

## Jared W. Marquis, PhD

Assistant Professor, Director of Combined Program  
Department of Atmospheric Science, John D. Odegard School of Aerospace Sciences  
University of North Dakota  
Grand Forks, ND 58203  
Office: (701) 777-4707  
Cell: (281) 433-8678  
jared.marquis@UND.edu

### EDUCATION

Ph. D.	Atmospheric Sciences <i>August 2021</i>	University of North Dakota Grand Forks, ND, USA	<i>Dissertation:</i> Estimating analysis temperature and humidity biases due to assimilation of aerosol & cloud contaminated hyperspectral infrared radiances
M. S.	Atmospheric Sciences <i>August 2016</i>	University of North Dakota Grand Forks, ND, USA	<i>Thesis:</i> Estimating optically-thin cirrus cloud induced cold bias on infrared radiometric satellite sea surface temperature retrieval in the tropics
B. S.	Atmospheric Sciences <i>June 2014</i>	University of Louisiana at Monroe Monroe, LA, USA	<i>Computer Science Minor</i>

### RECENT PROFESSIONAL EXPERIENCE

- Assistant Professor, August 2021-Present  
Interim Graduate Director (August 2024-Present)  
Combined Degree Program Director (August 2021-August)  
*John D. Odegard School of Aerospace Sciences - Atmospheric Science Department,*  
University of North Dakota, Grand Forks, ND
- Adjunct Instructor, August 2020 – May 2021  
*Division of Math and Science, Sitting Bull College, Fort Yates, ND*

### SELECTED PEER-REVIEWED PUBLICATIONS

- **Marquis, J. W.**, E. K. Dolinar, A. Garnier, J. R. Campbell, B. C. Ruston, P. Yang, and J. Zhang, 2023: Estimating analysis biases due to assimilation of cirrus cloud contaminated hyperspectral infrared radiances. *J. Atmos. Oceanic Technol.*, **40**, 327-340, doi:10.1175/JTECH-D-21-0165.1.
- **Marquis, J. W.**, M. I. Oyola, J. R. Campbell, B. C. Ruston, C. Cordoba-Jabonero, E. Cuevas, J. Lewis, T. Toth, and J. Zhang, 2020: Conceptualizing the impact of dust contaminated infrared radiances on data assimilation for numerical weather prediction. *J. Atmos. Oceanic Technol.*, **38**, 209-221, doi:10.1175/JTECH-D-19-0125.1.
- **Marquis, J. W.**, A. S. Bogdanoff, J. R. Campbell, J. A. Cummings, D. L. Westphal, N. J. Smith, and J. Zhang, 2016: Estimating infrared radiometric satellite sea surface temperature retrieval cold biases in the tropics due to unscreened optically thin cirrus clouds. *J. Atmos. Oceanic Technol.*, **34**, 355–373, doi:10.1175/JTECH-D-15-0226.1.
- Mullendore, G., M. Mayernik, D. Schuster, and **J. Marquis**, 2023: What About Model Data? – Best Practices for Preservation and Replicability. *Bull. Amer. Meteorol. Soc.*, **104**, E2053-E2064, doi:10.1175/BAMS-D-22-0252.1.

