Table S1. Results from the unadjusted negative binomial regression models with climatic variables of the same and the preceding month, in the health district of Mbour (January 2011- December 2014)

Parameter		Unadjusted model	
		Continuous	
		IRR (95%CI)	**P-value**
Average lst[a)]			
Lag 0	Low	Ref	
	Moderate	1.25 (1.04 – 1.72)	0.017
	High	1.02 (0.83 – 1.24)	0.860
	Very high	1.25 (1.00 – 1.55)	0.048
Lag 1	Low	Ref	
	Moderate	1.01 (0.84 – 1.22)	0.895
	High	0.70 (0.58 – 0.86)	< 0.001
	Very high	0.62 (0.49 – 0.77)	< 0.001
Mean LST_{Day} (°C)			
Lag 0	Low	Ref	
	Moderate	1.27 (1.06 – 1.52)	0.010
	High	1.54 (1.25 – 1.90)	< 0.001
	Very high	1.62 (1.29 – 2.03)	< 0.001
Lag 1	Low	Ref	
	Moderate	1.00 (0.83 – 1.21)	0.968
	High	1.11 (0.90 – 1.38)	0.323
	Very high	0.93 (0.74 – 1.18)	0.565
Mean LST_{Night} (°C)			
Lag 0	Low	Ref	
	Moderate	1.03 (0.88 – 1.21)	0.695
	High	0.73 (0.62 – 0.85)	< 0.001
	Very high	0.67 (0.57 – 0.79)	< 0.001
Lag 1	Low	Ref	
	Moderate	0.77 (0.66 – 0.90)	< 0.001
	High	0.76 (0.65 – 0.89)	< 0.001
	Very high	0.53 (0.45 – 0.62)	< 0.001
LST variability[b)]			
Lag 0	Low	Ref	
	Moderate	1.48 (1.25 – 1.75)	< 0.001
	High	1.95 (1.62 – 2.34)	< 0.001
	Very high	1.95 (1.59 – 2.40)	< 0.001
Lag 1	Low	Ref	
	Moderate	1.37 (1.16 – 1.62)	< 0.001
	High	1.57 (1.30 – 1.89)	< 0.001
	Very high	1.42 (1.16 – 1.75)	< 0.001
Mean cumulative rainfall (mm)			
Lag 0	Low	Ref	
	Moderate	1.18 (1.01 – 1.38)	0.035
	High	1.02 (0.85 – 1.23)	0.830
Lag 1	Low	Ref	
	Moderate	1.12 (0.96 – 1.31)	0.130
	High	1.21 (1.01 – 1.45)	0.037

IRR: Incidence-rate ratio; LST: Land surface temperature; a) Average of LST_{Day} and LST_{Night}; b) Difference LST_{Day} and $LST_{Night.}$ Categories: LST_{Day} - low (<27), moderate (27-32), high (32-36), very high (>=36). LST_{Night} - low (<18), moderate (18-19), high (19-21), very high (>=21).

LST-low (<24), moderate (24-26), high (26-28), very high (>=28). LST variability -low (<8), moderate (8-12), high (12-18), very high (>=18). Rainfall - low (<=12), moderate (13-56), high (>=57). The model also included health facility as fixed factors.

Table S2. Results from the adjusted negative binomial regression model with climatic variables of the same and preceding month, in the health district of Mbour (January 2011- December 2014).

		Adjusted model	
Parameter		**IRR (95%CI)**	***P-value***
Residual lag 1		1.04 (1.03 – 1.06)	< 0.001
Areas			
	Rural	Ref	
	Urban	1.53 (1.17 - 1.99)	0.002
Season			
	Hot dry season	Ref	
	Cold dry season	1.76 (1.61 - 1.92)	< 0.001
	Rainy season	1.04 (0.90 - 1.21)	0.551
Mean LST (°C)			
Lag 0	Low	Ref	
	Moderate	1.08 (0.96 - 1.21)	0.198
	High	1.08 (0.96 - 1.22)	0.206
	Very high	1.05 (0.91 - 1.21)	0.529
Lag 1	Low	Ref	
	Moderate	1.01 (0.91 - 1.13)	0.870
	High	0.82 (0.73 - 0.92)	< 0.001
	Very high	0.76 (0.66 - 0.87)	< 0.001
Mean cumulative rainfall (mm)			
Lag 0	Low	Ref	
	Moderate	1.20 (1.05 - 1.38)	0.009
	High	1.25 (1.08 - 1.44)	0.003
lag 1	Low	Ref	
	Moderate	1.07 (0.93 - 1.22)	0.368
	High	0.92 (0.80 - 1.06)	0.273
Annual trend			
	2011	Ref	
	2012	1.21 (1.10 – 1.34)	< 0.001
	2013	1.24 (1.12 – 1.37)	< 0.001
	2014	1.39 (1.26 – 1.53)	< 0.001

IRR: Incidence-rate ratio; LST: Land surface temperature. Rainfall - low (<=12), moderate (13-56), high (>=57) LST-low (<24), moderate (24-26), high (26-28), very high (>=28).

In this table, results for average mean temperature and mean monthly cumulative rainfall in the same month (lag 0) and the previous month (lag 1) are presented. The model also included health facility and type of setting as fixed factors and the lag1 Pearson residual as further covariate

Table S3. Results from the adjusted negative binomial regression model with climatic variables of the same and preceding month, in urban areas of district of Mbour (January 2011- December 2014).

