

Figure S1: Scatterplots of the MFAI (mean number of *Ae. aegypti* females) against each of the explanatory variables. A smoothing (LOESS) curve was added in each panel.

Table S1: Comparison of AICs of models with variables and varying time lags

Formula: gam(Aaefem~offset(LNtraps)+s(variable), family=nb())

Model	Variable	Estimate	Standard Error	Chi.sq	p-value	AIC
Models with variable explanatory Temperature minimum						
Tmin	<i>Intercept</i>	-1.15	0.08		<0.001	1857
	<i>s (Tmin)</i>	Smooth		151.5	<0.001	
Tmin1	<i>Intercept</i>	-1.23	0.08		<0.001	1832
	<i>s (Tmin_{t-1})</i>	Smooth		217.9	<0.001	
Tmin2	<i>Intercept</i>	-1.29	0.07		<0.001	1814
	<i>s (Tmin_{t-2})</i>	Smooth		275.3	<0.001	
Tmin3	<i>Intercept</i>	-1.34	0.07		<0.001	1798
	<i>s (Tmin_{t-3})</i>	Smooth		323.5	<0.001	
Tmin4	<i>Intercept</i>	-1.42	0.06		<0.001	1764
	<i>s (Tmin_{t-4})</i>	Smooth		463.4	<0.001	
Models with variable explanatory Temperature mean						
Tmean	<i>Intercept</i>	-1.07	0.09		<0.001	1879
	<i>s (Tmean)</i>	Smooth		106	<0.001	
Tmean1	<i>Intercept</i>	-1.16	0.08		<0.001	1854
	<i>s (Tmean_{t-1})</i>	Smooth		162.7	<0.001	
Tmean2	<i>Intercept</i>	-1.23	0.08		<0.001	1835
	<i>s (Tmean_{t-2})</i>	Smooth		218.4	<0.001	
Tmean3	<i>Intercept</i>	-1.30	0.07		<0.001	1810
	<i>s (Tmean_{t-3})</i>	Smooth		286.2	<0.001	
Tmean4	<i>Intercept</i>	-1.40	0.06		<0.001	1769
	<i>s (Tmean_{t-4})</i>	Smooth		443.2	<0.001	

Models with variable explanatory Temperature maximum						
Tmax	<i>Intercept</i>	-0.87	0.10		<0.001	1916
	<i>s (Tmax)</i>	Smooth		26.73	<0.001	
Tmax1	<i>Intercept</i>	-0.93	0.09		<0.001	1906
	<i>s (Tmax_{t-1})</i>	Smooth		43.18	<0.001	
Tmax2	<i>Intercept</i>	-0.96	0.09		<0.001	1900
	<i>s (Tmax_{t-2})</i>	Smooth		54.1	<0.001	
Tmax3	<i>Intercept</i>	-1.04	0.09		<0.001	1884
	<i>s (Tmax_{t-3})</i>	Smooth		85.12	<0.001	
Tmax4	<i>Intercept</i>	-1.14	0.08		<0.001	1860
	<i>s (Tmax_{t-4})</i>	Smooth		140	<0.001	
Models with variable explanatory humidity						
Hum	<i>Intercept</i>	-0.88	0.10		<0.001	1923
	<i>s (Hum)</i>	Smooth		25.56	<0.001	
Hum1	<i>Intercept</i>	-0.91	0.10		<0.001	1916
	<i>s (Hum_{t-1})</i>	Smooth		36.32	<0.001	
Hum2	<i>Intercept</i>	-0.95	0.09		<0.001	1908
	<i>s (Hum_{t-2})</i>	Smooth		51.05	<0.001	
Hum3	<i>Intercept</i>	-0.980	0.09		<0.001	1901
	<i>s (Hum_{t-3})</i>	Smooth		65.14	<0.001	
Hum4	<i>Intercept</i>	-0.99	0.09		<0.001	1898
	<i>s (Hum_{t-4})</i>	Smooth		70.67	<0.001	
Models with variable explanatory Rain						
Rain	<i>Intercept</i>	-0.77	0.11		<0.001	1937
	<i>s (Rain)</i>	Smooth		2.14	0.145	
Rain1	<i>Intercept</i>	-0.78	0.11		<0.001	1934
	<i>s (Rain_{t-1})</i>	Smooth		6.21	0.0162	

