



# Seasonal Outlook: Flood, Wildfire, Drought & Extreme Heat Spring/Summer 2024

Armel Castellan

Warning Preparedness Meteorologist

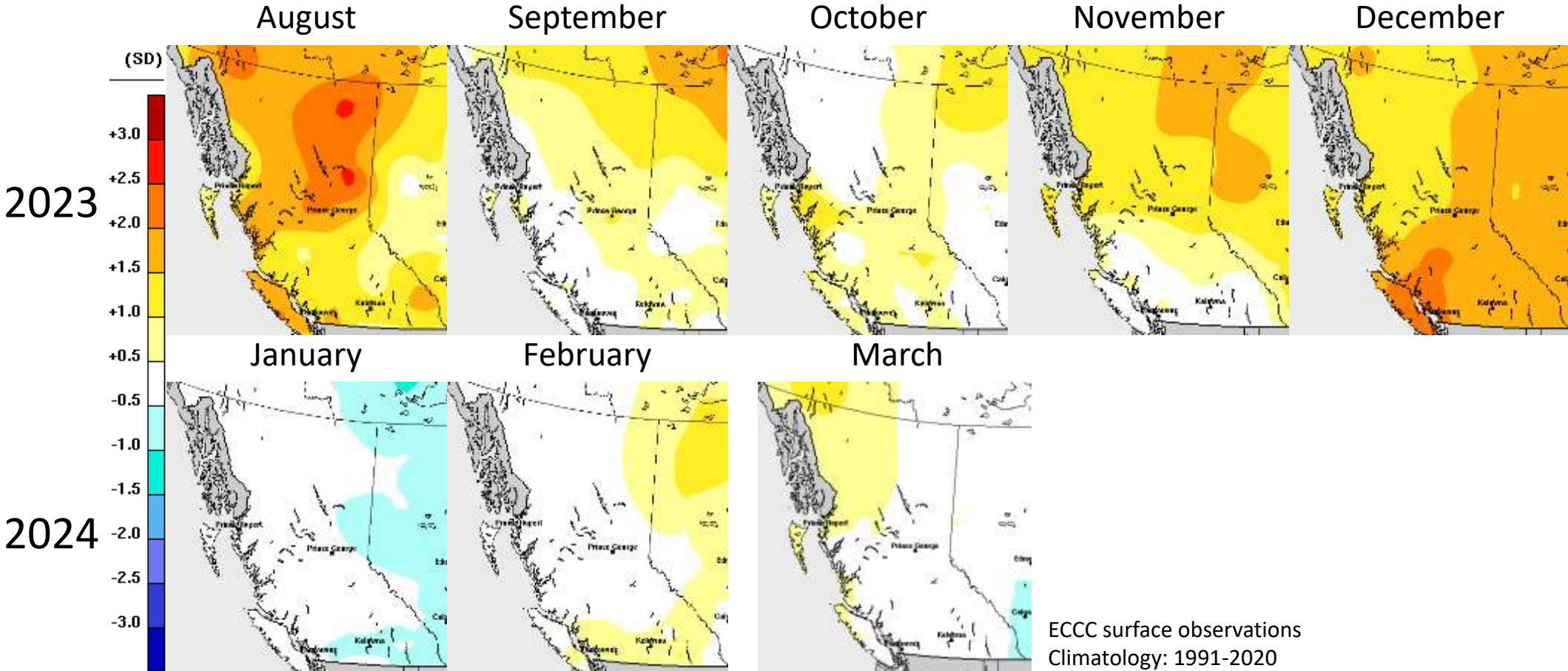
April 3<sup>rd</sup>, 2024



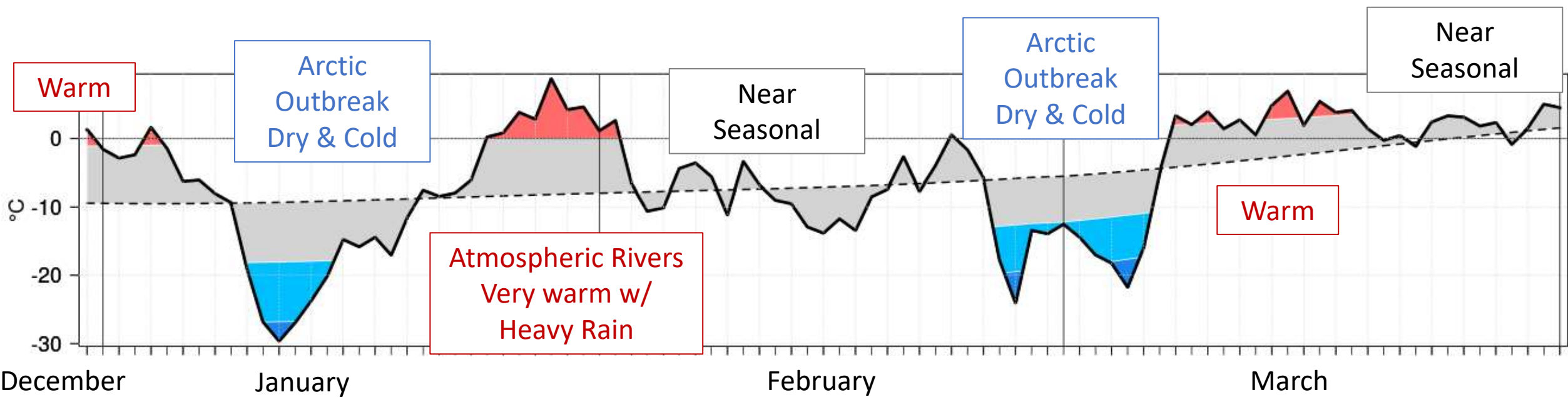
# Summer!, Fall and Winter 2023-24



# Past Monthly Temperature in Standardized Anomalies = rarity of signal



# Fort St James, Winter+ 2023-24: Major Temperature Swings



■ -3 sd/é-t ■ -2 sd/é-t ■ -1 sd/é-t ■ +/-1 sd/é-t ■ +1 sd/é-t ■ +2 sd/é-t ■ +3 sd/é-t

