

MnDNR Division of Lands and Minerals – Mineral Potential Section

Project #408 – Use of 3-Band RGB Imagery to Enhance Display of Slope, Curvature and Residual Intensity in Aeromagnetic Data

September, 2021

Project Overview

Since 2004, a detailed 3-band composite image of aeromagnetic intensity, slope and curvature has been used as a statewide backdrop for mineral potential evaluation work at MnDNR. The goal of the present report is to describe the basis and background behind the generation of this magnetic texture image.

The report also describes a modified, directional-derivative version of the magnetic texture image, which was developed to attenuate corrugation display effects, and the report describes a method developed to extract and maxima, minima and inflection lines from gridded aeromagnetic data. Snippets from the detailed statewide image are provided as examples of magnetic texture display and resolution.

Available Resources

The data package accompanying this report contains copies of the initial and directional-derivative statewide images in georeferenced TIFF format, plus a copy of the source grid of residual magnetic intensity values from which derivatives were generated, and a statewide shapefile of extracted lines of maxima, minima and inflection. A large (850 Mb) regional 3-band RGB image that includes public domain aeromagnetic data from Minnesota, Wisconsin and northern Ontario is included as separate georeferenced image file.