

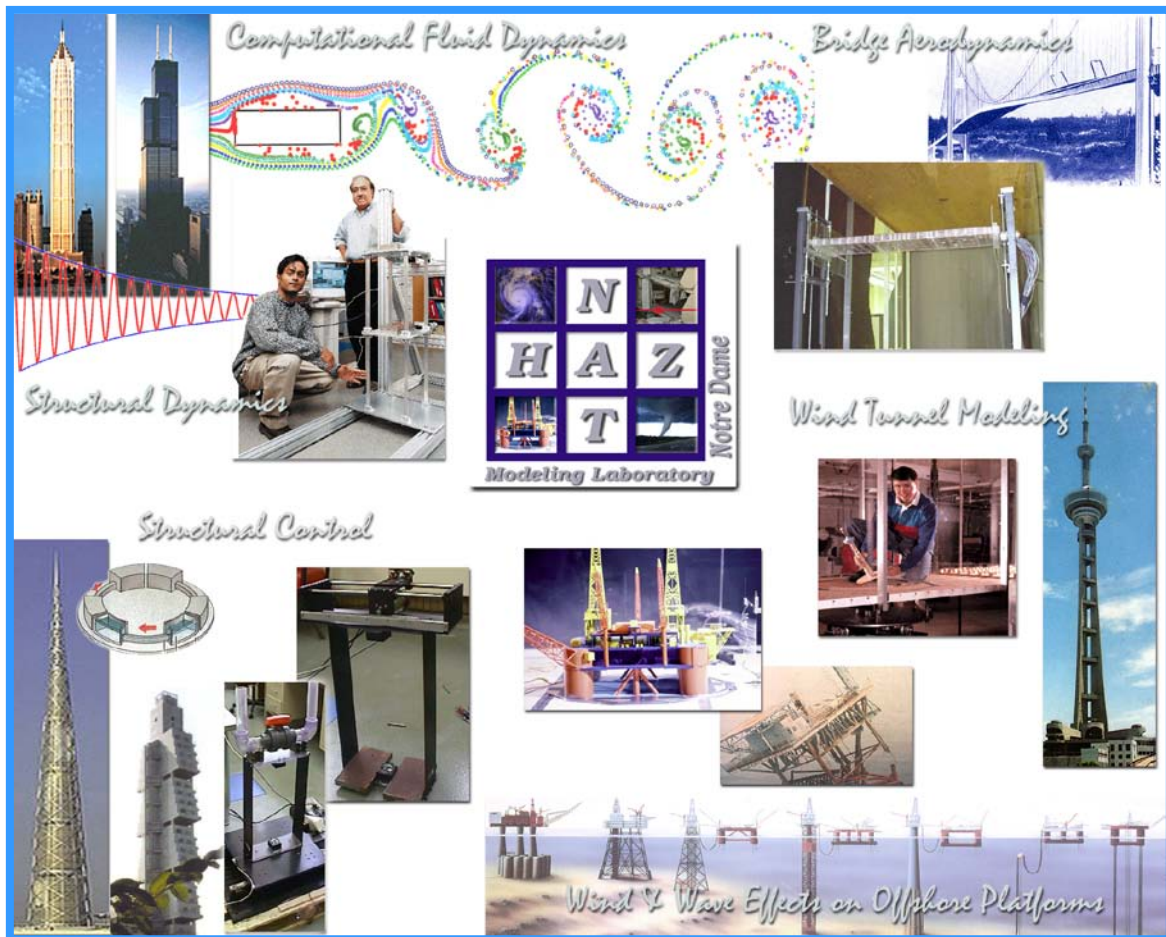
NAME

**Ahsan Kareem** (United States Citizen)

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**NatHaz Modeling Laboratory**

Dynamic Load Simulator  
Shaking Table/Full-Scale  
Monitoring System  
103 Cushing Hall  
Tel (574) 631-8453  
Atmospheric Wind Tunnel  
Hessert Laboratory for  
Aerospace Research



## Ahsan Kareem

### Professional Preparation

B.Sc., Civil Engineering (With Distinction), W. Pakistan Univ. of Engrg. and Tech., 1968

M.Sc., Civil Engineering (Structural Engineering; GPA 4.0) Univ. of Hawaii (joint program at MIT), 1975

Ph.D., Civil Engineering (Structural /Fluid Dynamics; GPA 4.0), Colorado State University, 1978

### Appointments

1999-present Robert M. Moran Professor of Engineering, Univ. of Notre Dame (Dept. Chair 99-02)

2006-present Advisory Professor, Tongji University, PROC

2009-present Guest Professor, Tokyo Polytechnic University, Tokyo, Japan

1990-1999 Professor, Dept. of Civil Engrg. and Geological Sciences, Univ. of Notre Dame

1990-1990 Visiting Professor and Research Fellow, University of Tokyo, Tokyo, Japan

1978-1990 Asst. Prof., Assoc. Prof., Prof. and Director Structural Aerodynamics & Ocean Systems Modeling Laboratory, Dept. of Civil Engrg., Univ. of Houston

1988-1990 Visiting Lecturer, Dept. of Civil Engrg., Rice University

### Honors & Affiliations

**2009 Member National Academy of Engineering**, for contributions to analyses and designs to account for wind effects on tall buildings, long span bridges, and other structures

**2009 Research Achievement Award**, University of Notre Dame

**2008 ASCE State-of-the-Art Civil Engineering Award** for scholarly contribution to full-scale monitoring of tall buildings

**2007 Alan G. Davenport Medal, IAWE** for outstanding contributions to wind load effects on structures

**2005 Robert H. Scanlan Medal ASCE** for outstanding contributions to engineering mechanics

**2002 Jack E. Cermak Medal ASCE** for outstanding contributions to wind engineering

**2003 Distinguished Service Appreciation** as Chair of the Executive Committee of the Engineering Mechanics Division of ASCE, Washington, D.C., 2003.

**1999 Munro Prize** for the best paper in *Engineering Structures*, an International Journal, Elsevier

**1998 Achievement in Academia Award**, College of Engineering, Colorado State University

**1997 Engineering Award**, National Hurricane Conference

**1997 American Association for Wind Engineering Award** in appreciation for the many contributions to the development of the ASCE7-95 Wind Load Standard

**1984 Presidential Young Investigator Award**, White House Office of Technology/NSF

**1983 Halliburton Young Faculty Research Excellence Award**, University of Houston

**Chair, Advisory Board and Ex-Com.** Engrg. Mechanics Division, ASCE, 2006-7; 2002-03

**President**, American Association for Wind Engineering, 1994-1998

**Regional Coordinator**, North & South America, IAWE

**Editor-in-Chief**, North & South America, *Wind & Structures*, (International. J.), 1998-2006

**Associate Editor/Guest Editor**, *J. of Engrg. Mech.*, ASCE 1998-2000; *J. of Struct. Engrg.*, ASCE, 1987-1997/*J. of Wind Engrg. and Indust. Aerodyn.*, Vol. 36, 1990; *Structural Safety*, 2001

**Member Editorial Board** *J. of Wind Engrg. and Indust. Aerodyn.*; *Probab. Engrg. Mech.*; *Struct. Safety*; *Engineering Structures*; *Applied Ocean Research*; *Journal of Engineering Mechanics*; *Journal of Structural Engineering Natural Disaster Studies*; *Structures & Infrastructure Engineerinmg*; *Computer-Aided Civil & Infrastructural Engineering*

**UNDP Consultant** to the SERC, Government of India

**Advisor/Consultant/Examiner** Universities in Malaysia; Korea; Japan; China; India; Hong Kong; Australia; Canada

**Member Advisory Board**, 21st Century Center of Excellence on the Effects of Wind on Buildings. & Urban Environment, Tokyo, Japan, 2004-2008.

Conference Chair, The Sixth U.S. Nat'l Conf. on Wind Engrg., Houston, TX, 1989 and ASCE Specialty Conference, "Hurricane Alicia: One Year Later", Galveston, Texas, August 16-17, 1984; 8th ASCE Specialty Conference on Probabilistic Mechanics and Structural Reliability, Notre Dame, IN, July 24-26, 2000. *NSF Workshop on Wind Engineering: Planning for the Future*; *NSF Workshop on Planning for the Wind Hazard Reduction Program*; *NSF/NIST Workshop on Large Scale Test Facilities for Wind*

Martin Minta Award of the American Institute of Aeronautics and Astronautics, 1977

Greaves Cotton & Co., UK, Gold Medal, 1968, for being the Best Civil Engineering Graduate

Presidential Award, 1968, The Office of the President of Pakistan, awarded to the top graduates in Engineering/Science/Humanities

Habib Bank Gold Medal (First-class-First) in the Graduating Class of 1968 in Civil Engineering

Habib Bank Gold Medal for the Highest Standing in Structural Engineering Area, 1968

Pak-Techno Consultants Gold Medal for the Highest Standing in Water Res. and Env. Engineering, 1968

Nominated for Esquire Magazine's search for the Best of the New Generation Men & Women under Forty Who are Changing America, April 1984

Finalist Rhodes Scholarship from Pakistan (two finalists), 1968

Best All Round Scholar, 1962, Don Bosco High School, Lahore, Pakistan

### Merit Scholarships

East West Center Scholarship (a Fulbright Hayes Program) for Graduate Studies at the University of Hawaii/MIT, 1971-73

British Commonwealth Scholarship for Graduate Studies at the Imperial College of Science and Technology, University of London, London, England, 1971-74 (did not avail)

Asian Institute of Technology, Scholarship, Bangkok, for Graduate Studies, 1971-73 (did not avail)

Saigol Foundation Merit Scholarship in Engineering, 1964-68

National Merit Scholarship, Department of Education, Government of Pakistan, Pre-Engineering and Engineering Studies, 1962-68.

**Major Research Contributions** (Representative examples of significant contributions work are provided below:)

### Dynamic Wind Load Effects

Developed prediction methods for evaluating the response of tall buildings; long-span cable-supported bridges; complaint offshore structures under extreme environments and service loads.

#### *Examples:*

- Developed advanced analysis framework for coupled response analysis of building utilizing synchronous multi-point pressure measurement (SMPM) system or high frequency base balance (HFBB) derived data and pointed out and corrected the common problem with recent wind tunnel practice in combining modal contribution using earthquake engineering based CQC method as unlike earthquake loads components the wind loads components are partially correlated (**Buildings Dynamic Analysis**).
- Developed a new framework for equivalent static wind loads (ESWL) on buildings including coupled cases and bridges based on HFBB and SMPM (**Buildings and Bridges Analysis**)
- Developed advanced coupled flutter and buffeting response analysis framework for long-span bridges that takes into account nonlinearities of both aerodynamic and structural origins. (**Long-Span Bridges Dynamic Analysis**).
- Unveiled underlying mechanisms in multi-modal coupled flutter through curve veering analysis of eigenvalues and vectors and developed closed form solutions. (**Dynamics of Long-span Bridges**).
- Developed a closed-form formula for estimating critical flutter wind speed of generic long span bridges that not only provides, for the first time, a theoretical basis of the well-known empirical

“Selberg's formula”, which is limited to bridges with flat plate sections, but also serves as its important extension to commonly used bridge deck sections (**Bridge Design**).

- Experimentally measured for the first time the spatial correlation of self-excited forces which plays a major role in flutter estimation and cataloged the influence of turbulence on the correlation (**Long-Span Bridges/ Experimental**).
- Introduced verification of in-situ behavior via full-scale monitoring of tall buildings using advanced technologies such as GPS and networked sensors, to validate design procedures. Developed **SmartSync** technologies to monitor dynamics of some of the tallest structures in the world in real-time (**Full-Scale Monitoring of Dynamic response**)
- Conducted and/or investigated hurricane induced damage to high-rise cladding/envelope in Hurricanes: Alicia; Andrew; York; Katrina, Ike and established wind speed damage correlation (**Hurricanes & Structures**)
- Developed physical benchtop facility involving a multi-fan wind tunnel for the generation of gust front winds. Developed improved understanding of transient loads and their quantification through experiments and data-driven models. (**Gust Fronts/ Load Effects**).
- Established the need and significance of the dynamic response of offshore structures to wind loads and developed an analysis framework starting with the first paper at OTC in 1980 (**Offshore Structures**)

### Dynamics/System Identification and Control

Conducted research in a wide range of topics in the areas of dynamics, system identification and control.

