

Anna-Lena Deppenmeier (she/her/hers)

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## ACADEMIC EXPERIENCE & EDUCATION

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### Project Scientist

06/2021 - Present

Climate and Global Dynamics Laboratory, Ocean Section

National Center for Atmospheric Science, Boulder, USA

Projects entail: pre-field campaign for the tropical pacific observing system process study (NOAA, PI), estimating diabatic and adiabatic upwelling from ocean state estimates (NASA, PI), marine heat waves (NSF, co-PI)

### Postdoctoral Fellow

06/2019 - 05/2021

Climate and Global Dynamics Laboratory, Ocean Section

National Center for Atmospheric Science, Boulder, USA

Investigating Pacific Upwelling & Mixing Physics with high resolution ocean models and observations

Advisors: Frank Bryan, William Kessler, LuAnne Thompson

### Ph.D. Climate Science

2019

Wageningen University, Netherlands

In collaboration with the Royal Netherlands Meteorological Institute (KNMI)

Dissertation: "Air-Sea Interactions in the Tropical Atlantic"

Advisors: Wilco Hazeleger, Rein Haarsma

**M.S. Chemistry**, ETH Zurich, Switzerland

2013

**B.S. Chemistry**, Georg-August University Goettingen, Germany

2011

## SELECTED PEER REVIEWED PUBLICATIONS

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1. **Deppenmeier, A. L.**, Bryan, F. O., Kessler, W. S., & Thompson, L. (2022). Diabatic Upwelling in the Tropical Pacific: Seasonal and subseasonal variability. *Journal of Physical Oceanography*, 52(11), 2657-2668.
2. **Deppenmeier, A. L.**, Bryan, F. O., Kessler, W. S., & Thompson, L. (2021). Modulation of Cross-Isothermal Velocities with ENSO in the Tropical Pacific Cold Tongue. *Journal of Physical Oceanography*, 51(5), 1559-1574.
3. **Deppenmeier, A. L.**, Haarsma, R. J., van Heerwaarden, C., & Hazeleger, W. (2020a). The Southeastern Tropical Atlantic SST Bias Investigated with a Coupled Atmosphere–Ocean Single-Column Model at a PIRATA Mooring Site. *Journal of Climate*, 33(14), 6255-6271.
4. **Deppenmeier, A. L.**, Haarsma, R. J., LeSager, P., & Hazeleger, W. (2020b). The effect of vertical ocean mixing on the tropical Atlantic in a coupled global climate model. *Climate Dynamics*, 54, 5089-5109.
5. Lancker, K., **Deppenmeier, A. L.**, Demissie, T., & Schmidt, J. O. (2019). Climate change adaptation and the role of fuel subsidies: An empirical bio-economic modeling study for an artisanal open-access fishery. *PloS one*, 14(8).
6. Voldoire, A., Exarchou, E., Sanchez-Gomez, E., Demissie, T., **Deppenmeier, A. L.**, Goubanova, K., Hazeleger, W., Keenlyside, N., Koseki, S., Prodhomme, C., Shonk, J., Toniazzo, T., & Traoré,

- A. K. (2019). Role of wind stress in driving SST biases in the Tropical Atlantic. *Climate Dynamics*, 53(5-6), 3481-3504.
7. Prodhomme, C., Voldoire, A., Exarchou, E., **Deppenmeier, A. L.**, García-Serrano, J., & Guemas, V. (2019). How does the seasonal cycle control equatorial Atlantic interannual variability? *Geophysical Research Letters*, 46(2), 916-922.
8. Hartung, K., Svensson, G., Struthers, H., **Deppenmeier, A. L.**, & Hazeleger, W. (2018). An EC-Earth coupled atmosphere-ocean single-column model (AOSCM) for studying coupled marine and polar processes. *Geosci. Model Dev. Discuss.* <https://doi.org/10.5194/gmd-2018-66>.
9. **Deppenmeier, A. L.**, Haarsma, R. J., & Hazeleger, W. (2016). The Bjerknes feedback in the tropical Atlantic in CMIP5 models. *Climate Dynamics*, 47(7-8), 2691-2707.

