Michael J. Erickson

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**Permanent Address: Campus Address:**

263 Christian Avenue School of Marine and Atmospheric Sciences (SoMAS)

Stony Brook, NY 11790 Stony Brook University, Stony Brook, NY 11794-5000

Professional Experience

**Postdoctoral Associate** Stony Brook University, Stony Brook, NY.

Advisor: Brian Colle May 2015 – present

**Adjunct Instructor** Suffolk County Community College, Selden, NY

MET 101 (Intro. to Weather). Fall 2012 – present

**Research Assistant**  Stony Brook University, Stony Brook, NY.

Advisor: Brian Colle Fall 2007- May 2015.

**Research Assistant** Stony Brook University, Stony Brook, NY.

Advisor: Sultan Hameed Summer 2004 – Spring 2007.

**Teaching Practicum** Stony Brook University, Stony Brook, NY

ATM 347 (Synoptic Meteo.) Fall 2008

**Teaching Assistant (TA)**  Stony Brook University, Stony Brook, NY,

ATM 102 (Weather and Climate) Full TA: Fall 2004, Spring 2005, and Spring 2007.

Partial TA: Fall 2006 and Fall 2007.

**Teaching Assistant (TA)** Stony Brook University, Stony Brook, NY

ATM 247 (Atmos. Structure/Analy) Full TA: Spring 2008.

**Private Tutor** Long Island Area, NY

Integrated Algebra, Geometry, Trig. Spring 2006 – Fall 2011

Research Interests

* Numerical modeling using the Weather Research and Forecasting (WRF) model.
* Data assimilation using an Ensemble Kalman Filter (EnKF) coupled with WRF.
* Simultaneous state and parameter estimation within the planetary boundary layer.
* Investigating fire weather days from an ensemble modeling perspective.
* Ensemble model verification and statistical post-processing with different bias correction techniques and Bayesian Model Averaging.
* Ensemble verification using gridded analysis datasets (NARR, RUC, RAP, GFS).
* Exploring and correcting conditional model bias/error.
* Collaboration with different agencies (National Weather Service, United States Forest Service, Consolidated Edison of New York) on research to operations projects.

Education

**Stony Brook University, Stony Brook, NY August 2007 – May 2015**

Ph.D. Marine and Atmospheric Sciences

Dissertation: *Exploring Model Error through Post-processing and an Ensemble Kalman Filter on Fire Weather Days*

Advisor: Prof. Brian A. Colle

**Stony Brook University, Stony Brook, NY Fall 2004 – July 2007**

Master of Science. Marine and Atmospheric Sciences

Thesis: The Influence of the North Atlantic Oscillation on Cod Recruitment.

Advisor: Prof. Sultan Hameed

**Western Connecticut State University, Danbury, CT Fall 1999 – May 2003**

Bachelor of Arts. Meteorology

GPA: 3.83/4.0

Skills and Qualifications

* Computer Languages:

MATLAB, Linux shell scripting, FORTRAN, HTML, KMZ.

* Knowledgeable with Weather Research and Forecasting (WRF) model including the WRF Preprocessing system (WPS).
* Knowledgeable with data assimilation; specifically the WRF Data Assimilation system (WRFDA), the WRF Boundary Condition (WRF\_BC) and the Pennsylvania State University Ensemble Kalman Filter.
* Strong background in statistics. Familiar with model verification, post-processing, EOF analysis, cluster analysis, and Bayesian techniques.
* Comfortable with analyzing large ensemble model (SREF, GEFS, FNMOC, CMC) and analysis (RUC, RAP, NARR) datasets in NetCDF, GRIB, GRIB2 and ASCII.
* Familiar with designing operational websites to display model graphical data.
* Knowledgeable with UNIX/LINUX, Windows and Mac OS.
* Familiar with Microsoft Word, Excel and Power Point.

