

*Curriculum Vitae*

**Christine Diane Alfano (Standohar), E.I.**

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**Affiliation**

Department of Mechanical Engineering  
Valparaiso University  
Valparaiso, IN 46383

**RESEARCH INTEREST**

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- Damage Assessment
- Severe Weather
- Structural Analysis, Performance, and Reliability
- Residential Storm Shelters

**EDUCATION**

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**Colorado State University**, Fort Collins, Colorado

*PhD Candidate, Research Assistant*

*Advisor:* Dr. J.W. van de Lindt

Ph.D.

Graduation Date: (August 2015, expected)

Major: Civil Engineering

Overall GPA: 4.0/4.0

Curriculum Emphasis: Wind engineering, structural analysis, hazard analysis

**University of Alabama**, Tuscaloosa, Alabama

*Research Assistant*

*Advisor:* Dr. J.W. van de Lindt

Ph.D.

August 2011-May 2013

Major: Civil Engineering

Overall GPA: 4.0/4.0

Curriculum Emphasis: Structural analysis, steel design, concrete design, forensic engineering

**University of Miami – Rosenstiel School of Marine and Atmospheric Science**, Miami, Florida

*Research Assistant*

*Advisor:* Dr. B.J. Soden

Master of Science

Graduation Date: (May 2012)

Major: Meteorology

Overall GPA: 3.8/4.0

Curriculum Emphasis: Climate change and hurricane intensity, geophysical fluid dynamics

**Valparaiso University**, Valparaiso, Indiana

Bachelor of Science, *Summa Cum Laude*

Graduation Date: May, 2009

Major: Meteorology

Minor: Mathematics

Overall GPA: 3.9/4.0

Major GPA: 3.9/4.0

Curriculum Emphasis: Synoptic scale mid-latitude weather and severe weather, mathematics

## RELEVANT EXPERIENCE

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### **Valparaiso University, Department of Mechanical Engineering, Valparaiso, Indiana**

*Visiting Assistant Professor – August 2014-Present*

- Applied my engineering knowledge and experience in an academic setting
- Significant experience with presentation and communication skills
- Instructor for several courses including:
  - GE100: Introduction to Engineering
  - ME 201: Technical Writing
  - ME 215: Mechanics of Materials
  - GE 497: Senior Design
  - ME 252L: Materials Science Lab

### **Colorado State University, Dept. of Civil and Environmental Engineering, Fort Collins, Colorado**

*Graduate Research Assistant and Grader – August 2013-Present*

- Performed an analysis of current residential building codes under tornado winds using a convolution of fragility analysis and tornado hazard curves
- Graded for CIVE 260 Statics and CIVE 367 Structural Analysis

### **University of Alabama, Dept. of Civil, Construction, and Environmental Engineering, Tuscaloosa, Alabama**

*Graduate Research Assistant – July 2011-July 2013*

- Assessed annual tornado hazard across the contiguous U.S. to create contoured maps highlighting high risk areas

### **National Weather Service: Birmingham, Alabama, Weather Forecasting Office**

*Engineering Volunteer – April 2011-July 2013*

- Assisted NWS damage assessment teams in their analysis of residential and commercial building performance of tornadoes or straight line wind events

### **University of Miami, Dept. of Meteorology and Physical Oceanography, Miami, Florida**

*Graduate Research Assistant – July 2009-May 2012*

- Researched the impact of climate change on hurricane intensity through the use of IPCC model output and axisymmetric vortex hurricane model simulations

### **National Weather Service: Miami, Florida, Weather Forecasting Office**

*Student Volunteer – June 2010-September 2010*

- Worked on a project to determine the verification of storm based warnings by cross-checking warning time and location with local storm reports
- Shadowed forecasters to understand the methodology behind long and short term forecasts, as well as the necessary criteria to issue a severe weather warning

**National Aeronautics and Space Administration (NASA), Greenbelt, Maryland**

*Goddard Space Flight Center Summer Institute Participant – June 2008-August 2008*

- Worked with NASA scientists to develop a methodology to estimate oceanic heat content based on in situ, climatological, and satellite observations
- Established a connection between areas of high oceanic heat content and rapid intensification of hurricanes

**Valparaiso University, Dept. of Geography and Meteorology, Valparaiso, Indiana**

*Undergraduate Teaching Assistant – August 2007-May 2009*

- Assistant during lab for Atmospheric Dynamics I & II, and Meteorological Observation and Analysis Classes
- Grade homework, quizzes, exams
- Hold weekly help sessions and exam review sessions

