
References

- Abramowitz, M. and Stegun, I.A. (1964) *Handbook of Mathematical Functions*, Applied Mathematics Series, Vol. 55. National Bureau of Standards, Washington, D.C (reprinted 1972 by Dover Publications, New York).
- Aitchison, J. and Brown, J. (1957) *The Lognormal Distribution*. Cambridge University Press, London.
- Akaike, H. (1974) A new look at the statistical model identification. *IEEE Transaction on Automatic Control*, AC-19, 716–723.
- Aldworth, J. and Cressie, N. (1999) Sampling designs and prediction methods for Gaussian spatial processes. In: S. Ghosh (ed.), *Multivariate Analyses, Design of Experiments, and Survey Sampling*. Marcel Dekker, New York, 1–54.
- Aldworth, J. and Cressie, N. (2003) Prediction of nonlinear spatial functionals. *Journal of Statistical Planning and Inference*, 112:3–41.
- Allen, D.M. (1974) The relationship between variable selection and data augmentation and a method of prediction. *Technometrics*, 16:125–127.
- Anselin, L. (1995) Local indicators of spatial association—LISA. *Geographic Analysis*, 27(2):93–115.
- Armstrong, M. (1999) *Basic Linear Geostatistics*. Springer-Verlag, New York.
- Azzalini, A. and Capitanio, A. (1999) Statistical applications of the multivariate skew normal distribution. *Journal of the Royal Statistical Society, Series B*, 61:579–602.
- Baddeley, A. and Silverman, B.W. (1984) A cautionary example for the use of second order methods for analyzing point patterns. *Biometrics*, 40:1089–1094.
- Bahadur, R.R. (1961) A representation of the joint distribution of responses to n dichotomous items, In *Studies in Item Analysis and Prediction*, ed. H. Solomon, Stanford University Press, Stanford, CA, 158–165.
- Banerjee, S., Carlin, B.P., and Gelfand, A.E. (2003) *Hierarchical Modeling and Analysis for Spatial Data*. Chapman and Hall/CRC, Boca Raton, FL.
- Barry, R.P. and Ver Hoef, J.M. (1996) Blackbox kriging: spatial prediction without specifying variogram models. *Journal of Agricultural, Biological, and Environmental Statistics*, 1:297–322.
- Bartlett, M.S. (1964) The spectral analysis of two-dimensional point processes. *Biometrika*, 51:299–311.
- Bartlett, M.S. (1978) *Stochastic Processes. Methods and Applications*. Cambridge University Press, London.
- Belsley, D.A., Kuh, E., and Welsch, R.E. (1980), *Regression Diagnostics; Identifying Influential Data and Sources of Collinearity*. John Wiley & Sons, New York.
- Berger, J.O., De Oliveria, V., and Sansó, B. (2001) Objective Bayesian analysis of spatially correlated data. *Journal of the American Statistical Association*, 96: 1361–1374.
- Besag, J. (1974) Spatial interaction and the statistical analysis of lattice systems. *Journal of the Royal Statistical Society, Series B*, 36:192–225.

- Besag, J. (1975) Statistical analysis of non-lattice data. *The Statistician*, 24:179–195.
- Besag, J., Green, P., Higdon, D., and Mengersen, K. (1995) Bayesian computation and stochastic systems (with discussion), *Statistical Science*, 10:3–66.
- Besag, J. and Kempton, R. (1986) Statistical analysis of field experiments using neighbouring plots. *Biometrics*, 42:231–251.
- Besag, J. and Kooperberg, C. (1995) On conditional and intrinsic autoregressions. *Biometrika*, 82:733–746.
- Besag, J. and Newell, J. (1991) The detection of clusters in rare diseases. *Journal of the Royal Statistical Society, Series A*, 154:327–333.
- Besag, J., York, J., and Mollié, A. (1991) Bayesian image restoration, with two applications in spatial statistics (with discussion). *Annals of the Institute of Statistical Mathematics*, 43:1–59.
- Bloomfield, P. (1976) *Fourier Analysis of Time Series: An Introduction*. John Wiley & Sons, New York.
- Boufassa, A. and Armstrong, M. (1989) Comparison between different kriging estimators. *Mathematical Geology*, 21:331–345.
- Box, G.E.P. and Cox, D.R. (1964) An analysis of transformations. *Journal of the Royal Statistical Society, Series B*, 26:211–243.
- Breslow, N.E. and Clayton, D.G. (1993) Approximate inference in generalized linear mixed models. *Journal of the American Statistical Association*, 88:9–25.
- Breusch, T.S. (1980) Useful invariance results for generalized regression models. *Journal of Econometrics*, 13:327–340.
- Brillinger, D.R. (1972) The spectral analysis of stationary interval functions. In *Proceedings of the 6th Berkeley Symposium on Mathematical Statistics and Probability*, 1:483–513.
- Brown, R.L., Durbin, J., and Evans, J.M. (1975) Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society (B)*, 37:149–192.
- Brownie, C., Bowman, D.T., and Burton, J.W. (1993) Estimating spatial variation in analysis of data from yield trials: a comparison of methods. *Agronomy Journal*, 85:1244–1253.
- Brownie, C. and Gumpertz, M.L. (1997) Validity of spatial analyses of large field trials. *Journal of Agricultural, Biological, and Environmental Statistics*, 2(1):1–23.
- Burnham, K.P. and Anderson, D.R. (1998) *Model Selection and Inference: A Practical Information-Theoretic Approach*. Springer-Verlag, New York.
- Burt, W.H. (1943) Territoriality and homerange concepts as applied to mammals. *Journal of Wildlife Management*, 54:310–315.
- Carlin, B.P. and Louis, T.A. (2000) *Bayes and Empirical Bayes Methods for Data Analysis*. 2nd Edition, Chapman and Hall/CRC, Boca Raton, FL.
- Casella, G. and George, E.I. (1992) Explaining the Gibbs sampler. *The American Statistician*, 46:167–174.
- Chatfield, C. (1996) *The Analysis of Time Series; An Introduction*, 5th ed. Chapman & Hall, London.
- Cherry, S., Banfield, J., and Quimby, W. (1996) An evaluation of a nonparametric method of estimating semi-variograms of isotropic spatial processes. *Journal of Applied Statistics*, 23:435–449.
- Chib, S. and Greenberg, E. (1995) Understanding the Metropolis-Hastings algorithm. *The American Statistician*, 49:327–335.

