

Appendix A – Resumes of the Panel of Experts

This Appendix includes the resumes of panel of experts who created the first set of questions and the follow-up questions for each modeler, reviewed the modelers responses, evaluated the models and prepared this report. They are:

1. Mr. Martin M. Simons
2. Dr. Jenni L. Evans
3. Dr. Masoud M. Zadeh

Their curricula vitae appear in the next several pages.



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(June 1986 to present) Owner - Martin M. Simons, Public Actuarial Consultant

CLIENTS

1. Hawaii Insurance Division – Regulatory Actuary (1986-present)
 - a.i. Actuarial and technical insurance consulting
 - a.ii. Review of property and casualty insurance rates
 - a.iii. Review of workers’ compensation insurance rates
 - a.iv. Medical malpractice insurance analyses
 - a.v. Economic analyses and rate of return calculations
 - a.vi. Department staff training
 - a.vii. Development of hurricane model review process
 - a.viii. Review hurricane models used for producing loss costs
 - a.ix. Legislative pricing analyses
 - a.x. Technical adviser to Governors, Cabinet Members, Legislature, & Insurance Commissioners
 - a.xi. Analyses of self insured financial programs and reserves
 - a.xii. Assistance to Financial Examination Section
 - a.xiii. Assistance to Captive Insurance Section
 - a.xiv. Assistance to Health Insurance Section
 - a.xv. Assistance to Legal Division
 - a.xvi. Expert testimony - Public hearings & Hawaii Legislature
 - a.xvii. Market Conduct Examiner
 - a.xviii. Senior Technical Adviser – Hawaii Hurricane Relief Fund
- b. Fla. Commission on Hurricane Loss Projection Methodology (1997-present)
 - b.i. Lead Actuary – FCHLPM Professional Team
 - b.ii. Development of Audit Standards, Disclosures, Forms, etc.
 - b.iii. Actuarial analysis & audit of hurricane models
 - b.iv. On site review of all submitted hurricane models (1997-2011)
 - b.v. Participation at Commission and Committee meetings
 - b.vi. Technical assistance
- c. South Carolina Department of Consumer Affairs (1997 – present)
 - c.i. Property/casualty rate filing analyses
 - c.ii. Workers’ compensation loss cost and rate filing analyses
 - c.iii. Economic analyses and rate of return calculations
 - c.iv. Public utility hearings - insurance related assistance
 - c.v. Expert testimony at public hearings and before Legislature



- d. Actuarial Standards Board (ASB) – pro bono
 - d.i. Member – General Committee
 - d.ii. ASOP #38, Catastrophe Modeling Standard Task Force
- e. American Academy of Actuaries (AAA) - pro bono
 - e.i. Member - Extreme Events Committee
 - a. Member - Natural Catastrophe Sub Committee
- f. Casualty Actuarial Society (CAS) - pro bono
 - f.i. Member/Facilitator – Committee on Professionalism Educ.
 - f.ii. Member - Seasoned Actuaries
 - f.iii. Guest Speaker
- g. South Carolina Uninsured Employers’ Fund (1990 – present)
 - g.i. Financial and reserve analyses
 - g.ii. Technical and actuarial assistance
 - g.iii. Legislative testimony
- h. South Carolina Second Injury Fund (1995 – present)
 - h.i. Liability and future assessment analyses
 - h.ii. Legislative testimony
 - h.iii. Technical and actuarial assistance
- i. Georgia Subsequent Injury Trust Fund (2004 – 2009)
 - i.i. Liability analyses
 - i.ii. Analyses of future assessments
 - i.iii. Actuarial consulting
 - i.iv. Legislative testimony
- j. California Earthquake Authority – Sacramento, CA (2004 – present)
 - j.i. Member - Actuarial Modeling Assumptions Work Group
 - j.ii. Member - Financial Alternatives Work Group
 - j.iii. Analysis of Claim Paying Capacity
 - j.iv. Earthquake model analysis
 - j.v. Technical assistance
- k. Florida State University College of Business (2004-2008)
 - k.i. Sinkhole insurance study
 - a. Data analysis and aggregation
 - b. Loss cost and trend production
 - c. Technical consulting
 - k.ii. Guest Speaker – (pro-bono)
- l. Mintz Levin – Boston, MA (2006-2008)
 - l.i. Review Massachusetts FAIR Plan (MPIUA) rate filing
 - l.ii. Hurricane model loss cost review
 - l.iii. Expert testimony
- m. Hawaii Hurricane Relief Fund – HHRF (1993 - 2002)
 - m.i. Involvement from prior to start-up to planned termination
 - m.ii. Senior Member of HHRF Technical Advisory Committee
 - m.iii. Legislative testimony



- n. Additional Clients (1986-present)
 - i. ABC News NIGHTLINE
 - ii. Arkansas Insurance Department
 - iii. Chappell, Smith & Arden – Columbia, South Carolina
 - iv. Colorado Workers' Compensation Education Association
 - v. DBH Global, Inc. – Hilton Head, South Carolina
 - vi. Delaware Insurance Department
 - vii. Dodge, Fazio, Anderson & Jones – Dallas, Texas
 - viii. Florida Office of the Consumer Advocate
 - ix. Florida Hurricane Catastrophe Fund
 - x. Florida Workers' Advocates
 - xi. Georgia Insurance Department
 - xii. Hawaii Department of Commerce and Consumer Affairs
 - xiii. Hawaii Department of Labor
 - xiv. Illinois Insurance Department
 - xv. Independent Ins. Agents & Brokers of Greater Charleston S.C.
 - xvi. Lewis and Babcock, LLP – Columbia, South Carolina
 - xvii. Louisiana Association of Business & Industry
 - xviii. Manitoba Personal Injury Protection Plan Review Comm.
 - xix. Maryland Insurance Administration
 - xx. Massachusetts Property Insurance Underwriting Association
 - xxi. Milberg Weiss Bershad Hynes & Lerach, LLP - New York, NY
 - xxii. Minnesota Insurance Department
 - xxiii. Nakamoto, Yoshioka, Okamoto – Hilo, Hawaii
 - xxiv. New Mexico Insurance Department
 - xxv. North Dakota Insurance Department
 - xxvi. Ohio Public Interest Campaign
 - xxvii. Oklahoma Attorney General
 - xxviii. Oklahoma Joint Legislative Committee - Workers' Comp
 - xxix. Reimbursement Consultants, Inc. – SC, LA & GA
 - xxx. Rhode Island Joint Reinsurance Association
 - xxxi. Schiff Hardin, LLP – Chicago, Illinois
 - xxxii. Self Insured Employers' Association of South Carolina
 - xxxiii. SC Medical Malpractice Patients' Compensation Fund
 - xxxiv. South Carolina Department of Insurance
 - xxxv. State Farm Mutual Automobile Ins Co – Bloomington, IL
 - xxxvi. Suggs and Kelly, PA - Columbia, South Carolina
 - xxxvii. Thornton and Collins, L.C. – Slidell, Louisiana
 - xxxviii. Willkie Farr & Gallagher LLP – New York, NY

National Association of Insurance Commissioners – NAIC (1985 – 1997)

- a. Exercised South Carolina Voting Rights at Plenary Sessions
- b. Chair: Property/Casualty Loss Cost Working Group
- c. Chair: Workers' Compensation Loss Cost Working Group
- d. NAIC – Insurance Industry Loss Cost Liaison
- e. Chair: By Line by State Profitability Report Working Group



- f. Chair: Insurance Expense Exhibit Working Group
- g. Chair/Member: Catastrophe Insurance Working Group
- h. Chair: Average Personal Auto Expenditures Working Group
- i. Member: Casualty Actuarial Task Force
- j. Member: Liability Closed Claim Study Working Group
- k. Member: Statistical Task Force
- l. Member: Personal Lines (C) Committee
- m. Member: Commercial Lines (D) Committee
- n. Adviser to NAIC Executive (E) Committee
- o. Member: Data Quality Working Group
- p. Chair: General Liability/Hold Harmless Agreement Working Groups
- q. Member: Consumer Information Working Group

PRIOR PROFESSIONAL EXPERIENCE

South Carolina Department of Insurance (1985-1997)

- 1) Deputy Insurance Director - Actuarial Services
- 2) Chief Property and Casualty Insurance Actuary
- 3) Management of Property and Casualty Insurance Division
- 4) Management of Life, Accident and Health Insurance Division
- 5) Management of State Rating and Statistical Division
- 6) Department staff training
- 7) Approval of property and casualty forms, rates and rules
- 8) Economic and rate of return analyses
- 9) Expert testimony
- 10) Analysis of property and casualty insurance financial exhibits
- 11) Expertise to Governor, Legislature, and Insurance Director
- 12) Hearing Officer – Agent Discipline
- 13) Member – New Insurer Admissions Committee

Unigard Insurance Group – Seattle Washington (1968 to 1984)

Branch Manager – (Fresno, CA 1983 - 1984)

Marketing Services Manager – Seattle, WA (1978-1983)

- a. Incentive Travel Program Director
- b. Marketing Training Program Director

Manager – Corp. Control & Analysis Dept. Seattle, WA (1975 -78)

- a. Expense Analyses
- b. Excess & Surplus Lines Analysis
- c. Branch Management Bonus Program Director

Assistant/Associate Actuary – Seattle, WA (1968-1975)

- a. Personal & commercial lines ratemaking
- b. Loss reserve analyses

Elected President Unigard Employees Fed Credit Union (1975-80)

State Farm Fire and Casualty Insurance Co. - Bloomington, Illinois (1967-1968)

- 1) Actuarial Associate
- 2) Associate Actuary



PROFESSIONAL DESIGNATIONS

1. Member: American Academy of Actuaries (MAAA)
 - a. Member: International Actuarial Association
2. Member: Actuarial Standards Board General Committee
3. Associate: Casualty Actuarial Society (ACAS)
4. Fellow: Conference of Consulting Actuaries (FCA)

EDUCATION AND MISCELLANEOUS

1. Bachelor of Arts in Mathematics – Washburn University
2. Service in United States Air Force – 1959-1963
 - a. B-47 Gunnery Technician
 - b. Atlas E Missile Launch Crew Member

