John B. Rundle

Education and Employment

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Education:
Ph.D., Geophysics & Space Physics, UCLA, 1976
M.S. , Planetary & Space Science, UCLA, 1973
B.S.E., Aerospace and Mechanical Sciences, Princeton University, 1972

Affiliations:
American Physical Society (*Fellow*, 2004-)
American Geophysical Union (*Fellow*, 2008-)
American Association for the Advancement of Science (*Fellow*, 2017-)
Seismological Society of America
The Computer Society

Employment:
July, 2009 - Present:
        Distinguished Professor, Departments of Physics and Geology, University of
California,
        Davis (UCD)
Director, California Institute for Hazard Research of the University of California
July, 2006 – July, 2009:
        Professor of Physics and Geology, University of California, Davis (UCD)
        Director, California Institute for Hazard Research of the University of
California
July, 2002 - July, 2006:
        Professor of Physics, Engineering and Geology, University of California, Davis
(UCD)
        Director, Center for Computational Science & Engineering (UCD)
August, 1998 - June, 2002:
        Professor of Physics, University of Colorado (CU)
        Affiliated Faculty, Department of Applied Mathematics, CU
        Director, Colorado Center for Chaos & Complexity, CU
        Fellow, Cooperative Institute for Research in Environmental Sciences, CU
        Deputy Director, Cooperative Institute for Research in Environmental
Sciences, CU
August, 1996 - August 1998:
        Professor of Physics & Geological Sciences, CU

Affiliated Faculty, Department of Applied Mathematics, CU
Fellow, Cooperative Institute for Research in Environmental Sciences, CU
October, 1996 - Present: *Director*, Colorado Center for Chaos and Complexity, CU
August, 1993 - August 1996: Associate Professor of Geology, CU
May, 1990 - August, 1993: Physicist, Lawrence Livermore National Laboratories
October, 1977 - May, 1990: Member of Technical Staff, Sandia National Laboratories
January, 1988 - January 1989 (Concurrent with above): Visiting Scholar, Condensed
        Matter Theory Group, Department of Physics, Boston University, Boston
        Massachusetts
June, 1981 - June, 1984 (Concurrent with above): Visiting Associate, Seismological
            Laboratory, Calif. Institute of Technology, Pasadena, CA
April, 1976 - September, 1977: Postdoctoral Fellow, UCLA

Professional Activities

Honorary Societies and Fellowships:
National Merit Finalist
Magna Cum Laude, Princeton University, 1972.
Tau Beta Pi, Princeton University
Phi Beta Kappa, Princeton University
Phi Eta Sigma, University of Illinois
University Teaching Fellow, University of Illinois, Physics Department, 1974
University of Illinois Mother's Association Book Award for Scholastic Excellence

Professional Recognition:
Award for Exceptional Contributions in Fundamental Research, Sandia National
Laboratories, 1987 ($2500 Award)
Best Paper of the US Geological Survey, Branch of Geologic Risk   Assessment,
1989(with G. King & R. Stein, $500 Award)
Association Lecturer, International Association of Seismology and   Physics of the
Earth's Interior, Wellington, NZ, 1994.
Distinguished Visiting Scientist, Jet Propulsion Laboratory, Pasadena, California,
1995 -
Award for Outstanding Contributions in Geosciences Research, given at the
Geosciences Research Symposium, Lawrence Berkeley National Laboratory, April,
1996, by the Geosciences Research Program, Office of Basic Energy Sciences, US
Department of Energy.
Aki Award for Distinguished Service as Chair (1994-1996) of the Advisory Board of
the Southern California Earthquake Center, Given at the Southern California
Earthquake Center Annual Meeting, 2001.
4th Lorenz Lecturer, American Geophysical Union Fall Meeting, December, 2004.
Elected Fellow, American Physical Society, 2004
2005 NASA Space Act Award - QuakeSim - NASA Tech Brief NPO 41079
        (QuakeSim Team: JBR - $350 Award), August, 2005.
Elected Fellow, American Geophysical Union, 2008
External Professor, The Santa Fe Institute, 2008-

Distinguished Professor, University of California, July, 2009-
Recognized by Thomson Reuters as one of the Top 10 most cited authors in the field of "earthquakes" during 2000 – 2010 (ScienceWatch, 2010)
Co-Winner, NASA Software of the Year Award/Prize (as part of JPL QuakeSim team), $18,000 team prize, 2012
Elected Fellow, American Association for the Advancement of Science, 2017

Biographical Listings:
Marquis' Who's Who in Frontiers of Science and Technology
Marquis' Who's Who in the West
Marquis' Who's Who of Emerging Leaders in America
Marquis' Who's Who in America, 60th Edition, 2005

