

A.I. McLeod

Curriculum Vita

I. PERSONAL INFORMATION

Position: Full Professor with Tenure
Department of Statistical and Actuarial Sciences,
Faculty of Science
The University of Western Ontario

Full Member of the Faculty of Graduate Studies,
The University of Western Ontario

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Personal URL: <http://www.stats.uwo.ca/faculty/aim> <http://www.stats.uwo.ca/mcleod>

Birth Date: August 13, 1948
Birth Place: Toronto, Ontario
Marital Status: Married
Name of Wife: Maree Jeannette McLeod
Children: Jonathan (August 24, 1989), Matthew (February 22, 1995)

Degrees: B.Math (1971), M.Math (1974) & Ph.D. (1977) all from the University of Waterloo

HONORARY AWARDS:

- 1) Adjunct Professor, Systems Design Engineering, University of Waterloo, 1988 to present.
- 2) Visiting Research Professor, University of Montreal (CRM), June 1999.
- 3) Visiting Scholar, Wolfram Research Inc., Champaign, Illinois, March 1999.
- 4) Visiting Research Scholar. May 15, 1996 to August 31, 1996 at the Disaster Prevention Research Institute, Kyoto University.
- 5) Chartered Statistician (C. Stat.). Approved January 1993 by the Council of the Royal Statistical Society.
- 6) Visiting Research Fellowship, Institute of Statistical Mathematics (Tokyo). Conducted research in Tokyo at the Institute of Statistical Mathematics for four months (March 25, 1990 to July 25, 1990).
- 7) Visiting Professor, Systems Design Engineering, University of Waterloo, 1987.
- 8) Elected member of the *International Statistical Institute*, 1984.
- 9) Received from the American Water Resources Association the 1984 William R. Boggess Award for "*Trend Assessment of Water Quality Time Series*". This Award is given to the author(s) of the paper published in the Water Resources Bulletin during the preceding year that best describes, delineates or analyzes a major problem or aspect of water resources from either a theoretical, applied, or philosophical standpoint.
- 10) Received the University of Waterloo Alumni Gold Medal Prize for the best Ph.D. Thesis in all disciplines at the University of Waterloo in 1978. **Society of Actuaries Examinations:** Passed Part 1 (Basic Mathematics) and Part 2 (Probability & Statistics) at the May 1969 sittings.

PROFESSIONAL AFFILIATIONS:

Member of the American Statistical Association (since 1973); Statistical Society of Canada (since 1982); Full member of the International Statistical Institute (elected, 1984); Member of The International Environment Society (since 1993) Member of the Institute for Mathematical Statistics (since 1993); Member of the Bernoulli Society (since 1994); Member of the International Association for Statistical Computing (since 1995).

EMPLOYMENT EXPERIENCE

Position	Dates	Location	Duties
Full Professor (Tenured)	July 1992 to present	Dept. of Statistical & Actuarial Sciences Western	Research, Teaching, Consulting & Administration
Associate Tenured Professor	July 1984 to June 1992	Dept. of Statistical & Actuarial Sciences Western	Research, Teaching, Consulting & Administration
Assistant Professor	July 1980 June 1984	"	"
Assistant Professor	July 1978 June 1980	Dept. of Mathematics Western	"
Postdoctoral Fellow	Jan. 1978 June 1978	Dept. of Statistics University of Waterloo	Research Teaching
Postdoctoral Fellow	Sept. 1977 Dec. 1977	Dept. of Systems Design Engineering University of Waterloo	Research
Experimental Officer	Sept. 1975 March 1976	C.S.I.R.O. (Australia) Div. Math. & Stat.	Consulting
Lecturer	Jan. 1975 June 1975	Dept. of Statistics University of Waterloo	Teaching

II. RESEARCH

A. REFEREED JOURNAL PAPERS

- 1) McLeod, A.I. and Quenneville, B. (2000), "Mean likelihood estimators", *Statistics and Computing* 11, 417–426.
- 2) McLeod, A.I., (1999), "Necessary and sufficient condition for nonsingular Fisher information matrix in ARMA and fractional ARMA models" *The American Statistician* 53, 71–72.
- 3) McLeod, A.I. (1999), "Improved Spread-Level Visualization", *Journal of Computational and Graphical Statistics* 8, 135–141.
- 4) McLeod, A.I., (1996), "Diagnostic checking for monotone spread". *Computational Statistics & Data Analysis* 26, 437–443.
- 5) McLeod, A.I. (1996), "Hyperbolic decay time series". *The Journal of Time Series Analysis* 19, 473–484.
- 6) McLeod, A.I. & Hipel, K.W. (1995), "Exploratory spectral analysis of hydrological time series", *Journal of Stochastic Hydrology and Hydraulics* 9, 171–205.
- 7) Valz, P., McLeod, A.I. & Thompson, M.E., (1995), "Cumulant generating function and tail probability approximations for Kendall's score with tied rankings", *Annals of Statistics*, Vol. 23, No. 1, pp.144–160.
- 8) McLeod, A.I. (1994) "Diagnostic Checking Periodic Autoregression Models with Application", *The Journal of Time Series Analysis*, Vol. 15, No. 2, pp.221–233.
- 9) McLeod, A.I., (1993), "Parsimony, Model Adequacy and Periodic Correlation in Forecasting Time Series", *International Statistical Review*, Vol. 61, No. 3, pp.387–393.
- 10) McLeod, A.I. (1993), "A Note on ARMA Model Parameter Redundancy" *The Journal of Time Series Analysis*, Vol. 14, No. 2, pp.207–208.
- 11) Kheoh, T.S. & McLeod, A.I. (1992), "Comparison of two modified portmanteau tests for model adequacy", *Computational Statistics and Data Analysis*, Vol. 14, pp.99–106.
- 12) McLeod, A.I., Hipel, K.W. & Bodo, B. (1991), "Trend Analysis Methodology for Water Quality Time Series", *Envirometrics*, Vol. 2, pp. 169–200.
- 13) C. Jiménez, Hipel, K.W. & McLeod, A.I. (1990), "Développements récents dans la modélisation de la persistance à long terme, *Revue des Sciences de l'Eau*, Vol. 3, pp.55–81.
- 14) Valz, P.D. & McLeod, A.I. (1990), "A simplified derivation of the variance of Kendall's tau.", *The American Statistician*, V.44, pp.39–40.
- 15) Hipel, K.W. & McLeod, A.I. (1989), "Intervention Analysis in Environmental Engineering", *Environmental Monitoring and Assessment*, Vol. 12, pp. 185–201.
- 16) Jiménez, C., McLeod, A.I. & Hipel, K.W. (1989), "Kalman filter estimation of periodic autoregressive-moving average models", *Journal of Stochastic Hydrology and Hydraulics*, Vol. 3, No. 3, pp. 227–240.
- 17) Kheoh, T.S. & McLeod, A.I. (1989), "On the forecast error variance of fitted time series models", *Pakistan Journal of Statistics*, Vol. 5(3) B, pp.239–243.
- 18) Hipel, K.W., McLeod, A.I. & Weiler, R.R. (1988), "Data analysis of water quality time series in Lake Erie", *Water Resources Bulletin*, V.24, pp.533–544.
- 19) Camacho, F., McLeod, A.I. & Hipel, K.W. (1987), "Multivariate contemporaneous ARMA models with application to hydrology", *Stochastic Hydrology and Hydraulics*, V.1, pp.141–154.
- 20) Li, W.K. & McLeod, A.I. (1987). "ARMA modelling with non-Gaussian innovations", *Journal of Time Series Analysis*, V.9, pp.155–168.
- 21) Noakes, D.J., Hipel, K.W. & McLeod, A.I. (1987). "Forecasting experiments with annual geophysical time series", *The International Journal of Forecasting*, V.4, pp.103–115.
- 22) Camacho, F., McLeod, A.I. & Hipel, K.W. (1987). "Contemporaneous bivariate time series". *Biometrika*, V.74, pp.103–113.
- 23) McLeod, A.I., Noakes, D.J., Hipel, K.W. & Thompstone, R.M. (1987). "Combining hydrologic forecasts". *Journal of the American Society of Civil Engineers, Water Resources Planning and Management Division*, V.113, pp.29–41.

