DANIEL J. LLOVERAS

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INTERESTS

Atmospheric predictability; deep learning weather prediction; synoptic and mesoscale meteorology; extratropical cyclones; numerical methods

EDUCATION

Ph.D. in Atmospheric Sciences, University of Washington   December 2023
    Certificate in data science

M.S. in Atmospheric Sciences, University of Washington   March 2021

B.S. in Marine and Atmospheric Science, University of Miami, *summa cum laude*   May 2018
    Majors in meteorology and applied mathematics, minor in broadcast journalism

APPOINTMENTS

Postdoctoral Research Associate, U.S. Naval Research Laboratory   2024 – present
Scientific Experience
- Investigated the intrinsic predictability of mesoscale polar lows
- Explored the predictability of synoptic-scale environments associated with polar lows using deep learning sensitivity analysis

Technical Experience
- Ran the Coupled Ocean/Atmosphere Mesoscale Prediction System (COAMPS) on high-performance computing (HPC) machines
- Developed Python code for deep learning sensitivity analysis with GraphCast
- Analyzed and visualized model output with Python

Graduate Research Assistant, University of Washington   2018 – 2023
Scientific Experience
- Investigated the 2–4-day predictability of midlatitude cyclones
- Proposed and tested a hypothesis for why deploying targeted observations to improve midlatitude-cyclone forecasts often does not work

Technical Experience
- Ran COAMPS, the COAMPS adjoint, and the Weather Research and Forecasting Model (WRF) on HPC machines
- Developed novel Python and Fortran code to generate initial conditions for idealized midlatitude-cyclone simulations
- Analyzed and visualized model output with Python

Undergraduate Research Assistant, University of Miami   2016 – 2018
Scientific Experience
- Investigated how shortwave-absorbing smoke particles affect low-cloud properties
- Found that poor data from a cloud condensation nuclei (CCN) counter was due to the high ambient relative humidity

Technical Experience
- Analyzed data from the Layered Atlantic Smoke Interactions with Clouds (LASIC) field campaign using the Interactive Data Language (IDL)
- Developed an air-drying mechanism to improve CCN data quality

Research Intern, Geophysical Fluid Dynamics Laboratory   Summer 2017

> *Scientific Experience*
> - Showed that the representation of sea-surface temperature over the northeast Atlantic Ocean is essential to the seasonal predictability of precipitation over the southeastern U.S.
>
> *Technical Experience*
> - Analyzed output from the Forecast-Oriented Low Ocean Resolution Model (FLOR) with MATLAB
> - Computed verification statistics using ERA-Interim reanalysis data
> - Conducted composite and empirical orthogonal function (EOF) analysis

PUBLICATIONS

[5] **Lloveras, D. J.** and J. D. Doyle, 2025: Exploring the intrinsic predictability of an Arctic polar low. *Quart. J. Roy. Meteor. Soc.*, in press. https://doi.org/10.1002/qj.70001

[4] **Lloveras, D. J.**, J. D. Doyle, and D. R. Durran, 2025: Can observation targeting be a wild goose chase? An adjoint-sensitivity study of a U.S. East Coast cyclone forecast bust. *J. Atmos. Sci.*, **82**, 343–360. https://doi.org/10.1175/JAS-D-24-0044.1

[3] **Lloveras, D. J.** and D. R. Durran, 2024: Improving the representation of moisture and convective instability in baroclinic-wave channel simulations. *Mon. Wea. Rev.*, **152**, 1469–1486. https://doi.org/10.1175/MWR-D-23-0210.1

[2] **Lloveras, D. J.**, D. R. Durran, and J. D. Doyle, 2023: The two- to four-day predictability of midlatitude cyclones: Don't sweat the small stuff. *J. Atmos. Sci.*, **80**, 2613–2633. https://doi.org/10.1175/JAS-D-22-0232.1

[1] **Lloveras, D. J.**, L. H. Tierney, and D. R. Durran, 2022: Mesoscale predictability in moist midlatitude cyclones is not sensitive to the slope of the background kinetic energy spectrum. *J. Atmos. Sci.*, **79**, 119–139. https://doi.org/10.1175/JAS-D-21-0147.1

PRESENTATIONS

[11] **Lloveras, D. J.** and J. D. Doyle, 2025: Exploring the intrinsic predictability of an Arctic polar low. *21st AMS Conference on Mesoscale Processes.* Oral presentation.

[10] **Lloveras, D. J.** and J. D. Doyle, 2025: Exploring the intrinsic predictability of an Arctic polar low. *4th Symposium on Mesoscale Processes at the 105th AMS Annual Meeting.* Oral presentation.

[9] **Lloveras, D. J.**, J. D. Doyle, and D. R. Durran, 2025: Can observation targeting be a wild goose chase? An adjoint-sensitivity study of a U.S. East Coast cyclone forecast bust. *4th Symposium on Mesoscale Processes at the 105th AMS Annual Meeting.* Oral presentation.

[8] **Lloveras, D. J.** and D. R. Durran, 2025: Improving the representation of moisture and convective instability in baroclinic-wave channel simulations. *29th Conference on Numerical Weather Prediction at the 105th AMS Annual Meeting.* Poster presentation.

