CURRICULUM VITAE FOR PETER GUTTORP

Personal

Born March 10, 1949 in Lund, Sweden.
Citizen of Sweden.
Permanent resident of the United States of America.

Education

B. Journ., College of Journalism, Stockholm, Sweden, 1969.

B.A., University of Lund, Sweden, 1974 (with distinction in Mathematical Statistics and Musicology).

M.A. (Statistics), University of California at Berkeley, 1976.
Thesis: *Testing Separate Families of Hypotheses*
Thesis Supervisor: Jerzy Neyman

Ph.D. (Statistics), University of California at Berkeley, 1980.
Dissertation: *Statistical Modelling of Population Processes*
Dissertation Supervisor: David Brillinger

Professional Experience

1972-74	Junior high school teacher in music and mathematics, Sweden.
1974-75	Teaching assistant, Mathematical Statistics, University of Lund, Sweden.
1975-80	Teaching assistant and Associate, Statistics, University of California at Berkeley.
1980-88	Assistant Professor, Statistics, University of Washington.
1984-85	Visiting Assistant Professor, Statistics, University of British Columbia, Canada.
1985	Visiting Research Associate, Statistics, University of British Columbia, Canada.
1985	Visiting Scientist, Mathematics and Statistics, Simon Fraser University, Canada.
1988-94	Associate Professor, Statistics, University of Washington.
1992	Resident Scientist, Institute for Mathematics and its Applications, Minneapolis.
1994-	Professor, Statistics, University of Washington.
1996-	Director, National Research Center for Statistics and the Environment.
1998	Visiting Professor, Statistics, University of Stockholm, Sweden.
2002-07	Chair, Statistics, University of Washington.
2004-05	CF Environmental Professor, Universities of Lund and Linköping, Sweden
2008-	Professor, Norwegian Computing Center, Oslo, Norway.
2014	Chalmers Jubilee Professor, Chalmers Technical University, Gothenburg, Sweden

Honors, Awards

1980	Received the Evelyn Fix Award for work in applied statistics, University of California, Berkeley.

	Elected member of Phi Beta Kappa.
1999	J. S. Hunter lecture, The Intenational Environmetric Society.
2001	Fellow of the American Statistical Association
2004	Elected member of the International Statistical Institute.
2004-05	Environmental Research Professor for the Swedish Institute of Graduate Engineers.
2007	Nobel Peace Prize (Intergovernmental Panel on Climate Change)
2009	Technologiae doctor honoris causa, Lund University.
	Lansdowne lecturer, Universisty of Victoria.
2013	Medallion lecturer, Joint Statistical Meeting, Montreal.
2014	Chalmers Jubilee Professor
2015	Constance Van Eeden lecturer, University of British Columbia. Fellow of the Institute of Mathematical Statistics
2016	Inaugural CANSSI visiting professor, UBC Okanagan.
2017	Barnett award, Royal Statistical Society.

Grants

1981-82	Principal investigator on University of Washington Graduate School Research Grant: *Inference from Sums of Random Variables.*
1983-85	Principal investigator on National Science Foundation grant: *Statistical Inference in Stochastic Processes.*
1984-87	Subcontracting investigator on SIAM Institute for Mathematics and Society grant: *Statistical Modeling of Acid Deposition.*
1986-87	Principal investigator on University of Washington Graduate School Research grant: *Inference for Directional Data.*
1987-91	Co-principal investigator on Electric Power Research Institute contract: *Global nonparametric estimation of spatial covariance patterns.* ($164 000)
1987-90	Co-principal investigator on Murdock Trust grant: *Center for Spatial Statistics Computer Facilities* ($337 000)
1988-91	Principal investigator on Societal Institute for Mathematical Sciences grant: *Statistical Methods in Acid Rain* ($136 898)
1991-95	Co-investigator on National Institute of Health grant: *Behavior of Hematopoietic Stem Cells*.
1991-93	Principal investigator on National Science Foundation grant: *Modeling of Nonstationary Atmospheric Phenomena*.
1993-95	Principal co-investigator (with P. D. Sampson, Statistics) on Electrical Power Research Institute contract: *Methods for the Operational Evaluation of an Air Quality Model*.
1993-96	Principal investigator on Environmental Protection Agency cooperative agreement: *Statistical analysis of biological monitoring data*.
1996-99	Principal investigator on National Science Foundation grant: *Statistics in Atmospheric Science*. ($400 000)
1996-10	Co-investigator on National Institute of Health grant: *Kinetics and Behavior of Hematopoietic Stem Cells*.($5 555 422)

1996-01 Principal investigator on Environmental Protection Agency cooperative agreement: *A National Center for Environmental Statistics*.($5 170 000)

1999-09 Co-Principal investigator on National Science Foundation grant: *Integration of Research and Education in the Applied and Computational Mathematical Sciences*. ($7 971 465)

2002-05 Co-Principal Investigator on National Science Foundation grant: *Wavelet-based statistical analysis of multiscale geophysical data.* ($694 839)

2003-05 Co-investigator on Environmental Protection Agency contract *Use of kriging to develop ambient air contencration estimates for ozone for 1986-1994 for 83 counties in the U.S.* ($85,031)

2005-09 Co-investingator on National Institute of Health grant: *Pathogenesis of clonal dominance in myeloproliferative disorders.* ($508 000)

2006-09 Foreign collaborator on STINT grant *Spatio-temporal extremes in environment, transportation, climate and public policy — A collaborative proposal between the Universities of Lund and Washington.* (SEK2 000 000)

2007-09 Principal Investigator (with J. Zidek, UBC-V, C. Dean, SFU and S. Esterby, UBC-O) on PIMS proposal for Period of Concentration in Environmetrics (CAD 215 940).

2009-10 Co-Principal Investigator on National Science Foundation grant: *CMG: Multivariate nonstationary spatial extremes in climate and atmospherics*.

2010-15 Principal Investigator on Nordforsk TFI grant: *Statistical Approaches to Regional Climate Models for Adaptation*. (NOK 1 150 000)

2011-16 Co-Principal Investigator on National Science Foundation grant: *RNMS: Statistical Methods for Atmospheric and Oceanic Sciences*. ($4 954 907)

2013-16 Principal Investigator on National Science Foundation grant: *Statistical Tools for Climate Research*. ($120 000)

Co-Principal Investigator on Nordforsk grant: *Statistical Analysis of Climate Projections*. (NOK 5 241 571)

Professional Societies

Member of the American Statistical Association, the Statistical Society of Canada, the Institute of Mathematical Statistics, the International Statistical Institute, and the Swedish Statistical Association.

Professional Services

1986 Assistant Secretary, Institute of Mathematical Statistics Western Regional Meeting.

1987 Reviewer, Task Group VI (Aquatic Effects), National Acidic Precipitation Assessment Program.

1987 Reviewer, Committee on Techniques for Estimating Probabilities of Extreme Floods, National Research Council.

1988-91 Associate Program Secretary, Institute of Mathematical Statistics Western Region.

1988-96 Member, Precipitation Committee, American Geophysical Union.

1989-91 Member, panel on Spatial Statistics, National Research Council.

1992-93 Contributed program chair and program committee member, Institute of Mathematical Statistics Annual Meeting (Joint Statistical Meetings), San Francisco.

1992-93 Program committee member, Western North American Region of the Biometric Society Annual Meeting, Laramie.

1992-08 Editorial Board member, Environmental and Ecological Statistics.

1993-95 Program committee member, 6th International Meeting on Statistical Climatology, Ireland.

1993-95 Contributor, Inergovernmental Panel on Climate Change Second Assessment Report: Climate Change 1995.

1995-97 Associate Editor, Annals of Statistics.

1995- Member, Bernoulli Society Committee on Statistics in the Physical Sciences.

1995-98 Program chair, 7th International Meeting on Statistical Climatology, British Columbia.

1996-03 Associate Editor, Bernoulli.

1996-97 Chair, nominating committee, Institute of Mathematical Statistics.

1997-00 Member, American Meteorological Society committe on Probability and Statistics.

1997-08 Associate editor, Environmetrics.

1997-04 Vice-chair, International Statistical Institute Environmental Statistics group.

1997-99 Scientific Committee member, ISI satellite meeting, Greece.

1998-01 Program committee member, 8th International Meeting on Statistical Climatology, Germany.

1998-01 Section editor, Spatial-temporal analysis and modeling, *Encyclopedia of Environmetrics*.

1999-06 Member, Science Advisory Panel for the EPA Northwest PM Center, University of Washington.

1999-06 Member, Advisory Panel for the Geophysical Statistics Project, National Center for Atmospheric Research (Chair 2003-05).

2000-08 Associate Editor, International Statistical Review.

2000-01 Reviewer, Intergovernmental Panel on Climate Change Third Assessment Report: Climate Change 2001. Organizer, *Ten Lectures on Spatial Statistics*, Seattle.

2000-02 President-elect, the International Environmetric Society.

2001-02 Member, Scientific Advisory Panel, Banff International Research Station.

2002-04 President, the International Environmetric Society.

2004-07 Program committee member, International Conferences on Environmental modelling and simulation, US Virgin Islands (2004), Honolulu (2007)

2004-05 Program committee member, Bayesian Inference for Stochastic Processes, Italy.

2005-06 Program committee member, TIES 2006, Kalmar, Sweden.

