

PRAIRIES and HIGH PLAINS

Weather and Climate Highlights and Impacts, March to May 2024
Climate Outlook, July to September 2024



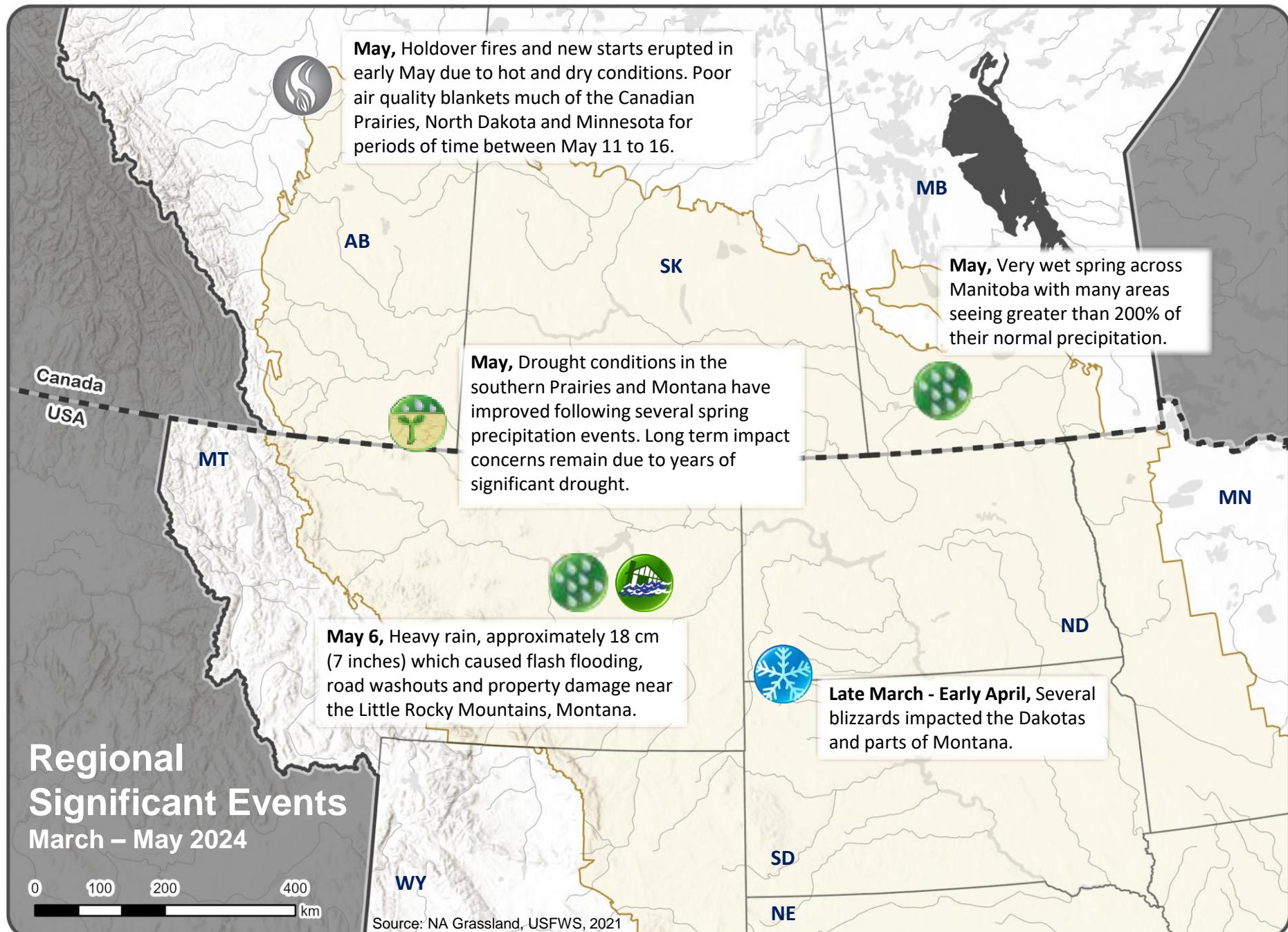
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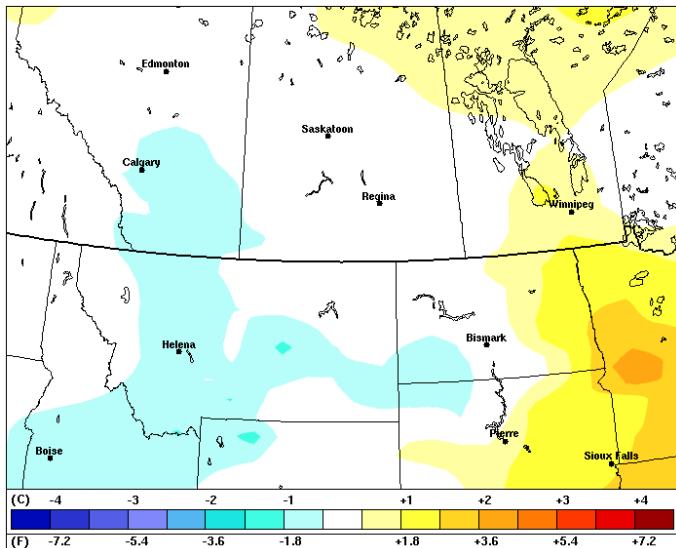
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Regional Climate Overview

