

**Name:** Cecil R. Hallum, B.S., M.S., Ph.D

**Title:** Professor of Mathematical Statistics

**Department:** Department of Mathematics and Statistics

Sam Houston State University

**College:** Arts and Sciences

### **Degrees Earned**

B.S., Mathematics, Texas Tech University, 1966

M.S., Mathematics, Texas Tech University, 1969 Ph.D., Mathematical Statistics, Texas Tech University, 1972

### **Professional Licensure and Certifications**

None

### **Peer-Review Publications and Artistic Performances/Exhibitions Articles**

Hallum, C.R., Lewis, T.O., and Boullion, T.L., "Estimation in the Restricted General Linear Model with a Positive Semi-definite Covariance Matrix", *Communications in Statistics*, Vol. 1, Issue 2, 1973, pp. 157-166.

Hallum, C.R., Boullion, T.L., and Odell, P.L., "Parameter Estimation and Hypothesis Testing in the Restricted General Linear Model", *Journal of Industrial Mathematics*, Vol. 23, Part 1, 1973, pp. 1-25.

Minter, T.S. and Hallum, C.R., "Maximum Likelihood Classification by Thresholding", Technical Report LEC/HASD No. 640-TR-114 under NASA Contract NAS 9-12200; appeared in *Remote Sensing of Earth Resources*, V-1, II, March 1973, pp. 795 -808.

Hallum, C.R., and Pore, M.D., "Computational Aspects of Matrix Generalized Inversion for the Computer with Applications", *Computers and Mathematics with Applications*, Vol. 1, January 1975.

Hallum, C.R., Odell, P.L., and Boullion, T.L., "An Extension of the Generalized Gauss-Markov Theorem to the Mixed Model", *Journal of Industrial Mathematics*, Vol. 27, Part 2, 1977.

Protomastro, Gerard P. and Hallum, Cecil R., "A Mathematical Modeling Approach to Introductory Mathematics", *American Mathematical Monthly*, Vol. 84, No. 5, May 1977, pp. 383-385.

McMath, John S., Sims, S.E., and Hallum, C.R., "On the Properties of a Matrix-Valued Derivative Utilizing the Moore-Penrose Inverse", *Linear Algebra and Its Applications*, 1977, pp. 281-291.

Hallum, C.R. and Pore, M.D., "A Discriminant Approach to Parameter Estimation in the Linear Model with Unknown Variance-Covariance Matrix", *Journal of Industrial Mathematics*, Vol. 29, Part 1, 1979, pp. 1-8.

McMath, John S., Sims, S.E., and Hallum, C.R., "A Comparison of Various Derivatives for Matrix Valued Functions", *Computers and Mathematics with Applications*, Vol. 6, 1979, pp. 161-166.

Hallum, Cecil and Gary, Howard, "Pseudoinverses to the Rescue", accepted for publication in *BYTE*, 1984.

Hallum, Cecil R. and Perry, Charles R., "Estimating Optimal Sampling Unit Sizes for Satellite Surveys", *Remote Sensing of Environment*, January 1984.

Chhikara, Raj, Hallum, Cecil, and Lycthuan-Lee, T.G., "Stratification and Sample Design for Landsat Crop Surveys", Special Issue of *Communications in Statistics, Theory and Methods*, Vol. 13, No. 23, 1984, pp. 2905-2935.

Hallum, C. R., Boullion, T. L., and Odell, P. L., "Best Linear Estimation in the Restricted General Linear Model", *Jour. of Industrial Mathematics*, Vol. 34, Part 1, 1984, pp. 55-64.

Walker, Douglas and Hallum, Cecil, "Pseudoinverses in Generalizing Newton's Method to Obtaining the Square Root of a Symmetric Positive Semi-definite Matrix", *Jour. of Industrial Mathematics*, Vol. 34, Part 2, 1984, pp. 137-145.

Mohler, R.J., Hallum, Cecil, Wells, Gordon L. and Trenchard, Michael H. "Monitoring Vegetation of Drought Environments", *Bioscience*, Vol. 36, No. 7, July/August, 1986.

Hallum, Cecil and Gary, Howard, "Pseudoinverses Applied to Simplifying Solutions to Systems of Equations", *ACCESS, The Journal of Microcomputer Applications*, Vol. 8, No. 5, Issue 47, pp. 34-47, October, 1989.

