EMAG2: A 2-ARC-MINUTE RESOLUTION EARTH MAGNETIC ANOMALY GRID COMPILED FROM SATELLITE, AIRBORNE AND MARINE MAGNETIC MEASUREMENTS

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Airborne and marine magnetic data have been collected for more than half a century, providing extensive coverage of the Earth. Due to the changing main field from the Earth's core, and due to differences in quality and coverage, combining these data to a consistent global magnetic anomaly grid is challenging. A key ingredient is the long wavelength magnetic field observed by the low-orbiting CHAMP satellite. To produce a homogeneous grid, the marine and aeromagnetic trackline data are first line-leveled and then merged with the existing grids of continental-scale compilations by Least Squares Collocation. The method takes the anisotropy of the oceanic magnetic field into account. This leads to an improved representation of oceanic magnetic lineations and allows for the interpolation between adjacent tracks in sparsely surveyed regions, particularly in the southern oceans. In the final processing step the short-to- intermediate wavelengths of the near-surface grid are merged with the latest CHAMP satellite magnetic anomaly model MF6 (http://geomag.org/models/MF6.html). In analogy to NGDC's 2-arc-minute resolution ETOPO2 grid, the new magnetic anomaly grid is named EMAG2. The grid is available in digital form and as plug-ins for NASA World Wind, Google Earth and Google Maps at http://geomag.org.

Magnetic field, Crustal field, Lithospheric field, Magnetic anomaly

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