Strengthening International Polar Cooperation: Arctic Circle Rome Forum – Polar Dialogue

Giuliana Panieri

Our Institute continues to play an active role in strengthening international cooperation in polar research and fostering dialogue across the global scientific community. A particularly important milestone in this direction was the Arctic Circle Rome Forum – Polar Dialogue, held recently in Rome (3-5 March 2026). The Forum represented one of the largest Arctic Circle Forum events organised to date, bringing together over 530 participants from 43 countries. The programme included 40 thematic sessions and 16 plenary discussions, reflecting the growing global interest in polar science and the governance of the Arctic.

Beyond the impressive participation, the Forum was above all a valuable collective experience. The months of preparation offered a unique opportunity to work closely with colleagues across the Institute and with partners at CNR Headquarters, building strong relationships and a genuine spirit of collaboration. It was encouraging to see how this shared effort brought together different competencies and perspectives, reinforcing our capacity to act as a coordinated national community in polar research.

The organization of the Forum also created important opportunities for dialogue with institutional stakeholders. It was particularly interesting and rewarding to interact with colleagues from the Italian Ministry of University and Research, the Ministry of Foreign Affairs, and the Ministry of Defence, highlighting how polar science today sits at the intersection of research,

international cooperation, environmental policy, and strategic awareness.

Participants represented a broad spectrum of stakeholders, including scientists, policy makers, international organizations, indigenous representatives and early-career researchers. The audience composition reflected the diversity of the polar community, approximately 39.9% of the participants were women and more than 15% were early career workers (under 35).

Italy played a particularly strong role in the Forum, accounting for over 44% of participants, highlighting the country's growing engagement in Arctic research and diplomacy. Experiences such as the Arctic Circle Rome Forum are important steps in strengthening Italy's scientific presence in the polar regions and in positioning the CNR as an increasingly visible and credible actor in the international polar science landscape.

At the end of these intense and inspiring days, one message clearly emerged: the importance of continuing to work together. In a rapidly changing world, science can and should remain a language of trust, dialogue, and peace. Strengthening collaboration, sharing data openly, and listening to the knowledge and perspectives of the people who have lived in these regions for centuries are essential steps toward building a deeper and more responsible understanding of our planet.

Photo 1. Giuliana Panieri, Director of CNR-ISP, interviewed during the Arctic Circle Rome Forum – Polar Dialogue (Credits: Arctic Circle).

IN THIS ISSUE:

The Roots and Fruits of the International Polar Year: Next Stop 2032–2033

Anna Maria Fioretti

The International Polar Year (IPY) is a global scientific initiative aimed at stimulating international cooperation and creating synergies to deepen knowledge of the Polar Regions, while providing information and tools capable of guiding strategic decisions that affect the entire planet.

Despite the ease of communication available today, organizing an event of this scale still requires considerable effort, so much so that the initial planning for the 5th edition, scheduled for 2032–33, has already begun. That the first edition took place in 1882–83 clearly shows how visionary this idea was and how exceptional the commitment to realizing it, more than a century ago, truly was.

The first IPY arose from the reflections of Karl Weyprecht (Fig. 1), an Austro-Hungarian naval officer stationed in Trieste, who, after participating and witnessing numerous heroic and sometimes tragic Arctic expeditions in the mid-19th century, became convinced of the futility of expeditions aimed merely at "planting the flag slightly ahead of every predecessor." He observed that costly and risky undertakings were wasted if they did not systematically collect data on meteorology, geology, flora, fauna, and geophysical phenomena, and that too many human lives were put at risk in the name of adventure and conquest rather than science. He also argued that only measurements carried out using the same methodologies, in distinct locations, and over at least a full year could allow understanding of complex phenomena such as the Earth's magnetism, atmospheric circulation, and climatic dynamics in polar regions—and that none of this could be achieved by any single country alone.

Weyprecht therefore promoted the International Polar Conferences, during which the idea—revolutionary for its time—that 'polar research should be the result of international collaboration' was developed. The Polar Conferences also led to the sharing and standardization of measurement types, methods, and procedures to be applied uniformly during IPY activities. It is no coincidence that, in those years (1889), the 1st General Conference on Weights and Measures was

convened, leading to the international standardization of measurement parameters.

Fig. 1. Karl Weyprecht (1838-1881) – the creator and promoter of the International Polar Year, died of tuberculosis one year before his project was realized.

The first IPY (1882–83) involved 11 nations, with around 700 men distributed across 12 permanent research stations (Fig. 2 and Table 1) and 13 auxiliary stations in the Arctic, and two stations in the Antarctic. For the first time, vast amounts of data were collected on the magnetic field, gravity, auroras, ocean currents, ice characteristics, meteorology, and ethnology. This marked the beginning of a new era in science. Subsequent polar research campaigns gradually became more structured, expanded their objectives, and involved an increasing number of countries.

