

Edith GABRIEL

Curriculum vitae

Born: 21th August 1977, Marseille, France

Department of Medicine
Lancaster University
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CAREER

Jun 2005 - : Research Associate in statistics, Department of Medicine, Lancaster University (UK)
Sep 2004 - Jun 2005 : Lecturer in statistics, Montpellier University, France
Sep 2001 - Dec 2004 : D.Phil., Biometry Unit, INRA, Avignon, France
Sep 2001 - Jun 2004 : Lecturer in statistics, IUT Avignon, France

DEGREES, QUALIFICATIONS, AWARDS

2006 : Marie-Jeanne Laurent-Duhamel 2006 prize of the french statistical society
2004 : Doctor of Philosophy, *Detecting zones of abrupt change in spatial data and application to precision agriculture.*
2001 : Master of Statistics, Montpellier University, France
1999 : Bachelor of Mathematics, Montpellier University, France
1996 : A level in Mathematics, Physics, Biology, ...

RESEARCH INTERESTS

Post-doc: spatial epidemiology (june 2005 - ; Lancaster University)

I am employed on a Veterinary Training and Research Initiative programme, funded by the Department for Environment Food and Rural Affairs. The main focus of my research is on investigating the origins, transmission pathways and emergence of human *Campylobacter* infections. I collaborate with Prof Peter J. DIGGLE (www.maths.lancs.ac.uk/~diggle), describing the spatio-temporal and genetic epidemiology of human *Campylobacter* infections in the North West of England. I also have a general interest in statistical methods for spatially referenced epidemiological data.

METHODS: spatial statistics, marked point processes, parametric models, non-parametric estimation.

D.phil.: statistics (2001 - 2004 ; Biometry Unit, INRA-Avignon)

I developed a method for estimating and testing the zones where a variable changes abruptly in the plane. It is based on geometrical properties of non-stationary χ^2 random fields. This method allowed us to identify and to define spatial structures in soil properties of an arable field. This work was supervised by Denis ALLARD (Biometry Unit, INRA-Avignon) and funded by INRA and CETIOM.

METHODS : multivariable and non-stationary geostatistics, geometry of random fields, excursion sets, Gaussian and χ^2 random fields.

PUBLICATIONS

Papers in journals

Gabriel E. & Allard D. (2007) Evaluating the sampling pattern when detecting zones of abrupt change, *Environmental and Ecological Statistics*, to appear.

Gabriel E., Allard D., Guérif M. & Mary B. (2007) Detecting zones of abrupt change in soil data, with an application to an agricultural field. *European Journal of Soil Science*, to appear.

Allard D., Gabriel E. & Bacro J.N. (2006) Estimating and testing zones of abrupt change for spatial data. (*submitted*).

Gabriel E. (2007) Détection de changements abrupts dans le gradient d'un champ gaussien et application aux sciences de l'environnement. *Journal de la Société Française de Statistique*, to appear.

Book chapter

Allard D. & Gabriel E. (2007) Détection de zones de changement abrupt pour des variables non permanentes : vers la définition de zones homogènes ? in *Agriculture de Précision*, pp. 165–176, Quae, Versailles.

Papers in conference proceedings

Gabriel E. & Allard D. (2005) “Assessing the power of zones of abrupt change test detection”, in *Seventh International Geostatistical Congress*, Banff, Canada, pp. 1103-1008, Kluwer Academic Publisher.

Gabriel E., Allard D. & Bacro J.N. (2004) Detecting zones of abrupt change: application to soil data”, in X. Sanchez-vila, J. Carrera and R. Froidevaux (Eds.) *Proceedings the 4th European Conference on Geostatistics for Environmental Applications*, Barcelona, Spain, pp. 437-448 Kluwer Academic Publisher.

Papers in progress

Gabriel E. & Diggle P. (2007) On the simulation and analysis of spatio-temporal point processes.

Wilson D., Gabriel E., Fearnhead P., Diggle P., Leatherbarrow H. & Fox A. (2007) *Campylobacter jejuni* in Lancashire 2000-2002: epidemiological and genetic analysis.

Dissertations

Gabriel E. (2004) Détection de zones de changement abrupt dans des données spatiales et application à l'agriculture de précision. Ph.D thesis, Université Montpellier II, France.

Gabriel E. (2001) Détection de zones de changement abrupt pour un champ gaussien. Master thesis, Université Montpellier II, France.

COMMUNICATIONS

Conferences

Gabriel E., Diggle P. (2006) Variation spatio-temporelle des cas de campylobactériose dans le secteur de Preston, *Journées MAS de la SMAI*, Lille, France, September 2006.

Gabriel E. (2006) Détection de zones de changement abrupt dans des données spatiales. *XXXVIIIèmes Journées de Statistique*, Clamart, France, May 2006.

Gabriel E., Allard D. (2004) Estimating and testing zones of abrupt change for spatial data, *Séminaire Européen de Statistique - Statistics of Spatio-Temporal Systems*, Bernried, Germany, December 2004.

Gabriel E., Allard D. (2004) Assessing the power of zones of abrupt change test detection, *Seventh International Geostatistical Congress*, Banff, Canada, September 2004.

Gabriel E., Allard D. (2004) Puissance d'un test de détection de zones de changement abrupt dans le plan, *XXXVIèmes Journées de Statistique*, Montpellier, France, May 2004.

Gabriel E., Allard D., Bacro J.N. (2002) Detecting zones of abrupt change: application to soil data, *4th European Conference on Geostatistics for Environmental Applications*, Barcelona, Spain, November 2002.

Allard, D., Gabriel, E., Bacro, J.N. "Détection de ruptures dans un champ gaussien : application à l'agriculture de précision", *XXXIVèmes Journées de Statistique*, Nantes, France, May 2001.

Workshop

Gabriel E., Allard D. (2004) Detecting zones of abrupt change for spatial data, *5th French-Danish Workshop on Spatial Statistics and Image Analysis in Biology*, Saint Pierre de Chartreuse, France, May 2004.

Seminars

Analyse spatio-temporelle des cas de campylobactériose dans le secteur de Preston, Bordeaux II University, Bordeaux, France 06 March 2007.

Détection de zones de changement abrupt dans des données spatiales, Paris VI University, Paris, France, 20 March 2006.

Spatio-temporal pattern of human Campylobacter isolates in the Preston area, Liverpool Veterinary School, Leahurst, UK, 16 January 2006.

Détection de zones de changement abrupt dans des données spatiales, Paris Sud University, Orsay, France, 06 January 2005.

Détection de zones de changement abrupt dans des données spatiales, Paul Sabatier University, Toulouse, France, 25 October 2004.

Détection de zones de changement abrupt dans des données spatiales, ENSAM -INRA - Montpellier II University, Montpellier, France, 07 June 2004.

Détection de zones de changement abrupt dans des données spatiales, Joseph Fourier University, Pierre Mendès France University, INRIA Rhône-Alpes, Grenoble, France, 03 June 2004.

Calcul de la puissance dans un test de détection de ruptures dans le plan, INAPG, Paris, France, 01 July 2003.