

Scott W. Powell

ASSISTANT PROFESSOR · DEPARTMENT OF METEOROLOGY, NAVAL POSTGRADUATE SCHOOL

🏠 swpowell.github.io | 📧 [swpowell](https://www.linkedin.com/in/swpowell) | 🎓 [Google Scholar](https://scholar.google.com/citations?user=swpowell)

Education

Ph.D., Atmospheric Sciences

UNIVERSITY OF WASHINGTON

Seattle, WA

2009–2016

B.S., Meteorology and Applied Mathematics

UNIVERSITY OF MIAMI

- *magna cum laude*
- Minors: Geography and Regional Studies, Psychology

Coral Gables, FL

2005–2009

Work Experience

Assistant Professor

DEPARTMENT OF METEOROLOGY, NAVAL POSTGRADUATE SCHOOL

Monterey, CA

2018 – present

NOAA Climate and Global Change Postdoctoral Fellow

COLORADO STATE UNIVERSITY/UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH

Fort Collins, CO

2016 – 2018

Research Scientist

UNIVERSITY OF WASHINGTON

Seattle, WA

2016

Publications

PEER-REVIEWED JOURNAL ARTICLES

Criticality in the shallow-to-deep transition of simulated tropical marine convection

S.W. POWELL

- <https://doi.org/10.1175/JAS-D-21-0155.1>

J. Atmos. Sci.

2022

Decomposing satellite-based classification uncertainties in large Earth science datasets

P. ORTIZ, B. MARSH, M. ORESCANIN, V. PETKOVIC, S. W. POWELL

- <https://doi.org/10.1109/TGRS.2022.3152516>

IEEE Trans. Geosci. Remote Sens.

2022

Tropical thermodynamic-convection coupling in observations and reanalyses

B. O. WOLDING, S. W. POWELL, J. DIAS, M. GEHNE, G. N. KILADIS, F. AHMED, J. D. NEELIN

- <https://doi.org/10.1175/JAS-D-21-0256.1>

J. Atmos. Sci.

2022

Large-scale moistening by adiabatic lifting during MJO initiation over the Indian Ocean

C. SNIDE, Á. F. ADAMES, S. W. POWELL, V. C. MAYTA

- <https://doi.org/10.1175/JCLI-D-21-0322.1>

J. Climate

2022

Bayesian deep learning for passive microwave precipitation type estimates

M. ORESCANIN, V. PETKOVIC, S. W. POWELL, B. R. MARSH, S. C. HESLIN

- <https://doi.org/10.1109/LGRS.2021.3090743>

IEEE Geosci. Remote Sens. Lett.

2021

Improving the physical basis for updraft dynamics in deep convection parameterization

J. M. PETERS, H. MORRISON, G. J. ZHANG, S. W. POWELL

- <https://doi.org/10.1029/2020MS002282>

J. Adv. Model. Earth Syst.

2021

The development of rainfall retrievals from radar at Darwin

R. JACKSON, S. COLLIS, V. LOUF, A. PROTAT, D. WANG, S. GIANGRANDE, E. J. THOMPSON, B. DOLAN, S. W. POWELL

- <https://doi.org/10.5194/amt-14-53-2021>

Atmos. Meas. Techniques

2021

Tropical precipitation evolution in a buoyancy-based framework

Á. F. ADAMES, S. W. POWELL, F. AHMED, V. C. MAYTA, J. D. NEELIN

- <https://doi.org/10.1175/JAS-D-20-0074.1>

J. Atmos. Sci.

2021

Interactions between moisture and tropical convection. Part I: The co-evolution of moisture and convection *J. Atmos. Sci.*
 B. WOLDING, J. DIAS, G. KILADIS, F. AHMED, S. W. POWELL, E. MALONEY, M. BRANSON 2020
 • <https://doi.org/10.1175/JAS-D-19-0225.1>

Observing possible thermodynamic controls on tropical marine rainfall in moist environments *J. Atmos. Sci.*
 S. W. POWELL 2019
 • <https://doi.org/10.1175/JAS-D-19-0144.1>