## INVITED PUBLICATIONS

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1. **A.-L. Deppenmeier** (2022). *The Atlantic Niño weakens*. *Nature Climate Change* 12.9 (2022): 780-781.
2. Y. Eddebbar, **A.-L. Deppenmeier**, D. A. Cherian, D. B. Whitt (2023). Upwelling and Mixing in the Equatorial Pacific Cold Tongue: Biogeochemical Implications, Dynamics, and Observing Needs. *CLIVAR Variations*. (in press at CLIVAR)

## SELECTED PRESENTATIONS

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### Keynote Speeches, Webinars, and Panel Appearances

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| 1. "Diabatic Upwelling in the eastern equatorial Pacific", Panelist,<br>CVP-TPOS Webinar Series  | 09/2022 |
| 2. "Air-Sea Observation Networks for Improving Model Parameterizations", Keynote,<br>Observing Air-Sea Interactions Strategy (OASIS) for a Predicted Ocean | 09/2021 |
| 3. "Multi-scale air sea interactions", Panelist, TPON CLIVAR workshop  | 05/2021 |
| 4. Postdoc participation in research proposals, Panelist, ASP Professional Development   | 2020    |

### Selected Invited seminars

1. "Upwelling in the eastern equatorial Pacific", CASPO Seminar at Scripps Institute of Oceanography, University of California, San Diego, October 2022
2. "Unknowns in the ocean: from mixing to large scale circulation", Insights from Climate Research and Future Directions symposium, Utrecht NL, May 2022
3. "Diabatic upwelling in the tropical Pacific - the role of water mass transformation processes in sea surface temperature variability", KNMI, NL, May 2022
4. "Seasonal to Interannual Controls on Warm Water Volume in the Tropical Pacific", Ocean Circulation and Climate Dynamics Colloquium, GEOMAR, May 2021
5. "Drivers of Water Mass Transformation in the Eastern Tropical Pacific and Their Modulation With ENSO", COMPASS Seminar, Rosenstiel School of Marine and Atmospheric Science, University of Miami, February 2021
6. "Cross-isothermal velocity modulation with ENSO", Physical Oceanography Seminar, University of Washington, June 2020
7. "Ocean Mixing – SST – Cloud Feedbacks in the Tropical Atlantic", CGD lunch seminar, National Center for Atmospheric Research, November 2017
8. "Ocean Mixing – SST – Cloud Feedbacks in the Tropical Atlantic", Lamont Doherty Earth Observatory lunch seminar, Columbia University, October 2017

## **Selected Conference presentations**

1. "Upwelling in the equatorial Pacific in a high resolution ocean model", Texas Center for Climate Studies High-Resolution Modeling Workshop, January 2023
2. "Vertical processes in the tropical Pacific cold tongue characterized from an Ocean State Estimate and a Bayesian Hierarchical Model", Ocean Science Meeting, March 2022
3. "The Southeastern Tropical Atlantic SST bias investigated with a coupled atmosphere-ocean single column model at a PIRATA mooring site", TRIATLAS virtual general assembly, May 2020
4. "Eastern Pacific Upwelling", CESM Ocean Working Group Meeting, April 2020
5. "Water mass transformation framework", NOAA/CVP TPOS Pre-Field Campaign PI Meeting, March 2020
6. "Cross-isothermal velocity modulation with ENSO", Ocean Sciences Meeting, February 2020
7. "Cross-isothermal velocities", TPOS/PUMP Investigators Workshop, October 2019
8. "The influence of ocean – SST – cloud feedback on the tropical Atlantic SST bias", Tropical Atlantic Variability CLIVAR conference, Paris 2017
9. "Sources of tropical Atlantic coupled model biases derived from initialised hindcasts and partially coupled sensitivity experiments", European Geosciences General Assembly, Vienna 2016
10. "Bjerknes Feedback in the Tropical Atlantic", PREFACE General Assembly, Casablanca 2014

## **ACADEMIC TRAINING**

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1. "Ocean Hackweek", 5-day learning hackathon, eScience Institute, Seattle 2019
2. "Fluid Dynamics of Sustainability and the Environment", 2-week summer school, Ecole Polytechnique & University of Cambridge, Paris 2017
3. Polarstern cruise PS88.2, 2014/11/02-29, CTD measurements, Glider deployment
4. "Nansen Tutu summer school on the Agulhas Current, the Benguela upwelling system and the tropical Atlantic", 6-day summer school, University of Cape Town, Cape Town, 2014
5. "Second European Earth System and Climate Modeling School", 2-week summer school, Barcelona Supercomputing Center, Barcelona 2014

