



Nicola Scafetta, PhD

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Research Interest:

Theoretical and applied statistics, and nonlinear models of complex physical processes with applications in several astronomical, geophysical and biophysical fields. In particular I am currently studying solar and astronomical causes of climate change and modeling of physiological systems for diagnosing hypoxia and hyperoxia risk patients.

Education:

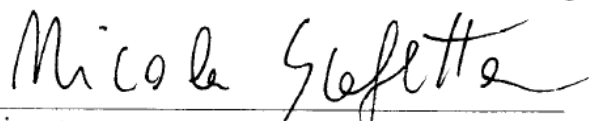
2001 University of North Texas, Denton, Texas. PhD in Physics,
 Dissertation: *"An entropic approach to the analysis of time series."*
 1997 Università di Pisa, Pisa, Italy. Laurea (Dottore in) Physics.
 Thesis: *"Breakdown of the Renormalization group approach to slow relaxation processes."*

Collaboration:

- 1) [Duke Center for Hyperbaric Medicine and Environmental Physiology:](http://hyperbaric.mc.duke.edu/index.htm)
<http://hyperbaric.mc.duke.edu/index.htm>
- 2) [Active Cavity Radiometer Solar Irradiance Monitor: ACRIM-SAT Experiment:](http://www.ACRIM.com)
<http://www.ACRIM.com>

Postgraduate Training and Experience:

Assistant Adjunct Professor:	2010-date,	Duke University
Research Scientist:	2010-date ,	ACRIM LAB group
Visiting Lecturer:	2010-fall ,	University of North Carolina Chapel Hill
Adjunct Professor:	2010-spring,	Elon University
Visiting Lecturer:	2008-fall ,	University of North Carolina Chapel Hill
Visiting Lecturer:	2008-2009,	University of North Carolina Greensboro
Research Scientist:	2003-2009,	Duke University, Physics Department
Preparing Future Faculty Program:	2005-2006,	Duke University, Graduate School
Research associate:	2002-2003,	Duke University, Electrical and Computer Engineering

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 Signature

NICOLA SCAFETTA
 Print Name

Professional society memberships:

American Physical Society (APS); American Geophysical Union (AGU); American Association of Physical Teachers (AAPT).

Funding (current & former):

Co-Investigator in research as part of the Science Team of the NASA ACRIM-SAT/ACRIM3 Mission. My amount is \$50,000 as part of the Science Team's funding under NASA Jet Propulsion Laboratory subcontract # 1405003. (2010).

Principal Investigator: ARO 50472-MA-DRI, "Modeling complex phenomena using multiscale series". \$297,890 (August 2006- July 2009).

Action plan for the investigation and prevention of postoperative respiratory depression at Duke university medical center. My amount was \$127,529 (2006).

Teaching Experience:

Principal Instructor: 2010-Fall, Phys 104 General Physics, UNC, Physics Dept.
Principal Instructor: 2010-Spring, Introduction to Astronomy. Elon University, Physics Dept.,
Principal Instructor: 2010-Spring, Conceptual Physics, theory and lab. Elon, Physics Dept.,
Principal Instructor: 2009-Summer, Introduction to Astronomy. Duke University, Physics Dept.,
Principal Instructor: 2009-Spring, Conceptual Physics, theory and lab. UNCG, Physics Dept.,
Principal Instructor: 2009-Spring, Introduction to Astronomy, Duke University, Physics Dept.
Principal Instructor: 2008-Fall, Classical Mechanics, (Graduate Course) UNC, Physics Dept.
Principal Instructor: 2008-Fall, Conceptual Physics, theory and lab. UNCG, Physics Dept.,
Principal Instructor: 2008-Summer, Introduction to Astronomy. Duke University, Physics Dept.,
Principal Instructor: 2008-Spring, Conceptual physics, theory and lab. UNCG, Physics Dept.,
Principal Instructor: 2007-Summer, Introduction to Astronomy. Duke University, Physics Dept.,
Teaching Assistant: 1999-2001, Astronomy computer lab. University of North Texas, Physics Dept.,

Teaching Interests:

I can teach a variety of courses.

Conceptual Physics, Astronomy, Classical Mechanics, General Physics I, General Physics II, Modern Physics, Quantum Mechanics, Statistical Mechanics. In addition, my research background allows me to teach Time series analysis, Nonlinear Dynamics, Chaotic Systems and Fractals with computer programming assignments.