2006-07 Program chair elect, American Statistical Association Section on Statistics and the Environment.

2006-07 Program chair, TIES North American Regional Meeting, Seattle.

2005-09 Member (representing COPSS), Elizabeth Scott Award Committee.

2006-08 Member, American Statistical Society Section on Statistics and the Environment Student Awards Committee.

2006-07 Member, Swedish Statistical Association committee on Swedish statistical terminology.

2007- American Statistical Association Media Expert

2007-08 Associate Editor, *Annals of Applied Statistics*.

2008-09 Associate editor, *IMS Collections*.

2008-10 Scientific Advisory Committee, SAMSI theme year on Space-time Statistics.

2008-11 Panel chair, Environmental Science, 7th International Congress on Industrial and Applied Mathematics, Vancouver.

2008-12 Member, ASA Advisory committe on climate change policy (Chair 2011-12).

2009-14 Member, PIMS Scientific Review Committee.

2009-14 Technical director, Nordic Network on Statistical Approaches to Regional Climate Models for Adaptation.

2009-13 Co-editor *Environmetrics*.

2009-10 Program committee, TIES 2010, Isla de Marguarita.

2009-11 Program committee, ISI World Congress, Dublin.

2010-12 Program committee, TIES 2012, Hydebarad.

2010-12 Program committee, Bernoulli World Congress in Probability and Statistics, Turkey.

2011-12 Organizer, *Ten Lectures on Statistical Climatology*, Seattle.

2011-13 Reviewer, Fifth Assessment Report, Intergovernmental Panel of Climate Change.

2012-14 Organizer and program chair, Pan-American Advanced Studies Institute on Spatial and Spatio-temporal Statistics, Buzios, Brazil.

2012-15 Member, Scientific Advisory Committee, CliMathNet.

2013 Member, American Statistical Association Cuba delegation.

2013-15 Member, Scientific Advisory Committee, Canadian Statistical Sciences Institute.

2017-21 Vice president, International Statistical Institute.

Invited conference lectures

1985 Modeling and analysis of transportation and deposition processes for atmospheric pollutants. AAAS Annual Conference, Los Angeles.

Estimation in branching processes — a review. Joint Statistical Meetings, Las Vegas.

Estimating point process models from discrete time rain occurrence data. AGU Fall Meeting, San Francisco.

1986 Modelling rainfall using event based data. Chapman Conference on Modeling of Rainfall Fields, Caracas, Venezuela.

1987 Some statistical problems in acid deposition research. Environmetrics 87, Washington.

1988 The covariance structure of small scale precipitation fields. Conference on Mesoscale Precipitation: Analysis, Simulation and Forecasting, Boston.

1989 Nonparametric estimation of non-stationary spatial covariance structure with application to monitoring network design. ISI Satellite Meeting on Statistics, Earth and Space Sciences, Leuven, Belgium.

1990 Statistical analysis of biological monitoring data. IMS Annual Meeting/Bernoulli Society Second World Congress, Uppsala, Sweden.

1991 Evaluating models for environmental change. Statistical Society of Canada Annual Meeting, Toronto, Canada.

The effect of nonstationary covariance on linear prediction of random fields. WNAR Annual Meeting, Santa Barbara.

1992 Consistency of the maximum likelihood estimator of the offspring variance in a Bienayme-Galton-Watson process. 2nd UQAM Symposium on Branching Processes and Related Topics, Montreal, Canada.

A hydrological rainfall model using atmospheric data with application to climate model impact evaluation. 5th International Meeting on Statistical Climatology, Toronto, Canada.

Stochastic precipitation models. Institute for Mathematics and its Applications Meeting on Environmental Studies, Minneapolis.

1993 Using stochastic models to downscale global circulation models. WNAR Annual Meeting, Laramie.

Consistency of the maximum likelihood estimator of the offspring variance in a Bienaymé-Galton-Watson process. First World Conference on Branching Processes, Varna, Bulgaria September 1993.

1994 Some statistical problems in environmental science. Keynote address, Colorado-Wyoming ASA Chapter Meeting on Statistics and the Environment.

Statistical methods for downscaling of general circulation models. NCAR colloquium on Applications of Statistics to Modeling the Earth's Climate System.

1995 Detection of closely spaced periodicities in atmospheric oscillations on Mars. Joint Statistical Meetings, Orlando.

Statistics from Mars: some analysis of Viking pressure data, Pacific Northwest Statistics Meeting, Vancouver, Canada.

1996 Nonhomogeneous hidden Markov models relating synoptic atmospheric patterns to local hydrologic phenomena. 2nd International Symposium on Spatial Accuracy, Boulder, Colorado.

Inference for partially observed point processes: a review and some extensions. SINAPE, Caxambu, Brazil.

Some hidden Markov models with scientific applications. SINAPE, Caxambu, Brazil.

Space-time modelling of tropospheric ozone. Royal Statistical Society International Meeting, UK.

1997 Hidden Markov models in atmospheric science. AMS Short Course on Time Series, Long Beach, California.

A National Research Center for Statistics and the Environment: the UW perspective. Interface 97, Houston, Texas.

Using non-stationary hidden Markov models to downscale general circulation models. 16th North America Resource Modeling Association Meeting, Seattle, Washington.

1998 Using non-stationary hidden Markov models to downscale general circulation models. Zürcher Kolloquium über anwendungsorientierte Statistik. ETH, Zürich, Switzerland.

State-space models for species compositions. Seminar für Statistik, ETH, Zürich, Switzerland.

1999 Stochastic modelling using hidden Markov models. Statistical Society of Canada Annual Meeting, Regina, Canada.

Picture the Future—graphical innovation in environmental statistics. Hunter lecture, TIES/SSES meeting (ISI satellite), Athens, Greece.

2000 Setting environmental standards—A statistician's approach. Statistics: Reflections on the past and visions for the future. Conference in honor of C. R. Rao's 80th birthday. Austin, TX.

2001 A hidden two-compartment model for hematopoiesis in animals. ENAR annual meeting, Charlotte, NC.

Six lectures on *Inference for stochastic processes in environmental science*. Vth Brazilian School of Probability, Ubatuba, SP, Brazil.

2002 Bayesian estimation of nonstationary spatial covariance. Statistical Society of Canada Annual Meeting, Hamilton, ON, Canada.

Recent advances in estimating nonstationary spatial covariance. Royal Statistical Society International Meeting, Plymouth, UK.

Estimating health effects of particulate matter air pollution (two lectures). III Curso/taller de Contaminacion Atmosferica y matematicas. UNAM, Mexico City, Mexico.

2003 Where is environmental statistics going? Opening address, SPRUCE VI, Lund, Sweden.

Point processes in environmental and ecological sciences. Joint Statistical Meetings, San Francisco.

Environmental statistics—A personal view. President's Invited Session, ISI, Berlin, Germany.

Using wavelet tools to estimate and assess trends in atmospheric data. TIES workshop on Space-time trend estimation, Johannesburg, South Africa.

2004 Nonstationary space-time modelling of air quality data (three lectures). Training course on Statistical Methods for Environmental Evaluation for Environmental Scientists, Glasgow, UK.

Setting environmental standards: some case studies and a research plan. TIES/Spatial Accuracy 2004, Portland, ME, USA.

Three lectures on Using transforms to analyze space-time data. Seminaire Europeen de Statistique (SEMSTAT), München, Germany.

2005 RSS Environment Section meeting, Edinburgh: Statistical analysis of compositional data.

Setting environmental standards: a statistician's approach. Transdisciplinary Seminars on Law, Probability and Risk, Edinburgh, Scotland.

A stochastic model for hematopoiesis. Zürcher Kolloquium über anwendungsorientierte Statistik. ETH, Zürich, Switzerland.

Recent advances in nonstationary spatial covariance modeling. Seminar für Statistik, ETH, Zürich, Switzerland.

Setting environmental standards: a statistician's approach. GRASPA conference, Bertinoro, Italy.

Lectures and exercises in spatial statistics. Sharp Statistical Tools, intensive course for environmental scientists, University of Linköping, Sweden.

Modelling nonstationary spatial covariance. Joint Statistical Meetings, Minneapolis.

Spatial statistics. 3-day workshop, University of Palermo, Italy.

New challenges in environmental statistics. Keynote address, Italian Statistical Association meeting, Messina, Italy.

2006 Decisions, uncertainty, and the law. Statistical considerations of environmental risk management. Statistical Society of Canada Annual Meeting, London, Canada.

Modern approaches to nonstationary models of spatial and space-time processes with air quality applications. Short course (with P. D. Sampson) at Joint Statistical Meetings, Seattle.

2007 Some Statistical Aspects of Environmental Standards. 9th Annual Winter Workshop on Environmental and Environmental Health Statistics, Gainesville.

Short course (with P. Sampson and J. Zidek) on Modeling environmental space-time processes, Seattle.

Internationa Air Quality Standards. Invited poster (with Laura Knudsen), Joint Statistical Meetings, Salt Lake City.

Short course on Stochastic modeling of environmental data. Workshop on Stochastic Processes Applied to Spatial Statitics: Multiscenario analysis and stochasticity in environmental prediction. Sao Paulo, Brazil.

Statistical analysis of compositional data. Department of Statistics, Universidad Federal do Rio de Janeiro, Brazil.

