



## Possible Recording of the Hilina Pali Excursion in Cored Tyrrhenian Sea Sediment

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First encountered in marine sediment cored from the Gulf of Mexico ( $19.5^{\circ}$  N,  $267.0^{\circ}$  E) (Clark and Kennett, 1973), the Hilina Pali Excursion (HPE) is named for a locality in Hawaii ( $19.5^{\circ}$  N,  $205.0^{\circ}$  E) where inclination of about negative  $40^{\circ}$  is documented in cored basalt (Teanby et al., 2002). Prior to naming the excursion, Coe et al. (1978) also found shallow inclination in basalt from Kilauea Volcano ( $19.2^{\circ}$  N,  $204.7^{\circ}$  E) that is dated at about 18,000 yrs B.P. (uncorrected Carbon-14, Rubin and Berthold, 1961) – the age now assigned to the HPE – and was erupted when the field intensity was reduced to nearly half the present intensity. More recently, the HPE was located at Changbaishan Volcano in northeastern China ( $40.2^{\circ}$  N,  $128.0^{\circ}$  E) where the age is established by Ar40/Ar39 dates (Singer et al., 2011). In exposed lake sediments in the Mono Basin, CA ( $38.0^{\circ}$  N,  $240.8^{\circ}$  E), shallow positive inclination at about 18,000 yrs B.P. might also be the HPE. In the Mono Basin, normalized (NRM/ARM) intensity is reduced at that time (Zimmerman et al., 2006), and the Virtual Geomagnetic Poles (VGPs) during the reduced intensity form a clockwise trending loop when followed from old to young that descends to  $53.8^{\circ}$  N,  $22.7^{\circ}$  E ( $n = 6$ ,  $\text{Alpha-95} = 2.3^{\circ}$ ) and is centered at about  $50^{\circ}$  N,  $30^{\circ}$  E (Coe and Liddicoat, 2012).

There is a possible excursion of the palaeomagnetic field recorded in marine sediment at a locality in the Tyrrhenian Sea about 25 km south of Ischia ( $40.5^{\circ}$  N,  $13.7^{\circ}$  E). The excursion is in sediment from two core segments that span about 22,000-18,000 yrs B.P. (de Alteriis et al., 2010) and occurs as reduced positive inclination (about  $50^{\circ}$ ) at about 20,000 yrs B.P. that increases to about  $80^{\circ}$  at about 18,000 yrs B.P. when declination changes from west to east. This pattern of field behaviour is similar to the behaviour of the possible HPE in the Mono Basin (Coe and Liddicoat, 2012) and in sediment cored from Lac du Bouchet, FR ( $44.9^{\circ}$  N,  $3.8^{\circ}$  E) that is assigned the age about 24,000 yrs. B.P. (Thouveney et al., 1987). There is a good correspondence between the paths of the Virtual Geomagnetic Poles (VGPs) for the Tyrrhenian Sea and Mono Basin in that a clustering of the VGPs occurs about  $20^{\circ}$  east of geographic north and descends to a latitude of about  $50^{\circ}$  N.