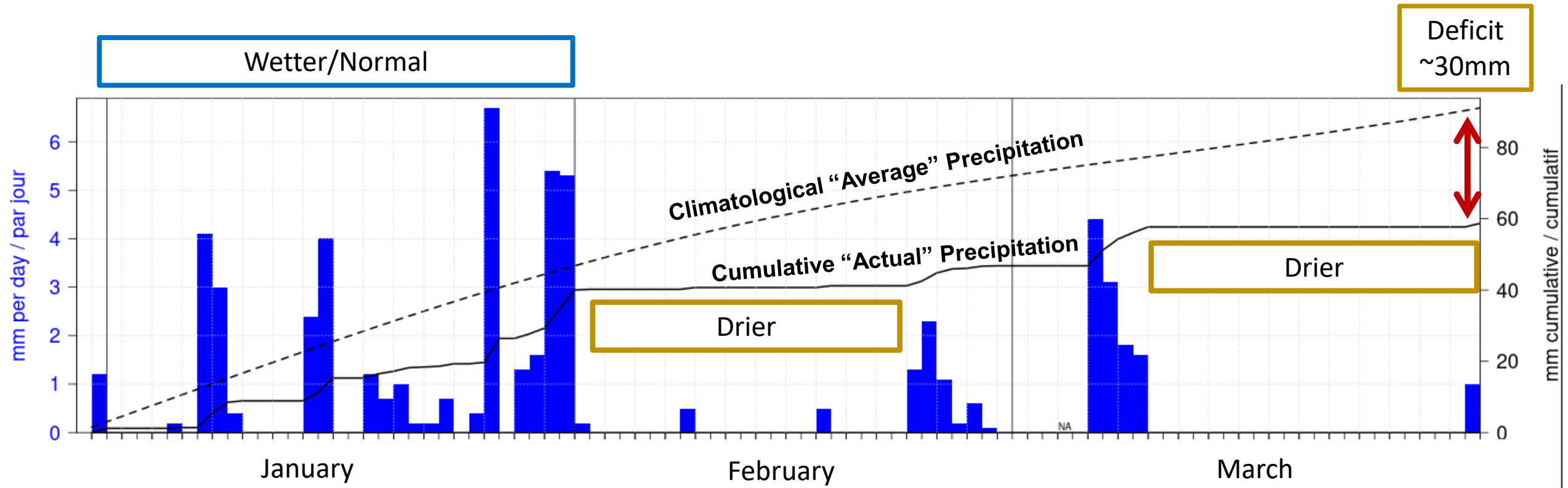


Environnement et  
Changement climatique Canada

Environment and  
Climate Change Canada

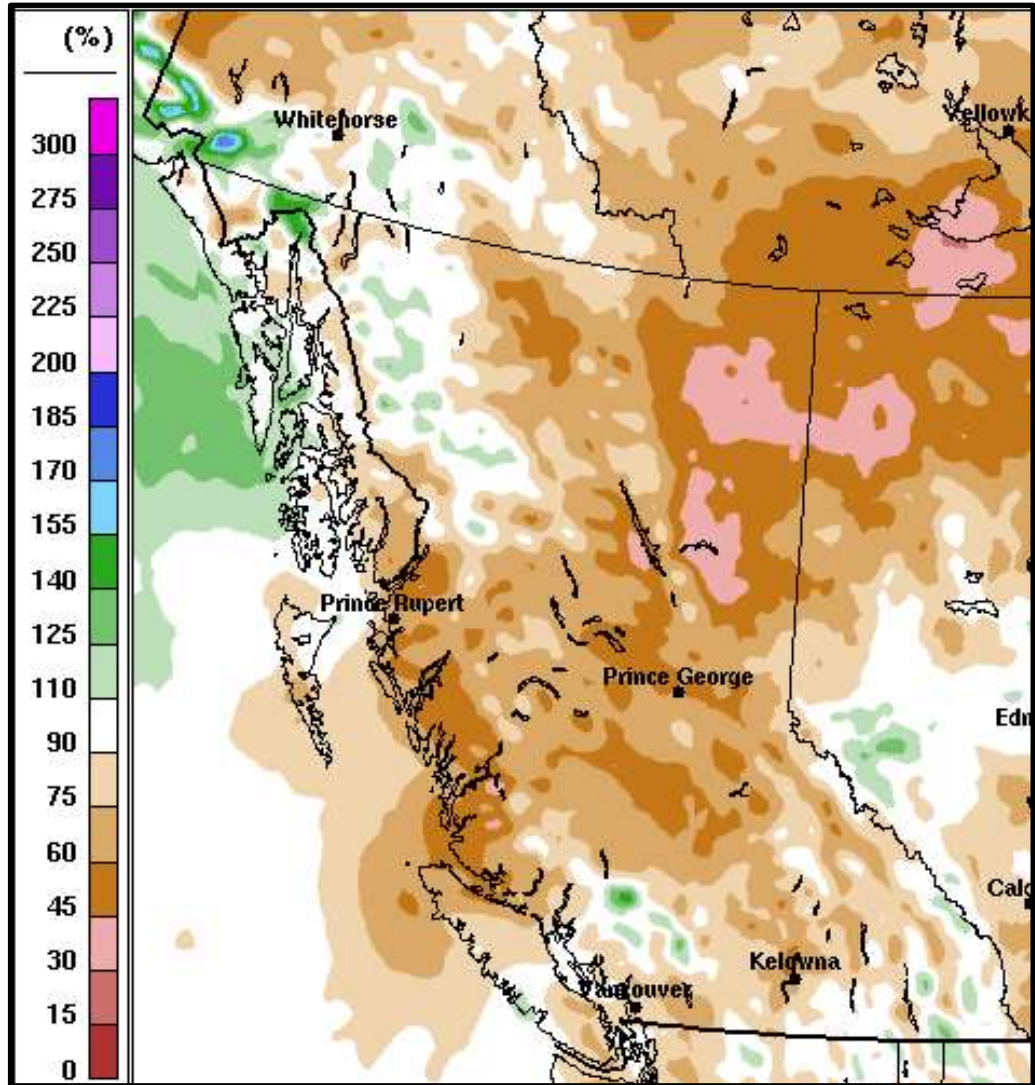
Weather station data / Données de stations météo  
Climatology / Climatologie: 1991-2020 ID=1092970  
2024-04-02 13:31UTC

