AN EXPERIMENTAL EVALUATION OF SHAW’S PALEOINTENSITY METHOD AND ITS MODIFICATIONS USING LATE QUATERNARY BASALTS

J. Morales, A. Gogichaishvili and J. Urrutia-Fucugauchi
Laboratorio de Paleomagnetismo y Geofísica Nuclear, Instituto de Geofísica, UNAM, (jmorales@tonatiuh.igeofcu.unam.mx)

Absolute paleointensity experiments were carried out using Shaw’s method (1974) and its modifications (Kono, 1978; Rolph and Shaw, 1985 and Tsunakawa and Shaw, 1994) on 49 samples belonging to six Late Quaternary basaltic flows from central Mexico. Samples were selected from a large collection because of their low viscosity index, stable remanent magnetization and close to reversible continuous thermomagnetic curves. Moreover, they previously yielded high technical quality Thellier paleointensity results, which makes them good candidates to assess the reliability of Shaw’s paleointensity method. Only 13 samples yielded acceptable results using Shaw’s original method (ARM2/ARM1 ratio varies from 0.95 to 1.05 for accepted determinations); though 10 samples do not pass the validity test proposed by Tsunakawa and Shaw (1994) and thus should be rejected for paleointensity analyses. Rolph and Shaw’s (1985) method gives reliable determination only in one case and no single determination was obtained by Kono’s (1977) modification. Our results indicate an extremely low success rate of Shaw’s paleointensity method, which may be due to magnetochemical changes occurred during heating of samples above its Curie temperature.