Supplementary Materials for

**Title: Climate factors and the East Asian summer monsoon may drive large outbreaks of dengue in China**

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**Fig S1.** Partialeffects on the dengue prevalence (log scale) based on the monthly data from 1980 to 2016 using the generalized additive model (GAM) in whole China. A. The effect of the time trend month. B. The effect of the monthly average temperature (℃) in current month (time lag=0). C. The effect of the previous monthly total precipitation (mm) (time lag=1). D. The effect of East Asian summer monsoon index (EASM index) in current month (time lag=0). Blue lines indicate the estimated mean value and the red dash lines indicate the 95% confidence intervals.

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**Fig S2.** Partialeffects on the dengue prevalence (log scale) based on the monthly data from 1980 to 2016 using the generalized additive model (GAM) in southern China. A. The effect of the time trend month. B. The effect of the monthly average temperature (℃) in current month (time lag=0). C. The effect of the previous monthly total precipitation (mm) (time lag=1). D. The effect of East Asian summer monsoon index (EASM index) in current month (time lag=0). Blue lines indicate the estimated mean value and the red dash lines indicate the 95% confidence intervals.



**Table S1.** Model selection results for dengue prevalence

|  |  |  |  |
| --- | --- | --- | --- |
| Model type and formula | GCV | AIC | Deviance Explained (%) |
| \* | 0.357 | 27153.8 | 55.6 |
| \* | 0.358 | 27178.0 | 55.6 |
| \* | 0.358 | 27186.4 | 55.5 |
| \* | 0.360 | 27267.1 | 55.3 |
| \* | 0.360 | 27274.5 | 55.3 |
| \* | 0.360 | 27276.4 | 55.2 |
| \*\* | 0.360 | 27293.3 | 55.2 |
|  | 0.360 | 27299.8 | 55.2 |
|  | 0.361 | 27304.7 | 55.2 |
|  | 0.361 | 27311.9 | 55.2 |
|  | 0.361 | 27312.8 | 55.1 |
|  | 0.361 | 27313.6 | 55.1 |
|  | 0.361 | 27315.6 | 55.1 |
|  | 0.362 | 27351.5 | 55.0 |
|  | 0.362 | 27356.0 | 55.0 |
|  | 0.363 | 27391.0 | 54.9 |
|  | 0.363 | 27393.0 | 54.9 |
|  | 0.363 | 27420.0 | 54.8 |
|  | 0.363 | 27421.7 | 54.8 |
|  | 0.363 | 27424.4 | 54.8 |
|  | 0.364 | 27426.1 | 54.8 |
|  | 0.364 | 27432.4 | 54.8 |
|  | 0.364 | 27433.6 | 54.8 |
|  | 0.364 | 27455.4 | 54.7 |
|  | 0.364 | 27455.8 | 54.7 |
|  | 0.364 | 27464.1 | 54.7 |
|  | 0.364 | 27465.0 | 54.7 |

The models were selected based on minimizing the generalized cross validation (GCV) and AIC criteria. The top first seven model (\*) has the smallest GCV and AIC. All terms are statistically significant at p < 0.05. The final model (\*\*) were selected not only based on GCV, AIC and p value, but also according to the previously published ecological theory.