# Smithers: 3-month Rolling Precipitation: Dry overall trend





# The Precipitation Deficit



**May 2023 – February 2024**

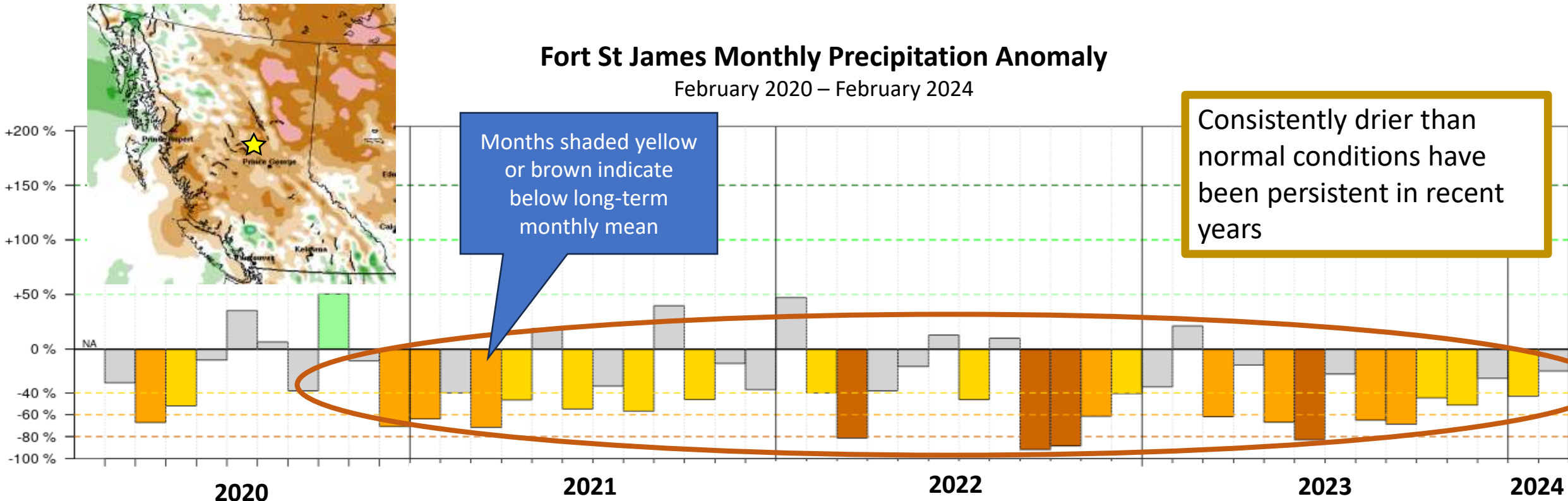
**11-month analysis compared to normal**

- Widespread precipitation deficit across most of B.C.
- Exceptions:  
Northwest B.C. (Cassiar Hwy),  
parts of southern B.C.



# Fort St James – February 2020 to February 2024

## Monthly Precipitation



■ <<< normal  
 ■ << normal  
 ■ < normal  
 ■ normal  
 ■ > normal  
 ■ >> normal  
 ■ >>> normal





