# Christina M. Patricola

**Research Scientist**
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## Research Interests

Climate dynamics, climate variability and change, atmosphere-ocean interactions, extreme climate events, tropical cyclones, hydrologic cycle, land-atmosphere interactions, paleoclimate, high-resolution climate modeling

## Education

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

## Professional Experience

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

## Awarded Grants

Title: The Impact of Canonical and Non-canonical El Niño and the Atlantic Meridional Mode on Atlantic Tropical Cyclones
Sponsor: National Science Foundation (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: National Science Foundation (NSF)
PI: P. Chang
Co-PI: **C.M. Patricola**
Period: 9/1/2013 – 8/31/2016
Amount: $796,305

## Pending Grant Support

Title: Understanding and Modeling the Physical Drivers of Western U.S. Drought
Sponsor: U.S. Department of Energy (DOE)
PI: **C.M. Patricola**
Period: 7/15/2017 – 7/14/2022
Amount: $2,500,000

## 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)

## Subcontracts

Title: Conditional Probabilistic Event Attribution
Subcontractor: Regents of the University of California and Lawrence Berkeley National Laboratory
Subcontract PI: **C.M. Patricola**
Period: 8/1/2014 – 7/31/2015

## Peer-reviewed Publications

1. Fu, D., P. Chang, and **C.M. Patricola**, 2017: Impact of Central American Gap-Winds on Intrabasin Variability of Eastern North Pacific Tropical Cyclones During ENSO. *Scientific Reports,* in revision.
2. Pall, P., **C.M. Patricola**, M.F. Wehner, D.A. Stone, C. Paciorek, and W.D. Collins, 2017: Diagnosing Conditional Anthropogenic Contributions to Heavy Colorado Rainfall in September 2013. *Weather and Climate Extremes,* in revision.
3. **Patricola, C.M.**, R. Saravanan, and P. Chang, 2016: A Teleconnection Between Atlantic Sea Surface Temperature and Eastern and Central North Pacific Tropical Cyclones. *Geophysical Research Letters*, 44, doi:10.1002/2016GL071965. [PDF]
4. **Patricola, C.M.** and P. Chang, 2016: Structure and Dynamics of the Benguela Low-Level Coastal Jet. *Climate Dynamics,* in press, doi:10.1007/s00382-016-3479-7. [PDF]
5. **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]
6. 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.,* 97, 2305–2328. [PDF]
7. **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]
8. 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]
9. 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]
10. **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]
11. 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]
12. Xu, Z., M. Li, **C.M. Patricola**, and P. Chang, 2014: Oceanic Origin of Southeast Tropical Atlantic Biases. *Climate Dynamics*, 43, 2915–2930. [PDF]
13. **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]
14. **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]
15. **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]

16. **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]
17. **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]
18. 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]
19. **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]
20. **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 Preparation

1. Kurian, J., **C.M. Patricola**, P. Chang, R. Montuoro and P. Li, 2017: Impact of the Benguela Low-Level Coastal Jet on Southeast Tropical Atlantic SST Bias. In preparation.
2. Hsu, W.-C., P. Chang, and **C.M. Patricola**, 2017: Quantifying the Impact of Sea Surface Temperature Biases on Simulated Tropical Cyclones. In preparation.

## 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, *U.S. 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)

## 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*

## Awards and Honors

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|---|---|
| 2013 | Outstanding Research Staff Award, Department of Atmospheric Sciences, Texas A&M University |
| 1/2006 | American Meteorological Society Global Change & Climate Variation Travel Scholarship |
| 6/2005 – 5/2006 | Cornell University Fellowship |
| 5/2004 – 9/2004 | NASA/NY Space Grant, awarded by Cornell University |

## Professional Affiliations

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|---|---|
| 2006 – present | American Geophysical Union |
| 2005 – present | American Meteorological Society |

## Invited Talks

2016

1. Large-scale climate controls on extreme climate events. Climate and Ecosystem Sciences Division, **Lawrence Berkeley National Laboratory**, Berkeley, CA.
2. The Benguela Low-Level Coastal Jet and Ocean Model Biases in the Benguela Coastal Upwelling Region. **U.S. CLIVAR Process Study and Model Improvement (PSMI) Panel Meeting**, Woods Hole, MA.
3. Oceanic and Atmospheric Controls on Tropical Cyclone Activity. Department of Marine Sciences, **University of North Carolina at Chapel Hill,** Chapel Hill, NC.
4. Large-scale climate controls on extreme climate events. Department of Geography and Atmospheric Science, **University of Kansas**, Lawrence, KS.
5. Large-scale climate controls on extreme climate events in the past, present, and future. Department of Geological and Mining Engineering and Sciences, **Michigan Technological University**, Houghton, MI.
6. Large-scale climate controls on extreme climate events. Department of Environmental Sciences, **University of California, Riverside**, Riverside, CA.
7. The Influence of El Niño Flavors on Atlantic and North Pacific Tropical Cyclone Activity. **AIR Worldwide**, Boston, MA.

2011

8. 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.
9. An Investigation of the Tropical Atlantic Bias Problem Using a High-Resolution Coupled Regional Climate Model. **Ocean University of China**, Qingdao, China.