

GCC 2017 Program

Friday, November 10, 2017

10:00 am: Bus departs from MIT Campus to Woods Hole

12:00 - 1:30 pm: Lunch and Registration (1h 30 min)

Swope Center, 1st floor lobby and 2nd floor dining hall

1:30 - 1:45 pm: Introduction (15 min)

Rowe Building, Speck Auditorium

Co-chairs: Charles Gertler (MIT) and Madeleine Youngs (MIT-WHOI Joint Program)

1:45 - 3:15 pm: Session I. Atmosphere, Ocean, and Climate Dyn. (AOCD) 1 (1h 30 min)

Rowe Building, Speck Auditorium

Session Chairs: Henri Drake (MIT-WHOI) and Laura Fleming (MIT-WHOI)

The Hadley circulation's response to imposed idealized ocean heat transport in an aquaplanet GCM

Casey Hilgenbrink (University of Washington)

Testing the Role of Westerly Jet in the Termination of Meiyu

Wenwen Kong (University of California, Berkeley)

Fast adjustments of the Asian summer monsoon to anthropogenic aerosols

Xiaoqiong Li (Columbia University)

Understanding the Spatial Dependence of the Climatic Response to Ocean Heat Transport Variations

Cameron Rencurrel (University at Albany)

3:15 - 3:30 pm: Coffee Break (15 min)

Rowe Building, Speck Lobby

3:30 - 5:00 pm: Session II. Policy and Human Dimensions (1h 30 min)

Rowe Building, Speck Auditorium

Session Chairs: Jake Forsyth (MIT-WHOI) and Rose Palermo (MIT-WHOI)

Shaping glaciology for sea-level adaptation

Lizz Ultee (University of Michigan)

Telling fish stories: Utilizing mobile app technology to connect commercial fisher observations with climate science

Lange Solberg (University of Washington)

Community Resilience to Climate Change in a Midwestern State: Responses from State Park Employees

Ojetunde Ojewola (University of Missouri)

Psychosocial predictors of human climate change adaptation behaviors

Jennifer Carman (University of Michigan)

5:00 - 5:15 pm: Break

5:15 - 6:15 pm : Keynote Address: Quinton Zondervan (1h)

Rowe Building, Speck Auditorium

Quinton Zondervan is an entrepreneur, non-profit leader and dedicated community activist in Cambridge, Massachusetts. He has been a member of the Climate Protection Action Committee (CPAC) in Cambridge since 2008, including as Chair from 2012 through 2014. CPAC is a City Manager appointed advisory committee of stakeholders advising the city on climate change action, including mitigation and adaptation responses. He is also an active member of MIT Alumni for Climate Action Leadership (MITACAL), an organization of MIT alumni concerned about climate change, urging MIT and the world to take more action and to demonstrate leadership on the issue.

6:15 - 7:15 pm: Dinner (1h)

Swope Center, 2nd Floor Dining Hall

7:15 - 9:00 pm: Outreach Events (1h 45 min)

Swope Center, 2nd floor Cafe Swope

Swope Center, 2nd floor Meigs Room

Rowe Building, Speck Auditorium

9:00 pm +: Social Event - Head to bars

Saturday, November 11, 2017

8:30 - 9:30 am: Breakfast (1h)

Swope Center, 2nd floor dining hall

9:30 - 11:00 am: Session III. AOCD 2 (1h 30 min)

Rowe Building, Speck Auditorium

Session chairs: Tristan Abbott (MIT) and Yang Tian (Harvard)

Tropical precipitation in a warming climate

Margaret Duffy (MIT)

A Comparison of Methods on Dynamical Adjustment in a Large Ensemble of Climate Simulations

Jingyuan Li (Colorado State University)

Using observed MJO-modulation of tropical cyclone activity to test a downscaling framework with potential for climate change analysis

Megan Fowler (University of California, Irvine)

Ask the Computer: Parameterizing Turbulence Using Machine Learning

Jeremy McGibbon (University of Washington)

11:00 - 11:15 am: Coffee Break (15 min)