Hallum, Cecil R., "A Change Detection Strategy for Monitoring Vegetative and Land-use Cover Types Using Remotely-sensed, Satellite-based Data", *Jour. of Remote Sensing of the Environment*, Vol. 43, No. 2, 1993, pp. 171-178.

Scariano, Stephen M. and Hallum, Cecil R., "A Matrix Analogue to the Arithmetic Geometric-Harmonic Means Inequality", *J. of Mathematics and Computer Education*, 1993, pp. 95-101.

MacGregor, Frances and Hallum, Cecil, "The Impact on the Multiple Correlation Coefficient Due to Model Misspecifications in the Linear Model", accepted for publication in the *Jour. of Industrial Mathematics*, 1997.

Co-authored with Jack Turner, Charles L. Douglas, Paul R. Krausman, and Rob Roy Ramey (2004), "Determination of Critical Habitat for the Endangered Nelson's Bighorn Sheep in Southern California", *Wildlife Society Bulletin*, 32(2): p. 427-448.

Co-authored with Dean M. Young and Stephen M. Scariano (2005), "Estimation-equivalent Covariance Structures for the Least Squares and MINQUE Estimators of the Linear Model Variance", *Communications in Statistics*, Vol. 34, No. 3.

### **Books**

None

### **Chapters**

None

### **Proceedings**

Hallum, C.R., "On a Model for Optimal Proportions Estimates for Category Mixtures", *Proceedings of the Eighth International Symposium on Remote Sensing of the Environment*. The University of Michigan, Ann Arbor, Michigan, October 1972.

Hallum, C.R., "Feature Selection via an Upper Bound (to any Degree Tightness) on Probability of Misclassification", *Proceedings of the Conference on Machine Processing of Remotely Sensed Data*, Purdue University, West Lafayette, Indiana, October 1973.

Hallum, C.R., "The Influence of Computing on Generalized Inverse Applications in Statistical Analysis", *Proceeding of Symposia in Applied Mathematics*, Vol. 20, 1974, pp. 153-159.

Pore, M.D. and Hallum, C.R., "Computational Aspects of the Matrix Pseudoinverse", *American Statistical Association Proceedings of the Statistical Computing Section*, August 1976, Chicago, Illinois.

Hallum, C.R., "Experiment Design Overview", *Proceedings of the Large Area Crop Inventory Experiment (LACIE) Symposium*, held at NASA/JSC, October 23-26, 1978, Houston, Texas.

Hallum, C.R., Feiveson, A.H., Chhikara, R., and Houston, A.G., "Sampling and Aggregation in LACIE", *Proceedings of the Large Area Crop Inventory Experiment (LACIE) Symposium*, held at NASA/JSC, October 23-26, 1978, Houston, Texas.

Feiveson, A.H. and Hallum, C.R., "The Sampling Design for LACIE", *Proceedings of the Large Area Crop Inventory Experiment (LACIE) Symposium*, held at NASA/JSC, October 23-26, 1978, Houston, Texas.

Hallum, C.R. and Basu, J.P., "A Natural Sampling Strategy", *Proceedings of the Large Area Crop Inventory Experiment (LACIE) Symposium*, held at NASA/JSC, October 23-26, 1978, Houston, Texas.

Perry, C.R. and Hallum, C.R., "Sampling Unit Size Considerations in Large Area Crop Inventorying Using Satellite-based Data", *Proceedings of the Survey Research Methods Section of the American Statistical Association Conference*, August 1979, Washington, D.C.

Hallum, C.R. and Perry, C.R., "Sampling Unit Size Considerations for Reducing Data Loads in Crop Inventorying Using Remotely-Sensed, Satellite-based Data", *Proceedings of the IEEE Telecommunications Conference*, Galveston, Texas, November 2, 1982.

Mohler, R.J., Hallum, Cecil, "Analysis of Drought Environments Using Multi-sensor Data", *Proceedings of the Annual Meeting of the Forum of the Assoc. for Arid Lands Studies*, Reno, Nevada, April 23-26, 1986.

Hallum, Cecil R., "Player Performance Evaluations and Productivity Rankings in the NBA: A SAS/GRAPH Tutorial", *Proceedings of the Houston SAS Users Group Conference* held in Houston, Texas, October 12, 1990.

Carpenter, Mark and Hallum, Cecil, "Sample Size versus Detection Probabilities of Off-Aim Drifts in Support of Quality Improvement: A SAS/GRAPH Application", *Proceedings of the 18th Annual SAS Users Group International Conference*, May 9-12, 1993, pp. 889-893.