Major Committees, Panels, Workshops:
National Research Council of the National Academy of Sciences, Committee on Geodesy, *Member*, 1986 - 1987, *Chairman,*1988 - 1990.
National Research Council of the National Academy of Sciences, Panel on Modeling, Future of the Solid Earth Sciences,*Member*, 1988.
National Science Foundation, Evaluation Panel on Science and Technology Centers, Earth Sciences, *Member,*1989
National Science Foundation, Evaluation Panel on the Southern California Earthquake Center, *Chairman,* 1989
National Aeronautics and Space Administration, Crustal Dynamics Program Investigator Working Group, 1982 - Present, *Member*
National Aeronautics and Space Administration, GPS Science Working Group, 1987 - Present, *Member*
U.S. Department of Energy, Magma Energy Program Science Advisory Panel, 1986 - Present, *Chairman*
National Science Foundation, External Advisory Council for the Southern California Earthquake Center, *Member*, 1991 -*Chairman,* 1995-1995; *Member*, 1997-1999
National Aeronautics and Space Administration, Evaluation Panel on Regional Deformation, *Chairman*, 1991
National Science Foundation, Evaluation Panel on Collaborative Research in Geosciences, Geography and Mathematical Sciences, *Member,* 1991
National Aeronautics and Space Administration, Geoscience Laser Ranging Team, 1989 - Present, *Member*
Commission on Geodynamics and Tectonophysics of the Internat. Assoc. Seis. Phys. Earths Int., 1992 - Present, *Member*
United States Delegation to JUST International Workshop on Application of Space Technology to Combat Natural Disasters, Tsukuba, Japan, November 1993, *Member*
Office of Science and Technology Policy, Executive Office of the President of the United States, National Forum on Environment and Natural Resources, March 28-30, 1994,*Invited Participant*
Office of Science and Technology Policy, Executive Office of the President of the United States, National Earthquake Strategy Workshop, June 6-8, 1994, *Invited Participant*

National Aeronautics and Space Administration, Earth System Science Advisory Committee (Committee Advisory to the Associate Administrator OF NASA for Mission to Planet Earth , June 1994 – Present, *Member*

American Geophysical Union, Technical Committee on Nonlinear Geophysics, 1997-, *Chair*

National Aeronautics and Space Administration, Solid Earth and Natural Hazards, Committee on Future Directions, Panel on Earthquakes and Crustal Deformation, 1997-1998, *Chair*

Graduate Student Advisory Committee, Santa Fe Institute, 1999-, *Member*

Advisory Board, Center for Dynamics of Complex Systems, Universitat Potsdam, Germany, 2003- *Member*

Technical Divisions Advisory Board, Jet Propulsion Laboratory, Pasadena, CA, 2003-, *Member*

Visiting Committee, Earth and Space Science Division, Jet Propulsion Laboratory, Pasadena, CA, 2003-, *Member*

International Science Committee, Advisory to the Australian Computational Earth Systems Simulator, a Major National Research Facility, September, 2003 -, *Member* http://www.access.edu.au/frames.htm

NASA Capability Roadmap Team, Modeling and Simulation, January, 2005 -2006, *Member*

NASA Working Group on Synthetic Aperture Radar Interferometry, October, 2004 -, *Member*

Search Committee for Editor-in-Chief, Computers in Science and Engineering, a publication of the Computer Society for the IEE and the AIP, *Chair,* 2004.

NSF Panel to review the "Incorporated Research Institutions for Seismology", October 24-26, 2005, Socorro, NM - *member*

APEC Cooperation for Earthquake Simulations, 2008 - 2016, *Executive Director. Emeritus, 2017*

US-China (NASA-China National Space Administration) Working Group on Earthquakes and Forecasting, 2010- , *US Delegate and Member*

Editorial Boards:
Earth and Planetary Science Journal (Indian Academy of Sciences), 1996-
ARI, Bulletin of Istanbul Technical University, 1996-
American Institute of Physics Advisory Board to *Computing in Science and Engineering*, *Member* 1999-2001; *AIP Representative*, 2002-2003
Computing in Science and Engineering (CiSE), *Associate Editor in Chief*, 2003-2008
Computing in Science and Engineering (CiSE), *Editorial Board*, 2008-

Invited Contributions:
U.S. National Report to the International Union of Geodesy and Geophysics for the Quadrennium 1979 - 1982 (Crustal Dynamics)
Annual Reviews of Earth and Planetary Sciences, Volume 16, 1987 (Long Valley Caldera) Physics World, Physics in Action, Earthquakes, Self-Organization, and Scaling, November, 1989