- Chilès, J.P. and Delfiner, P. (1999) *Geostatistics. Modeling Spatial Uncertainty*. John Wiley & Sons, New York.
- Choi, E. and Hall, P. (1999) Nonparametric approach to analysis of space-time data on earthquake occurrences. *Journal of Computational and Graphical Statistics*, 8:733–748.
- Christensen, R. (1991) *Linear Models for Multivariate, Time Series, and Spatial Data*. Springer-Verlag, New York.
- Clark, I. (1979) *Practical Geostatistics*. Applied Science Publishers, Essex, England.
- Clayton, D.G. and Kaldor, J. (1987) Empirical Bayes estimates of age-standardized relative risks for use in disease mapping, *Biometrics*, 43:671–682.
- Cleveland, W.S. (1979) Robust locally weighted regression and smoothing scatterplots. *Journal of the American Statistical Association*, 74:829–836.
- Cliff, A.D. and Ord, J.K. (1981) *Spatial Processes; Models and Applications*. Pion Limited, London.
- Cody, W.J. (1987) SPECFUN—A portable special function package. In *New Computing Environments: Microcomputers in Large-Scale Scientific Computing*, ed. A. Wouk, SIAM, Philadelphia, 1–12.
- Congdon, P. (2001) *Bayesian Statistical Modelling*. John Wiley & Sons, Chichester.
- Congdon, P. (2003) *Applied Bayesian Modelling*. John Wiley & Sons, Chichester.
- Cook, R.D. (1977) Detection of influential observations in linear regression. *Technometrics*, 19:15–18.
- Cook, R.D. (1979) Influential observations in linear regression. *Journal of the American Statistical Association*, 74:169–174.
- Cook, R.D. and Weisberg, S. (1982) *Residuals and Influence in Regression*. Chapman and Hall, New York.
- Cowles, M.K. and Carlin, B.P. (1996) Markov chain Monte Carlo convergence diagnostics: a comparative review. *Journal of the American Statistical Association*, 91:883–904.
- Cressie, N. (1985) Fitting variogram models by weighted least squares. *Journal of the International Association for Mathematical Geology*, 17:563–586.
- Cressie, N. (1990) The origins of kriging. *Mathematical Geology*, 22:239–252.
- Cressie, N. (1992) Smoothing regional maps using empirical Bayes predictors. *Geographical Analysis*, 24:75–95.
- Cressie, N.A.C. (1993) *Statistics for Spatial Data. Revised ed.* John Wiley & Sons, New York.
- Cressie, N. (1993b) Aggregation in geostatistical problems. In: A. Soares (ed.), *Geostatistics Troia '92*. Kluwer Academic Publishers, Dordrecht, 25–35.
- Cressie, N. (1998) Fundamentals of spatial statistics. pp. 9–33 in *Collecting Spatial Data: Optimum Design of Experiments for Random Fields*. W.G. Müller, (ed.) Physica-Verlag.
- Cressie, N. and Grondona, M.O. (1992) A comparison of variogram estimation with covariogram estimation. In *The Art of Statistical Science*, ed. K.V. Mardia. John Wiley & Sons, New York, 191–208.
- Cressie, N. and Hawkins, D.M. (1980) Robust estimation of the variogram, I. *Journal of the International Association for Mathematical Geology*, 12:115–125.
- Cressie, N. and Huang, H.-C. (1999) Classes of nonseparable, spatio-temporal stationary covariance functions. *Journal of the American Statistical Association*, 94:1330–1340.
- Cressie, N. and Lahiri, S.N. (1996) Asymptotics for REML estimation of spatial covariance parameters. *Journal of Statistical Planning and Inference*, 50:327–341.

- Cressie, N. and Majure, J.J. (1997) Spatio-temporal statistical modeling of livestock waste in streams. *Journal of Agricultural, Biological, and Environmental Statistics*, 2:24–47.
- Croux, C. and Rousseeuw, P.J. (1992) Time-efficient algorithms for two highly robust estimators of scale. In *Computational Statistics, Vol. 1*, eds. Y. Dodge, and J. Whittaker, Physika-Verlag, Heidelberg, 411–428.
- Curriero, F.C. (1996) The use of non-Euclidean distances in geostatistics. Ph.D. thesis, Department of Statistics, Kansas State University, Manhattan, KS.
- Curriero, F.C. (2004) Norm dependent isotropic covariogram and variogram models. *Journal of Statistical Planning and Inference*, In review.
- Curriero, F.C. and Lele, S. (1999) A composite likelihood approach to semivariogram estimation. *Journal of Agricultural, Biological, and Environmental Statistics*, 4(1):9–28.
- Cuzick, J. and Edwards, R. (1990) Spatial clustering for inhomogeneous populations (with discussion). *Journal of the Royal Statistical Society, Series B*, 52:73–104.
- David, M. (1988) *Handbook of Applied Advanced Geostatistical Ore Reserve Estimation*. Elsevier, Amsterdam.
- Davidian, M. and Giltinan, D.M. (1995) *Nonlinear Models for Repeated Measurement Data*. Chapman and Hall, New York.
- De Cesare, L., Myers, D., and Posa, D. (2001) Estimating and modeling space-time correlation structures. *Statistics and Probability Letters*, 51(1):9–14.
- De Iaco, S., Myers, D.E., and Posa, D. (2002) Nonseparable space-time covariance models: some parametric families. *Mathematical Geology*, 34(1):23–42.
- De Oliveira, V., Kedem, B. and Short, D.A. (1997) Bayesian prediction of transformed Gaussian random fields. *Journal of the American Statistical Association*, 92:1422–1433.
- Deutsch, C.V. and Journel, A.G. (1992) *GSLIB: Geostatistical Software Library and User's Guide*. Oxford University Press, New York.
- Devine, O.J., Louis, T.A. and Halloran, M.E. (1994) Empirical Bayes methods for stabilizing incidence rates before mapping, *Epidemiology*, 5(6):622–630.
- Diggle, P.J. (1983) *Statistical Analysis of Point Processes*. Chapman and Hall, New York.
- Diggle, P.J. (1985) A kernel method for smoothing point process data. *Applied Statistics*, 34:138–147.
- Diggle, P., Besag, J.E., and Gleaves, J.T. (1976) Statistical analysis of spatial patterns by means of distance methods. *Biometrics*, 32:659–667.
- Diggle, P.J. and Chetwynd, A.G. (1991) Second-order analysis of spatial clustering for inhomogeneous populations. *Biometrics*, 47:1155–1163.
- Diggle, P.J., Tawn, J.A., and Moyeed, R.A. (1998) Model-based geostatistics. *Applied Statistics*, 47:229–350.
- Dobson, A.J. (1990) *An Introduction to Generalized Linear Models*. Chapman and Hall, London.
- Dorai-Raj, S.S. (2001) *First- and Second-Order Properties of Spatiotemporal Point Processes in the Space-Time and Frequency Domains*. Ph.D. Dissertation, Dept. of Statistics, Virginia Polytechnic Institute and State University.
- Dowd, P.A. (1982) Lognormal kriging—the general case. *Journal of the International Association for Mathematical Geology*, 14:475–499.
- Draper, N. and Smith, H. (1981) *Applied Regression Analysis*, 2nd edition. John Wiley & Sons, New York.