#### *Examples:*

- Established in mid eighties a systematic analysis procedure for compliant offshore platforms (TLPs) subjected to simultaneous action of wind, waves and current loads including hull and tethers coupled dynamics involving nonlinearities of aerodynamic, hydrodynamic and structural origins in both time and frequency domain (**Dynamics of Coupled Systems**).
- Advanced the frequency domain approach for these complex nonlinear systems, a first in the offshore industry that captured all significant nonlinear effects, e.g., drag induced, diffraction, drift and splash zone load effects at the instantaneous position of the platform utilizing equivalent quadratzation and cubicization (**Dynamics of Deepwater Offshore Platforms**).
- Utilized tri-variate Hermite polynomials in tandem with Volterra series expansion to model these load effects along with an innovative feedback approach to correct for instantaneous position of the platform in both time and frequency domains. (**Non-linear Random Vibration**).
- Developed schemes for the diffraction of nonlinear random waves by circular cylinders and attendant load effects (**Wave Dynamics**).
- Developed fundamental understanding and models for the “Ringing” response of TLPs (**Non-linear Random Vibration**).
- Modeling the dynamics of nonlinear systems with symmetric and asymmetric nonlinearities utilizing Volterra Systems (**Non-linear Random Vibration**).
- Analysis of nonlinear systems under deterministic and stochastic excitations utilizing attractors in phase space via Poincare mapping to delineate signatures of chaotic and periodic motions (**Non-linear Random Vibration**).
- Provided a detailed analogy of nonlinear sloshing of fluid filled tanks used as dampers at higher amplitudes in terms of sloshing and slamming utilizing a linear and an impact damper, where the hardening affects are explained by transition of fluid from sloshing mode to periodic impact. (**Non-linear Dynamics**)
- Developed passive semi-active and active strategies for mitigating structural motions through developments in control algorithms, e.g., model predictive control (**Motion Control**).
- Developed wavelet-based system identification for engineering structures (**System Identification**).

- Delineated the efficacy of Hilbert and wavelet transforms in signal processing, system behavior analysis, extraction of signal embedded in noise and nonlinear signal analysis (**Time-Frequency Analysis**).
- Development of “Dynamic Load Simulator” with multiple actuators capable of inducing correlated loads; conducted “Hardware-in-the-loop” experiments to physically model nonlinear components and interface them with computational model of the remaining system.
- Developed system identification using transformed singular value decomposition/principle component analysis in time-frequency domain (**Identification of Non-Stationary Data/Damping/Frequency**).

### **Simulation/Computational Methods/System Identification**

Developed efficient simulation schemes for random vector processes: stationary/non-stationary; Gaussian/Non-Gaussian; Conditional/Un-Conditional utilizing spectral and time-series methods in conjunction with a novel scheme named “Stochastic Decomposition.”

#### ***Examples:***

- Developed efficient Monte-Carlo based simulation schemes for the uni-variate, multi-variate and multi-dimensional Gaussian stationary and non-stationary processes (**Simulation**).
- Developed ARMA system modeling and simulation in wind effects (**Simulation**).
- State-Space modeling of combined buffeting and self-excited effects of bridges (**Simulation**).
- Introduced “spectral correction” method that has led to subsequent developments by many others for the simulation of non-Gaussian unconditional, conditional multi-variate and random fields including, e.g., pressure fluctuations on structures, random ocean waves and soil moisture contents(**Non-Gaussian Simulations**).
- Utilized innovative wavelet based scheme and Hilbert transform nested with POD for the simulation of gust front winds and earthquakes (**Gust Fronts and earthquakes**).
- Introduced the Large Eddy Simulation (LES) Scheme for simulating numerically flow around and its load effects on prismatic building (**CFD**).
- Developed High-Order time-frequency domain analysis using wavelets to capture transient nonlinear relationships between two measured processes like turbulence and pressures (**Higher-Order Analysis**).

### **Uncertainty/Safety and Reliability/Risk Assessment**

Developed schemes for the propagation of uncertainty in damping, reliability analysis under winds and pdf of extreme response of nonlinear ocean platforms with applications.

#### ***Example:***

- Introduced the role of uncertainty in the analysis of wind-induced dynamic response of structures leading to reliability based analysis (**Safety and Reliability Analysis**).
- Introduced reliability based measures for the performance of buildings from human comfort considerations (**Probabilistic Design**).
- Safety and performance analysis of building cladding under extreme wind events (**Wind Speed Damage Correlation**).
- Developed peak factor for non-Gaussian narrow-banded and broad-banded processes.
- Development of load factors for the design of flexible structures in wind in light of uncertainties in system parameters and wind (**Code Based Design**).
- Development of the pdf of extreme response of nonlinear systems, like TLPs in ocean environment based on higher order moments of the response derived from the Volterra series expansion of nonlinear components (**Probabilistic Response Analysis**).

## Codes/Standards e-Analysis and –Design Technologies

Developed, improved and implemented current and past versions of ASCE Standard on Wind Loads and developed web-based e- analysis and –design tools for promoting their usage in design practice.

### **Examples:**

- Introduced closed-form expressions for Gust Effect Factor (GEF) in ASCE 7-05 and its predecessors and a new Gust Effect Factor in ASCE 7-05 and an alternate expression for the equivalent static loading which correctly represents the variation of wind loads along the height, which has been in part implemented in ASCE 7-05. Developed a 3-D Gust Loading Factor for the along, across and torsional components (**ASCE 7-05**).
- Developed and introduced an interactive web-based database for aerodynamic wind loads on tall buildings in ASCE 7-05 Commentary (<http://aerodata.ce.nd.edu>). The framework also evaluates dynamic response of buildings and equivalent static loads for given building dynamic features (**Buildings e-Design**).
- Introduced a web-based portal for evaluating newly introduced Gust-Front Factor: A new framework for the analysis of wind load effects in gust-fronts (<http://gff.ce.nd.edu>). This accounts for the contrasting velocity profile and transient dynamics of gust fronts and reduces to current gust GEF for non-gust front winds (**Gust Front Factor**).
- Developed web-based simulation portal (<http://windsim.ce.nd.edu>) to facilitate stochastic simulation of wind related processes without the need for user's familiarity with the theoretical background (**Web-Based Simulation**).
- Developed web-base portals for full-scale data monitoring, transfer, processing, mining and on-the-fly processing (<http://windycity.ce.nd.edu>; <http://bdart.ce.nd.edu>) (**Web-Based Data Acquisition, Analysis and Management**).
- Developing an Engineering Virtual Organization to reduce the toll of extreme winds on society VORTEX-Winds ([www.vortex-winds.org](http://www.vortex-winds.org)). A cyber-collaboratory of the leading universities, organizations, firms and government agencies dedicated to mitigating the effects of extreme winds on society. VORTEX-Winds coordinates geographically dispersed e-analysis and design modules to enable automated, integrated analysis and design of structures to resist wind) (**Virtual Organizations**).
- Experimental work on wind loads on TLPs quantified the influence of interference among platform deck structures, lift induced moments and discrepancies in the recommendation of the codes and standards in offshore engineering (**Offshore Platforms**)

## Recent Research Grants/Projects

- New Frontier of Education and Research in Wind Engineering: A Global Center of Excellence, *Ministry of Education, Culture, Sports, Science and Technology Japan (MEXT) 2008-2013.*
- VORTEX-Winds: A Virtual Organization for Reducing the Toll of Extreme Winds on Society, *National Science Foundation, USA 2007-2009*
- Structural Health Monitoring of Tall Buildings, *Samsung Corporation, Samsung Design and Construction Group, S. Korea. 2006-2008.*
- Performance Evaluation of Tall Buildings under Winds: From Predictive Methods to Laboratory and Full-Scale Measurements, *National Science Foundation, USA.2006-2009*
- Performance of Glass/Cladding of High-Rise Buildings in Hurricane Katrina and its Impact on the Vertical Evaluation, *National Science Foundation, USA.2005-2006.*

- Study of Load Effects on Structures Induced by Gust-Fronts, *National Science Foundation, USA*. 2003-2006.
- Characterization, Modeling and Simulation of Transient Hurricane Loads, *NIST, USA*. 2002-2004
- Full-Scale Study of the Behavior of Tall Buildings Under Winds, *National Science Foundation, USA*. 2000-2004.

### **Other Major Sponsors in the Past**

- Office of Naval Research
- Lockheed Martin
- NASA
- United Nation Development Program
- American Institute of Steel Construction
- Texas Advanced Technologies Program
- Texas Advanced Research Program
- Group of Japanese Universities
- Amber/Booth
- General Electric Corporation
- Cray Corporation
- Ocean Engineering Services
- Halliburton Foundation
- Gulf Research & Development Company
- Chevron Oil Field Research Company
- Brown & Root Corporation
- Conoco Oil
- Shell Development Company
- DnV

### **PROFESSIONAL COURSES TAUGHT**

Computational Methods in Wind Engineering, University of Opole, Poland, March 23<sup>rd</sup>, 2009.

Motion Mitigation Devices in Structural Engineering, University of Opole, Poland, March 23<sup>rd</sup>, 2009.

Computational Methods in Wind Engineering, Bridge Engineering Department, Tongji University, Shanghai, PROC, November 21-23, 2007.

Motion Mitigation Devices in Structural Engineering, Bridge Engineering Department, Tongji University, Shanghai, PROC, November 21-23, 2007.

Computational Methods in Wind Engineering, Center of Excellence International Advanced Study Institute, Tokyo, Japan, March 5-9, 2007.

Motion Mitigation Devices in Structural Engineering, Center of Excellence International Advanced Study Institute, Tokyo, Japan, March 5-9, 2007.

Dynamics of Tall Buildings under Winds, Continuing Education Course at the 11<sup>th</sup> Americas Conference on Wind Engineering, Baton Rouge, Louisiana, May 31, 2005

Aerodynamic Tailoring of Tall buildings, SPACE, Universiti Teknologi Malaysia, Advanced School for Professionals and Academicians, Kuala Lumpur, February 23-24, 2005

Wind Effects on Structures: The Next Frontiers, Croucher Foundation Advanced Study Institute, Hong Kong University of Science and Technology, 6-10, December 2004, 8-10, December 2005.

Wind-Excited and Aeroelastic Vibrations of Structures, EU Advanced School, Genoa, Italy, Department of Structural and Geotechnical Engineering, University of Genoa, June 12-16, 2000.

Design of Floating Production Systems, Austin, Texas, sponsored by the University of Texas and Norwegian Institute of Technology, October, 1991.

Wind Resistant Design of High-Rise Buildings, Taipei, sponsored by Building Research Institute, Taiwan, August, 1991.

Design of Steel Bins for the Storage of Bulk Solids at Sydney, Australia, Sydney, Australia, sponsored by University of Sydney, March, 1985.

Wind Loads on Buildings and Structures, Dallas and Houston, sponsored by Texas Tech University, October, 1984.

Wind Effects on Structures Special Reference to Caribbean, Mayaguez, P.R., sponsored by University of Puerto Rico, August, 1982.

