Deglacial and Postglacial Sedimentary Architecture in a Deeply Incised Palaeovalley: The Late Carboniferous (Pennsylvanian) Jejenes Formation, San Juan, Argentina

Dykstra, Mason[1], Benjamin Kneller[2], Juan Pablo Milana[3] (1) University of California, Santa Barbara, CA (2) University of Aberdeen, Aberdeen, United Kingdom (3) Universidad de La Serena, La Serena, Chile

Quebrada de las Lajas, San Juan, Argentina, preserves a mid-Carboniferous deglacial succession in a paleofjord. The sedimentary succession can be divided into four distinct stages. The first is characterized proximally by Gilbert-type deltas and distally by sheet-like sandbodies, varved siltstones and channel sandstone and conglomerate bodies. Dropstones are present, but their abundance decreases upward. Depositional environments varied from ice-contact deltas, subaqueous outwash fans, and related deep-water environments. Mass-transport deposits are abundant near the top of Stage 1, up to 50 m thick, and hundreds of meters wide and long. They exhibit significant surface topography (> 20 m), which was a major control on subsequent sediment pathways. Stage 2 records a glacioeustatic marine transgression, and a reduction of clastic supply. It is characterized by dark, organic-rich marine shales that could form significant local source rock (type III). These are interbedded with rare, thin turbidite sandstones and conglomerates. Stage 3 records progressive infilling of the accommodation space created by glacial overdeepening and glacioeustatic transgression. It is characterized by thick-bedded (0.5-10 m) sheet-like turbidite sandstones and associated shales. Stage 4 is interpreted as a fan-delta, and is characterized by coarse turbiditic sandstones and conglomerates interbedded with abundant, small-scale mass-transport deposits. This stage represents a major rejuvenation of sediment influx into the paleofjord. The form of the paleofjord floor created a depositional/compactional syncline, with pinch-outs toward the margins, and dramatic thickening toward its centre, forming effective structural/stratigraphic traps.