

Dr. Christoph Renkl | Curriculum Vitae

Deputy Professor – University of Bonn – Institute of Geosciences
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EDUCATION

Ph.D. Oceanography <i>Dalhousie University, Halifax NS, Canada</i>	2021
M.Sc. Physics of the Earth and Atmosphere (Specialization in Meteorology) <i>University of Bonn, Germany</i>	2013
B.Sc. Meteorology <i>Freie Universität Berlin, Germany</i>	2011

ACADEMIC EXPERIENCE

Deputy Professor (W2) in General Meteorology <i>Institute of Geosciences, University of Bonn</i>	2025–present <i>Bonn, Germany</i>
Guest Investigator <i>Physical Oceanography Department, Woods Hole Oceanographic Institution</i>	2025–present <i>Woods Hole, MA, USA</i>
Postdoctoral Investigator <i>Physical Oceanography Department, Woods Hole Oceanographic Institution</i> MENTORS: Prof. Dr. Hyodae Seo and Dr. Anthony Kirincich	2023–2025 <i>Woods Hole, MA, USA</i>
Postdoctoral Fellow <i>Department of Oceanography, Dalhousie University</i> MENTOR: Prof. Dr. Eric C. J. Oliver	2021–2022 <i>Halifax NS, Canada</i>
Graduate Student Researcher <i>Department of Oceanography, Dalhousie University</i> DISSERTATION: Ocean Model Validation and Downscaling for Subseasonal-to-Seasonal Prediction ADVISOR: Prof. Dr. Keith R. Thompson	2014–2020 <i>Halifax NS, Canada</i>
Research Assistant <i>Nansen Environmental and Remote Sensing Center</i> ADVISORS: Dr. Laurent Bertino and Dr. François Counillon	2014 <i>Bergen, Norway</i>
Visiting Researcher <i>Department of Oceanography, Dalhousie University</i> ADVISOR: Prof. Dr. Katja Fennel	2013 <i>Halifax NS, Canada</i>
Master Student Researcher <i>Meteorological Institute, University of Bonn</i> MASTER THESIS: The Vertical Structure of the Atmosphere in COSMO-DE-EPS: Multivariate Ensemble Postprocessing in the Space of Vertical Normal Modes ADVISOR: PD Dr. Petra Friederichs	2012–2013 <i>Bonn, Germany</i>
IAESTE/SURE Research Intern <i>Department of Physics and Astronomy, University of Leicester</i> ADVISOR: Dr. Robert Fear	2012 <i>Leicester, UK</i>
Undergraduate Student Researcher <i>Institute of Meteorology, Freie Universität Berlin</i> BACHELOR THESIS: “Untersuchung der Vorhersagbarkeit europäischer Winterstürme in den Ensemblevorhersagen des EZMW in Abhängigkeit von der Vorlaufzeit” (in German) [“Analysis of the Predictability of European Winter Storms in ECMWF Ensemble Predictions as a Function of Lead Time”] ADVISORS: Prof. Dr. Uwe Ulbrich and Dr. Philip Lorenz	2011 <i>Berlin, Germany</i>

Research Intern

Leibniz-Institute of Atmospheric Physics e.V.
ADVISOR: Dr. Christoph Zülicke

2010*Kühlungsborn, Germany***ERASMUS Exchange Student**

University of Bergen
Courses in meteorology, oceanography, computer science, and Norwegian language

2009–2010*Bergen, Norway***PUBLICATIONS**

Summary: 7 Refereed Publications, 297 Total Citations, h-Index: 4 (Source: Google Scholar, January 18, 2026)

