

CLIMATE EXTREMES



What does this measure and why is it important?

This indicator tracks occurrences of extreme weather events at four Basin Boundary weather stations over the past century. Two indices are analysed: the annual number of warm days and the annual amount of rain falling on very wet days. “Warm Days” are defined as days when the maximum temperature exceeds the 90th percentile for that day of the year, calculated using a 30-year baseline period. “Very Wet Days” are defined as days when one-day rain values exceed the 95th percentile for that year. These methodologies are based on the CLIMDEX indices of weather extremes (for more information, see www.climdex.org). Raw data were acquired from the Pacific Climate Impacts Consortium’s [Provincial Climate Data Set Portal](#) and from the [National Climate Information Archive](#). Analysis was completed by the RDI research team.

Climate change has the potential to significantly impact all aspects of well-being, sometimes positively and sometimes negatively. Between 1913 and 2002, average annual temperatures in the Columbia Basin increased by 1.4 degrees Celsius, and average annual precipitation amounts increased by 26%. This analysis of extremes adds a new perspective to how, or if, our climate is changing. Studies predict that certain types of extreme weather will become more common both globally and locally. An increase in the frequency or severity of extreme weather can have significant consequences for our natural and built environments.

What are the trends and current conditions?

Number of warm days

The analysis does not show a clear trend in the frequency of very warm days experienced in this region over the past 90 years. Creston was the only community to see consistent increases in the frequency of warm days recorded over the 3 baseline periods used in this analysis (Table 1). These results suggest that most of the warming experienced in the region over the past century is not being driven by extreme temperatures. At a regional scale, though the frequency of warm days varied significantly from year to year, averages for the periods 1923-1952, 1953-1982 and 1983-2012 did not (Figure 1). Since weather patterns change annually, climate research relies on long-term averages to draw conclusions.

	Average # of Warm Days		
	1923-1952	1953-1982	1983-2012
Creston	41.2	42.1	42.8
Fauquier	41.6	41.2	41.3
Fernie	41.4	42.5	39.2
Kaslo	42.2	41.5	41.5
Region	41.6	41.8	41.2

Table 1: Number of warm days at individual Basin Boundary weather stations

Source of raw data: Pacific Climate Impacts Consortium, 2013; Environment Canada, 2013b

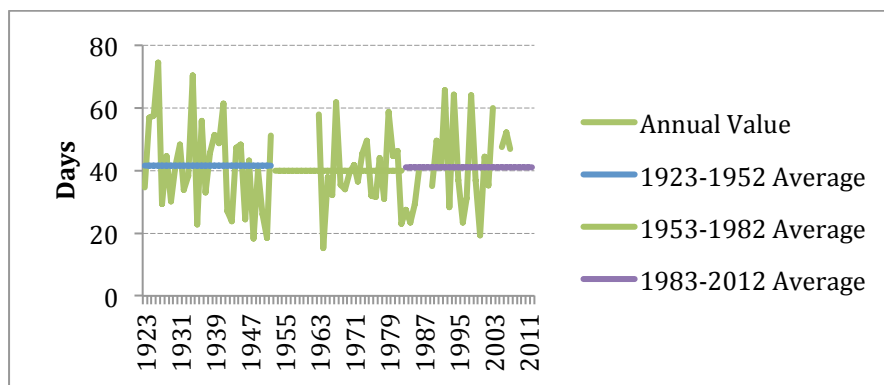


Figure 1: Number of warm days recorded annually, average taken from 4 Basin Boundary stations

Source of raw data: Pacific Climate Impacts Consortium, 2013; Environment Canada, 2013b

Amount of rain falling on very wet days

The analysis shows a trend toward more frequent and severe rain events in the region over the past 90 years. At the regional scale, the average amount of rain falling on very wet days increased consistently across the three baseline periods used in this analysis (Figure 2), a trend that was also witnessed at each of the monitoring stations (Table 2). In Creston, where the most significant change was recorded, 34% more rain fell during very wet days over the period 1983-2012 as compared to the period 1923-1952.

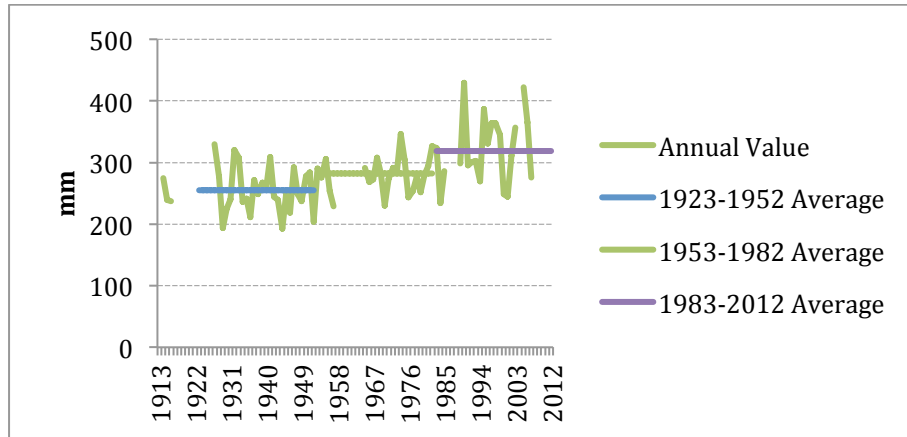


Figure 2: Amount of rain falling on very wet days, average taken from 4 Basin Boundary stations
 Source of raw data: Pacific Climate Impacts Consortium, 2013; Environment Canada, 2013b

Average mm of Rain Falling on Very Wet Days			
	1923-1952	1953-1982	1983-2012
Creston	182.9	225.5	245.2
Fauquier	215.3	238.2	266.6
Fernie	387.0	409.1	460.7
Kaslo	243.4	270.3	290.9
Region	257.2	285.8	315.8

Table 2: Millimetres of rain falling on very wet days at individual Basin Boundary weather stations
 Source of raw data: Pacific Climate Impacts Consortium, 2013; Environment Canada, 2013b

The discussion above provides interesting context to the results of the RDI's 2013 poll of residents, which indicated that roughly half of Basin Boundary residents (51%) believe that extreme weather events are occurring more frequently in the region.



The Columbia Basin Rural Development Institute, at Selkirk College, is a regional centre of excellence in applied research and information provision focused on strengthening rural communities in the Columbia Basin-Boundary Region. Visit www.cbrdi.ca for more information.