## **SUPERVISION OF RESEARCH**

### **Post-Doctoral/Research Fellows/Visiting Scholars**

<u>Name</u>	<u>Research Area</u>	<u>Inclusive Dates</u>
Professor H. Kozmar	Environmental Aerodynamics	2007-08
Professor Jae-Seung Hwang	Structural Dynamcis	2006-07
Dr. Luigi Crassale	Nonlinear Stochastic Dynamics	2005
Dr. Dae-Kun Kwon	Structural Dynamics	2001-08
Professor Heeduck Kim	Aerodynamics	2003-04
Professor F. Haan, Jr.	Bridge Aerodynamics	2001-02
Professor M. Kanda	Dynamic Load Effects	1999-01
Dr. Y. Zhou	Wind Loads & Building Codes	1998-01
Dr. X. Chen	Bridge/Building Aerodynamics	5/1/98-
Dr. K. Gurley	Stochastic Simulation	1997
Mr. M. Moubacher	Bridge Aerodynamics	1997
Mr. Katsutoshi Ohdo	Construction Safety	1997-98
Dr. J. D. Yoder	Dynamic Load Simulator	1996
Dr. Balaje Rao	Non Gaussian Analysis	1994
Professor Young-Moon Kim	Tall Buildings	1993-94
Mr. S. Gomathinayagam	Analysis of Full-Scale Data	1993
Mr. T. L. Murlidharan	Conditional Simulation	1993
Dr. Johanes Suhardjo	Structural Control	1990-91
Dr. Yaqin Zhang	Finite Element Analysis	1989-90
Dr. Yousun Li	Probabilistic Dynamics	1988-89
Dr. El Sayed A. Mashally	Seismic Response Analysis	1989-90
Dr. Po Chien Lu	Structural Aerodynamics	1984-87
Dr. Wei-Joe Sun	Probabilistic Response of Structures	1984-86
Dr. John W. Cox	Offshore Engineering	1984-85
Mr. Zhendong Liu	Numerical Modelling	1990-92
Mr. Elias Saqan	Computer Code Development	1989-90
Mr. Ruey-Ming Chung	Experimental Methods	1987-88

### **Ph.D. Thesis Students**

<u>Name</u>	<u>Thesis Title</u>	<u>Graduation Year</u>
Jeder Hsieh	Reliability of Concrete Chimneys under Winds	1983
Chii-Ming Cheng	Acrosswind Response of Towers	1984

	and Stacks of Circular Cross-Section	
Yousun Li	Stochastic Response of Tension Leg Platforms to Wind and Wave Fields	1988
Chang Chun Hsieh	Probabilistic Response Analysis of Offshore Platforms to Wave Loading	1991
Jun Zhao	Response Statistics of Tension Leg Platform	1993
Xiaobing Song	Stochastic Response of Offshore Compliant Systems to Environmental Loads	1993
Dahai Yu	Numerical Modeling of Flow Around Structures	1997
Kurt Gurley*	Modeling Nonlinear Load Effects on Structures	1997
Mike Tognarelli	Non-Gaussian Response Statistics of Ocean Structures	1999
Katsutoshi Ohdo**	Influence of Wind on Construct- ability of Civil Structures	1999
Fred Haan	The Effects of Turbulence on the Aerodynamics of Long Span Bridges	2000
Swaroop Yalla	Liquid Dampers for Mitigation of Structural Response: Theoretical Development and Experimental Validation	2001
Gang Mei	Model Predictive Control Schemes for the Mitigation of Natural Hazards: Theoretical and Experimental Studies	2001
Luigi Carassale****	Reliability of Nonlinear Systems	2002
Tracy Kijewski***	Full-Scale Measurements & System Identification: A Time-Frequency Perspective	2003
Lijuan Wang	Modeling, Analysis and Simulation of Transient Events	2007
Rachel Bashor	Dynamics of Tall Buildings	2009 (expected)
Kyle Butler	Transient Aerodynamic Load Effects	2010
Megan McCullough	Multi-Hazard Resistant Design	2013
Teng Wu	Dynamics of Wind Sensitive Structures	2013
Nathan Regola (co-advisor)	Cyberinfrastructure for VORTEX-Winds	2014
Jim Thomas (co-advisor)	Damage Detection from Satellite Imagery	2014

\*Received Notre Dame Alumni Research Award

\*\*Ph.D. awarded by the University of Tokyo, Japan.

\*\*\*Office of Naval Research, Department of Defense Graduate Fellowship and Skidmore Owings & Merrill Fellowship and Eli J. and Helen Shaheen Graduate School award

\*\*\*\*Ph.D. awarded by the University of Genoa, Italy

**Placement of Ph.D. Students/Postdoctoral Fellows**

Jeder Hsieh	Vice-President Taiwan High Speed Rail Corporation Taipei, Taiwan
Chii-Ming Cheng	Professor and Director Former Department Chair Wind Engineering Research Center Department of Civil Engineering Tamkang University Taipei, Taiwan
Yousun Li	Principal Engineer Offshore R & D Shell Development Company Houston, TX
Chang Chun Hsieh	Engineering Consulting Practice Taipei, Taiwan
Jun Zhao	Investment Banker ChinaVest San Francisco/Shanghai
Xiaobing Song	Senior Engineer Offshore Systems American Bureau of Shipping Houston, TX
Dhai Yu	J. P. Morgan Chase New York, NY
Kurt Gurley	Associate Professor Department of Civil Engineering University of Florida Gainesville, FL
Michael Tognarelli	Senior Project Engineer BP Offshore Houston, TX
Katsutoshi Ohdo	Project Manager Construction Safety Division Ministry of Labor Government of Japan Tokyo, Japan
Fred Haan, Jr.	Assistant Professor Department of Aerospace Engineering Iowa State University/Roseman Hull Ames, Iowa/IN
Swaroop Yalla	Morgan Stanley New York, NY
Gang Mei	Project Engineer EI Taller Colaborativo P.C.

Luigi Carassale	Philadelphia, PA Assistant Professor Department of Civil Engineering University of Genoa Genoa, Italy
Tracy Kijewski-Correa	Associate Professor/Associate Chairperson Linbeck Professor Department of Civil Engineering and Geological Sciences University of Notre Dame Notre Dame, IN
Wei-Joe Sun	Project Manager Lockheed Martin Johnson Space Center Clear Lake, TX
Po-Chen Lu	Professor Department of Civil Engineering Tamkang University Taipei, Taiwan
El-Sayed Amin Mashaly	Professor Department of Structural Engineering Alexandria University Alexandria Egypt
Yaqin Zhang	Senior Engineer Shell Development Company Houston, TX
Johanes Suhardjo	Systems Engineer OIT/College of Engineering University of Notre Dame Notre Dame, IN
Xinzhong Chen	Assistant Professor Department of Civil Engineering Texas Tech University Lubbock, TX
Yin Zhou	Risk Management Solutions, Inc. Palo Alto, CA
Lijuan Wang	Technip USA Inc. Houston, TX

### MS. Thesis Students

Name	Thesis Title	Graduation Year
Chii-Ming Cheng	Wind Tunnel Modeling of Stacks of Circular Cross-Section	1982
Wilson Wan	Nonlinear Dynamic Response of a Tension Leg Platform Subjected to Wind Loading	1982
Patti Doucet	Wind Loads on Tension Leg Platforms (co-advisor)	1989
Michael DeKlotz	Response of Base Isolated Buildings	1991

Kurt Gurley	with Tuned Mass Dampers Probabilistic Analysis of Aero- Dynamic Response of Structures	1993
Michael Tognarelli	Equivalent Statistical Quadraticization & Cubicization for Nonlinear Systems	1997
Dahai Yu	Numerical Simulation of Pressure Field Around Two-Dimensional Rectangular Prisms	1997
Scott Kabat	Analysis and Control of Wind Induced Response of Structures	1999
S. Yalla	Optimum Absorber Parameters for Tuned Liquid Column Dampers	2000
Tracy Kijewski	Mitigation of Motions of Tall Buildings with Specific Examples of Recent Applications	2000
Devin Brown	Full Scale Response of An 800 ft. Tall Building	2003
Tiphaine Williams	Dynamics of Tall Buildings	2003

### MS. Project Students

Name	Thesis Title	Graduation Year
S. Vacek	Fiber-Reinforced Concrete Panels Subjected to Axial and Flexural Loads	1980
Zing Jin	System Simulation Using the Fast Fourier Transform	1981
D. Villarreal	Full-Scale and Analytical Analysis of Transmission Line Towers	1981
Fu-Ping Chyn	Dynamic Analysis of Plates Using Finite Element Method	1981
Ricardo Martinez	Comparing Building Code Requirements for Wind Uplift of Timber Roof Connections	1984
John Garland	Dynamic Analysis of Jacket Platforms During Transportation	1987

### B.S. Project Students

Name	Thesis Title	Graduation Year
W. R. French	Investigation of Reserve Strength Reportedly Exhibited by Expansion- Type Aluminum Mullions Subjected to Flexural Loadings	1989
Doug Krause	Simulation of Random Processes	1990
John Ghia	Computation of Steady Forces on TLPs	1991
Scott Kabat	Numerical Simulation and Dynamic Effects	1995

**Research Experiences for Undergraduate Programs**

<u>Name</u>	<u>Project Title</u>
Elias Saqan University of Houston	Modeling of Wind Loads
Kenya Colley Texas A&M	Damage due to Hurricanes and Tornadoes
Christopher Brown Texas A&M	Climate Change and Natural Disasters
Mark Ellis Harvard University	Dynamics of Basic-Isolated Buildings
Barbara Allen Purdue University	Stochastic Modeling of Wind Loads
Elizabeth Collins Old Dominion University	Response of Tall Buildings to Wind
Frank Rivera University of Notre Dame	Development of an Automated Wind Tunnel Turntable
Mike Tognarelli University of Notre Dame	Development of an Automated Wind Tunnel Traverse System
Sam A. Kline Washington University	Analysis of Multiple Mass Dampers
Tuan A. Le University of Notre Dame	Development of Data Acquisition Systems for Wind Tunnel
Daniel Mark Avis Oregon State University	Wind Tunnel Velocity Profile Mapping
Scott Kabat University of Notre Dame	Numerical Simulation and Dynamic Load Effects
Joel G. Theodore University of Notre Dame	Modeling of Nanjing TV Tower
Michael L. Herman Rice University	Dynamic Wind Load Simulator
Tracy Kijewski University of Notre Dame	Development of Wind Loads Provision-in Codes & Standards
Julie Yeasted University of Notre Dame	Natural Hazards Mitigation Strategies
Alicia N. Rigili Colorado State University	Damping Estimation in Buildings
Rik Vandermuelen University of Notre Dame	Bootstrapping in signal Processing
Hugh J. Roberts University of Notre Dame	Full-Scale Data Analysis
Kevin Bott University of Notre Dame	Web-based Data Management
Megan McCullogh University of Notre Dame	Climate Change and Hurricanes
Emily Kunen	Social and Structural Risk Modeling of Tsunamis

Brown University Julie Martom Brown University	Reliability of Coastal Structures under Multi-Hazard Environment
Thomas Mueller Notre Dame	Software development for VORTEX-Winds
Sarah Bobby Noter Dame	Full-scale data mangement
Patrick Brewick Notre Dame	CFD
Joe Jerey Noter Dame	Satelitte Imagery Analysis
Laura Divel Notre Dame	CFD

## **Publications**

### ***Summary of Journal Publications:***

**Summary:** J. of Engineering Mechanics, ASCE, **38** paper; J. of Wind Engrg. and Industrial Aerodynamics: **42** papers;; J. of Structural Engineering, ASCE.: **30**; Engineering. Structures: **7** papers; Appl. Ocean Res./Ocean Enginrg./Offshore Mech. ASME: **7**; Probabilistic Engineering Mechanics: **6** papers; Wind & Struct.: **3** papers; Fluid & Struct.: **2** papers; Struct. Safety: **2** papers; J. of Sound & Vibr.: **2** papers; Others: **14** papers.

### ***Refereed Publications***

#### **Journal Articles**

Hwang, Jae-Seung, Kareem, A., Kim, Wha-Jung, “Estimation of Modal Loads Using Structural Response,” ***Journal of Sound and Vibration***, ASCE in press, 2009.

