

Bayesian spatio-temporal models using R-INLA

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Abstract

Considering the spatial and temporal component of diseases can identify areas with low or high risk as well as capture the temporal variation of risk. Bayesian methods are useful due to the ease of specifying additional information, including temporal or spatial structure, through prior distributions. Here, we examine a range of different Bayesian spatio-temporal models available using R-INLA (Integrated Nested Laplace Approximation). The application of these models will be illustrated through a case study on dengue cases in Makassar, Indonesia. Model performance will be compared using goodness-of-fit measures, such as Watanabe-Akaike Information Criterion (WAIC). The computational speed of R-INLA makes it an attractive option for Bayesian spatio-temporal modelling.

Keywords: Bayesian, R-INLA, spatio-temporal models.