Mark De Bruin

METEOROLOGIST

Skilled in weather forecasting, python development, and research.

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EDUCATION

Bachelor of Science, Meteorology 2019 – 2023
Iowa State University, Ames, Iowa
Minor: Geographic Information Science
3.6 GPA, Magna Cum Laude

Master of Science, Earth and Atmospheric Science 2023 – Current
University of Nebraska, Lincoln, Nebraska
Advisor: Dr. Adam Houston
Specialization: Meteorology
3.75 GPA, Magna Cum Laude

PROFESSIONAL EXPERIENCE

Graduate Research Assistant, *University of Nebraska - Lincoln* 2023 – Current
Led research on supercell internal boundary dynamics using TORUS field data for Dr. Adam Houston. Required quality control and analysis of mobile mesonet, UAS, radar (WSR88D, Ka-Band, NOXP), satellite, and balloon sonde profiles. This research will be submitted for publication in the summer.

Graduate Teaching Assistant, *University of Nebraska-Lincoln* 2025 – Current
TA for radar class. Developed radar visualization products for homework assignments and student research projects, operated RAXPOL mobile radar for training/field work, and presented to K12 students about radars and meteorology.

Lead Field Meteorologist, *University of Nebraska - Lincoln* 2024
Leadership role and participation in multiple academic field projects: TORUS-LItE, MITTEN-CI, and SCALES-UHI. Lead positions in the latter two projects involved live data interpretation, coordination with other students and project PIs, instrument setup, and data collection strategy. Operated mobile mesonet and UAS platforms and launched weather balloons.

Hollings Scholar, *National Weather Service Sioux Falls* 2021 – 2023
Involved a ten-week internship/research project with the NWS and presentations at the SLS and annual AMS conferences. The research project was in coordination with Phil Schumacher (NWS) and Kevin Gallo (NESDIS) and was based around the python automation of hail swath identification using GOES-16. I was the primary scientific programmer during the internship, and continued research meetings and presentations throughout the 2 years.

Undergraduate Research Assistant, *Iowa State University* 2020 – 2023
Developed datasets for a machine learning thesis. Work was led by William Gallus and Elizabeth Tirone (Tirone et al. 2024). A machine learning model was developed to assess how representative severe wind reports were of storm intensity. I assisted in collecting the dataset of storm reports and adding hyperparameters for wind speed, land use, elevation, etc. using Python.

VOLUNTEER WORK

Chapter President, *AMS at Iowa State University* 2022 – 2023
Leadership of one of the most awarded and active student chapters in AMS. Oversaw and facilitated 14 positions within the chapter as well as executed large scale chapter functions including monthly meetings and annual conference planning. During my term, the chapter received chapter honor roll and the inaugural Outstanding Efforts in DEI award from the AMS.

Chapter Forecast Chair, *AMS at Iowa State University* 2020 – 2022

Connection Group Leader, *Cornerstone Church* 2021-2023

Jack Trice Stadium Cleanup, *Iowa State University* 2021-2023

PROFESSIONAL PRESENTATIONS

21st Conference on Mesoscale Processes, *Boise, Idaho* 2025
"A UAS-Centered Investigation of Supercell Left and Forward Flank Boundary Characteristics"

27th Annual Severe Storms and Doppler Radar Conference, *Ankeny, Iowa* 2025
"An Analysis of Southern Plains Severe Weather During Memorial Day Weekend 2024" (content only)

31st Conference on Severe Local Storms, *Virginia Beach, Virginia* 2024
"A UAS-Centered Observational Study of Supercell Left and Forward Flank Boundary Characteristics"

19th Annual Symposium on Operational Environmental Satellite Systems, *Denver, Colorado* 2023
"Automation of GOES-16 ABI Data to Assess Hail Swath Vegetation Damage"

Satellite Book Club, *NOAA NESDIS (Virtual)* 2023
"Automation of GOES-16 ABI Data to Assess Hail Swath Vegetation Damage"