Reviewer for:

Physical Review E; Physical Review Letters; Physica A, Statistical Mechanics and its Applications; Journal of Physics D, Applied Physics; Journal of Applied Mathematics and Computing; Journal of Vibration and Control; European Physical Letters; Physical Letter A; IOP, New Journal of Physics; Bioinformatics; Quantitative Finance; Communications in Nonlinear Science and Numerical Simulations; Computers and Mathematics with Applications; IEEE Transactions on Biomedical Engineering; Geophys. Res. Lett.; J. of Atmospheric and Solar-Terrestrial Physics; Nonlinear Dynamics; Atmospheric Chemistry and Physics; Solar Physics; Journal of Physics A: Mathematical and Theoretical;

Books:

“Disrupted Networks: from physics to climate change,” Bruce J. West and Nicola Scafetta , World Scientific (March, 2010).

“Fractal and Diffusion Entropy Analysis of Time Series: Theory, concepts, applications and computer codes for studying fractal noises and Lévy walk signals”. Nicola Scafetta, VDM Verlag Dr. Müller (May, 2010).

I have also authored an internet-free booklet

“Climate Change and Its Causes, A Discussion About Some Key Issues”, Nicola Scafetta, Science and Public Policy Institute (2010).

I have been a contributing author and reviewer of

“Climate Change Reconsidered, 2009 Report of the Nongovernmental Panel on Climate Change (NIPCC).” Editors C. Idso and S. F. Singer, Chicago, IL: The Heartland Institute, (2009).

Articles:

- 56) N. Scafetta, "Testing an astronomically-based decadal-scale empirical harmonic climate model vs. the IPCC (2007) general circulation climate models," *Journal of Atmospheric and Solar-Terrestrial Physics*, in press. (2012).
- 55) N. Scafetta, "The forgotten 60-year natural cycle and its significance for the development of our future climate." (2012) Invited chapter in F. Vahrenholt and S. Lüning, "Die kalte Sonne - Warum die Klimakatastrophe nicht stattfindet (The cold sun: Why the climate crisis is not happening)", (Hoffmann und Campe, Germany) in press.
- 54) N. Scafetta (2011), "A shared frequency set between the historical mid-latitude aurora records and the global surface temperature" *Journal of Atmospheric and Solar-Terrestrial Physics*, in press. DOI: 10.1016/j.jastp.2011.10.013.
- 53) N. Scafetta, "Understanding the complexity of the Levy-walk nature of human mobility with a multi-scale cost/benefit model," *Chaos: An Interdisciplinary Journal of Nonlinear Science* 21, 043106 (2011). This paper has been selected for the *Vir. J. Bio. Phys. Res., Statistical and Nonlinear Physics* 22(8) (2011).
- 52) N. Scafetta, "Total Solar Irradiance Satellite Composites and their Phenomenological Effect on Climate," chapter 12, pag 289-316. (In "Evidence-Based Climate Science" edited by Don Easterbrook, Elsevier) (2011).
- 51) A. Mazzarella and N. Scafetta, "Evidences for a quasi 60-year North Atlantic Oscillation since 1700 and its meaning for global climate change," *Theor. Appl. Climatol.*, DOI 10.1007/s00704-011-0499-4 (2011).
- 50) C. Loehle and N. Scafetta, "Climate Change Attribution Using Empirical Decomposition of Climatic Data," *The Open Atmospheric Science Journal*, 5, 74-86 (2011).