Multivariate analysis			
Parameter		**IRR (95%CI)**	***P-value***
Season			
	Hot dry season	Ref	
	Cold dry season	1.81 (1.64 - 2.00)	< 0.001
	Rainy season	1.04 (0.88 - 1.24)	0.615
Mean LST (°C)			
Lag 0	Low	Ref	
	Moderate	1.05 (0.93 - 1.19)	0.437
	High	1.08 (0.95 - 1.23)	0.237
	Very high	1.03 (0.87 - 1.21)	0.714
Lag 1	Low	Ref	
	Moderate	0.98 (0.87 - 1.11)	0.777
	High	0.79 (0.70 - 0.89)	< 0.001
	Very high	0.73 (0.63 - 0.85)	< 0.001
Mean cumulative rainfall (mm)			
Lag 0	Low	Ref	
	Moderate	1.12 (0.96 - 1.32)	0.154
	High	1.31 (1.12 - 1.54)	< 0.001
lag 1	Low	Ref	
	Moderate	1.03 (0.87 - 1.21)	0.725
	High	0.98 (0.83 - 1.15)	0.789
Annual trend		1.00 (1.00 – 1.01)	0.073
	2011		
	2012	1.17 (1.04 – 1.30)	0.006
	2013	1.15 (1.03 – 1.29)	0.011
	2014	1.24 (1.11 – 1.38)	< 0.001

IRR: Incidence-rate ratio; LST: Land surface temperature. Rainfall - low (<=12), moderate (13-56), high (>=57) LST-low (<24), moderate (24-26), high (26-28), very high (>=28).
In this table, results for average mean temperature and mean monthly cumulative rainfall in the same month (lag 0) and the previous month (lag 1) in urban areas are presented. The model also included health facility as fixed factor.

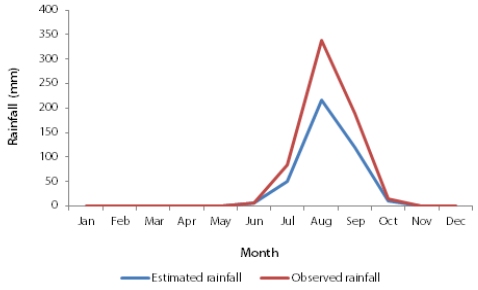
Table S4. Results from the adjusted negative binomial regression model with climatic variables of the same and preceding month, in rural areas of the health district of Mbour (January 2011- December 2014).

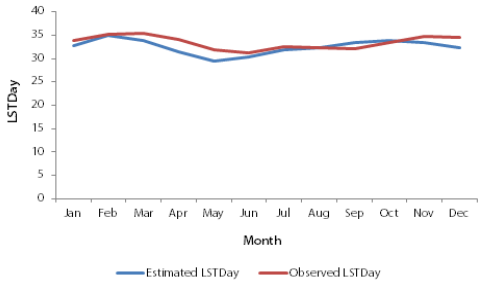
Multivariate analysis			
Parameter		**IRR (95%CI)**	***P-value***
Season			
	Hot dry season	Ref	
	Cold dry season	1.69 (1.41 - 2.02)	< 0.001
	Rainy season	1.12 (0.84 - 1.49)	0.439
Mean LST (°C)			
Lag 0	Low	Ref	
	Moderate	1.15 (0.91 - 1.46)	0.248
	High	1.08 (0.81 - 1.43)	0.610
	Very high	1.11 (0.82 - 1.51)	0.490
Lag 1	Low	Ref	
	Moderate	1.04 (0.81 - 1.34)	0.743
	High	0.93 (0.70 - 1.25)	0.660
	Very high	0.80 (0.58 - 1.10)	0.172
Mean cumulative rainfall (mm)			
Lag 0	Low	Ref	
	Moderate	1.30 (0.99 - 1.71)	0.056
	High	1.01 (0.74 - 1.37)	0.945
lag 1	Low	Ref	
	Moderate	1.08 (0.83 - 1.40)	0.549
	High	0.80 (0.60 - 1.07)	0.134
Annual trend			
	2011	Ref	
	2012	1.24 (0.98 – 1.55)	0.068
	2013	1.48 (1.19 – 1.85)	< 0.001
	2014	1.83 (1.48 – 2.26)	< 0.001

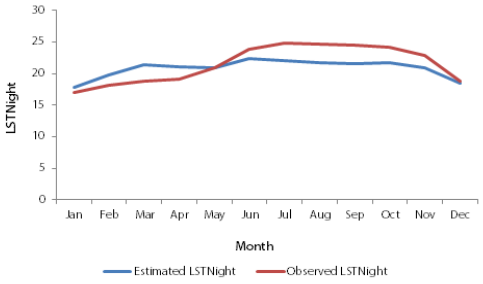
IRR: Incidence-rate ratio; LST: Land surface temperature. Rainfall - low (<=12), moderate (13-56), high (>=57) LST-low (<24), moderate (24-26), high (26-28), very high (>=28).

In this table, results for average mean temperature and mean monthly cumulative rainfall in the same month (lag 0) and the previous months (lag 1) in rural areas are presented. The model also included health facility as fixed factors.

Figure S1. Comparison of satellite remote sensing data of monthly temperatures and rainfall extracted at the health facility location closest to the meteorological station with measured data from this station


Rainfall (mm)
400
350
300
250
200
150
100
50
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Month
Estimated rainfall
Observed rainfall


LSTDay
40
35
30
25
20
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Month
Estimated LSTDay
Observed LSTDay


LSTNight
30
25
20
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Month
Estimated LSTNight
Observed LSTNight