Projects during Dissertation

**“Evaluation of Long Range Ensemble Weather Modeling.” February 2014 - present**

* Developed operational methods for separating and displaying ensemble forecast cyclone tracks and ensemble derived track probabilities.
* Developed operational methods for displaying ensemble data such as probabilistic wind speed, precipitation and temperature.
* Wrote KMZ files to visualize forecast storm tracks with Google Earth.
* Operational products available at: <http://smokey.somas.stonybrook.edu/cyclonetracks/>

**“Employing ensemble data assimilation, parameter estimation, and field data to improve fire weather predictions in mesoscale models.” August 2010 - present**

* Coupled the Weather Research and Forecasting Model (WRF) to an Ensemble Kalman filter.
* Adapted the Ensemble Kalman Filter for simultaneous state and parameter estimation within the ACM2 PBL scheme.
* Developed a statistical fire weather index to quantify fire development probabilities and verified that index against observed fire events.
* Analyzed and post-processed the National Centers for Environmental Prediction (NCEP) Short Range Ensemble Forecast (SREF) fields with analysis fields on fire weather days.
* Used cluster analysis to analyze the impact of flow-regime on model performance.
* Operational products available at: <http://smokey.somas.stonybrook.edu/fire/>

 **“Improving Air Quality Forecasting and Management in New York State through Ensemble and High-Resolution Modeling with Diagnostic Analyses.” June 2008 – July 2011.**

* Ran WRF with an Urban Canopy Model (UCM) on days with high surface ozone concentrations.
* Analyzed and post-processed NCEP SREF fields on high pollution days to evaluate the impact of near surface model bias on air quality models.

**“Use of Mesoscale Ensemble Weather Predictions to Improve Short-Term Precipitation and Hydrological Forecasts.” Aug 2007 – March 2010.**

* Verified the NCEP SREF and the Stony Brook Ensemble (MM5/WRF) precipitation forecast data over multiple seasons.
* Employed post-processing methods such as bias correction and Bayesian Model Averaging to improve bias and dispersion issues with ensembles.
* Provided real-time post-processed precipitation forecast data for collaborators at the River Forecast Center (RFC) and National Weather Service (NWS) for input in hydrologic models.

Publications (In Preparation)

**Erickson, M.J.**, and B. A. Colle, 2015: Performance of an Ensemble Kalman Filter (EnKF) during Fire Weather Days. Target Journal: Wea. Forecasting.

**Erickson, M.J.**, J. Charney, and B. A. Colle, 2015: Gridded Verification and Post-processing of the NCEP-SREF Using a Statistical Fire Weather Index. *Target Journal:* J. Appl. Meteor. Climatol.

Publications

**Erickson, M.J.**, J. Charney, and B. A. Colle, 2015: Development of a Fire Weather Index Using Meteorological Observations within the Northeast United States. J. Appl. Meteor. Climatol. Accepted.

Hodrefe, C, P. Doraiswamy, B. Colle, K. Demerjian, W. Hao, **M.J. Erickson**, M. Souders, and J-Y Ku, 2014: Meteorology, Emissions, and Grid Resolution: Effects on Discrete and Probabilistic Model Performance. In: D. Steyn, P. Builtjes, R. Timmermans (eds.): Air Pollution and Modeling and Its Application XXII, NARA Science for Peace and Security Series C: Environmental Security, 493-497. Springer Netherlands.

**Erickson, M.J.**, B. A. Colle, and J. Charney, 2012: Impact of bias correction type and conditional training on Bayesian model averaging over the northeast United States. Wea. Forecasting, **27**, 1449-1469.

Presentations and Seminars

***Bold*** *indicates presenter*

**Erickson, M.J**., B.A. Colle, and B. Hertell. “Development of a Website to Diagnose Ensemble Cyclone Track Uncertainty with Additional Supporting Graphics.” National Weather Service Northeast Regional Operational Workshop. November 2015. Albany, NY. (Oral Presentation).

**Erickson, M.J.** “Demonstration of the Operational Ensemble Cyclone Tracks Website.” Invited Webinar Talk for the National Weather Service Alaska Region, Sept 2015. Fairbanks, Alaska. (Virtual Oral Presentation).

**Erickson, M.J**, and B.A. Colle. “Using the Ensemble Kalman Filter on Fire Weather Days to Explore Model Error over the Northeast United States.” AMS 23rd Conference on Numerical Weather Prediction. July 2015. Chicago, IL (Oral presentation).

