

Valley Profile

Introduction

Figure 50 is a schematic valley profile of Nansen and Victoria Creeks. This profile was compiled from combined data including surficial geology, observed field relationships and facies data from measured sections. Vertical elevations are approximate, and no horizontal scale is implied.

Discussion

As the valley profile shows, a variety of facies associations and stratigraphic relationships occur in the valleys of Nansen and Victoria Creek and their major tributaries. A till interpreted to be deposited by the older of at least two pre-Reid glaciations is preserved only in patches and hummocks on the major valley floors. A younger pre-Reid till occurs intermittently along major valley walls and tributary valley walls where it is overlain by a variety of alluvial and colluvial deposits. Pre-Reid glaciofluvial gravels occupy terraces and cut bedrock on north-facing (southern) valley walls.

Two sets of alluvial terraces occur: 1) remnant tributary valley alluvial terraces, which occupy the (mainly southern) valley walls of major tributaries, and 2) remnant main valley alluvial terraces, which occupy the valleys of Victoria and Nansen creeks, where at least three levels can be discerned. Along major tributary valleys, colluvium and recent alluvial fans overlie older glacial and glaciofluvial deposits. Recent gullch gravels have dissected and reworked older glacial, glaciofluvial and alluvial deposits.

Paleogeographic History

Introduction

Figures 51 to 61 show the interpreted paleogeographic history of the field area. These are based on field relationships, surficial geology and facies distribution data from measured sections. Table 20 is the legend for the paleogeographic maps.

Discussion

Prior to the onset of periodic Pleistocene glaciations, a long period of humid tropical weathering occurred in the Tertiary. This left a thick mantle of highly-weathered and eroded bedrock (Figure 51). The first of a minimum of two pre-Reid ice advances occurred at least 1 Ma B.P. (Hughes, 1987). This ice advance left only limited evidence, such as ice-marginal scours in bedrock along Mt. Nansen, and patchy occurrences of till along the valley floor of Nansen Creek. Only the highest points (above approximately 4500 feet ASL) of Mt. Nansen and Victoria Mountain were above the scouring effects of this ice sheet (Figure 52). After deglaciation (Figure 53) and a lengthy ice-free period (Hughes, 1987) during which there was extensive weathering (Figure 54), a second pre-Reid glaciation occurred. As this Cordilleran ice sheet advanced, a local ice-centre probably originated in the Dawson Range (Jackson, 1993). This likely began as cirque glaciers (Figure 55), progressed to valley glaciers (Figure 56) and eventually merged with the Cordilleran ice-sheet advancing from the south (Figure 57). Following deglaciation, the climate returned at least once to warmer conditions than those of today, (Foscolos *et al.*, 1977; Tarnocai, 1987) resulting in the extensive weathering of both bedrock and pre-Reid glacial and glaciofluvial deposits (Figure 58).