U.S. National Report to the International Union of Geodesy and Geophysics for the Quadrennium 1991 - 1994 (Physics of Earthquakes)
Reviews of Geophysics and Space Physics (AGU), Statistical physics approach to understanding the multiscale dynamics of earthquake fault systems (with DL Tucotte, R Scherbakov, W Klein and C Sammis)

Invited Lectures (1991-)

Scaling in Lattice Automata Models for Frictional Sliding, Earthquakes and Avalanches Processes: An Overview, Spring 1991 AGU Meeting, Baltimore, MD, May 28-31, 1991.
Self-Organized Criticality and Earthquakes, Santa Fe Institute for the Study of Complexity, Santa Fe, NM, September, 1991.
Dynamical Models for Crustal Deformation: An Overview, AGU Chapman Conference on Time Dependent Positioning: Modeling Crustal Deformation, Annapolis, MD, September 23-25, 1991.
The Statistical Mechanics of Earthquakes, Lectures given at the Workshop on Nonlinear Dynamics and Earthquake Prediction, International Center for Theoretical Physics, Trieste, Italy, December, 1991
Scaling in Lattice Automata Models for Frictional Sliding, Earthauakes, and Avalanche Processes: An Overview, European Geophysical Society Annual Meeting, Edinburgh, Scotland, April, 1992.
Simulating Earthquakes and Seismicity in the Computer, Seismological Society of America, Santa Fe, NM, April, 1992.
Nucleation and Earthquakes, Rutgers Meeting on Statistical Mechanics, Rutgers University, May, 1992.
Nonlinear Models for Earthquakes, Turcotte Symposium, Ithaca, NY, May 16, 1992.
Scaling and Critical Phenomena in a Class of Burridge Knopoff Models for Earthquakes, SIAM 40th Anniversary Meeting, Los Angeles, CA, July 20, 1992.
Physics of Earthquakes, VII Assembly of European Union of Geosciences, Strasbourg, France, April, 1993.
Simulating Earthquakes in the Computer, IMACS International Conference on Computational Physics, St. Louis, October, 1993.
Contributions of Space Technology to Fundamental Studies of Earthquakes, JUST International Workshop on Application of Space Technology to Combat Natural, Tsukuba, Japan, November 1993.
The Statistical Mechanics of Earthquakes, Association Lecture, International Association of Seismology and Physics of the Earth's Interior, Wellington, NZ, 1994.
Predicting Earthquakes: New Ideas from the Sciences of Complexity, Public Lecture Series, Santa Fe Institute for the Study of Complexity, Santa Fe, NM, March 16, 1994.
Deep Exploration of an Active Silicic Caldera: A Search for Magma in the Crust Beneath Long Valley , California, VIIth International Symposium on the Observation of the Continental Crust Through Drilling, Santa Fe, NM, April, 1994.
Earthquakes and Brain Dynamics, Distinguished Lecturer Series, Department of Geology and Geophysics, University of Wyoming, October 4, 1994
Earthquakes and Neurobiology: Emergent Behavior in Two Driven Threshold Systems, Santa Fe Institute Seminar Series, January, 1995.
Complexity and Scaling in Natural Hazard Occurrence, invited lecture in "Lecture Series on Natural Hazards", Jet Propulsion Laboratory, June 15, 1995.
Earthquakes and Complexity, Departmental Colloquium, Department of Physics, Boston University, October, 1995.
Citationist for Donald L. Turcotte, on the occasion of his receiving the American Geophysical Union Charles Whitten Medal, December, 1995.

The Statistical Mechanical View of Earthquakes: Unifying themes and the Development of General Earthquake Models, Carnegie Institution of Washington, DTM, February, 1996.

The Statistical Mechanics of Earthquakes, Scripps Inst. of Oceanography, March, 1996.

The Statistical Mechanics of Earthquakes and Other Driven Threshold Systems, California Institute of Technology, February, 1997.

Earthquakes and Complexity, Lawrence Livermore National Laboratory, July, 1997.

A Users Guide to Models for Viscoelastic and Inelastic Postseismic Deformation, American Geophysical Union, December, 1997.

Modeling earthquakes as a complex nonlinear system, US Department of Energy Workshop on Computational Scientific Initiative/Nonlinear complex systems, Germantown, MD, January, 1998.

Modeling foreshocks and aftershocks as critical phenomena fluctuations, Workshop on Seismicity Patterns, Their Statistical Significance and Meaning (sponsored by Univ. of Alaska), Nikko, Japan, May, 1998.

