

James H. Ruppert, Jr.

Assistant Professor
School of Meteorology
University of Oklahoma, Norman, OK
Office: NWC 5331
Email: [jruppert \[at\] ou.edu](mailto:jruppert[at]ou.edu)
[Research Webpage](#), [Google Scholar](#), [Publons](#)

Curriculum Vitae
May 2021

EDUCATION

- 2015** **Ph.D.**, Atmospheric Science, Colorado State University, Fort Collins, CO
2012 **M.S.**, Atmospheric Science, Colorado State University, Fort Collins, CO
2009 **B.S.** (*summa cum laude*), Atmospheric Science, University at Albany, Albany, NY

POSITIONS

- 2021–** **Assistant Professor**
School of Meteorology, University of Oklahoma, Norman, OK
- 2018–2020** **Assistant Research Professor**
Department of Meteorology and Atmospheric Science, Center for Advanced Data Assimilation and Predictability Techniques, The Pennsylvania State University, University Park, PA
- 2015–2018** **NSF AGS and Alexander von Humboldt Postdoctoral Research Fellow**
Max Planck Institute for Meteorology, Hamburg, Germany
- 2012** **NSF East Asia and Pacific Summer Institutes (EAPSI) Fellow**
Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan
- 2009–2015** **Graduate Research Assistant**
Department of Atmospheric Science, Colorado State University, Fort Collins, CO

TEACHING

- 2018** **Lecturer**
Advanced Lectures on Clouds and Precipitation (March 2018): Moist Convection and Large-scale Dynamics in the Tropics, CAMS/CMA, Beijing, China
- 2013** **Teaching Assistant, Lab Instructor**
ATS 350, Introduction to Weather and Climate (fall), Colorado State University
- 2012** **Teaching Assistant, Lab Instructor**
ATS 541, Mesoscale Meteorology (spring), Colorado State University
- 2010, 2011** **Teaching Assistant**
Weather and Climate for Educators (summer), Colorado State University

STUDENT SUPERVISION

- 2020** Nicholas Barron, M.S., Master's committee member, The Pennsylvania State University, University Park, PA
- 2018** Marie-Léa Pouliquen, Diplôme de l'École Normale Supérieure, École normale supérieure, Paris, France (research conducted at the Max Planck Institute for Meteorology, Hamburg, Germany)
- 2011** David Wang, Research Experiences for Undergraduates (REU), Colorado State University, Fort Collins, Colorado

REFEREED PUBLICATIONS

BOOK CHAPTERS

In process

DeMott, C. A., **J. H. Ruppert, Jr.**, A. V. Rydbeck, 2021: Intraseasonal variability for the Indian Ocean region. *The Indian Ocean and its role in the global climate system*, C. C. Ummerhofer and R. R. Hood, Eds., Elsevier, in review.

JOURNAL ARTICLES

In process

Ruppert, J. H., Jr., S. E. Koch, X. Chen, Y. Du, A. Seimon, Y. Sun, J. Wei, and L. F. Bosart, 2021: Mesoscale gravity waves and midlatitude weather: A tribute to Fuqing Zhang, *Bull. Amer. Meteor. Soc.*, in review.