- Eaton, M.L. (1985) The Gauss-Markov theorem in multivariate analysis. In *Multivariate Analysis—VI*, ed. P.R. Krishnaiah, Amsterdam: Elsevier, 177–201.
- Ecker, M.D. and Gelfand, A.E. (1997) Bayesian variogram modeling for an isotropic spatial process. *Journal of Agricultural, Biological, and Environmental Statistics*, 2:347–369.
- Fedorov, V.V. (1974) Regression problems with controllable variables subject to error. *Biometrika*, 61:49–65.
- Fisher, R.A., Thornton, H.G., and MacKenzie, W.A. (1922) The accuracy of the plating method of estimating the density of bacterial populations. *Annals of Applied Biology*, 9:325–359.
- Fotheringham, A.S., Brunsdon, C. and Charlton, M. (2002) *Geographically Weighted Regression*. John Wiley & Sons, New York.
- Freeman, M.F. and Tukey, J.W. (1950) Transformations related to the angular and the square root. *Annals of Mathematical Statistics*, 21:607–611.
- Fuentes, M. (2001) A high frequency kriging approach for non-stationary environmental processes. *Environmetrics*, 12:469–483.
- Fuller, W.A. and Battese, G.E. (1973) Transformations for estimation of linear models with nested error structure. *Journal of the American Statistical Association*, 68:626–632.
- Galpin, J.S. and Hawkins, D.M. (1984) The use of recursive residuals in checking model fit in linear regression. *The American Statistician*, 38(2):94–105.
- Gandin, L.S. (1963) *Objective Analysis of Meteorological Fields*. Gidrometeorologicheskoe Izdatel'stvo (GIMIZ), Leningrad (translated by Israel Program for Scientific Translations, Jerusalem, 1965).
- Gaudard, M., Karson, M., Linder, E., and Sinha, D. (1999) Bayesian spatial prediction. *Environmental and Ecological Statistics*, 6:147–171.
- Geary, R.C. (1954) The contiguity ratio and statistical mapping, *The Incorporated Statistician*, 5:115–145.
- Gelfand, A.E. and Smith, A.F.M. (1990) Sampling-based approaches to calculating marginal densities. *Journal of the American Statistical Association*, 85:398–409.
- Gelman, A., Carlin, J.B., Stern, H.S., and Rubin, D.B. (2004) *Bayesian Data Analysis*. Chapman and Hall/CRC, Boca Raton, FL.
- Gelman, A. and Rubin, D.B. (1992) Inference from iterative simulation using multiple sequences (with discussion). *Statistical Science*, 7:457–511.
- Geman, S. and Geman, D. (1984) Stochastic relaxation, Gibbs distributions and the Bayesian restoration of images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 6:721–741.
- Genton, M.G. (1998a) Highly robust variogram estimation. *Mathematical Geology*, 30:213–221.
- Genton, M.G. (1998b) Variogram fitting by generalized least squares using an explicit formula for the covariance structure. *Mathematical Geology*, 30:323–345.
- Genton, M.G. (2000) The correlation structure of Matheron's classical variogram estimator under elliptically contoured distributions. *Mathematical Geology*, 32(1):127–137.
- Genton, M.G. (2001) Robustness problems in the analysis of spatial data. In *Spatial Statistics: Methodological Aspects and Applications*, ed. M. Moore, Springer-Verlag, New York, 21–38.
- Genton, M.G. and Gorsch, D.J. (2002) Nonparametric variogram and covariogram estimation with Fourier-Bessel matrices. *Computational Statistics and Data Analysis*, 41:47–57.