Pattern dynamics and predictability of seismicity in complex nonlinear systems, Workshop on Earthquake Stress Triggering, Fault Interaction, and Frictional Failure (sponsored by US Geological Survey), Carmel, CA, June, 1998.

Finding space-time patterns in complex earthquake sequences: A Pattern Dynamics approach, Workshop on Earthquake Physics (sponsored by Southern California Earthquake Center), Snowbird, UT, June 1998.

Can we forecast earthquakes like we forecast El Nino's?, Lawrence Livermore National Laboratory, July, 1998.

Modeling and simulations of nonlinear systems, Symposium on Computer Modeling and Simulation at UC Boulder (sponsored by the Graduate School of the University of Colorado at Boulder), September, 1998.

Analyzing earthquake hazards with space geodesy: From data to models, US-Japan workshop on the Utilization of Remote Sensing Technology to Natural Disaster Reduction (sponsored by NIED, Japan), Tsukuba, Japan, October, 1998.

General Earthquake Models, presented at the 1st workshop of the APEC Cooperation for Earthquake Simulation, Brisbane, Australia, February, 1999.

What can we learn about the physics of earthquakes from numerical simulations?, Department of Geophysics, Stanford University, April, 1999.

Dynamics of space-time patterns in nonlinear threshold systems, CNLS-Colorado Days, Los Alamos, NM, May, 1999.

Space-time complexity, correlations and patterns in earth system processes, Exxon Research Corporation, Clinton, NJ, October, 1999.

Systematic variations in non-local space time patterns of southern California seismicity, International Workshop '99 on Seismotectonics at the Subduction Zone, National Institute for Earth Science and Disaster Prevention, Tsukuba, Japan, November-December, 1999.

The US General Earthquake Model Program: What We Can Learn About Earthquake Physics, Processes and Patterns from Numerical Simulations, International Workshop on Solid Earth Simulations and Working Group Meeting of the APEC Countries Cooperation for Earthquake Simulation, Tokyo, Japan, January, 2000.

Images of Space-Time Patterns in Complex Earth Systems, given at the US Department of Energy, Basic Energy Sciences Workshop on Imaging, February, 2000.

What is the Future of Earthquake Science?, Invited Lecture at the Festschrift Symposium to honor Professor K. Aki's, Los Angeles, March, 2000.

Transition from Simplicity to Complexity in Earthquake Faults, Invited talk at the 25th General Assembly of the European Geophysical Union, Nice, France, April, 2000.

Using Numerical Simulations as an Approach to Understanding Extreme Earthquake Events (Using Virtual_California Simulations to Interpret Earthscope Data), Invited Lecture given at the Workshop on Extreme Events, organized by the Center for Science, Policy and Outcomes, Boulder, CO, June, 2000.

The Statistical Mechanics of Earthquakes, Invited Lecture at the Gordon Conference on Statistical Mechanics, Plymouth, NH, June 2000.

Patterns of Earthquakes in a Geometrically Realistic Simulation for the Southern California Earthquake Fault System, given at the Lawrence Livermore National Laboratory, August, 2000.

Simplicity and Complexity in Earthquake Dynamics: Dynamical Manifestations of Complex Geosystems, given at the Jet Propulsion Laboratory, Pasadena, CA, August, 2000.

General Earthquake Models, Problems and Prospects, Invited Lecture, 2nd International Symposium of the APEC Countries Cooperation for Earthquake Simulation, Hakone, Japan, October, 2000.

Nonlinear Network Dynamics of Earthquake Fault Systems, Institute for Theoretical Dynamics, UC Davis, October, 2000.

The Statistical Physics of Earthquakes: New Approaches Using Numerical Simulations, Research Frontiers Lecture, Institute for Geophysics and Planetary Physics, Los Alamos National Laboratory, November, 2000.

Dynamics of Earthquake Fault Systems, Invited Colloquium at Center for Nonlinear Science, Los Alamos National Laboratory, November, 2000

Self-Organization of Earthquake Fault Systems due to Sliding Friction, Invited talk at the Fall, 2000 American Geophysical Union Meeting, San Francisco, CA, December, 2000.

Terrametrics Analysis of Space-Time Patterns in Earthquakes, with Applications to Forecasting and Prediction, Invited talk at the Fall, 2000 American Geophysical Union Meeting, San Francisco, CA, December, 2000.

Geocomplexity, Presentation to Dr. Margaret Leinen, Director of NSF/GEO Division, NSF, January, 2001.

