



American Association
for Wind Engineering

AMERICAN ASSOCIATION FOR WIND ENGINEERING

2012 WORKSHOP

August 12-14, 2012

Resort & Conference Center, Hyannis, MA, USA

PROGRAM

Sunday, August 12

- 5:00 – 5:30 pm** **Registration desk opens**
(Second floor, Hotel Lobby)
- 5:30 – 7:30 pm** **Welcome Reception**
“Resort Barbeque” (Cabana Tent area; inclement weather: Cape Cod Room) ‡
- 7:30 – 9:00 pm** **AAWE Board Meeting** (Barnstable 1)

All workshop sessions will be in Hyannisport Room (Hotel, 2nd floor). Every presentation other than those in the plenary sessions is scheduled for 15 minutes (12 min. for presentation, 2 min. for questions and 1 min. for transition). Breakfast, lunch and dinner will be in Cape Cod Room (Hotel, 2nd floor). Breaks will be on the 2nd-floor Lobby of the Hotel.

All posters must be set up in the designated area of Hyannisport on 8/13 during breakfast and will remain on display until 8/14. Dimensions of the poster boards are 48 inches (wide) by 36 inches (high); material for mounting posters will be provided in the poster area.

Affiliation of the main author is only shown in this program. Please refer to the electronic proceedings for the complete list of affiliations.

Monday, August 13

7:30am **BREAKFAST**‡

8:30am **WELCOME REMARKS**

Luca Caracoglia, *Chairman - 3rd AAWE Workshop, Northeastern University*

Jerome F. Hajjar, *Professor and Chair, Dept. of Civil and Envir. Engr., Northeastern University*

Partha P. Sarkar, *AAWE President and Co-Chairman - 3rd AAWE Workshop, Iowa State Univ.*

8:50am **PLENARY SESSION A**

(A1) Wind hazard and community resiliency (ID 50)

Kishor Mehta

National Science Foundation, Arlington, VA, USA

(A2) Assessing climate change impact on the US east coast hurricane hazard II: Sea temperature and hurricane frequency (ID 02)

Lauren Mudd, Yue Wang, Chris Letchford*, David Rosowsky

Rensselaer Polytechnic Institute, Troy, NY, USA

* Lead presenter, ID: Abstract ID (see Book of Abstracts), PS: Poster Session, † Poster presentation

‡ Included in registration fee

9:30am SESSION 1 - Wind Hazard Modeling and Assessment

- (1a) Cyberbased analysis, modeling and simulation of wind load effects in VORTEX-Winds (ID 08)
Ahsan Kareem*, Dae Kun Kwon, Yukio Tamura
University of Notre Dame, Notre Dame, IN, USA
- (1b) Data-driven models for analysis and simulation of extreme wind events (ID 12)
Megan McCullough*, Ahsan Kareem
University of Notre Dame, Notre Dame, IN, USA
- (1c) Human perception of surface wind, rain and water current (ID 41)
Forrest J. Masters*, Greg A. Webster, Duzgun Agdas
University of Florida, Gainesville, FL USA
- (1d) A study of Hurricane IKE impact on hospital services (ID 44)
Yuepeng Cui*, Daan Liang, Bradley Ewing
Texas Tech University, Lubbock, TX, USA

10:30am BREAK‡ with POSTER SESSION

- (PS1) Failure vs. Flight: An experimental study of wind speeds associated with flight of residential roof structures† (ID 20)
Sarah Elizabeth Stenabaugh*, Gregory A. Kopp
Western University, London, Ontario, Canada
- (PS2) Load sharing of toe-nailed, roof-to-wall connections under extreme wind loads† (ID 15)
Mohammad Abrar A. Khan*, David J. Henderson, Murray J. Morrison, Gregory A. Kopp
Western University, London, Ontario, Canada

10:45am SESSION 2 - Fluid-structure Interaction and Wind-induced Failure

- (2a) Influence of solid area distribution on the drag of a 2-D lattice frame (ID 21)
Thomas G. Mara
Western University, London, Ontario, Canada
- (2b) Wind-induced vibration of mast arm traffic signal support structure of various configurations (ID 17)
Jieying Hua*, Delong Zuo
Texas Tech University, Lubbock, TX, USA
- (2c) Vortex induced vibrations of inclined flexible cylinders in flow (ID 18)
Banafsheh S. Aghazadeh*, Yahya Modarres-Sadeghi
University of Massachusetts, Amherst, MA, USA
- (2d) Wind-tunnel testing of an inclined stay cable with a helical fillet (ID 45)
Harold R. Bosch
Aerodynamics Laboratory, Federal Highway Administration, McLean, VA, USA
- (2e) Determining remaining fatigue life of in-situ mast-arm traffic signal supports (ID 03)
Michelle Riedman*, Christopher Letchford, Michael O'Rourke
Rensselaer Polytechnic Institute, Troy, NY, USA
- (2f) Modelling the failure of inter-connected roof-to-wall connections in residential wood framed buildings under realistic wind loads (ID 06)
Tushar Kanti Guha*, Gregory A. Kopp
Western University, London, Ontario, Canada