Hallum, Cecil, "Player Performance Evaluations in the NBA: Applications of SAS/GRAPH and SAS/QC", *Proceedings of the South Central Regional SAS Conference*, September 27-28, 1993, Houston, Texas.

Hallum, Cecil, "Accelerating Maximum Likelihood Classification: An Approach with SAS/IML Software", *Proceedings of the 19th Annual SAS Users Group Conference*, April 10-13, 1994, Dallas, Texas.

Hallum, Cecil and Miller, Melinda, "A GUI for Enhanced Insight Into Data in a University Setting: SAS/EIS and SAS/AF Frame to the Rescue", *Proceedings of the Twenty-Third Annual SAS Users Group International (SUGI) Conference*, Nashville, Tennessee, March 22-25, 1998, pp. 968-973.

Chen, Xiadong and Hallum, Cecil, "Improved Classification Using Weighted Distance Functions", *Proceedings of the American Statistical Association Conference*, Dallas, Texas, August 1998, pp. 118-123.

The Jackknifed Mahalanobis Distance Function for Change Detection in Support of Land Management Monitoring, co-authored with Marsha M. Young, *Proceedings of the American Statistical Association Conference*, held in Indianapolis, Indiana, August 13-17, 2000.

Impacts of Model Misspecifications in the Restricted General Linear Model, co-authored with Ananda Bandulasiri, *Proceedings of the American Statistical Association Conference*, held in Atlanta, Georgia, August 2001.

Co-authored with Lisa Cannon (2004), "SAS and Multivariate Music: A GUI for Multivariate Analysis of MIDI Data", *Proceedings of the 14<sup>th</sup> Annual South Central SAS Users Group (SCSUG) 2004 Conference*, held in Austin, Texas, November 7-9, 2004.

Co-authored with Jason Minter, "Real-time Multivariate Analysis Onboard an RF Controlled Vehicle: Miniaturized Remote Sensing", *Proceedings of the Joint Statistical Meetings of the American Statistical Association*, held in Seattle, Washington in August 2006.

Co-authored with Youfeng Nie, "The Impact of Erroneous Inclusion and Exclusion of Variables in Multivariate Inference", *Proceedings of the Joint Statistical Meetings of the American Statistical Association*, held in Seattle, Washington in August 2006.

Co-authored with Huixing He, "Multivariate Object Detection using Digital Photography and SAS-based Graphical User Interface", *Proceedings of the Joint Statistical Meetings of the American Statistical Association* held in Salt Lake City, Utah in August 2007.

Co-authored with Fang Duan "Key Highlights of Generalized Inverse Applications in Mathematical Statistics", *Proceedings of the Joint Statistical Meetings of the American Statistical Association* held in Salt Lake City, Utah in August 2007.

Co-authored with Drs. Ferry Butar, Ananda Bandulasiri and Melinda Holt "Insights into Mathematical Statistics Applications via Matrix Visualizations", *Proceedings of the Joint Statistical Meetings of the American Statistical Association* held in Salt Lake City, Utah in August 2007.

Hallum, Cecil, "Multivariate Sound Info Retrieval from MIDI Music, Digital Photography, and Satellite Imagery: SAS to the Rescue", published in the Proceedings of the 2010 South Central SAS Educational Forum, Austin, Texas, Nov. 9-11, 2010; this is the 20<sup>th</sup> annual state-wide SAS Users' Group Conference.

### **Artistic Performances**

None

### **Artistic Exhibitions**

None

### **Research Monographs and Technical Reports**

Hallum, C.R., "Null Class Thresholding in Gaussian Maximum Likelihood Classification". Technical Report LEC/HASD No. 640-TR-133 under NASA Contract NAS 9-12200, August 1972.

Minter, T.S. and Hallum, C.R., "Maximum Likelihood Classification by Thresholding", Technical Report LEC/HASD No. 640-TR-114 under NASA Contract NAS 9-12200; appeared in *Remote Sensing of Earth Resources*, V-1, II, March 1973, pp. 795 -808.

Summary of Findings from Change Analysis of the Depth 10 and Depth 20 Surface Water Data, prepared for contract personnel at the Watershed Experiment Station (WES) in Vicksburg, Mississippi, March 1999; this technical report was in support of my work as a Senior Research Statistician on the TRIES grant with WES.