PEER-REVIEWED JOURNAL ARTICLES

- [7] Seo, H., Sauvage, C., **Renkl, C.**, Lundquist, J. K., and Kirincich, A. “Sea Surface Warming and Ocean-to-Atmosphere Feedback Driven by Large-Scale Offshore Wind Farms under Seasonally Stratified Conditions”. In: *Science Advances* 11.45 (2025), eadw7603. DOI: 10.1126/sciadv.adw7603.
- [6] Richaud, B., Dowd, M., **Renkl, C.**, and Oliver, E. C. J. “Sea Ice Nonlinearities Act to Rectify and Filter Oceanic and Atmospheric Forcing”. In: *Journal of Climate* 38.17 (2025), pp. 4573–4588. DOI: 10.1175/JCLI-D-24-0485.1.
- [5] **Renkl, C.**, Oliver, E. C. J., and Thompson, K. R. “The Alongshore Tilt of Mean Dynamic Topography and Its Implications for Model Validation and Ocean Monitoring”. In: *Ocean Science* 21.1 (2025), pp. 181–198. DOI: 10.5194/os-21-181-2025. [EGU Highlight Paper].
- [4] Ohashi, K., Laurent, A., **Renkl, C.**, Sheng, J., Fennel, K., and Oliver, E. “DalROMS-NWA12 v1.0, a Coupled Circulation–Ice–Biogeochemistry Modelling System for the Northwest Atlantic Ocean: Development and Validation”. In: *Geoscientific Model Development* 17.23 (2024), pp. 8697–8733. DOI: 10.5194/gmd-17-8697-2024.
- [3] **Renkl, C.**, Oliver, E. C. J., and Thompson, K. R. “Downscaling the Ocean Response to the Madden–Julian Oscillation in the Northwest Atlantic and Adjacent Shelf Seas”. In: *Climate Dynamics* 62 (2024), pp. 6719–6744. DOI: 10.1007/s00382-024-07233-y.
- [2] **Renkl, C.** and Thompson, K. R. “Validation of Ocean Model Predictions of Mean Dynamic Topography in Shallow, Tidally Dominated Regions Using Observations of Overtides”. In: *Journal of Geophysical Research: Oceans* 127.3 (2022), e2021JC018095. DOI: 10.1029/2021JC018095.
- [1] Merryfield, W. J. et al. incl. **Renkl, C.** “Current and Emerging Developments in Subseasonal to Decadal Prediction”. In: *Bulletin of the American Meteorological Society* 101.6 (2020), E869–E896. DOI: 10.1175/BAMS-D-19-0037.1.

SUBMITTED/IN PREPARATION

- [3] Kim, Y.-J., Tanaka, K., Seo, H., Matsumura, Y., Sauvage, C., and **Renkl, C.** “The Role of Time- and Spatially Varying Wind in Coastal Circulation Based on High-Resolution Oceanic and Atmospheric Simulations”. Manuscript under Review in *Journal of Geophysical Research: Oceans*.
- [2] **Renkl, C.** and Oliver, E. C. J. “Bias Correction for Downscaling CMIP6 Simulations of Northwest Atlantic Circulation and Sea Ice”. Manuscript in preparation.
- [1] **Renkl, C.**, Seo, H., and Miller, A. J. “Marine Heatwave Impacts on Landfalling Atmospheric Rivers on the U.S. West Coast”. Manuscript in preparation.

REPORTS

- [2] Krastel, S. et al. incl. **Renkl, C.** *Geomorphology, Processes and Geohazards of Giant Submarine Landslides and Tsunami Generation Capacity, as Recorded in the Sedimentary Record of the Only Historic Slide of This Kind: The 1929 Grand Banks Landslide of the Canadian Atlantic Continental Margin - Cruise No. MSM47 - September 30 - October 30, 2015 - St. John's (Canada) - Ponta Delgada, Azores (Portugal)*. MARIA S. MERIAN-Berichte MSM47. DFG-Senatskommission für Ozeanographie, 2016, p. 55. DOI: 10.2312/cr_msm47.
- [1] **Renkl, C.**, Counillon, F., and Bertino, L. *Validation of the 20-Year TOPAZ Reanalysis*. Bergen, Norway: Nansen Environmental and Remote Sensing Center, 2014, p. 67.