**Erickson, M.J.**, B.A. Colle., R.D. Torn, E.K.M Chang, M. Zhang, J.J. Charney. “Exploring Model Error through Post-processing and an Ensemble Kalman Filter on Fire Weather Days.” Ph.D Dissertation. May 2015. Stony Brook, NY (Oral presentation).

**Erickson, M.J**, and B.A. Colle. ”Exploring Ensemble Kalman Filter Performance on Fire Weather Days over the Northeast United States.” 11th Symposium on Fire and Forest Meteorology. May 2015. Minneapolis, MN. (Oral Presentation).

**Erickson, M.J**. and B.A. Colle. “Using an Ensemble Kalman Filter to Explore Model Performance on Northeast U.S. Fire Weather Days.” National Weather Service Northeast Regional Operational Workshop. November 2014. Albany, NY. (Virtual Oral Presentation).

**Erickson, M.J.**, B.A. Colle, S. Ganetis, N. Korfe, K. Roberts, M.J. Sienkiewicz, Z. Zhang, R. Yu, and N. Leonardo. “Coastal Meteorology and Atmospheric Prediction (COMAP) Research at Stony Brook University.” 5th Tri-State Weather Conference. October 2014. Danbury, CT. (Poster Presentation).

**Erickson, M.J.** and B.A. Colle. “Exploring Model Error with an Ensemble Kalman Filter on Fire Weather days over the Northeast United States.” The 6th Ensemble Kalman Filter Data Assimilation Workshop. May 2014. Buffalo, NY. (Poster Presentation).

**Erickson, M.J**, B.A. Colle and J.J. Charney. “Towards the Usage of Post-processed Operational Ensemble Fire Weather Indices over the Northeast United States” National Weather Service Northeast Regional Operational Workshop. December 2013. Albany, NY. (Virtual Oral Presentation).

**Erickson, M.J**, B.A. Colle and J.J. Charney. “Ensemble Verification and Post-processing of Fire Weather Indices Using the NCEP SREF over the Northeast United States.” 10th Symposium on Fire and Forest Meteorology. October 2013. Bowling Green, KY. (Oral Presentation).

Lombardo, K., J. Murray, **M.J. Erickson** and B.A. Colle. “Climatology and Evolution of Convective Storms Approaching the Southern Coast of the Northeast U.S.” 38th Northeastern Storm Conference. March 2013. Rutland, VT. (Oral Presentation).

**Erickson, M.J**, B.A. Colle and J. Pollina. “A Look at High Fire Threat Risk and Ensemble Modeling Over the Northeast United States.” 4thTri-State Weather Conference. October 2012. Danbury, CT. (Oral presentation).

**Colle, B.A**, M.J. Erickson and J.J Charney. “Determining Atmospheric Flow Regimes for Particular Ensemble Biases on Fire weather days.” 21st AMS Conference on Weather and Forecasting. May 2012. Montreal, CA (Poster Presentation)

**Erickson, M.J**, B.A. Colle and J. Pollina. “Northeast U.S. Wildfires: Climatology and Ensemble Post-Processing Using Conditional Training.” Invited Seminar Talk. March 2012. East Lansing, MI (Oral presentation).

**Erickson, M.J**, B.A. Colle and J.J. Charney. “Similar Day Ensemble Post-Processing as Applied to Wildfire Threat and Ozone Days.” National Weather Service Northeast Regional Operational Workshop. November 2011. Albany, NY (Oral presentation).

**Erickson, M.J**, B.A. Colle, J. Pollina and J.J. Charney. “Impact of Spatial Bias Correction and Conditional Training on Bayesian Model Averaging Over the Northeast United States.” AMS 20th Conference on Numerical Weather Prediction. January 2011. Seattle, WA (Oral presentation).

**Erickson, M.J**, and B.A. Colle. “Ensemble Post-Processing and it’s Potential Benefits for the Operational Forecaster.” National Weather Service Northeast Regional Operational Workshop. November 2010. Albany, NY (Oral presentation).

**Erickson, M.J**, and B.A. Colle. “Post-Processing Approaches that Make Ensembles More Usable to the Forecaster.” 3rd Tri-State Weather Conference. October 2010. Danbury, CT. (Oral presentation).