May 1999 Report of Initial Approaches for a Change Assessment Methodology and a Verification and Sensitivity Analysis Capability for Land Management Models, a technical report in support of the TRIES grant with the Water Experiment Station (Vicksburg, Mississippi), May 1999 (30 pages).

Design of a Change Assessment Methodology and a Verification and Sensitivity Analysis Capability for Land Management Models, end of contract year technical report in support of TRIES grant with the Water Experiment Station, Vicksburg, Mississippi, September 1999 (31 pages).

Phase I Protocol for Comparative Analysis of Soil Erosion Models, the protocol prepared in support of the Texas Research Institute of Environmental Studies (TRIES) grant with the Corp. of Engineers Research Laboratory (Champaign, Illinois), August 2000 (a 58 page document).

### **Funded External Grants**

Melrose-Thompson Fund: received \$3,007 for Summer, 1982 for work on “A Large-area Stratification Approach in Support of Dynamic Detection of Changes and Condition Assessments of Vegetative Cover Types Using Remotely-sensed, Satellite-based Data”.

NASA/JSC Contract: Principal Investigator on a NASA/JSC funded Grant entitled “Advanced Sampling, Stratification, and Aggregation Techniques Estimating Area, Area Change, and Correlated Characteristics”; contract was let December 1, 1982 in the amount of \$39,997.

NASA/JSC Contract: Principal Investigator on a NASA/JSC grant entitled “Advanced Multisensor/Multistage Sampling and Estimation in Support of Biomass Monitoring of Major Vegetation Types”; contract was let January 1, 1984 in the amount of \$41,000.

Hogg Foundation Grant: Research Associate on Pilot Project Funded by the Hogg Foundation in the amount of \$1,818; my portion of support from this funding was \$348 for a trip to the University of Medicine and Dentistry, Dept. of Psychiatry and Mental Health Care, in Newark, N.J. to finalize the experiment design and data collection for a pilot study in support of a prospective payment model for inpatient mental health care (PI: Dr. Neal Mertz).

NASA/JSC Contract: Research Associate on a NASA/JSC funded grant entitled “Analysis of a Collision Avoidance Radar (CAR) System”; contract was let in May, 1985 in the amount of \$50,003; my portion of support from this grant was in the amount of \$17,701 plus reimbursement for two trips to Washington, D.C.

TDCJ Contract: PI on a funded grant entitled: “Statistical Support to the Design and Implementation of a Utilities Management Capability”, funded for the amount of \$56,994 in 1995.

The proposal entitled “A Change Analysis Strategy in Support of Environmental Monitoring Using Multiple Sensor Platforms”, was submitted in 1991 to the Texas Regional Institute of Environmental Studies (TRIES) at SHSU. This proposal was funded beginning the summer 1994. The amount funded was \$138,000 for each year over a 3-year period.

A proposal entitled “Statistical Support to the Design and Implementation of a Utilities Management Capability”, an interagency agreement with the Texas Department of Criminal Justice; funded for \$43,640 for the period 9-1-96 through 8-31-97.

A proposal entitled “Enhancement of Image Assessment Capabilities for Natural Resource Characterization”, Co-PI on this proposal funded by the Department of Energy through the Oakridge National Laboratory in the amount of \$737,392.

A proposal entitled “Fort Hood Watershed Study and WIARS, WMS, and IDLAMS”; my portion of funding on this particular TRIES grant included 25% time for spring 1999 and full-time for summer 1999; it also included support for a graduate student (Marsha M. Young) as a student research assistant. The total funding on this grant was \$529,472.

A proposal entitled "Statistical Support to the Design and Implementation of a Utilities Management Capability", an interagency agreement with the Texas Department of Criminal Justice; this was just funded in the fall semester by TDCJ for a 2-year period running from 9-1-99 through 8-31-01. This agreement continuously employed at least one graduate student per semester.

A proposal entitled "Expanded Ft. Hood Watershed Study and Development of an Enhanced, Web-Based Land Management Change Assessment Capability"; I was Co-PI on this proposal that was submitted to the Water Experiment Station (WES), a DOD organization; the other Co-PI's were Mark Leipnik and Gary Smith; it was approved for \$295,000 and permitted the hiring of numerous graduate students (4 statistics students and 2 computer science students) as well as two additional faculty (Drs. Peter Cooper and Ferry Butar). Some coverage (including myself full-time) continued through the summer semesters.

