

Curriculum Vitae

Cathy J. Kessinger

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Citizenship: U.S.A.

Education

1983: Master of Science, Department of Meteorology, University of Oklahoma
1978: Bachelor of Science, Department of Meteorology, University of Oklahoma
1973: Diploma, Mulvane High School

Professional Experience

1998-present: Project Scientist II, National Center for Atmospheric Research, Research Applications Program, Applied Science Group

1997-1998: Associate Scientist IV, National Center for Atmospheric Research, Research Applications Program, Applied Science Group

1987-1997: Associate Scientist III, National Center for Atmospheric Research, Research Applications Program, Applied Science Group

1981-1987: Associate Scientist II, National Center for Atmospheric Research, Atmospheric Technology Division, Field Observing Facility, Joint Airport Weather Studies Project

1978-1981: Graduate research assistant under Peter S. Ray at the University of Oklahoma, the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), and the National Severe Storms Laboratory (NSSL), Norman

1978: Member of the Storm Intercept Project headed by Howard Bluestein at the University of Oklahoma for three months during the convective season

1975-1978: Undergraduate assistant for Rex L. Inman, Department of Meteorology, University of Oklahoma, Norman

Areas of Interest

Radar meteorology, mesoscale and cloud-scale analysis of weather events including microbursts, sea breezes, squall lines, and winter storms, short-term nowcasting of thunderstorm initiation and evolution, and multiple Doppler analysis techniques.

Professional Societies

American Meteorological Society

Grants and Proposals

- PI, 2005-2006, “Oceanic Convection Diagnosis and Nowcasting” as funded by the NASA Cooperative Agreement Notice (CAN-2004)
- PI, 2006-2011, “Oceanic Convection Diagnosis and Nowcasting” as funded by the NASA Research Opportunities in Space and Earth Sciences (ROSES-2005)
- PI, 2009-2011, “Characteristics of Oceanic Convective Storms for Inclusion in Aviation Decision Support Systems” as funded by NASA ROSES-2008
- CO-PI, 2008-2012, “Global Atmospheric Turbulence Decision Support System for Aviation” as funded by the NASA ROSES-2007
- CO-PI, 2010-2012, “Short-term storm forecasting over the Gulf of Mexico by blending satellite-based extrapolation forecasts with numerical weather prediction results” as funded by NASA ROSES-2009
- Collaborator, 2010-2012, “Improved Convective Initiation Forecasting in the Gulf of Mexico Region” as funded by NASA ROSES-2009
- PI, 2014-2015, for the “Developing a Project Plan for an Operational Demonstration to Provide Oceanic Weather Information to Transoceanic Airline Flights,” as funded by FAA WTIC.
- PI, 2014-2015, on a proposal to Basic Commerce & Industries, Inc to do a technology transfer of the satellite-based cloud top height product and to test the product with Lufthansa Airlines.
- PI, 2015-2017, on a proposal submitted to Basic Commerce and Industries (BCI), Inc. in response to an RFP by Lufthansa Airlines to provide the Cloud Top Height (CTH) and Convective Diagnosis Oceanic (CDO) products as weather in the cockpit products.
- Collaborator, 2015, for the “Developing a Project Plan for an Operational Demonstration to Provide Oceanic Weather Information to Transoceanic Airline Flights” as funded by Innovations Laboratory, Inc, from a NASA Phase 1 SBIR proposal entitled “Oceanic Convective Turbulence Guidance Based on Lightning and other Convective Weather Observations.”

Refereed Papers

Lindholm, T., C. Kessinger, G. Blackburn and A. Gaydos, 2013: Weather Technology in the Cockpit, Transoceanic human-over-the-loop demonstration. *Jour. of Air Traffic Control*, Q12013, 55(1), 18-21.

Donovan, M., E. Williams, C. Kessinger, G. Blackburn, P. H. Herzegh, R. L. Bankert, S. D. Miller, and F. R. Mosher, 2008: The identification and verification of hazardous convective cells over oceans using visible and infrared satellite observations. *Journal of Applied Meteorology and Climatology*, **47**, 164-184.

Brandes, E.A., J. Vivekanandan, J.D. Tuttle, and C.J. Kessinger, 1995: A study of thunderstorm microphysics with multiparameter radar and aircraft observations. *Monthly Weather Review*, **123** (11), 3129-3143.