- 24) Thompstone, R.M., Hipel, K.W. & McLeod, A.I. (1986), "Powerhouse Inflow Forecasting", *International Journal of Hydroelectric Energy*, Vol. 4, No. 4, pp.289–298.
- 25) Li, W.K. & McLeod, A.I. (1986). "Fractional time series modelling", *Biometrika*, V.73, pp.217–221.
- 26) Camacho, F., McLeod, A.I. & Hipel, K.W. (1985). "Contemporaneous autoregressive-moving average (CARMA) modelling in hydrology". *Water Resources Bulletin*, V.21, pp.709–720.
- 27) Thompstone, R.M., Hipel, K.W. & McLeod, A.I. (1985). "Forecasting quarter-monthly riverflow". *Water Resources Bulletin*, V.21, pp. 731–741.
- 28) Noakes, D.J., McLeod, A.I. & Hipel, K.W. (1985). "Forecasting seasonal hydrological time series". *The International Journal of Forecasting*, V.1, pp.179–190.
- 29) McLeod, A.I. & Jiménez, C. (1984). "Nonnegative definiteness of the sample autocorrelation function". *The American Statistician*, V.38, p.297.
- 30) McLeod, A.I. (1984). "Duality and other properties of multiplicative autoregressive-moving average models". *Biometrika*, V.71, pp.207–211.
- 31) McLeod, A.I. & Li, W.K. (1983). "Diagnostic checking ARMA time series models using squared-residual autocorrelations". *Journal of Time Series Analysis*, V.4, pp.269–273.
- 32) McLeod, A.I., Hipel, K.W. & Camacho, F. (1983). "Trend assessment of water quality time series". *Water Resources Bulletin*, V.19, pp.537–547.
- 33) McLeod, A.I. & Sales, P.R.H. (1983). "An algorithm for approximate likelihood calculation of ARMA and seasonal ARMA models". *Applied Statistics*, V.32, pp.211–223.
- 34) McLeod, A.I. & Bellhouse, D.R. (1983). "A convenient algorithm for drawing a simple random sample". *Applied Statistics*, V.32, pp.182–184.
- 35) Thompstone, R.M., Hipel, K.W. & McLeod, A.I. (1983). "Transfer function noise modelling for powerhouse inflow forecasting". *INFOR (Canadian Journal of Operational Research and Information Processing)*, V.21, pp.258–269.
- 36) Li, W.K. & McLeod, A.I. (1981). "Distribution of the residual autocorrelation in multivariate ARMA time series models". *Journal of the Royal Statistical Society, Series B*, V.43, pp. 231–239.
- 37) Baracos, P.C., Hipel, K.W. & McLeod, A.I. (1981). "Modelling hydrological time series from the Arctic". *Water Resources Bulletin*, V.17, pp.414–422.
- 38) McLeod, A.I. (1979). "Distribution of the residual cross correlations in univariate ARMA time series models". *Journal of the American Statistical Association (Theory and Methods)*, V.74, pp.849–855.
- 39) Hipel, K.W., Lettenmaier, D.P. & McLeod, A.I. (1979). "Assessment of environmental impact, Part 1, Intervention analysis". *Environmental Management*, V.2, pp.529–535.
- 40) Lettenmaier, D.P., Hipel, K.W. & McLeod, A.I. (1979). "Assessment of environmental impact, Part 2, Data collection". *Environmental Management*, V.2, pp.537–554.
- 41) McLeod, A.I. (1978). "On the distribution and applications of residual autocorrelations in Box-Jenkins modelling". *Journal of the Royal Statistical Society, Series B*, V.40, pp.296–302.
- 42) McLeod, A.I. & Hipel, K.W. (1978). "Simulation procedures for Box-Jenkins models". *Water Resources Research*, V.14, pp.969–975.
- 43) Hipel, K.W., McBean, E.A. & McLeod, A.I. (1978). "Hydrologic generating model selection". *Journal of the American Society of Civil Engineering, Division of Water Resources Planning and Management*, V.105, pp.223–242.
- 44) McLeod, A.I. & Hipel, K.W. (1978). "Preservation of the rescaled adjusted range, Part 1, A reassessment of the Hurst phenomenon". *Water Resources Research*, V.14, pp.491–508.
- 45) Hipel, K.W. & McLeod, A.I. (1978). "Preservation of the rescaled adjusted range, Part 2, Simulation studies using Box-Jenkins models". *Water Resources Research*, V.14, pp.509–516.
- 46) Hipel, K.W. & McLeod, A.I. (1978). "Preservation of the rescaled adjusted range, Part 3, Fractional Gaussian noise algorithms". *Water Resources Research*, V.14, pp.517–518.
- 47) McLeod, A.I. (1977). "Improved Box-Jenkins estimators". *Biometrika*, V.64, 531–534.
- 48) Hipel, K.W., McLeod, A.I. & Lennox, W.C. (1977). "Advances in Box-Jenkins modelling, Part 1, Theory". *Water Resources Research*, V.13, pp.567–575.

- 49) McLeod, A.I., Hipel, K.W. & Lennox, W.C. (1977). "Advances in Box-Jenkins modelling, Part 2, Applications". *Water Resources Research*, V.13, pp.576–586.
- 50) Hipel, K.W., McLeod, A.I. & McBean, E.A. (1977). "Stochastic modelling of the effects of reservoir operation". *Journal of Hydrology*, V.32, pp.99–113.
- 51) Thompson, M.E. & McLeod, A.I. (1976). "The effects of economic variables upon the demand for cigarettes in Canada". *The Mathematical Scientist*, V.1, pp.121–132.
- 52) Hipel, K.W., Lennox, W.C., Unny, T.E. & McLeod, A.I. (1975). "Intervention analysis in water resources". *Water Resources Research*, V.11, pp.855–861.
- 53) McLeod, A.I. (1975). "Derivation of the theoretical autocorrelation function of autoregressive moving-average time series". *Applied Statistics*, V.24, pp.255–256. (Errata, 26, 194).

