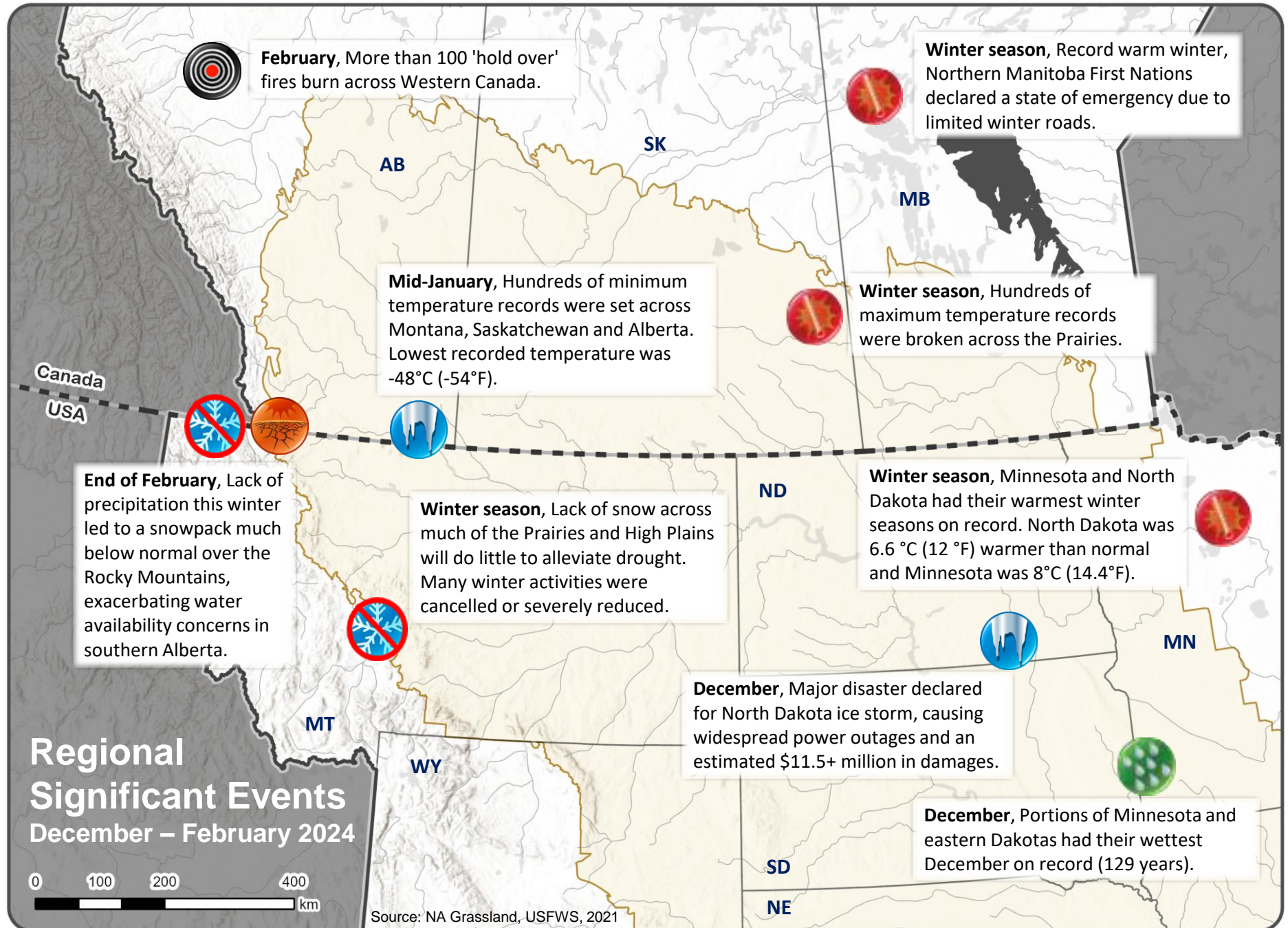


# PRAIRIES and HIGH PLAINS

Weather and Climate Highlights and Impacts, December to February 2024  
Climate Outlook, April to June 2024