March – May 2024

Departure from Normal Temperature (°C/°F)

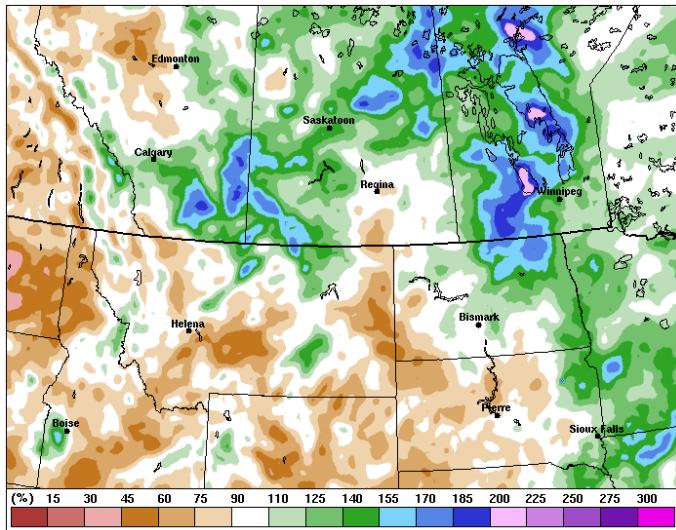


Source: ECCC Climate Archive and USHCN v 2.5
Reference period: 1991-2020

Temperature

Spring brought contrasting temperatures to the Prairies and High Plains, with colder conditions in the western regions, including the southeastern corner of Montana and extending into the Dakotas, while parts of the eastern region saw warmer than normal temperatures. In general, March was particularly cold in the Prairies, including Montana and North Dakota, which observed a notable cold spell. Following a brief April warmup, May temperatures in most areas returned to near normal, except for the southwest region, which saw colder than normal conditions.

Percent of Normal Precipitation (%)

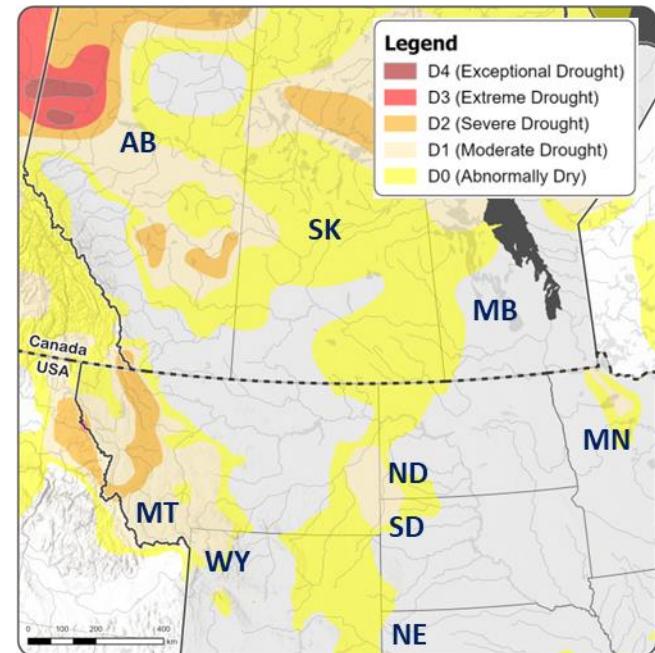


Source: Canadian Precipitation Analysis (CaPA)
Reference period: 1991-2020

Precipitation

The majority of the Prairie provinces saw much wetter than normal conditions. Manitoba received higher than usual precipitation amounts, driven by notable precipitation events in April and May. Meanwhile, eastern Dakotas and Minnesota saw slightly above normal amounts. In contrast, drier than normal conditions were observed across much of the High Plains region, west-central Alberta and the southeastern corner of Saskatchewan.

