

## CHRISTINA M. PATRICOLA

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### Research Interests

Climate dynamics, climate variability and change, tropical cyclones, climate extremes, atmosphere-ocean interactions, land-atmosphere interactions, hydrologic cycle, monsoons, paleoclimate, high-resolution climate modeling, high-performance computing

### Education

- Ph.D. 5/2010 Atmospheric Science, minor in Quaternary Geology  
Cornell University, Ithaca, NY
- M.S. 1/2007 Atmospheric Science  
Cornell University, Ithaca, NY
- B.S. 5/2005 Geological Sciences, cum laude  
College of Engineering, Cornell University, Ithaca, NY

### Professional Experience

- 8/2016 – present Research Scientist Climate and Ecosystem Sciences Division  
Lawrence Berkeley National Laboratory,  
Berkeley, CA
- 9/2013 – 8/2016 Associate Research Scientist Department of Atmospheric Sciences  
Texas A&M University, College Station, TX
- 8/2013 – 8/2016 Affiliate Computational Research Division  
Lawrence Berkeley National Laboratory,  
Berkeley, CA
- 3/2012 – 9/2013 Assistant Research Scientist Department of Atmospheric Sciences  
Texas A&M University, College Station, TX
- 8/2010 – 3/2012 Postdoctoral Research Associate Department of Atmospheric Sciences  
Texas A&M University, College Station, TX
- 5/2005 – 5/2010 Graduate Research Assistant Department of Earth and Atmospheric Sciences  
Cornell University, Ithaca, NY
- 5/2003 – 5/2005 Undergraduate Researcher Department of Earth and Atmospheric Sciences  
Cornell University, Ithaca, NY

## Grants

**Title:** The Impact of Canonical and Non-canonical El Niño and the Atlantic Meridional Mode on Atlantic Tropical Cyclones

**Sponsor:** NSF

**PI:** **C.M. Patricola**

**Co-PI:** P. Chang and R. Saravanan

**Period:** 2/1/2014 – 1/31/2017

**Amount:** \$220,314

**Title:** Understanding Causes of Climate Model Biases in the Southeastern Tropical Atlantic

**Sponsor:** NSF

**PI:** P. Chang

**Co-PI:** **C.M. Patricola**

**Period:** 9/1/2013 – 8/31/2016

**Amount:** \$796,305

## Subcontracts

**Title:** Conditional Probabilistic Event Attribution

**Subcontractor:** The Regents of the University of California and Lawrence Berkeley National Laboratory

**Subcontract PI:** **C.M. Patricola**

**Period:** 8/1/2014 – 7/31/2015

## Computational Resource Awards

**Title:** The Impact of Canonical and Non-canonical El Niño and the Atlantic Meridional Mode on Atlantic Tropical Cyclones

**Sponsor:** NSF/Extreme Science and Engineering Discovery Environment (XSEDE)

**PI:** **C.M. Patricola**

**Co-PI:** P. Chang and R. Saravanan

**Period:** 7/1/2014 – 6/30/2015; 7/1/2015 – 6/30/2016; 7/1/2016 – 6/30/2017

**Amount:** 2.2 million core hours (\$79,654 equivalent); 3 million core hours (\$106,397 equivalent); 4.7 million core hours (\$171,071 equivalent)

## Peer-reviewed Publications

**Patricola, C.M.,** P. Chang, and R. Saravanan, 2016: Degree of simulated suppression of Atlantic tropical cyclones modulated by flavour of El Niño. *Nature Geoscience*, 9, 155–160. [[PDF](#)]

Zuidema, P. and **Coauthors**, 2016: Challenges and Prospects for Reducing Coupled Climate Model SST Biases in the Eastern Tropical Atlantic and Pacific Oceans: The U.S. CLIVAR Eastern Tropical Oceans Synthesis Working Group. *Bull. Amer. Meteor. Soc.*, in press. [[PDF](#)]

