

# Paul B Goddard

pgoddard@iu.edu

Bloomington, IN 47401  
+1 937.654.0537

Current Affiliations:  
Indiana University, Bloomington IN

## EDUCATION

**University of Arizona** | Tucson, Arizona

**Ph.D.** 2018 **Department of Geosciences** (with a Ph.D. Minor in Global Change)

Advisor: Jianjun Yin

Committee: Jianjun Yin, Joellen Russell, Julia Cole, Mike Crimmins

**University of Cincinnati** | Cincinnati, Ohio

**B.S.** 2011 **Environmental Studies**

**B.S.** 2011 **Mathematics**

**B.A.** 2007 **Secondary Education**

## PROFESSIONAL EXPERIENCE

2019 – Pres. **Adjunct Faculty** | Rowan University Department of Geology, Glassboro, NJ

2018 – Pres. **Postdoctoral Associate** | UCONN Center for Integrative Geosciences w. Dr. Clay Tabor

2012 – '18 **Graduate Research Associate** | UA Department of Geosciences, Tucson, AZ

2017 **Graduate Teaching Assistant** | UA Department of Geosciences, Tucson, AZ

2011 – '12 **Environmental Golf Internship** | Hyde Park G&CC, Cincinnati, OH

2007 – '12 **Secondary Math and Science Student Teacher, Substitute, & Tutor** | Cincinnati, OH

## PUBLICATIONS – peer reviewed journal publications

**Paul B. Goddard**, C. O. Dufour, J. Yin, S. M. Griffies, M. Winton: CO<sub>2</sub>-induced ocean warming of the Antarctic continental shelf in an eddying global climate model. *Journal of Geophysical Research-Oceans*, doi:10.1002/2017JC012849 (2017).

Stephen M. Griffies, M. Winton, W. G. Anderson, R. Benson, T. L. Delworth, C. O. Dufour, J. P. Dunne, **P. Goddard**, and coauthors: Impacts on heat in the climate system from the ocean's time mean and transient mesoscale eddies in a hierarchy of climate models. *Journal of Climate*, **28** (3), 952-977, doi:10.1175/JCLI-D-14-00353.1, (2015).

**Paul B. Goddard**, J. Yin, S. M. Griffies, S. Zhang: An extreme event of sea-level rise along the northeast coast of North America in 2009-2010. *Nature Communications*, **6**, 6346-6354, doi:10.1038/ncomms7346, (2015).

Stephen M. Griffies, J. Yin, P. J. Durack, **P. Goddard**, and coauthors: An assessment of global and regional sea level for years 1993-2007 in a suite of interannual CORE-II simulations. *Ocean Modeling*, **78**, 35-89, doi:10.1016/j.ocemod.2014.03.004, (2014).

Jianjun Yin and **Paul B. Goddard**: Oceanic control of sea level rise patterns along the east coast of the United States. *Geophysical Research Letters*, **40** (20), 5514-5220, (2013).

## PUBLICATIONS – in preparation

**Paul B. Goddard**, Clay R. Tabor, Tyler R. Jones, and Eric J. Steig: The atmospheric drivers of the Amundsen Sea Low variability and the resultant influence on stable water isotopic records in West

Paul B Goddard | *Curriculum Vitae, Summer 2020*

Antarctica: A study of observations and simulations. In prep for *Journal of Climate*, estimated submission date, Summer 2020.

#### **PRESENTATIONS – selected talks, abstracts, and meetings participant**

**Paul B. Goddard**, Clay R. Tabor, Tyler R. Jones, and Eric J. Steig: The atmospheric drivers of the Amundsen Sea Low variability and the resultant influence on stable water isotopic records in West Antarctica: A study of observation and simulations. AGU Fall Meeting 2018 – poster.

**Paul B. Goddard**: U.S. northeast coast sea level rise: mechanisms, extreme events, and 21<sup>st</sup> century projections. University of Connecticut 2018 – invited talk.