Haan, Jr., F. L. and Kareem, A., “Anatomy of Turbulence Effects on the Aerodynamics of an Oscillating Prism,” ***Journal of Engineering Mechanics***, ASCE, in press. 2009

Kwon, D-K., Kareem, A., “Gust-Front Factor: New Framework for Wind Load Effects on Strctures,” ***Journal of Structural Engineering***, ASCE, 135(6), 717-732, 2009

Chen X. and Kareem, A., “Identification of Critical Structural Modes and Flutter Derivatives for Predicting Coupled Bridge Flutter,” ***Journal of Wind Engineering and Industrial Aerodynamics***, 96 (10-11), 2008, 1856-1870.

Kareem, A., “Numerical Simulation of Wind Effects: a probabilistic Perspective,” ***Journal of Wind Engineering and Industrial Aerodynamics***, 96 (10-11), 2008, 1472-1497.

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## **Books, Proceedings and Book Chapters**

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Kareem, A. and Li, Yousun, "Recursive Simulation of Stochastic Wind and Wave Related Processes for the Analysis of Offshore Platforms," Proceedings Abstracts of the First U.S. Congress on Computational Mechanics, Chicago, Illinois, July 21-24, 1991.

Kareem, A., "Mitigation of Cladding and Structural Damage in Extreme Winds," Proceedings of the World Congress on Natural Hazard Reduction, World Federation of Engineering Organizations, New Delhi, India, Feb. 1-5, 1991.

Mashaly, El-Sayed Amin and Kareem, A., "Response of Nonclassically Damped MDOF Systems to Nonstationary Random Excitation," Proceedings of the ASCE Engineering Mechanics Specialty Conference - Mechanics Computing in 1990's and Beyond, May 19- 22, 1991.

Kareem, A., "Wind Engineering Research Issues," Structures Congress '91, Structures Abstracts, ASCE, NY, 1991.

Bergman, L.A., McFarland, D.M. and Kareem, A., "Coupled Passive Control of Tall Buildings," Structures Abstracts, ASCE, NY, 1991.

Kareem, A., and Li, Yousun, "Response of Tension Leg Platforms to Wind, Waves, and Currents: A Frequency Domain Approach," Proceeding of the Offshore Technology Conference, OTC 6318, Houston, Texas, 1990.

Kareem, A., "Reduction of Wind Induced Motion Utilizing a Tuned Sloshing Damper," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Li, Yousun, and Kareem, A., "ARMA Modelling in Wind Engineering," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Allen, R., and Kareem, A., "Development of Knowledge-Based Systems in Wind Engineering," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Chiu, A. N., Golden, J. H., Kareem, A., and Perry, D. C., "Tornadic Events of the Past Revisited -- Lessons Learned," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Kareem, A., "Measurements of Pressure and Force Fields on Building Models in Simulated Atmospheric Flows," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Li, Yousun, and Kareem, A., "Stochastic Response of a Tension Leg Platform to Wind and Wave Fields: Frequency and Time Domain Analysis," Proceedings of the 6th U.S. National Conference on Wind Engineering, University of Houston, Houston, Texas, March 8-10, 1989.

Kareem, A., and Li, Yousun, "On Modeling the Nonlinear Relationship Between Random Fields by Means of Higher-Order Spectra," Proceedings of the ASCE Specialty Conference on Probabilistic Mechanics and Structural and Geotechnical Safety, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, May, 1988.

Li, Yousun, and Kareem, A., "Recursive Modeling of Dynamic Response of MDOF Systems," Proceedings of the ASCE Specialty Conference on Probabilistic Mechanics and Structural and Geotechnical Safety, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, May, 1988.

Li, Yousun, and Kareem, A., "ARMA Modeling of Random Wind and Wave Fields," Engineering Mechanics - 6th Conference, Abstracts, ASCE Engineering Mechanics Division 6th Specialty Conference, State University of New York at Buffalo, 1987.

Kareem, A., and Sun, Wei-Joe, "Probabilistic Response of Structures with Parametric Uncertainties," Proceedings of the Fifth International Conference on Application of Statistics and Probability in Soil and Structural Engineering, Vancouver, Canada, May 25-29, 1987.

- Kareem, A., and Sun, Wei-Joe, "Probabilistic Dynamic Response of Structures with Uncertainty in Parameters," Structures Congress '86, Abstracts Volume, ASCE Specialty Conference, New Orleans, September, 1986.
- Kareem, A., "Structure of Hurricane Wind Field Over the Ocean," Structures Congress '86, Abstracts, ASCE Specialty Conference, New Orleans, September, 1986.
- Sun, Wei-Joe, and Kareem, A., "Coupled Lateral-Torsional Response of a Multi-Degree- of-Freedom System to Nonstationary Random Excitation," Proceedings U.S. National Conference on Earthquake Engineering, Charleston, South Carolina, 1986.
- Kareem, A., "A Wind Tunnel Investigation of Aerodynamic Loads on a Typical Tension Leg Platform," Proceedings of the Offshore Technology Conference, OTC #5173, Houston, Texas, May, 1986.
- Reinhold, T. A., and Kareem, A., "Wind Loads and Building Response Predictions using Force Balance Techniques," Proceedings of the Third ASCE Engineering Mechanics Conference - Dynamics of Structures, University of California, LA, March, 1986.
- Sun, Wei-Joe, and Kareem, A., "Stochastic Response of Structures with Appendages Containing Fluids," Proceedings of the Third ASCE Engineering Mechanics Conference - Dynamics of Structures, University of California, LA, March, 1986.
- Kareem, A., and Lu, P. C., "Measurement of Spatially Averaged Fluctuating Loads using Pneumatic Averaging," Proceedings of the Conference on Advances in Aerodynamics, Fluid Mechanics and Hydraulics, Minneapolis, Minnesota, 1986.
- Kareem, A., "Structure of Wind Over the Ocean," International Workshop on Offshore Winds and Icing, Halifax, Nova Scotia, 1985.
- Kareem, A., Sun, Wei-Joe, and Hsieh, J., "Reliability Analysis of Structures Under Dynamic Wind Loading," Proceedings of the Fifth U.S. National Conference on Wind Engineering, Lubbock, Texas, November, 1985.
- Kareem, A, Cheng, Chii-Ming, and Lu, P. C., "Pressure and Force Fluctuations on Circular Cylinders in Boundary Layer Flows," Proceedings of the Fifth U.S. National Conference on Wind Engineering, Lubbock, Texas, November, 1985.
- Li, Yousun, Kareem, A., and Williams, A. N., "Dynamic Response of Tension Leg Platform to Random Wave and Wind Fields," Proceedings of the Fifth U.S. National Conference on Wind Engineering, Lubbock, Texas, November, 1985.
- Kareem, A., "Lateral-Torsional Motion of Tall Buildings to Wind Loads," Proceedings of the Third International Conference on Tall Buildings, Hong Kong and Guangzhou, December, 1984.
- Kareem, A., and Hsieh, J., "Reliability of Dynamic Wind Loads on Compliant Offshore Structures," Proceedings of the Specialty Conference on Probabilistic Mechanics and Structural Reliability, Berkeley, California, January, 1984.
- Kareem, A., "Fluctuating Pressures and Forces on Fixed Cylinders," Bulletin of the American Physical Society, Vol. 28, No. 9, the Thirty-Sixth Annual Meeting of the American Physical Society, Division of Fluid Dynamics, November 20-22, 1983, University of Houston, Houston, Texas.

- Kareem, A., "Characteristics of Pressure Fluctuations on the Windward and Leeward Faces of a Tall Building Model," Proceedings of the Symposium on Measurement Techniques and Prediction Methods in Turbulent Flows, Purdue University, May, 1983.
- Kareem, A., and Hsieh, J., "Reliability of Concrete Chimneys Under Winds," Proceedings of the 4th ASCE/EMD Specialty Conference, Purdue University, May, 1983.
- Kareem, A., "Mitigation of Wind Induced Motion of Tall Buildings," Proceedings, 5th Colloquium on Industrial Aerodynamics, Aachen, June 14-16, 1982.
- Kareem, A., and Dalton, C., "Dynamic Effects of Wind on Tension Leg Platforms," Proceedings, Offshore Technology Conference, OTC 4229, 1982, Houston, Texas.
- Kareem, A., "Interaction of Square Buildings in Two Flow Fields," Proceedings of the 4th U.S. National Conference on Wind Engineering, Seattle, Washington, July 26-29, 1981.
- Kareem, A., "Crosswind Response of Towers and Stacks of Circular Cross-Section," Proceedings of the 4th U.S. National Conference on Wind Engineering, Seattle, Washington, July 26-29, 1981.
- Kareem, A., "Dynamic Vibration Absorbers for Wind Turbine Systems," Proceedings of the 2nd Conference on Wind Energy Technology, University of Missouri, Columbia, March 16-17, 1981.
- Kareem, A., "Dynamic Effects of Wind on Offshore Structures," Proceedings Offshore Technology Conference, 1980, Houston, Texas, OTC Paper 3764.
- Kareem, A., Lissaman, P. B. S., and Zambrano, T. G., "Wind Loading Definition for the Structural Design of Wind Turbine Generator System," Proceedings AIAA-SERI Wind Energy Conference, 1980, Boulder, Colorado, AIAA Paper No. 80-0610.
- Kareem, A., "Reduction of Wind-Excited Motion of High-Rise Buildings," Proceedings of the 3rd ASCE/EMD Specialty Conference, Austin, Texas, 1979.
- Kareem, A., and Cermak, J. E., "Wind Pressure Fluctuations on Tall Buildings," Proceedings of the 3rd ASCE/EMD Specialty Conference, Austin, Texas, 1979.
- Kareem, A., Cermak, J. E., and Peterka, J. A., "Dynamic Pressure Fluctuations of a Square Prism," Proceedings of the 3rd U.S. National Conference on Wind Engineering, Gainesville, Florida, 1978.
- Kareem, A., Cermak, J. E., and Peterka, J. A., "Wind-Induced Response of High-Rise Buildings," Proceedings of the 3rd U.S. National Conference on Wind Engineering, Gainesville, Florida, 1978.
- Kareem, A., and Cermak, J. E., "Reduction of Wind Induced Motion of Buildings," Proceedings of the 3rd U.S. National Conference on Wind Engineering, Gainesville, Florida, 1978.
- Kareem, A., "Wind Excited Response of High-Rise Buildings," presented at AIAA Region V Student Conference, Air Force Academy, Colorado, April 6-8, 1978 (Received Martin Minta Award), Colorado State University, Civil Engineering Paper No. CEP77-78 AK 44.
- Kareem, A., and Poore, A. B., "On the Stability of Dynamic Multimode Oscillations of Bluff Bodies in Atmospheric Shear Flows," Proceedings of the 2nd U.S. National Conference on Wind Engineering, Fort Collins, Colorado, 1975.

Kareem, A., and Cermak, J. E., "Dynamic Response of Buildings in Turbulent Shear Flows," Proceedings of the 2nd U.S. National Conference on Wind Engineering, Fort Collins, Colorado, 1975.

## **PAPERS PRESENTED AT TECHNICAL MEETINGS/WORKSHOPS**

UJNR/Panel on Wind & Seismic Effects, Task Committee E Workshop, Seattle, 2-5 October, 2002.

UJNR/Panel on Wind & Seismic Effects, Task Committee E Workshop, Tsukuba, Japan, May 24-28, 1999.

International Workshop on "CFD for Wind Climate in Cities" - How to Apply CFD to Practical Problems in Environment, Buildings and Structures, August 24-26, 1998, Hayama, Japan.

U.S.-Japan Joint Workshop/Seminar on Cooperative Research in Structural Control for Civil Infrastructure Systems, Kyoto, Japan, June 28-July, 1998.

U.S.-Japan and China Workshop on Civil Infrastructure Systems and Hazard Mitigation, Shanghai, Nov. 4-8, 1998.

Workshop on the National Wind Hazard Mitigation Program, American Association for Wind Engineering/NSF, The Johns Hopkins University, Baltimore, December 7-8, 1997.

Workshop on Large Scale Testing for Winds, NSF/NIST, Alexandria, VA, May 1-2, 1997.

Workshop on Experimental Facilities for Extreme Winds, Lockheed Martin, Idaho Falls, Nov. 23-25, 1995.