Agriculture and  
Agri-Food Canada

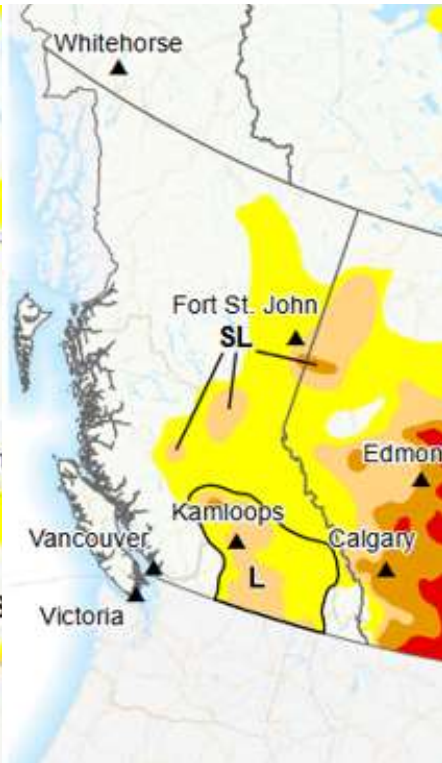
Agriculture et  
Agroalimentaire Canada

# Canadian Drought Monitor

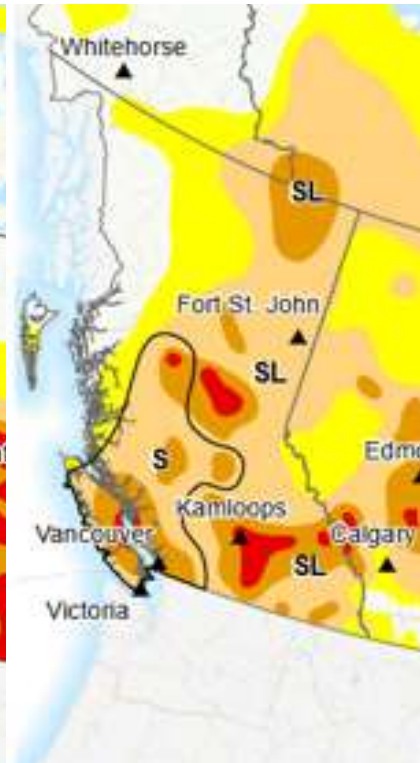
## Drought Intensity



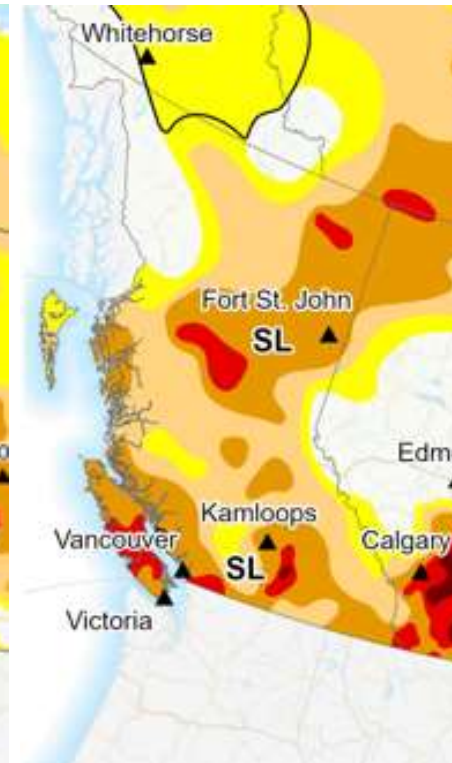
Jan 31 2021



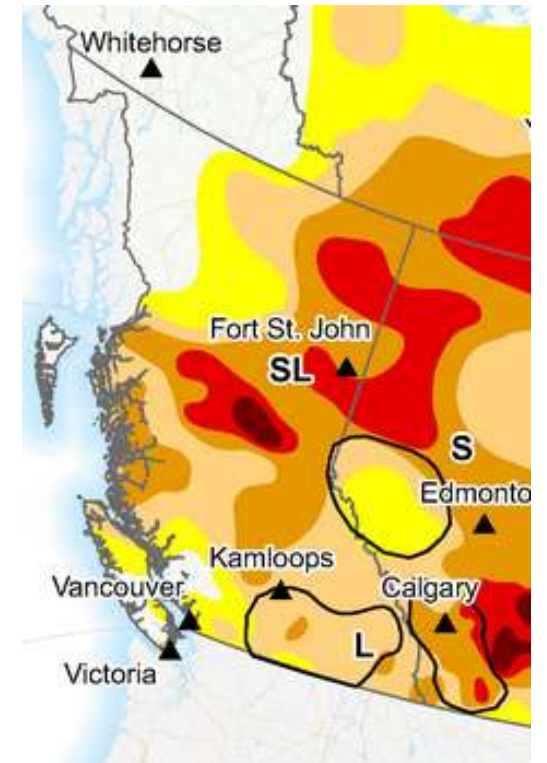
Dec 31 2021



Oct 31 2022



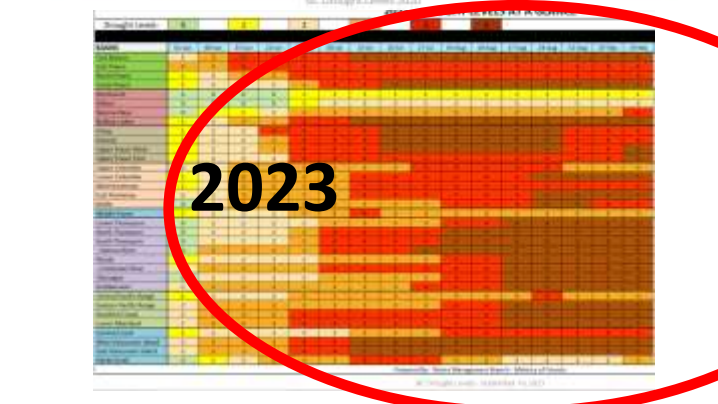
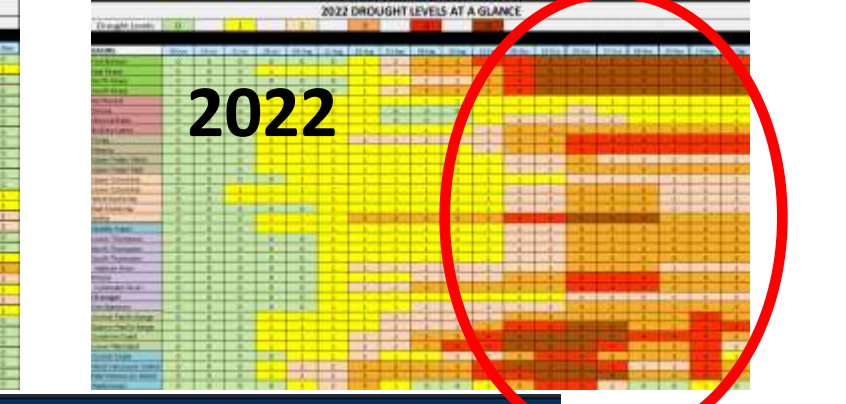
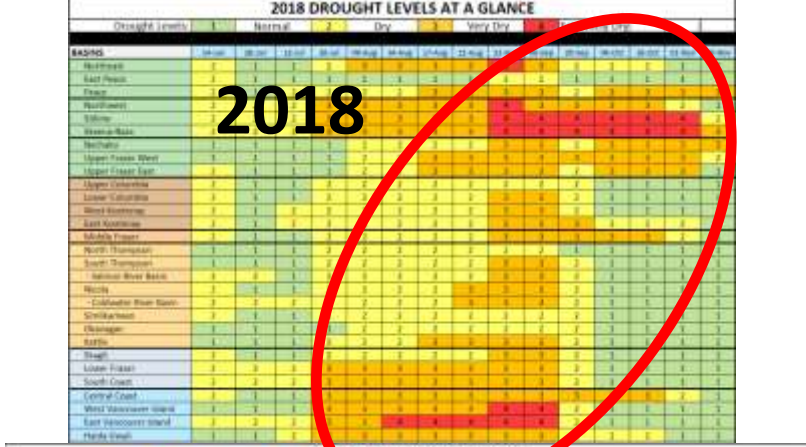
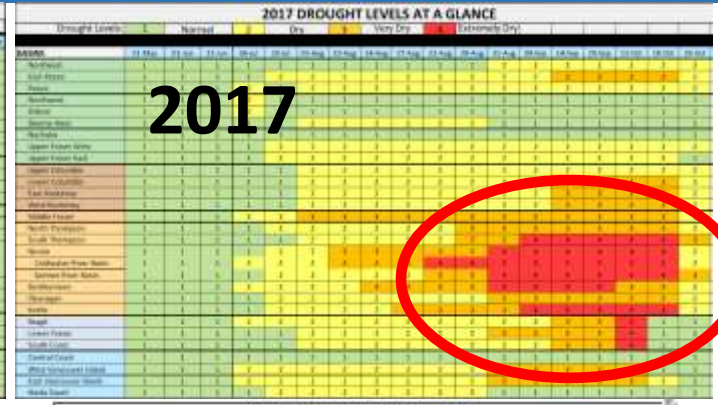
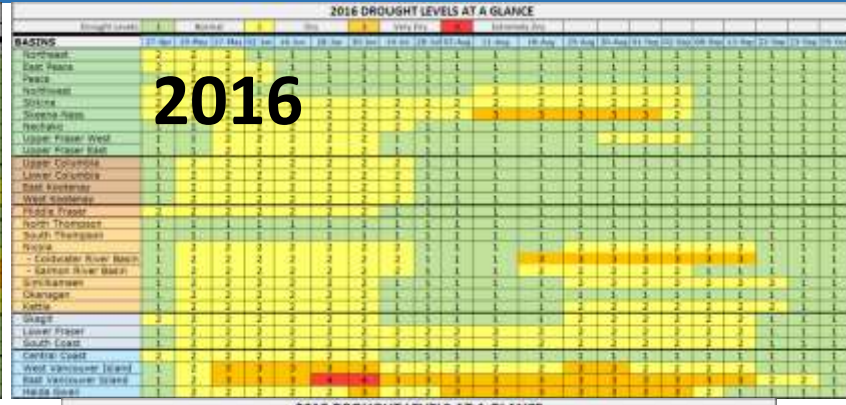
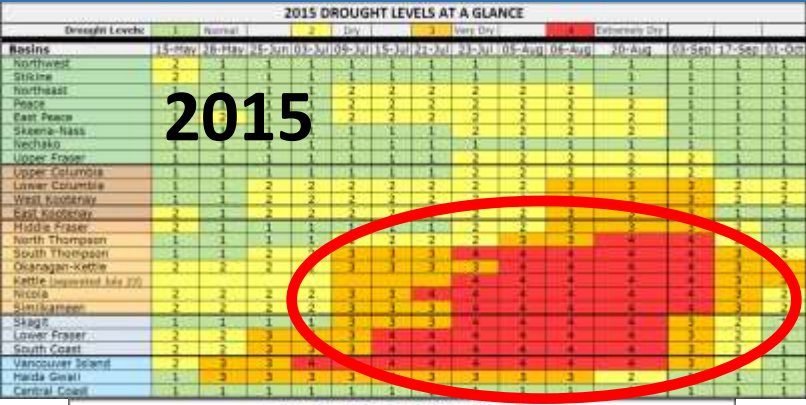
Aug 31 2023



