

# ***MONTSERRAT FUENTES***

Executive Vice President and Provost  
Professor of Statistics and Actuarial Science and Biostatistics  
University of Iowa

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## **Education**

National Center for Atmospheric Research Postdoc	1999	Environmental Sciences
University of Chicago, Chicago, IL	Ph.D. 1998	Statistics
University of Valladolid, Spain	B.S. 1994	Mathematics and Statistics (Extraordinary award of Graduation)
University of Valladolid, Spain	B.S. 1994	Music and Piano

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## **Research Interests**

Big data, brain imaging analysis, statistics for spatial data, uncertainty analysis, computer models, interdisciplinary applications in neurosciences, environmental and health sciences. These data analytical advances are motivated and implemented to address scientific and societal problems in brain imaging, weather forecasting, climate change, air pollution and human health effects from pollution, as well as studies of pregnancy and pregnancy outcomes for both the mother and child.

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## Professional Experience

### University of Iowa

2019 - **Executive Vice President and Provost**  
2019 - Professor of Statistics and Actuarial Science and Biostatistics

### Virginia Commonwealth University

College of Humanities and Sciences

2016 - 2019 **Dean**  
2016 - 2019 Full Professor of Statistics (College of Humanities and Sciences),  
Full Professor of Biostatistics (School of Medicine)

### North Carolina State University

Department of Statistics

2011 - 2016 **Department Head**  
2015 - 2016 James M. Goodnight Distinguished Professor of Statistics  
2008 - 2016 Full Professor (tenured)  
2003 - 2008 Associate Professor (tenured)  
1999 - 2003 Assistant Professor

### North Carolina State University

Department of Marine, Earth & Atmospheric Sciences

2003 - 2016 Associate status

### STATMOS

2011 - 2016 Center Director  
(NSF-DMS, "Collaborative Research: RNMS Statistical methods  
for atmospheric and oceanic sciences")  
Website: [www.statmos.washington.edu](http://www.statmos.washington.edu)

### The Environmental Protection Agency (EPA)

Atmospheric Modeling Division

1999 - Present Visiting Scientist

### National Center for Atmospheric Research

1998 - 1999 Postdoctoral Research Scientist

**Lucent Technologies**, Bell Labs, New Jersey.

Summer 1996 Visiting Scientist  
Summer 1995 Visiting Scientist

**AT&T. Bell Labs**, New Jersey.

Fall 1995 Visiting Scientist

**Joint Research Center, European Union**, Italy.

1994 Visiting Scientist

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**Professional Organization Service & Leadership**

**National Academy of Sciences**

2019 - National Academies of Sciences, Engineering, and Medicine  
Illustrating Math Committee  
2015 - 2017 Intelligence Science and Technology Experts, National Research  
Council (NRC)  
2015 - 2017 Committee on the Review of the Department of Veterans Affairs  
Airborne Hazards and Open Burn Pit Registry  
2012 - 2017 Committee on Applied and Theoretical Statistics, Second term  
2007 - 2008 Committee on Ozone Mortality Risk Reduction Benefits, NRC

**Editorial Boards**

2016 - 2018 **Editor**, *Journal of the American Statistical Association, Applications and Case Studies*, (JASA-ACS), (Considered a top journal in Statistics and the flagship journal of the American Statistical Association)  
2016 - 2018 **Coordinating Editor** of JASA  
2015 **Founder**, *Advances in Statistical Climatology, Meteorology and Oceanography* (ASCMO), international open-access. Sponsored by the STATMOS network  
2011 - 2015 **Editor**, *Journal of the Agricultural, Biological, and Environmental Statistics* (JABES) (second term)  
2009 - 2012 **Associate Editor**, JASA-ACS  
2006 - 2011 **Associate Editor**, *Annals of Applied Statistics* (second term)  
2003 - 2011 **Associate Editor**, *Environmetrics* (third term)  
2003 - 2010 **Associate Editor**, *Biometrics* (third term)

## Government

2010 - 2011	US EPA. Science Advisory Board, Trichloroethylene (TCE) Panel
2009 – 2015	National Children Study. iSMOC committee
2007	Department of Justice. (U.S. v. American Electric Power) Expert witness and consultant
2006 - 2007	US EPA. Ethylene Oxide Review Panel
2005 - 2009	NIH. Member of the Biostatistical Methods and Research Design (BMRD) Study Section
2004 - 2009	US EPA. Science Advisory Board Integrated Human Exposure Committee (second term)

## Professional Societies

2015 - 2016	<b>Special Committee</b> of the Board of Directors on the <i>Role of Statistics in Data Science</i> , American Statistical Association
2015 - 2016	<b>Chair</b> , Environmental Statistics Section of the International Society for Bayesian Analysis
2013 - 2016	<b>Steering committee</b> of the National Consortium of Data Science (NCDS)
2013 - 2014	<b>Chair</b> , Computing and Graphics Section of the American Statistical Association (ASA)
2012 - 2015	<b>Officer</b> , Academic Representative, ASA Academic Caucus
2009 - 2012	<b>Board of Trustees</b> of the National Institute of Statistical Sciences
2009 - 2012	<b>Member</b> , ASA Climate Change Policy Advisory Committee
2009 - 2011	<b>Officer</b> , ASA Committee on Federally Funded Research
2009 - 2010	<b>Officer</b> , Council of Sections. ASA Section on Statistical Computing
2007 - 2010	<b>Member</b> , Institute of Mathematic Statistics (IMS), Council
2007 - 2008	<b>Treasurer and secretary</b> , ASA Bayesian Statistical Science Section
2004 - 2012	<b>Board of Directors</b> of the International Environmetrics Society (second term)
2003 - 2006	<b>Regional Advisory Board</b> of the Eastern North American Region of the Biometric Society (ENAR)

## International Advisory Boards

2015 -	Scientific Advisory Board of the Engineering and Physical Sciences Research Council (EPSRC), WEFWEBs project at University of Glasgow, Scotland
2014 -	Scientific advisory committee of the ARC Centre of Excellence for Mathematical & Statistical Frontiers (ACEMS), The University of Melbourne, Australia

## University Committee Service & Leadership

### Virginia Commonwealth University

2018 – 2019	VCU University Council
2018 – 2019	VCU Academic Affairs and University Policy Committee
2019 – 2020	Faculty Mentor of Grace Harris Leadership Training
2016 - 2018	Co- Chair, University Strategic Planning
2016 - 2019	Member, University Budget Committee
2016 - 2019	Steering Committee for Budget Redesign

### North Carolina State University

2015 - 2016	Chair, Search Committee for the Head of the Department of Marine, Earth, and Atmospheric Sciences
2015 - 2016	Member, Search Committee for the Vice Chancellor for Business and Administration
2016 - 2016	Graduate School Fellowships and Awards Selections Committee
2016 - 2016	Advisory committee, Experiential Learning Institute
2015 - 2016	Member, Committee on Guidelines for Graduate Student Support Plan
2015 - 2016	Member, Search committee for the Vice Chancellor for Research
2014 - 2016	Faculty Liaison, Office for Institutional Equity and Diversity (second term)
2014 - 2015	Chair, Academic Policy Committee
2014 - 2015	Member, Steering Committee of Associate Deans for Academic Affairs
2014 - 2015	Member, Steering Committee of Academic Deans
2013 - 2015	Chair of the NC State Academic Policy committee
2013 - 2015	Member, Faculty Senate Executive Committee
2012 - 2015	Member, University Budget Committee (chaired by the Provost)
2012 - 2013	Member, Senate Personnel Policy Committee
2012 - 2013	Member, NC State Strategic Plan Implementation Committee
2011 - 2015	Faculty Senator (elected for a second term)
2010 - 2014	Senior Leader, NSF ADVANCE program

## Leadership Training

2013 - 2016 Graduate level courses in *Leadership, Work Psychology, and Work Motivation*.  
NC State, Psychology Department (Industrial Organizational)

**Participant in the following Leadership programs:**

2014 - 2016 Food Systems Leadership Institute  
2013 - 2014 North Carolina State. Strategic Transformational Leadership Program  
2013 - 2016 UNC Leadership workshop  
2012 - 2016 Shelton Leadership Forum  
2010 - 2012 NC State. NSF ADVANCE Leadership Program

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## Professional Leave

Fall 2008 **Visiting faculty**  
Statistics Department, Duke University, Durham, NC.  
Fall 2003 **Visiting faculty**  
The Center on Global Change, Duke University, Durham, NC  
Fall 1998 **Visiting scientist (postdoc)**  
The National Center of Atmospheric Research  
*Geophysical Statistics Project*, Boulder, CO.

