



## An aeromagnetic double cover of Karasjok, Norway

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Separating remanent from induced magnetic anomalies is a challenging but important task in the interpretation of aeromagnetic data. A comprehensive knowledge of petrophysical properties and geological processes is necessary to estimate the quantity and distribution of remanent rocks in an area to obtain a realistic model. A different and more efficient possibility to achieve this separation is to use repeated high-quality aeromagnetic measurements, performed within diverse geomagnetic fields. If the geomagnetic field substantially changed between two surveys,  $A$  and  $B$ , due to the regional geomagnetic secular variation, the difference between both survey anomalies mainly results from the magnetization induced by this secular variation  $\Delta H = H_B - H_A$ . In many places of the world the secular variation during the last 30 years has been more than 500 nT, giving a sufficiently high signal-to-noise ratio in the difference of two high-quality data sets. Here a double cover of a continental magnetic anomaly near Karasjok, northern Norway, is studied using two surveys of similar resolution made in 1982 and in 2011 covering a common area of 20 km  $\times$  30 km. An evaluation of IGRF models confirms that the geomagnetic field intensity in this region has increased by approximately 500 nT. In the case of a purely induced magnetization, the anomaly amplitudes should have consistently increased by about 1% in response to the field increase. Deviations from this expected variation make it possible to identify remanent magnetic anomalies in crustal rocks, a topic of high relevance with respect to mineral exploration and lamellar magnetism.