



Possible Recording of the Hilina Pali Excursion in the Mono Basin, California

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Inclination of about negative 40° in basalt from Kilauea volcano, Hawaii (Teanby et al., 2002), that is assigned an age of about 18,000 radiocarbon years (uncorrected)(Coe et al., 1978, after Rubin and Berthold, 1961) and an excursion in northeastern China at Changbaishan Volcano of similar age from Ar40/Ar39 dates (Singer et al., 2011) that was interpreted to be the Blake Subchron (Zhu et al., 2000) using K/Ar (Liu, 1987) and Ar40/39 dates (Lin, 1999), might be recorded as shallow positive inclination in lacustrine siltstone in the bank of Wilson Creek in the Mono Basin, CA. The siltstone was deposited in Pleistocene Lake Russell, of which Mono Lake is the remnant, and was exposed when Wilson Creek was incised as the shoreline of Mono Lake receded (Lajoie, 1968). Basaltic and rhyolitic volcanic ash layers exposed in the bank of the creek are stratigraphic markers that have been important for studies of the Mono Lake Excursion (Denham and Cox, 1971; Liddicoat and Coe, 1979; Liddicoat, 1992; Coe and Liddicoat, 1994) and Pleistocene climate in the U.S. Great Basin (Zimmerman et al., 2006). Those ash layers likewise are useful for locating paleomagnetic directions along strike that might be the negative inclination in Hawaii named the Hilina Pali Excursion (Teanby et al., 2002).

The portion of the lacustrine section exposed along Wilson Creek that is of interest records waveform Delta in Lund et al. (1988) in Subunit E of Lajoie (1993) that is bracketed by ash layers 12 and 13; in Lajoie (1968), those ash layers are numbered 8 and 7, respectively. About midway in Subunit E, which has a thickness of 1.1 m, the inclination is about 15° in four back-to-back horizons that span 8 cm. The subsamples, each 2 cm thick, were treated by either alternating field or thermal demagnetization. The Virtual Geomagnetic Pole (VGP) for the horizon with the shallowest inclination (14.9°) is 53.8° N, 22.7° E ($n = 6$, $\text{Alpha-95} = 2.3^\circ$), and the VGPs within waveform Delta when followed from old to young form a clockwise loop centered at about 50° N, 30° E. The negative paleomagnetic directions in Hawaii occur when the Virtual Dipole Moment was reduced by as much as 50 percent of the present moment (Coe et al., 1978; Teanby et al., 2002), as is the relative paleomagnetic field intensity normalized by the ratio of Natural Remanent Magnetization to Anhysteritic Remanent Magnetization (NRM/ARM) for the portion of Subunit E (Zimmerman et al., 2006) that contains the shallow positive inclination in the Mono Basin.