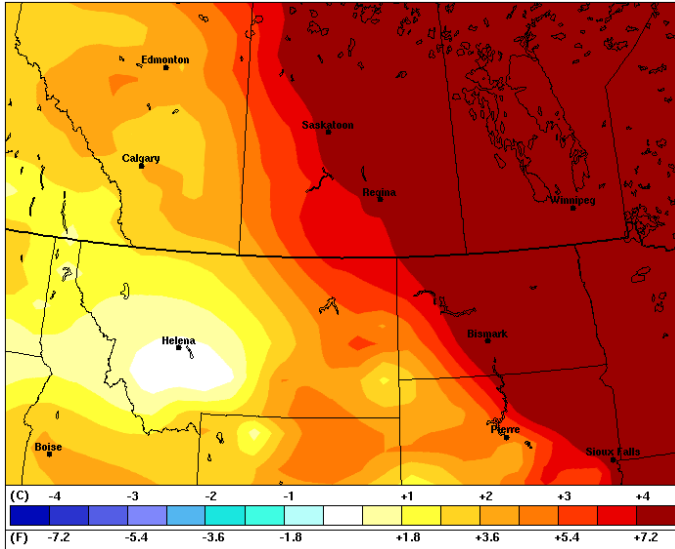
Environment and Climate Change Canada / Environnement et Changement climatique Canada  
Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada



# Regional Climate Overview

December – February 2024

## Departure from Normal Temperature (°C/°F)

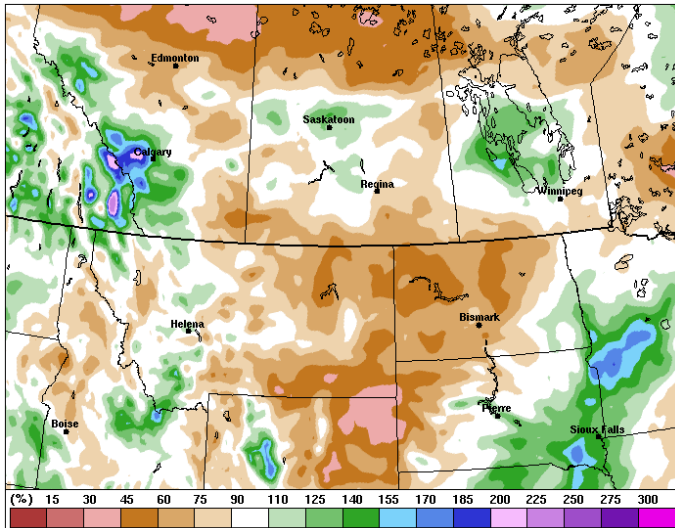


Source: ECC Climate Archive and USHCN v 2.5  
Reference period: 1991-2020

## Temperature

The Prairies and High Plains saw warmer than normal temperatures, with the eastern half notably warmer than the rest of the region. Overall, December saw record high temperatures, particularly in the Prairies. A brief intense cold spell in mid-January lowered temperatures to below normal levels in the western parts of the region before returning to a much warmer pattern, mostly in Minnesota and regions of the Dakotas, as the season ended.