Workshop on Wind Engineering: Planning for the Future, American Association for Wind Engineering/NSF, Arlington, VA, Nov. 6, 1995.

1995 ONR Workshop-Reliability of Nonlinear Ocean Structures Under Stochastic Excitation, ONR Probability and Statistics Program, Arlington, Virginia, July, 1995.

Workshop on Missiles in a Wind Field, Insurance Institute for Property Loss Reduction, Washington, D.C., February 10-11, 1995.

Workshop on Engineering of Structures for Mitigating Damage Due to Cyclones, United Nations Development Program, Structural Engineering Research Centre, Madras, India, January 4-6, 1995.

National Institute of Standards and Technology Workshop on Research Needs in Wind Engineering, Gaithersburg, MD, September, 1994.

1994 ONR Workshop-Reliability of Nonlinear Ocean Structures Under Stochastic Excitation, ONR Probability and Statistics Program, Arlington, Virginia, July, 1994.

Workshop on Strategies for Design and Construction of Structures to Mitigate Damage Due to Cyclones, United Nations Development Program, Structural Engineering Research Centre, Madras, India, January, 1994.

International Workshop on the Assessment and Prequalification of Offshore Production Structures, New Orleans, Louisiana, December, 1993.

1993 ONR Workshop-Reliability of Nonlinear Ocean Structures Under Stochastic Excitation, ONR Probability and Statistics Program, Arlington, Virginia, July, 1993.

Industry Workshop-Hydrodynamics of Offshore Structures, College Station, sponsored by Offshore Technology Research Center/NSF, February, 1992.

International Workshop on Technology for Hong Kong's Infrastructure Development, Hong Kong, sponsored by NSF, Croucher Foundation, HK General Chamber, Hong Kong Institution of Engineers, December, 1991.

Wind Resistant Design of High-Rise Buildings, Taipei, sponsored by Building Research Institute, Ministry of Interior, Taiwan, August, 1991.

Industry Workshop-Hydrodynamics of Offshore Structures, College Station, sponsored by Offshore Technology Research Center, NSF, February, 1991.

Offshore Winds & Their Effects, Houston, Texas, sponsored by Offshore Technology Research Center, NSF, July, 1990.

Kareem, A., "Wind Engineering at Notre Dame," NIST Workshop on Research Needs in Wind Engineering, Gaithersburg, MD, September, 1994.

Kareem, A., "Reduction of Natural Disasters," First Pan-American Congress on Prevention and Control of Disasters, XXI Convention UPADI 90, Washington, D.C., 1990.

Kareem, A., "Offshore Winds and Their Effects on Platforms," Workshop on Offshore Winds and Their Effects on Platforms, Offshore Technology Research Center, Houston, Texas, 1990.

Kareem, A., "Stochastic Response of Structures to Environmental Loads," NMHH-NSF- PYI Panel, Washington, D.C., 1989.

Sun, Wei-Joe, and Kareem, A., "Coupled Lateral-Torsional Response of Multi-Degree-of-Freedom System to Nonstationary Random Excitation," AIAA (Houston Chapter) Meeting, NASA, Johnson Space Center, Houston, Texas, 1988.

Kareem, A., "Reliability Analysis of Structures Under Dynamic Wind Loading," Spring Convention, ASCE, 1986, Seattle.

Kareem, A., "Effects of Hurricane Alicia on Galveston-Houston Area," Hurricane Awareness 1984, Institute of Storm Research, Houston, Texas, June 6-8, 1984.

Kareem, A., "Overview of Damage in Hurricane Alicia," ASCE Annual Convention, Houston, Texas, Oct. 17-21, 1983.

Kareem, A. and Marshall, R., "Description of Hurricane Alicia," ASCE Annual Convention, Houston, Texas, Oct. 17-21, 1983.

Kareem, A., "Simulation of Dynamic Wind Loads with Applications to Offshore Structures," Structures Congress 82, Fall Convention, New Orleans, October 25-29, 1982.

Kareem, A., and Hsieh, J., "Reliability of Concrete Chimneys Under Winds," Symposium on Reliability of Structures, ASCE Fall Convention, New Orleans, October 25-29, 1982.

Kareem, A., "Simulation of Wind Loads on Curtain Walls," Texas Section, ASCE Fall Meeting, October 4-6, 1979, College Station, Texas.

## INVITED SEMINARS

“Hurricane Ike, Gust Fronts and a Potpourri of Issues in Wind Effects on Structures,” Ferguson Lecture, Department of Civil Engineering, the University of Texas, Austin, TX, April 8, 2009

“Tailoring Structures for Dynamic Wind Effects,” Structural Engineering Group, Department of Civil Engineering, the University of Texas, Austin, TX, April 7, 2009

“Tailoring Contemporary Structures for Dynamic Load Effects,” Department of Civil and Environmental Engineering, Rice University, Houston, TX, October 20, 2008

“Designing Structures for Dynamic Wind Load Effects,” Department of Civil Engineering, University of Arizona, April 28, 2008.

“Tailoring Structures for Dynamic Wind Load Effects,” Department of Aerospace and Mechanical Engineering, University of Notre Dame, April 21, 2008.

“Tailoring Contemporary Structures for Dynamic Wind Load Effects,” Bruce Podwal Seminar Series, City University of New York, November 10, 2007.

“Wind Load Effects: The Next Frontiers, Bridge Engineering Department,” Tongji University, October 20, 2006

“Tailoring Structures for Dynamic Wind Load Effects,” Department of Civil Engineering, Lehigh University, October, 2005.

“Equivalent Static Loads on Structures,” The 21<sup>st</sup> Century Center for Excellence on the Effects of Wind on Buildings and Urban Environment, Tokyo Polytechnic University, Tokyo, Japan, March 11, 2005.

“Aerodynamic Tailoring of Tall Buildings,” Sekolah Pendidikan Professional Dan Pendidikan Berterusan (SPACE), Universiti Teknologi Malaysia, Kuala Lumpur, February 23-24, 2005

“Wind Effects on Structures: The Next Frontiers,” The 21<sup>st</sup> Century Center for Excellence on the Wind Effects on Buildings and Urban Environment, Tokyo Polytechnic University, Tokyo, Japan, November 15, 2003.

“Dynamics of Flexible Structures: The Next Frontiers,” Department of Civil Engineering, Universiti Teknologi Malaysia, August 12, 2003.

“Recent Advances in the Modeling of Tall Buildings Under Winds,” Department of Civil Engineering, Universiti Teknologi Malaysia, August 18, 2003.

“Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring,” CPP, Wind Engineering Consultants, Fort Collins Colorado, April 31, 2003

“Next Frontiers in Dynamic Response of Structures,” Department of Civil Engineering, Colorado State University, Fort Collins, Colorado, May 1, 2003.

“Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring,” Georgia Tech, March 25, 2003.

“Probabilistic Dynamic Response of Structures: Computational Tools, Laboratory and Full-Scale Experiments,” Vanderbilt University, January 23, 2003.

“Dynamic Response of Structures: Computational Methods to Laboratory Experiments and Full-Scale Monitoring,” University of California, Irvine, California, November 22, 2002

“Recent Developments in Wind Effects on Structures,” RWDI Wind Engineering Consultants, Guelph, Canada, May 20, 2002.

“Probabilistic Dynamics of Longspan Bridges and Tall Buildings: The Next Frontiers,” the Department of Civil Engineering, Hong Kong Polytechnique University, Hong Kong, April 19, 2002.

“Dynamics of Tall Buildings and Long-Span Bridges,” Ove Arup Consulting Engineers, Hong Kong, April 18, 2002

Jousting with the Wind: A Structural Engineer’s Nightmare, National Institute of Industrial Safety, Ministry of Labor, Tokyo, March 17, 2000.

“Modeling and Simulation of Wind Effects: A Reflection on the Past and Outlook for the Future,” Tokyo Institute of Polytechnics, Tokyo, March 14, 2000.

“Modeling of Dynamic Wind Effects on Structures,” Department of Civil Engineering, University of California at Berkeley, October 25, 1999.

“Dynamic Load Effects on Structures,” Joint Seminar in Mechanics and the Environment, Duke University, Interdisciplinary Colloquia, Department of Civil and Environmental Engineering and the Center for Applied Control at Duke University, May 4, 1999.

“Wind Effects on Civil Infrastructure,” Drexel Intelligent Infrastructure and Transportation Safety Institute, Drexel University, Philadelphia, Pennsylvania, December 11, 1998.

“Dynamic Wind Effects on Structures,” CROM Lectures in Civil Engineering Design 1998, Department of Civil Engineering, University of Florida, Gainesville, Florida, October 15, 1998.

“Probabilistic Dynamic Analysis of Structures Under Environmental Loads,” Department of Civil Engineering, Vanderbilt University, Nashville, Tennessee, July 14, 1998.

“Modelling Analysis and Simulation of Dynamic Load Effects on Structures,” Joint Seminar of the Departments of Civil Engineering and Aeronautics and Astronautics, University of Illinois, Urbana Champaign, Illinois, September 26, 1997.

“Dynamics of Structures Under Environmental Loads,” Department of Civil Engineering, Illinois Institute of Technology, Chicago, Illinois, October 17, 1997.

“Dynamics of Tall Buildings Under Winds,” Department of Civil Engineering, Cornell University, Ithaca, NY, October 29, 1996.

“Contemporary Analysis and Simulation Tools in Wind Engineering,” Department of Civil Engineering, Tokyo University, Tokyo, Japan, September, 1995.

“Dynamic Response of Structures Under Environmental Loads,” Dept. of Civil Engineering, Johns Hopkins University, Baltimore, Maryland, April, 1995.

“Probabilistic Dynamic Response of Structures,” Dept. of Civil Engineering, Washington University, St. Louis, Missouri, September, 1994.

“Damping Devices to Control Structural Motions,” Tokyo Institute of Polytechnics, Tokyo, March, 1994.

“Aerodynamics of Tall Buildings,” Kanagawa University, Yokohama, Japan, March 1994.

“Stochastic Environmental Loads on Structures,” Structural Engineering Research Center, Madras, India, December, 1993.

“Wind Tunnel Modelling of Structure,” Structural Engineering Research Center, Madras, India, December 1993.

“Dynamic Response Analysis of Structures,” Structural Engineering Research Center, Madras, India, January 1994.

“Jousting with Environmental Loads: A Structural Engineer’s Nightmare,” Department of Civil Engineering and Geological Sciences, University of Notre Dame, September, 1992.

“Wind Tunnel Modeling of Structures,” Tamkang University, Taipei, Republic of China, August 1991.

“Codification of Wind Loads,” National Taiwan University, Taipei, Taiwan, August 1991.

“Fluctuating Pressures and Forces on Bluff Bodies,” Institute of Industrial Sciences, University of Tokyo, March, 1990.

“Wind and Wave Loadings on Tension Leg Platforms,” Chevron Oil Field Research Company, California, July, 1990.

“Stochastic Analysis of Tension Leg Platforms,” Energy Laboratory Seminar Series, Houston, Texas, April, 1990.

“Dynamics of Tension Leg Platforms,” Shell Development Company, Bellaire Research Center, Bellaire, Texas, April, 1989.

“Stochastic Response of Tension Leg Platform to Wind and Wave Fields,” Production Research Department, Marine Group, Conoco, Inc., Ponca City, Oklahoma, October, 1987.

“Stochastic Response of Offshore Platforms,” Department of Mathematics, University of Houston, April, 1987.

“Performance of Constructed Facilities Under Extreme Winds,” Department of Civil Engineering Seminar, University of Houston, December, 1986.

“Environmental Loading of Offshore Platforms,” Shell Development Company, Bellaire Research Center, Bellaire, Texas, July, 1985.

“Wind Loads on Offshore Platforms,” Brown and Root, Inc., Houston, Texas, June 1985.

“Computer-Aided Design of Structures,” Pakistan Railways, Structural Engineering Division and Computerization Institute, Lahore, Pakistan, December, 1984.

