

**Ultra-Fast Geomagnetic Field Reversals in the mid-Jurassic:  
~10,000-yr Polarity Intervals Recorded by Jurassic Quiet Zone  
Crust**

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**The remanent magnetizations of tholeiitic basalt of the Jurassic Quiet Zone (JQZ) crust indicate that the Jurassic Quiet Zone is "quiet" because of exceedingly rapid reversals of the geomagnetic field. The remanent magnetic signature of 400 meters of tholeiite displays six changes of the geomagnetic field polarity. In addition, quasi-continuous changes of inclinations exist between polarity intervals. Several possibly aborted reversals also are suggested within polarity intervals. Petrologic, petrographic, and rock magnetic investigations all indicate that the Jurassic oceanic crust is extraordinary unaltered and well preserved; these basalts contain typical MORB titanomagnetites, consistent with their petrological definition as N-MORB tholeiites. This 400 m record represents the magnetic signature of most of oceanic Layer 2A. Spreading rates extrapolated from nearby anomalies (15-16 cm/yr) and recent seismic estimates that the whole of Layer 2A of the East Pacific Rise is constructed of within 1-3 km spreading off the rise crest, implies durations of 2500 to 9500 years for these mid-Jurassic (~170 Ma) geomagnetic polarity intervals. Assuming a constant spreading rate for the duration of the Jurassic Quiet Zone, the width of sea-floor with this extant magnetic signature suggests that this ultra-fast reversal behavior of the geomagnetic field was sustained for a minimum of 15 m.y.; Jurassic magnetostratigraphy suggests that the rate may have endured for twice that time interval.**

**1. Chapman Conference on  
Timescales of the Geomagnetic field  
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