- Dolinar, E. K., J. R. Campbell, **J. W. Marquis**, J. R. Lewis, S. Lolli, P. Yang, and E. J. Welton, 2023: Estimation of the uncertainty in daytime cirrus cloud radiative forcing due to ice crystal optics. *J. Appl. Meteor. and Climatol., In-Revision*.
- Dolinar, E. K., J. R. Campbell, **J. W. Marquis**, A. E. Garnier, and B. M. Karpowicz, 2022: Novel parameterization of ice cloud effective diameter from collocated CALIOP-IIR and CloudSat retrievals. *J. Appl. Meteor. and Climatol.*, **61**, 891-907, doi:10.1175/JAMC-D-21-0163.1.
- McHardy, T. M., J. R. Campbell, D. A. Peterson, S. Lolli, A. Garnier, A. P. Kuciauskas, M. L. Surratt, **J. W. Marquis**, S. D. Miller, E. K. Dolinar, and X. Dong, 2022: GOES ABI detection of thin cirrus overland. *J. Atmos. Oceanic Technol.*, **39**, 1415-1429, doi:10.1175/JTECH-D-21-0160.1.
- Carson-Marquis, B. N., J. Zhang, P. Xian, J. S. Reid, and **J. W. Marquis**, 2021: Improving WRF-Chem meteorological analyses and forecasts over aerosol polluted regions by incorporating NAAPS aerosol analyses. *J. Appl. Meteor. Climatol.* **60**, 839-855, doi:10.1175/JAMC-D-20-0174.1.
- Kennedy, A., A. Scott, N. Loeb, A. Szczepanski, K. Lucke, **J. Marquis**, and S. Waugh, 2021: Bringing microphysics to the masses: The blowing snow observations at the university of North Dakota: Education through research (BLOWN-UNDER) campaign. *Bull. Amer. Meteor. Soc.*, **103**, E85-E100, doi:10.1175/BAMS-D-20-0199.1.
- Landi, T. C., S. Lolli, M. Brunetti, J. R. Campbell, **J. Marquis**, P. Di Girolamo, and P. Bonasoni, 2021: Aerosol direct radiative impacts over highly-polluted areas in Europe and Mediterranean: a ten-year analysis (2007-2016). *Remote Sens.*, **13**, 2933, doi:10.3390/rs13152933.
- McHardy, T. M., J. R. Campbell, D. A. Peterson, S. Lolli, R. L. Bankert, A. Garnier, A. P. Kuciauskas, M. L. Surratt, **J. W. Marquis**, S. D. Miller, E. K. Dolinar, and X. Dong, 2021: Advancing maritime transparent cirrus detection using the Advanced Baseline Imager “Cirrus” Band. *J. Atmos. Oceanic Technol.*, **38**, 1093-1110, doi:10.1175/JTECH-D-20-0130.1.
- Yu, Y., O. V. Kalashnikova, M. J. Garay, H. Lee, M. Choi, G. S. Okin, J. E. Yorks, J. R. Campbell, and J. W. Marquis, 2021: A global analysis of dust diurnal variability using CATS observations. *Atmos. Chem. Phys. Discuss.*, **21**, 1427-1447, doi:10.5194/acp-21-1427-2021.
- Campbell, J. R., E. K. Dolinar, S. Lolli, G. J. Fochesatto, Y. Gu, J. R. Lewis, **J. W. Marquis**, T. M. McHardy, D. R. Ryglicki, E. J. Welton, 2020: Cirrus cloud top-of-the-atmosphere net daytime forcing in the Alaskan Subarctic from ground-based MPLNET monitoring. *J. Appl. Meteor. Climatol.*, **60(1)**, 51-63, doi:10.1175/JAMC-D-20-0077.1.
- Yu, Y., O. V. Kalashnikova, M. J. Garay, H. Lee, M. Notaro, J. R. Campbell, **J. Marquis**, P. Ginoux, and G. S. Okin, 2020: Disproving the Bodélé Depression as the primary source of dust fertilizing the Amazon Rainforest. *Geophys. Res. Lett.*, **47**, 12pp, doi:10.1029/2020GL088020.
- Campbell, J. R., D. A. Peterson, **J. W. Marquis**, G. J. Fochesatto, M. A. Vaughan, S. A. Stewart, J. L. Tackett, S. Lolli, J. R. Lewis, M. I. Oyola, and E. J. Welton, 2018: Unusually deep wintertime cirrus clouds observed over the Alaskan Subarctic. *Bull. Amer. Meteorol. Soc.*, **99**, 27-32, doi:10.1175/BAMS-D-17-0084.1.
- Toth, T.D., J. R. Campbell, J. S. Reid, J. L. Tackett, M. A. Vaughan, J. Zhang, and **J. W. Marquis**, 2018: Minimum aerosol layer detection sensitivities and their subsequent impacts on aerosol optical thickness retrievals in CALIPSO level 2 data products. *Atmos. Meas. Tech.*, **11**, 499-514, doi:10.5194/amt-11-499-2018.
- Lolli, S., J. R. Campbell, J. R. Lewis, Y. Gu, **J. W. Marquis**, B. N. Chew, S-C. Liew, S. V. Salinas, and E. J. Welton, 2017: Daytime top-of-the-atmosphere cirrus cloud radiative forcing properties at Singapore. *J. Appl. Meteorol. Climatol.*, **56**, 1249-1257, doi:10.1175/JAMC-D-16-0262.1.
- Tosca, M. G., J. Campbell, M. Garay, S. Lolli, F. C. Seidel, **J. Marquis**, and O. Kalashnikova, 2017: Attributing accelerated summertime warming in the Southeast United States to recent reductions in aerosol burden: Indications from vertical-resolved observations. *Remote Sens.*, **9**, 17pp, doi:10.3390/rs9070674.

