

INDIAN MONSOON DERAILED BY A NORTH ATLANTIC WAVETRAIN

Indian summer monsoon rainfall is remarkably stable. The interannual variation in the seasonal mean rainfall is around 10%. During the period 1901 to 2015 there were 23 years when the summer monsoon rainfall was 10% below the long-term mean. Among these 23 drought years, 13 years can be linked to years when the sea surface temperature in the eastern equatorial Pacific was above normal. These are called El Niño years. The remaining 10 droughts are not linked to El Niño and hence many scientists have been wondering if there were any external trigger during these years. In a recent paper published in the journal SCIENCE, Pritam Borah (Grantham fellow), Prof. Venugopal (DCCC) and Prof. Sukhatme (DCCC) have shown that in these 10 years the north Atlantic Ocean was unusually cold,

and the circulation anomalies induced by the cold north Atlantic is associated with a decrease in rainfall over India during late August and early September. In El Niño years the major decrease in rainfall occurs in July. The authors of this paper were able to unearth the difference between two kinds of drought because they used daily rainfall data instead of the traditional approach that used monthly or seasonal mean rainfall.

Reference: Indian monsoon derailed by a North Atlantic wavetrain by P. J. Borah, V. Venugopal, J. Sukhatme, P. Muddebihal and B. N. Goswami, SCIENCE, 270,1335-1338,2020

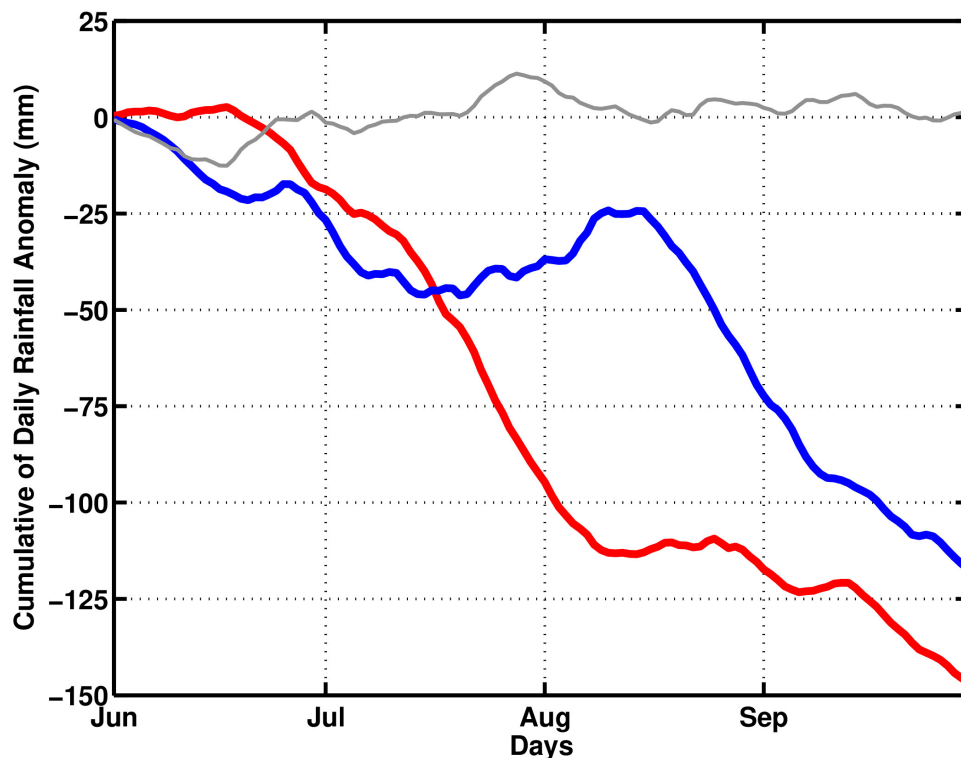


Fig: Cumulative departure of daily rainfall in Central India during droughts that occur in 13 El Niño years (Red line) and those that occur during 10 non-El Niño years (Blue line). The normal years is shown in gray.