

New Compilation Map of the Central Foreland Project Area: Structural Transitions in the Northern Foothills

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A new regional compilation map of the Central Foreland NATMAP project area incorporates current mapping and new 1:250,000 scale compilations published since 1998. These include substantial revisions/updates to four 1:250,000 scale maps, new mapping in 14 recently published 1:50,000 scale map areas, and substantial revisions to the stratigraphy. The map area encompasses 5 degrees of latitude along tectonic strike. From the Interior Platform in the east, to the Rocky Mountain Trench in the west, successively older and more distal strata are exposed. Culminations expose Proterozoic clastic continental margin strata, whereas the westernmost thrust sheet contains Neoproterozoic strata on Paleoproterozoic gneissic basement. A prolonged tectonic history spans Proterozoic and most of Phanerozoic time. Mesozoic east-northeast-directed shortening defines the predominant structural grain.

At this scale, important structural transitions are prominently displayed. Most apparent is the dramatic eastward swing in the deformation front at the 60th parallel, accompanied by a 10-fold increase in the wavelength of major folds. Basement structure, lower Paleozoic shaleout and variations in the mechanical properties of the deforming succession are factors in these transitions. The Paleozoic MacDonald Platform-Kechika Trough transition marks an abrupt change in structural trend, from NNW on the platform to NW in the trough. A similar structural divergence is locally apparent in the foothills and has been interpreted to reflect the influence of subsurface structures.

The map-area is rich in base and precious metal occurrences, and hydrocarbon resources. Exploration activity is presently focused on the hydrocarbons, primarily within folded and faulted strata beneath the Foreland Basin.