Rain2	<i>Intercept</i>	-0.77	0.11		<0.001	1937
	<i>s (Rain_{t-2})</i>	Smooth		4.54	0.135	
Rain3	<i>Intercept</i>	-0.77	0.11		<0.001	1938
	<i>s (Rain_{t-3})</i>	Smooth		3.25	0.246	
Rain4	<i>Intercept</i>	-0.76	0.11		<0.001	1938
	<i>s (Rain_{t-4})</i>	Smooth		2.12	0.396	

Table S2: Comparison of discarded models

Model	AIC
glm(Aaefem ~ offset(INtraps) + Tmin _{t-4} + Hum _{t-4} , family = poisson)	17337
glm(Aaefem ~ offset(INtraps) + Tmin _{t-4} + MFAI _{t-1} , family = poisson)	11180
glm.nb(Aaefem ~ offset(INtraps) + Tmin _{t-4} + MFAI _{t-1})	1737
glm.nb(Aaefem ~ offset(INtraps) + Tmin _{t-4} + Hum _{t-4})	1763
gam(Aaefem~offset(INtraps)+s(Tmin _{t-4})+s(Hum _{t-4}), family=poisson)	10159
gam(Aaefem~offset(INtraps)+s(Tmin _{t-4})+s(MFAI _{t-1}), family=poisson)	4411
gam(Aaefem~offset(INtraps)+s(Tmin _{t-4} , Hum _{t-4}), family=nb())	1736
gam(Aaefem~offset(INtraps)+s(Tmin _{t-4} , MFAI _{t-1}), family=nb())	1692

Table S3: Comparison of AICs of logistic regression models with MFAI as predictor variable in varying time lags

Formula: $\text{glm}(\text{pDenA} \sim \text{MFAI}, \text{family}=\text{binomial})$

Model	AIC	P-value
MFAI	146.7	<0.001
MFAI _{t-1}	147.1	<0.001
MFAI _{t-2}	145.7	<0.001
MFAI _{t-3}	137.9	<0.001
MFAI _{t-4}	141.4	<0.001

Abbreviations: pDenA- presence of dengue case, MFAI - mean female Aedes Index

Table S4: Descriptive statistics by year.

Year		Rain	Humidity	Tmean	Tmax	Tmin	MFAI	<i>Aedes aegypti</i> (Female)
2012*	Min	0	62.3	15.7	22.2	10.7	0.03	16
	Mean	3.5	70.1	22.7	29.3	17.9	0.27	184.7
	Max	10.8	80.6	27	34.1	21.4	0.62	407
	Sd	3.5	5.9	2.9	3.4	2.5	0.22	149
2013	Min	0	62.4	8.9	14.8	4.9	0	0
	Mean	2.6	76.2	19.3	25.2	15.2	0.32	226.8
	Max	23	89.3	26.9	34.3	22.5	1.2	891
	Sd	4.8	6.3	4.4	4.9	4.1	0.36	258
2014	Min	0	61.4	12.5	14.2	8.2	0.01	5
	Mean	4.6	77.9	20.4	24.9	17.1	0.4	290.2
	Max	18.9	91.1	30.7	38	24.5	1.2	909
	Sd	4.4	6.3	4.5	5.2	4.2	0.35	254
2015	Min	0	68	11.8	14.1	9.5	0.07	51
	Mean	3.8	77.3	21.7	25.3	18.6	1	722
	Max	15.7	88.5	26.8	31.2	23.8	1.7	1252
	Sd	3.5	4.5	4	5.1	3.4	0.48	345
2016*	Min	0.04	71.2	25.4	30.5	21.7	0.8	674
	Mean	0.25	73.4	25.8	31.7	22	1.1	950.5
	Max	0.46	75.5	26.2	32.9	22.2	1.5	1227
	Sd	0.29	3	0.6	1.7	0.37	0.4	391

* The year 2012 includes only data from September onwards, and year 2016 includes only data until January.

