BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Alan Gelfand	Professor of Statistics
eRA COMMONS USER NAME	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
City College of New York, New York	B.S.	1965	Mathematics
Stanford University, California	M.S.	1967	Statistics
Stanford University, California	Ph.D.	1969	Statistics

A. Positions and Honors.

Positions and Employment

1969-1975   Assistant Professor, Department of Statistics, University of Connecticut
1975-1980   Associate Professor, Department of Statistics, University of Connecticut
1980-2002   Professor, Department of Statistics, University of Connecticut
2002-present   James B. Duke Professor of Statistics and Decision Sciences and Professor of Environmental Sciences and Policy, Duke University
2007-   Chair, Department of Statistical Science, Duke University

Honor or Distinctions

1978   Elected Fellow of the American Statistical Association
1986   Elected Member of the International Statistical Institute
1995   Elected Member of the Connecticut Academy of Arts and Sciences
1996   Elected Fellow of the Institute of Mathematical Statistics
2001   Mosteller Statistician of the Year Award
1991-2001   Tenth Most Cited Mathematical Scientist in the World, Science Watch
2006   President, International Society for Bayesian Analysis
2006   Recipient, Parzen Prize

B. Selected peer-reviewed publications (in chronological order).

(Publications selected from more than 110 since 1990)

1. Gelfand, A.E. (with S. Mukhopadhyay) 1997. Dirichlet Process Mixed Generalized Linear Models, Journal of the American Statistical Association, 92, 633-639.
2. Gelfand, A.E. (with L. Waller, B.P. Carlin and H. Xia) 1997. Hierarchical Spatio-temporal Mapping of Disease Rates, Journal of the American Statistical Association, 92, 607-617.
3. Gelfand, A.E. (with B.K. Mallick and W. Polasek) 1997. Broken Biological Size Relationships: A Censored Semiparametric Regression Approach with Measurement Error, Journal of the American Statistical Association, 92, 836-845.
4. Gelfand, A.E. (with S.K. Ghosh) 1998. Model Choice: A Minimum Posterior Predictive Loss Approach. Biometrika 85, 1-11.
5. Gelfand, A.E. (with S.K. Ghosh) 1998. Latent Waiting Time Models for Bivariate Event Times

with Censoring. <u>Sankhya</u> B 60, 31-47.

6.   Gelfand, A.E. (with B.P. Carlin and J.B. Kadane) 1998. Approaches for Optimal Sequential Decision Analysis in Clinical Trials. <u>Biometrics</u> 54, 964-975.

7.   Gelfand, A.E. (with P.K. Vlachos) 1998. Nonparametric Bayesian Group Sequential Design. In: <u>Practical Nonparametric and Semiparametric Bayesian Statistics</u>, Eds: D. Dey, P. Mueller and D. Sinha, Springer Verlag Lecture Notes 133. 115-132.

8.   Gelfand A.E. (with S. Sahu) 1999. Gibbs Sampling, Identifiability and Improper Priors in Generalized Linear Mixed Models. <u>Journal American Statistical Association</u> 94, 247-253.

9.   Gelfand, A.E. (with F. Wang) 2000. Modeling the Cumulative Risk for a False Positive Under Repeated Screening Events. <u>Statistics In Medicine</u> 19, 1865-1879.

10.   Gelfand, A.E. (with S.K. Ghosh, C. Christiansen, S.B. Soumerai and T.J. McLaughlin) 2000. Proportional Hazards Models: A Latent Risks Approach. <u>Applied Statistics</u> 49, 385-397.

11.   Gelfand, A.E. (with M.D. Ecker, C. Christiansen, S.B. Soumerai and T.J. McLaughlin) 2000. Conditional Categorical Response Models with Application to Treatment Compliance for and Survival of AMI Patients. <u>Applied Statistics</u> 49, 171-186.

12.   Gelfand, A.E. (with A. Mugglin and B.P. Carlin) 2000. Fully Model Based Approaches for Misaligned Spatial Data. <u>Journal American Statistical Association</u> 95, 877-887.

13.   Gelfand, A.E. (with P. Vounatsou and T. Smith) 2000. Modeling of Multinomial data with latent structure: application to geographical mapping of human gene and haplotype frequencies. <u>Biostatistics</u> 1, 177-189.

14.   Gelfand, A.E. 2000 (with C.L. Christiansen, F. Wang, M.B. Barton, W. Kreuter, J.G. Elmore and S.W. Fletcher). Predicting the Cumulative Risk of False Positive Mammograms. <u>Journal National Cancer Institute</u>, 92, 1657-1666.

15. Gelfand, A.E. (with L. Zhu and B.P. Carlin) 2001. On The Change of Support Problem for Spatio-Temporal Data, <u>Biostatistics</u> 2, 31-45.