B. PUBLISHED REFEREED CONFERENCE PAPERS

- 1) McLeod, A.I. & Hipel, K.W. (1996), Testing Annual Hydrological Time Series for Long Memory, Proceedings: Volume 1. The International Conference on Water Resources and Environmental Systems: Towards the 21st Century, Kyoto, October 29-31, 1996, pp. 411-418.
- 2) Bodo, B.A., McLeod, A.I. & Hipel, K.W. (1994) Analysis of Water Quality Time Series Obtained for Mass Discharge Estimation in *Time Series Analysis in Hydrology and Environmental Engineering*, edited by K. W. Hipel, A. I. McLeod, U. S. Panu & V. P. Singh. Kluwer: Amsterdam.
- 3) McLeod, A.I. & Hipel, K.W. (1994). "Tests for Monotonic Trend" in *Time Series Analysis in Hydrology and Environmental Engineering*, edited by K. W. Hipel, A. I. McLeod, U. S. Panu & V. P. Singh. Kluwer: Amsterdam.
- 4) Fosu, P., Hipel, K.W. & McLeod, A.I. (1987). "Empirical Power Comparisons of Tests for Trend", in *Statistical Methods in Water Quality Research*, edited by A.H. El-Shaarawi & S.R. Esterby. Elsevier: Amsterdam.
- 5) Thompstone, R.M., Hipel, K.W. & McLeod, A.I. (1987). "Simulation of Monthly Hydrological Time Series", in *Advances in the Statistical Sciences, V.III, Stochastic Hydrology*, pp.57–72. Edited by A.I. McLeod and published by D. Reidel Publishing Company: Dordrecht. ISBN: 90-277-2396-6.
- 6) Kheoh, T.S. & McLeod, A.I. (1986). "On the Efficiency of a Strongly Consistent Estimator in ARMA Models", in *Advances in the Statistical Sciences, V.IV, Time Series and Econometric Modelling*, pp.101–105. Edited by A.I. McLeod and published by D. Reidel Publishing Company: Dordrecht. ISBN: 90-277-2396-6.
- 7) Camacho, F., McLeod, A.I. & Hipel, K.W. (1986). "The Use and Abuse of Multivariate Time Series Models in Hydrology", *Advances in the Statistical Sciences, V.III, Stochastic Hydrology*, pp.27–44.
- 8) Camacho, F., McLeod, A.I. & Hipel, K.W. (1985). "Developments in Multivariate ARMA Modelling in Hydrology", in *Proceedings of the Fourth International Hydrology Symposium on Multivariate Analysis of Hydrologic Processes*. Colorado State University, Fort Collins, Colorado, July 15–17.
- 9) Hipel, K.W., McLeod, A.I. & Li, W.K. (1983). "Causal and dynamic relationships between natural phenomena", in *Time Series Analysis: Theory and Practice 6, Proceedings of the International Conference on Hydrological, Geophysical and Spatial Time Series* held at Toronto, August 10–14, 1983.
- 10) Thompstone, R.M., Hipel, K.W. & McLeod, A.I. (1983). "Grouping of periodic autoregressive models", in *Time Series Analysis: Theory and Practice 6, Proceedings of the International Conference on Hydrological, Geophysical and Spatial Time Series* held at Toronto, August 10–14, 1983.
- 11) Hipel, K.W., McLeod, A.I. & Noakes, D.J. (1982). "Fitting dynamic models to hydrological time series", pp.110–129 in *Time Series Methods in Hydrosociences*, ed. A.H. El-Shaarawi & S.R.Esterby. Elsevier: Amsterdam.
- 12) Hipel, K.W., McLeod, A.I., Lennox, W.C. & Unny, T.E. (1976). "Intervention analysis to test for changes in the mean level of stochastic processes". *Proceedings of the Second International IAHR (International Association of Hydraulic Research) Symposium on Stochastic Hydraulics*, held August 2–4, 1976 at Lund Institute of Technology, University of Lund, Lund, Sweden. Published in *Stochastic Processes in Water Resources Engineering*, ed. L. Gottschalk, G. Lindh and L. Mare, Vol. 1, pp.93–113, Water Resources Publications: Fort Collins.

C. PUBLISHED COMMENTS & REMARKS IN REFEREED JOURNALS

- 1) McLeod, A.I. (1989). Contribution to the discussion of “Space-Time Modelling with Long-memory Dependence: Assessing Ireland’s Wind Power Resource”, by J. Haslett and A. Raftery. *Applied Statistics*.
- 2) McLeod, A.I. and MacNeill, I.B. (1988). Comments on a paper of E.B. Dagum on seasonal adjustment. *Canadian Journal of Statistics*, V.16, pp.131–132.
- 3) McLeod, A.I., Hipel, K.W. & Camacho, F. (1985). Contribution to the Applications Digest, “Trend analysis of water quality time series”. *The Canadian Journal of Statistics*, V.13, pp.257–258.
- 4) McLeod, A.I. (1985). Remark AS R58. A Remark on AS 183. An efficient and portable pseudo-random number generator. *Applied Statistics*, V.34, pp.198–200.
- 5) McLeod, A.I. (1985). Contribution to the discussion of “Modelling and residual analysis of nonlinear autoregressive time series in exponential variables” by A.J. Lawrance and P.A.W. Lewis. *Journal of the Royal Statistical Society, Series B*, V.47, pp.193–194.
- 6) McLeod, A.I. & Jiménez, C. (1985). REPLY to Letter to the Editor. *The American Statistician*, V.38, pp.237–238.
- 7) Hipel, K.W. & McLeod, A.I. (1980). Contribution to the discussion of “Threshold autoregressions, limit cycles and cyclical data” by H. Tong and K.S. Lim. *Journal of the Royal Statistical Society, Series B*, V.42, pp.277–278.
- 8) McLeod, A.I. & Hipel, K.W. (1979). Reply to G.J. Vicens. *Water Resources Research*, V.15, pp.1669–1670.
- 9) D’Astous, Hipel, K.W. & McLeod, A.I. (1979). Comment on “Evidence for nonstationarity as a physical explanation of the Hurst phenomenon” by K.W. Potter. *Water Resources Research*, V.15, pp.501–504.
- 10) McLeod, A.I. & Hipel, K.W. (1978). Comment on “Modelling monthly hydrologic persistence” by G.K. Young & R.U. Jettmar. *Water Resources Research*, V.14, pp.699–702.
- 11) McLeod, A.I. (1978). “Time series analysis in water resources research”. *Canadian Journal of Statistics*, V.6, p.128.
- 12) Hipel, K.W. & McLeod, A.I. (1977). Contribution to the discussion of “Stochastic modelling of river flow time series” by A.J. Lawrance & N.T. Kottegoda. *Journal of the Royal Statistical Society, Series A*, V.140, pp.41–42.
- 13) Hipel, K.W., McLeod, A.I. & McBean, E.A. (1977). Comment on “Hydrologic estimation and economic regret” by G.K. Young & R.U. Jettmar. *Water Resources Research*, V.13, pp.687–688.
- 14) McLeod, A.I., Hipel, K.W., Lennox, W.C. & Unny, T.E. (1976). Reply to K.W. Potter. *Water Resources Research*, V.12, p.1331.

D. EDITORIALY REVIEWED JOURNAL PUBLICATIONS

- 1) McLeod, A.I. (1993). Toeplitz Matrices. *The Mathematica Journal*, Vol. 3, No. 4, pp.18–19.
- 2) McLeod, A.I., MacNeill, I.B. & Bhattacharyya, J.D. (1985). “Seasonal patterns in Canadian murders”. *The Canadian Journal of Statistics*, V.13, pp.261–291.
- 3) McLeod, A.I. (1983). “The cargo-loading or knapsack problem by dynamic programming”, *APL Quote Quad*, V.14, pp.21–22.

E. MONOGRAPH PUBLICATION

- 1) Hipel, K.W. & McLeod, A.I. (1994). *Time Series Modelling of Water Resources and Environmental Systems*. Developments in Water Science 45, 1013 pages, ISBN: 0 444 89270-2, Elsevier, Amsterdam.

F. PUBLISHED INVITED PAPERS

- 1) McLeod, A.I. and Provost, S.P. (2001), Multivariate Data Visualization, *Encyclopedia of Environmetrics*, Wiley.
- 2) McLeod, A.I. (1987). "Simple Random Sampling" in *Encyclopedia of Statistical Sciences*, Volume 7, ed. S. Kotz, N.L. Johnson & C.B. Read. Wiley: New York.
- 3) Hipel, K.W. & McLeod, A.I. (1981). "Box-Jenkins modelling in the geophysical sciences", pp.65–87 in *Future Trends in Geomathematics*, ed. R.G. Craig & M.L. Labovitz. London: Pion Ltd.
- 4) Hipel, K.W. & McLeod, A.I. (1980). "Perspectives in stochastic hydrology" in *Time Series, Proceedings of the International Conference held at Nottingham University, March 1979*, pp.73–102. Amsterdam: North-Holland.
- 5) Hipel, K.W., McLeod, A.I. & P.K. Fosu (1986). "Empirical Power Comparisons of Some Tests for Trend" in the *Proceedings of the Workshop on the Statistical Aspects of Water Quality Monitoring* held at the Canada Centre for Inland Waters, Burlington, Ontario 7–10 October, 1985.
- 6) McLeod, A.I. & Hipel, K.W. (1979). "Time series analysis in operational hydrology", pp.203–209 in *Proceedings of the 12th Interface of Computer Science and Statistics*, ed. Jane F. Gentleman, University of Waterloo.