Self-Organization in Leaky Threshold Systems, with Applications to Physics, Biology, and Earthquakes, NAS Arthur M. Sackler Colloquium, Irvine, CA, March, 2001.

Scaling in Earthquake Science, IMA/NSF Workshop on Mathematics and Earth Science, University of Minnesota, Minneapolis, MN, March, 2001.

Simulating Earthquakes in the Computer, with Applications to Earthquake Forecasting, Colloquium, Department of Physics, Harvey Mudd College, Claremont, CA, March, 2001.

The Appearance of Equilibrium-like Properties in Driven Dissipative Systems in Complex Earth (and other) Systems, Invited talk at the Spring, 2001 American Geophysical Union Meeting, Boston, MA, May, 2001.

*The Statistical Physics of Earthquakes: New Approaches Using Numerical Simulat*ions, Invited Plenary lecture, SIAM Meeting, Boulder, CO, June 2001.
Simulating Earthquake Fault System Dynamics, Southern California Earthquake Center II Organizing Workshop, Lake Tahoe, CA, July, 2001.
Scales in Earthquake Cycle Simulations, GEM/ACES Workshop on Computational Technologies for Earthquake Science, Maui HPCC Center, Maui, HI, July, 2001.
Evaluating Performance and Observational System Constraints for NASA/GESS missions Using Numerical Stress-Evolution Simulations of Fault Networks, Global Earthquake Satellite System Workshop, Snowbird, UT, October 2001.
Coupling of Great Earthquakes Between Northern and Southern California: Analysis via Numerical Simulations, American Geophysical Union, Fall, 2001.
 A New Kind of Geophysics: The Role of Computational Science & Engineering in the Discovery Process, Invited Lectures given at Cornell University, Princeton University, and University of California at Berkeley, October 2002.
Problems and Challenges in Earthquake Simulations, American Geophysical Union, Fall, 2002.
Space-Time Patterns, Computer Simulations, and Earthquakes: Is this a "New Kind of Geophysics?", presented at US Geological Survey, Menlo Park, CA, May 14, 2003.
Understanding Complex Earthquake Fault Systems Using Numerical Simulations, presented at the Summary Symposium on the Solid Earth Simulator Project (1998-2002), Tokyo, Japan, March 13, 2003.
Damage Mechanics and Spinodals in Self-Organizing Complex Systems, presented at the Spring AGU-EGS-EUG meeting, Nice France, April 2003
Strategies for the Detection and Analysis of Space-Time Patterns of Earthquakes on Complex Fault Systems, presented at the International Conference on Computational Science, Melbourne, Australia, June, 2003.
How John Hopfield and Eugen Merzbacher Influenced My Life as a Scientist: Earthquakes, Neurobiology, and the Physics of Patterns in Complex Threshold Systems, presented at the Hopfest Symposium in Honor of John Hopfield's Career, Princeton University, Princeton, NJ, June 7-8, 2003.
Statistical Mechanical Approaches to the Modeling of and Forecasting of Nonlinear Earthquake Physics and Dynamics, presented at the Hagiwara Symp. at the Inter. Union Geodesy and Geophys., Sapporo, Japan, July 1, 2003.
Simulating the Earthquake Cycle on Complex Multiscale Earthquake Fault Systems: Towards Ensemble Earthquake Forecasting, presented at the Graduate Institute of Geophysics, National Central University, Chung Li, Taiwan, October 2, 2003.
Statistical Physics of Earthquake Fault Systems: The Physics Behind the Faulting, presented at the Academia Sinica, Taipei, Taiwan, October 8, 2003.
Computing and Visualizing the Complex Dynamics of Earthquake Fault Systems, Towards Ensemble Earthquake Forecasting, presented at the Fall, 2003 Am. Geophys. Meeting, San Francisco, CA, December 9, 2003.
Using Computer Simulations to Develop Technology for Earthquake Prediction, presented at the Int. Symp. on Predictability of the Evolution and Variation of the Multiscale Earth System, University of Tokyo, January 8-9, 2004.

Variation, Recurrence and Correlation in Topologically Realistic System-Level Earthquake Stress-Evolution Simulations, presented at the RELM conference on Earthquake Rupture Forecasting, Lake Arrowhead, California, February 19, 2004.

Topologically Realistic, System-Level Earthquake Fault Simulations: Toward Ensemble Forecasting, presented at the Seismological Society of America meeting in Palm Springs, California, April 14, 2004.

Connecting the Microscale to the Macroscale in Earthquake Processes, Scaling and its Relation to Nucleation in Damage Mechanics, 4th ACES Workshop, Beijing, China, July 9-14, 2004.

