

# 14<sup>th</sup> Annual Climate Prediction Applications Science Workshop

March 22-24, 2016  
Burlington, Vermont

Climate Services for Addressing  
Environmental Risks and Hazards



### LODGING

- 1 Courtyard by Marriott, E3
- 2 Hilton Garden Inn, B4
- 3 Hilton Hotel, D3
- 4 Hotel Vermont, E4



### POINTS OF INTEREST

- 5 Battery Park & Promenade, F3
- 6 Community Boathouse, C1
- 7 Fishing Pier, F1
- 8 Lake Champlain Navy Memorial, B2
- 9 New Moran Inc., G1  
Redevelopment info: [Moranplant.org](http://Moranplant.org)
- 10 Waterfront Information Center, C2
- 11 Waterfront Park and Boardwalk, D2



### FOOD & DINING

- 12 Bleu Restaurant, E3
- 13 Breakwaters Restaurant, B2
- 14 Burlington Bay Market & Café, C3
- 15 Cobblestone Deli, B3
- 16 Dedalus Wine Shop, A3
- 17 Ice Cream Bob Grill & Scoop Shop, C2
- 18 Ice House Restaurant, A3
- 19 Juniper Bar, E4
- 20 Mounted Cat, D4
- 21 San Sai Japanese Cuisine, E2
- 22 Shanty on the Shore, B3
- 23 Skinny Pancake, C3
- 24 Splash at The Boathouse, C1
- 25 Sugarsnap Cafe, C2
- 26 Yangser Dorjee's Himalaya Restaurant, B3



### ACTIVITIES

- 27 ECHO, Leahy Center for Lake Champlain, C2
- 28 Lake Champlain Community Sailing Center, G1
- 29 Lake Champlain Maritime Museum & Lois McClure Exhibit, A2
- 30 Local Motion Bike Rental, B3
- 31 Main Street Landing Performing Arts Center, D3
- 32 Northern Lights Cruise Ship, A2
- 33 RunVermont, C3
- 34 SkiRack, B4
- 35 Spirit of Ethan Allen III, C2
- 36 Vermont Lake Monsters Baseball, B3
- 37 Waterfront Diving Center, A3
- 38 Whistling Man Schooner Co., C2



### TOURS

- 39 Burlington History Tours: (802) 863-9132\*, G2
- 40 Burlington Segway Tours: (802) 489-5113
- 41 City Brew Tours: (802) 760-6091\*\*
- 42 Queen City Ghost Walk: (802) 351-1313\*\*
- 43 Shipwreck Tours: [lcomm.org](http://lcomm.org)\*, A2



### TRANSPORTATION

- 44 CCTA Free College Street Shuttle: [cctaride.org](http://cctaride.org), C2
- 45 Lake Champlain Ferries: [ferries.com](http://ferries.com), B2

\* Tour start location  
\*\* Tour start locations vary





# 14<sup>th</sup> Annual Climate Prediction Applications Science Workshop

Hilton Burlington

Tuesday, March 22

7:30 am

Room Open

8:30 – 9:15

Conference Welcome

## Opening Remarks

**Richard Galbraith**, VP for Research, University of Vermont  
(Introduction by William Falls, Dean of the College of Arts and Sciences, UVM)

**Lesley-Ann Dupigny-Giroux**, Vermont State Climatologist, University of Vermont

**Fiona Horsfall**, Chief of Climate Services Branch, NOAA National Weather Service

## Welcome

**Peter Shumlin**, Governor of Vermont  
(Introduction by Andrew Nash, Meteorologist-in-Charge, WFO Burlington)

**Remarks from Senator Leahy's Office**

9:15 – 10:30

Keynote Address

**"The Global Weather, Climate, and Water Enterprise: Helping to Build Resilient Communities"**

**David Grimes**, WMO President, Assistant Deputy Minister and Head of Environment and Climate Change Canada's Meteorological Service

**"The Challenge of Decision-Making in a Changing Climate"**

**Filipe Lucio**, Director, Global Framework for Climate Services, World Meteorological Organization

(Introductions by Fiona Horsfall, Chief of Climate Services Branch, NOAA National Weather Service)

10:30 – 11:00

Break

11:00 – 12:30

Session 1: Food Resilience

Moderator: Richard Choularton, United Nations World Food Programme - Rome

**Achieving Food Security amid Disparate and Volatile Climate Regimes: Climate Adaptation/Mitigation Strategies at Play in Ethiopia, Kazakhstan, and North Dakota (ND)**