G. ELECTRONIC UNREFEREED PUBLICATIONS

- 1) The McLeod-Hipel Time Series Package for Personal Computers (PC). Available from my homepage at <http://www.stats.uwo.ca/mcleod>
- 2) The McLeod-Hipel Time Series Datasets. A collection of over 300 time series data sets many from well-known case studies. The datasets complement our monograph *Time Series Modelling of Water Resources and Environmental Systems*. Available from my homepage at <http://www.stats.uwo.ca/HOMEPAGES/Faculty/mcleod>
- 3) Splus functions and documentation for implementing the methodology given in my paper "Diagnostic Checking Periodic Autoregression Models with Application", *The Journal of Time Series Analysis*, Vol. 15, No. 2, pp.221-233. Available from my homepage at <http://www.stats.uwo.ca/HOMEPAGES/Faculty/mcleod>
- 4) Splus functions and documentation for implementing the methodology given in my paper "Diagnostic Check for Monotone Spread" *The Journal of Time Series Analysis*, Vol. 15, No. 2, pp.221-233. Available from my homepage at <http://www.stats.uwo.ca/HOMEPAGES/Faculty/mcleod>

H. CONFERENCE PRESENTATIONS

- 1) "Misspecification in Hyperbolic Decay Time Series", Statistical Society of Canada, Annual Meeting, Regina, June 9, 1999 (invited).
- 2) "Visualization of Storm Data", Joint Statistical Meetings, Dallas, August 11 (contributed).
- 3) "Visualization analysis of effluent data", presented at the SSC meeting in Sherbrooke, May 30 (contributed).
- 4) "Topics in Current Research", March 23–27, 1998, Workshop on Time Series Analysis, at Centre de recherches mathe'matique, Unversité de Montréal (invited).
- 5) "Explorations in Statistical Science", *Mathematica* Developer's Conference, Champaign, Illinois, October 27–29, 1997 (invited).
- 6) "Hyperbolic Decay Time Series", October 9-11 annual NSF-NBER Time Series Conference, Duke University (invited).
- 7) "Explorations in Statistical Science", Workshop on Symbolic Computation, held September 21–26, 1997 at Centre de recherches mathe'matique, Unversité de Montréal (invited).
- 8) "Visualization of Storm Data: A Multimedia Statistical Graphic", *1997 International Environmetrics Conference*, held August 4–8, 1997, Innsbruck, Austria (invited).
- 9) "Analysis of the Effects of Green Pricing Structure on Residential Water Consumption in London, Ontario", presented at the *1994 International Environmetrics Society Conference* which was held August 11-15, 1994 at the Canadian Center for Inland Waters, Burlington, Ontario (contributed).
- 10) "Analysis of Water Quality Time Series Obtained for Mass Discharge Estimation", presented at the conference "Stochastic and Statistical Methods in Hydrology and Environmental Engineering" held June 21–23 1993 at the University of Waterloo (contributed).

- 11) "Developments in Periodic Time Series", presentation at the annual Statistical Society of Canada Meeting held June 6, 1993 in Wolfville, Nova Scotia (invited).
- 12) "Integration over the stationary and invertible region of an autoregressive moving average process", Presented at the 1992 Joint Statistical Meetings, Boston, Massachusetts, August 10–13. *Stochastic and Statistical Methods in Hydrology and Environmental Engineering* held June 21–23 1993 at the University of Waterloo.
- 13) "Developments in Periodic Correlation Modelling" at the Symposium on New Directions in Time Series Analysis held at the University of Heidelberg, June 26, 1992.
- 14) "Trend Analysis" at the IFAC Workshop on Economic time series analysis and systems identification, Vienna, July 3, 1992
- 15) "Trend Analysis Procedures for Water Quality Time Series" presented November 29, 1988 at the Technology Transfer Conference, Toronto.
- 16) "Developments in Fractional ARMA Modelling" presented June 6, 1988 at the Annual Meeting of the Statistical Society of Canada, University of Victoria.
- 17) "A tremendously simplified derivation of the variance of Kendall's tau" presented June 8, 1988 at the Annual Meeting of the Statistical Society of Canada, University of Victoria.
- 18) "Developments in Fractional ARMA Modelling" presented October 16, 1986 at the 1986 NBER-NSF Time Series Conference, Southern Methodist University, Dallas, Texas.
- 19) "Empirical Power Comparisons of Some Tests for Trend", presented August 21, 1986 at the Annual Meeting of the American Statistical Association, Chicago.
- 20) "Long-memory time series modelling" presented July 9, 1986 at 2nd Scientific Assembly of the International Association of Hydrological Sciences, Budapest, Hungary.
- 21) "Seasonal Economic Time Series Forecasting using Periodic Correlation", presented at The Fifth International Symposium on Forecasting on June 11, 1985.
- 22) Discussant for Dr. Estelle Bee Dagum's paper entitled "Revision of Trend-Cycle Estimators of Moving Average Seasonal Adjustment Methods" at the Annual Meeting of the Statistical Society of Canada, June 5, 1985, Winnipeg.
- 23) "Graphical Interpretation of the Autocorrelation Function of Multiplicative ARIMA Models" presented May 27, 1985 at the Joshi Festschrift and Symposia in Statistics, UWO.
- 24) "Distribution of residual autocorrelations in periodic autoregressive time series models" presented at 6o. Simposio Nacional de Probabilidade e Estatistica, Universidade Federal do Rio de Janeiro, September 4, 1984.
- 25) "Recent developments in time series analysis with applications to hydrology" presented at 6o. Simposio Nacional de Probabilidade e Estatistica, Universidade Federal do Rio de Janeiro, September 5, 1984.
- 26) "Forecasting Seasonal Hydrological Time Series", presented July 9, 1984 at the Fourth International Symposium on Forecasting, London, England.
- 27) "Forecasting Quarter-Monthly Riverflow", an invited presentation given May 16, 1984 at the Annual Meeting of the Statistical Society of Canada, Guelph.
- 28) "Contemporaneous ARMA Modelling with Applications", an invited presentation given May 16, 1984 at the Annual Meeting of the Statistical Society of Canada, Guelph.
- 29) A Survey of New Developments in Seasonal Time Series Modelling", an invited presentation given May 16, 1984 at the Annual Meeting of the Statistical Society of Canada, Guelph.
- 30) "The Use and Abuse of Multivariate Time Series Models in Hydrology", an invited presentation given December 7, 1983 at American Geophysical Union Fall Meeting, San Francisco.
- 31) "Perspectives in Long-Memory Modelling", an invited presentation given August 18, 1983 at the Annual Meeting of the American Statistical Association, Toronto.
- 32) "Causal and Dynamic Relationships Between Natural Phenomena", presented August 13, 1983 at the International Time Series Meeting: Special Topics Conference on Hydrological, Geophysical and Spatial Time Series, Toronto.
- 33) "Grouping of Periodic Autoregressive Models", presented August 10, 1983 at the International Time Series Meeting: Special Topics Conference on Hydrological, Geophysical and Spatial Time Series, Toronto.
- 34) "Forecasting with Periodic Autoregressive Models", presented May 31, 1983 at the Spring Meeting of the American Geophysical Union, Baltimore.

- 35) "Transfer Function-Noise Modelling for Run-of-the-River Hydropower Operations", presented January 1982 at the IFAC Symposium on Theory and Application of Digital Control, New Delhi, India.
- 36) "Intervention Analysis", Water Quality Trend Assessment Workshop, Water Quality Branch of Environment Canada, Ottawa, June 25, 1981.
- 37) "Intervention Analysis: Theory and Applications", an invited talk presented December 1980 at the Annual Meeting of the American Geophysical Union, San Francisco.
- 38) "Some Experiments with Nonparametric Markov Modelling", presented May 1980 at the Spring Meeting of the American Geophysical Union, Toronto.
- 39) "Modelling Hydrologic Time Series from the Arctic", presented May 1979 at the American Geophysical Union Spring Meeting, Washington.
- 40) "Forecasting Geophysical Time Series", presented May 1979 at the American Geophysical Union Spring Meeting, Washington.
- 41) "Time Series in Operational Hydrology", an invited talk presented at the 12th Annual Conference on the Interface of Computer Science and Statistics, May 1979, University of Waterloo.
- 42) "Preservation of Historical Statistics in Synthetic Hydrology", presented at the Royal Statistical Society General Conference, April 1979, Oxford University.
- 43) "Perspectives in Stochastic Hydrology", presented at the International Time Series Meeting, March 1979, University of Nottingham.
- 44) "Critical Drought Revisited", presented at the International Symposium on Risk and Reliability in Water Resources, June 1978, University of Waterloo.
- 45) "Time Series Models in Water Resources", an invited talk presented at the Sixth Annual Meeting of the Canadian Statistical Association, May 1978, The University of Western Ontario.
- 46) "Stochastic Relationships Between Natural Time Series", presented at the Annual Meeting of the American Geophysical Union, December 1977, San Francisco.