Recurrence and Correlation in Topologically Realistic System-Level Earthquake Simulations, 4th ACES Workshop, Beijing, China, July 9-14, 2004.

Research in Earthquake Physics, Forecasting, and Simulation-based Probabilistic Hazard Assessment at the University of California, Davis, Disaster Prevention Research Institute, Kyoto University, Japan, October 13, 2004.

Simulating the Dynamics of Earthquakes with High Performance Computing, International Workshop on Geodynamics: Observation, Modeling and Computer Simulation, University of Tokyo, Tokyo, Japan, October 14-15, 2004.

Information Technology and Model Synthesis, NASA Workshop on Synthetic Aperture Radar Interferometry, October 20-22, 2004.

Process, Pattern and Prediction: Complexity in Driven Earth Systems, Lorenz Lecture, American Geophysical Union Fall Meeting, December, 2004. Also presented at the Hydrologic Sciences Colloquium, UC Davis, May 19, 2005.

Recent Results in Earthquake Forecasting Research at the University of California, Davis, USA, Workshop on Early Warning Systems for Earthquake Monitoring Using Space Technology, Kandili Observatory and Earthquake Research Institute, Istanbul, Turkey, February 1-2, 2005.

Understanding the Earthquake Cycle on Complex Multiscale Earthquake Fault Systems: Progress and Prospects, UC Berkeley Seismological Laboratory Seminar, March 15, 2005.

Anticipating Disaster - Earthquake Prediction and Computational Geoscience, Santa Fe Instititue Business Network topical meeting, Cisco Systems Headquarters, San Jose CA, March 23, 2005.

Understanding the Earthquake Cycle on Complex Multiscale Earthquake Fault Systems: Progress and Prospects, Science Board Meeting, Australian Computational Earth Systems Simulator, a Major National Research Facility, University of Queensland, Brisbane, Australia, April 18-22, 2005.

A Brief Overview of Tsunamis and the Sumatra Tsunami Event, Science Board Meeting, Australian Computational Earth Systems Simulator, a Major National Research Facility, University of Queensland, Brisbane, Australia, April 18-22, 2005.

Forecasting Earthquakes Using the Pattern Informatics Method ("Hotspot Maps"): Current Status, European Geoscience Union, Vienna, Austria, April 25, 2005.

Forecasting Locations for Destructive Tsunamis Using the Pattern Informatics Method ("Hotspot Maps"), European Geoscience Union, Vienna, Austria, April 26, 2005.

Thresholds and Pattern Dynamics, Sir Mark Oliphant Conferences, International Frontiers of Science and Technology, University of Western Australia, July 4-7, 2005.

Process, Pattern, Prediction: Understanding Complexity in Driven Dynamical Systems, Monash University, Melbourne Australia, July 14, 2005.

Earthquake Forecasting, Issues and Ideas, University of Queensland/AcCESS, July 20, 2005.

Relating Observable Earthquake Pattern Formation to Unobservable Earthquake Physics: Implications for Earthquake Forecasting, Kavli Institute for Theoretical Physics, Santa Barbara, CA August 15, 2005

The Pattern Informatics Approach to Earthquake Forecasting, Current Status, California Earthquake Prediction Evaluation Council, Sacramento, CA September 20, 2005.

Topologically Realistic System-Level Earthquake Stress-Evolution Simulations, Working Group on California Earthquake Probabilities, US Geological Survey, Menlo Park, CA November 11, 2005.

100 Years after the San Francisco Earthquake of 1906: Earthquake Forecasting and Forecast Verification - Status, Prospects and Promise, Fall 2005 AGU meeting, Eos Trans. AGU, 86(52), Fall Meet. Suppl., Abstract NG21A-07

Earthquake Forecasting on Complex Multiscale Earthquake Fault Systems - Prospects, and Promise, *100 Years after the San Francisco Earthquake of 1906*, Directors Colloquium Series, NASA Goddard Space Flight Center, Greenbelt, MD March 6, 2006.

Overview: Earthquake Segmentation, Fault-to-Fault Jumps, and Numerical Paleoseismology, Working Group on California Earthquake Probabilities, Southern California Earthquake Center, Pasadena, CA March 16, 2006.

Ideas on Time-Dependent Earthquake Forecasting, APEC Collaboration for Earthquake Simulations, 5th International Workshop, Maui, HI, April 6, 2006.

Santa Rosa and the San Francisco Earthquake of 1906, Public Lecture, Santa Rosa, CA April 23, 2006.

What Happens....When You Include the Test in The Earthquake Forecast? , Southern California Earthquake Center - Collaboratory for the Study of Earthquake Predictability, Oxnard, CA June 7, 2006.