The second IPY (1932–33), scheduled to take place 50 years after the first one, took place during a period of great crisis, when the world had not yet recovered from the 1929 economic crash, and was therefore necessarily more limited than originally hoped.

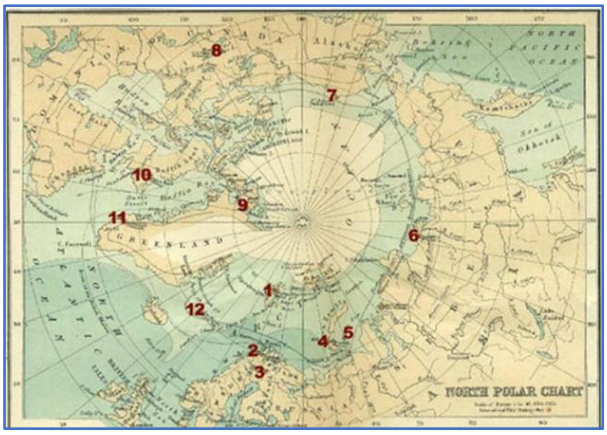


Fig. 2. Map showing the 12 research stations that participated in the first IPY (1882-83).

Table 1. Research stations that participated in the first IPY (1882-83) and the respective responsible Nation.

N°	Stations	Responsible Nation
1	**Kapp Thordsen** (Svalbard)	Sweden
2	**Bossekop** (Norway)	Norway
3	**Sodankylä** (Finland)	Finland
4	**Malye** Karmakuly (Novaja Zemlja)	Russia
5	**Nieuw Holland** (Dickson Island)	Netherlands
6	**Sagastyr (**Lena Delta)	Russia
7	**Point Barrow** (Alaska)	United States
8	**Fort Rae** (Canada)	United Kingdom
9	**Fort Conger** (Ellesmere Island)	United States
10	**Kingua Fjord** (Baffin Island)	Germany
11	**Godthåb** (Nuuk, Greenland)	Denmark
12	**Jan Mayen** (Jan Mayen Island)	Austria-Hungary

Nevertheless, 44 nations participated; in the Arctic, 45 new measurement stations were installed, while in the Antarctic there were around 50 stations, primarily for magnetic and

meteorological observations. Studying variations in the Earth's magnetic field, the upper atmosphere, the ionosphere, and radio wave propagation was essential for the development of intercontinental communications.

The third IPY (1958–59) coincided with the first International Geophysical Year (IGY) and benefited from a unique historical context in which scientific and political interests converged particularly intensely. Major technological progress—including more advanced instruments, air transport, and icebreakers—and international cooperation, despite occurring during the Cold War, produced unprecedented results in Antarctic knowledge. The collaboration established among states, combined with the need to avoid territorial conflicts, led in 1959 to the signing of the Antarctic Treaty, a permanent legal agreement that suspended territorial claims, established the peaceful use of the continent, guaranteed freedom of scientific research, and is truly unique in international law.

The fourth IPY (2007–2008), promoted by the International Council for Science (ICSU) and the World Meteorological Organization (WMO), took place in a context marked by growing attention to climate change. It involved 63 countries and around 50,000 scientists, technicians, and support personnel. For the first time, Arctic indigenous communities were actively involved, and particular attention was given to education and outreach projects. The availability of advanced technologies—such as communication and remote sensing satellites, new materials, automation, and sophisticated mathematical models—made this IPY especially productive, with highly significant scientific results achieved thanks to the exceptional large-scale coordination of more than 228 major international projects (Fig. 3).

In summary, all International Polar Years have proven to be important opportunities for advancing knowledge and catalysts for international collaboration. For various historical and situational reasons, Italy had limited participation in the first three IPYs, while in the fourth, despite having a large and well-established scientific community, it could not fully realise its potential.

The 5th IPY (2032–33, https://ipy5.info/) represents a new opportunity for all organizations engaged in polar research to contribute and take a leading role, leveraging scientific expertise and decades of experience. The Italian IPY5 Committee is taking shape, and ISP-CNR has already established a dedicated working group (contacts: Giuliana Panieri and Nicoletta Ademollo). Stay tuned, participate, contribute!