GRANTS AND SCHOLARSHIPS

2023	US CLIVAR Travel Grant	covering all costs to attend the Mesoscale and Frontal-Scale Air-Sea Interactions Workshop in Boulder, CO, USA.	
2021–2022	MEOPAR Postdoctoral Fellowship Award	for research project “Future Projections CAD\$40,000 of Northwest Atlantic Circulation and Sea Ice”.	
2018	World Meteorological Organization Travel Grant	to attend the International Conferences of Subseasonal to Decadal Prediction in Boulder, CO, USA.	US\$2,000
2017	MEOPAR Travel Grant	covering all costs to attend the Annual Scientific and Training Meetings in Montreal QC, Canada.	
2014–2017	Nova Scotia Scholarship, International Award		CAD\$30,000

AWARDS AND HONORS

2021	Invited Participant, Physical Oceanography Dissertation Symposium (PODS) XI, Lihue, HI, USA.
2016	Outstanding Student Poster and PICO (OSPP) Award, European Geosciences Union (EGU) General Assembly 2016 in Vienna, Austria.
2012	IAESTE Internship/Summer Undergraduate Research Experience (SURE), University of Leicester, UK.

TEACHING EXPERIENCE

Physics of the Atmosphere (mug320)	University of Bonn
<i>Principal Lecturer</i>	Winter 2025/26
Atmospheric Dynamics (pea710)	University of Bonn
<i>Principal Lecturer</i>	Winter 2025/26
Synoptic Meteorology (mug410)	University of Bonn
<i>Principal Lecturer</i>	Summer 2025
General Hydrodynamics (pea810)	University of Bonn
<i>Principal Lecturer</i>	Summer 2025
Climate Variability and Diagnostics (12.860)	Massachusetts Institute of Technology
<i>Guest Lecturer</i>	Fall 2024
Ocean Dynamics (OCEA 5221)	Dalhousie University
<i>Guest Lecturer</i>	Winter 2022
Oceanography Honours Class (OCEA 4201)	Dalhousie University
<i>Guest Lecturer</i>	Fall 2021, 2022
Introduction to Programming with R and Python	Dalhousie University
<i>Co-Lecturer</i>	Fall 2018
The Blue Planet (OCEA 2001/2002)	Dalhousie University
<i>Teaching Assistant</i>	Fall 2016, 2017 and Winter 2017, 2018
Synoptic Meteorology	Freie Universität Berlin
<i>Teaching Assistant</i>	Winter 2010/11

ADVISING AND MENTORING

Graduate & Undergraduate Students:

2025–present	Noah Gloden, B.Sc. Physics, University of Bonn
2025–present	Jerome Schyns, M.Sc. Physics of the Earth and Atmosphere, University of Bonn <i>Co-Advisor with Dr. Jannick Fischer von zur Gathen (Karlsruhe Institute of Technology)</i>
2025–present	Patrick Zobec, M.Sc. Physics of the Earth and Atmosphere, University of Bonn <i>Co-Advisor with Niklas Schnierstein (University of Cologne)</i>
2024–2025	Anito Marcarelli, M.A.S. Climate Science and Policy, Scripps Institution of Oceanography/UCSD <i>Capstone Committee Co-Advisor with Dr. Arthur Miller, Dr. Matthew Mazloff, and Dr. Xun Zou</i>

Graduate & Undergraduate Students (continued):

2023–2024 Yoo-Jun Kim, University of Tokyo, Guest Ph.D. Student at WHOI
Co-Advisor with Dr. Hyodae Seo and Dr. Cesar Sauvage

2023 Anthony Meza, WHOI/MIT Joint Ph.D. Program, unofficial mentor for General Exam Project
Co-Advisor with Dr. Hyodae Seo

2022 Alexa MacIsaac, Kaitlyn Quinn, Lilian Musselman, Peter MacGregor, Dalhousie Interdisciplinary Science Program, Dalhousie University
Co-Advisor with May Wang

Thesis Committees:

2025–present Francis da Silva Lopes, Ph.D. Candidate, University of Bonn

SERVICE

- **Reviewer** for Communications Earth and Environment (2), Journal of the Atmospheric Sciences, Journal of Climate (2), Journal of Physical Oceanography, npj Climate and Atmospheric Science, Weather and Climate Dynamics.
- **Proposal Reviewer** for National Science Foundation Physical Oceanography (ad hoc).
- **Member** of the examination board, Institute of Geosciences, University of Bonn, Germany (2025–present).
- **Member** of the space committee, Woods Hole Oceanographic Institution, Woods Hole, MA, USA (2023–2025).
- **Co-Organizer** of a scientific retreat for graduate students in ocean-related disciplines, Brigadoon Village, Aylesford NS, Canada (2018).
- **President** of the Dalhousie Oceanography Students Association (DOSA), Dalhousie University, Halifax NS, Canada (2016–2018).
- **Co-Organizer** and **Presenter** of Methods in Ten Minutes (MTM) seminar series, Dalhousie University, Halifax NS, Canada (2016–2022).
- **Member** of the executive of the student society, Meteorological Institute, University of Bonn, Germany (2012–2013).
- **Student Representative** at the internal assembly and master studies examination board, Meteorological Institute, University of Bonn, Germany (2011–2013).
- **Member** of the organizing committee of “Studentische Meteorologentagung” (annual meeting of meteorology students from Germany, Austria, and Switzerland) at Freie Universität Berlin, Germany (2011).
- **Member** of the executive of the student society, Institute of Meteorology, Freie Universität Berlin, Germany (2008–2011).

Public Science Engagement

- Interview with San Francisco Chronicle about the impact of marine heatwaves on atmospheric rivers (2024) [\[link to article\]](#)
- Q&A sessions about weather, ocean, and climate with 3rd graders at the Lina-Morgenstern-Schule, Bochum, Germany (2016, 2022).
- Guided tours of the weather observatory at the Institute of Meteorology at Freie Universität Berlin, Germany (2010–2011).

SEA TIME AND FIELD WORK EXPERIENCE

2024 **Wind Forecast Improvement Project 3 Field Campaign:** Atmospheric soundings at Woods Hole weather station to better understand characteristics of lower atmospheric winds and boundary layer clouds in the nearshore and offshore region.

Sep–Oct 2015 (30 days) **R/V Maria S. Merian - MSM47:** Seismic mapping and coring transects to identify the sedimentary record of the 1929 Grand Banks landslide along the Canadian Atlantic continental margin.

PRESENTATIONS

Invited Seminars

- *Intensification of Atmospheric Rivers by Marine Heatwaves*. CLIVAR Research Focus group “Marine Heatwaves in the Global Ocean” (virtual), May 2025.
- *Intensification of Atmospheric Rivers by Marine Heatwaves*. University of Hawai‘i at Mānoa, Honolulu, HI, USA, February 2025.
- *Intensification of Atmospheric Rivers by Marine Heatwaves*. Woods Hole Oceanographic Institution, Woods Hole, MA, USA, January 2025.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. U.S. Naval Research Laboratory, Monterey, CA, USA (virtual), February 2022.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. National Oceanography Centre, Liverpool, UK (virtual), February 2022.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. Woods Hole Oceanographic Institution, Woods Hole, MA, USA (virtual), February 2022.
- *Ocean Model Validation and Downscaling for Subseasonal-to-Seasonal Prediction*. Physical Oceanography Dissertation Symposium XI, Lihue, HI, USA, October 2021.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. Bedford Institute of Oceanography, Dartmouth NS, Canada, February 2021.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. Department of Oceanography, Dalhousie University, Halifax NS, Canada, January 2021.
- *Tilt, Tides, and Turbulence: Real-Life Struggles of an Ocean Modeller*. Amec Foster Wheeler Environment & Infrastructure, Dartmouth NS, Canada, April 2017.
- *The Alongshore Tilt of Mean Dynamic Topography and Implications for Nearshore Circulation*. Bedford Institute of Oceanography, Dartmouth NS, Canada, October 2016.