- 49) Nicola Scafetta, "I cicli climatici e le loro implicazioni" (Climate cycles and their implications), in press on the Bollettino della Scuola Normale di Pisa (2011).
- 48) Nicola Scafetta and B. J. West, "Comment on 'Testing hypotheses about Sun-climate complexity linking'" Phys. Rev. Lett. 10.1103/PhysRevLett.105.219801 (2010).
- 47) Nicola Scafetta, "Empirical evidences for a celestial origin of the climate oscillations and its implications," Journal of Atmospheric and Solar-Terrestrial Physics, doi:10.1016/j.jastp.2010.04.015 (2010).
- 46) Nicola Scafetta, "I cambiamenti climatici sono regolati da cicli naturali di origine astronomica" ("Climate change is regulated by natural cycles with an astronomical origins") 21mo Secolo 2 (2010).
- 45) Nicola Scafetta, "I cambi climatici e le loro cause, una discussione su alcuni punti chiave" ("Climate changes and their causes, a discussion on some key points"), La Chimica e l'Industria **1**, page 70-75 (2010).
- 44) Nicola Scafetta and B. J. West, "Interpretations of climate-change data," Physics Today, November, page 8-10 (2009).
- 43) Nicola Scafetta, "Empirical analysis of the solar contribution to global mean air surface temperature change," Journal of Atmospheric and Solar-Terrestrial Physics (2009), doi:10.1016/j.jastp.2009.07.007.
- 42) Nicola Scafetta, Damiano Marchi and Bruce J. West, "Understanding the complexity of human gait dynamics" Chaos **19**, 026108 (2009); DOI:10.1063/1.3143035.
- 41) Nicola Scafetta and Richard Willson, "ACRIM-gap and Total Solar Irradiance (TSI) trend issue resolved using a surface magnetic flux TSI proxy model", Geophysical Research Letter **36**, L05701, doi:10.1029/2008GL036307 (2009) .
- 40) Nicola Scafetta and Bruce J. West, reply letter in "Variation on Sun's role in climate change," Physics Today, October, page 10-16 (2008).
- 39) Nicola Scafetta, "Comment on 'Heat capacity, time constant, and sensitivity of Earth's climate system' by Schwartz." J. Geophys. Res. 113, D15104 (2008). doi:10.1029/2007JD009586.
- 38) Nicola Scafetta and Bruce J. West, "Is climate sensitive to solar variability?" Physics Today **3**, 50-51 (2008).
- 37) Erik Kabela and Nicola Scafetta, "Solar Effect and Climate Change," Bulletin of the American Meteorological Society, **89**, 34-35 (2008).
- 36) Ivy F. Forkner, Claude A. Piantadosi, Nicola Scafetta, Richard E. Moon, "Hyperoxia-Induced Tissue Hypoxia: A Danger?Reply to MS #200707041," Anesthesiology **108**, 169-170 (2008).
- 35) K.F. Froehlich, M.R. Graham, T.G. Buchman, L.G. Girling, N. Scafetta, B.J. West, E.K-Y. Walker, B.M. McManus and W.A.C. Mutch, "Physiological Noise versus White Noise to Drive a Variable Ventilator in a Porcine Model of Lung Injury" Canadian Journal of Anesthesia **55**(9) 572 - 576 (2008).
- 34) Nicola Scafetta, and Bruce J. West, "Phenomenological reconstructions of the solar signature in the NH surface temperature records since 1600." J. Geophys. Res., 112, D24S03, doi:10.1029/2007JD008437 (2007).

- 33) Nicola Scafetta, and Bruce J. West, "Emergence of bi-fractal time series from noise via allometric filters." *European Physical Letters* **79**, 30003, (2007).
- 32) Ivy F. Forkner, Claude A. Piantadosi, Nicola Scafetta, Richard E. Moon, "Hyperoxia-Induced Tissue Hypoxia: A Danger?," *Anesthesiology* **106**, 1051-5 (2007).
- 31) Nicola Scafetta, Richard Moon, and Bruce J. West, "Fractal Response of Physiological Signals to Stress Conditions, Environmental Changes and Neurodegenerative Diseases," *Complexity* **12**, 12-17 (2007).
- 30) Nicola Scafetta, and Bruce J. West, "Probability distributions in conservative energy exchange models of multiple interacting agents", *J. Phys.: Condens. Matter* **19** 065138 (18pp) doi:10.1088/0953-8984/19/6/065138 (2007).
- 29) Nicola Scafetta, Richard Moon, and Bruce J. West, "Physiological signals and their fractal response to stress conditions, environmental changes and neurodegenerative diseases." in the proceedings of The 25th Army Science Conference (ASC), Orlando, Florida, November 27-30, (2006).
- 28) Nicola Scafetta and Bruce J. West, "Phenomenological solar signature in 400 years of reconstructed Northern Hemisphere temperature record," *Geophys. Res. Lett.*, **33**, doi:10.1029/2006GL027142. (2006).
- 27) Nicola Scafetta and Bruce J. West, Reply to comment by J. L. Lean on "Estimated solar contribution to the global surface warming using the ACRIM TSI satellite composite", *Geophys. Res. Lett.*, **33**, doi:10.1029/2006GL025668. (2006).
- 26) Richard Moon, Lynn Eschenbacher and Nicola Scafetta, "Perioperative Respiratory Depression and Monitoring", chapter in *Pain Management and Patient-Controlled Analgesia: Improving Safety and Quality of Care, Proceedings from The Sixth Conference Center for Medication Safety and Clinical Improvement* San Diego, CA. (2006).
- 25) Nicola Scafetta and Bruce J. West, "Phenomenological solar contribution to the 1900-2000 global surface warming," *Geophys. Res. Lett.*, **33**, L05708, doi:10.1029/2005GL025539 (2006).
- 24) Nicola Scafetta, Asok Ray and Bruce J. West, "Correlation regimes in fluctuations of fatigue crack growth," *Physica A* **359**, 1-23 (2006).
- 23) Nicola Scafetta and Bruce J. West, "Estimated solar contribution to the global surface warming using the ACRIM TSI satellite composite," *Geophys. Res. Lett.*, **32**(24), doi:10.1029/2005GL023849 (2005).
- 22) Nicola Scafetta and Bruce J. West, "Multiscaling comparative analysis of time series and geophysical phenomena," *Complexity* **10**(4) 51-56 (2005).
- 21) Bruce J. West and Nicola Scafetta, "A Multifractal Dynamical Model of Human Gait", Conference proceedings of the International Symposium on Fractals in Biology and Medicine vol. IV, in Ascona, Switzerland March 9. (2005).
- 20) Nicola Scafetta and Bruce J. West, "Multi-scaling comparative analysis of time series and a discussion on 'earthquake conversations' in California" *Phys. Rev. Lett.* **92** 138501 (2004).
- 19) Bruce J. West, Nicola Scafetta, William Cooke and Rita Balocchi, "Influence of progressive central hypovolemia on multifractal dimension of cardiac interbeat intervals," *Annals of Biomedical Engineering*, **32** 1077-1087 (2004).