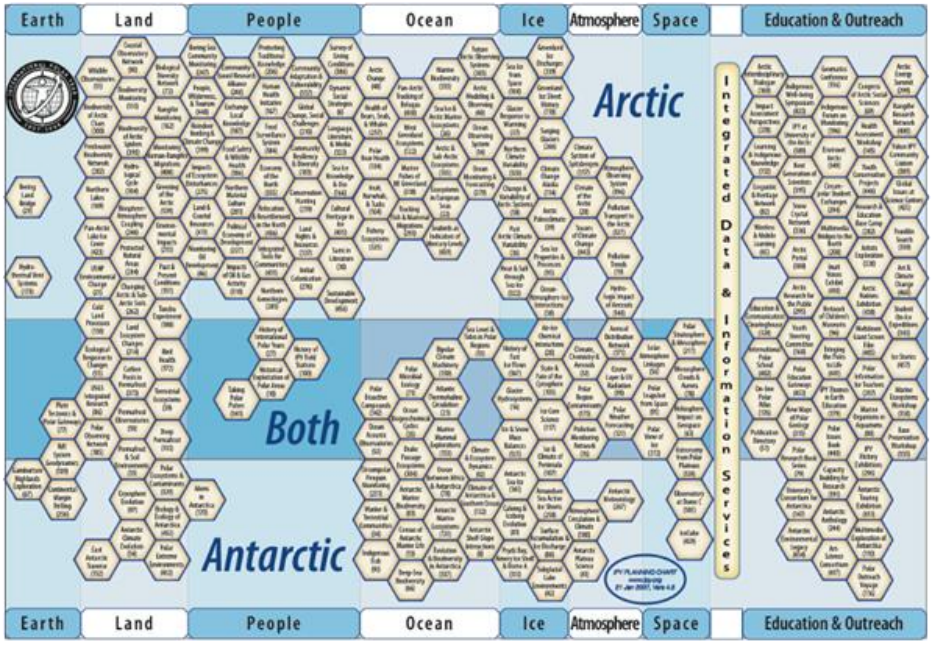


Fig. 3. Summary of the 228 projects carried out during the 4th IPY, categorized by region and topic.

1. Life as Station Leader at Dirigibile Italia

Chiara Ripa

My name is Chiara Ripa, and I am the current Station Leader at the Dirigibile Italia base in Ny-Ålesund. I arrived in January and will remain here until April; this is my first experience in the Arctic, a dream I have held for years. I am fortunate enough to experience it during the transition from the polar night, and its aurorae, to the return of the sun, as the landscape slowly begins to brighten. On February 17th, the sun officially rose above the horizon for the first time, illuminating the mountain peaks overlooking Kongsfjorden.

My primary responsibilities involve environmental, snow and atmospheric monitoring as part of national and international research projects that require year-round measurements.

My daily tasks include atmospheric monitoring: I regularly visit the GVB (Gruvebadet) laboratory or the CCT (Climate Change Tower) to check instruments that sample the air and record climatic parameters.

Every week, I perform snow sampling (Photo 1) during snowpit excavations, carried out in coordination with the activity leads from AWIPEV and NPI (Norwegian Polar Institute). Due to heavy snowfall in recent days, we have reached a snow depth of 1 meter. Additionally, I measure snow-height at designated points near the tower. Finally, I manage seawater sampling for eDNA (environmental DNA) analysis: samples are collected near a fixed buoy and are subsequently filtered in the laboratory.

Photo 1. Snow sampling (Credits: Chiara Ripa).

The role of Station Leader also carries the responsibility of base management and coordination: I organize researchers' activities and support the use of the infrastructures provided by Kings Bay. As the winter season ends, the base is gradually coming back to life; at the end of February, we welcomed the first researchers after the months of darkness. The arrival of spring and the slow melting of the ice will lead to a significant increase in activities across various scientific fields.

Living and working in such a remote and extreme environment represents an extraordinary opportunity for my professional and personal growth. Every day is a chance to deepen my understanding of this unique ecosystem and to contribute, alongside Italian and international colleagues, to the progress of Arctic scientific research.

Photo 2. Kongsfjorden, Ny-Ålesund (Svalbard, Norway) (Credits: Chiara Ripa).

2. Arctic Monitoring Frontiers: eDNA as a Sentinel for Biodiversity in Ny-Ålesund

Angelo Odetti

The current climate crisis necessitates a rapid transition toward autonomous, high-temporal-resolution observation systems capable of operating even where human presence is limited by extreme environmental conditions. In this context, the deployment of an advanced automatic seawater sampler for environmental DNA (eDNA) analysis was recently completed in Ny-Ålesund—a device designed to provide critical data on the structure of marine biological communities in one of the global warming hotspots.

The initiative is an integral part of the PNRR IR0000032 – ITINERIS (Italian Integrated Environmental Research Infrastructures System) project, funded by the European Union – Next Generation EU (Mission 4, Component 2). The activity specifically pertains to WP5 – Marine Domain, Task 5.14 ("Expand capability of biological and EOVs observations in polar regions", CUP B53C22002150006), under the scientific coordination of Maurizio Azzaro from CNR-ISP in Messina.

