

The relationship between the polar jet stream and fire spread days in Alberta, Canada

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We explore the relationship between the polar jet stream and fire spread days in Alberta, Canada. Using MODIS and VIIRS fire hotspot data, in combination with fire perimeter data from the Canadian National Fire database (CNFDB), we map daily fire growth using an algorithm based on Voronoi tessellation of the hotspot data combined with temporal interpolation. We then identify active spread days as days where the estimated fire front advances at least 400m. In this exploratory study, we initially focus on large fires (> 5000 Ha) that occurred in Alberta between 2011-2016.

Various characteristics of the polar jet stream (Meridional and zonal amplitudes, wavelength and position anomalies) are determined using the wind speed and direction data from the 300 mb levels of the global NCEP-DOE Reanalysis 2 product, subset to the extratropical latitudinal band 35 to 75 deg. Various approaches, including visualizations and composite analysis, will then be used to find the space-time relationship between active spread days and the dynamics of the jet stream.