

# **Early to Middle Jurassic Subsidence History of the Bowser Basin and Hazelton Trough in the Area of Tsatia Mountain, North-central British Columbia**

J.-F. Gagnon\*

University of Alberta, Edmonton, AB

jfgagnon@ualberta.ca

C.A. Evenchick

Geological Survey of Canada, Vancouver, BC

J.W.F. Waldron

University of Alberta, Edmonton, AB

F. Cordey

Université Claude Bernard Lyon 1, Lyon, France

T.P. Poulton

Geological Survey of Canada, Calgary, AB

## **Summary**

Backstripping calculations performed on a stratigraphic section near Tsatia Mountain, north-central British Columbia, indicate that the northwestern edge of the Bowser Basin and Hazelton Trough was characterized by two phases of enhanced subsidence. An initial episode of rapid subsidence of the Hazelton Trough occurred in the Pliensbachian, during which bimodal volcanic flows and associated sedimentary rocks were deposited in a shallow-marine environment. This episode corresponds to the end of a rifting event in the Stikine arc when most of the accommodation space was generated by extensional faulting of the predominantly igneous basement. Slower subsidence took place in Toarcian to Bajocian time along with deposition of a condensed section in a deep-water basin. This part of the history is consistent with thermal subsidence following the end of volcanism. An increase of subsidence rates in the Bathonian-Callovian interval was accompanied by increased sediment supply, marking the start of deposition of the Bowser Lake Group. This second pulse of rapid subsidence can be explained by sediment loading alone; it does not require, but neither does it negate, tectonic loading of the basin floor. The Early to Middle Jurassic subsidence history observed at Tsatia Mountain is consistent with a simple extensional model defined by a rifting episode, followed by thermal contraction of the crust, sediment loading, and possibly flexural subsidence.