Drought Monitor



Source: North American Drought Monitor

Drought Conditions as of May 31, 2024

Conditions across the Prairies and High Plains region at the start of March were significantly dry: Extreme (D3) and/or Exceptional Drought (D4) existed across southern Alberta, southern Manitoba and western Montana. These areas did not receive sufficient precipitation for more than a year (or longer), and thus reported significant impacts, such as water supply concerns and pasture losses. This pattern persisted into April, until late in the month, when a weather pattern shift occurred, bringing more than 200% of normal monthly precipitation in May across eastern Alberta, southwestern Saskatchewan and southern Manitoba. Going into the growing season, this substantially helped to alleviate drought concerns, leading to the end of D3 and D4 conditions in the region by the end of May.

Regional Impacts

March – May 2024

A Change in Drought Condition Brings Relief

Overall [changes to drought](#) from March to May were significant: southern Alberta, southwestern Saskatchewan, southern Manitoba and northern North Dakota saw 3- to 4-class improvements to drought. It was a very welcome change for the Prairies and High Plains region, with a large portion of these [improvements occurring in the last month](#). Drought concerns going into the 2024 growing season were top of mind for many sectors (e.g. agriculture, industry, municipal water supply, etc.), but the typical transition from spring to summer brought notable precipitation to this region.

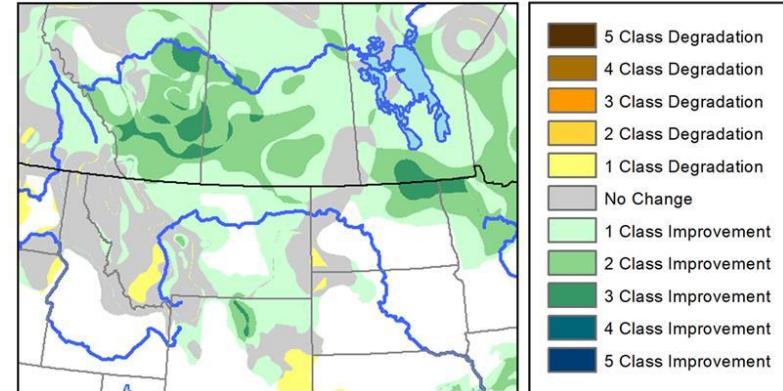
[Looking back](#), the initial conditions leading up to May were significantly dry and concerning, as many areas in this region had ongoing drought concerns season-after-season over the past year. Moisture was needed, as the last few seasons were very dry, and the winter snowpack and subsequent runoff was minimal over most areas in the Prairies. The unusually warm and dry winter limited snowpack and snow cover, and the extremely low snow water equivalent across the Rocky Mountains raised heightened concerns for the upcoming growing season. The exceptional Drought (D4) that had developed across southern Alberta last year was still present 10 months later. In April, several regions in Alberta were put under water advisories, and irrigators across Alberta were given restrictions for the 2024 growing season. It was a turbulent time, but relief came when the last week of April saw a change in weather which brought cooler temperatures along with consistent and significant precipitation across the region.

May was a very wet month with two significant widespread storms moving through the Prairies during the first part of the month, bolstering topsoil moisture over much of the region. More than 200% of normal precipitation fell across eastern Alberta, southwestern Saskatchewan and southern Manitoba. May's precipitation was also felt in Montana, which observed marked improvements in soil moisture, changing from below normal soil moisture (0-30th percentile) to near normal conditions across most of the state. May's precipitation and cool weather added to water year precipitation totals and delayed snowmelt in many locations, resulting in better water supply forecasts for June 1, compared to the ones for May 1. In nearly all basins, the snowpack peaked below normal this season, which will most likely have an impact on flows later this summer.

While the long-term drought concerns remain in some areas, a change to wetter weather eased many of the immediate concerns. These precipitation events provided much-needed moisture for crop germination and emergence across the grain belt. After years of significant drought, however, pastures and rangeland still have a lot of recovery ahead. Grasses have been growing well so far this season, but there are reports of grasses heading out early (going to seed), which may limit the overall growth potential for these crops.

