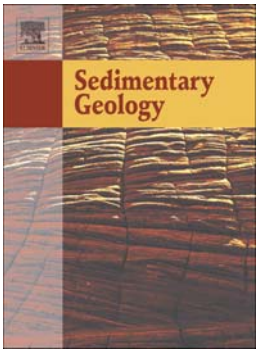

Evidence of flash floods in Precambrian gravel dominated ephemeral river deposits

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Evidence of flash floods in Precambrian gravel dominated ephemeral river deposits.

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ABSTRACT

Fluvial strata at the base of the Whyte Inlet Formation on Baffin Island, to the west of Sikosak Bay, are predominantly boulder and cobble bearing large pebble conglomerates of braided fluvial origin. Local development of narrow sinuous channels, possibly within the thalwegs of an initially braided bedrock confined system, is indicated by the presence of lateral accretion surfaces, some of which host isolated sub-vertically oriented boulders. These larger boulders were probably emplaced during exceptional flood events involving either hyper-concentrated flows or dilute debris flows, with velocities in the order of 2.2 m/s. Isolated ridges of boulders and cobbles are perched on the upper parts of lateral accretion surfaces in mixed sandy-gravelly fluvial intervals. These boulder berms developed down stream from channel bends or bedrock constrictions in response to flow expansion during flash floods, with estimated peak discharge of about 1.4 m/s. Associated sandstones on lateral accretion surfaces show evidence of deposition under both upper and lower flow conditions. Similar boulder and cobble berms of this type are known from Modern ephemeral and highly seasonal fluvial systems in a wide range of climatic settings, and are a clear indication that highly variable