



## What drives foodborne diseases outbreak in Chandigarh?

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A brief overview of the literature highlights the existence of a relationship between foodborne diseases and climate. Many works focused on the role of heavy precipitations and/or temperatures in the modulation of these foodborne diseases. The prediction of the optimal climate conditions some time before outbreaks of diseases can be seen as a useful tool to help in the establishment of sanitation adaptation strategies. The main objective consists to explore linkages between several climate variables with *Entamoeba Histolytica* and *Giardia Lamblia* in the Chandigarh area.

This area displays a unimodal rainfall regime with 80% of total rainfall recorded during the summer monsoon period (June to September). This period is marked by seasonal reversing wind accompanied by corresponding changes in precipitation. Our analysis shows that the activity of this monsoon circulation is significantly link with the variability of parasites. In fact, an advection of humidity over the region contributes to an increase of rainfall which is also associated to an increase of parasites. A set of rainfall descriptors is computed from daily rainfall data collected for the period 1982-2010 from the Indian Meteorological Department (IAF). A positive covariability appears between total annual rainfall amount and the variability of *Entamoeba Histolytica* and *Giardia Lamblia*. Focusing on rainfall characteristics, we found also that the prevalence of *Entamoeba histolytica* is influenced by seasonal total rainfall amount, mean daily rainfall intensity and other characteristics of the temporal distribution of rainfall as the mean length of rainy spells.

Sea Surface Temperatures (SST) provides fundamental information on the global climate system and are an essential parameter in weather prediction. The analysis of the tropical SST show that years characterized by a higher number of parasites are often associated to negative anomalies over the eastern pacific combined with a horseshoe positive anomalies pattern in the other side of the ocean. The interannual variability of *Entamoeba Histolytica* and *Giardia Lamblia* is clearly associated to the global mode 'El Nino (la Nina) Southern Oscillation'.