- Wakimoto*, R.M., C.J. Kessinger, and D.E. Kingsmill, 1994: Kinematic, thermodynamic and visual structure of low-reflectivity microbursts. *Monthly Weather Review*, **122** (1), 72-92.
- Rasmussen, R.M., A. Crook, and C. Kessinger, 1993: Snow-band formation and evolution during the 15 November aircraft accident at Denver Airport. *Weather and Forecasting*, **8** (4), 453- 480.
- Kessinger, C.J., D.B. Parsons, and J.W. Wilson, 1988: Observations of a storm containing mesocyclones, downbursts, and horizontal rotor circulations. *Monthly Weather Review*, **116** (10), 1959-1982.
- Kessinger, C.J., P.S. Ray*, C.E. Hane*, 1987: The 19 May 1977 Oklahoma squall line. Part I: A multiple Doppler analysis of convective and stratiform structure. *Journal of the Atmospheric Sciences*, **44** (19), 2840-2864.
- Hane*, C.E., C.J. Kessinger and P.S. Ray*, 1987: The 19 May 1977 Oklahoma squall line. Part II: Mechanisms for maintenance of the region of strong convection. *Journal of the Atmospheric Sciences*, **44** (19), 2866-2883.
- Rothermel*, J., C. Kessinger, and D.L. Davis*, 1984: Dual Doppler lidar measurements of winds in the JAWS experiment. *Journal of Atmospheric and Oceanic Technology*, **2**, 138-147.
- Wilson, J.W., R.D. Roberts, C. Kessinger, and J. McCarthy, 1984: Microburst wind structure and evaluation of Doppler radar for airport wind shear detection. *Journal of Climate and Applied Meteorology*, **23** (6), 898-915. Also available as Final Report to the FAA, DOT/ FAA/PM-84/29. National Technical Information Service, Springfield, Va., 37 pp.

Book Chapter

- Williams, J.K., C. Kessinger, J. Abernethy and S. Ellis, 2007: Chapter 17. Fuzzy Logic Applications. A chapter for inclusion in *Artificial Intelligence Applications in Environmental Science*, Springer Press, Sue Ellen Haupt, Antonello Pasini, Caren Marzban, Editors, 424 pp.

Non-Refereed and Technical Reports: Over 180 non-referred papers and technical reports written. Recent publications are below.

- Deierling, W., J. K. Williams, S. A. Al-Momar*, J. A. Craig, R. Sharman, M. Steiner, J. Krozel*, and C. Kessinger, 2015: Investigating the Application of Total Lightning Measurements to Diagnose Convective Turbulence, 7th Conference on the Meteorological Applications of Lightning Data, AMS Annual Meeting, 4-8 January 2015, Phoenix, AZ.
- Kessinger, C., M. Donovan*, R. Bankert*, E. Williams*, J. Hawkins*, H. Cai, N. Rehak, D. Megenhardt, and M. Steiner, 2008: Convection diagnosis and nowcasting for oceanic aviation applications, Rem. Sensing Appl. for Aviation Weather Hazard Detection & Decision Support, edited by Wayne F. Feltz and John J. Murray, Proc. of SPIE Vol. 7088 (SPIE, Bellingham, WA, 2008) 7088-08, San Diego, 10-14 Aug 2008.

- Kessinger, C., W. Deierling, and N. Rehak, 2011: Using relationships between storm evolution, lightning, and turbulence to depict hazard regions within oceanic convection, 5th Conf. on Meteor. Appl. of Lightning Data, AMS, 24-26 Jan 2011, Seattle, WA.
- Kessinger, C., G. Blackburn, N. Rehak, A. Ritter*, K. Milczewski*, K. Sievers*, D. Wolf*, J. Olivo* and T. McParland*, 2015: Demonstration of a convective weather product into the flight deck. 17th ARAM Conf., AMS, 5-8 Jan 2015.
- Kessinger, C., W. Deierling, D. Megenhardt, E. Nelson, S. Dettling, and M. Steiner, 2015: Convection Nowcasting Products Available at the Army Test and Evaluation Command Ranges, 17th Conference on Aviation, Range, and Aerospace Meteorology, AMS Annual Meeting, 4-8 January 2015, Phoenix, AZ.
- Kessinger, C., E. Frazier, G. E. Blackburn, and T. Lindholm, 2015: A Demonstration to Validate the Minimum Weather Services for Oceanic and Remote Airspace, 17th Conference on Aviation, Range, and Aerospace Meteorology, AMS Annual Meeting, 4-8 January 2015, Phoenix, AZ.
- Lindholm, T.A., E. Frazier*, B. Barron, G. Blackburn, C. Kessinger, M. Delemarre* and J.K. Williams, 2015: Demonstrating feasibility of tactical turbulence alerts. 17th ARAM Conf., AMS, 5-8 Jan 2015.