

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 <i>Thesis Defence: Nov. 23, 2020</i>
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**2010**

Leibniz-Institute of Atmospheric Physics e.V.

Kühlungsborn, Germany

ADVISOR: Dr. Christoph Zülicke

ERASMUS Exchange Student**2009–2010**

University of Bergen

Bergen, Norway

Courses in meteorology, oceanography, computer science, and Norwegian language

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 of Northwest Atlantic Circulation and Sea Ice”.	CAD\$40,000
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) <i>Principal Lecturer</i>	University of Bonn <i>Winter 2025/26</i>
Atmospheric Dynamics (pea710) <i>Principal Lecturer</i>	University of Bonn <i>Winter 2025/26</i>
Synoptic Meteorology (mug410) <i>Principal Lecturer</i>	University of Bonn <i>Summer 2025</i>
General Hydrodynamics (pea810) <i>Principal Lecturer</i>	University of Bonn <i>Summer 2025</i>
Climate Variability and Diagnostics (12.860) <i>Guest Lecturer</i>	Massachusetts Institute of Technology <i>Fall 2024</i>
Ocean Dynamics (OCEA 5221) <i>Guest Lecturer</i>	Dalhousie University <i>Winter 2022</i>
Oceanography Honours Class (OCEA 4201) <i>Guest Lecturer</i>	Dalhousie University <i>Fall 2021, 2022</i>
Introduction to Programming with R and Python <i>Co-Lecturer</i>	Dalhousie University <i>Fall 2018</i>
The Blue Planet (OCEA 2001/2002) <i>Teaching Assistant</i>	Dalhousie University <i>Fall 2016, 2017 and Winter 2017, 2018</i>
Synoptic Meteorology <i>Teaching Assistant</i>	Freie Universität Berlin <i>Winter 2010/11</i>

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.