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A 4 kyr stalagmite oxygen isotopic record of the past Indian Summer Monsoon in the Andaman Islands

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As oxygen isotopic composition (δ18O) of precipitation in the tropics has an amount dependence, past rainfall conditions could be reconstructed using carbonate archives such as speleothems, which preserve a record of paleo-monsoon rainfall variations. Two stalagmites from the Baratang cave in Andaman Islands have been investigated for their temporal variations in δ18O to reconstruct Indian Summer Monsoon during the last $\sim$4 kyr. During 1800-2000 cal yr BP, a strong reduction in the monsoon ($\sim$33% less than the present) is recorded, the wide-spread nature of which is confirmed by diverse proxy records from other areas influenced by the monsoon. Reduction in monsoon is also observed around 1500 and 400-800 cal yr BP. The strongest monsoon ($\sim$8 % higher than the present) was observed during 800-1200 cal yr BP (the Medieval Warm Period), and relatively arid conditions during the transition to the Little Ice Age. The monsoon remained almost unchanged during the recent $\sim$400 yrs, although there is an overall increasing trend observed after 1.8 ka BP. Reduced monsoon is correlatable with the decreasing trend of the total solar irradiance in the last $\sim$4 kyr.