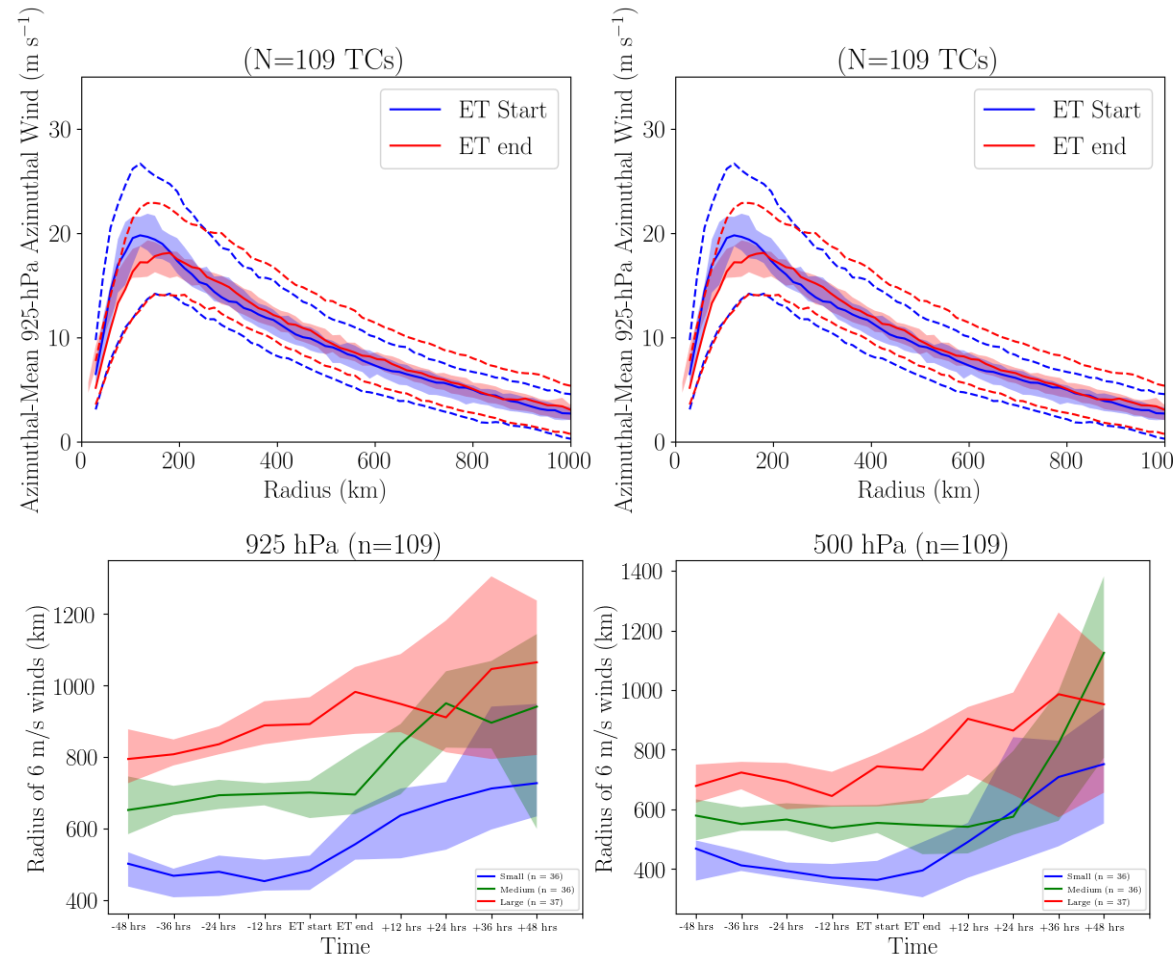


## Background:

- Extratropical transition (ET) occurs when tropical cyclones (TCs) move into higher latitudes and undergo structural changes, becoming extratropical storms.
- Hart and Evans (2004) suggests that outer size increases throughout transition and the changes in size associated with ET begin in the mid-levels.
- We examine the outer size of a subset of transitioning TCs in the Atlantic basin to observe the evolution of outer size over the course of ET and afterwards.

## Methods:

- Examined 109 TCs from the NHC Best-Track data from 1979–2020
- TC structure and size data taken from ECMWF ERA-5 reanalysis;
- 6 m/s wind radius used as outer size metric
- Transition start and end time calculated using the cyclone phase space applied to ERA-5 data.



## Figures:

- Figures 1, 2: Radial profiles of azimuthal-mean azimuthal wind at 925 and 500 hPa
- Figures 3, 4: Timescale of radius of 6 m/s winds from 48 hours before start of ET to 48 hours after end of ET

## Key Results

- No significant differences in composite median outer size from the start of ET to end of ET (Fig 1 and 2).
- Median outer size shows small changes during ET at lower levels, no change in mid-levels (Fig 3 and 4)
- Following ET, outer size increases for smaller TCs (Fig 3 and 4).
- Changes in outer size associated with transition appear to begin in lower troposphere for both small and medium TCs (Fig 3 and 4).