I. CONFERENCES AND WORKSHOPS ATTENDED (NO PAPER PRESENTATION)

- 1) Influencing Faculty or Departmental Culture, Provost Seminar Series, University of Western Ontario, May 9, 2001.
- 2) Spring Perspectives on Teaching, University of Western Ontario, May 8–9, 2001.
- 3) Mentoring Program Workshop, Provost Seminar Series, University of Western Ontario, February 14, 2001.
- 4) Workload Agreement Workshop, Provost Seminar Series, University of Western Ontario, February 6, 2001.
- 5) Balancing Your Chair Duties, Provost Seminar Series, University of Western Ontario, January 16, 2001.
- 6) Educational Technology Conference, University of Western Ontario, May 11–12, 2000.
- 7) Management Issues: A Problem Solving Approach, Provost Seminar Series, University of Western Ontario, February 11, 2000.
- 8) Faculty Evaluation, Development and Workload, Provost Seminar Series, University of Western Ontario, January 14, 2000.
- 9) The University Administrator's Role in Investigating Complaints, Provost Seminar Series, University of Western Ontario, January 14, 2000.
- 10) Human Resource Management, Provost Seminar Series, University of Western Ontario, November 12, 1999.
- 11) Governance and University Policies I and II, Provost Seminar Series, University of Western Ontario, October 1, 1999.
- 12) Academic Administration in the Current Context, Provost Seminar Series, University of Western Ontario, September 16, 1999.
- 13) Orientation for Academic Administrators, Provost Seminar Series, University of Western Ontario, September 16, 1999.
- 14) Financial Planning and Management Provost Seminar Series, University of Western Ontario, September 24, 1999.
- 15) Joint Statistical Meetings, August 9–13, 1998, Dallas.

- 16) Measurement Error in Nonlinear Models with R.J. Carroll, D. Ruppert and L.A. Stefanski, 6 lecture hours, held August 9, 1998 at the Joint Statistical Meetings in Dallas.
- 17) Worldwide Mathematica Conference, June 18-21, 1998, Chicago.
- 18) Annual Meeting of the Statistics Society of Canada, May 31 – June 3. University of Sherbrooke.
- 19) Symposium on Wavelets, Duke University, October 11–12, 1997
- 20) Symposium on Stochastic Models, Duke University, October 9–10, 1997
- 21) Workshop on Improving Your Vocal and Physical Expressiveness for More Effective Lecturing. Instructor: Mary Dow. February 12 - March 5, 1997 (four 2 hour sessions).
- 22) Workshop on Teaching Statistics, held Sept. 8, 1995, at the University of Western Ontario
- 23) Nonlinear Time Series Workshop, held July 15–18, 1995 at the University of Montreal.
- 24) Workshop on Improving Your Teaching Effectiveness, held July 11–13, 1995 at the University of Western Ontario.
- 25) Annual NBER/NSF Time Series Meeting, Oct. 14–15, 1988, University of Chicago
- 26) Attended five workshops on Effective Teaching. Sponsored by PACTL, UWO and held Fall 1987.
- 27) Annual Meeting of the Statistical Society of Canada, Banff Centre, May 1986.
- 28) Twentieth Annual Conference of the American Water Resources Association, August 12–17, 1984, Washington, D.C.
- 29) Fourth Annual Conference on Teaching and Learning in Higher Education held at the University of Western Ontario, London, Canada, June 17–21, 1984.
- 30) Time Series Day sponsored by the Department of Mathematics and Statistics and the Laboratory for Research in Statistics and Probability, Carleton University, April 28, 1984.
- 31) The Second Annual Joint Meeting of the Ottawa Chapter's of the American Statistical Association and the Statistical Association of Canada held February 16, 1984 at the RCAF Officer's Mess, Ottawa.
- 32) Workshop on "Instructional Design and the Evaluation of Learning" given by Drs. Squires and Mills and sponsored by the Provost's Advisory Committee on Teaching and Learning (PACTL), October 11, 1983, The University of Western Ontario.
- 33) Workshop on "Effective Lecturing" held by The Provost's Advisory Committee on Teaching and Learning (PACTL) in conjunction with the Educational Development Office, The University of Western Ontario, September 8, 1983.
- 34) American Statistical Association Tutorial on "Graphical Methods For Data Analysis and Presentation", Toronto, August 14, 1983. TIMS/ORSA Applied Probability Meeting, University of Kentucky, July 18–20, 1983.
- 35) Water Resources Systems Analysis Workshop, Cornell University, June 15–18, 1983.
- 36) TIMS/ORSA (The Institute of Management Science/Operations Research Society of America) Joint National Meeting, Chicago, April 25–27, 1983.
- 37) Conference on Scientific Inference, Data Analysis and Robustness, University of Wisconsin at Madison, November 4–6, 1981. Short Course on Bayesian Inference and Modelling, University of Wisconsin at Madison, November 2–3, 1981.
- 38) Workshop on "Creativity in Teaching" directed by Dr. Don Woods (Faculty of Engineering, McMaster University) and sponsored by The Provost's Advisory Committee on Teaching and Learning (PACTL) in conjunction with The Faculty of Engineering and The Educational Development Office, The University of Western Ontario, held April 15, 1981 at The University of Western Ontario.
- 39) ASA-NBER-NSF Time Series Analysis and Seasonal Adjustment Meeting, University of Wisconsin at Madison, May 25–26 1980.
- 40) The Institute of Statisticians 1978 Conference on Time Series Analysis and Forecasting, Cambridge University, July 12–15.
- 41) The Institute of Mathematical Statistics Special Topics Meeting on Time Series Analysis, Iowa State University, May 1–3, 1978.
- 42) The Annual Meeting of The Statistical Society of Australia, Canberra, October 28, 1975.

J. INVITED GUEST LECTURES

- 1) "Reproducible Research and Statistical Computing", University of Western Ontario, December 7, 2000.
- 2) "Forecasting with Neural Nets", University of Montreal, June 17, 1999.
- 3) "Misspecified Hyperbolic Decay Time Series", University of Montreal, June 3, 1999.
- 4) "Looking for Long Memory in Annual Hydrological Time Series", University of Tottorri, August 19, 1996.
- 5) "Spatial Statistics", University of Kyoto, August, 1995.
- 6) "Long range dependence", Keio University, Japan, June 1995.
- 7) "Long range dependence", Institute of Statistical Mathematics, Japan, June 1995.
- 8) "Spectral Analysis and the Hurst Effect", ETH-Zentrum, (Swiss Institute of Technology), Zurich, October 24, 1995.
- 9) "Diagnostic Checking For Monotone Spread", University of Lausanne, October 21, 1995.
- 10) "Exploratory Spectral Analysis of Hydrological Time Series", University of Lausanne, October 21, 1995.
- 11) "Developments in Seasonal Time Series Models", University of Lausanne, October 20, 1995.
- 12) "Trend Assessment of Water Quality Parameters", University of Lausanne, October 20, 1995.
- 13) "Time Series Analysis in Hydrology and Environmetrics", University of Neuchâtel, October 19, 1995.
- 14) Institute of Statistical Mathematics, Tokyo, June 13, 1990.
- 15) Faculty of Engineering, University of Kyoto, May 29, 1990.
- 16) Séminaire Recherche Opérationnelle, Université de Montréal, September 29, 1988.
- 17) Canadian Centre for Inland Waters, Burlington, April, 16, 1987.
- 18) Séminaire Recherche Opérationnelle, Université de Montréal, April 14, 1987.
- 19) Systems and Industrial Engineering Seminar, University of Arizona, October 14, 1986.
- 20) Département d'Océanographie, Université du Québec à Rimouski, April 19, 1985.
- 21) Department of Statistics and Actuarial Sciences, University of Waterloo, November 21, 1984.
- 22) Coordenacao dos Programas de Pos-Graduacao em Engenharia Universidade Federal do Rio de Janeiro (COPPE/UFRJ), August 27-30, 1984.
- 23) Department of Economics, The University of Western Ontario, February 1984.
- 24) Department of Economics, The University of Western Ontario, February 1983.
- 25) Department of Sociology, The University of Western Ontario, November 1980.
- 26) Civil Engineering Group, The University of Western Ontario, January 1980.
- 27) Department of Operations Research & Industrial Engineering, Cornell University, November 1979.
- 28) Department of Mathematics, The University of Toronto, April 1978.
- 29) Department of Mathematics, Simon Fraser University, January 1978.
- 30) Department of Mathematics, The University of Saskatchewan, January 1978.
- 31) Department of Statistics, Australian National University, November 1975.

