Storm Tracks and Precipitation
A Lagrangian approach

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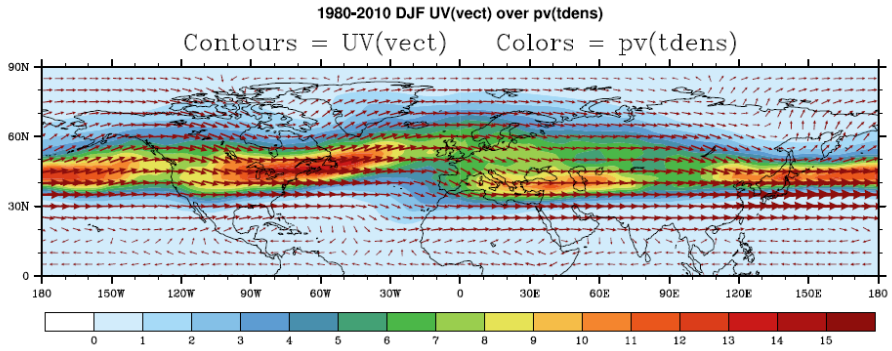
Storm tracks (ST) are narrow bands with large transient (or extratropical storm) activity. *Many modes of low frequency variability impact regional climate through modulations of the higher frequency storm tracks.*



Main objectives

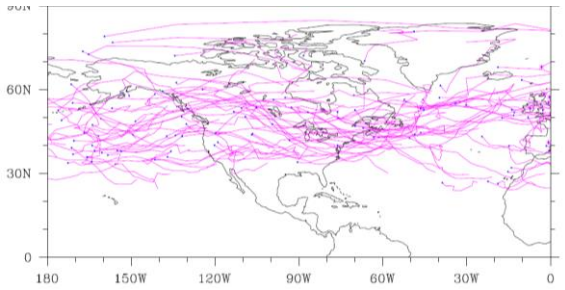
Our main objectives are to achieve **a better understanding of the storm track properties, relate them to precipitation patterns, and take advantage of this information for developing climate prediction tools**.

Methodology

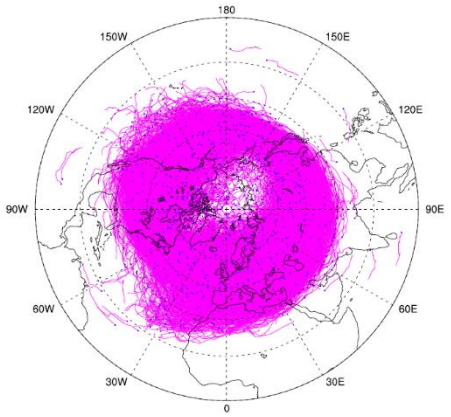
A Lagrangian approach is followed using **Isentropic Potential Vorticity** as a property that is conservative and thus **can be used as a tracer of storms**, following them throughout their life cycle.

Results

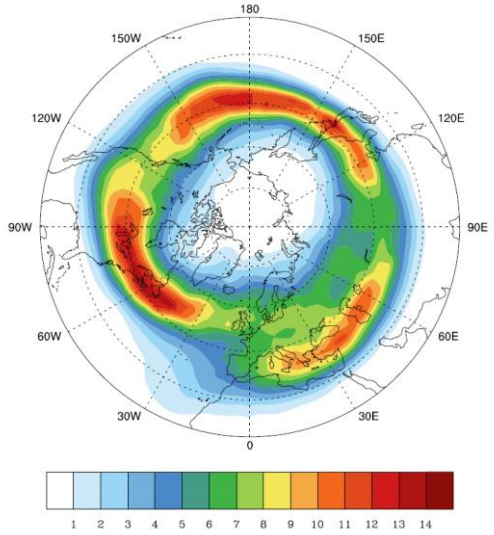
1980
Potential Vorticity Trajectories



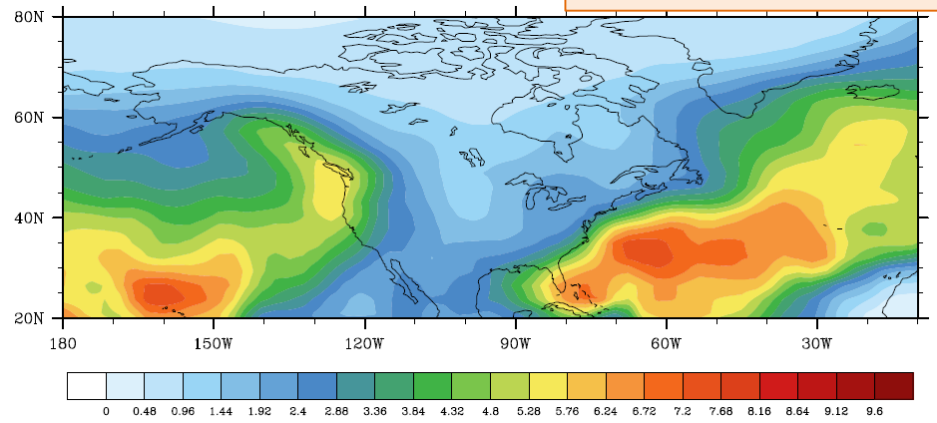
1980-2010
Potential Vorticity Trajectories

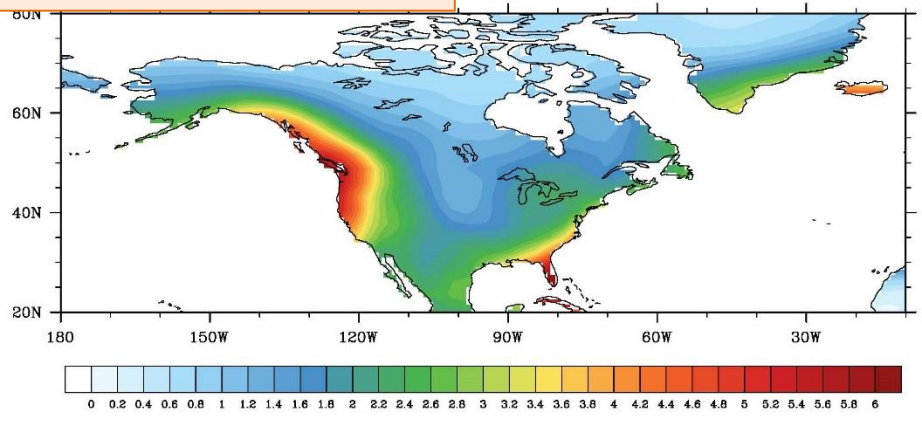


1980- 2010
Winter Storm Track Density



Precipitation associated with Storm Tracks
$[mm\ day^{-1}]$





Future work

To further analyze the relationship between the North American Continent extreme precipitation events and the intensities and spatial patterns of the storm tracks.

To examine to what extent hindcasts from NOAA models can reproduce the relationships between the Northern Hemisphere storm tracks and precipitation patterns.

To investigate the value of the ST information for the National Multi-Model Ensemble (NMME) at different forecast times.