

ALICE K. DUVIVIER (she/hers)
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RESEARCH INTERESTS

I am a climate scientist who studies the Earth system in the Arctic and Antarctic. I use climate models and observations to investigate physical processes and the changing climate in the Polar regions. I am interested in understanding exchanges of energy and moisture between the sea ice, atmosphere, and ocean. I also investigate how the changing polar regions will affect natural ecosystems and the people living and working in these regions.

EDUCATION

UNIVERSITY OF COLORADO	Boulder, CO
Ph.D., Atmospheric and Oceanic Sciences, 2015	
M.S., Atmospheric and Oceanic Sciences, 2012	
THE COLORADO COLLEGE	Colorado Springs, CO
B.A., Physics, Magna Cum Laude, 2008	

PROFESSIONAL EXPERIENCE

NSF National Center for Atmospheric Research (NCAR)	Boulder, CO
2023-pres.	Project Scientist II: Polar climate modeling and analysis. Supervisor: Dr. Marika Holland
2019-2023	Project Scientist I: Polar climate modeling and analysis. Supervisor: Dr. Marika Holland
2017-2019	Associate Scientist II: Sea Ice modeling: Evaluate and test sea ice (CICE) parameterizations and polar climate in the Community Earth System Model (CESM). Create documentation, develop code, and act as liaison for Polar Climate Working Group and CICE Consortium. Supervisor: Dr. David Bailey.
2016-2017	Postdoctoral Researcher: Analysis of the Southern Ocean mixed layer in observations and in models. Tested and amended model parameterizations of surface forced near-surface mixing. Supervisor: Dr. William Large.
Cooperative Institute for Research in Environmental Sciences (CIRES)	Boulder, CO
2012-2016	Professional Research Assistant: Regional climate modeling and data analysis of the Arctic Climate System. Focused on atmosphere-ocean-sea ice energy fluxes during extreme winds. Supervisor: Dr. John Cassano
2010-2012	Graduate Research Assistant: Analysis of model, satellite, and in-situ data of atmosphere-ocean interactions around Greenland during extreme wind events. Adviser: Dr. John Cassano.

FUNDED GRANTS

Principal Investigator, "Improving predictions of Arctic ecosystem productivity in ice-covered waters for next-generation Earth System Models", NOAA, \$684,619, (recommended; on hold r.e. executive orders)

NCAR-PI, "Conference: Sikumiut: An Utqiagvik Sea Ice Field School", NSF, \$20,063, 07/01/24-6/30/26

Principal Investigator, "Hot spots in the ice: revealing the importance of polynyas for sustaining present and future Antarctic marine ecosystems", NASA, \$1,185,450, 9/15/20-9/14/25

Named Personnel, "Collaborative Research: Interactions between Arctic cyclones, atmospheric rivers, and sea ice in a warming climate", NSF, \$396,216, 2/1/21-1/31/24

NCAR-PI, NSF, "NNA Track 1: Collaborative Research: Maritime Transportation in a Changing Arctic: Navigating Climate and Sea Ice Uncertainties", NSF, \$134,367, 1/1/20-12/31/22

Principal Investigator, "CICE and Icepack sea ice model tutorial", NSF, \$15,415, 9/20/19-9/30/22

HONORS AND AWARDS

2024	Charles Franklin Brooks Award for Outstanding Service to Society, American Meteorological Society
2014	Certificate in College Teaching: Graduate Teacher Program, University of Colorado, Boulder, CO
2009-2012	NOAA/CIRES Graduate Student Fellowship: University of Colorado, Boulder, CO
2012	Best Talk in CIRES Graduate Student Seminar Series: University of Colorado, Boulder, CO
2011	Atmospheric and Oceanic Sciences Travel Grant for <i>On the Cutting Edge</i> Professional Development Workshop: University of Colorado, Boulder, CO
2010	Best Should Teach Silver Award: Graduate Teacher Program, University of Colorado, Boulder, CO
2008	Phi Beta Kappa
2008	Outstanding Physics Student: The Colorado College, Colorado Springs, CO
2004-2008	Dean's List: The Colorado College, Colorado Springs, CO
2004-2008	Colorado College Scholar – Scholarship: The Colorado College, Colorado Springs, CO
2007	Venture Grant – <i>What Makes a Scientist? The life of Geologist James Hutton</i> : The Colorado College, Colorado Springs, CO
2004	AP Scholar with Distinction

PUBLICATIONS

REFEREED (chronological)