Near-surface frontogenesis and atmospheric instability along the U.S. East Coast during the extratropical transition of Hurricane Matthew (2016) *Mon. Wea. Rev.*
 S. W. POWELL, M. M. BELL 2019
 • <https://doi.org/10.1175/MWR-D-18-0094.1>

The diurnal variability of precipitating cloud populations during DYNAMO *J. Atmos. Sci.*
 N. SAKAEDA, S. W. POWELL, G. N. KILADIS, AND J. DIAS 2018
 • <https://doi.org/10.1175/JAS-D-17-0312.1>

Successive MJO Propagation in MERRA2 Reanalysis *Geophys. Res. Lett.*
 S. W. POWELL 2017
 • <https://doi.org/10.1002/2017GL073399>

Updraft buoyancy within and moistening by cumulonimbi prior to MJO convective onset in a regional model *J. Atmos. Sci.*
 S. W. POWELL 2016
 • <https://doi.org/10.1175/JAS-D-15-0326.1>

Rainfall-type categorization of radar echoes using polar coordinate reflectivity data *J. Atmos. Oceanic Technol.*
 S. W. POWELL, R. A. HOUZE, JR., S. R. BRODZIK 2016
 • <https://doi.org/10.1175/JTECH-D-15-0135.1>

Effect of dry large-scale vertical motions on initial MJO convective onset *J. Geophys. Res. Atmos.*
 S. W. POWELL, R. A. HOUZE, JR. 2015
 • <https://doi.org/10.1002/2014JD022961>

Evolution of convective echo top heights observed by TRMM radar over the Indian Ocean during DYNAMO *J. Geophys. Res. Atmos.*
 S. W. POWELL, R. A. HOUZE, JR. 2015
 • <https://doi.org/10.1002/2014JD022934>

The cloud population of the Madden-Julian Oscillation over the Indian Ocean during DYNAMO-AMIE *J. Geophys. Res. Atmos.*
 S. W. POWELL, R. A. HOUZE, JR. 2013
 • <https://doi.org/10.1002/2013JD020421>

Evolution of convective echo top heights observed by TRMM radar over the Indian Ocean during DYNAMO *J. Atmos. Sci.*
 X. ZENG, W-K. TAO, S. W. POWELL, R. A. HOUZE, JR., P. CIESIELSKI, N. GUY, H. PIERCE, T. MATSUI 2013
 • <https://doi.org/10.1175/JAS-D-12-050.1>

Comparison of simulated and observed continental tropical anvil clouds and their radiative heating profiles *J. Atmos. Sci.*
 S. W. POWELL, R. A. HOUZE, JR., A. KUMAR, AND S. A. MCFARLANE 2012
 • <https://doi.org/10.1175/JAS-D-11-0251.1>

Idealized simulations of the intertropical convergence zone and its multi-level flows *J. Atmos. Sci.*
 D. S. NOLAN, S. W. POWELL, C. ZHANG, AND B. E. MAPES 2010
 • <https://doi.org/10.1175/2010JAS3417.1>

OTHER LITERATURE

Will We Have the Marine Atmospheric Boundary Layer Observations Necessary to Realize the “Decade of Convection” in the Tropics? *US CLIVAR Variations*
 B. O. WOLDING, S. W. POWELL, K. SCHIRO, R. STORER, T. LEE, R. KRISHNAMURTHY *in press*

Mirai Radar Data: DYNAMO Legacy Rainfall Products

S. RUTLEDGE, P. F. HEIN, B. DOLAN, S. W. POWELL, S. R. BRODZIK

- https://data.eol.ucar.edu/datafile/nph-get/347.192/radar_ship_mirai_readme.pdf

UCAR-EOL

2018

Communicating weather information to the public: people's reactions and understandings of weather information and terminology

S. W. POWELL, H. D. O'HAIR

- 3rd Symp. Policy Socioeconomic Impacts, New Orleans, LA, P1.3

American Meteorological Society

2008

Oral and Poster Presentations

Listing all oral and poster presentations on this CV would make it cumbersome. If you are interested, you can find a list of my group's presentations [on my website](#) along with PDFs of the presentation documents.

