



Flin Flon Domain of Saskatchewan – Dataset Descriptions

The Flin Flon domain hosts one of the most prolific Precambrian volcanogenic massive sulphide (VMS) districts in the world, with over 160 million tonnes of ore produced from at least 28 deposits in Saskatchewan and Manitoba since the start of the 20th century. Situated in the Reindeer Zone of the of the Trans-Hudson Orogen, rocks of this domain comprise dominantly metamorphosed and polydeformed volcanoplutonic terranes with subordinate siliciclastic sedimentary sequences. Volcanic rocks vary in composition throughout the domain and were originally emplaced in a variety of tectonic settings, including island arc(s), arc rift, ocean floor, and ocean pleateau. The VMS deposits are hosted primarily by Paleoproterozoic juvenile arc rocks in one of several defined lithotectonic assemblages.

The datasets provided for this area are located within a ~12,000 km² area of the Flin Flon Domain of Saskatchewan that contains several past producing base metal mines and a multitude of known mineral occurrences. The northern quarter of the area is underlain by exposed Precambrian Shield, whereas the southern three-quarters consists of Precambrian basement situated beneath up to 200 metres of undeformed, Phanerozoic sedimentary rocks. The sedimentary cover in this southern portion makes exploration of the Precambrian rocks particularly challenging.

The datasets provided for this area consist of: (i) airborne geophysical survey data, and (ii) multiple GIS datasets from the exposed Precambrian Shield and/or the buried Precambrian basement and/or the Phanerozoic sedimentary cover.

The geophysical data comprises digital data for 22 airborne surveys including industry-derived data submitted to the Saskatchewan Geological Survey through assessment work reports, and surveys funded by provincial and federal governments. All databases (15 VTEM, 4 HeliTEM, 3 gravity gradiometer surveys) are provided in a Geosoft project called "FR_award_data". A regional scale magnetic grid and two stitched grids (the residual magnetic intensity and the first vertical derivative grids), created by merging high resolution magnetic data, are also included in the project file.

The GIS data, provided in a file geodatabase called "PDAC_FrankArnott.gdb", include a combination of raw data and regional compilations from the area, in addition to the project area boundary and boundaries of the airborne geophysical surveys described above. The individual feature classes are briefly described as follows:

Mineral Deposits Index - Information on all known mineral occurrences in the project area. Current definitions for the mineral deposit categories used in the Saskatchewan Mineral Deposit Index can be found in the document hosted at <http://www.publications.gov.sk.ca/details.cfm?p=89363> .

Minerals and Quaternary Drill Holes – A compilation of drill hole collar information for the area from Saskatchewan Mineral Assessment Reports and other publically available sources. Additional information (e.g. geological) from the drill holes is available through the Saskatchewan Mineral Assessment Database, available online at: <http://mineral-assessment.saskatchewan.ca/Pages/BasePages/Main.aspx>. Note: this is not an exhaustive list of drill holes in Saskatchewan.

Geochronology - A compilation of radiometric ages of Precambrian rocks in the area from a variety of sources.

GSC Lake Sediment Analyses - A compilation of Lake Sediment Analyses done by the Geological Survey of Canada for the Precambrian Shield area.

Lithogeochemistry Analyses - A compilation of results from lithogeochemical analyses for the area.

Isotopic Tracers - A compilation of radioisotopic tracer data, primarily Sm-Nd, for rocks in the area from a variety of sources.

Ice Flow Indicators – A compilation of glacial ice flow indicators from recent and historical bedrock and surficial geology maps and digital datasets.

Metamorphic Facies - A map depicting the metamorphic facies for the exposed Precambrian Shield of Saskatchewan, derived from the GSC Open File 5443 Metamorphic Map of Northern Saskatchewan, Scale 1:1 million.

250K Surficial Geology - A geological map compiled at 1:250,000 scale showing Quaternary surficial terrain deposits classified by depositional environment and geomorphology. Mapping of this compiled dataset was originally done by Agriculture and Agri-Food Canada and Prairie Farm Rehabilitation Administration (PFRA).

250K Faults - This dataset shows faults and lineaments of the Precambrian Shield area compiled at 1:250 000 scale. The lineaments were interpreted from a variety of sources including air photo and geophysical interpretation, as well as field observations.

250K Bedrock Geology - This dataset shows 1:250 000 scale bedrock geology of the area. Mapping in support of the dataset includes many years of field observations which were compiled at 1:250 000 scale and integrated into this dataset.

Major Faults and Shear Zones - This dataset represents a 1:1 million scale compilation of major faults and shear zones present in the area. Mapping in support of this dataset includes field observations, combined with interpretation of structures in the basement rocks from geophysical data.