

DR. MARGARET L. DUFFY

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EDUCATION AND EMPLOYMENT

National Center for Atmospheric Research, Postdoctoral Fellow September 2021-Present
Supervised by Dr. Brian Medeiros and Dr. Andrew Gettelman

Massachusetts Institute of Technology, PhD in Climate Science July 2021
Dissertation: “An energetic perspective on the tropical atmosphere and its response to warming”
Supervised by Professor Paul O’Gorman

Haverford College, BS in Mathematics May 2015
Minor in Statistics, Concentration in Scientific computing
Thesis: “Analysis of a simple ice sheet model”

AWARDS AND FUNDING

Funded DEI proposal, NCAR EdEC, \$4,927 2024

Award for Excellence in Teaching, MIT EAPS, 12.003 2018

Jule Charney Prize, MIT EAPS 2015-2018

Whiteman Fellow, MIT EAPS 2016-2017

Rasmussen Fellow, MIT EAPS 2015-2016

PUBLICATIONS

Under review

Duffy, M.L., L.Y. Barnes, C.D. Wirz, M.I. Ranganathan, M.A. Freilich, E.M. Freese, E. Lalk, J. Wilcots, R. Shivamoggi, An empirical analysis of factors influencing underrepresented geoscientists’ decision to accept or decline a faculty job offer (Under review with *AGU Advances*)

M.F. Wehner, **M.L. Duffy**, M. Risser, C.J. Paciorek, D.A. Stone, P. Pall, On the uncertainty of long-period return values of extreme daily precipitation (Under review with *Frontiers in Climate*)

A. Gettelman, T. Eidhammer, **M.L. Duffy**, D. McCoy, C. Song, D. Watson-Parris, The interaction between climate forcing and feedbacks (Under review with *JGR Atmospheres*)

Accepted

J. Bloch-Johnson, M.A.A. Rugenstein, M.J. Alessi, C. Proistosescu, M. Zhao, B. Zhang, A.I.L. Williams, J.M. Gregory, J. Cole, Y. Dong, **M.L. Duffy**, S.M. Kang, C. Zhou, The Green's function model intercomparison project (GFMIP) protocol, *JAMES*

Published

Duffy, M.L., B. Medeiros, A. Gettelman, T. Eidhammer, 2023, Perturbing parameters to understand cloud contributions to climate change, *Journal of Climate*. DOI: 10.1175/JCLI-D-23-0250.1

Duffy, M.L. and P.A. O'Gorman, 2023, Intermodel spread in Walker circulation responses linked to spread in moist stability and radiation responses, *JGR Atmospheres*. DOI: 10.1029/2022JD037382

Ranganathan, M.I., E. Lalk, E.M. Freese, M.A. Freilich, J. Wilcots, **M.L. Duffy**, R. Shivamoggi, 2021, Trends in the representation of women amongst US geoscience faculty from 1999 to 2020: The long road towards gender parity. *AGU Advances*. DOI: 10.1029/2021AV000436

Duffy, P.B. and **M.L. Duffy**, 2021, Worst climate outcomes are still possible. *Letter, Science*, DOI: 10.1126/science.abg2720 (Letter, not peer reviewed)

Duffy, M.L., P.A. O'Gorman, L.E. Back, 2020, Importance of Laplacian of low-level warming for the response of precipitation to climate change over tropical oceans, *Journal of Climate*, DOI: 10.1175/JCLI-D-19-0365.1

TRAINING

Machine Learning Bootcamp, NCAR

November 2023

INVITED PRESENTATIONS

University of Illinois Urbana-Champaign, Atmospheric Sciences Department Perturbing parameters to understand cloud contributions to climate change (January 2024)

Lapse rate workshop Intermodel spread in Walker circulation responses linked to spread in moist stability and radiation responses (July 2023)

ECS and cloud feedback virtual symposium Perturbing parameters to understand cloud contributions to climate change (March 2023)

University of Wyoming, Atmospheric Science Seminar Series The relationship between atmospheric parameters, SST pattern, and radiative feedbacks in CAM6 (November 2022)

University of Colorado Boulder, ATOC Colloquium The relationship between atmospheric parameters, SST pattern, and radiative feedbacks in CAM6 (September 2022)

University of Wisconsin Madison, AOS Seminar Importance of Laplacian of low-level warming for the response of precipitation to climate change over tropical oceans (November 2019)