“Hurricane Alicia: Wind Field Characteristics,” American Meteorological Society, Houston, March, 1984.

“Effects of Hurricane Alicia in the Galveston-Houston Region of Texas,” Fluid Mechanics and Wind Engineering Program Seminar Series, Department of Civil Engineering, Colorado State University, November, 1983.

“Wind Field Characteristics Over the Ocean and Wind Load Effects on Offshore Installation,” Gulf Research & Development Company, Houston, Texas, June 1983.

“Wind Engineering Study of Buildings A Designer’s Viewpoint,” Bernard Johnson, Inc., Houston, Texas, January, 1983.

“Nonlinear Dynamic Response of Compliant Offshore Structures,” Structural Engineering Seminar, Rice University, Houston, Texas, November, 1982.

“Probabilistic Structural Dynamics with Applications to Environmental Loads,” Structural Engineering Seminar, University of Colorado, February, 1982.

“Environmental Loads on Structures with Applications to Structural Dynamics,” Structural Engineering Seminar, Texas A & M University, February, 1982.

“Dynamic Effects of Wind on Offshore Structures,” Chevron Oil Field Research Company, U.S.A., September, 1981.

“Wind Loads on Gulf Oil TLP,” Gulf Research & Development Company, Houston, Texas, May 1981.

“Dynamics of Tall Buildings,” Dept. of Civil Engineering, Georgia Tech., Atlanta, July, 1979.

“Wind Excited Response of Tall Buildings,” Dept. of Civil Engineering, University of Houston, Houston, March, 1978.

## **EXPERIENCE**

### **Administration/Management/Organization**

**Member**, ASCE Huber Prize Committee, 2008-

**Chair**, EMI/ASCE Awards Committee, 2007-09.

**Chair**, ASCE Committee for Society Wide Awards based on Journal Papers, 2005-2008

**Member**, Technical Activities Committee, ASCE, 2004-2007

**Member**, Advisory Board, The 21<sup>st</sup> Century Center for Excellence on the Effects of Wind on Buildings and Urban Environment, Tokyo Polytechnic University, Tokyo, Japan, 2004-2009

**Chair**, Advisory Board, Engineering Mechanics Division, ASCE, 2007-2008.

**Chair**, Department of Civil Engineering and Geological Sciences, University of Notre Dame, 1999 - 2002.

**Chair**, Executive Committee of the Engineering Mechanics Division, ASCE, 2002-03

**Member**, Executive Committee of the Engineering Mechanics Division, ASCE, 1999 - 2005 .

**Vice-Chair**, Engineering Mechanics Division, ASCE, 2001-2002.

**Internal reviewer**, for the Department of Aerospace and Mechanical Engineering’s academic review; joined by four leading external senior professors/deans/senior administrators, 1998.

**External reviewer**, for the Department of Civil Engineering, Duke University, 2004.

**Chaired**, Chair Search Committee of the Department of Aerospace and Mechanical Engineering, University of Notre Dame, 1995.

**Member**, Dean Search Committee of the College of Engineering, University of Notre Dame, 1997-98.

**Co-Chair**, ASCE’s Specialty Conference on Probabilistic Mechanics and Structural Reliability, Notre Dame, IN, 2000.

**Chaired**, ASCE’s Specialty Conference, “Hurricane Alicia: One Year Later”, 1984.

**Chaired**, AAWE's Workshop on Wind Engineering: Planning for the Future at NSF, Arlington, Virginia, 1996.

**Chaired**, Workshop on Planning for a National Wind Hazards Reduction Program at the Johns Hopkins University, 1997.

**Chaired**, The Sixth U.S. National Conference on Wind Engineering, University of Houston, 1989.

**Chaired**, Technical Program of the Seventh U.S. National Conference on Wind Engineering, University of California at Los Angeles, 1993.

**Organized**, NSF/NIST Workshop on Large Scale Testing, NSF, Arlington.

**Chaired**, ASCE's technical committee: Wind Effects/Dynamic Effects (1986-90); Task Committee on Damping Systems (1993-1997); Probabilistic Methods Committee (1998- 2000).

**Regional Chair**, (North America & South America) International Association for Wind Engineering, 1994-99; to coordinate wind engineering research activities in North America and South America with other international groups, i.e., Asia & Pacific, and European & African.

**President**, American Association for Wind Engineering 1994-98; represent wind research and practice communities at national and international activities, assist federal agencies in prioritizing research needs and interact with congressional staff; formulate and articulate a vision for the wind related research and development.

**Member**, Provost's Advisory Committee 1996-1999 and 2000-2003; Committee advises the Provost on matters related to academics, budgetary; governance and the university promotion and tenure decisions.

**Chaired**, Undergraduate Curriculum Committee and Honesty Committee, Department of Civil Engineering and Geological Sciences, University of Notre Dame, 1993-94, 1991-93, respectively.

**Chaired**, Faculty Annual Performance Evaluation Committee, Department of Civil Engineering, University of Houston, 1986-87.

**Director**, Structural Aerodynamics Ocean System Modeling Laboratory, University of Houston, 1984-1990; Laboratory consisted of a large size boundary layer type atmospheric wind tunnel and a wave tank for modeling ocean systems with state-of-the-art instrumentation.

**Visiting Professor**, *Department of Civil Engineering, Universiti Teknologi Malaysia*, August, 2003,

**Member**, *Board of Directors of the Multi-hazard Mitigation Council* an advisory body of the National Institute of Building Science, Washington, DC, 1998-1999.

**Member**, *Governing Council, The Partnership for Natural Disaster Reduction*, FEMA/ DOE/INEEL.

**Member**, *Blue Ribbon Review Committee of New ASCE Manual of Practice for Wind Tunnel Testing of Buildings and Structures*, ASCE, 1995.

**Member**, *Advisory Board, International Wind Engineering Forum*, 1994-.

**Member**, *Advisory Board, DOE/NASA, Project on Aerospace Engineering* at Southern University, LA, 1995-97.

**Member**, *Board of Directors, American Association for Wind Engineering*, 1992-2002.

**Member** *of the Panel to Review of the Need for a Large-Scale Test Facility for Research on the Effects of Extreme Winds on Structures*, National Research Council, National Academy of Sciences, 1998-99.

**Member of the** *Panel on the Assessment of Wind Engineering Issues in the United States*, National Research Council, National Academy of Sciences, 1989-91.

**Consultant - UNDP** *to the Government of India*, Engineering for Mitigation of Cyclone Damage, 1993-94, 1995.

**Member**, *Committee on Natural Disasters*, National Research Council, National Academy of Sciences, 1986-91.

### **Chair/Member Conference and Scientific Committees**

**Member**, Scientific Committee, Twelfth International Conference on Wind Engineering (12ICWE), Cairns, Australia, July, 2007.

**Member, Scientific Committee**, International Conference on Structural Safety and Reliability, Rome, July, 2005.

**Member, Scientific Committee**, International Conference on Structural Safety and Reliability, Rome, July, 2005

**Member**, Technical Committee, Seventh U.S. National Conference on Earthquake Engineering (7NCEE), Boston, Massachusetts, USA, July 21-25, 2002.

**Member**, Scientific Committee, Eleventh International Conference on Wind Engineering (11ICWE), Lubbock, Texas, USA, June 2-5, 2003.

**Member**, Scientific Committee, Tenth International Conference on Application of Statistics and Probability in Civil Engineering, Tokyo, Japan, July, 2007.

**Member**, Scientific Committee, Ninth International Conference on Application of Statistics and Probability in Civil Engineering, San Francisco, USA, July 6-9, 2003.

**Member**, International Scientific Committee, International Conference on Advances in Structural Dynamics (ASD 2000), Hong Kong, China, December 13-15, 2000.

**Member**, International Scientific Committee, Sixth International Colloquium on Bluff Body Aerodynamics & Its Applications (BBAA VI), Milan, Italy, July 21- 24, 2008.

**Member**, International Scientific Committee, Fifth International Colloquium on Bluff Body Aerodynamics & Its Applications (BBAA V), Ottawa, Canada, July, 2004.

**Member**, International Scientific Committee, Fourth International Colloquium on Bluff Body Aerodynamics & Its Applications (BBAA IV), Bochum, Germany, September 11- 14, 2000.

**Co-Chair and Member**, Scientific Committee, ASCE Specialty Conference on ASCE Probabilistic Mechanics and Structural Reliability, Notre Dame, IN, July 24-26, 2000.

**Co-Chair**, International Symposium on Wind and Structures for the 21st Century (WAS- 2000), Chejado, Korea, January 26-28, 2000.

**Member**, Scientific Committee, International Conference on Applications of Statistics and Probability, Sydney, Australia, December 12-15, 1999.

**Member**, International Technical Committee, Civil & Environmental Engineering Conference - New Frontiers and Challenges, Bangkok, Thailand, November 8-12, 1999.

**Member**, Scientific Committee, 10th International Conference on Wind Engineering, Copenhagen, Denmark, June 21-25, 1999.

**Member**, Scientific Committee, Third International Conference on Computational Stochastic Mechanics, Santorini, Greece, June 14-17, 1998.

**Member**, Scientific Committee, Fourth International Conference on Stochastic Structural Dynamics, Notre Dame, IN, August 6-8, 1998.

**Member**, Technical Organization Committee, US-Japan Workshop/Seminar on Stochastic Simulation for Civil Infrastructural Systems, Kyoto, Japan, November 22-23, 1997.

**Member**, Conference Scientific Committee, 7th International Conference on Structural Safety & Reliability, Kyoto, Japan, November, 1997.

**Member**, Scientific Advisory Board, 2nd European and African Regional Conference on Wind Engineering, Genoa, Italy, June, 1997.

**Member**, Steering Committee, 8th U.S. National Conference on Wind Engineering, Baltimore, June, 1997.

**Member**, Technical Committee, Engineering: Buildings and Structures, 18th, 19th & 20th National Hurricane Conference, Orlando, FL, April, 1996; Houston, TX, April, 1997.

**Member**, Advisory Committee, ASCE 1996 International Conference and Exposition on Natural Disaster Reduction, Washington, D.C., December, 1996.

**Member**, Technical Committee, International Wind Engineering Forum Workshop on CWE/CFD For Prediction of Wind Effects on Structures, Fort Collins, CO, August, 1996.

**Member**, Scientific Advisory Board, Second International Symposium on Computational Wind Engineering CWE 96, Fort Collins, CO, August, 1996.

**Member**, Steering Committee, Structure Congress '96, Chicago, Ill.

**Member**, Technical Committee, International Wind Engineering Forum Conference on Damping, Atsugi, Japan, Sept., 1995.

**Member**, Institute for Business & Home Safety (formerly IIPLR) Committee on Wind Damage, Mitigation, 1995-00

**Vice-Chairman**, Task Committee on Building Motion, Perception and Criteria, Wind Effects/STD-Dynamic Effects, American Society of Civil Engineers, 1990-95.

**Member**, Technical Program Committee, Fifth U.S. National Conference on Earthquake Engineering, Chicago, July 1994.

**Member**, Scientific Committee of the Second International Conference on Computational Stochastic Mechanics, Athens, Greece, June, 1994.

**Co-Chairman**, Technical Program and Member Steering Committee, 7th U.S. National Conference on Wind Engineering, Los Angeles, July 1993.

**Chairman**, Task Committee on Damping Systems/Wind Effects/STD-Dynamic Effects, American Society of Civil Engineers, 1991-.

**Member**, Steering Committee, International Association of Wind Engineering, 1991-.

**Chairman**, Committee on Wind Effects/STD-Dynamic Effects, American Society of Civil Engineers, 1986 - 90.

**Member**, Steering Committee, Hugo: One Year Later, ASCE, 1990.

**Member**, Scientific Committee of Earth & Space: 9<sup>th</sup> Aerospace Division International Conference on Engineering, Construction and Operations Challenging Environments, ASCE, 2004

**Conference Chairman**, The Sixth U.S. National Conference on Wind Engineering, March 1989, University of Houston, Houston, Texas.

