic helps French and Swiss actors anticipate upcoming changes at home. By being 'Observers' in the Arctic Council, France and Switzerland actively support dialogue, science diplomacy, and the involvement of local communities.

RESEARCH CLUSTERS



Physical
Chemistry



Organic
Dynamics



Microbial
Connectivity



Food
Webs



Primary
Production



Glacier
Dynamics



Benthic
Processes

RESEARCH INSTITUTIONS

- Dalhousie University (CA)
- École Normale Supérieure (FR)
- EPF Lausanne (CH)
- ETH Zurich (CH)
- Greenland Institute of Natural Resources (GL)
- Memorial University of Newfoundland (CA)
- Sorbonne Université (FR)
- Université de Genève (CH)
- Université de Lausanne (CH)
- Université du Québec (CA)
- Université du Québec à Rimouski (CA)
- Université Laval (CA)
- Université Paris-Saclay (FR)

FACTS & FIGURES

50+ researchers involved
16 international scientific projects
13 research institutions from
4 countries
3 partner institutions
1 joint outreach programme

FUNDING

- Canada Foundation for Innovation (CA)
- Transforming Climate Action Program (CA)
- Swiss Polar Institute (CH)
- Fondation Albédo pour la Cryosphère (FR)
- Cryosphere Foundation (CH)
- Ferring Inc. (CA)

AMUNDSEN SCIENCE

CASCADES Expedition benefits from the infrastructure provided by Amundsen Science, which manages the Canadian research icebreaker CCGS *Amundsen*.

MILESTONES

2025

March

Expedition announcement & Launch of the call for projects

October

Scientific programme confirmed

November

Presentation at the *Greenland Science Week*, Nuuk (GL)

2026

February

Pre-expedition scientific and logistic in-person workshop, Québec City (CA)

18 March

Press conference & Launch of CASCADES Expedition, Bern (CH)

August-September

CASCADES Expedition **Leg A**
 Iqaluit (CA) - Pituffik Space Base (GL)

9 September

SPI 10th Anniversary celebration in the presence of partner institutions, Sion (CH)

October-November

CASCADES Expedition **Leg B**
 Resolute (CA) - Québec City (CA)

2027

February

Post-expedition scientific workshop