CONTRIBUTED PRESENTATIONS

AGU Annual Meeting (December 2023) Poster “Perturbing parameters to understand cloud contributions to climate change”

AGU Annual Meeting (December 2023) Oral “Are departmental DEI and culture efforts working?: An empirical analysis of how geoscientists from historically-underrepresented groups make the decision to accept or decline faculty job offers”

CFMIP (July 2023) Poster “Perturbing parameters to understand cloud contributions to climate change”

CESM workshop (June 2023) Oral “Perturbing parameters to understand cloud contributions to climate change”

AMS Annual Meeting (January 2023) Oral “Intermodel spread in Walker circulation responses linked to spread in moist stability and radiation responses”

AMS Annual Meeting (January 2023) Oral “Parametric sensitivity of cloud feedbacks in CAM6”

CFMIP (July 2022) Oral with panel “Processes setting the spread in cloud-radiative feedbacks in a perturbed parameter ensemble”

Pattern Effect Workshop (May 2022) Poster “Investigating the spread in cloud-radiative feedbacks in a perturbed parameter ensemble”

AGU Annual Meeting (December 2021) Oral “An energetic evaluation of the response of the Walker circulation to warming”

AGU Annual Meeting (December 2021) Oral “Relating the gross moist stability to SST and SST gradients”

AMS Tropical (May 2021) Oral “An energetic evaluation of the response of the Walker circulation to warming”

AMS Tropical (May 2021) Oral “Relating the gross moist stability to SST and SST gradients”

AMS Annual Meeting (January 2020) Poster “Influence of entrainment on the response of the Walker circulation to warming”

AMS AOFD (June 2019) Oral “Importance of convergence driven by the Laplacian of low-level temperature for the response of precipitation to climate change over tropical oceans”

Northeast Tropical (June 2019) Oral with panel “Precipitation response to climate change over tropical oceans: Importance of changes in surface convergence driven by near-surface temperature gradients”

Harvard Climate Conference (April 2019) Oral “Precipitation response to climate change over tropical oceans: Importance of changes in surface convergence driven by near-surface temperature gradients”

AGU Annual Meeting (December 2018) Oral “Precipitation response to climate change over tropical oceans: Importance of changes in surface convergence driven by near-surface temperature gradients”

Lorenz Center Workshop on Water and Climate Change (June 2018) Poster “Precipitation response to climate change over tropical oceans: Importance of changes in surface convergence driven by near-surface temperature gradients”

Graduate Climate Conference (November 2017) Oral “Understanding the response of tropical rainfall to climate change”

AMS Annual Meeting (January 2015) Poster “Quantification of uncertainty in return values of extreme precipitation events in the western US”

TEACHING

Guest Lectures Colorado State University, Atmospheric Science, ATS 781 Fall 2021

Teaching Practice Certificate Program MIT Teaching and Learning Lab Spring 2021

Teaching Assistant

MIT 12.885/12.385, Science, Politics, and Environmental Policy (TA rating 6.4/7) 2018

MIT 12.003, Introduction to Atmosphere, Ocean, and Climate Dynamics 2017

TA Days workshop MIT Teaching and Learning Lab 2017

Tutor Haverford College, Calculus Resource Center 2012, 2013, 2015

Student Grader

Haverford College MATH 105, Applied Modeling with Calculus 2013, 2015

Haverford College MATH 103, Introduction to Probability and Statistics 2014

MENTORING AND RESIDENTIAL LIFE

Undergraduate research mentor: Sarah Weidman (MIT '21) (co-advised with Professor

O’Gorman) 2019

Mentor EAPS mentoring program 2017-2019

Graduate Residence Tutor/Advisor MIT McCormick Hall (undergraduate women’s residence hall) 2016-2020

Peer Awareness Facilitator (PAF) and PAF committee co-head, part of Haverford College’s first year student mentorship program 2012-2015

SERVICE AND OUTREACH

Session co-convener, Parameter estimation, CESM workshop June 2023

Reviewer, Journal of Climate, Journal of the Atmospheric Sciences, JAMES, GRL, Science Advances, NSF Climate and large-scale dynamics

MIT Abstracts, Nord Anglia Education, invited speaker April 2021

Wx challenge, participant 2019-2021

Graduate student advisory group to PAOC faculty search committee member 2019-2020

PAOC Colloquium committee member; Founder, EAPS career discussions 2018-2020

Girls day at MIT Museum volunteer November 2019

Keys to Empowering Youth Society for Women Engineers, invited speaker October 2016