Title:	Multi-proxy evidence for an arid shift in the climate and vegetation of the Banni grasslands of western India during the mid- to late-Holocene
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Abstract:	Tropical semi-arid grasslands are a widespread and ecologically and economically important terrestrial biome. Here, we use paleoecology to understand woodland–grassland transitions across the mid- to late-Holocene period in the Banni grassland, western India. Multi proxy analyses involving palynology, phytoliths and elemental geochemistry were carried out on two sediment cores retrieved from wetlands (Chachi and Luna), to understand temporal fluctuations in vegetation, moisture availability and other environmental parameters. Based on the results, the Chachi core was divided into two major climatic phases. Phase 1 (4600–2500 cal. yr BP) was characterised by high precipitation and abundance of pollen types and phytolith morphotypes that indicate the presence of woody savanna, and mesic herbaceous taxa. Phase 2 (2500 cal. yr BP to the present) was characterised by lower precipitation, lower abundance of mesic taxa and an increase in grass phytolith abundance. However, the period from ~1000 cal. yr BP to the present was characterised by the increased abundance of leguminous taxa, dryland herbs/shrubs and a decline in grass phytolith abundance. The Luna core (~1000 cal. yr BP to the present) also showed results matching with the Chachi core for this latter period. Overall, moisture availability in the ecosystem appears to have declined since 4600 cal. yr BP, and the vegetation has responded to this. Although the balance between tree, shrub and grass elements has fluctuated, overall, the region has remained as an open ‘grass and shrub savanna’ with sparse woody vegetation throughout this period. Our study provides insights into the vegetation dynamics and environmental settings in a poorly understood tropical arid-grassland ecosystem from Asia during the mid-late-Holocene.
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