- Jenouvrier, S., Brooks, C., **Duvivier, A. K.**, & Trathan, P. N. (2024). Emperor Penguins in a Changing World: Unveiling Current Trends and Predicting Future Scenarios. *Antarctic Environments Portal*.
<https://doi.org/10.48361/9BSP-7948>
- Brooks, C., Stammerjohn, S., Ballard, G., **DuVivier, A. K.**, Hofmann, E., LaRue, M., et al. (2024). Building a coordinated framework for research and monitoring in large-scale international marine protected areas: The Ross Sea region as a model system. *Conservation Letters*, 17, e13053.
<https://doi.org/10.1111/conl.13053>
- DuVivier, A.K.**, Holland, M.M., Vavrus, S., Landrum, L., Thacker, R., Shields, C. (2023). Investigating future Arctic sea ice loss and near-surface wind speed changes related to surface roughness using the Community Earth System Model. *Journal of Geophysical Research: Atmospheres*, 128(20), e2023JD038824.
<https://doi.org/10.1029/2023JD038824>
- DuVivier, A.K.**, M.Molina, A-L. Deppenmeier, M.M. Holland, L. Landrum, K. Krumhardt, S. Jenouvrier. (2023). Projections of winter polynyas and their biophysical impacts in the Ross Sea Antarctica. *In Preparation for Climate Dynamics*, <https://doi.org/10.1007/s00382-023-06951-z>
- Coupe, J., C. Harrison, A. Robock, **A.K. DuVivier**, et al. (2023). Sudden Reduction of Antarctic Sea Ice Despite Cooling After Nuclear War. *Journal of Geophysical Research: Oceans*, 128(1), e2022JC018774.
<https://doi.org/10.1029/2022JC018774>
- Bourreau, L., et al. (including **A.K. DuVivier**) (2023). First description of in situ chlorophyll fluorescence signal within East Antarctic coastal polynyas during fall and winter. *Frontiers in Marine Science*, 10, 1186403.
<https://doi.org/10.3389/fmars.2023.1186403>
- Crosta, X., K.E Kohfeld, H.C. Bostock, M. Chadwick, **A.K. DuVivier**, et al. (2022). Antarctic sea ice over the past 130,000 years, Part 1: A review. *Climate of the Past*, 18(8), 1729–1756.
<https://doi.org/10.5194/egusphere-2022-99>
- Harrison, C., T. Rohr, **A.K. DuVivier**, E.A. Maroon, et al. (2022). A New Ocean State After Nuclear War. AGU Advances, 3(4), e2021AV000610. <https://doi.org/10.1029/2021AV000610>
- Kay, J.E., P. DeRepentigny, M.M. Holland, D.A. Bailey, **A.K. DuVivier**, et al. (2022). Less surface sea ice melt in the CESM2 improves Arctic sea ice simulation with minimal non-polar climate impacts. *Journal of Advances in Modeling Earth Systems*, e2021MS002679. <https://doi.org/10.1029/2021MS002679>
- DuVivier, A.K.**, M.M. Holland, L. Landrum, H.A. Singh, D.A. Bailey, E.A. Maroon (2021). Impacts of sea ice mushy

- thermodynamics in the Antarctic on the Coupled Earth System. *Geophysical Research Letters*, 48(18), e2021GL094287. <https://doi.org/10.1029/2021GL094287>
- Blanchard-Wrigglesworth, E., A. Donohoe, L.A. Roach, **A.K. DuVivier**, C.M. Bitz (2021). High-frequency sea ice variability in observations and models. *Geophysical Research Letters*, 48(14), e2020GL092356. <https://doi.org/10.1029/2020GL092356>
- Cassano, J. J., Nigro, M. A., Seefeldt, M. W., M.Katurji, K. Guinn, G. Williams, & **A.K. DuVivier** (2021). Antarctic atmospheric boundary layer observations with the Small Unmanned Meteorological Observer (SUMO). *Earth System Science Data*, 13(3), 969–982. <https://doi.org/10.5194/essd-13-969-2021>
- Webster, M. A., **A.K. DuVivier**, **M.M. Holland**, & D.A. Bailey (2021). Snow on Arctic Sea Ice in a Warming Climate as Simulated in CESM. *Journal of Geophysical Research: Oceans*, 126(1). <https://doi.org/10.1029/2020JC016308>
- Bailey, D. A., **M.M. Holland**, **A.K. DuVivier**, **E.C. Hunke**, & A.K. Turner (2020). Impact of a New Sea Ice Thermodynamic Formulation in the CESM2 Sea Ice Component. *Journal of Advances in Modeling Earth Systems*, 12(11). <https://doi.org/10.1029/2020MS002154>
- Chang, P., Zhang, S., Danabasoglu, G., Yeager, S. G., Fu, H., Wang, H., et al. (2020). An Unprecedented Set of High-Resolution Earth System Simulations for Understanding Multiscale Interactions in Climate Variability and Change. *Journal of Advances in Modeling Earth Systems*, 12(12). <https://doi.org/10.1029/2020MS002298>
- Danabasoglu, G., J.F. Lamarque, J. Bacmeister, D.A. Bailey, **A.K. DuVivier**, J. Edwards, et al. (2020). The Community Earth System Model Version 2 (CESM2). *Journal of Advances in Modeling Earth Systems*, 12(2), e2019MS001916. <https://doi.org/10.1029/2019MS001916>
- DuVivier, A. K.**, Holland, M. M., Kay, J. E., Tilmes, S., Gettelman, A., & Bailey, D. A. (2020). Arctic and Antarctic Sea Ice Mean State in the Community Earth System Model Version 2 and the Influence of Atmospheric Chemistry. *Journal of Geophysical Research: Oceans*, 125(8). <https://doi.org/10.1029/2019JC015934>
- DuVivier, A. K.**, DeRepentigny, P., Holland, M. M., Webster, M., Kay, J. E., & Perovich, D. (2020). Going with the floe: tracking CESM Large Ensemble sea ice in the Arctic provides context for ship-based observations. *The Cryosphere*, 14(4), 1259–1271. <https://doi.org/10.5194/tc-14-1259-2020>
- Greco, S., G.D. Emmitt, **A.K. DuVivier**, K. Hines, & M. Kavaya (2020). Polar Winds: Airborne Doppler Wind Lidar Missions in the Arctic for Atmospheric Observations and Numerical Model Comparisons. *Atmosphere*, 11(11), 1141. <https://doi.org/10.3390/atmos11111141>
- Singh, H. K. A., L. Landrum, **M.M. Holland**, D.A. Bailey, & **A.K. DuVivier** (2020). An Overview of Antarctic Sea Ice in the CESM2: Analysis of the Seasonal Cycle, Predictability, and Atmosphere-Ocean-Ice Interactions. *Journal of Advances in Modeling Earth Systems*. <https://doi.org/10.1029/2020MS002143>
- Small, R. J., **A.K. DuVivier**, D.B. Whitt, M.C. Long, I. Grooms, & W.G. Large (2020). On the control of subantarctic stratification by the ocean circulation. *Climate Dynamics*. <https://doi.org/10.1007/s00382-020-05473-2>
- Gettelman, A., Mills, M. J., Kinnison, D. E., Garcia, R. R., Smith, A. K., Marsh, D. R., et al. (2019). The Whole Atmosphere Community Climate Model Version 6 (WACCM6). *Journal of Geophysical Research: Atmospheres*, 124(23), 12380–12403. <https://doi.org/10.1029/2019JD030943>
- Huang, Y., X. Dong, D.A. Bailey, **M.M. Holland**, B. Xi, **A.K. DuVivier**, J.E. Kay, L. Landrum, Y. Deng (2019). Thicker clouds and accelerated Arctic sea ice decline: The atmosphere-sea ice interactions in spring. *Geophysical Research Letters*, <https://doi.org/10.1029/2019GL082791>
- Large W.G., E.G. Patton, **A.K. DuVivier**, P.P. Sullivan, L. Romero (2019). Similarity theory in the surface layer of large-eddy simulations of the wind, wave, and buoyancy forced Southern Ocean. *Journal of Physical Oceanography*, <https://doi.org/10.1175/JPO-D-18-0066.1>
- Meehl, G.A., J.M Arblaster, C. Chung, **M.M. Holland**, **A.K. DuVivier**, L. Thompson, D. Yang, C.M. Bitz (2019): Sustained ocean changes contributed to sudden Antarctic sea ice retreat in late 2016. *Nature communications*, 10, 14, <https://doi.org/10.1038/s41467-018-07865-9>
- DuVivier, A.K.**, W.G. Large, R.J. Small (2018), Argo observations of the Deep Mixing Band in the Southern Ocean:

- A salinity modeling challenge, *Journal of Geophysical Research: Oceans*, <https://doi.org/10.1029/2018JC014275>
- Brunke, M.A., J.J. Cassano, N. Dawson, **A.K. DuVivier**, W. J. Gutowski, J. Hamman, W. Maslowski, B. Nijssen, J.R. Erye, J. Renteria, A. Roberts, X. Zeng (2018): Evaluation of the atmosphere-land-ocean-sea ice interface processes in the Regional Arctic System Model Version 1 (RASM) using local and globally gridded observations. *Geoscientific Model Development*. <https://doi.org/10.5194/gmd-2018-104>
- Cassano, J.J., **A.K. DuVivier**, A. Roberts, M. Hughes, M. Seefeldt, M. Brunke, A. Craig, B. Fisel, W. Gutowski, J. Hamman, M. Higgins, W. Maslowski, B. Nijssen, R. Osinski, X. Zeng (2017): Development of the Regional Arctic System Model (RASM): Near Surface Atmospheric Climate Sensitivity. *Journal of Climate*. <https://doi.org/10.1175/JCLI-D-15-0775.1>
- DuVivier, A.K.**, J. J. Cassano, S.Greco, G.D. Emmitt (2017), A Case Study of Observed and Modeled Barrier Flow in the Denmark Strait in May 2015, *Monthly Weather Review*, <https://doi.org/10.1175/MWR-D-16-0386.1>
- Hamman, J., B. Nijssen, M. Brunke, J. Cassano, A. Craig, **A.K. DuVivier**, M. Hughes, D. Lettenmaier, W. Maslowski, R. Osinski, A. Roberts, X. Zeng (2016), Land Surface Climate in the Regional Arctic System Model, *Journal of Climate*, <https://doi.org/10.1175/JCLI-D-15-0415.1>
- DuVivier, A.K.**, J. J. Cassano, A. P. Craig, J. Hamman, W. Maslowski, B. Nijssen, R. Osinski, and A. Roberts (2016), Winter atmospheric buoyancy forcing and oceanic response during strong wind events around southeastern Greenland in the Regional Arctic System Model (RASM) for 1990-2010, *Journal of Climate*, 29, 975–994, <https://doi.org/10.1175/JCLI-D-15-0592.1>
- DuVivier, A.K.**, J.J. Cassano, (2016): Comparison of wintertime mesoscale winds over the ocean around southeastern Greenland in WRF and ERA-Interim. *Climate Dynamics*, 46(7), 2097–2211, <https://doi.org/10.1007/s00382-015-2697-8>
- DuVivier, A.K.**, J.J. Cassano, (2015): Exploration of turbulent heat fluxes and wind stress curl in WRF and ERA-Interim during wintertime mesoscale wind events around southeastern Greenland. *Journal of Geophysical Research: Atmospheres*, 120, 3593–3609. <https://doi.org/10.1002/2014JD022991>
- Roberts, A., A. Craig, W. Maslowski, R. Osinski, **A. DuVivier**, M. Hughes, B. Nijssen, J.J. Cassano, M. Brunke, (2014). Simulating transient ice-ocean Ekman transport in the Regional Arctic System Model and Community Earth System Model. *Annals of Glaciology*, 69, <https://doi.org/10.3189/2015AoG69A760>
- DuVivier, A.K.**, and J. Cassano (2013). Evaluation of WRF model resolution on simulated mesoscale winds and surface fluxes near Greenland. *Monthly Weather Review*, 141, 941–963. <https://doi.org/10.1175/MWR-D-12-00091.1>
- Lazzara, M.A., L.J. Welhouse, J.E. Thom, J.J. Cassano, **A.K. DuVivier**, G.A. Weidner, L.M. Keller, and L. Kalnajs, (2012): Automatic weather station (AWS) program 2011–2012 field season report. *Antarctic Record*.
- Anderson, D., C. Baulcomb, **A.K. DuVivier**, A. Gupta, (2010). Indian Summer Monsoon During the Last Two Millennia. *Journal of Quaternary Science*, 25, 911–917, <https://doi.org/10.1002/jqs.1369>

IN REVIEW

- DuVivier, A.K.**, K. Krumhardt, L.Landrum, Z. Sylvester, et al. (In Review) Quantifying the present and future value for Antarctic ecosystems from phytoplankton to penguins. *Nature Communications*.
- Holland, M.M., K. Krumhart, **A.K. DuVivier**, L. Landrum. (Accepted) Regional multi-year predictability of Antarctic sea ice in CESM2 and its implications for marine ecosystems. *Journal of Climate*.
- Landrum, L., **A.K. DuVivier**, M.M. Holland, K. Krumhardt, Z. Sylvester. (In Review) Defining Antarctic polynyas in satellite observations and climate model output to support ecological climate change research. *The Cryosphere*. <https://doi.org/10.5194/egusphere-2024-3490>
- Payne, C., N. Lovenduski, M.M. Holland, K. Krumhardt, **A.K. DuVivier**. (In Review) Quantifying the potential predictability of Arctic marine primary production. *Journal of Geophysical Research - Oceans*.
- Thaker, R., S.J. Vavrus, C. Shields, **A.K. DuVivier**, M. MacLennan, M.M. Holland, L. Landrum. (In Review) Arctic atmospheric rivers in a changing climate and the impacts on sea ice. *Journal of Geophysical Research - Atmospheres*.

