

**A Holocene High Resolution Geomagnetic Field Record from Rio Martino Cave (Western Alps, Northern Italy)**

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Speleothems are considered excellent archives for the Earth's Magnetic Field changes in the past, as they are able to continuously record its variations, can be easily dated, and acquire a mostly "instantaneous" magnetic remanence at a high-resolution timescale. The latter ensures the possibility to detect short and/or high-frequency events, thus providing high-quality Paleosecular Variation (PSV) data. Unfortunately, the low magnetic intensities often characterizing speleothems limit their study. Here we present a paleomagnetic study performed on a flowstone from Rio Martino cave (Western Alps, Italy). U/Th dating of the flowstone indicates that its deposition started at the beginning of the Holocene. The flowstone is characterized by high magnetization intensity, due to the metaophiolites in the area, which provide the magnetic detrital input. The collected 60 cm-long core was cut in small slices, 3 mm-high, permitting a 60 yr time resolution. Magnetic measurements point at detrital magnetite as the remanence carrier. The Characteristic Remanent Magnetization (ChRM), isolated after stepwise AF demagnetizations, is well defined, with Maximum Angular Deviation (MAD) lower than 10°. Relative paleointensity was obtained by analysis of the Arai diagrams. Regression lines always provided a correlation coefficient lower than 0.850. Paleomagnetic directions and paleointensity data allow reconstruction of the PSV curves during the Holocene for the area. The results are compared to the Italian archaeomagnetic SV curve and to the regional and global geomagnetic field models. The comparison shows that the Rio Martino flowstone has faithfully recorded the Earth's Magnetic Field in the past. The obtained high resolution results, together with the high quality dating, provide promising data both for the detection of short time geomagnetic field variations and completion of past regional PSV curve, where well-dated data are scarce.