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Title:	Vegetational responses to monsoon variability during Late Holocene: Inferences based on carbon isotope and pollen record from the sedimentary sequence in Dzukou valley, NE India
Authors:	Bhattacharya, S. (/jspui/browse?type=author&value=Bhattacharya%2C+S.) Ambili, Anoop (/jspui/browse?type=author&value=Ambili%2C+Anoop)
Keywords:	Biomarkers Carbon isotope Late Holocene Monsoon NE India Pollens
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Abstract:	The study aims to identify regional vegetational changes during the late Holocene from the Dzukou valley in north-eastern (NE) India and the potential relationship of these vegetation dynamics with climatic shifts. The investigations utilize a combination of δ13Corg of organic matter, lipid biomarker (n-alkane) as well as pollen data derived from ~1.4 m sedimentary profile spanning the last ~3150 cal BP. The δ13Corg values during late Holocene range from −29.1‰ to −27.7‰ suggesting that organic carbon was derived exclusively from C3 vegetation. The profile is characterized by a homologous series of n-alkanes ranging in chain length from n-C18 to n-C35 with maxima at n-C29. The generated proxy data reveal three phases of climatic and vegetation shifts with the first phase from ~3150 cal BP to ~2300 cal BP being characterised by relatively high δ13Corg values and occupied by Pine-Oak forest indicating a comparatively dry climatic conditions. Subsequently, the second phase from ~2300 cal BP to ~1000 cal BP shows an increase in arboreal pollen (tree elements) and gradually decreasing trend of δ13Corg with a total shift of ~1.4‰ suggesting moist climatic conditions. During the third phase from ~1000 cal BP onwards, the precipitation declined till date as suggested by increasing trend in δ13Corg values and good recovery of Pinus-Oak forest pollens. This study provides significant insights into the use of δ13Corg and biomarkers along with pollen data to understand the influence of fluctuating rainfall (in a high rainfall zone) in altering the floristic composition within a region. Thus, the study has provided ground for further investigations to address issues related to biodiversity loss, extent of endemism in high rainfall zones dominated by single types (C3 and/or C4) of vegetation
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