The objective is clear: to enhance the observation capacity of biological Essential Ocean Variables (EOVs) through the implementation of integrated IoT infrastructures. The sampler is not merely a collection tool but a complex analytical system born from the synergy between CNR-INM (Institute of Marine Engineering) and CNR-ISP. Designed to be hosted on the "smart thalassographic buoy," (Photo 1) the device must guarantee the integrity of the biological signal throughout the entire Arctic winter. The technical rigor of the system ensures the integrity of the biological signal through a complex architecture: bi-weekly sampling processes over 2 litres of water on Merck Millipore® Sterivex™ filters, with immediate in situ DNA fixation to prevent enzymatic degradation. Sterility is ensured by automatic decontamination cycles using hydrochloric acid and distilled water (managed by station leaders), while thermal and fluid-dynamic stability is maintained by an entirely thermostated system.

The Raspberry Pi control unit coordinates Waveshare motors and custom CNR-INM components, monitoring flows via pressure switches, flow meters, and Qosina fittings.

Photo 1. The oceanographic buoy in the harbor of Ny-Ålesund (Credits: Angelo Odetti).

The success of the operation is the culmination of a collective effort. The hardware, software, and electronic development was carried out by the team in Photo 2 composed of Angelo Odetti, Gabriele Bruzzone, Giorgio Bruzzone, and Edoardo Spirandelli, who defined the operational protocols necessary to ensure reliability in polar environments.

The physical installation in Ny-Ålesund benefited from a hybrid assistance model: the team present in the Arctic operated in constant coordination with the technical base in Italy via VPN connection, ensuring real-time resolution of commissioning issues.

Special thanks go to the logistical and operational support from Chiara Ripa, Station Leader of the "Dirigibile Italia" Arctic Station.

This installation transforms the oceanographic buoy into a cutting-edge multiparametric platform, capable of combining physical oceanography and molecular biology. The eDNA-based approach will allow mapping of marine biodiversity with unprecedented sensitivity, identifying alien species or variations in native populations in response to glacier retreat and the "Atlantification" of the Arctic Ocean.

Photo 2. The installation team, from left to right: Chiara Ripa (CNR-ISP), Angelo Odetti (CNR-INM), Edoardo Spirandelli (CNR-INM), and Gabriele Bruzzone (CNR-INM). (Credits: Gabriele Bruzzone).

NEWS FROM ANTARCTICA

1. PASSPORT Project: the chemical and biological human footprint in the heart of Antarctica

Andrei Munteanu

As part of the scientific activities conducted in the Antarctic continent during the 41st Italian Antarctic Expedition, the PASSPORT project carried out an intensive sampling campaign at Dome C. The field activities, performed by the PhD student Andrei Munteanu, were aimed at revealing not only the presence and distribution of microplastics and organic contaminants in one of the planet's most remote environments, but also their crucial link with microbiology.

Led by CNR-ISP in close collaboration with Ca' Foscari University of Venice and CNR-IRSA, the study focuses on microplastics as well as the analysis of chemical plastic additives of primary environmental concern: perfluoroalkyl substances (PFAS), polybrominated diphenyl ethers (PBDEs), and compounds with potential endocrine-disrupting properties (PEDCs), such as bisphenols.

To distinguish long-range atmospheric transport from local impacts by human activities at Concordia Station, the experimental design was structured to evaluate surface snow sampling areas extending up to 25 kilometres away (Photo 1).

Photo 1. Sampling of surface snow in Antarctica (Credits: Andrei Munteanu©PNRA).

By concentrating on pristine background zones to the South and downwind areas to the North of the station—which are potentially impacted by logistical activities. This complex spatial mapping was combined with a vertical exploration of the snowpack through the excavation of stratigraphic trenches reaching a depth of 1 meter, an approach that will allow for the analysis of contamination trends.

A further crucial part of the work took place directly in situ, using rigorous sample pretreatment procedures, essential for preserving the integrity of the chemical and biological data (Photo 2).

Photo 2. Pretreatment of snow samples collected during the PASSPORT project (Credits: Andrei Munteanu).

These operations included sample filtration for the isolation of microplastics and microbiological investigations, as well as solid-phase extraction (SPE) aimed at extracting target analytes and serving as a preparatory step for untargeted screening. In parallel, specific snow aliquots were prepared for Total Organic Carbon (TOC) analysis and the determination of isotopic signatures.

All samples, stored at low temperatures to ensure safe shipment, have been sent to the Italian laboratories. Here, the collaboration between researchers from CNR-ISP, Ca' Foscari University, and CNR-IRSA will allow the samples to undergo instrumental analysis, such as Micro-FTIR for the identification and quantification of microplastics, mass spectrometry for targeted and untargeted chemical analyses, and IRMS and ESI-Orbitrap systems for isotopic investigations.

The integration of these data will enable the PASSPORT project to quantify the real contribution of global atmospheric transport compared to local anthropogenic impact, and to decipher the complex interaction dynamics between chemical pollutants, plastics, and the microbiome, ultimately defining the degree of alteration and the chemical-biological footprint left by human activities on the Antarctic ecosystem.