## **AWARDS AND HONORS**

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Awarded NOAA Climate Variability Program Funding (PI, \$754,954)	2022
"Developing a framework for a field campaign in the cold tongue: Analysis of Pacific Upwelling and Mixing Physics from models and observations"	
Awarded NASA Physical Oceanography Funding (PI, \$259,308)	2021
"Diabatic versus adiabatic controls on the tropical Pacific cold tongue - an investigation from satellite data and two ECCO based ocean state estimates"	
Chrysalis Award, Association for Women Geoscientists	2019
Outstanding Student Poster Award Ocean Sciences Division, European Geosciences Union	2015
Competitive Scholarship for Research Project Abroad, German Academic Exchange Service	2010

## **TEACHING AND MENTORING EXPERIENCE**

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### **Mentorship**

Co-mentor two graduate students under the NSF Marine Heat Wave project	2021-present
Co-mentor NESSI undergraduate intern Kenzie Klisz	2022

Proposal guidance: PostDoc Kay McMonnigal to submit to NASA Physical Oceanography	2022
Proposal guidance: Jacob Cohen for NASA FINESST and ASP Graduate Visiting Program	2021-2022

### Guest Lectures

Introduction to Climate Modeling, mixed undergraduate and graduate course CU Boulder	2022
Introduction to Climate Science, undergraduate course CU Boulder	2022
Atmospheric Dynamics, M.S. course Wageningen University	2016

### Thesis advisor

<b>M.Sc.</b> Monique Gosseling	2016
Dissertation: "Analysis of EC-Earth SST bias development in the Tropical Atlantic"	
<b>B.Sc.</b> Pleun Bonekamp	2014
Dissertation: "Two model intercomparison of the West African Monsoon"	

### Academic Tutor

Meteorology and Climate, B.S. course Wageningen University	2015
Introduction to Chemistry and Thermodynamics, B.S. course ETH Zurich	2012-2013
Theoretical Chemistry for Chemists and Physicists, B.S. course G-A University Goettingen	2010-2011

## PROFESSIONAL ACTIVITIES & LEADERSHIP

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### Reviewer

*Nature Communications, Nature Climate Change, Geophysical Research Letters, Journal of Climate, Climate Dynamics, Journal of Geophysical Research Oceans, Climate Resilience and Sustainability*

### Organiser

Lead organiser of NCAR UCAR UCP all staff Meet-Up on Intersectionality	2023
Co-organiser of NCAR UCAR UCP webinar "Imani Barbarin on Intersectionality"	2023
Co-organiser of NCAR UCAR UCP panel on Earth System Futures: Human Intersections	2022
Primary session convener Tropical Pacific Observing System, Ocean Science Meeting	2022
Lead organiser of NCAR UCAR UCP all staff Meet-Up on Privilege	2021
Co-organiser of two NCAR UCAR UCP all staff Meet-Ups, Allyship and Pronouns	2021
Co-convener Tropical Pacific Observing System Session, AGU Fall Meeting	2021
Co-organiser professional development panel for postdocs, "Writing Research Statements"	2021
One-day workshop, "SST bias development in the tropical Atlantic", Barcelona	2016

### Member

CGD Diversity Equity and Inclusion Committee	2022 - Present
Working towards a better onboarding experience for new employees as well as general contributions to the mission of making CGD a more inclusive workplace	
FACES-UCAR (Forging Allies and Connections for Equity in STEM)	2020 - Present
Organises and facilitates Meet-Ups for NCAR UCAR UCP staff to normalise conversations around equity and diversity in order to further inclusivity and justice in the workplace	
Taskforce for making postdoc appointments equitable across UCAR/NCAR	2021 - Present
Postdoctoral Development Committee	2020 - 2021

### Outreach

Skype a Scientist	2019 - Present
Letters to a Pre-Scientist	2019 - Present

## PROGRAMMING, MODELING AND OBSERVATIONAL EXPERIENCE

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### **Highly experienced**

Programming tools: Python (including using and having contributed to modern analysis packages such as xarray, xgcm, dask, pop-tools, etc), Jupyter, Bash, git, GitHub, SVN

Ocean and climate models: MOM6, POP2, CESM, NEMO, EC-Earth, IFS, MITgcm

Reanalysis products: ORAS4, ORAS5, ERA5, ERA-Interim, ERA-40, SODA3, NCEP, JRA-55, TropFlux

Observations: TAO and PIRATA mooring arrays, CTD and ADCP measurements, NASA satellite products,  $\chi$ pod observations

### **Experienced**

Programming tools: Fortran