Feb 29 2024



# River Forecast Centre: Historical Drought Scale (GREEN; no drought, RED; max drought)



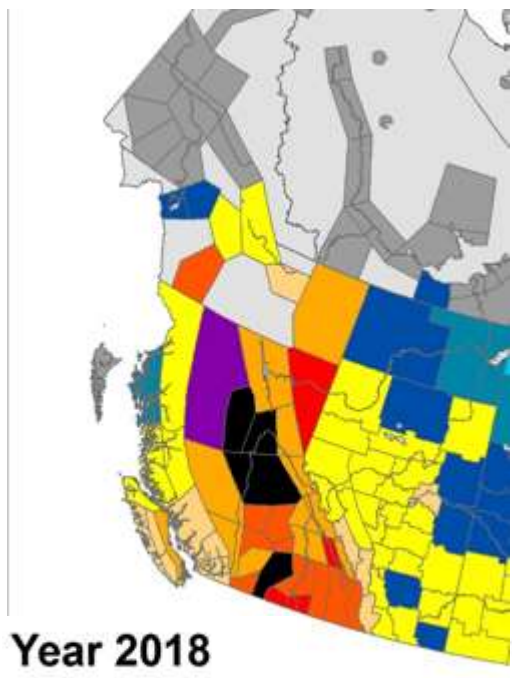


# Total Number of Days of Air Quality Alerts

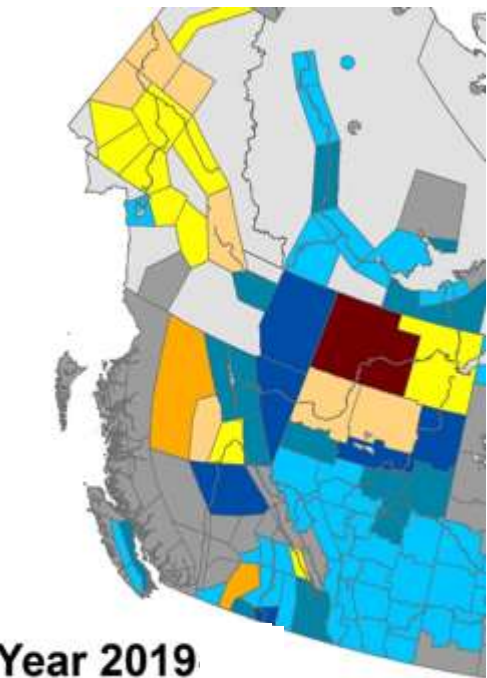


Environment and  
Climate Change Canada

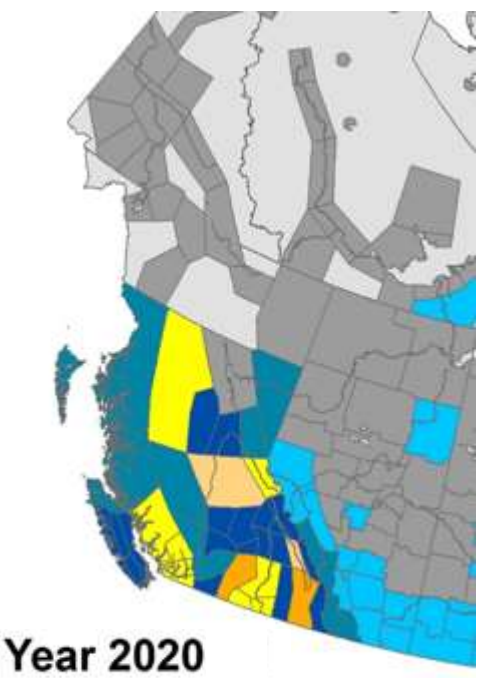
Environnement et  
Changement climatique Canada



