

**Auroop R. Ganguly, Ph.D.**

Professor, Civil & Environmental Engineering      Director, Sustainability & Data Sciences Laboratory  
 Professor (by courtesy), Computer Science (Khoury)      Professor (by courtesy), Marine & Environmental Sciences  
 Professor (by courtesy), Political Science      Professor (by courtesy), Public Policy & Urban Affairs  
 Northeastern University, Boston, MA; Ph. 617-373-6005; a.ganguly@neu.edu; civ.neu.edu/people/ganguly-auroop  
 Fellow, American Society of Civil Engineers (ASCE); Senior Member, IEEE  
 Co-Founder & Chief Scientific Adviser, risQ (www.risq.io), Cambridge, MA

**EDUCATION:**

<b>Massachusetts Institute of Technology</b>	Civil & Environmental Engineering	Ph.D.	2002
Dissertation: <i>Distributed Quantitative Precipitation Forecasts Combining Information from Radar and Numerical Weather Prediction Model Outputs</i> (Supervisor: <u>Rafael L. Bras</u> )			
<b>University of Toledo, Ohio</b>	Civil Engineering	M.S.	1997
<b>Indian Institute of Technology, Kharagpur</b>	Civil Engineering	B. Tech. (Hons.)	1993

**APPOINTMENTS:**

08/2011–Present	Professor, Civil & Environmental Engineering and Director of the Sustainability & Data Sciences Lab (SDS Lab), <b>Northeastern University</b> , Boston, MA Professor (by courtesy) Khoury College of Computer Science; Marine & Environmental Sciences; Political Science; Public Policy/Urban Affairs; <b>Northeastern University</b> International Visiting Professor, Computer Science and Environmental Engineering, <b>Indian Institute of Technology (IIT)</b> , Kharagpur (2018–Present) Co-Founder & Chief Scientific Adviser, <b>risQ</b> (SDS Lab spinout startup: risq.io) Cambridge, MA (2016–Present) Visiting Professor, Climate Science, <b>Indian Institute of Technology (IIT)</b> , Bombay (2013–2015)
09/2004–08/2011	Senior Scientist (Senior R&D Staff), Computational Science & Engineering and Climate Change Science Institute, <b>Oak Ridge National Laboratory</b> , Oak Ridge, TN Joint Faculty, Civil & Environmental Engineering & Adjunct Faculty, Industrial Engineering, <b>University of Tennessee, Knoxville</b> , TN (2008-2011)
12/2003–09/2004	Visiting Faculty, Civil & Environmental Eng., <b>University of South Florida, Tampa, FL</b>
03/2003–12/2003	Senior Product Manager of Analytics & Strategy, <b>Demantra Inc.</b> , subsequently acquired by <b>Oracle Corporation</b> , Cambridge, MA & Waltham, MA
06/1998–03/2003	Product Manager of Demand Planning (1999-2003), Burlington, MA & Waltham, MA, and Time Series Software Developer (1998-1999), Nashua, NH <b>Oracle Corporation</b>

**HONORS & AWARDS:**

2020	<b>1<sup>st</sup> Place Poster Presentation</b> , (PhD student Venkata Shashank Konduri), Hydrology Section, American Meteorological Society 100 <sup>th</sup> Annual Meeting, Boston, MA
2020	<b>Best Poster Award</b> , Society for Risk Analysis, awarded to PNNL PI (Chatterjee) for joint project on infrastructure resilience: PNNL, Northeastern, RPI, IIT-GN, VOLPE
2019	<b>Fellow</b> , American Society of Civil Engineers (ASCE)
2019	<b>Invited Keynote</b> , National Academies Workshop: Data, Models, Urban Sustainability.
2018	<b>Senior Member</b> , Institute of Electrical and Electronics Engineers (IEEE)
2017	<b>Runner-Up Best Paper Award</b> and Runner-Up Best Student Paper Award (to PhD student Vandal), KDD 2017 Applied Data Science Track, ACM SIGKDD Knowledge Discovery and Datamining Conference (8.8% acceptance rate for paper acceptance as an oral presentation in Applied Data Science track)
2017	<b>First Prize</b> (to PhD student Jalalzadeh-Fard), American Geophysical Union (AGU) Virtual Poster Presentation (with a special note from the CEO of AGU)
2016	<b>Excellent Youth Paper Award Candidate</b> (to PhD student Bhatia), US National Academy of Engineering & Chinese Academy of Engineering organized International
2016	Conference on Sustainable Infrastructure, Shenzhen, China
2015	<b>ERL Highlights of 2015</b> , for ERL paper
2012	<b>Outstanding Reviewer</b> , American Society of Civil Engineers
2011	<b>Faculty Fellow</b> , Northeastern University, College of Engineering
2011	<b>Best Student Paper Award</b> , SIAM Data Mining
2011	<b>AGU Editor’s Pick</b> , American Geophysical Union, for GRL journal paper

2011 **Research Highlight in journal Nature**, for GRL journal paper  
 2011 **Research Highlight in journal Nature Climate Change**, for GRL journal paper  
 2010 **Outstanding Joint/Adjunct/Research Faculty Award**, U. TN, Knoxville, CEE.  
 2010 **Best Paper Award**, NASA Conference on Intelligent Data Understanding  
 2010 **Significant Event Award**, Oak Ridge National Laboratory (ORNL), U.S. Department of Energy (US DOE). (Novel analysis of new Climate model simulations.)  
 2010 **Best Doctoral Student Award** for PhD Co-Advisee and ORNL Mentee  
 2009 **Best Student Paper Award**, ACM KDD Sensor-KDD Workshop  
 2009 **Significant Event Award**, ORNL, US DOE. (Science Lead from ORNL for an international climate change war game.)  
 2009 **Exceptional Mentoring**, ORNL, US DOE.  
 2008 **Significant Event Award**, ORNL, US DOE. (Co-PI and Task Lead on DARPA project on systematic evaluation of human behavior modeling.)  
 2008 **Outstanding Mentor Award**, US DOE.  
 2006 **Outstanding Mentor Award**, ORNL, US DOE.  
 2006 **Selfless Mentoring Award**, ORNL, US DOE.

**Recognition/Service:**

2020 **KDD 2020 PC Member (Research Track)**, The 27<sup>th</sup> ACM SIGKDD Knowledge Discovery and Data Mining, Program Committee Member, Research Track  
 2020 **GISTAM 2020 PC Member**, The 6th International Conference on Geographical Information Systems Theory, Applications and Management, Program Committee Member  
 2020 **Chair or Co-Chair**, Three Sessions on Artificial Intelligence for the Environment, American Meteorological Society 100<sup>th</sup> Annual Meeting, Boston, MA  
 2019 – Now **ASCE Committee Member**, Committee on Adaptation to a Changing Climate (Task Committee on Hydroclimatology and Engineering Adaptation; Task Committee on Future Weather and Climate Extremes), American Society of Civil Engineers  
 2019 **Lead Author, US National Climate Assessment**, Artificial Intelligence Section of Climate Adaptation Chapter in the Applied Climate Assessment of the Independent Advisory Committee (climateassessment.org)  
 2019 **Co-Organizer**, Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery, Workshop in conjunction with **KDD 2019**, 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 4–8, 2019, Anchorage, Alaska, USA.  
 2018 **United Nations Panelist**, United Nations Environment Programme, Quadrennial Report on “Environmental Effects of Ozone Depletion and Interactions with Climate Change – 2018”  
 2018 **Invited Author**, Climate 2020, **United Nations Association–United Kingdom** (UNA-UK)  
 2018 **Co-Organizer**, Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery, Workshop in conjunction with **KDD 2018**, 24th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 13–19, 2018, London, UK.  
 2018 – Now **Editorial Board Member: PLOS ONE** journal  
 2018 – Now **Specialty Chief Editor: Water and Built Environment. Frontiers in Water** journal  
 2018 **Endowed Chair Activity**: Charotar University of Science and Technology, Gujarat, India  
 2018 **Founding Organizer**, First International Conference on the **Networked Digital Earth** (ICNDE 2018), Indian Institute of Technology, Kharagpur, India, March 7-9.  
 2018 **Invited Contributor**, Climate 2020, United Nations Association – United Kingdom.  
 2018 **Co-Chair**, Themed Joint Session 7: Machine Learning and Climate Studies, Annual Meeting of the **American Meteorological Society**, January 10.  
 2017 **Co-Convener**, 7<sup>th</sup> Workshop on Data Mining in Earth System Science (DMESS 2017), held in conjunction with the **IEEE International Conference on Data Mining (ICDM)**, November 18, New Orleans, LA  
 2016-Now **Co-Chair**, Societal Dimensions Working Group, **Community Earth System Model**, National Center for Atmospheric Research, Boulder, CO  
 2016 **Reviewer**, **The National Academies Press**, “From Maps to Models: Augmenting the Nation’s Geospatial Intelligence Capabilities,” 134 pages. <https://www.nap.edu/23650>.  
 2015 – Now **Editorial Board Member**, Scientific Reports, Nature Publishing Group.  
 2009 – Now **Associate Editor**, Journal of Computing in Civil Eng., American Society of Civil Engineers

2011 – 2015	<b>Associate Editor</b> , Water Resources Research, American Geophysical Union.
2012 – 2018	<b>Elected Member</b> , Artificial Intelligence Committee, American Meteorological Society
2014	<b>Invited Reviewer Panel</b> , United Nations Environment Programme: Environmental Effects Assessment Panel: Environmental Effects of Ozone Depletion
2014-2015	<b>Program Committee</b> , Climate Informatics Workshop.
2013-2014	<b>Guest Editor, Nonlinear Processes in Geophysics</b> , Journal Special Issue on Physics-driven Data Mining for Climate Extremes, European & American Geophysical Unions
2010	<b>Invited International Reviewer Panel</b> , United Nations Environment Programme: Environmental Effects Assessment Panel: Environmental Effects of Ozone Depletion
2009	<b>Guest Editor, Intelligent Data Analysis</b> , Journal Special Issue on Knowledge Discovery from Data Streams, IOS Press
2011-2012	<b>Program Committee</b> , NASA Conference on Intelligent Data Understanding.
2010-2014	<b>Program Committee</b> , ACM Big Spatial Workshop.
2009-2014	<b>Program Committee</b> , IEEE Spatial / Spatiotemporal Data Mining Workshop.
2007-2012	<b>Lead Founding Organizer</b> , 1 <sup>st</sup> -6 <sup>th</sup> Knowledge Discovery from Sensor Data (SensorKDD) Workshops at ACM Knowledge Discovery/Data Mining (KDD): 2 edited books, Knowledge Discovery from Sensor Data (CRC Press/LNCS).
2009-2011	<b>Founding Organizer</b> , First – Third Workshops on Climate Data Mining at the IEEE International Conference on Data Mining (ICDM) conferences.
2004-2012	<b>Invited National Panels</b> , 2016 NSF Big Data (Breakout Session Leader); 2014 US DOE Regional Climate Modeling Review; 2012 Integrated Water Cycle Modeling (Invited Attendee and Speaker at Breakout Session); NSF Ad Hoc Reviewer for GEO (Hydrologic Sciences), ENG (CMMI), and CISE; 2009 Climate Decision Support Workshop, Aspen Global Change Institute, Aspen, CO; 2008 “Modeling Uncertainty in Integrated Assessment Models,” Workshop; U.S. Department of Energy / Argonne National Laboratory; 2008 “Identifying Outstanding Grand Challenges in Climate Change Research”: Guiding the Department of Energy Strategic Planning, U.S. Department of Energy, Crystal City, VA; 2007 “Weather Extremes Impacts on Infrastructure”, NCAR/LANL, Sante Fe, NM; 2004 “Data Science Technology for Homeland Security Information Management and Knowledge Discovery”, Workshop Report on Data Sciences, Dept. Homeland Security
2004-2014	<b>Conference Sessions Chaired (Selected)</b> , “Modelling and Analytics for Hydrologic Impact Assessments due to Climate Change,” Computational Methods in Water Resources Conference, Stuttgart, Germany, June 10-13, 2014, Univ. Stuttgart; “Applications of data mining/knowledge discovery and improved understanding of large environmental science datasets,” American Meteorological Society (AMS) Conference, Austin, TX, January 6-10, 2013; “Modelling and Analytics for Hydrologic Impact Assessments due to Climate Change,” Computational Methods in Water Resources Conference, Urbana, IL, June 17-21, 2012, University of Illinois at Urbana-Champaign; “Environmental Impacts of Urbanization: Hazards, Risks, and Opportunities from Neighborhood to Globe,” American Geophysical Union (AGU) Fall Meeting (FM), San Francisco (SFO), CA, December 9-13, 2013; “Climate Extremes and Impacts: Can Big Data Mining and Fusion Help Reduce Uncertainties?” AGU FM, SFO, CA, December 3-7, 2012; “Predictive Modeling and Uncertainty Quantification for Systematic Evaluation of Climate Models and Data-Guided Enhancements of Regional Climate Projections,” AGU FM, SFO, CA, December 13-17, 2010; “Variability and Predictability of Weather and Climate Extremes,” AGU FM, SFO, CA, December 13-17, 2010; “Impacts of Severe Weather on Environment, Economy, and Society,” AGU Joint Assembly, Fort Lauderdale, FL, May 27-30, 2008; “Nonlinear Data Sciences for Finite Observations With Noise and Periodicity,” AGU FM, SFO, CA, December 5-9, 2005; “Data mining and decision sciences for earth systems science,” INFORMS 2004 Conference, Denver, CO, October 24-27, 2004.
2010-2012	<b>External Proposal Reviewer</b> , Polish NSF (2012); Dartmouth College (2010), USA
2012	<b>International External Thesis Evaluator</b> , University of Sydney, Australia
2013-2017	<b>Technical Program Committees (Selected)</b> : <u>IWCCE-2017</u> , Int’l workshop on Computing in CE, Seattle, WA, Jun. <u>DMESS-2014</u> , Data Mining in Earth System Sc., Jun, Cairns, Australia; <u>BigSpatial-2013</u> , Nov., FL; <u>Climate Informatics 2013</u> , NCAR, CO; Int’l Conf. on Applied Math, Modeling & Computation ( <u>AMMCS 2013</u> ), Waterloo, Canada, Aug.