Williams, Justin (PI), Cecil Hallum (Co-PI) and Monte Thies (Co-PI). Environmental Survey and Risk Assessment to Introducing the California Condor and Aplomado Falcon Near Holloman AFB, New Mexico. Granting Agency: U.S. Army Corp of Engineers. Approved amount: \$266,645.39 (this was approved in the fall 2001, started in spring 2002, covered me full-time during summer 2002 and 1 month during the forthcoming summer 2003).

Hallum, Cecil (PI). TDCJ Utilities Management. Granting Agency: Texas Department of Criminal Justice. Approved amount: \$31,200 for the period of September 1, 2001 through August 31, 2003. This agreement has employed two students (Lisa Cannon – a student that entered our graduate program for the M.S. in Statistics beginning in the fall 2002 and a Senior math student, JoAnna Crixell, who was pursuing the M.S. in statistics beginning in the fall 2003 semester).

Consultant to Angelo State University on USDA Grant # 2004-06237 (Award # 2004-38899-02181) entitled "A Sampling and Estimation Strategy for Water Use in Agricultural Systems Utilizing Aerial Videography" – these results were presented at Sul Ross State University in 2005.

### **Peer-Review Presentations/Posters**

"The Influence of Computing on Generalized Inverse Applications in Statistical Analysis", presented at the joint meeting of the American Mathematical Society and the Mathematical Association of America at the University of Montana, Missoula, Montana, August 13-16, 1973.

"The Teaching of Statistics", presented at the Spring Meeting of the Louisiana Chapter of the American Statistical Association (as an invited panelist) held at the University of Southwestern Louisiana in Lafayette, Louisiana, April 15, 1977.

"A Sampling Strategy for Inventorying Crops", an invited talk presented to the Graduate Faculty Seminar of the Department of Mathematics at the University of Texas in Dallas, Texas, January 1978.

"Experiment Design Overview", presented at the Large Area Crop Inventory Experiment (LACIE) Symposium held October 23-26, 1978, at the NASA/Johnson Space Center, Houston, Texas.



"Sampling and Aggregation in LACIE", presented at the Large Area Crop Inventory Experiment (LACIE) Symposium held October 23-26, 1978, at the NASA/Johnson Space Center, Houston, Texas.

"Satellite Agricultural Surveys---Contributions of H. O. Hartley", an invited paper presented at the annual meeting of the American Statistical Association held in Cincinnati, Ohio, August 16-19, 1982.

"SAS and the Micro -in Sports, Energy, and Financial Areas", co-authored this invited paper presented at the Eighth Annual Meeting of the SAS (Statistical Analysis System) Users Group International held in New Orleans, Louisiana, January 16, 1983.

"Sampling and Estimation in Support of Monitoring Biological Productivity", an invited paper presented in the Remote Sensing Specialty Group Session on Global Habitability at the Association of American Geographers Annual Meeting, April 22-25, 1984 in Washington, D.C.

"Customization of Outputs Via Interfacing Micro-processors with SAS", an invited presentation to the Houston SAS (Statistical Analysis System) Users' Group on June 5, 1985 in Houston, Texas.

"A View of Earth from Space: Monitoring Resources and Ecology from Satellite Based Data", presented as an invited speaker at the Fall Meeting of the Louisiana Chapter of the American Statistical Assoc., Nov. 7, 1986.

"Aerospace Research in Mathematics and Statistics at NASA/JSC and Surrounding Industries", presented as an invited speaker at the Fall Meeting of the Louisiana Chapter of the American Statistical Association, Nov. 7, 1986.

"Experimental Design Strategies in Engineering Quality Control", presented as an invited speaker at the April 2, 1988 Meeting of the Houston Chapter of the American Society of Quality Control, Houston, Texas.

"Statistical Evaluation of Player Performances in the National Basketball Association", presented as an invited speaker at the April 12, 1988 Meeting of the Houston Area Chapter of the American Statistical Association, Houston, Texas.

"SAS/GRAPH Applications to Player Performance Evaluations in the NBA", an invited presentation to the April 12, 1989 meeting of the Houston SAS Users' Group.

"Quality Control in the Process Industry", an invited presentation at the Reliability and Quality Management Seminar held October 5, 1990 at the University of Houston; jointly sponsored by the Houston Chapter of the Institute of Industrial Engineers and the Houston Cullen College of Engineering.

