An Assessment of Climate and Fire Danger Rating in the Northern Rockies During the 1910 Fire Season

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Abstract

The 1910 fires of western Montana and northern Idaho have received much publicity in the popular media but little scientific attention regarding the factors that contribute to fire behavior and fire danger. Here we present information surrounding the weather, and reconstructed measures of Palmer Drought Severity Index (PDSI), Keetch-Byram Drought Index (KBDI), Energy Release Component (ERC), and Pacific Decadal Oscillation (PDO) during the 1910 fire season in the northern Rockies. KBDI and ERC were used to assess local and regional fire danger related to fuel conditions while PDSI and PDO were used to examine regional and continental scale measures of drought in 1910 in the northern Rockies. Reconstructed measures of PDSI clearly illustrate the drought conditions during the months leading up to and during the 1910 fire season. However, measures of PDSI for the month of August were more severe in contemporary fire seasons such as 1919, 1934, 1988, 2000, and 2003 and over a much broader geographical extent. KBDI trends illustrate the early season dryness that occurred in 1910. However, KBDI trends where higher and a month earlier in 1934, while 1988 and 2000 were more severe later in August in comparison to 1910. KBDI values during the period July-October were also much higher in 2003 than those for the same period in 1910. We compared calculated ERC values from 1910 to contemporary fire seasons to display and compare the 1910 season to other recent extreme years in the northern Rockies. Similarly, measures of ERC were higher in 1910 from May to mid-July when compared to 1988, 2000, and 2003. However, these years had higher ERC values from mid-July to October. An examination of PDO indicates a relatively cool (negative phase) period in 1910, especially when compared to the period 1980 to the present. Finally, many eyewitness accounts describe the winds during the blowup of August 19-21, 1910 as “hurricane” or “cyclonic in nature”. However, we examined available hourly wind data recorded at Weather Bureau Offices operating in the region at the time and found that peak recorded wind speeds during this period ranged from 20-26 mph. The exception being Lewiston, Idaho which recorded peak wind speeds on these dates ranging from 38-42 mph.