2004-2017 **Peer Reviewer (Selected)**, Nature, Nature Communications, PNAS, PLOS One, Water Resources Research, J. Hydrologic Engineering, J. Hydrology, Geophysical Research Letters, Journal of Hydrometeorology, Climate Dynamics, Climatic Impacts, Journal of Climate, International Journal of Climatology, Environmental Research Letters, Nonlinear Processes in Geophysics, Physical Review Letters, Physical Review E, Data Mining and Knowledge Discovery, Statistical Analysis & Data Mining, Pattern Recognition Letters

2004-2017 **Funding Agency Review Panels (Selected):** Multiple at NSF, DOE (USA); NSF (Poland)

**Scientific Outreach:**

May 2020 **Invited Editorial Participant**, Frontiers Journals, Lausanne, Switzerland  
 March 2020 **Guest Speaker**, Networked Infrastructures under Compound Extremes, Babson College, Babson Executive Conference Center, CERA Design Associates  
 August 2019 **Co-organizer and Panel Moderator**, Sustainable Urban Sciences Workshop, University of Texas at Austin  
 July 2019 **Workshop**, Pacific Northwest National Laboratory, LDRD Grant  
 May 2019 **Invited Speaker**, AI for Sustainability, US Consulate in Kolkata, India  
 May 2019 **Invited Participant**, Workshop on Data-driven Resilience, Stanford University  
 April 2019 **Invited Speaker**, Artificial Intelligence for Social Entrepreneurship, Emmersive India  
 December 2018 **Invited Attendee**, NSF Expeditions in Computing 10<sup>th</sup> Year Celebrations, NSF HQ  
 May 2018 **Invitee**, Workshop on Water, Food and Climate, MIT J-WAFS  
 November 2017 **Invitee**, Microsoft AI for Earth Education Summit, Redmond, WA  
 October 2017 **Invitee**, Swiss Re Symposium, Boston, MA  
 2016-2017 **Lead PI and Scientist**, Research for the Town of Brookline, MA, Community Resilience to Extreme Heat (Thriving Earth Exchange, American Geophysical Union)  
 2015-2016 **Team Lead**, City of Boston, Climate Ready Report (Lead for Temperature Extremes)  
 2009-2010 **Science Lead**, ORNL, Inform climate change assessments for the US Department of Defense 2010 Quadrennial Defense Review (QDR) report  
 2008 **Science Lead**, ORNL, International climate change war games by the Center for a New American Security, a Washington, DC, based think tank

**Academic Institutional Service:**

**Northeastern University (NU) Civil and Environmental Engineering (CEE)**

2019-2020 **Interdisciplinary Research Sabbatical**, Khoury College of Computer Science  
 2017-2018 **Member**, CEE Faculty Search  
 2017 **Member**, Ad hoc Committee for Outreach & Marketing  
 2016-2017 **Chair**, CEE Faculty Search  
 2015-2016 **Chair**, CEE Resilience Faculty Search  
 2015-2016 **Member**, CEE Informatics Faculty Search  
 2015 **Member**, Graduate Students Committee  
 2014-2015 **Chair**, CEE Interdisciplinary PhD Degree Program  
 2012-2013 **Chair**, CEE Infrastructure Systems Working Group  
 2012-2013 **Chair**, Cross-College Urban Coastal Faculty Search (COE/CEE & COS/MES)  
 2012-2013 **Member**, CEE Faculty Search Committee  
 2011-2012 **Member**, CEE Faculty Search Committee  
 2011-2012 **Member**, Cross-College Coastal Sustainability Faculty Search Committee (COE/COS)  
 2011-2012 **Member**, Cross-College Statistical Analysis and Large Datasets Faculty Search Committee (Social Sciences, COE, COS, CIS)

**NU College of Engineering or University Level**

2018-2019 Key role in continuing to establish MoU with Pacific Northwest National Lab (PNNL)  
 2018 Established MoU with Oak Ridge National Laboratory (ORNL)  
 2017 Key role in establishing MoU and long-term relation with IIT, Kharagpur, India  
 2015-Present CEE Representative for COE Research Advancing Priorities Committee  
 2015 International Safety and Security Assessment Committee (ISSAC), Northeastern University Office of the Provost  
 2011-2012 COE Institute Discussions: Critical Infrastructure Resilience

**University of Tennessee, Knoxville (UTK) and Oak Ridge National Laboratory (ORNL)**

2009-2011 UTK-ORNL Governor's Chair Search Committee for Climate in CEE

**PUBLICITY (Selected):**

- 2007-2018      **Scientific Venues:** Nature; Nature Climate Change; NSF News; IPCC, PNAS; NASA Tech Briefs; R&D Magazine; National Climate Assessment; Environmental Research Web (UK); La Scienza (Italy); American Geophysical Union (AGU); AGU Press Conference; Science Daily; PhysOrg
- 2009-2018      **Media:** Quotes or citations to articles in the National mainstream media (e.g., USA Today, Washington Post, LA Times, Boston Globe, Knoxville Sentinel, MSNBC, Yahoo News), International (e.g., UK Guardian, Paris Guardian, AL Jazeera, The Hindu, India, NDTV India; Op-Eds in Millennium Post, India) and many other mainstream media articles across the continents of North and South America, Europe, Asia, and Africa.
- 2009-2018      **Institutional:** MIT News, Northeastern News, Oak Ridge National Lab News

**INVITED LECTURES (Selected):**

[Single asterisk \* denotes current or former student or mentee]

1. Ganguly, A.R. (2020): “Networked Infrastructures under Compound Extremes”. Guest Speaker. **Babson College**, Babson Executive Conference Center, Organized by **CERA Design Associates**, Boston, MA.
2. Ganguly, A.R. (2019): **Keynote. National Academies Committee on Frontiers of Big Data, Modeling and Simulation in Urban Sustainability**. National Academies, Keck Center, Washington, DC, January 30-31.
3. Ganguly, A.R. (2019): U04 Data-driven science for earth and space exploration. IUGG Centennial. 27<sup>th</sup> IUGG General Assembly. **International Union of Geodesy and Geophysics**. July 8-18.
4. Ganguly, A.R. (2019): Machine Learning in Geosciences. **MILA** (Quebec AI Institute) Earth Sciences, July.
5. Ganguly (2018): Panel on Climate Security: Adaptation and Dangers. 5th Annual ALLIES Civil Military Relations Conference on "Security, Society and the New Climate Regime". **Tufts University**. November 10.
6. Ganguly, A.R. (2018): “Intelligent Climate Adaptation and Resilient Engineering (I-CARE)”, Department of Civil and Environmental Engineering, **Rensselaer Polytechnic Institute**, Troy, NY, October 3.
7. Ganguly, A.R. (2018): “Intelligent Climate Adaptation and Resilient Engineering (I-CARE)”, US-Serbia and West Balkan Data Science Workshop, **US National Science Foundation** and **Ministry of Education, Science and Technological Development of the Republic of Serbia**, August 26-28, Belgrade, Serbia.  
*Endowed Chair Activity* (Series of Invited Lectures), Charotar University of Science & Technology, India:
8. Ganguly, A.R. (2018): “The Networked Digital Earth for Urban Resilience and Rural Development to Build a Climate Resilient India,” One day Workshop on ‘**Toward a Climate Resilient India**’, July 31.
9. Ganguly, A.R. (2018): “Adopting the United Nation’s IPCC Climate Risk Framework to Emerging Economies with a Focus on India,” One day Workshop on ‘**Toward a Climate Resilient India**’, July 31.
10. Ganguly, A.R. (2018): “Physics-Aware Artificial Intelligence in the Sciences and Engineering: A Fundamental Research Agenda with Societal Impacts,” August 1, **Charotar University**, India.
11. Ganguly, A.R. (2018): “The University of the Future: Balancing Knowledge Creation with Knowledge Dissemination in the World of AI, Citizen Science, and MOOC,” August 1, **Charotar University**, India.
12. Ganguly, A.R. (2018): “Critical Infrastructures under Climate and Cyber Threats: A Call for Action to Civil and Environmental Engineers,” August 2, **Charotar University**, India.
13. Ganguly, A.R. (2018): “Social Entrepreneurship for Future Civil Engineers: Critical Infrastructures, Key Resources, and Social Justice,” August 2, **Charotar University**, India.
14. Ganguly, A.R. (2018): “Next-Generation Civil Engineers as Interdisciplinary Pioneers: Making Money, Saving Lives, and Having Fun,” August 3, **Charotar University**, India.  
*End Endowed Chair Activity* (Invited Lectures Series)
15. Ganguly, A.R. (2018): “Dynamic Threats on Lifelines: Resilience of Critical Infrastructures to Cyber and Climate”, Second ACM SIGMETRICS International Workshop on Critical Infrastructure Network Security, ACM SIGMETRICS, **Association of Computing Machinery**, July 18-22, Irvine, CA, USA.
16. Ganguly, A.R. (2018): “Translating Deep Uncertainty in Climate Model Ensembles to Risk-Informed Decisions,” **Climate Change, Agriculture, Water, and Food Security: What We Know and Don’t Know**, MIT Experts Workshop, **Massachusetts Institute of Technology**, J-WAFS Abdul Latif Jameel World Water and Food Security Lab, Cambridge, MA, May 8-9 (Accepted).
17. Ganguly, A.R. (2018): “The Networked Digital Earth for Climate Change Impacts on Coupled Natural-Built-Human Systems,” First **International Conference on the Networked Digital Earth (ICNDE 2018)**, Indian Institute of Technology, Kharagpur, Kharagpur, India, 7-9 March (Accepted).
18. Ganguly, A.R. (2017): “Physics Guided Data Science in the Earth Sciences,” 2017 Fall Meeting of the **American Geophysical Union**, Session on Machine Learning Applications in Earth Science and Remote Sensing, New Orleans, LA, 11-15 December.

19. Ganguly, A.R. (2017): "Spatiotemporal Chaos as the Next-Gen Grand Challenge in Machine Learning," **Invited Keynote at SSTDM 2017 held in conjunction with IEEE ICDM 2017**, 12th International Workshop on Spatial and Spatiotemporal Data Mining (SSTDM-17) held in conjunction with the IEEE International Conference on Data Mining (ICDM), New Orleans, 18 November.
20. Ganguly, A.R. (2017): Panel Presentation on "Resilience of Coastal Communities" entitled "The Networked Digital Earth for Harnessing Complexity and Designing Policy", 2017 ASCE Convention, **American Society of Civil Engineers**, New Orleans, 8-11 October.
21. Ganguly, A.R. (2017): Managing non-stationarity and deep uncertainty in earth systems science and engineering. **Arizona State University**, Tempe, AZ, October 2.
22. Ganguly, A.R. (2017): "Knowledge Discovery in Earth Systems Sciences and Engineering," **Keynote at the NextGEO summit** of the US Department of Energy's Pacific Northwest National Laboratory, Seattle, Sept. 14.
23. Ganguly, A.R. (2017): **Dwijendra University**, Bali, Indonesia, June 2017.
24. Ganguly, A.R. (2017): **Udayana University (UNUD)**, Bali, Indonesia, June, 2017.
25. Ganguly, A.R. (2017): "Lessons learned in flood resilience of coastal cities with applicability to Jakarta, Indonesia," Panel Presentation at Workshop on Cross Disciplinary Approaches to Analyzing Flood Risks in Jakarta, **Universitas Tarumanagara (UNTAR)**, Jakarta, Indonesia, May 22-23, 2017.
26. Ganguly, A.R. (2017): "Big Data Meets Extreme Events in an Interconnected World: Climate Adaptation, Critical Infrastructures, and the Sustainability of Key Resources," **National University of Singapore**, Singapore, May 15, 2017.
27. Ganguly, A.R. (2017): "Understanding Climate Science and Informing Adaptation with Physics Guided Machine Learning," Tracking Climate Adaptation Workshop, **Yale-NUS College**, Singapore, 11-12 May, 2017.
28. Ganguly, A.R.: Invited and U. Bhatia\* (2016): "Climate & Complexity: The Resilience of Natural-Built-Human Systems," **International Workshop on Modeling of Physical, Economic and Social Systems for Resilience Assessment**, Session on Modeling of Systems and Dependencies (Thursday, October 20<sup>th</sup> AM), National Institute of Standards and Technology (NIST) and Colorado State University, 19-21 October, Washington, DC.
29. Bhatia, U.\*, and A.R. Ganguly: Invited (2016): "Climate & Complexity: The Resilience of Natural-Built-Human Systems," **International Conference on Sustainable Infrastructure (ICSI 2016)**, Theme on Adaptation to Climate Change (Tuesday, October 18<sup>th</sup> AM), US National Academy of Engineering (NAE) and the Chinese Academy of Engineering (CAE), 17-19 October, Shenzhen, China.
30. Ganguly, A.R. & SDS Lab/risQ (2016): Climate adaptation & resilient engineering, **University of Massachusetts, Amherst**, 10/28.
31. Bhatia, U.\*: Invited (2016): "Network Science Based Quantification of Resilience of Multiscale Infrastructure Systems," Session WA52 - Network Repair and Resiliency for Service Restoration (Nov. 16, AM), **The Institute for Operations Research and the Management Sciences Conference (INFORMS 2016)**, Nashville, TN, November 13-16.
32. Bhatia, U.\*, and A.R. Ganguly: Presenter for Northeastern SDS Lab (2016): Resilience of Boston's interdependent public transportation and power distribution network-of-networks to flood surge under high tide and Sandy-like hurricane with sea level rise scenarios, and Kodra, E.\*: Presenter for SDS Lab spinout risQ Corporation (2016): Novel recovery strategy for the NYC MTA post-Sandy, presented at the kickoff meeting for critical infrastructure resilience to infrastructure stakeholders and emergency managers in greater Boston.
33. **Indian Institute of Technology, Bombay**, Climate Change Interdisciplinary Program (IDP), Summer 2016.
34. **Indian Institute of Technology, Kharagpur**, Computer Science Department, Summer 2016.
35. **Indian Institute of Technology, Roorkee**, Environmental Engineering Department, Summer 2016.
36. **National Institute of Technology, Hamirpur**, Short Course and Lecture, Summer 2016.
37. Ganguly, A.R., Kodra, E.A.\*, Oglesby, R., Buja, L., Agrawal, A., Banerjee, A., Boriah, S., Chatterjee, S., Chatterjee, S., Choudhary, A., Das, D.\*, Ghosh, S., Hayhoe, K., Hays, C., Hendrix, W., Fu, Q., Kawale, J., Kumar, D.\*, Kumar, V., Liao, W.-K., Liess, S., Mawalagedara, R.\*, Mithal, V., Najm, H., Salvi, K., Snyder, P.K., Steinhäuser, K., and Wuebbles, D.J. (2012): "Exploiting Big Data to Understand Climate Extremes and Assess their Impacts," **NASA Conference on Intelligent Data Understanding**, Poster Session, NCAR, Boulder, CO, October 24-26, 2012.
38. Ganguly, A.R. (2011): "Precipitation Extremes with Climate Variability and Change," 2011 Fall Meeting, **American Geophysical Union**, San Francisco, CA, December 5-9, 2011.
39. Ganguly, A.R. (2011): "Computational Data Sciences for Assessment and Prediction of Climate Extremes," 2011 Fall Meeting, **American Geophysical Union**, San Francisco, CA, Dec. 5-9, 2011.

40. Ganguly, A.R. (2011): “Can Machine Learning Help Translate the Science of Climate Change to Information Relevant for Preparedness and Policy?” ICML 2011 Workshop on Machine Learning for Global Challenges, **International Conference on Machine Learning**, Bellevue, WA, June 28 – July 2, 2011.
41. Kodra, E., Chatterjee, S., Ganguly, A.R. (2011): “Challenges & Opportunities toward Improved Data-Guided Handling of Global Climate Model Ensembles for Regional Climate Change Assessments,” **2011 International Conference on Machine Learning: Workshop on Grand Challenges**, Bellevue, WA, June 28 – July 2, 2011.
42. **NSF-Sponsored Workshop on Computational Sustainability**, MIT, 2010
43. Conference entitled *Exploring the Dimensions of Environmental Carrying Capacity* organized by the **Steinbrenner Institute at Carnegie Mellon University**, Pittsburgh, 2009
44. Omिताому, O.A.\*, Ganguly, A.R., Vatsavai, R.R., Gama, J., Gaber, M.M., and Chawla, N.V. [Proceedings Editors] (2010): “Workshop Proceedings, Fourth International Conference on Knowledge Discovery from Sensor Data (Sensor-KDD’10),” **16th International Conference on Knowledge Discovery and Data Mining (KDD 2010)**, Washington, DC, July 25-28, 2010.
45. Chandola, V., Omिताому, O.A.\*, Ganguly, A.R., Vatsavai, R.R., Chawla, N.V., Gama, J., and Gaber, M.M. (2010): “Knowledge Discovery from Sensor Data (SensorKDD),” **ACM SIGKDD Explorations**, 12(2): 50-53.
46. **Environmental Protection Agency**, Raleigh-Durham, NC, 2009
47. **NSF-Sponsored Workshop on Uncertainty Quantification**, USC, LA, 2009
48. **NOAA-Sponsored Symposium on Air Quality and Climate**, JSU, Jackson, MS, 2009
49. Departmental Seminar: Civil and Environmental Engineering, **Carnegie Mellon University**, 2009
50. Seminar: **University of Alabama Huntsville, and NASA, Huntsville, AL**, 2009
51. **US-Japan (11th Specialist) Joint Climate Conference**, ORNL, 2009
52. Omिताому, O.A.\*, Ganguly, A.R., Vatsavai, R.R., Gama, J., Gaber, M.M., and Chawla, N.V. [Proceedings Editors and Workshop Organizers] (2009): “Workshop Proceedings, Third International Conference on Knowledge Discovery from Sensor Data (Sensor-KDD’09),” **15th Int’l Conf. on Knowledge Discovery & Data Mining (KDD 2009)**, Paris, France, 6/28-7/1, 2009.
53. Ganguly, A.R., Steinbach, M., and V. Kumar (2009): “Knowledge Discovery and Nonlinear Modeling can Complement Climate Model Simulations for Predictive Insights about Climate Extremes and Impacts,” 2009 **Fall Meeting, American Geophysical Union**, SFO, CA, Dec. 14-18, 2009.
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61. **Office of the Secretary of Defense** at the Pentagon, Presentations on Climate Extremes Impacts Assessment for the US Department of Defense, US DoD, Washington, DC, 2008
62. Identifying Outstanding Grand Challenges in Climate Change Research: Guiding the Department of Energy Strategic Planning, **US DOE**, Crystal City, VA, March 25-27, 2008.
63. Workshop on **Modeling Uncertainty in Integrated Assessment Models**, U. Chicago & Argonne Nat’l Lab, Chicago, IL, August 2008.
64. Department of Computer Science and Engineering, **University of Notre Dame**, IN, 2008
65. Civil & Environmental Engineering, **Carnegie Mellon University**, Pittsburgh, PA, 2008

66. **Fall Creek Falls Conference**, ORNL/DOE, 2008
67. Department of *Civil and Environmental Engineering*, **University of Tennessee, Knoxville**, 2008
68. Department of *Statistics*, **University of Tennessee, Knoxville**, 2008
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71. Civil and Environmental Engineering, **University of Texas at Austin**, 2007
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75. **US ARMY**, United States Department of Defense, 2005
76. **United States Department of Homeland Security**, 2005
77. **Intelligence Community Consortium** (ARDA, currently DTO), Final round of a major presentation, 2005
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79. **Procter and Gamble**, Global Analytics Group (via teleconference), 2004
80. Khan, S.\*, Ganguly, A.R., and Saigal, S. (2004): "Complexity analysis and predictive models for hydrologic systems," **Annual Meeting of INFORMS**, Denver, CO, October 24-27, 2004.
81. Data Science Technology for Homeland Security Information Management and Knowledge Discovery, Report of the DHS Workshop on Data Sciences, **Department of Homeland Security**, September 22-23, 2004.
82. Quantitative Methods, **Indian Institute of Management**, Ahmedabad, India, 2002.