**Valparaiso University, Dept. of Mathematics, Valparaiso, Indiana**

*Undergraduate Teaching Assistant – August 2007-May 2009*

- Assistant in class for Calculus I and Differential Equations
- Grade homework and quizzes
- Hold weekly help sessions

**DAMAGE SURVEYS**

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- *Moore, Oklahoma* – EF5, May 20, 2013  
Funded by a NSF RAPID grant, the University of Alabama teamed with members from the University of Florida, the University of Oklahoma, Oklahoma State University, Mississippi State University, Oregon State University, Rose-Hulman Institute of Technology, and Simpson Strong Tie to assess damage. Focus was paid to roof-to-wall connections, wall-to-foundation connections, and storm shelter performance. Transects were completed across the path to obtain a variation of wind speed and damage across a tornado's width. The data was compiled into a website and available to the public.  
<http://esridev.caps.ua.edu/MooreTornado/MooreTornado.html>
- *Macedonia/Ethelsville* – EF1, April 11, 2013  
Teamed with the Birmingham National Weather Service to assess damage in Pickens County in western Alabama. Portions of the path in Mississippi were rated EF3 by the Jackson, Mississippi weather forecasting office.  
[http://www.srh.noaa.gov/bmx/?n=event\\_04112013macedonia](http://www.srh.noaa.gov/bmx/?n=event_04112013macedonia)
- *Koffman Tornado* – EF2, January 23, 2012  
Viewed the damage with several structural engineers from the University of Alabama to compliment and confirm the assessment from the Birmingham National Weather Service of the tornado that moved through northern Tuscaloosa County from the January 23, 2012 outbreak.  
[http://www.srh.noaa.gov/bmx/?n=event\\_01232012koffman](http://www.srh.noaa.gov/bmx/?n=event_01232012koffman)

- *Maplesville Tornado* –EF2, January 23, 2012  
Teamed with the Birmingham National Weather Service to assess the damage in Perry and Chilton Counties south of Birmingham from two tornadoes due to the January 23, 2012 outbreak.  
[http://www.srh.noaa.gov/bmx/?n=event\\_01232012maplesville](http://www.srh.noaa.gov/bmx/?n=event_01232012maplesville)
- *Country Rd 7 Tornado* – EF1, January 23, 2012  
Teamed with the Birmingham National Weather Service to assess the damage in Perry County southwest of Birmingham from tornadoes due to the January 23, 2012 outbreak.  
[http://www.srh.noaa.gov/bmx/?n=event\\_01232012countyr7](http://www.srh.noaa.gov/bmx/?n=event_01232012countyr7)
- *Cordova Tornado* – EF4, April 27, 2011  
Teamed with the Birmingham National Weather Service and Tim Marshall (Haag Engineering) to assess damage from a long track tornado to Cordova, Alabama due to the April 27, 2011 tornado outbreak.  
[http://www.srh.noaa.gov/bmx/?n=event\\_04272011cordova](http://www.srh.noaa.gov/bmx/?n=event_04272011cordova)
- *Tuscaloosa Tornado* – EF4, April 27, 2011  
Funded by a NSF RAPID grant, the University of Alabama teamed with members from the University of Florida, Oregon State University, South Dakota State University, the Applied Technology Council, and Simpson Strong Tie to assess damage. This was the first damage assessment performed by this particular group of professionals. The methodology developed here was fine-tuned for application in future tornadoes. Focus was paid to roof-to-wall connections, wall-to-foundation connections, and roof sheathing performance. Transects were completed across the path to obtain a variation of wind speed and damage across a tornado's width. The data was compiled into a website and available to the public.  
[http://esridev.caps.ua.edu/tuscaloosa\\_tornado/](http://esridev.caps.ua.edu/tuscaloosa_tornado/)