Gregory Gust, NOAA/NWS Grand Forks, ND

**Bridging the Gap of Users' Knowledge on Climate through Climate Field School - Indonesia Experience**

Noer Hayati, Indonesia Agency for Meteorology Climatology and Geophysics (BMKG)

**Farmer Perception and Index Design in Weather Insurance for Agriculture in the Developing World**

*Molly Brown, University of Maryland, College Park*

**Integrating Climate Considerations into Conservation Planning Decisions by Agricultural Producers**

*Daniel Dostie, NRCS liaison to the Northeast USDA Climate Hub*

**Gridded Spring Forecast Maps for Natural Resource Planning**

*Alyssa Rosemartin, USA National Phenology Network/University of Arizona*

**Temperature Trends during Vermont's Maple Sugaring Season**

*Paul Sisson, NOAA/NWS, WFO Burlington, VT*

**12:30 pm**

**Lunch (provided)**

**1:45 – 3:15**

**Session 2: Interactive Decision Support Services Tool Demonstrations**

*Moderator: Nichole Becker, NOAA/NWS WFO Gray, ME*

**Research to Applications in Action: Some examples from PSD-ESRL**

*Andrea Ray, NOAA/ESRL Physical Sciences Division*

**Accessing and Visualizing Satellite Data for Fisheries Managers in the Northeast Large Marine Ecosystem**

*Riley Young Morse, Gulf of Maine Research Institute*

**Automated Design Storm Notification System**

*Patrick Guinan, University of Missouri*

**Detection of Hydrologic Non-stationarities using Traditional and Emerging Statistical Change Point Detection Methods**

*Bryan Baker, US Army Corps of Engineers (presented by Douglas Friedman, BAH contractor at USACE)*

**Climate Data Access Tools Using the Applied Climate Information System (ACIS)**

*Keith Eggleston, Northeast Regional Climate Center, Cornell University*

**A Historical Hourly Climate Database and its Value-Added Resource Potential**

*Michael Timlin, Midwest Regional Climate Center*

**3:15 – 3:45**

**Break**

**3:45 – 4:45**

**Session 3: Climate and Health Panel**

*Moderator: David Grass, VT Department of Health*

**Climate Change, Lyme Disease, and other Vector-borne Diseases in Vermont**

*Nathaniel Schafrick, Vermont Department of Health*

**Using Climate Data to Ascertain Risk of Dengue Fever**

*Brunilda Lugo, CASE Consultants International; Marjorie McGuirk, CASE Consultants International*

**Validation of a Spatially Fine-Scale Air Temperature Statistical Model in New York City**

*Brian Vant-Hull, CREST Institute, City University of New York*

**A Baseline System for Forecasting Excessive Heat Events at Sub-seasonal Lead Times**

*Augustin Vintzileos, University of Maryland - ESSIC/CICS*

**4:45 – 5:15**

**Facilitated Discussion**

**5:15 pm**

**Adjourn**

**6:00 – 7:30**

**Reception and Poster Session**

*Please see list of posters*



**David Grimes**, a Brock University graduate, has been Assistant Deputy Minister and head of Environment and Climate Change Canada's Meteorological Service (MSC) since July 2006. His effective leadership style has resulted in a transformation and modernization of the MSC, including a realization of substantial investments in the Service. Mr. Grimes has many accomplishments from his 40-year career with the MSC in weather forecast operations, the Canadian Climate Centre and science-policy development. He is recognized for his strategic and innovative thinking, effective problem solving and engaging leadership style.

Mr. Grimes has been active for over 25 years in the World Meteorological Organization (WMO) and other international forums. He has shown leadership in WMO on matters pertaining to service delivery, disaster risk reduction and results-based planning. He has served as one of Canada's negotiators for the United Nations Framework Convention on Climate Change and participated in the Intergovernmental Panel on Climate Change (IPCC).

Since December 2006, Mr. Grimes has been honoured to be Canada's Permanent Representative with the WMO. In 2015, he was re-elected President of the WMO by the Seventeenth World Meteorological Congress for a second four-year term. During his presidency he has successfully led the development and adoption of the Global Framework for Climate Services' implementation plan including leading the first ever Extraordinary World Meteorological Congress and the first Intergovernmental Board for Climate Services. There have been several other notable achievements during his tenure as President.