**Conference Chairman**, ASCE Specialty Conference, "Hurricane Alicia: One Year Later." August 16-17, 1984, Galveston, Texas.

**Chair**, Workshop on Planning for a National Wind Hazard Reduction Program, American Association for Wind Engineering, The Johns Hopkins University, Dec. 7&8, 1997.

**Chair**, Workshop on Wind Engineering: Planning for the Future, American Association for Wind Engineering/NSF, Arlington, VA, Nov. 6, 1995.

#### **Technical Sessions Organized/Chaired at the following conferences**

ASCE Structures Congress 1985, 1986, 1987, 1988, 1989, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007.

ASCE Engineering Mechanics Conference 1983, 1997, 1987, 1995, 1998, 1999, 2000, 2002, 2003, 2004 and 2005

ASCE Probabilistic Mechanics and Structural Reliability, 1988, 1992, 1996, 2000 and 2004.

ASCE Hurricane Alicia: One Year Later, 1985.

ASCE Hurricane Hugo: One Year Later, 1990.

ASCE International Conference, Civil Engineering in the Oceans, 1992.

ASCE/ASME Mechanics Conference, McNU '97, 1997.

ASME Offshore Mechanics and Arctic Engineering International Conference, 1994, 1996, 1998, 1999 and 2000.

International Conference on Wind Engineering, 1983, 1987, 1991, 1995, 1999, 2003, 2007.

U.S. National Conference on Wind Engineering, 1981, 1985, 1989, 1993, 1997, 2001.

Americas Conference on Wind Engineering, 2005

European and African Regional Conference on Wind Engineering, 1997, 2005.

National Hurricane Conference, 1985, 1987, 1990, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 and 2005.

Wind Tunnel Modelling of Civil Engineering Structures, 1982.

Bluff Body Aerodynamics III, 1996, IV, 2000.

International Wind Engineering Forum Conference on Structural Damping, 1995.  
International Conference on Advances in Structural Dynamics (ASD 2000), 2000.  
UNDP Workshop on Engineering of Structures for Mitigating Damage Due to Cyclones, 1995.  
Inaugural Meeting of the International Wind Engineering Forum, 1994.  
UNDP Workshop on Strategies for Design and Construction of Structures to Mitigate Damage Due to cyclones, 1994.  
IUTAM Symposium on Advances in Nonlinear Stochastic Mechanics, 1995.  
Advances in Aerodynamics Fluid Mechanics and Hydraulics, 1986.  
High Winds and Building Codes - Wind Engineering Symposium, 1987.  
National Mitigation Conference, "Partnership for Building Safer Communities," 1995.  
International Conference on Structural Safety and Reliability (ICOSSAR), 1989, 1993, 1997, 2001 and 2005.  
Jubileum Conference on Wind Effects on Buildings and Structures, 1998.  
First, Second and Fourth World Conference on Structural Control, 1994, 1998 and 2006.  
International Workshop on "CFD for Wind Climate in Cities", 1998.  
International Conference on Computational Wind Engineering, 2006  
First USA-China-Japan Workshop on Future R&D Directions in Public Works, Civil Infrastructure Systems and Hazard Mitigation, 1998.  
International Conference on Computational Stochastic Mechanics, 1991, 1994, 1998 and 2002.  
International Conference on Stochastic Structural Dynamics, 1990, 1998.  
International Conference on the Application of Probability and Statistics in Civil Engineering, 1999.  
Seventh International Offshore & Polar Engineering Conference (ISOPE - 97), 1997.  
UJNR/Panel on Wind and Seismic Effects, Task Committee E Workshop, 1997, 1999.  
Second International Workshop on Structural control "Next Generation of Intelligent Structures," 1997.  
Earth & Space: 9<sup>th</sup> Aerospace Division International Conference on Engineering, Construction and Operations Challenging Environments, ASCE, 2004.  
US-Japan Workshop/Seminar on Stochastic Simulation for Civil Infrastructural Systems, 1997.  
U.S.-Japan Joint Workshop/Seminar on Cooperative Research in Structural Control for Civil Infrastructure Systems, Kyoto, Japan, June 28 - July 1, 1998.

### **Who's Who Listings**

Listed in Who is Who in America, 55th Edition, 2001-  
 Listed in International Man of the Year, 2000/2001-  
 Listed in Who's Who in Science and Engineering, 2000-  
 Listed in 2000 Outstanding Scientists of the 20th Century.  
 Listed in Who's Who in Society, 1988-  
 Listed in Who's Who in the South and Southwest, 1983-  
 Listed in International Who's Who in Engineering, 1983-  
 Listed in Who's Who in Engineering, 1982-  
 Listed in Who's Who in Technology Today, 1980-  
 Listed in American Men and Women of Science, 1979-  
 Listed in the Directory of World Researchers 1980's - published by International Technical Information Institute, Japan.

## **SPONSORED RESEARCH (Principal Investigator Unless Noted)**

Advanced Aeroelastic Analysis Framework for Cable-Supported Bridges under Turbulent Winds, **National Science Foundation**, 2009-2012. (pending)

PIRE: The Living Laboratory – A New Approach to Research and Education for hazard-Resilient Civil Infrastructure, **National Science Foundation, USA .2009-20014** (Pre-proposal) (Co-PI: Kijewski-Correa), (pending)

CDI-TYPEII: Open Sourcing the Design of Civil Infrastructure (OSD-CI), **National Science Foundation, USA .2009-20013** (pending) (Co-PI: Kijewski-Correa)

Global Center of Excellence: New Frontier of Education and Research in Wind Engineering, \$ 245,000 **Ministry of Education, Culture, Sports, Science and Technology (MEXT)**, 2008-2009.

VORTEX-Winds, A Virtual organization for reducing the toll of extreme winds on society, \$ 280,000, **National Science Foundation**, 2007-2009 (T.Kijewski-Correa and G. Madey, Co-PI)

Structural Health Monitoring of Tall Buildings, \$149, 672, **Samsung Corporation**, Samsung Design and Construction Group, 2007-2008 (T. Kijewski-Correa, Co-PI)

Performance Evaluation of Tall Buildings under Winds: From Predictive Mthods to Laboratory and Full-Scale Measuremnets, \$ 360,000, **National Science Foundation**, 2006-2009 (T. Kijewski-Correa, Co-PI).

Performance of Glass/Cladding of High-Rise Buildimngs in Hurricane Katrina and its Impact on the Vertical Evaluation, \$ 17,982, **National Science Foundation**, 2005-2006.

Study of Load Effects on Structures Induced by Gust-Fronts, \$ 283,656, **National Science Foundation**, 2003-2006.

Characterization, Modeling and Simulation of Transient Hurricane Loads, \$ 55,000, **NIST/University of Florida**, 2003-2004.

Full-Scale Study of the Behavior of Tall Buildings Under Winds, \$336,326, **National Science Foundation**, 2000-2003.

Evolution of Time-Frequency Analysis: New Developments of Wavelet-Based Systems - Identification for Aero-Mechanical Systems, \$6,000, **NASA Indiana Space Grant Consortium**, 2000-2002.

Modelling of Directional Seas in Bay of Campeche, **Ocean Engineering Services**, CA, \$47,181, 1999-00.

Travel Grants/Fellowships, \$36,000, **National Institute of Industrial Safety, Ministry of Labor, Japan, University of Kyoto and Tokyo Polytechnic University, Japan and European Union, NSF**, 2000-07.

Research Participation in the 10th International Conference on Wind Engineering, \$31, 975, **National Science Foundation**, 1999-00.

Wind & Building Pressure Field Data and Its Simulation in the Laboratory, (jointly with Clemson University & Texas Tech University; N.D. funding \$45,000), **Lockheed Martin**, \$179,000, 1998.

Wind Loading and Capacities of Components, Connections and Systems, (Jointly with Clemson University & Texas A&M University; N.D. funding \$300,000), **Lockheed Martin**, \$849,000, 1995-98.

The Next Generation of Tuned Liquid Dampers for Controlling Structural Motions, \$286,346, **National Science Foundation**, 1995- 98.

Engineering Research Equipment, Full Scale Component Testing and Digital Control System Upgrade (B.F. Spencer, PI; R.B. Fleischman, M. Sain, A. Kareem, I-K. Chang, Co-PIs), \$109,985, **National Science Foundation**, 1997-98.

Research Participation in the Twenty Ninth Joint Meeting of the U.S.-Japan Panel on Wind & Seismic Effects (UJNR), \$9,750, **National Science Foundation**, 1997-98.

REU Site in CE/GEOS at the University of Notre Dame, (S. Silliman, P.I., CE/GEOS Faculty Co-PI), \$160,500, **National Science Foundation**, 1997-2000.

Large Scale Test Facility, \$19,980, **National Science Foundation**, 1997-98.

Large Scale Test Facility, \$8,000, Center for Building Technology, **NIST**, 1997-98.

Dynamic Response of Structures, \$34,750, **National Science Foundation**, 1995-98.

US/PRC Joint Research Program in Structural Control: Control of Nanjing TV Tower, \$123,939, **National Science Foundation**, 1994-98.

Engineering for Wind Hazard Mitigation, \$146,595, **National Science Foundation**, 1995-98.

Response Statistics of Ocean Structures under Wind, Wave and Current Loads and Their Motion Control, \$285,000, **Office of Naval Research**, Mathematical Sciences Division, Department of Defense, 1993-1997.

Numerical Investigation of Wind Effects on Structures, Su3500, National Center for Supercomputing, **National Science Foundation**, 1996-97.

Bridge Aerodynamics, \$32,000, University of Notre Dame, Matching Funds, 1996-97.

Travel Grants, **Lockheed-Martin, FEMA, CCIND, NSF, IBHS**, \$30,200, 1995-00.

Engineering Research Equipment: Data Acquisition, Sensing and Control, (B.F. Spencer, Jr., PI; M.K. Sain, A. Kareem, and M. Makris, Co-PIs), \$30,328, **National Science Foundation**, 1995-96.

International Travel Fellowship, **International Wind Engineering Forum** (Japan Society for Advancement in Building Science), \$10,500, 1994-98.

Research Participation in the Ninth International Conference on Wind Engineering, \$20,256, **National Science Foundation**, 1994-95.

Engineering of Structures for Mitigating Damage Due to Cyclones, \$10,000, **United Nations Development Project**, UN/Government of India, 1993-1995.

UJNR Panel Travel Support, \$10,000, **National Science Foundation**, 1993, 1999, 2002, 2006

Dynamic Response of Structures, \$10,000, **National Science Foundation**, 1992-1993.

Offshore Winds and Their Load Effects, \$40,000, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1991-1992.

Equipment for Wind Tunnel Laboratory, \$125,000, **University of Notre Dame**, 1990-.

Response of Tension Leg Platform to Combined Action of Wind, Waves, and Currents, \$75,200, **Texas Advanced Research Program**, 1989-1991.

Mitigation of Offshore Platform Motions Utilizing Tuned Sloshing Dampers (A.N. Williams Co-PI), \$85,000, **Texas Advanced Technology Program**, 1989-92.

Wind Effects on Tension Leg Platforms, \$32,245, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1990-1991.

Faculty Development Award, \$30,000, **University of Houston**, Office of the Provost, 1989-1990.

Dynamic Response of Structures, \$37,500, **National Science Foundation**, 1990-1993.

Wind Resistant Design of High-Rise Buildings, \$7,000, **Building Research Institute**, Ministry of Interior, Taiwan, 1991.

Risk Assessment and Probabilistic Design, \$8,458, **University of Houston**, Energy Laboratory, 1989-1990.

Wind Effects on Tension Leg Platforms, \$30,000, Offshore Technology Research Center, **National Science Foundation**, Engineering Research Centers Program, 1989-1990.

Dynamic Response of Structures, \$34,080, **National Science Foundation**, 1989-1990.

Nonlinear Frequency - Domain Hydrodynamic Analysis of Compliant Offshore Platforms in Random Seas, (A.N. Williams Co-PI), \$120,000, **Texas Advanced Technology Program**, 1988-1990.