2008 The role of statisticians in international science policy. President's Invited Lecture, TIES 2008, Kelowna, Canada.

Short course on Spatial statistics. Australian Math Society Winter School, Brisbane, Australia.

Short course on Climate modeling and statistics, University of Oslo, Norway.

2009 GASP\mI cant breathe! Statistical aspects of environmental standards. Honorary doctorate public lecture, Lund, Sweden.

Extremes in air pollution and climate. Special invited lecture for the probability section, Statistical Society of Canada Annual Meeting, Vancouver, Canada.

Short course on Spatial statistics. Forest fire modeling summer school, Hinton, Canada.

Some extreme value problems in climate research. TIES 09, Bologna; ISI, Durban; XI CLAPEM, Naiguata; JSM 10, Vancouver.

Of what use is a statistician in climate modeling. Lansdowne lecture, University of Victoria. NORKLIMA forskerkonferanse 2009, Bergen. Cramérsällskapet inaugural meeting, Lund.

How a paper can come about. Lansdowne lecture, University of Victoria.

Short course on Climate modeling and statistics. Universidad Simon Bolivar, Caracas.

2010 Finding climate signals in extremes. International Workshop on Modern Statistics for Climate Research, Oslo.

Short course on Space-time modeling, TIES annual meeting, Isla de Margarita.

Trying to sell Bayesian hierarchic models to climatologists. TIES annual meeting, Isla de Margarita.

Bayesian estimation of climate sensitivity using a simple climate model fitted to global temperatures. 11th International Meeting on Statistical Climatology, Edinburgh.

Introduction to climate modeling. Opening lecture, Extreme events in climate and weather—an interdisciplinary workshop, Banff.

What use is a statistician in climate research? Lead keynote address, International Chinese Statistical Association meeting, Guangzhou.

2011 Stochastic downscaling. SARMA workshop on downscaling, Lund.

Stochastic modeling of hematopoiesis. Korean Statistical Society 40th Anniversary Meeting.

Some theoretical and practical problems in climate research. Young Statisticians Meeting, Dublin.

Short course on Space-time modeling, ISI World Statistical Congress, Dublin.

2012 Short course on Climate and Statistics, UFRJ, Rio de Janeiro.

Short course on Space-time models using Gaussian processes, Heidelberg.

Assessment of regional climate models using statistical upscaling and downscaling. Colorado State University; German Statistics and Probability Days, Mainz.

Statistical issues in climate research. Closing keynote address, NordStat, Umåa.

Statistics and climate. Introductory Overview Lecture, Joint Statistical Meeting, San Diego.

2013 The Heat Is On! A statistical look at the state of the climate. Opening plenary talk, CliMathNet initial annual meeting, Exeter.

Pointing to the future. Medallion lecture at the Joint Statistical Meetings, Montreal, and invited lecture at the European Meeting of Statisticians, Budapest.

2014 Uncertainty in contour lines. UC Davis Statistical Sciences Day.

2015 Projecting the uncertainty of sea level rise using climate models and statistical downscaling. Constance Van Eeden lecture, University of British Columbia.

Vic Barnett, 1938-2014. ISI World Congress, Rio de Janeiro.

2016 The heat is on. Inaugural CANSSI invited researcher lecture, University of British Columbia Okanagan, Kelowna.

2017 Statistics and climate. BIRS workshop on *Challenges in the Statistical Modeling of Stochastic Processes for the Natural Sciences*. Banff.
History, Science and Stochastic Processes. Opening plenary lecture, 31st Brazilian Mathematics Colloquium, Rio de Janeiro.
Are you sure we want to do this? Barnett lecture, Royal Statistical Society, Glasgow.

Publications

Books

[B1] A. Baddeley, J. Besag, H. Chernoff, P. Clifford, N. A. Cressie, D. J. Geman, B. Gidas, L. S. Gillick, N. Green, P. Guttorp, T. Kadota, A. Lippman and J. Simpson (1991): *Spatial Statistics and Digital Image Analysis*. Washington: National Academy of Sciences Press.

[B2] P. Guttorp (1991): *Statistical inference for branching processes.* New York: Wiley.

[B3] A. T. Walden and P. Guttorp, eds. (1992): *Statistics in the Environmental and Earth Sciences*. London: Edward Arnold.

[B4] P. Guttorp (1995): *Stochastic modeling of scientific data*. London: Chapman & Hall.

[B5] A. Gelfand, P. Diggle, M. Fuentes and P. Guttorp (2010): *Handbook in Spatial Statistics*. Boca Raton: Chapman & Hall.

[B6] P. Guttorp and D. R. Brillinger (2011): *Selected works of David Brillinger.* New York: Springer.

Papers published or accepted for publication

[1] Guttorp, P. and Song, H. H. (1977): A note on the distribution of alcohol consumption. *Drinking and Drug Practices* **13**: 7-8.

[2] R. Kulperger and P. Guttorp (1981): Criticality conditions for some random environment population processes. *Stochastic Processes and their Applications* **11:** 207-212.

[3] P. Guttorp and R. Kulperger (1984): Statistical inference for some Volterra population processes in a random environment. *Canadian Journal of Statistics* **12:** 289-302.

[4] P. Guttorp, R. Kulperger and R. A. Lockhart (1985): A coupling proof of weak convergence. *Journal of Applied Probability* **22:** 447-453.

[5] P. Guttorp and A. Siegel (1985): Consistent estimation in partially observed random walks. *Annals of Statistics* **13:** 958-969.

[6] F. K. Forster, P. Guttorp, and E. L. Gow (1985): Variance reduction for ultrasonic attenuation measurements from backscatter in biological tissue. *IEEE Transactions on Sonics and Ultrasonics* **SU-32:** 523-530.

[7] P. Guttorp (1986): On binary time series obtained from continuous time point process models describing rainfall. *Water Resources Research* **22:** 897-904.

[8] P. Guttorp and D. Hopkins (1986): On estimating varying b-values. *Bulletin of the Seismological Society of America*, **76:** 889-895.

[9] M. L. Thompson and P. Guttorp (1986): Estimating the second order product moment from the process of counts. *South African Statistical Journal* **20:** 1-7.

[10] E. Foufoula-Georgiou and P. Guttorp (1986): Compatibility of continuous rainfall occurrence models with discrete rainfall observations. *Water Resources Research* **22:** 1316-1322.

[11] M. L. Thompson and P. Guttorp (1986): A probability model for severe cyclonic storms striking the coast around the Bay of Bengal. *Monthly Weather Review* **114:** 2267-2271.

[12] P. Guttorp (1987): On least squares estimation of b-values. *Bulletin of the Seismological Society of America* **77:** 2115-2124.

[13] E. Foufoula-Georgiou and P. Guttorp (1987): Assessment of a class of Neyman-Scott models for temporal rainfall. *Journal of Geophysical Research D* **92:** 9679-9682.

[14] P. Guttorp and A. Walden (1987): On the evaluation of geophysical models. *Geophysical Journal of the Royal Astronomical Society* **91:** 201-210.

[15] K. K. Aase and P. Guttorp (1987): Estimation of models for security prices. *Scandinavian Actuarial Journal* 1987: 211-224.

[16] P. Guttorp (1988): Analysis of event based precipitation data with a view towards modeling. *Water Resources Research* **24:** 35-44.

[17] P. Guttorp and R. A. Lockhart (1988): On finding the location of a signal: a Bayesian analysis. *Journal of the American Statistical Association.* **83:** 322-330.

[18] P. Guttorp and R. A. Lockhart (1988): On the asymptotic distribution of quadratic forms in uniform order statistics. *Annals of Statistics* **16:** 433-449.

[19] D. Ko and P. Guttorp (1988): Robustness of estimators for directional data. *Annals of Statistics* **16:** 609-618.

[20] P. Guttorp and R. A. Lockhart (1989): Estimation in sparsely sampled random walks. *Stochastic Processes and their Applications* **31, 315-320.**

[21] P. Guttorp and R. A. Lockhart (1989): On the asymptotic distribution of high order spacings statistics. *Canadian Journal of Statistics* **17:** 419-426.

[22] P. Guttorp and M.L. Thompson (1990): Nonparametric estimation of intensities for sampled counting processes. *Journal of the Royal Statistical Society, Series B* **52:** 157-173.

[23] P. Guttorp and M.L. Thompson (1990): A note on point process analysis of Chinese earthquake data. *Pure and Applied Geophysics*,**133:** 541-546.

[24] P. Guttorp, M. A. Newton, and J. L. Abkowitz (1990): A stochastic model for haematopoiesis in cats. *IMA Journal of Mathematics Applied in Medicine and Biology* **7:** 125-143.

[25] J. L. Abkowitz, M. L. Linenberger, M. A. Newton, G. H. Shelton, R. L. Ott, and P. Guttorp (1990): Evidence that hematopoiesis is maintained by the sequential activation of stem cell clones. *Proceedings of the National Academy of Sciences* **87:** 125-143.

[26] P. D. Sampson and P. Guttorp (1991): Power transformations and tests of environmental impact as interaction effects. *American Statistician* **45:** 83-89.

[27] R. J. Vong and P. Guttorp (1991): Co-occurrence of ozone and acidic cloud water in high-elevation forests. *Environmental Science and Technology* **25:** 1325-1329.

[28] W. Zucchini and P. Guttorp (1991): A hidden Markov model for space-time precipitation. *Water Resources Research* **27:** 1917-1923.