In 2006 Mr. Grimes was also appointed Canada's Principal Representative to the Group on Earth Observations; an intergovernmental body responsible for guiding the implementation of the Global Earth Observation System of Systems. In this capacity, he has led the coordination of two key Ministerial Summits, the first in the Republic of South Africa (2007), the second in China (2010).

Mr. Grimes' career has been supported by his dedicated, lifelong companion Karen, his three children, Chris, Allison and Kim and three lovely grandchildren. Exercising a passion for science and enjoying a loving family coalesce into a meaningful and fulfilling life experience.



**Filipe Domingos Freires Lúcio** is Director of the Global Framework for Climate Services (GFCS) Office at the Secretariat of the World Meteorological Organization (WMO), in Geneva, Switzerland, since January 2014. From 2011 to 2013 he led the GFCS Project Office, which coordinated the development of the Implementation Plan of the GFCS and the engagement of key partners and stakeholders. He joined WMO in 2007 as a Senior Scientific Officer in the disaster risk reduction programme, following 18 years of hands-on experience in operational meteorology and research, 10 of which as the Director of the National Institute of Meteorology of Mozambique.

On the research front, he has authored papers and has been part of Climate Variability and Predictability (CLIVAR) in Africa and the International Council of Scientific Unions (ICSU) where he contributed to the development of science plans on “Integrated Research on Disaster Risk” and “Natural and Human-induced Hazards and Disasters in sub-Saharan Africa”.

Recently he played a key role in the development of the “Climate Research for Development” (CR4D) Agenda for Africa, an initiative that promotes climate research on Africa that resulted from the African Climate Conference held in 2014.

# 14<sup>th</sup> Annual Climate Prediction Applications Science Workshop

Hilton Burlington

Wednesday, March 23

7:30 am Room Open

8:30 – 9:00 Keynote

***“Preparing for the Storm: Reflections on Flooding, Community Resilience and the Important role of Climate Science”***

*Deborah Markowitz, Secretary of the Vermont Agency of Natural Resources*

*(Introduction by David Rosowsky, Provost and Senior Vice President, UVM)*

9:00 – 10:00 Session 1: Managing Water Resources and Flooding

*Moderator: Ellen Mecray, NOAA / NESDIS*

**Improving Situational Awareness of Flash Flooding in a Small Urban Catchment by Integrating Meteorological Analysis into a Geospatial Framework**

*John Goff, NOAA/NWS WFO Burlington, VT; Lesley-Ann Dupigny-Giroux, University of Vermont*

**Northern Fire and Ice: Climate Services and Advance Planning for Spring River Ice Break-up and Wildfires in Alaska**

*Richard Thoman, NOAA/NWS Alaska Region*

**Improving Operational Real-Time Flood Forecasting and Flood Inundation Mapping in the Lake Champlain-Richelieu River Watershed: A Cooperative Effort between Canada and the US for Lake Champlain and the Richelieu River**

*Robert Flynn, U.S. Geological Survey; William Saunders, NOAA/NWS Northeast RFC*

**Probabilistic Flood Forecasting, Hazard Assessment and Adaptation Studies for the US Northeast**

*Philip Orton, Stevens Institute of Technology*

10:00 – 10:30 Break

10:30 – 12:00 Session 2: Hydro-meteorological Disaster Risk Assessment and Management

*Moderator: Andrew Nash, NOAA/NWS WFO Burlington, VT*

**Implementing IRDR's peril classification in SHEL DUS**

*Melanie Gall, Hazards and Vulnerability Research Institute, University of South Carolina*

**Quantifying Seasonal Nutrient and Sediment Loads with Relation to Land Use and Soil Properties in Vermont's Lake Champlain Basin**

*Baxter Miatke, University of Vermont - Environmental Engineering*

**Climatic Forecasts of Surface Water Anomalies**

*Thomas Parris, ISciences, L.L.C.*

**Connecting Seasonal Predictions into Decision-making in the Greater Horn of Africa**

*Tsegaye Tadesse, National Drought Mitigation Center, University of Nebraska-Lincoln*

**Climate Change and the Future of Winter Road Performance in New England**

*Jillian Crowley, University of New Hampshire (presented by Jennifer Jacobs, UNH)*

**Future Intensity Duration Frequency Curves for Climate Change Resiliency in New York**

*Art DeGaetano, Northeast Regional Climate Center, Cornell University (presented by Keith Eggleston, NERCC)*

**12:00 pm**

**Lunch (provided)**

**1:30 – 3:00**

**Session 3: Interactive Decision Support Services Tool Demonstrations**

*Moderator: Keith Eggleston, Northeast Regional Climate Center / Cornell University*