- Greig-Smith, P. (1952) The use of random and contiguous quadrats in the study of the structure of plant communities. *Annals of Botany*, 16:293–316.
- Grondona, M.O. (1989) Estimation and design with correlated observations. Ph.D. Dissertation, Iowa State University.
- Grondona, M.O. and Cressie, N. (1995). Residuals based estimators of the covariogram. *Statistics*, 26:209–218.
- Haas, T.C. (1990) Lognormal and moving window methods of estimating acid deposition. *Journal of the American Statistical Association*, 85:950–963.
- Haas, T.C. (1995) Local prediction of a spatio-temporal process with an application to wet sulfate deposition. *Journal of the American Statistical Association*, 90:1189–1199.
- Haining, R. (1990) *Spatial Data Analysis in the Social and Environmental Sciences*. Cambridge University Press, Cambridge.
- Haining, R. (1994) Diagnostics for regression modeling in spatial econometrics. *Journal of Regional Science*, 34:325–341.
- Hampel, F.R., Rochetti, E.M., Rousseeuw, P.J., and Stahel, W.A. (1986) *Robust Statistics, the Approach Based on Influence Functions*. John Wiley & Sons, New York.
- Handcock, M.S. and Stein, M.L. (1993) A bayesian analysis of kriging. *Technometrics*, 35:403–410.
- Handcock, M.S. and Wallis, J.R. (1994) An approach to statistical spatial-temporal modeling of meteorological fields (with discussion). *Journal of the American Statistical Association*, 89:368–390.
- Hanisch, K.-H. and Stoyan, D. (1979) Formulas for the second-order analysis of marked point processes. *Mathematische Operationsforschung und Statistik. Series Statistics*, 10:555–560.
- Harville, D.A. (1974) Bayesian inference for variance components using only error contrasts. *Biometrika*, 61:383–385.
- Harville, D.A. (1977) Maximum-likelihood approaches to variance component estimation and to related problems. *Journal of the American Statistical Association*, 72:320–340.
- Harville, D.A. and Jeske, D.R. (1992) Mean squared error of estimation or Prediction under a general linear model. *Journal of the American Statistical Association*, 87:724–731.
- Haslett, J. and Hayes, K. (1998) Residuals for the linear model with general covariance structure. *Journal of the Royal Statistical Society, Series B*, 60:201–215.
- Hastings, W.K. (1970) Monte Carlo sampling methods using Markov chains and their applications. *Biometrika*, 57:97–109.
- Hawkins, D.M. (1981) A cusum for a scale parameter. *Journal of Quality Technology*, 13:228–231.
- Hawkins, D.M. and Cressie, N.A.C. (1984) Robust kriging—a proposal. *Journal of the International Association of Mathematical Geology*, 16:3–18.
- Heagerty, P.J. and Lele, S.R. (1998) A composite likelihood approach to binary spatial data. *Journal of the American Statistical Association*, 93:1099–1111.
- Henderson, C.R. (1950) The estimation of genetic parameters. *The Annals of Mathematical Statistics*, 21:309–310.
- Heyde, C.C. (1997) *Quasi-Likelihood and Its Applications. A General Approach to Optimal Parameter Estimation*. Springer-Verlag, New York.
- Higdon, D. (1998) A process-convolution approach to modeling temperatures in the North Atlantic Ocean. *Environmental and Ecological Statistics*, 5(2):173–190.

- Higdon, D., Swall, J., and Kern, J. (1999) Non-stationary spatial modeling. *Bayesian Statistics*, 6:761–768.
- Hinkelmann, K. and Kempthorne, O. (1994) *Design and Analysis of Experiments. Volume I. Introduction to Experimental Design*. John Wiley & Sons, New York.
- Houseman, E.A., Ryan, L.M., and Coull, B.A. (2004) Cholesky residuals for assessing normal errors in a linear model with correlated outcomes. *Journal of the American Statistical Association*, 99:383–394.
- Huang, J.S. and Kotz, S. (1984) Correlation structure in iterated Farlie-Gumble-Morgenstern distributions. *Biometrika*, 71:633–636.
- Hughes-Oliver, J.M., Gonzalez-Farias, G., Lu, J.-C., and Chen, D. (1998) Parametric nonstationary correlation models. *Statistics & Probability Letters*, 40:267–278.
- Hughes-Oliver, J.M., Lu, J.-C., Davis, J.C., and Gyurcsik, R.S. (1998) Achieving uniformity in a semiconductor fabrication process using spatial modeling. *Journal of the American Statistical Association*, 93:36–45.
- Hurvich, C.M. and Tsai, C.-L. (1989) Regression and time series model selection in small samples. *Biometrika*, 76:297–307.
- Isaaks, E.H. and Srivastava, R.M. (1989) *An Introduction to Applied Geostatistics*. Oxford University Press, New York.
- Jensen, D.R. and Ramirez, D.E. (1999) Recovered errors and normal diagnostics in regression. *Metrika*, 49:107–119.
- Johnson, M.E. (1987) *Multivariate Statistical Simulation*. John Wiley & Sons, New York.
- Johnson, N.L. and Kotz, S. (1972) *Distributions in Statistics: Continuous Multivariate Distributions*. John Wiley & Sons, New York.
- Johnson, N.L. and Kotz, S. (1975) On some generalized Farlie-Gumbel-Morganstern distributions. *Communications in Statistics*, 4:415–427.
- Jones, R.H. (1993) *Longitudinal Data With Serial Correlation: A State-space Approach*. Chapman and Hall, New York.
- Jones, R.H. and Zhang, Y. (1997) Models for continuous stationary space-time processes. In Gregoire, T.G. Brillinger, D.R. Diggle, P.J., Russek-Cohen, E., Warren, W.G., and Wolfinger, R.D. (eds.) *Modeling Longitudinal and Spatially Correlated Data*, Springer Verlag, New York, 289–298.
- Journel, A.G. (1980) The lognormal approach to predicting local distributions of selective mining unit grades. *Journal of the International Association for Mathematical Geology*, 12:285–303.
- Journel, A.G. (1983) Nonparametric estimation of spatial distributions. *Journal of the International Association for Mathematical Geology*, 15:445–468.
- Journel, A.G. and Huijbregts, C.J. (1978) *Mining Geostatistics*. Academic Press, London.
- Jowett, G.H. (1955a) The comparison of means of industrial time series. *Applied Statistics*, 4:32–46.
- Jowett, G.H. (1955b) The comparison of means of sets of observations from sections of independent stochastic series. *Journal of the Royal Statistical Society, (B)*, 17:208–227.
- Jowett, G.H. (1955c) Sampling properties of local statistics in stationary stochastic series. *Biometrika*, 42:160–169.
- Judge, G.G., Griffiths, W.E., Hill, R.C., Lütkepohl, H., and Lee, T.-C. (1985) *The Theory and Practice of Econometrics*, John Wiley & Sons, New York.
- Kackar, R.N. and Harville, D.A. (1984) Approximation for Standard errors of estima-

