



Climatic significance of stable water isotope records from Alpine ice cores.

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Stable water isotopomers (δD or $\delta^{18}O$) are well established temperature proxies in polar ice core studies, though Holocene signals are there rather subdued and not immediately relevant for lower latitudes. Isotope records from cold Alpine drill sites may thus offer supplementary climate information aimed at extending the latitudinal coverage of isotope records to mid-latitudes and the European 250 years instrumental temperature series further back in time. However, the straightforward climatological interpretation of Alpine isotope records is hampered by various site specific shortcomings making a multi-ice core study mandatory. Detailed tracking of internal layers and the bedrock topography by ground penetrating radar at the Colle Gnifetti (Monte Rosa) drilling area allowed us to select a drill position specifically suited for long term records and well linked to existing cores by various (radar) time horizons. The isotopic record of the new ice core drilled down to bedrock at this peculiar site is presented as completing the existing array of deep ice cores from this drill place as well as from the Mont Blanc region one. The isotope-temperature relation derived from regression with instrumental 20th century temperature series is discussed with respect to upstream effects observed at the Monte Rosa as well as for the Mont Blanc drill sites. This attempt is backed up by direct observations of isotope changes in precipitation collected close to the drill sites. It is shown that in a multi-core approach alpine ice cores may offer reliable temperature proxy records on major climate trends of the last centuries provided local glaciological and meteorological interferences are adequately considered.