**Monitoring & Reporting Drought in Canada – The Online Canadian Drought Monitor Application**

*Patrick Cherneski, T. Hadwen & A. Chipanshi, Agriculture & Agri-Food Canada (AAFC)*

**Drought Monitoring with a High Resolution SPEI**

*Rebecca Ward, State Climate Office of North Carolina*

**Extreme Precipitation Dashboard for Water Resource Managers and City Planners**

*Nancy Beller-Simms, NOAA Climate Program Office*

**Monitoring for Extreme Climatological Impacts on Vegetation - the MRCC's Vegetation Impact Program (VIP)**

*Beth Hall, University of Illinois*

**Visualizing Climate Data Projections for Decision Support**

*David Herring, NOAA Climate Program Office*

**The NW Climate Toolbox**

*Kathie Dello, PNW Climate Impacts Research Consortium*

**3:00 pm**

**Break**

**3:00 – 6:00**

**Field Trips (Optional)**

*Lake Champlain Chocolates Tasting*

*ECHO Lake Aquarium and Science Center*

*Burlington Air Quality Monitoring Walking Tour*

**6:00 – 8:00**

**Banquet Dinner: Hilton Burlington**

**America's two "climate changes"**

***Dan Kahan, Yale University, Elizabeth K. Dollard Professor of Law and Professor of Psychology***

*There are two climate changes in America: the one people "believe" or "disbelieve" in order to express their cultural identities; and the one people ("believers" & "disbelievers" alike) acquire and use scientific knowledge about in order to make decisions of consequence, individual and collective. I will present various forms of empirical evidence—including standardized science literacy tests, lab experiments, and real-world field studies in Southeast Florida—to support the "two climate changes" thesis. I will also examine what this position implies about the forms of deliberative engagement necessary to rid the science communication environment of the toxic effects of the first climate change and to make it habitable for enlightened democratic engagement with the second.*

*(Introduction by Lesley-Ann Dupigny-Giroux, Vermont State Climatologist, University of Vermont & David Herring, NOAA Climate Program Office)*



**Wednesday Keynote Speaker: Deborah Markowitz, Secretary of the Vermont Agency of Natural Resources**



**Deborah Markowitz** is the Secretary of the Vermont Agency of Natural Resources, the state agency with primary responsibility for protecting Vermont's environment, natural resources and wildlife and for maintaining Vermont's forests and state parks. Markowitz was named to that position by Governor Peter Shumlin in January 2011.

Secretary Markowitz previously served as Vermont's Secretary of State from 1999 until 2011. Markowitz has a distinguished record of achievement and is widely recognized for enhancing customer service at the Secretary of State's office, improving access to government and strengthening Vermont's democracy. As Secretary of the Agency of Natural Resources, Markowitz has shaped the environmental agenda of the state, focusing on the challenges of climate change, strategic land conservation, growing threats to forest health and integrity, and improving the water quality of Vermont's lakes and rivers. Markowitz believes that given today's challenges, we must find new and creative approaches to care for nature, build healthy communities, and support the working landscape for a sustainable future.

A graduate of the University of Vermont (B.A., 1983), Markowitz received her Juris Doctorate degree from the Georgetown University Law Center (magna cum laude, 1987). Markowitz served as a law clerk with Justice Louis Peck of the Vermont Supreme Court (1987 - 1988) and practiced law with Langrock, Sperry, Parker and Wool (1988-1990). She served as the founding director of the Vermont League of Cities and Towns Municipal Law Center (1990-1997), where she published numerous handbooks and academic papers on local government law and lectured locally and nationally on issues related to municipal law and on ethics in government. Markowitz is the author of the Vermont Municipal Guide to Land Use Regulation (1997) and Vermont Municipal Environmental Handbook (1995).

Secretary Markowitz serves as the Chair of Vermont's Climate Cabinet and represented Vermont on the White House Task Force on Climate Preparedness and Resilience. She serves on the Executive Board of the Environmental Council of the States and on the Boards of Advisors for the Georgetown Climate Center, Antioch's Center for Climate Preparedness and Community Resilience, and for the University of Vermont's Rubenstein School of Environment and Natural Resources.

