Rebecca Adams-Selin

Atmospheric and Environmental Research
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Education

Ph.D., Atmospheric Science	Colorado State University	2012
M.S., Atmospheric Science	Colorado State University	2007
B.S., Atmospheric Science, Mathematics	Creighton University with honors, summa cum laude	2005

Professional Experience

Senior Manager Science Modeling Atmospheric Components and Processes Group	Atmospheric and Environmental Research	2021-present
Senior Staff Scientist II Lead, Convection, Chemistry, and Microphysics Research Group	Atmospheric and Environmental Research	2019-2021
Senior Staff Scientist	Atmospheric and Environmental Research	2017-2019
Staff Scientist II	Atmospheric and Environmental Research	2014-2017
Staff Scientist I	Atmospheric and Environmental Research	2011-2014
Senior Research Associate	Atmospheric and Environmental Research	2009-2011
Visiting Scientist	University Corporation of Atmospheric Research Air Force Weather Agency	2007-2009

Awarded Grants

Establishing a Holistic Understanding of Mesoscale Convective System Stratiform Precipitation Regions. DoE ASR. PIs: **Adams-Selin**, Evans; 08/2022 – 07/2025.

Use of GPM to Understand Production of Hail in South America. NASA PMM. PI: **Adams-Selin**; 04/2022 – 03/2025.

A Multi-Perspective Analysis of Hail Processes, Melting, and their Environments. NASA PMM. PI: Sarah Bang, NASA Marshall; 07/2022-06/2025.

Lightning Data Assimilation for Convection. NASA ACCDAM. PI: **Adams-Selin**; 07/2021-06/2024.

PREEVENTS Track 2: Collaborative Research: Improving High-Impact Hail Event Forecasts by Linking Hail Environments and Modeled Hailstorm Processes. NSF. PI: **Adams-Selin**; 08/2019 – 10/2022.

In-situ Collaborative Experiment for the Collection of Hail In the Plains (ICECHIP) Planning Grant. NSF. PIs: **Adams-Selin**, Heymsfield, Allen, Gensini; 06/2022.

Improving Hail Forecasts Through Operational Implementation of the HAILCAST Hail Model. NOAA. PI: **Adams-Selin**; 10/01/2018 – 09/30/2021.

Collaborative Research: Impact of Convectively Generated Gravity Waves on Mesoscale Convective Systems. NSF. PI: **Adams-Selin**; 11/01/2016 – 04/30/2020.

Refereed Publications

Adams-Selin, R., C. Kalb, T. Jensen, J. Henderson, T. Supinie, L. Harras, Y. Wang, B. Gallo, and A. Clark, 2022: Just what is "good"? Musings on hail forecast verification through evaluation of FV3-HAILCAST hail forecasts. *Wea. Forecasting,* accepted pending revisions.

Schumacher, R. S., S. J. Childs, and **R. Adams-Selin**, 2022: Intense surface winds from gravity wave breaking in simulations of a destructive macroburst. *Mon. Wea. Rev*., accepted pending revisions.

Fan, J., Y. Zhang, J. Wang, J.-H. Jeong, X. Chen, x. Zhang, Y. Lin, Z. Feng, and **R. Adams-Selin**, 2022: Contrasting responses of hailstorms to anthropogenic climate change in different synoptic weather systems. *Earth's Future*, in press.

Groff, F., **R. Adams-Selin**, and R. Schumacher, 2021: Response of MCS low-frequency gravity waves to vertical wind shear and nocturnal thermodynamic environments. *J. Atmos. Sci.,* 78, 3889-3908*.*

Childs, S., R. Schumacher, and **R. Adams-Selin**, 2021: High-resolution observations of a destructive macroburst. *Mon. Wea. Rev.*, 149, 2875-2896.

Adams-Selin, R., 2020: Impact of convectively generated low-frequency gravity waves on evolution of Mesoscale Convective Systems. *J. Atmos. Sci.*, 77, 3441-3460.

Adams-Selin, R., 2020: Sensitivity of MCS low-frequency gravity waves to microphysical variations. *J. Atmos. Sci.*, 77, 3461-3477.

Adams-Selin, R., A. Clark, C. Melick, S. Dembek, I. Jirak, and C. Ziegler, 2019: Verification of WRF-HAILCAST during the 2014-2016 NOAA/Hazardous Weather Testbed Spring Forecasting Experiments. *Wea. Forecasting*, 34, 61-79.