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‡ Included in registration fee

12:15pm LUNCH‡

1:45pm SESSION 3 - Tornado and Thunderstorm Outflow

- (3a) The 19 May 2012 Tornadoes (ID 47)
Maryam Refan, Horia Hangan*
Western University, London, Ontario, Canada
- (3b) Effect of tornado size on forces on thin 2D cylinder (ID 37)
R. Panneer Selvam, Piotr Gorecki*
University of Arkansas, Fayetteville, Arkansas, USA
- (3c) Mitigation of tornado effects—a study of the shielding effects of hills (ID 46)
R. Panneer Selvam, Quentin S. Ragan*
University of Arkansas, Fayetteville, Arkansas, USA
- (3d) Study of microburst simulation models and wind loading effects (ID 07)
Yan Zhang*, Partha P. Sarkar, Hui Hu
Iowa State University, Ames, IA, USA
- (3e) High-resolution full-scale observations of thunderstorm outflow winds (ID 28)
W. Scott Gunter*, John L. Schroeder
Texas Tech University, Lubbock, TX, USA
- (3f) Near-surface turbulence characteristics of thunderstorm outflow in Texas Tech University Ka-band mobile Doppler radar observations (ID 36)
Patrick S. Skinner*, Christopher C. Weiss, W. Scott Gunter, John L. Schroeder
Texas Tech University, Lubbock, TX, USA

3:15pm BREAK‡ with POSTER SESSION

- (PS3) Numerical investigation of wind-induced pressure loads on low-rise residential buildings with complex roof shapes† (ID 51)
Agerneh K. Dagne, Girma T. Bitsuamlak*, Edward Ledesma
Florida International University, Miami, FL, USA
- (PS4) Turbulent flow mechanism for inclined and yawed stay cables† (ID 52)
Michael S. Hoftyzer*, Elena Dragomirescu
University of Ottawa, Ottawa, Canada

3:30pm SESSION 4 - Low-rise Buildings

- (4a) Ongoing research on the wind resistance of asphalt shingles (ID 19)
Craig R. Dixon, Forrest J. Masters*, Kurt R. Gurley, David O. Prevatt
University of Florida, Gainesville, FL
- (4b) Refined modeling of a typical low-rise building under hurricane loads using finite element models (ID 24)
Fang Pan*, C.S. Cai, Wei Zhang
Louisiana State University, Baton Rouge, LA, USA
- (4c) Wind loads on roof mounted equipment on low-rise buildings (ID 27)
Murray J. Morrison*, Chuck Miccolis, Anne Cope
Insurance Institute for Business & Home Safety, Richburg, SC, USA

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- (4d) Development of a model for predicting pressure moderation across cladding systems (ID 01)
Randy Van Straaten*, **Gregory A. Kopp**
Western University, London, Ontario, Canada
- (4e) A stochastic approach to assess the progression of failures leading to total collapse in wood frame residential structures (ID 40)
Joseph B. Dannemiller*, **Douglas A. Smith**, **Stephen M. Morse**
Texas Tech University, Lubbock, TX, USA
- (4f) Gutter aerodynamics and their effect on near eave roof pressure (ID 32)
Workamaw Warsido*, **Girma T. Bitsuamlak**
Florida International University, Miami, FL, USA
- (4g) Hurricane-induced interior damage to low-rise buildings: a status report of ongoing research at Florida International University (ID 34)
Thomas Baheru*, **Arindam Gan Chowdhury**, **Jean-Paul Pinelli**
Florida International University, Miami, FL, USA
- (4h) Large-scale measurements of the wind induced external convective heat transfer coefficient for building envelope (ID 39)
Thomas Baheru, **Ramtin Kargarmoakhar***, **Arindam Gan Chowdhury**, **ChengXian Lin**
Florida International University, Miami, FL, USA

5:30pm OPEN TIME (5:30pm - 6:30pm, 12ACWE Steering Committee Meeting - Hyannisport Room)

7:30pm CONFERENCE DINNER‡

Tuesday, August 14

7:30am BREAKFAST‡

8:30am PLENARY SESSION B

- (B1) Measurements of utility-scale turbine wakes using the Texas Tech University Ka-band mobile research radars (ID 14)
Brian D. Hirth, **John L. Schroeder***
Texas Tech University, Lubbock, TX, USA
- (B2) Wind tunnel input for performance based design (ID 25)
Bhami Ilyas, **Jason Garber**, **Jon Galsworthy***
RWDI Inc., Guelph, Ontario, Canada