AUTHOR/CO-AUTHOR

*asterisked items below may be downloaded from: <http://www.mmsimons.com>

1. Testimony on Behalf of The Florida Office of the Consumer Advocate, *Citizens Insurance Corporation Rate Hearing, Sinkhole*, Tampa Convention Ctr. September 13, 2011
2. * *Catastrophic Risk Planning Model Evaluation* – Maryland Insurance Administration, August 23, 2011
3. * Comments - American Academy of Actuaries Extreme Events Committee to the National Conference of Insurance Legislators (NCOIL) – Actuarial Rates in the Context of National Flood Insurance Program (NFIP) Hazard Mapping, NCOIL Summer Meeting, Property-Casualty Insurance Committee -July 2011
4. * Florida Commission on Hurricane Loss Projection Methodology – 2011 *Professional Team Report – FPM (Florida Public Model)*
5. * Florida Commission on Hurricane Loss Projection Methodology – 2011 *Professional Team Report – EQECAT.*
6. * Florida Commission on Hurricane Loss Projection Methodology – 2011 *Professional Team Report – ARA (Applied Research Associates Inc.)*
7. * Florida Commission on Hurricane Loss Projection Methodology – 2011 *Professional Team Report – RMS (Risk Management Solution, Inc.)*
8. *Analysis and Opinion - *Determination of the Capitalized Value of All Sunshine States Insurance Company Claims and Losses, Both Reported and Unreported, Resulting from Loss Occurrences Commencing During Florida Hurricane Catastrophe Fund Contract Year 2004*, Dec 2010.
9. *Florida Commission on Hurricane Loss Projection Methodology – 2nd 2010 *Professional Team Report (AIR Worldwide) – Boston MA, November 4, 2010*
10. Analysis - *South Carolina Uninsured Employers' Fund – Loss Reserve Analysis as of June 30, 2010*. August 20, 2010 (prepared annually 1992-2010)
11. Report of Consultants - *Calculating the Claim Paying Capacity of the California Earthquake Authority*, May 24, 2010.
12. *Florida Commission on Hurricane Loss Projection Methodology – 2010 *Professional Team Report – AIR Worldwide – Boston, MA, May 7, 2010.*
13. **Actuarial Analysis of the Runoff of the South Carolina Second Injury Fund – Analysis of Current Liabilities, Future Liabilities and Assessments*, Jan. 22, 2010
14. *Testimony – *Florida NCCI Workers' Compensation Rate Hearing*, Oct. 6, 2009



15. * Comments - American Academy of Actuaries Extreme Events Committee to the National Conference of Insurance Legislators (NCOIL) - *Proposed System for Public-Private Natural Catastrophe Financing*, July 2009
16. * Florida Commission on Hurricane Loss Projection Methodology – 2009 *Professional Team Reports*
17. *AIR Worldwide Corporation*- Boston, MA, May 2009
18. *ARA (Applied Research Associates, Inc.)* – Raleigh, NC, Jun 2009
19. *EQECAT Incorporated* – Oakland, CA, June 2009
20. *Florida Hurricane Public Loss Model* – Miami, FL, June 2009
21. *RMS (Risk Management Solutions, Inc.)* – Newark, CA, June 2009
22. *Dumm, Randy E, Johnson, Mark E. and Simons, Martin M., *Inside the Black Box: Evaluating and Auditing Hurricane Loss Models*, *Journal of Insurance Regulation*, Winter, 2008
23. *Issue Brief – *Current Issues in Insurance Ratemaking for Catastrophic Events* – American Academy of Actuaries Natural Catastrophe Subcommittee, December, 2008
24. *Oral Testimony - *Comments of the Extreme Events Committee of the American Academy of Actuaries to the Catastrophe Insurance Working Group of the National Association of Insurance Commissioners – Natural Catastrophe Risk: Creating a Comprehensive Plan*, Oct. 14, 2008
25. *Testimony – *Select Committee on Property Insurance Accountability of the Florida State Senate – Hurricane Modeling*, February 19, 2008
26. *Testimony - *NCCI v. S. C. Dept. of Ins., Elliott F Elam, S. C. Consumer Advocate, and S. C. Small Business Chamber of Commerce, Intervenors*, February 15, 2008
27. *Analysis - *Medical Malpractice Reforms –Hawaii Insurance Division* - submitted to Hawaii Legislature, February 6, 2008
28. *Testimony - *On Behalf of the American Academy of Actuaries before the P&C Insurance (C) Committee of the National Association of Insurance Commissioners - Use of Catastrophe Models by Rating Agencies*, Dec. 1, 2007
29. *Testimony-*Application of the Massachusetts Property Insurance Underwriting Association (MPIUA) for Approval of a General Rate Revision to be Effective July 1, 2007 (Docket no. R2007)*, Boston, MA, August, 2007
30. *Analysis - *Liabilities of the South Carolina Second Injury Fund, Including Analysis of Current and Future Liabilities and Assessments*, April, 2007, November 29, 2005
31. *Testimony, *House Insurance Committee of the Florida Legislature –Comparison of Hurricane Models*, April, 2007
32. Testimony – *Consumer Appeal of Hawaii Insurance Division Approval of State Farm Homeowners Rates*, February, 2007
33. *Testimony - Rhode Island Legislature- *Regulating Hurricane Insurance Models for Producing Property Insurance Rates in New England*, December 23, 2007
34. *Analysis Update - *Liabilities of the Georgia Subsequent Injury Trust Fund Including Analysis of Current Liabilities Analysis of Future Liabilities, Future Assessment and Opened Claims Activity*, December 11, 2006



35. *Testimony before South Carolina Senate Workers' Compensation Study Committee – *Second Injury Fund, etc.*, Sept. 19, 2006
36. Testimony- *State Farm Fire and Casualty Ins. Company Homeowners Program Sub-zone Introduction Filing, Dated June 3, 2005, prepared for the Hawaii Insurance Division* (confidential subject to court order), 2006
37. *Testimony, *National Council on Compensation Ins. v S. C. Dept. of Ins. et al, Elliott F. Elam, Jr. S. C. Consumer Advocate, Intervenor* (Docket 05-ALJ-09-0277-CC) 2006
38. **Insurance Study of Sinkholes, FSU*, submitted to the Fla. Legislature, April, 2005
39. *Cohn, Richard A., Goldberg, Steve, and Simons, Martin M., *Report of the Financial Alternatives Work Group to the California Earthquake Authority*, December, 2005
40. *Johnson, Mark E., Watson, Charles C., and Simons, Martin M., *Insurance Rate Filings and Hurricane Loss Estimation Models, Journal of Insurance Regulation*, April 2004
41. *Testimony Before SC House of Representatives – *South Carolina Second Injury Fund*, February, 2004
42. *Simons, Martin M.; Santo, Shelley K.; Chock, Gary Y. K.; Schroeder, Thomas A., *Hawaii Insurance Division Memorandum 2003-3R - Hurricane Modeler Questionnaire*, July, 2003
43. *Testimony- *State Farm Fire and Casualty Insurance Company, Petitioner v. South Carolina Department of Insurance, respondent; Elliott F. Elam, Jr. Acting Consumer Advocate, Intervenor – Homeowners Insurance Including Hurricane* (Docket # 03-ALJ-09-0210-CC) September 29, 2003
44. * Analysis - *The Property & Casualty Insurance Environment in Hawaii, An Overview, Prepared for the Hawaii Ins. Division*, February, 2003
45. Testimony - *Avery et al., Appellees, v. State Farm Mutual Automobile Ins. Co., IL* (Docket No. 91494-Agenda May 7, 2003)
46. **Actuarial Analysis of the Utilization and Rate Impacts of Reinstating Naturopathy Among the Personal Injury Protection Benefits in Motor Vehicle Insurance. Pursuant to HCR 131, 2002, REQ.* adopted by the Hawaii Legislature, Dec. 2002
47. **Inside the Black Box*, Best's Review, August, 2002
48. Testimony - *Rate Regulatory Systems - Impacts of Side Agreements on Statutory Compliance and Regulatory Approval, (confidential subject to court order) Kettle Restaurant v Travelers of Illinois, et al, Dallas, TX* 2002
49. **Report to the Hawaii Legislature on the Feasibility of a Wind Resistive Device Grant Program*, December 13, 2001
50. *Testimony- *NCCI v. South Carolina Dept of Insurance, Philip S. Porter, SC Consumer Advocate and Companion Property & Casualty Insurance Company, Intervenor* (Docket # 95-ALJ-09-0055-CC), - March 2, 2001
51. Testimony - *Oklahoma Joint Legislative Session –State Insurance Fund and the Multiple Injury Trust Fund–* February, 2000
52. *Testimony – *NCCI v Hawaii Insurance Div. - Workers' Comp. Loss Costs –* 1998
53. Testimony - *State of South Carolina, Medlock v NCCI*, 1998



54. Testimonies – *Oklahoma Workers’ Comp. Loss Cost Hearings* – 1987 – 2004
55. **Taking the Next Step in Hurricane Modeling*, Best’s Review, May, 1997
56. Numerous Analyses and Testimonies - Hawaii Legislature - re: *Motor Vehicle Insurance Reform Legislation* 1992 – 1997 *(see May 1, 1997 letter)
57. Numerous Analyses and Testimonies - Hawaii Legislature - re: *Workers’ Compensation Insurance Reform Legislation* 1994 - 1997
58. Testimony – *NCCI v. Hawaii Insurance Division - Loss Cost / Rate Hearing*, 1993
59. Testimony - *Liberty Mutual Auto Ins Co. v. Hawaii Division of Insurance*, 1992
60. Testimonies - *NCCI v Arkansas Department of Insurance*, 1991 and 1992
61. * *In Defense of Rate Regulators*, Best's Review, Property & Casualty Ed. June 1992
62. Klein, Robert, Eley, David, and Simons, Martin M., *NAIC Report on Profitability - By Line By State*, The Interpreter, IASA, December 1, 1991
63. Legislative Testimony, *Ins. Rate Regulation, Ohio Public Interest Campaign*, 1990
64. * *Rate Regulation Revisited* - Best's Review, P & C Edition, July, 1989
65. Presentation Before the National Association of Insurance Commissioners Executive (E) Committee - *Rating Bureaus, Anti-Trust Laws and Loss Cost Based Rate Regulation*, Denver, CO, February 6, 1989
66. * *Federal Oversight – The Wrong Answer*, Best's Review, P & C Ed. November 1988
67. * *Managing for Consistency*, Best's Review, Property & Casualty Ed, Jan. 1987
68. * *Looking Inside the Statistics*, Best's Review, P & C Ed. May 1986
69. *Expert Testimonies – South Carolina - Fire, Allied Lines, Homeowners, Business Owners, Automobile, Liability, Fidelity, Surety, etc.* 1985-1997

INVITED SPEAKER

1. Catastrophe Models, Do they produce rates that are not excessive, inadequate or unfairly discriminatory? – CASE, October 3, 2012
2. Audiocast - Professionalism: ASOP 41 – Actuarial Communications, Conference of Consulting Actuaries - American Academy of Actuaries and Canadian Institute of Actuaries, co-sponsors - 7/13/2011
3. Using Your Professionalism GPS to Navigate the Actuarial World – CAS Government in Insurance Seminar, October 2010
4. Different Uses For the (Catastrophe) Model – CAS Ratemaking and Product Management Seminar, March 9, 2009
5. Predictive Modeling – Regulatory Concerns – CAS Ratemaking and Product Management Seminar, March 10, 2009
6. Comparison of Hurricane Loss Projection Models – Florida State University Catastrophic Storm Risk Management Center, Florida State University, 6/9/2008
7. Regulating Hurricane Insurance Loss Costs, Produced by Computer Models, Casualty Actuarial Society Seminar on Reinsurance, 6/2006
8. Regulating Hurricane Models – Casualty Actuaries of the Southeast, April, 2006
9. Actuarial Professionalism, Casualty Actuarial Society Course on Professionalism, Nov. 2004
10. The Actuary as an Expert Witness - CAS Ratemaking Seminar, 2004, 2001, 1998



11. Workers' Compensation Rate Regulation, South Carolina Small Business Chamber of Commerce, Sept. 2004
12. Hurricane Model Reviews- Southern Risk & Insurance Assoc. 2003 Annual Meeting
13. Dealing With the Differences in Hurricane Models- CAS Special Interest Seminar on Catastrophe Insurance, 2002
14. The Perfect Rate Filing, CAS Ratemaking Seminar, August 2002, 1998, 1995
15. Building a Specialized Actuarial Practice, Conference of Consulting Actuaries Annual Mtg, 2002
16. The Actuary as an Expert Witness, Casualty Actuarial Society, Annual Meeting, Nov. 1993
17. Insurance Regulation – Info-line Conference, NY, 1992
18. Insurance Rate Regulation – Loss Cost Rating - National Association of Insurance Commissioners' Executive Committee, February 6, 1989
19. Insurance Regulation – Connecticut Legislature – March 5, 1987



Jenni L. Evans, Ph.D.

