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A Climate History of the Monsoon in Southern India 1730-2016

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The meteorological information contained within historical documents has repeatedly demonstrated its value to historical climatologists. This study utilises the abundance of English language documents created in India during the residence of the East India Company, and the subsequent colonial era, to reconstruct northeast monsoon rainfall variability in the present day state of Tamil Nadu, from 1730 to 2016. This reconstruction is achieved by translating historical data to a 5-point monsoon severity index and exploiting a significant 45-year overlap period to calibrate each index to representative rainfall thresholds. The calibration uses this crossover period to establish the percentile values which most accurately represent the instrumental threshold values; a modern reconstruction approach which remains sensitive to the local climate as well as the limitations of documentary data.

Preliminary results of a second reconstruction using the meteorological information contained within ships' logbooks for the same time period will also be available. Here, two well established statistical methods will be used, principal component regression (PCR) and composite plus scale (CPS), to reconstruct northeast monsoon rainfall variability. This second, independent reconstruction, allows for comparison with the first, and will form the basis of a multi-proxy reconstruction.

The results of the climate reconstruction(s) will be exceptionally valuable for improving the understanding of the remarkably under-studied Indian northeast monsoon and its variability. Furthermore, it will be a valuable tool for identifying years of drought, and will provide the basis for a further investigation into social responses to drought events in Southern India.