Published

1. **Ruppert, J. H., Jr.**, A. A. Wing, X. Tang, and E. L. Duran, 2020: The critical role of cloud–infrared radiation feedback in tropical cyclone development, *Proc. Natl. Acad. Sci.*, **117**, 27884–27892, DOI: [10.1073/pnas.2013584117](https://doi.org/10.1073/pnas.2013584117)
 - * *Science*, Editors' Choice: "Birth of a storm" <https://science.sciencemag.org/content/370/6518/twil>
 - * Penn State News: "[Greenhouse effect of clouds instrumental in origin of tropical storms](#)"
2. Wing, A. A., **et al.**, 2020: Clouds and convective self-aggregation in a multi-model ensemble of radiative-convective equilibrium simulations, *J. Adv. Model. Earth Syst.* **12**, DOI: [10.1029/2020MS002138](https://doi.org/10.1029/2020MS002138)
3. **Ruppert, J. H., Jr.** and X. Chen, 2020: Island rainfall enhancement in the Maritime Continent, *Geophys. Res. Lett.*, **47**. DOI: [10.1029/2019GL086545](https://doi.org/10.1029/2019GL086545)
4. **Ruppert, J. H., Jr.**, X. Chen, and F. Zhang, 2020: Convectively forced diurnal gravity waves in the Maritime Continent, *J. Atmos. Sci.*, **77**, 1119–1136. DOI: [10.1175/JAS-D-19-0236.1](https://doi.org/10.1175/JAS-D-19-0236.1)
5. **Ruppert, J. H., Jr.**, and F. Zhang, 2019: Diurnal forcing and phase locking of gravity waves in the Maritime Continent, *J. Atmos. Sci.*, **76**, 2815–2835. DOI: [10.1175/JAS-D-19-0061.1](https://doi.org/10.1175/JAS-D-19-0061.1)
6. **Ruppert, J. H., Jr.**, and D. Klocke, 2019: The two diurnal modes of tropical upward motion, *Geophys. Res. Lett.*, **46**. DOI: [10.1029/2018GL081806](https://doi.org/10.1029/2018GL081806)
7. Chen, X., F. Zhang, and **J. H. Ruppert, Jr.**, 2019: Modulations of coastal rainfall diurnal cycle over South China by the boreal summer intraseasonal oscillation, *J. Climate*, **32**, 2089–2108. DOI: [10.1175/JCLI-D-18-0786.1](https://doi.org/10.1175/JCLI-D-18-0786.1)
8. **Ruppert, J. H., Jr.**, and M. E O'Neill, 2019*: Diurnal cloud and circulation changes in tropical cyclones, *Geophys. Res. Lett.*, **46**. DOI: [10.1029/2018GL081302](https://doi.org/10.1029/2018GL081302)
 - * Eos Research Spotlight: Underwood, E., 2019: A better understanding of tropical cyclones, *Eos*, 100. DOI: [10.1029/2019EO118381](https://doi.org/10.1029/2019EO118381)
9. **Ruppert, J. H., Jr.**, and C. Hohenegger, 2018: Diurnal circulation adjustment and organized deep convection, *J. Climate*, **31**, 4899–4916. DOI: [10.1175/JCLI-D-17-0693.1](https://doi.org/10.1175/JCLI-D-17-0693.1)
10. Ciesielski, P. E., R. H. Johnson, W. H. Schubert, and **J. H. Ruppert, Jr.**, 2018: Diurnal cycle of the ITCZ in DYNAMO, *J. Climate*, **31**, 4543–4562. DOI: [10.1175/JCLI-D-17-0670.1](https://doi.org/10.1175/JCLI-D-17-0670.1)
11. Bony, S., **et al.**, 2017: EUREC4A: a field campaign to elucidate the couplings between clouds, convection and circulation, *Surveys in Geophysics*. DOI: [10.1007/s10712-017-9428-0](https://doi.org/10.1007/s10712-017-9428-0)
12. **Ruppert, J. H., Jr.**, 2016: Diurnal timescale feedbacks in the tropical cumulus regime. *J. Adv. Model. Earth Syst.*, **8**, 1483–1500. DOI: [10.1002/2016MS000713](https://doi.org/10.1002/2016MS000713)
13. **Ruppert, J. H., Jr.**, and R. H. Johnson, 2016: On the cumulus diurnal cycle over the tropical warm pool. *J. Adv. Model. Earth Syst.*, **8**, 669–690. DOI: [10.1002/2015MS000610](https://doi.org/10.1002/2015MS000610)

