The discovery of Late Palaeolithic (circa 13,000 yrs BP), painted stones in the Riparo Dalmeri rock shelter, situated at 1240 m above sea level in Trentino (Alps of N-E Italy), which show stylistic echoes of naturalistic art, provide a unique testimony of pre- and post-Younger Dryas (YD) cultural evolution. The artistic production and spiritual aspect of the Epigravettian hunter-gatherers seem to be lost after the YD and it is not revived by the Mesolithic hunter-gatherers. The YD, therefore, appears to coincide with a breaking point in European human culture. Did climate play a role?

**The archaeological setting**

At, Riparo Dalmeri rock shelter, archaeological excavations revealed evidence of a Late Palaeolithic layer containing over 200 stones with red ochre paintings. The painted figures are the result of careful observation of habits and behaviour of animals such as chamois (1), auroch? (2), ibex (3), deer (4). The stones were placed with the decorated surface downwards. The deliberate hiding of the figures has been interpreted as a form of ritual. Radiocarbon dating of a charcoal fragment associated with the painted stones indicated an age of c. 13,300 ± 200 cal BP.

**The speleothem climate archive: stable isotope record from stalagmite Savi 1 collected at Grotta Savi, near Trieste**

The stable isotope record from Savi 1, reveals evidence of climate instability in the Late Palaeolithic, from c. 17.0 to c. 11.4 kyr BP. Since c. 11.0 kyr BP (Mesolithic to Present-day), isotope series show less intense climatic fluctuations. In Savi 1, the YD is characterized by high δ18O values, coinciding with Δ14C enrichment of up to +1‰. Furthermore, the YD coincides with a brownish layer characterized by extremely low growth rate (< 8 μm/yr).

**The YD: a climate-related breaking point in European culture?**

Low growth rate in the YD recorded by Savi 1 may indicate cold climatic conditions. In addition, lake level records from the Jura mountains (France and Switzerland) provide evidence for climatic drying during part of GS-1 (YD) (Magny et al. 2003). It is, therefore, possible that in the Alps, the YD cooling was associated with aridity. The Δ14C peak for the YD recorded in Savi 1 may, in fact, reflect a combination of cold and arid climate, characterized by active soil condition of short duration (that is prolonged frozen soil in the cold season). This caused less soil CO2 production, and ultimately reduced stalagmite growth. The YD δ18O peak in the Savi 1 record broadly coincides with a δ18O peak at Soreq Cave that Bar-Matthews et al. (2003) related to high δ18O values of rainwater. They also associated high δ18O peaks with decrease in rainfall amount. By analogy, the high YD δ18O values recorded by Savi 1 may reflect a combination of low rainfall amount and high rainfall δ18O values. A comparison with the δ18O record of GISP2 ice core also shows that shifts to depleted oxygen in Greenland (cold) correspond to high δ18O values in both the Savi and Soreq δ18O profiles (dry). This suggests that most of the YD in the Alps was cool and dry with a short warm season, and that there was a connection with climate in the Eastern Mediterranean.

Geological data have suggested that Alpine Palaeolithic art was a response to Pre-Holocene climatic instability, which required deep knowledge of the environment and a nomadic lifestyle. Furthermore, archaeological data have suggested that a Late Palaeolithic lifestyle was accompanied by a spirituality deeply rooted in the observation of Nature. By contrast, Mesolithic and Neolithic art showed a tendency to abstraction. Possibly, the relatively stable Holocene climate did not require a deep knowledge of wild animal habits, and favoured perennial settlements, starting from the Natufian culture in the Middle East. Naturalistic cave art, thus, was lost with the Late Palaeolithic people. In agreement with Mithen (2003) we infer that the YD was the harbinger of the western modern spirituality.