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## Honors & Awards

2017 Medal of Distinguished Achievement by the American Statistical Association, Environmental Statistics Section. For major statistical methodology contributions, leadership and mentoring roles.  
2016 *NC State D.D. Mason Award*. The award recognizes Fuentes's outstanding contributions as department head from 2011 to 2016.  
2013 *NC State Equity of Women award*, for major contributions to the equity and well-being of women.  
2012 *Scientific and Technological Achievement Award* offered by the United States Environmental Protection Agency for the development of an air quality model evaluation framework that fosters scientific credibility for model applications

2012	Best <i>Biometrics</i> paper of the year
2010	Best <i>International Journal of Environmental Research and Public Health</i> paper of the year
2008	American Statistical Association (ASA) fellow for outstanding research in spatial statistics
2003	Abdel El-Shaarawi Young Researcher's Award in recognition of outstanding contributions to environmetric research

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## Professional Organization Memberships

Member-elect of the International Statistical Institute (ISI)  
 American Statistical Association (ASA)  
 Institute of Mathematical Science (IMS)  
 Eastern North American Region of the Biometric Society (ENAR)  
 American Meteorological Society (AMS)  
 The International Environmetrics Society (TIES)  
 The International Society for Bayesian Analysis (ISBA)

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## Administrative Experience

### **Executive Vice President and Provost. 2019-present**

The University of Iowa is one of the nation's premier public research universities with over 32,000 students from all 50 states and all over the world. A member of the Association of American Universities and the Big Ten Conference, UI carries out its academic mission through its 12 colleges which offer undergraduate and graduate education, professional education, and education and training in the health sciences. As executive vice president and provost, I am chief academic officer and report to the president. I communicate on behalf of the university with the Board of Regents, State of Iowa on academic matters and am a principal participant in collaborative decision-making involving university-wide strategic planning and budget development, management of auxiliary enterprises, health care services, and the conduct of research and scholarship. I provide intellectual leadership to create, advance, and implement the academic mission of the university and oversee academic programs, a wide range of faculty matters, and student academic affairs. I ensure diversity, equity, and inclusion is a core value in every area of our academic mission.

### **Major areas of responsibilities include:**

- 12 academic colleges
- Faculty affairs

- Undergraduate and graduate education
- Engagement
- International programs
- Diversity, equity, and inclusion
- Enrollment management
- University libraries
- University museum of art
- Information technology service
- University Strategic plan development and implementation

**Dean and Professor of Statistics in College of Humanities and Sciences. 2016 – Present**

The College of Humanities and Sciences is the largest unit at Virginia Commonwealth University in terms of enrollment- more than 15,000 students; approximately 500 full-time faculty members and 230 part time; representing 50% of the total credit hours, and 60% of the undergraduate credit hours taught at VCU. The College also has the largest amount of externally funded research on VCU's Monroe Park Campus. The College houses two professional schools (The Robertson School of Media and Culture, and The School of World Studies), 15 departments, ROTC, and 3 other degree granting undergraduate academic programs (Liberal Studies for Early and Elementary Education; Interdisciplinary Science Program; and Sciences, Technology and Society). The College is the administrative unit for 85 undergraduate majors/concentrations, 5 certificate programs, 12 Master's programs, 10 PhD programs, and 5 cross-disciplinary Ph.D. programs (Media, Art and Text; Nanoscience and Nanotechnology; Systems Modeling and Analysis; Rehabilitation and Movement Science; and Chemical Biology). As the chief academic and administrative officer of the College, I am responsible for the recruitment and retention of faculty, and all aspects of the academic programs of the College. I also serve as the primary advocate for the College, both internally and externally including fundraising, friend-raising, legislative and alumni relations.

**Major Responsibilities/Accomplishments:**

- managed a complex budget of 69M with state appropriated funds and tuition funds, and additional 20M in development funds
- funded research increased by 29%, from 17M to 22M
- \$121M from Legislature in capital funds for new building
- philanthropy: gift funds increased by 52%. 4M raised in FY18 in gift funds
- supported/established new interdisciplinary degrees/programs in Addition Studies, LGBTQ studies, Data Science, Digital Sociology, Science Technology and Society, and Nanoscience.
- led a strategic planning initiative for the College
- created 30 new faculty lines (6 % increase in faculty)
- launched interdisciplinary cluster hires, leading to three main themes: Migration studies, Big Data, and LGBTQ studies.
- strengthened the College research infrastructure by adding a grants writer and internal research seed funds for faculty



- promoted experiential learning with the new David Baldacci 1M gift to support real-world learning
- promoted a student-centered and life learning- model of education, by strengthen advising (22 new advisors) and mentoring for career planning, and exposing undergraduate students to research-led training, internships, and capstone experiences. Increase in retention/graduation rates.
- established the College Staff Council to promote staff governance, functioning on parallel with the College Faculty Council
- established mentoring and advocacy groups for minority students
- more than 30% of the College tenure-track hires from underrepresented groups
- new longer term contracts for non-tenure track faculty lines, with opportunities for promotion

### **Head, Department of Statistics, NC State. 2011- 2016**

The Department of Statistics at NC State is in the College of Sciences and in the College of Agriculture and Life Sciences. It is a top ranked Department and both the largest and one of the oldest in the nation with 45 faculty members, 14 staff members, 180 graduate students (primarily all PhDs), 175 undergraduate students, and new 64 students in the online MS program.

#### **Major Responsibilities/Accomplishments:**

- managed a complex budget of 15M with state appropriated funds, grant funding, tuition funds, and endowment funds.
- established an entirely online MS program in statistics
- established two online certificates in statistics-education and applied statistics
- established a new online graduate program on Data Science in partnership with the Computer Science Department.
- launched an intense (face-to-face) 1 year MS program
- increased rankings (becoming #12 by US World and News report)
- funded research increased by 50%
- size of the faculty increased by 30%,
- increased number of endowments: 3 new named professorships, 3 named rooms, new fellowships for graduate students and undergraduate students
- strengthened the Department research infrastructure by adding two new grant-support related positions: a new grants administrator and a research director
- organized grant writing and student mentoring workshops for the Statistics faculty
- established a new consulting center, the Laboratory for Collaborations and Statistical Innovation (L-CSI), to provide solutions to real-life statistical problems arising from various fields in industry
- increased partnerships with industry through Graduate Industrial Traineeships (GIT) to build relationships between the department and local organizations or companies
- established new practices and policies to facilitate life and work integration, in particular by introducing a new reassignment of duties policy due to family circumstances and a parental leave for graduate students
- promoted a student-centered and life learning- model of education, by strengthen advising (19 new advisors) and mentoring for career planning, and exposing

undergraduate students to research-led training, internships, and capstone experiences, while introducing new courses in communicating science and research ethics for graduate students

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**Director, STATMOS. 2011- 2016.**

The Network on Statistical Methods in Atmospheric and Oceanic Sciences is an NSF funded center to promote multi-institutional and interdisciplinary research and training at the interface of Statistics, Atmospheric and Oceanic Sciences, with 200 members and 21 institutions affiliated to it.

Major Responsibilities/Accomplishments:

- managed a 5M budget
  - coordinated statistical research across the 21 institutions based on issues in atmospheric and oceanic science
  - developed a cadre of PhD students, postdocs and young faculty with substantial experience in doing cross disciplinary work with statisticians and physical, biological and social scientists
  - organized a series of workshops and summer schools to disseminate the research ideas promoted by the network
  - sponsored and launched a new international open-access journal, *Advances in Statistical Climatology, Meteorology and Oceanography* (ASCMO)
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## Refereed Publications

### Books

1. Gelfand, A., **Fuentes, M.**, Smith, R., and Hoeting, J. (2018). *The Handbook of Environmental and Ecological Statistics*. CRC Press. ISBN 9781498752121
2. Gelfand, A., **Fuentes, M.**, Guttorp, P., and Diggle, P. (2009). *The Handbook of Spatial Statistics*. CRC Press.

### Book Chapters

3. **Fuentes, M.**, Yen Ning Huang and Reich, B. (2017). Exposure Assessment. Chapter in *The Handbook of Environmental and Ecological Statistics*. CRC Press. ISBN 9781498752121
4. Reich, B., and **Fuentes, M.** Nonparametric Spatial Models. (2017). Chapter in *The Handbook of Nonparametric Statistics*. CRC Press.