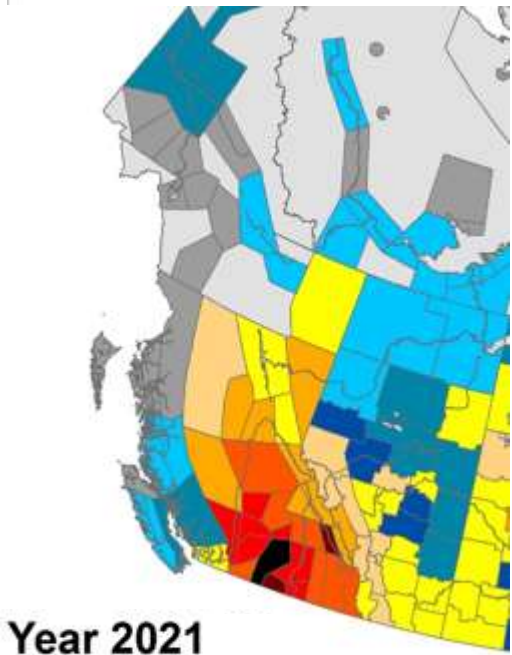
Year 2018



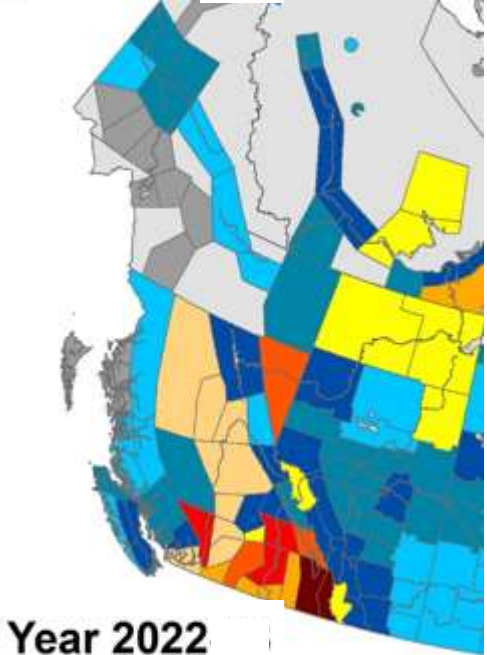
Year 2019



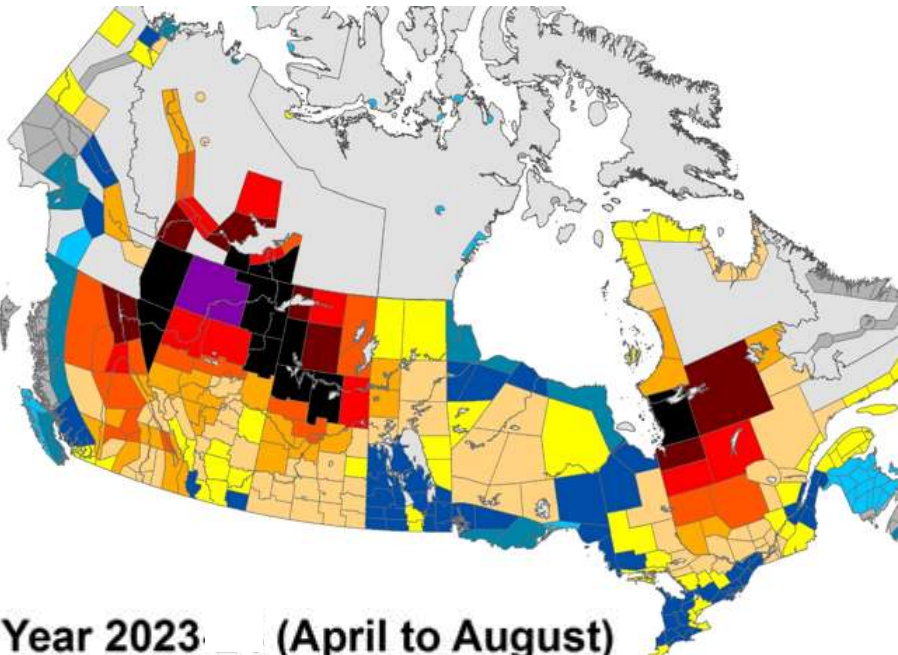
Year 2020



Year 2021

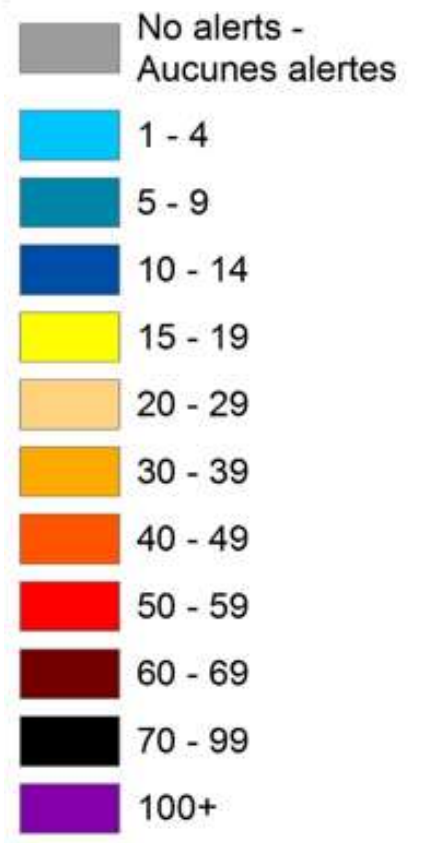


Year 2022



Year 2023 (April to August)

