A Bayesian spatio-temporal analysis of forest fires in Portugal

Giovani L. Silva*
CEAUL and IST, Technical University of Lisbon, Lisbon, Portugal
gsilva@math.ist.utl.pt

In the last decade, forest fires have become a natural disaster in Portugal, causing great forest devastation, leading to both economic and environmental losses and putting at risk populations and the livelihoods of the forest itself. In this work, we present Bayesian hierarchical models to analyze spatio-temporal fire data on the proportion of burned area in Portugal, by municipalities and over three decades. Mixture of distributions was employed to model jointly the proportion of area burned and the excess of no burned area for early years. For getting estimates of the model parameters, we used Monte Carlo Markov chain methods.

Key Words: Forest fires data, spatio-temporal modelling, Bayesian analysis.