

CURRICULUM VITA
REBECCA D. WOOTEN
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RESEARCH INTERESTS

Statistical Analysis (**Parametric** and **Non-parametric**), Statistical Modeling (**Univariate**, **Bivariate** and **Multivariate**), Time Series Analysis (**Stationary** and **Non-stationary**), Computerized Algorithms for Statistical Analysis, and Research emphasizing **Environmental Studies**, **Geo-Physics**, **Geo-Engineering**, **Health**, **Life Science**, and **Education**, studying such topics as **Hurricanes**, **Lightning**, **Rainfall**, **Floods**, **Red Tide**, and **Volcanoes**.

EDUCATION

University of South Florida, Tampa, FL

Post Doctoral

Graduated May 1996 with both a B.A. and a M.A in Mathematics

Graduated December 2006 with a Ph.D. in Statistics: Environmental Studies

Dissertation Title: “**Statistical Environmental Models: Hurricanes, Lightning, Rainfall, Flooding, Red Tide and Volcanoes.**”

Specialization: Applied Statistics in Environmental Studies

Additional studies: Combinatorics, Graph Theory, Logic, Algebra, and Topology

Florida State University, Tallahassee, FL

Doctorial Student 1997-1998

Worked toward taking my preliminaries in Mathematics before returning to the University of South Florida

EMPLOYMENT

08/94 to 05/96 and 08/97 to Present

University of South Florida, Tampa, FL

ASSISTANT PROFESSOR (as of August 2009)

Acting Course Coordinator for Introduction to Statistics I and teaching Applied Statistical Methods. Have also worked as an adjunct instructor, teaching Introduction to Statistics I; have also taught a number of courses including: College Trigonometry, College Algebra, Pre-calculus, Calculus (All levels), Finite Math, Number Theory, Technology Seminar, Basic Statistics and Introduction to Statistics (I and II).

07/98 to Present

The Pedagogue, Tampa, FL

PRIVATE TUTOR/WEBMASTER

Work tutoring high school and college Mathematics and Statistics as well as acting as Webmaster of **Acceber** (<http://www.acceber.net>) and coordinator of the **Pedagogue** (<http://www.acceber.net/Pedagogue>).

01/02 to 12/02

Hillsborough Community College, Tampa, FL

ADJUNCT INSTRUCTOR

Worked teaching Intermediate Algebra

08/00 to 01/01

Palmer Tennis Academy Tampa, FL

MATHEMATICS INSTRUCTOR

Worked teaching pre-calculus

06/96 to 06/97

Florida State University, Tallahassee, FL

GRADUATE TEACHING ASSISTANT

Worked as a teaching assistant

08/91 to 05/96

Project Thrust - U.S.F., Tampa, FL

TUTOR

Worked tutoring all levels of mathematics including some computer languages such as FORTRAN and some engineering courses such as Linear Systems, also assisted in general office duties, data entry and statistical work.

SKILLS

Languages: Formal training in **Basic** and **FORTRAN**; working knowledge of **Visual Basic**, **C/C++**, **HTML**, **EXCEL** and basic **Java**.

Programs: Have working knowledge of **Norton**, **Works**, **WordPerfect**, **Microsoft Works**, **Word**, **Excel**, **Publisher**, **Power Point**, **Page Maker**, **Super Paint**, and **SAS analyst**; working knowledge of linear and non-linear analysis as well as ANOVA both simple and factorial, both in Excel and SAS.

Operating Systems: Have experience with **DOS**, **Windows** and **UNIX**.

PUBLICATIONS

1. **STATISTICAL ANALYSIS AND MODELING OF LIGHTNING** with Dr. C. P. Tsokos

ABSTRACT: Florida is the lightning capital of the United States. Lightning strikes occur when electrostatic energy within storm conditions is unbalanced and ephemeral discharges of static electricity are set off to help the system find equilibrium. Lightning, meaning the number of lightning strikes per month is characterized by relative humidity, sea level pressure, sea surface temperature, rain, precipitable water and the outgoing long-wave radiation. In the present study we use real data to identify the probability distribution that characterizes the behavior of the number of lightning strikes, develop a statistical model that identifies that key attributable variables to the subject strikes along with attributing interactions and proceed to estimate the number of lightning strikes with an acceptable degree of confidence. The result of the present study can be effectively used for strategic protection planning, among others.

Neural, Parallel & Scientific Computations, Volume 16, Number 1, March 2008, pages 125-147

2. **A MARKOVIAN ANALYSIS OF HURRICANE TRANSITIONS** with Dr. C. P. Tsokos

ABSTRACT: Markov chains to predict hurricane transformation between indices as defined by the newly proposed scale.

Neural, Parallel & Scientific Computations, Volume 16, Number 1, March 2008, pages 1-16

3. **A PROPOSED NEW SCALE TO IDENTIFY THE CATEGORY OF A HURRICANE'S STATUS**

ABSTRACT: The present study is concerned with the relationship between wind speeds in a hurricane and the pressure or depression. We propose a new index for categorizing hurricane force winds. Our method is developed utilizing statistical procedures and modeling with molecular physics. Our results are compared with the commonly used Saffir-Simpson scale.

