

# Spatial Generalized Linear Mixed Models with Application to Prevalence Mapping

空间广义线性混合模型及其在预测流行病中的应用

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# Outline

## ① 引言

- 研究意义
- 文献综述
- 主要内容

## ② 模型 (SGLMM)

- 模型结构
- 计算方法
- 数据分析

## ③ 结论与展望

# 例例例

## 例 例 例

- ① radionuclide concentrations on Rongelap Island
- ② childhood malaria in the gambia
- ③ Loa loa prevalence in Cameroon and surrounding areas

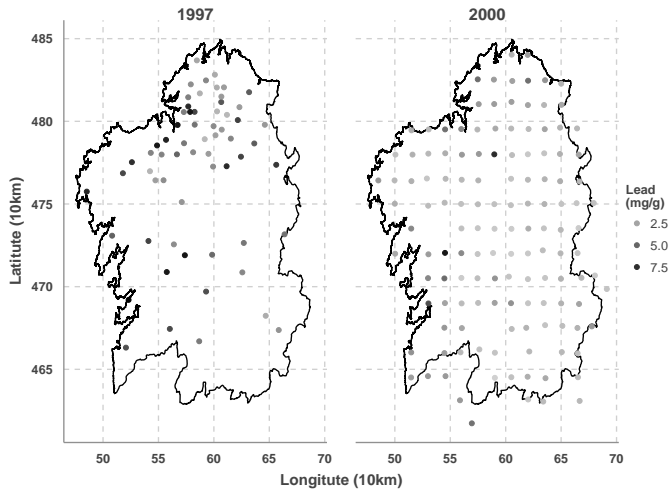
# Introduction

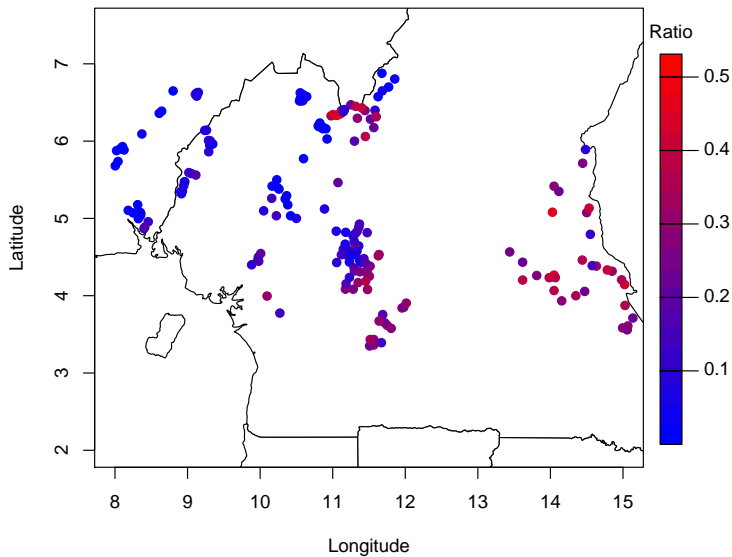
Diggle *et al.* (2002)

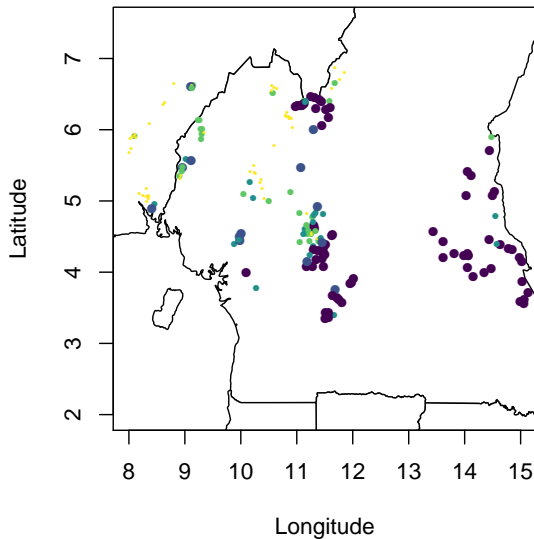
- First item in the list
- Second item
- and so on
  - First item in the list
  - Second item
  - and so on
- the effects of child level covariates (age and bed net use)
- village level covariates (the primary health care and greenness of surrounding vegetation)
- separate components for residual spatial
- non-spatial extrabinomial variation

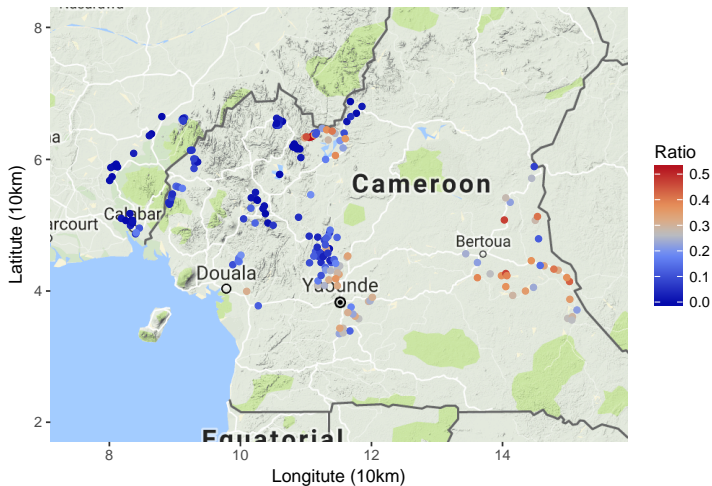
$\mathbb{R}^n$

$$\log\{p_{ij}/(1 - p_{ij})\} = \alpha + \beta'z_{ij} + U_i + S(x_i)$$











*Thank You*

# References I

Diggle, Peter, Moyeed, Rana, Rowlingson, Barry, & Thomson, Madeleine. 2002. Childhood malaria in the Gambia: a case-study in model-based geostatistics. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, **51**(4), 493–506.

# Softwares and Tools




图: GNU R INLA Stan PyMC3


# Projects




Bioconductor  
OPEN SOURCE SOFTWARE FOR BIOINFORMATICS

# Ack

 Cloud2016 @Github

 Xiangyun @Overleaf

 arXiv