DEPOSITIONAL AND EROSIONAL STRATIGRAPHY, SOUTHEASTERN QUEBEC

SHILTS, William W., Illinois State Geol Survey, 615 E Peabody Dr, Champaign, IL 61820-6964, shilts@isgs.uiuc.edu.

Foundations for understanding the glacial stratigraphy of the Appalachian Mountain region of Quebec were laid in the 1950s by Gadd and by Karrow, who identified tills of two glacial events separated by interglacial St. Pierre Beds in the St. Lawrence Lowlands. In St. Lawrence Seaway excavations, MacClintock and Stewart identified two glacial events that are now regarded as members of the uppermost tills described by Gadd and Karrow. In the 1960s, Stewart and MacClintock, building on their “Seaway” model, described a three-till stratigraphy in northern Vermont, which was imported into Southern Quebec in 1964 and has stood until present, much as it was described by McDonald and Shilts in 1971. The depositional stratigraphy of the region comprises lower, pre-Wisconsinan Johnville Till, deposited by an ancestral Laurentide Ice Sheet (LIS) over a preglacial regolith, separated from two late Wisconsinan tills by the St. Pierre-equivalent Massawippi Formation. The lowermost Wisconsinan till (Chaudiere Till) was deposited by ice flowing from an Appalachian ice cap centered in Maine and/or New Brunswick. Chaudiere ice was displaced by the LIS, which also deposited the overlying Lennoxville Till after a brief (Gayhurst) interstadial event. The LIS eventually traversed all of New England, depositing Lennoxville Till equivalents as far south as New York City. This thirty-one year old, three-till model for Quebec remains valid today and has been rigorously, quantitatively supported by extensive till fabric and striation data, by depositional models for associated waterlain sediment, and by till mineralogy and geochemistry. In 1971, Lamarche rediscovered a prominent set of northward striations that clearly postdates the widespread, southeastward-trending striations related to the Lennoxville glacial event. Subsequent work has revealed striations reflecting multiple regional ice flow events related to a relict, late glacial Appalachian ice mass and a final readvance of Laurentide ice up major valleys to the so-called Highland Front moraine complex. Although as many as seven distinct ice flow events have been inferred from the erosional stratigraphy, they are represented depositionally by only one or two recognizable till units, suggesting continuous late Wisconsinan ice cover for all but the Gayhurst interstade.