14. **Ruppert, J. H., Jr.**, and R. H. Johnson, 2015: Diurnally modulated cumulus moistening in the pre-onset stage of the Madden–Julian oscillation during DYNAMO. *J. Atmos. Sci.*, **72**, 1622–1647. DOI: [10.1175/JAS-D-14-0218.1](https://doi.org/10.1175/JAS-D-14-0218.1)
15. Johnson, R. H., P. E. Ciesielski, **J. H. Ruppert, Jr.**, and M. Katsumata, 2015: Sounding-based thermodynamic budgets for DYNAMO. *J. Atmos. Sci.*, **72**, 598–622. DOI: [10.1175/JAS-D-14-0202.1](https://doi.org/10.1175/JAS-D-14-0202.1)
16. **Ruppert, J. H., Jr.**, and L. F. Bosart, 2014: A case study of the interaction of a mesoscale gravity wave with a mesoscale convective system. *Mon. Wea. Rev.*, **142**, 1403–1429. DOI: [10.1175/MWR-D-13-00274.1](https://doi.org/10.1175/MWR-D-13-00274.1)
17. Johnson, R. H., R. S. Schumacher, **J. H. Ruppert, Jr.**, D. T. Lindsey, J. E. Ruthford, L. Kriederman, 2014: The role of convective outflow in the Waldo Canyon Fire. *Mon. Wea. Rev.*, **142**, 3061–3080. DOI: [10.1175/MWR-D-13-00361.1](https://doi.org/10.1175/MWR-D-13-00361.1)
18. **Ruppert, J. H., Jr.**, R. H. Johnson, and A. K. Rowe, 2013: Diurnal circulations and rainfall in Taiwan during SoWMEX/TIMREX (2008). *Mon. Wea. Rev.*, **141**, 3851–3872. DOI: [10.1175/MWR-D-12-00301.1](https://doi.org/10.1175/MWR-D-12-00301.1)

PUBLICATIONS IN MEDIA

1. **Ruppert, J. H., Jr.**, and A. A. Wing, 2020: [The 2020 Atlantic hurricane season was a record-breaker, and it's raising more concerns about climate change](#). *The Conversation*.
2. **Ruppert, J. H., Jr.**, 2016: The diurnal cycle: A bridge between weather and climate. *Physics Today: Down to Earth*. DOI: [10.1063/PT.5.4024](https://doi.org/10.1063/PT.5.4024)
3. **Ruppert, J. H., Jr.**, and R. H. Johnson, 2012: The diurnal cycle of rainfall during the Mei-yu season. APEC Research Center for Typhoon and Society (ACTS) Quarterly Newsletter, Vol. 2, No. 3, 8–11., available from [APEC-ACTS](#)

THESES AND DISSERTATIONS

1. **Ruppert, J. H., Jr.**, 2015: Cumulus moistening, the diurnal cycle, and large-scale tropical dynamics. Ph.D. Dissertation, Colorado State University (CSU), 116 pp. ([link to PDF](#))
2. **Ruppert, J. H., Jr.**, 2012: Analysis of the diurnal cycle in Taiwan during the Terrain-influenced Monsoon Rainfall Experiment. M.S. Thesis, CSU, 107 pp., ([link to PDF](#))
3. **Ruppert, J. H., Jr.**, 2009: Analysis of the large-amplitude inertia–gravity wave of 7 March 2008. B.S. Thesis, University at Albany, 38 pp.

GRANTS

1. Zhang F. (PI), **J. H. Ruppert, Jr.** (co-PI), and Y. Zhang (co-PI), 2019–2021 (\$135,000): *Supplement to “Coupling of Gravity Waves and Convection, and Their Impacts on the Dynamics and Predictability of Multiscale Processes Associated with Moist Baroclinic Jet–Front Systems,”* NSF-AGS Award 1712290
2. **Ruppert, J. H., Jr.** (PI), 2016–2018 (\$192,000): *The diurnal cycle, cloud–radiative feedbacks, and large-scale tropical dynamics*, NSF-AGS Postdoctoral Research Fellowship Award 1524844
3. **Ruppert, J. H., Jr.** (PI), 2015–2017 (€82,800): Alexander von Humboldt Postdoctoral Research Fellowship
4. **Ruppert, J. H., Jr.** (PI), 2012 (\$5,000): *Relationships between Intraseasonal Variability and Convection in the Southeast Asian Summer Monsoon*, NSF East Asia and Pacific Summer Institutes Fellowship.

