

## **Magnetic Stratigraphy and Geomagnetic Reversal History**

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**During the past 40 years, mutually reinforcing records of geomagnetic polarity have been derived from the marine magnetic anomaly record and magnetic stratigraphy studies. The main features of the geomagnetic reversal record are securely established and reliably dated back to the mid-Jurassic. Consequently, the polarity record can be used to date sedimentary sequences that would otherwise remain undated. However, some polarity features remain to be explained. The reason for the Cretaceous Normal Polarity Superchron is not known, and, despite deep-tow marine studies and detailed magnetostratigraphy, field behavior during this long interval is controversial. Fine-scale magnetic polarity stratigraphy, especially in high-deposition rate sediments, often reveals short magnetozones that do not occur in matching sections or have no equivalent in the oceanic record. Likewise, surface and deep-tow magnetic profiles have shown short-lasting features that cannot be identified unequivocally as either polarity features or paleointensity fluctuations. These short features have a serious effect on analyses of the statistical properties of reversal sequences. It is more difficult to establish geomagnetic polarity history for older intervals that pre-date the onset of sea-floor spreading. In some cases, first-rate magnetic stratigraphies have been developed, yet it is difficult to tie them to each other, and especially to correlate continental and marine records. The number of successful studies in Paleozoic sections is still small and correlations are difficult. The possible presence of appreciable persistent non-dipole components in older rocks could jeopardize the founding of a secure ancient polarity history.**

**1. Chapman Conference on Timescales of the Geomagnetic Field 2. Invited 3. (a) Prof. William Lowrie, Institute of Geophysics, ETH-Hoenggerberg, 8093 Zürich, Switzerland (b) +41-1-633-2607 (c) +41-1-633-1065 (d) [lowrie@mag.ig.erdw.ethz.ch](mailto:lowrie@mag.ig.erdw.ethz.ch) 4. No**