"Player Performance Evaluations and Productivity Rankings in the NBA: A SAS/GRAPH Tutorial", an invited paper presented at the Houston SAS Users Group Conference held October 12, 1990 in Houston, Texas. Received special recognition as the individual (out of approximately 300 in attendance) that had been using SAS the longest (over 18 years).

"Regression Analysis in Recent Space Applications Aboard the Shuttle", an invited presentation at the Statistics Symposium held on the Stephen F. Austin University campus, Spring Semester 1994.

“Ramifications of Model Misspecifications in Linear Modeling”, an invited presentation presented to the Statistics Club at Baylor University in the spring semester 1994.

“Landscape Change Assessment Using Remotely-Sensed, Satellite and Aircraft Data”, keynote speaker at the meeting of the Houston Area Chapter of the American Statistical Association held at Rice University on May 14, 1996.

“Factors Associated with ExCET Performance “, an invited keynote speaker at the annual meeting of the Council of the State Organization of Teacher Education, held in Corpus Christi, Texas on March 22-23, 1997.

“A Software Capability for Monitoring ExCET Data Using the SAS AF Frame Module”, presented as an invited speaker at UT-Brownsville, Brownsville, Texas, March 5, 1997

“A GUI for Enhanced Insight Into Data in a University Setting: SAS/EIS and SAS/AF Frame to the Rescue”, co-authored with Melinda Miller and presented at the SAS Users Group International (SUGI) 23<sup>rd</sup> Annual Conference, March 22-25, 1998, in Nashville, Tennessee.

“An ExCET Monitoring and Information Assessment System”, an invited presentation to the College of Education at Stephen F. Austin University on July 6, 1998; this was an invited talk.

### **Work or Professional Experiences**

Co-director of the Louisiana Chapter of the American Statistical Association Conference entitled: “Generalized Inverses and Their Practical Applications”, held at Loyola University in New Orleans, New Orleans, Louisiana, November 15, 1974.

Co-director of the Louisiana Chapter of the American Statistical Association Conference entitled: “Industrial Applications of Statistics”, held at the University of New Orleans, New Orleans, Louisiana, November 7, 1975.

Chairman of the Experiment Design Session of the Large Area Crop Inventory Experiment Symposium held at NASA/JSC, Houston, Texas, October 23-26, 1978.

Organized and chaired a special contributed paper session entitled “Satellite Agricultural Surveys” at the annual meeting of the American Statistical Association held in Cincinnati, Ohio, August 18, 1982.

Chaired the “Inventory Technology” session of the Symposium on Agriculture and Resources Inventory Surveys Through Aerospace Remote Sensing held at NASA/JSC, December 2, 1982.

Chaired the National Committee on Institutional Membership in the American Statistical Association, held at the annual meeting of the ASA in Cincinnati, Ohio, August 16, 1982.

Program Chairman for the Fifth Annual Conference on Computer Developments held November 10, 1983 at the University of Houston/Clear Lake.

Chaired the National Committee on Institutional Membership in the American Statistical Association, held at the annual meeting of the ASA in Toronto, Ontario, August 16, 1983.

Program Chairman for the Sixth Annual Conference on Computer Developments held November 13, 1984 at the University of Houston/Clear Lake.

Organizer of a Seminar Series in Mathematics and Statistics jointly sponsored by the UH/Clear Lake Mathematical Sciences Department and NASA/JSC; these seminars began in August, 1984 and were held approximately every 6 weeks and featured keynote speakers throughout the Bay Area and other parts of Texas.

Co-director of the Conference on Applied Analysis (Mathematics and Statistics) in Aerospace, Industry and Medical Sciences held November 14-15, 1985 at the Univ. of Houston/Clear Lake.

Chaired the "Statistical Quality and Process Control" session of the Symposium on the Joint Applications in Instrumentation, Process, and Computer Control held at University of Houston/Clear Lake, March 12, 1987 and then again on March 15, 1989 at University of Houston/Clear Lake.

Moderator for the American Statistical Association Fall Technical Conference held October 26 and 27, 1989 in Houston, Texas; the title of this conference was "Statistical Quality Control and Productivity".

Organized the "Patrick L. Odell Colloquia Series in Applied Mathematical Statistics" conducted over the 1992-93 academic year at Sam Houston State University; a total of 19 speakers participated from the Gulf Coast Region.

