# Climate Sensitivity of Dengue in Central Sri Lanka

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Dengue Fever (DF)/Dengue Hemorrhoid Fever (DHF) have become the major public health issue in Central Sri Lanka. Over the past 27 years morbidity, mortality and spatial distribution of disease have increased dramatically. In 2017, number of cases reached 14408 for1.4 million populations. Dengue outbreaks are primarily associated with climatic variables such as rainfall, temperature (max/min), and relative humidity.

This project aims to identify relationship between abundance and transmissivity of dengue vectors and climate variables.Climate, epidemiological and environment data were collected with the help of staff of the Provincial Directorate of Health. This also includes updates on dengue case data, other social and demographic factors. Quality control of data was carried out,including verifying reports with health officials. Statistical tests and exploratory data analysis were carried out to catch any errors in the data. Thereafter, time series and scatter plots were examined to identify overall relationships between dengue incidence and climate parameters. Statistical indices such as correlations, rank and partial correlations were used to establish variables that could show associations and for predictions in different seasons.

Some of our findings are :( a) the highest correlations arebetween rain, temperature and dengue incidence with 1-2 months lag. (b) There are two seasons of active dengue transmission, May to August with a peak in June/ July and October to January with a peak in November/ December with slight variations in other parts of the country. (c) These transmission peaks are associated with the seasonality of rains. (d) The epidemics are associated with temperature of around minimum temperature of $20^0$C and the maximum temperature of around $30^0$C.
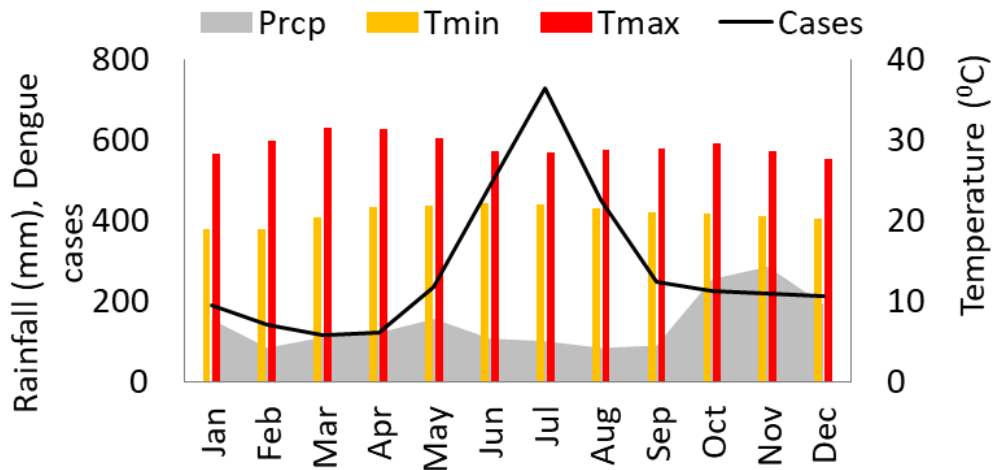


Figure 1: Average number of cases of Dengue by month for Kandy is shown as the black line. The monthly average Rainfall is shown as the gray shading; the monthly average Minimum temperature is shown as the yellow bar; the monthly average Maximum temperature is shown as the orange bar from 2008 to 2017.