2. PACE: A Season of Science, Collaboration and Italian Innovation in Antarctica

Patrizia Giordano

The research campaign of the PNRA project PACE – Plankton production and carbon flux in Antarctic Coastal Ecosystems (PI Prof. O. Mangoni, University of Naples Federico II), carried out during the XLI Italian Antarctic Expedition (2025/2026) of the National Antarctic Research Program (PNRA) at the Italian Mario Zucchelli Station, has been successfully completed.

The campaign was an intense season of scientific activity and collaboration among several institutions. Throughout the austral summer, the PACE project team included researchers from the CNR – Institute of Polar Sciences (CNR-ISP), the University of Naples Federico II, Parthenope University of Naples, and the Stazione Zoologica Anton Dohrn. From November to February, during the core of the Antarctic seasonal transition, the research group operated in the Ross Sea, in the

Terra Nova Bay region, one of the most biologically productive sectors of the Southern Ocean (Photo 1).

The main goal of the project is to investigate how plankton communities and carbon fluxes evolve over time in Antarctic coastal ecosystems in response to the rapid environmental changes affecting polar regions. Plankton forms the base of marine food webs and plays a fundamental role in the carbon cycle and in the regulation of the global climate.

Photo 1. Study area on the coastal land-fast sea ice of Gerlache Inlet, in front of Mario Zucchelli Station, with Mount Melbourne in the background (Credits: Patrizia Giordano ©PNRA).

A seasonal observatory on plankton ecosystems

Sampling activities were carried out continuously from early spring to the austral summer at fixed stations located across the different ecological subsystems of Terra Nova Bay. The aim was to follow step by step the seasonal evolution of the plankton communities from the beginning of spring to the first months of summer.

During the initial phase of the campaign, research focused on the coastal land-fast sea-ice of the Gerlache Inlet, in front of Mario Zucchelli Station. In this extreme environment, ice microalgae thrive and represent key organisms for the onset of Antarctic primary production. Researchers investigated the relationship between sea-ice biota and the phytoplankton blooms developing in the underlying waters, analyzing the physical and chemical properties of both compartments as well as the role of zooplankton grazing.

Photo 2. Base of a sea-ice core colonized by sympagic microalgae that give the ice its characteristic brownish colouration (Credits: Patrizia. Giordano ©PNRA).

RESEARCH HIGHLIGHTS

1. Sun in sediments

Tommaso Tesi

Satellite images alone are not enough to identify the key factors influencing Antarctic sea-ice dynamics. A team coordinated by ISP went back in time, by reconstructing 3,700 years of coastal sea-ice history in the Ross Sea. The results, published in Nature Communications, reveal a link with solar activity cycles. At the heart of the study is a type of sea ice known as “fast ice” (Photo 1). Unlike the more common drifting sea ice found around Antarctica, fast ice remains attached to the continent and plays a crucial role: it regulates seawater salinity, provides a habitat for many species, including penguins, and in some areas even serves as a natural runway for logistical operations. But how can its history be reconstructed over thousands of years? ISP researchers analyzed sediment cores collected from the seafloor of the Edisto Inlet, Antarctica. Layer by layer, these sediments preserve tiny biological and chemical traces of the past. Through ultra-high-resolution imaging, molecular biomarkers, and the study of diatoms (microalgae sensitive to environmental conditions), the team was able to determine when the ice was stable and when it broke up more frequently.

Photo 1. Fast ice in Edisto Inlet, with Mount Herschel and the Ironside and Honeycomb glaciers in the background (Credits: Patrizia Giordano /PNRA).

The analysis showed that fast-ice break-up does not simply follow an annual rhythm. Instead, it displays longer and more complex oscillations, with cycles of about 90 and 240 years. These periodicities coincide with well-known solar activity cycles, suggesting that variations in the energy emitted by the Sun may also influence the behavior of Antarctic coastal sea ice. The new method opens important perspectives, as similar sedimentary archives are widespread along the Antarctic coasts and could help better distinguish

long-term natural variability from the effects of human-induced climate change. Understanding sea ice of the past is essential to properly assessing what is happening today in the Antarctic cryosphere, within the context of natural climate variability and, more broadly, the Antarctic system.

2. Polar lakes as sentinels of change: the dialogue between water and sediments

Maria Papale

From environmental chemistry to microbial biodiversity, polar lakes act as natural sensors of global environmental pressures. Two studies coordinated by the CNR Institute of Polar Sciences within the PNRA MicroPolArS project compared lakes in Svalbard near the Dirigibile Italia station in Ny-Ålesund and in the South Shetland Islands close to Juan Carlos I station on Livingston Island and Gabriel de Castilla station on Deception Island (Fig. 1). The activities were performed in collaboration with the University of Pisa and the University of Messina.

