

Who I Am & What I Do



Marwa Majdi



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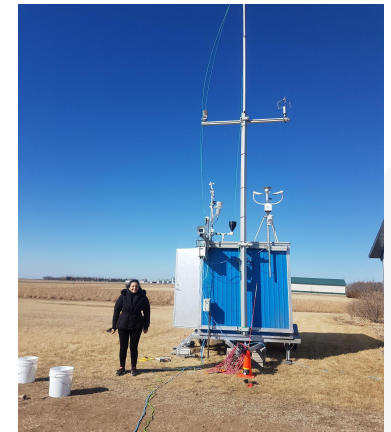
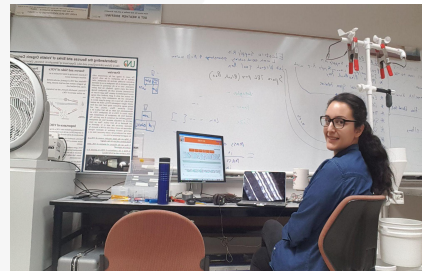
Focus/Research Interests: Atmospheric Aerosols, Fog & Cloud Microphysics, Regional Modeling, Weather Forecasting, Weather for Uncrewed Aircraft Systems, Machine Learning for Weather Prediction

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Current Projects



- **Turning cameras into smart sensors that estimate visibility and cloud ceiling in real time:** building a “Weather Camera Database” camera.atmos.und.edu and developing a machine-learning prototype.
- **Environmental guidance for UAS navigation:** provide high-resolution weather datasets and machine-learning decision tools that improve UAS navigation safety in low-visibility and complex environments.
- **ML tool for thunderstorm forecasts for North Dakota’s hail-suppression operations.**
- **WRF forecast support, Western ND for hail suppression operations (NDARB/NDCMP).**
- **IMPACTS (NASA):** better understand winter-storm microphysics, by analysing and processing ice crystal images collected from the probes.



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Weather Cameras Database

[About Weather Cameras Database](#)

[List of Cameras](#)

[Fog Events](#)

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UND WRF-ARW Model Output

Model Run

WRF

00Z WSM6 00Z Thompson*

00Z WDM6

00Z WSM6 00Z Thompson*

12Z WSM6 12Z Thompson*

Hours:

00 01 02 03 04 05

06 07 08 09 10 11

12 13 14 15 16 17

18 19 20 21 22 23

24 25 26 27 28 29

30 31 32 33 34 35

36 37 38 39 40 41

42 43 44 45 46 47

48

Get Selected Times (Loop All Times)

Parameters:

Surface temperature

Surface dewpoint temperature

Simulated maximum reflectivity

Simulated 2 km reflectivity

1 hr accumulated precipitation

12 hr accumulated precipitation

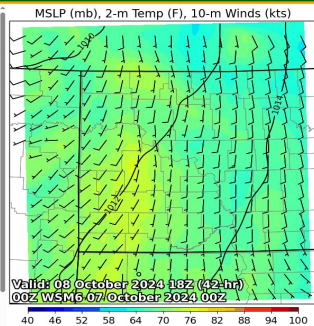
Mixed Layer CAPE

Most unstable CAPE

HAILCAST Mean Hail Diameter

Bowman Sounding

Standard Deviation



How can you get Involved ?

Ways you can start:

- **Data Analysis:** label the collected camera images, check camera feeds, or do some Python coding, computer vision and sensor setup.
- **Forecast Models and Analysis:** dig into real storm days or fog cases, compare model output with observations.
- **ML for Weather Forecasts** Help clean and organize datasets so ML models can learn from the best-quality information.



Interested? Contact me

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