16.   Gelfand, A.E. (with A. Kottas) 2001. Bayesian Semiparametric Median Regression Modeling. <u>Journal American Statistical Association</u> 96, 1458 – 1468.

17.   Gelfand, A.E. (with M. Branco and A. Kottas)2002 Nonparametric Bayesian Modeling for Cytogenetic Dosimetry, <u>Biometrics</u>,58, 593-600

18.   Gelfand, A.E. (with P.Vounatsou) 2002 Proper Multivariate Conditional Autoregressive Models for Spatial Data Analysis, <u>Biostatistics</u>,4, 11-25

19. Gelfand, A.E. (with P.Vounatsou and T.Smith) 2003 Spatial modeling of gene frequencies in the presence of undetectable alleles. <u>Journal of Applied Statistics</u> 30, 49-62

Gelfand (with S. Banerjee) 2003 On Smoothness Properties of Spatial Processes. <u>Journal of Multivariate Analysis</u> 84, 85-100

20. Gelfand, A.E. (with L.Zhu and B.P. Carlin) 2003 Hierarchical regression with misaligned Spatio-temporal Data: Relating Ambient Ozone and Pediatric Asthma ER visits in Atlanta, <u>Environmetrics</u>14, 537-557

21. Gelfand, A.E. (with H-J. Kim, C.F. Sirmans and S. Banerjee)2003 Spatial Modeling with Spatially Varying Coefficient Processes, <u>Journal of the American Statistical Association</u> 98, 387-396.

22. Gelfand, A.E. (with A. Kottas) 2003 Bayesian Semiparametric Regression for Median Residual Life, <u>Scandinavian Journal of Statistics</u>, 30, 651-665

23. Gelfand, A.E. (with S. Banerjee) 2003 Directional Rates of Change Under Spatial Process Models, <u>Journal of the American Statistical Association</u>, 98, 946-954

24. Gelfand, A. E. (with A. Kottas) 2003. Bayesian Semiparametric Regression for Median Residual Life. <u>Scandinavian Journal of Statistics</u> 30, 651-665.

25.   Gelfand, A.E. (with A.M. Schmidt, S. Wu, J.A. Silander, A. Latimer and A.G. Rebelo) 2005. Explaining Species Diversity Through Species Level Hierarchical Modeling. <u>Applied Statistics</u>, 65, 1-20

26.   Gelfand, A.E. (with S. Banerjee and D. Gamerman) 2005. Spatial Process Modeling for Univariate and Multivariate Dynamic Spatial Data, <u>Environmetrics</u>, 16, 1-15.

27. Gelfand, A.E. (with D. Agarwal) 2005. Slice Gibbs Sampling for Simulation Based Fitting of Spatial Models. <u>Statistics and Computing</u>, 15, 61-69.

28.   Gelfand, A.E. (with D. Agarwal, J. Silander, J. Mickelson and R. Dewar) 2005. <u>Relating Tropical Deforestation and Population Pressure through Spatially Explicit</u>

Misaligned Bivariate Regression Models. <u>Ecological Modelling</u>, 185, 105-131

29.   Gelfand, A.E. (with M. Short and B.P. Carlin) 2005. Covariate-adjusted Spatial CDF's for Air Pollutant Data. <u>Journal of Agricultural, Biological and Environmental Statistics</u>, 10, 259-275

30.   Gelfand, A.E. (with A. Kottas and S.N. Mac Eachern) 2005. Bayesian Nonparametric Spatial Modeling with Dirichlet Process Mixing. <u>Journal of the American Statistical Association</u> , 100, 1021-1035

31.   Gelfand, A.E. (with P. Paliwal, L. Abraham, W. Barlow and J. Elmore) 2005. Chronological Event Modeling For Screening Mammography. Statistics in Medicine, 24

32. Gelfand, A.E. (with S. Sahu and D.M. Holland) 2006. Spatio-temporal Modeling for Fine Particulant Matter. <u>Journal of Agricultural, Biological and Environmental Statistics</u> , 10, 259-275

33.   Gelfand, A.E. (with A. Latimer, S. Wu and J.A. Silander, Jr.) 2006. Building Statistical Models to Analyze Species Distributions, <u>Ecological Applications</u> 16, 33-50

34.   Gelfand, A.E. (with P. Paliwal) 2006. Estimating Measures of Diagnostic Accuracy when some covariate information is missing. <u>Statistics in Medicine, 25,</u> 2981-2993<u>.</u>

35.   Gelfand, A.E. (with G. Xia and M. L. Miranda) 2006. Approximately Optimal Spatial Design Approaches for Environmental Health Data. Environmetrics, 17, 363-385

36.   Gelfand, A.E. (with S. Banerjee) 2006. Curvilinear Boundary Assessment under Spatial Processes Models. Journal of the American Statistical Association, 101, 1487-1501

37. Gelfand, A.E. (with J. Barber and J.A. Silander) 2006. Modeling Map Positional Error to infer about True Feature Location. Canadian Journal of Statistics, 34, 4