## RECENT GRANTS

- *Verification of Aerosol Analysis and Prediction Using the Ground Based Micropulse Lidar Network for Numerical Weather Prediction and Aerosol-Aware Data Assimilation*, Naval Research Lab BAA, PI, **In-Review**, **\$375K**, 2023.
- *Northern Plains AgTech Engine for Food systems Adapted for Resiliency and Maximized Security (FARMS)*, NSF Regional Innovations Engines, Co-I, **Funded**, **\$500K**, 2024.
- *2023 Summer Faculty Fellowship*, North Dakota Space Grant Consortium, PI, **Funded**, **\$4.5K**, 2023.
- *Real-Time Estimation of Cloud Ceiling from Camera Images and Satellite Data using Deep Learning Features for Aviation Operations Involving Unmanned Aircraft Systems*, Early Career Scholars Program to Advance Multi-Disciplinary Research Teams, Co-I, **Funded**, **\$30K** 2023.
- *National Eclipse Balloon Project (NEBP)*, North Dakota Team, Co-I (Designated PI), **Funded**, **\$19K**, 2022
- *“What About Model Data”* Earth Cube RCN Grand Forks Workshop, Grand Forks Visitor Bureau, PI, **Funded**, **\$1K**, 2022.
- *“Investigating the impact of assimilating dust-biased hyperspectral sounder radiances on numerical weather prediction forecasts using an observing system simulation experiment.”* Naval Research Laboratory, Science PI, **Funded**, **\$35K**, 2022.
- *“Temporal and spatial variability of air quality: Merging research, environmental technology, and education on the Standing Rock Sioux Reservation Two-year extension”*, Sitting Bull College/NASA, Co-I, **Funded**, **\$55K**, 2022.

## RECENT STUDENTS ADVISED IN RESEARCH

### Graduate Research (\* Indicates Committee Chair)

- \*Taylor McHone, MS, Fall 2022-Summer 2024  
*An Evaluation of NAAPS During Canadian and U.S. East Coast Smoke Events in May and June 2023*
- \*Joshua Nielsen, MS (non-thesis, scholarly project), Summer 2022-Spring 2023
- Aaron Scott, PhD, Fall 2021-Present
- Julia Poblitzki, MS, Spring 2022-Present
- Kendra Sand, MS, Fall 2022-Present
- Lauren Vocke, MS, Fall 2021-Present
- Aanan Schlieff, MS, Fall 2022-Spring 2024
- Daniel Iancu, MS, Summer 2023-Spring 2024
- Taylor Dolan, MS, Fall 2021-Spring 2024
- Jennifer Moore, MS, Fall 2021-Fall 2023

