

# Joel McAuliffe

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## EDUCATION

### **M.S., Atmospheric Sciences, July 2020**

*A Comparative Convective Study between the Local Particle Filter and Ensemble Kalman Filter using the Gridpoint Statistical Interpolation System*

*University of Oklahoma, Norman, OK, USA.*

### **B. S., Mathematics, May 2017**

*East Carolina University, Greenville, North Carolina, USA.*

### **B. S., Applied Atmospheric Sciences, May 2017**

*East Carolina University, Greenville, North Carolina, USA.*

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## WORK HISTORY

### **November 2020 – Current**

OPS Biological Modeler

Florida Atlantic University

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## RESEARCH INTERESTS

Ocean and atmospheric modeling, data assimilation

## UNDERGRADUATE RESEARCH

### **The Effect of the Gulf Stream Temperature Gradient on the Precipitation in the Atlantic Ocean**

**Research Details:** The Weather Research and Forecasting (WRF) model was used to create idealized simulations of precipitation rates and analyzing differences when altering the sea surface temperature gradient of the Gulf Stream.

**Relevant Technical Skills:** WRF, NCL, Python

**Advisory Committee:** Dr. Rosana Ferreira

**Location:** East Carolina University, Greenville, NC

**Dates:** May 2016 – November 2016

### **Environmental Factors Contributing to the Development of Above Anvil Cirrus Plumes – National Weather Center REU**

**Research Details:** Identifying plume-producing storms via satellite imagery, then using GridRad software (developed by Cameron Homeyer) and soundings to observe storm features and environmental conditions.

**Relevant Technical Skills:** Excel, GridRad

**Advisory Committee:** Dr. Cameron Homeyer

**Location:** National Weather Center, Norman, OK

**Dates:** May 2015 – August 2015

### **Synoptic Climatology of Propagating Sea Breeze Events in North Carolina**

**Research Details:** GrADS software was used to analyze surface and upper wind fields to determine their connection to the propagation of sea breeze fronts from the North Carolina Coast.

**Relevant Technical Skills:** GrADS

**Advisory Committee:** Dr. Rosana Ferreira

**Location:** East Carolina University, Greenville, NC

**Dates:** May 2014 – March 2015

## GRADUATE RESEARCH

### **A Comparative Convective Study between the Local Particle Filter and Ensemble Kalman Filter using the Gridpoint Statistical Interpolation System**

**Research Details:** The Warn-on-Forecast System (WoFS) was implemented with the Ensemble Kalman Filter and the Local Particle Filter to distinguish any discrepancies in the analyses and forecasts of two severe convective cases.

**Relevant Technical Skills:** WRF, Python, Slurm batch submission, UNIX shell scripting

**Advisory Committee:** Dr. Louis Wicker, Dr. Thomas Jones, Dr. Xuguang Wang, Dr. Steven Cavallo

**Location:** University of Oklahoma, Norman, OK

**Dates:** August 2018– July 2020

## AWARDS AND HONORS

**National Aeronautics and Space Administration (NASA)** North Carolina Space Grant Program: The Effect of the Gulf Stream Temperature Gradient on Precipitation in the Atlantic Ocean. **J. McAuliffe** and R. Nieto-Ferreira

## TEACHING EXPERIENCE

Introduction to Meteorology Lab I – METR 1014, **August 2017 – July 2018**

- Responsibilities include educating students on the subject material and leading weekly meetings with other teaching assistants to inform about upcoming lectures.

## TECHNICAL SKILLS

**Programming and Scripting:** NCL, Python, Fortran, Matlab

**Modeling and Data Manipulation:** WRF, DART, WoFS

**High Performance Computing:** Slurm batch job submission

**Data Formats:** NetCDF, GRIB

**Operating Systems:** Linux, Mac OS X, Windows

## PEER-REVIEWED PUBLICATIONS

Luchetti, N., R. Nieto-Ferreira, T. Rickenbach, M. Nissenbaum, and **J. McAuliffe**, Influence of the North Atlantic subtropical high on wet and dry sea-breeze events in North Carolina, United States. *Investigaciones Geograficas* (68), 9-25, <https://doi.org/10.14198/INGEO2017.68.01> 2017.

Homeyer, C. R., **J. D. McAuliffe**, and K. M. Bedka, 2017: On the Development of Above-Anvil Cirrus Plumes in Extratropical Convection, *J. Atmos. Sci.*, **74**, 1617–1633, doi:10.1175/JAS-D-16-0269.1

## CONFERENCE PRESENTATIONS

**McAuliffe, J.**, L. Wicker, T.A. Jones, J. Poterjoy: A Comparative Convective Study between the Local Particle Filter and Ensemble Kalman Filter using the Gridpoint Statistical Interpolation System. 100<sup>th</sup> Annual American Meteorological Society Conference, January 2020.

**McAuliffe, J.**, R. Nieto-Ferreira: The Effect of the Gulf Stream Temperature Gradient on Precipitation in the Atlantic Ocean. North Carolina Space Grant Symposium, Durham, NC, November 2016.

**McAuliffe, J.**, C. Homeyer: Environmental Factors Contributing to the Development of Above-Anvil Cirrus Plumes. Research and Creativity Achievement Week, Greenville, NC, April 4-8, 2016.

**McAuliffe, J.**, C. Homeyer: Environmental Factors Contributing to the Development of Above-Anvil Cirrus Plumes. American Meteorological Student Conference, New Orleans, Louisiana, January 2016.

**McAuliffe, J.**, R. Nieto-Ferreira: Synoptic Climatology of propagating Sea Breeze events in North Carolina. Research and Creativity Achievement Week, Greenville, NC, March 23-27, 2015.