Teaching

Assistant Professor

DEPARTMENT OF METEOROLOGY, NAVAL POSTGRADUATE SCHOOL

- Remote Sensing of the Atmosphere and Ocean
- Tropical Meteorology
- Advanced Tropical Meteorology
- Python for Meteorology and Oceanography Applications
- Climatology

Monterey, CA

2018 – present

Primary Instructor

DEPARTMENT OF ATMOSPHERIC SCIENCES, UNIVERSITY OF WASHINGTON

- Weather Analysis

Seattle, WA

2014 – 2016

Teaching Assistant

DEPARTMENT OF ATMOSPHERIC SCIENCES, UNIVERSITY OF WASHINGTON

- Weather (101-level course)

Seattle, WA

2010, 2013

Math/Physics Tutor

ATHLETIC DEPARTMENT, UNIVERSITY OF MIAMI

- Various mathematics and physics courses.

Coral Gables, FL

2006 – 2007

Students Advised

PH. D. STUDENTS

CAPT (USAF) Daniel Bazemore

DISSERTATION TITLE TBD

2024 est.

M.S. STUDENTS

LCDR (USN) Jessica Wasserman

M.S. THESIS TITLE TBD

2023 est.

LCDR (USN) Monica Killoran

SEA LEVEL VARIABILITY ANALYSIS FOR COASTAL NAVAL INSTALLATIONS

- Co-advised with Dr. Mara Orescanin, Dept. of Oceanography

2022

LT (USN) Micky Hall

EMULATING PASSIVE MICROWAVE OBSERVATIONS WITH PATCH-TO-PIXEL CONVOLUTIONAL NEURAL NETWORKS

- Co-advised with Dr. Marko Orescanin, Dept. of Computer Science

2022

LT (USAF) Sean Heslin

APPLICATIONS OF BAYESIAN NEURAL NETWORKS TO GLOBAL PRECIPITATION MEASUREMENT MISSION DATA

- Co-advised with Dr. Marko Orescanin, Dept. of Computer Science

2021

LCDR (USN) Coriandre Johnson

TECHNIQUES FOR THE DETERMINATION OF PARTICLE GROWTH FACTORS IN REAL TIME

2020

LCDR (USN) Benjamin Wells

SENSIBLE AND LATENT HEAT FLUXES ACROSS THE MARGINAL ICE ZONE AND IRMINGER CURRENT

2019

LT (USN) Wesley Davis

VERIFYING THE REPRESENTATION OF TROPICAL EASTERLY WAVES IN COMMUNITY CLIMATE MODEL VERSION 4

2019

OTHER ADVISEES

Jessica Solomon

REU SUMMER INTERNSHIP AT COLORADO STATE UNIVERSITY

2017

David Coppin, B.S, M.S.

UNIV. OF PIERRE AND MARIE CURIE, MASTER 1 INTERNSHIP

2013

Service

EXTERNAL SERVICE

2020	Associate Editor, <i>Monthly Weather Review</i>	
2019	Lead Convener and OSPA Liaison, AGU Session on Atmospheric, Land, and Ocean Processes in the Maritime Continent and Indo-Pacific	San Francisco, CA
2017–19	Program Co-chair, 6th–7th Symposia on the Madden-Julian Oscillation and Sub-Seasonal Monsoonal Variability	Austin, TX; Phoenix, AZ
2017–19	K–5 Outreach Demonstrations with Gates County Schools	Gates Co., NC
2017	Session Chair, 5th Symposium on the Madden-Julian Oscillation	Seattle, WA
2009–15	University of Washington Dept. of Atmospheric Sciences K–12 Outreach	Seattle, WA
2015–16	University of Washington College of Environment Committee on Graduate Recruitment, Retention, and Diversity (Funding and Resource Subcommittee)	Seattle, WA
2013–14	Graduate Student Invited Distinguished Speaker Coordinator	Seattle, WA
2010–13	Treasurer, American Meteorological Society Student Chapter at the Univ. of Washington	Seattle, WA
2011	North Deanery Science Fair Judge	Seattle, WA
2009	President, University of Miami Atmospheric Science Club and American Meteorological Society Student Chapter	Coral Gables, FL
2008	Treasurer, University of Miami Atmospheric Science Club and American Meteorological Society Student Chapter	Coral Gables, FL