- tors of fixed and random effects in mixed linear models. *Journal of the American Statistical Association*, 79:853–862.
- Kaluzny, S.P., Vega, S.C., Cardoso, T.P. and Shelly, A.A. (1998) *S+SpatialStats. User's Manual for Windows[®] and Unix[®]*. Springer Verlag, New York.
- Kelsall, J.E. and Diggle, P.J. (1995) Non-parametric estimation of spatial variation in relative risk. *Statistics in Medicine*, 14: 2335–2342.
- Kelsall, J.E. and Wakefield, J.C. (1999) Discussion of Best et al. 1999. In Bernardo, J.M. Berger, J.O. Dawid, A.P. and Smith, A.F.M. (eds.) *Bayesian Statistics 6*, Oxford University Press, Oxford, p. 151.
- Kempthorne, O. (1955) The randomization theory of experimental inference. *Journal of the American Statistical Association*, 50:946–967.
- Kenward, M.G. and Roger, J.H. (1997) Small sample inference for fixed effects from restricted maximum likelihood. *Biometrics*, 53:983–997.
- Kern, J.C. and Higdon, D.M. (2000) A distance metric to account for edge effects in spatial analysis. In *Proceedings of the American Statistical Association, Biometrics Section*, Alexandria, VA, 49–52.
- Kianifard, F. and Swallow, W.H. (1996) A review of the development and application of recursive residuals in linear models. *Journal of the American Statistical Association*, 91:391–400.
- Kim, H. and Mallick, B.K. (2002) Analyzing spatial data using skew-Gaussian processes. In Lawson, A. B. and Denison, D. G.T. (eds.) *Spatial Cluster Modeling*, Chapman & Hall/CRC, Boca Raton, FL. pp. 163–173.
- Kitanidis, P.K. (1983) Statistical estimation of polynomial generalized covariance functions and hydrological applications. *Water Resources Research*, 19:909–921.
- Kitanidis, P.K. (1986) Parameter uncertainty in estimation of spatial functions: Bayesian analysis. *Water Resources Research*, 22:499–507.
- Kitanidis, P.K. and Lane, R.W. (1985) Maximum likelihood parameter estimation of hydrological spatial processes by the Gauss-Newton method. *Journal of Hydrology*, 79:53–71.
- Kitanidis, P.K. and Vomvoris, E.G. (1983) A geostatistical approach to the inverse problem in groundwater modeling (steady state) and one-dimensional simulations. *Water Resources Research*, 19:677–690.
- Knox, G. (1964) Epidemiology of childhood leukemia in Northumberland and Durham. *British Journal of Preventative and Social Medicine*, 18:17–24.
- Krige, D.G. (1951) A statistical approach to some basic mine valuation problems on the Witwatersrand. *Journal of Chemical, Metallurgical, and Mining Society of South Africa*, 52:119–139.
- Krivoruchko, K. and Gribov, A. (2004) Geostatistical interpolation in the presence of barriers. In: *geoENV IV - Geostatistics for Environmental Applications: Proceedings of the Fourth European Conference on Geostatistics for Environmental Applications 2002 (Quantitative Geology and Geostatistics)*, 331–342.
- Kulldorff, M. (1997) A spatial scan statistic. *Communications in Statistics-Theory and Methods*, 26:1487–1496.
- Kulldorff, M. and International Management Services, Inc. (2003) *SaTScan v. 4.0: Software for the spatial and space-time scan statistics*. National Cancer Institute, Bethesda, MD.
- Kulldorff, M. and Nagarwalla, N. (1995) Spatial disease clusters: detection and inference. *Statistics in Medicine*, 14:799–810.
- Kupper, L.L. and Haseman, J.K. (1978) The use of a correlated binomial model for

- the analysis of certain toxicological experiments, *Biometrics*, 34:69-76.
- Laarhoven, P.J.M. van and Aarts, E.H.L. (1987) *Simulated Annealing: Theory and Applications*. Reidel Publishing, Dordrecht, Holland.
- Lahiri, S.N., Lee, Y., Cressie, N. (2002) On asymptotic distribution and asymptotic efficiency of least squares estimators of spatial variogram parameters. *Journal of Statistical Planning and Inference*, 103:65-85.
- Lancaster, H. O. (1958) The structure of bivariate distributions. *Annals of Mathematical Statistics*, 29:719-736.
- Lawson, A.B. and Denison, D.G.T. (2002) *Spatial Cluster Modelling*, Chapman and Hall/CRC, Boca Raton, FL.
- Le, N.D. and Zidek, J.V. (1992) Interpolation with uncertain spatial covariances: a Bayesian alternative to kriging. *Journal of Multivariate Analysis*, 43:351-374.
- Lele, S. (1997) Estimating functions for semivariogram estimation, In: *Selected Proceedings of the Symposium on Estimating Functions*, eds. I.V. Basawa, V.P. Godambe, and R.L. Taylor, Hayward, CA: Institute of Mathematical Statistics, 381-396.
- Lele, S. (2004) On using expert opinion in ecological analyses: A frequentist approach. *Environmental and Ecological Statistics*, to appear.
- Lewis, P.A.W. and Shedler, G.S. (1979) Simulation of non-homogeneous Poisson processes by thinning. *Naval Research Logistics Quarterly*, 26:403-413.
- Liang, K.-Y. and Zeger, S.L. (1986) Longitudinal data analysis using generalized linear models. *Biometrika*, 73:13-22.
- Lindsay, B.G. (1988) Composite likelihood methods. *Contemporary Mathematics*, 80:221-239.
- Littell, R. C., Milliken, G. A., Stroup, W. W., and Wolfinger, R. D. (1996) *The SAS System for Mixed Models*. SAS Institute, Inc., Cary, NC.
- Little, L.S., Edwards, D. and Porter, D.E. (1997) Kriging in estuaries: as the crow flies or as the fish swims? *Journal of Experimental Marine Biology and Ecology*, 213:1-11.
- Lotwick, H.W. and Silverman, B.W. (1982) Methods for analysing spatial processes of several types of points. *Journal of the Royal Statistical Society, Series B*, 44: 406-413.
- Ma, C. (2002) Spatio-temporal covariance functions generated by mixtures. *Mathematical Geology*, 34(8):965-975.
- Mantel, N. (1967) The detection of disease clustering and a generalized regression approach. *Cancer Research*, 27(2):209-220.
- Marcotte, D. and Groleau, P. (1997) A simple and robust lognormal estimator. *Mathematical Geology*, 29:993-1009.
- Mardia, K.V. (1967) Some contributions to contingency-type bivariate distributions. *Biometrika*, 54:235-249.
- Mardia, K.V. (1970) *Families of Bivariate Distributions*. Hafner Publishing Company, Darien, CT.
- Mardia, K.V., Kent, J.T., and Bibby, J.M. (1979) *Multivariate Analysis*. Academic Press, London.
- Mardia, K.V. and Marshall, R.J. (1984) Maximum likelihood estimation of models for residual covariance in spatial regression. *Biometrika*, 71:135-46.
- Marshall, R.J. (1991) Mapping disease and mortality rates using empirical Bayes estimators. *Applied Statistics*, 40:283-294.
- Martin, R.J. (1992) Leverage, influence and residuals in regression models when