Proceedings of the *Fifth World Congress of IFNA*, (R) Orlando, FL 2008,

CITATION: R.D. Wooten, C.P. Tsokos, A proposed new scale to identify the category of a Hurricane's status, *Nonlinear Analysis* (2009), doi:10.1016/j.na.2009.06.088

4. **MATHEMATICAL AND STATISTICAL ANALYSIS OF TEPHRA FALLOUT**

ABSTRACT: In this study, the bivariate probability distributions of volcanic explosivity index as well as the tephra fallout as measured at Cerro Negro are considered and the skewness of the distribution is considered empirically and the non-skewed bivariate Gaussian probability distribution is compared to the skewed Gaussian distribution.

To appear in: *Communication in Applied Analysis* xx (2009), no. N, xxx-xxx

5. LINEAR AND NON-LINEAR STATISTICAL MODELING OF HURRICANE FORCE WINDS

ABSTRACT: In the present study, the primary aim concentrates on the modeling of hurricane force winds; that is, maximum sustained winds related to pressure, location and linear velocity. We were successful in modeling the wind speed within storm as a function of the contributing entities. In this study, we were able to re-evaluate the association between wind speed and pressure within storms and know this will lead to historical breakthroughs in how we see hurricanes and predict hurricanes. This paper is the first paper of a series, and its analysis of wind speed versus pressure indicates that further analysis of the Saffir-Simpson Scale is necessary, as well as determining if pressure is an indicator or a consequence of a hurricane force wind speed.

To appear in: *Communication in Applied Analysis* xx (2009), no. N, xxx-xxx

JOURNALS

On the editorial board for **NONLINEAR STUDIES**

PRESENTATIONS

1. Title: Markov Chains and Differential Equations in Hurricane Analysis
Date: Friday, April 10, 2009 Time: 12:10PM
Location: ENB 109
2. Title: Red Tide and its Biological Effects
Date: Friday, February 20, 2009 Time: 3:00PM
Location: ENB 109
3. Title: Linear and Non-linear analysis of Hurricanes Force Winds
Date: Friday, July 4, 2008 Time: 2:00PM
Location: World Congress of Nonlinear Analyst
Audience: International Federation of Nonlinear Analyst
4. Title 1: Statistical Environmental Modeling: Lightning
Title 2: Statistical Environmental Modeling: Hurricanes
Date: June 2008 Time:
Location: University of South Florida
Audience: Students and Faculty, PROGRESS ENERGY
5. Title: Carbon Dioxide in the Atmosphere: CO2
Date: Spring 2008 Time:
Location: University of South Florida
Audience: Students and Faculty, T.J. Blasing for Oak Ridge Lab
6. Title: Looking at Red Tide from and Statistical Perspective
Date: December 2007 Time:
Location: Florida Institute for Game and Wildlife
Audience: Students and Faculty
7. Title: Statistical Analysis and Modeling of Lightning
Date: Thursday, April 11, 2007 Time: 3:00-4:00 pm
Location: Florida Southern College
Audience: Students and Faculty
8. Title: Statistical Analysis and Modeling of Hurricanes: Birth of a storm and analysis of the Saffir-Simpson Scale
Date: Friday, October 6, 2006 Time: 3:00-4:00 pm
Location: University of South Florida
Audience: Students and Faculty
9. Title: Statistical Analysis of Lightning Data
Date: Friday, March 31, 2006 Time: 3:00-4:00
Location: University of South Florida
Audience: Students and Faculty
10. Title: On Hastings-Metropolis Algorithm
Date: Friday, September 16, 2005 Time: 3:00-4:00
Location: University of South Florida
Audience: Students and Faculty
11. Title: An Analysis of the Effects of Grading with the Plus/Minus system versus the Standard Four Point System
Date: Friday, October 29, 2004 Time: 3:00-4:00
Location: University of South Florida
Audience: Students and Faculty

7. **THE FIRST USF INTERDISCIPLINARY WORKSHOP: *OPTIMAL DELAYED CONTROL OF STOCHASTIC SYSTEMS WITH MEMORY***

Date: Friday, February 15, 2008 Time: 1:00PM to 2:00PM
Location: University of South Florida

GUEST SPEAKER: Dr. Mou-Hsiung Chang
Manager of the Probability and Statistics Program in Mathematical Sciences Division,
US Army Research Office

USF REPRESENTATIVES: Dr. Chris P. Tsokos
Dr. G. Ladde
Dr. R.D. Wooten

ORGANIZATIONS

1993 *Pi Mu Epsilon*
1992 *Mathematics Association of America*
2004 *American Statistical Association*
2005 *Urban Scholars Outreach Program (USOP)*
Academic Coordinator, January 2007 to Present
<http://math.usf.edu/outreach/scholars/>
2005 *Geological Society of America*
2006 *National Honor Society*
2007 *Dr. A.N.V. Rao Gurukulam Program (RGP)*
Co-Founder and Academic Coordinator, August 2007 to Present
www.acceber.net/RGP
2008 *International Federation of Nonlinear Analyst (IFNA)*
Board of Directors, July 2008 to Present, Secretary of IFNA

GRANTS

Bright House Spring 2009, \$250 for supplies for **RGP**
Children's Board Spring 2008, \$5000 for supplies and brochures as well as a
copier/printer/scanner for the **USOP** office