**PATENTS & INVENTIONS:**

(Direct students, postgraduates, mentees, visiting faculty marked with \*)

1. Kodra, E.\* and Ganguly, A.R. (2019): "System for Multivariate Climate Change Forecasting with Uncertainty Quantification", Filed through Northeastern University, **US Patent # 10,488,556** (Granted by USPTO)
2. Bhatia, U.\*, Kumar, D.\*, Kodra, E.\* and Ganguly, A.R. (2019): "Software System for Generating and Analyzing Quantitative Restoration and Recovery Strategies and Scenarios for Man-Made and Natural Complex Networks", Filed through Northeastern University, **US Patent # 10,361,907 B2** (Granted by USPTO)
3. Ganguly, A.R., and O.A. Omiaomu\* (2010): Anomaly Analysis for Security, Oak Ridge National Laboratory Invention Disclosure ("ORNL IDEA").
4. Ganguly, A.R., and G. Kuhn\* (2007): Geospatial-Temporal Extremes Dependence, "ORNL IDEA".
5. Ganguly, A.R., and S. Khan\* (2005): Automated estimation of Nonlinear Correlation, "ORNL IDEA".

**NATIONAL & INTERNATIONAL ASSESSMENTS:**

(Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

**(A) Lead Authorship: International**

1. Ganguly, A.R., Kodra, E.\*, Bhatia, U.\*, Warner, M.E.\*, Duffy, K., Banerjee, A., and S. Ganguly (2018): "Understanding and interpreting data for climate adaptation and mitigation," **(INVITED). Climate 2020: Degrees of devastation**, published November 2018 by Witan Media for the **United Nations Association – UK**.

**(B) Lead Authorship: National**

2. Ganguly, A.R., Joppa, L., Fleming, P., McGovern, A., and P. Tissot (2019): Artificial intelligence section in applied climate science and assessment, **Applied Climate Assessments**, Independent Advisory Committee. Group spawned by members of the US National Climate Assessments. **(INVITED)**.

**(C) Review Panel: International**

3. **United Nations Environment Programme**, Quadrennial Report on "Environmental Effects of Ozone Depletion and Interactions with Climate Change" – 2018 and 2010. **(INVITED)**

**(D) Workshop Reports (Invited Talk & Report Review): National**

4. **MIT JWAFS**, Climate Change, Water, Agriculture, and Food Security (2018).
5. **US National Academies**, Enhancing Urban Sustainability with Data, Modeling, and Simulation (2019).
6. **UT-Austin NSF SUS Workshop**, Conference Report, NSF Award 1929941. (2019).



**JOURNAL PUBLICATIONS:** (Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

Note: Ganguly is the corresponding author in nearly all of these journal papers, except a few where his postdocs and/or visiting faculty in his Lab are the corresponding authors. Just a couple are collaborative with other Labs.

**(A) Interdisciplinary Journals**

1. Bhatia, U.\*, and A.R. Ganguly (2019): “Precipitation extremes and depth-duration-frequency under internal climate variability,” **Scientific Reports (Nature Publishing Group)**, 9, 9112.
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4. Kodra, E.\*, and A.R. Ganguly (2014): “Asymmetry of projected increases in extreme temperature distributions,” **Scientific Reports (Nature Publishing Group)**, 4, 5884.
5. Ghosh, S.\*, Das, D.\*, Kao, S.-C.\*, and A.R. Ganguly (2012): “Lack of uniform trends but increasing spatial variability in observed Indian rainfall extremes,” **Nature Climate Change**, 2, 2, 86-91.
6. Ganguly, A.R., Steinhäuser, K.\*, Erickson, D.J., Branstetter, M. Parish\*, Singh, N., Drake, J.B., and L. Buja (2009): “Higher trends but larger uncertainty and geographic variability in 21st century temperature and heat waves,” **Proceedings of the National Academy of Sciences of the USA (PNAS)**, 106(37), 15555-15559.
7. Bhatia, U.\*, Kumar, D.\*, Kodra, E.\*, A.R. Ganguly (2015): “Network science-based quantification of resilience demonstrated on the Indian Railways Network,” **PLOS One**, 10(11), e0141890.

**(B) Climate & Geoscience Journals**

8. Moss, R.H., Avery, S., Baja, K., Burkett, M., Chischilly, A.M., Dell, J., Fleming, P.A., Geil, K., Jacobs, K., Jones, A., Knowlton, K., Lemos, M.C., Melillo, J., Pandya, R., Richmond, T.C., Scarlett, L., Stults, M., Waple, A., Whitehead, J., Zarrilli, D., Fox, J., Ganguly, A., Joppa, L., Julius, S., Kirshen, P., Kreutter, R., McGovern, A., Meyer, R., Neumann, J., Solecki, W., Smith, J., Tissot, P., Yohe, G., R. Zimmerman (2019): “Evaluating Knowledge to Support Climate Action: A Framework for Sustained Assessment. Report of an Independent Advisory Committee on Applied Climate Assessment,” **Weather, Climate, and Society**, July. 11(3): 465–487.
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16. Ganguly, A.R., Kodra, E.\*, Agrawal, A., Banerjee, A., Boriah, S., Chatterjee, Sn., Chatterjee, So., Choudhary, A., Das, D.\*, Faghmous, J., Ganguli, P.\*, Ghosh, S., Hayhoe, K., Hays, C., Hendrix, W., Fu, Q., Kawale, J., Kumar, D.\*, Kumar, V., Liao, W., Liess, S., Mawalagedara, R.\*, Mithal, V., Oglesby, R., Salvi, K., Snyder, P.K., Steinhäuser, K.\*, Wang, D.\*, D. Wuebbles (2014): “Toward enhanced understanding & projections of climate extremes using physics-guided data mining,” **Nonlinear Processes in Geophysics**, 21, 777-795.

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**(C) Hydrologic Science & Engineering Journals**

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**(D) Data, Sensors, Computing, and Infrastructures Journals**

34. Duffy, K.\*, Vandal, T.\*, Li, S., Ganguly, S., Nemani, R., and A.R. Ganguly (2019): “DeepEmSat: Deep Emulation for Satellite Data Mining,” **Frontiers in Big Data**, 2:42.
35. Clark, K.\*, Bhatia, U.\*, Kodra, E.\*, and A.R. Ganguly (2018): “Resilience of the US National Airspace System Airport Network,” **IEEE Transactions on Intelligent Transportation Systems**, 19(12), 3785-3794.
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**(D) Miscellaneous (Operational Research, Informational Sciences, Law) Journals**

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**(E) Articles in Peer Review or Revision at Miscellaneous Journals**

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**BOOKS:** (Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

1. Ganguly, A.R., U. Bhatia\*, and S. Flynn (2018): **Critical Infrastructures Resilience: Policy and Engineering Principles**. Routledge, Taylor & Francis, March 6<sup>th</sup>, 2018, 131 pages.  
*Editorial Reviews by Profs. Bruce Ellingwood, Lucio Soibelman, and Rafael Bras.*
2. Gaber, M.M., Vatsavai, R.R., Omitaomu, O.A.\*, Gama, J., Chawla, N.V., and Ganguly, A.R. (editors) (2010): **Knowledge Discovery from Sensor Data**. Laboratory Notes for Computer Science, Springer, Berlin (Germany), 227 pp.
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**BOOK CHAPTERS:** (Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

***Peer-reviewed book chapters***

4. Warner, M.\*, Bhatia, U.\*, and Ganguly, A.R. (2019): “From probabilistic risk analysis to resilience with network science: lessons from the literature and best practice,” In **Handbook on Resilience of Socio-Technical Systems** (Ruth and Goessling-Reisemann, editors), Edward Elgar Publishing.
5. Bhatia, U.\*, Kumar, D.\*, Kodra, E.\*, and Ganguly, A.R. (2017): “Water Complexity and Physics-Guided Data Mining,” In **Contingent Complexity and Prospects for Water Diplomacy** (Islam and Madani, editors), Anthem.
6. Vandal, T.\*, Bhatia, U.\*, and Ganguly, A.R. (2016): “Statistical Downscaling in Climate with State-of-the-Art Scalable Machine Learning,” In **Large Scale Machine Learning in the Earth Sciences** (Steinhaeuser, K., et al. editors), Taylor & Francis.
7. Bhatia, U.\*, and Ganguly, A.R. (2016): “Network Science Perspectives on Engineering Adaptation to Climate Change and Weather Extremes,” In **Large Scale Machine Learning in the Earth Sciences** (Steinhaeuser, K. et al. editors), Taylor & Francis.
8. Chandola, V., Vatsavai, R.R., Kumar, D.\*, and Ganguly, A.R. (2015): “Analyzing Big Spatial and Big Spatiotemporal Data: A Case Study of Methods and Applications,” In **Handbook of Statistics**, 20, 239-258, Elsevier.
9. Ganguly, A.R., Kodra, E.\*, Chatterjee, S., Banerjee, A., and Najm, H.N. (2013). “Computational Data Sciences for Actionable Insights on Climate Extremes and Uncertainty,” In Ting Yu, Nitesh Chawla and Simeon Simoff (editors.), **Computational Intelligent Data Analysis for Sustainable Development**, Chapman and Hall / CRC, Chapter 5, 127-156 pp.
10. Monteleoni, C., Monteleoni, Schmidt, G. A., Alexander, F., Niculescu-Mizil, A., Steinhaeuser, K., Tippett, M., Banerjee, A., Blumenthal, M.B., Ganguly, A.R., Smerdon, J. E., and Tedesco, M. (2013): “Climate Informatics,” In Ting Yu, Nitesh Chawla and Simeon Simoff (editors.), **Computational Intelligent Data Analysis for Sustainable Development**, Chapman and Hall / CRC, Chapter 4, 81-126 pp.
11. Ganguly, A.R., Whitmeyer, J., Omitaomu, O., Brecke, P., Hadžikadić, M., Gilman, P., Khouja, M., Fernandez, S., Eichelberger, C., McLean, T., Yu, C., Middleton, E., Carmichael, T., and Sun, M. (2013). “Towards a Characterization and Systematic Evaluation Framework for Theories and Models of Human, Social, Behavioral, and Cultural Processes within Agent-Based Models,” In **Managing Complexity: Practical Considerations in**

- the Development and Application of ABMs to Contemporary Policy Challenges**, Springer Berlin Heidelberg, (Based on a DARPA funded project), 93-136 pp.
12. Bhaduri, B., Shankar, M., Sorokine, A., and Ganguly, A.R. (2009): “Spatio-Temporal Visualization for Environmental Decision Support,” In: Raffaele De Amicis, Radovan Stojanovic, Giuseppe Conti (editors.), **GeoVisual Analytics: Geographical Information Processing and Visual Analytics for Environmental Security**, NATO Science for Peace and Security Series - C: Environmental Security. Springer, 331-341 pp.
  13. Gupta, A., Seshasai, S., Mukherji, S., and Ganguly, A.R. (2008): ‘Offshoring: The Transition from Economic Drivers Toward Strategic Global Partnership and 24-Hour Knowledge Factory,’ In Gupta, A. (editor), **Outsourcing and Offshoring of Professional Services, Executive Highlight**, Chapter 1, 1-24 pp.
  14. Ganguly, A.R., Gupta, A., and Khan, S.\* (2007): “Data Mining and Decision Support for Business and Science,” **Intelligent Information Technologies: Concepts, Methodologies, Tools and Applications**, Sugumaran, V. (editor), Idea Group Inc. (IGI), Chapter 6.1, 1798-1805 pp.
  15. Ganguly, A.R., Fang, Y.\*, Khan, S.\*, Omitaomu, O. A.\*, and Bhaduri, B. L. (2007): “Knowledge Discovery from Sensor Data for Scientific Applications,” In: Gaber, M. and Gama, J. (editors.), **Learning from Data Streams – Processing Techniques in Sensor Networks**, Springer-Verlag, 205-229 pp.
  16. Ganguly, A.R., Omitaomu, O.A.\* and Walker, R.M. (2007): “Knowledge Discovery from Sensor Data for Security Applications,” In: Gaber, M. and J. Gama (editors.), **Learning from Data Streams – Processing Techniques in Sensor Networks**, Springer-Verlag, 187-204 pp.
  17. Khan, S.\*, Ganguly, A.R., and Gupta, A. (2007): “Data Mining and Data Fusion for Enhanced Decision Support,” **Handbook on Decision Support Systems I**, F. Burnstein and C.W. Holsapple (editors), Springer-Verlag, 581-608 pp.
  18. Khan, S.\*, Ganguly, A.R., and Gupta, A. (2005): “Creating Knowledge about the Future through Business Forecasting and Planning,” **Encyclopedia of Knowledge Management**, D. Schwartz (editor), Idea Group, 81-89 pp.
  19. Ganguly, A.R., Khan, S.\*, and Gupta, A. (2005): “Data Mining and Decision Support for Business and Science,” **Encyclopedia of Data Warehousing and Mining**, Wang, J. (editor), Idea Group, Chapter 45, 233-238 pp.
  20. Ganguly, A.R., and Gupta, A. (2005): “Framework for Strategic IT Decisions,” **The Handbook of Business Strategy**, Coate, P. (editor), Emerald, 265-271 pp.
  21. Ganguly, A.R. (2002): “Forecasting Rainfall and Floods – Advances and Way Forward,” **Advances in Civil Engineering Volume I: Water Resources and Environmental Engineering** (Bandopadhyay and Kumar, editors), Allied Publishers India, 166-174 pp.

***Peer-reviewed encyclopedia articles primarily with undergraduate students***

22. Najjar, S.\*, Bhatia, U.\*, and Ganguly, A. R. (2016): “Introduction to Climate Adaptation,” In Climate Change Adaptation (section), **Encyclopedia of GIS 2<sup>nd</sup> Edition** (Shekhar and Xioing, editors; Ganguly, A.R., Section Editor), Springer.
23. Henderson, H.\*, Blumenfeld, L.\*, Traylor, A.\*, Bhatia, U.\*, Kumar, D.\*, Kodra, E\*, and Ganguly, A.R. (2016): “Understanding Climate Extremes and Informing Adaptation,” In Climate Change Adaptation (section), **Encyclopedia of GIS 2<sup>nd</sup> Ed.** (Shekhar and Xioing, editors; Ganguly, A.R., Section Editor), Springer.
24. Moskos, C.\*, Henderson, H.\*, Bressler, L.\*, Bhatia, U.\*, Kumar, D.\*, Kodra, E\*, and Ganguly, A. R. (2016): “Informing Climate Adaptation with Big Data and Bigger Models,” In Data Science (section), **Encyclopedia of GIS 2<sup>nd</sup> Edition** (Shekhar and Xioing, editors; Chawla, S., Section Editor), Springer.
25. Blumenfeld, L.\*, Hall, T.\*, Henderson, H.\*, Bressler, L.\*, Moskos, C.\*, Bhatia, U.\*, Ganguli, P.\*, Kumar, D.\*, and Ganguly, A. R. (2016): “Climate and Human Stresses on the Water-Energy-Food Nexus,” In Climate Change Adaptation (section), **Encyclopedia of GIS 2<sup>nd</sup> Edition** (Shekhar and Xioing, editors; Ganguly, A.R., Section Editor), Springer.
26. Bhatia, U.\*, Traylor, A.\*, Moskos, C.\*, Blumenfeld, L.\*, Bressler, L.\*, Hall, T.\*, Heiss, R.\*, Clark, K., Deng, N., Kumar, D.\*, Kodra, E.\*, Hajjar, J.H., Flynn, S.E., Koutsopoulos, H., and Ganguly, A. R. (2016): “Climate Hazards and Critical Infrastructures Resilience,” In Climate Change Adaptation (section), **Encyclopedia of GIS 2<sup>nd</sup> Edition** (Shekhar and Xioing, editors; Ganguly, A.R., Section Editor), Springer.
27. Bressler, L.\*, Morgan, K.\*, Traylor, A.\*, Henderson, H.\*, Fard, B.\*, Kumar, D.\*, Bhatia, U.\*, Majumder, R., Mukherji, S., Roy, J., Ruth, M., and Ganguly, A. R. (2016): “Climate Change and Developmental Economics,” In Climate Change Adaptation (section), **Encyclopedia of GIS 2<sup>nd</sup> Edition** (Shekhar and Xioing, editors; Ganguly, A.R., Section Editor), Springer.

