

Transient Inverted Troughs Interacting with the North American Monsoon System

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The frequent presence of upper tropospheric lows in the subtropical North Pacific and North Atlantic during the summer is well documented in Riehl (1948) and Kelly and Mock (1982). These same upper tropospheric lows also develop in the subtropical and tropical Gulf of Mexico and Atlantic in a region classified as the tropical upper-tropospheric trough according to Whitfield and Lyons (1992). It is from this TUTT region that these lows begin their westward progression into regions such as Arizona, New Mexico and northern Mexico during the summer-time months. These transient inverted troughs (IVs) take different tracks and can be influenced by sea surface temperatures in the Pacific Ocean. Using the Combined Pacific Variability Mode (CPVM) from Castro et al. (2006b), it has been proven from Julian Days 155-200 that these IVs can be adversely affected by track density. When comparing years considered negative and positive by using the CPVM, these IVs tracked further north and were more numerous. When considering anomalies (normal being all years between 1980-2006), the aforementioned deviation was still present for negative years. Positive years, overall, showed that transient IV's were reduced in number (typically by 1 IV over the period) over nearly all regions of the North American Monsoon region.