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Zhang, X., et al including **A.K. DuVivier**. (In Review) Weather and Climate Extremes in a Changing Arctic. *Nature Reviews Earth & Environment*.

IN PREPARATION

- Kandel, R., H. Baroud, **A.K. DuVivier**, S. Lin. (In Prep). A risk assessment of Arctic maritime incidents using climate model data. *Reliability Engineering & System Safety*.
- Krumhardt, K., L. Landrum, S. Jenouvrier, M.M. Holland, **A.K. DuVivier**, M. Levy, C. Nissen, B. Sen. (In Prep). Patterns and timing of emergence of climate signals in Antarctic sea ice and ecosystems. *Nature Climate Change*.
- Landrum, L., K. Krumhardt, **A.K. DuVivier**, M.M. Holland. (In Prep). Emergence of regional Antarctic sea ice climate signals. *Geophysical Research Letters*.
- Lin, S., **A.K. DuVivier**, H. Baroud, R. Bennartz. (In Prep). Climate driven changing whaling opportunities in Utqiagvik, AK. *Geophysical Research Letters*.
- Mundi, C., T. L'Ecuyer, **A.K. DuVivier**. (In Prep). How Do Intense Summer Cyclones Impact the Arctic Marginal Ice Zone in the CESM2 Large Ensemble? *Journal of Geophysical Research - Atmospheres*.
- Payne, C., N. Lovenduski, M.M. Holland, K. Krumhardt, **A.K. DuVivier**. (In Prep) End-of-century Arctic Ocean phytoplankton blooms start a month earlier due to anthropogenic climate change. *Nature Climate Change*.
- Sylvester, Z., K. Krumhardt, **A.K. DuVivier**, L. Landrum, C. Brooks (In Prep). Sea Ice, Polynyas, and Productivity: Antarctic Circumpolar Perspectives on Phytoplankton and Zooplankton from an Earth System Model. *Environmental Research Letters*.
- Thaker, R., C. Shields, **A.K. DuVivier**, S. Vavrus, M.M. Holland, L. Landrum. (In Prep). Sea Ice response to Arctic atmospheric rivers. *Climate Dynamics*.

OTHER

- L. Landrum and **A.K. DuVivier**. (2024) Sea ice is shrinking during Antarctic winter. Nature News and Views. <https://doi.org/10.1038/d41586-024-04078-7>
- A.K. DuVivier**, K. Krumhardt, Z. Sylvester, L. Landrum, M.M. Holland, S. Jenouvrier, S. Labrousse, M. LaRue, M. Long, B. Sen, and C. Brooks. Mapping present day polynya ecosystem value from phytoplankton to penguins. White paper submitted to Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) Scientific Committee. September 2024. SC-CAMLR-43/BG/26
- S. Stammerjohn, C. Brooks, G. Ballard, **A.K. DuVivier**, and M. LaRue. Ross Sea Research Planning Meeting Oct 3-5 2022, University of Colorado Boulder. White paper submitted to Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) Working Group on Ecosystem Monitoring and Management. June 2023. WG-EMM-2023/P03
- Z. Sylvester, C. Brooks, **A.K. DuVivier**, K. Krumhardt, L. Landrum, M.M. Holland, M. Long, S. Jenouvrier, S. Labrousse, L. Bourreau. Hot spots in the ice: revealing the importance of polynyas for sustaining present and future Antarctic marine ecosystems. White paper submitted to Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) Working Group on Ecosystem Monitoring and Management. June 2022. WG-EMM-2022/40
- A.K. DuVivier** (2019) "Championing yourself - Setting and Enforcing Your Boundaries". *Association of Polar Early Career Scientists (APECS) Career Blog series*. ([link](#))
- A.K. DuVivier** and E.C. Hunke. (2018) "Community driven sea ice modeling with the CICE Consortium". *Witness the Arctic*. ([link](#))

PRESENTATIONS

INVITED

- DuVivier, A.K.**, D. Bailey, M.M. Holland, D. Clemens-Sewall, L. Roach, C. Bitz, E. Thomas, H. Singh: Opportunities and Challenges with Sea Ice Model Developments in the Community Earth System Model (CESM). *AGU Annual Meeting* - poster presentation. Washington, DC, December 2024.