**CONFERENCE PAPERS:** (Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

*Note: In computer science (e.g., data mining or machine learning), there is a tradition of submitting the best work in high-visibility and highly selective conferences. These conferences are usually almost always more selective than ASCE journals, with some top conferences, such as KDD, ICDM or SIAM Data Mining, being much more selective. Workshops, such as those organized in conjunction with KDD and ICDM, are less relatively much less selective than the regular conferences but are usually still more selective than ASCE journals. A few of the computer science conference or workshop papers are occasionally further developed for journals. Non-computer data scientists (e.g., electrical engineers, statisticians, nonlinear physicists) prefer journals, and these days some computer scientists are also beginning to do so. In civil and environmental engineering, or climate and water areas, conference papers may range from being mildly peer reviewed (less rigorous than ASCE journals) to not peer-reviewed at all, with some of the latter (such as AGU fall meetings) merely requiring abstracts (which need to be presented orally or as posters).*

**“Very Highly Selective” (top computer science venues; ~10% acceptance) Top Computer Science Conferences**

1. Ganguly, A.R., Mehta, T., Patel, T., Sundaram, R., and D. Tiwari (2020): “Resilience and the Coevolution of Preferential Interdependent Networks,” ASONAM 2018, **Proc. 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining**, 10(2), 3.
2. Liu, Y., Chen, J., Ganguly, A.R., and J. Dy (2019): “Nonparametric Mixture of Sparse Regressions on Spatio-Temporal Data -- An Application to Climate Prediction,” KDD 2019, **25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining**, August 4–8, 2019, Anchorage, Alaska. **KDD Applied Data Science Track** (Note: Paper selectivity about 10% for oral presentations).
3. Vandal, T.\*, Kodra, E.\*, Dy, J., Ganguly, S., Nemani, R., and A.R. Ganguly (2018): “Quantifying Uncertainty in Discrete-Continuous and Skewed Data with Bayesian Deep Learning,” KDD 2018, **24th ACM SIGKDD Conference on Knowledge Discovery and Data Mining**, August 13–19, 2018, London, UK. **KDD Research Track** (Note: Paper selectivity about 10% for short oral presentations).
4. Vandal, T.\*, Kodra, E.\*, Ganguly, S., Michaelis, A., Nemani, R., and A.R. Ganguly (2018): “Generating High Resolution Climate Change Projections through Single Image Super-Resolution: An Abridged Version,” IJCAI 2018, **27th International Joint Conference on Artificial Intelligence**, July 13–17, 2018, Stockholm, Sweden. (**Sister Conferences Best Paper Track**).
5. Vandal, T.\*, Kodra, E.\*, Ganguly, S., Michaelis, A., Nemani, R., and A.R. Ganguly (2017): “DeepSD: Generating High Resolution Climate Change Projections through Single Image Super-Resolution,” KDD 2017, **23rd ACM SIGKDD Conference on Knowledge Discovery and Data Mining**, August 13–17, 2017, Halifax, Nova Scotia, Canada. (**Runner-Up Best Paper Award and Runner-Up Best Student Paper Award in the KDD Applied Data Sciences Track**) (Note: Paper selectivity for oral presentations in this track was 8.8% and this paper was the runner-up best paper even within this highly selective group of papers).
6. Chatterjee, S., Steinhäuser, K.\*, Banerjee, A., Chatterjee, S., and Ganguly, A.R. (2012): “Sparse Group Lasso: Consistency and Climate Applications,” **SIAM International Conference on Data Mining (SDM 2012)**, Anaheim, CA, April 26-28, 2012. (**Best Student Paper Award**).

**“Highly Selective” (definition: at least as selective as ASCE journals) Computer Science Conferences/Workshops**

7. Duffy, K.\*, and A.R. Ganguly (2019): “Machine intelligence for floods and the built environment under climate change,” Workshop on Climate Change and AI, **Proc. 36<sup>th</sup> International Conference on Machine Learning**, PMLR 97, Long Beach, California.
8. Warner, M.\*, Chatterjee, S., Yadav, N.\*, Brigantic, R., and A.R. Ganguly (2019): “Multi-stakeholder resilient infrastructure decision support under dynamic environmental and adaptive adversarial settings,” **Proc. 19<sup>th</sup> IEEE International Symposium on Technologies for Homeland Security**, November, Woburn, MA.
9. Sathanur, A.V., Halappanavar, M., Chatterjee, S., Ganguly, A., and K. Clark (2019): “Identification of critical airports from the perspective of delay and disruption propagation in air travel networks,” **Proc. 19<sup>th</sup> IEEE International Symposium on Technologies for Homeland Security**, November, Woburn, MA.
10. Yadav, N.\*, Duffy, K.\*, A.R. Ganguly (2019): “Deep learning based quantitative precipitation nowcasting,” **Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery**, Workshop held in conjunction with **ACM KDD 2019**, Anchorage, AL. (**Student Travel Award**).
11. Duffy, K.\*, Vandal, T.\*, Li, S.\*, Ganguly, S.\*, Nemani, R.\*, and A.R. Ganguly (2019): “DeepEmSat: Deep Emulation for Satellite Data Mining,” **Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery**, Workshop held in conjunction with **ACM KDD 2019**, Anchorage, AL. (**Student Travel Award**).

12. Bhatia, U.\*, and A.R. Ganguly (2018): “Extreme values from spatiotemporal chaos: Precipitation extremes and climate variability,” 8<sup>th</sup> Workshop in Data Mining in Earth System Science (DMESS 2018), **IEEE International Conference on Data Mining**, Singapore, November 17-20. Accepted.
13. Collier, E., Duffy, K.\*, Ganguly, S., Madanguit, G., Nemani, R., Kalia, S., Michaelis, A., Shreekanth, G., Li, S., Ganguly, A.R., and S. Mukhopadhyay (2018): “Progressively growing generative adversarial networks for high resolution semantic segmentation of satellite images,” 8<sup>th</sup> Workshop in Data Mining in Earth System Science (DMESS 2018), **IEEE International Conference on Data Mining**, Singapore, November 17-20. Accepted.
14. Bhatia, U.\*, Chatterjee, S., Clark, K.\*, Ganguly, A.R., et al. (2018): “Aviation Transportation, Cyber Threats, and Network-of-Networks: Conceptual Framing and Modeling Perspectives for Translating Theory to Practice,” 2018 IEEE International Symposium on Technologies for Homeland Security (**IEEE-HST**), Woburn, MA, Oct.
15. Konduri, V.S., Kumar, J., Hoffman, F., Bhatia, U., Gouhier, T., and A.R. Ganguly (2018): “Physics Guided Data Science for Food Security and Climate,” **Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery**, Workshop in conjunction with **KDD 2008**, 24<sup>th</sup> ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 13–19, 2018, London.
16. Konduri, V.S., Vandal, T.J., Ganguly, S., and A.R. Ganguly (2018): “Data Mining for Weather Impacts on Crop Yield,” **Fragile Earth: Theory Guided Data Science to Enhance Scientific Discovery**, Workshop in conjunction with **KDD 2008**, 24<sup>th</sup> ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 13–19, 2018, London.
17. Vandal, T.J.\* and Ganguly, A.R. (2017): “Uncertainty Quantification for Statistical Downscaling using Bayesian Deep Learning,” **Climate Informatics**, Seventh International Workshop, NCAR, Boulder, CO.
18. Li, Y., Chang, Y., Vandal, T.\*, Das, D., Ding, A., Ganguly, A.R. and J. Dy (2015): “Copula Based Covariate Selection in Climate for Statistical Downscaling,” **Climate Informatics**, Seventh International Workshop, NCAR, Boulder, CO.
19. Goncalves, A., Chatterjee, S., Sivakumar, V., Chatterjee, S., Ganguly, A., Kumar, V., Liess, S., Ravikumar, P., and Banerjee, A. (2015): “Robustness and Synthesis of Earth System Models (ESMs): A Multi-Task Learning Perspective,” **Climate Informatics**, Fifth International Workshop, NCAR, Boulder, CO.
20. An, X.\*, Ganguly, A. R., Fang, Y.\*, Scyphers, S., Hunter, A.M.\*, and Dy, J.G. (2014): “Tracking Climate Change Opinions from Mining Twitter Data,” **ACM SIGKDD Workshop on Data Mining for the Social Good: KDD 2014**, 5 pp.
21. Das, D.\*, Kodra, E.\*, Obradovic, Z., Ganguly, A. R. (2012): “Mining Extremes: Severe Rainfall and Climate Change,” **20<sup>th</sup> European Conf. Artificial Intelligence (ECAI-12)**, Montpellier, France, August 2012.
22. Vatsavai, R. R., Chandola, V., Klasky, S., Ganguly, A., Stefanidis, A., and Shekhar, S. (2012): “Spatiotemporal Data Mining in the Era of Big Spatial Data: Algorithms and Applications,” **1<sup>st</sup> ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data**, 20<sup>th</sup> ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2012), Redondo Beach, CA, November 6, 2012.
23. Das, D.\*, Ganguly, A., Obradovic, Z., Banerjee, A. (2012): “Towards Understanding dominant Processes in Complex Dynamical Systems: Case of Precipitation Extremes,” **SensorKDD ‘12**, 16-24, **ACM KDD Workshops**, Beijing, China, August 12, 2012.
24. Das, D.\*, Kodra, E.\*, Ganguly, A. R., and Obradovic, Z. (2012): “Mining Extreme Values: Climate and Natural Hazards,” **ACM SIGKDD Workshop on Data Mining Applications in Sustainability**, in conjunction with the **18<sup>th</sup> SIGKDD Conf. Knowledge Discovery and Data Mining**, Beijing, China, August 12-16, 2012.
25. Das, D.\*, Ganguly, A. R., Chatterjee, S., Kumar, V., and Obradovic, Z. (2012): “Spatially Penalized Regression for Dependence Analysis and Prediction of Rare Events: A Study in Precipitation Extremes,” **ACM SIGKDD Workshop on Data Mining Applications In Sustainability**, in conjunction with the **18<sup>th</sup> SIGKDD Conf. Knowledge Discovery and Data Mining**, Beijing, China, August, 12-16, 2012.
26. Kawale, J., Liess, S., Kumar, V., Kumar, Lall, U., and Ganguly, A.R. (2012): “Mining Time-Lagged Relationships in Spatiotemporal Climate Data,” **CIDU 2012**, 130-135, **NASA Conference on Intelligent Data Understanding**, Boulder, CO, October 24-26, 2012.
27. Faghmous, J. H., Liess, S., Ganguly, A., Steinbach, M., Semazzi, F., and Kumar, V. (2011): “Data Mining Technique suggests a Dynamic Relationship between Atlantic Sea Surface Temperatures and Hurricanes,” **CIDU 2012**, Poster, **NASA Conference on Intelligent Data Understanding**, Mountain View, CA, October 19-21, 2011.
28. Kawale, J., Liess, S., Kumar, A., Steinbach, M., Ganguly, A.R., Nagiza, S., Semazzi, F., Snyder, P.K., and Kumar, V. (2011): “Data Guided Discovery of Dynamic Climate Dipoles,” **CIDU 2011**, 30-34, **NASA Conf. on Intelligent Data Understanding**, Mountain View, CA, Oct. 19-21. (*Best Student Paper Award.*)

29. Steinhäuser, K.\*, Chawla, N.V., and A.R. Ganguly (2011): “Comparing Predictive Power in Climate Data: Clustering Matters,” **SSTD 2011**, 39-55, **12th International Symposium on Spatial and Temporal Databases**, Twin Cities, MN, August 24-26, 2011.
30. Hoffman, F.M., Larson, J.W., Mills, R.T., Brooks, B.J., Ganguly, A.R., Hargrove, W.W., Huang, J., Kumar, J., and Vatsavai, R.R. (2011): “Data Mining in Earth System Science (DMESS 2011),” **Procedia CS**, 4, 1450-1455, **International Conference on Computational Science, ICCS 2011**, Singapore, June 1-3, 2011, Nanyang Technological University.
31. Pelan, A., Steinhäuser\*, K., Chawla, N.V., de Alwis Pitts, D.A., and Ganguly, A.R. (2011). “Empirical Comparison of Correlation Measures and Pruning Levels in Complex Networks Representing the Global Climate System,” **CIDM 2011**, 239-245, **IEEE Symposium Series on Computational Intelligence and Data Mining (CIDM)**, Paris, France, April 11-15, 2011.
32. Race, C., Steinbach, M., Ganguly, A., Semazzi, F., and Kumar, V. (2010): “A Knowledge Discovery Strategy for Relating Sea Surface Temperatures to Frequencies of Tropical Storms and Generating Predictions of Hurricanes under 21st-Century Global Warming Scenarios,” **CIDU 2010**, 204-212, **NASA Conference on Intelligent Data Understanding**, San Francisco, CA, October 5-7, 2010.
33. Steinhäuser, K.\*, Chawla, N.V., and Ganguly, A.R. (2010): “Complex Networks in Climate science: Progress, Opportunities and Challenges,” **CIDU 2010**, 16-26, **NASA Conference on Intelligent Data Understanding**, San Francisco, CA, October 5-7, 2010.
34. Ganguly, A. R., Steinhäuser, K.\*, Sorokine, A., Parish, E. S.\*, Kao, S.-C.\*, and Branstetter, M. L. (2009): “Demo Paper: Geographic Analysis & Visualization of Climate Extremes for the Quadrennial Defense Review,” **GIS 2009**, 542-543, **17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems**, Seattle, WA, November, 4-6, 2009.
35. Steinhäuser, K.\*, Chawla, N.V., and Ganguly, A.R. (2009): “Discovery of Climate Patterns with Complex Networks,” **International Conference on Network Science (NetSci)**, Venice, Italy, June 29 – July 3, 2009.
36. Steinhäuser, K.\*, Chawla, N.V., and Ganguly, A.R. (2009): Descriptive and Predictive Analysis of Climate Data, **SIAM International Conference on Data Mining (SDM)**, Doctoral Symposium Poster Presentation (Competitive Selection Process), Sparks, NV, April 30 – May 2, 2009. (*Best Poster Award for Doctoral Forum Presentation*).
37. Kao, S.-C.\*, Ganguly, A.R., and Steinhäuser, K.\* (2009): “Motivating Complex Dependence Structures in Data Mining: Case Study with Anomaly Detection in Climate Data,” **9th IEEE International Conference on Data Mining - Workshops (ICDMW'09)**, Miami, FL, December 6-9, 2009.
38. Erickson, D., Daniel, J., Allen, M., Ganguly, A., Hoffman, F., Pawson, S., Ott, L., and Neilson, E. (2009): Data Mining Geophysical Content from Satellites and Global Climate Models, **9th IEEE International Conference on Data Mining – Workshop (ICDMW'09)**, Miami, FL, December 6-9, 2009.
39. Steinhäuser, K.\*, Chawla, N.V., and Ganguly, A.R. (2009): “An Exploration of Climate Data using complex Networks,” **3rd International Workshop on Knowledge Discovery from Sensor Data, 15th ACM SIGKDD Conference on Knowledge Discovery and Data Mining**, Paris, France, June 28 – July 1, 2009.
40. Ganguly, A.R., and Steinhäuser, K.J.\* (2008): “Data Mining for Climate Change and Impacts,” **8th IEEE Int’l Conf. on Data Mining – Workshops (ICDMW'08)**, Pisa, Italy, Dec. 15-19, 2008.
41. Fang, Y.\*, Omिताomu, O.A.\*, Ganguly, A.R. (2008): “Incremental Anomaly Detection Approach for Characterizing Unusual Profiles,” **KDD Workshop on Knowledge Discovery from Sensor Data 2008**, Las Vegas, NV, August 24-27, 2008.
42. Fang, Y.\*, and Ganguly, A.R. (2007): “Mixtures of Probabilistic Principal Component Analyzers for Anomaly Detection,” **The First International Workshop on Knowledge Discovery from Sensor Data, 13th International Conference on Knowledge Discovery & Data Mining**, San Jose, CA, August 12-15, 2007.
43. Agovic, A., Banerjee, A., Ganguly, A.R., and Protopopescu, V.A. (2007): “Non-Linear Anomaly Analysis with Applications to Transportation Corridors,” **The First International Workshop on Knowledge Discovery from Sensor Data, The 13th International Conference on Knowledge Discovery and Data Mining**, San Jose, CA, August 12-15, 2007. (*Runner-Up Best Student Paper Award*)
44. Pan, C.-C., Mitra, P., and Ganguly, A.R. (2007): “Spatio-Temporal Analysis on FEMA Situation Updates with Automated Information Extraction,” **The First International Workshop on Knowledge Discovery from Sensor Data, The 13th International Conference on Knowledge Discovery and Data Mining**, San Jose, CA, August 12-15, 2007. (*Best Student Paper Award*)
45. Fang., Y.\*, Ganguly, A. R., Singh, N., Vijayaraj, V., Feierabend, N., and Potere, D. P. (2006): “Online Change Detection: Monitoring Land Cover from Remotely Sensed Data,” **6th IEEE International Conference on Data Mining – Workshops (ICDMW'06)**, Hong Kong, China, December 18-22, 2006.