5. Warren, J., **Fuentes, M.**, and Herring, A. (2015). Spatio-temporal Modeling of Pre-term Birth. *The Handbook of Spatial Epidemiology*. CRC.
6. **Fuentes, M.** and Foley, K. (2013). Ensembles methods, in the *Encyclopedia of Environmetrics*. Wiley.
7. **Fuentes, M.** (2012). Spectral methods, chapter in the *Encyclopedia of Environmetrics*. Wiley.
8. **Fuentes, M.** and Foley, K. (2012). Ensemble methods, Spectral methods, chapter in the *Encyclopedia of Environmetrics*. Wiley.
9. Reich, B., and **Fuentes, M.** (2012). Accounting for design in spatial modeling, chapter in *Spatio-Temporal design: advances in efficient data acquisition*. Wiley. Editors, Mateu and Werner.
10. Steel, M. and **Fuentes, M.** (2009). Nonparametric Modeling of Spatial Data. Chapter in the *Handbook of Spatial Statistics*. CRC Press.
11. **Fuentes, M.** and Reich, B. (2009). Spectral Analysis for Spatial Data. Chapter in the *Handbook of Spatial Statistics*. CRC Press.
12. **Fuentes** and members of the National Research Council Committee on Ozone Mortality Risk Reduction Benefits (2008). Estimating Mortality Risk Reduction Benefits from Decreasing Tropospheric Ozone Exposure. National Academies of Science.
13. **Fuentes, Montserrat**, Guttorp, Peter, and Sampson, Paul. (2007). Using transforms to analyze space-time processes, chapter in *Statistics of Spatio-Temporal Systems*. Editors, Held and Finkenstadt. CRC/Chapman Hall. Pages: 77-151.
14. Chen, L., **Fuentes, M.** and Davis, J.M. (2006). Spatial-temporal statistical modeling and prediction of environmental processes. Pages 121-144 in *Hierarchical Modelling for the Environmental Sciences: Statistical methods and applications* (eds., J.S. Clark and A.E. Gelfand). New York: Oxford University Press, 205pp.
15. **Fuentes, M.** (2002). Spatial interpolation of environmental processes, in *Spatial Statistics through Applications*. WIT Press, Boston. Chapter 4, pp. 71-104.
16. **Fuentes, M.**, Doney, S. C., Glove D. M. and McCue S. J. (2000). Spatial structure of ocean color data in the North Atlantic in *Case Studies in Statistics and the Atmospheric Sciences*. Springer-Verlag, New York, pp. 153-172.

### Journal Articles

18. Joseph, A-C, **Fuentes, M.**, Wheeler, D.C. (2020). The Impact of Population Mobility on Estimates of Environmental Exposure Effects in a Case-Control Study. *Statistics in Medicine*. <https://doi.org/10.1002/sim.8501>
19. Jhuang, A-T., **Fuentes, M.**, Bandyopadhyay, D., and Reich, B. (2020). Spatiotemporal signal detection using continuous shrinkage priors. *Statistics in Medicine*. <https://doi.org/10.1002/sim.8514>.
20. Muyskens, A., Guinness, J., and **Fuentes, M.** (2000). Partition-Based Non-Stationary Covariance Estimation using the Stochastic Score Approximation. Search Results. *Journal of Computational and Graphical Statistics*, accepted.
21. Moradi, H., Wang, Q., Naji, Z., and **Fuentes, M.** (2020). New parsimonious multivariate spatial model: spatial envelope *Statistica Sinica*, in press.

22. Moradi, H., and **Fuentes, M.** (2019). Multivariate space-time functional model or hurricane tracks and intensity. *Spatial Statistics*, 29, 351-365.
23. Huang, Yen-Ning, Reich, B., **Fuentes, M.**, and Sankarasubramanian, A. (2019). Complete Spatial Model Calibration. *Annals of Applied Statistics*, 13, 746-766.
24. Jhuang, A-T., **Fuentes, M.**, Jones, J., Esteves, G., Fancher, C., Furman, M., and Reich, B. (2019). Spatial signal detection using continuous shrinkage priors. (2018). *Technometrics*, 61, 494-506
25. Terres, M., **Fuentes, M.**, Hesterberg, D., and Polizzotto, M. (2018). Bayesian Spectral Modeling of Microscale Spatial Distributions in a Multivariate Soil Matrix. *Journal of Bayesian Analysis*, 13, Number 1, pp. 1–28
26. Kaufeld, K., **Fuentes, M.**, Reich, B., Herring, A., Shaw, G., and Terres, M. (2017). A Multivariate Dynamic Spatial Factor Model for Speciated Pollutants and Adverse Birth Outcomes. *International Journal of Environmental Research and Public Health*, 14(9): 1046 (16 pages)
27. Miao, G., Noormets, A., Domec, J. C ., **Fuentes, M.**, Trettin, C. C., Sun, G., McNulty, S. G., King, J. S. (2017). Hydrology and microtopography control carbon dynamics in wetlands: implications in partitioning ecosystem respiration in a coastal plain forested wetland. *Agricultural and Forest Meteorology*, 247 (December 2017): 343-355.
28. Guinness, J., and **Fuentes, M.** (2017). Circulant Embedding of Approximate Covariances for Inference from Gaussian Data on Large Lattices. *Journal of Computational and Graphical Statistics*, 26(1), 88-97.
29. Guinness, J., and **Fuentes, M.** (2016). Isotropic covariance functions on spheres: Some properties and modeling considerations. *Journal of Multivariate Analysis*, vol. 143, issue C, 143-152.
30. Mannshardt, E., Sucic, K., **Fuentes, M.**, and Bingham, F. (2016). Comparison of distributional statistics of Aquarius and Argo sea surface salinity measurements. *Journal of Atmospheric and Oceanic Technology*, <http://dx.doi.org/10.1175/JTECH-D-15-0068.1>
31. Warren, J., Stingone, J., Herring, A., Luben, T., **Fuentes, M.**, Aylsworth, Langlois, P., Botto, L., Correa, A., Olshan, A., and the National Birth Defects Prevention Study (2016). Bayesian Multinomial Probit Modeling of Daily Windows of Susceptibility for Maternal Fine Particulate Matter Exposure and Congenital Heart Defects. *Statistics in Medicine*, 35(16):2786-2801
32. Reich, B., and **Fuentes, M.** (2016). Discussion of Spatial Product Partition Models by Garritt L. Page and Fernando A. Quintana. *Bayesian Analysis*, 11, 1, 265-298.
33. Sun, Y., Wang, H.J., and **Fuentes, M.** (2016). Fused Lasso for Spatial and Temporal Quantile Function Estimation. *Technometrics*, 58, 127-137.
34. Boehm, L., Reich, B., **Fuentes, M.**, and Domini, F. (2015). Spatial variable selection methods for investigating acute health effects of fine particulate matter components. *Biometrics*, in press. 71, 167-177.
35. Guinness, J., **Fuentes, M.** (2015). Likelihood Approximations for Big Nonstationary Spatial Temporal Lattice Data. *Statistica Sinica*, 25, 329-349.
36. Guinness, J., **Fuentes, M.**, Hesterberg, and D., Polizzotto, M. (2014). Multivariate spatial modeling of conditional dependence in microscale soil elemental composition data. *Spatial Statistics*, 9, 93-108.
37. Jeanette A. Stingone, Thomas J. Luben, Julie L. Daniels, M. **Fuentes**, David B. Richardson, Arthur S. Aylsworth, Amy H. Herring, Marlene Anderka, Lorenzo Botto,

