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Dating Lake Tahoe (CA/NV) and Mono Lake (CA) sediment using palaeomagnetic secular variation as a chronology for late Pleistocene palaeoclimate in the U.S. Great Basin

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In 1976, six meters of graded and varved sediment were recovered in three piston cores from Lake Tahoe, CA/NV, and used for palaeomagnetic and sedimentologic investigations (Palmer et al., 1979; Denham, 1981). The long-term changes (secular variation) in the Lake Tahoe palaeomagnetic record were compared to secular variation in exposed lacustrine sediment of the Wilson Creek Formation (Lajoie, 1993) in the Mono Basin, CA, (Denham and Cox, 1971), 100 km away. During the more than 30 years since the coring was done in Lake Tahoe, the record of palaeomagnetic secular variation in the Mono Basin and elsewhere in the Great Basin has been refined (Liddicoat and Coe, 1979; Lund et al., 1988, Liddicoat and Coe, 1997; Liddicoat and Coe, 1998; Benson et al., 1998; Negrini and Davis, 1992; Kent et al., 2002; Zimmerman et al., 2006) to allow a reexamination of the palaeomagnetic directions and environmental magnetic record in the Lake Tahoe cores and the age of those sediments. Inferences are also possible about the sedimentological importance during the recording of the palaeomagnetic field at Lake Tahoe and possibly in the Mono Basin, and the age of the Lake Tahoe sediment recovered, which postdates the Mono Lake Excursion. The age of the Mono Lake Excursion and Wilson Creek Formation is relevant to investigations of Late Pleistocene palaeoclimate reconstructions for the U.S. Great Basin (Zimmerman et al., 2006).