

Extreme Climate Events Symposium 2020

*Quantifying, testing, and understanding
extreme events in ecology*

Feb 19, 2020

9:00 - 4:30

**York University
Stedman Lecture B**

Ecological analysis of extreme climate events in a changing world

Climate extremes, such as extended drought, heavy rainfall leading to flooding, and severe frost events, are predicted to increase in magnitude, duration, and frequency (IPCC 2014). Climate extremes affect ecosystems globally on an annual basis (Du et al. 2018; Zhang et al. 2013) and are expected to be more impactful driver of community assembly than gradual shifts in climate (Jentsch, Kreyling & Beierkuhnlein 2007; Smith 2011). Extreme climate events (ECE) are defined as a period where climate conditions surpass a threshold value from those previously observed (e.g. the 90th percentile) that elicit an extreme ecological response (Smith 2011). However, not all climate extremes result in ECEs. Given the forecast of intensified climate extremes, there is a need to understand when extreme climate conditions result in extreme ecological responses and under which circumstances they do not, as ECE events should result in long-lasting impacts on ecosystems (Smith 2011). Our ability to effectively predict the effects of climate change requires examining large-scale and long-term datasets to generate tools necessary for improving our understanding of ECEs.



Enrique L. Garre

Schedule

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| 8:45 am | Arrival/Registration <i>Stedman Lecture Hall B</i> |
| 9:00 am | Opening remarks |
| 9:15 am | Plenary by Dr. Melinda Smith <i>Colorado State University</i> |
| 10:00 am | Plenary by Dr. Kate Wilkins <i>Colorado State University</i> |
| 10:30 am | Coffee Break <i>Stedman Lecture Hall B</i> |
| 10:45 am | Submitted talks <i>Stedman Lecture Hall B</i> |
| 12:30 pm | Lunch <i>OverGrad Café - S167 Ross</i> |
| 1:30 pm | Submitted talks <i>Stedman Lecture Hall B</i> |
| 3:15 pm | Coffee Break <i>Stedman Lecture Hall B</i> |
| 3:30 pm | Panel discussion on extreme events <i>Dr. Matter, Dr. Sharma, & Dr. Smith</i> |
| 4:00 pm | Closing Remarks |
| 4:15 pm | End |

Plenary—Dr. Melinda Smith

*Professor of Ecology and Evolutionary Biology
Colorado State University*

Dr. Smith is a plant community and ecosystem ecologist interested in understanding the consequences of human-caused global changes, especially the impacts of climatic changes and extremes, biological invasions, eutrophication (e.g., increased N deposition), and altered disturbance regimes for biodiversity and ecosystem structure and function. Within this context, her research addresses questions about the functional roles of species in ecosystems, the causes and impacts of loss and gain of genetic and species diversity, the factors that influence species coexistence and patterns of species abundance, and the relative strength of bottom-up (resources) vs. top-down (consumers) controls in structuring communities.



Plenary—Dr. Kate Wilkins

*Post-doctoral Fellow
Colorado State University*

Kate is a conservation scientist and community ecologist who uses ecology and science communication to address major environmental challenges. As a postdoc, Kate manages various projects that assess how drought affects grasslands in the US (EDGE) and globally (DroughtNet). Kate would also like to explore the combined effects of grazing and drought in grassland ecosystems. In addition to her research pursuits, Kate is committed to encouraging underrepresented groups to pursue careers in the ecological sciences and interested in finding ways to retain these groups.



Morning talk session

- 10:45 am** **Climate change reshapes the major drivers of false spring risk across European trees**
Harvard University
Catherine Chamberlain, Benjamin Cook, Ignacio Morales-Castilla, & Elizabeth Wolkovich
- 11:00 am** **Impacts of drought on the reproductive output of solitary bees in a subalpine habitat**
University of Ottawa
Lydia Wong & Jessica Forrest
- 11:15 am** **Climate change contributes to widespread declines among bumble bees across continent**
University of Ottawa
Peter Soroye, Tim Newbold, & Jeremy Kerr
- 11:30 am** **Interaction between snow and temperature produces extreme effects on butterfly population dynamics**
University of Cincinnati
Stephen F. Matter & Jens Roland
- 11:45 am** **Natural system vulnerabilities to climate change and the steps towards resilience**
Toronto and Region Conservation Authority
Namrata Shrestha
- 12:00 pm** **Coping and adapting to climatic events: insights from farming communities in semi-arid Ghana**
York University
Balikisu Osman
- 12:15 pm** **The influence of precipitation and grazing management on plant communities across Western Canada**
University of Alberta
Jessica Grenke, Cameron N. Carlyle, Edward W. Bork, Richard R. Teague, Mark S. Boyce, James F. Cahill Jr.

Afternoon talk session

- 1:30 pm** **Cross acclimation between freezing and drought in herbaceous plants**
Western University
Ricky Kong & Hugh Henry
- 1:45 pm** **Are herbaceous legumes in the northern temperate zone disproportionately susceptible to freezing?**
Western University
Samuel Rycroft & Hugh Henry
- 2:00 pm** **The effects of consumer pressure and abiotic stress on plant interactions are mediated by extreme climate events**
University of Alberta
Alessandro Filazzola, Amanda R. Liczner, Michael F. Westphal, Christopher J. Lortie
- 2:15 pm** **How to estimate network structure without data**
Université de Montréal
Francis Banville, Timothée Poisot, Dominique Gravel and Andrew MacDonald
- 2:30 pm** **The influence of climatic drivers on extreme algal outbursts in lakes globally**
York University
Arnab Shuvo, Alessandro Filazzola, Octavia Mahdian, Carolyn Ewins, Luke Moslenko, Roberto Quinlan, Derek Gray, Catherine O'Reilly, & Sapna Sharma
- 2:45 pm** **Extreme events in freshwater lakes in a changing world**
York University
Arshad Imrit, Alessandro Filazzola, Kevin Blagrove, & Sapna Sharma
- 3:00 pm** **Can zooplankton on the Great Plains “keep up” with climate-driven salinity change**
University of Waterloo
Mariam Elmarsafy & Derek Gray

Thank you!

I would like to extend my sincerest gratitude to everyone who participated in and supported the Extreme Climate Events Symposium 2020. I hope that you found this event informative, rewarding, and interesting.

To my knowledge, this symposium is the first of its kind trying to improve our ability to understand the impacts of extreme climate events on natural systems.

I would greatly appreciate any feedback with respect to the symposium. What did you like about it, what could have been better, and most importantly, would you like to see this symposium held again in the future. Come find me any time during the symposium or email me after.

Thank you all very much!

Sincerely,
Dr. Alessandro (Alex)
Filazzola



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