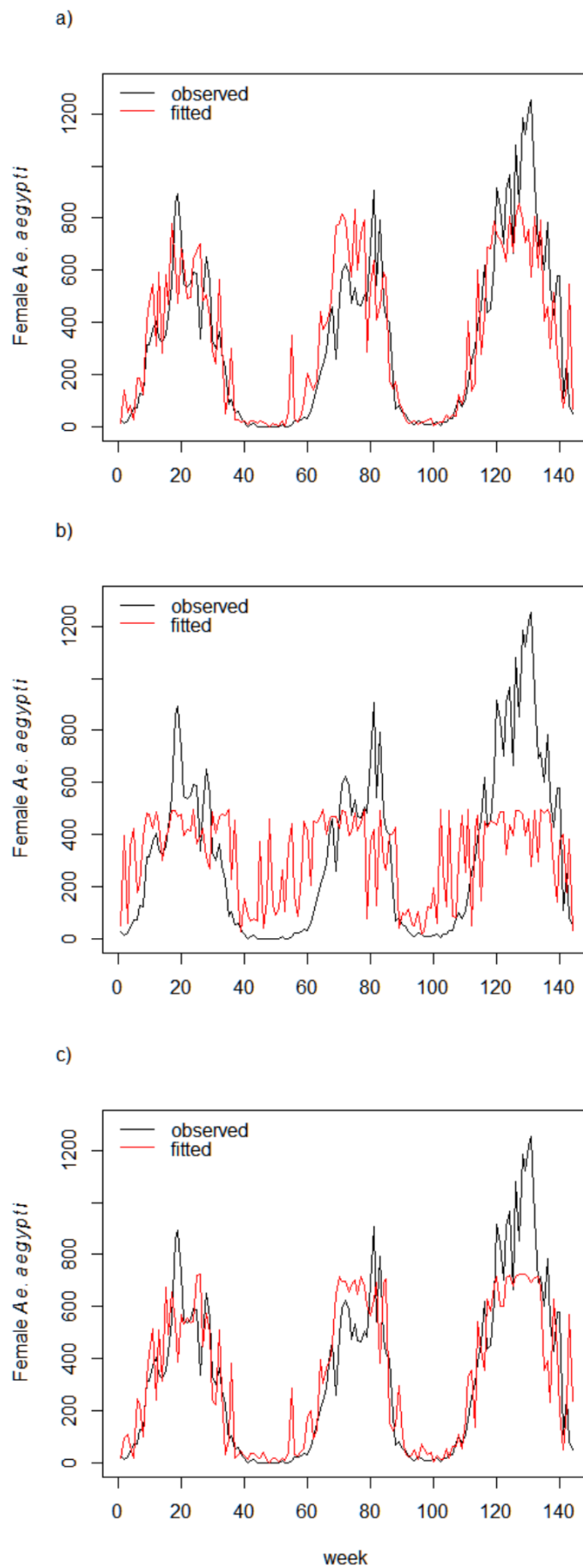


Figure S2: Observed and fitted by model: **a** gam ($A_{efem} \sim \text{offset}(IN_{traps}) + s(T_{min4}) + s(hum4)$, family=nb ()), **b** gam ($A_{efem} \sim \text{offset}(IN_{traps}) + s(hum4)$, family=nb ()), **c** gam ($A_{efem} \sim \text{offset}(IN_{traps}) + s(T_{min4})$, family=nb ())