UNIVERSITY SERVICE

2022–	Academic Associate for Department of Meteorology	
2020–22	NPS Faculty Council representative for Department of Meteorology	
2020–21	Dept. of Meteorology representative for Graduate School of Engineering and Applied Science (GSEAS) Dean Search Committee	
2020	NPS Focus Group for Enhancing Distance Learning	
2018–	Dept. of Meteorology Liaison for High Performance Computing at NPS	

JOURNALS/AGENCIES SERVED AS REVIEWER

Advances in Atmospheric Sciences
Atmosphere
Atmospheric Science Letters
Bulletin of the American Meteorological Society
Climate Dynamics
Geophysical Research Letters
International Journal of Climatology
Journal of Advances in Modeling Earth Systems
Journal of Applied Meteorology and Climatology
Journal of Atmospheric and Oceanic Technology

Journal of the Atmospheric Sciences
Journal of Climate
Journal of Geophysical Research—Atmospheres
Monthly Weather Review
Nature
Quarterly Journal of the Royal Meteorological Society
Science
 U.S. Department of Energy
 National Oceanic and Atmospheric Administration
 National Science Foundation

Honors & Awards

2016	NOAA Climate and Global Change Postdoctoral Fellow	
2013	Student Poster Award: DOE Atmospheric System Research Spring Meeting	Rockville, MD
2009	American Meteorological Society Graduate Fellowship	
2009	UW Dept. of Atmospheric Science "Top Scholar" Award	
2008	American Meteorological Society John R. Hope Endowed Scholarship in Atmospheric Science	
2007	NOAA Ernest F. Hollings Scholarship	
2005	Foote Fellow, University of Miami	

Field Project Participation

2022	Lead PI , CALifornia Investigation of Convection over Ocean (CALICO)	Marina, CA RV Thomas G Thompson, West Pacific
2018	Propagation of Intraseasonal Tropical Oscillations (PISTON)	
2011	Dynamics of the Madden-Julian Oscillation (DYNAMO)/ARM Madden-Julian Oscillation Investigation Experiment (AMIE)	Addu City, Maldives

Research Funding Support

National Oceanic and Atmospheric Administration	\$748,583
DEPENDENCE OF MJO PRECIPITATION MAINTENANCE ON CONVECTIVE PROCESSES	2023 – 25
<ul style="list-style-type: none"> • Role: Lead Principal Investigator • Climate Variability and Prediction Program • Interagency Agreement # TBD 	
U.S. Department of Energy	\$493,378
DYNAMICS OF SHALLOW TO DEEP CONVECTIVE TRANSITION DURING CACTI	2021 – 24
<ul style="list-style-type: none"> • Role: Principal Investigator • Atmospheric System Research • Interagency Agreement Number 89243021SSC000077 	
Office of Naval Research	\$451,288
SMALL-SCALE THERMODYNAMIC AND DYNAMIC MECHANISMS FOR GROWTH OF SHALLOW CUMULIFORM CLOUDS	2020 – 23
<ul style="list-style-type: none"> • Role: Principal Investigator • Code 32 • Grant Number: N0001421WX01472 	
Office of Naval Research	\$554,853
DEEP LEARNING UNCERTAINTIES OF GOES ADVANCED BASELINE IMAGER PRODUCTS INGESTED BY GEOIPS FOR ASSIMILATION INTO NAVY GLOBAL MODELS	2020 – 23
<ul style="list-style-type: none"> • Role: Co-Investigator (Co-wrote proposal) • Code 32 • Grant Number: N0001421WX00575 	