Chad Wiley- Recipient of the 2019 Ernest F. Hollings Undergraduate Scholarship

This summer I had the amazing opportunity to work with the National Weather Service in Boulder through the Ernest F. Hollings Scholarship. Though it was not the summer I imagined a few months ago, I am still grateful for the opportunity to learn, network, and research. My project was on snow probabilistic verification within Colorado and investigating biases across various locations. This internship helped me to become more comfortable with working with large data set, probability statistics, and creating algorithms with less than perfect data sets. Other than learning how to do meteorological research, I learned a lot about doing work and communication in a virtual workspace. Overall, this summer was an unforgettable summer for many reasons but through this internship it will assist in my goal of attending a graduate school and furthermore, a career in the field of meteorology.

Adam Weiner- Recipient of the 2020 A. G. Breidenstine Award for the "most outstanding thesis", 2020 Phi Kappa Phi Graduate Fellowship, and the 2020 Portz Scholar (National Collegiate Honors Council)

I am excited to receive three awards upon completion of my undergraduate degree in meteorology at Millersville University and my Honors thesis. I am honored to receive the A. G. Breidenstine Award for the "most outstanding thesis" submitted across all academic disciplines at Millersville University. This annual award was established by friends of Dr. A. G. Breidenstine in recognition of his service as academic dean of the college from 1955 to 1965 and to subsequently award the student whose work was judged most outstanding by the Honors and Awards Committee of the Associate Provost Office. The title of my honors thesis (Thesis Faculty Adviser-Dr. Yalda) was “Improving Tornado Watch and Warning Lead Time: A Case Study of the 25 April 2014 Severe Weather Event in Eastern North Carolina.” The topic was focused on investigating different methods which can ultimately combine to help extend Tornado Watch and Warning lead time, or the time between the issuance of those bulletins and the subsequent occurrence of a tornado. In the study, a tornado climatology was first examined, which provided a historical perspective on the occurrence of tornadoes recorded throughout North Carolina from 1950 through 2018. The primary research component of the study consisted of a detailed case study of a particularly notable supercell thunderstorm which produced two damaging tornadoes on April 25, 2014. By following the storm using multiple radars and analyzing over 100 frames of radar data, I was able to identify several key changes in the character of the storm throughout its life. This detailed analysis of a Mid-Atlantic supercell added to the limited literature available on supercells in this region of the United States.

I am also very excited to have received the Phi Kappa Phi Graduate Fellowship, sponsored by The Honor Society of Phi Kappa Phi. Only 58 student members from across the country are awarded a fellowship from Phi Kappa Phi each year. These students demonstrate strong aptitude for success in graduate school and attend some of the nation's top graduate institutions. By providing financial support for my graduate studies at the University of Alabama-Huntsville, I will be able to focus more on my coursework and research endeavors which will ultimately contribute to a successful start in my future career as a meteorologist.

Last but not least, I am also grateful to have been chosen as one of four scholars from among 47 institutional nominees from across the nation to receive the 2020 Portz Scholar by the National Collegiate Honors Council.

While at the University of Alabama in Huntsville, I will be performing a detailed case study of a QLCS tornado event that occurred during February 2020. UAH had a pair of Doppler radars gathering data during the event, which will allow me to perform a dual-Doppler analysis and subsequently investigate the evolution of the wind field as the QLCS passed through. This work will contribute to a larger field campaign slated for Spring 2021 during which targeted observations of QLCS tornadoes are planned.

Benjamin Fellman- Recipient of the 2019 Ernest F. Hollings Undergraduate Scholarship and 2020 CoSIDA Academic All-America Division II Men's At-Large Third Team

This past Summer, I had the opportunity to complete a research internship with the Hollings Scholarship Program. For my 10 week project, I chose to work at the National Weather Service Office in Key West, Florida, studying the statistical prediction of waterspout frequency in the Florida Keys. With such a broad topic at hand, this project allowed me to choose what I wanted to do specifically within my research. After spending some time researching the history of waterspouts and looking over various journals, I formulated the idea to look at how synoptic-scale events affected waterspout frequency within the Keys. Specifically in my project, I looked at two features: the Madden-Julian Oscillation (MJO) and the Bermuda High Index (BHI). Within my research, I was able to find various conditions under each of the features that resulted in suppressed waterspout frequencies that were statistically significant. Furthermore, by using past research on favorable waterspout conditions, I was able to justify why these conditions led to decreased waterspout likelihood. Overall, this remote internship allowed me to gain an insight into the research side of Meteorology and allow me to use mathematics in order to justify and conclude on several points I made. Looking forward into the future, I hope to go to graduate school, where I will continue to immerse myself within the field of Meteorology. Read Abstract below.

Synoptic-scale Influences on Observed Waterspout Frequency in the Florida Keys

Benjamin Fellman
Weather-Ready Nation
Bryce Tyner (Mentor)
Andrew Devanas (Collaborator), Lydia Stefanova (Collaborator)
National Weather Service (NWS) Key West, Florida
National Oceanic and Atmospheric Administration (NOAA)

The Florida Keys are home to one of the most conducive environments for waterspout development in the world. Between the months of June and September, the Keys average at least one observed waterspout every five days. Waterspouts are near-surface weather phenomena, and the associated rotational couplets are narrow. Because these events typically last for just a few

minutes, they are nearly impossible to detect on radar. It is important to note that the Florida Keys are home to many people who live on the water. Thus, it is critical to have accurate forecasts to predict waterspouts for the safety of the marine community.

Past research has focused on using various parameters derived from observed sounding data to provide a metric for predicting observed waterspouts in the Florida Keys on a given day. Over the course of the project, we add to this research and investigate synoptic-scale influences on observed waterspout probability. More specifically, we examine the role of the phase and amplitude of the Madden-Julian Oscillation (MJO) and the sign and magnitude of the Bermuda High Index (BHI) in the probability of an observed waterspout on a given day. Results suggest phase 7 of the MJO and a strongly positive BHI both result in well below-normal observed waterspout frequency. Compositing analysis results are presented to provide a meteorological explanation for the decreased observed waterspout frequency for these synoptic patterns.