*Non-Selective to Mildly Selective (Climate, Water, Infrastructures, Computing, Statistical or Other) Conferences*

46. Duffy, K.\*, Gouhier, T., and A.R. Ganguly (2020): “Climate change impacts on global ecology,” In **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA, January.
47. Yadav, N.\*, Ganguly, A. and Chatterjee, S. (2020): “Machine intelligence approach to precipitation nowcasting for transportation network-of-networks resilience,” In **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA, January.
48. Konduri, V.S.\*, Kumar, J., Hargrove, W., Hoffman, F.M., and A.R. Ganguly (2020): “In-season crop mapping for the continental United States,” In **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA.
49. Warner, M.\*, Yadav, N.\*, Skurka, D., Bhatia, U.\*, Rao, V., Clark, K.\*, Chatterjee, S., Gao, J., and A.R. Ganguly (2020): “Resilience of hierarchical network-of-lifeline-networks under compound weather extremes,” In **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA, January.
50. Sharma, B.\*, Hoffman, F.M., Kumar, J., and A.R. Ganguly (2020): “Cumulative impacts of human-induced changes on carbon cycle extremes,” **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA.
51. Tye, M., Giovannetone, J., AghaKouchak, A., Barros, A.P., Beighley, R.E., Capehart, W.J., Douglas, E.M., Fehrenbacher, N., Fields, R.C., Ganguly, A.R. and J. Huang (2020): “Prioritizing Actions to Adapt America’s Infrastructure for Climate Change-Overview,” In **100<sup>th</sup> American Meteorological Society Annual Meeting**, Boston, MA, January.
52. Duffy, K.\*, Vandal, T.\*, Li, S., Nemani, R.R. and A.R. Ganguly (2019): “Deep Learning Emulation of Atmospheric Correction for Geostationary Sensors,” Fall Meeting, **American Geophysical Union**, December.
53. Tye, M.R., Giovannetone, J.P., AghaKouchak, A., Barros, A.P., Beighley, E., Capehart, W.J., Douglas, E.M., Fehrenbacher, N., Fields, R.C., Ganguly, A.R. and J. Huang (2019): “Prioritizing Actions to Adapt America’s Infrastructure for Climate Change,” Fall Meeting, **American Geophysical Union**, December.
54. Malakar, P., Mukherjee, A., Bhanja, S., Ganguly, A., Saha, D., Ray, R., Sarkar, S., and A. Zahid (2019): “Groundwater-climate variability link in the transboundary aquifer system of south Asia,” Geophysical Research Abstracts, **EGU General Assembly**, Vol. 21, EGU2019-9730.
55. Warner, M.E.\*, and A.R. Ganguly (2018): “Evaluating future heatwave projections and predictive impacts to human health,” Fall Meeting, **American Geophysical Union**, 10-14 December.
56. Bhatia, U.\*, and A.R. Ganguly (2018): “Enhancing predictability of extreme precipitation events in changing climate using outputs of Large Ensemble Experiment,” Fall Meeting, **American Geophysical Union**, Dec.
57. Goroo, V.A., Ganguly, S., Kalia, S., Nemani, R.R., Nguyen, P., Li, S., Ganguly, A.R., Hayatbini, N., Michaelis, A., Shreekanth, G., Hsu, K.-L., and S. Sorooshian (2018): “GEONEX: Application of Deep Neural Networks and CloudSat Data in Cloud Type Classification of GOES-16 Multispectral Images for Improving PERSIANN-CCS,” Fall Meeting, **American Geophysical Union**, 10-14 December.
58. Vandal, T.\*, Ganguly, S., Kodra, E.\*, Dy, J., Michaelis, A., Nemani, R.R., and A.R. Ganguly (2018): “Image super-resolution and uncertainty quantification for earth science data on the NASA Earth Exchange AI platform,” Fall Meeting, **American Geophysical Union**, 10-14 December.
59. Konduri, V.S.\*, Kumar, J., Hargrove, W.W., Hoffman, F.M., and A.R. Ganguly (2018): “Early season mapping of Corn and Soybeans in the US Midwest,” Fall Meeting, **American Geophysical Union**, 10-14 December.
60. Sharma, B.\*, Hoffman, F.M., Kumar, J., Collier, N., and A.R. Ganguly (2018): “Impact of changes in anthropogenic forcing on the terrestrial carbon budget through the year 2300,” Fall Meeting, **American Geophysical Union**, 10-14 December.
61. Vandal, T.\*, and A.R. Ganguly (2018): “Super-Resolution and Deep Learning for Climate Downscaling,” **98<sup>th</sup> Annual Meeting of the American Meteorological Society (98<sup>th</sup>-AM-AMS)**, Austin, TX, January 7-11.
62. Bhatia, U.\*, Sela, L., and A.R. Ganguly (2018): “Non-Stationary Weather Extremes and the Resilience of Critical Lifeline Infrastructure Network-of-Networks,” **98<sup>th</sup>-AM-AMS**, Austin, TX, January 7-11.
63. Ganguly, A.R. (2017): “Physics Guided Data Science in the Earth Sciences,” (INVITED Oral Presentation) **Fall Meeting of the American Geophysical Union (AGU-FM-2017)**, New Orleans, LA, December 11-15.
64. Duffy, K.\*, Bhatia, U.\*, Vandal, T.\*, and A.R. Ganguly (2017): “The sensitivity of climate driven hydrologic models to statistical downscaling methods,” (Oral Presentation) **AGU-FM-2017**, New Orleans, LA, Dec. 11-15.
65. Sharma, B.\*, Hoffman, F., Jitendra, K., and A.R. Ganguly (2017): “Carbon Cycle Extremes in the 22nd and 23rd Century & Attribution to Climate Drivers,” (Oral Presentation) **AGU-FM-2017**, New Orleans, Dec. 11-15.
66. Konduri, V.S.\*, Jitendra, K., Hoffman, F., Ganguly, A.R., W.W. Hargrove (2017): “Spatiotemporal Analysis of Corn Phenoregions in the Continental United States,” (Oral Presentation) **AGU-FM-2017**, NOLA, Dec. 11-15.
67. Warner, M.E.\*, Ganguly, A.R., and U. Bhatia\* (2017): “Acclimatization to extreme heat,” (Poster Presentation) **AGU-FM-2017**, New Orleans, LA, December 11-15.

68. Warner, M.E.\*, Bhatia, U.\*, Sela, L., Wang, R., Kodra, E.\*, and A.R. Ganguly (2017): “Prioritizing recovery of urban lifelines in the aftermath of hazards: Transportation in post-Harvey Houston,” (Poster Presentation) **AGU-FM-2017**, New Orleans, LA, December 11-15.
69. Mage, M\*, Ganguly, S., Vandal, T.\*, Nemani, R.R., Li, S., Kalia, S., and A.R. Ganguly (2017): “Estimation of MODIS-like surface-spectral reflectance from geostationary satellites using deep neural networks,” (Poster Presentation) **AGU-FM-2017**, New Orleans, LA, December 11-15.
70. Fard, B.J.\*, Hassanzadeh, H.\*, Warner, M.E.\*, Bhatia, U.\*, and A.R. Ganguly (2017): “Effective Mitigation and Adaptation Strategies for Public Health Impacts of Heatwaves for Brookline, MA,” Spring 2017 Virtual Poster Showcase, **American Geophysical Union. (First Place Winner Graduate Showcase Award)**.
71. Sela, L., Bhatia, U.\*, Kodra, E.\*, Zhuang, J., and A.R. Ganguly (2017): “Resilience strategies for interdependent multiscale lifeline infrastructure networks,” **International Workshop on Computing in Civil Engineering (IWCCE2017)**, Seattle, WA, June 25-26.
72. Bhatia, U.\*, and Ganguly, A. R. (2015): “Engineering Adaptation of Critical Infrastructures to Climate Change and Weather Extremes,” **Fall Meeting of the American Geophysical Union (FM AGU)**, SFO, CA, December.
73. Kumar, D.\*, and Ganguly, A.R. (2014): “Uncertainty Characterization and Delineation of Nonstationarity in Intensity-Duration-Frequency Curves of Precipitation Relevant for Infrastructural Design,” **FM AGU**, SFO, CA, December 2014.
74. Lettenmaier, D., Mishra, V., Ganguly, A.R., and Nijssen, B. (2014): “Observed Climate Extremes in Global Urban Areas,” **EGU General Assembly Conference Abstracts**, 16, 14787.
75. Kumar, D.\*, and Ganguly, A. R. (2014): “Uncertainty Characterization and Delineation of Nonstationarity in Intensity-Duration-Frequency Curves of Precipitation Relevant for Infrastructural Design,” **XX International Conference on Computational Modeling in Water Resources**, Stuttgart, Germany, June 10-13, 2014.
76. Ganguli, P.\*, and Ganguly A. R. (2013): “Severity-Duration-Frequency Curves of Meteorological Droughts over U.S,” **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 9-13, 2013.
77. Kumar, D.\*, Kodra, E.\* and Ganguly, A. R. (2013): “Regional and Seasonal Mean Inter-Comparison across CMIP3 and CMIP5 Climate Model Ensembles,” **93rd Annual Meeting of the American Meteorological Society**, Austin, TX, January 6-10, 2013.
78. Das, D.\*, and Ganguly, A. R. (2013): “Towards Improving the State of the Art in Statistical Downscaling of Regional Precipitation and their Extremes with Emerging Developments in Machine Learning and Data Mining,” **93rd Annual Meeting, American Meteorological Society**, Austin, TX, January 6-10, 2013.
79. Kawale, J., Liess, S., Kumar, A., Ormsby, D., Steinhäuser, K., Steinbach, M., Ganguly, A.R., Chatterjee, S., Samatova, N., Semazzi, F., and Kumar, V. (2012): “Graph Based Analysis of Dynamic Teleconnections,” **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 3-7, 2012.
80. Rowe, C.M., Oglesby, R.J., Hays, C., Mawalagedara, R.\*, Maasch, K.A., Birkel, S.D., and Ganguly, A.R. (2012): “Effects of very high (4-12 km) resolution on the simulation of surface temperature and precipitation in regions of complex topography and heterogeneous land Use,” **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 3-7, 2012.
81. Kodra, E.A.\*, and Ganguly, A.R. (2012): “Changing Tails? Exploring CMIP5 Projections of Changes in Hot and Cold Extremes Intensity,” **Fall Meeting, American Geophysical Union**, SFO, CA, December 3-7, 2012.
82. Kumar, D.\*, Kodra, E.A.\*, and Ganguly, A. R. (2012): “Limits to Regional and Seasonal Projections Suggested from the Latest Generation of Global Climate Models,” **Fall Meeting, American Geophysical Union**, San Francisco, CA, December 3-7, 2012.
83. Mawalagedara, R.\*, Oglesby, R.J., Hays, C., and Ganguly, A.R. (2012): “Climate Extremes in Sri Lanka: Changes in Response to Greenhouse Gas Forcing,” **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 3-7, 2012.
84. Kodra, E.A., Chatterjee, S., and Ganguly, A.R. (2012): “Statistical Characterization of Relationships Between Precipitation Extremes and Atmospheric Covariates,” **2012 Joint Statistical Meetings, American Statistical Association**, San Diego, CA, July 28 – August 2, 2012.
85. Das, D.\*, Ganguly, A.R., Chatterjee, S., Kumar, V., and Obradovic, Z. (2012): “Spatially Penalized Regression for Dependence Analysis of Rare Events: A Study in Precipitation Extremes,” **IGARSS 2012, 1948-1951, IEEE International Geoscience and Remote Sensing Symposium**, Munich, Germany, July 22-27, 2012.
86. Das, D.\* and Ganguly, A.R. (2012): “Predictive Insights for Precipitation Extremes under Non-Stationary Climate,” **XIX International Conference on Computational Modeling in Water Resources**, Urbana-Champaign, June 17-21, 2012.

87. Kumar, D.\*, Kodra, E.A.\*, and Ganguly, A.R. (2012): "Regional and Seasonal Mean Precipitation Intercomparison across CMIP3 and CMIP5 Climate Model Ensembles," **XIX International Conference on Computational Modeling in Water Resources**, Urbana-Champaign, June 17-21, 2012.
88. Ganguly, A.R., Steinhäuser, K.\*, Kao, S.-C.\*, and Kodra, E.\* (2010): "Evaluating Projected Changes in Mean Processes, Extreme Events, and their Spatio-Temporal Dependence Structures," 2010 **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 13-17, 2010.
89. Steinhäuser, K.\*, Chawla, N.V., and Ganguly, A.R. (2010): "Complex Networks reveal Persistent Global / Regional Structure and Predictive Information content in Climate Data," 2010 **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 13-17, 2010.
90. Kodra, E.A.\*, Steinhäuser, K.\*, and Ganguly, A.R. (2010): "The Possibility of Persisting Cold Spells in a Warming Environment," **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 13-17, 2010.
91. Kodra, E. A.\*, Chatterjee, S., and Ganguly, A.R. (2010): "Classic Granger Causality may not be Appropriate for Diagnosing CO<sub>2</sub>-Temperature and other Noisy Relationships," 20th Conference on Probability and Statistics in the Atmospheric Sciences: **90th American Meteorological Society Annual Meeting**, Atlanta, GA, January 17-21, 2010.
92. Parish, E.S.\*, and Ganguly, A.R. (2010): "Estimating Fresh Water Availability at Regional and decadal Scales based on Projected Changes in Climate and Population," 18th Conference on Applied Climatology: **90th American Meteorological Society Annual Meeting**, Atlanta, GA, January 17-21, 2010.
93. Ngnepieba, P.\*, and Ganguly, A. R. (2010): "Towards Rigorous Mathematical Approaches for Forecast Generation and Uncertainty Characterization using Multi-Model Ensembles of Climate," **90th American Meteorological Society Annual Meeting**, Atlanta, GA, January 17-21, 2010.
94. Kao, S.-C.\*, and Ganguly, A. R. (2009): "Intensification of Droughts in a Warming environment," 2009 **Fall Meeting, American Geophysical Union**, SFO, CA, Dec., 14-18, 2009.
95. Parish, E.S.\*, and Ganguly, A. R. (2009): "Risk Formulations versus Comprehensive Uncertainty Characterizations for Climate Extremes and their Impacts," 2009 **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 14-18, 2009.
96. Walker, R.M., Kopsick, D.A., Gorman, B.L., Ganguly, A.R., Mitch, F., and Shankar, M. (2009): "Global Radiological Source Sorting, Tracking, and Monitoring (GRADSSTRAM) using Emerging RFID and Web 2.0 Technologies to Provide Total Asset and Information Visualization," **50th Annual INMM Conference**, Tucson, AZ, July 12-16, 2009.
97. Ganguly, A.R., Parish, E.S.\*, Singh, N., Steinhäuser, K.\*, Erickson, D.J., Branstetter, M.L., King, A.W., and Middleton, E.J. (2009): "Regional and Decadal Analysis of Climate Change Induced Extreme Hydro-Meteorological Stresses Informs Adaptation and Mitigation Policies," 21st Conference on Climate Variability and Change, **89th Annual Meeting of the American Meteorological Society**, Phoenix, AZ, January 11-15.
98. Steinhäuser, K.\*, Ganguly, A.R., and Chawla, N.V. (2009): "Complex Networks as a Tool of Choice for Improving the Science of Climate Extremes and Reducing Uncertainty in their Projections," 2009 **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 14-18, 2009.
99. Ganguly, A.R., Omitaomu, O.A., and Yu, J. (2009): "Information-Theoretic Approaches for Evaluating Complex Adaptive Social Simulation Systems," **Human Behavior-Computational Intelligence Modeling Conference**, Oak Ridge, TN, June 23-24, 2009.
100. Li, H.\*, Fernandez, S. and Ganguly, A.R. (2008): "Racial Segregation, Economic Growth, and Natural Disaster Resilience," **The North American Regional Science Council**, Annual Meeting, NY, November 19-22, 2008.
101. Ganguly, A.R., Branstetter, M.L., Steinhäuser, K.\*, Erickson, D., Parish, E.S.\*, and Singh, N. (2008): "Global Warming Impacts on Regional Hydrology and Water resources," **Eos Trans. AGU**, 89(53), Fall Meet. Suppl., Abstract H21E-0870, San Francisco, CA, December 30, 2008.
102. Lai, E.\*, Steinhäuser, K.\* and Ganguly, A.R. (2008): "Trends in Mean and Extreme Rainfall in South Florida and their Correlations with Sea Surface Temperature Anomalies," **Eos Trans. AGU**, 89(53), Fall Meet. Suppl., Abstract H13D-0950, San Francisco, CA, December 30, 2008.
103. Ganguly, A. R. (2008): "Hydro-Meteorological Extreme events caused by Climate Variability or Change and their Impacts on Infrastructures," **Joint Assembly of the AGU**, Ft. Lauderdale, FL, May 27-30, 2008.
104. Erickson, D.J., Branstetter, M.L., Wilbanks, T.J., Ganguly, A.R., Hoffman, F.M., King, A.W., Buja, L., and Panwar, T.S. (2008): "Global Climate Simulations with the A1FI Scenario for 2000-2100: Meltwater, Temperature and River Flow Impacts in India," **Joint Assembly of the American Geophysical Union**, Fort Lauderdale, FL, May 27-30, 2008.