## SCHOLARLY PUBLICATIONS

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1. Standohar-Alfano, Christine D., and van de Lindt, John W., 2014: Tornado Risk Analysis for Residential Wood-frame Roof Damage Across the United States. *Journal of Structural Engineering (In Review)*.
2. Graettinger, A.J., Ramseyer, C.C., Freyne, S., Prevatt, D.O., Myers, L., Dao, T., Floyd, R.W., Holliday, L., Agdas, D., Haan, F.L., Richardson, J., Gupta, R., Emerson, R.N., Alfano, C., 2014: Tornado Damage Assessment in the Aftermath of the May 20<sup>th</sup> 2013 Moore Oklahoma Tornado. *NSF Final Report*.  
<http://esridev.caps.ua.edu/MooreTornado/Images/MooreTornadoFinalReport.pdf>
3. Standohar-Alfano, Christine D., Freyne, Seamus, Graettinger, Andrew J., Floyd, Royce W., Dao, Thang N., 2014: Performance of Residential Shelters in the May 20<sup>th</sup>, 2013 Moore, Oklahoma Tornado. *Journal of the Performance of Constructed Facilities*.  
<http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29CF.1943-5509.0000636>

4. Dao, Thang N., Graettinger, Andrew, Standohar-Alfano, Christine, Haan, Fred L., Gupta, Rakesh, Prevatt, David, Richardson, James, and Kashani, Alireza Geranmayeh, 2014: Failure Progression Analysis of Observed Residential Structural Damage with the Tornado Wind Field. *Structures Congress 2014*, 1448-1459.  
<http://ascelibrary.org/doi/abs/10.1061/9780784413357.128>
5. Standohar-Alfano, Christine D., and van de Lindt, John W., 2014: An Empirically-Based Probabilistic Tornado Hazard Analysis of the U.S. Using 1973-2011 Data. *Natural Hazards Review*, **10**. [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)NH.1527-6996.0000138](http://ascelibrary.org/doi/abs/10.1061/(ASCE)NH.1527-6996.0000138)
6. van de Lindt, J., Amini, M.O., Standohar-Alfano, C., Dao, T., 2012: Systematic Study of the Failure of a Light-Frame Wood Roof in a Tornado. *Buildings*, **2**, 519-533.  
<http://www.mdpi.com/2075-5309/2/4/519>
7. Standohar-Alfano, Christine D., 2012: Impact of Upper Ocean Warming on Hurricane Intensity. *Open Access Theses*. Paper 362. [http://scholarlyrepository.miami.edu/oa\\_theses/362](http://scholarlyrepository.miami.edu/oa_theses/362)

## **SELECTED PRESENTATION AT NATIONAL CONFERENCES**

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1. C.D. Standohar-Alfano and J.W. van de Lindt, *Tornado Risk Analysis for Residential Wood-frame Structures across the United States* presented at the 2014 FLASH (Federal Alliance for Safe Homes) Annual Conference, Orlando, Florida, November, 2014.
2. C.D. Standohar and B.J. Soden, *Impacts of Climate Change on Upper Ocean Warming and its Relationship to Hurricane Intensity* presented at the 91<sup>st</sup> American Meteorological Society Annual Meeting, 23<sup>rd</sup> Conference on Climate Variability and Change, Seattle, Washington, January, 2011.
3. C.D. Standohar, P. de Matthaëis, and S.D. Jacob, *Hurricane Intensity and Ocean Vertical Structure* presented at the 7<sup>th</sup> Annual Great Lakes Meteorology Conference, Valparaiso, Indiana, March, 2009.

## **HONORS**

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- Valparaiso University Presidential Scholarship, 2005-2009
  - Member of Alpha Lambda Delta Honor Society for Freshman, 2006-2009
  - Member of Chi Epsilon Pi Meteorology Honor Society, 2007-2009
  - American Meteorological Society Undergraduate Scholarship, 2008
  - Valparaiso University Lumina Award for Academic Achievement, 2008
  - American Meteorological Society Graduate Fellow, 2009-2010
  - University of Alabama Graduate Council Fellowship, 2012-2013
  - Colorado State University Dr. Jack E. Cermak Wind Engineering Scholarship, 2014
  - Federal Alliance for Safe Homes International Code Council Scholarship, 2014
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## **SKILLS**

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- Experience with FORTRAN, MatLab, and Unix environments
- Participated and guided several radiosonde launches
- Studied severe convective storms in a field study using weather software and instrumentation, as well as nowcasting skills
- Ability to perform damage surveys to assess structural performance in extreme winds
- Able to effectively communicate and explain concepts to an audience
- Multi-disciplinary approach to understanding weather hazard analysis

## **PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS**

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- Valparaiso University Storm Intercept Team (VUSIT), 2005-2009
- VUSIT Elected Board Secretary, 2007-2008
- Northwest Indiana National Weather Association/AMS, 2005-2009
- American Meteorological Society (AMS), 2007-Present
- Society of Women Engineers, 2011-Present
- American Society of Civil Engineers, 2012-Present