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Eccentricity forcing of Saharan climate drives fluvial strath terrace formation in the High Atlas

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River strath terraces reflect changes in lateral and vertical erosion rates within mountain valleys related to changes in the sediment to water discharge ratio. In contrast to the formation of terraces in high latitude glaciated catchments, little is known about the timing and mechanisms of river valley aggradation and incision in response to climate in low latitude, non-glaciated arid regions. To investigate the timing of river strath terrace formation in North-West Africa, we developed and applied a new approach to OSL dose rate correction of gravels. We sampled terraces in the M'Goun catchment crossing the thrust front and a thrust-sheet-top basin of the south-central High Atlas in Morocco, totalling 23 dated samples. Strath surfaces are elevated 10 to 40 m above the modern river plain, depending on local valley and bedrock configuration, and are overlain by 2 to 10 m of fluvial conglomerates. Burial ages of conglomerates in the first strath terrace level span from 180 to 60 ka, with widespread abandonment and incision post 60 ka throughout the catchment. This timing coincides with an eccentricity-driven decrease in African summer insolation and a decrease in the fluvial signature of Saharan dust recorded in an offshore Atlantic sediment core. We propose enhanced precipitation from the African summer monsoon during high insolation periods led to increased sediment yield and aggradation in the southern High Atlas, whilst low insolation and dry periods led to sediment-starved incision. To our knowledge, the M'Goun river terrace record is the most detailed record of long-term landscape evolution in response to climate fluctuations in northwest Africa to date.