- Adolfo Correa, Suzanne M. Gilboa, Peter H. Langlois, Bridget Mosley, Gary M. Shaw, Csaba Siffel, and Andrew F. Olshan (2014). Maternal Exposure to Criteria Air Pollutants and Congenital Heart Defects in Offspring: Results from the National Birth Defects Prevention Study. *Environmental Health Perspectives*, 122, 863-872.
38. Smith, L., **Fuentes, M.**, Gordon-Larsen, P., and Reich, B. (2015). Quantile Regression for Mixed Models. *Annals of Applied Statistics*, 9, 1226-1246.
  39. Smith, L., Reich, B., and Herring, A, and **Fuentes, M.** (2015). Multilevel Quantile Function Modeling with Application to Birth Outcomes. *Biometrics*, 71, 508-519.
  40. Smith L, **Fuentes M**, Reich B, Eder B. (2013). Prediction of Speciated Particulate Matter and Bias Assessment of Numerical Output Data. *International Journal of Environmental Science and Engineering Research*, 4, 8-17.
  41. Mannshardt, E., Sucic, K., Jiao, W., Dominici, F., Frey, H. C., Reich, B., & **Fuentes, M.** (2013). Comparing exposure metrics for the effects of fine particulate matter on emergency hospital admissions. *Journal of Exposure Science and Environmental Epidemiology*, 23, 627-636.
  42. Joshua L. Warren, **M. Fuentes**, Amy H. Herring and Peter H. Langlois (2013). Air Pollution Metric Analysis while Determining Susceptible Periods of Pregnancy for Low Birth Weight. *ISRN Obstetrics and Gynecology*, Article ID 387452. 9 pages.
  43. **Fuentes M**, Reich BJ (2013). Multivariate spatial nonparametric modeling via kernel processes mixing. *Statistica Sinica*, 23, 75-97.
  44. **Fuentes, M.**, Henry, J., and Reich, B. (2013). Nonparametric Spatial Models for Extremes: Application to Extreme Temperature Data. *Journal of Extremes*, 16, 75-101
  45. Modlin, D., **Fuentes, M.**, and Reich, B. (2012). Circular Conditional Autoregressive Modeling of Vector Fields, *Environmetrics*, 23, 46--53.
  46. Chang, H., **Fuentes, M.**, and Frey, C. (2012). Time Series Analysis of Personal Exposure to Ambient Air Pollution and Mortality Using an Exposure Simulator, *Journal of Exposure Science and Environmental Epidemiology*, 22, 483-8.
  47. Bravo, M., **Fuentes, M.**, Zhang, Y., and Bell, M. (2012). Comparison of Exposure Estimation Methods for Air Pollutants: Ambient Monitoring Data and Regional Air Quality Simulation," *Environmental Research*, 116, 1-10.
  48. Banarjee, S., and **Fuentes, M.** (2012). Bayesian Modeling for Large Spatial Datasets. *WIREs Computational Statistics*, 4, 59-66.
  49. Reich BJ, Kalendra E, Storlie CB, Bondell HD, **Fuentes M** (2012). Variable selection for high-dimensional Bayesian density estimation: Application to human exposure simulation. *Journal of the Royal Statistical Society: Series C*, 61, 47-66.
  50. Reich. B., and **Fuentes, M.** (2012). Nonparametric Bayesian models for a spatial covariance. *Statistical Methodology*, 9, 265-274.
  51. Warren, J, **Fuentes, M**, Herring, A, and Langlois, P. (2012) Spatial-Temporal Modeling of the Association between Air Pollution Exposure and Preterm Birth: Identifying Critical Windows of Exposure. *Biometrics*, 68, 1157-1167. *BEST BIOMETRICS PAPER of 2012.*
  52. Warren, J, **Fuentes, M.** Herring, A, and Langlois, P. (2012). Spatial-temporal Model for Cardiac Congenital Anomalies and Ambient Air Pollution Risk Assessment. *Environmetrics*, 8, 673-684.
  53. Zhou, J., Chang, Howard H., and **Fuentes, M.** (2012), Estimating the Health Impact of Climate Change with Calibrated Climate Model Output, *Journal of Agricultural*,

- Biological, and Environmental Statistics*, 17, 377-394.
54. Reich BJ, Kalendra, E., Storlie, CB, Bondell, HD, **Fuentes M.** (2012). Variable selection for high-dimensional Bayesian density estimation: Application to human exposure simulation. *JRSS-C*, 61, 47–66.
  55. Zhou, Jingwen, **Fuentes, Montserrat**, and Davis, Jerry (2011), Calibration of numerical model output using nonparametric spatial density functions, *Journal of Agricultural, Biological, and Environmental Statistics*, 16, 531-553
  56. **Fuentes, M.**, Xi, B. and Cleveland, W. (2011) Trellis Display for Modeling Data from Designed Experiments. *Journal of Statistical Analysis And Data Mining*, 4, 133-145..
  57. Reich, B., **Fuentes, M.** and Dunson, D. (2011). Bayesian spatial quantile regression. *JASA Case Studies*, 106, 6–20.
  58. Chang, H., Zhou, J. and **Fuentes, M.** (2010). Impact of climate change on ambient ozone level and mortality in Southeastern United States. *International Journal of Environmental Research and Public Health*. 7, 2866-2880. *BEST PAPER AWARD OF 2010*.
  59. Dennis, Fox, **Fuentes**, Gilliland, Hanna, Hogrete, Irwin, Rao, Scheffe, Schere, Steyn, Venkatram. (2010). A framework for evaluating regional-scale numerical photochemical modeling systems. *Environmental Fluid Mechanics*, 10, 471-489.
  60. **Fuentes, M.** (2009). Statistical issues in health impact assessment at the state and local levels. *Air Quality, Atmosphere and Health*, 2, 47-55.
  61. Reich, B., **Fuentes, M.**, Herring, A., and Evenson KR (2010). Bayesian Variable Selection for Multivariate Spatially-Varying Coefficient Regression. *Biometrics*, 66, 772-782.
  62. Choi, J., **Fuentes, M.**, and Reich, B. (2009). Spatial-temporal association between fine particulate matter and daily mortality. *Journal of Computational Statistics and Data Analysis*, 53, 2989-3000.
  63. **Fuentes, M.** (2009). The role of statisticians in U.S. environmental regulation and policy. *Boletín de Estadística e Investigación Operativa*, 25, 46-50.
  64. **Fuentes, M.** (2009). Comments on: Approximate Bayesian inference for latent Gaussian models by using integrated nested Laplace approximations (Rue, Martino and Chopin). *Journal of the Royal Statistical Society, B*, 71, 319-392.
  65. Choi, J., Reich, B., **Fuentes, M.**, and Davis, J.M. (2009). Multivariate spatial-temporal modeling and prediction of speciated fine particles. *Journal of Statistical Theory and Practice*, 3, 407-418.
  66. Reich, B., **Fuentes, M.**, and Burke, J. (2009). Analysis of the effects of ultrafine particulate matter while accounting for human exposure. *Environmetrics*, 20, 131-146.
  67. **Fuentes, M.**, Peter Guttorp, P., and Stein, M.L. (2008). Special section on statistics in the atmospheric sciences. *Annals of Applied Statistics*, 2, 1143-1147.
  68. **Fuentes, M.**, Reich, B., and Lee, G. (2008). Spatial-temporal mesoscale modelling of rainfall intensity using gage and radar data. *Annals of Applied Statistics*, 4, 1148-1169.
  69. Song, H.R., **Fuentes, M.**, Ghosh, S. (2008). A comparative study of Gaussian geostatistical models and Gaussian Markov random field models. *Journal of Multivariate analysis*, 99, 1681-1697.
  70. **Fuentes, M.**, Chen, L, and Davis, J. (2008) A class of nonseparable and nonstationary spatial temporal covariance functions. *Environmetrics*, 19, 487-507.
  71. Park, M.S., and **Fuentes, M.** (2008). Testing Lack of Symmetry in Spatial-Temporal Processes. *Journal of Statistical Planning and Inference*, 138, 2847-2866.