**Banquet Speaker: Dan Kahan, Elizabeth K. Dollard Professor of Law & Professor of Psychology at Yale Law School**



**Dan Kahan** is the Elizabeth K. Dollard Professor of Law & Professor of Psychology at Yale Law School. His primary research interests are risk perception and science communication. He is a member of the Cultural Cognition Project, an interdisciplinary team of scholars who use empirical methods to examine the impact of group values on perceptions of risk and related facts. In studies funded by the National Science Foundation, his research has investigated public disagreement over climate change, public reactions to emerging technologies, and conflicting public impressions of scientific consensus. Articles featuring the Project's studies have appeared in a variety of peer-reviewed scholarly journals including the Journal of Risk Research, Judgment and Decision Making, Nature Climate Change, Science, and Nature. He is a Senior Fellow at the National Center for Science and Civic Engagement and a member of the American Academy of Arts and Sciences.

# 14<sup>th</sup> Annual Climate Prediction Applications Science Workshop

Hilton Burlington

Thursday, March 24

7:30 am

Room Open

8:30 – 9:45

## Session 1: Coastal Issues in Disaster Risk Assessment and Management

*Moderator: Marina Timofeyeva, NOAA/NWS Climate Services Branch*

### Building Resilience on the Georgia Coast

*Madeleine Russell, Georgia Sea Grant*

### A Climate of Change: Preparing for an Uncertain Fishing Future By Bringing Communities Together with Climate and Marine Scientists to Understand Predictive Capabilities and Information Needs

*Nick Battista, Island Institute (presented by Susie Arnold, Island Institute)*

### Climate Services for Coastal Area Management

*Marjuki (Jack), Agency for Meteorology, Climatology and Geophysics Indonesia (BMKG)*

### Resilience to Coastal Storms in Urban Neighborhoods

*Malgosia Madajewicz, The Center for Climate Systems Research, Columbia University*

### Improving Community Resilience through the Integration of Climate Services in Adaptation Decision-Making in the Southwest Coastal Bangladesh

*Saleh Ahmed, The University of Arizona*

9:45 – 10:15

Break

10:15 – 11:30

## Session 2: Regional and Local Climate Services / User Engagement

*Moderator: Mike Halpert, NOAA/NWS Climate Prediction Center*

### NOAA Regional Climate Services: Integrating Climate Information across Sectors and Partners

*Ellen Mecray, NOAA / NESDIS*

### The Consortium for Climate Risk in the Urban Northeast: A NOAA RISA Project Focused on Co-generated Climate Science Information for Urban Decision-makers

*Radley Horton, Columbia University / NASA Goddard Institute for Space Studies*

### The Delaware Environmental Observing System: Decision Support for Coastal Flooding and Snowfall

*Daniel Leathers, University of Delaware (presented by Tina Callahan, DEMAC)*

### Climate Change Adaptation Planning in the Casco Bay Region of Maine

*Duane Verner, Argonne National Laboratory; Bill DeLong, DHS*

### Adaptation of Vermont State Park Visitors to Climate Change

*William Valliere, University of Vermont*

11:30 – 1:00

Lunch (provided)

**1:00 – 2:30**

**Session 3 Panel: Needs for and Scientific Feasibility of Local & Regional Seasonal Precipitation Predictions**

*Moderators: Daniel Barrie, NOAA Climate Program Office; Lesley-Ann Dupigny-Giroux, UVM*

*Andrea Ray, NOAA/ESRL Physical Sciences Division*

*Robert D'Arienzo, VELCO*

*Jason Shafer, Lyndon State College*

*Mike Halpert, NOAA/NWS Climate Prediction Center*

*Shrad Shukla, University of California Santa Barbara*

**2:30 – 3:00**

**Break**

**3:00 – 4:00**

**Session 4: Localizing Climate Information**

*Moderator: Alex Bryan, DOI Northeast Climate Science Center*

**Introduction of Dynamical Regional Downscaling (DSJRA-55) Using the JRA-55 Reanalysis and Discussion for Possibility of its Practical Use**

*Nobuyuki Kayaba, Climate Prediction Division, Japan Meteorological Agency*

**A Statistical Downscaling Model with Uncertainty Quantification for Engineering Infrastructure Design Adaptation**

*Ernst Linder, University of New Hampshire, Durham*

**Climate Risk Metrics and Statistical Data for Risk Management**

*Terrance Thompson, LMI*

**Extreme Weather Events and Transportation Infrastructure - A Framework for Benefit-Cost Analysis**

*Sam Merrill, GEI Consultants*

**4:00 – 4:30**

**Summary and Closing Remarks**

*Lesley-Ann Dupigny-Giroux, Vermont State Climatologist, University of Vermont*

*Fiona Horsfall, Chief of Climate Services Branch, NOAA National Weather Service*