Rowe Building, Speck Lobby

11:15 - 12:45 pm: Session IV. Paleoclimate (1h 30 min)

Rowe Building, Speck Auditorium

Session chairs: Charles Gertler (MIT) and Matt Osman (MIT-WHOI)

Magnitude of Glacial-Interglacial Temperature Change in Antarctica based on Proxy Data and Model Results

Emma Kahle (University of Washington)

Grain-size analysis of hurricane-induced event beds in a coastal New England pond

Katherine Castagno (MIT-WHOI)

A Coral-based Reconstruction of Interannual Climate Variability at Vanuatu During the Medieval Climate Anomaly (950-1250 CE)

Allison Lawman (University of Texas at Austin)

How novel are 21st century climates? A global assessment of future climates and their analogs back through the Eocene

Kevin D Burke (University of Wisconsin - Madison)

12:45 -2:00 pm: Lunch

Swope Center, 2nd floor dining hall

2:00 - 3:45 pm: Session V. Biology and Climate (1h 45 min)

Rowe Building, Speck Auditorium

Session chair: Chrissy Hernandez (MIT-WHOI)

Groundwater as a Source of Dissolved Organic Matter and Inorganic Nutrients to Lagoons along the Eastern Alaskan Beaufort Sea Coast

Craig Connolly (University of Texas at Austin)

Protecting Forest to Control Climate: Impacts of Albedo

Charlotte Levy (Cornell University)

Understanding the Influences of Water Quality on the Value of Recreational Shellfishing in Buzzards Bay

Sheron Luk (MIT-WHOI)

Modeling our Snowpack with Terrain and Vegetation: Implications for Water Resources Forecasting Under Climate Change

Ian Bolliger (University of California, Berkeley)

3:45 - 4:15 pm: Break + Group Picture

Rowe Building, Speck Lobby

4:15 - 5:30 pm: Session VI. AOCD 3 (1h 15 min)

Rowe Building, Speck Auditorium

Session chair: Mara Freilich (MIT-WHOI)

The suppression of eddy diffusivity: two sides of one coin

Hailu Kong (University of Chicago)

Reservoir Computing: A New Approach in Short-term Climate Prediction

Tse-Chun Chen (University of Maryland)

Reducing Tracer Transport biases due to numerics among General Circulation Models for better climate prediction

Aman Gupta (New York University)

Instantaneous linkages between clouds and large-scale meteorology over the Southern Ocean in observations and a climate model

Casey Wall (University of Washington)

5:30 - 6:30 pm: Dinner (1 h)

Swope Center, 2nd floor dining hall

6:30 - 8:00 pm: Poster Session A (Last name N-Z) + Mixer

Swope Center, 2nd floor lobby + Meigs Room

Social Event - Traditional costume party

Sunday, November 12, 2017

8:30 - 9:55 am: Breakfast and Checkout

Swope Center, 2nd floor dining hall

9:55-11:25 am: Poster Session B (Last Name A-M) + Coffee Break (1h 30 min)

Swope Center, 2nd floor lobby + Meigs Room

11:25 -12:50 pm: Session VII. Impacts and Mitigation (1h 25 min)

Rowe Building, Speck Auditorium

Session chairs: Suzi Clark (MIT-WHOI) and Rose Palermo (MIT-WHOI)

Influence of Climate Change on Air Quality and Human Health in China and India

Mingwei Li (MIT)

Assessing diarrheal disease risks due to climate change in the 21st century over South Asia.

M. Alfi Hasan (University of Rhode Island)

Can compost from a nitrogen-fixing tree be used on agricultural land to replace fertilizer, improve agroecosystem functioning, and provide climate change mitigation and resilience?

