

Sedimentary character of braided & anastomosing fluvial systems, Iceland

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Braided and anastomosing fluvial channel networks are widespread on the topographically unconfined pro-glacial outwash plains (sandur) of Iceland. These sand-dominated systems exhibit a variety of channel forms ranging from single, moderate-sinuosity channels that are entrenched below the regional sandur surface, through braided channel networks in which flow is diverted around compound braid bars, to anastomosing, simultaneously-occupied channels that diverge to occupy distinct and separate parts of the outwash plain before re-converging further downstream. Anastomosing channel patterns on the distal parts of Skeidararsandur (southern Iceland) are especially unusual as many of the streams exhibit downstream increases in discharge where they are fed from a shallow ground water table. Furthermore, these systems flow around and interact with aeolian dune and sandsheet complexes which are themselves undergoing active construction.

This project is investigating the sedimentary character of these complex fluvial systems and is seeking to determine how downstream changes in fluvial style are reflected in associated changes in preserved sedimentary expression. Ongoing detailed analysis has involved the construction of over 50 sedimentary logs from various sandur across Iceland, the assembly of many kilometres of architectural panels, textural analyses of clast fabrics, and the development of a series of detailed 3D semi-quantitative facies models that depict the arrangement of fluvial architectural elements on a range of scales.