K. PAPERS SUBMITTED FOR PUBLICATION

- 1) Kajitani, Y., Hipel, K.W. and McLeod, A.I. (2001), Forecasting Nonlinear Time Series with Feed-Forward Neural Networks: A Case Study of Canadian Lynx Data. Submitted to *The Journal of Forecasting*.

L. PAPERS IN PREPARATION

- 1) Hipel, K.W. and McLeod, A.I. (2001). An invited chapter of about 9,000 words on the topic "Time Series Analysis For Life Support Systems" will appear in *Encyclopedia of Life Support Systems* to be published by UNESCO.
- 2) McLeod, A.I., Zhang, Y., Yu, H. and (2001), Randomized Multiple Choice Examinations.
- 3) McLeod, A.I. (2001), Fractional ARMA: Algorithms and Misspecification.
- 4) McLeod, A.I. and Vinglis, E. (2001), Power Computations and Intervention Analysis.
- 5) McLeod, A.I. (2001), Animating Data.

M. GRANTS

(I) NSERC OPERATING GRANTS

Amt. per Year	Years of Tenure
\$2,487	1979
\$3,362	1980–82
\$12,885	1983–86
\$18,032	1986–88
\$23,790	1989–91
\$18,000	1992–94
\$22,800	1995–2000
\$28,000	2001–2004

(II) NSERC EQUIPMENT GRANTS

The following are Equipment Grants for which I was the Principal Investigator. My Co-Investigators were other members of the Department of Statistical & Actuarial Sciences.

Amt. per Year	Years of Tenure
\$52,858	1993–1994
\$43,049	1994–1996
\$29,081	1996–1997
\$22,800	1995–2000
\$28,000	2000–2004

(III) NIH GRANT

I am co-investator on a \$160,000 grant awarded to E. Vingilis, Population and Community Health Unit, Faculty of Medicine, UWO for “Health/Safety Impact of Ontario’s Drinking Hours”.

(IV) ORDCF GRANT

I am one of about 50 Principal Investigators on the successful ORDCF Grant for Cluster Computer (Beowulf). This grant, I understand, will bring in about \$4,000,000 per year over the next several years.

N. INSTRUCTOR FOR SHORT COURSES AND WORKSHOPS

- 1) “Explorations in Statistical Science with *Mathematica*, a two-hour invited workshop held August 13, 1998 at the Joint Statistical Meetings, Dallas.
- 2) “Time Series Analysis for Effluent and Water Quality Data” sponsored by Environment Canada. This 5-day course was based on our forthcoming monograph *Time Series Modelling for Environmental and Water Resources Systems*, to be published by Elsevier. This course was held December 11–15, 1989 at the University of Western Ontario. Eighteen scientists attended.
- 3) “Exploratory Data Analysis of Hydrological Time Series”, Environment Canada Workshop held in Guelph on March 26, 1987.
- 4) “Modelagem de Series Temporais Aplicada a Recursos Hidricose Engenharia Ambiental” sponsored by CESO and the Engineering School of Sao Carlos, University of Sao Paulo. Twenty-three participants from various universities and research organizations in Brazil attended this short course held April 7–18, 1980 at Departamento de Hidraulica e Saneamento, Escola de Engenharia de Sao Carlos, Universidade de Sao Paulo, Sao Carlos, Estado de Sao Paulo, Brasil.
- 5) “Water Quality Trend Assessment”, Environment Canada Workshop held in Ottawa on June 24–25, 1981.
- 6) “Stochastic Modelling of Riverflows” advanced specialized seminar, sponsored by the National Research Council of Canada Association Committee on Hydrology in cooperation with the Department of Civil Engineering and Applied Mechanics at McGill University, August 28 to September 1, 1978.

O. CONSULTING

- 1) CONSULTANT TO ENVIRONMENT CANADA, Spring 2000. Analysis of Engine Oil Spill Data.
- 2) CONSULTANT TO MANAGEMENT SERVICES COMPANY, Spring 1999. Analysed using SPSS, S-Plus and Mathematica confidential world-wide sales data of a large company.
- 3) CONSULTANT TO STATLAB, Spring 1998. Assisted in the analysis of the impact meteorological variables on ozone levels in London, Ontario.
- 4) CONSULTANT TO ONTARIO HYDRO, 1988–1990. Assisted in the analysis of meteorological data at stations in Ontario for the purpose of detecting empirically evidence of the greenhouse effect.
- 5) CONSULTANT TO THE ONTARIO MINISTRY OF THE ENVIRONMENT, 1988–89. Development of new trend analysis procedures for PWQMN Data Series. Extensive application to the Grand, Saugeen and Don River Systems.
- 6) CONSULTANT TO THE DEPARTMENT OF HEALTH AND WELFARE, MAY 1988 Used my newly developed Regression-ARIMA model for testing for seasonality in morbidity and mortality rates due to asthma.
- 7) CONSULTANT TO ENVIRONMENT CANADA, MARCH 1987. Implemented computer software for the analysis of riverflow time series. Performed a case study on 10 river basins.
- 8) CONSULTANT TO ACRES INTERNATIONAL, DECEMBER 1984. Performed trend analysis of water quality parameters in Lake Erie.
- 9) CONSULTANT TO EMPRESA BRASILEIRA DE PESQUISA AGROPECUARIA (**EMBRAPA**), AUGUST 1984. Gave short course on Stochastic Hydrology for COPPE (the main graduate school for Engineering in Brazil) and CEPEL (the research division of the national electrical power utility of Brazil).
- 10) CONSULTANT TO ENVIRONMENT CANADA, MAY 1981. Trend analysis of water quality parameters in four river basins.
- 11) CONSULTANT TO FRASER-CURRAH LTD., JANUARY 1980. Forecasting experiments in the commodity futures market.
- 12) CONSULTANT TO BARBER HYDRAULIC TURBINES, NOVEMBER 1980. Measurement of streamflow in Shaw's Creek for turbine design.
- 13) CONSULTANT TO ELETROBRAS, RIO DE JANEIRO, APRIL 1979. Implemented computer software. Analysis of monthly riverflow.
- 14) CONSULTANT TO **CESO** (CANADIAN EXECUTIVE SERVICE OVERSEAS), MAY 1979. Put on a two-week course on Stochastic Hydrology at the University of Sao Paulo (Sao Carlos campus).
- 15) CONSULTANT TO ENVIRONMENT CANADA, JUNE 1979. Analysis of 15 monthly riverflow data sets from British Columbia.
- 16) CONSULTANT TO ENVIRONMENT CANADA, MAY 1978. Forecasting monthly riverflow time series. Analyzed riverflow time series from Canada and Europe.
- 17) CONSULTANT TO SOUTHERN CALIFORNIA CONSOLIDATED EDISON COMPANY, DECEMBER 1977. Implemented computer software and assisted in the analysis of data for the environmental impact assessment of nuclear power plants.