Professor of Meteorology, The Pennsylvania State University

University Park, PA 16802

Email: jle7@psu.edu

PROFESSIONAL APPOINTMENTS

Current: Tenured Full Professor, July 2005 – present

*Department of Meteorology and Earth and Environmental Systems Institute
The Pennsylvania State University*

Current: Professional Team Lead Meteorologist, June 2003–present

*Florida Commission on Hurricane Loss Projection Methodology
Florida State Board of Administration*

Risk Model Review, Hurricane Meteorology

Maryland Insurance Administration, MD (2011), in support of a review of State Farm hurricane insurance rate filing

Mintz Levin – Boston, MA (2007-2008), in support of a review of the Massachusetts FAIR Plan (MPIUA) rate filing

Visiting Scientist, 2007 – 2008

Bureau of Meteorology Research Centre, Melbourne, Australia

Tenured Associate Professor, 1998 – 2005

Department of Meteorology and EMS Environment Institute, The Pennsylvania State University

Assistant Professor, 1992 – 1998

Department of Meteorology and EMS Environment Institute, The Pennsylvania State University

Research Scientist, 1990 – 1992

CSIRO Division of Atmospheric Research, Melbourne, Australia

Visiting Scientist, 1987 – 1989

Department of Meteorology, College of Engineering, The Naval Postgraduate School, Monterey CA

Research Assistant [fluid dynamics laboratory], 1985 – 1987

Department of Mathematics, College of Science, Monash University, Melbourne, Australia

Research Assistant [atmospheric boundary layer laboratory], 1984 – 1985

Department of Mechanical Engineering, College of Engineering, Monash University, Australia

EDUCATION, ACADEMIC AND PROFESSIONAL QUALIFICATIONS

Ph.D., Applied Mathematics, Monash University [October 1990]

B.Sc. (Hons) Applied Mathematics, Monash University [March 1984]

Fellow, American Meteorological Society [AMS]

PUBLISHED WORKS

Peer-Reviewed Publications

Graduate students for whom I was major advisor when working on the published research for these papers indicated by underlining; *other student co-authors* (those on whose graduate committee I served, undergraduate advisees) are identified by *italics*.

1. **Evans, Jenni L.**, and Jeffrey J. Waters, 2012: Simulated relationships between sea surface temperatures and tropical convection in climate models and their implications



- for tropical cyclone activity. *J. Climate*, **25**, 7884–7895, doi: <http://dx.doi.org/10.1175/JCLI-D-11-00392.1>.
2. **Kozar, Michael E.**, Michael E. Mann, Suzana J. Camargo, James P. Kossin and **Jenni L. Evans**, 2012: Statistical modeling of Atlantic tropical cyclone counts. *J. Geophys. Research (Atmospheres)*, **117**, D18103.
 3. **Evans, Jenni L.**, and **Aviva J. Braun**, 2012: A climatology of subtropical cyclones in the South Atlantic *J. Climate*, **25**, 7328–7340, doi: <http://dx.doi.org/10.1175/JCLI-D-11-00212.1>.
 4. **Waters, Jeffrey J.**, **Jenni L. Evans**, and Chris E. Forest, 2012: Large-scale diagnostics of tropical cyclogenesis potential using environment variability metrics and logistic regression models. *J. Climate*, **25**, 6092–6107, doi: <http://dx.doi.org/10.1175/JCLI-D-11-00359.1>.
 5. **Fan, Fangxing**, Michael E. Mann, Sukyoung Lee and **Jenni L. Evans**, 2012: Projected Future Changes in the South Asian Summer Monsoon: Analysis of Mechanisms in 720ppm Stabilization Experiment. *J. Climate*, **25**, 3909–3928, doi: <http://dx.doi.org/10.1175/JCLI-D-11-00133.1>.
 6. **Keller, Julia H.**, Sarah C. Jones, **Jenni L. Evans** and Patrick A. Harr, 2011: Characteristics of the TIGGE multimodel ensemble prediction system in representing forecast variability associated with extratropical transition. *Geophys. Res. Letters*, **38**, L12802, doi:10.1029/2011GL047275.
 7. **Evans, Jenni L.**, Jose D Fuentes, Xiao-Ming Hu and **Holly Hamilton**, 2011: Earth-Atmosphere interactions: Tropical storm and hurricane activity in the Caribbean and their consequent health impacts. *J. Race and Policy Special Issue “Disaster Preparedness and Health Care: U.Va in St. Kitts and Nevis”*, **7** (1).
 8. **Evans, Jenni L.**, 2010: Environmental impacts on tropical cyclone structure and intensity change. *Report to the World Meteorological Organisation (WMO) International Workshop on Tropical Cyclones (IWTC-VII)*, La Réunion, November 2010, J. Kepert and C. Velden (Eds).
 9. **Fan, Fangxing**, Michael E. Mann, Sukyoung Lee and **Jenni L. Evans**, 2010: Observed and Modeled Changes in the South Asian Summer Monsoon Over the Historical Period. *J. Climate*, **23**, 5193–5205, doi: <http://dx.doi.org/10.1175/2010JCLI3374.1>.
 10. **Evans, Jenni L.**, and **Mark P. Guishard**, 2009: Atlantic Subtropical Storms. Part I: Diagnostic Criteria and Composite Analysis. *Monthly Weather Review*, **137**, 2065–2080, DOI: 10.1175/2009MWR2468.1.
 11. **Guishard, Mark P.**, **Jenni L. Evans**, and Robert E. Hart, 2009: Atlantic Subtropical Storms. Part II: Climatology. *Journal of Climate*, **22**, 3574–3594, DOI: 10.1175/2008JCLI2346.1.
 12. **Veren, Daniel**, **Jenni L. Evans**, Sarah C. Jones, and Francesca Chiaromonte, 2009: Novel Metrics for Evaluation of Ensemble Forecasts of Tropical Cyclone Structure. *Monthly Weather Review*, **137**, 2830–2850, DOI: 10.1175/2009MWR2655.1.
 13. **Pratt, Aaron**, and **Jenni L. Evans**, 2009: Evaluation of operational model forecast skill for Atlantic tropical cyclones. *Weather and Forecasting*, **24**, 420–435, DOI: 10.1175/2008WAF2007090.1.



14. Moyer, Adam C., **Jenni L. Evans**, and Mark Powell, 2007: Comparison of observed gale radius statistics. *Meteorology and Atmospheric Physics*, **97**, 41-55, doi 10.1007/s00703-006-0243-2.
15. Guishard, Mark P., Elizabeth A. Nelson, **Jenni L. Evans**, Robert E. Hart, and Dermott G. O'Connell, 2007: Bermuda subtropical storms. *Meteorology and Atmospheric Physics*, **97**, 239-253, doi 10.1007/s00703-006-0255-y.
16. **Evans, Jenni L.**, Justin M. Arnott, and Francesca Chiaromonte, 2006: Evaluation of operational model cyclone structure forecasts during Extratropical Transition. *Monthly Weather Review*, **134**, 3054–3072, doi: <http://dx.doi.org/10.1175/MWR3236.1>.
17. Hart, Robert E., Clark Evans, and **Jenni L. Evans**, 2006: Synoptic composites of the extratropical transition lifecycle of North Atlantic tropical cyclones: Factors determining post-transition evolution. *Monthly Weather Review*, **134**, 553–578, doi: <http://dx.doi.org/10.1175/MWR3082.1>.
18. Arnott, Justin M., **Jenni L. Evans** and Francesca Chiaromonte, 2004: Characterization of extratropical transition using cluster analysis. *Monthly Weather Review*, **132**, 2916-2937, doi: <http://dx.doi.org/10.1175/MWR2836.1>.
19. **Evans, Jenni L.**, and Barbara Prater-Mayes, 2004: Factors affecting the post-transition intensification of Hurricane Irene (1999). *Monthly Weather Review*, **132**, 1355-1368, doi: [http://dx.doi.org/10.1175/1520-0493\(2004\)132<1355:FATPIO>2.0.CO;2](http://dx.doi.org/10.1175/1520-0493(2004)132<1355:FATPIO>2.0.CO;2).
20. **Evans, Jenni L.**, and Robert E. Hart, 2003: Objective indicators of the life cycle evolution of extratropical transition for Atlantic tropical cyclones. *Monthly Weather Review*, **131**, 909-925, doi: [http://dx.doi.org/10.1175/1520-0493\(2003\)131<0909:OIOTLC>2.0.CO;2](http://dx.doi.org/10.1175/1520-0493(2003)131<0909:OIOTLC>2.0.CO;2).
21. Jones, Sarah C., Patrick A. Harr, Jim Abraham, Lance F. Bosart, Peter J. Bowyer, **Jenni L. Evans**, Deborah E. Hanley, Barry N. Hanstrum, Robert E. Hart, François Lalaurette, Mark R. Sinclair, Roger K. Smith, and Chris Thorncroft, 2003: The Extratropical Transition of Tropical Cyclones: Forecast Challenges, Current Understanding, and Future Directions. *Weather and Forecasting*, **18**, 1052–1092, doi: [http://dx.doi.org/10.1175/1520-0434\(2003\)018<1052:TETOTC>2.0.CO;2](http://dx.doi.org/10.1175/1520-0434(2003)018<1052:TETOTC>2.0.CO;2).
22. Tsakraklides, Giorgos, and **Jenni L. Evans**, 2003: Global and regional diurnal variations of organized convection. *Journal of Climate*, **16**, 1562–1572, doi: <http://dx.doi.org/10.1175/1520-0442-16.10.1562>.
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30. **Meehl, G. A.**, **T. Karl**, **D. R. Easterling**, **S. Changnon**, **R. Pielke Jr.**, **D. Changnon**, **Jenni L. Evans**, **P. Ya. Groisman**, **T. R. Knutson**, **K. E. Kunkel**, **L. O. Mearns**, **C. Parmesan**, **R. Pulwarty**, **T. Root**, **R. T. Sylves**, **P. Whetton**, **F. Zwiers**, 2000a: An introduction to trends in extreme weather and climate events: Observations, socioeconomic impacts, terrestrial ecological impacts, and model projections. *Bulletin of the American Meteorological Society*, **81**, 413-416, doi: [http://dx.doi.org/10.1175/1520-0477\(2000\)081<0413:AITTIE>2.3.CO;2](http://dx.doi.org/10.1175/1520-0477(2000)081<0413:AITTIE>2.3.CO;2).
31. **Meehl, G. A.**, **F. Zwiers**, **Jenni L. Evans**, **T. Knutson**, **L. Mearns**, **P. Whetton**, 2000b: Trends in extreme weather and climate events: Issues related to modeling extremes in projections of future climate change. *Bulletin of the American Meteorological Society*, **81**, 427-436, doi: [http://dx.doi.org/10.1175/1520-0477\(2000\)081<0427:TIEWAC>2.3.CO;2](http://dx.doi.org/10.1175/1520-0477(2000)081<0427:TIEWAC>2.3.CO;2).
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40. **Evans, Jenni L.**, 1993: Sensitivity of tropical cyclone intensity to sea surface temperature. *Journal of Climate*, **6**, 1133-1140, doi: [http://dx.doi.org/10.1175/1520-0442\(1993\)006<1133:SOTCIT>2.0.CO;2](http://dx.doi.org/10.1175/1520-0442(1993)006<1133:SOTCIT>2.0.CO;2).
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42. Holland, G. J., and **Jenni L. Evans**, 1992: Interactions between a barotropic vortex and an idealized subtropical ridge. Part II: Structure changes. *Journal of the Atmospheric Sciences*, **49**, 963-975, doi: [http://dx.doi.org/10.1175/1520-0469\(1992\)049<0963:IBABVA>2.0.CO;2](http://dx.doi.org/10.1175/1520-0469(1992)049<0963:IBABVA>2.0.CO;2).
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44. **Evans, Jenni L.**, 1992: Comment on "Can existing climate models be used to study anthropogenic changes in tropical cyclone climate?" *Geophysical Research Letters*, **19**, 1523-1524, doi:10.1029/92GL01120.
45. **Evans, Jenni L.**, 1991: Tropical cyclones and climate change. *Search*, **22**, 26-28.
46. **Evans, Jenni L.**, G. J. Holland and R. L. Elsberry, 1991: Interactions between a barotropic vortex and an idealized subtropical ridge. Part I: Vortex motion. *Journal of the Atmospheric Sciences*, **48**, 301-314, doi: [http://dx.doi.org/10.1175/1520-0469\(1991\)048<0301:IBABVA>2.0.CO;2](http://dx.doi.org/10.1175/1520-0469(1991)048<0301:IBABVA>2.0.CO;2).
47. Smith, R. K., M. J. Coughlan and **Jenni L. Lopez** (nee **Evans**), 1986: Southerly nocturnal wind surges and bores in northeastern Australia. *Monthly Weather Review*, **114**, 1501-1518, doi: [http://dx.doi.org/10.1175/1520-0493\(1986\)114<1501:SNWSAB>2.0.CO;2](http://dx.doi.org/10.1175/1520-0493(1986)114<1501:SNWSAB>2.0.CO;2).



