

# Space-Time Modeling of Environmental Data

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**Resumen** Many environmental phenomena involve variability over both space and time. In this talk we consider two approaches to the analysis of environmental space-time data: i) hierarchical geostatistical models and ii) point processes. Hierarchical models are flexible tools to handle the measurements of complex phenomena, taking into account their spatio-temporal covariance structure and considering all the sources of uncertainty. However, although they are relatively easy to specify, there are a number of complicating issues, such as the computational complexity in large data sets. In this talk we propose a multiresolution approach based on nonorthogonal wavelet functions for estimating large covariance matrices. Some applications are then provided for the analysis of air quality data. The second issue that will be addressed regards the space time modeling of earthquake events. After a short introduction of the Epidemic-Type Aftershock Sequence (ETAS) models we will show some methods for the estimation of the background rate of seismicity. Finally, we will present some preliminary results to the earthquake catalog of Chile.