- observations are correlated. *Communications in Statistics—Theory and Methods*, 21:1183–1212.
- Matérn, B. (1960) Spatial variation. *Meddelanden fran Skogsforskningsinstitut*, 49(5).
- Matérn, B. (1986) *Spatial Variation*, 2nd ed. Lecture Notes in Statistics, Springer-Verlag, New York.
- Matheron, G. (1962) Traite de Geostatistique Appliquee, Tome I. *Memoires du Bureau de Recherches Geologiques et Minieres*, No. 14. Editions Technip, Paris.
- Matheron, G. (1963) Principles of geostatistics. *Economic Geology*, 58:1246–1266.
- Matheron, G. (1976) A simple substitute for conditional expectation: The disjunctive kriging. In: M. Guarascio, M. David, and C. Huijbregts (eds.), *Advanced Geostatistics in the Mining Industry*. Reidel, Dordrecht, 221–236.
- Matheron, G. (1982) La destructure des hautes teneurs et le krigeage des indicatrices. Technical Report N-761, Centre de Géostatistique, Fontainebleau, France.
- Matheron, G. (1984) Isofactorial models and change of support. In: G. Verly, M. David, A. Journel, A. Marechal (eds.), *Geostatistics for Natural Resources Characterization*. Reidel, Dordrecht, 449–467.
- McCullagh, P. and Nelder, J.A. (1989) *Generalized Linear Models, Second Edition*. Chapman and Hall, New York.
- McMillen D.P. (2003) Spatial autocorrelation or model misspecification? *International Regional Science Review*, 26:208–217.
- McShane, L.M., Albert, P.S., and Palmatier, M.A. (1997) A latent process regression model for spatially correlated count data. *Biometrics*, 53:698–706.
- Mercer, W.B. and Hall, A.D. (1911) The experimental error of field trials. *Journal of Agricultural Science*, 4:107–132.
- Metropolis, N., Rosenbluth, M. N., Teller, A. H., and Teller, E. (1953) Equations of state calculations by fast computing machines. *Journal of Chemical Physics*, 21: 1087–1092.
- Mitchell, M.W. and Gumpertz, M.L. (2003) Spatio-temporal prediction inside a free-air CO₂ enrichment system, *Journal of Agricultural, Biological, and Environmental Statistics*, 8(3):310–327.
- Mockus, A. (1998) Estimating dependencies from spatial averages. *Journal of Computational and Graphical Statistics*, 7:501–513.
- Møller, J. and Waagepetersen, R.P. (2003) *Statistical Inference and Simulation for Spatial Point Processes*, Chapman & Hall/CRC, Boca Raton, FL.
- Moran, P.A.P. (1950) Notes on continuous stochastic phenomena, *Biometrika*, 37:17–23.
- Moyeed, R.A. and Papritz, A. (2002) An empirical comparison of kriging methods for nonlinear spatial prediction. *Mathematical Geology*, 34:365–386.
- Mugglestone, M.A. and Renshaw, E. (1996a) A practical guide to the spectral analysis of spatial point processes. *Journal of Computational Statistics & Data Analysis*, 21:43–65
- Mugglestone, M.A. and Renshaw, E. (1996b) The exploratory analysis of bivariate spatial point patterns using cross-spectra. *Environmetrics*, 7:361–377.
- Müller, W.G. (1999) Least-squares fitting from the variogram cloud. *Statistics & Probability Letters*, 43:93–98.
- Nadaraya, E.A. (1964) On estimating regression. *Theory of Probability and its Applications*, 10:186–190.
- Neyman, J. and Scott, E.L. (1972) Processes of clustering and applications. In:

- P.A.W. Lewis, (ed.) *Stochastic Point Processes*. John Wiley & Sons, New York, 646–681.
- Ogata, Y. (1999) Seismicity analysis through point-process modeling: a review. *Pure and Applied Geophysics*, 155:471–507.
- O'Hagan, A. (1994) *Bayesian Inference*. Kendall's Advanced Theory of Statistics, 2B, Edward Arnold Publishers, London.
- Olea, R. A. (ed.) (1991) *Geostatistical Glossary and Multilingual Dictionary*. Oxford University Press, New York.
- Olea, R. A. (1999) *Geostatistics for Engineers and Earth Scientists*. Kluwer Academic Publishers, Norwell, Massachusetts.
- Openshaw, S. (1984) *The Modifiable Areal Unit Problem*. Geobooks, Norwich, England.
- Openshaw, S. and Taylor, P. (1979) A million or so correlation coefficients. In N. Wrigley (ed.), *Statistical Methods in the Spatial Sciences*. Pion, London, 127–144.
- Ord, K. (1975) Estimation methods for models of spatial interaction. *Journal of the American Statistical Association*, 70:120–126.
- Ord, K. (1990) Discussion of "Spatial Clustering for Inhomogeneous Populations" by J. Cuzick and R. Edwards. *Journal of the Royal Statistical Society, Series B*, 52:97.
- Pagano, M. (1971) Some asymptotic properties of a two-dimensional periodogram. *Journal of Applied Probability*, 8:841–847.
- Papadakis, J.S. (1937) Méthode statistique pour des expériences sur champ. *Bull. Inst. Amélior. Plant. Thessalonique*, 23.
- Patterson, H.D. and Thompson, R. (1971) Recovery of inter-block information when block sizes are unequal. *Biometrika*, 58:545–554.
- Percival, D.B. and Walden, A.T. (1993) *Spectral Analysis for Physical Applications. Multitaper and Conventional Univariate techniques*. Cambridge University Press, Cambridge, UK.
- Plackett, R.L. (1965) A class of bivariate distributions. *Journal of the American Statistical Association*, 60:516–522.
- Posa, D. (1993) A simple description of spatial-temporal processes. *Computational Statistics & Data Analysis*, 15:425–437.
- Prasad, N.G.N. and Rao, J.N.K. (1990) The estimation of the mean squared error of small-area estimators. *Journal of the American Statistical Association*, 85:161–171.
- Prentice, R.L. (1988) Correlated binary regression with covariates specific to each binary observation. *Biometrics*, 44:1033–1048.
- Priestley, M.B. (1981) *Spectral analysis of time series. Volume 1: Univariate series*. Academic Press, New York.
- Rathbun, S.L. (1996) Asymptotic properties of the maximum likelihood estimator for spatio-temporal point processes. *Journal of Statistical Planning and Inference*, 51:55–74.
- Rathbun, S.L. (1998) Kriging estuaries. *Environmetrics*, 9:109–129.
- Rathbun, S.L. and Cressie, N.A.C. (1994) A space-time survival point process for a longleaf pine forest in Southern Georgia. *Journal of the American Statistical Association*, 89:1164–1174.
- Rendu, J.M. (1979) Normal and lognormal estimation. *Journal of the International Association for Mathematical Geology*, 11:407–422.
- Renshaw, E. and Ford, E.D. (1983) The interpretation of process from pattern us-