North American Drought Monitor Class Change - 1 Month

May 31, 2024 compared to April 30, 2024



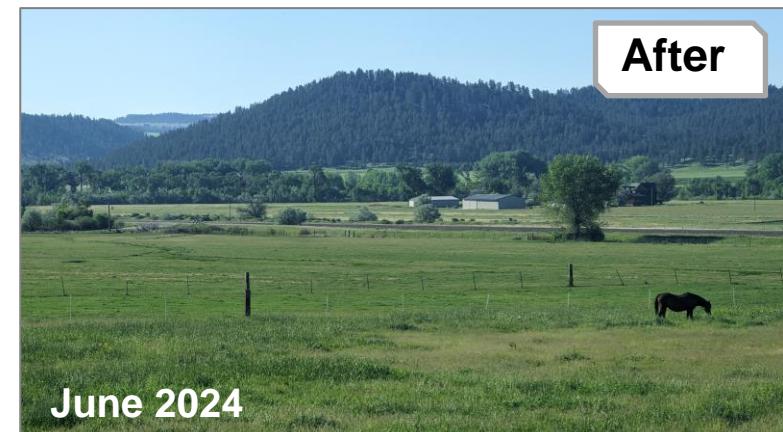
Source: North America Drought Monitor Change Map

Before



March 2024

After



June 2024

Agricultural fields in Columbus, Montana showing recovery from drought conditions.

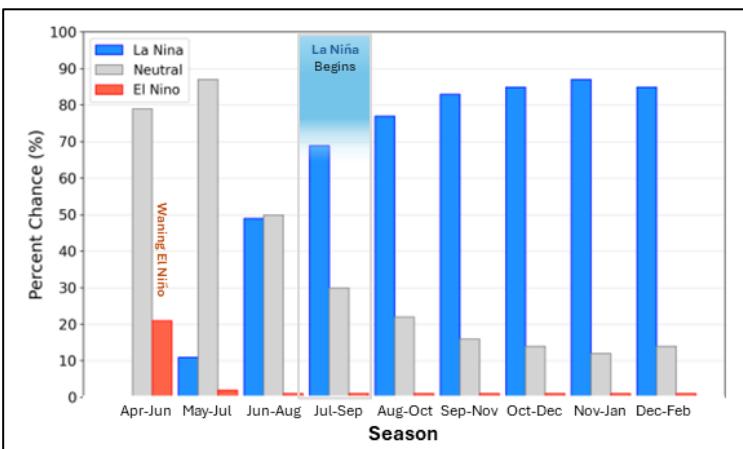
Photo Credit: Lee Schmelzer

Temperature and Precipitation Outlook

July – September 2024

The summer temperature outlooks from both [American](#) and [Canadian](#) models show an enhanced chance of above normal temperatures for the entire domain. The precipitation outlook suggests below normal precipitation from southern Alberta southward through to Nebraska. Over the eastern part of the domain (Saskatchewan, Manitoba, the eastern Dakotas and Minnesota) the forecast is for an equal chance of above or below normal precipitation.

ENSO Outlook for Prairies and High Plains – The 2023-24 El Niño event has been weakening through the past few months. It peaked over the winter with a maximum Oceanic Niño Index (ONI) value of 2.0°C, then gradually weakened to an ONI of 0.7°C by the end of May. Based on the latest alert issued by NOAA Climate Prediction Centre, a transition from El Niño to ENSO-neutral is likely in June 2024, and a La Niña event may develop in July-September.



Graph: A transition from El Niño to ENSO-neutral is expected in April-June 2024, with the neutral phase persisting through May-July. La Niña conditions are favored through the second half of the year
(Credit: [CPC ENSO Diagnostic Discussion](#)).

Table: Three-month running mean ONI for the last three years. Warm (red) and cold (blue) periods based on a threshold of +/-0.5°C for ONI
(Credit: [Cold & Warm Episodes by Season](#)).

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	2.0
2024	1.8	1.5	1.1	0.7								

Stronger impacts of El Niño or La Niña are often seen during the winter. When an El Niño is weakening as it is now, typically it will produce a more active weather pattern on the Prairies and High Plains, in terms of precipitation and thunderstorm activity. This waning effect may persist into the early summer before the change to ENSO neutral conditions.

PRAIRIES and HIGH PLAINS

Contacts and Partners

- Environment and Climate Change Canada
www.canada.ca/en/services/environment
- Agriculture and Agri-Food Canada
www.agr.gc.ca/drought
- National Drought Mitigation Center
<http://drought.unl.edu/>
- NOAA NIDIS
www.drought.gov
- US State Climatologist
<https://stateclimate.org/>
- NOAA NCEI
www.ncei.noaa.gov
- USDA Climate Hubs
www.climatehubs.usda.gov
- NOAA NWS Climate Prediction Center
www.cpc.ncep.noaa.gov
- High Plains Regional Climate Center
www.hprcc.unl.edu
- NOAA NWS Missouri Basin River Forecast Center
www.weather.gov/mbrfc
- USDA Natural Resources Conservation Service
www.nrcs.usda.gov



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