Books

Laing, Arlene, and Jenni L. Evans, 2011: Introduction to tropical meteorology, 2nd Edition. Available at http://www.meted.ucar.edu/tropical/textbook_2nd_edition/.

Each chapter is peer-reviewed. Chapters are published as completed and freely available online in both Spanish and English. Produced by the COMET Program.

Book Chapters

Evans, Jenni L., and Robert E. Hart, 2006: Extratropical transition of tropical cyclones in the North Atlantic. Advances in Fluid Mechanics 39, Atmosphere–Ocean Interactions, Volume 2. WIT Press, Southhampton, UK, 155-189. Will Perry (Ed).

Evans, Jenni L., 2001: Hurricanes, Typhoons and Tropical Storms: A Theoretical Review. In *Encyclopedia of Global Environmental Change*, T. Munn, M. C. MacCracken and J. S. Perry (Eds), John Wiley and Sons, London UK.

Articles Currently in Review or in Preparation

1. *Casey C. Webster*, and **Jenni L. Evans**, 2013: Observed relationships between tropical convection and sea surface temperatures. [*Geophysical Research Letters*] Revised.
2. **Jenni L. Evans**, *Holly L. Hamilton*, and Jose D. Fuentes, 2013: A Regional Climatology of West African Rainfall for the period 1998 to 2010. [*Australian Meteorological and Oceanographic Journal*].
3. *Artemiou, Andreas*, **Jenni L. Evans** and Francesca Chiaromonte, 2013: Applying Sufficient Dimension Reduction to analysis of Atlantic storm data. [*Monthly Weather Review*].
4. **Evans, Jenni L.**, *Julia Keller*, *Prabhani Kuruppumullage Don*, *Casey C. Webster*, Francesca Chiaromonte and Sarah C. Jones, 2013: Comparison of storm-centered path clustering with point clustering of environmental structures for ensemble forecasts of extratropical transition. [*Monthly Weather Review*].
5. **Evans, Jenni L.**, *Prabhani Kuruppumullage Don* and Francesca Chiaromonte, 2013: Structure analysis of tropical cyclone ensembles using mixture-based clustering. [*Geophysical Research Letters*].
6. *Kuruppumullage Don, Prabhani*, **Jenni L. Evans**, Francesca Chiaromonte and *Casey C. Webster*, 2013: Identifying physically consistent ensemble partitions of T-PARC extratropical transition cases through mixture-based path clustering. [*Monthly Weather Review*].
7. *Lowe, Michael*, George S. Young and **Jenni L. Evans**, 2013: Vulnerability metrics of hurricane forecast accuracy. [*Weather, Climate and Society*].



Technical Reports and Published Reviews

This list does not include white papers to agencies or numerous reports to sponsors.

Evans, Jenni L., 2010: Environmental impacts on tropical cyclone structure and intensity change. Report to the World Meteorological Organisation (WMO) International Workshop on Tropical Cyclones (IWTC-VII), La Réunion, November 2010, J. Kepert and C. Velden (Eds).

Evans, Jenni L., 2001: Book review of "Hurricanes, Their nature and impacts on society" by R. A. Pielke Jr. and R. Pielke Sr. Climatic Change, 49, 367-369.

King C., R. Harmon, T. Bullard, Jenni L. Evans, W. Hollowell, J. Juvik, R. Johnson and M. Larsen, 1999: A technical analysis of Puerto Rico and Hawai'i for tropical testing of Army materiel and systems. Technical report, Environmental Systems Branch, U.S. Army Research Office, Research Triangle Park, NC, March 1999.

King C., R. Harmon, T. Bullard, Jenni L. Evans, R. Johnson and M. Larsen, 1998: A technical analysis to identify ideal geographic locations for tropical testing of Army materiel and systems. Technical report, Environmental Systems Branch, U.S. Army Research Office, Research Triangle Park, NC, July 1998.

Evans, Jenni L., 1997: Hurricanes and Global Warming. Report to the U.S. Environmental Protection Agency.

Evans, Jenni L., 1990: Envisaged impacts of enhanced greenhouse warming in tropical cyclones in the Australian region. CSIRO Division of Atmospheric Research Technical Paper No. 20, 31pp.

Invited Lectures

2012: Research Unplugged Lecture Series, The Pennsylvania State University, University Park, PA.

2011: XXV IUGG General Assembly Joint symposium: (J-M10) Monsoons, Tropical Cyclones and Tropical Dynamics. Melbourne, Australia.

2011: Department of Earth Science, California University of Pennsylvania, California, PA.

2011: Department of Meteorology, The Pennsylvania State University, University Park, PA.

2010: World Meteorological Organisation (WMO) 7th International Workshop on Tropical Cyclones (IWTC-VII), La Réunion, France.

2010: University at Albany, State University of New York, Albany, NY.

2010: University at Stony Brook, State University of New York, Stony Brook, NY.

2009: Lamont Dougherty Earth Observatory, Columbia University, Palisades, NY.

2008: Department of Geography, The Pennsylvania State University, University Park, PA.

2008: Climate Change Lecture Series, Bruce Museum, Greenwich, CT.

2008: PSUBAMS, Department of Meteorology, The Pennsylvania State University

2008: NSF Cutting Edge Workshop, Northfield, MN.

2008: National workshop on Subtropical Cyclones and Extratropical Transitions (multiple presentations), Agencia Estatal de Meteorología, Madrid, Spain.

2007: NSF Early Career Workshop for Junior Faculty, College of William and Mary, Williamsburg, VA.

2007: AMS Forum on Climate Change Manifested by Changes in Weather, San Antonio, TX.

2007: Earth System Science Center, The Pennsylvania State University

2006: 6th WMO International Workshop on Tropical Cyclones (IWTC-VI), San Jose, Costa Rica.

2006: National Hurricane Center, National Weather Service, Miami, FL.

2006: NSF Early Career Workshop for Junior Faculty, College of William and Mary, Williamsburg, VA.

2005: 3rd WMO International Workshop on Extratropical Transition (IWET-III), Perth, Australia.



- 2005:** Department of Meteorology, Florida State University, Tallahassee, FL.
- 2004:** Department of Meteorology, The Pennsylvania State University
- 2003:** 2nd International Workshop on Extratropical Transition II, Halifax, Nova Scotia, Canada.
- 2003:** Lock Haven University, Lock Haven, PA.
- 2003:** II Simposium Internacional Sobre Ciclonología Tropical “Padre Benito Viñes S. J. In Memoriam” (co-sponsored by the WMO). Havana, Cuba.
- 2003:** Hadley Centre for Climate Change Research, United Kingdom Meteorological Office, Bracknell, UK.
- 2003:** New Perspectives on Catastrophe Risk, 10-13 February 2003: Las Palmas CA.
- 2002:** WMO 5th International Workshop on Tropical Cyclones. Cairns, Australia.
- 1999:** WMO Workshop on the Extratropical Transition of Tropical Cyclones, Kaufbeuren, Germany.
- 1999:** US National Interdepartmental Hurricanes Conference, Biloxi, MI.
- 1998:** Workshop on Extratropical Transition of Tropical Cyclones, Risk Prediction Initiative (RPI), Bermuda Biological Station, St Georges, Bermuda.
- 1998:** Aspen Global Change Institute, Aspen CO.
- 1994:** Aspen Global Change Institute, Aspen CO.
- Assorted television and radio interviews in local, national and international media (e.g. Canadian Broadcast Corporation, Nat Geo)

Graduate and Undergraduate Student Supervision

Major Advisor or co-Advisor

Ms. Holly Hamilton and Mr. Alex Kowaleski are both current Doctoral candidates working with me in the Department of Meteorology at Penn State. I have supervised 21 Masters and three Doctoral students to successful completion of their graduate degrees and 20 undergraduate research theses.