# 14<sup>th</sup> Annual Climate Prediction Applications Science Workshop

Tuesday, March 22

6:00 – 7:30pm: Poster Session and Reception

## Location

1	<b>Assessing the Value of Incorporating Streamflow Forecasts into an Early Drought Detection Tool</b> <i>Kathryn Booras, University of Massachusetts Amherst</i>
2	<b>Climate Services Supporting Endangered Species Assessment: An FWS-NWS Partnership</b> <i>Ray Wolf, NOAA/NWS Quad Cities, IA/IL</i>
3	<b>Daily Weather Estimator for Climate Projections Based on Nearest Neighbor Resampling</b> <i>Gabriela Bucini &amp; Patrick Clemins, University of Vermont</i>
4	<b>Prediction of Suspended Sediment in Rivers using Artificial Neural Networks and Future Climate Scenarios</b> <i>Scott Hamshaw, University of Vermont</i>
5	<b>Long-term Changes in the Midsummer Drought over Northwest Costa Rica</b> <i>Bandar AlMutairi, Carnegie Mellon University</i>
6	<b>Importance of Anthropogenic Aerosols in Climate Change Attribution</b> <i>Eric Leibensperger, Center for Earth and Environmental Science, SUNY Plattsburgh</i>
7	<b>River Forecast Uncertainty Products on NOAA's NWS Advanced Hydrologic Prediction Service (AHPS) Website</b> <i>Dan Matusiewicz, NOAA NWS Water Resources Services Branch</i>
8	<b>Early Alert System for Risk of Cattle Fever Tick Outbreaks in Permanent Quarantine Zone Along the Texas-Mexico Border</b> <i>Allan Auclair, United States Department of Agriculture</i>
9	<b>The Evaporative Demand Drought Index: a new drought early warning and monitoring index for drought</b> <i>Mike Hobbins, NOAA /ESRL Physical Sciences Division</i>
10	<b>Reducing the Vulnerability of Transportation Infrastructure through Non-Stationary Hydraulic Analysis</b> <i>Cameron White, University of Vermont</i>
11	<b>Comparative Visualization of Heat Indices, Drought Indicators, and Flow Frequencies in a Changing Climate</b> <i>Bryan Baker, US Army Corps of Engineers (presented by Douglas Friedman, BAH contractor at USACE)</i>
12	<b>The National Integrated Heat Health Information System (NIHHIS) - Building Societal Resilience to Extreme Heat with Integrated Climate Research, Observations, Predictions, and Partnerships</b> <i>Hunter Jones, NOAA Climate Program Office</i>
13	<b>National Water Resources Monitoring and Outlook: Meeting Water Managers' Needs for Timely Water Intelligence</b> <i>Michelle Stokes, NOAA/NWS Colorado Basin RFC; (presented by Andrea Ray, NOAA/ESRL)</i>



