A Space-Time Model for Wild Fires in Portugal

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Brief abstract (if necessary, include references within the abstract

Forest fires severity has increased in Portugal in the last decades. Forest ecosystem managers and policy-makers thus face the challenge of developing effective fire prevention policies. Geographical information systems allied to convenient statistical methods prove to be quite helpful for this.

We propose to extend the work of (Russel-Smith, Yates, Whitehead, Smith, Craig, Allan, Thackway, Frakes, Cridland, Meyer, Malcom, ,2007, IJWF, volume16: pp361-377 and Amaral-Turkman, Turkman, Le Page, Pereira, 2010, EES, volume 17 on Australian wild fire data, in order to model the risk of fire in Portugal, by joint modeling the probability of ignition and fire sizes through an hierarchical space-time model, in a Bayesian framework. Despite their methodology has been used
for data measured over small areas defined by a regular grid, in our case we have to work with small areas with borders defined administratively, parish.

The data set we are using comprises data on the annual percentage of land burned over each parish as well as annual values of several explanatory variables, from weather conditions, to topography information, proximity to roads and population density. To our knowledge this is the first study of the kind performed within the Portuguese wild fires scenario.

Keywords (at most 5):

Bayesian hierarchical space-time model; fire risk; Geographic Information Systems.