Service on Other Graduate Committees

In addition to my own students, I serve on four Doctoral committees (Jon Poterjoy, Erin Munsell and Dandan Tao, all advised by Fuqing Zhang; Josh Magerman, Chris Forest) and a Masters committee (Kyle Imhoff, George Young) in the Department of Meteorology, and Doctoral committees in the Penn State Departments of Mathematics (Stephanie Blanda, Diane Henderson) and Agricultural Economics and Rural Sociology (Meri Davlasheridz, Karen Fisher-Vanden). I am also serving on a Doctoral committee in the Department of Civil and Environmental Engineering at Duke University (Julien Brun, Ana Barros). I have previously served on over twenty graduate committees including Doctoral committees in Geography, Electrical Engineering, Statistics and at SUNY Albany and the University of Karlsruhe.



Selected Conference Papers

1. **Evans, Jenni L.**, 2011: Variations of convection under a changing climate and implications for climate change. *XXV IUGG General Assembly Joint symposium: (J-M10) Monsoons, Tropical Cyclones and Tropical Dynamics*, 28 June - 7 July 2011, Melbourne, Australia. (Invited speaker).
2. Bright, Kimberley D., Jon M. Nese and **Jenni L. Evans**, 2011: A Newton story: Overcoming barriers to communicating science to the public. *90th AMS Annual Meeting*, 24-28 January 2011, Seattle, WA.
3. **Evans, Jenni L.**, 2010: Environmental impacts on tropical cyclone structure and intensity change. Report to the *World Meteorological Organisation (WMO) International Workshop on Tropical Cyclones (IWTC-VII)*, November 2010, La Réunion. (Invited speaker).
4. **Evans, Jenni L.**, Francesca Chiaromonte, and Prabhani Kuruppumullage Don, 2010: Distillation of key storm evolution characteristics from ensemble forecasts through path clustering. *29th AMS Tropical Meteorology and Tropical Cyclones Conference*, 10-14 May, Tucson, AZ.
5. Laing, Arlene, **Jenni L. Evans**, and Mick Pope, 2010: What's new with the online textbook for tropical meteorology? *29th AMS Tropical Meteorology and Tropical Cyclones Conference*, 10-14 May, Tucson, AZ.
6. Hernandez, Michael, and **Jenni L. Evans**, 2010: The Effects of Latent Heating on the Extratropical Transition of Typhoon Sinlaku. *29th AMS Tropical Meteorology and Tropical Cyclones Conference*, 10-14 May, Tucson, AZ.
7. Clark, Alison, and **Jenni L. Evans**, 2010: A Study of Cost of Hurricane Evacuations in Florida. *90th AMS Annual Meeting*, 18-22 January 2010, Atlanta, GA.
8. Arnold, Adam, and **Jenni L. Evans**, 2009: Vulnerability metrics of hurricane forecast accuracy. *89th AMS Annual Meeting*, 11-15 January 2009, Phoenix, AZ.
9. **Evans, Jenni L.**, and Aviva Braun, 2008: A methodology for identifying subtropical cyclones in the South Atlantic. *28th AMS Tropical Meteorology and Tropical Cyclones Conference (P1C.2)*, 28 April-2 May 2008, Orlando, FL.
10. Schreiber-Abshire, Wendy, **Jenni L. Evans**, and Arlene Laing, 2008: An online textbook for tropical meteorology. *28th AMS Tropical Meteorology and Tropical Cyclones Conference (P1H.4)*, 28 April-2 May 2008, Orlando, FL.
11. **Evans, Jenni L.**, and Daniel Veren, 2007: Analysis of ensemble forecasts of tropical cyclone structure through extratropical transition. *THORPEX Special Session (3.6)*, AMS Forum on Climate Change Manifested by Changes in Weather, *AMS Annual Meeting*, 14-19 January 2007, San Antonio, TX. (Invited speaker).
12. **Evans, Jenni L.**, 2006: Observing and forecasting extratropical transition. *6th WMO International Workshop on Tropical Cyclones (IWTC-VI)*, 18 – 30 November 2006, San Jose, Costa Rica. (Invited speaker).
13. **Evans, Jenni L.**, Justin M. Arnott, and Francesca Chiaromonte, 2006: Phase space-based evaluation of numerical forecasts of cyclone structure evolution. *27th AMS Tropical Meteorology and Tropical Cyclones Conference (1B.4)*, 24-28 April 2006, Monterey, CA.



14. Guishard, Mark A., and **Jenni L. Evans**, 2006: A climatology of North Atlantic subtropical storms. *27th AMS Tropical Meteorology and Tropical Cyclones Conference* (4A.1), 24-28 April 2006, Monterey, CA.
15. Hart, Robert E., **Jenni L. Evans**, and Clark Evans, 2006: Synoptic Composites of the Extratropical Transition Lifecycle of North Atlantic Tropical Cyclones: Factors Determining Post-Transition Evolution. *27th AMS Tropical Meteorology and Tropical Cyclones Conference* (3A.1), 24-28 April 2006, Monterey, CA.
16. Moyer, Adam, and **Jenni L. Evans**, 2006: A study of current datasets for outer wind radii. *27th AMS Tropical Meteorology and Tropical Cyclones Conference* (1B.7), 24-28 April, Monterey, CA.
17. **Evans, Jenni L.**, and Robert E. Hart, 2005: Workshop on Operational uses of the Cyclone Phase Space (CPS). *3rd WMO International Workshop on Extratropical Transition (IWET-III)*, 1 – 9 December 2005, Perth, Australia. (Invited speaker).
18. Hart, Robert E., **Jenni L. Evans**, and Clark Evans, 2005: Synoptic composites of the extratropical transition lifecycle of North Atlantic tropical cyclones: Factors determining post-transition evolution. *3rd WMO International Workshop on Extratropical Transition (IWET-III)*, 1 – 9 December 2005, Perth, Australia.
19. **Evans, Jenni L.**, Justin M. Arnott, and Francesca Chiaromonte, 2005: Evaluation of cyclone structure evolution in global model forecasts using cluster analysis. *1st THORPEX International Science Symposium*, 6-10 December 2004, Montreal, Canada.
20. **Evans, Jenni L.**, and Justin M. Arnott, 2004: Analysis of operational model forecast trends in extratropical transition storm structure. *26th AMS Tropical Meteorology and Tropical Cyclones Conference*, 3-7 May 2004, Miami Beach, FL.
21. **Evans, Jenni L.**, and Mark P. Guishard, 2004: A proposed potential vorticity mechanism for sub-tropical genesis and tropical transition. *26th AMS Tropical Meteorology and Tropical Cyclones Conference*, 3-7 May 2004, Miami Beach, FL.
22. Hart, Robert E., and **Jenni L. Evans**, 2004a: Synoptic composites of the extratropical transition lifecycle of North Atlantic TCs as defined within cyclone phase space. *26th AMS Tropical Meteorology and Tropical Cyclones Conference*, 3-7 May 2004, Miami Beach, FL.
23. Hart, Robert E., and **Jenni L. Evans**, 2004b: 2001-2003 realtime use of cyclone phase diagrams to improve structural diagnosis and forecasting. *26th AMS Tropical Meteorology and Tropical Cyclones Conference*, 3-7 May 2004, Miami Beach, FL.
24. Pratt, Aaron S., and **Jenni L. Evans**, 2004: An evaluation of the Global Forecast System (GFS) and Navy Operational Global Atmospheric Prediction System (NOGAPS) forecasting skill of tropical cyclogenesis. *26th AMS Tropical Meteorology and Tropical Cyclones Conference*, 3-7 May 2004, Miami Beach, FL.
25. Arnott, Justin M., and **Jenni L. Evans**, 2003: Composite evolution of ET using cluster analysis. *WMO 2nd International Workshop on Extratropical Transition (IWET-II)*, 17-21 November 17-21, Halifax, NS.
26. **Evans, Jenni L.**, and Justin M. Arnott, 2003: Characterization of extratropical transition using cluster analysis. *WMO 2nd International Workshop on Extratropical Transition (IWET-II)*, 17-21 November 17-21, Halifax, NS. (Invited speaker).
27. Hart, Robert E., and **Jenni L. Evans**, 2003: Synoptic composites of the ET lifecycle of North Atlantic TCs as defined within a cyclone phase space. *WMO 2nd*



- International Workshop on Extratropical Transition (IWET-II)*, 17-21 November 17-21, Halifax, NS.
28. **Evans, Jenni L.**, 2003: Tropical cyclone formation. *Il Simposium Internacional Sobre Ciclonología Tropical “Padre Benito Viñes S. J. In Memoriam”* (co-sponsored by the WMO). 3-8 March 2003, Havana, Cuba. (Invited speaker).
 29. **Evans, Jenni L.**, 2003: Tropical cyclones and their effects on New England, Canada, and Europe. *New Perspectives on Catastrophe Risk*, 10-13 February 2003, Las Palmas CA. (Keynote speaker).
 30. **Evans, Jenni L.**, and **Justin M. Arnott**, 2003: Characterization of cyclone lifecycle evolution using cluster analysis. *Joanne and Bob Simpson Symposium, AMS Annual Meeting*, 12-13 February 2003, Long Beach CA.
 31. **Robertson, David**, and **Jenni L. Evans**, 2003: Quantitative Precipitation Forecast (QPF) skill for selected tropical cyclone forecast models during Hurricane Irene (1999). *17th AMS Conference on Hydrology*, 12-13 February 2003, Long Beach CA.
 32. **Evans, Jenni L.**, 2002: Tropical cyclogenesis: regional, mesoscale and intraseasonal factors. *5th WMO International Workshop on Tropical Cyclones (IWTC-V)*, 1-13 December 2002, Cairns, Australia. (Invited speaker).
 33. **Evans, Jenni L.**, Christopher S. Velden, Lance F. Bosart, John Molinari and Peter G. Black, 2002: Hurricane Michael (2000) – The “Two-way TC”. *25th AMS Tropical Meteorology and Tropical Cyclones Conference*, 29 April-3 May, San Diego CA.
 34. Bosart, Lance F., Peter G. Black, **Jenni L. Evans**, John Molinari and Christopher S. Velden, 2002: The double transition of Hurricane Michael (2000): Baroclinic to tropical to baroclinic. *25th AMS Tropical Meteorology and Tropical Cyclones Conference*, 29 April-3 May, San Diego CA.
 35. **Hart, Robert E.**, and **Jenni L. Evans**, 2002: Phase space characterization of the stages of cyclone development. *Australian Meteorological and Oceanographic Society [AMOS] 9th National Conference*, Melbourne University, 18-20 February 2002, Melbourne, Australia.
 36. Black, Peter, Lance Bosart, John Molinari, Christopher Velden and **Jenni L. Evans**, 2001: Hurricane Michael: The two-way TC. *AMS Weather and Forecasting Conference*, July 2001, Fort Lauderdale, FL.
 37. **Evans, Jenni L.**, 2001: Tropical cyclone sensitivities to differing climate regimes. *12th AMS Symposium on Global Change and Climate Variations*, 14-18 January, Albuquerque, NM.
 38. **Evans, Jenni L.**, **Robert E. Hart** and Christopher S. Velden, 2000: Improved data assimilation in the study of Hurricane Floyd (1999). *24th Conference on Hurricanes and Tropical Meteorology*, May 2000, Fort Lauderdale FL.
 39. **Evans, Jenni L.**, 2000: Assimilation of satellite-derived winds into the Community Hurricane Modeling System (CHUMS) at Penn State. *International Satellite Winds Workshop*, 28 February-3 March 2000, Lorne, Australia.
 40. **Evans, Jenni L.**, 2000: A climatology of convective weather systems in the global tropics. *Australian Meteorological and Oceanographic Society (AMOS) Annual Meeting*, 7-9 February 2000, Melbourne, Australia.
 41. **Tsakraklides, Giorgos**, and **Jenni L. Evans**, 2000: Satellite-based inputs for quantitative precipitation forecasting over the United States mid-Atlantic region. *10th AMS Conference on Satellite Meteorology*, 9-14 January 2000, Long Beach, CA.