Process, Pattern, Prediction: Using Space Data tp Understand and Predict Complexity in Driven Dynamical Earth Systems, Interface 2006 , The 38th Symposium on the Interface of Statistics, Computing Science and Applications, Pasadena, CA May 25, 2006

Earthquake Forecasting, Numerical Simulations, and Space-Time Patterns, Seminario Internacional Complutense "Earth Sciences and Mathematics", Universidad Complutense de Madrid, September 13-15, 2006.

Earthquake Forecasting and its Verification, Ensemble Forecasting with Seismic Intensity-Based Measures, Acadmia Sinica Colloquium, Taipei, Taiwan, October 19, 2006.

The Physics of Space-Time Interactions: Analysis Based on Recreating Great Earthquakes in the Computer, Department of Earth Sciences Colloquium, National Central University, Taiwan, October 20, 2006.

Advances in Earthquake Forecasting with Numerical Simulations and Pattern Analysis, First Intl. CREST Symp. for "Integrated Predictive Simulation System for Earthquake and Tsunami Disaster, University of Tokyo, October 23-24, 2006.

Advances in Earthquake Forecasting and Forecast Verification Ensemble forecasting with seismic intensity-based measures, Department of Earth Sciences, Kyoto University, Kyoto, Japan, November 7, 2006.

Earthquake Physics and Forecasting: Space-Time Patterns, Ensembles and Numerical Simulations, 6th Joint Meeting of the UJNR Panel on Earthquake Research, Tokushima, Japan, November 8-11, 2006.

Forecasting Natural Disasters in the Chaotic and Complex Earth, Santa Fe Inst. Public Lecture, Santa Fe, NM, November 15, 2006

California Institute for Hazard Research, CITRIS Colloquium, UC Berkeley, March 21, 2007.

Earthquake Risk Assessment and Forecasting: A Summary of Current Issues, Department of Earth Sciences, University of Western Ontario, Canada, April 26, 2007

Failure of Rock Masses from Nucleation and Growth of Microscopic Defects and Disorder, US DoE Symposium on Computational and Numerical Geosciences, Gaithersburg, MD, May 3-4, 2007.

Numerical Simulations of Earthquakes on Realistic Fault Systems: Virtual California, SCEC Earthquake Simulators Workshop, November 2-6, 2007.

Forecasting Large Earthquakes Using Small Earthquakes, Risk Management Solutions (RMS) Symposium on "Advances in Earthquake Forecasting", January 23, 2008.

Short-Term Forecasting of Large Earthquakes, EQECAT Client Conference, Savannah, GA, April 3, 2008.

Virtual California 2008: Topology and Dynamics, 6th ACES International Workshop, Cairns, Australia, May 11-16 2008.

Performance Analysis of RIPI Forecasts of California Earthquakes, 6th ACES International Workshop, Cairns, Australia, May 11-16 2008.

Nucleation and Growth of Microscopic Defects and Disorder in Rock Masses, 6th ACES International Workshop, Cairns, Australia, May 11-16 2008.

Hazards, Physical Risks, and Financial Risks of Potential Natural Disasters, Testimony to the California Board on Forestry and Wildfires, Sacramento, CA, May 8, 2008.

Financial Innovations for Wildfire and Other Types of Potential Natural Disasters, Testimony to the California Board on Forestry and Wildfires, Sacramento, CA, May 8, 2008.

Research and the Future of California Wildfire Policy, Testimony to the California Board on Forestry and Wildfires, Sacramento, CA, May 8, 2008.

Short Term Forecasting of Large Earthquakes Using Small Earthquakes, National Taiwan University, June 23, 2008.

Computing Earthquake Forecast Probabilities Using Numerical Simulations of the Physics of Realistic Fault Systems (Virtual California), National Central University, Taiwan, June 24, 2008; also, Association of Pacific Rim Universities Symposium, Davis, CA, August 21, 2008

Complex Natural Catastrophes:Modeling, Visualizing, and Managing Risk in an Uncertain World, Santa Fe Institute, September 16, 2008.

Patterns in Complex Natural Catastrophes: Modeling and Managing Risk in an Uncertain World, Santa Fe Institute-Morgan Stanley Workshop on Risk, Rye, NY, October 16-18, 2008.

Earthquakes: An example of nucleation in a system with long range (elastic) interactions, Conference on Global Center of Excellence for Physical Sciences Frontier (JST-CREST), University of Tokyo, Tokyo, Japan, October 28-30, 2008.

NASA Programs in Support of "Early Warning", NRC/NAS Committee on Seismology and Geodynamics, Irvine, CA, November 6, 2008.