[29] P. Guttorp and M. L. Thompson (1991): Estimating second order parameters of volcanicity from historical data. *Journal of the American Statistical Association* **86:** 578-583.

[30] P. D. Sampson and P. Guttorp (1992): Nonparametric estimation of nonstationary spatial covariance structure. *Journal of the American Statistical Association* **87:** 108-119.

[31] G. K. Grunwald, A. E. Raftery, and P. Guttorp (1993): Time series models for continuous proportions. *Journal of the Royal Statistical Society, Series B,* **55:** 103-116.

[32] G. Grunwald, P. Guttorp, and A. E. Raftery (1993): Prediction rules for exponential family state space models. *Journal of the Royal Statistical Society, Series B* **55:** 937-944.

[33] J. E. Tillman, N. C. Johnson, P. Guttorp, and D. B. Percival (1993): The Martian annual atmospheric pressure cycle: years without great dust storms. *Journal of Geophysical Research E* **98:** 10963-10971.

[34] J. L. Abkowitz, M. L. Linenberger, M. Persik, M. A. Newton, and P. Guttorp (1993): The behavior of feline hematopoietic stem cells years after busulfan exposure. *Blood* **82:** 2096-2103.

[35] J. P. Hughes, D. P. Lettenmaier, and P. Guttorp (1993): A stochastic approach for assessing the effects of changes in regional circulation patterns on local precipitation. *Water Resources Research* **29:** 3303-3315.

[36] J. P. Hughes and P. Guttorp (1994): A class of stochastic models for relating synoptic atmospheric patterns to regional hydrologic phenomena. *Water Resources Research* **30:** 1535-1546.

[37] J. P. Hughes and P. Guttorp (1994): Incorporating spatial dependence and atmospheric data in a model of precipitation. *Journal of Applied Meteorology* **33:** 1503-1515.

[38] P. Kumar, P. Guttorp, and E. Foufoula-Georgiou (1994): A probability weighted moment test to assess scaling in rainfall. *Journal of Stochastic Hydrology and Hydraulics* **8:** 173-183.

[39] P. Guttorp, W. Meiring, and P. D. Sampson (1994): A space-time analysis of ground-level ozone data. *Environmetrics* **5:** 241-254.

[40] J. L. Abkowitz, M. Persik, G. H. Shelton, R. L. Ott, J. V. Kiklevich, S. N. Catlin, and P. Guttorp (1995): The behavior of hematopoietic stem cells in a large animal. *Proceedings of the National Academy of Science* **92:** 2031-2035.

[41] M. A. Newton, P. Guttorp, S. Catlin, R. Assunção, and J. L. Abkowitz (1995): Stochastic modeling of early hematopoiesis. *Journal of the Statistical Association of America* **90:** 1146-1155.

[42] P. Guttorp (1995): Three papers on the history of branching processes (translated from Danish). *International Statistical Review* **63:** 233-245.

[43] D. Billheimer and P. Guttorp (1995): Zooplankton proportion estimates from non-uniformly sampled Poisson counts. *Environmental and Ecological Statistics* **2:** 117-124.

[44] J. L. Abkowitz, S. N. Catlin, and P. Guttorp (1996): Evidence that hematopoiesis may be a stochastic process *in vivo*. *Nature Medicine* **2:** 190-197.

[45] J. L. Abkowitz, M. T. Persik, S. N. Catlin, and P. Guttorp (1996): Simulation of Hematopoiesis — Implications for the gene therapy of lysosomal enzyme disorders. *Acta Haematologica* **95**:2, 213-217.

[46] P. Guttorp and M. L. Thompson (1996): Estimation for point processes from incomplete data: A review and some extensions. *REBRAPE* (Brazilian Journal of Probability and Statistics) **10:** 135-149.

[47] J. L. Abkowitz, S. N. Catlin, and P. Guttorp (1997): Strategies for hematopoietic stem cell gene therapy: insights from computer simulation studies. *Blood* **89:** 3192-3198.

[48] D. Billheimer, T. Cardoso, E. Freeeman, P. Guttorp, H. Ko, and M. Silkey (1997): Natural variability of benthic species composition in the Delaware Bay. *Environmental and Ecological Statistics* **4:** 95-115.

[49] J. L. Abkowitz, M. Tabadoa, G. H. Shelton, S. N. Catlin, P. Guttorp, and J. V. Kiklevich (1998): An X-chromosome gene regulates hematopoietic stem cell kinetics. *Proceedings of the National Academy of Science* **95:** 3862-3866.

[50] W. Meiring, P. Guttorp and P. D. Sampson (1998): Space-time estimation of grid-cell hourly ozone levels for assessment of a deterministic model. *Environmental and Ecological Statistics* **5:** 197-222.

[51] J. P. Hughes, P. Guttorp, and S. P. Charles (1999): A nonhomogeneous hidden Markov model for precipitation. *Applied Statistics* **48:** 15-20.

[52] R. Assunção and P. Guttorp (1999): Robustness for point processes. *Annals of the Institute of Statistical Mathematics* **51:** 657-678.

[53] P. Guttorp (2000): Environmental Statistics. *Journal of the American Statistical Association* **95:** 289-292.

[54] E. Bellone, J. P. Hughes, and P. Guttorp (2000): A hidden Markov model for relating synoptic scale patterns to precipitation amounts. *Climate Research* **15:** 1-12.

[55] B. Whitcher, P. Guttorp, and D. B. Percival (2000): Wavelet analysis of covariance with application to atmospheric time series. *Journal of Geophysical Research* **105** 14941-14962.

[56] B. Whitcher, P. Guttorp and D. B. Percival (2000): Multiscale detection and location of multiple variance changes in the presence of long memory. *Journal of Statistical Computing and Simulation* **68:** 65-88.

[57] D. Damian, P. D. Sampson and P. Guttorp (2000): Bayesian estimation of semi-parametric non-stationary spatial covariance structure. *Environmetrics* **12**: 161-176.

[58] J. L. Abkowitz, D. Golinelli, D. E. Harrison and P. Guttorp (2000): The in vivo kinetics of murine hematopoietic stem cells. *Blood* **96:** 3399-3405.

[59] E. A. Steel, P. Guttorp, J. J. Anderson, and D. C. Caccia. (2001): Modeling juvenile salmon migration using a simple Markov chain. *Journal of Agricultural, Biological and*

Environmental Statistics **6:** 80-88.

[60] M. L. Thompson, J. Reynolds, L. H. Cox, P. Guttorp and P. D. Sampson (2001): A review of statistical methods for the meteorological adjustment of tropospheric ozone. *Atmospheric Environment* **35:** 617-630.

[61] S. N. Catlin, P. Guttorp, and J. L. Abkowitz (2001): Statistical inference in a two-colony model for hematopoiesis. *Biometrics* **57:** 546-553.

[62] E. S. Park, P. Guttorp, and R. C. Henry (2001): Multivariate receptor modeling for temporally correlated data by using MCMC. *Journal of the American Statistical Association* **96:** 1176-1183.

[63] D. Billheimer, P. Guttorp and W. Feigan (2001): Statistical interpretation of species composition. *Journal of the American Statistical Association* **96:** 1205-1214.

[64] E. S. Park, M. S. Oh, and P. Guttorp (2002): Multivariate receptor modeling and model uncertainty. *Chemometrics and Intelligent Laboratory Systems* **60:** 49-67.

[65] B. Whitcher, S. D. Byers, P. Guttorp and D. B. Percival (2002): Testing for Homogeneity in Time Series: Long memory, Wavelets and the Nile River.*Water Resources Research* **38 (5):** art. no. 1054.

[66] J. L. Abkowitz, S. L. Catlin, M. T. McCallie and P. Guttorp (2002): Evidence that the number of hematopoietic stem cells per animal is conserved in mammals. *Blood* **100:** 2665-2667.

[67] P. Guttorp (2003): Environmental statistics—a personal view. *International Statistical Review* **71:** 169-181.

[68] M. Fuentes, P. Guttorp and P. Challenor (2003): Statistical assessment of numerical models. *International Statistical Review* **71:** 201-222.

[69] D. Damian, P. D. Sampson, and P. Guttorp (2003): Variance modeling for nonstationary spatial processes with temporal replication. *Journal of Geophysical Research Atmospheres* **108** (D24) Art. No. 8778.

[70] C. Marzban, M. Drton and P. Guttorp (2003): A Markov chain model of tornadic activity. *Monthly Weather Review* **131:** 2941-2953.

[71] S. Catlin, P. Guttorp, M. Tabadoa and J. Abkowitz (2004): Hematopoiesis as a competitive exclusion process. *Journal of Agricultural, Biological and Environmental Statistics***9:** 216-235.

[72] P. F. Craigmile, P. Guttorp and D. B. Percival (2004): Trend assessment in a long memory dependence model using the discrete wavelet transform. *Environmetrics* **15:** 313-335..

[73] E. S. Park, P. Guttorp, and H. Kim (2004): Locating major PM10 source areas in Seoul using multivariate receptor modeling. *Environmental and Ecological Statistics* **11:** 9-19.

[74] M. Liermann, A. Steel, M. Rosing and P. Guttorp (2004): Random denominator and the analysis of ratio data. *Environmental and Ecological Statistics* **11:** 55-71.