42. **Evans, Jenni L.**, 1999: Current hurricane research and AMS hurricane activities. *Interdepartmental Hurricanes Conference*, 8-10 February 1999, Biloxi, MI. (Invited opening speaker)
43. **Evans, Jenni L.**, 1999: Satellite-based inputs for Quantitative Precipitation Forecasting (QPF) over the United States Mid-Atlantic Region. *1999 Meteorological Satellite Users' Conference*, September 1999, Copenhagen, Denmark.
44. **Evans, Jenni L.**, and Robert E. Hart, 1999a: Climatology and impacts of extratropical transition of tropical cyclones in the Atlantic basin. *1st WMO Workshop on the Extratropical Transition of Tropical Cyclones (IWET-I)*, May 1999, Kaufbeuren, Germany. (Invited speaker).
45. **Evans, Jenni L.**, and Robert E. Hart, 1999b: A climatology of extratropical transition of tropical cyclones in the North Atlantic Ocean. *23rd Conference on Hurricanes and Tropical Meteorology*, January 1999, Dallas, TX.
46. **Evans, Jenni L.**, 1998: Climatology of convective weather systems in the tropical Indian Ocean. *American Geophysical Union (AGU) Fall Meeting*, December 1998, San Francisco, CA.
47. **Evans, Jenni L.**, and Robert E. Hart, 1998: Extratropical transition of tropical cyclones. Part I: Climatology and theoretical breakdown. *Workshop on Extratropical Transition of Tropical Cyclones*, Risk Prediction Initiative (RPI), Bermuda Biological Station, September 1998, St Georges, Bermuda. (Invited speaker).
48. **Evans, Jenni L.**, 1998: Regional climate change assessment in the tropics using summary measures of monsoon and tropical cyclone variability. *Aspen Global Change Institute*, August 1998, Aspen CO. (Invited speaker)
49. **Evans, Jenni L.**, Francine A. Jaskiewicz and Robert E. Shemo, 1998: Satellite identification of systems evolving within the Madden-Julian Oscillation. *AMS/Eumetsat Conference on Satellite Meteorology and Oceanography*, May 1998, Paris, France.
50. **Evans, Jenni L.**, 1997: Detection of tropical cyclogenesis potential via large-scale diagnostics: Implications for climate change. *American Geophysical Union (AGU) Fall Meeting*, December 1997, San Francisco CA.
51. **Evans, Jenni L.**, 1997: Tropical cyclone blobs: Intensity and motion changes. *1997 IAMAS/IAPSO*, 1-9 July 1997, Melbourne, Australia.
52. **Evans, Jenni L.**, Francine A. Jaskiewicz and Robert E. Shemo, 1997: Pacific variation of organized tropical convection. *1997 IAMAS/IAPSO*, 1-9 July 1997, Melbourne, Australia.
53. **Evans, Jenni L.**, and Kathleen S. McKinley, 1997: Maximum tropical cyclone intensity and recurvature. *22nd AMS Conference on Hurricanes and Tropical Meteorology*, 19-23 May 1997, Fort Collins, CO.
54. **Evans, Jenni L.**, Francine A. Jaskiewicz and Robert E. Shemo, 1997: Potential significance of organized tropical convection. *13th AMS Conference on Hydrology*, 2-7 February 1997, Long Beach, CA.
55. **Evans, Jenni L.**, Francine A. Jaskiewicz and Robert E. Shemo, 1996: Pacific and Atlantic variation of organized tropical convection. *1996 Meteorological Satellite Users' Conference*, 399-406pp, 16-20 September 1996, Vienna, Austria.



56. Drury, Sytske, and **Jenni L. Evans**, 1996: Non-hydrostatic tropical cyclone intensification modeling using MM5. *11th Numerical Weather Prediction Conference*, 19-23 August, Norfolk, VA.
57. **Evans, Jenni L.**, *Liyang Qian*, George S. Young and William M. Frank, 1996: Integration of a gust front parameterization into ICE-T. *ARM Science Team Meeting*, March, San Antonio, TX.
58. **Evans, Jenni L.**, 1995: Seasonal variation of organized tropical convection. *21st Hurricanes and Tropical Meteorology Conference*, 24-28 April 1995, Miami FL.
59. **Evans, Jenni L.**, George S. Young and William M. Frank, 1995: An integrated parameterization system for GCMs. *ARM Science Team Meeting*, March 1995, San Antonio, TX.
60. **Evans, Jenni L.**, 1995: Regional climate studies and tropical cyclones. *Elements of Change 1994, Aspen Global Change Institute, Report on 1994 Workshops*, S. J. Hassol and J. Katzenberger (Eds), 156-157, Aspen CO. (Invited speaker).
61. Shemo, Robert E., and **Jenni L. Evans**, 1994: Precipitation signatures of various classes of organized convection in the Atlantic Ocean. *7th Conference on Satellite Meteorology and Oceanography*, 6-10 June 1994, Monterey, CA.
62. Lambert, Winifred C., **Jenni L. Evans** and *Tanya Spero*, 1994: Connecting girls to science: Projects at Penn State. *3rd Symposium on Education*, 23-28 January 1994, Nashville, TN.
63. **Evans, Jenni L.**, and Robert J. Allan, 1993: Changes in the structure of the Australasian summer monsoon and tropical cyclone activity in extreme phases of the El Nino-Southern Oscillation. *20th Hurricanes and Tropical Meteorology Conference*, 10-14 May, San Antonio, TX.
64. Drury, Sytske, and **Jenni L. Evans**, 1993: Sea surface temperature and CAPE: Importance for tropical cyclone intensity. *4th International Conference on Southern Hemisphere Meteorology and Oceanography*, 29 March-2 April 1993, Hobart, Australia.
65. **Evans, Jenni L.**, 1991a: Structure changes of an axisymmetric vortex under an imposed absolute vorticity gradient. *Bulletin of the American Physical Society*, **36**, 2703, Eugene, OR.
66. **Evans, Jenni L.**, 1991b: Tropical cyclone sensitivity to sea surface temperatures. *19th Hurricanes and Tropical Meteorology Conference*, 6-10 May 1991, Miami, FL.

Field Program Participation

- **2008** Tropical Pacific Asian Regional Campaign (T-PARC), North Pacific, August-September 2008
- **2004** Two research flights into Hurricane Ivan, Gulf of Mexico, September 14 on the NOAA Gulfstream-IV jet and September 15 on the NOAA WP-3D Orion.
- **1990** Tropical Cyclone Motion (TCM-90) Field Program, Guam, August
- Research flight into Hurricane Florence, September 1988
- **1985** Southerly Buster field experiment II, Narooma, NSW, October/November
- **1982** Southerly Buster field experiment I, Nowra, NSW, November
- **1982** Morning Glory field experiment, Burketown, QLD, October
- **1981** Australian Cold Fronts Research Program, Bransholme, November/December



PROFESSIONAL SERVICE

Current and Selected Prior Professional Service

- **2012**– Subject Matter Expert, *ESCAP/Typhoon Committee, World Meteorological Organisation (WMO)* of the United Nations
- **2011**– Science Advisory Board, *NOAA/NCAR Developmental Testbed Center (DTC)*
- **2011**– Committee Member, *American Meteorological Society (AMS) Nominations Committee for President and Councilors*
- **2010**– Chair, *8th World Meteorological Organisation (WMO) International Workshop on Tropical Cyclones (IWTC-VIII)*
- **2003**– Professional Team Lead Meteorologist, *Florida Commission on Hurricane Loss Projection Methodology (Florida State Board of Administration)*
- **2011–2012** Review Team Member, *US National Academy of Sciences Report “Weather Services for the Nation: Second to None”*
- **2011** Meteorology Expert, *Catastrophic Risk Planning Model Evaluation* for the state of Maryland Insurance Administration
- **2007–2009** Executive Committee, *Board on Oceans and Atmosphere Executive Committee, Association of Public and Land-grant Universities (APLU)* (providing advice to Congress)
- **2006–2009** US Science Steering Committee, *The Observing System Research and Predictability Experiment (THORPEX)* of the *World Meteorological Organisation*
- **2008** Co-Chair, *Agencia Estatal de Meteorología National Workshop on Subtropical Cyclones and Extratropical Transitions*, Madrid, Spain
- **2008** *Extratropical Transition (ET) Science Operations Team* – mission coordination for the *THORPEX/ T-PARC* field experiment
- **2007–2008** Meteorology Expert, Review of Hurricane Loss Models used in the *Massachusetts FAIR Plan (MPIUA)* rate filing
- **2006–2008** Science Steering Committee, *THORPEX/ T-PARC (Pacific Asian Regional Campaign)*
- **2005–2008** Councilor, *American Meteorological Society*
- **2006–2007** Council Facilitator, *American Meteorological Society*, Statement on “Hurricane Forecasting in the United States”
- **2006** Panel Member, *National Science Board Panel “Towards a national agenda for hurricane science and engineering”*
- **2005–2007** Editor, *Monthly Weather Review*
- **2005** Organizing committee, *3rd WMO International Workshop on Extratropical Transition (IWET-III)*, Perth, Australia
- **2005** Panel Member, *National Research Council Panel “Weather for Earth Science and Applications from Space : A Community Assessment and Strategy for the Future”*
- **2001–2005** Editorial Board, *Bulletin of the American Meteorological Society*
- **2000–2005** Science Steering Committee, *United States Weather Research Program (USWRP)*



- **2003–2004** Chair, *American Meteorological Society (AMS) Nominations Committee for President and Councilors*
- **2003** Professional Team Backup Meteorologist, *Florida Commission on Hurricane Loss Projection Methodology*
- **2001–2004** Associate Editor, *Weather and Forecasting*
- **2001–2003** Committee Member, *AMS Nominations Committee for President and Councilors*
- **2002** Co-convener, *Hurricane Weather and Research Forecast (WRF) Modeling Workshop*, National Science Foundation Headquarters, Arlington, Virginia
- **1998–2000** Team Member, *United States Army Tropical Test Facility Relocation Initiative*
- **1997–2000** Chair, *AMS Tropical Meteorology and Tropical Cyclones Committee*
- **1996–2000** Committee Member, *AMS Tropical Meteorology and Tropical Cyclones Committee*
- *Proposal reviewer for a number of National Science Boards/Foundations (USA, Britain, Australia, Germany, Canada, Israel, China and Japan)*
- *Reviewer for numerous promotion and tenure cases (US, Europe, Britain, Australia)*
- *Reviewer for: Journal of the Atmospheric Sciences; Quarterly Journal of the Royal Meteorological Society; Monthly Weather Review; Australian Meteorological Magazine; Journal of Climate; Geophysical Research Letters; International Journal of Climatology; Journal of the Meteorology Society of Japan, Weather and Forecasting; Climatic Change; Bulletin of the American Meteorological Society; Global and Planetary Change, Mausam, among others.*

