**Tiny wiggles in the Cenozoic Magnetic Record: Short Polarity Events Obscured by Intensity Fluctuations?**

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**Magnetic profiles from different oceanic basins reveal, in addition to the well-known reversal pattern, the occurrence of short-wavelength magnetic anomalies, called Atiny-wiggles@. Understanding the origin of tiny wiggles is one of the most important problems in geo- and paleomagnetism. Are tiny wiggles short paleointensity fluctuations of the geomagnetic field, as some authors suggest, or are they short-lived polarity intervals? Because it is difficult to resolve polarity intervals shorter than 20,000 years in the oceanic magnetic anomaly record, we need to rely on the paleomagnetism of volcanic and sedimentary rocks in order to decipher the origin of tiny wiggles. However, sediments can suffer from low resolution due to smoothing of the magnetization signal and are therefore not always perfect recorders of the geomagnetic field; hence the underlying cause of tiny wiggles remains unclear.**

**A number of tiny wiggles have been detected as short duration polarity events in a variety of sedimentary rocks, and their characteristics will be discussed. Specifically, in polarity chrons C1n, C2An.1n, C5n.2n, C12r and C13r, several tiny wiggles have been revealed as short events in both marine and continental deposits (e.g., NE Tibetan Plateau, Pyrenean Foreland Basin, Bighorn basin). In contrast, other polarity chrons where tiny wiggles are observed in the anomaly record have not produced any evidence of short polarity events in the stratigraphic record. The fact that short polarity events are found in some rocks, whereas other rocks of the same age do not reveal these events, suggests that the latter have likely acquired their remanence with much averaging over time or that there is a mechanism of overprinting after an interval of low geomagnetic intensity that masks short events. We will show a case study including the Blake Event as (imperfectly) recorded in Chinese Loess. It is intriguing that short polarity events in the last 2 million years have been documented in well-dated volcanic rocks, but that other tiny wiggles are not (or imperfectly) seen in the paleomagnetic records of sedimentary rocks. This suggests that short polarity events may be much more common than observed,**

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**and that they are preserved in the paleomagnetic record only when lock-in processes are rapid.**