38. Gelfand, A.E. (with M. Guindani) 2006. Smoothness Properties and Gradient Analysis under Spatial Dirichlet Process Models, Models and Computing in Applied Probability, 8, 159-189

39. Gelfand, A.E. (with J.S. Clark) 2006. The emergence of integrated hierarchical models in ecology, Trends in Ecology and Evolution, 21, 375-380

40. Gelfand, A.E. (with D.B. Woodard, W.E. Barlow, and J. G. Elmore) 2007. Performance Assessment for Radiologists Interpreting Screening Mammography, Statistics and Medicine (forthcoming)

41. Gelfand, A.E. (with A. Majumdar) 2007. Multivariate Spatial Process Modeling Using Convolved Covariance Functions, Mathematical Geology (to appear)

42.   Gelfand, A.E. (with M. Guindani and S. Petrone) 2007. Bayesian nonparametric modeling for spatial data analysis using Dirichlet processes, Bayesian Statistics 8, Eds: Bernardo, J. et al., Oxford University Press (forthcoming)

43.   Gelfand, A.E. (with J. Barber) 2007. Hierarchical Spatial Modeling for Estimation of Population Size. <u>Environmental and Ecological Statistics (forthcoming)</u>.

44.   Gelfand, A.E. (with S. Bhattacharya and K. Holsinger) 2007. Model Fitting and Inference   Under Latent Equilibrium Processes, Statistics and Computing (forthcoming)

45.   Gelfand, A.E. (with S.K. Sahu and D.M. Holland) 2007. High-Resolution Space-time Ozone Modeling for Assessing Trends, Journal of the American Statistical Association (forthcoming)

C.   Research Support.

Ongoing Research Support

1-P20-RR020782-01 Miranda (PI)   09/01/2004 - 08/31/2007
NIH/Roadmap Initiative

Center for Geospatial Medicine
This project brings together six investigators to develop an interdisciplinary research center that utilizes geospatial (GIS), molecular biological, genomic, epidemiological social and psychological technologies to develop systematic, spatially based methods for analyzing the pathways through which the environment, genetic, and psychosocial domains jointly shape child health and well being. Using neural tube defects as a prototype health endpoint, the researchers will develop a generalized framework for applying methods to a wide variety of endpoints, including autism, obesity, and ADHD.
Role: Co-PI

9R01-CA-107623-04   Elmore (PI)   08/01/05 – 05/31/06
NIH/AHRQ
Understanding Variability in Community Mammography
The objective of this grant is to assess the current information in the Breast Cancer Surveillance Consortium's database regarding variability among radiologists in rates such as recall, sensitivity, false positive, etc. In addition, new databases are being developed to characterize radiologists and the facilities they work in. A synthesis of all of these databases will help to explain radiologist variability.
Role: Co-PI

1R01-GM-068449-01A1 Holsinger (PI)   07/01/05– 06/30/06
NIH
Bayesian Methods for Analyzing Genetic Diversity
Nearly all plant and animal populations consist of many populations among which genetic exchange is limited. The goal of this project is to use hierarchical Bayesian modeling in conjunction with observed patterns of differences among populations to estimate population size, migration rates, and mutation rates.
Role: Co-PI

1R21-ES-013776-01   04/01/2005 - 03/31/2007
NIH
Optimal Spatial Design for Environmental Health Research
The goal of this project is to devise a general approach for collecting environmental and biological samples that incorporates optimal spatial design given recent advances in the theory of spatial statistics, as well as new kinds of data management techniques and analytical approaches made possible through the development of GIS software.
Role: PI

NSF-DMS-05-04953   06/01/2005 - 05/31/2008
NSF/DMS
Bayesian Nonparametric Methods for Spatial and Spatiotemporal Data
A wide range of applications demands spatial or spatio-temporal modeling. The objective of this funding is to explore a new class of nonparametric and semiparametric spatial models. The class is developed by extending Dirichlet process mixing in several critical ways.
Role: Co-PI

1-R01-CA112444-01 Banerjee(PI)   04/01/06 – 02/28/07
NIH/NCI
Hierarchical Modeling Approaches for Geographical Boundary analysis in Cancer Studies
The objectives of this project are to examine several substantial advances in the modeling and interpretation of boundary analysis with attendant enhancements in the understanding of spatial structure associated with information displayed in cancer maps.
Role: Co-PI

DEB-0516198   07/01/05 – 06/30/06

NSF

Collaborative QEIB Research: Spatio-temporal Modeling of Species Distributions and Biodiversity at High Resolution – Integrating Population and Climate Responses
Determining the drivers of species abundance and distribution across the earth has been a central question in ecology since Darwin. We propose to build dynamic models that integrate environment and climate to understand plant performance at both the individual and sampling site level.
Role: PI