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Quantitative multiparameter modelling of mineral resources at the Geological Survey of Denmark and Greenland: examples, impacts, considerations and future needs

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Many government institutions have changed their way of processing, interpreting and presenting spatial data during the last couple of decades in response to demands from society and industry and assisted by considerable progress in the management and analysis of digital spatial data.

As part of this development, the Geological Survey of Denmark and Greenland have applied a cross-validated statistical procedure to regional survey data from Greenland. The available datasets, which are derived from measurements of many geochemical and geophysical parameters, are integrated and statistical analysed in order to quantify multiparameter signatures of mineral occurrences, predict mineral potential and estimate the probability for new discoveries. In our work until now, we have dealt with occurrences of base metal sulphides and gold.

In addition, we have developed new procedures for recognising and extracting additional information from certain types of data, such as magnetic and topographic lineaments. This additional information can be utilized in the statistical procedure as input data.

This presentation will present the developed and applied procedures and discuss their impacts, the considerations they have provoked, and the needs for future development.