Current Service in Academic Planning and Governance

- **2013–** Interim Director, *Earth and Environment Systems Institute*
- **2012–** Chair, Promotion and Tenure Committee, *Department of Meteorology*
- **2009–** Member, Promotion and Tenure Committee, *Department of Meteorology*
- **2008–** Steering Committee, *Earth System Science Center (ESSC)*
- **1994–** Honors Student Advisor, *Department of Meteorology*
- **1993–** Broad range of activities promoting recruitment and retention of women and minorities in the sciences and engineering, *The Pennsylvania State University*



Masoud M. Zadeh, Ph.D., PE
Risk and Reliability Engineering

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SUMMARY

- Outstanding skills in probabilistic risk and reliability assessment for structural systems, buildings, systems, processes, utilities and lifeline networks, and portfolios of properties for natural hazards such as earthquakes, tornadoes and hurricanes and manmade and technological hazards.
- Specialized in application of reliability engineering and risk management principals, methods, and processes to property risk and insurance management, performance-based engineering, PRA, Seismic PML, fragility model development, loss estimation, reliability-centered maintenance, reliability-based design, safety assessment and management, and risk-based system upgrade programs
- Extensive experience with nuclear, utilities, insurance and reinsurance, risk management, oil and petroleum and shipping industries, as well as local, state, and Federal governments. Versatile leader with hands on experience in seismic, hurricane, tornado, waves, wind, and other natural and manmade hazards risk analysis and management
- Consultant with an extensive and wide range of experience in leadership, business development, management, marketing, project management, technical management, project engineering, teaching, training, and research and development
- Licensed Professional Engineer in the State of California, with expertise in structural engineering and structural mechanics, earthquake engineering and wind engineering

EXPERIENCE

RISK AND RELIABILITY ENGINEERING, San Jose, CA

2003 – Present

Principal Consultant

Consulting services in various risk management projects including:

- Provided consulting and advisory services enhancement and extension of FEMA HAZUS Hurricane loss estimation tool.
- Provided expertise for auditing hurricane loss estimation models for Florida Commission on Hurricane Loss Projection Methodology (FCHLPM)
- Provided expertise and review of hurricane models used in State of Maryland
- Participated in South Carolina Department of Insurance Expert Panel to review hurricane catastrophe models used for rate filing
- Developed seismic fragility models for nuclear power plants structures.
- Participated as a member of peer review team for review of a high wind & tornado PRA of a NPP. Led the review of the high wind and tornado hazard assessment and wind fragility development for all important SSCs per ASME Standards



- Developed guidance for risk selection and rating of various commercial and personal properties with regard to wind hurricane risk for an insurance company
- Performed tornado missile impact assessment for critical safety components in a NPP
- Implemented and used EPRI-based tornado windfield to evaluate tornado generated wind velocity components for evaluating and managing tornado missile risk at a NPP.
- Developed seismic fragility and performed risk assessment for various fire stations
- Performed tornado and seismic risk assessment for a large data center and support offices
- Evaluated stability of various platforms and configurations for design basis seismic event for Palo Verde Nuclear Generating Station.
- Performed seismic Probable Maximum Loss (PML) assessments.
- Gave seminars and training on natural hazards risk assessment and model development
- Provided expert consulting in wind and structural engineering with regard to hurricane risk modeling and technology to State and Federal governments and insurance industry
- Led and managed a group of engineers to provide engineering-based risk management solutions to industrial, commercial and manufacturing clients
- Performed post-hurricane and earthquake engineering investigations.

SAMSUNG CORPORATION, Seoul, South Korea**2005-2007****Vice President and Head of Samsung Everland Risk Engineering Unit**

Senior management responsibilities including strategic planning, business development, development of typhoon and earthquake catastrophe loss assessment computer software packages for application in South Korea:

- Led and managed a group of engineers to provide engineering-based risk management solutions to industrial, commercial and manufacturing clients
- Developed tools and trained engineers to perform and manage risk consulting projects. Projects included seismic, typhoon, flood, explosion hazard and risk assessment and developing cost-effective mitigation solutions as well as failure analysis.
- Performed post-Hurricane Katrina engineering investigation.
- Participated in business development and marketing.
- Invited speaker at various conferences and universities.

UC BERKELEY, DEPT. OF CIVIL & ENVIRONMENTAL ENG.**2003 & 2012****Lecturer**

Taught CE193 “Engineering Risk Analysis” to graduate and upper level undergraduate students.



AON BENFIELD, E.W. BLANCH AND K2 TECHNOLOGIES, San Jose, CA 1997 – 2002**Senior Vice President of Risk Engineering**

Senior management responsibilities including strategic planning, business development, R&D of engineering and scientific risk and loss assessment in computer software packages and services, reported directly to CEO and President at K2 Technologies and Executive Vice President at E.W. Blanch and Benfield Blanch, involved in:

- Effectively converted K2 Technologies, a start-up company, from six employees to more than fifty in less than 18 months while positioning the Company for a successful sale to E.W. Blanch, a publicly traded insurance risk management and brokerage company with more than \$200 m in revenue
- Perform strategic planning and business development for the Company
- Establish and lead a team of scientists and engineers to complete the development of Catalyst, a state-of-the-art catastrophe risk model for natural hazards such as earthquakes, fires following earthquakes, hurricanes, hail and tornadoes
- Provide effective leadership in the research, collection and synthesizing of data, the development of mathematical and physical models as well as efficient and sound analytical methods for performing risk and loss assessment
- Lead and manage, for three years in a row, the entire annual process to obtain approval from Florida Commission on Hurricane Loss Methodology for Catalyst. This includes:
 - Successful on time completion of written submissions to the Commission
 - Detailed on-site review of the model by Professional Teams which consist of a number of scientists and engineers who verify the submissions and model according to a set of Standards on behalf of the Commission
 - Presenting the model and its acceptability to the Commission in Florida in public hearings
- Technical marketing of Catalyst for use by insurer and reinsurance companies
- Provide risk assessment and management consulting to internal and external clients
- Work with financial engineers and analysts to develop tools and perform Dynamic Financial Analysis to investigate the financial health of companies in lieu of uncertain natural hazards and catastrophe events
- Led and manage support for internal and external clients
- Develop “near” real-time computer software package for monitoring and managing major electrical utility assets in Northern California with respect to earthquake hazards
- Provide technical training on catastrophe risk management and deliver informative and technical presentations on topical issues to E. W. Blanch internal and external clients

AON RISK TECH. & IMPACT FORECASTING INC., Chicago, IL**1995 – 1997****Vice President of Science and Engineering**

Responsible for R&D of engineering, scientific risk and loss assessment computer software packages and services:

- Established and effectively led teams of earth and weather scientists (geophysicists, geologists, seismologists, meteorologists), civil, structural, construction and geotechnical wind and earthquake engineers, and social scientists (economists, financial analysts, insurance and reinsurance specialists).



- Successfully recruited 23 engineers and scientists into division over a period of 14 months.
- Developed and implemented the overall and detailed product and service requirements and methodology.
- Trained and directed team in the development of software tools for risk assessment due to natural hazards, such as earthquakes and hurricanes for single assets and portfolios of assets.
- Provided effective leadership in the research, collection and synthesizing of data, the development of mathematical and physical models as well as efficient and sound analytical methods for performing risk and loss assessment.
- Led the effort to develop damage functions for all types of structural systems using the latest technology in stochastic non-linear structural analysis techniques together with experimental test data and real world past performance data.
- Went beyond engineering risk and loss assessment to engineering risk management and performance of cost benefit analysis for development and implementation of the most efficient loss reduction and loss control schemes.
- Actively involved in technical marketing and the development of client relationships and partnerships to better serve client needs.
- Performed a review study of a major US airline maintenance facilities in San Francisco to identify and rank buildings and facilities for seismic upgrade, considering the expected level of seismic hazards at the sites, existing asset seismic vulnerability, cost of upgrade, importance of the asset for the acceptable performance of the entire enterprise, life-safety aspect, redundancy and backup, practicality and applicability of upgrade procedures.
- Performed analysis of high winds, snow and ice loading impact on high voltage transmission lines in Sierra mountains
- Performed snow risk assessment of large warehouses in Illinois
- Effectively delivered many informative and technical presentations and seminars to other Aon entities and their clients.
- Working closely with other VPs and the President of the Company developed and implemented the organization's business plan while working in cooperation with insurance brokers, actuaries and underwriters within other Aon subsidiaries.

EQE INTERNATIONAL/ABS CONSULTING, San Francisco, CA
Associate and Technical Manager

1991 – 1995

At EQE International, key contributions in a number of projects included:

- Project Manager and Co-principal Investigator for a study of impacts of Hurricanes Andrew and Iniki on lifeline systems funded by the National Science Foundation. Key areas studied were damage, performance, recovery and interactions with other lifelines for water, power, communications, transportation, sewage and gas.
- Providing technical consultation to a team of engineers and software programmers in developing a number of programs for hurricane wind and earthquake risk assessment.
- Development of wind damage vulnerability functions for various building models with different occupancy types using data collected from Hurricane Andrew.



- Performed probabilistic and deterministic seismic hazard analysis for a number of offshore platforms, onshore processing and terminal facilities, and oil pipelines in a number of overseas seismic regions for major international oil companies. The results were used to select the most cost-effective solutions and pipelines to manage earthquake risk
- Constructed seismic fragility models for several facilities, including steel and concrete tanks, pumping stations, and pipelines for East Bay Municipal Utility District. The results were used for prioritization in a major capital improvement program
- Created computer package for earthquake risk assessment for telecommunications facilities located in Northern California funded by National Communications Systems (NCS) for use by National Security Emergency Preparedness users
- Investigated the effects of 1992 Landers and Big Bear and 1994 Northridge earthquakes on telecommunications facilities. The results were summarized in several reports to NCS and presented in a workshop.
- Performed seismic reliability assessment for several facilities, including an above ground steel tank and an underground clear well for Contra Costa Water District. The results were used in a benefit/cost analysis to select the most appropriate alternative.
- Participated in seismic review study of Greater Vancouver Regional District water distribution facilities, including pipelines, reservoirs & tanks, water treatment plants, wastewater treatment plants, and pumping stations. The purpose of the study was to identify seismic vulnerabilities of the system and identify and prioritize components of the system for seismic upgrade considering the expected level of seismic hazards at the sites, existing asset seismic vulnerability, cost of upgrade, importance of the asset for the acceptable performance of the entire enterprise, life-safety aspect, redundancy and backup, practicality and applicability of upgrade procedures. .
- Project Manager for various projects consisting of:
 - Wind and earthquake risks to Barbados Light and Power Company
 - Wind and earthquake risks to the US Virgin Island Water and Power Authority
 - Seismic reliability assessment of a preliminary design for the saltwater pumping stations and dedicated water distribution system for the City of Vancouver in Canada
 - Seismic housing study for the City of San Jose. The study results included expected dollar loss, number of injuries, number of deaths, and number of homeless due to major earthquakes affecting residential buildings in San Jose.
 - Several earthquake and hurricane portfolio risk analyses for insurance companies. A few of these analyses included analysis of large portfolios for the actual events such as 1994 Northridge earthquake and Hurricane Andrew
 - Study on socio-economic impacts of seismic failure of non-structural components in critical facilities for National Center for Earthquake Engineering (NCEER) funded by National Science Foundation.



