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## Effect of the Pacific Decadal Oscillation in long term persistence Alaska climate time series

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The long term memory of surface air temperature (SAT) and sea level pressure (SLP)are characterized over Alaska using he Hurst rescaled range power law method. This analysis method can characterize the long-term memory in a time series. Understanding the long term memory may serve as a tool to improve long term predictability: forecasting on a decadal scale may be made more accurate than red noise in areas that exhibit long term persistence. This analysis used SATs for Alaska stations from 1941 to 2007 from the National Climate Data Center (NCDC) Global Summary of the Day data set. Daily data were constructed from the hourly temperatures. The analysis also included the (NCEP/NCAR) reanalysis from 1948-2007 and the Twentieth Century Reanalysis (NOAA/ESRL) from 1923 to 2007. The Hurst analysis of station data revealed that the the 'dynamics' of SATs in 11 of the stations in Alaska were different before and after 1976. It was hypothesized that the shift from more random behavior (timescales of 5-15 years) to more persistent behavior was linked to the Pacific Decadal Oscillation. Hurst analysis of the the reanalysis data sets and over different PDO phases (the 1923-1944 positive phase, the 1946-1975 negative phase, and the 1977-2007 positive phase) provides a consistent picture with the station data results. Temperature and Sea Level Pressure in interior and northwestern Alaska are shown to exhibit random behavior during the negative PDO phase, and persistent behavior during the positive PDO phase on the 5-15 year timescale. Analysis is ongoing to understand the climate mechanisms behind this change.