JOHN CINTINEO

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PROFESSIONAL EXPERIENCE

Research Meteorologist   **NOAA National Severe Storms Laboratory   Apr 2024 – present**
- Improving artificial-intelligence / machine-learning (AI/ML) models for convective forecasting for the National Weather Service (NWS) and use by the general public, including ProbSevere v3 and LightningCast.
- Research on forecasting and understanding convective hazards with radar, satellite, lightning, and near-storm environment data.

Research Meteorologist   **University of Wisconsin—Madison   Oct 2011 – Apr 2024**
Space Science and Engineering Center (SSEC) / Cooperative Institute for Meteorological Satellite Studies (CIMSS).
- Lead developer of NOAA/CIMSS ProbSevere products
  - ProbSevere v3 – hail, wind, and tornado machine-learning nowcasting models. Operational in NOAA.
  - ProbSevere LightningCast – machine-learning model to predict lightning. Operational in NOAA.
  - IntenseStormNet – detection of "intense" portions of storms using machine learning and satellite data.
- Contributing developer for volcanic ash and SO_2 retrieval tools (VOLCAT).
  - Evaluated state-of-the-art volcanic ash products.
  - Aided in development of novel approach to detect volcanic convection (i.e., explosive eruptions).

Hazardous Weather Testbed Spring Experiment   **NOAA National Severe Storms Laboratory   2014-2024**
- Lead the deployment, training, forecaster interaction, and feedback collection for ProbSevere and LightningCast products in the HWT. Interacted with forecasters for 1-3 weeks each year.

EDUCATION

M.S. – Meteorology, 2011	**University of Oklahoma**	**Norman, Oklahoma**
B.S. – Atmospheric Science, 2009	**Cornell University**	**Ithaca, New York**

SKILLS and TOOLS

- **Languages:** Python, Linux, Bash, IDL, Matlab, C, C++
- **Packages:** TensorFlow, PyTorch, Numpy, Scikit-learn, Satpy, Matplotlib
- **Data formats:** netCDF4, HDF4/5, grib2, Zarr, geoJSON
- **Other:** Docker, AWS, NOAA Open Data Dissemination, WDSS-II, AWIPS, ArcGIS

PEER – REVIEWED PUBLICATIONS (selected)

• Cintineo, J. L., M. J. Pavolonis, and J. M. Sieglaff, 2025: The Impact of Radar Data in a Satellite-Based Lightning Nowcasting Model. *Wea. Forecasting*, **submitted**.

• Cintineo, J. L., M. J. Pavolonis, and J. M. Sieglaff, 2024: ProbSevere version 3: Improved Exploitation of Data Fusion and Machine Learning for Nowcasting Severe Weather. *Wea. Forecasting*, **39**, 1937-1958.

• Li, J., J. Zheng, B. Li, M. Min, Y. Liu, C-Y Liu, Z. Li, W. P. Menzel, T. J. Schmit, J. L. Cintineo, S. Lindstrom, S. Bachmeier, Y. Xue, Y. Ma, D. Di, and H. Lin, 2024: Quantitative applications of weather satellite data for nowcasting: Progress and challenges. *J. Meteor. Res.*, 38(3), 399-413, doi: 10.1007/s13351-024-3138-6

• Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, 2022: ProbSevere LightningCast: A deep-learning model for satellite-based lightning nowcasting. *Wea. Forecasting*, **37**, 1239-1257.

• Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, A. Wimmers, and J. Brunner, 2020: A deep-learning model for automated detection of intense mid-latitude convection using geostationary satellite images. *Wea. Forecasting*, **35**, 2567-2588.

• Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, L. Cronce, and J. Brunner, 2020: NOAA ProbSevere v2.0 – ProbHail, ProbWind, and ProbTor. *Wea. Forecasting*, **35**, 1523–1543.

• Pavolonis, J. M. Sieglaff, and J. L. Cintineo, 2018: Automated Detection of Explosive Volcanic Eruptions Using Satellite-derived Cloud Vertical Growth Rates. *Earth and Space Science*, **5**, 12, 903-928.

• Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, D. T. Lindsey, L. Cronce, J. Gerth, B. Rodenkirch, J. Brunner, and C. Gravelle, 2018: The NOAA/CIMSS ProbSevere Model - incorporation of total lightning and validation. *Wea. Forecasting*, **33**, 331–345.

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- Karstens, C. D., J. Correia Jr., D. S. LaDue, J. Wolf, T. C. Meyer, D. R. Harrison, J. L. Cintineo, K. M. Calhoun, T. M. Smith, A. E. Gerard, L. P. Rothfusz, 2018: Development of a human-machine mix for forecasting severe convective events. *Wea. Forecasting*, **33**, 715-737**.**
- Pavolonis, M. J., J. M. Sieglaff, and J. L. Cintineo, 2015: Spectrally Enhanced Cloud Objects (SECO): A Generalized Framework for Automated Detection of Volcanic Ash and Dust Clouds using Passive Satellite Measurements: 2. Cloud Object Analysis and Global Application, *J. Geophys. Res. – Atmospheres,* **120**, 15, (7842-7870)*.*
- Pavolonis, M. J., J. M. Sieglaff, and J. L. Cintineo, 2015: Spectrally Enhanced Cloud Objects (SECO): A Generalized Framework for Automated Detection of Volcanic Ash and Dust Clouds using Passive Satellite Measurements: 1. Multispectral Analysis, *J. Geophys. Res. – Atmospheres,* **120**, 15, (7813-7841).
- Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, and D. T. Lindsey, 2014: An empirical model for assessing the severe weather potential of developing convection. *Wea. Forecasting*, **29**, 639-653.
- Schmit, T. J., S. J. Goodman, D. T. Lindsey, R. M. Rabin, K. M. Bedka, M. M. Gunshor, J. L. Cintineo, C. S. Velden, A. S. Bachmeier, S. S. Lindstrom, and C. C. Schmidt, 2013: GOES-14 super rapid scan operations to prepare for GOES-R. *J. Appl. Remote. Sens.*, **7**, 073462.
- Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, and A. K. Heidinger, 2013: Evolution of severe and non-severe convection inferred from GOES-derived cloud properties. *J. Appl. Meteorol. Climatol.*, **52**, 2009-2023.
- Cintineo, J. L., T. M. Smith, V. Lakshmanan, H. E. Brooks, and K. L. Ortega, 2012: An objective high-resolution hail climatology of the contiguous United States. *Wea. Forecasting*, **27**, 1235-1248.

CONFERENCE PAPERS and INVITED PRESENTATIONS (selected)