SERVICE

Leadership:

- Organizer: *Climate Science Symposium for the visit of the Alexander von Humboldt Foundation International Climate Protection Fellows* at the Max Planck Institute for Meteorology (March 2018)
- Co-planner: *PRECIP2020 – Prediction of Rainfall Extremes Campaign In the Pacific*
- Co-planner: *EUREC⁴A 2020 field campaign – Elucidating the Role of Cloud–Circulation Coupling in Climate*

Outreach:

- Organizer: “Severe Weather for High Schools” – a group of graduate students conducting hands-on, interactive geoscience learning activities in Front Range high schools (2011–2015)
- Steering committee member: Fort Collins Atmospheric Scientists (FORTCAST) – a Front Range Chapter of the AMS established to facilitate CSU student outreach activities (2012–2013)
- Club Tres Mentor, Fort Collins, CO (2013): led hands-on activities for elementary-school students to engage them in science

Fieldwork operations:

- Sounding launches on Diego Garcia, British Indian Ocean Territory during the Dynamics of the MJO (DYNAMO) field campaign for the National Center for Atmospheric Research (2011).

Award panel reviewer:

- AMS Max A. Eaton Student Prize

Proposal reviews:

- NSF Physical Oceanography, NSF Climate and Large-Scale Dynamics

Journal reviews:

- Climate Dyn., GRL, IJC, J. Climate, JAMES, JAS, JAMC, JGR, MWR, QJRM

Society memberships:

- American Geophysical Union, American Meteorological Society, European Geophysical Union

HONORS AND AWARDS

2020	Science Magazine, Editor's Choice
2019	EOS Research Spotlight
2016	European Geophysical Union (EGU) Outstanding Student Poster Award
2015	NSF AGS Postdoctoral Research Fellowship
2015	Alexander von Humboldt Postdoctoral Research Fellowship
2015	1 st Place Student Oral Presentation, AMS 16 th Conference on Mesoscale Processes
2013	Colorado State University, Alumni Award, Department of Atmospheric Science
2013	Colorado State University, Shrake Culler Graduate Scholarship
2012	NSF East Asia and Pacific Summer Institutes Fellowship
2009	2 nd Place Student Poster Presentation, 13 th Conference on Mesoscale Processes (AMS)
2009	University at Albany, graduation with honors, <i>summa cum laude</i>
2009	Distinguished Student Award, Department of Atmospheric and Environmental Sciences, University at Albany
2009	Undergraduate Research Award, University at Albany

INVITED SEMINARS

- 2020** Department of Earth System Science
University of California Irvine, Irvine, CA, 6 April 2020
- 2020** NOAA Cooperative Institute for Research in the Atmosphere (CIRA)
Colorado State University, Fort Collins, CO, 4 March 2020
- 2020** Department of Atmospheric Science
University of Wyoming, Laramie, WY, 27 February 2020
- 2020** Department of Meteorology
Naval Postgraduate School, Monterey, CA, 19 February 2020
- 2020** School of Meteorology
University of Oklahoma, Norman, OK, 10 February 2020
- 2020** Department of Meteorology and Atmospheric Science
Penn State University, State College, PA, 5 February 2020
- 2020** Department of Atmospheric and Oceanic Sciences
University of Wisconsin–Madison, Madison, WI, 27 January 2020
- 2019** Department of Atmospheric and Environmental Sciences
University at Albany, Albany, NY, 7 October 2019
- 2019** *Frank Talk Series*, Department of Meteorology and Atmospheric Science
Penn State University, State College, PA, 26 September 2019
- 2019** *Brown Bag Series*, Earth System Science Center
Penn State University, State College, PA, 10 April 2019
- 2018** Department of Meteorology and Atmospheric Science
Penn State University, State College, PA, 4 April 2018
- 2018** Department of Geological and Atmospheric Sciences
Iowa State University, Ames, IA, 14 February 2018
- 2017** Max Planck Institute for Meteorology, Hamburg, Germany, 7 Nov 2017
- 2016** Institute of Geophysics and Meteorology
University of Cologne, Cologne, Germany, 6 December 2016
- 2016** Max Planck Institute for Meteorology, Hamburg, Germany, 5 April 2016