The approach combines contaminant analyses and microbial DNA sequencing across two complementary compartments, water and sediment. In lake waters, the results show that even at extreme latitudes pollutants accumulate through long-range atmospheric and oceanic transport, together with contributions linked to local human presence.

Chemical fingerprints differ between the poles. Arctic lakes are mainly characterised by polycyclic aromatic hydrocarbons and, to a lesser extent, chlorobenzenes. Antarctic systems show relatively higher levels of chlorinated compounds such as polychlorinated biphenyls and polychlorinated naphthalenes, with stronger signals in sites closer to activities and infrastructure. In sediments, which act as a reservoir and long-term memory of the ecosystem, contamination signals are integrated over time. Here, Arctic–Antarctic differences emerge as distinct chemical fingerprints that help disentangle global transport inputs from potential local sources. Sediments also record trace metals, whose spatial patterns may vary markedly among sites depending on geology and local biogeochemical processes. These chemical patterns are matched by a clear biological response.

In waters, bacterial communities show high variability among the lakes, and these differences partly reflect their environmental conditions, particularly between lakes that are glacial, brackish, impacted by man, or used for base water-supplies. In sediments, prokaryotic communities are generally more stable and display a clearer separation between Arctic and Antarctic sites. In both compartments, a few major groups typical of cold, nutrient-poor environments dominate, yet community composition shifts substantially at finer taxonomic levels. This suggests that contaminant type and intensity may act as selective pressures, with potential implications for microbial functions and biogeochemical cycles. The water–sediment comparison, therefore, highlights two complementary time scales. Water captures recent and dynamic processes, while sediments preserve the history of exposure and host microorganisms able to transform pollutants.

Overall, the studies strengthen the role of polar lakes as sentinels of climate change and anthropogenic pressure, providing a robust baseline for long-term monitoring. In summary, the Arctic–Antarctic comparison reveals two coherent and complementary signatures. In the Arctic, the dominant fingerprint is mainly linked to combustion-related compounds, and microbial

communities vary with lake features. In Antarctica, chlorinated pollutants stand out more clearly and, at some sites, specific trace-metal patterns are evident, while microbial communities reflect both geography and local pressure. Integrating chemistry and microbiology shows that the two poles do not respond in the same way to global pressures, making bipolar comparisons essential for understanding the vulnerability and resilience of high-latitude freshwater ecosystems.