## Total number of Days of AQ alerts



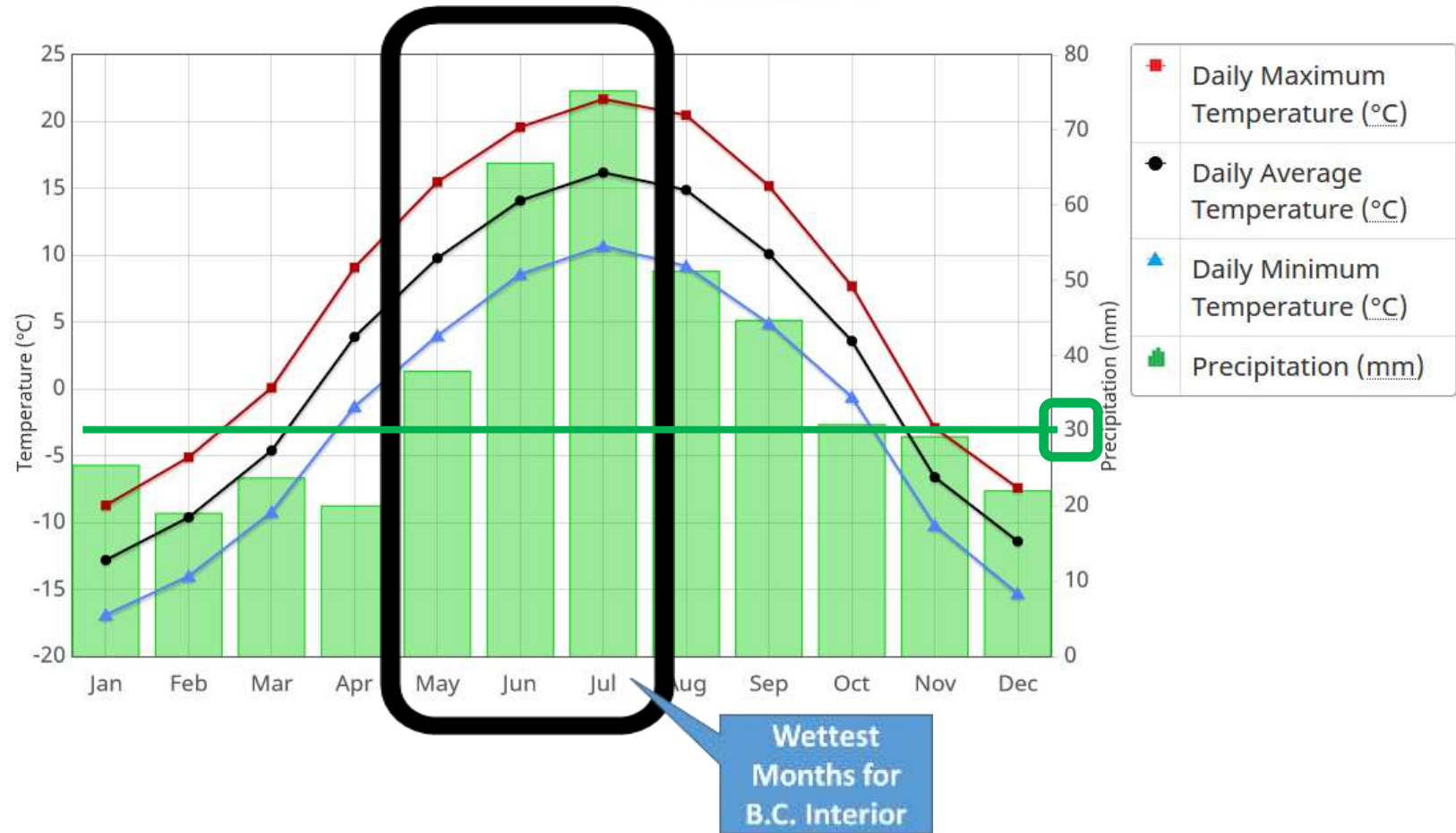
# Forecasts



# Climatology of Spring/Summer

## Heading into B.C. Interior Wet Season

Temperature and Precipitation Graph for 1981 to 2010 Canadian Climate Normals  
FORT ST JOHN A