- 18) Nicola Scafetta, Sergio Picozzi and Bruce J. West, "An out-of-equilibrium model of the distributions of wealth" *Quantitative Finance* 4, 353-364 (2004).
- 17) Nicola Scafetta, Bruce J. West and Sergio Picozzi, "A trade-investment model for distribution of wealth," on a special issue of *Physica D "Anomalous Distributions, Nonlinear Dynamics, and Nonextensivity"* 193 338–352 (2004).
- 16) Nicola Scafetta, Paolo Grigolini, Patti Hamilton and Bruce J. West, "Non-extensive diffusion entropy analysis and teen birth phenomena," Chapter in: "Nonextensive Entropy: Interdisciplinary Applications," M. Gell-Mann and C. Tsallis Eds., Oxford University Press (2004).
- 15) Nicola Scafetta, Timothy Imholt, J.A. Roberts and Bruce J. West, "An intensity-expansion method to treat non-stationary time series: an application to the distance between prime numbers." *Chaos, Solitons & Fractals* 20, 179 (2004).
- 14) Nicola Scafetta and Bruce J. West, "Multiresolution Diffusion Entropy Analysis of time series: an application to births to teenagers in Texas" *Chaos, Solitons & Fractals* 20, 119 (2004).
- 13) Nicola Scafetta, Paolo Grigolini, Timothy Imholt, J.A. Roberts and Bruce J. West, "Solar turbulence in earth's global and regional temperature anomalies" *Phys. Rev. E* 69, 026303 (2004).
- 12) Nicola Scafetta, Elizabeth Restrepo and Bruce J. West, "Seasonality of birth and conception to teenagers in Texas" *Social Biology*, 50 (1-2) 1-22 (2004).
- 11) Nicola Scafetta and Bruce J. West, "Complexity, multiresolution, non-stationarity and entropic scaling: Teen birth thermodynamics" *Journal of Mathematical Sociology* Volume 28, Number 4 / October–December, 229 - 259 (2004).
- 10) P. Allegrini, V. Benci, P. Grigolini, P. Hamilton, M. Ignaccolo, G. Menconi, L. Palatella, G. Raffaelli, Nicola Scafetta, M. Virgilio, J. Yang, "Compression and Diffusion: A Joint Approach to Detect Complexity," *Chaos, Solitons & Fractals* 15 (3), 517-535 (2003).
- 9) Nicola Scafetta, Lori Griffin and Bruce J. West, "Holder exponent spectra for human gait," *Physica A* 328, 561, 15 Oct (2003).
- 8) Bruce J. West and Nicola Scafetta, "A non linear model for human gait," *Phys. Rev. E* 67, 051917 (2003). Selected for the *Virtual Journal of Biological Physics Research* 5 June 1, (2003).
- 7) Nicola Scafetta and Bruce J. West, "Solar Flare Intermittency and the Earth's Temperature Anomalies," *Phys. Rev. Lett.* 90, 248701 (2003).
- 6) Paolo Grigolini, Deborah Leddon, Nicola Scafetta, "The Diffusion entropy and waiting time statistics of hard x-ray solar flares," *Phys. Rev. E* 65, 046203 (2002).
- 5) Nicola Scafetta, Vito Latora and Paolo Grigolini, "Lévy statistics in coding and non-coding nucleotide sequences," *Physics Letters A* 299 (5-6), 565-570 (2002).
- 4) Nicola Scafetta, Vito Latora and Paolo Grigolini, "Lévy Scaling: The diffusion entropy method applied to the DNA sequences," *Phys. Rev. E* 66, 031906 (2002). Selected for the *Virtual Journal of Biological Physics Research* 4 Oct. 1, 2002.

- 3) Nicola Scafetta, and Paolo Grigolini, "Scaling detection in time series: diffusion entropy analysis," *Phys. Rev. E* 66, 036130 (2002).
- 2) Gerardo Aquino, Paolo Grigolini, Nicola Scafetta, "Sporadic Randomness, Maxwell's Demon and the Poincare' recurrence times," *Chaos, Solitons & Fractals* 12, 2023-2038 (2001).
- 1) Nicola Scafetta, Patti Hamilton and Paolo Grigolini, "The Thermodynamics of Social Process: the Teen Birth Phenomenon," *Fractals*, 9, 193-208 (2001).

