

Reprocessing the United States Magnetic Anomaly Map Using the Comprehensive Model, Adam Shaw, Joseph Batir, Matthew McIndoo, and Dhananjay Ravat, Department of Geology, Southern Illinois University, Carbondale, IL 62901-4326, adam1385@siu.edu, jbatir33@siu.edu, mmcindoo@siu.edu, ravat@geo.siu.edu; Peter Milligan, Geoscience Australia, Peter.Milligan@ga.gov.au; Thomas G. Hildenbrand, Robert Kucks, and Patricia Hill, U.S. Geology Survey, tom@usgs.gov, rkucks@usgs.gov, pathill@usgs.gov

We have improved the magnetic anomaly map of the United States using National Uranium Reconnaissance and Evaluations (NURE) aeromagnetic surveys collected during the 1970's. Previous versions of these data sets processed using IGRF/DGRF do not mesh well at the survey boundaries because of leveling artifacts. Similarly, the U.S. component of the North American magnetic anomaly map has long wavelength errors caused by warping of hundreds of state and local aeromagnetic surveys during the merging process. The main difference in our processing that has allowed us to retain proper baselevels is the use of the continuous main field Comprehensive Model (CM4). The advantage of using the NURE surveys is that most of these surveys have time information and diurnal variation observed with base station magnetometers is removed from them. Furthermore, we have cleaned the NURE data by removing many spurious values through visual inspection. Some NURE surveys did not have total field values or time information. For these surveys, we reintroduced the IGRF for their approximate date and removed the core field determined by CM4. We compare the results of our processing and improvements with the U.S. aeromagnetic anomaly data prepared by different merging techniques. The improved map is more suitable for regional geologic and geodynamic interpretations.