[75] J. L. Abkowitz, D. Golinelli and P. Guttorp (2004): Strategies to Expand Transduced Hematopoietic Stem Cells In Vivo. *Molecular Therapy* **9**: 566-576.

[76] B. E. Shepherd, P. Guttorp, P. M. Lansdorp and J. L. Abkowitz (2004): Estimating human hematopoietic stem cell kinetics using granulocyte telomere lengths. *Experimental Hematology*: **32:** 1040-1050.

[77] P. F. Craigmile, P. Guttorp and D. B. Percival (2005): Wavelet-based parameter estimation for polynomial trend contaminated fractionally differenced processes. *IEEE Transaction on Signal Processing* **53:** 3151-3161.

[78] S. N. Catlin, P. Guttorp and J. L. Abkowitz (2005): The kinetics of clonal dominance in myeloproliferative disorders. *Blood* **106:** 2688-92.

[79] G. C. Chiu and P. Guttorp (2006): Stream health index for the Puget Sound lowland. *Environmetrics* **17:** 285-307.

[80] P. Guttorp (2006): Setting environmental standards: A statistician's perspective. *Environmental Geosciences* **13**: 261-266.

[81] D. Golinelli, P. Guttorp and J. Abkowitz (2006): Bayesian inference in hidden stochastic two-compartment model for feline hematopoiesis. *Mathematical Medicine and Biology* **23:** 153-172.

[82] P. Guttorp and T Gneiting (2006): Studies in the history of probability and statistics XLIX On the Matérn correlation family. *Biometrika* **93:** 989-995.

[83] B. E. Shepherd, H.-P. Kiem, P. M. Lansdorp, G. Aubert, C. E. Dunbar, A. LaRochele, R. Seggewiss, P. Guttorp, J. L. Abkowitz (2007): Hematopoietic Stem Cell Behavior in Nonhuman Primates. *Blood* **110:** 1806-1813.

[84] S. Åberg and P. Guttorp (2008): Distribution of the maximum in air pollution fields. *Environmetrics* **19:** 183-208.

[85] N. Loperfido and P. Guttorp (2008): Network bias in air quality monitoring design. *Environmetrics* **19:** 661-671.

[86] F. Bruno, P. Guttorp, P. D. Sampson and D. Cocchi (2009): A simple non-separable non-stationary spatiotemporal model for ozone. *Environmental and Ecological Statistics* **16:** 515-529.

[87] P. Guttorp and G. Lindgren (2009): Karl Pearson and the Scandinavian School of Statistics. *International Statistical Review* **77:** 64-71.

[88] Y. Fong, P. Guttorp and J Abkowitz (2009): Bayesian inference and model choice in a hidden stochastic two-compartment model for feline hematopoiesis. *Annals of Applied Statistics* **3:** 1695-1709.

[89] L. Bao, T. Gneiting, E. P. Grimit, P. Guttorp and A. E. Raftery (2010): Bias Correction and Bayesian Model Averaging for Ensemble Forecasts of Surface Wind Direction. *Monthly Weather Review* **138:** 1811-182.

[90] D. Warton and P. Guttorp (2010): Compositional analysis of overdispersed counts using generalized estimating equations. *Environmental and Ecological Statistics*, DOI: 10.1007/s10651-010-0145-9.

[91] G. S. Chiu, P. Guttorp, A. H. Westveld, S. A. Khan and J. Liang (2011): A Latent Health Factor Index via Generalized Linear Mixed Models, with Application to Ecological Health Assessment. *Environmetrics* **22:** 243-255.

[92] P. Guttorp and J. Xiu (2011): Climate change, trends in extremes, and model assessment for a long temperature time series from Sweden. *Environmetrics* **22:** 456-463.

[93] A. Schmidt, P. Guttorp and A. O'Hagan (2011): Considering covariates in the covariance structure of spatial processes. *Environmetrics* **22:** 487-500.

[94] S. N. Catlin, L. Busque, R. E. Gale, P. Guttorp, and J. L. Abkowitz (2011):The replication rate of human hematopoietic stem cells *in vivo*. *Blood* **117:** 4460-4466.

[95] P. Guttorp (2011): The role of statisticians in international science policy. *Environmetrics* **22:** 817-825.

[96] E. Orskaug, L. Scheel, A. Frigessi, P. Guttorp, J. E. haugen, O. E. Tveito and O. Haug (2011): Evaluation of a dynamic downscaling of Norwegian precipitation. *Tellus A* **63:**

746-756.

[97] P. Craigmile and P. Guttorp (2011): Space-time modeling of trends in temperature series. *Journal of Time Series Analysis* **32:** 378-395.

[98] M. Aldrin, M. Holden, P. Guttorp, R. B. Skeie, G. Myhre and T. K. Bentsen (2012): Bayesian estimation of the climate sensitivity based on a simple climate model fitted to observations of hemispheric temperatures and global ocean heat content. *Environmetrics* **23:** 253-271.

[99] V. Berrocal, P. Craigmile and P. Guttorp (2012): Regional climate model assessment using statistical upscaling and downscaling techniques. *Environmetrics* **23: 482-492**.

[100] P. Guttorp (2012): Climate statistics and public policy. *Statistics, Politics and Policy* **3**, online. doi: 10.1515/2151-7509.1055.

[101] P. Guttorp and T. Thorarinsdottir (2012): What happened to discrete chaos, the Quenouille process, and the sharp Markov property? Some history of stochastic point processes. *International Statistical Review* **80:** 253-268.

[102] Y. Ma and P. Guttorp (2013): Estimating daily mean temperature from synoptic climate observations. *International Journal of Climatology* **33:** 1264-1269. doi: 10.1002/joc.3510

[103] P. Guttorp and M. D. Perlman (2013) Predicting extinction or explosion in a Galton-Watson branching process. *Statistical Inference for Stochastic Processes* **16:** 113-125.

[104] P. Guttorp and T. Y. Kim (2013): Uncertainty in ranking the hottest years of US surface temperatures. *Journal of Climate***26:** 6323-6328.

[105] P. Guttorp and A. M. Schmidt (2013): Covariance structure of spatial and spatio-temporal processes. *WIREs Computational Statistics* **5:** 279-287.

[106] J. Vianna Neto, A. Schmidt and P. Guttorp (2013): Accounting for spatially varying directional effects in spatial covariance structure. *Journal of the Royal Statistical Society Series C* **63:** 103-122.

[107] P. F. Craigmile and P. Guttorp (2013): Can a regional climate model reproduce observed extreme temperatures? *Statistica* **73:** 103-122.

[108] R. Onorati, P. D. Sampson and P. Guttorp (2013): A spatio-temporal model based on the SVD to analyze large spatio-temporal datasets. *Journal of Environmental Statistics* **5:** Issue 2..

[109] P. Guttorp (2014): Statistics and Climate. *Annual Reviews of Statistics and its Applications* **1:** 87-101.

[110] P. F. Craigmile, P. Guttorp, R. Lund, R. L. Smith, P. W. Thorne, and D. Arndt (2014): Warm Temperature Streaks in the US Temperature Record: What are the Chances? *Journal of Geophysical Research—Atmospheres* **119:** 5757-5766.

[111] P. Guttorp, D. Bolin, A. Januzzi, D. Jones, M. Novak, H. Podschwit, L. Richardson, A. Šarkǩa, C. Sowder and A Zimmerman (2014): Assessing the uncertainty in projecting local mean sea level from global temperature. *Journal of Applied Meteorology and Climatology* **53:** 2163-2170.

[112] D. Bolin, P. Guttorp, A. Januzzi, D. Jones, M. Novak, H. Podschwit, L. Richardson, A. Šarkǩa, C. Sowder and A Zimmerman (2015): Statistical prediction of global sea level from global temperature. *Statistica Sinica* **25:** 351-367.

[113] P. Guttorp and M. D. Perlman (2015): Predicting extinction or explosion in a Galton-Watson branching process with power series offspring distribution. *Journal of Statistical Planning and Inference* **167:** 193-215.

[114] J. Xu, P. Guttorp, M. Kato-Maeda, and V. N. Minin (2015): Likelihood-Based Inference for Discretely Observed Birth-Death-Shift Processes, with Applications to Evolution of Mobile Genetic Elements. *Biometrics* **71:** doi 10.1111/biom.12352.

[115] D. Bolin, A. Frigessi, P. Guttorp, O. Haug, E. Orskaug, I. Scheel and J. Wallin (2016): Calibrating regionally downscaled precipitation over Norway through quantile-based approaches. *Advances in Statistical Climatology, Meteorology and Oceanography* **2:** 39-47.

[116] A.-K. Ylitalo, P. Guttorp and A. Šarkǩa (2016): What we look at in paintings: A comparison between experienced and non-experienced art viewers. *Annals of Applied Statistics* **10:** 549-572.

[117] C. Andersson, P. Guttorp and A. Šarkǩa (2016): Discovering early diabetic neuropathy from epidermal nerve fiber patterns. *Statistics in Medicine* **35:** 4427-4442.

[118] P. Guttorp (2017): How we know that the Earth is warming. *Chance* **30,** 4, 6-11.

[119] T. L. Thorarinsdottir, P. Guttorp, M. Drews, P. Skougaard Kaspersen and K. de Bruin (2017): Sea level adaptation decisions under uncertainty. *Water Resources Research* **53:** 8147-8163.