9:10am SESSION 5 - Tall Buildings

- (5a) A cohesive performance-based optimization framework for the design of tall buildings subject to wind loads (ID 13)
Sarah Bobby*, **Seymour M.J. Spence**, **Daniel Wei**, **Enrica Bernardini**, **Ahsan Kareem**
University of Notre Dame, Notre Dame, IN, USA
- (5b) Synthesis of wind tunnel and climatological data in wind-induced response estimation of tall buildings (ID 31)
Workamaw Warsido*, **Girma T. Bitsuamlak**
Florida International University, Miami, FL, USA

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- (5c) Estimating extremes of combined Gaussian and non-Gaussian response processes (ID 05)
Kuangmin Gong*, **Xinzhong Chen**
Texas Tech University, Lubbock, TX, USA
- (5d) Wind borne debris impact generated damage to cladding of high rise building (ID 48)
Anurag Jain
Weidlinger Associates, Inc., Marina del Rey, CA, USA

10:10am BREAK‡ with POSTER SESSION

- (PS5) Wind-borne debris trajectory estimation using computer generated turbulent wind field† (ID 04)
Farid Moghim*, **Luca Caracoglia**
Northeastern University, Boston, MA, USA
- (PS6) Wind effect on photovoltaic solar systems in single and cluster arrangements† (ID 53)
Sathya Baskaran*, **Elena Dragomirescu**, **Paul Wilson**
University of Ottawa, Ottawa, Canada

10:25am SESSION 6 - Renewable Energy Systems

- (6a) A wind-tunnel investigation of the wake behind a wind-turbine in a turbulent boundary-layer flow (ID 22)
Steve Cochard, **Daniel Lander***
The University of Sydney, Sydney, NSW, Australia
- (6b) Lidar-enhanced pitch control for optimized wind turbine performance (ID 23)
Rachit R. Mathur*, **Jennifer Rice**, **Andrew Swift**, **Jamie Chapman**
Texas Tech University, Lubbock, TX, USA
- (6c) Wind Loadings on Solar Panels (ID 33)
Dorothy A. Reed
University of Washington, Seattle, WA, USA
- (6d) Wind load on solar panel experiment (ID 49)
Erin K. Dowds, **Jennifer S. Harris***, **Frederick R. Rutz**
University of Colorado-Denver, Denver, Colorado
- (6e) Numerical and experimental study of wind effects on photovoltaic (PV) panels (ID 29)
Chowdhury Jubayer, **Ayodeji Abiola-Ogedengbe**, **Kamran Siddiqui**, **Horia Hangan***
Western University, London, Ontario, Canada
- (6f) Pressure equalization and analytical solution for pressures underneath the outer layer in double skin envelopes (ID 16)
Jeong Hee Oh*, **Gregory A. Kopp**
Western University, London, Ontario, Canada
- (6g) Design wind loads for photovoltaic systems mounted on sloped roofs of low-rise residential buildings (ID 26)
Yumi Iida, **Sarah Elizabeth Stenabaugh**, **Gregory A. Kopp***, **Panagiota Karava**
Western University, London, Ontario, Canada

12:10pm LUNCH‡

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1:40pm SESSION 7 – Slender Bridges and Cables

- (7a) Nonlinear aerodynamic and aeroelastic analysis framework for cable-supported bridges (ID 11)

Teng Wu*, **Ahsan Kareem**

University of Notre Dame, Notre Dame, IN, USA

- (7b) A numerical algorithm for predicting life-cycle maintenance costs for slender bridges under wind hazards (ID 10)

Dong-Woo Seo*, **Luca Caracoglia**

Northeastern University, Boston, MA, USA

- (7c) A stochastic approximation algorithm for simulating wind-induced nonlinear dynamics of cable networks (ID 09)

Gian Felice Giaccu*, **Bernardo Barbiellini-Amidei**, **Luca Caracoglia**

University of Cagliari, Cagliari, Italy

- (7d) Study on a recently-developed impact damper for reducing wind-induced cable-stay vibration (ID 38)

Philipp Egger*, **Luca Caracoglia**, **Johann Kollegger**

Vienna University of Technology, Vienna, Austria

2:40pm BREAK

2:50pm SESSION 8 - Wind Climatology and Full-scale Measurements

- (8a) Progress on development of an updated United States extreme wind climatology for wind load design (ID 35)

Franklin T. Lombardo

National Institute of Standards and Technology, Gaithersburg, MD, USA

- (8b) Remote sensing in wind damage analysis (ID 42)

Lin Cong*, **Daan Liang**, **Brian Nutter**

Texas Tech University, Lubbock, TX, USA

- (8c) Characteristics of wind in an atmospherically stable boundary layer (ID 43)

Delong Zuo, **Jingting Xiao***

Texas Tech University, Lubbock, TX, USA

- (8d) An analysis of the kinematic variability within the hurricane boundary layer using the coastal WSR-88D radar network (ID 30)

Richard Krupar III*, **John L. Schroeder**

Texas Tech University, Lubbock, TX, USA

3:50pm CLOSING REMARKS

4:00pm ADJOURN

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