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The Planform Mobility of River Channel Confluences: Insights from Analysis of Remotely Sensed Imagery

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Abstract

River channel confluences are widely acknowledged as important geomorphological nodes that control the downstream routing of water and sediment, and which are locations for the preservation of thick fluvial deposits overlying a basal scour. Despite their importance, there has been little study of the stratigraphic characteristics of river junctions, or the role of confluence morphodynamics in influencing stratigraphic character and preservation potential. As a result, although it is known that confluences can migrate through time, models of confluence geomorphology and sedimentology are usually presented from the perspective that the confluence remains at a fixed location. This is problematic for a number of reasons, not least of which is the continuing debate over whether it is possible to discriminate between scour that has been generated by autocyclic processes (such as confluence scour) and that driven by allocyclic controls (such as sea-level change). This paper investigates the spatial mobility of river confluences by using the 40-year record of Landsat Imagery to elucidate the styles, rates of change and areal extent over which large river confluence scours

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