

PRESS RELEASE - Dushanbe, Tajikistan, 13rd October 2025

Final stages of the 2025 Pamir ice coring expedition



**Two deep ice cores of 105 m
length to reveal the secrets of
resistant glaciers in the Pamir
Mountains, Tajikistan - Central
Asia.**



University of
Zurich^{UZH}



Launched at **the end of September**, following four years of cooperation between scientific organizations from **Tajikistan and Switzerland**, an international team from **the PAMIR Project** also including scientists from **Japan and the United States**, has successfully achieved its ambitious goal.

During a **3-week Ice Coring Expedition** led by the University of Fribourg, they drilled and secured **two deep ice cores, 104.7 and 105 meters long**, at an altitude of **5,814 meters**.

Located in one of the most remote and extreme environments on Earth, **the Kon Chukurbashi ice cap** is expected to hold at least **700 years of climate history and regional climate variations**.

Although the glaciers of the Pamirs have been resilient to anthropogenic climate change until now, the vital climate signals preserved within them are already at risk following a decade of hot and dry years - possibly a turning point for the region. These **two first deep ice cores** will offer major climate archives from this region which hosts some of **the oldest glaciers in the Northern Hemisphere**.

Back from the field in **Dushanbe** and during a highly symbolic ceremony on the **13rd October**, in favor of the ice memory of the Pamir Mountains, **one ice core** has been given by Tajikistan to **the PAMIR Consortium** for collaborative analysis; **the second ice core** has officially been given to **the Ice Memory Foundation** to safeguard it in a dedicated sanctuary in Antarctica, constituting a lasting legacy for centuries to come.

With this ice core, future generations of scientists will be able to access the **climatic and environmental memory of the Pamirs**, even if the extraordinary physical archive of glacier ice, full of incredible details about the evolution of the Central Asian climate, has disappeared due to climate change.

The **Pamir ice coring expedition** brought together **fifteen scientists** including two from the Tajik Academy of Sciences, one from the Tajik Agency of Hydrometeorology, six from Japan, three from Switzerland, and others from Russia and the US in the heart of the Murgab Region.

Thanks to the support of eight Tajik mountain porters, they succeeded in safely transporting about **800 kilograms of equipment**, food, tents and the driller from a base camp at 5100 m to set up **the drilling site (5814m)**.

This high-altitude operation required **a careful acclimatization** to overcome the reduced oxygen levels, which could lead to dangerous medical complications of acute mountain sickness.

While the drill was conducted using a solar-powered, optimized for altitude, the team operated in conditions where daytime temperatures dropped as low as **-16°C**. The team was further challenged by sustained winds of up to 10m/s and **one snowstorm**, which initially limited progress.

The **first core of 104,7 m length** was extracted under stable weather conditions on the **27th September**, after four days. The **second core of 105 m length** was extracted a few days later, on **30 September**.

Following extraction, the ice cores were securely transported back to Karakul village using **insulated boxes**, then placed in **refrigerated trucks** bound for Dushanbe. This four-day transport was not without further difficulties; the rugged Pamir Highway damaged the truck suspension and caused tire blowouts along the way. **Nevertheless, the ice was successfully brought to Dushanbe, where it is temporarily stored at -30°C.**

A crucial contribution as the Pamir plays a vital role

These samples represent an **important contribution to science** in the Pamir region, which remains unique in its **hydroclimatic and cryospheric character**.

Despite the Third Pole's crucial role in **supplying water to millions of downstream** ecosystems, we understand these glaciers much less than those in the Arctic or Antarctic.

The Pamirs – western part of the Third Pole - contains a **broad variety of cryospheric phenomena**, leading to complex streamflow regimes and geohazards. *“There is urgency to understand the Pamir cryosphere and its natural and human environments, as models suggest that it, too, will succumb to sustained warming in coming decades”* said the leader of this ice coring expedition Dr. Evan Miles - from the University of Fribourg, the University

of Zurich, and the Swiss Federal Institute for Forest, Snow, and Landscape Research WSL.

And strikingly, the region contains both shrinking and stable glaciers – a poorly understood phenomenon called **the ‘Pamir-Karakoram Anomaly’**. Many hypotheses have been proposed to explain this behaviour, including increased precipitation at high elevations due to enhanced winter Westerly storms, summertime cooling, or an increase in summertime precipitation due to irrigation in the agricultural regions adjacent to the Pamir.

