MORAINE FORMATION IN THE EUROPEAN ALPS MIRRORS NORTH ATLANTIC HEINRICH EVENTS. S. Ivy-Ochs1,2, H. Kerschner3, P.W. Kubik4, H.-A. Synal4, G. Patzelt5 and C. Schlüchter1, 1Geologisches Institut, Universität Bern, CH-3012 Bern Switzerland, 2Teilchenphysik, ETH-Hönggerberg, CH-8093 Zürich Switzerland, 3Institut für Geographie, Innrain 52, Universität Innsbruck, A-6020 Innsbruck Austria, 4Paul Scherrer Institut c/o Teilchenphysik, ETH-Hönggerberg, CH-8093 Zürich Switzerland.

10Be, 26Al and 36Cl measured in boulder surfaces from moraines in the Swiss and Austrian Alps point to glacier expansions synchronous with North Atlantic Heinrich ice-rafting events H-2, H-1, and the Younger Dryas. Present day limitations of comparing timescales established with radiocarbon, ice core layer counting or ice-flow modelling, and in situ produced cosmogenic isotopes should not be overlooked. Production rates used are from Nishiizumi et al. (1989) for 10Be and 26Al, and Phillips et al. (1996) for 36Cl. Exposure dates have not been erosion corrected.

Erratic blocks which mark the maximum terminal position of the Solothurn lobe of the Rhone Glacier (Switzerland) associated with the last glacial cycle have yielded exposure ages close to the timing of H-2 which occurred ca. 20,000 radiocarbon years ago (in North Atlantic sediment cores 609 and V23-81) or ca. 24,000-22,000 years ago (in GRIP and GISP2 ice cores) (Bond and Lotti 1995).

Preliminary exposure dates for the type locality of the Gschnitz family of moraines (Austria) indicate a readvance of Alpine glaciers coincident with H-1, i.e. at 15,000-14,000 radiocarbon years or roughly 16,000 years ago in GRIP and GISP2 (Bond and Lotti 1995).

The equivalence of the family of Alpine moraines known as Egesen to the Younger Dryas has been shown by radiocarbon dating at several locations (Patzelt 1972, Kerschner 1978, Bortenschlager 1984) and more recently by surface exposure dating at Julier Pass, Switzerland (Ivy-Ochs et al. 1996).