Recurving TCs, and those undergoing extratropical transition (ET) can develop into rapidly intensifying systems bringing TC-like conditions (e.g., intense rainfall, strong winds, large waves) to areas far removed from the original TC, such as Canada, Europe, or the northeast U.S., that are not typically accustomed to such events. Recent examples of such events that affected the U.S. include Irene (2011), Sandy (2012), and Matthew (2016). Furthermore, outflow from recurving or transitioning TCs can modify midlatitude flow and lead to high-impact weather events, such as cold-air outbreaks or heavy precipitation, downstream of the original TC. Relatively few studies have examined how climate change would affect the process, frequency, and intensity of ET; however, it is important to understand these aspects of present-day ET events to realize the future impacts of these systems.

Therefore, the overall objective of this project is to examine how the intensity and frequency of recurving and extratropically transitioning TCs will be affected by climate change. To do this, high-resolution seasonal simulations are conducted in current and future thermodynamic environments using the Model for Prediction Across Scales (MPAS) and a pseudo-global warming (PGW) technique following the IPCC AR5 RCP 8.5 emissions scenario. TCs are then tracked to construct current and future climatologies of recurving and ET TCs. First, however, initial model comparison concerning the treatment of large-scale mean fields such as jet stream location, annual precipitation patterns, and stationary pressure systems is done.

The results to be presented include the initial model comparison and comparison of TC climatologies in current and future climates.