## Percent of Normal Precipitation (%)

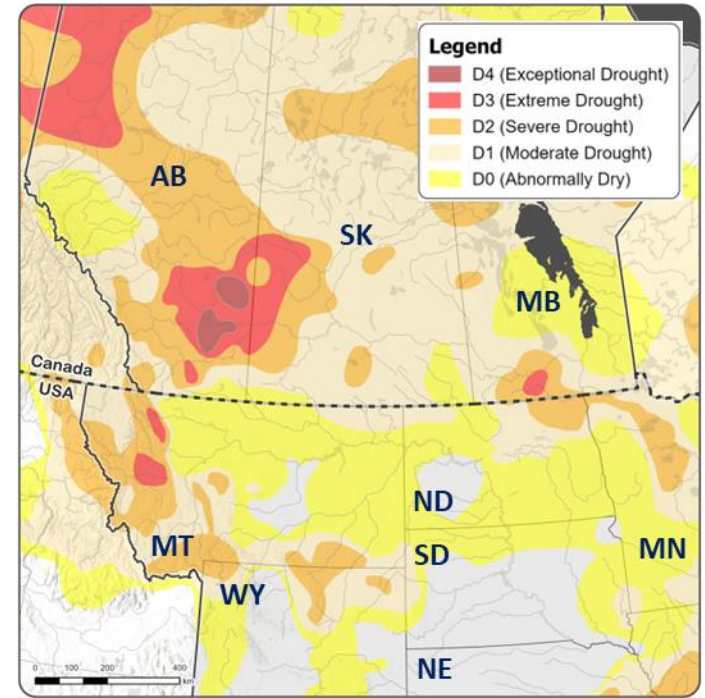


Source: Canadian Precipitation Analysis (CaPA)  
Reference period: 1991-2020

## Precipitation

Much drier than normal conditions were observed across the region in the bordering states and provinces, including inland areas such as the northern Prairies, parts of Montana, Wyoming, and the Dakotas. Localized regions in Saskatchewan, Manitoba and parts of Wyoming received wetter than normal conditions. Meanwhile, the region spanning much of Minnesota and eastern parts of the Dakotas, along with southwestern Alberta, saw much wetter than normal conditions this season.

# Drought Monitor



Source: North American Drought Monitor

## Drought Conditions as of February 29, 2024

The Prairies and High Plains region continued to experience significant drought through the winter, with over 75% of the Canadian prairies in drought conditions by the end of February. Winter precipitation had little impact on improving drought conditions in the southern Canadian Prairies, while drought conditions in the northern prairies and throughout the High Plains region continued to expand and increase in severity. As we transition to spring, there is significant concern within the agricultural sector regarding feed supplies, water availability and soil moisture. In addition, wildfire concerns are extremely high. Southern Alberta and Southwestern Saskatchewan continue to be rated in Extreme (D3) or Exceptional Drought (D4) given the long-term moisture deficits.

# Regional Impacts

December – February 2024

## Drought and Agricultural Impacts



Winter wheat fields near the Helena area in Montana.  
Photo Credit: Lee Schmelzer

### Location: Montana and North Dakota

Agricultural concerns around the region include ongoing drought, limited snowpack and snow cover, and unusual winter warmth followed by rapid onset of extreme cold. A sudden cold-front passed through the area in mid-January, setting multiple records for minimum temperature. This sudden swing from unusual warmth to extreme cold without protective snow cover caused some producers to worry about freeze and wind damage to overwintering crops, such as [alfalfa](#) and [wheat](#). According to the [Montana Crop Progress report for February](#), 10% of surveyed producers reported severe winter wheat damage from freeze and drought, and another 23% reported moderate damage. In the livestock sector, a relatively mild winter across much of the area resulted in [easier conditions](#) for feeding and calving. However, lower pregnancy rates were detected in several herds in eastern Montana and western North Dakota going into the winter. This could be due to [many factors](#), such as limited forage in drought-affected areas, or reduced forage quality in areas with above normal moisture. Additionally, in eastern Montana and western North Dakota, extended summer moisture in 2023 led to an abundance of horn and stable flies, which disrupted livestock grazing behavior and weight gain.

## Warm and Dry Winter's Impact on Recreation



Teton Pass Ski Resort in Montana, with low snow accumulation on the ski hills toward the end of the season.

Photo Credit: Charles Hlavac

### Location: Prairies and High Plains

Warm and dry conditions (lack of snow) have had an impact on many outdoor activities this winter. [Ski hill providers struggled to stay open](#)

due to a lack of snow, followed by bitterly cold conditions in January. Warm weather and safety concerns led to many cancelled [ice fishing events](#) and a [limited season](#). Users of [cross country ski and snowmobile trails](#) have had to adapt to changing and generally poor trail conditions. Throughout the season, winter enthusiasts have had to find alternative ways to enjoy the outdoors.