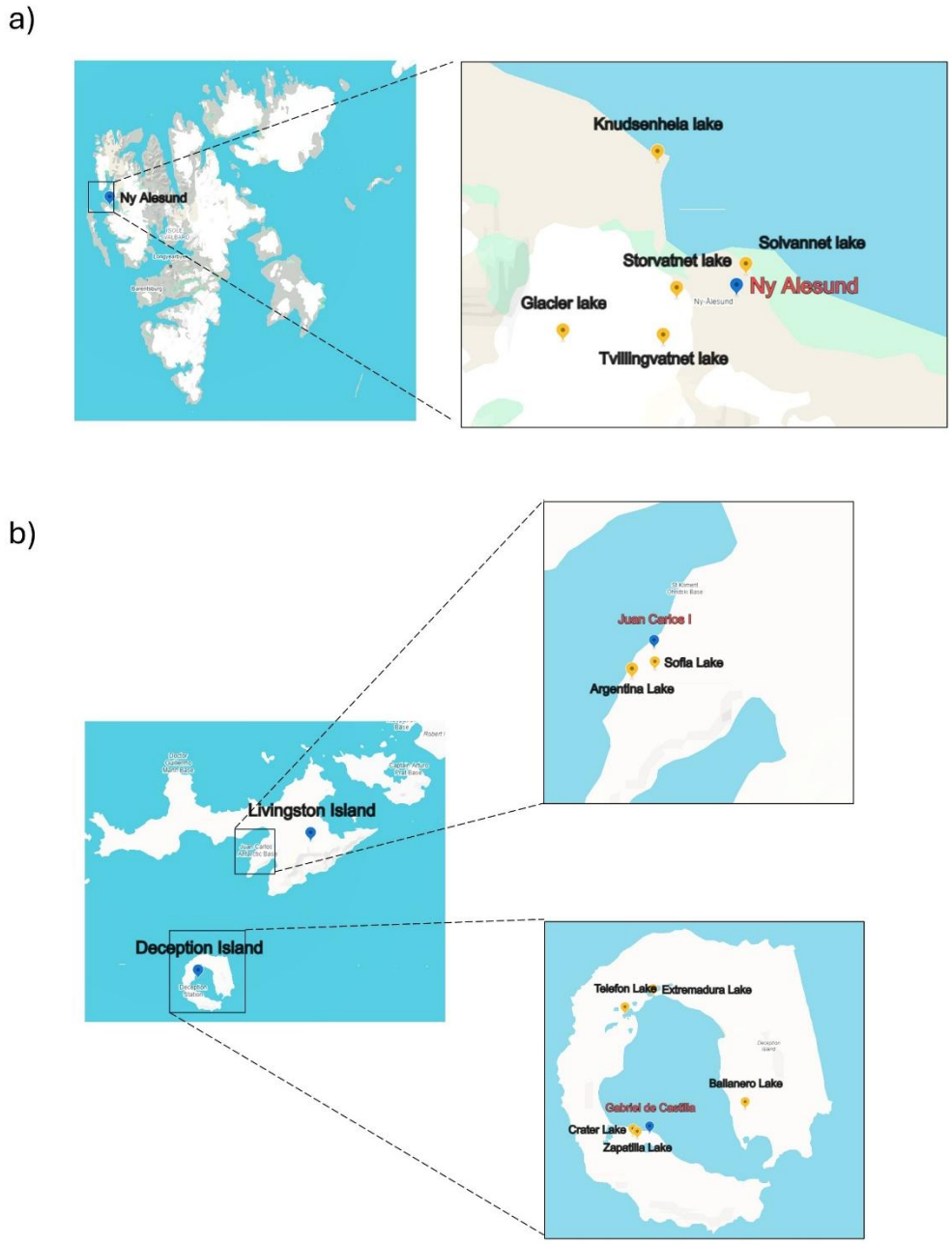


Fig. 1. Study areas: a) Svalbard (Ny-Ålesund, Dirigibile Italia station); b) South Shetland Islands (Juan Carlos I and Gabriel de Castilla research bases).

OUTREACH

Little Bear and the Ice Mountain

Warren Cairns

We are very proud to have been the scientific partners for the brand-new lyrical opera for children, Little Bear and the Ice Mountain (Piccolo Orso e la Montagna di ghiaccio).

The idea for Little Bear (Piccolo Orso) was born in 2023 from an idea by Monica Fracasetti of the Fenice Opera Education department in Venice as they wished to do something to celebrate the International Year of Glaciers' Preservation and the 30th anniversary of Opera Domani of the Teatro Sociale di Como in 2025. After several meetings with them and the author Giancarlo di Cataldo, where we described the problems faced by the Arctic, work began on the story.

The first problem was finding the pollutant that was to be the antagonist of the story. With the help of Stefania Giliardoni from the Milan group, we successfully inserted black carbon as a character into the story, with the mountain, and the clothing of the enigmatic character Mangianeve (snow eater) (photo 1) gradually becoming darker during the opera.

With the pollutant identified, work began on the story and the music. The composer Maestro Giovanni Sollima took inspiration from the underwater sounds from Antarctica isolated for us by Virginia Sciacca and Francesco Filiciotto of the Messina site.

While the music was being composed, the scenography team led by the director Lorenzo Ponte needed help to envisage the Arctic. Help for this arrived during the 2024 Polar Night Week when various colleagues sent photos to help inspire the work. To accompany the Opera, CNR-ISP wrote and provided teaching materials that are available to all who attended the opera (Photo 1). We also went to training sessions for teachers in eight cities across northern Italy, training 540 teachers that in turn will bring over 20000 children to see the Opera over the first season.

Summary of the final story

Two young brother and sister polar bear cubs embark on an epic journey in search of food and

the way back home in an Arctic threatened by global warming.

Photo 1. CNR-ISP backstage with the characters (Credits: Warren Cairns).

During a fishing trip, Little She-Bear is separated from her brother due to their ice floe cracking and melting (Photo 2).

Photo 2. Piccolo Orso floating away on his ice floe (credits: Warren Cairns).

Desperate, Little Bear meets Mangianeve (Snoweater), an enigmatic salesman who promises to help him but has dark ulterior motives: he wants to turn the icy kingdom into an amusement park called Ghiacciolandia (Iceworld, Photo 4).

Photo 3. The Ice Queen with the Pink Hour behind her (Credits: Warren Cairns).

Meanwhile, Little She-Bear is rescued by the Ice Queen, a stern yet protective entity who safeguards the mountain's fragile balance (Photo 3).

Photo 4. Ghiacciolandia with Mangianeve, and Quantosonofico (Credits: Warren Cairns).

When Little Bear, deceived by Mangianeve, clashes with the Queen, hidden truths come to light: only the pure song of the two cubs can heal the Ice Mountain, gravely wounded by pollution and human greed. With the help of unlikely allies — including Quantosonofico (how cool am I), a clumsy but well-meaning tourist, and the loyal Walrus — the siblings are reunited.

Together, they sing to the Mountain, restoring peace and saving their fragile ecosystem as the ice starts to fall (Photo 5). Mangianeve, defeated, is forced to clean up the damage caused by his greed.