72. Foley, K. and **Fuentes, M.** (2008). A statistical framework to combine multivariate spatial data and physical models for hurricane surface wind prediction. *Journal of Agricultural, Biological, and Environmental Statistics*, 13, 37-59.
73. Foley, K., and **Fuentes, M.** (2008). Multivariate space-time models for environmental processes. *Encyclopedia of GIS*, Springer. Shekhar, Shashi; Xiong, Hui (Eds.).
74. **Fuentes, M.** (2007). Approximate likelihood for large irregularly spaced spatial data. *Journal of the American Statistical Association, Theory and Methods*, 102, 321-331.
75. Reich, B., and **Fuentes, M.** (2007). A multivariate semiparametric Bayesian spatial modeling framework for hurricane surface wind fields. *Annals of Applied Statistics*, 1, 249-264.
76. **Fuentes, M.**, Chaudhuri, A. and Holland, D. (2007). Bayesian entropy for spatial sampling design of environmental data. *Environmental and Ecological Statistics*, 14, 323-340.
77. Xie, L., Bao, S., L.P. Pietrafesa, Foley, K., and **Fuentes, M.** (2006). A real-time hurricane surface wind forecasting model: formulation and verification. *Monthly Weather Review*, 134, 1355–1370.
78. Flores, F.J., Allen, H. L., Cheshire, H., Davis, J. M., **Fuentes, M.**, and Kelting, D. L. (2006). Using multispectral satellite imagery to estimate leaf area and response to silvicultural treatments in loblolly pine stands. *Can. J. Forest Research*, 37, 1587-1596.
79. **Fuentes, M.** (2006). Dynamic Gaussian Process Priors, with Applications to the Analysis of Space-time Data (discussion of chapter by Gamerman, Salazar and Reis). *Bayesian Statistics 8*. Editors: Bernardo, Bayarri, Berger, Dawid, Heckerman, Smith and West.
80. **Fuentes, M.**, Kittel, T. and Nychka, D. (2006). Sensitivity of ecological models to spatial-temporal estimation of their climate drivers: Statistical ensembles for forcing. *Ecological Applications*, 16, 99–116.
81. **Fuentes, M.**, Song, H.R., Ghosh, S., Holland, D. and Davis, J. (2006). Spatial association between speciated particulate matter and mortality. *Biometrics*, 62, 855-863.
82. Taylor, C., Thompson, J., Rand, P., and **Fuentes, M.** (2005). Sampling and statistical considerations for hydroacoustic surveys used in estimating abundance of forage fishes in reservoirs, *North American Journal of Fisheries Management*, 25, 73-85
83. **Fuentes, M.** (2005). A formal test for nonstationarity of spatial stochastic processes. *Journal of Multivariate Analysis*, 96, 30-55
84. **Fuentes, M.** and Raftery, A. (2005). Model evaluation and spatial interpolation by Bayesian combination of observations with output from numerical models. *Biometrics*, 61, 36-45.
85. **Fuentes, M.**, Chen, L., Davis, J. and Lackmann, G. (2005). A new class of nonseparable and nonstationary covariance models for wind fields. *Environmetrics*, 16, 449-464.
86. **Fuentes, M.** (2004). Nonstationary multivariate process modeling through spatially varying coregionalization: Comment. *TEST* (invited discussion of a paper by Gelfand, Schmidt and Banerjee), 13, 33-36.
87. **Fuentes, M.** (2004). Testing for separability of spatial-temporal covariance functions. *Journal of Statistical Planning and Inference*, 136, 447-466.
88. Mateu J, Montes F, **Fuentes M.** (2003). Recent advances in space-time statistics with applications to environmental data: An overview. *Journal of Geophysical Research, Atmosphere*, 108 (D24), 8774.

89. **Fuentes, M.** (2003). Statistical analysis of areas of compliance with the air pollution standards. Invited paper for *a special issue in Journal of Geophysical Research, Atmosphere*, 108 (D24), 8780.
90. **Fuentes, M.** (2003). Book review: Predictions in time series using regression models. *Journal of the American Statistical Association*, 98, 768-769.
91. **Fuentes, M.** (2003). Spatial-Temporal Nonlinear Filtering Based on Hierarchical Statistical Models: Comment. *TEST* (invited discussion of a paper by Irwin, Cressie and Johannesson), 2, 284-287.
92. Doney, S., Glover, **Fuentes, M.**, and McCue, S. (2003). Mesoscale variability of Sea-viewing Wide Field-of-View Sensor (SeaWiFS) satellite ocean color: Global patterns and spatial scales. *Journal of Geophysical Research, Oceans*. 108 (C2), 3024
93. **Fuentes, M.**, Guttorp, and Challenor, P. (2003). Statistical assessment of numerical models. *International Statistical Review*, 71, 2, 201-221.
94. **Fuentes, M.** (2002). Modeling and prediction of nonstationary spatial processes. *Statistical Modelling: An International Journal*, 2, 281-298.
95. **Fuentes, M.** (2002). Periodogram and other spectral methods for nonstationary spatial processes. *Biometrika*, 89, 197-210.
96. **Fuentes, M.** (2001). A High Frequency Kriging for Nonstationary Environmental Processes. *Environmetrics*, 12, 1-15.
97. **Fuentes, M.** (2001). Fixed-domain asymptotics for variograms using subsampling. *Mathematical Geology*, 33, 6, 679-691.
98. **Fuentes, M.** (2000). Predicting Integrals of Diffusion Processes with unknown diffusion parameters. *Stochastics*, 69, 255-283.
99. **Fuentes, M.** (2000). Predicting Integrals of Diffusion Processes. *Journal of Statistical Planning and Inference*, 90, 183-193.
100. Smith, R.L., Kim, Y., **Fuentes, M.**, and Spitzner, D. (2000). Threshold dependence of mortality effects for fine and coarse particles in Phoenix, Arizona. *Journal of the Air and Waste Management Association* 50, 1367-1379.
101. LeGrange, Carter, **Fuentes**, Boos, Freeny, Cleveland, and Miller. (1997). The Dependence of the Electro-Optical Properties of Polymer Dispersed Liquid Crystals on the Photopolymerization Process. *Journal of Applied Physics*, vol. 81 (9).

## Invited Presentations

- 2020**      35th International Workshop on Statistical Modelling (IWSM2020). “Spatial Modelling of Brain Imaging”. Bilbao, Spain. July. Keynote speaker
- 2020 STEM Celebration of MLK, Jr. "Leading with Data". Iowa City, IA. January. Keynote speaker.



- “2020 Annual Update on Diversity, Equity and Inclusion”. Iowa City, IA. January. Public presentation.
- 2019** *Challenges, Opportunities and Planning for the Future in Higher Education*. Witching hour Festival. Iowa City, IA, November. Public presentation.
- 2019 Iowa City/Coralville Area Convention & Visitors Bureau Annual Luncheon. “*University of Iowa: A Destination University*”. Coralville, IA. December. Keynote presenter. Public presentation.
- 2018** Dalhousie Statistics Seminar, “Spatial modeling of adverse pregnancy outcomes”. Canada, January – Seminar.
- New England Statistical Symposium*, “Spatial tensor analysis for neuroimaging”. *Keynote Speaker*, April, MASS-Amherst
- International Indian Statistical Association*. “Brain imaging studies for drug addicts”. April 2018. University of Florida Gainesville, Florida. *Keynote Speaker*.
- Big Data and Data Science for learning in the Digital World Symposium*. “Tensor Analysis for neuroimaging data” June 2018. Madrid. *Keynote Speaker*.
- International Society for Bayesian Analysis*. “Bayesian Analysis for neuroimaging data”. June 2018. Edinburgh. *Keynote Speaker*
- Emory University– “Spatial regression for neuroimaging”- October –Georgia– Seminar.
- Old Dominion University – “Studying the brain of cocaine addicts”- October –Virginia– Seminar.
- 2017** “Human health Impacts of extreme weather and air pollution”, February. VSU, Petersburg, Virginia. *Keynote Speaker*
- “Nonparametric Spatial-Temporal Modeling of the Association between Ambient Ambient Air Pollution and Adverse Pregnancy Outcomes”, February -Seminar – Biostatistics Department, VCU. Richmond, Virginia
- ENAR 2017 Spring Meeting, March - Washington, DC
- John Hopkins Biostatistics – “Spatial association between preterm birth and pollution”- March – Baltimore, Maryland – Seminar.
- “Human health impacts of extreme weather and air pollution: what big data tells us”, Plenary Talk at Old Dominion University, April - Norfolk, Virginia
- Humphrey Fellowship Program Graduation Ceremony – April 30 – Keynote Speaker – Richmond, Virginia

JSM Baltimore 2017, July – Invited Speaker- “Multivariate Functional Model for Hurricane forecasting”.

*Women Who Mean Business* –Speaker –Richmond, October 2017

**2016** “Spatial temporal association between air pollution and adverse pregnancy outcomes“ March. National Institutes of Health. Washington, DC.

“Spatial hurricane forecasting“ March. Workshop on Environmental Statistics. Ohio State University.

“Work and Life Balance in Academia”. April. SAMSI workshop. *Keynote Speaker*.

“ Statistics for Big Data“. May. A celebration of Statistics at Chicago (70 years celebration). University of Chicago. *Keynote speaker*.

“Dynamic spatial temporal modeling of the impact of air pollution on adverse pregnancy outcomes“ June. The International Envriometrics Society, Glasgow, Scotland. *Keynote speaker*.