Session Coordinator for a session on Repeated Measures Analysis at the 21<sup>st</sup> SAS Users Group International (SUGI) Conference held March 10-13, 1996 in Chicago, Illinois.

Council member of the Executive Committee of Texas Statisticians.

Served as President of the Conference of Texas Statisticians (COTS) held at Sam Houston State University, April 2000.

Served as Session Coordinator of the Applications Frame Session at the 25<sup>th</sup> Annual SAS Users Group International Conference (SUGI 25), held April 9-12, 2000 in Indianapolis, Indiana.

Session Coordinator of the Applications Frame Session at the 28<sup>th</sup> Annual SAS Users Group International Conference (SUGI 28), to be held March 30 through April 2, 2003 in Seattle, Washington.

Judge for the Computers and Mathematics Section of the Greater New Orleans Science Fair, March 1974.

Chairman of Judges for the Computers and Mathematics Section of the Greater New Orleans Science Fair, March 1975.

Judge for the Computers and Mathematics Section of the Greater New Orleans Science Fair, March 1976.

Invited lecturer for seminars at Tulane University and University of New Orleans in the Fall and Spring of 1972-73, 1973-74, and 1974-75. At Tulane I presented seminars covering the topics: "Remote Sensing of the Earth's Resources", "Multivariate Analysis of Variance", and "Analyses Performed in Statistical Linear Models". At the University of New Orleans, I lectured throughout the Spring semester, 1974, on topics concerning "Remote Sensing Analysis of Aircraft and Satellite Data".

Presented two seminars to the Loyola Faculty entitled "The Information Revolution: Will it Improve the Quality of Life?" and "Questions You've Always Wanted to Ask About the Computer, But Were Afraid To", January 12-14, 1976.

Served as statistical consultant and data analyst for the National Basketball Association's New Orleans Jazz professional basketball franchise for two years while at Loyola University in New Orleans. An outcome of this association was the development of a procedure for player performance evaluations which were subsequently used by the Seattle Supersonics as well.

National Research Council Scientific Advisor for 1979-80 at NASA/JSC; directed the research activities of Dr. Charles Perry, a senior NRC Research Associate, for this two year span.

Advisor for Student Internship Program at NASA/JSC during the summers of 1978, 1980, and 1981. Coordinated the research activities of Ms. Pam Alexander, a NASA/JSC Student Intern for these three summers.

Advisor for the 1980 NASA-ASEE Summer Faculty Fellowship Program; directed the research activities of Dr. Charles Rennolet during the summer of 1980.

Judge in the Mathematics and Computers Division of the Science Engineering Fair of Houston held at the Astro-Hall, Houston, Texas (1983-1988).

Consulted during the summer of 1982 for the Earth Resources Applications Division at NASA/JSC in support of the development of an approach for detecting changes in various crops on a global basis using satellite-based, remotely-sensed data.

Consulted from 1982 til 1985 for NORTHROP Research, Inc., in support of statistical analyses of the "Bedrest Study" data; this experiment's purpose was to determine human physical reactions prior to, during, and after space flights such as those experienced by the Shuttle mission.

Consulted intermittently from 1981 through 1991 with several UH/CL faculty members that needed statistical assistance in regard to proposals and/or projects.

Consulted intermittently during 1981-83 with the U.S. Dept. of Agriculture and Lockheed Engineering and Management Services Co. on several projects related to statistical analyses of the NOAA AVHRR satellite-acquired, remotely sensed data.

Consulted with several petro-chemical companies from 1986-present on statistical quality control; this was done for: DuPont, Aristech, Sterling Chemicals, Cain Chemical Company, and OxyChem.

Consulted with the following companies over the past seven years: 1) Martin Marietta (consulted on the statistical aspects of calibrating the Urinary Monitoring System (UMS) aboard the Shuttle); 2) NASA/JSC (consulted with Dr. William Thornton (an astronaut) in regard to the statistical aspects of calibrating a device that measures the mass of the human body in zero-gravity); 3) Fluke Mfg. Co. (this consultation supported the calibration efforts in regard to a number of devices for measuring voltages); 4) ISK-Biotech Corporation (this consultation was related to the proper design of sampling strategies to support product monitoring goals).

Formation of the Statistics Consulting Laboratory at Sam Houston State University (Fall, 1991).

Consulted intermittently from 1991 through the present with numerous Sam Houston State University faculty and/or their graduate students requesting statistical assistance in regard to proposals and/or research projects.