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- DuVivier, A.K.:** Modeling changes in Antarctic coastal sea ice. *NOAA Climate and Global Change seminar series* - oral presentation. Virtual, October 2024.
- DuVivier, A.K.:** The CESM Sea Ice Model. *CESM Tutorial* - oral presentation. Boulder, CO, July 2024.
- DuVivier, A.K.:** Projected changes in Antarctic coastal sea ice and ecosystems. *ATOC Colloquium* - oral presentation. Boulder, CO, March 2024.
- DuVivier, A.K.:** Climate Modeling Applications Workshop. *Climate Sustainability: Challenges & Opportunities Workshop* - oral presentation. Atlanta, GA, September 2023.
- DuVivier, A.K., M.M. Holland:** Challenges in Modelling Sea Ice Processes in Coupled Climate Systems. *NOAA sea ice modeling workshop* - oral presentation. Boulder, CO, April 2023.
- DuVivier, A.K., L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse, L. Bourreau, M. Long:** Hot spots in the Ice: using satellites to reveal relationships between marine ecosystems and sea ice in coastal Antarctica. *22nd William T. Pecora Memorial Remote Sensing Symposium* - oral presentation, Denver, CO, October 2022.
- DuVivier, A.K., L. Landrum, M.M. Holland:** Modeling climate extremes in the new Arctic and the possible impacts on vessel traffic. *Aspen Global Change Institute Workshop: Arctic Climate and Weather Extremes: Detection, Attribution, and Future Projection* - oral presentation, Aspen, CO, May 2022.
- DuVivier, A.K., M.M. Holland, L. Landrum, S. Vavrus, C. Shields, R. Thaker:** Arctic change is rough: impacts of sea ice roughness on air-sea ice processes. *University of Wisconsin Climate, People, and the Environment Program (CPEP) seminar series* - oral presentation, Madison, WI, April 2022.
- DuVivier, A.K., M.M. Holland, L. Landrum, H. Singh, D. Bailey, C. Brooks, S. Jenouvrier:** Mushy ice leads to saltier seas: impacts of Antarctic coastal sea ice production. *Antarctic Sea Ice and Southern Ocean Seminars* - oral presentation, virtual, March 2021.
- DuVivier, A.K., P. DeRepentigny, M. Webster, M.M. Holland, J.E. Kay, D.K. Perovich, D.A. Bailey:** Going with the floe: using the CESM Large Ensemble sea ice to better understand climate- and process- scale observations. *2019 AGU Annual Meeting* – oral presentation, San Francisco, CA, December 2019.
- DuVivier, A.K., P. DeRepentigny, M.M. Holland, M. Webster, J.E. Kay, D. Perovich:** Using the CESM large ensemble to provide context for ship-based observations. *2019 NOAA Seminar* – oral presentation, Boulder, CO, June 2019.
- DuVivier, A.K., M. Seefeldt, J.J. Cassano, M. Hughes:** Regional Arctic System Model (RASM) sensitivity to clouds. *Kay Group meeting* – oral presentation, Boulder, CO, August 2015.
- DuVivier, A.K.:** How do strong winds around Greenland impact the ocean? *The Colorado College Environmental Program Seminar* - oral presentation, Colorado Springs, CO, September 2013.

CONTRIBUTED

- DuVivier, A.K., L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse:** Quantifying the value of Antarctic polynyas on the ecosystem from phytoplankton to penguins. *AGU Annual meeting* - oral presentation. Washington, DC, December 2024.
- DuVivier, A.K., A. Lindemann:** Arctic Shifts. *NCAR CGD Exchange* - oral presentation. Boulder, CO, October 2024.
- DuVivier, A.K., L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse:** Piloting a new web-based ecological index toward identifying Antarctic coastal ecological hotspots. *Scientific Committee on Antarctic Research (SCAR) Open Science Meeting* - oral presentation. Pucon, Chile, August 2024.
- DuVivier, A.K., L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse:** Quantifying the value of Antarctic polynyas on the ecosystem from phytoplankton to penguins. *Scientific Committee on Antarctic Research (SCAR) Open Science Meeting* - oral presentation. Pucon, Chile, August 2024.
- DuVivier, A.K., E. Faircloth, C. Hannay, G. Leguy:** Facilitating Students from Minority Serving Institutions (MSI) to

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- Gain Experience with Earth System Modeling. *CESM Annual Workshop* - poster presentation. Boulder, CO, June 2024.
- DuVivier, A.K.,** L. Landrum, K.Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse: Quantifying the value of Antarctic polynyas on the ecosystem from phytoplankton to penguins. *NASA Biological Diversity & Ecological Conservation Meeting* - oral presentation. Washington, DC, May 2024.
- DuVivier, A.K.:** Investigating coupled processes with the Community Earth System Model. *CICE sea ice modeling workshop* - oral presentation. Santa Fe, NM, May 2024.
- DuVivier, A.K.,** L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse, L. Bourreau, M. Long: Quantifying the value of Antarctic polynyas on the ecosystem from phytoplankton to penguins. *AGU Ocean Sciences* - oral presentation, New Orleans, LA, February 2024.
- DuVivier, A.K.,** S. Vavrus, M.M. Holland, L. Landrum, C. Shields, R. Thaker: Arctic Sea Ice Loss and Near-surface Wind Speed Changes Related to Surface Roughness with the Community Earth System Model. *AMS Polar Meteorology and Oceanography Special Symposium* - oral presentation. Baltimore, MD February 2024.
- DuVivier, A.K.,** S. Vavrus, M.M. Holland, L. Landrum, C. Shields, R. Thaker: Arctic Sea Ice Loss and Near-surface Wind Speed Changes Related to Surface Roughness with the Community Earth System Model. *CLIVAR Polar Amplification of Climate Change Across Hemispheres and Seasons* - poster presentation. Boulder, CO, January 2024.
- DuVivier, A.K.,** L. Landrum, K.Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse, Lucie Bourreau, Marte Vienne, Francesco Ventura, Matthew Long: Hot spots in the ice: importance of polynyas for Antarctic marine ecosystems. *CESM Annual Workshop* - oral presentation. Boulder, CO, June 2023.
- DuVivier, A.K.,** L. Landrum, K.Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse, Lucie Bourreau, Marte Vienne, Francesco Ventura, Matthew Long: Hot spots in the ice: importance of polynyas for Antarctic marine ecosystems. *NASA Biological Diversity & Ecological Conservation Meeting* - oral presentation. Washington, DC, May 2023.
- DuVivier, A.K.,** L. Landrum, K.Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks: Regional Polynya-Biogeochemical Connections in Coastal Antarctica. *Polar Marine Science Gordon Research Conference* - poster presentation. Ventura, CA, March 2023.
- DuVivier, A.K.,** M. Molina, M.M. Holland, L. Landrum, K.Krumhardt, Z. Sylvester, C. Brooks: Using Self Organizing Maps to Project Policy Relevant Changes in Coastal Sea Ice in the Ross Sea, Antarctica. *Collective Madison Meeting/17th Annual Conference on Polar Meteorology and Oceanography* - poster presentation, Madison, WI, August 2022.
- DuVivier, A.K.,** M.M. Holland, S. Vavrus, R. Thaker, C.Shields: Arctic Change is Rough: Impacts of Sea Ice Roughness on Air-Sea ice processes. *Collective Madison Meeting/17th Annual Conference on Polar Meteorology and Oceanography* - poster presentation, Madison, WI, August 2022.
- DuVivier, A.K.,** L. Landrum, K. Krumhardt, Z. Sylvester, M.M. Holland, C. Brooks, S. Jenouvrier, S. Labrousse, L. Bourreau, M. Long: Hot spots in the Ice: revealing relationships between marine ecosystems and sea ice in coastal Antarctica. *SCAR Open Sciences Meeting* - oral presentation, virtual, August 2022.
- DuVivier, A.K.,** M. Molina, M.M. Holland, K. Krumhardt, L. Landrum, Z. Sylvester: Assessing Antarctic polynyas and their impacts on biology. *Polar Climate Working Group Winter meeting* - oral presentation, virtual, March 2022.
- DuVivier, A.K.,** A. Lindemann: Arctic Shifts (Art-Science Innovative Session). *2022 AGU Ocean Sciences Meeting* - oral presentation, virtual, March 2022.
- DuVivier, A.K.,** M.M. Holland, L. Landrum, S. Vavrus, C. Shields, R. Thaker: Arctic change is rough: impacts of sea ice roughness on air-sea ice processes. *2022 AGU Ocean Sciences Meeting* - oral presentation, virtual, February 2022.
- DuVivier, A.K.,** & M. Molina: Adventures in Self-Organizing Maps using Jupyter and the CESM2-LE. *Earth System Data Science (ESDS) works in progress series* - oral presentation, virtual, January 2022.
- DuVivier, A.K.,** M.M. Holland, L. Landrum, H. Singh, D. Bailey: Mushy ice and saltier seas: coupled impacts of sea

