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A non-homogeneous Poisson model to estimate the number of ozone peaks in Mexico City

In this talk we consider the problem of estimating the number of exceedances of an air quality standard in a given period of time. A non-homogeneous Poisson model is proposed to analyse this issue. The rate at which the Poisson events occur is given by a rate function $\lambda(t)$, $t \geq 0$. This rate function also depends on some parameters that need to be estimated. Two forms for $\lambda(t)$, $t \geq 0$ are considered: Weibull and exponential-Weibull with parameters $\alpha \geq 0$, $\beta \geq 0$ and $\sigma \geq 0$, that will be estimated using a Bayesian formulation as well as a Gibbs sampling algorithm. The model is applied to the ozone data provided by the Mexico City monitoring network.

This is part of a joint work with Jorge A. Achcar from the University of São Paulo, Brazil, and A. A. Fernández-Bremauntz and G. Tzintzun both from the National Institute of Ecology of the Ministry of Environment, México.