Joanna Norton (University of Hawaii, Hilo)

Building wetlands in an era of rapid sea-level rise and subsidence

Molly Keogh (Tulane University)

12:50-1:00 pm: Concluding Remarks (10 min)

Rowe Building, Speck Auditorium

1:00 pm +: Box Lunch and Afternoon Activities

Swope Center, 1st floor lobby

Bus departs from Woods Hole to Logan International Airport/MIT Campus

Poster Session A (Last Name N-Z)

6:30 - 8:00pm, Saturday November 11th, 2017

Sessions: AOCD1, AOCD2, AOCD3, Biology and Climate, Impacts and Mitigation, Paleoclimate, Policy and Human Dimensions

1) Coastal community vs. sea level rise: Coupling coastal processes and human interactions within a littoral cell

Rose Palermo (MIT-WHOI Joint Program)

2) Characterizing the Spatiotemporal Evolution of the U.S. Warming Hole

Trevor Partridge (Dartmouth University)

3) Convection over the Congo Rainforest

Ajay Raghavendra (University at Albany)

4) Climate Impacts on Biological Nitrogen Fixation Inputs

Anika Petach (Columbia University)

5) Valuing the Coastal Wetlands for Flood Protection: Storm Surge, Sea level rise and Marsh Migration vulnerability to the coastal community and protected areas

Ali Mohammad Rezaie (George Mason University)

6) Bacterial carbon-use- efficiency predicted from genome-specific metabolic models varies phylogenetically and declines with genome size

Mustafa Saifuddin (Boston University)

7) Simple Climate Model Evaluation Using Fundamental Impulse Tests

Adria Schwarber (University of Maryland)

8) Vulnerability and Resilience to Glacial Hazards in the Mt. Everest Region of Nepal

Sonam Futi Sherpa (Arizona State University)

9) Investing Secondary Eyewall Formation in Hurricanes

Rohini Shivamoggi (MIT)

10) Ocean's role in Monsoon Intra-Seasonal Oscillations in the Bay of Bengal

Gualtiero Spiro Jaeger (MIT-WHOI)

11) Assessing climate-induced water supply variability through collaborative modeling

Kelley Sterle (University of Nevada, Reno)

12) Intensive urban heat islands in the Arctic

Mikhail Varentsov (Lomonosov Moscow State University)

13) Investigating the influence of topography on the dynamics of the North American monsoon in climate model simulations

Arianna Varuolo-Clarke (Stony Brook University)

14) Precipitation enhancement by trans-Pacific dust on inter-annual timescales

Kara Voss (Scripps Institution of Oceanography)

15) Spatial Analysis of the Physical Impacts during the 2011-2014 Drought within the Chickasaw Nation, Oklahoma

Melissa Wagner (University of Oklahoma)

16) Paleohurricane activity over the past millenium in the Bahamas

Elizabeth Wallace (MIT-WHOI)

17) Heterogeneous Chlorine Chemistry in the Tropical Stratosphere

Catherine Wilka (MIT)

18) Simulating Impacts of Real-World Wind Farms on Land Surface Temperature Using the WRF Model. Part I: Validation with Observations

Geng Xia (University at Albany)

19) Modeling Climate Effects of the 1783-1784 Laki Eruption in Iceland

Brian Zambri (Rutgers University)

20) Geochemical and paleoenvironmental analysis of Oligo-Miocene carbonate deposits from the Tethys Ocean.

Raymond Zammit (Cardiff University)

21) Submarine Groundwater Discharge on a Barrier Island: Estimates via Chemical Tracers and Darcy's Law

Suzanna Clark (MIT-WHOI Joint Program)

22) Spatial and temporal structure of Southern Ocean upwelling

Henri Drake (MIT-WHOI Joint Program)

23) Vertical distributions of coral reef fish larvae influence dispersal and connectivity

Christina Hernandez (MIT-WHOI Joint Program)

Poster Session B (Last Name A-M)

9:55-11:25 am, Sunday November 12th, 2017

Sessions: AOCD1, AOCD2, AOCD3, Biology and Climate, Impacts and Mitigation, Paleoclimate, Policy and Human Dimensions

1) The Air Quality Impacts of Energy Efficiency Programs in the Eastern United States

David Abel (University of Wisconsin - Madison)