- ice thermodynamics in Antarctic coastal regions. *16th Annual Conference on Polar Meteorology and Oceanography* - oral presentation, virtual, June 2021.
- DuVivier, A.K.,** M.M. Holland, L. Landrum, H. Singh, D. Bailey: Mushy ice and saltier seas: coupled impacts of sea ice thermodynamics in Antarctic coastal regions. *CESM annual workshop* - oral presentation, virtual, June 2021.
- DuVivier, A.K.,** M.M. Holland, L. Landrum, H. Singh, D. Bailey: Coupled impacts of sea ice thermodynamics due to Antarctic coastal ice production. *Polar Climate Working Group Winter Meeting* - oral presentation, virtual, February 2021.
- DuVivier, A.K.,** M.M. Holland, L. Landrum, H. Singh, D. Bailey: Changing sea ice in Antarctic coastal polynyas in the Community Earth System Model (CESM). *AGU Annual Meeting* - poster presentation, virtual, December 2020.
- DuVivier, A.K.,** M.M. Holland, J.E. Kay, S. Tilmes, A. Gettelman, D.A. Bailey: Arctic and Antarctic Sea Ice State in CESM2 and the impact of clouds. *Polar Climate Working Group Winter Meeting* - oral presentation, Boulder, CO, February 2020.
- DuVivier, A.K.,** M.M. Holland, J.E. Kay, S. Tilmes, A. Gettelman, D.A. Bailey: The impact of atmospheric chemistry on Arctic clouds and sea ice state in the Community Earth System Model version 2. *2019 AGU Annual Meeting* – poster presentation, San Francisco, CA, December 2019.
- DuVivier, A.K.,** P. DeRepentigny, M.M. Holland: Going with the floe as Arctic sea ice variability increases. *Arctic Futures 2050* – poster presentation, Washington, DC, September 2019.
- DuVivier, A.K.,** M.M. Holland, S. Tilmes, J. Kay, D. Bailey, A. Gettelman: The impact of cloud-aerosol interactions on Arctic and Antarctic sea ice in the community Earth System Model version 2. *2019 CESM Annual Workshop* – oral presentation, Boulder, CO, June 2019.
- DuVivier, A.K.,** M.M. Holland, S. Tilmes, J. Kay, D. Bailey, A. Gettelman: Why does the equilibrium Arctic and Antarctic sea ice state differ in the Community Earth System Model version 2 experiments? *15th Annual Conference on Polar Meteorology and Oceanography* – oral presentation, Boulder, CO, May 2019.
- DuVivier, A.K.,** M.M. Holland, D. Bailey, J.E. Kay, A. Gettelman, S. Tilmes: Arctic and Antarctic Explorations in Differences in CESM2 CMIP6 Preindustrial Experiments. *CESM Polar Climate Working Group Winter Meeting* – oral presentation, Boulder, CO, February 2019.
- DuVivier, A.K.,** M.M. Holland, D. Bailey, T. Krumpen, C. Harrison: Using the CESM large ensemble to explore sea ice conditions possible during the MOSAiC field experiment. *2018 AGU Annual Meeting* – oral presentation, Washington, DC, December 2018.
- DuVivier, A.K.,** E.C. Clare, A. Craig, D. Bailey: CICE-Consortium Town Hall: Sea Ice Model Development for and by the Community. *2018 AGU Annual Meeting* – town hall, Washington, DC, December 2018.
- DuVivier, A.K.:** Overview of near surface winds near the Labrador Sea. *2018 CESM annual meeting* – oral presentation, Boulder, CO, June 2018.
- DuVivier, A.K.:** Model experiments provide useful context for field experiments. *Arctic Change workshop* - poster presentation, Boulder, CO, April 2018.
- DuVivier, A.K.,** W.G. Large, R.J. Small: The impact of subsurface salinity structure on deep mixed layer development in the Southern Ocean. *2018 AGU Ocean Sciences Meeting* – oral presentation, Portland, OR, February 2018.
- DuVivier, A.K.,** W.G. Large, G. Danabasoglu, E. Patton, P. Sullivan, M. Levy: Investigating Southern Ocean Mixed Layer Biases. *CESM Ocean Model Working Group Winter Meeting* – oral presentation, Boulder, CO, February 2017.
- DuVivier, A.K.:** Modeled air-sea interactions around southeastern Greenland. *CGD Seminar* - oral presentation. Boulder, CO, October 2016.
- DuVivier, A.K.,** J.J. Cassano, S. Greco: Analysis of barrier wind event near Greenland during the May 2015 Polar Winds Aircraft Campaign. *CIRES Rendezvous* - poster presentation, Boulder, CO, May 2016.
- DuVivier, A.K.,** J.J. Cassano, A. Craig, J. Hamman, W. Maslowski, B. Nijssen, R. Osinski, A. Roberts: Winter oceanic