WORKSHOPS AND SYMPOSIA

- 2018** *Propagating Diurnal Convection in the Maritime Continent during DYNAMO*
Workshop: Second ADAPT Symposium on Advanced Understanding, Monitoring and Prediction of Weather, Climate and Environmental systems
Penn State University, State College, PA, 16–18 December 2018
- 2018** *Circulation changes forced by the diurnal cycle of tropical organized deep convection*
Workshop: Multiscale Modeling of Atmospheric Processes
CAMS/CMA, Beijing, China, 20–27 March 2018
- 2017** *The diurnal cycle of large-scale overturning circulation*
Workshop: The Future of Cumulus Parameterization
Delft University of Technology, Delft, Netherlands, 10–14 July 2017
- 2016** *Large-scale Sounding Array for EUREC⁴A*
Workshop: The Next-generation Aircraft Remote-sensing for Validation Studies (NARVAL) II—Elucidating the Role of Cloud–Circulation Coupling in Climate (EUREC⁴A), University of Cologne, Cologne, Germany, 7–9 December 2016

- 2016** *Diurnal timescale feedbacks in the tropical cumulus regime*
Workshop: GEWEX Convection-Permitting Climate Modeling
National Center for Atmospheric Research, Boulder, CO, 6–8 September 2016
- 2014** *Convective clouds, moisture preconditioning, and the diurnal cycle during DYNAMO*
Workshop: Advances in Topical Dynamics
University of Hawaii, Honolulu, HI, 14–16 January 2014
- 2013** *The diurnal cycle of moistening during MJO preconditioning periods in DYNAMO*
Workshop: Global Atmospheric System Studies MJO Task Force Meeting on the Heating and Moistening Processes of the Madden–Julian Oscillation
Centre for Climate Research Singapore, Singapore, 3–5 June 2013

CONFERENCE PRESENTATIONS (AS FIRST AUTHOR ONLY)