2) Reconstructing Greenland Ice Sheet climate forcing and elevation change

Jessica Badgeley (University of Washington)

3) Reconstructing Sediment Supply and Transport Behind the Elwha River Dams

Claire Beveridge (University of Washington)

4) Estimating global ocean warming using noble gas thermometry

Benjamin Birner (Scripps Institution of Oceanography)

5) Cover Crop "Cocktails" for Conservation: Nitrogen Cycling Processes in Mixtures vs. Monocultures

Alison Bressler (University of Michigan)

6) Isolating the effect of temperature on growth, survivorship, and phenology on dominant Rocky Mountain tree seedlings

Jeff Carroll (Colorado State University)

7) An examination of changes in deglacial intermediate water $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ in the Southwest Pacific

Vincent Clementi (Rutgers University)

8) The Tiny but Mighty: Nanoflagellates as the Unsung Heroes of Planktonic Ecosystems

Gabrielle Corradino (North Carolina State University)

9) The circulation response to volcanic eruptions

Kevin DallaSanta (New York University)

10) "Hot" off the presses: Very first impressions from the just-completed second season of a biomass burning study in southern Africa

Michael Diamond (University of Washington)

11) Tracking climate change to the deep ocean: coral records of surface- and deep-sea change

Carina Fish (University of California, Davis)

12) Deciphering pathways for vertical nutrient supply

Mara Freilich (MIT-WHOI Joint Program)

13) Antarctic Stratosphere Temperature Trends in the Early 21st Century

Mukund Gupta (MIT)

14) Variability of the African Easterly Jet and Its Influence on Easterly Waves

Amana Hosten (Florida State University)

15) The critical role of vapor pressure deficit in crop yield projections and its interaction with rising CO₂ levels

Jennifer Hsiao (University of Washington)

16) How do Climate Science Boundary Organizations Matter to Local Climate Policy?

Alexander Hurley (Ohio University)

17) The Enhancement and suppression of Sudden Stratospheric Warming events in response to stronger Madden-Julian Oscillation

Wanying Kang (Harvard University)

18) “There is no rhyme or reason to it?”: Exploring Climate Variability Perceptions and Experiences in Newfoundland and Labrador

Marilyn Koitnum (Memorial University of Newfoundland)

19) Can nitrogen-fixing trees increase the capacity of the regenerating tropical forest carbon sink?

Sian Kou-Giesbrecht (Columbia University)

20) Antarctic Bottom Water warming in the Southwest Pacific basin along 32S

Ratnaksha Lele (Scripps Institution of Oceanography)

21) The response of ocean salinity to climate change and water cycle intensification

Sam Levang (MIT-WHOI)

22) Joint controls of radiation and precipitation on the photosynthesis of Amazon forests during the 2015 drought

Xing Li (University of New Hampshire)

23) Environmental stress and genes of stress response in the green crab *Carcinus maenas*

Alejandro Lopez-Ceron (Colorado State University)

Keynote Speaker: Quinton Zondervan

Quinton Zondervan is an entrepreneur, non-profit leader and dedicated community activist in Cambridge, Massachusetts.

He has been a member of the Climate Protection Action Committee (CPAC) in Cambridge since 2008, including as Chair from 2012 through 2014. CPAC is a City Manager appointed advisory committee of stakeholders advising the city on climate change action, including mitigation and adaptation responses.

Quinton cofounded and serves as the President and board chair of the Climate Action Business Association, Inc. (CABA), a 501(c)6 non-profit association of local businesses, based in Boston. CABA helps its member businesses be more sustainable, be more effective policy advocates to combat climate change, and be more active community members in our collective response to climate change.

Quinton also serves as President of Green Cambridge, Inc. a 501(c)3 non-profit corporation dedicated to improving the environment and enhancing Cambridge's sustainability, including combating climate change. He was one of the leaders behind the Net Zero buildings emissions zoning petition in Cambridge in 2013, and served on the subsequent City Manager appointed year-long Getting to Net Zero Task Force (2014-2015) which produced a 25 year action plan, adopted by the City Council, for reducing greenhouse gas emissions from buildings in the city to zero as quickly as possible.