Scientific Conferences and Presentations:

"Astronomical origin of the solar oscillations and their implication for climate oscillations and climate forecast." N. Scafetta, 2011 AGU Fall Meeting which is 5-9 December 2011.

"The climate oscillations: analysis, implications and their astronomical origin." N. Scafetta, Invited. Third Santa Fe Conference on Global and Regional Climate Change. October 30, 2011 - November 3, 2011.

"Heliospheric oscillations and their implication for climate oscillations and climate forecast." N. Scafetta, *SORCE Science Meeting Sedona, Arizona*. Sept. 13-16, 2011.

"Are solar irradiance cycles linked to the planetary oscillations?" N. Scafetta, *SORCE Science Meeting Sedona, Arizona*. Sept. 13-16, 2011.

"The climate oscillations: analysis, implications and their astronomical origin." N. Scafetta, Invited. Workshop on the climate change over the past millennium. Chinese Academy of Meteorological Sciences, Institute of Earth Environment, Chinese Academy of Sciences, and Institute of Atmospheric Physics, Chinese Academy of Sciences. Beijing, China. Aug/25/2011.

"Climate oscillations and their solar/astronomical origin: climate reconstruction and forecast". N. Scafetta, Invited. The Sixth International Conference on Climate Change. Washington DC. July/01/2011

"Climatic cycles and their implication" N. Scafetta, Invited. Zeche Zollverein, Essen, Germany. June/20/2011.

"The climate oscillations: analysis, implications and their astronomical origin." N. Scafetta. Invited, Seoul National University, Seoul, South Korea, January, 4, 2011.

"Spectral analysis of the TSI satellite records, their comparison and interpretation." N. Scafetta. American Geophysical Union (AGU 2010) Joint Assembly, San Francisco, CA, USA, December, 13-17, 2010.

"Spectral Observed Differences in the satellite TSI Data Record and their possible causes. Barycentric solar system motion and TSI variation.." N. Scafetta. Workshop JPL NASA, San Francisco, CA, USA, December, 10-11, 2010.

"Empirical evidences for a celestial origin of the climate oscillations and its implications," N. Scafetta Invited at the 12th Japanese-American Frontiers of Science (JAFoS) Symposium organized by the U.S. National Academy of Science (NAS) and the Japan Society for the Promotion of Science (JSPS), Japan Decemberr 2-6, 2010.

- "Empirical evidences for a celestial origin of the climate oscillations and its implications," N. Scafetta*
Invited at the international conference of the European Seed Kilns, Verona Italy September 9-12,
2010.
- "Celestial origins of the climate oscillations", N. Scafetta*, Invited at University of Napoli, Italy
16/July/2010.
- "Celestial origins of the climate oscillations", N. Scafetta*, Invited at University of Pisa, Italy 05/July/2010.
- "Celestial origins of the climate oscillations", N. Scafetta*, Invited at Firenze, Italy 03/July/2010.
- "I cambi climatici e le loro cause, una discussione su alcuni punti chiave" N. Scafetta*, Invited al' Terzo
Convegno Internazionale di Meteorologia and Climatologia, Allumiere, Italy 27/Feb/2010.
- "Celestial origins of the climate oscillations, a review.", N. Scafetta*, Invited at Old Dominion University,
11/Feb/2010.
- "Analysis of the total solar irradiance composite and their contribution to global mean air surface
temperature rise" N. Scafetta*. Invited at the American Geophysical Union (AGU 2009) Joint
Assembly, San Francisco, CA, USA, December 15-19, 2009.
- "Can the solar system planetary motion be used to forecast the multidecadal variability of climate?" N.
Scafetta*. At the American Geophysical Union (AGU 2009) Joint Assembly, San Francisco, CA,
USA, December 15-19, 2009.
- "Noise Classification & Fractal Response of Physiological Signals to
Stress Conditions, Environmental Changes and Neurodegenerative
Diseases" N. Scafetta* Invited at the Department of anesthesiology
Duke University, Sep/29/2009.
- "Interpreting complex time series: A multidisciplinary overview about some challenges for interpreting
complex systems."* N. Scafetta Invited At Loyola University, New Orleans April/30/2009
- "The three-tiered science of complex systems: Data, Knowledge and Information. A multidisciplinary
overview about the challenges of interpreting complex systems."* N. Scafetta. Invited at the
Northeastern University , Boston, March 26, 2009.
- "Climate Change and Its causes: A Discussion about Some Key Issues" N. Scafetta*. Invited at the U. S.
Environmental Protection Agency, DC USA, February 26, 2009.
- "Climate Change and Its causes: A Discussion about Some Key Issues" N. Scafetta*. Invited at the UNCW,
February 11, 2009.
- "Analysis of the total solar irradiance composite and their contribution to global mean air surface
temperature rise" N. Scafetta*. Invited at the American Geophysical Union (AGU 2008) Joint
Assembly, San Francisco, CA, USA, December 15-19, 2008.
- "Can the solar system planetary motion be used to forecast the multidecadal variability of climate?" N.*