105. Fernandez, S., Li, H.\* and Ganguly, A.R. (2008): “Racial Segregation, Economic Growth, and Resilience to Natural Disasters,” **Joint Assembly of the American Geophysical Union**, Fort Lauderdale, FL, May 27-30.
106. Vatsavai, R.R., Ganguly, A.R., Omitaomu, O.A.\*, and Bhaduri, B. (2008): “Geospatial-Temporal Data Mining for Infrastructures or Ecosystems under Stress From Severe Weather Events,” **Joint Assembly of the American Geophysical Union**, Fort Lauderdale, FL, May 27-30, 2008.
107. Parish, E.S.\*, Ganguly, A.R., Brunson, A., Shi, B., and Roadinger, E.\* (2008): “Engaging High School Students in Climate Change Research: A Case Study,” **Joint Assembly of the American Geophysical Union**, Fort Lauderdale, FL, May 27-30, 2008.
108. Ganguly, A.R. and Bhaduri, B.L. (2008): “Towards Secure Transportation Corridors: A GIS-based Framework for Knowledge Discovery,” **GIS for Transportation Symposium**, Houston, TX, March 17-19, 2008.
109. Ganguly, A.R., Khan, S.\*, Kuhn, G.\*, Fang, Y.\*, Erickson III, D. J., Branstetter, M., and Ostrouchov, G. (2008): “Climate Change, Rainfall Extremes, and Population at Risk,” **American Meteorological Society, 88th Annual Meeting**, New Orleans, LA, January 20-24, 2008.
110. Ganguly, A.R., Parish, E.S.\*, and Bhaduri, B.L. (2008): “Toward an Integrative computational Modeling and Analysis Framework for Climate Extremes and their Impacts,” **American Association of Geographers**, 2008 Annual Meeting, Boston, MA, April 15-19, 2008.
111. Walker, R.M., Omitaomu, O.A.\*, Ganguly, A.R., Abercrombie, R.K., and Sheldon, F.T. (2008): “Multimodal Integrated Safety, Security, and Environmental Program Strategy,” **Transportation Research Board, 87th Annual Meeting**, Washington, DC, 08-2644, January 13-17, 2008.
112. Ganguly, A.R. (2007): “Multivariate Dependence Estimation in Geophysics,” **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 10-14, 2007.
113. Ganguly, A.R., Omitaomu, O.A.\*, Protopopescu, V., Patton, B., Walker, R., Fang, Y.\*, Agovic, A., and Banerjee, A. (2007): “Anomaly Detection from Heterogeneous Sensor Data with Application to Transportation Security,” **National Rural Intelligent Transportation Systems Conference**, Traverse City, MI, October 7-10.
114. Ganguly, A.R., and Bhaduri, B.L. (2006): “A Framework for Geospatial-Temporal Knowledge Discovery,” **American Association of Geographers**, Annual Meeting, Chicago, IL, March 7-11, 2006.
115. Kuhn, G.\*, Khan, S.\*, and Ganguly, A.R. (2006): “New Approaches for Extreme Value Analysis in Large-Scale Geospatial-Temporal Data with Applications to Observed and Climate-Model Simulated Precipitation in South America,” Session on Role of Observed Precipitation in Atmospheric and Land Surface Models I, **Fall Meeting of the American Geophysical Union**, San Francisco, CA, December 11-15, 2006.
116. Fuller, C.\*, Sabesan, A.\*, Khan, S.\*, Kuhn, G.\*, Ganguly, A.R., Erickson, D., and Ostrouchov, G. (2006): “Quantification and Visualization of the Human Impacts of Anticipated Precipitation Extremes in South America,” Session on Catastrophic Risk from Natural Perils: Scientific, Engineering, and Financial Issues, **Fall Meeting of the AGU**, SFO, CA, December 11-15, 2006. (*Highlighted at the 2006 AGU Press Conference*).
117. Branstetter, M. L., Erickson, D. J., Ghan, S., Ganguly, A.R., and Khan, S.\* (2006): “Hydrology in the IPCC Simulations,” **CCSM3 (Climate Modeling) Workshop**, Breckenridge, CO, June 2006.
118. Ganguly, A.R. and Fang, Y.\* (2006): “Online Alarm Generation in Sensor-Cyber Networks, Session on Sensor-Cyber Networks for Homeland Defense,” **9th ONR/GTRI Workshop on Target Tracking in Sensor Fusion**, Analytical Predictions of Tracking Performance, Office of Naval Research (ONR) and Georgia Tech Research Institute (GTRI), Gatlinburg, TN, June 22-23, 2006.
119. Huang, C., Hsing, T., Cressie, N., Ganguly, A.R., Protopopescu, V.A., and Rao, N.S. (2006): “Plume Model Identification Based on Statistical Analysis of Sensor Network Data,” Session on Sensor-Cyber Networks for Homeland Defense, **9th ONR/GTRI Workshop on Target Tracking in Sensor Fusion**, Analytical Predictions of Tracking Performance, ONR & GTRI, Gatlinburg, TN, June 22-23, 2006.
120. Abercrombie, K.\*, Sabesan, A.\*, and Ganguly, A.R. (2006): “Metrics for the Comparative analysis of Geospatial Datasets with Applications to High-Resolution Grid-Based Population data,” **American Association of Geographers**, Annual Meeting, Chicago, IL, March 7-11, 2006.
121. Samatova, N., Branstetter, M., Ganguly, A.R., Hettich, R., Khan, S.\*, Kora, G., Li, J., Ma, X., Pan, C., Shoshani, A., and Yoginath, S. (2006): “High Performance Statistical Computing with Parallel R: Applications to Biology and Climate,” **U.S. DOE SciDAC PI Meeting**, Denver, Co, June 25-29, 2006.
122. Khan, S.\*, Bandyopadhyay, S., and Ganguly, A.R. (2005): “Nonlinear Dependence among Multiple Time Series from Limited Observations and Noise,” Session on Nonlinear Data Sciences for Finite Data with Noise & Periodicity, **Fall Meeting, American Geophysical Union**, San Francisco, CA, December 5-9, 2005.
123. Ganguly, A.R., Khan, S.\*, and Saigal, S. (2005): “Impact of Noise and Seasonality on the Detection and Nonlinear Prediction of Chaos from Finite River-Flow Time Series,” Session on Nonlinear Data Sciences for Finite Data with Noise and Periodicity, **Fall Meeting of the AGU**, San Francisco, CA, December 5-9, 2005.

124. Ganguly, A.R., Khan, S. \*, Erickson, D.J., Katz, R. W., Ostrouchov, G., Protopopescu, V.A., Bandyopadhyay, S., and Saigal, S. (2005): “Multivariate Dependence in Complex Systems,” **Fifth Symposium on Understanding Complex Systems**, Urbana, IL, May 16-19, 2005, University of Illinois at Urbana-Champaign.
125. Mukherji, S., and Ganguly, A. R. (2004): “Sustaining the Offshore Outsourcing Boom for Software Development: Transitioning from Low-Cost Service Providers to Strategic Partners for Information Systems,” **9th International Symposium on Logistics (9th ISL)**, Bangalore, India, July 11-14, 2004.
126. Ganguly, A.R., and M. Aronowich (2003): “Advanced Analytics for Closed-Loop Enterprise Planning and Forecasting,” **INFORMS Annual Meeting**, Atlanta, Georgia, October 19-22, 2003.
127. Ganguly, A.R. (2002): “Forecasting Systems and Frameworks in Disparate Complex Domains,” **International Conference on Complex Systems**, Nashua, NH, June 9-14, 2002.
128. Ganguly, A.R., and Bras, R.L. (2002): “Quantitative Precipitation Forecasting using Radar and Numerical Weather Model Outputs,” **American Geophysical Union Spring Meeting**, Washington, DC, May 28-31, 2002.
129. Ganguly, A.R., and Bras, R.L. (2002): “Artificial Neural Networks and Ensemble Methods for Forecasting Mean Rainfall Intensities and Confidence Bounds in Space and Time,” **American Geophysical Union Spring Meeting**, Washington, DC, May 28-31, 2002.
130. Ganguly, A.R., and Gupta, A. (1998): “Inventory Optimization using Statistical and Artificial Neural Network Based Data Mining,” **MIT Industry Liaison Research Directors’ Conf.**, Cambridge, MA, May 6-7, 1998.
131. Ganguly, A.R., Garrotte, L., and Bras, R.L. (1997): “Application of a Physically Based Distributed Hydrologic Model to Large Basins,” **13th Int’l Conf. Hydrology & 13th Int’l Conf. on IIPS, American Meteorological Society**, Long Beach, CA, February 2-7, 1997.

**TECHNICAL NOTES:** (Direct students, postgraduates, mentees, visiting faculty marked with asterisk \*)

1. Fard, B.J.\*, Hassanzadeh, H. \*, Warner, M.E. \*, Bhatia, U. \*, and A.R. Ganguly (2016): “Mitigation and Adaptation Strategies for Public Health Impacts of Heatwaves for the Town of Brookline, MA,” Report submitted to the **Town of Brookline** under the aegis of the **Thriving Earth Exchange** of the American Geophysical Union.
2. Kodra, E., Ruth, M. and A.R. Ganguly (2016): Temperature Extremes Section (one of four sections and teams ) in the Climate Ready Boston Report (December 2016), Prepared for the **City of Boston** under the aegis of the **Green Ribbon Commission** and managed by the University of Massachusetts. (*Ganguly: Team Lead*)
3. Kodra, A. \*, Das, D. \*, A.R. Ganguly, Erickson, D.J., and M.R. Allen (2012): “Data and Methodology for Probabilistic Precipitation Modeling,” Prepared for the **United States Nuclear Regulatory Commission**, Northeastern University Technical Report.
4. Ganguly, P. \*, Kumar, D. \*, and A.R. Ganguly (2016): Water Stress on US Power Production at Decadal Time Horizons,” US DOE/ARPA-E Tech Report. <http://arxiv.org/abs/1511.08449>.
5. Steinhäuser, K. \*, Parish, E. \*, Sorokine, A., and Ganguly, A. R. (2009): “Projected State of the Arctic Sea Ice and Permafrost by 2030,” Tech Manual, **ORNL/TM-2009/265**, Oak Ridge National Laboratory. (*Cited by the National Academies Press on climate change and national security*).
6. Ganguly, A.R., Whitmeyer, J.M., Omitaomu, O.A. \*, Hadzikadic, M., Gilman, P., Brecke, P.K., Khouja, M.J., Fernandez, S.J., Eichelberger, C.N., McLean, A.L., Yu, J., Middleton, E.J., Carmichael, T.D., Saric, A. and Sun, M. (2008): “Towards a Characterization and Systematic Evaluation Framework for Theories and Models of Human, Social, Behavioral, and Cultural Processes,” **ORNL/TM-2008/062**, Oak Ridge National Laboratory.
7. Fernandez, S. J., Brecke, P., Carmichael, T. D., Eichelberger, C. N., Ganguly, A. R., Hadzikadic, M., Jiao, Y., Khouja, M. J., McLean, A. L., Middleton, E. J., Omitaomu, O. A. \*, Saric, A., Sun, M., Whitmeyer, J. M., Gilman, P., O’Maonaigh, H. C. (2008): “Actionable Capability for Social and Economic Systems (ACSES),” **ORNL/TM-2008/088**, Oak Ridge National Laboratory.
8. Sabesan, A. \*, Abercrombie, K. \*, Ganguly, A.R., Bhaduri, B.L., Bright, E.A., and Coleman, P. (2006): “Uncertainty in Population Estimates — A Comparison between GPW and LandScan Data Models,” **ORNL/TM-2006/540**, Oak Ridge National Laboratory.
9. Gerdes, D.A. \*, Khan, S. \*, and Ganguly, A.R. (2006): “Nonlinear Dependence Measures with Application to Static Scale Data from the Watt Road Weigh Station,” **ORNL/TM-2006/549**, Oak Ridge National Laboratory.
10. Fang, Y. \*, and Ganguly, A. R. (2006): “Probabilistic Principal Component Analysis for Online Anomaly Detection with Application to Static Scale Data from the Watt Road Weigh Station,” **ORNL/TM-2006/546**, Oak Ridge National Laboratory.
11. Gabriel, K. \*, and Ganguly, A. R. (2006): “Geospatial-Temporal Dependence among the Usual and the extreme Values with Applications to Observed and Simulated Precipitation in South America,” **ORNL/TM-2006/542**, Oak Ridge National Laboratory, 24 pp.

**ENTREPRENEURSHIP:**

**risQ Corporation, Cambridge, MA:** Co-Founder and Chief Scientific Adviser (2016–Now)  
 Partnership with Intercontinental Exchange (ICE): January 2020  
 Reported in Yahoo! Finance, Bloomberg, Bond Buyer, Business Wire  
 risQ to provide climate risk analytics to municipal bond ecosystem exclusively to ICE  
 NSF SBIR Phase II Award (\$750,000): 2018-2020  
 NSF SBIR Phase I Award (\$225,000): 2016-2017  
 Startup spun out from Ganguly’s SDS Lab at Northeastern University: 2016  
 Co-Founder and CEO: Evan Kodra (former PhD student of Ganguly: graduated from SDS Lab)  
 Co-Founder and Chief Scientific Adviser: Auroop Ganguly  
 Co-Founder and COO: Colin Sullivan (Northeastern BS graduate)

**Analyticsmart Inc., Tampa, FL:** Founder and Chief Technology Officer (2003–2004)

**RESILIENCE & ADAPTATION LEADERSHIP:**

**Town of Brookline, MA (2016 – 2017)**

Public Health Impacts on Urban Heat Islands  
 Risk Assessment, Consequence Management, Adaptation, Mitigation  
 American Geophysical Union Thriving Earth Exchange  
 Partial funding by NSF  
 Presented to the Town Hall  
 1<sup>st</sup> Prize at AGU Virtual Poster Session and Highlight in EOS Transactions

**Climate Ready Boston (2015 – 2016)**

Boston Research Advisory Group Report (June 1, 2016)  
 Team Lead, Temperature Extremes (one of four chapters)  
 Office of the Mayor, City of Boston  
 Green Ribbon Commission

**Massachusetts Port Authority (2014 – 2015)**

Engagement with senior management at Massport including Chief Resilience Officer  
 Collaboration with Massport and Kleinfelder  
 Graduate Class: Critical Infrastructure Resilience

**UNDERGRADUATE TEACHING (Three, 4-Credit Courses at Northeastern: One existing and two new):**

**1. Probability and Engineering Economy for Civil Engineers** (Northeastern University; CIVE 3464; 4 credits)

Semester	Learning	Instructor	# Students
Spring 2017	4.2	3.3	42
Spring 2016	4.1	4.1	65
Spring 2015	3.9	3.9	75
Fall 2013	3.7	3.7	57
Spring 2013	3.8	3.7	51
Spring 2012	2.6	2.5	56

*Note: CEE departmental and University average for all UG courses stays around 4.0.*

**Sample Student Comments:**

- “Provided great real-life examples.”
- “The classes [are] interdisciplinary nature but still keeping civil engineering projects at the forefront of probability and economics problems.”
- “The course is very interesting but a little too broad for my liking. Looking at three topics in a semester allows it only to briefly touch on each, and even though it’s good I would have liked a little more.”