Despite the numerous hypotheses, its response to climate change and its consequences remain unexplained, in large part due to a dramatic **lack of direct measurements**. Recent observations suggest this anomaly may be ending, making the **ice core timely to understand recent and ongoing processes and to anticipate future changes**.

The ambitious scientific **PAMIR Programme** - funded by **the Swiss Polar Institute** - has been working tirelessly over the past four years to generate important historic and contemporary understanding of this key headwater region. In addition to the scientists from the University of Fribourg, teams from the University of Zurich, the Ecole Polytechnic Federal Lausanne, and the Institute for Science and Technology of Austria (formerly based at the Swiss Federal Research Institute WSL) have, with their Tajik partners from the Academy of Sciences of Tajikistan, established a **network of high alpine monitoring sites**, undertaken groundbreaking studies of **permafrost and stream biogeochemistry**, and advanced understanding of developing cryospheric hazards.

However, the ambitious Pamir ice core remained an elusive and coveted key objective. “ *We look forward to the next crucial phase of the PAMIR Project with the analysis of the first ice core. The data will enable scientists to better understand the shifts in our planet’s past climate, empowering us all to make evidence-based decisions as we anticipate and prepare for the challenges ahead.*” - Danièle Rod, Executive Director, Swiss Polar Institute.

The **first deep ice core** will provide crucial information for **the current and future response of glaciers and streamflow in the region**. Indeed, to this day, the Pamirs remained one of the last major high-altitude regions on the planet where **no deep ice core had ever been retrieved**.

Despite repeated attempts over the past three decades, efforts have only managed to recover relatively shallow cores spanning multi-year timescales.

Finally, data from this core will contribute to further **understand climate in an arid region** stretching to the Aral Sea, where headwaters are crucial to river supply, making the Pamir one of **the most important mountain waters supplies globally**. Given its relevance for people and ecosystems and its tremendous scientific importance, at the transition between the majority of the

shrinking glaciers, these **2 deep ice cores** offer an important chapter of the climatic history book. This will allow scientists **to reduce the knowledge gap**, and better anticipate the evolution of the cryosphere on its possible trajectory towards the end of the anomaly.

From the summits to the labs and to the Ice Memory Sanctuary in Antarctica

The **successful preservation and transport of these cores** - in close collaboration with key institutional support from the Academy of Sciences of Tajikistan, the Institute for Low Temperature Science of Hokkaido University and all international partners since 2022 - mark a critical milestone in the global effort **to save endangered climate archives** before they are lost to melting.

From Dushanbe, the ice cores will travel to **Sapporo, Japan**, where **the first ice core** will be analysed at the Ice Core Laboratory of Hokkaido University's Institute for Low Temperature Science.

The **second ice core** will complement the **Ice core Heritage** which will be stored in **the Ice Memory Sanctuary**, located in **Antarctica**, at the **French-Italian Concordia station** - jointly managed by PNRA and IPEV - and allowing natural storage at -50°C. This heritage will be preserved for **decades and centuries to come** in the Ice Memory sanctuary in Antarctica, under international governance.

This **10th Ice Memory ice core** from Tajikistan will enable future generations of scientists to generate new knowledge and inform future policy decisions. *“This ice holds hundreds and possibly even thousands of years of physical records of snowfall, temperature, dust, and atmospheric chemistry. We have to race against time to retrieve it before climate-change induced melt damages these natural archives forever. For our contemporary research but also to give a chance to future generations to model the past and the future”* said Evan Miles.

A ceremonial donation from Tajikistan to the international scientific community and the future generations

Recognizing that this data is valuable to future generations in the coming decades, Tajikistan wishes to entrust this ice to **the international scientific community officially**.

As part of **the International Year of Glaciers' Preservation and the United Nations Decade of Action for Cryospheric Sciences**, a ceremony honoring the ice memory of the Pamir Mountains was held **in Dushanbe on October 13**.

Representatives of the Tajik government and partner institutions symbolically donated a sample of ice from Tajikistan to **the PAMIR Consortium**, and another sample was given to **the Ice Memory Foundation** to be stored in the dedicated sanctuary in Antarctica, the safest place to store these precious archives.

