
**A new geographic information system for the Strand
Fiord area, western Axel Heiberg Island, Nunavut**

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A Geographic Information System (GIS) assembled for the purpose of geoscience applications in the territory of Nunavut represents the first attempt to integrate multiple databases in areas north of the 75th parallel. We chose the western part of Axel Heiberg Island for this study because of the significant number of geological and geophysical studies that were carried out by the Geological Survey of Canada in this region, over the past 50 years. There is also a renewed interest in the resource potential of this area, linked to the interaction of Cretaceous igneous rocks with evaporite diapirs that intrude the Mesozoic and Tertiary succession of the Sverdrup Basin. Spectacular exposures of volcanic rocks and salt domes are found along the shores of Strand Fiord and Expedition Fiord.

To produce the GIS, aeromagnetic and gravity data were integrated with geological and topographic maps (1:250 000 scale). A digital elevation model was included to allow more

precise identification of igneous intrusions sampled during field work. Lithological data are being compiled for three volcanic successions in the Strand Fiord Formation (Bastion Ridge, Twisted Ridge, and Index Ridge, on the Kanguk Peninsula) and a large sill exposed at the head of Expedition Fiord (Wolf Intrusion). The list of attributes for samples from each location includes: geographic location, lithology, petrography, textural characteristics, whole-rock geochemistry, and geochronological data where available. The GIS is a useful tool to characterize and classify the igneous rocks and salt diapirs, for example, by providing information on the shape and morphology of the structures, nature of geological contacts, attitude and extent of faults, and relative percentage of igneous material “rafted” in the salt domes. A preliminary analysis of the aeromagnetic data revealed the existence of a north-to northwest-trending high, and allowed us to delineate the salt diapirs and some important regional faults. Gravity anomalies change from low negative to low positive values from east to west in the study area.