**Undergraduate / Graduate (Dual offering: graduate credits with class project): New (developed by Ganguly)**

2. **Climate Science, Engineering Adaptation, and Policy** (Northeastern University; CIVE 5699-AG; 4 credits)  
(New/Upcoming version: **CIVE 5363: Climate Science and Engineering**)

Semester	Learning	Instructor	# Students
Spring 2019	3.3	3.3	35
Spring 2018	4.4	4.2	22

**Undergraduate: New (developed by Ganguly) & University Wide (Study Abroad, or “Dialogue of Civilizations”):**

- **Note 1:** This study-abroad program has been adapted by elite “Northeastern University Scholars” Program
  - **Note 2:** This study abroad program and both the courses below were developed by Ganguly
  - **Note 3:** The courses innovate on syllabi, engage guest lectures and use war games as pedagogical tools
3. **Climate Hazards & Resilient Cities or Coastlines** (Northeastern University; CIVE 4777; 4 credits)
4. **Climate Adaptation & Policy in an Emerging Economy** (Northeastern University; CIVE 4778; 4 credits)

Semester	Location	Learning	Instructor	# Students
Summer 2020	Tanzania	<i>Preparation Initiated</i>		22
Summer 2019	Nepal/India	4.1	3.3	22
Summer 2018	Brazil/Peru	4.8	5.0	28
Summer 2017	Indonesia/Singapore	4.7	4.1	25
Summer 2016	India	4.4	4.1	26
Summer 2015	India	5.0	5.0	26
Summer 2014	India	4.6	4.6	26

*Note: University average hovers around 4.1  
Numbers represent average scores*

**Sample Student Comments:**

- “The things I learned in the coursework and outside of the classroom have changed me for the better – I am more confident, more open minded, and better prepared ...”
- “I really liked how hectic this was ... I would not change anything”
- “This was an eye-opening experience ...”
- “We had a very solid understanding of climate science”
- “It really helped me get an idea of what kind of career I want and exposed me to a lot of different culture.”
- “Professor Ganguly is an excellent professor and very helpful for all of his students.”
- “Professor Ganguly was a very effective professor who always engaged us whether it was in or out of the classroom ... he is really passionate about climate change and this dialogue, and that was really wonderful to have in an instructor.”

**GRADUATE TEACHING (Two New 4-Credit Courses at Northeastern):**

1. **Applied Time Series & Spatial Statistics** (Northeastern University; 4 credits; CIVE 7100 (Now) / 7388)
- New course developed by Ganguly at Northeastern  
(Current version: **CIVE 7100: Time Series and Geospatial Data Sciences**)

Semester	Learning	Instructor	# Students
Spring 2019	4.5	4.6	15
Spring 2018	4.6	4.1	23
Spring 2017	3.8	3.8	7
Spring 2016	4.0	3.6	9
Spring 2015	4.5	4.8	14
Spring 2014	3.8	3.7	24
Fall 2012	3.9	4.0	14

*Note: CEE departmental average for all Grad courses stays around 4.2.*

**Sample Student Comments:**

- “This course helped me learn concepts of time series.”
- “Great orator, very positive, always available, answers all doubts.”
- “Dr. Ganguly has ... very good communication skill to explain the subject in a simple and systematic way.”
- “Professor Ganguly is a genius ... however, I believe he assumed that his students had higher mathematical competency than the class actually did...”

2. **Critical Infrastructure Resilience** (Northeastern University; 4 credits; CIVE 7110 (Now) / CIVE 7388)
- New course developed by Ganguly (jointly with Policy, see below) at Northeastern
  - **Note:** This course is offered in conjunction with POLS 7704 offered by Political Science. The class combined basic principles with guest lectures, war games and a capstone-line activity

Semester	Learning	Instructor	# Students
Fall 2018	4.0	4.0	1+7 = 8
Fall 2017	4.6	4.6	11+4 = 15
Fall 2016	4.5	4.5	4+20 = 25
Fall 2015	4.1	4.5	14+19 = 33
Fall 2014	4.2	4.7	9+27 = 36

Note: CEE departmental average for all Grad courses stays around 4.2.

**Sample Student Comments:**

- “Being an Interdisciplinary course, it is very rare opportunity for me to study along with policy students. It helped me to understand the interdependencies between the engineers and policymakers in the real life.”
- “Course needs more structure...”
- “Enthusiastic, visionary, encouraged out-of-the-box thinking”
- “Excellent professor and human being! I highly recommend this course and Professor Ganguly!”

**GRADUATE TEACHING (Prior to Northeastern):**

Course number	Course title	Course type	# students	
IE 692	Knowledge discovery from time series, spatial and space-time data (Spring 2007)	Graduate	12	(UTK: Tennessee)
CGN 6933	Applied time series and spatial statistics (Spring 2004)	Graduate	8	(USF: South Florida)
CWR 6535	Hydrologic Models (Fall 2003)	Graduate	7	(USF: South Florida)

**MENTORING & ADVISING:**

**Visiting Professors (Northeastern University)**

V. Mishra Current Position: Professor, Civil Eng., Indian Institute of Technology, Gandhinagar  
 Dates of mentorship: April 15 – July 30, 2013  
 Topic: Distributed hydrologic modeling, analysis of hydro-climate extremes & predictability

**Visiting Professors (Oak Ridge National Laboratory)**

S. Ghosh Current Position: Professor, Civil Engineering, Indian Institute of Technology Bombay  
**SS Bhatnagar Prize Winner (India’s top award for scientists)**  
 Dates of mentorship: June 15 – December 15, 2010  
 Topic: Changes in regional precipitation mean and extremes under a warming environment

P. Ngnepieba Current Position: Professor & Chair, Mathematics, Florida A&M University  
 Dates of mentorship: May 1 – August 30, 2009  
 Topic: Uncertainty in climate models

**Postdoctoral Associates (Northeastern University)**

H. Hassanzadeh Current Position: Senior Data Scientist/Engineer, Fidelity Investments, Boston, MA  
 Dates of supervision: June 2016 – August 2017  
 Topic: Critical Infrastructure and Climate with Network and Data Science

P. Ganguli Current Position: Assistant Professor, Agricultural Engineering, Indian Institute of Technology, Kharagpur (**Humboltz Fellowship Winner**)  
 Dates of supervision: January 2013 – December 2015  
 Topic: Hydrologic Extremes under Climate Change; Climate-Water-Energy Nexus



R. Mawalagedara                      Current Position: Teaching Faculty, Geological & Atmospheric Sciences, Iowa State  
Dates of supervision:                October 2012 – December 2014  
Topic:                                      Regional Climate Modeling and Climate Physics

D. Wang                                    Senior Scientist, AIR Worldwide, Boston, MA  
Dates of supervision:                April 2013 – November 2015  
Topic:                                      Coastal Upwelling and Climate Change

***Postdoctoral Associates (Oak Ridge National Laboratory [ORNL])***

O. Omitaomu                            Senior R&D Staff, Computational Sciences and Engineering Division, ORNL  
Dates of supervision:                October 1, 2006 – September 30, 2008  
Topic:                                      Knowledge Discovery from Heterogeneous Sensor Data, Analysis of Disparate Data  
for Elusive Indicators of Rare Events for Threat

S.-C. Kao                                   Senior R&D Staff & Team Lead of Hydrologic Systems Analysis Team,  
Environmental Sciences Division, ORNL  
Dates of supervision:                October 1, 2009 – September 30, 2010  
Topic:                                      Precipitation Extremes Under a Warming Environment, Translation to Metrics  
Relevant for Engineering Design

***Supervision of Graduate Students***

***Current Ph.D. Students at Northeastern University***

N. Yadav                                    Topic: “Physics-AI based Weather Extremes for Network Science based Critical  
Infrastructures” Expected Graduation (EG): May 2022

K. Duffy                                    Topic: “Earth Systems Sciences with Hybrid Physics-AI”, EG: May 2021

B.D. Sharma                                Topic: ““Century-Scale Climate and Carbon Extremes”, EG: May 2021

V. S. Konduri                              Topic: “Food Security with Remote Sensing and Models”, EG: Dec. 2020

M.E. Warner                                Topic: “Policy Perspectives on Resilience and Adaptation”, EG May 2020

***Completed Ph.D. Students (Northeastern University)***

U. Bhatia                                    Topic: “Infrastructures Resilience and Hydrometeorological Extremes”, Jan 2019.  
Current Position: Assistant Professor, Indian Institute of Technology Gandhinagar.

T.J. Vandal                                Topic: “Deep Machine Learning for Climate Statistical Downscaling”, Sep 2018.  
Current Position: NASA Scientist (NASA AMES GEONEX via BAERI)

B.J. Fard                                    Topic: “Climate Change Impacts on Urban Resilience”, Sep 2018.  
Current Position: Postdoctoral Research Associate, Univ. Nebraska

K. Clark                                    Topic: “Critical Infrastructures Resiliency: Airspace System”, May 2018.  
Current Position: Chief of Aviation Division, VOLPE Research, US DOT.

D. Kumar                                    Topic: “Climate Hazards Risks, and Critical Infrastructures Resilience,” Graduated,  
May 2016. Current Position: Lead Risk Analyst, Tokio Marine, Atlanta, GA.

E. Kodra                                    Topic: “Addressing Climate Gaps: Hypothesis and Physics Guided Statistical  
Approaches,” Graduated, May 2014. Current Position: CEO, risQ, Cambridge MA.

D. Das Topic: “Computer Science and Data Mining, with a Focus on Analysis of Extreme Values and their Dependence, and Applications to Climate and Sensor Data,” Graduated 2014. (Ph.D. Adviser: Zoran Obradovic, Co-Adviser: A.R. Ganguly; Funded by Ganguly at Northeastern as a research associate). Current Position: Machine Learning Scientist, Hitachi, Silicon Valley, CA.

**Completed Ph.D. Students (Oak Ridge National Laboratory with U. South Florida and U. Notre Dame)**

K. Steinhaeuser Topic: “Complex Networks in Climate Applications, Data Analysis and Mining for Climate Extremes,” Graduated from Notre Dame, 2010; Primary Adviser: N. Chawla; Co-Adviser: A. R. Ganguly; direct mentorship by Ganguly at ORNL for two years. Current Position: Research Associate at the University of Minnesota and with Progeny Systems, a U.S. DOD subcontractor in data mining and network science research.

S. Khan Topic: “Climate Extremes, Nonlinear Dynamics, Hydrology, Natural Hazards,” Graduated 2007, U. South Florida, Primary Adviser: A.R. Ganguly; co-adviser: Saigal; Supervisor at USF followed by direct mentorship at ORNL. Current Position: Director, Research and Modeling, American Insurance Group (AIG), Previous: AIR Worldwide (natural hazards risk modeling).

**M.S. Student Interns**

S. Zacca Topic: “Climate internal variability and Bayesian shrinkage for spatial downscaling”

R. Luo Topic: “Climate change and air pollution in China”

X. An Topic: “Statistical for Geospatial Visualization of Rare Events in Space and Time Especially but not Limited to Climate Change, Weather Extremes, and Impacts.” Internship Completed, December 2012.

Y. Karwa Topic: “IT Infrastructures for Geospatial Visualization,” Completed and Graduated, December 2012, MSIS Information Student.

J. Tolen Topic: “Climate Model Uncertainty,” Research Completed, December 2011.

**Post-Master’s Students Supervised at the Oak Ridge National Laboratory**

G. Kuhn Topic: “Extreme Value Statistics.” 5/2006 – 11/2006. Current Affiliation: Unknown (In Germany: Private Sector).

E. Parish Topic: “Climate Change Impacts Assessment, Climate and Population Change Impacts on Water Stress.” 11/2009 – 5/2010. Current Position: Research Staff at ORNL’s Environmental Sciences Division.

Y. Fang Topic: “Computational Sciences, Sensor Data Analysis.” 10/2006 – 08/2008. Current Position: Associate Professor at Santa Clara Univ., CA.

D. Gerdes Topic: “Transportation Security and Decision Sciences.” 10/2006 – 09/2007. Current Position: Unknown (In Brazil: Private Sector).

L. Huiping Topic: “Social Sciences, Community Resilience under Hazards.” 5/10 – 7/10. Current Position: Tenure Tack Professor in China.

**Doctoral Students: Dissertation or PhD QE Committee Member (Northeastern University)**

W. Zhang Topic: Chemical processes and data sciences (Advisers: A. Mueller; M. Wing)

L. Troupe Topic: Climate and Building Energy (Adviser: M. Eckelman)

R. Philips Topic: Climate and Building Water/Energy Systems (Adviser: M. Eckelman)

M. Saha Topic: Climate and Urban Infrastructures (Adviser: M. Eckelman)

L. Pourzahedi Topic: Lifecycle Analysis (Adviser: M. Eckelman)

R. Masoumi Topic: Construction Management (Adviser: A. Touran)

D. Vines-Cavanaugh Topic (Area): Road Monitoring, with Mobile Sensors (Adviser: M. Wang)

**Doctoral Students: Dissertation Committee Member (University of South Florida)**

D. Randeniya                      Topic (Area Transportation, Sensor Fusion, Mobile Vehicle Sensors, Status: Graduated, post-graduation: research staff at ORNL (Adviser: M. Gunaratne)

**Supervision of Undergraduate Students**

***Undergraduate Research Assistant Supervision (Northeastern University)***

Student name:                      Violet Lingenfelter  
Dates of supervision:              2020-Now  
Project Description                Critical Infrastructures and Climate

Student name:                      Ruth Linnaea Cahill  
Dates of supervision:              2020-Now  
Project Description                Climate Impacts on Infrastructure

Student name:                      Riddhi Samtani  
Dates of supervision:              2019-Now  
Project Description:                Projections of sensible heat waves resilience

Student name:                      Elal Segev  
Dates of supervision:              2018-2019  
Project Description                Climate Change and Desertification

Student name:                      Matt Mage  
Dates of supervision:              2017-2018  
Project Description                AI / Deep Learning and Remote Sensing (with NASA)

Student name:                      Lindsey Bressler  
Dates of supervision:              2018  
Project description:                Laboratory Research

Student name:                      Amina Ly  
Dates of supervision                2017-2018  
Project description:                Laboratory Research

Student name:                      Rachel Dowley  
Dates of supervision:              2017-2018  
Project description:                Scholars/Honors Thesis

Student name:                      Janet Yun  
Dates of supervision:              2014  
Project description:                Independent study (subsequently, graduate student at MIT in Mech. Eng.)

