

Updated Geological Map of the Alberta Foothills North of Bow River

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The formation of the Rocky Mountain Fold and Thrust Belt had a profound effect on the hydrocarbon and coal potential, both within the deformed belt and in the adjacent undeformed strata of the Western Canada Sedimentary Basin. Due to its enormous economic potential, the fold and thrust belt has been the focus of intense geological exploration and research; it has been mapped by different generations of workers over a period of one century and the published maps vary in scale from 1:50 000 to 1:1,000,000, with uneven geological information or inconsistent nomenclature, structural and stratigraphic interpretations. The need always existed for a stand-alone updated, regionally consistent geological map at a scale that displays the entire region at sufficient detail and in a manageable size when printed.

Mandated by the government with providing updated geological knowledge in a readily available digital format for informed industrial, environmental and regulatory decisions, the Alberta Geological Survey (AGS) has embarked on compiling the geology of the Alberta portion of the Rocky Mountains and Foothills at a scale of 1:500 000. The final product, which will consist of a seamless, updated digital compilation geological map and a geological summary of the Alberta portion of the Foreland Belt, is expected to be delivered by 2012. This poster presents the first stage of the AGS program and includes the compilation map of the Alberta Foothills north of Bow River.

To date, the AGS has systematically reviewed existing literature and acquired, digitized and georeferenced all existing paper copy GSC and AGS geological maps, as well as selected compilation maps and maps from guidebooks published by the Canadian Society of Petroleum Geologists and universities. A number of 1: 63,360 and 1:50 000 GSC and AGS maps previously digitized in non GIS format (GaiaBase and Canvas files) have been converted to GIS format (shapefiles). The index map shows the distribution of different types of data sources currently being used for the GIS compilation. The geological information was filtered, reorganized and structured in the new GIS product as polygon, line and point layers. A new, regionally consistent stratigraphic scheme, appropriate for the scale of the map is aided by new colour and labelling schemes. The resulting map will be eventually integrated in a user friendly GIS web application that will be updated with additional layers (coal mines, mineral occurrences, potential field, etc.) as the need arises.

In addition, AGS has conducted extensive field work in the Foothills in order to check accuracy of contacts, resolve existing map edge discrepancies, to confirm correlations between stratigraphic units with different names and/or lithological composition in different segments of the Foreland Belt. Paleontological and isotope studies have been initiated in cooperation with national and international partners in order to better constrain the tectonostratigraphic evolution of the Alberta portion of the fold and thrust belt.