



Global analysis of vector marine aeromagnetic data

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Marine magnetic anomalies provide crucial constraints on global plate kinematic models as well as on our understanding of the accretion processes that shape the oceanic crust at mid-ocean ridges. Because shipboard and ship-towed vector magnetic measurements are rather sparse, previous studies have used almost exclusively total-field anomaly data as the basis for their investigations. Here we present preliminary results from a detailed investigation of the Project Magnet high-altitude vector aeromagnetic anomaly dataset. We have first re-processed the data to eliminate erroneous data records and resampled and interpolated to equidistant distance each of the 475 flights. We have then detected the location of the geomagnetic field reversals-related anomalies by the construction of forward magnetic models for a selected group of profiles that were flown roughly parallel to the local seafloor spreading direction. We determined the shape of each of the anomalies and show that their characters are related to the spreading rate by which the oceanic crust was formed at. Our results hint that vector magnetic anomalies could potentially provide new insights to the accretion processes that shape the magnetic structure of the oceanic crust.