“Functional spatial modeling of hurricane tracks.” August 2016 Joint Statistical Meeting (JSM). Chicago, IL.

“Forecasting of weather extreme events”. 2016 International Conference on Computational Statistics. August, Spain.

**2015** Keynote speaker. “Human health impacts of climate change: what big data tell us.” The Environmental Design Research Association. 2015 Fall inaugural symposium. North Carolina

Keynote speaker. “Human health impacts of extreme weather and air pollution: what the data tell us.” American Meteorological Society, 2015 Summer meeting. Raleigh, North Carolina.

Keynote speaker. “Spatial Nonparametric Modeling.” G70: A Celebration of Alan Gelfand. Duke University, Durham, North Carolina.

“Spatial likelihood methods for big data.” 2015 Joint Statistical Meeting (JSM). Seattle, Washington.

- “Multivariate spatial modeling of soil trace elements.” Joint 24<sup>th</sup> International Chinese Statistical Association (ICSA) Applied Statistics Symposium and 13<sup>th</sup> Graybill Conference. Fort Collins, Colorado.
- 2014** Led a roundtable discussion on the topic: *Multivariate Spatial Modeling of Conditional Dependence to Study Arsenic Contamination in Drinking Water*. 2014 Joint Statistical Meeting (JSM). Boston, Massachusetts.
- “Hurricane Forecasting using Multivariate Spatial Functional Linear Model.” International Society for Bayesian Analysis World Meeting (ISBA 2014). Cancun, Mexico.
- “Nonstationary and Nonparametric Modeling of Multivariate Correlated Data via Kernel Processes Mixing.” 2nd International Society for Nonparametric Statistics (ISNPS) Conference. Cádiz, Spain.
- Panelist. “Taking on Leadership while Keeping Research Vibrant.” Women in Statistics Conference. Cary, North Carolina.
- Keynote speaker. “Nonparametric spatial-temporal modeling of the association between ambient air pollution and adverse pregnancy outcomes.” 8<sup>th</sup> Annual Probability & Statistics Day. University of Maryland, Baltimore County, Maryland.
- “Air Pollution Metric Analysis while Determining Susceptible Periods of Pregnancy for Low Birth Weight and Birth Defects.” Eastern North American Region, International Biometric Society (ENAR). Baltimore, Maryland.
- “Statistical Methods for Large Environmental Datasets.” 2014 AAAS Annual Meeting. Chicago, Illinois.
- “Multivariate Spatial-temporal Model for Birth Defects and Ambient Air Pollution Risk Assessment.” Brown University Distinguished Lecture Series. Providence, Rhode Island.
- 2013** “Statistics: The Power of Transforming Massive Data into Knowledge.” ENCORE. Raleigh, North Carolina.
- Guest Lecturer. STATMOS node. Collaborator. International Year of Statistics. Valladolid, Spain.
- “The Spatial Structure of Microscale Reactivity of Arsenic in Soil Material.” Agronomic and Environmental Studies ASA-CSSA-SSSA 2013. Tampa, Florida.

“Calibration of deterministic numerical models using nonparametric spatial density functions.” The John C. & Susan S.C. Wierman Lecture Series. Johns Hopkins University, Baltimore, Maryland.

“Opportunities for Geospatial Methods in Federal Surveys.” National Institute of Statistical Sciences (NISS) Workshop. Washington, D.C.

Led a roundtable discussion on the topic: *The role of a statistician in interdisciplinary teams and funding opportunities*. 2013 Joint Statistical Meeting. Montreal, Canada.

“Spatial temporal analysis of health effects associated with sources and speciation of fine PM.” RTI.

“Impact of heat waves on mortality.” 23<sup>rd</sup> Annual Conference of The International Environmetrics Society (TIES). Anchorage, Alaska.

“Spatial calibration of deterministic computer models.” Plenary speaker. Spatial Statistics 2013 Conference. Ohio State University, Columbus, Ohio.

“Spatial modeling of the impact of pollution on premature birth outcomes.” Eastern North American Region, International Biometric Society (ENAR), Orlando, Florida.

“Balancing life and a career in academia.” Distinguished speaker. ADVANCE program. Kansas State University. Manhattan, Kansas.

“Spatial circular models for wind fields.” SAMSI-SAVI workshop on Environmental Statistics. Research Triangle Park, North Carolina.

**2012** “Impact of extreme temperatures on birth outcomes.” American Public Health Association 2012 Annual Meeting. San Francisco, California.

“Calibration of deterministic numerical models.” American Statistical Association (ASA) Section on Statistics and the Environment (ENVR) workshop. Raleigh, North Carolina.

“Balancing life and a career in academia.” Plenary speaker. National Science Foundation (NSF) ADVANCE conference. Raleigh, NC. September 2012.

“Impact of climate change on human health.” Eastern North American Region, International Biometric Society (ENAR), Washington, D.C.

Plenary speaker. 100th year celebration of the Girl Scouts. Raleigh, North Carolina.

“Do we know too much to know anymore?” 2012 Southern Regional Council on

Statistics (SRCOS) Summer Research Conference. Jekyll Island, Georgia.

“Calibration of deterministic models.” 8th International Purdue Symposium on Statistics. Purdue University, West Lafayette, Indiana.

“Spatial-Temporal Modeling of the Critical Windows of Air Pollution Exposure for Preterm Birth.” 2012 Joint Statistical Meeting (JSM), San Diego, California.

**2011** “Spatial modeling of the impact of climate change of ozone levels.” Keynote speaker. Workshop on Mathematics in the Geosciences. Northwestern University, Evanston, Illinois.

“Impact of Pollution on preterm birth.” Eastern North American Region, International Biometric Society (ENAR). Washington, D.C. [Also presented a short course and led a luncheon discussion.]

“Spatial nonparametric models for the impact of pollution on adverse pregnancy outcomes.” 2011 Joint Statistical Meeting (JSM). Miami, Florida.

“Spatial models for the impact of climate change on ozone levels.” Plenary speaker. International Biometric Society (IBS). Sidney, Australia. [Also presented a workshop on the topic: *Spatial analysis of public health data: a practical introduction with geocoded and areal data.*]

“Nonparametric models for spatial extremes.” 2<sup>nd</sup> Institute of Mathematical Statistics (IMS), Asia Pacific Rim Meeting. Omiya Sonic City, Japan.

“Clearing the air.” ENCORE (extension and continuing education). Raleigh, North Carolina.

“Calibration of deterministic models.” Statistical Methods for Very Large Datasets Conference 2011. Baltimore, Maryland.

“Nonparametric spatial models for extreme temperatures.” 42nd Symposium on the Interface of Computing Science and Statistics 2011 (Interface 2011). Cary, North Carolina.

**2010** “Spatial analysis of images.” Workshop: From Imaging to Understanding: Visualization and Smart Analysis. Duke University, Durham, North Carolina.

Invited speaker. Extreme Events in Climate and Weather - An Interdisciplinary Workshop. Banff International Research Station, Alberta, Canada.

“Nonparametric Spatial Models for Extremes: Application to Extreme Temperature

- Data.” 2010 Joint Statistical Meeting (JSM). Vancouver, British Columbia, Canada.
- Plenary speaker. International Workshop in Applied Probability (IWAP 2010). Madrid, Spain.
- “Bayesian Quantile Regression: Application to Study the Impact of Climate Change on Tropospheric Ozone.” International Workshop on Spatio-Temporal Modelling (METMA V). University of Santiago de Compostela, Spain.
- Invited speaker, Institute for Pure & Applied Mathematics (IPAM) Workshop IV: Data Hierarchies for Climate Modeling. Los Angeles, California.
- 2009** “Spatial modeling of health effects from pollution.” 2009 Joint Statistical Meeting (JSM). Washington, D.C.
- “Nonparametric spatial models for extreme temperature.” Graybill International Conference on Extreme Value Analysis VIII, Fort Collins, Colorado.
- “Bayesian spatial variable selection: applied to pregnancy data.” Eastern North American Region, International Biometric Society (ENAR). San Antonio, Texas.
- 2008** Invited discussant: *Get involved in the research on environmental statistics going on in RTP!* 2008 Joint Statistical Meeting (JSM). Denver, Colorado. August 2008.
- “Bayesian variable selection for spatially-varying coefficient regression: application to physical activity in prenatal women.” 19<sup>th</sup> Annual Conference of The International Environmetrics Society (TIES), Kelowna, Canada.
- “Bayesian variable selection for spatially-varying coefficient regression: application to physical activity in prenatal women.” International Indian Statistical Association (IISA) Conference. University of Connecticut, Storrs, Connecticut.
- 2007** “Nonparametric spatial models.” 56th Session of the International Statistical Institute, Lisbon, Portugal.
- “Nonparametric models for spatial data.” International Conference on Advances in Interdisciplinary Statistics and Combinatorics. Greensboro, North Carolina
- “Uncertainty analysis of air quality deterministic models.” EPA regional meeting. North Carolina.
- “Likelihood approximation for spatial temporal processes.” Eastern North American

