

EGU21-13792

<https://doi.org/10.5194/egusphere-egu21-13792>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



The Relationship between the North Atlantic Oscillation and High-Wind Observations Across the Eastern United States

Sylvia Stinnett¹, Joshua Durkee¹, Joshua Gilliland², Victoria Murley³, Alan Black⁴, and Gregory Goodrich¹

¹Western Kentucky University, Bowling Green, KY, United States of America

²Kennesaw State University, Kennesaw, GA, United States of America

³Elizabethtown Community and Technical College, Elizabethtown, KY, United States of America

⁴Southern Illinois University Edwardsville, Edwardsville, IL, United States of America

The North Atlantic Oscillation (NAO) is a high-frequency oscillation that has known influences on the climatology of weather patterns across the eastern United States. This study explores the relationship between the daily North Atlantic Oscillation index with observed high-wind events from 391 first-order weather stations across the eastern U.S. from 1973-2015. These events were determined following typical National Weather Service high-wind criteria: sustained winds of at least 18 m•s⁻¹ for at least 1 hour or a wind gust of at least 26 m•s⁻¹ for any duration. Since research literature shows high-wind events are often connected to parent mid-latitude cyclone tracks, and since the NAO has been shown to influence these storm tracks, it is hypothesized that changes in NAO phases are connected to spatial shifts and frequencies in high-wind observations. Initial results show a preferred southwesterly direction during each NAO phase. Variance in high-wind directions appears to increase (decrease) during negative (positive) NAO phases. Further, the greatest spatial difference in the mean center of high-wind observations was between positive and negative NAO phases. Overall, these preliminary findings indicate changes in high-wind observations may be linked to NAO phases.