Student name:                      Catherine Moskos  
Dates of supervision:              2014 – 2015  
Project description:                Laboratory Research (currently, employed at Arcadis, NY)

Student name:                      Hayden Henderson  
Dates of supervision:              2014 – 2015  
Project description:                Laboratory Research

Student name:                      Laura Blumenfeld  
Dates of supervision:              2014  
Project description:                Laboratory Research

Student name:                      Allison Traylor  
Dates of supervision:              2014  
Project description:                Laboratory Research

Student name:                      Lindsey Bressler  
Dates of supervision:              2014 – 2015  
Project description:                Laboratory Research

Student name: Kara Morgan  
Dates of supervision: 2014  
Project description: Laboratory Research (currently a fellow at the Clinton Foundation in India)

Student name: Tyler Hall  
Dates of supervision: 2014  
Project description: Laboratory Research (currently on an Udall Scholarship)

Student name: Rachael Heiss  
Dates of supervision: 2014  
Project description: Laboratory Research

Student name: Shahed Najjar  
Dates of supervision: 2014  
Project description: Laboratory Research

Student name: Annique Fleurat  
Dates of supervision: 2014  
Project description: Laboratory Research

***Visiting Undergraduate Research Assistant Supervision (Northeastern University)***

S. Pal Jadavpur University

Dates of supervision: Summer 2013

Debadrita Das IIT, Kharagpur

Dates of supervision: Summer 2012

***(UG: University Scholars) Scholars Independent Research Funds (funded by Northeastern University)***

Amina Ly Summer 2017

Laura Blumenfeld Summer 2017

Shahed Najjar Summer 2017

Elisa Figueras Summer 2017

Lauren Enright Summer 2017

Mike Tormey Summer 2017

Lindsey Bressler Summer 2016

Shahed Najjar Summer 2016

Joseph Schenosky Summer 2016

Itxaso Garay Summer 2016

***High School Students***

Ayan Chowdhury Summer 2018

Arun Polumbaum Summer 2018

Reetahan Mukhopadhyay Summer 2015

***Other Students Mentored (Oak Ridge National Laboratory: 2004–2011)***

***Graduate Student Summer Interns:***

Gautam Bisht Dates: 5/2010 – 9/2010

Ryan Knox Dates: 5/2010 – 9/2010

***Undergraduate Interns:***

Evan Kodra Dates: 11/2009 – 8/2011

***Undergraduate Summer Interns:***

Eduardo Mojica Dates: 5/2010 – 9/2010

Jonathan Rann Dates: 5/2010 – 9/2010

Chris Fuller Dates: 5/2006 – 9/2006

Kathleen Abercrombie Dates: 5/2005 – 9/2005

**High School Summer Interns:**

Ethan Lai Dates: 5/2009 – 9/2009  
Elizabeth Roadinger Dates: 5/2010 – 9/2010

**Graduate Student Collaborators in Publications (neither funded nor directly mentored):**

Aarthy Sabesan (ORNL) Dates: 06/2005 – 02/2006  
Sharba Bandyopadhyay (JHU; remote) Dates: 11/2006 – 11/2007  
Veeraraghavan Vijayaraj (ORNL) Dates: 05/2005 – 11/2005  
Nagendra Singh (ORNL) Dates: 05/2005 – 08/2009  
Neal Feierabend (ORNL) Dates: 05/2005 – 11/2005

**Teaching and Advising Activities – Professional**

1. Endowed Chair Activity: Charotar University of Science and Technology, Gujarat, India, 2018
2. Guest Lecture Series on Data Sciences for Climate Change: Indian Institute of Technology Bombay, 2013
3. Summer Course on Climate Change & Quantitative Methods: National Institute of Technology, Hamirpur, 2016

**FUNDING GRANTS:**

**External: Funded – Active / Awarded (while at Northeastern University)**

Principal Investigator: **A.R. Ganguly (Lead PI)**, S. Flynn (Northeastern U.); M. Gonzalez (UC, Berkeley); S. Chatterjee, R. Brigantic, A. Tartakovsky, M. Halappanavar (PNNL); H. Das, E. Russo, K. Burks-Copes, B. Trump (US Army Corps of Engineers), S. Chikkagoudar (US Naval Research Lab)

Project title: *NICE: Networked Infrastructure under Compound Extremes*  
Sponsor: US Department of Defense (Strategic Environmental R&D Program [SERDP])  
Duration: March 2020 – December 2024 (Awarded)  
Amount: \$3,000,000 (\$3M)

Principal Investigator: **A. R. Ganguly (Sole PI)**  
Project title: *Machine Learning in the Earth Systems Sciences and Engineering*  
Sponsor: NASA (National Aeronautics & Space Administration) Ames and BAERI  
Duration: January 2019 – December 2019  
Amount: \$58,237

Principal Investigator: **A.R. Ganguly (Sole PI from Northeastern for PNNL LDRD)**  
Project title: *Cyber-based contingency analysis of interdependent transportation and communication networks under uncertainty*  
Sponsor: PNNL (Pacific Northwest National Laboratory) LDRD Program (**PI: S. Chatterjee**)  
Duration: October 2018 – September 2020  
Amount: \$460K (\$40K as NU subcontract and multiple students pipelines)

Principal Investigator: **A. R. Ganguly (Sole PI)**  
Project title: *Advanced Remote Sensing Methods Using Machine Learning*  
Sponsor: ORNL (Oak Ridge National Laboratory) GO (Graduate Opportunities) Program  
Duration: May 2018 – May 2019  
Amount: \$37,697

Principal Investigator: **A. R. Ganguly (Sole PI)**  
Project title: *Detection and Attribution of Carbon Cycle Extremes*  
Sponsor: ORNL (Oak Ridge National Laboratory) GO (Graduate Opportunities) Program  
Duration: May 2018 – May 2019  
Amount: \$37,697

Principal Investigator: A.-L. Barabasi (PI, NU), **A.R. Ganguly (Co-PI)**, R.J. Sampson (Harvard), S. Flynn (Co-PI, NU), K. Coronges (Co-PI, NU)  
Project title: *CRISP Type 2: Interdependent Network-based Quantification of Infrastructure Resilience (INQUIRE)*  
Sponsor: National Science Foundation  
Duration: September 2017 – August 2021  
Amount: \$2,500,000

Principal Investigator: **A. R. Ganguly (Sole PI)**  
Project title: *Deep Machine Learning in the Earth Sciences*  
Sponsor: NASA (National Aeronautics & Space Administration) Ames and BAERI  
Duration: January 2017 – December 2017  
Amount: \$62,500

Principal Investigator: S. Flynn (PI, NU), **A. R. Ganguly (Co-PI)**  
Project title: *Task Order: Critical Infrastructures Resilience*  
Sponsor: Department of Homeland Security  
Duration: August 2015 – July 2016  
Amount: \$350,000

Principal Investigator: A. Banerjee (Lead PI, UMN), **A. R. Ganguly (PI)**, P. Ravikumar (PI, UT Austin)  
Project title: *BIGDATA: F: DKA: Collaborative Proposal: High-Dimensional Statistical Machine Learning for Spatio-Temporal Data, with Climate applications*  
Sponsor: National Science Foundation  
Duration: August 2015 – July 2018  
Amount: \$1,071,864

Principal Investigator: J. Dy (PI, NU), **A.R. Ganguly (Co-PI)**, T. Gouhier & A. Ding (Co-PIs, NU)  
Project title: *Spatiotemporal Extremes & Association: Marine Adaptation & Survivability under Climate change and rising Ocean Temperatures (SEA-MASCOT)*  
Sponsor: National Science Foundation (Cyber SEES)  
Duration: September 2014 – August 2018  
Amount: \$1,200,000

Principal Investigator: V. Kumar (PI, UMN), **A. R. Ganguly (Co-PI)**, A. Banerjee (Co-PI, UMN), S. Chatterjee (Co-PI, UMN), S. Shekhar (Co-PI, UMN), P. Snyder (Co-PI, UMN), J. Foley (Co-PI, UMN), A. Chaudhary (Co-PI, NWU), N. Samatova (Co-PI, NCSU), F. Semazzi (Co-PI, NCSU), A. Homaifar (Co-PI, NCAT)  
Project title: *Expeditions in Computing: Understanding Climate Change: Data-driven Approach*  
Sponsor: National Science Foundation (CISE)  
Duration: August 2014 – July 2015 – July 2018 (3 years no cost extension)  
Amount: \$10,200,000

***External: Pending – Pre-Proposal Encouraged; Full Proposal in Evaluation (while at Northeastern University)***

Principal Investigator: **A. R. Ganguly (Lead PI)**, T. Gouhier (PI) [Northeastern University (Overall Lead and Lead for Hydrometeorological Use Cases)]; V. Kumar (Co-Lead PI), A. Banerjee (PI) [U. Minnesota (Co-Lead and Lead for Machine Learning)]; S. Haupt (PI), C. Deser (PI) [National Center for Atmospheric Research (Lead for Climate)]; C. Jablonowski (PI) [U. Michigan, Ann Arbor]; A. McGovern (PI) [U. Oklahoma]; F. Hoffman (PI) [U. Tennessee, Knoxville / Oak Ridge National Laboratory]; A. Karpatne (PI) [Virginia Tech]; T. Vandal (PI) [NASA AMES / BAERI]; E. Kodra (PI) [risQ Corporation]; U. Bhatia (PI) [Indian Institute of Technology Gandhinagar]; S. Ghosh (PI) [Indian Institute of Technology Bombay]; S. Panickal [Indian Institute of Tropical Meteorology]

Senior Persons: J. Dy (SP), R. Sundaram (SP), R. Yu (SP), Y. Zhang (SP) [Northeastern University]; S. Chatterjee (SP), S. Liess (SP), M. Steinbach (SP) [U. Minnesota]; D. Gagne (SP), T. McCandless (SP) [National Center for Atmospheric Research]; C. Hay (SP) [risQ Corporation]; P. Mohapatra (SP) [Indian Institute of Technology Gandhinagar]; J. Indu (Indian Institute of Technology Bombay)

Project title: *Hybrid Physics–AI Systems for Predictive Understanding of Interannual to Multi–Decadal Weather Extremes*

Sponsor: VESRI – Schmidt Futures (Eric Schmidt Foundation)

Duration: September 2020 – August 2025

Amount: \$10,350,000 (\$10.35 Million): \$10M Foundation and \$350K NEU (lead) match

**Funded – Completed (while at Northeastern)**

Principal Investigator: **A. R. Ganguly (PI)**

Project title: *Data and Methods for Probabilistic Precipitation Modeling*

Sponsor: Nuclear Regulatory Commission through U.S. Department of Energy

Duration: October 2011 – October 2012

Amount: \$55,000 (funded by NRC via ORNL / U.S. DoE)

Principal Investigator: **A.R. Ganguly (PI)**

Project title: *Future U.S. Water Availability and Quality Study*

Sponsor: Advanced Research Projects Agency-Energy (DOE)

Duration: January 2014 – January 2015

Amount: \$85,000

Principal Investigator: S. Flynn (PI, NU), **A. R. Ganguly (Co-PI)**, J. F. Hajjar (Co-PI, NU)

Project title: *Disaster Resilience of Buildings, Infrastructure, and Communities*

Sponsor: National Institute of Standards and Technology

Duration: October 2013 – October 2014

Amount: \$300,000

**Funded – Completed (while at the Oak Ridge National Laboratory)**

Principal Investigator: **A. R. Ganguly (PI)**, T. Wilbanks (ORNL, Co-PI), D. Erickson (Co-PI, ORNL)

Project title: *Uncertainty Assessments & Reduction in Climate Extremes & Climate Impacts*

Sponsor: Oak Ridge National Lab. (US DOE) Laboratory Directed Research & Development

Duration: October 2009 – September 2011

Amount: \$819,000

Principal Investigator: **A. R. Ganguly (Joint PI)**, E. Begoli (Joint PI, ORNL)

Project title: *Emergency Preparedness and Risk Analysis / Visualization*

Sponsor: Department of Homeland Security (Office of Infrastructure Protection)

Duration: January 2008 – December 2008

Amount: \$800,000

Principal Investigator: **A. R. Ganguly (PI)**, O. Omitaomu (Co-PI, ORNL)

Project title: *Knowledge Discovery for Threat Cognizance in Transportation Security*

Sponsor: Oak Ridge National Laboratory, Laboratory Directed Research and Development

Duration: October 2006 – September 2008

Amount: \$790,000

Program Lead: **A. R. Ganguly (PI and Science Lead)**, B. Ross (Program Manager)

Project title: *Climate Science Support for the 2010 Quadrennial Defense Review*

Sponsor: Department of Defense (Office of the Secretary of Defense)

Duration: March 2008 – June 2009

Amount: \$200,000

Program Lead: **A. R. Ganguly (PI and Science Lead)**, B. Ross (Program Manager)  
Project title: *Science Support for CNAS led Climate Change War Games*  
Sponsor: Oak Ridge National Laboratory, Center for a New American Security  
Duration: March 2007 – December 2008  
Amount: \$250,000

Principal Investigator: **A. R. Ganguly (PI)**, D. Erickson (Co-PI, ORNL), G. Ostrouchov (Co-PI, ORNL)  
Project title: *Multivariate Dependence in Climate Extremes*  
Sponsor: Oak Ridge National Laboratory, SEED LDRD Funds  
Duration: October 2006 – September 2007  
Amount: \$125,000

Principal Investigator: M. Hadzikadic (PI, UNC, ORNL, GT), **A. R. Ganguly (Co-PI)**  
Project title: *ACSES: Actionable Capability for Social & Economic Systems*  
Sponsor: Defense Advanced Research Projects Agency (IPTO), U.S. Department of Defense  
Duration: February 2007 – December 2008  
Amount: \$750,000

Principal Investigator: T. Wilbanks (PI, ORNL), **A. R. Ganguly (Co-PI)**, D. Erickson (Co-PI)  
Project title: *Climate Change Impacts on the Energy Sector*  
Sponsor: Oak Ridge National Laboratory, Laboratory Directed Research and Development  
Duration: October 2006 – September 2008  
Amount: \$350,000

Principal Investigator: A. King (PI, ORNL), **A. R. Ganguly (Co-PI)**, D. Erickson (Co-PI, ORNL)  
Project title: *Climate Change Downscaling and Uncertainty*  
Sponsor: Oak Ridge National Laboratory, Laboratory Directed Research and Development  
Duration: January 2009 – June 2009  
Amount: \$500,000

Principal Investigator: B. Preston (PI, ORNL), T. Wilbanks (Co-PI, ORNL), **A. R. Ganguly (Sr. Person)**  
Project title: *Developing a Regional Integrated Assessment Model Framework*  
Sponsor: Department of Energy / Pacific Northwest National Laboratory  
Duration: July 1, 2010 – June 30, 2015  
Amount: \$1,800,000 (A. R. Ganguly share: \$100,000)

Principal Investigator: S. Wullschlegel (PI, ORNL), R. Graham (Program Manager, ORNL), **A. R. Ganguly (Task Lead)**  
Project title: *Data Mining and Networks for Carbon Sequestration in Terrestrial Ecosystem*  
Sponsor: Department of Energy (OS)  
Duration: October 1999 – September 2012  
Amount: \$100,000 (A. R. Ganguly share)

Principal Investigator: S. Fernandez (PI, ORNL), **A. R. Ganguly (Task Lead)**  
Project title: *Real-Time Outage Detection in Power Grids*  
Sponsor: Oak Ridge National Laboratory, Laboratory Directed Research and Development  
Duration: October 2011 – September 2012  
Amount: \$500,000 (A. R. Ganguly share: \$50,000)

Principal Investigator: T. Wilbanks (PI, ORNL), **A. R. Ganguly (Task Lead)**  
Project title: *Possible Impacts of Relatively Severe Climate Change*  
Sponsor: Oak Ridge National Laboratory, Laboratory Directed Research and Development



Duration: January 2009 – July 2009  
Amount: \$50,000

Co- Investigator: **A. R. Ganguly (PI and Science Lead)**, N. Cressie (Co-PI, OSU), T. Hsing (Co-PI, OSU), Nageswara Rao (Co-PI, ORNL)

Project title: *Spatiotemporal Statistics for Analysis of Data from Sensor Networks*  
Sponsor: Office of Naval Research (U.S. DOD)  
Duration: September 2006 – July 2007  
Amount: \$100,000

**Internal to Northeastern University**

Principal Investigator: R. Yu, **A.R. Ganguly**  
Project Title: *Physics-Informed Deep Learning for High-Resolution Climate Extremes Modeling*  
Sponsor: Northeastern University (FY20 Tier 1)  
Amount: \$50,000 (January 2020 to December 2020)

Principal Investigator: A. Shrivastava, J. Stephens, D. O’Brien, **A.R. Ganguly**, B. Helmuth, M. Patterson  
Project Title: *Temperature Sensors for Urban Resilience & Public Health Impacts of Heat Waves*  
Sponsor: Northeastern University (FY17 Tier 1)  
Amount: \$50,000 (July 2017 to September 2018)

Principal Investigator: D. Tiwari (PI), **A.R. Ganguly** (Co-PI), R. Sundaram (Co-PI)  
Project Title: *A “network of networks” approach to critical infrastructure resilience*  
Sponsor: Northeastern University (Global Resilience Institute Seed Funds)  
Amount: \$75,000 (June 2017 to May 2019)

Principal Investigator: **Joint PIs:** G. Shatkin, D. Lee, K. Goh, A. Renzi, **A.R. Ganguly**  
Project title: *Cross-Disciplinary Approaches to Analyzing Flood Risk in Jakarta*  
Sponsor: Northeastern University (FY17 Tier 1)  
Amount: \$50,000

Principal Investigator: T. Gouhier (Joint PI), **A. R. Ganguly (Joint PI)**  
Project title: *Adaptive Management of Coastal Ecosystems under Climate Change*  
Sponsor: Northeastern University (FY14 Tier 1)  
Amount: \$50,000

Principal Investigator: **A. R. Ganguly (PI)**  
Project title: *Proposal Preparation and Completion of Key Research Elements*  
Sponsor: Northeastern University (Tier 2: FY14-FY17)  
Amount: \$60,000

Principal Investigator: **A. R. Ganguly (PI), S. Flynn (Co-PI)**  
Project title: *Critical Infrastructures Resilience: Curriculum Development*  
Sponsor: Northeastern University (Office of the Provost: FY14)  
Amount: \$35,000

Principal Investigator: **A. R. Ganguly, S. Rolland (NU)**  
Project title: *Regulatory Policy for Weather Extremes under Climate Change*  
Sponsor: Northeastern University (FY13 Tier 1)  
Amount: \$50,000