Haghi, K., B. Geerts, H. Chipilski, A. Johnson, S. Degelia, D. Imy, D. Parsons, **R. Adams-Selin**, D. Turner, and X. Wang, 2019: Bore-ing into nocturnal convection. *Bull. Amer. Meteor. Soc.,* 100, 1103–1121.

Hegarty, J., J. Lewis, E. McGrath-Spangler, J. Henderson, et al., 2018: Analysis of the planetary boundary layer height during DISCOVER-AQ Baltimore - Washington, DC with lidar and high-resolution WRF modeling. *J. Appl. Meteor. Climot.,* **57**, 2679–2696.

Alvarado, M. J., E. Winijkul, **R. Adams-Selin**, E. Hunt, C. Brodowski, C. R. Lonsdale, et al., 2018: Sources of black carbon deposition to the Himalayan glaciers in current and future climates. *Journal of Geophysical Research: Atmospheres*, 123, 7482–7505.

Clark, A., I. Jirak, S. Dembek, G. Creager, et al., 2018: The Community Leveraged Unified Ensemble (CLUE) in the 2016 NOAA/Hazardous Weather Testbed Spring Forecasting Experiment. *Bull. Amer. Meteor. Soc.,* 99, 1433–1448.

Gallo, B., A. Clark, I. Jirak, J. Kain, et al., 2017: Breaking new ground in severe weather prediction: The 2015 NOAA/Hazardous Weather Testbed Spring Forecasting Experiment. *Wea. Forecasting*, 32, 1541-1568.

Adams-Selin, R. and C. Ziegler, 2016: Forecasting hail using a one-dimensional hail growth model within WRF. *Mon. Wea. Rev.,* 144, 4919-4939.

Adams-Selin, R., S. van den Heever, and R. Johnson, 2013: Impact of graupel parameterization schemes on idealized bow echo simulations. *Mon. Wea. Rev.,* 141, 1241-1262.

Adams-Selin, R., S. van den Heever, and R. Johnson, 2013: Sensitivity of bow echo simulation to microphysical parameterizations. *Wea. Forecasting,* 28, 1188-1209.

Adams-Selin, R., and R. Johnson, 2013: Examination of gravity waves associated with the 13 March 2003 bow echo. *Mon. Wea. Rev.,* 141, 3735-3756.

Adams-Selin, R., and R. Johnson, 2010: Mesoscale surface pressure and temperature features associated with bow echoes. *Mon. Wea. Rev.*, 138, 212-227.

Selected Recent Conference Presentations

*Denotes advised student ^Denotes invited presentation

Adams-Selin^, R., 2022: Going beyond the observed: Just how far can a dataset take you? *Richard H. Johnson Symposium*, Amer. Meteor. Soc., 10.3.

Adams-Selin, R., 2022: Examination of common hail growth pathways in left- and right-moving supercells using a newly developed trajectory clustering algorithm. *19th Conf. on Mesoscale Processes*, Amer. Meteor. Soc., 11.6.

Adams-Selin, R., 2022: Generation of a 20-year high-resolution climatology via convective-permitting dynamic downscaling for use in planning decisions across multiple sectors. *31st Conf. Wea. Analysis Forecasting/27th Conf. Num. Wea. Prediction,* Amer. Meteor. Soc., J7B.2.

Adams-Selin, R., 2021: Development of a density-based clustering algorithm for three-dimensional hail trajectories and sub-trajectories. *3rd European Hail Workshop,* https://ehw2020.imk.kit.edu/.

Adams-Selin, R., C. Kalb, P. Skinner, and T. Jensen, 2020: Comparison of Object-Based and Grid-Based Verification of Warn-on-Forecast System HAILCAST Forecasts. *30th Conf. Wea. Analysis Forecasting/26th Conf. Num. Wea. Prediction*, Amer. Meteor. Soc., Boston, MA, 2B.2.

Adams-Selin, R., 2020: Comparison of one-dimensional pseudo-Lagrangian and three-dimensional fully Lagrangian trajectories when forecasting hail size. *30th Conf. Wea. Analysis Forecasting/26th Conf. Num. Wea. Prediction*, Amer. Meteor. Soc., Boston, MA, 165.

