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**Astronomical Calibration of the Late Oligocene Through
Early Miocene Geomagnetic Polarity Time Scale**

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At Ocean Drilling Program Site 1090 (subantarctic South Atlantic)
benthic foraminiferal stable isotope data (from *Cibicidoides* and *Oridorsalis*) span

the late Oligocene through the early Miocene (24-16 Ma) at a temporal resolution of 5 kyr. In the same time interval, a magnetic polarity stratigraphy can be unequivocally correlated to the geomagnetic polarity timescale (GPTS), thereby providing direct correlation of the isotope record to the GPTS. In an initial age model we use the newly derived age of the Oligocene/Miocene boundary of 23.0 Ma (Shackleton et al., 2000) revised to the new astronomical calculation of Laskar (2001) to recalculate the spline ages of Cande and Kent (1995). We then tune the site 1090 oxygen isotope record to obliquity, assuming a 7.2 kyr phase lag, using the new astronomic solution of Laskar (2001). In this manner we are able to refine the ages of polarity chron C7n through C5Cn.1n. The new age model is consistent, within one obliquity cycle, with previously tuned ages for polarity chron C7n to C6Bn from Shackleton et al. (2000), rescaled to the new astronomical solution of Laskar (2001). For early Miocene polarity chron C6AAr through C5Cn, our obliquity-scale age model is the first to allow a direct calibration to the GPTS. The new ages are also close to, within one obliquity cycle, to those obtained by rescaling the Cande and Kent (1995) interpolation using the new age of the O/M boundary (23.0 Ma), and the same middle Miocene control point (14.8 Ma) used by Cande and Kent (1992). Thus we have confidence in the orbitally tuned age model and the refined GPTS calibration for the late Oligocene through early Miocene.

1535 Reversals (process, timescale, magnetostratigraphy)

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