## Water Supply Concerns

### Location: Alberta

The unusually warm and dry winter across the Prairies and High Plains has greatly impacted the region's water supply. The decline in mountain snowpack resulted in low streamflow in tributaries, particularly in Alberta. By late February, local communities near the headwaters of the Oldman River system witnessed the [drying of the Crowsnest River](#) due to a lack of precipitation and [drought conditions](#). Water supply in southern



Satellite imagery of the St. Mary Reservoir in Alberta, Canada, captured in February 2024.

Source: ESA Sentinel-2

Alberta communities reported [critically low levels](#). The District of Pincher Creek used trucks and emergency pipes to access water from underground, as its regular intake pipe that brings in water could not be used. The province of Alberta is now urgently negotiating with water license holders, focusing on the reduction of water usage. This marks the [largest water-sharing](#) negotiation in Alberta's history, as the province prepares for prolonged drought conditions in the upcoming season.

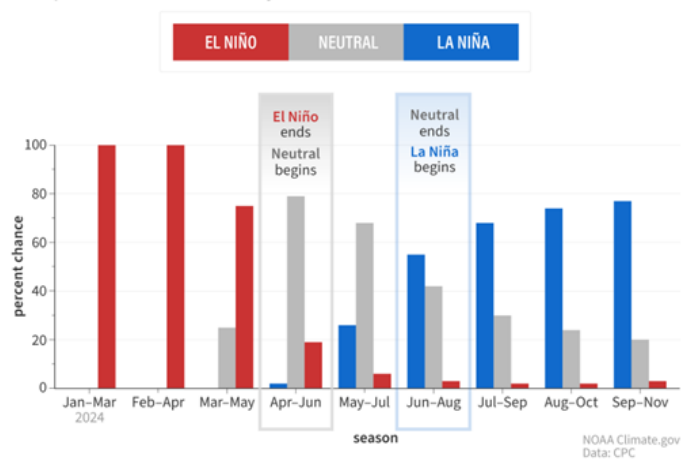
# Temperature and Precipitation Outlook

April – June 2024

Spring temperature outlooks from the [American](#) and [Canadian](#) models show an enhanced chance of above normal temperatures for most of the Canadian Prairies, as well as near the continental divide in the US and near the eastern fringe of the domain, over Minnesota. Equal chances of above and below temperatures are forecast for the High Plains. The precipitation outlook suggests near normal precipitation over much of the Prairies and High Plains, except for western Montana where drier than normal conditions are expected. It should be noted that forecast skill for precipitation on the seasonal scale is low.

**ENSO Outlook for Prairies and High Plains** – The ongoing strong El Niño event peaked over the winter with a maximum Oceanic Niño Index (ONI) value of 2.0°C. Based on the [latest alert](#) issued by the NOAA Climate Prediction Center (CPC), El Niño conditions will persist but decline rapidly through March – May 2024. A transition to the ENSO-neutral state is likely by June, with increasing odds of La Niña developing into the summer. Despite its weakening signal, El Niño is likely to continue influencing the region’s weather pattern with impacts lingering through April.

ENSO probabilities issued February 2024



**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: [February 2024 ENSO Outlook](#), [Climate.gov](#)).

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											

**Table:** Three-month running mean ONI for the last two years. Warm (red) and cold (blue) periods based on a threshold of +/- 0.5C for ONI (Credit: [Historical El Niño / La Niña episodes](#), NOAA CPC).

[Statistics](#) from previous springs (March – May) following strong El Niño winters since the 1950s show, on average, above normal temperatures through the spring for the Prairies and High Plains. While near normal precipitation is favored in early spring, the odds for below normal precipitation increase in late spring. The lack of significant precipitation in the outlook is unlikely to alleviate ongoing severe drought in this region. Warmer temperatures could lead to an earlier start to thawing, while the risk of severe flooding this spring is reduced due to lower amounts of snow cover from the winter. In general, these ENSO signals are consistent with current seasonal outlooks based on the [American](#) and [Canadian](#) climate models.

## PRAIRIES and HIGH PLAINS

Contacts and Partners

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



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