Quinton serves as board member of Better Future Project, Inc. a 501(c)3 non-profit corporation dedicated to a future free of fossil fuels and climate change, and the sponsor organization for the volunteer lead 350 Massachusetts network. He also serves as an active volunteer in the 350 Mass Cambridge Node.

Quinton is an active member of MIT Alumni for Climate Action Leadership (MITACAL), an organization of MIT alumni concerned about climate change, urging MIT and the world to take more action and to demonstrate leadership on the issue.

Quinton is a Software Engineer and entrepreneur, and has worked at IBM, was the CTO at internet start-up company Clickmarks, Inc. and was the founding CEO at therapeutics focused biotech Excelimmune, Inc. for 7 years (2006 – 2012). He currently works as a software consultant, and is the Chief Technology Officer at internet start-up company eCare Vault, Inc. He holds a master's degree in electrical engineering and computer science from MIT and two bachelor's degrees in the fields of mathematics and computer science from Eckerd College in St. Petersburg, Florida, and serves on the board of trustees at Eckerd.

Quinton lives in Cambridge with his wife and two children in a house that is on its way to becoming net zero emissions.

Outreach Workshop 1

How to Increase Community Vulnerability, Lose Credibility, and Generally #\$\$@&%*! Things Up: Lessons from the frontlines of community-based research and action

Marcos Luna

7:15 - 9:00 pm

Swope Center, Meigs Room

Description

In this participatory workshop we will explore common pitfalls that occur when researchers try to work in/with communities and discuss lessons learned. Scholars and researchers working out of academic or research institutions should seek to work in/with communities to expand scholarly understanding and to improve the common welfare. But working with communities, particularly marginalized communities, can be an awkward experience for researchers who are not members of those communities, and who often have different expectations about these interactions and their outcomes. For communities, ineffective relationships with researchers can be exploitative, reinforce suspicion or apathy, and even exacerbate vulnerability.

The goal of this workshop is generate awareness amongst academics about the need for reflective engagement with communities that advances scholarly endeavors and genuinely supports communities.

Bio

Bio: Dr. Marcos Luna is a Professor of Geography and the Coordinator of the Graduate Geo-Information Science Program at Salem State University. His primary interest is in the application of geospatial technologies to the promotion of environmental justice. Over the last 20 years, he has worked with marginalized communities from California to Massachusetts training community members to use these technologies, documenting local environmental burdens that affect quality of life, and working with activists and community leaders to promote policies that address structural inequities in systems of governance in order to enhance community resilience.

Outreach Workshop 2

Practicing Climate Communication

Gabi Serrato Marks

7:15 - 9:00 pm

Swope Center, Swope Cafe

Description

This interactive workshop will focus on science communication that goes beyond telling people what you know. Participants will think about why they want to communicate about climate issues and how to do it well. We will practice creating social media posts about recent papers, talking about what motivates us to study climate, and using visuals to explain complex topics.

Bio

Gabi is a PhD student in the MIT-WHOI Joint Program in Oceanography. She got her B.A. in Earth and Oceanographic Science from Bowdoin College. She is based at MIT, where she works with David McGee on stalagmites from the Yucatan Peninsula. Her research focuses on paleoclimate and precipitation records. She is interested in science communication and public outreach, as well as issues of diversity and inclusion in STEM. She tweets at @gserratomarks.

Outreach Workshop 3

Recognizing and acting on policy opportunities

Shira Rascoe

7:15 - 9:00 pm

Rowe Building, Speck Auditorium

Bio

Shira Rascoe is the Director of Communications for the Scholars Strategy Network. She connects scholars to the media by editing and pitching OpEds and stories, identifying opportunities to share their research findings and analysis, and developing messages and communications strategies. Shira produces SSN's podcast, No Jargon. She also supports SSN's policy team in the issue areas of climate change, energy, and the environment. She is a graduate of Tufts University with a BA in Political Science and Environmental Studies.