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Cenntennial scale isotope thermometry from Alpine ice core records: shortcomings and challenges.

M. Pettinger (1), L. Keck (1,7), H. Fischer (1,8), **D. Wagenbach** (1), S. Preunkert (2), R. Böhm (3), M. Hoelzle (4), M. Leuenberger (5) and G. Hoffmann (6)

(1) Institut für Umweltphysik, University of Heidelberg, Germany, (2) LGGE-CRNS, St. Martin D'Heres, France, (3) ZAMG , Vienna, Austria, (4) Department of Geography, University of Zurich, Switzerland, (5) Climate and Environmental Physics, Physics Institute, University of Bern, Switzerland, (6) LSCE, Saclay, France, (7) GSF, Neuherberg, Germany, (8) AWI, Bremerhaven, Germany (dietmar.wagenbach@iup.uni-heidelberg.de / Fax: +49 6221 546405 / Phone: +49 6221 546310)

Ice core records of stable isotopomeres of water (i.e. ∂^{18}O or ∂D) are well established to quantify long term temperatur changes. However, temperature driven isotope changes during the (late) Holocene appear to be relatively weak and are thus strongly burried in glacio-meteorological noise. Even at the relatively uniform ice sheets, most of these recent records are found to be inconsistent in terms of representative temperature changes, which is particularly true for late Holocene isotope records recovered from various mountain drill sites.

Here we focus on isotope records from high elevation (cold) Alpine drill sites, which are expected to be particularly usefull in completing the latidudinal coverage of ice core information and, which stands out through the wealth of related climate records available from the greater Alpine realm. In this context, we prospected Alpine isotope records by exploring several ice cores drilled to bedrock in the Monte Rosa and Mt.Blanc summit regions and which cover largely different glaciological regimes.

As confined to the highest summit ranges, Alpine drill sites will be shown to experience a series of shortcomings, particularly hampering the interpretation of (multi-centennial) isotope records in terms of net temperature changes. In addition to the dating problems arising from rapid annual thinning, snow erosion in conjunction with ice flow related changes in the seasonal sample distribution are found to be the most serious shortcomings. Recent (isotopic) warming trends, the isotope–temperature re-

lationship and multi-centennial isotope records will be discussed in terms of their supportability using: englacial firn-temperature changes, long term instrumental series and related climate proxy data.