ASEA BROWN BOVERI (ABB) IMPELL CORPORATION, San Ramon, CA 1987 - 1991**Lead Senior Engineer**

While at Impell, key contributions in a number of projects included:

- Development of upgraded seismic criteria for the Fort Calhoun Nuclear Power Plant using EPRI EQHAZRD software program. Performed a probabilistic seismic hazard study and developed hazard curves and uniform probability ground response spectra for Fort Calhoun.
- Developed seismic hazard curves for Crystal River Unit 3 Nuclear Power Plant using probabilistic seismic hazard methodology developed by EPRI. Conducted a study for development of probability-based justification for temporary removal of seismic supports for the Crystal River Station. Once implemented this procedure would save owners millions of dollar in maintenance costs.
- Development of plant reliability and availability program for Palo Verde Nuclear Generating Station (PVNGS). Devised administrative controls and technical departmental procedures for probabilistic risk assessment (PRA), reliability-centered maintenance (RCM), and failure data trending (FDT) programs for PVNGS. Produced technical departmental procedure for reliability design review (RDR) of design change packages and site modifications.
- Constructed probability-based justification for Return to Service Program for the Department of Energy's N-Reactor, using the results of prior PRA and seismic exposure studies for the N-Reactor.
- Implemented the latest development in random vibration theory and earthquake engineering in developing a program for modal response combination in seismic response spectrum analysis. Also, developed computer program for computation of cross-cross floor response spectra based on random vibration theory.
- Product manager for SUPERPIPE computer program
- Performed Lawrence Livermore National Laboratory's seismic reevaluation and crane drop analyses.
- Seismic evaluation of medical facilities at the University of California, San Francisco; specifically responsible for development of site-specific ground motion response spectra. The results were used for design of seismic retrofit of various facility buildings.
- Design and seismic evaluation of cable trays for Comanche Peak Nuclear Power Plant

A.S. VERITAS RESEARCH, DET NORSKE VERITAS (DNV), Oslo, Norway 1984-1987**Research Engineer**

While at A.S. Veritas Research, a subsidiary of Det norske Veritas (DnV) was an active member of the research group on Reliability of Marine Structures, the largest group of its kind in the world. Key contributions in a number of projects included implementation and practical application of research results and are as follows:

- Probabilistic fatigue-fracture analysis of arctic vessels
- Probabilistic crack growth and inspection analysis
- Probabilistic fatigue analysis of an offshore jacket structure



- Probabilistic stability analysis of an offshore concrete platform foundation under extreme wave loading
- Systems reliability analysis of a gas process plant
- Seismic reliability analysis of a water lifeline systems
- Load combination analysis of ship hull structures
- Developed theoretical and example manuals and marketing materials for PROBAN, a general purpose probabilistic analysis program.
- Finite element modeling and analysis of Condeep offshore platforms in the North Sea.
- Technical support and technical marketing for PROBAN
- A number of technical reports and papers for conference presentations.

PDVSA - INTEVEP: VENEZUELAN PETROLUEM CO., CENTER OF R & D**Los Teques, Venezuela****1983 – 1984****Senior Research Engineer**

While at INTEVEP developed seismic risk analysis programs and participated in a team effort for development of seismic hazard maps for offshore Venezuela.

COMPUTECH ENGINEERING SERVICES, Berkeley, California**1982 -1983****Senior Research Engineer**

Developed reliability-based ultimate strength design procedures for seismic design of clay masonry shear walls. This procedure was eventually implemented in masonry design codes. Developed effective reliability-based inspection methods for evaluation of sufficiency of reinforcement in built reinforced masonry walls in commercial nuclear power plants (NPPs) which were cost-effective and induced least destruction and intrusion. These methods saved the nuclear industry millions of dollars for inspection costs

EDUCATION

- **Ph.D. Civil Engineering**, University of California, Berkeley, California, May 1982
- **M.S. Civil Engineering**, Northwestern University, Evanston, Illinois, May 1978
- **B.S. Structural Engineering**, Sharif University of Technology, Tehran, Iran, February 1976

PROFESSIONAL MEMBERSHIPS AND ACHIEVEMENTS

- **22nd International Conference on Structural Mechanics in Reactor Technology (SMiRT22)**, to be held in San Francisco in August 2013, Chair of Organizing Committee, 2011 to 2013
- **American Association for Structural Mechanics in Reactor Technology (AASMiRT)**, Treasurer and Board Member since 2009
- **Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) Member of Professional Team**: Structural Engineer since 2005
- **FEMA/NIBS Wind Committee**: Member of Wind Committee on behalf of Federal Emergency Management Agency (FEMA) and National Institute of Building Sciences (NIBS) since 1997



- **Risk Prediction Initiatives:** Member of the Executive Council of RPI, a research program funded by insurance and reinsurance industry, focusing on climate change and its impact on short term and long term patterns of hurricane activities, 1995-1996
- **American Society of Civil Engineers (ASCE):** Member since 1982
- **ASCE Technical Council on Lifeline Earthquake Engg (TCLEE):** Member since 1991
- **ASCE TCLEE Seismic Risk Committee:** 1996-1999
- **ASCE TCLEE Newsletter:** Editor, 1993-1998
- **Earthquake Engineering Research Institute (EERI):** Member since 1982
- **Seismological Society of America:** Member 1995-2001
- **American Association for Wind Engineering:** Member since 1995
- **American Meteorological Society:** Member 1995-1998
- **Sharif University of Technology, Tehran:** Scholarship recipient
- **Licensed Professional Engineer:** Civil Engineering, State of California, from 1994 to present

SELECTED NATURAL DISASTERS INVESTIGATED

- Hurricane Katrina, Louisiana and Mississippi, August 29, 2005
- Hurricane Charley, West Coast and Central Florida, August 13, 2004
- Bam Earthquake, Bam, Iran Earthquake of December 26, 2003
- Nisqually (Seattle), Washington Earthquake of February 28, 2001
- Oklahoma City, Oklahoma Tornadoes of May 3, 1999
- Jarrell, Texas Tornadoes of May 27, 1997
- Arkansas Tornadoes of March 1, 1997
- Hurricane Luis, San Martin, Anguilla, and St. Barthelemy, July 1995
- Pereira (Columbia) Earthquake of February 8, 1995
- Northridge (California) Earthquake, , January 17, 1994
- Hurricane Iniki, Kauai, Hawaii, September 24, 1992
- Hurricane Andrew, Florida, September 11, 1992
- Landers Earthquake, California, June 28, 1992

SELECTED PUBLICATIONS

- Zadeh, M. and S. Esfandiari, “Critical Impact Location for Cantilever Beams in Design of Structures for Missile Impact,” Submitted to 21st International Conference on Structural Mechanics for Reactor Technology, New Delhi, India, November 6-11, 2011.
- Zadeh, M. and H-H Roh, “Seismic Performance Evaluation Methodologies for Existing Buildings”, invited lecture presented and published at the proceedings of International Symposium Commemorating the 10th Anniversary of Earthquake Engineering Society of Korea, Seoul, Korea, September 21-22, 2006.
- Zadeh, M., “Hurricane Katrina Damage and its Impacts”, Published in Journal of Green Samsung, Vol. 77, Issue 1, Seoul, Korea, January 2006 (in Korean).
- Zadeh, M., “Recent US Hurricane Damage on Buildings and Its Implications”, invited lecture presented at the 2nd International Seminar of Remodeling Technology, Seoul, Korea, November 3rd, 2005.



- Zadeh, M., “Engineering Observations and Lessons Learned From Florida Hurricanes of 2004,” invited lecture presented at the Benfield 2005 Florida Catastrophe Summit, Key Largo, Florida, March 2-4, 2005.
- Nadim, F., M. Moghtaderi-Zadeh, C. Lindholm, A. Andresen, S. Remseth, M.J. Bolourchi, M. Mokhtari, and E.Tvedt (2004), “The Bam earthquake of 26 December 2003”, *Bulletin of Earthquake Engineering*, Vol. 2, Issue 2.
- Moghtaderi-Zadeh, M., F. Nadim and M.J. Bolourchi (2004), “Performance of lifeline systems in Bam earthquake of 26 December 2003”, *Journal of Seismology and Earthquake Engineering, Special Issue on Bam Earthquake*, Vol. 5, No. 4, and Vol. 6, No. 1, pp 153-168, August 2004.
- Pan, K., Peter Montpelier, and M. Zadeh, “Engineering Observations of 3 May 1999 Oklahoma Tornado Damage,” *Journal of Weather and Forecasting*, American Meteorological Society, Vol. 17, No. 3, June 2002.
- Zadeh, M., “Comparative Study of Existing Catastrophe Models & Their Impacts on Financial Decisions,” Presented at the ASCE 2001 Annual Conference & Exposition, Houston, Texas, October 10-13, 2001.
- Sigal, B., A. Singhal, K. Pan, P. Seneviratna, and M. Zadeh, “Simulation of the Tornado Hazard in the U.S.,” The 2000 Winter Simulation Conference, Orlando, Florida, December 10-13, 2000.
- Schwartz, N., N. Basoz, M. Zadeh, A. Singhal, and E. Hansen, “Catastrophe Risk management Using Dynamic Financial Analysis,” The 6th International Seismic Zonation Conference, Palm Springs, California, November 12-15, 2000.
- Zadeh, M., “Insurance Earthquake Risk Assessment: Contents as Nonstructural Components”, presented at the Pacific Earthquake Engineering Research Center Workshop on Nonstructural Components, University of California, Irvine, California, July 25, 2000.
- Zadeh, M., “Financial Management of Earthquake Risk: Chapter 1 – Understanding Risk Management,” Earthquake Engineering Research Institute (EERI) Endowment Fund White Paper, May 2000.
- Pan, K., and M. Zadeh, “Engineering Observation of May 3, 1999 Oklahoma Tornado Damage,” poster presentation at the National Symposium on the Great Plains Tornado Outbreak of 3 May 1999, Oklahoma City, Oklahoma, April 30 - May 3, 2000.
- Zadeh, M., “The “New Madrid” Seismic Risk,” invited lecture presented at the Fall 1999 Conference of Intermediaries & Reinsurance Underwriters Association, Pinehurst, North Carolina, September 28, 1999.
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