

Abstract

The Indian summer monsoon is a dramatic multiscale, multiphysics event that has a profound impact on the food security of over a billion people. With stakes so high, there is immense interest in understanding the phenomenon, preferably leading to meaningful predictions. There is large body of work aimed at understanding the physics of Indian monsoon, but lately there has been interest in analyzing the phenomenon using purely data centric approaches. In this work, we study the spatio-temporal variabilities of the Indian summer monsoon rainfall, such as "active" and "break" spells, by proposing a Markov random field model for the rainfall data incorporating various spatio-temporal associations. We attempt to characterize spatio-temporal patterns of daily rainfall during the monsoon, and the evolution of such patterns within each season.