**Paul B. Goddard**, C. O. Dufour, J. Yin, S. M. Griffies, M. Winton: Role of CO<sub>2</sub>-forced Antarctic shelf freshening on local shelf warming in an eddying global climate model. AGU Fall Meeting 2017 - oral.

**Paul B. Goddard**: Panelist for a session on regional and global sea level change and impacts at the NOAA Ocean Observing and Monitoring Division Community Workshop, Silver Spring MD, 2017.

**Paul B. Goddard**, J. Yin, S. M. Griffies, C. O. Dufour, M. Winton: Ocean heat transport mechanisms and CO<sub>2</sub>-induced ocean climate change around Antarctica in GFDL CM2.6 and CM2.5. CLIVAR Open Science Conference, Qingdao, China, 2016.

**Paul B. Goddard**, J. Yin, S. M. Griffies, M. Winton: Ocean heat transport mechanisms and CO<sub>2</sub>-induced ocean climate change around Antarctica in GFDL CM2.6 and CM2.5. AGU Ocean Sciences Meeting, 2016, AGU Fall Meeting, 2015.

**Paul B. Goddard** and Jianjun Yin: Ocean dynamics and impacts on U.S. coastal sea level. 43<sup>rd</sup> Annual GeoDaze Symposium, UA Geosciences, 2015.

**Paul B. Goddard**, J. Yin, S. M. Griffies, S. Zhang: An extreme event of sea level rise along the northeast coast of North America in 2009-2010. AGU Fall Meeting, 2013-2014.

#### **PEER-REVIEWER**

*Journal of Climate, Geophysical Research Letters, Journal of Geophysical Research-Oceans*

#### **RESEARCH SCHOLARSHIPS & GRANTS**

2017            **ChevronTexaco Geology Fellowship** | UA Geosciences Department \$1,000  
2017            **Paul Martin and Sulzer Scholarship** | UA Geosciences Department \$4,750  
2017, '15, '14   **Student Travel Grant** | UA Grad. and Professional Student Council \$750 ea.  
2015            **H. E. Carter Travel Grant** | UA Graduate Interdisciplinary Program \$600  
2015, '14, '13   **Environ. Grad. Student Travel Grant** | UA Institute of the Environ. \$500 ea.  
2015            **R. Wilson Thompson Scholarship** | UA Geosciences Department \$500  
2014            **Sumner Scholarship** | UA Geosciences Department \$1,500  
2014            **Galileo Circle Scholar Award** | UA College of Science \$1,000  
2013            **Global Change PhD Minor Dissertation Improvement Grant** | UA \$1,000  
2012            **Carson Scholarship** | UA Carson Scholars Program \$5,000

**Total PI Funding: \$19,100**

## TRANSFERABLE SKILLS

**Computing and Analysis:** I compute statistical analyses of large datasets and quantify physical changes to the climate system. To accomplish these tasks, I use:

- Python
  - NumPy
  - Pandas
  - Xarray
  - Dask
  - Matplotlib
  - SciPy
  - Statsmodels
- Linux OS
- Jupyter Notebook
- Github
- Shell Scripting
- Matlab
- NOAA PyFerret
- Big data analysis and statistics
- Excel
- PowerPoint
- Adobe Illustrator
- NOAA GFDL Climate Models
- NCAR CESM Climate Models
- ArcGIS

**Research:** My research uses global climate models and observational data while applying ocean and atmospheric dynamics to understand circulation change, warming, and sea level rise patterns of the present and under future CO<sub>2</sub> levels. My work focuses on US East Coast decadal and centennial sea level rise projections, storm surge changes along the global coastline with increased CO<sub>2</sub> levels, Antarctic shelf ocean warming, and water isotopic signatures on the West Antarctic Ice Sheet during the 20<sup>th</sup> century.