[120] P. Guttorp and T. Thorarinsdottir (2018): How to save Bergen from the sea? Decisions under uncertainty. *Significance* April 2018: 14-18.

[121] Podschwit, H., Guttorp, P., Larkin, N. and Steel, A. (2017): Estimating wildfire growth from noisy and incomplete incident data using a Bayesian state-space model. *Environmental and Ecological Statistics* **25:** 325-340.

[122] P. Guttorp and G. Lindgren (2019): Why distinguish between statistics and mathematical statistics? The case of Swedish academia. *International Statistical Review* **87:** 110â126.

[123] E. A. Steel, M. R. Liermann and P. Guttorp (2018): Beyond calculations: A course in statistical thinking. *The American Statistician* **73** Supp. 1: 392-401.

[124] J. Xu, Y. Wang, P. Guttorp and J. L Abkowitz (2018): Visualizing hematopoiesis as a stochastic process. *Blood Advances* **2:** 2637-264.

[125] J. Xu, S. Koelle, P. Guttorp, C. Wu, C. E. Dunbar, J. L. Abkowitz and V. N. Minin (2019): Statistical inference in partially observed stochastic compartmental models with application to cell lineage tracking of in vivo hematopoiesis.
Annals of Applied Statistics **13:** 2091-2119.

[126] A. Schmidt and P. Guttorp (2019): Flexible spatial covariance functions. To appear, *Spatial Statistics*.

[127] N. Garcia, P. Guttorp and G. Ludwig (2020): Interacting cluster point process model for epidermal nerve fibers. *Spatial Statistics*, https://doi.org/10.1016/j.spasta.2020.100414

[128] Guttorp, P. and Craigmile, P.F. (2021): A combined estimate ofglobal temperature. To appear, *Environmetrics*.

[129] M. Schneider, M. McDowell, P. Guttorp, E. A. Steel, N. Fleischhut (2022): Effective uncertainty visualization for aftershock forecast maps. To appear, *Natural Hazards and Earth System Sciences*.

Reviewed book chapters

[C1] D.R. Brillinger, J. Guckenheimer, P. Guttorp, and G. Oster (1980): Empirical modelling of population time series: The case of age and density dependent rates. In G. Oster (ed.): *Some Mathematical Questions in Biology.* Lectures on Mathematics in the Life Sciences **13:** 65-90. American Mathematical Society, Providence.

[C2] P. Guttorp (1991): Spatial statistics in environmental science. In A. Baddeley et al. (eds): *Spatial Statistics and Digital Image Analysis* (Reference B1 above): 71-86. Washington: National Academy Press.

[C3] P. Guttorp (1991): Spatial statistics in ecology. In A. Baddeley et al. (eds): *Spatial Statistics and Digital Image Analysis* (Reference B1 above): 129-146. Washington: National Academy Press.

[C4] P. D. Sampson. S. Lewis, P. Guttorp, F. L. Bookstein, and C. Hurley (1991): Computation and interpretation of deformations for landmark data in morphometrics and environmetrics. *Proceedings of the 23rd Symposium on the Interface: Computing Science and Statistics:* 534-541. Fairfax Station: Interface Foundation.

[C5] P. Guttorp, P. D. Sampson and K. Newman (1992): Nonparametric estimation of spatial covariance with application to monitoring network evaluation. In A. Walden and P. Guttorp (eds): *Statistics in Environmental and Earth Sciences*: 39-51. London: Edward Arnold.

[C6] M. A. Newton, P. Guttorp, and J. L. Abkowitz (1992): Bayesian inference by simulation in a stochastic model from hematology. *Proceedings of the 24th Symposium on the Interface: Computing Science and Statistics:* 449-455. Fairfax Station: Interface Foundation.

[C7] P. Guttorp (1993): Statistical analysis of biological monitoring data. In G.P. Patil, C.R. Rao (editors): *Multivariate Environmental Statistics*: 165-174. Amsterdam: North-Holland.

[C8] P. Guttorp, N. D. Le, P. D. Sampson, and J. V. Zidek (1993): Using entropy in the redesign of an environmental monitoring network. In G.P. Patil, C.R. Rao (editors): *Multivariate Environmental Statistics*: 175-202. Amsterdam: North-Holland.

[C9] P. Guttorp and P. D. Sampson (1994): Methods for estimating heterogeneous spatial covariance functions with environmental applications. In G. P. Patil, C. R. Rao (editors): *Handbook of Statistics XII: Environmental Statistics*: 663-690. New York: North Holland/Elsevier.

[C10] D. B. Percival and P. Guttorp (1994): Long-memory processes, the Allan variance and wavelets. In E. Foufoula-Georgiou and P Kumar (eds.): *Application of Wavelet Transforms in Geophysics*: 325-344. San Diego: Academic Press.

[C11] P. Guttorp (1996): Stochastic modeling of rainfall. In M. F. Wheeler (editor): *Environmental Studies: Mathematical, Computational, and Statistical Analysis*: 171-187. New York: Springer.

[C12] W. Meiring, P. Guttorp, and P.D. Sampson (1998): Computational issues in fitting spatial deformation models for heterogeneous spatial correlation. *Computing Science and Statistics* **29(1)**: 409-417.

[C13] P. Monestiez, W. Meiring, P. Guttorp and P. D. Sampson (1998): Modelling non-stationary spatial covariance structure from space-time data. In R. Rabbinge, J. Goode, J. V. Lake and G. Bock (eds.) *Precision Agriculture: Spatial and Temporal Variability of Environmental Quality*. Vol. 210, CIBA foundation.

[C14] P. D. Sampson and P. Guttorp (1999): Operational evaluation of air quality models. In *IEnvironmental Statistics: Analyzing Data for Environmental Policy.* Novartis Foundation. Chichester: Wiley: 33-45.

[C15] L. H. Cox, P. Guttorp, P. D. Sampson, D. C. Caccia and M. L. Thompson (1999): Preliminary statistical examination of the uncertainty and variability on environmental regulatory standards for ozone (with discussion). In *Environmental Statistics: Analyzing Data for Environmental Policy.* Novartis Foundation. Chichester: John Wiley & Sons, Ltd. 122-143.

[C16] P. Guttorp (2001): SIMON NEWCOMB—Astronomer and Statistician. In C. C. Heyde and E. Seneta (eds.): *Statisticians of the Centuries*: 197-199. New York: Springer.

[C17] P. Guttorp, D. R. Brillinger and F. P. Schoenberg (2001): Spatial Point Processes. In A. El-Shaarawi and W. Piegorsch (eds.): *Encyclopedia of Environmetrics*: 1571-1573. London: Wiley.

[C18] D. R. Brillinger, P. Guttorp and F. P. Schoenberg (2001): Temporal Point Processes. In A. El-Shaarawi and W. Piegorsch (eds.): *Encyclopedia of Environmetrics*: 1577-1581. London: Wiley.

[C19] F. P. Schoenberg, D. R. Brillinger and P. Guttorp (2001): Space-Time Point Processes. In A. El-Shaarawi and W. Piegorsch (eds.): *Encyclopedia of Environmetrics*: 1573-1577. London: Wiley.

[C20] P. Guttorp (2001): The National Research Center for Statistics and the Environment. In A. El-Shaarawi and W. Piegorsch (eds.): *Encyclopedia of Environmetrics*: 1353. London: Wiley.

[C21] Sampson, P.D., Damian, D., and Guttorp, P. (2001): Advances in Modeling and Inference for Environmental Processes with Nonstationary Spatial Covariance. In *GeoENV 2000: Geostatistics for Environmental Applications*, P. Monestiez, D. Allard, R. Froidevaux, eds., Dordrecht: Kluwer, pp. 17-32.

[C22] Sampson, P.D., Damian, D., Guttorp, P., and Holland, D.M. (2001): Deformation-based nonstationary spatial covariance modelling and network design. In *Spatio-Temporal Modelling of Environmental Processes*, Colecció "Treballs D'Informàtica I Technologica", Núm. 10, J. Mateu and F. Montes, eds., Castellon, Spain: Universitat Jaume I, pp. 125-132

[C23] Craigmile, P. F., Percival, D. B. and Guttorp, P. (2001): The impact of wavelet coefficient correlations on fractionally differenced process estimation. In *European Congree of Mathematics, vol. II. C. Casuberta, R. M. Miro-Roig, J. Verdera, S. Xambo-Descamps (eds,), Basel: Birkhäuser.*

[C24] Bruno, F., Guttorp, P.and Sampson, P. D. and Cocchi, D. (2003): Non-separability of space-time covariance models in environmental studies. In *Proceedigs of the ISI International Conference on Environmental Statistics and Health*. Universidad de Santiago de Compostela: 153-161.

[C25] P. Guttorp, M. Fuentes, and P. D. Sampson (2007): Using transforms to analyze space-time processes. In *Statistics of Spatio-Temporal Systems*, edited by V. Isham, B. Finkelstadt and W. Härdle: 77-150. Boca Raton: Taylor and Francis.

[C26] T. Gneiting, M. G. Genton, and P. Guttorp (2007): Geostatistical Space-Time Models, Stationarity, Separability and Full Symmetry. In *Statistics of Spatio-Temporal Systems*, edited by V. Isham, B. Finkelstadt and W. Härdle: 151-176. Boca Raton: Taylor and Francis.