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- response during strong wind events around southeastern Greenland in the Regional Arctic System Model (RASM) for 1990-2010. *2016 AGU Ocean Sciences Meeting* - oral presentation, New Orleans, LA, February 2016.
- DuVivier, A.K., J.J. Cassano, A. Craig, J. Hamman, W. Maslowski, B. Nijssen, R. Osinski, A. Roberts:** Winter oceanic response during strong wind events around southeastern Greenland as modeled over 20 winters in the Regional Arctic System Model (RASM). *CIRES Rendezvous* - poster presentation, Boulder, CO, May 2015.
- DuVivier, A.K., J.J. Cassano:** Analysis of wintertime mesoscale winds and their impact on the oceans around southeastern Greenland. *High Latitude Dynamics Workshop* - oral presentation, Rosendal, Norway, March 2015.
- DuVivier, A.K. and J.J. Cassano:** Wintertime mesoscale winds and their impact on the oceans around southeastern Greenland. *ESRL Physical Sciences Division Seminar* - oral presentation, Boulder, CO, February 2015.
- DuVivier, A.K., J.J. Cassano, M. Hughes, S. Knuth, and A. Roberts:** Using WRF in the coupled Regional Arctic System Model (RASM): sensitivity to atmospheric processes. *2014 WRF User's Workshop* - oral presentation, Boulder, CO, June 2014.
- DuVivier, A.K. and J.J. Cassano:** Analysis of wintertime mesoscale winds and turbulent fluxes around southeastern Greenland. *CIRES Rendezvous* - poster presentation, May 2014.
- DuVivier, A.K., J.J. Cassano, R. Osinski, A. Roberts, T. Craig, W. Maslowski, J. Clement-Kinney:** Modeled oceanic response to realistic atmospheric forcing during extreme mesoscale events around Greenland. *12th annual polar AMS meeting* - poster presentation, Seattle, WA, April 2013.
- DuVivier, A.K., J.J. Cassano, M. Hughes, and S. Knuth:** RASM Atmosphere Update. *RASM biannual meeting* - oral presentation, Seattle, WA, April 2013.
- DuVivier, A.K., J.J. Cassano, and M. Hughes:** RASM Atmosphere Update. *RASM biannual meeting* - oral presentation, Monterey, CA - November 2012.
- DuVivier, A.K. and J.J. Cassano:** How do mesoscale winds around Greenland impact the ocean? *CIRES Graduate Student Seminar Series* - oral presentation, Boulder, CO, October 2012.
- DuVivier, A.K. and J.J. Cassano:** Evaluation of WRF model resolution on simulated mesoscale winds and surface fluxes near Greenland. *International Polar Year Conference* - oral presentation, Montreal, Canada, April 2012.
- DuVivier, A.K. and J.J. Cassano:** The effect of WRF resolution: case study of an easterly tip jet off Cape Farewell, Greenland. *American Geophysical Union Annual Meeting* - poster presentation, San Francisco, CA, December 2011.
- DuVivier, A.K. and J.J. Cassano:** The effect of WRF resolution: case study of an easterly tip jet off Cape Farewell, Greenland. *WRF User's Workshop* - oral presentation, Boulder, CO, June 2011.
- DuVivier, A.K. and J.J. Cassano:** Understanding the effects of model resolution on winds and surface fluxes for an easterly tip jet during the Greenland Flow Distortion Experiment. *11th annual Polar AMS Meeting* - poster presentation, Boston, MA, May 2011.
- DuVivier, A.K.:** Reconstruction of the Southwest Asian Monsoon. *Colorado Springs Undergraduate Research Forum* - poster presentation, Colorado Springs, CO, April 2006.

OTHER EXPERIENCE

- 2024** **Participant:** UCAR Leadership Academy, Virtual. *Selected as one of three lab representatives to build scientific and group leadership skills.*
- 2019** **Participant:** Next Generation Polar Researchers Leadership Symposium, Catalina Island, CA. *Training and networking for early career polar researchers for interdisciplinary research careers.*
- 2017** **Participant:** Polar Science Communication Workshop, Boulder, CO. *Participated in a workshop organized by the Association of Polar Early Career Scientists and the Alan Alda Center to improve oral and written science communication skills.*

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2016	Participant: Sea Ice Camp, Barrow, AK. <i>Participated in a workshop to bring together sea ice observers and modelers. Included field observations on sea ice around Barrow.</i>
2012	Antarctic Field Assistant: McMurdo Station, Antarctica. <i>Repaired and tested automatic weather stations. Flew unmanned planes to sample atmospheric boundary layer.</i>
2009	Student Research Assistant: National Oceanic and Atmospheric Administration (NOAA), Boulder, CO. <i>Remote-sensing observations of atmospheric boundary layer. Supervisor: Dr. Arlyn Andrews.</i>
2008	Summer Intern: Colorado State University, Fort Collins, CO. <i>Icosahedral numerical approximations. Adviser: Dr. David Randall.</i>
2004-2008	Cool Science Co-President/Member: The Colorado College, Colorado Springs, CO. <i>Developed and presented scientific concepts and demonstrations to K-12 students.</i>
2007	Summer Intern: National Institute of Standards and Technology (NIST), Boulder, CO. <i>Developed laser instrumentation to measure biological temperature changes. Supervisor: Dr. Ralph Jimenez.</i>
2005	Summer Intern: National Oceanic and Atmospheric Administration (NOAA), Boulder, CO. <i>Analysis of paleoclimate Indian Summer Monsoon. Supervisor: Dr. David Anderson.</i>

