MIDWISCONSINAN SEDIMENTOLOGY, 3D STRATIGRAPHIC MAPPING AND PALEOGEOGRAPHY IN THE APPALACHIANS OF SOUTHEASTERN Québec

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Complex sequences of ice marginal and frontal deposits have been mapped and documented in the Saint-François and Chaudière river valleys, north of the international border. In most cases, these sediments and landforms as well as other geomorphological features, are valuable indicators of the extent of former ice-dammed lakes, as their elevation is strongly constrained by well-documented outlets. However the complex stratigraphic architecture of the subsurface is poorly documented. The Quaternary geology of Eastern Québec is unique in several aspects, the Pleistocene stratigraphy is characterized by a three till sequence, each till being underlain and overlain by glaciolacustrine sediments deposited in ice-dammed lakes during the advance or retreat phases of each glaciation. The Gayhurst Formation includes all glacial lake sediments deposited in the Chaudière and Saint-François valley during the time interval between the Chaudière and Lennoxville glacial phases (MIS 3?).

A methodology for three-dimensional numeric geomodelization of surficial deposits is proposed in this study. This kind of model is based on the integration of surficial sediments map and boreholes logs with the use of GIS and 3D geomodeling system. The objectives of this geomodeling study 1) are to define the physical lateral extension of the Gayhurst Formation; 2) to devise paleogeographic reconstructions testing possible glacial water routing in New-Brunswick, Maine and Vermont and 3) to determine the age of this glacial lacustrine sequence using IRSL. New field and stratigraphic data are being acquired in the Chaudière and Saint-François, in the course of a groundwater/Quaternary geology mapping project that was initiated in 2007, some of which will be presented at the meeting.