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# Late Holocene aridity over the Indian subcontinent-Myths against reality

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The agricultural output, industrial development and electric production required to supply the basic needs of dense populations across Indian subcontinent are dependent on the precipitation during Indian summer monsoon (ISM, June-September) and winter monsoon (October-December). Understanding the correlation between forcing factors and monsoonal precipitation is a fundamental challenge because variability, intensity and duration of monsoon are governed by both natural and human induced variables. Interestingly, instrumental records exhibit that decrease in ISM precipitation over central part of the Indian subcontinent is inversely related to increase in NEM precipitation over southern peninsular India the cause of which remains enigmatic due to absence of climate record from the later region. In NEM season (October to December), southern peninsular India receives dominant fraction ( 60The gradual lowering in the [U+F064]Dn-alkane value after last 3000 cal yr BP indicates intensification of NEM precipitation over southern peninsular India. The [U+F064]13Cn-alkane values of the same samples also suggest that increased cold season precipitation favored the expansion of C3 plants in the study site. Inter-comparison of Lake Ennamangalam dataset with published climate records shows a persistent anti-phase relationship between ISM and NEM precipitation since the last 3000 cal yr BP. We postulate that southward migration of Intertropical Convergence Zone (ITCZ) and subsequent higher frequency of El-Nino events in the Late Holocene were responsible for the strengthening of easterly winds which superimposing upon NE trade winds led heavy precipitation over southern peninsular India. However, southward movement of ITCZ reduces and increased El-Nino events reduced summer-time precipitation in Northern Hemisphere, and thus established an inverse relationship between two monsoonal systems. Our findings on precipitation-vegetation interaction are expected to improve water and crop management policies in southern peninsular India, especially when increasing El-Nino activity is predicted by numerous climate models under warmer climate. |End Text| @END$_A BSTRACT$@