### Undergraduate Research (\* Indicates Committee Chair)

- \*David Brannon, Senior Project, August 2023 – Present  
*Simple Data: Training an ensemble machine learning model to detect boundary layer height*
- \*Abbygail Weikamp, Senior Project, August 2023 – Present  
*Atención: Importance of Spanish Translations for Meteorological Communication*
- \*Lucas Castro, Senior Project, August 2022 – May 2023  
*Utilizing the Cloud Resolving Model 1 to Evaluate Hail Mitigation Effectiveness*
- Nathan Dahlseng, Senior Project, August 2022 – May 2023  
*Nocturnal Tornado Climatology*
- \*Joshua Nielsen, Senior Project, August 2021 – May 2022  
*Examining the 14 August 2020 Minnesota Tornadoes*
- Aanan Schlieff, Senior Project, August 2021 – May 2022  
*Complications and limitations of lunar-reflecatance-based-nighttime aerosol optical depth retrievals using VIIRS Day/Night Band (DNB)*
- Joshua Kern, Senior Project, August 2021 – May 2022

*Evaluation of boundary layer heights and smoke in the high-resolution rapid refresh model over eastern North Dakota*

### **FIELD CAMPAIGNS (\* Indicates Project Lead)**

- \*Nationwide Eclipse Ballooning Project, North Dakota Team Lead Aug 22-Present
- BLOWN-UNDER, Radar Lead Jan-Feb 2020

### **COURSES & LECTURES DEVELOPED**

- ATSC 110 – Meteorology (Sitting Bull College)
- ATSC 270 – Computer Concepts
- ATSC 310 – Introduction to Weather Forecasting
- ATSC 411 – Synoptic Meteorology
- ATSC 420 – Advanced Weather Forecasting
- ATSC 499 – Eclipse Field Observations I & II
- ATSC 520 – Atmospheric Chemistry (Sitting Bull College)
- ATSC 528 – Atmospheric Data Analysis
- ATSC 545 – Hydrometeorology
- Ethics in Meteorology
- Data & Software Preservation and Open Science

### **WORKSHOPS & PROFESSIONAL DEVELOPMENT**

- Graduate Faculty Mentor Training Program, University of North Dakota Aug 23-May 24
- 2022 UCAR Members Meeting, Boulder, CO Oct 2022
- Alice T. Clark Mentorship Program, University of North Dakota Aug 21-May 23
- EarthCube RCN, “What About Model Data?” *Steering Committee*, Grand Forks, ND Aug 2022
- JCSDA Summer Colloquium on Satellite DA, Bozeman, MT Jul-Aug 2018

### **SERVICE AND OUTREACH**

#### **National/Society Level**

- 2022 EarthCube Annual Meeting Planning Committee Jan-Aug 2022
- Board Member, AMS STAC Board on Open Science, Data, and Software Jan 20-Present
- NSF Panel Reviewer Various
- Reviewer, Remote Sensing of Environment (RSE)
- Reviewer, Atmospheric Environment (ATMENV)
- Reviewer, Aerosol and Air Quality Research (AAQR)
- Reviewer, Journal of Meteorological Research (JMR)
- Reviewer, Atmospheric Measurement Techniques (AMT)

#### **University Level**

- University of North Dakota Senate – At Large Member Aug 22-May 24
- Faculty Advisor – UND Student Chapter of American Meteorological Society May 22-Present

#### **College Level**

- JDOSAS Tenure & Promotion Committee Aug 22-May 23

#### **Department Level**

- Undergraduate Programming Committee
- Graduate Programming Committee
- IT/Space Committee
- UND-NWS Fargo/Grand Forks Committee
- Various Search Committees

## **PROFESSIONAL AWARDS**

- Best Junior/Senior Professor, UND AMS Student Chapter, April 2024
- Best Junior/Senior Professor, UND AMS Student Chapter, April 2022
- Best Freshman/Sophomore Instructor, UND AMS Student Chapter, April 2018

## **RESEARCH INTERESTS**

- Data Assimilation
- Synoptic Meteorology
- Remote Sensing
- Numerical Weather Prediction
- Weather Forecasting
- Earth System Science
- Scientific Computing
- Machine Learning / Artificial Intelligence
- Agricultural Weather
- Meteorological Instrumentation
- Hydrometeorology