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AUTHORS	TITLE
Ahmed, Saleh	Improving Community Resilience through the Integration of Climate Services in Adaptation Decision-Making in the Southwest Coastal Bangladesh
AlMutairi, Bandar; Iris Grossmann and Mitchell J. Small (POSTER)	Long-term Changes in the Midsummer Drought over Northwest Costa Rica
Auclair, Allan; Matthew T. Messenger, and Adalberto A. Pérez de León (POSTER)	Early Alert System for Risk of Cattle Fever Tick Outbreaks in Permanent Quarantine Zone Along the Texas-Mexico Border
Baker, Bryan; Dr. Kathleen White, Douglas Friedman	Comparative Visualization of Heat Indices, Drought Indicators, and Flow Frequencies in a Changing Climate (POSTER)
Baker, Bryan; Dr. Kathleen White, Dr. Gabrielle Villarini, Chanel Mueller, Douglas Friedman	Detection of Hydrologic Nonstationarities using Traditional and Emerging Statistical Change Point Detection Methods
Barrie, Daniel; Fiona Horsfall, Jenna Meyers, Annarita Mariotti	Needs for and Scientific Feasibility of Local and Regional Seasonal Precipitation Predictions
Battista, Nick; Susie Arnold, Heather Deese	A Climate of Change: Preparing for an Uncertain Fishing Future By Bringing Communities Together with Climate and Marine Scientists to Understand Predictive Capabilities and Information Needs
Beller-Simms, Nancy	Extreme Precipitation Dashboard for Water Resource Managers and City Planners
Booras, Kathryn; Richard N. Palmer, Ph.D, Fellow ASCE (POSTER)	Assessing the Value of Incorporating Streamflow Forecasts into an Early Drought Detection Tool
Brown, Molly; Gregory Husak, Bristol Mann, Rahel Diro, Jessica L. McCarty, Elena Tarnavsky and Daniel Osgood	Farmer Perception and Index Design in Weather Insurance for Agriculture in the Developing World
Bucini, Gabriela; Patrick J. Clemins, Jonathan M. Winter and Brian Beckage (POSTER)	Daily weather estimator for climate projections based on nearest neighbor resampling
Cherneski, Patrick, T.Hadwen, A.Chipanshi	Monitoring & Reporting Drought in Canada – the online Canadian Drought Monitor application
Crowley, Jillian; Jennifer M. Jacobs, Heather Miller, Jo Daniel, Masoumeh Khalkhali	Climate Change and the Future of Winter Road Performance in New England
DeGaetano, Art; Christopher Castellano (presented by Keith Eggleston)	Future Intensity Duration Frequency Curves for Climate Change Resiliency in New York
Dello, Kathie; John Abatzoglou, Bart Nijssen	The NW Climate Toolbox
Dostie, Dan; Maria Janowiak, Howard Skinner	Integrating Climate Considerations into Conservation Planning Decisions by Agricultural Producers
Eggleston, Keith; Dr. Arthur DeGaetano, William Noon	Climate Data Access Tools Using the Applied Climate Information System (ACIS)
Flynn, Robert; William Saunders; National Weather Service NERFC	Improving Operational Real-Time Flood Forecasting and Flood Inundation Mapping in the Lake Champlain-Richelieu River Watershed: A Cooperative Effort between Canada and the US for Lake Champlain and the Richelieu River

Gall, Melanie; Susan L. Cutter	Implementing IRDR's peril classification in SHELDER
Goff, John; Lesley-Ann Dupigny-Giroux, John Kilbride, Sarah Leiding, Phoebe Fooks, Megan Moir, Jeffrey Marshall	Improving Situational Awareness of Flash Flooding in a Small Urban Catchment by Integrating Meteorological Analysis into a Geospatial Framework
Guinan, Patrick; John Lory, Ray Massey	Automated Design Storm Notification System
Gust, Gregory	Achieving Food Security amid Disparate and Volatile Climate Regimes - Climate adaptation/mitigation strategies at play in Ethiopia, Kazakhstan, and North Dakota.
Hall, Beth; Michael Timlin, Mary Woloszyn, Zoe Zaloudek, Steven Hilberg, Olivia Kellner	Monitoring for Extreme Climatological Impacts on Vegetation - the MRCC's Vegetation Impact Program (VIP)
Hamshaw, Scott; Justin Guilbert, Donna Rizzo, Arne Bombles (POSTER)	Prediction of suspended sediment in rivers using artificial neural networks and future climate scenarios
Herring, David; Jim Fox, Jamie Herring, Ned Gardiner, LuAnn Dahlman	Visualizing Climate Data Projections for Decision Support
Hobbins, Mike; Daniel McEvoy, Justin Huntington, Andrew Wood, Charles Morton, James Verdin, Andrea Ray (POSTER)	The Evaporative Demand Drought Index: a new drought early warning and monitoring index for drought
Horton, Radley; Franco Montalto, William Solecki, Philip Orton, Patrick Kinney, Richard Palmer, Yochanan Kushnir, Robert Chen, Daniel Bader	The Consortium for Climate Risk in the Urban Northeast: A NOAA RISA project focused on co-generated climate science information for urban decision-makers
Jones, Hunter; Juli Trtanj, Michelle Hawkins, George Luber, Wayne Higgins, Roger Pulwarty (POSTER)	The National Integrated Heat Health Information System (NIHHIS) - Building Societal Resilience to Extreme Heat with Integrated Climate Research, Observations, Predictions, and Partnerships
Kayaba, Nobuyuki; Takashi Yamada, Syugo Hayashi, Kazutoshi Onogi, Shinya Kobayashi, Koichi Yoshimoto, Kenji Kamiguchi, and Kazuya Yamashita	Introduction of dynamical regional downscaling (DSJRA-55) using the JRA-55 reanalysis and discussion for possibility of its practical use
Leathers, Daniel; Kevin Brinson, Tina Callahan, John Callahan, Linden Wolf, Chris Hughes	The Delaware Environmental Observing System: Decision Support for Coastal Flooding and Snowfall
Leibensperger, Eric; Evan Cazavilan (POSTER)	Importance of Anthropogenic Aerosols in Climate Change Attribution
Linder, Ernst; Meng Zhao, Yiming Liu, Jennifer Jacobs, Anne Stoner	A Statistical Downscaling Model with Uncertainty Quantification for Engineering Infrastructure Design Adaptation
Lugo, Brunilda; Marjorie McGuirk	Using Climate Data to Ascertain Risk of Dengue Fever
Madajewicz, Malgosia; Cristina Coirolo	Resilience to coastal storms in urban neighborhoods
Marjuki, Marjuki	Climate Services for Coastal Area Management
Matusiewicz, Daniel (POSTER)	River Forecast Uncertainty Products on NOAA's NWS Advanced Hydrologic Prediction Service (AHPS) Website
Mecray, Ellen	NOAA Regional Climate Services- Integrating Climate Information across Sectors and Partners
Merrill, Sam	Extreme weather events and transportation infrastructure - a framework for benefit-cost analysis.
Miatke, Baxter	Quantifying Seasonal Nutrient and Sediment Loads with Relation to Land Use and Soil Properties in Vermont's Lake Champlain Basin
Orton, Philip; Nickitas Georgas, Alan Blumberg	Probabilistic Flood Forecasting, Hazard Assessment and Adaptation Studies for the US Northeast
Parris, Thomas; Jonathon Boright, R. Matthew Landis, Matthew Luck, Lisa Emmer, Erwin Villiger	Climatic Forecasts of Surface Water Anomalies