Scafetta. Invited at the American Geophysical Union (AGU 2008) Joint Assembly, San Francisco, CA, USA, December 15-19, 2008.

"Solar dynamics, global warming and beyond: A discussion about the science of complexity." N. Scafetta, Invited Speaker, Dept. of Physics, University of North Carolina – Greensboro NC, April 18/2008.

"Is the Sun Warming the Climate?" N. Scafetta, Invited Speaker, John Locke Foundation Raleigh NC, April 14/2008.

"How important are PMOD and ACRIM TSI satellite composites for the global warming debate?" N. Scafetta. Invited speaker at the American Geophysical Union (AGU 2007) Joint Assembly, San Francisco, CA, USA, December 10-14, 2007.

"The phenomenological solar effect on climate" N. Scafetta. Invited speaker at the American Geophysical Union (AGU 2007) Joint Assembly, San Francisco, CA, USA, December 10-14, 2007.

"Variation of solar irradiance and their implications for climate change," N. Scafetta with R. Willson, Invited speaker at the Geological Society of America, Denver Annual Meeting (28–31 October 2007).

"After general anesthesia inter-breath interval is correlated with sleep stage but not end-tidal PCO₂," N. Scafetta, with R.E. Moon, A.D. Krystal, J.C. Keifer and B. Ginsberg. at the American Society of Anesthesiologists, October 16, 2007.

"The Average is Truly Exceptional", N. Scafetta with B.J. West, keynote talk at SCIPS, Chapman University, Orange CA, July 27, 2007.

"Where Medicine Went Wrong", N. Scafetta with B.J. West, keynote talk at Plexus Institute, Kansas, Circle S Ranch, July 24, 2007.

"The Average Person is Truly Exceptional," N. Scafetta with B.J. West, at DoD Biotechnology HPC Software Applications Institute at Ft. Detrick, June 7, 2007.

"Fractal Calculus Modeling Physiologic Networks," N. Scafetta with B.J. West, at DoD Biotechnology HPC Software Applications Institute at Ft. Detrick, June 7, 2007.

"Phenomenological reconstructions of the solar signature in the NH surface temperature records since 1600." N. Scafetta. Invited speaker at the Palmetto Chapter of the American Meteorological Society, Columbia, SC, USA, June 05, 2007.

"Global warming and complexity: is there a strong but subtle solar signature behind global climate change?", N. Scafetta, at the International Workshop on Understanding Complex Systems, University of Illinois at Urbana-Champaign, 14-17 May, 2007.

"The Fractional Calculus and Dynamic Fractals," N. Scafetta with B.J. West invited talk North Carolina State University, February 23, 2007.

"A phenomenological reconstruction of the solar signature in 400 years of global surface temperature

records,” N. Scafetta with B.J. West. Invited speaker at the American Geophysical Union (AGU 2006) Joint Assembly, San Francisco, CA, USA, December 11-15, 2006.

“*Physiological signals and their fractal response to stress conditions, environmental changes and neurodegenerative diseases.*” N. Scafetta, R. Moon, and B.J. West, The 25th Army Science Conference (ASC), Orlando, Florida, November 27-30, (2006).

“*Phenomenological solar signature in 400 years of reconstructed Northern Hemisphere temperature record*”, N. Scafetta with B.J. West. Invited speaker, Second International Conference on Global Warming, Santa Fe, New Mexico, July 17-21, 2006.

“*Phenomenological solar signature in 400 years of reconstructed Northern Hemisphere temperature record*”, N. Scafetta with B.J. West. Invited speaker, Universita' di Trento, Department of Environmental Engineering, May 1, 2006.

“*Is the Sun Warming the Earth and is its Contribution to Climate Change Underestimated by Climate Models? A Phenomenological Study on Global Warming,*” N. Scafetta with B.J. West. Invited speaker, Elon University, department of Physics, 6 April, 2006.

“*An out-of-equilibrium model of the distributions of wealth*”, ,” N. Scafetta with S. Picozzi and B.J. West. APS March meeting at Baltimore, 12 March, 2006.

