

ICE MEMORY: second mission on the Illimani glacier

May 22th/June 18th – Bolivia

Press Release | May 15th

Collecting ice cores from glaciers most at risk from climate change and storing them in Antarctica for future generations of scientists: that is the goal of ICE MEMORY, an international programme aimed at preserving the climate and environmental memory of glaciers. Following the first drilling in the French Alps in August 2016 and the inaugural ICE MEMORY conference at UNESCO in March 2017, the second mission will take place in Bolivia, on the Illimani glacier (6,400 metres above sealevel), from May 22th to June 18th.

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Illimani glacier: 18,000 years of climatic archives

Peaking more than 6,400 metres above sea level, the Illimani glacier is located between the wet Amazon basin and the dry Bolivian Altiplano, just above the Bolivian capital, La Paz. Since an initial deep drilling operation conducted in 1999, scientists know that this site records a vast array of information, from various sources: rainfall trends and forest fires (Amazonian side), human-induced emissions and urban pollution (Altiplano side). With a depth of 140 metres and the slow flow of the glacier, the site preserves up to 18,000 years of climatic and environmental archives. Therefore the past environment can be reconstructed, as far back as the last glaciation.

Dangerous and difficult drilling operations

Since the end of April, the international team (France, Russia, Bolivia, Brazil) composed of 15 researchers has arrived in Bolivia and currently acclimatize to low atmospheric pressure. The high altitude of the glacier represents the main difficulty of the mission and drilling operations: transporting equipment (core drill, 75 specially insulated boxes, camping gear...) to the top of Illimani is impossible by helicopter. All equipments must therefore be physically carried on the back of around fifteen Bolivian high-mountain guides.



To deal with the physiological difficulties related with the high altitude, two teams of researchers will conduct shifts between the base camp and the top of the glacier to perform the drilling operations. Their aim: drilling down through the glacier to the bedrock, in order to extract three ice cores of about 150 metres length each. These "heritage ice cores" will be physically carried down at night to the base camp, then transported by refrigerated truck to La Paz, and stored in a refrigerated container there.

Post-mission, the container will be transported to the Chilean border, by truck, then by ship to Le Havre (France), before joining Grenoble. One of the three ice cores will be analysed at the IGE laboratory (Institut des géosciences de l'environnement) in 2019, in order to identify chemical tracers available with current technologies and to create a database accessible for the whole

scientific community, being today or in the future. The two others ice cores, similarly to the ones collected during the first drilling operation on the Col du Dôme glacier in August 2016 (Mont-Blanc range, France), will be carried toward Concordia station, in Antarctica, starting sometime around 2020, for long term storage there. They will contribute to the world's first ice archive sanctuary, relying on glaciers threatened by global warming.

Follow the mission!

Equipment transport, camp installation, drilling, ice cores handling and transportation, team's life: from May 22th to June 18th, follow the various stages of the Illimani mission on ICE MEMORY's Facebook account: **@ProtectingIceMemory**

Photos and videos will be available on the **<http://fuga-media-stock.univ-grenoble-alpes.fr/>** platform from May 18th.

Team Composition

Patrick Ginot (expedition's leader, IRD, France), **Romain Biron** (IRD, France), **Pierre Vincent** (IRD, France), **Thomas Condom** (IRD, France), **Bruno Jourdain** (UGA, France), **Christian Vincent** (CNRS, France), **Nicolas Caillon** (CNRS, France), **Luc Piard** (CNRS, France), **Xavier Faïn** (CNRS, France), **Joël Savarino** (CNRS, France), **Vladimir Mikhalenko** (Institute of Geography, Russia), **Stanislav Kutuzov** (Institute of Geography, Russia), **Filipe Gaudie Ley Lindau** (Federal University of Rio Grande do Sul, Brazil), **Alvaro Soruco** (Mayor San Andres University in La Paz, Bolivia), **Sarah Del Ben** (Wildtouch film director).

ICE MEMORY:

an international scientific programme aimed at preserving climate memory

Over the last few decades, glaciologists have observed the effect of increased temperatures on the melting of glaciers, which hold the memory of former climates and environmental conditions, and which help to predict future environmental changes. Faced with this alarming observation, French glaciologists from IGE Grenoble (Institut des géosciences de l'environnement) and their Italian partners decided to take action and launched the ICE MEMORY project in 2015, backed by the Université Grenoble Alpes Foundation and under the patronage of the French and Italian national commissions of UNESCO.

Their primary goal: to create in Antarctica the world's first ice archive sanctuary, relying on glaciers threatened by global warming. These samples will be the property of humanity, with sustainable international governance ensuring their preservation as well as their exceptional and appropriate use, in order to enable future generations of scientists to carry out unprecedented analyses.

The inaugural ICE MEMORY conference, organised in March 2017 in Paris under the patronage of UNESCO, marked the internationalisation of the programme, with the participation of fifteen American, Russian, Chinese, Brazilian, Swedish, Japanese, German, Swiss, Italian and French scientists specialised in ice core studies. The consortium hopes to unite the international community of glaciologists in order to carry out at least another twenty drilling missions on various glaciers around the world, during the next decade.

Backed by the Université Grenoble Alpes Foundation, ICE MEMORY project unites the following partners: CNRS, IRD, Université Grenoble Alpes, National Research Council of Italy, Ca' Foscari University of Venice, as well as IPEV (French Polar Institute) and the Italian Antarctic research programme (PNRA) as regards the Concordia station. The project is equally jointly financed by the provision of human resources and equipment from partner scientific organisations and by private sponsorship, through the Université Grenoble Alpes Foundation.

For further information: [website](#), [Wild Touch Production's film](#), [press kit](#).

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