- 2021** *Island Rainfall Enhancement and Diurnal Rectification in the Maritime Continent* (oral), AMS 34th Conference on Hurricanes and Tropical Meteorology, Virtual (coauthors: X. Chen, F. Zhang)
- 2021** *The critical role of cloud–longwave radiation feedback in the formation and rapid intensification of super typhoon Haiyan (2013) and major hurricane Maria (2017)* (oral), AMS 34th Conference on Hurricanes and Tropical Meteorology, Virtual (coauthors: A. A. Wing, X. Tang, E. Duran)
- 2021** *The Critical Role of Cloud–Infrared Radiation Feedback in Tropical Cyclone Development* (oral), vEGU 2021, Virtual (coauthors: A. A. Wing, X. Tang, E. Duran)
- 2021** *The Critical Role of Cloud–Infrared Radiation Feedback in Tropical Cyclone Development* (oral), AMS 101st Annual Meeting, Virtual (coauthors: A. A. Wing, X. Tang, E. Duran)
- 2020** *Island Rainfall Enhancement and Diurnal Rectification in the Maritime Continent* (poster), AGU Fall Meeting, Virtual (coauthors: X. Chen)
- 2020** *Diurnal forcing and phase locking of gravity waves in the Maritime Continent* (oral), AMS 100th Annual Meeting, Boston, MA (coauthors: F. Zhang, X. Chen)
- 2019** *Diurnal forcing and phase locking of gravity waves in the Maritime Continent* (oral), AMS 18th Conference on Mesoscale Processes, Savannah, GA (coauthor: F. Zhang)
- 2018** *A tale of two diurnal cloud modes* (oral), AGU Fall Meeting, Washington D.C. (coauthors: C. Hohenegger, M. O’Neill, and D. Klocke)
- 2018** *How does the diurnal radiative heating cycle impact the genesis and intensification of tropical cyclones?* (oral), AMS 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL (coauthors: C. Hohenegger and M. O’Neill)
- 2018** *Diurnal circulation adjustment and organized deep convection* (oral), AMS 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL (coauthor: C. Hohenegger)
- 2018** *Diurnal circulation adjustment and organized deep convection* (oral), EGU General Assembly 2018, Vienna, Austria (coauthors: C. Hohenegger and M. O’Neill)
- 2018** *Diurnal modes of tropical cyclones* (poster), EGU General Assembly 2018, Vienna, Austria (coauthors: C. Hohenegger and M. O’Neill)
- 2017** *The diurnal cycle of tropical large-scale circulation* (poster), EGU General Assembly 2017, Vienna, Austria (coauthor: C. Hohenegger)
- 2016** *Acceleration of the Large-scale Onset of Deep Convection by the Shallow Cumulus Diurnal Cycle* (oral), 2016 AGU Fall Meeting, San Francisco, CA
- 2016** *Climate implications of the moist convective diurnal cycle* (poster), EGU General Assembly 2016, Vienna, Austria (**outstanding student poster award**)

- 2015** *Rectified moistening by the cumulus diurnal cycle* (oral), 2014 AMS 16th Conference on Mesoscale Processes, Boston, MA (coauthor: R. H. Johnson) **(1st place student oral presentation)**
- 2014** *Diurnally modulated cumulus moistening in the pre-onset stage of the Madden–Julian oscillation during DYNAMO* (poster), 2014 AGU Fall Meeting, San Francisco, CA (coauthor: R. H. Johnson)
- 2014** *Cumulus moistening, convection, and the diurnal cycle during pre-onset periods in DYNAMO* (oral), AMS 31st Conference on Hurricanes and Tropical Meteorology, San Diego, CA (coauthors: R. H. Johnson, P. E. Ciesielski)
- 2013** *The diurnal cycle of moistening by shallow convection during DYNAMO* (p), 2013 AGU Fall Meeting, San Francisco, CA (coauthor: R. H. Johnson)
- 2013** *Diurnal convection and mesoscale organization in the MJO during DYNAMO*, AMS 15th Conference on Mesoscale Processes (o), Portland, OR (coauthor: R. H. Johnson)
- 2012** *Diurnal cycle of rainfall in Taiwan during SoWMEX/TiMREX (2008)* (p), 2012 AGU Fall Meeting, San Francisco, CA (coauthor: R. H. Johnson)
- 2011** *Analysis of flow variability during the Terrain-influenced Monsoon Rainfall Experiment (2008)* (o), AMS 14th Conference on Mesoscale Processes, Los Angeles, CA (coauthor: R. H. Johnson)
- 2011** *Case study of a large-amplitude mesoscale inertia–gravity wave over the Southeast U.S.* (o), AMS 14th Conference on Mesoscale Processes, Los Angeles, CA (coauthor: L. F. Bosart)
- 2011** *Case study of a large-amplitude inertia–gravity wave over the Southeast* (p), AMS 24th Conference on Weather and Forecasting, Seattle, WA (coauthor: L. F. Bosart)
- 2010** *Case study of a large-amplitude inertia–gravity wave over the Southeast* (p), AMS 25th Conference on Severe Local Storms, Denver, CO (coauthor: L. F. Bosart)
- 2009** *Case study of a large-amplitude inertia–gravity wave over the Southeast* (p), AMS 13th Conference on Mesoscale Processes, Salt Lake City, UT (coauthor: L. F. Bosart) **(2nd place student poster presentation)**