“*Is the Sun Warming the Earth and is its Contribution to Climate Change Underestimated by Climate Models? A Phenomenological Study on Global Warming,*” N. Scafetta with B.J. West. Invited speaker at Department of Environmental Engineering, Duke University, 15 February, 2006.

“*Estimate solar contribution to the global surface warming using the ACRIM TSI satellite composite,*” N. Scafetta with B.J. West. Invited speaker at the American Geophysical Union (AGU) 2005 Joint Assembly, San Francisco, CA, USA, 5-9 December, 2005.

“*Fractal breathing characteristics after upper abdominal surgery*” N. Scafetta with R.E. Moon, SLars L Mielke, Fritz F Klein, and Bruce J West , at the American Society of Anesthesiologists, 2005.

“*A Critical Review of Models of Composite Total Solar Irradiance,*” N. Scafetta. Invited speaker and chair of section SH22B at the American Geophysical Union (AGU) 2005 Joint Assembly, New Orleans, LA, USA, 23-27 May, 2005.

“*An out-of-equilibrium model of the distributions of wealth and income in society*”, N. Scafetta with S. Picozzi and B.J. West, at the International Workshop on Understanding Complex Systems, University of Illinois at Urbana-Champaign, 16-19 May, 2005.

“*Fractal Response of Physiological Signals to Stress Conditions, Environmental Changes and Neurodegenerative Diseases.*”, N. Scafetta with R.E. Moon and B.J. West, at the International Workshop on Understanding Complex Systems, University of Illinois at Urbana-Champaign, 16-19 May, 2005.

“*Climate sensitivity to solar activity: The contribution of solar cycles 21-23 to global mean surface warming,*” N. Scafetta with B.J. West. Invited speaker at the American Geophysical Union (AGU) 2004 Joint Assembly, San Francisco, CA, USA, 13-17 December, 2004.

“*The Fractal Nature of Breathing during Hypobaric Hypoxia*”, N. Scafetta with R.E. Moon, S. Bar-Yosef, B.W. Stolp, G. del Dear, C. A Piantadosi, and B.J. West, presented at the American Society of

Anesthesiologists meeting held in Las Vegas, Nevada, on 23-27 October, 2004.

- “Detecting Levy and fractal Gaussian Intermittency in Geophysical Phenomena”*, N. Scafetta with B.J. West, at the International Workshop on Understanding Complex Systems, University of Illinois at Urbana-Champaign, 17-20 May, 2004.
- “The anthropogenic factor in the Gamma-Pareto distributions of wealth”*, N. Scafetta with S. Picozzi and B.J. West, at the Center for Nonlinear Science at Physics Department, Duke University, 27 April, 2004.
- “Detecting Levy and fractal Gaussian Intermittency in Geophysical Phenomena”*, N. Scafetta with B.J. West, at the American Geophysical Union (AGU) 2004 Joint Assembly, Montreal, Quebec, Canada, 17-21 May, 2004.
- “Solar Intermittency in earth’s global and regional temperature anomalies”*, N. Scafetta with B.J. West, presented at Physics Department, Texas Tech University, Lubbock, 8 April, 2004.
- “Introduction to Fractals, Networks & Power Laws: How Biology and Medicine Fit In”*, N. Scafetta with B.J. West, presented at US Army Institute of Surgical Research Scientific Seminar, Ft. Sam Houston April 7, 2004.
- “A multifractal dynamical model of human gait”*, N. Scafetta with B.J. West, presented at Fourth International Symposium on Fractals in Biology and Medicine in Ascona, Switzerland March 9, 2004.
- “Complexity produces strange kinetics and dynamics”*, N. Scafetta with B.J. West, presented at Physics Department, Warlaw Technical University, Warlaw, Poland, March 7, 2004.
- “Introduction to Fractals, Networks & Power Laws: How Biology and Medicine Fit In”*, N. Scafetta with B.J. West, presented at Warlaw Technical University, Medical School, Warlaw, Poland, March 4, 2004.
- “Solar intermittency in earth’s global and regional temperature anomalies.”* N. Scafetta with B.J. West, presented at Center for Nonlinear and Complex Systems, Physics Department, Duke University Mar. 25 2003, Durham (NC). Chaired by D. J. Gauthier.
- “Introduction to Fractals, Networks and Power Laws: How Biology and Medicine Fit In or The Importance of Variability”*, N. Scafetta with B.J. West and L. Griffin, presented at University of Manitoba Winnipeg, Canada, May 29 presented at *MedMath2003*.
- “Solar intermittency in earth’s global and regional temperature anomalies.”* N. Scafetta with B.J. West, presented at Civil and Environmental Department of Pratt school of Engineering. Duke University, Chaired by Roni Avissar. June 27 2003, Durham (NC).
- “Complexity produces strange kinetics and dynamics”*, N. Scafetta and B.J. West, presented at the Center for Nonlinear Science at Physics Department, Duke Univeristy, October 7, 2003.
- “Complexity produces strange kinetics and dynamics”*, N. Scafetta with B.J. West, presented at the Physics Department, University of Illinois, Chicago October 9, 2003.
- “Complexity produces strange kinetics and dynamics”*, N. Scafetta and B.J. West, presented at the Physics Department, University of North Texas October 21, 2003.