- ing two-dimensional spectral analysis: methods and problems of interpretation. *Applied Statistics*, 32:51–63.
- Ripley, B.D. (1976) The second-order analysis of stationary point processes. *Journal of Applied Probability*, 13:255–266.
- Ripley, B.D. (1977) Modeling spatial patterns. *Journal of the Royal Statistical Society (B)*, 39:172–192 (with discussion, 192–212).
- Ripley, B.D. (1981) *Spatial Statistics*. John Wiley & Sons, New York.
- Ripley, B.D. (1987) *Stochastic Simulation*. John Wiley & Sons, Chichester.
- Ripley, B.D. and Silverman, B.W. (1978) Quick tests for spatial interaction. *Biometrika*, 65:641–642.
- Rivoirard, J. (1994) *Introduction to Disjunctive Kriging and Nonlinear Geostatistics*. Clarendon Press, Oxford.
- Robert, C.P. and Casella, G. (1999) *Monte Carlo Statistical Methods*. Springer-Verlag, New York.
- Rogers, J.F., Thompson, S.J., Addy, C.L., McKeown, R.E., Cowen, D.J., and De-Coulfé, P. (2000) The association of very low birthweight with exposures to environmental sulfur dioxide and total suspended particulates. *American Journal of Epidemiology*, 151:602–613.
- Rousseeuw, P.J. and Croux, C. (1993) Alternatives to the median absolute deviation. *Journal of the American Statistical Association*, 88:1273–1283.
- Royaltey, H., Astrachan, E. and Sokal, R. (1975) Tests for patterns in geographic variation. *Geographic Analysis*, 7:369–396.
- Ruppert, D., Wand, M.P., and Carroll, R.J. (2003) *Semiparametric Regression*, Cambridge University Press, Cambridge, UK.
- Russo, D. and Bresler, E. (1981) Soil hydraulic properties as stochastic processes, 1. An analysis of field spatial variability. *Journal of the Soil Science Society of America*, 45:682–687.
- Russo, D. and Jury, W.A. (1987) A theoretical study of the estimation of the correlation scale in spatially variable fields. 1. Stationary Fields. *Water Resources Research*, 7:1257–1268.
- Sampson, P.D. and Guttorp, P. (1992) Nonparametric estimation of nonstationary spatial covariance structure. *Journal of the American Statistical Association*, 87:108–119.
- Schabenberger, O. and Gregoire, T.G. (1996) Population-averaged and subject-specific approaches for clustered categorical data. *Journal of Statistical Computation and Simulation*, 54:231–253.
- Schabenberger, O. and Pierce, F.J. (2002) *Contemporary Statistical Models for the Plant and Soil Sciences*. CRC Press, Boca Raton, FL.
- Schervish, M.J. and Carlin, B.P. (1992) On the convergence of successive substitution sampling. *Journal of Computational and Graphical Statistics*, 1:111–127.
- Schmidt, P. (1976) *Econometrics*, Marcel Dekker, New York.
- Searle, S.R., Casella, G., and McCulloch, C.E. (1992) *Variance Components*. John Wiley & Sons, New York.
- Self, S.G. and Liang, K.Y. (1987) Asymptotic properties of maximum likelihood estimators and likelihood ratio tests under nonstandard conditions. *Journal of the American Statistical Association*, 82:605–610.
- Shapiro, A. and Botha, J.D. (1991) Variogram fitting with a general class of conditionally nonnegative definite functions. *Computational Statistics and Data Analysis*, 11:87–96.

- Smith, A.F.M. and Gelfand, A.E. (1992) Bayesian statistics without tears: A sampling-resampling perspective. *The American Statistician*, 46:84–88.
- Smith, A.F.M. and Roberts, G.O. (1993) Bayesian computation via the Gibbs sampler and related Markov chain Monte Carlo methods. *Journal of the Royal Statistical Society, Series B*, 55:3–24.
- Solie, J.B., Raun, W.R., and Stone, M.L. (1999) Submeter spatial variability of selected soil and bermudagrass production variables. *Journal of the Soil Science Society of America*, 63:1724–1733.
- Stein, M.L. (1999) *Interpolation of Spatial Data. Some Theory of Kriging*. Springer-Verlag, New York.
- Stern, H. and Cressie, N. (1999) Inference for extremes in disease mapping. In A. Lawson et al. (eds.) *Disease Mapping and Risk Assessment for Public Health*, John Wiley & Sons, Chichester, 63–84.
- Stoyan, D., Kendall, W.S. and Mecke, J. (1995) *Stochastic Geometry and its Applications*. 2nd ed. John Wiley & Sons, New York.
- Stroup, D.F. (1990) Discussion of “Spatial Clustering for Inhomogeneous Populations” by J. Cuzick and R. Edwards. *Journal of the Royal Statistical Society, Series B*, 52:99.
- Stroup, W.W., Baenziger, P.S., and Muiltze, D.K. (1994) Removing spatial variation from wheat yield trials: a comparison of methods. *Crop Science*, 86:62–66.
- Stuart, A. and Ord, J.K. (1994) *Kendall's Advanced Theory of Statistics, Volume I: Distribution Theory*. Edward Arnold, London.
- Sun, D., Tsutakawa, R.K., and Speckman, P. L. (1999) Posterior distribution of hierarchical models using CAR(1) distributions, *Biometrika*, 86:341–350.
- Switzer, P. (1977) Estimation of spatial distributions from point sources with application to air pollution measurement. *Bulletin of the International Statistical Institute*, 47:123–137.
- Szidarovsky, F., Baafi, E.Y., and Kim, Y.C. (1987). Kriging without negative weights, *Mathematical Geology*, 19:549–559.
- Tanner, M.A. (1993) *Tools for Statistical Inference*. 2nd Edition, Springer-Verlag, New York.
- Tanner, M.A. and Wong, W.H. (1987) The calculation of posterior distributions by data augmentation. *Journal of the American Statistical Association*, 82:528–540.
- Theil, H. (1971) *Principles of Econometrics*. John Wiley & Sons, New York.
- Thiébaux, H.J. and Pedder, M.A. (1987) *Spatial objective analysis with applications in atmospheric science*. Academic Press, London.
- Thompson, H.R. (1955) Spatial point processes with applications to ecology. *Biometrika*, 42:102–115.
- Thompson, H.R. (1958) The statistical study of plant distribution patterns using a grid of quadrats. *Australian Journal of Botany*, 6:322–342.
- Tierney, L. (1994) Markov chains for exploring posterior distributions (with discussion). *Annals of Statistics*, 22:1701–1786.
- Tobler, W. (1970) A computer movie simulating urban growth in the Detroit region. *Economic Geography*, 46:234–240.
- Toutenburg, H. (1982) *Prior Information in Linear Models*. John Wiley & Sons, New York.
- Turnbull, B.W., Iwano, E.J., Burnett, W.S., Howe, H.L., and Clark, L.C. (1990) Monitoring for clusters of disease: Application to leukemia incidence in upstate New York. *American Journal of Epidemiology*, 132:S136–S143.

