



Dating fluvial archives of the Riverine Plain, Southeastern Australia

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The Riverine Plain of Southeastern Australia is characterized by a multiplicity of relict river channels. Compared to the modern drainage system the most prominent of those distinct features are defined by large bankfull channel widths, large meander wavelengths and coarse sediment loads. Such morphological differences provide evidence for regimes of higher discharge, stemming from significant changes in runoff volumes, flood-frequency regimes and sediment supply. An existing geochronology for some of these channels is based on multi-grain thermoluminescence (Murrumbidgee River; Page et al., 1996) or radio-carbon dating (Goulburn River; Bowler, 1978) and indicates enhanced fluvial activity between 30 to 13 ka. The absence of exact Last Glacial Maximum (LGM, 21 ± 3 ka) ages of the Murrumbidgee palaeochannels was interpreted to indicate decreased fluvial activity during the peak of the LGM but was not inferred for the nearby Goulburn River.

Recent developments in optical dating, especially measurements of individual grains of quartz, allow for an examination of these previous findings. Key sites along the Murrumbidgee and Goulburn Rivers have been revisited and new sites of the adjacent Murray River have been investigated. A revised, high-resolution geochronology based on single-grain optically stimulated luminescence dating is used to examine the precise occurrence of those massive channels and their implications for the Southern Hemisphere LGM.

References:

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