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Glaciers threatened by climate change: scientists set up camp at 4100 meters to save the “memory” of the Grand Combin

From Monday October 21, a team of Italian and Swiss scientists will reach the Corbassier glacier, on the Grand Combin massif, setting up camp at 4.100 meters, to extract three ice cores and deliver two of them to the dedicated ‘ice sanctuary’ that will be set up in Antarctica by the Ice Memory international programme.

Understanding past climate and environment helps us to anticipate future changes. Mountain glaciers hold the memory of the region’s climate and environment, but they are retreating unrelentingly due to global warming, putting this priceless scientific heritage in danger. It could simply disappear. Humanity cannot afford to lose such vital information.

6 glaciologists and paleoclimatologists from the National Research Council (Isp-Cnr),Ca’ Foscari University of Venice, and the Swiss Paul Scherrer Institut (PSI) will live and work on the Grand Combin glacier. Here, they will be constantly faced with temperatures well below zero, with lows up to -20°C. Decent meteorological conditions will prove essential to the success of the expedition, as the only way in and out is by helicopter. The group will be supported by other colleagues, who will follow the mission from the base camp in Ollomont (Aosta Valley, North Western Italy).

The goal is to extract 3 ice cores, 80 meters deep and 7,5 cm in diameter. These will be the very first continuous ice cores to bedrock depth to ever be recovered from the Grand Combin glacier. Two of them will be stored in the purpose-built archive located in the Concordia Station on the Antarctic Plateau, planned in the Ice Memory program. The other two will be analyzed in the Ca’ Foscari - CNR joint labs in Venice and at the PSI.

The mission on the Grand Combin is the first in a series of expeditions funded by the Italian Ministry of Education, University and Research, which will continue with the Italian glaciers on Monte Rosa, Marmolada, Montasio and Calderone. Ice Memory program benefits from Didier et Martine Primat Foundation support.

You can also follow the live updates from the researchers involved in the project on Facebook and Twitter.

The researchers who will take part in the expedition are: Carlo Barbante (Ca' Foscari University of Venice and Cnr), Margit Schwikowski (team leader, PSI), Theo Jenk (PSI), Thomas Singer (PSI), Reto Schild (mountain guide, PSI), Jacopo Gabrieli (Cnr), Fabrizio de Blasi (Cnr), Rachele Lodi (Cnr).

The ice core science

By analyzing the air bubbles that snow deposits on the glacier layer after layer throughout the centuries, scientists can now identify the marks of temperature evolution, as well as the concentration of chemical compounds. Until a few decades ago, this type of analysis would have been unthinkable. For this very reason, the primary goal of the Ice Memory mission is to deliver high quality samples to future scientists who, in a few decades, will hopefully have even better methods and technologies to analyze them.

"To better understand the reaction of earth's climate to the incessant emissions it is subjected to, and to engage in concrete actions of mitigation and adaptation, we must observe the past - explained the researchers - It is indeed necessary to understand how the climate has reacted to the natural variation cycle in greenhouse gases. Thanks to the ice cores, we can now retrace those cycles. An emblematic example is that of the ice core that was extracted in Antarctica thanks to the European project EPICA. This specific ice ore, which is over 3000 meters long, allowed the reconstruction of earth's climate history in the past 740 000 years, while also uncovering key information on the sequence of past glacial and interglacial periods." Certain ice cores extracted from alpine glaciers, like those on Monte Rosa and on the Ortles, have allowed the reconstruction of the climate evolution up to over 5000 years ago, despite the shallower drilling depths (70 - 80 meters).

Ice Memory

The Ice Memory program aims to provide, now and for decades and centuries to come, the raw material and data necessary for scientific advances and political decisions that contribute to the sustainability and well-being of humanity. Ice Memory aims to federate the international scientific and institutional communities in order to create in Antarctica a repository of ice cores from glaciers currently in danger of degradation or disappearance. Scientists are convinced that this ice has valuable information to pursue research on requiring samples from disappeared glaciers.

The Grand Combin is the second Ice Memory mission on an alpine glacier, after the 2016 expedition on Monte Bianco. Other international expeditions have secured important ice archives from the Illimani glaciers (Bolivia) Belukha and Elbrus (Russia).

Ice memory is a joint project between the Université Grenoble Alpes Foundation, Ca' Foscari University of Venice, the French National Research Institute for Sustainable Development (IRD-France), CNRS, CNR - together with the the French Polar Institute (Ipev), and the National Program for Research in Antarctica (Pnra) for what concerns the activities of the Concordia Station in Antarctica. Ice Memory is under the patronage of both the Italian and French Unesco Commissions.

Learn more about Ice Memory:
https://fondation.univ-grenoble-alpes.fr/menu-principal/nos-projets/preservation-des-patrimoines/ice-memory-in-english-/ice-memory-in-english--81152.kjsp?RH=1466778689492

For the media:

Videos of the 2018 survey on the Grand Combin: http://bit.ly/video_intvw_gcombin_2018
(credits: Riccardo Selvatico for the CNR and Ca' Foscari University of Venice)
Footage and interviews (in Italian) with: Fabrizio De Blasi, Cnr; François Yves Burgay, Ca' Foscari University of Venice

Photos of the 2018 survey on the Grand Combin
http://bit.ly/photos_gcombin_2018 (credits: Riccardo Selvatico for the Cnr and Ca' Foscari University of Venice)

During and after operations, photos will be available here:
https://fuga-media-stock.univ-grenoble-alpes.fr/

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