



## **A new Holocene record of geomagnetic secular variation from Windermere, UK**

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Palaeomagnetic secular variation (PSV) records serve as valuable independent stratigraphic correlation and dating tools for marine and terrestrial sediment sequences. The master Holocene UK PSV record, used to date regional Holocene sediment sequences, was established over three decades ago using older radiocarbon techniques and discrete sediment samples from Windermere and two other lakes (Turner and Thompson, 1981). We present a new radiocarbon-dated record of Holocene geomagnetic secular variation from Windermere, with a view to updating the UK master PSV curve.

Our analyses used u-channel samples taken from the centre of four sediment cores retrieved from Windermere in 2012. The natural remnant magnetisation (NRM) of each U-channel was measured before and after stepwise alternating field demagnetisation on a 2G Enterprises superconducting rock magnetometer at 0.5 cm resolution for the first core, and 1 cm resolution for the remaining cores. The NRM data reveal a stable and well-defined primary magnetization. Principal Component Analysis (PCA) directions of the four Windermere cores, especially the inclination records, appear to correlate well on their independent radiocarbon age models. The new Windermere PSV records compare well with the existing UK master curve on millennial timescales, as well as with records from other European lakes and northern North Atlantic marine records. These observations suggest that millennial scale secular variations of the Earth's magnetic field in the Europe- North Atlantic region shared common driving mechanisms during the Holocene. The new Windermere PSV record may thus be used in a regional context for correlating and dating sediment sequences through the Holocene.