Geophysical Research Abstracts
Vol. 21, EGU2019-4407, 2019
EGU General Assembly 2019

Improving the resolution and precision of Holocene geomagnetic records by integrating archaeomagnetic directions and lacustrine sedimentary data

Ron Shaar (1), Yael Ebert (1), Yoav Vaknin (1,2), Mordechai Stein (1,3)

(1) Institute of Earth Sciences, The Hebrew University of Jerusalem, Jerusalem, Israel (ron.shaar@mail.huji.ac.il), (2) Department of Archaeology, Tel Aviv University, Tel Aviv, Israel, (3) Geological Survey of Israel, Jerusalem, Israel

Lake sediments and archaeological materials are two primary sources for paleomagnetic records of the Holocene. Each one of these data sources is far from being ideal, presenting different advantages and limitations. Sedimentary data provide continuous records through the Holocene, but can be affected by inclination shallowing, post depositional diagenesis, lock-in depth effects, and age models uncertainties. In contrast, archaeological materials can provide extremely well-dated recording of the field, but their occurrence in time is sporadic. Here, we combine information from both types of data and report on two comprehensive paleomagnetic archives from Israel: (1) More than fifty high-precision archaeomagnetic directions from archaeological structures spanning the past four millennia; and (2) continuous decadal-resolution paleomagnetic data from two coeval sedimentary lacustrine sections from the exposures of the late Holocene Dead Sea. The correlation and integration of the two records using their declination profiles allow improving the radiocarbon-based age model of the sedimentary sections and the interpolation of the archaeomagnetic data. The combined record provides further robust evidences for fast secular variation rates during the late Holocene.