III. GRADUATE SUPERVISION

A. PH.D. GRADUATES (CHIEF THESIS SUPERVISOR)

- 1) H. Lam (1999). "Hyperbolic, Irregular, Spatial and ARCH Time Series", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 2) Benoît Quenneville (1993). "Mean Likelihood Estimation and Time Series" Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 3) P. Valz (1990). "Developments in Rank Correlation Procedures with Applications to Trend Assessment in Water Resources Research", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 4) C. Jiménez (1988). "Advances in Time Series Analysis with Hydrological Applications", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 5) T.S. Kheoh (1986). "Topics in Time Series Analysis and Forecasting", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 6) F. Camacho (1984). "Contemporaneous ARMA Modelling with Applications", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario.
- 7) D.J. Noakes (1984). "Topics in Applied Time Series Modelling, Seasonality and Forecasting", Ph.D. Thesis, Department of Systems Design Engineering, University of Waterloo (177 pages)
- 8) R.M. Thompstone (1983). "Topics in hydrological time series modelling", Ph.D. Thesis, Department of Systems Design Engineering, University of Waterloo (227 pages).
- 9) W.K. Li (1981). "Topics in time series modelling", Ph.D. Thesis, Department of Statistical and Actuarial Sciences, The University of Western Ontario (233 pages).

B. M.SC. THESIS SUPERVISOR

- 1) Y. Kajitani (April, 1999), "Forecasting Time Series with Neural Nets". M.Sc. Thesis, University of Western Ontario.

C. M.SC. PROJECT SUPERVISOR

- 1) J. Lee, (February 2001), "Survey of Wavelets in Statistics".
- 2) Kwai Chan (January, 2001), "Self-Organizing Maps".
- 3) R. Li (September, 1999), "Forecasting Exchange Rates".
- 4) M. Yao (August, 1999), "Introduction to XLISP-STAT"
- 5) Y. Zhang (1998), "Basic Bootstrapping in Mathematica".
- 6) P. Lau (1997), "Generalized Linear Modelling in Mathematica"
- 7) A. Shih (1996), "Technical Analysis of Stock Prices"
- 8) C. Kung (1995), "Comparison of Trend Tests in the Presence of Seasonality" M.Sc. Project.
- 9) T. Keenlyside (1995), "Analysis of Demming's Funnel Experiment", M.Sc. Project.
- 10) S. Denning (1995), "Long memory in Financial and Geophysical Time Series" M.Sc. Project.
- 11) Lam, H. (1994), "Threshold Autoregressive Modelling", M.Sc. Project.
- 12) Fosu, P. (1992), "Developments in Control Chart Methodology with Applications to Water Resources Research", M.Sc. Project. Mr. Fosu is an actuary at Hewitt Associates in Toronto.
- 13) F. Buzanis (1992), "An Improved Algorithm for PARMA Estimation ", M.Sc. Project.
- 14) L. Curio (1991) "Symbolic Likelihood Evaluation For MA(1) Model" M.Sc. Project. Mr. Curio is a computer modeller with a life insurance company.
- 15) A. Chow (1990), "Improved Forecasting of Macro-economic time series with SARIMA-PAR Models" M.Sc. Project. Ms. Chow is an actuarial consultant with the firm KPMG in Toronto.
- 16) J.D. Bhattachyarra (1984), Time Series
- 17) F. Camacho (1982), Time Series
- 18) J.Noakes (1979), Synthetic Hydrology
- 19) P.C. Baracos (1979), "Time Series Modelling of Artic Riverflow Data"

D. CURRENT GRADUATE STUDENTS

- 1) Y. Zhang, Ph.D. Candidate
- 2) Zhi Tan, M.Sc. Candidate

E. EXTERNAL EXAMINER

- 1) External Examiner for Ph.D. Thesis, "Estimation of Parameters in ARMA Models" by D. Balanagammal, Ph.D. Thesis, Bharathiar University, India, October 1997.
- 2) External Examiner for Ph.D. Thesis, "Topics in Conditional Heteroscedastic Time Series Modelling" by Wong Heung, Ph.D. Thesis, University of Hong Kong, June 30, 1995.
- 3) External Examiner for Ph.D. Thesis "Modulated Threshold Time Series Models With Applications in Hydrology" T. Astatkie, Department of Statistics, Queens University, Kingston, Ontario, July 11, 1994.
- 4) External Examiner for Ph.D. thesis "Tests de causalité dans les modeles ARMA multivariés" by B. Hafida, Faculty de Informatique, University of Montreal, August 1988.
- 5) External Examiner for the Master of Philosophy Thesis of Chan-Lam Lo, University of Hong Kong, September 1987.
- 6) External Examiner for the Ph.D. Thesis of Sergio Serrano, Department of Civil Engineering, University of Waterloo, March 15, 1985.

E. UWO FACULTY OF GRADUATE STUDIES EXAMINER

- 1) Chair, Ph.D. Oral Examining Board, Physics, The University of Western Ontario, April 28, 1999.
- 2) Departmental Examiner, Ph.D. Thesis, Young-Ho Chong, 1999.
- 3) Extradepartmental Examiner, M.Sc. Thesis, Dec. 15, 1997.
- 4) Chair, Ph.D. Oral Examining Board, Thesis by Xiaopeng Gao, The University of Western Ontario, June 17, 1994.
- 5) Departmental Ph.D. Examiner, Thesis of John Braun.
- 6) Chairman of the Examining Committee for the Ph.D. Thesis by I. Pitowsky, Department of Philosophy, The University of Western Ontario, Ph.D., March 1983.
- 7) Extradepartmental Examiner for the M.Sc. Thesis of S. Wong, Faculty of Engineering Science, The University of Western Ontario, M.Sc., October 1982.
- 8) Extradepartmental Examiner for the Ph.D. Thesis of J. Pooler, Department of Geography, The University of Western Ontario, Ph.D., June 1982.
- 9) Departmental Examiner for the Ph.D. Thesis of Q.P. Duong, Department of Statistical & Actuarial Sciences, The University of Western Ontario, Ph.D., June 1981.
- 10) Departmental Examiner for the Ph.D. Thesis of E.H. Gan, Department of Statistical & Actuarial Sciences, The University of Western Ontario, Ph.D., May 1980.
- 11) Extradepartmental Examiner for the M.Sc. Thesis of C. Stagg, Department of Astronomy, The University of Western Ontario, M.Sc., July 1979.
- 12) Extradepartmental Examiner for the Ph.D. Thesis of J. Selody, Department of Economics, The University of Western Ontario, Ph.D., September 1979.

IV. TEACHING EXPERIENCE

A. CURRICULUM INSTRUCTION

- (a) Department of Statistics, University of Waterloo
 (b) Department of Mathematics, University of Western Ontario
 (c) Department of Statistical & Actuarial Sciences, U.W.O.

YEAR	COURSE TOPIC	UNDERGRADUATE COURSE #	GRADUATE COURSE
1976-77(a)	Time Series		Math 919b
1977-78(a)	Time Series		Math 919b
	Intro Math. Stats	Math. 233b	
1978-79(b)	Time Series & Stoch.Proc.	A. Math. 443	A.Math.543
	Operations Research.	Math.136	
1979-80(b)	Time Series & Stoch.Proc.	A. Math.443	A. Math.543
	Operations Research	Math. 136	
1980-81(c)	Time Series & Stoch.Proc.	Stats 443	
	Operations Research	Math. 136	
1981-82(c)	Experimental Design	Stats 242b	
	Operations Research.	Stats 336	
	Time Series & Stoch. Proc.	Stats 443	Stats 543
1982-83(c)	Stochastic Processes	Stats 450a	Stats537a
	Time Series	Stats 451b	Stats 550b
	Design of Surveys	Stats 152a	
	Operations Research	Act. Sc. 326a	
1983-84(c)	Operations Research	Stats 336	
	Operations Research	Act. Sc. 326b	
	Time Series	Stats 451a	Stats 550a
1985-86(c)	Operations Research	Act.Sc.326b	
	Time Series	Stats 451a	Stats 550a
1986-87(c)	Operations Research	Stats 336	
	Operations Research	Act. Sc. 326b	
	Time Series	Stats 451a	
1986-87(c)	Operations Research	Act. Sc. 326b	Stats 547b
	Statistical Computing	Stats 348a	Stats 543
	Time Series	Stats 451a	Stats 550a
	Computing & Data Analysis		Stats 543
1987-88(c)	Time Series	Stats 451a	Stats 550a
	Operations Research	Stats 336	Stats 548a
	Operations Research	Act. Sc. 326b	Stats 547b
1989-90(c)	Time Series	Stats 451a	Stats 550a
	Statistical Computing	Stats 349b	
	Data Analysis	Stats 151a	
	Statistical Computing	Stats 152b	
1990-91(c)	Time Series	Stats 451a	Stats 550a
	Data Analysis	Stats 151a	
	Statistical Computing	Stats 152b	
	Applied Statistics	Stats 359b	Stats 524b
1991-92(c)	Time Series	Stats 451a	Stats 550a
	Data Analysis	Stats 151a	
	Applied Statistics	Stats 359b	Stats 524b
	Statistical Computing	Stats 152b	
1992-93(c)	Time Series	Stats 451a	Stats 550a
	Data Analysis	Stats 542a	
	Applied Statistics	Stats 359b	Stats 524b
	Topics in Time Series	Stats 549b	
1993-94(c)	Time Series	Stats 451a	Stats 550a

