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Oceanic influence on seasonal malaria outbreaks over Senegal and Sahel

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Beyond assessment and analysis of observed and simulated malaria parameters, this study is furthermore undertaken in the framework of predictability of malaria outbreaks in Senegal and remote regions in Sahel, which are found to take place two months after the rainy season. The predictors are the sea surface temperature anomalous patterns at different ocean basins mainly over the Pacific and Atlantic as they are related to changes in air temperature, humidity, rainfall and wind. A relationship between El Niño and anomalous malaria parameters is found. The malaria parameters are calculated with the Liverpool Malaria Model (LMM) using meteorological datasets from different reanalysis products. A hindcast of these parameters is performed using the Sea Surface temperature based Statistical Seasonal ForeCAST (S4CAST) model developed at UCM in order to predict malaria parameters some months in advance.
The results of this work will be useful for decision makers to better access to climate forecasts and application on malaria transmission risk.