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The Holocene (5000-6000. yrs B.P.) paleosecular variation record from a Portuguese speleothem

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Recent studies pointed speleothems as excellent recorders of the Earth's magnetic field. Here we apply a high resolution paleomagnetic study in a well-dated (5000-6000. yrs B.P., U-Th methods) speleothem from Algarve, Portugal, in order to i) check for the reliability of the magnetic remanence recorder in speleothem, and ii) provide new paleosecular variation data for the studied Holocene interval. In addition, we applied a new technique (by using the MIRONE software) in order to calculate the sedimentation rate of the calcite growth. Our results show that the magnetic remanence recorded in our samples is primary (detrital remanent magnetization) and carried by maghemite/magnetite. Magnetic directions are stable with satisfactory statistical criteria (alpha95<(2.2º). Mean directions are oriented Nº0 with a mean inclination of 46.4º. We compared the results with a geomagnetic model based on archaeomagnetic and lava flow paleomagnetic data (Sha.dif.14k) and that our data well fit the model Sha.dif.14k for the concerned time interval. These new results provide the first paleomagnetic data at 5000-6000 yrs. B.P., which are crucial for the improvement of the paleosecular variation models.

Key-words: Speleothems, palaeomagnetism, Paleosecular Variation, Holocene

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