- Cintineo, J. L., 2025: A Benchmark Dataset for Lightning Nowcasting in Latin America. *105th Annual Amer. Meteo. Soc. Meeting*, New Orleans, LA, EIPT7. [dataset]
- AMS Satellite Applications Virtual Training for Students (2024): *Forecasting convective hazards with satellite data and AI* [invited]
- WMO RA IV Aviation Workshop (2023): *Satellite-based AI tools for convection* [invited]
- NWS Eastern Region Science Sharing Seminar (2023): *Applying LightningCast to NWS Operations* [invited]
- University of North Dakota – Grand Forks, Seminar Series (2023): *Forecasting convective hazards with AI* [invited]
- 5th NOAA Workshop on AI in Environmental Sciences (2023): *Live Demo: LightningCast nowcasting resources* [invited]
- NWS SOO/DOH Conference, Denver, CO (2023): *Applying LightningCast to NWS Operations* [invited]
- Cintineo, J. L., M. J. Pavolonis, and Chad Gravelle (2023): ProbSevere LightningCast for decision-support services. *103rd Annual Amer. Meteo. Soc. Meeting*, 8.4.
- Webinar on Nowcasting Operations and Techniques: Perspectives to South America (2022) [invited]
- NOAA Satellite Book Club – *ProbSevere LightningCast – user panel discussion* (2022) [invited]
- NWS Southern Region Science Circle – *ProbSevere v3* (2022) [invited]
- NWS Southern Region Science Circle – *ProbSevere LightningCast* (2021) [invited]
- Cintineo, J. L., M. J. Pavolonis, and J. M. Sieglaff (2021): Using ABI and deep learning to nowcast lightning. *101st Annual Amer. Meteo. Soc. Meeting*, J2.5
- NOAA Satellite Book Club – *NOAA/CIMSS ProbSevere – Present and Future* (2020) [invited]
- Cintineo, J. L., M. J. Pavolonis, and J. M. Sieglaff, 2020: Lightning prediction in the Atlantic offshore region. *2nd NOAA Workshop for Leveraging AI in the Environmental Sciences*, College Park, MD.
- Pavolonis, M. P., J. L. Cintineo, D. Hyman, J. M. Sieglaff, and C. Calvert, 2019: Transforming data to information: the ongoing evolution of satellite products. *100th Annual Amer. Geophy. Union Fall Meeting*, San Francisco, CA, IN53D-0771.
- Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, C. D. Karstens, and K. M. Calhoun, 2018: Automated severe thunderstorm guidance from the NOAA/CIMSS ProbSevere model within the Hazardous Weather Testbed. *98th Annual Amer. Meteo. Soc. Meeting*, Austin, TX, 13A.1.
- Pavolonis, M. J., J. M. Sieglaff, and J. L. Cintineo, 2018: Automated volcanic cloud identification, tracking, and characterization using JPSS and GOES-R. *98th Annual Amer. Meteo. Soc. Meeting*, Austin, TX, 2.2.
- Cintineo, J. L., M. J. Pavolonis, J. M. Sieglaff, J. Brunner, and D. T. Lindsey, 2017: Next generation geostationary satellite observations in a multi-sensor severe weather nowcasting tool. *EUMETSAT Meteorological Satellite Conference*, Rome, Italy, 95
- Pavolonis, M. J., J. M. Sieglaff, and J. L. Cintineo, 2017: Automated volcanic cloud identification, tracking, and characterization using next generation meteorological satellites. *EUMETSAT Meteorological Satellite Conference*, Rome, Italy, 270

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• Pavolonis, M. J., J. M. Sieglaff, and J. L. Cintineo, 2016: Automated Utilization of Weather Satellites for Global Mitigation of Aviation Related Volcanic Hazards. *32nd Conference on Environmental Information Processing Technologies*, New Orleans, LA, J3.2

• Cintineo, J. L., M. J. Pavolonis, and J. M. Sieglaff, 2014: Preliminary evaluation of a fused algorithm for the prediction of severe storms. *22nd Conference on Probability and Statistics in the Atmospheric Sciences*, Atlanta, GA, 7.1.

• Cintineo, J. L., T. M. Smith, V. Lakshmanan, and S. Ansari, 2011: An automated system for processing the Multi-Year Reanalysis Of Remotely Sensed Storms (MYRORSS). *27th Conference on Interactive Information Processing Systems*, Seattle, WA, J9.3.

• Cintineo, J. L., V. Lakshmanan, and T. M. Smith, 2010: Performance of a probabilistic cloud-to-ground lightning prediction algorithm. *20th Conference on Probability and Statistics in the Atmospheric Sciences,* Atlanta, GA, P526.

• Cintineo, J. L., T. M. Smith, V. Lakshmanan, and K. L. Ortega, 2009: A real-time automated method to determine forecast confidence associated with NWS tornado warnings. *25th Conference on Interactive Information Processing Systems*, Phoenix, AZ, 4B.1.

SERVICE & HONORS (selected)

• AMS Satellite Meteorology and Oceanography Committee (SatMOC) (2024-present)
• World Meteorological Organization – Artificial Intelligence Nowcasting Pilot Project, core member (2022-present)
• NOAA Technology Transfer Award – WDSS-II: On Demand team (2013)
• NOAA Hollings Scholar (2008-2009) – internship at NOAA/NSSL
• AMS Loren Crow Memorial Scholarship (2009)
• Cornell University Traditions Fellow (2005-2009)