25th Annual Severe Storms and Doppler Radar Conference, *Ankeny, Iowa* 2023
"Physical Mechanisms Behind Tornado Outbreak Location During the 15 December 2021 Quasi-Linear Convective System"

National Weather Service Seminar, *NWS Des Moines (Virtual)* 2023
"Physical Mechanisms Behind Tornado Outbreak Location During the 15 December 2021 Quasi-Linear Convective System"

30th Conference on Severe Local Storms, *Santa Fe, New Mexico* 2022
"Automation of GOES-16 ABI Data to Assess Hail Swath Crop Damage and Severe Warning Verification"

Senior Thesis Symposium, *Ames, Iowa* 2022
"Quasi-Linear Convective System Tornado Environments: 15 December 2021 Case Study"

AWARDS

Outstanding Senior Thesis, *Iowa State University* 2023

2nd Place Poster Presentation, *Annual Symposium on Operational Environmental Satellite Systems* 2022

1st Place Synoptic Class Forecast Competition, *Iowa State University* 2022

National Runner-Up Category 3 Forecaster for Quillayute, WA, *WxChallenge* 2022

Ernest F. Hollings Scholarship, *National Oceanographic and Atmospheric Administration* 2021

National Cumulative 1st Place Forecaster in Category 4, *WxChallenge* 2021

National Runner-Up Category 4 Forecaster for Jackson, MS, *WxChallenge* 2021

National 1st Place Category 4 Forecaster for Los Angeles, LA, *WxChallenge* 2021

National Runner-Up Category 4 Forecaster for Columbus, OH, *WxChallenge* 2020

National Runner-Up Category 4 Forecaster for Minneapolis, MN, *WxChallenge* 2020

Michael Oetken Meteorology Scholarship, *Iowa State University* 2019

FIELD CAMPAIGNS

Targeted Observation by Radar and UAS of Supercells – Left Flank Intensive Experiment (TORUS-LItE), *Support Meteorologist* 2023

Maritime to Inland Transitions Towards Environments for Convection Initiation (MITTEN-CI), *Lead Meteorologist* 2024

Small-UAS Coordination for Atmospheric Low-Level Environmental Sampling (SCALES), *Lead Meteorologist* 2024

RELEVANT COURSEWORK

Calculus I, II, III, *Iowa State University*	2020
Introduction to Classical Physics I, II, *Iowa State University*	2020
Fundamentals of GIS, *Iowa State University*	2020
GIS for Geoscientists I, II, *Iowa State University*	2020
Elementary Differential Equations, *Iowa State University*	2020
Computational Meteorology, *Iowa State University*	2020
General Meteorology, *Iowa State University*	2021
World Climates, *Iowa State University*	2021
Introduction to Synoptic Meteorology, *Iowa State University*	2021
Atmospheric Physics I, II, *Iowa State University*	2021
Tropical Meteorology, *Iowa State University*	2021
Fundamentals of Public Speaking, *Iowa State University*	2021
Dynamic Meteorology I, II, *Iowa State University*	2022
Remote Sensing and Spatial Analysis, *Iowa State University*	2022
Mesoscale Meteorology, *Iowa State University*	2022
GIS Programming and Automation, *Iowa State University*	2022
Synoptic Meteorology, *Iowa State University*	2022
Writing for Research, Senior Research, *Iowa State University*	2022
Mesoscale Forecasting Lab, *Iowa State University*	2023
Instrumentation and Measurement, *Iowa State University*	2023
Radar Applications Meteorology, *Iowa State University*	2023
Introduction to Machine Learning, *University of Nebraska – Lincoln*	2023
Radar Signal Processing and Applications, *University of Nebraska – Lincoln*	2023
Severe Storms, *University of Nebraska – Lincoln*	2024

Satellite Meteorology, *University of Nebraska – Lincoln* 2024

Mesoscale Meteorology, *University of Nebraska – Lincoln* 2024

Severe Convective Storm Dynamics, *University of Nebraska – Lincoln* 2024