SERVICE

2024-pres	CESM Polar Climate Working Group Co-Chair: 04/2024-present Member: 06/2016-present
2018-2023	CESM Tutorial Committee Chair: 08/2022-08/2023 Member and Instructor: 2018-2023
2015-2023	AMS Polar Meteorology and Oceanography Committee Chair: 05/2021-12/2022 Vice Chair: 05/2019-05/2021 Member: 11/2015-12/2022 Program chair for 16th Conference on Polar Meteorology and Oceanography - 2021, virtual Program chair for 17th Conference on Polar Meteorology and Oceanography - 2022, Madison, WI
2020-2024	Advanced Study Program (ASP) postdoctoral candidate reviewer
2021-2022	NCAR Design and hiring committees for the Education, Engagement, & Early-Career Development (EdEC)
2018-2021	Early Career Scientists Assembly (ECSA) Executive Committee Member and Climate and Global Dynamics (CGD) Lab representative
2019-2020	CICE Tutorial Organizing Committee Chair and Instructor
2018-2020	CESM Polar Modeling Workshop Organizing Committee and Instructor
2019-2020	Consultant for Dr. Carolyn Fish and her graduate student Michala Garrison in Faculty Innovators Program
2019	APECS Webinar Series Speaker for Polar Science 101: Coupled Climate Modeling

TEACHING AND MENTORING

TEACHING

2024	Invited Speaker: University of Denver Law School, “Changing Polar Regions - legal implications”
2022, 24	Invited Speaker: Colorado State University. “Sea Ice Modeling in CESM”
2023	Invited Speaker: Spelman College, “Climate Modeling Applications”
2023	Invited Speaker: Howard University, “Climate Modeling with CESM”
2022	Interviewee/subject: University of Connecticut, Fine Arts and Media Design Science Visualization Course - Final film “Climate Change: A Call to Action” won honorable mention in the One Earth Film Festival- 2022.
2018-19, 21	Panelist: University of Colorado Boulder, “Careers at National Labs” panel
2021	Invited Speaker: North Central College (virtual). “Rapid Climate Change at the Poles”

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2021	Invited Speaker: North Central College (virtual). “Ice is nice: how climate models inform our future”
2021	Invited Speaker: Johnson C. Smith University (virtual). “Ice is nice: how climate models inform our future”
2019	Invited Speaker: Williams College (virtual). “Coupled Earth System Modeling: Making it work”
2014	Visiting Instructor: The Colorado College, Colorado Springs, CO. <i>Taught upper-level undergraduate atmospheric physics and dynamics. Prepared inquiry-focused activities and assessments, and advised student course projects.</i>
2012	Instructor: University of Colorado, Boulder, CO. <i>Prepared and presented lectures, exams, projects, homework, in class activities for intensive month-long summer weather course.</i>
2010-11	Lead Graduate Teaching Assistant: University of Colorado, Boulder, CO. <i>Created departmental TA training, led workshops, videotaped and consulted with graduate students.</i>
2009-10	Teaching Assistant: University of Colorado, Boulder, CO <i>Prepared, taught, and graded material for atmospheric science courses.</i>
2005-08	Tutor: The Colorado College, Colorado Springs, CO. <i>Helped students with all levels of undergraduate physics and mathematics. Assisted individuals in improving scientific writing.</i>

MENTORING

2024-present	Mentor in the UCAR Mentoring Program
2021-present	Postdoc supervisor (4 postdocs)
2020-present	Graduate student mentor, research collaborator, PhD committee member (7 students)
2017-19, 21, 24	Science co-mentor and writing mentor for undergraduate students in the Significant Opportunities in Atmospheric Research and Science (SOARS) program

OTHER

OUTREACH

2020-2024	Co-Creator: “Arctic Shifts” - science/art film collaboration (link)
2016,18,19, 23, 24	Lead Volunteer: NCAR Super Science Saturday, Polar region themed activities
2024,20	Class Visitor: Watershed High School
2024	Interviewee: The Science Show - Australian National Broadcasting (link)
2022	Interviewee: American Meteorological Society Clear Skies Ahead Podcast (link)
2021	Guest Expert: BBC World News
2020	Interviewee: NCAR Meet the Experts Q&A (link)
2020	Visitor: “A Scientist’s Journey” - Angevine Middle School
2020	Invited Speaker: “Rapid Climate Change - the New Arctic” - Ocean’s First, local ocean conservation organization
2020	Visitor: “A Scientist’s Journey” - Angevine Middle School
2020	Volunteer: WOW Children’s Museum outreach activity
2019	Volunteer: WOW Children’s Museum outreach activity
2019	Speaker: “Polar Science 101: Coupled Climate Modeling” - Association of Polar Early Career Scientists (APECS) (link)

PROFESSIONAL SOCIETY MEMBERSHIPS

American Geophysical Union (AGU)
 American Meteorology Society (AMS)
 Arctic Research Consortium of the United States (ARCUS)
 Association of Polar Early Career Scientists (APECS)

JOURNAL REVIEWER

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Journal of Glaciology
Journal of Climate
Polar Research
Quarterly Journal of the Royal Meteorological Society
Geophysical Research Letters
Ocean Modeling
Scientific Reports
International Journal of Climatology
International Panel on Climate Change Special Issue for Ocean and Cryosphere
The Cryosphere
Nature Climate Change
Nature Communications Earth & Environment
Geoscientific Model Development
Ocean Science
Climate Dynamics
Journal of Marine Systems
Journal of Geophysical Research: Atmospheres
Journal of Geophysical Research: Oceans

PROPOSAL REVIEWER

National Science Foundation - Office of Polar Programs