[C27] P. Guttorp and N. Loperfido (2006): Network bias in air quality monitoring design. Proceedings of Conference on Spatial Data Methods for Environmental and Ecological Processes.

[C28] T. P. Cardoso and P. Guttorp (2008): A hierarchical Bayes model for combining precipitation measurements from different sources. In *In and Out of Equilibrium 2*, Eds. E.M. Vares and V. Sidaravicious. Progress in Probability vol. 60, Birkhauser,Basel: 185-210.

[C29] T. Gneiting and P. Guttorp (2009): Continuous-parameter stochastic process theory. Gelfand et al., *Handbook of Spatial Statistics*, Chapman & Hall.

[C30] T. Gneiting and P. Guttorp (2009): Continuous-parameter spatio-temporal processes. Gelfand et al., *Handbook of Spatial Statistics*, Chapman & Hall.

[C31] R. Onorati, P. Sampson and P. Guttorp (2009): Dimensionality reduction for large spatio-temporal dataset based on SVD. Italian Statistical Society 2009 meeting.

[C32] Guttorp, P. and Thorarinsdottir, T. (2011): Bayesian Inference for Non-Markovian Point Processes. In E. Porcu, J.M. Montero, and M. Schlather (Eds.), *Space-Time Processes and Challenges Related to Environmental Problems: Proceedings of the Spring School "Advances and Challenges in Space-Time Modelling of Natural Events"*:79-102. Berlin: Springer.

[C33] Craigmile, P. F. and Guttorp, P. (2019). Modeling and assessing climatic trends. In Gelfand, A.,Fuentes, M., Hoeting, J., and Smith, R., editors, *Handbook of Environmental and Ecological Statistics*.Chapman and Hall/CRC, New York: NY.

[C34] Guttorp, P. and Lockhart, R.A. (2021): Modeling Wind Direction Using von Mises Regression on Wind Speed. In A. SenGupta and B.C. Arnold (eds.): *Directional Statistics for Innovative Applications*, to appear. New York: Springer.

Discussions, problems, etc.

[D1] P. Guttorp and H. H. Song (1979): A rejoinder to Skog. *Drinking and Drug Practices Surveyor* **14:** 29-30.

[D2] P. Guttorp (1982): A comment to problem 81-16, 'A learning model'. *SIAM Review* **24:** 480.

[D3] P. Guttorp and P. D. Sampson (1989): Discussion of the paper by Haslett and Raftery. *Journal of the Royal Statistical Society, Series C* **38:** 32-34.

[D4] P. Guttorp (1991): Problem 91-5: How many modes? *The IMS Bulletin* **20:** 564.

[D5] P. Guttorp (1992): Comment on Kemp, A. W. and Kemp, C.D. (1991),"Weldon's Dice Data Revisited," *The American Statistician*, 45, 216-222. *The American Statistician* **46:** 239-240.

[D6] P. Guttorp (1994): Comment on the paper by Handcock and Wallis. *Journal of the American Statistical Association* **89:** 382-384.

[D7] P. Guttorp, P. D. Sampson, and D. Billheimer (1995): Discussion of the paper by Duddek et al. *Environmental and Ecological Statistics* **2:** 204-206.

[D8] P. Guttorp, W. Meiring, and P. D. Sampson (1997): Discussion of the paper by Carroll et al. *Journal of the American Statistical Association* **92:** 405-408.

[D9] P. Guttorp (1998): EDITORIAL: Special issue on space-time processes in environmental and ecological studies. *Environmental and Ecological Statistics* **5:** 97-98.

[D10] A. Cullen, P. Guttorp and R. L. Smith (2000): Editorial: Special issue on statistical analysis of particulate matter air pollution data. *Environmetrics* **11:** 609-610.

[D11] P. Guttorp and P. D. Sampson (2004): EDITORIAL: Special issue on research at the National Research Centr for Statistics and the Environment. *Environmental and Ecological Statistics* **11:** 7-8.

[D12] P. Guttorp (2005) Några tankar om "Utbildningens internationalisering och demokratin" (Qvartilen 20:3). *Qvartilen* **20** (4): p.11.

[D13] P. Guttorp (2007): Discussion of the paper by Moller and Waagepetersen. *Scandinavian Journal of Statistics* **34:** 694-693.

[D14] M. Fuentes, P. Guttorp and M. L. Stein (2008): SPECIAL SECTION ON STATISTICS IN THE ATMOSPHERIC SCIENCES. *Annals of Applied Statistics*.

[D15] P. Guttorp and P. D. Sampson (2009): Discussion of the paper by Diggle et al. To appear, *Journal of the Royal Statistical Society B.*

[D16] P. Guttorp and W. Piegorsch (2010): Editorial. *Environmetrics*.

[D17] R. L. Smith, M. Berliner and P Guttorp (2010): Statisticians Comment on Status of Climate Change Science. *AmStat News*, March 2010, 13-17.

[D18] P. Guttorp (2010): The Paper That Convinced Me of the Connection Between CO2 and Climate Change. *AmStat News*, March 2010, 14-15.

[D19] P. Guttorp and B. Das (2011): Comments on Lindgren,Lindström and Rue: "An explicit link between Gaussian fields and Gaussian Markov random fields: The stochastic partial differential equation approach". *Journal of the Royal Statistical Society, Series B* **73:** 472-473.

[D20] P. Guttorp (2011): Upp- och nedskalning av klimatmodeller. *Qvintensen* Nr 3 2011: 17-18.

[D21] P. Guttorp, S. Sain and C. Wikle (2012): Editorial: Advances in Statistical Methods for Climate Analysis. *Environmetrics* **23:** 363.

[D22] L. Young, W. Piegorsch and P. Guttorp (2013): Editorial: In Memory of George Casella. *Environmetrics* **24:** 279-280.

[D23] R. W. Katz, P. F. Craigmile, P. Guttorp, M. Haran, B Sanso and M. L. Stein (2013): Uncertainty analysis in climate change assessments. *Nature Climate Change* **3**: 769-771.

[D24] P. Guttorp and W. Piegorsch (2014): Editorial: *Environmetrics* Silver Anniversary Special Issue. *Environmetrics* **25:** 559.

[D25] R. Benestad, J. Sillmann, T. L. Thorarinsdottir, P. Guttorp, M. d. S. Mesquita, M. R. Tye, P. Uotila, C. Fox Maule, P. Thejll, M. Drews, K. M. Parding (2017): New vigour involving statisticians to overcome ensemble fatigue. *Nature Climate Change* **7:** 697-703.

[D26] P. Guttorp and G. Lindgren (2018): Matern, Bertil. Available online *StatsRef*.

[D27] P. Guttorp and G. Lindgren (2018): Charlier, Carl. Available online *StatsRef*.

[D28] P. Guttorp and G. Lindgren (2019): Är statistikforskningen industristyrd? Eller är det tvärtom?. To appear, *Qvantilen.*

[D29] P. Guttorp and T. Thorarinsdottir (2019): A little money goes a long way. Appeared online, *EOS*.

Book reviews

1985 Review of Yu. A. Kutoyants: *Parameter estimation for stochastic processes*, translated by B. L. S. Prakasa Rao. *Bulletin of the London Mathematical Society* **7:** 510-511.

1986 Review of *Stochastic Models of Air Pollutant Concentration* by J. Grandell. *Short Book Reviews* **6:** 10.

1988 Review of *Series of Irregular Observations: Forecasting and Model Building* by Robert Azencott and Didier Dacunha-Castelle. *SIAM Review* **30:** 513-514.

1989 Review of *Statistical Spectral Analysis: A Nonprobabilistic Theory* by W. A. Gardner. *American Scientist*, March/April 1989.

1990 Review of *Fuzzy Mathematical Models in Management Science and Engineering* by A. Kaufmann and M. Gupta. *Technometrics* **32:** 238.

Review of *An Introduction to the Theory of Point Processes* by D. J. Daley and D. Vere-Jones. *SIAM Review* **32:** 175-176.

Review of *The Empire of Science: How probability changed science and everyday life* by G. Gigerenzer, Z. Swijtink, T. Porter, L. Daston, J. Beatty and L. Krüger. *Journal of the American Statistical Association* **85:** 592.

1992 Review of *The Art of Probability for Scientists and Engineers* by Richard W. Hamming. *Technometrics* **34:** 244.

Review of *A History of Inverse Probability From Thomas Bayes to Karl Pearson* by A. I. Dale. *Journal of the American Statistical Association,* **87:** 586-587.

Review of *The Taming of Chance* by Ian Hacking. *Journal of the American Statistical Association,* **87:** 897.

1993 Review of *Probability Via Expectation* by Peter Whittle. *Journal of the American Statistical Association* **88:** 699-700.

1996 Review of *Models for Infectious Human Diseases: Their Structure and Relation to Data,* edited by V. Isham and G. Medley. *Statistics in Medicine*.

2011 Review of *Hidden Markov Models for Time Series. An Introduction Using R.* by Walter Zucchini and Iain L. MacDonald. *Biometrics* **67:** 1178.

Papers submitted or under revision

P. Thejll, P. Guttorp, M. Drews, T. Schmith, T. Thorarinsdottir, J. Woge Nielsen and M. Hvid Ribergaard (2022): High impact of nonstationarity in statistical projections of sea level extremes in Esbjerg, Denmark. Under revision, *Journal of Geophysical Research Oceans*.