**Patricola, C.M.,** P. Chang, and R. Saravanan, 2015: Impact of Atlantic SST and High Frequency Atmospheric Variability on the 1993 and 2008 Midwest Floods: Regional Climate Model Simulations of Extreme Climate Events. *Climatic Change*, 129, 397–411. [[PDF](#)]

- Walsh K.J.E. and **Coauthors**, 2015: Hurricanes and Climate: The U.S. CLIVAR Working Group on Hurricanes. *Bull. Amer. Meteor. Soc.*, 96, 997–1017. [[PDF](#)]
- Daloz, A.S. and **Coauthors**, 2015: Cluster Analysis of Downscaled and Explicitly Simulated North Atlantic Tropical Cyclone Tracks. *Journal of Climate*, 28, 1333–1361. [[PDF](#)]
- Patricola, C.M.**, R. Saravanan, and P. Chang, 2014: The Impact of the El Niño-Southern Oscillation and Atlantic Meridional Mode on Seasonal Atlantic Tropical Cyclone Activity. *Journal of Climate*, 27, 5311–5328. [[PDF](#)]
- Liu, Y., J.C.H. Chiang, C. Chou, and **C.M. Patricola**, 2014: Atmospheric teleconnection mechanisms of extratropical North Atlantic SST influence on Sahel rainfall. *Climate Dynamics*, 43, 2797-2811. [[PDF](#)]
- Xu, Z., M. Li, **C.M. Patricola**, and P. Chang, 2014: Oceanic Origin of Southeast Tropical Atlantic Biases. *Climate Dynamics*, 43, 2915-2930. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2013: Mid-twenty-first century climate change in the Central United States. Part II: Climate change processes. *Climate Dynamics*, 40, 569-583. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2013: Mid-twenty-first century warm season climate change in the Central United States. Part I: Regional and global model predictions. *Climate Dynamics*, 40, 551-568. [[PDF](#)]
- Patricola, C.M.**, M. Li, Z. Xu, P. Chang, R. Saravanan, and J.-S. Hsieh, 2012: An Investigation of Tropical Atlantic Bias in a High-Resolution Coupled Regional Climate Model. *Climate Dynamics*, 39, 2443-2463. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2011: Sub-Saharan Northern African climate at the end of the twenty-first century: Forcing factors and climate change processes. *Climate Dynamics*, 37, 1165-1188. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2010: Northern African climate at the end of the twenty-first century: An integrated application of regional and global climate models. *Climate Dynamics*, 35, 193-212. [[PDF](#)]
- Cook, K.H., E.K. Vizy, Z.S. Launer, and **C.M. Patricola**, 2008: Springtime intensification of the Great Plains low-level jet and Midwest precipitation in GCM simulations of the twenty-first century. *Journal of Climate*, 21, 6321-6340. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2008: Atmosphere/Vegetation Feedbacks: A mechanism for abrupt climate change over northern Africa. *Journal of Geophysical Research*, 113, D18102. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2007: Dynamics of the West African Monsoon under Mid-Holocene precessional forcing: Regional climate model simulations. *Journal of Climate*, 20, 694–716. [[PDF](#)]

### Papers in Review

- Patricola, C.M.** and P. Chang, 2016: The Benguela Low-Level Coastal Jet: Structure, Dynamics, and Model Biases. *Climate Dynamics*, in review.
- Pall, P., **C.M. Patricola**, M.F. Wehner, D.A. Stone, C. Paciorek, and W.D. Collins, 2016: Diagnosing Anthropogenic Contributions to Heavy Colorado Rainfall in September 2013. *Weather and Climate Extremes*, in review.

## Other Publications

- Contributing Author:** Collins, M. and Coauthors, 2013: Long-term Climate Change: Projections, Commitments and Irreversibility. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. [[PDF](#)]
- Patricola, C.M.**, P. Chang, R. Saravanan, M. Li, and J.-S. Hsieh, 2011: An Investigation of the Tropical Atlantic Bias Problem Using a High-Resolution Coupled Regional Climate Model, *US CLIVAR Variations*, 9 (2), 9-12. [[PDF](#)]
- Patricola, C.M.** and K.H. Cook, 2007: The African Humid Period: Evidence for abrupt climate change in northern Africa. *Climate Variability and Predictability (CLIVAR) Focus on Africa*, 2pp.