Earthquake forecasting: data, physics, methods, validation, and applications, Keynote Address, International Symposium On Earthquake Seismology And Earthquake Predictability, Beijing, China, July 5-9, 2009.

Global Sustainability: Anticipating and Managing Great Natural Catastrophes, Hong Kong University, Applied Geoscience Centre, Hong Kong University, Hong Kong, August 7, 2009.

Earthquake Forecasting: Do Similar Pasts in Simulation Data Imply Similar Futures in Numerical Earthquake Simulators?, Asia Oceania Geosciences Society, Singapore, August 12, 2009.

Validation and Verification in Earthquake Forecasting Research, Asia Oceania Geosciences Society, Singapore, August 12, 2009.

Earthquake Forecasting: Data, Physics, Methods, Validation, and (Financial) Applications, Association of Pacific Rim Universities Multihazards Symposium, National Taiwan University, Taipei, Taiwan, August 17, 2009.

Synchronization and Correlation in Earthquake Physics and Other Applications, American Geophysical Union Annual Meeting, San Francisco, CA, December 16, 2009.

Activation vs. Quiescence: Which is the Precursory Signal for the Next Large Earthquake?, Seismological Society of America Annual Meeting, Portland, OR, April 23, 2010.

Role of the Internet in Anticipating and Mitigating Earthquake Catastrophes, and the Emergence of Personal Risk Management, Western Pacific AGU Meeting, Taipei, Taiwan, June 24, 2010.

Time- and Space-Dependent Earthquake Forecasting, Kyoto University, Kyoto, Japan, June 28, 2010.

Scaling, Material Damage and Earthquake Dynamics, , Western Pacific AGU Meeting, Taipei, Taiwan, June 25, 2010.

Advances in Time- and Space-Dependent Earthquake Forecasting, China Earthquake Administration, Beijing, China, August 26, 2010.

The Problem of Earthquake Precursors, Association of Pacific Rim Universities Multihazards Symposium, Peking University, Beijing, China, August 27, 2010.

ACES, Present Status and Future Directions, APEC Cooperation for Earthquake Simulations International Symposium, Otaru, Japan, October 4, 2010

Earthquake Precursors: Activation, Quiescence, or Something Else?, Earthquake Research Institute, Univesity of Tokyo, Tokyo, Japan, October 1, 2010; and APEC Cooperation for Earthquake Simulations International Symposium, Otaru, Japan, October 5, 2010.

Forecasting Earthquakes with Numerical Simulations (and other uses for simulators), APEC Cooperation for Earthquake Simulations International Symposium, Otaru, Japan, October 6, 2010

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Non-Reviewed Publications:

1969:

Rundle, J.B. and E.J. Koenke, A new method for the self - alignment of a strapdown navigation system, *NASA/ERC Technical Rept.*, 1969.

1980:

Rundle, J.B., Numerical evaluation of static elastic - gravitational deformation in a layered half - space by point couple - sources, *Sandia Tech. Rept. No. SAND80 - 2048J*, 1980.

1989:

Rundle, J.B., and J.C. Eichelberger, Science Guide to the Long Valley Caldera Deep Well, *Sandia Tech. Rept. SAND89-0155*, 1989.

1990:

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Ph. D. Dissertations Being Supervised

Ph.D. students supervised at UCD:

> James Holliday, Department of Physics (PhD 2007)
> Jordan Van Aalsburg, Department of Physics (PhD 2010)
> Mark Yoder, Department of Physics (PhD 2012)
> Joe Gran, Department of Physics (PhD 2012)
> Michael Sachs, Department of Physics (PhD 2014)
> Quinn Norris, Department of Physics (PhD 2015)
> Kasey Schulz, Department of Physics (PhD 2016)
> John Wilson, Department of Physics
> Molly Luginbuhl, Department of Physics
> Alexis Giguerre, Department of Physics

Previous students supervised:

Yu, T.T., *Crustal Deformation due to a Dipping Fault in an Elastic Gravitational Layer Overlying a Viscoelastic Gravitational Half Space: Models and Applications*, Ph.D. Dissertation, Department of Geological Sciences and Program in Geophysics, the University of Colorado, Boulder, CO, 1995.

P. Vincent, *Application of SAR Interferometry to Low-Rate Crustal Deformation Fields*, 218 pp., University of Colorado, 1998.

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Preston, E.F., *Avalanche Dynamics in Near Mean Field Threshold Systems*, Ph.D. Dissertation, Department of Physics, University of Colorado, Boulder, CO, 2000.

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