Project Science Director of the United Nations Environment Program Information Systems Visualization Project in the initial days of the TRIES (Texas Research Institute of Environmental Studies).

Chair of the Chairperson Selection Committee for the Department of Mathematical and Information Sciences at SHSU; this Committee functioned during the spring semester 1996.

Developed a software capability to monitor ExCET data for the SHSU College of Education and Applied Sciences (COEAS); one of my graduate students, Cindy Bayes, was hired as a consultant with COEAS to carry on with these efforts with my guidance.

Designed and initiated a capability, similar to the ExCET Monitoring System, for monitoring the regular SHSU student data; this effort was carried out during summer I, 1998 and was approved by the Academic Deans Council.

My name continues on a list distributed to Fortune 500 and other companies across the nation that participate as users of the statistical "hotline" (coordinated by Teltech, Inc.) out of Minneapolis, Minnesota. This has resulted in numerous consulting calls over the past several years at SHSU.

Was a consultant to Berwanger, Inc. in November 1999 to determine risk probabilities associated with various episodic events at such manufacturing localities.

Reviewed a statistics text for John Wiley & Sons, Inc. (received an honorarium for doing so), November 2003.

Served on the SHSU Research Council during academic year 2003 and up through summer 2, 2004.

Served as chair of the Applications Development Section of the 14<sup>th</sup> Annual South Central SAS Users Group (SCSUG) Conference, held in Austin, Texas, November 7-9, 2004. Sponsored 3 graduate students (Richard Willey, Anna Ravi and Abhishek Lall) that presented papers at this conference.

Served as the SHSU research collaborator for post-Katrina research, affiliate faculty member, Dr. Julie Jones from Xavier University, summer and fall 2005. Title of Research: "A Methodology for Detecting Anomalies in MRI Data".

Session coordinator of the Statistics Session of the Annual SAS Global Forum held in San Antonio, Texas in April, 2008.

Session coordinator at the Annual South Central SAS Users Group Conference held in San Antonio, Texas, November 8-10, 2009.

Session coordinator of the Statistics and Data Analysis Session of the Annual 2010 South Central SAS Educational Forum held in Austin, Texas, November 9-11, 2010.

### **Honors and Awards**

Received a NASA Traineeship, 1967 -1969 All College Recognition Service, 1963, 1964, 1970 Inducted as a Member of Pi Mu Epsilon (Honorary Mathematics Club), November 1972 Biography selected for the Dictionary of International Biography, Cambridge, England, 1973 Received Outstanding Young Men of America Award, July 1973 Received NASA/JSC Quality Increase Award, April 1978 Received NASA/JSC Superior Achievement Award, July 1979 Received NASA/JSC Outstanding Performance Award, November 1980 Nominee for the Piper Teaching Award at UH/CL, November 1983 Received the University of Houston/Clear Lake President's 1986 -87 Award for Excellence in Teaching Inducted into the Honor Society of Phi Kappa Phi at UH/Clear Lake on August 22, 1991 Nominated for the Excellence in Research Award for 2003 at Sam Houston State University

### **Other Competencies**

*Technometrics*---Refereed one paper in 1973, two in 1974, two in 1975, one in 1976, and one in 1977.

*Communications in Statistics*---Refereed two papers in 1974, one in 1978, one in 1979, one in 1987, two in 1988, one in 1989, and one in 1996.

*IEEE Transactions on Cybernetics*---One paper refereed in 1976.

Proposal Reviewer for the National Science Foundation, 1976.

*Photogrammetric Engineering and Remote Sensing*---Refereed one paper in 1981.

*Remote Sensing of Environment*---Refereed one paper in 1983, one in 1985, one in 1986, one in 1993, one in 2003, and one in 2006.

*Jour. of the Amer. Stat. Assoc.*---Refereed one paper in 1984.

*Texas Journal of Science* ---Refereed one paper in 1997.

*Computer Methods and Programs in Biomedicine Journal* --- one paper refereed in 2009 and a re-work of the same paper refereed again in 2010.

Served as a beta tester for Band-in-a-Box (a product of PG Music, Inc.), a music software package used at many universities for educational purposes; this is the seventh consecutive year of service as a beta tester on this package. I have researched MIDI (Musical Instrumentation Digital Interface) digital music data for the past several years and was selected to be a beta tester as a result of that (I assume).