



EMAG2 Version 3 – Update of a two arc-minute global magnetic anomaly grid

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Magnetic minerals in rocks of the shallow portions of the lithosphere (the crust and upper mantle above the depth of the Curie isotherm) induce complex distortions, or anomalies, of the otherwise smooth magnetic field from the Earth's core. The NOAA/CIRES geomagnetism team published a global compilation of magnetic anomaly data, at 2-arc minute resolution (EMAG2_V2) in 2009. Since 2009 NOAA's National Centers for Environmental Information (NCEI, formerly NGDC) has added over 51 million points of magnetic data (over 2.5 million miles of marine and airborne surveys) to its data holdings. Using these new data, updated satellite-based geomagnetic models, pre-compiled regional anomaly grids, and magnetic observatory data, we produced the third version of EMAG2. Among other improvements, EMAG2_V3 uses no a priori information about ocean age/structure in order to more accurately reflect the complexity of the oceanic anomalies, including 'magnetic stripes', and provides more accurate mapping of anomalies in regions of new data. This also eliminates false confidence in the accuracy or geographic data availability of marine magnetic anomalies. The primary grid models magnetic anomalies at 4km (approximately 2 arc-minute) above ellipsoid; a secondary product is also available that reports anomalies at sea level above oceanic regions, and 4km above the continents. Also, each grid value comes with an error estimate and each data point is fully traceable to the source data that were used to derive it. The compilation will be updated regularly as new data are available. This presentation will detail the latest version available.