Conference Presentations (Presenting Author)

2025

- *Intensification of Atmospheric Rivers by Marine Heatwaves*. Oral presentation at CELLO Conference 2025, Hamburg, Germany, September 2025.

2024

- *Intensification of Atmospheric Rivers by Marine Heatwaves*. Oral presentation at AGU Annual Meeting 2024, Washington, DC, USA, December 2024.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. Poster presentation at AGU Annual Meeting 2024, Washington, DC, USA, December 2024.
- *Marine Heatwaves and Atmospheric Rivers: Implications for Offshore Wind Energy at the US West Coast*. Oral presentation at NAWEA/WindTech 2024, New Brunswick, NJ, USA, October 2024.
- *Intensification of Atmospheric Rivers by Marine Heatwaves*. Oral presentation at the Eastern Pacific Ocean Conference 2024, Timberline Lodge, OR, USA, September 2024.
- *Diabatic Amplification of Atmospheric River Intensity by Marine Heatwaves*. Oral presentation at the International Atmospheric Rivers Conference 2024, La Jolla, CA, USA, June 2024.
- *Diabatic Amplification of Atmospheric River Intensity by Marine Heatwaves*. Oral presentation at the EGU General Assembly 2024, Vienna, Austria, April 2024.
- *Diabatic Amplification of Atmospheric River Intensity by Marine Heatwaves*. Oral presentation at the 2024 Ocean Sciences Meeting (OSM), New Orleans, LA, USA, February 2024.
- *Impact of Marine Heatwaves on Atmospheric Rivers along the U.S. West Coast*. Oral presentation at the WHOI Postdoctoral Symposium 2024, Falmouth, MA, USA, January 2024.

2023

- *Impact of Marine Heatwaves on Atmospheric Rivers along the Coast of California*. Poster presentation at the WCRP Open Science Conference 2023, virtual, October 2023.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic*. Poster presentation at the WCRP Open Science Conference 2023, virtual, October 2023.
- *Impact of Marine Heatwaves on Atmospheric Rivers along the Coast of California*. Oral presentation at the Eastern Pacific Ocean Conference 2023, Fallen Leaf Lake, CA, USA, September 2023.

- *Downscaling Climate Projections of Northwest Atlantic Circulation and Sea Ice: Importance of Bias Correction and Spatiotemporal Scales.* Oral presentation at the 57th Canadian Meteorological and Oceanographic Society (CMOS) Congress, St. John's NL, Canada, May/June 2023.
- *Coastal Mean Dynamic Topography and Implications for Model Validation and Ocean Monitoring.* Oral presentation at the 57th Canadian Meteorological and Oceanographic Society (CMOS) Congress, St. John's NL, Canada, May/June 2023.
- *Impact of Marine Heatwaves on Atmospheric Rivers along the Coast of California.* Poster presentation at the 57th Canadian Meteorological and Oceanographic Society (CMOS) Congress, St. John's NL, Canada, May/June 2023.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic.* Poster presentation at the Mesoscale and Frontal-Scale Interactions Workshop, Boulder, CO, USA, March 2023.

2022

- *Bias Correction and Spatiotemporal Scales for Downscaling Future Projections of Northwest Atlantic Circulation and Sea Ice.* Oral presentation at the 56th Canadian Meteorological and Oceanographic Society (CMOS) Congress, virtual, June 2022.
- *Bias Correction and Spatiotemporal Scales for Downscaling Future Projections of Northwest Atlantic Circulation and Sea Ice.* Oral presentation at the EGU General Assembly 2022, Vienna, Austria, May 2022.
- *Bias Correction and Spatiotemporal Scales for Downscaling Future Projections of Northwest Atlantic Circulation and Sea Ice.* Poster presentation at the Ocean Frontier 2022, Halifax NS, Canada, May 2022.
- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic.* Oral presentation at the 2022 Ocean Sciences Meeting (OSM), virtual, February/March 2022.