"We are thrilled to count on this irreplaceable archive from the Pamir mountains and include it into the Ice Memory Sanctuary," said Prof. Dr. Thomas F. Stocker, Chair of Ice Memory Foundation from the Oeschger Centre for Climate Change Research at the University of Bern, Switzerland. *"Today more than ever, we must protect the data that enable us to make science-based decisions—to better guide our societies, adapt to the global changes threatening our planet, and ensure that future generations are able to anticipate the profound transformations underway. This is a responsibility we all share".*

"The preservation of the Ice Memory is a powerful symbol of international scientific and diplomatic cooperation" calls Anne-Catherine Ohlmann, Ice Memory Foundation Director – *"We now need nations and scientists to commit quickly to building this Ice Memory humanity's heritage, in order to pass on these valuable data to our children and grandchildren."*

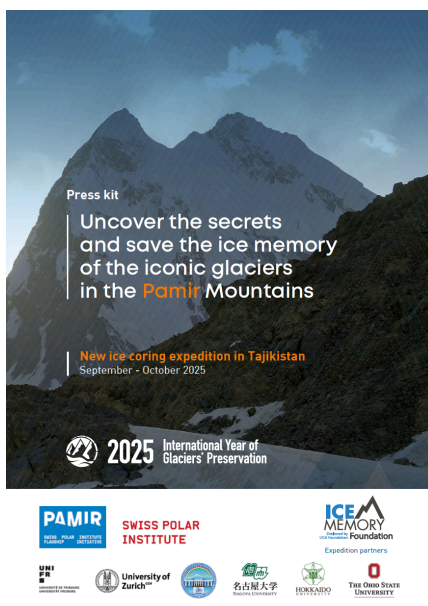
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PHOTOS & VIDEOS

About the drilling operation in the Pamir Region

- Location: Kon Chukurbashi Ice Cap, Tajikistan (5800 m a.s.l.)
- Date: September 2025 to early October (5 weeks)
- Partners: University of Fribourg, Tajikistan Academy of Sciences, University of Zurich, Nagoya University, Hokkaido University, Ohio State University, University of Bern.
- Funding: Swiss Polar Institute, Ice Memory Foundation
- Outputs: Full-depth expected ~105 m - the first ice cores to be analyzed and archived; the second ice core to be sent to the Ice Memory Sanctuary in Antarctica.



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About Ice Memory Foundation

- The Ice Memory Foundation aims to collect, save, and manage ice cores from selected glaciers currently in danger of degradation or disappearance, with a view to preserving the information they contain for decades and centuries to come.
- The Ice Memory Foundation has been created by 6 major French, Italian, and Swiss scientific institutions: University Grenoble Alpes, CNRS,

Institut de Recherche pour le Développement - IRD, Ca' Foscari University of Venice, CNR in Italy, Paul Scherrer Institute in Switzerland and is sheltered by the University Grenoble Alpes Foundation.

- The Foundation's governance is international, with members from France, Italy, Switzerland, China, and the United States, including two former IPCC Vice Presidents.



Founders of the Ice Memory Initiative



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About the PAMIR Project and the Swiss Polar Institute Flagship Initiatives

- Swiss Polar Institute granted CHF 1.5 million to the PAMIR programme. The research programme's full title is *PAMIR - From ice to microorganisms and humans: Toward an interdisciplinary understanding of climate change impacts on the Third Pole*.
- The ice coring at the Kon Chukurbashi Glacier will be performed by PAMIR's Climate and Environmental History Research Cluster, during their field campaign, Sept. Oct. 2025.
- The programme research consortium is led by University of Fribourg and comprises 6 research clusters.
- As Swiss Polar Institute's largest funding instrument, the SPI Flagship Initiatives are multi-annual programmes combining science and technology projects from different disciplines and different groups/institutions in Switzerland around a polar or remote high-altitude region.
- The funding is focused on field campaigns (logistics, safety, etc.), data management, outreach, and programme coordination, thus providing temporary infrastructure for a Swiss-led polar research programme.
- The PAMIR programme is one of the first two SPI Flagship Initiatives running from 2022 until 2026. PAMIR is a multi-disciplinary research programme with focus on the current state of the Pamir cryosphere, as well as its impacts on ecosystems, hazards and water resources.



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