Reviewer's report

Title: Time Series Analysis of Dengue Fever and Weather in Guangzhou, China

Version: 3 Date: 13 May 2009

Reviewer: Xiao-Nong Zhou

Reviewer's report:

General Comments
The authors have made great improvement for the quality and data presentation of the manuscript, with a focus on the correlation between monthly dengue fever cases and weather variables in Guangzhou. The research approach has been applied in the new version of the manuscript by using the time series Poission regression analysis in two ways, firstly correlation analysis between dengue cases and each variable among 5 weather variables was performed, Secondly the multivariable models on autocorrelation between monthly cases and 5 weather variables were established either in an over–dispersion term (Model1) and a first-order autoregressive structure (Model 2). Due to outbreaks of dengue fever affected by natural factors (weather variables) in China has not been reported although similar data presentation has been reported in other countries, I personally believe this revised manuscript could be published in the journal after amendments.

Specific Comments:
1. Title: it is suggested the title is revised as “Correlation between number of dengue fever cases and weather variables in Guangzhou, China”, since the concept of “dengue fever and weather” in the original title is not clear.
2. Introduction:
   2.1 The main part of the introduction should be focused on (1) the main problem in Guangzhou is the outbreaks of dengue frequently occurred during the past and the period of 2001-2006; (2) list the potential natural factor attributed into outbreaks of dengue in Guangzhou; (3) there are no any research on the effect of natural factors, particularly weather variables, on dengue prevalence/outbreaks, which will help us to understand the epidemiological patters of the dengue outbreaks, and provide the valuable indicators on prediction of outbreaks in the future.
   2.2 The objective of the study should changed into “In the current study, we used the time-series regression approach to examine the effect of weather variability on the incidence of dengue fever in the subtropical city of Guangzhou for the period of 2001-2006.”
   2.3 Introduction: Change “the genus Flavivirus” into “the genus Flavivirus” (italitic)
3. Methods:
   3.1 The first two paragraphs are not very well described or suitable to be put into
this part. In this part, it should be focused on the following orders: (1) Data validation and collection (monthly notified dengue fever cases, monthly weather data including 5 variables, general weather condition); (2) Spearman rank correlation analysis, including the variables and equations; (3) Establishment of multi-correlation models, including the model equations, model evaluation indicators; (4) Softwares

3.2 In the model of \( \ln(Y) = 0 + 1X_1 + 2X_2 + \ldots \) should changed into \( \ln(Y) = 0 + 1X_1 + 2X_2 + 3X_3 + 4X_4 + 5X_5 \). Since only 5 weather variables were used in the manuscript, and each \( X \) need to clearly mentioned in the equation explanations. The same as in the model 2.

3.3 The following paragraph “Guangzhou is the capital city of Guangdong Province in southern China. It is located at 112°57'E to 114°3'E and 22°26'N to 23°56'N (Figure 1). The population in 2006 was about 10 million in the metropolitan area. Guangzhou has a humid subtropical climate influenced by the Asian monsoon. Summers are wet with high temperatures and a high humidity index. Winters are mild, dry and sunny. The annual mean temperature ranges from 18 to 25°C. The annual rainfall is typically between 1,500 and 2,000 mm.” should move into results.

3.4 The following paragraph “As GEE are not a full likelihood-modeling method, the Akaike information criterion (AIC) cannot be used for model selection. We therefore computed the quasi-likelihood based information criterion (QICu) developed by Pan [10] to select the most parsimonious model.” should move into discussion.

4. Results

4.1 The three parts of results should be described: (1) general condition of dengue outbreaks and general weather condition during the 2001-2006, in Guangzhou; (2) Spearman rank correlation analysis; (3) Multi-correlation models.

4.2 Table 1: Replace title “Spearman correlation coefficients for the relation between dengue incidence (2001-06) and weather variables in Guangzhou, China (* p<0.05)” by “Coefficients of Spearman correlation analysis between dengue fever cases (2001-2006) and weather variables in Guangzhou, China (* p<0.05)”

4.3 Table 2: Replace title “Time series Poisson regression of the monthly dengue incidence (2001-2006) on the weather factors in Guangzhou, China” by “Time-series Poisson regression of the monthly dengue cases (2001-2006) on the weather factors in Guangzhou, China”

5. Discussion:

5.1 There are following points were missed in the discussion. (1) The methodology of the analysis is suitable for the study objective, and why the parameters selected to be used in analysis; (2) why some of the conflict results occurred Spearman correlation analysis, and multi-correlation models.

5.2 The effects of weather variables on prevalence of dengue in the discussion part should be minimized only on those entered into model 2, while other weather variables do not need to be included in the discussion.
**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests