

THE MONICA (MONITORING OF ICE WITHIN CAVES) PROJECT: A MULTIDISCIPLINARY APPROACH FOR THE GEOPHYSICAL AND PALEOCLIMATIC CHARACTERIZATION OF PERMANENT ICE DEPOSITS IN THE SOUTHEASTERN ALPS

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Abstract

On days 30 September and 1-2 October 2013, a 7.8 m long ice core has been extracted from a permanent ice cave deposit in the Southeastern Alps (Vasto's cave, Mt. Canin - Julian Alps). Each 20 to 100 cm long section of the ice core has been immediately stored in plastic bags and preserved thanks to dry ice. The ice samples,



Figure 1. One sector of the ice core just extracted from the Vasto ice cave. Photo courtesy Fabrizio Giraldi.

thanks to the helicopter, have been subsequently brought to the valley and promptly stored in a refrigerated van, made available by BoFrost. Thus the ice cores have been transported intact to the EUROCOLD laboratory in Milan. These operations have been carried out within the project MONICA (MONitoring of Ice within CAves) promoted by University of Trieste, Italy thanks to the “Finanziamento di Ateneo per progetti di ricerca scientifica-FRA 2012”. The choice of the place where to extract the ice core has been selected after a dedicated high-resolution GPR survey performed on the surface of the ice deposit. This methodology allowed to visualize and avoid debris and boulders present in the ice deposit that could have damaged the tip of the ice driller. In this way it was possible to extract the longest core ever extracted in the Italian Alps in an ice cave. The ice core has been cut and stored thanks to the EUROCOLD facilities and a detailed full stratigraphic analysis has been realized. All the samples are now ready to be analyzed by using isotope geochemistry techniques ($\delta^{18}\text{O}$ and δD), crystallographic analysis and C^{14} radiocarbon dating of organic materials. The preliminary

results allow us to hypothesize the use of additional methods for a complete characterization of this very interesting potential paleoclimatic record.