- “*On understanding walking: A nonlinear dynamical model of human gait*”, N. Scafetta with B.J. West, presented at the second annual Duke University Postdoctoral research day, Duke University, October 24, 2003. Durham (NC).
- “*A stochastic analysis of the solar and non-solar forcings on global climate during the solar cycles 21-23 (1978-2003)*.” N. Scafetta with B.J. West, presented at the second annual Duke University Postdoctoral research day, Duke University, October 24, 2003. Durham (NC).
- “*The Fractal Nature of Breathing during Hypobaric Hypoxia*”, N. Scafetta with R.E. Moon, A.M. Moon, H.J. Frederick, J.D. Archibald, B.W. Stolp, G. de L. Dear and B.J. West, presented at the American Society of Anesthesiologists. *Anesthesiology* 99 (Suppl):A1534, 2003, San Francisco, CA.
- “*Non-extensive diffusion entropy analysis and teen birth phenomena.*” N. Scafetta with P. Grigolini, P. Hamilton and B.J. West, presented at the International Workshop on Interdisciplinary Applications of Ideas from Nonextensive Statistical Mechanics and Thermodynamics, Apr 8-12 2002, Santa Fe (NM). Co-Chaired by M. Gell-Mann and C. Tsallis, Santa Fe Institute.
- “*Treating Non-stationarity in Time Series: an Interdisciplinary Approach to Analyzing Complex Phenomena.*” N. Scafetta with B.J. West, presented at The first annual Duke University Postdoctoral research day, Duke University, May 24, 2002. Durham (NC).
- “*Some History of the Renormalization Group and Scaling in the Theory of Complexity*”, N. Scafetta with B.J. West, at ARO Workshop “Non-stationary time series: A theoretical, computational and practical challenge”, October 13-19, 2002, presented at Center for Nonlinear Science, University of North Texas.
- “*Non-stationarity and fractal scaling in biological and mathematical systems.*” N. Scafetta with B.J. West, presented at International Workshop on Diffusion Entropy and Related Techniques of Time Series Analysis. Oct 13-19 2002, Center for Nonlinear Science, University of North Texas, Denton (TX).
- “*A trade-investment model for a Gamma-Pareto distribution of wealth.*” N. Scafetta with S. Picozzi and B.J. West, presented at the International Workshop on Anomalous Distributions, Nonlinear Dynamics and Nonextensivity. Nov 6-9 2002, Santa Fe (NM). Co-Chaired by Alan R. Bishop, H. Swinney, Costantino Tsallis, Los Alamos - Santa Fe.
- “*Fractal Physiology and Chaos in Medicine*”, N. Scafetta with B.J. West and L. Griffin, presented at University of Texas Medical Branch on December 16, 2002, Galveston, TX.
- “*The Thermodynamics of Social Process: the Teen Birth Phenomenon.*” N. Scafetta with P. Hamilton and P. Grigolini, at the International Workshop on nonextensive entropy. June, 2000. Denton (TX). Co-Chaired by P. Grigolini and C. Tsallis, University of North Texas

Computer Knowledge:

OS: General knowledge of Linux and of all Microsoft Operative Systems.
 Languages: C, C++, Matlab, Mathematica, Maple, Basic.
 Networking: General knowledge of Internet.

News about my research:

“Sun's Direct Role in Global Warming May Be Underestimated, Duke Physicists Report,” by Monte Basgall, Duke University News & Communications, Sept. 30, 2005.

<http://www.dukenews.duke.edu/2005/09/sunwarm.html>

<http://www.physorg.com/news6892.html>

“Solar Flares and Global Warming,” by Phil Schewe, James Riordon, and Ben Stein, Physics News Update 642 #2, June 19, 2003. <http://www.aip.org/enews/physnews/2003/split/642-2.html>

“Less lovin' in summer,” by Philip Ball, Nature ScienceUpdate, 3 June 2002.

<http://www.nature.com/nsu/020527/020527-15.html>

"A new mathematical model explains patterns of human movement by considering the costs"

<http://www.sciencedaily.com/releases/2011/10/111011121256.htm>

<http://www.physorg.com/news/2011-10-mathematical-patterns-human-movement.html>

My research on solar physics and climate change has been publicized in numerous internet blogs in numerous countries.

<http://www.google.com/search?q=scafetta+climate+sun>