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Assessing the impacts of climate variability - a study of institutional archival data spanning 1700-1947 (British Colonial Period) pertaining to semi-arid tracts of peninsular India

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Climate disasters such as droughts and floods are becoming very important in 21st century India especially in the semi-arid tracts of rain-shadow regions of peninsular India – stretching from Maharashtra in the west to Tamil Nadu in the south. The role of climate variability in these climate disasters and the climate forcings working behind these needs a special attention. Here we present new data, pertaining to climate disasters, impacts and adaptive strategies, from a review of 60 volumes of archival institutional documents from the British Colonial Period pertaining to administration of districts of peninsular India. The documents span ~ 220 years (1729-1947 AD) and encompass the two phases of the British colonial period, the Company period (before 1858) and the Crown period (1858-1947) respectively. We found archival institutional documents to be excellent archives for reconstructing a chronology of climate disasters, studying the effects of these disasters and assessing the efficacy of adaptive strategies and policies at local scales, often at the level of districts (<30 kms). Vivid accounts describe impacts of climate disasters e.g crop failure, price hike, farmer migration, riot, starvation, epidemic diseases, death during droughts, and colossal destruction, migration and death due to heavy rainfall (and associated floods). Farmers being the most affected group. In 19th century famines due to droughts continued to occur every 5-10 years if the rainfall fell below 14% of the average annual rainfall, consistent with decadal and sub-decadal modes of rainfall variability. This data is comparable with the tree ring data found in this area. Climate variability is to some extent at par with ENSO events but land atmosphere interaction especially due to anthropogenic activities such as deforestation can be a major climate forcing that acted in this area. During the Crown period protective measures were very similar even though governance changed. But British government had to change their policies when sudden huge fall in rainfall occurred in 1876 and 1899 causing major famines (Great Famine 1876-1877, Indian Famine 1899-1900). Formation of Famine Codes and Famine Commissions (1880-1901) after these two major famines made situation better, changes were done in grass root level. We see no major famine caused by droughts in peninsular India after that.