

December is the duller month of the year with all stations showing totals less than 100 hours. There is a noticeable tendency for the sky to be either cloudless or completely overcast on the prairies.

Lying in the centre of the Continent and shielded from the Pacific by the western mountain ranges, the Prairie Provinces lack available sources for abundant precipitation. The region is favoured, however, by the fact that cyclonic activity is fairly vigorous and the hot summers are conducive to convection, particularly on the southern prairies. The heaviest precipitation on the prairies, especially in Manitoba, results from the lifting of extensive masses of moist air moving northward from the Gulf of Mexico and adjoining regions. Droughts are usually associated with abnormally low pressure in the Northwest Territories which produces only a weak southward flow of cold air.

Over a large section of the Prairie Provinces the total precipitation averages less than 15 inches and even throughout most of the grain area the annual total is less than 20 inches. Manitoba is the most favoured section with totals reaching 22 inches in the inter-lake region. The other extreme occurs on the High Plains north of the International Boundary in Saskatchewan and southeastern Alberta with totals only slightly in excess of ten inches and the effectiveness of this amount is reduced by the strong summer sunshine and drying winds.

In marked contrast to the Pacific Coast with its winter maximum, the prairies have a rainy season from late May to early September, although no season is without some precipitation. The light precipitation is somewhat mitigated by the fact that 60 to 75 p.c. of the year's precipitation falls during the crop season when it can be best utilized by the plants.

During the summer the intense heating and resulting strong convection are conducive to thunderstorm activity. These convective thunderstorms are less severe than the frontal type which develop along cold fronts and are often intensified by local convection. The second type may affect large areas as the front moves across the prairies. Unfortunately, hail frequently accompanies severe thunderstorms and may cause local or even widespread damage to crops and livestock. Distribution of hail along a storm track is erratic and the damage is generally restricted to narrow strips extending for several miles in a more or less discontinuous pattern. Hailstorms, like thunderstorms, are most frequent during the period mid-June to mid-August and are more likely to occur over the open grassland than in forested areas. Tornadoes are relatively infrequent on the Canadian prairies. There are probably a very few each year but they usually go unreported owing to the relatively sparse population. Only six have been reported as causing damage in excess of one million dollars; the most destructive was at Regina in 1912.

Precipitation shows wide variations from year to year, with differences between the extreme annual amounts exceeding the mean annual total in most areas. However, in an area such as the prairies where precipitation is marginal for agriculture, more harm is caused by droughts than by excessive precipitation. This is especially true when there are a number of dry years in succession which may cause almost total crop failure and serious soil erosion. Drought is most apt to occur in southeastern Alberta and southwestern Saskatchewan; the Edmonton district of Alberta and the Red River Valley of Manitoba have the most dependable precipitation. Monthly precipitation totals are more often in deficit than in excess. A month may have no precipitation over a large section of the western grain area, while occasionally monthly totals may exceed ten inches. June and July are most likely to have high rainfall totals.

Floods are not ordinarily a serious problem on the prairies but high water in river systems with headwaters in the Rockies may occur during the early summer when the flow is increased by melting snow and ice in the mountains. Local flooding may result from excessive local rains in smaller drainage basins during the summer season. The lower valleys of the Red and Assiniboine Rivers in Manitoba, however, are liable to serious flooding such as occurred at Winnipeg in April-June, 1950. This situation developed from a combination of heavy winter accumulation of snow, a cold spring resulting in a late break-up, and moderate to heavy precipitation at the time of the break-up.