Climate sensitive diseases such as malaria are affected with changes in climatic such as temperature/rainfall. Certain levels favor production, or compromise survival, of vectors and hence alter transmission.

Recently, the Tanzania Meteorological Agency (TMA) launched a new climate service which offers access to over 30 years of gridded rainfall and temperature data throughout the country. This is the only local climatic data which is well organized, complete and with high spatial resolution. There is a need of putting efforts to ensure the data is utilized by right people to guide decisions in health sector

This study analyze district level malaria data and the climate information to study malaria seasonality and demonstrate contribution of extreme climate events in the disease burden.

Understanding the patterns of climate extreme events can facilitate establishment of effective early warning systems for outbreaks, and strengthen the capacity of the system to forecast, respond and properly manage malaria outbreaks.

**Methodology and Findings**

**Data**
- 20-years data (1996-2015) of malaria OPD cases collected by the National Malaria Control Program (NMCP) through Health Management Information System (HMIS)

**Pilot Sites/Districts (Rain)**
- Babati - Northern (Bimodal)
- Dodoma - Central (Unimodal)
- Iringa - Southern Highlands (Unimodal)

**Analysis**
Conducted in the light of Oceanic Niño Index (ONI) to detect prominent patterns of malaria cases that might be associated with El Niño Southern Oscillation (El Niño and La Niña) (Fig. 1):

- Babati and Dodoma experienced malaria epidemic in 1998/1999, Iringa did not report outbreak that time

**Patterns of Malaria**

- 1997/1998 malaria was above the average throughout the year; a very strong El Niño was recorded
- 1999 malaria was high in the first five months of a year and increased sharply; a moderate La Niña was recorded
- 1998/1999 malaria was above the average throughout the year, in these years there was a moderate La Niña

**What do we see?**

- Malaria cases increased in times of moderate to very strong El Niño/La Niña index levels
- In some instance malaria cases increased during weak index
- Spatial variation of the effect was observed, districts are affected differently
- In all 3 districts, for all the times that index was abnormal, malaria cases went above the expected range, not only for the peak times but also other months (Fig. 2).
- Dodoma district recorded high cases in almost all occurrences of El Niño and La Niña.

**Conclusion**
This pilot analysis indicates that studying patterns of extreme weather events can be useful to inform the health system and initiate effective response to malaria epidemics. Full analysis will utilize the high quality climate products from the TMA.

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