Dynamic Response of Structures, \$70,350, **National Science Foundation**, 1988-1989.

Sixth U.S. National Conference on Wind Engineering, \$47,769, **National Science Foundation**, 1988-1990.

Dynamic Response of Structures, \$7,050, **Halliburton Foundation**, Houston, Texas, 1988- 1989.

Seismic Analysis of Structure-Equipment Systems, \$17,500, **Amber/Booth Company**, Inc., Houston, Texas, 1986-1988.

Dynamic Response of Structures, \$62,500, **National Science Foundation**, 1986-1987.

Serviceability of Tall Buildings, \$20,000, **American Institute of Steel Construction**, Chicago, Illinois, 1985-1990.

Grant CPU time on the CRAY Y-MP, \$6,000, **CRAY Corporation**, Minneapolis, Minnesota, 1987-1988.

Equipment and Travel Grants, \$8,500, **Halliburton Foundation**, Houston, Texas, 1984- 1986.

Dynamics of Deepwater Compliant and Fixed Offshore Structures, \$67,500, **Shell Oil, Conoco, Brown & Root, DnV**, 1984-1991.

Dynamic Response of Structures, \$62,500, **National Science Foundation**, 1985-1986.

Response of Tension Leg Platforms to Random Wave and Wind Fields, \$40,000, **Chevron Oil Field Research Company**, La Habra, California, 1984-1986.

Participation in a Joint US-Australian Workshop on Loading, Analysis and Stability of Thin-Shell Bins, Tanks and Silos, Sydney, Australia, \$2,500, **National Science Foundation**, 1985-1986.

Development of Ultra-sensitive Force Balance and Automated Experimental Control, \$7,700, **New Research Opportunities Program**, University of Houston, 1984-1985.

Dynamic Response of Structures, \$62,500, **National Science Foundation**, 1984-1985.

Equipment Grant (Microcomputer System), \$10,000, **University of Houston**, 1983-1984.

International Travel Grant, \$1,900, **National Science Foundation**, 1983-1984.

Development of Computer Programs for Dynamic Analysis of Tension Leg Platforms, \$4,178, **Gulf Research & Development Company**, Houston, Texas, 1982-1983.

Wind Engineering Study of Kilroy Airport Center, \$20,100, **Kilroy Industries/Aerovironment**, Pasadena, California, 1981-1982.

Wind-Excited Response of a Tension Leg Platform, \$55,439, **Gulf Research & Development Company**, Houston, Texas, 1980-1982.

Across-Wind Response of Towers and Stacks of Cricular Cross Section, \$89,750, **National Science Foundation**, 1980-1982.

Local Terrain Effects on Jet Engine Test Facility, \$30,000, **General Electric/Aerovironment**, Pasadena, California, 1979-1980.

Equipment for Wind Tunnel Laboratory, \$23,795, **New Research Opportunities Program**, University of Houston, 1979-1981.

## SERVICE ACTIVITIES

### 1. UNIVERSITY SERVICE

#### A. Departmental

<u>Faculty Co-Advisor, ASCE Student Chapter (UH)</u>	1979-1980
<u>Undergraduate Advisor (UH)</u>	1985-1986
<u>Member, Planning Committee (UH)</u>	1986-1988
Chairman 1987-88	
<u>Member Department, Faculty Evaluation Committee</u>	1985-1987
Chairman 1986-87 (UH)	
<u>Member, Committee on Appointments and Promotions (UH)</u>	1984-1990
<u>Professor-in-Charge, CE Computer Laboratory (UH)</u>	1986-1990
<u>Member, Committee on Appointments &amp; Promotions (ND)</u>	1993-1996
<u>Member, Department Graduate Curricula &amp; Program Committee (ND)</u>	1991-1993
<u>Chairman, Undergraduate Curriculum Committee (ND)</u>	1993-1994
<u>Member, Department Graduate Recruiting Committee (ND)</u>	1991-1993
<u>Chairman, Department Honesty Committee (ND)</u>	1991-1993
<u>Member, Department Research Laboratories Committee (ND)</u>	1991-1995
<u>Member, Department Space Renovation Committee (ND)</u>	1991-1995
<u>Member, Department Ad Hoc Committee on Governance (ND)</u>	1996-97
<u>Member, Civil Engrg. &amp; Geo. Sciences Chair Search (ND)</u>	1998-99

#### B. College

<u>Member, College Executive Committee (ND)</u>	1999-02
<u>Member, Dean Search Committee (ND)</u>	1997-98
<u>Member, Review Team for 10-Year Evaluation of the Department of Aerospace &amp; Mechanical Engineering</u>	1997-1998
<u>Chairman, Chair Search Committee for Department Mechanical and Aerospace Engineering (ND)</u>	1995
<u>Member, College Committee on Women (ND)</u>	1996-
<u>Alternate Member, College Council (ND)</u>	1995-1996
<u>Member, College Recruiting Committee (UH)</u>	1979-1985
<u>Member, College Governance Committee (UH)</u>	1979-1985
<u>Member, Petroleum Engineering Committee (UH)</u>	1982-1983
<u>Member, Committee to Study Remote Instruction</u>	1983-1985

<u>by Television (UH)</u>	
<u>Member, College Graduate Standards Committee (UH)</u>	1985-1987
<u>Member, College Computer Policy Committee (UH)</u>	1986-1990
<u>Member, College CIE Microcomputer Committee (UH)</u>	1986-1990
<u>Served as an inter-departmental member on a number of theses/dissertation committees (UH and ND)</u>	1978-

C. University

<u>Member Provost's Task Force on Strategic Directions in Science &amp; Engineering (ND)</u>	1999
<u>Member Provost's Advisory Committee (ND)</u>	1996-1999 2000-2003
<u>Member Provost's Ad Hoc Committee on Fellowships (ND)</u>	1993-1994

D. Inter-University

Advisor to the Department of Civil Engineering, University of Puerto Rico in the development of their Wind Tunnel Laboratory Facilities, August 1982. Served as an external Ph.D. thesis examiner to the University of Sydney, Sydney, Australia, Washington University, St. Louis, Missouri, National University of Singapore, Singapore, and University of Western Ontario, London, Canada.

## 2. PROFESSIONAL SERVICE

National Science Foundation, Research Proposal Reviewer and Review Panel Member, January 1981-present, (USA), National Science & Engineering Research Council (Canada), University Grants Commission (Australia) and Hong Kong Research Grants Council, Hong Kong Polytechnic University, IIT Madras

Paper Reviewer, Journals of Structural Engineering, ASCE, Journal of Engineering Mechanics, ASCE, Journal of Aerospace Engineering, ASCE, Journal of Computations, ASCE, Journal of Harbors & Waterways, ASCE, Journal of Offshore Mechanics and Arctic Engineering, ASME, Journal of Applied Mechanics, ASME, Journal of Vibration and Acoustics, ASME, Journal of Fluids Engineering, ASME, Journal of Energy Resources, ASME, Engineering Structures, Journal of Wind Engineering and Industrial Aerodynamics, Probabilistic Engineering Mechanics, Structural Safety, Structural Engineering and Mechanics, International Journal of Solids and Structures, AISC Engineering Journal, Journal of Sound and Vibration, Journal of the Japan Society of Wind Engineering, AIAA Journal, Fluids and Structures, ASCE Technical Publications, John Wiley Science Publications, Journal America Meteorological Society, and Wind & Structures, IEEE Signal Processing

Reviewer for the City of Houston's Building Code for Wind Loading, 1980-90.

Member, Construction Industry Council's Code Review Committee, 1983-85.

### Professional and Honor Societies

American Society of Civil Engineers  
American Institute of Aeronautics and Astronautics

Scientific Research Society of North America, SIGMA XI  
Honor Society of PHI KAPPA PHI  
Honor Society of Chi Epsilon  
American Association for Wind Engineering, USA  
International Association for Civil Engineering Reliability and Risk Analysis  
Earthquake Engineering Research Institute, USA  
Japan Association for Wind Engineering  
International Wind Engineering Forum

### **Technical Committee Memberships**

Member, Committee to Review the Need for a Large-Scale Facility for Research on the Effects of Extreme Winds on Structures, National Research Council, National Academy of Sciences.

Member, Task Committee E on Design for Wind and Wind Hazard Mitigation, U.S.-Japan Cooperative Program in Natural Resources (UJNR), Panel on Wind & Seismic Effects.

Member, Committee on Natural Disasters, National Research Council, National Academy of Sciences, 1986 - 91.

Chairman, Committee on Wind Effects/STD - Dynamic Effects, American Society of Civil Engineers, 1986 - 90, member 1979.

Member, Dynamic Effects, Administrative Committee, Structural Division, ASCE, 1986 - 90.

Member, Probabilistic Methods Committee, Engineering Mechanics Division, ASCE, 1987 - .

Chairman, Probabilistic Methods Committee, Engineering Mechanics, Division, ASCE, 1999-2000.

Member, Dynamics Committee, Engineering Mechanics Division, ASCE, 1985- 95.

Member, Experimental Analysis and Instrumentation, Engineering Mechanics Division, ASCE, 1993-.

Member, Aerodynamics Committee, Aerospace Div., ASCE, 1986 - .

Member, Committee on Structural Identification and Health Monitoring of Constructed Facilities, Structural Division, ASCE, 1999 - .

Member, Committee on Tall Buildings, Structures Division, ASCE, 1999 - .

Member, Task Committee on Wind Damage Investigation, Aerospace Division, ASCE, 1989 - .

Member, Task Committee on Turbulence, Engineering Mechanics Division ASCE, 1981-86.

Chairman, Task Committee on Damping Systems, Structures Division, ASCE, 1993-.

Member, ASCE 7 (formerly ANSI) Task Committee on Wind Loads, 1991-.

Chairman, Sub-Committee on Application of Wind Engineering to Offshore Engineering, Structures Division, ASCE, 1989 - .

Member, Task Committee on Building Motion, Perception and Criteria, Structures Division, ASCE, 1989 - 95.

Member, Criteria and Loading (CL) subcommittee, Wind Loading and Wind Effects, Council on Tall Buildings and Urban Habitat, 1985 - .

Member (corresponding), Society of Naval Architects and Marine Engineers, Offshore Committee, Panel OC-1, Stability and Motions, 1988 - .

Member, IASSAR, Stochastic Methods in Structural Mechanics, 1989 - .

Member, Wind Damage Mitigation Committee, Insurance Institute for Property Loss Reduction, Boston, 1995-.

Member, Engineering Committee, National Hurricane Conference, Tallahassee, Florida, 1995-.

## **Consulting Activities**

ExxonMobil, Houston Texas, Floating, Production, Storage and Offloading Vessels.

Chevron Oil Field Research Company, La Habra, CA. - Offshore Structures.

Aerovironment, Inc., Pasadena, CA., General Consultant - Wind Energy Systems and Structural Aerodynamics.

Herzfeld & Rubin, New York, N.Y. - Automobile Aerodynamics.

The Reinforced Earth Company, Arlington, VA. - Structural Aerodynamics.

Bernard Johnson, Inc., Houston, TX. - Structural Dynamics.

Walter P. Moore and Associates, Inc., Houston, TX. - Structural Dynamics.

Reynolds, Allen & Cook, Houston, TX. - Cladding Behavior of Tall Buildings.

Applied Research Engineering Services, Inc., Raleigh, N.C. - Wind Engineering, Earthquake Engineering, and Structural Dynamics.

United Nations Development Program, Madras, India - Engineering of Structures for Mitigating Damage Due to Cyclones.

Impact Forecasting, L.L.C., Chicago, Illinois – Risk Assessment of Structures in Wind Storms and Earthquakes.

KPFF Consulting Engineers, Seattle, Washington – Design of Olive & Eight a 420 ft tall building in Seattle and Olivian a 400 ft tall building in Seattle..

State Farm Insurance, Damage evaluation of coastal communities in the wake of Hurricane Katrina.