

# Aeromagnetic Anomaly Map of Scandinavia

Total intensity referred to IGRF-65

Geological Survey of Sweden 1983

### General

This map is based on an aeromagnetic survey carried out in 1965 by the Dominion Observatory, Ottawa, Canada, in cooperation with the Danish Meteorological Institute, the Finnish Meteorological Institute, The Geographical Survey of Norway and the Swedish Board of Shipping and Navigation 1/7. The flight altitude was 3 km above sea level and flight lines had an average spacing of 35 km. The total intensity was measured by means of a proton magnetometer and recordings were made every 3 seconds.

### Data processing

The initial procedure involved computation of mean total intensity values over successive 5 minute intervals. These intervals correspond to approximately 30 km segments of the flight path. The 5-minute mean values were then reduced to the epoch 1965.0 and various errors were corrected for. The remainder of the data processing was carried out by means of the program system SURFACE II 7/2. After several tests, the following procedure was adopted. The irregular point grid based on the 5-minute mean values was converted into a 15 x 15 km square grid. This was accomplished by estimating total intensity values at the grid nodes as averages of the 6 closest 5-minute mean values within a radius of 100 km. A weighting procedure was employed using the inverse square of the distance to the node point as weighting parameter. The values in the square grid were then smoothed by averaging node values within a radius of  $D_{sm} = 30\sqrt{2}$  km using the weighting parameter  $w = (1-D/D_{sm})^2$ , where D is the distance to the node point being smoothed. The anomaly values in the orthogonal grid nodes were then obtained by subtracting the International Geomagnetic Reference Field 1965 (IGRF-65). Finally, isomagnetic contour lines were computed by means of a spline function technique.

### Map characteristics

The isomagnetic contour lines are presented in this map at a scale of 1:2 500 000. The contour interval is 50 nT and the colour code interval is 100 nT. The map is based on the Gauss' Hammerov projection used for the national Swedish coordinate grid (RT 38). Coordinate values are indicated together with latitude and longitude east of Greenwich. The geographical background map in this projection is provided by the National Land Survey of Sweden.

### References:

1. F. Eleman, K. Borg, U. Öqvist and C. Sucksdorff, The Aeromagnetic Survey of Denmark, Finland, Norway, Sweden 1965. Swedish Board of Shipping and Navigation, Stockholm 1969.
2. R.J. Sampson, SURFACE II Graphics System. Kansas Geological Survey Lawrence 1978.

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