



Hydrological changes in NW Sicily from a discontinuous Holocene stalagmite record

S. Frisia (1), A. Borsato (1), A. Mangini (2), C. Spötl (3), G. Madonia (4), and U. Sauro(5)

Museo Tridentino di Scienze Naturali, via Calepina 14, 38100 Trento, (2)

Akademie der Wissenschaften, Im Neuenheimer Feld 229, D-69120, (3) Institut für Geologie und Paläontologie, Leopold-Franzens Universität, Innrain 52, A-6020 Innsbruck, (4) Dipartimento di Geologia e Geodesia, Università di Palermo, Corso Tukory 131, I-90134 Palermo, (5) Dipartimento di Geografia, Università di Padova, Via del Santo 26, I-35123 Padova

A Holocene stalagmite (CR1) was removed from Carburangeli cave in Sicily to gain information about climate evolution in the Holocene which would complement archaeological data for the NW coast of this Mediterranean Island. The stalagmite is characterized by a very low U content (40 to 129 ppb) and locally low $^{230}\text{Th}/^{232}\text{Th}$ activity ratios (2.3 to 6.7) compromising the precision of the U/Th dates. Two marked hiatuses indicate a discontinuous growth history. Fabric and stable isotopic composition, however, provide one of the first high-resolution palaeo-hydrological record for the Early Holocene for this region. During the Early Holocene, the transition from Mesolithic to Neolithic lifestyles occurred, and the commonly accepted hypothesis suggests that this transition occurred by selection of Neolithic elements by Mesolithic hunter-gatherers, rather than by replacement of the indigenous population by immigrant farmers. High $\delta^{13}\text{C}$ stable isotopic values in the speleothem calcite deposited from 8500 to 7500 yr BP are interpreted as periods of high rainfall rates in winter. This wet phase was interrupted by a prolonged, relatively dry period centred at c. 8200 yr BP ago, which lasted for several hundred years. A second, similarly wet period is centred at c. 7500 yr BP. These long-term, Early Holocene climate anomalies appear to be linked to reduced solar output. Large $\delta^{13}\text{C}$ variability is recorded from 7500 to circa 6500 yr BP and indicates that the transition from the pluvial Early Holocene to the modern climate was punctuated by decadal-scale periods of relatively dry winters

within an overall wetter-than-today climate: during this climatically unstable phase Neolithization occurred. Comparison with other stalagmite records from Italy suggest that stalagmite CR1 recorded regional-scale climate and environmental changes, and, in particular, highlights the absence of a marked “8.2 kyr” event in the Mediterranean region.