Kansas Geological Survey
Lawrence, Kansas

Aeromagnetic Map of Kansas

Reduced onto a Horizontal Plane and Reduced to the Pole

MAP M-41D
1995

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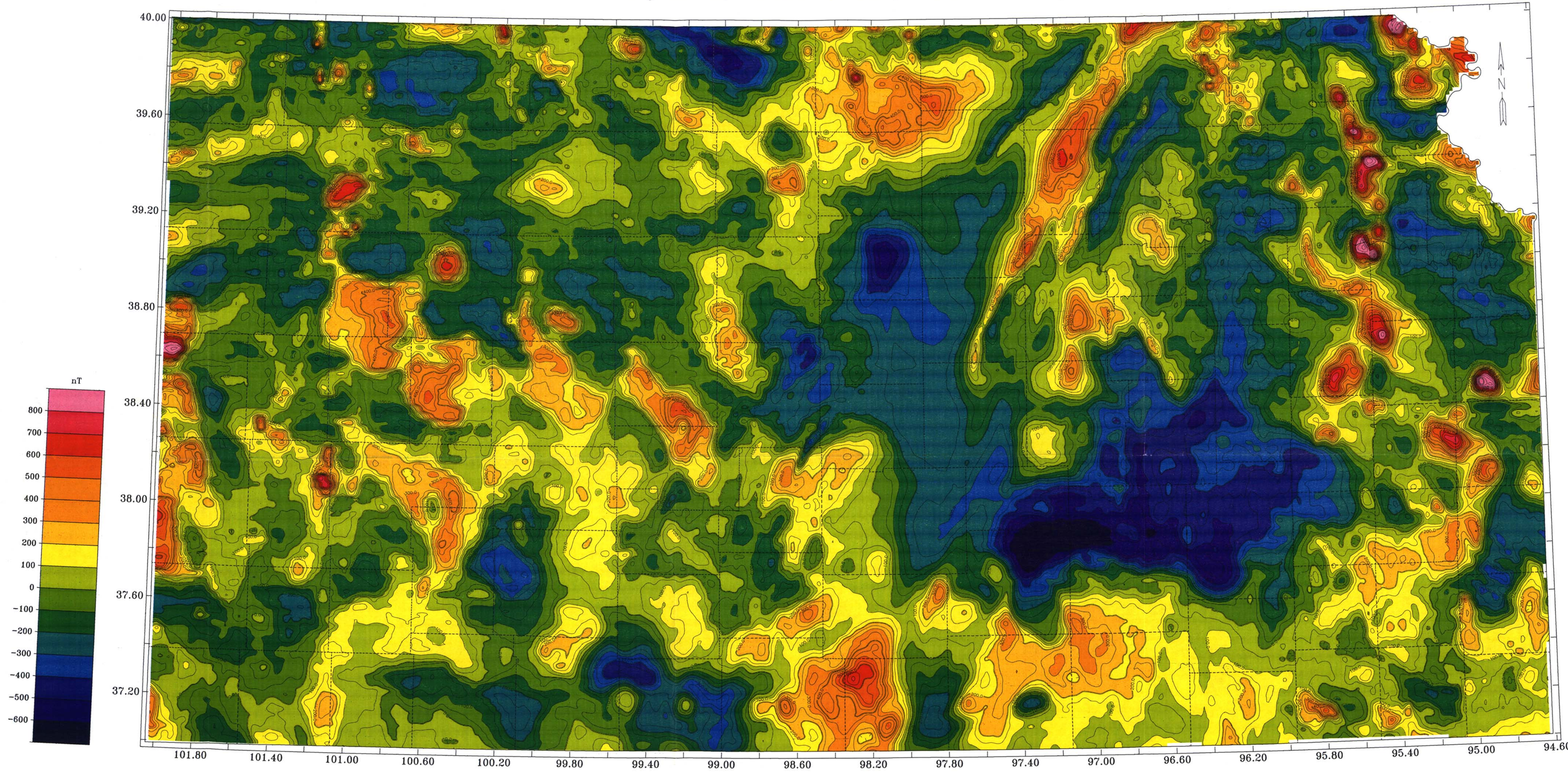

This map is based on the aeromagnetic data of the Kansas Geological Survey (Yarger, 1983, "Regional interpretation of Kansas aeromagnetic data," Kansas Geological Survey, Geophysical Series 1; Yarger et al., 1981, "Aeromagnetic map of Kansas," Kansas Geological Survey, Map M-16). The data were measured at three different elevations, 762 m above sea level in eastern Kansas (east of longitude 98.30°), and 914 m and 1,372 m above sea level in the east half and west half of western Kansas, respectively. US-283 (longitude 99.90°), which runs north-south through western Kansas, was used as a visual landmark to the pilot to change elevation. Flight lines spaced 3.2 km apart were flown east or west along section lines. The data density along a flight line is 8-11 points/km. The International Geomagnetic Reference Field 1975 was used in data processing. The data were used to generate 1.6 km by 1.6 km grids by universal kriging. The final grid is 205 rows by 408 columns. The inclination and declination of the geomagnetic field are, respectively, chosen as 65° and 7°, which are the average values in Kansas (Yarger, 1983). The aeromagnetic data are first reduced onto a horizontal plane of 914 m above sea level and then reduced to the pole (Xia et al., 1993, "Correction of topographic distortions in potential-field data: a fast and accurate approach," Geophysics, v. 58, p. 515-523).

Scale 1:1,000,000

1 inch equals approximately 16 miles

0 mi 25

0 km 40

Shading interval is 100 nT.

Contour interval is 50 nT.

Lambert Conformal Conic Projection with standard parallels of 33° and 45°

The data were gridded, contoured, and shaded using SURFACE III developed by Robert Sampson at the Kansas Geological Survey, with the assistance of Dana Adkins-Heljeson.

Reduction to the pole removes the effect of the inclination of the Earth's magnetic field and improves the resolution and location of anomalies (particularly along the north-south direction). Anomalies after reduction to the pole are equivalent to the magnetic field that would be observed if the Earth's inducing field were vertical. The effects of remanent magnetization are ignored during the calculation of reducing to the pole. All calculations are performed in the frequency domain and no edge effects are notable. Aeromagnetic anomalies are mainly caused by basement lithological variation and to a small extent (normally not more than 30 nT) by Precambrian basement relief.