- Region, International Biometric Society (ENAR). Atlanta, Georgia.
- “Spatial temporal modeling framework for hurricane wind fields.” 10 CLAPEM: Latin American Congress of Probability and Mathematical Statistics. Lima, Peru.
- “Combining data and numerical models for hurricane forecasting.” 2007 Joint Statistical Meeting (JSM). Seattle, Washington.
- 2006** “Spatial temporal covariance models.” 26<sup>th</sup> European Meeting of Statisticians. Torun, Poland.
- “Should ultrafine particulates be regulated?” Annual Conference of The International Environmetrics Society (TIES). Kalmar, Sweden.
- “Spatial association between speciated particulate matter and mortality.” Bayes Workshop. University of Warwick. Coventry, United Kingdom.
- “Dynamic priors for space-time modeling.” Valencia/ISBA Eighth World Meeting on Bayesian Statistics. Benidorm, Spain.
- “Data assimilation for hurricane forecasting.” Eastern North American Region, International Biometric Society (ENAR). Tampa, Florida.
- 2005** “Probabilistic methods for environmental exposure risk analysis.” Society for Risk Analysis (SRA) Annual Meeting. Orlando, Florida.
- “Multivariate spatial-temporal models for wind fields.” Royal Statistical Society Environmental Statistics Section workshop. London, United Kingdom.
- “The use of statistics within a regulatory framework.” LPR (Law, Probability and Risk) Conference. Edinburgh, United Kingdom.
- “Bayesian hierarchical models for association between pollution and mortality.” Eastern North American Region, International Biometric Society (ENAR). Austin, Texas.
- “Combining numerical models and spatial data.” 2005 Joint Statistical Meeting (JSM). Minneapolis, Minnesota.
- “Combining numerical models and data for wind forecasting.” 2005 Joint Statistical Meeting (JSM). Minneapolis, Minnesota.
- “Likelihood approximation methods.” 2005 Joint Statistical Meeting (JSM). Minneapolis, Minnesota.

“New models for asymmetric spatial processes.” 2005 Joint Statistical Meeting (JSM). Minneapolis, Minnesota.

“Combining disparate spatial data.” Royal Statistical Society. London, United Kingdom.

Probabilistic Risk Assessment (PRA): Bridging Components along the Exposure-Dose-Response Continuum workshop. Sponsored by ACS, SOT, and U.S. EPA. Washington, DC.

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## Grants Funded

**NSF Fuentes (PI).** NSF 16-594. 2019-2023. ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers. Institutional Transformation. “*Overcoming Immunity to Change (ITC): ADVANCE IT VCU*”  
Budget: \$3M.

**EPA** 2014-2017, Fuentes (co-PI)  
“Characterizing the Determinants of Vehicle Traffic Emissions Exposure: Measurement and Modeling of Land-use, Traffic, Emissions.” Budget: \$762k.

**NIH/NCATS** – 2017-2022–Center for Clinical Translational Research, Fuentes co-PI. (FG Moeller PI). “Clinical Translational Science Award”. Budget 21.5M

**NSF DMS-1406016.** 2014-2019, Fuentes (PI)  
“Spatial temporal models and methods for big nonstationary multivariate data on Euclidean spaces and the sphere.” Budget: \$201k.

**NSF EAR-1349374** 2014-2019, Dean Hesterberg and Montse Fuentes (Co-PIs)  
“Microscale Reactivity of Trace Elements in Complex Geochemical Systems.” Budget: \$498k.

**NSF DMS-1107046.** 2011-2019, Fuentes (PI), Guttorp (UW) and M. Stein (UC) (Co-PIs)  
"Collaborative Research: RNMS Statistical methods for atmospheric and oceanic sciences."  
Budget: \$5,000,000.

**NSF** 2013-2018, Fuentes (Co-PI)  
“Promoting Academic and Career Success for Raleigh Future Scholars at NC State.” Budget: \$634k

**NOAA** 2011-2014, Fuentes (Co-PI)  
“Incorporating Climate Change Effects into Next-Generation Coastal Inundation Maps: An Integrated Approach.” Budget: \$390k.

**RISF** 2013-2015, Dean Hesterberg and Montse Fuentes (Co-PIs)  
“Development of Stochastic/Mechanistic Models for Predicting Environmental Impacts of Toxic Trace Elements.” Budget: \$23k.

**Centers for Disease Control and Prevention (CDC)** 2014-2019  
The North Carolina Center for Birth Defects Research and Prevention  
Andrew Olshan (PI), Fuentes is an Institutional PI (summer support)

**NIH- R01** Fuentes (PI, in collaboration with UNC-Biostatistics and Duke). 2012-2015  
“Space-time Modeling for Linking Climate Change, Pollutant Exposure, Built Environments, and Health Outcomes.” Budget: \$1,094,446.

**NIH R13. Travel awards.** Fuentes (PI)

This award provides 6 travel awards for students and junior investigators attending the IMS-ISBA 2011 conference in Utah.

**NSF DMS.** CMG 2009-2011, Fuentes (PI)

“Multivariate nonstationary spatial extremes in climate and atmospherics.”

Co-PIs: Alan Gelfand (Duke), Peter Guttorp (UW), Doug Nychka (NCAR) and Kate Calder (OSU). Consultant: Richard Smith (UNC). L. Mearns (NCAR), and Rick Katz (NCAR)

**NASA** 2009-2011. Fred Bingham (Prof. of Oceanography, UNCW) and Fuentes (PIs)

“Statistical Validation of Sea Surface Salinity Measurements from Aquarius.”

Budget: \$150k.

**EPA- STAR** 2009-2012, Fuentes (PI)

“Spatial Temporal Analysis of Health Effects Associated With sources and Speciation of Fine PM.” Total Budget: \$893k.

**NIH- R01** Starting Jan 2008, Fuentes (PI, 30% of time + a graduate student)

“A Spatial temporal modeling approach for Environmental Epidemiological Data.”

Total Budget: \$1,086,133.

**NSF** August 2007. Fuentes (PI)

Award for 2,000 from the associated for women in Mathematics. Budget: \$2k

**Centers for Disease Control and Prevention (CDC)** 12/01/2008 – 12/01/2013.

The North Carolina Center for Birth Defects Research and Prevention

Andrew Olshan (PI), Fuentes is a Co-PI (summer support). Budget: \$ 6,321,731.

**GIT:** Graduate industrial trainee program. GIT with Waratah Corporation under EPA Prime contract EP-D-06-072, Fuentes (PI)

“Impact of climate change on future ambient ozone values.”

Student supported: Jingwen Zhou (advisor: Fuentes). Research conducted in collaboration with EPA. This GIT provides full support for the student.

**Center for Environmental Health and Susceptibility, UNC.** August 2007. A. Herring and M. Fuentes (PIs)

“New Statistical Approaches for Combining Multiple-Source Environmental Data.”

(Summer 2007 support for Fuentes)

**NSF-DMS.** 2007-2010. Fuentes (PI). Co-PIs: Lian Xie (Professor of Oceanography) and Brian Reich (postdoc). “Multivariate space-time models and methods to combine large disparate spatial data and numerical models.” Budget: \$260k.

**NSF-DMS.** 2004-2007, Fuentes (PI)

“Estimation, Modeling and prediction of nonseparable and nonstationary space-time processes.” Budget: \$112k.

**NSF-DMS.** 2000-2004, Fuentes (PI)  
“Spatial Modeling, Analysis and Prediction of Nonstationary Environmental Processes.”  
Budget: \$150k.

**NSF-DMS.** 2005, Fuentes (PI)  
Travel award for the IMS-ISBA conference (Italy) to support student traveling. Budget:  
\$10k.