2021

- *Downscaling the Ocean Response to the Madden-Julian Oscillation in the Northwest Atlantic.* Oral presentation at the 55th Canadian Meteorological and Oceanographic Society (CMOS) Congress, virtual, May/June 2021.

2019

- *The Madden-Julian Oscillation as a Source of S2S Predictability of North Atlantic Sea Surface Temperature.* Oral presentation at the 27th General Assembly of the International Union of Geodesy and Geophysics (IUGG), Montreal QC, Canada, July 2019.
- *The Madden-Julian Oscillation as a Source of S2S Predictability of North Atlantic Sea Surface Temperature.* Oral presentation at the Conference of Dalhousie Oceanography Graduate Students (CDOGS), Halifax NS, Canada, March 2019.

2018

- *Downscaling Subseasonal Predictions of Ocean Extremes.* Poster presentation at the International Conference on Subseasonal to Seasonal (S2S) Prediction, Boulder, CO, USA, September 2018.
- *Using Overtides to Evaluate Ocean Model Predictions of Mean Dynamic Topography in Shallow, Tidally-Dominated Regions.* Oral presentation at the 52nd Canadian Meteorological and Oceanographic Society (CMOS) Congress, Halifax NS, Canada, June 2018.
- *A First Step Toward Downscaling Subseasonal Predictions of Ocean Extremes.* Oral presentation at the Conference of Dalhousie Oceanography Graduate Students (CDOGS), Halifax NS, Canada, March 2018.
- *Using Overtides to Evaluate Ocean Model Predictions of Mean Dynamic Topography in Shallow, Tidally-Dominated Regions.* Poster presentation at the 2018 Ocean Sciences Meeting (OSM), Portland, OR, USA, February 2018.

2017

- *The Mean Tilt of Coastal Sea Level in Shallow, Tidally-Dominated Regions.* Oral presentation at the 51st Canadian Meteorological and Oceanographic Society (CMOS) Congress, Toronto ON, Canada, June 2017.
- *Tilt, Tides, and Turbulence: Real-Life Struggles of an Ocean Modeller.* Oral presentation at the Conference of Dalhousie Oceanography Graduate Students (CDOGS), Halifax NS, Canada, March 2017.

2016

- *The Alongshore Tilt of Mean Dynamic Topography and Implications for Nearshore Circulation and Regional Vorticity Balance.* Oral presentation at the 50th Canadian Meteorological and Oceanographic Society (CMOS) Congress, Fredericton NB, Canada, May/June 2016.
- *The Alongshore Tilt of Mean Dynamic Topography and Implications for Nearshore Circulation and Regional Vorticity Balance.* Poster presentation at the EGU General Assembly 2016, Vienna, Austria, April 2016.
- *The Alongshore Tilt of Mean Dynamic Topography and Implications for Nearshore Circulation.* Oral presentation at the Conference of Dalhousie Oceanography Graduate Students (CDOGS), Halifax NS, Canada, March 2016.

2013

- *Ensemble Postprocessing and Verification of the Vertical Structure of the Atmosphere*. Poster presentation at the Workshop “Evaluating Probabilistic Forecasts of Multivariate Quantities”, Heidelberg, Germany, October 2013.
- *Ensemble Postprocessing and Verification of the Vertical Structure of the Atmosphere*. Oral presentation at the EGU General Assembly 2013, Vienna, Austria, April 2013.
- *Ensemble Postprocessing and Verification of the Vertical Structure of the Atmosphere*. Poster presentation at the COSMO User Seminar, Offenbach, Germany, March 2013.
- *Ensemble Postprocessing and Verification of the Vertical Structure of the Atmosphere*. Poster presentation at the Symposium “Extreme Events: Modeling, Analysis and Prediction”, Hanover, Germany, February 2013.