[7] **Lloveras, D. J.**, D. R. Durran, and J. D. Doyle, 2023: Initial-condition-error growth in idealized midlatitude cyclones. *20th AMS Conference on Mesoscale Processes.* Oral presentation.

[6] **Lloveras, D. J.**, D. R. Durran, and J. D. Doyle, 2023: Upscale versus large-scale error growth in midlatitude cyclones. *3rd Symposium on Mesoscale Processes at the 103rd AMS Annual Meeting.* Oral presentation.

[5] **Lloveras, D. J.**, D. R. Durran, L. H. Tierney, and J. D. Doyle, 2022: The predictability of midlatitude cyclones: Are butterflies important? *National Center for Atmospheric Research–Mesoscale and Microscale Meteorology Laboratory (NCAR–MMM) Happy Hour Seminar.* Invited oral presentation.

[4] **Lloveras, D. J.**, L. H. Tierney, and D. R. Durran, 2022: Mesoscale predictability in moist midlatitude cyclones is not sensitive to the slope of the background kinetic energy spectrum. *19th Conference on Mesoscale Processes at the 102nd AMS Annual Meeting.* Remote oral presentation.

[3] **Lloveras, D. J.**, L. H. Tierney, and D. R. Durran, 2021: Mesoscale predictability in moist midlatitude cyclones is not sensitive to the slope of the background kinetic energy spectrum. *AGU Fall Meeting 2021.* Remote poster presentation.

[2] **Lloveras, D. J.** and P. Zuidema, 2018: Assessment of low-cloud changes in the presence of shortwave-absorbing smoke. *17th Student Conference at the 98th AMS Annual Meeting.* Poster presentation.

[1] **Lloveras, D. J.** and X. Yang, 2018: Evaluating the predictability of summertime precipitation over the southeastern United States. *17th Student Conference at the 98th AMS Annual Meeting.* Poster presentation.

HONORS

Early Career Presentation Award, 21st AMS Conference on Mesoscale Processes	2025
Graduate Student Distinguished Service Award, University of Washington	2022
Honorable Mention Oral Presentation, 19th AMS Conference on Mesoscale Processes	2022
Outstanding Student Presentation Award, AGU Fall Meeting	2021
Achievement Rewards for College Scientists Fellowship	2018 – 2021
Honorable Mention, National Science Foundation Graduate Research Fellowship Program	2019
Departmental Honors in Atmospheric Science, University of Miami	2018
Outstanding Graduating Senior in Mathematics, University of Miami	2018
Honor Roll and Dean's List, University of Miami	2014 – 2018
President's Scholarship, University of Miami	2014 – 2018

SERVICE

Reviewer, Various Journals   2022 – Present
- *Journal of the Atmospheric Sciences*
- *Monthly Weather Review*
- *Weather and Forecasting*
- *Geophysical Research Letters*

Member, AMS Committee on Weather Analysis and Forecasting   2020 – Present
- Outreach subcommittee chair
- Planned conferences and chaired sessions
- Evaluated AMS glossary submissions and award nominees
- Co-authored 5-year strategic and implementation plans

Mentor, University of Washington Graduate-Undergraduate Mentoring Program   2019 – 2023
- Mentored three undergraduates in Department of Atmospheric Sciences
- Met quarterly to discuss courses and career opportunities
- Attended quarterly social events to engage with other undergraduates

Volunteer, University of Washington Outreach Program   2018 – 2023
- Provided demos during science nights at local elementary schools
- Hosted field trips from local schools by providing demos and tours of the building

Manager, University of Washington Weather Challenge Forecasting Team   2020 – 2023
- Coordinated weekly weather discussions and daily email weather briefings
- Mentored undergraduates interested in weather forecasting and analysis
- Recruited and registered team members in the national forecasting competition

Graduate President, University of Washington Student Chapter of the AMS   2020 – 2022
- Organized monthly social and professional development events
- Raised funds for undergraduates to attend AMS Student Conference
- Mentored undergraduate officers

Treasurer, University of Miami Student Chapter of the AMS   2017 – 2018
- Managed the chapter's budget
- Coordinated reimbursements for travel and events

TEACHING

Instructor, ATM S 490: Current Weather Analysis, University of Washington
Winter Quarter 2021, Autumn Quarter 2021, Spring Quarter 2022
- Led weekly weather discussions
- Presented lectures on the fundamentals and frontiers of weather analysis and forecasting
- Taught sections for both majors and non-majors

Teaching Assistant, ATM S 111: Global Warming, University of Washington
Winter Quarter 2022, Spring Quarter 2023
- Presented lectures on the affect of climate change on hurricanes
- Led weekly quiz sections to review material and facilitate discussions
- Developed new homework and exam questions
- Graded assignments and final projects

Teaching Assistant, ATM S 103: Hurricanes and Thunderstorms, University of Washington
Spring Quarter 2020
- Presented weekly lectures on a "storm of the week"
- Led exam review sessions
- Developed new homework and exam questions
- Adapted to the first online-learning quarter of the pandemic

Last updated: July 2025