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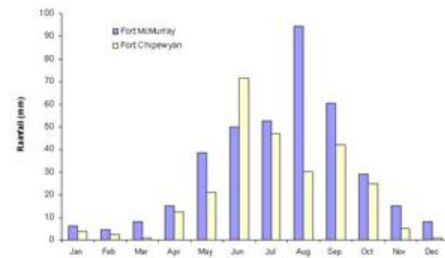
Extreme Weather Events

The spring breakup of frozen rivers can lead to catastrophic floods. River ice can form ice jams, which obstruct runoff and lead to water levels higher than would occur with open water, and can release a surge of water upon breakup. The earliest documented breakup flood at Fort McMurray dates to April 25th, 1875. In 1977, the lower Fort McMurray townsite was flooded, resulting in \$2.6 million in damages. The town was again flooded in 1997, with millions of dollars of damage to land and property. While flooding associated with ice jams can occur quickly and with little warning, studies are now being done to help forecast the breakup of the Athabasca and Clearwater rivers.

Fort McMurray and Fort Chipewyan have also experienced high levels of daily rainfall, with over 94 mm of rain falling on August 26th, 1976 in Fort McMurray, and over 71 mm of rainfall falling on June 19th, 1986 in Fort Chipewyan (see the top graph to the right).

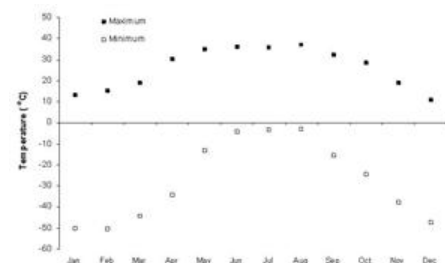
Extreme high and low temperatures can have important impacts on human society, including increased energy use (for heating and cooling buildings), damage to infrastructure (e.g., burst pipes), and heat- and cold-related illnesses.

In Fort McMurray, recorded temperatures have reached as high as 37°C (on August 10th, 1991) and as low as -50.6°C (on February 1st, 1947). In addition, extreme temperatures have exceeded 0°C in every month, and fallen below 0°C in every month (bottom graph on the right). That is, the region has seen melting conditions in January, and frost in July.



Extreme daily rainfall at Fort McMurray and Fort Chipewyan.

Source: Environment Canada
(http://climate.weatheroffice.ec.gc.ca/climate_normals).
(click to enlarge)



Extreme maximum and minimum temperatures, Fort McMurray.

Source: Environment Canada
(http://climate.weatheroffice.ec.gc.ca/climate_normals).
(click to enlarge)

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