**Collaboration:** Currently, I am working with Clay Tabor at the University of Connecticut, Tyler Jones at Colorado University, and Eric Steig at the University of Washington on a study that compares ice core and model data from the West Antarctic Ice Sheet. I also worked with Stephen M. Griffies from GFDL in Princeton, New Jersey. Being the lead developer of the ocean model component of the GFDL climate models, Griffies generously offers great mentorship towards my understanding of climate models and growth as a scientist. I contributed to two of his publications regarding regional sea level rise and mesoscale activity in climate models. Furthermore, Carolina O. Dufour at McGill University was my lead collaborator on the Antarctica shelf seas study published in 2017.

**Communication and Teaching:** Additionally, during graduate school I took advantage of a university-wide initiative to prepare graduate students with a transdisciplinary approach to resolving climate change issues. This program cultivated communication between diverse audiences (policymakers, scientists, businesses, citizens, etc.) to achieve productive outcomes. Through the requirements of this Ph.D. Global Change minor and the Carson Scholars program, I understand the social issues surrounding climate change, the responsibilities of decision makers, and techniques to improve scientist and stakeholder communication.

## SERVICE – professional and outreach

- 2017 - '13      **GeoDaze Symposium** | UA Geosciences Department  
*Publications Chair*
- 2017 – '14      **Graduate Student Mentor** | UA Geosciences Department  
*Served in formal capacity as mentor for incoming graduate students in the Climate Modeling Lab*
- 2014            **Native American Science and Engineering Program** | UA Geosciences Dept.  
*Student volunteer for weekend outreach program for high school students*
- 2014            **UA Teacher Symposium for Secondary STEM Teachers** | UA Geosciences Dept.  
*Modeled a lesson plan for 20 secondary educators for integrating climate data into the classroom*

## HONORS & AWARDS

- 2018 – present      **NCAR CISL Small Allocation Recipient** | NCAR  
*Supercomputer resources to study precession-length hydroclimate variability of the South American monsoon system using a water isotope-enabled global climate model*

- 2017 – '12 **Rachel Carson Scholars Program** | University of Arizona  
2014 **Best Climate Oral Presentation** | 42<sup>nd</sup> Annual UA GeoDaze Symposium  
2003 – '11 **Cum Laude** | University of Cincinnati

## TEACHING

**Adjunct Faculty** | Rowan University Geology Department

Spring 2019 **Earth in Transition**

*Course objective is to inform undergraduates of the causes and impacts of Global Climate Change*

**Graduate Teaching Associate** | University of Arizona Geosciences Department

Spring 2017 **Earth from Birth to Death** | instructor: Randall Richardson

*Guided weekly discussions, graded weekly homework and essays*

**Secondary Math and Science Teacher**

2012 – '07 **Teacher, Substitute, Tutor** | Cincinnati, OH

*Licensed secondary math teacher in Ohio. Completed several long-term substitute positions at secondary schools, and tutored SAT/ACT preparation for students in Cincinnati, OH.*

## PROFESSIONAL DEVELOPMENT

2018 **PANGEO Workshop** | Washington DC

*Focused on Python packages Xarray and Dask for big data analysis*

2016 **Software Carpentry Workshop** | Tucson, AZ

*Focused on Bash scripting and R-programming for science professionals*

2014 **CESM Tutorial** | NCAR, Boulder, CO

*Focused on the use and components of the Community Earth System Model*

2012 **Carson Scholarship Climate Communication Workshop** | Biosphere 2, AZ

*Focused on improving climate scientists' communication with colleagues, stakeholders, decision makers, and the public*

## REFERENCES

**Dr. Jianjun Yin**

Geosciences Department  
University of Arizona, AZ  
yin@email.arizona.edu

**Dr. Stephen M. Griffies**

Geophys. Fluid Dynamics Lab.  
Princeton, NJ  
stephen.griffes@noaa.gov

**Dr. Clay Tabor**

Ctr. for Integrative Geosciences  
University of Connecticut, CT  
clay.tabor@uconn.edu