

# **Reconstructing Late Quaternary Palaeo-environmental change from the dryland landscape of the Kachchh Mainland, western India: Revisiting the optical chronology**

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The Kachchh Mainland of western India, situated in a seismically active intraplate region with a considerable Quaternary landscape, provides an opportunity to reconstruct the roles of climate and tectonics. Employing geomorphology, detailed sedimentology supported by geochemistry and optical dating, we integrate the fluvial to fluvio-marine and aeoline records to evaluate the potential of dryland environments in archiving the palaeo-events. We revisit the available optical dates with advancements in optical dating methods and statistical solutions. The climate reconstructions suggest that the fluvial systems have responded to the variations in monsoonal strength through widespread aggradation during the later part of the MIS-3. Following this, a relative weakening of monsoon and onset of aridity is observed between latter part of last glacial maxima. The monsoonal conditions again strengthened during the Early Holocene period, which facilitated a regional relative sea-level rise during the Middle Holocene period. Following this, the landscape witnessed downcutting/incision in response to the relative sea-level fall to the present level in post 3 ka period. The advancements in the assessment of the optical dates, re-illuminates the geological history of Kachchh Mainland and processes acting therein during the Late Quaternary period.