

MESOZOIC STRATIGRAPHY, SVERDRUP BASIN, ARCTIC CANADA

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Mesozoic strata of the Sverdrup Basin are up to 9 km thick and cover an area of 300,000 sq. km. The strata consist of alternating sandstone-dominated units and argillaceous intervals and record numerous regional transgressions and regressions. Seventeen stratigraphic sequences have been recognized and these result from the interplay of basin tectonics, sedimentation and eustatic sea level changes.

Subaerial unconformities form the sequence boundaries on the basin margins. These unconformities disappear basinward and most are due to eustatic sea-level fall. However, widespread subaerial unconformities of Late Callovian and Hauterivian age are more likely related to regional tectonic activity.

Submarine unconformities (hiatal surfaces) mark the sequence boundaries in the basin centre. These formed during times of sea level rise when sediment supply to the basin was cut off.

Rate and type of sedimentation varied during the Mesozoic. In general periods of pronounced deltaic sedimentation with accompanying high rates of deposition alternated with shelf sedimentation with moderate to low rates of sedimentation. Epeirogenic movements of the craton most likely controlled this variation.

Igneous activity involving basic volcanism and dyke and sill intrusion occurred from Late Jurassic until mid-Late Cretaceous and is probably synchronous with the formation of the Amerasian ocean basin.