**NSF-DMS.** 2003, Fuentes (PI)  
Travel award for the ISI Environmental and health statistics (Spain) to support student  
traveling. Budget: \$9k

**NSF-DMS. VIGRE.** 2005-2008, Fuentes (Co-PI)  
Integrated and Mentored Program of Research and Education in Statistical Sciences.  
Budget: \$3,807,965.

**NSF-DMS.** 2001-2002. Bloomfield (PI), Fuentes (Co-PI)  
Scientific Computing Research Environments for the Mathematical Sciences. Budget \$22k.

**NIH.** 2003, Fuentes (PI)  
Travel award for the ISI international conference on Environmental Statistics and Health.  
\$9,000. To support student/junior investigators traveling. Budget: \$9k.

**EPA** 2003, Fuentes (PI)  
Travel award for the ISI international conference on Environmental Statistics and Health to  
support student/junior investigators/invited speakers.

**Center for Environmental Health and Susceptibility, UNC.** 2007. A. Herring and M.  
Fuentes (PIs).  
“New Statistical Approaches for Combining Multiple-Source Environmental Data.”  
(Summer support for Fuentes)

**EPA** 2001-2005, Fuentes (PI), David Higdon (Co-PI).  
“Statistical Methodology for Spatial Modeling and Interpolation of Air and Deposition  
Pollutants.” Budget: \$470k.

**DOD** 2001-2004, Fuentes (PI), J. Davis (Co-PI)  
“The development of a model for predicting the wind field over the Chesapeake Bay.”  
Budget: \$230k.

**NOAA.** 2001-2003, Fuentes and Morrison (PIs)  
“Climate Scale Sea-Surface-Temperature Analyses.” (Support for a graduate student).  
Budget: \$100k.

**NOAA.** 2003 – 2007, Pietrafesa (PI) Xie and Fuentes (Project Leaders)  
(1 month of summer salary and 1 graduate student for Fuentes)  
“Climate and Weather Impacts on Society & the Environment” Budget: \$3,000,000.

**Faculty Research and Professional Development Fund, NC State.** 2001, Fuentes (PI)  
“New methodology for spatial interpolation of nonstationary environmental processes.”  
Budget: \$5k.

**Alfred P. Sloan Foundation.** 2002-2003, Fuentes (PI)  
Budget: \$29k.

**EPA.** 1999-2001, Fuentes (PI)  
“Spatial structure of dry deposition.” Budget: \$62k/year for salary + \$5k/year for travel.

#### **EPA**

1. Coop with EPA to support a PhD students working with Fuentes (Man Sik Park).  
Jan. 2004-Dec 2005.
  2. Coop with EPA to support a PhD student working with Jungsoong Choi.  
June 2005-June 2006.
  3. Coop with EPA to support a PhD student working with Fuentes (Hae-Ryoung Song).  
May 2004-Dec 2006.
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## **PhD Students Supervised**

### **PhD Thesis Students (Fuentes chair of thesis committee)**

1. Jifang Zhao. “Dimension reduction for brain imaging data”. Expected graduation date 2020. VCU
2. Halley Brantley. “Spatial source apportionment for air pollution”. Graduated: 2019
3. Amanda Bell. “Spatial spectral modelling”. Graduated 2019.
4. An-Ting Jhuang. “Data assimilation”. Graduated 2018
5. Marcela Cordoba. Spatial Likelihood approximations”. Graduated 2017.
6. Luke Smith. “Multivariate spatial quantile regression. Graduated May 2014.
7. Laura Boehm. “Variable selection models for spatial data.” Graduated May 2013.  
Assistant Professor at St. Ola College, MN.
8. Darryl Cooney, Ph.D. “Methods to approximate the spatial likelihood of nonstationary processes”. On leave. GIT at Scimetrika.
9. Danny Modlin. Probabilistic hurricane forecasting. Expected graduation date: May 2015.  
(supported by Fuentes’s NSF award). Started full-time at SAS in April 2011.
10. Josh Warren. “Spatial nonparametric modeling of the association between exposure to air pollution and birth outcomes.” Graduated July 2011. (supported by Fuentes’s STAR-EPA award). Postdoct at UNC-Biostat starting July 2011.

11. Jingwen Zhou. Topic: Spatial quantile nonparametric regression, in the context of air atmospherics. Graduated May 2012. (supported by Fuentes's NASA award)
12. Eric Kalendra. "Space-time modeling of health effects due to exposure to particulate matter." Graduated May 2010 (supported by Fuentes's NIH award). Currently at George Mason University.
13. Shenek Heyward. "Spatial temporal modeling of temperature trends (modeling climate change)". Graduated December 2010 (supported by NOAA award).
14. Tsuei-long Chen. Started to work on his dissertation under Fuentes's supervision on Jan 07. Topic: Multivariate spatial temporal models to study association between mortality and speciated particulate matter.
15. Jungsoon Choi. "Multivariate space-time models for air pollutants." Graduated December 2008. Assistant Professor, Department of Biostatistics, College of Medicine, Korea University, Seoul, South Korea.
16. Liyun Ma. "Spectral likelihood methods for incomplete large spatial datasets." Graduated August 2006. Currently working as a research analyst at the headquarters of Capital One financial corporation in Mclean, VA.
17. Kristen M. Foley. "Data assimilation methods for space-time processes." Graduated August 2006. Currently a statistician (permanent position) at U.S. EPA, RTP, NC.
18. Hae-Ryoung Song. "Spatial-temporal hierarchical Poisson model to study association between speciated fine particles and human health effects from pollution." Graduated May 06. Currently a Postdoc working with Andrew Lawson at University of South Carolina.
19. Man Sik Park. "Test for axial and diagonal symmetry of space-time processes". Graduated May 06. Initially went to a postdoc at Colorado State University working with Dr. Hoeting.
20. Li Chen. "Spatial-temporal non-separable models for wind fields." Graduated May 2004 (co-advisor: J. Davis from MEAS). Initially went to a postdoc at the University of Chicago working with Dr. M. Stein.
21. Prashenn Agarwal. "Bootstrap for spatial data." Graduated March 2003. Research biostatistician at Bristol-Myers Squibb, Pharmaceutical Research Institute, (co-advisor: M. Overton from Civil Engineering).
22. Jarrett Barber. "Modeling and prediction of non-stationary environmental processes." Graduated May 2002. Assistant Professor at Montana State University School of Mathematical and Statistical Sciences, Arizona State University.
23. Hon-Jung Kim, Ph.D. "Spectral Analysis with Spatial periodogram and Data Tapers." PhD. August 2000. She is currently an assistant professor (tenure-track) at University of Oulu (Finland), (co-advisor: Dennis Boos).

### **Postdocs mentored by Fuentes**

1. Abdolnasser Sadeghkhanian supported by NIH (2019-2020).
2. Hossein Rezaei, supported by NSF (2017-2019). Currently tenure-track faculty at South Dakota University.
3. Yen-Ning Huang supported by NIH (2015-2017). Currently faculty at Indiana University.
4. Kimberly Kaufeld supported by NIH and NSF (2014-2016). Currently at Los Alamos.
5. Maria Terres supported by STATMOS-NSF and STAR EPA award (2014-2015). Currently senior scientist at Climate Corporation.
6. Joe Guinness, postdoc supported by STATMOS-NSF award (2012-2013). Currently a tenure-track faculty member at NC State.
7. Elizabeth Mannshardt, postdoc supported by STATMOS-NSF award (2012-2014). Currently scientist at the Environmental Protection Agency.
8. Dorit Hammerling, postdoc supported by SAMSI (2012-2014). Currently scientist at the National Center for Atmospheric Research.
9. Ying Sun. Postdoc supported by SAMSI and STATMOS (2011-2013). Currently assistant Professor (tenure-track) at Ohio State University, Department of Statistics.
10. Howard Chang, postdoc (2009-2011). Currently assistant professor tenure-track at the Biostatistics Department, Emory University.
11. John Henry, postdoc ( July 2008-august 2009)
12. Brian J. Reich, PhD from Biostatistics, University of Minnesota. Postdoc (2006-2008) Faculty position at NC State (tenure-track).
13. Guillaume Vernieres, Ph.D. in oceanography from Oregon State University. Postdoc 2006-2007.

### **Undergraduate students mentored by Fuentes**

Kaili Stevens – supported by International Biometrics Society  
Katrina Myzgayeva – supported by STATMOS center grant.  
Katelyn Kilmer – supported by STATMOS center grant.