Calkins, C., and **R. Adams-Selin**, 2020: Use of WRF-HAILCAST to produce a dynamically downscaled hail climatology. *30th Conf. Wea. Analysis Forecasting/26th Conf. Num. Wea. Prediction*, Amer. Meteor. Soc., Boston, MA, 163.

Adams-Selin, R., and A. J. Heymsfield, 2019: Sensitivity of hail trajectories to embryo location, size, and density. *18th Conf. on Mesoscale Processes*, Amer. Meteor Soc., Savannah, GA, 31.

Adams-Selin, R., and R. S. Schumacher, 2019: Lifecycle and impacts of MCS convectively generated low-frequency gravity waves. *Special Symposium on Mesoscale Meteorological Extremes, 99th AMS Annual Meeting*, Phoenix, AZ, 379.

Groff*, F., R. Schumacher, and **R. Adams-Selin**, 2019: Analysis of convectively generated gravity waves in the 14-15 July 2015 Mesoscale Convective System during PECAN. *Special Symposium on Mesoscale Meteorological Extremes, 99th AMS Annual Meeting*, Phoenix, AZ, 380.

Adams-Selin, R., and R. S. Schumacher, 2018: Low-frequency gravity wave generation during Mesoscale Convective System Lifecycles within varying environments. *29th Conf. Severe Local Storms*, Amer. Meteor. Soc., Stowe, VT, 6B.3.

Adams-Selin, R., A. Clark, C. Melick, S. Dembek, I. Jirak, and C. Ziegler, 2018: Evaluation of HAILCAST during NOAA/Hazardous Weather Testbed Spring Forecasting Experiments using multiple verification metrics. *29th Conf. Wea. Analysis Forecasting/25th Conf. Num. Wea. Prediction,* Amer. Meteor. Soc., Denver, CO, 11.

Adams-Selin, R., and R. Schumacher, 2018: MCS evolution in response to convectively-generated low-frequency gravity waves. *29th Conf. Wea. Analysis Forecasting25th Conf. Num. Wea. Prediction,* Amer. Meteor. Soc., Denver, CO, 10A.2.

Groff*, F., R. Schumacher, and **R. Adams-Selin**, 2018: Analysis of convectively generated gravity waves in the 14-15 July 2015 Mesoscale Convective System during PECAN. *Special Symposium on Plains Elevated convection at Night (PECAN), 98th AMS Annual Meeting,* Austin, TX, 837.

Adams-Selin, R., and R. Schumacher, 2017: Impacts of convectively-generated deep tropospheric gravity waves on surrounding environments of MCSs. *17th Conf. Mesoscale Processes,* San Diego, CA, 11.2.

Adams-Selin^, R., 2017: Development, application, and evaluation of a one-dimensional hail growth model within WRF. *2nd European Hail Workshop*, Bern, Switzerland.

Adams-Selin^, R., 2017: Development, application, and evaluation of a one-dimensional hail growth model. *MeteoSwiss*, Zurich, Switzerland.

Adams-Selin, R., A. Clark, C. Melick, S. Dembek, and C. Ziegler, 2017: Application and evaluation of WRF-HAILCAST hail size forecasts during NOAA/Hazardous Weather Testbed Spring Forecasting Experiments. *28th Conf. Wea. Analysis Forecasting/24th Conf. Num. Wea. Prediction*, Seattle, WA, 7A.6.

University and Community Service

Associate Editor	Monthly Weather Review	2018-present
Member	Developmental Testbed Center Science Advisory Board	2022-present
Committee member	AMS Conf. on Severe Local Storms	2022
Chair	AMS Meeting Oversight Committee	2022-present
Member	AMS Meeting Oversight Committee	2021-2022
Chair	AMS Committee on Weather and Forecasting	2018-2021
Committee Member	AMS Committee on Weather and Forecasting	2011-2018
Affiliate Faculty	Colorado State University Co-Advisor and Thesis Committee Member, Faith Groff	2017-2019

Chair	AMS Conf. on Weather Analysis and Forecasting/ Numerical Weather Prediction	2016
Committee member	AMS Conf. on Weather Analysis and Forecasting/ Numerical Weather Prediction	2012, 2014, 2015, 2017, 2019, 2021

Honors

Employee of the Year	Atmospheric and Environmental Research	2022
Invited Participant	NOAA/NSSL Hazardous Weather Testbed Spring Forecasting Experiment	2011, 2014-2022