

# DR. MARGARET L. DUFFY

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## EDUCATION AND EMPLOYMENT

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**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

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**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

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*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 (Submitted to *AGU Advances*)

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*

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, *Frontiers in Climate*

*Published*

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*. DOI: 10.1029/2023MS003700

**Duffy, M.L.**, B. Medeiros, A. Gettelman, T. Eidhammer, 2024, 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

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**Machine Learning Bootcamp**, NCAR

November 2023

INVITED PRESENTATIONS

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**Stanford University, CLAOD Seminar** Perturbing parameters to understand cloud contributions to climate change (February 2024)

**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** 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

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**BASC Symposium with theme “Going with the Flow: AI/ML in Atmospheric Science”** (March 2024) Poster “Perturbing parameters to understand cloud contributions to climate change”

**CESM Climate Justice Task Force** (February 2024) Oral “An empirical analysis of how geoscientists from underrepresented groups decide to accept or decline faculty job offers”

**CESM Atmosphere Model Working Group Meeting** (February 2024) Oral “CAM6 patch experiments”

**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

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**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**

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**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**

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**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