

Updating the Geomagnetic Polarity Time Scale with Marine Magnetic Anomalies (Chronos C13-C33, 33-83 Ma): A Progress Report

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An accurate Geomagnetic Polarity Time Scale (GPTS) is used extensively by earth scientists to date geologic events. We will develop an updated GPTS based on marine magnetic anomalies found at mid-ocean ridges worldwide. While the current GPTS is based on the assumption of smoothly varying seafloor spreading rates in the South Atlantic, we extend that assumption across the globe, finding a time scale that will minimize the variability in seafloor spreading rates at 4-5 ridges. Here, we focus on analysis of marine magnetic anomalies, developing the methodology which future analysis will be based on. We focus our initial work on the Pacific-Antarctic ridge and the magnetic anomalies in the region. Through selection of ship tracks with well defined anomalies, projection of the tracks onto plate tectonic flow lines, and modeling of the anomalies, we find the widths of magnetized blocks on the ocean floor—information that we will use in the future to construct an updated time scale. We also test the currently accepted GPTS with our initial results in the South Pacific, finding that there is reason to continue our analysis and develop a new GPTS.