

Full Vector (i.e. directional and relative paleointensity) results of the geomagnetic signature of the Pringle Falls excursion (ca 211+/-13 ka) recorded at Pringle Falls, Oregon USA

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Abstract. We studied the detailed characteristics of the Pringle Falls excursion from samples at the original site recovered from four profiles drilled along the Deschutes River, Oregon. We have drilled 827 samples spaced along 5 km for their detailed directional study. The profiles have registered a high-resolution (>10cm/kyr) paleomagnetic record of the excursion (ca. 211+/- 13 ka) recorded by diatomaceous lacustrine sediments. We conducted paleomagnetic and rock magnetic studies to investigate the reproducibility of the signal throughout the profiles. We performed low-field susceptibility vs temperature analysis that indicated that the main magnetic carrier is pure magnetite (Curie point 575°C). The magnetic grain size also indicated SD-MD magnetite. The demagnetization was done by a.f. experiments and the mean directions were determined by principal component analyses. In addition we have performed magnetic susceptibility (χ) analyses, Saturation IRM and Anhyseretic Remanent Magnetization (ARM) as well as normalization of J/ARM_{70} and $(\chi)ARM/\chi$, $SIRM/(\chi)$ to study the relative paleointensity of the sediments in question. The results of the normalization studies indicate a direct correlation between the decrease of the relative paleointensity variations (i.e. lows) with respect to the directional changes. The detailed behavior of the paleo-signal is highly consistent since they are rapidly deposited sediments providing a detailed representation of the paleofield. The dissected VGP paths in 3 different phases are highly internally consistent and are defined by clockwise and anticlockwise loops traveling from high northern latitudes over eastern North America and the North Atlantic to South America and then to high southern latitudes; then they return to high northern latitudes through the Pacific and over to Kamchatka.

Keywords: Pringle Falls excursion, directional results, relative paleointensity analyses.