Ray, Andrea; Joseph J. Barsugli, Robert S. Webb	Research to Applications in Action: Some examples from PSD-ESRL
Riama, Nelly Florida	Bridging the gap of users' knowledge on climate through Climate Field School - Indonesia Experience
Rosemartin, Alyssa; Mark D. Schwartz, The USA-NPN Development Team	Gridded Spring Forecast Maps for Natural Resource Planning
Russell, Madeleine; Kelly Spratt	Building Resilience on the Georgia Coast
Schafrick, Nathaniel	Climate Change, Lyme Disease, and other Vector-borne Diseases in Vermont
Sisson, Paul; Nathan Foster, Andrew N. Loconto, Charles McGill	Temperature Trends during Vermont's Maple Sugaring Season
Stokes, Michelle; Andrea Ray, Ashley Nielson	National Water Resources Monitoring and Outlook: Meeting water managers' needs for timely water intelligence
Tadesse, Tsegaye; Nicole Wall, Tonya Haigh, and Andualem Shiferaw	Connecting Seasonal Predictions into Decision-making in the Greater Horn of Africa
Thoman, Richard	Northern Fire and Ice: Climate Services and Advance Planning for Spring River Ice Break-up and Wildfires in Alaska
Thompson, Terence; Jeremy Alcorn, James McMahon	Climate Risk Metrics and Statistical Data for Risk Management
Timlin, Michael; Leslie Stoecker, Beth Hall, Greg McCurdy	An Historical Hourly Climate Database and its Value-Added Resource Potential
Valliere, William; Robert Manning, Elizabeth Perry Xiao Xiao, Nathan Reigner	Adaptation of Vermont State Park Visitors to Climate Change
Vant-Hull, Brian; Maryam Karimi, Awalou Sossa, Louis Waxman, Reza Khanbilvardi	Validation of a Spatially Fine Scale Air Temperature Statistical Model in New York City
Verner, Duane	Climate Change Adaptation Planning in the Casco Bay Region of Maine
Vintzileos, Augustin; Jon Gottschalck, Mike Halpert	A Baseline System for Forecasting Excessive Heat Events at Subseasonal Lead Times
Ward, Rebecca	Drought Monitoring with a High Resolution SPEI
White, Cameron; Arne Bomblies (POSTER)	Reducing the Vulnerability of Transportation Infrastructure through Non-Stationary Hydraulic Analysis
Wolf, Ray; Mike Coffey (POSTER)	Climate Services Supporting Endangered Species Assessment: An FWS-NWS Partnership
Young Morse, Riley; Ellen Mecrey, Andrew Pershing	Accessing and Visualizing Satellite Data for Fisheries Managers in the Northeast Large Marine Ecosystem

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