- Upton, G.J.G. and Fingleton, B. (1985) *Spatial Data Analysis by Example, Vol. 1: Point Pattern and Quantitative Data*. John Wiley & Sons, New York.
- Vallant, R. (1985) Nonlinear prediction theory and the estimation of proportions in a finite population. *Journal of the American Statistical Association*, 80:631–641.
- Vanmarcke, E. (1983) *Random Fields: Analysis and Synthesis*. MIT Press, Cambridge, MA.
- Verly, G. (1983) The Multi-Gaussian approach and its applications to the estimation of local reserves. *Journal of the International Association for Mathematical Geology*, 15:259–286.
- Vijapurkar, U.P. and Gotway, C.A. (2001) Assessment of forecasts and forecast uncertainty using generalized linear models for time series count data. *Journal of Statistical Computation and Simulation*, 68:321–349.
- Waller, L.A. and Gotway, C.A. (2004) *Applied Spatial Statistics for Public Health Data*. John Wiley & Sons, New York.
- Walters, J.R. (1990) Red-cockaded woodpeckers: a 'primitive' cooperative breeder. In: *Cooperative Breeding in Birds: Long-term Studies of Ecology and Behaviour*. Cambridge University Press, Cambridge, 67–101.
- Wand, M.P. and Jones, M.C. (1995) *Kernel Smoothing*. Chapman and Hall/CRC Press, Boca Raton, FL.
- Watson, G.S. (1964) Smooth regression analysis. *Sankhya (A)*, 26:359–372.
- Webster, R. and Oliver, M.A. (2001) *Geostatistics for Environmental Scientists*. John Wiley & Sons, Chichester.
- Wedderburn, R.W.M. (1974) Quasi-likelihood functions, generalized linear models and the Gauss-Newton method. *Biometrika*, 61:439–447.
- Whittaker, E.T. and Watson, G.N. (1927) *A course of modern analysis, 4th ed.*, Cambridge University Press, Cambridge, UK.
- Whittle, P. (1954) On stationary processes in the plane. *Biometrika*, 41:434–449.
- Wolfinger, R.D. (1993) Laplace's approximation for nonlinear mixed models. *Biometrika*, 80:791–795.
- Wolfinger, R.D. and O'Connell, M. (1993) Generalized linear mixed models: a pseudo-likelihood approach. *Journal of Statistical Computing and Simulation*, 48:233–243.
- Wolfinger, R., Tobias, R. and Sall, J. (1994) Computing gaussian likelihoods and their derivatives for general linear mixed models. *SIAM Journal on Scientific and Statistical Computing*, 15:1294–1310.
- Wong, D.W.S. (1996) Aggregation effects in geo-referenced data. In D. Griffiths (ed.), *Advanced Spatial Statistics*. CRC Press, Boca Raton, Florida, 83–106.
- Yaglom, A. (1987) *Correlation Theory of Stationary and Related Random Functions I*. Springer-Verlag, New York.
- Yule, G. U. and Kendall, M. G. (1950) *An Introduction to the Theory of Statistics*. 14th Edition, Griffin, London.
- Zahl, S. (1977) A comparison of three methods for the analysis of spatial pattern. *Biometrics*, 33:681–692.
- Zeger, S.L. (1988) A regression model for time series of counts. *Biometrika*, 75:621–629.
- Zeger, S.L. and Liang, K.-Y. (1986) Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*, 42:121–130.
- Zeger, S.K., Liang, K.-Y., and Albert, P.S. (1988) Models for longitudinal data: a generalized estimating equation approach. *Biometrics*, 44:1049–1006.

- Zellner, A. (1986) Bayesian estimation and prediction using asymmetric loss functions. *Journal of the American Statistical Association*, 81:446–451.
- Zhang, H. (2004) Inconsistent estimation and asymptotically equal interpolators in model-based geostatistics. *Journal of the American Statistical Association* 99: 250–261.
- Zhao, L.P. and Prentice, R.L. (1990) Correlated binary regression using a quadratic exponential model. *Biometrika*, 77:642–648.
- Zimmerman, D.L. (1989). Computationally efficient restricted maximum likelihood estimation of generalized covariance functions. *Mathematical Geology*, 21:655–672.
- Zimmerman, D.L. and Cressie, N.A. (1992) Mean squared prediction error in the spatial linear model with estimated covariance parameters. *Annals of the Institute of Statistical Mathematics*, 32:1–15.
- Zimmerman, D.L. and Harville, D.A. (1991) A random field approach to the analysis of field-plot experiments and other spatial experiments. *Biometrics*, 47:223–239.
- Zimmerman, D.L. and Zimmerman, M.B. (1991) A comparison of spatial semivariogram estimators and corresponding kriging predictors. *Technometrics*, 33:77–91.