	Data Analysis	Stats 542a	
	Linear Models	Stats 454b	Stats 524b
	Topics in Time Series	Stats 549b	
1994–95(c)	Time Series	Stats 451a	Stats 550a
	Data Analysis	Stats 542a	
	Linear Models	Stats 454b	Stats 524b
	Topics in Time Series	Stats 549b	
1995–96(c)	Time Series	Stats 451a	Stats 550a
	Data Analysis	Stats 542a	
	Linear Models	Stats 454b	Stats 524b
	Statistical Computing	Stats 459b	Stats 549b
1996–97(c)	Time Series	Stats 451a	Stats 550a
	Spatial Statistics	Stats 721a	
	Linear Models	Stats 454b	Stats 524b
	Statistical Computing	Stats 459b	Stats 549b
1997–98(c)	Topics in Time Series Analysis		Stats 720a
	Environmetrics		Stats 722a
	Linear Models	Stats 454b	Stats 524b
	Statistical Computing	Stats 459b	Stats 549b
	StatLab Consulting		
1999-2000(c)	Data Visualization	Statistics 731b	
2000-2001(c)	Wavelets	Math 533 (2 weeks)	

B. READING COURSES GIVEN

STUDENT	DATE	COURSE TITLE	COURSE #
M. Eliasziw	85.1	Statistical Computer Graphics	Stats 559b
M. Tang	85.1	Topics in Time Series	Stats 549b
C. Jiménez	84.1	Topics in Time Series	Stats 549b
C. Jiménez	84.1	Topics in Operations Research	Stats 549b
T.S. Kheoh	83.1	Topics in Time Series	Stats 549b
F. Camacho	83.1	Topics in Time Series	Stats 549b

V. ADMINISTRATIVE DUTIES

A. AT THE UNIVERSITY OF WESTERN ONTARIO

- 1) Member. Department Promotion and Tenure Committee, 1993 to present
- 2) Member, Dean's Advisory Committee on Computing (1992-1996)
- 3) Chairman, Department Computing Committee (1992-1996)
- 4) Member, Graduate Affairs Committee (1987-1996)
- 5) Member. Department Promotion and Tenure Committee, 1989-1990
- 6) Chairman of the Graduate Affairs Committee (Graduate Chairman), Department of Statistical and Actuarial Science, September 1980 to July 1987.
- 7) Member, Executive Committee, Faculty of Graduate Studies, January 1982 to July 1987.
- 8) Member, Physical Sciences Divisional Committee, Faculty of Graduate Studies, Sept. 1980 – July 1987.
- 9) Past member of the Library Committee, Department of Statistical and Actuarial Science.
- 10) Past member of the Colloquium Committee, Department of Statistical and Actuarial Science.
- 11) Past member of the Curriculum Committee, Department of Statistical and Actuarial Science.
- 12) Past member of the Chairmanship Selection Committee, Faculty of Science, 1980.
- 13) Regular participant in the Faculty of Science Open House, March 1979 – 84.
- 14) Participant in the Computing Centre Open House, January 1980.

B. SESSIONS CHAIRED AND ORGANIZED AT CONFERENCES

- 1) Organizing committee and review for the 2nd International Conference on Water Resources and Environmental Research, Brisbane, Australia, July 6-8, 1999.
- 2) Member of Research Program Committee, "The 8-th International Environmetrics Conference" Innsbruck, Austria, August 4-8, 1997.
- 3) Member of the Organizing Committee for "The International Conference on Water Resources and Environmental Systems: Towards the 21st Century", Kyoto, October 29-31, 1996.
- 4) Co-director, "Stochastic and Statistical Methods in Hydrology and Environmental Engineering", an international conference bringing together statisticians and engineers, held at the University of Waterloo, June 22-23, 1993.
- 5) Chaired the session, "Forecasting in Hydrology, Oceanography and Meteorology", June 12, 1985 at The Fifth International Symposium on Forecasting held in Montreal.
- 6) Chaired and Organized the Symposium on Stochastic Hydrology and Co-organizer for the Symposium on Time Series and Econometric Modelling held May 27-31, 1985, UWO.
- 7) Chaired and Organized the session, "Time Series Modelling and Forecasting", May 16, 1984 at the Annual Meeting of the Statistical Society of Canada held at the University of Guelph.

C. EDITORIAL COLLABORATION

- 1) Theme Editor, *Encyclopedia of Life Support Systems (EOLSS)*, UNESCO
- 2) Associate Editor, *Environmetrics*, 1996 appointed.
- 3) Joint Editor, *Time Series Analysis in Hydrology and Environmental Engineering* published by Kluwer, 1994.
- 4) Editor, *Programs in Statistics and Related Disciplines in Canada, 1989*, published by the Statistical Society of Canada (172 pages, ISSN 0229-0081).
- 5) Associate Editor, the journal *Stochastic Hydrology and Hydraulics* published by Springer International, 1986-1990.
- 6) Associate Editor, *Advances in the Statistical Sciences*, Volumes III & IV.
- 7) I have served as a referee on numerous occasions, at least six to ten papers per year, and have reviewed papers for: *Annals of Statistics*, *Applied Statistics*, *Biometrika*, *Climatic Change*, *Computational Statistics and*

Data Analysis, Environmetrics, International Association for Water Quality, International Statistical Review, Journal of the American Statistical Association, Journal of Applied Probability, Journal of Forecasting, Journal of the Royal Statistical Society (A) and (B), Journal of Time Series Analysis, Technometrics, The American Statistician, The Statistician, Scandinavian Journal of Statistics, Water Resources Bulletin, Water Resources Planning and Management (Journal of the American Society of Civil Engineers), Water Resources, Planning and Management, Water Resources Research

- 8) Member of the Publications Committee of the Statistical Society of Canada, 1983–1989.

I. PERSONAL INFORMATION

II. RESEARCH

- A. Refereed Journal Papers
- B. Published Refereed Conference Papers
- C. Published Comments & Remarks in Refereed Journals
- D. Editorially Reviewed Journal Publications
- E. Textbook Publication
- F. Published Invited Papers
- G. Electronic Publications (Not Refereed)
- H. Conference Presentations
- I. Conferences and Workshops Attended (no paper presentation)
- J. Invited Guest Lectures
- K. Papers Submitted for Publication
- L. Papers in Preparation
- M. Grants
- N. Instructor for Short Courses and Workshops
- O. Consulting

III. GRADUATE SUPERVISION

- A. Ph.D. Graduates (Chief Thesis Supervisor)
- B. M.Sc. Project Supervisor
- C. Current Graduate Students
- D. External Examiner
- E. UWO Faculty of Graduate Studies Examiner

IV. TEACHING EXPERIENCE

- A. Curriculum Instruction
- B. Reading Courses Given

V. ADMINISTRATIVE DUTIES

- A. At the University of Western Ontario
- B. Sessions Chaired and Organized at Conferences
- C. Editorial Collaboration