**Erickson, M.J**, B.A. Colle, C. Hogrefe, P. Doraiswamy, K. Demerjian, W. Hao, M. Beauharnois, J.Y. Ku, and G. Sistla. “Towards an Ensemble Forecast

Air Quality System for New York State.” National Weather Service Northeast Regional Operational Workshop. November 2009. Albany, NY (Oral presentation).

**Erickson, M.J**, B.A. Colle, J. Tongue, N. Furbush, A. Cope and J. Ostrowski. “Using a Calibrated Mesoscale Ensemble to Improve Precipitation and Hydrological Forecasts over the Northeast U.S.” AMS 19th Conference on Numerical Weather Prediction. June 2009. Omaha, NE (Oral presentation).

**Erickson, M.J**, and B.A. Colle. “Potential Improvements to Precipitation and Hydrological Forecasts using Mesoscale Ensemble Weather Predictions.” 2nd Tri-State Weather Conference. April 2009. Danbury, CT. (Oral presentation).

**Erickson, M.J**, B.A. Colle, J. Tongue, N. Furbush, A. Cope and J. Ostrowski. “Use of Mesoscale Ensemble Weather Predictions to Improve Short-Term Precipitation and Hydrological Forecasts.” National Weather Service Northeast Regional Operational Workshop. November 2008. Albany, NY (Oral presentation).

**Erickson, M.J.**, S. Hameed, S.B. Munch, M.G. Frisk. “The Influence of the North Atlantic Oscillation on Cod Recruitment.” Masters Thesis. May 2007. Stony Brook, NY.

**Erickson, M.J**, S. Hameed and S.B. Munch. “Cod Recruitment Variability and the North

Atlantic Oscillation” 1st Tri-State Weather Conference. October 2006. Danbury, CT.

(Poster presentation).

Community/Professional Service

**Reviewer** *Journal of Atmospheric and Oceanic Technology*

*Journal of Applied Meteorology and Climatology*

*Journal of Applied Meteorology and Climatology*

**Session Chair** *11th Symposium on Fire and Forest Meteorology (2015)*

**Mentoring** Elizabeth Van Loon and Abby Cuomo

Commack High School, Commack, NY

*The Implementation and Verification of a Forest Fire Index for the Northeast United States."* Semifinalists in the Siemen's Foundation for Math and Science (2015)

**Student Member** of the Graduate Program Committee (GPC) 2008-2010

Recommends policy and provides guidance for graduate student academic affairs.

School of Marine and Atmospheric Science, Stony Brook University, Stony Brook, NY.

**President** of the Hera Group 2009-2010

Club organized scientific lectures of interest to the campus community.

Graduate Student Club, Stony Brook University, Stony Brook, NY

**President** of the Meteorology Club 2001-2003

Organize meetings, club events, and fund raisers. Promote a sense of community.

Undergraduate Student Club, Western Connecticut State University, Danbury CT

Professional Affiliations

Member of the American Meteorological Society. 1999-present

Member of the Hera Group. Student Club. 2007-2010

Member of the Meteorology Club. Student Club. 1999-2003

Awards and Honors

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**Best New Organization Award:** The Hera Group. 2008

Stony Brook University, Stony Brook, NY.

**B.A. Magna Cum Laude with Honors.** 2003

**Dean’s Choice Award** 2003

Western Connecticut State University, Danbury, CT.

**Jonathan Mottley Memorial Scholarship** 2002

Western Connecticut State University, Danbury, CT.

**Meserve Memorial Scholarship** 1999-2003

Western Connecticut State University, Danbury, CT.

References

Dr. Brian A. Colle: Professor and ITPA Director

School of Marine and Atmospheric Sciences

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Dr. Ryan Torn: Assistant Professor

University at Albany, Albany, NY

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Dr. Joseph J. Charney: Research Meteorologist

Northern Research Station, East Lansing, MI

(517) 355-7740; ext. 105

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Scott A. Mandia: Assistant Chair and Professor

Suffolk County Community College (SCCC) –

Ammerman Campus, Selden, NY

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