

Sophie Dabo, Laboratoire Painleve-CNRS 8524, Université de Lille, Villeneuve d'Ascq, France



Spatial-functional statistics with applications to environment and health in Africa

Abstract

Spatio-functional statistics includes any (statistical) techniques which study functional (from functional spaces; curves, images, shapes, ...) data observed on spatial sets. Such data appears in a variety of fields: epidemiology, environmental sciences, agriculture, physics, image processing and many others. The modeling of this kind of phenomena is among the most interesting research topics in dependent functional-data analysis. This is motivated by the increasing number of situations from different fields where the data are of functional and spatial nature.

Complex issues arise in spatio-functional Data Science, many of which are neither clearly defined nor completely resolved, but form the basis for current researches.

We are interested in this talk to introduce spatio-functional statistical learning methods.

More precisely, we consider clustering, regression modeling and prediction where the data are observed from spatio-functional processes of high dimension. Application to environmental and epidemiological real African data problems are given.

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Biography

Sophie Dabo-Niang is full professor of Applied Mathematics at University of Lille (North of France), chair of EMS-CDC (European Mathematical society-Committee of developing countries), scientific officer of CIMPA (International center of pure and applied mathematics), member of the new comity of diversity of IMU (International Mathematical Union).

She is French and Senegalese, married with 4 children. She completed a 3-year PhD in Statistics from the Sorbonne University (Pierre and Marie Curie, Paris) in 2002.

After a first young teaching and researcher position at University Paris 2 from 2002 to 2004, she got an associate professor position in the Department of Mathematics, Computer sciences, Economy and Management of University Lille 3 (Charles De Gaulle) in 2004 where she practiced until being recruited as full professor in 2010.

She co-chaired EMS-CDC from 2018 to 2019, headed the MeQAME axis of laboratory LEM CNRS 9221 of University Lille 3, from 2015 to 2019. She headed the laboratory EQUIPPE of University Lille 3, from 2010-2015.

The research program of Sophie Dabo-Niang is focused on the representation of time and space in random environments through the use of stochastic space and time changes driven by real problems in various areas as economics, medical, epidemiology, physics, environmental and hydrological studies, natural resource management, renewable energy, and agriculture. She published about sixty scientific articles and edited two books. She is currently engaged in several national and international research projects, societies, associations.

She supervised many M.S and PhD thesis students and has taught statistics and econometrics courses in many different countries. She has led several statistical scientific events worldwide and gave different oral communications.

Another important achievement is her deep involvement and commitment to promotion of Mathematics and women in mathematics, in Europe and in the developing world, in particular in Africa.