C. Heinrich, T. L. Thorarinsdottir, P. Guttorp and M. Schneider (2021): Validation of point process predictions with proper scoring rules. Submitted to *Biometrika*.

Technical reports etc.

P. Guttorp (1980): *Statistical modelling of population processes.* Dissertation submitted to the University of California, Berkeley, in partial fulfillment of the requirements for the Ph. D. degree.

P. Guttorp (1981): A simple model for acoustic noise. University of Washington Department of Statistics Technical Report **13.**

P. Guttorp (1982): Reconstructing the age distribution of a population from aggregate data on births and deaths. University of Washington Department of Statistics Technical Report **25.** (Paper presented at Biometrie 82, Toulouse).

P. Guttorp (1983): Estimation of the killing distribution for killed Poisson processes. University of Washington Department of Statistics Technical Report **30** (Paper presented at IMS Western Regional Meeting, Victoria, 1981).

S. P. Millard and P. Guttorp (1985): Hypothesis tests for regression models with autocorrelated errors. University of British Columbia Department of Statistics Technical Report **18.**

P. Guttorp (1986): Models for transportation and deposition of atmospheric pollutants. SIMS Technical Report **95.**

P. Guttorp, A. J. Petkau, P. D. Sampson, and J. V. Zidek (1986): A summary of current methodology relating to the problem of designing a large-scale monitoring network. SIMS Technical Report **104**.

A. K. Pollack, A. B. Hudischewskyj, T. S. Stoeckenius, and P. Guttorp (1989): Analysis of variability of UAPSP precipitation chemistry measurements. Draft Final Report SYSAPP-89/041. San Rafael: Systems Applications, Inc.

P. Guttorp and W. Zucchini (1990): A hidden Markov model for space-time precipitation. *Eighth Conference on Hydrometeorology:* 199-201. Boston: American Meteorological Society.

P. Guttorp, J. P. Hughes, and P. D. Sampson (1992): A hydrological rainfall model using atmospheric data with application to climate model impact evaluation. *Proceedings of the 5th International Meeting on Statistical Climatology*. Toronto: Environment Canada.

J. P. Hughes and P. Guttorp (1993): Nonhomogeneous hidden Markov models relating synoptic atmospheric patterns to local hydrologic phenomena. *Hydrology Days Publications*, Atherton, CA.

P. Monestiez, P. D. Sampson, and P. Guttorp (1993): Modeling of heterogeneous spatial correlation structure by spatial deformation. *Cahiers de Geostatistique*, Fascicule 3, Compte Rendu des Journees de Geostatistique, 25-26 May 1993, Fontainebleau: Ecole Nationale Superieure des Mines de Paris.

P. Guttorp, W. Meiring, and P. D. Sampson (1993): Estimating heterogeneous spatial covariance with environmental applications. *Bull. Intern. Statist. Inst.* 49th session, Contributed Papers vol. 1: 527-528.

P. D. Sampson, P. Guttorp, and W. Meiring (1994): Spatio-temporal analysis of regional ozone data for operational evaluation of an air quality model. *1994 Proceedings of the Section on Statistics and the Environment*, Alexandria: American Statistical Association: 46-55.

W. Meiring, P. Guttorp, and P. D. Sampson (1995): Space-time covariance modelling. *Proceedings of the 6th International Meeting on Statistical Climatology*. Galway, Ireland: 423-426.

D. Billheimer and P. Guttorp (1995): Spatial models for discrete compositional data. University of Washington Department of Statistics Technical Report **301**.

P. Guttorp (1997): Environmental statistics: a case-based approach using the web. *Paideia* **5:** no. 2: 6-8.

P. Guttorp (1997): Analysis of Spokane CO data. NRCSE Technical Report **2**.

W. Meiring, P. Monestiez, P. D. Sampson, and P. Guttorp (1997): Developments in the modelling of nonstationary spatial covariance structure from space-time monitoring data. In E. Y. Baafi and N. Schofield (eds.): *Geostatistics Wollongong '96*, pp. 162-173. Dordrecht: Kluwer.

W. Meiring, P. Guttorp, and P. D. Sampson (1997): On the validity and identifiability of spatial deformation models for heterogeneous spatial correlation structure. NRCSE Technical Report **8**.

J. H. Reynolds, B. Das, P. D. Sampson and P. Guttorp (1998): Meteorological adjustment of western Washington and northwest Oregon surface ozone observations with investigation of trends. NRCSE Technical Report **15**.

J. H. Reynolds, D. Caccia, P. D. Sampson and P. Guttorp (1999): Meteorological adjustment of Chicago, Illinois, regional surface ozone observations with investigation of trends. NRCSE Technical report **25**.

P. Guttorp and R. L Smith (2001): The matter of particulates and health. TIES bulletin and ASA ENVR bulletin.

R. L. Smith, P. Guttorp, E. A. Sheppard, T. Lumley and N. Ishikawa (2001): Comments on the Criteria Document for Particulate Matter Air Pollution. NRCSE Technical Report **66**.

R. Onorati, P. D. Sampson and P. Guttorp (2009): Dimensionality reduction for large spatio-temporal datasets based on SVD. *Proceedings of Socieťa Italiano di Statistica meeting on Statistical methods for the analysis of large data-sets.*

P. Guttorp (2009): Some extreme value problems in climate research. *Proceedings of the International Statistical Institute biennial meeting.*

Guttorp, P. and Craigmile, P.F. (2021): A combined estimate ofglobal temperature. NR Technical Report SAMBA/14/21.

Master of Science students

1998 Mariabeth Silkey (Quantitative Ecology and Resource Management): Evaluation of a model of the benthic macro intertebrate distribution of Delaware Bay, Delaware.

2000 Erin Sullivan (Statistics): Estimating the association between ambient particulate matter and elderly mortality in Phoenix and Seattle using Bayesian model averaging.

2002 Jennifer Calahan (Statistics): Estimating areal crab catch from catch card data.

2008 Hilary Lyons (Statistics): ‘ Modeling Dominance in Spatial Point Processes

2009 Junglim Shin (Statistics): Survival Analysis of Interval-Censored Data with Application to the Time-to-Depletion of Connecting-Peptide in Type I Diabetes

2011 Robert Branom (Statistics): Modeling the Game of Soccer Using Potential Functions

2017 Harry Podschwit (QERM): The Statistical Analysis of Wildfire Growth

Doctoral students

1985 Steven P. Millard (Biomathematics): Statistical methods and optimal sampling designs for detection of aquatic ecological change.

Daijin Ko (Statistics): Robust statistics on compact metric spaces.

1987 Wasima Rida (Biostatistics): Stochastic models for the spread of communicable diseases: parameter estimates and their properties.

Gary Grunwald (Statistics): Time series models for continuous proportions.

Steve Kaluzny (Quantitative Ecology): Estimation of trends in spatial data.

1988 Pat Sullivan (Quantitative Ecology): Catch at length analysis: a Kalman filter approach.

1993 James P. Hughes (Statistics): A class of stochastic models for relating synoptic atmospheric patterns to local hydrologic phenomena.

Ken Newman (Statistics): State-space modeling of salmon migration and a Monte Carlo alternative to the Kalman filter.

1994 Renato Assunção (Statistics): Robust estimation in point processes.

1995 Dean Billheimer (Statistics): Statistical analysis of biological monitoring data: state-space models for species composition.

Wendy Meiring (Statistics): Estimation of heterogeneous space-time covariance

1996 Ian Painter (Statistics): Inference in a discrete parameter space

1997 Sandra Catlin (Statistics): Statistical inference for partially observed Markov population models

1998 Brandon Whitcher (Statistics): Assessing nonstationary time series using wavelets

1999 Ashley Steel (Quantitative Ecology and Resource Management): In-stream factors affecting juvenile salmon out-migration

2000 Enrica Bellone (Statistics): Nonhomogeneous hidden Markov models for downscaling synoptic atmospheric patterns to precipitation amounts

Barnali Das (Statistics): Global covariance modeling: a deformation approach to anisotropy

Daniela Golinelli (Statistics): Bayesian inference in hidden stochastic population processes

Peter Craigmile (Statistics): Parameter estimation of trend contaminated long memory processes

2002 Doris Damian (Biostatistics): A Bayesian approach to estimating heterogeneous spatial covariances

Francesca Bruno (Statistical Sciences, Univ. Bologna): A simple non-separable non-stationary spatiotemporal model for ozone.

2004 Tamre Cardoso (Quantitative Ecology and Resource Management): A hierarchical Bayes model for combining precipitation measurements from different sources

2007 Debashis Mondal (Statistics): Wavelet variance analysis for time series and random fields.

Sofia Åberg (Mathematical Statistics, Lund University): Applications of Rice's formula in oceanographic and environmental problems

2009 Rossella Onorati: Dimensionality reduction for large spatiotemporaldataset based on SVD

2011 Hilary Lyons (Statistics): Seeing the trees through the forest: a competition model for growth and mortality

2013 Fabio Sigrist (Statistics, ETH): Physics based dynamic modeling of space-time data

2021 Max Schneider (Statistics): Improving uncertainty quantification and visualization for spatiotemporal earthquake rate models for the Pacific Northwest

Postdoctoral fellows

1999-2002 Eun Sug Park

2003-05 Grace Chiu

2008-11 Angie Hugeback

2012-14 Cynthia Chang