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## A Climatology of Tropical Transitions in the North Atlantic Ocean

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In recent years, western Europe has been threatened by anomalous tropical cyclones, developed from tropical transition (TT) processes in which a baroclinic cyclone becomes in a fully barotropic cyclone. Thirty-three tropical transition events were identified in the North Atlantic basin during the period 1979-2019 using ERA5 and HURDAT datasets. The TTs show a favored seasonality covering 70% of total between September and November.

A TT climatology is built and analyzed using large-scale storm-centered composites to study their common features and highlighting their differences respect the long-term climatology. The results reveal that TT synoptic environment is mainly characterized by a trough at 300 hPa and a strong anticyclone located north of the cyclone. In addition, a previous westerlies meridional trough with quasigeostrophic forcing acts as precursor. As the ERA5 does not accurately represent the diabatic processes due to its horizontal resolution, the deepening of mean sea level pressure is not shown in the composites. The average Potential Vorticity 300-200 hPa (PV) shows a decreasing in the upper troposphere around the cyclones as the moment of TT is approaching, while the PV is increasing in the lower troposphere. This PV conjunction promotes low-level wind speed intensification around the cyclone center that is linked with differential diabatic heat source in the low troposphere.