The work closes with a message of hope and responsibility: harmony between humans, nature, and animals is possible only through respect and cooperation.

Photo 5. Piccolo Orso and Piccola Orsa finally find each other (Credits: Warren Cairns).

POSTCARD FROM ...

Greetings from Juan Carlos I Station (Livingston Island)! ISP researchers from the STORAGE project (PI Gabriella Caruso) are currently analysing microbial biofilms developed on PVC panels submerged in Antarctic waters for 12 months.

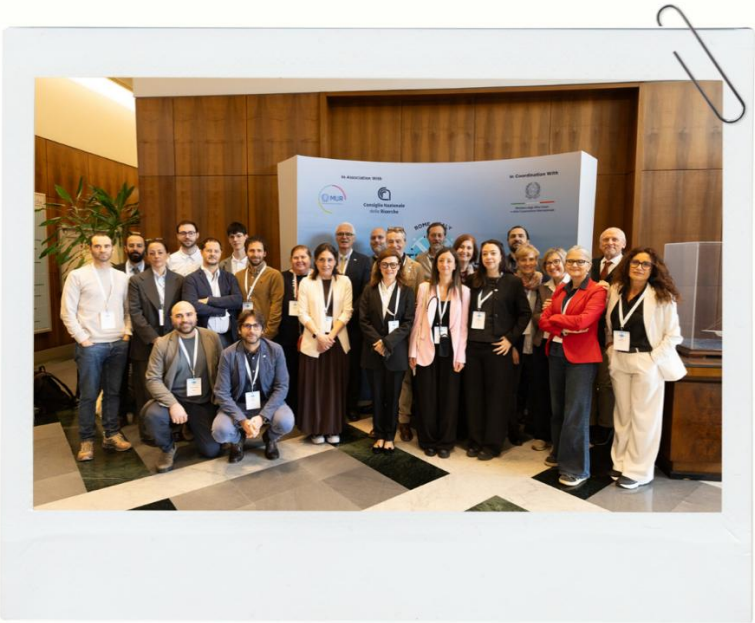
Maurizio Azzaro Francesco Smadile

ARCTIC CIRCLE

WE'VE JUST RETURNED FROM THE ICE... WHILE STAYING IN THE HEART OF ROME!

DURING THESE INTENSE DAYS, RICH IN DISCOVERY AND FULL OF CHALLENGES, WE BROUGHT THE 'BREATH' OF THE POLES INTO THE HALLS OF THE CAPITAL, SHARING THE STORY OF HOW FRAGILE AND PRECIOUS POLAR AND HIGH-ALTITUDE ENVIRONMENTS TRULY ARE. FROM RESEARCH TO AWARENESS: THE JOURNEY CONTINUES!

Hello CNR-ISP



ARCTIC CIRCLE ROME FORUM - POLAR DIALOGUE
3-4 MARCH 2026
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EVENTS & NEWS

- SCAR Open Science Conference 2026: call for abstracts now open. 'Antarctic Research: The Global Bridge' is the theme of the upcoming Open Science Conference of the Scientific Committee on Antarctic Research (SCAR), to be held in Oslo, Norway, from August 10th to 14th, 2026. The event represents the world's most significant forum dedicated to Antarctic research and international scientific cooperation. https://scar.org/events/osc/oslo-2026
- ASSW 2026: registration open, full programme published and travel grants for early career researchers! Registration is now officially open for the Arctic Science Summit Week (ASSW) 2026, which will take place in Aarhus, Denmark, from 25 March to 1 April 2026. The event, organised by the International Arctic Science Committee (IASC), will be held in a hybrid format, allowing both in-person and online participation. https://mailchi.mp/a0318f17405c/assw-2026-registration-open-full-programme-published-and-ecrs-travel-awards?e=3987873151
- In April 2026, ISP will host a series of key international meetings in Bologna, starting with the INTERACT Station Manager Forum (20 April). This will be followed by the 3rd POLARIN General Assembly and project retreat, held in person in Bologna from 21 to 23 April 2026. All events are by invitation, with further details and logistics to be shared in due course. https://www.interactassociation.org/news/save-the-date-interact-general-assembly-and-station-manager-forum-2026

SEGUICI SU:

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- 6th ESP Europe Conference: focus on ecosystem services. The 6th Ecosystem Services Partnership – Europe Conference will be held in Prague from 18 to 22 May 2026, under the theme “Advancing ecosystem services knowledge for achieving a nature- and people-positive Europe”. Among the scheduled sessions, Rositsa Yaneva from the Bulgarian Academy of Sciences is organising the session “Ecosystem services in polar, boreal, and alpine regions: advancing knowledge for shared futures”, dedicated to ecosystem services in polar, boreal, and alpine regions. https://www.espconference.org/europe2026/sessions-overview