## Synergistic Activities

2011 – 2014 U.S. CLIVAR Hurricane Working Group ([HWG](#))

## Graduate Students Mentored

Wei-Ching Hsu (Texas A&M University), Dan Fu (Texas A&M University)

## Awards and Honors

12/2013 2013 Outstanding Research Staff Award, Department of Atmospheric Sciences, Texas A&M University

6/2005 – 5/2006 Cornell University Fellowship

5/2004 – 9/2004 NASA/NY Space Grant, awarded by Cornell University

## Reviewer

National Science Foundation; *Nature Geoscience*; *Geophysical Research Letters*; *Journal of Climate*; *Climate Dynamics*; *Climatic Change*; *Journal of Geophysical Research*; *Earth and Planetary Science Letters*; *International Journal of Climatology*; *International Journal of Geophysics*; *WIREs Climate Change*; *Advances in Meteorology*

## Service

4/2016 Judge for Student Poster Competition, AMS 32<sup>nd</sup> Conference on Hurricanes and Tropical Meteorology

## Professional Affiliations

2006 – present American Geophysical Union

2005 – present American Meteorological Society

## Invited Talks

- Patricola, C.M., 2016. "Large-scale climate controls on extreme climate events." Seminar, Climate and Ecosystem Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA.
- Patricola, C.M., 2016. "The Benguela Low-Level Coastal Jet and Ocean Model Biases in the Benguela Coastal Upwelling Region" US CLIVAR Process Study and Model Improvement (PSMI) Panel Meeting, Woods Hole, MA.
- Patricola, C.M., 2016. "Large-scale climate controls on extreme climate events in the past, present, and future." Department seminar, Department of Geological and Mining Engineering and Sciences, Michigan Technological University, Houghton, MI.
- Patricola, C.M., 2016. "Large-scale climate controls on extreme climate events." Department seminar, Department of Environmental Sciences, University of California, Riverside, Riverside, CA.
- Patricola, C.M., 2016. "Oceanic and Atmospheric Controls on Tropical Cyclone Activity." Department seminar, Department of Marine Sciences, University of North Carolina at Chapel Hill, Chapel Hill, NC.
- Patricola, C.M., 2016. "Large-scale climate controls on extreme climate events." Department seminar, Department of Geography and Atmospheric Science, University of Kansas, Lawrence, KS.
- Patricola, C.M., 2016. "Atmospheric Sources of Oceanic Bias in the Southeastern Tropical Atlantic." Department seminar, Department of Oceanography, Texas A&M University, College Station, TX.
- Patricola, C.M., R. Saravanan, and P. Chang, 2014. "Oceanic Influences on Hurricane Activity: Pacific and Atlantic Climate Modes in Concert, and Key Thresholds." Department seminar, Department of Atmospheric Sciences, Texas A&M University, College Station, TX.
- Patricola, C.M., R. Saravanan, and P. Chang, 2013. "The Impact of the El Niño-Southern Oscillation and Atlantic Meridional Mode on Seasonal Atlantic Tropical Cyclone Activity." Climate Group Brown Bag, Lawrence Berkeley National Laboratory, Berkeley, CA.
- Patricola, C.M., P. Chang, M. Li, and R. Saravanan, 2011. "An Investigation of the Tropical Atlantic Bias Problem Using a High-Resolution Coupled Regional Climate Model." International Symposium on Regional Earth System Modeling and Analysis, Beijing, China.
- Patricola, C.M., P. Chang, M. Li, and R. Saravanan, 2011. "An Investigation of the Tropical Atlantic Bias Problem Using a High-Resolution Coupled Regional Climate Model." Seminar, Ocean University of China, Qingdao, China.