

# CHEMOSTRATIGRAPHY AND LITHOFACIES ANALYSIS OF AERONIAN TO TELYCHIAN (EARLY SILURIAN) CARBONATES FROM ANTICOSTI ISLAND, QUEBEC, CANADA

**Matthew Braun**

*University of Ottawa, Department of Earth Sciences, Ottawa, ON, Canada*  
mbrau097@uottawa.ca

## ABSTRACT

The early Paleozoic Icehouse, which spans the Ordovician-Silurian (O/S) boundary, comprised a series of climatic shifts and sea level fluctuations driven by the advance and retreat of continental ice sheets. These continental glaciations occurred during an overall climatic greenhouse condition, demonstrating the complex climate dynamics of the early Paleozoic. The Ordovician to Silurian sequence on Anticosti Island consists of approximately 900 m of undeformed fossiliferous limestone and minor siliciclastic rocks, and is a storehouse of considerable information to decipher the cause-and effect relationships within the ocean-atmosphere-biosphere system. My thesis will focus on the Aeronian to Telychian (early Silurian) part of the Anticosti succession with the intent of providing a high-resolution framework for the interpretation of facies architecture in terms of base-level dynamics linked to relative sea level changes. This will be completed through the integration of sequence sedimentology and stratigraphy with species-based biostratigraphic packages and carbon isotopic profiles. Stratigraphic tools to track relative sea level changes include the identification of multi-scale proximal tempestite trends, evaluation of cycle stacking/thickness patterns, changing proportion of lithofacies within a cycle, cycle symmetry, and facies tract offset. Whole rock stable isotope geochemistry will be completed for carbon and oxygen at a high resolution through the studied succession, and will be integrated with chitinozoan biostratigraphy. Trends identified in the  $\delta^{13}\text{C}$  stratigraphy may be used for local, regional, and global correlations of early Silurian strata, whereas  $\delta^{18}\text{O}$  trends may give insight into palaeoclimate systems, and can be used as a proxy to track sea level fluctuations.

AAPG Search and Discovery Article #90298 © 2017 AAPG Foundation 2016 Grants-in-Aid Projects