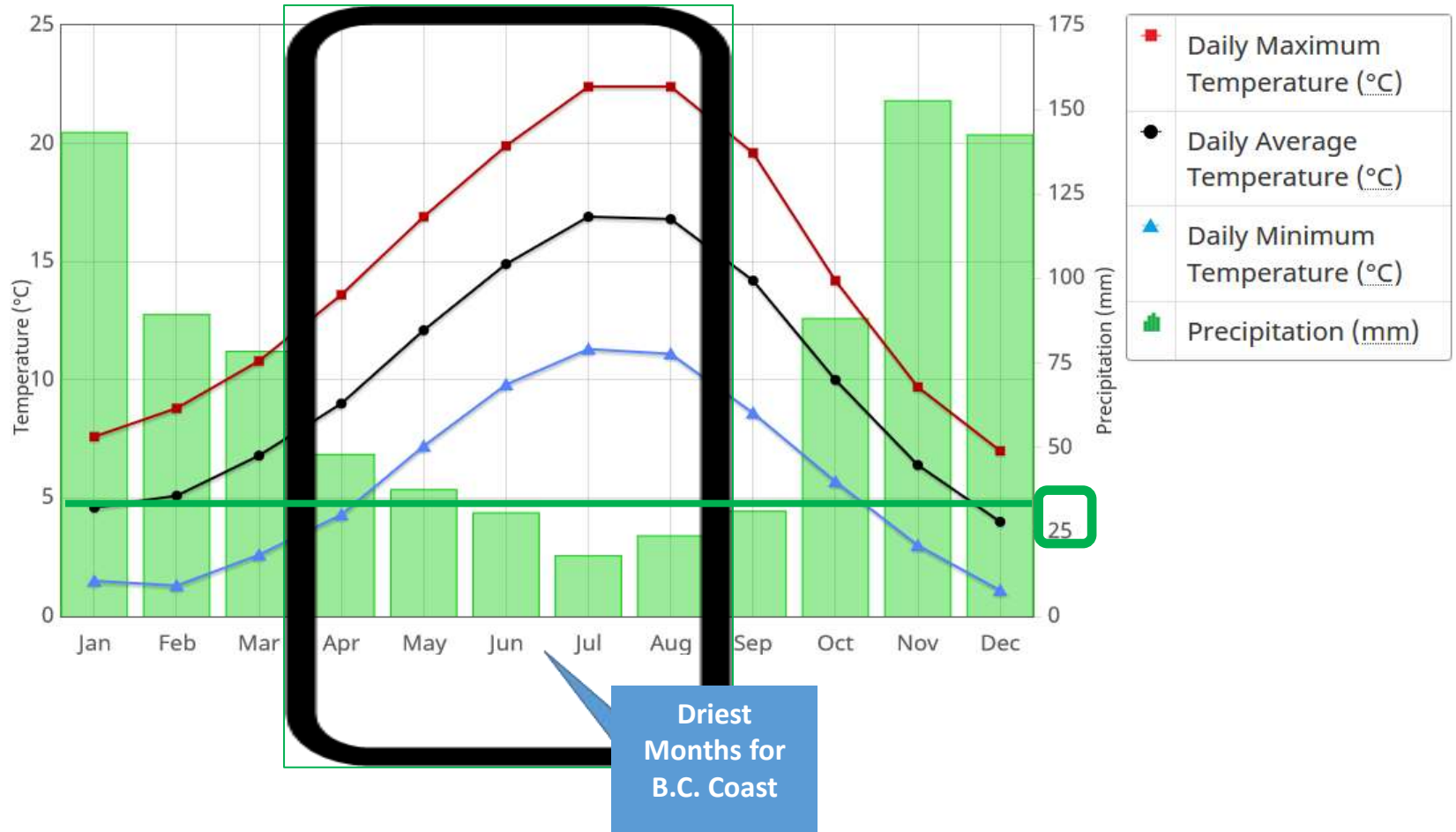




# Climatology of Spring/Summer

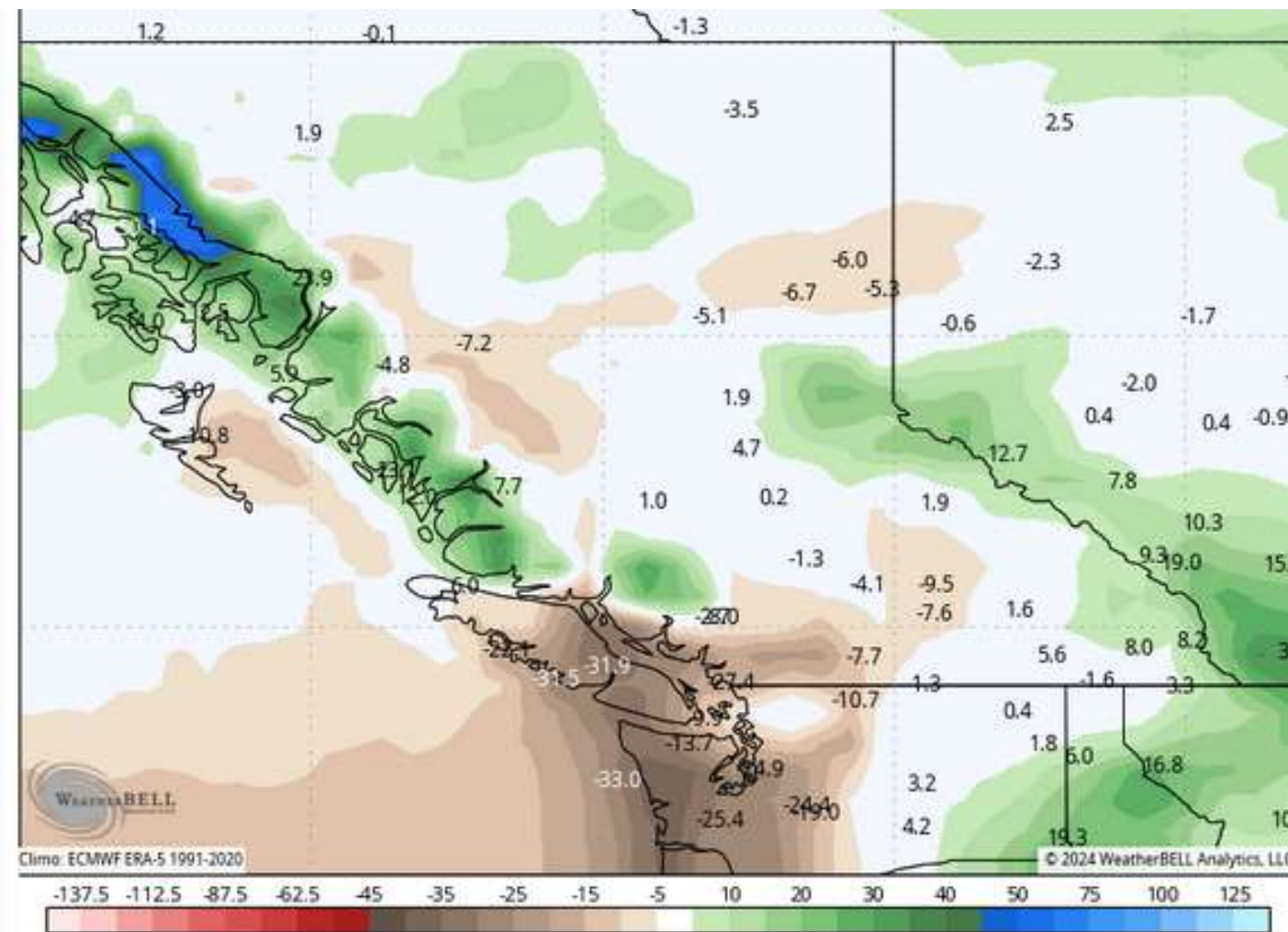
## Heading into B.C. Coast Dry Season

Temperature and Precipitation Graph for 1981 to 2010 Canadian Climate Normals  
VICTORIA INT'L A

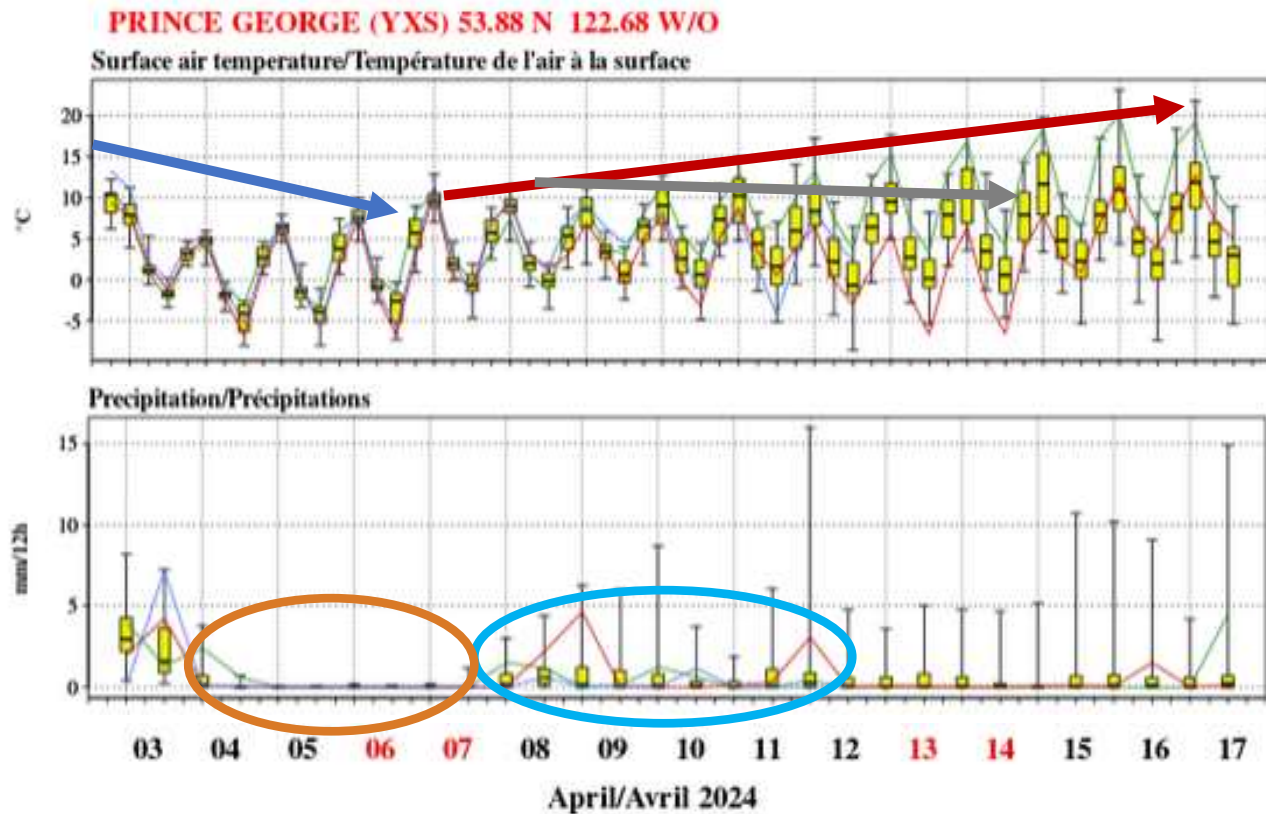


# 10-Day Precipitation Anomaly (mm), valid April 12th

- Spring Weather
  - Generally drier (than normal) for the South Coast
  - Wetter for the North Coast (maybe S Rockies)
  - Near normal (white) over the Interior.



# Trends for the Next 14 Days (Prince George)

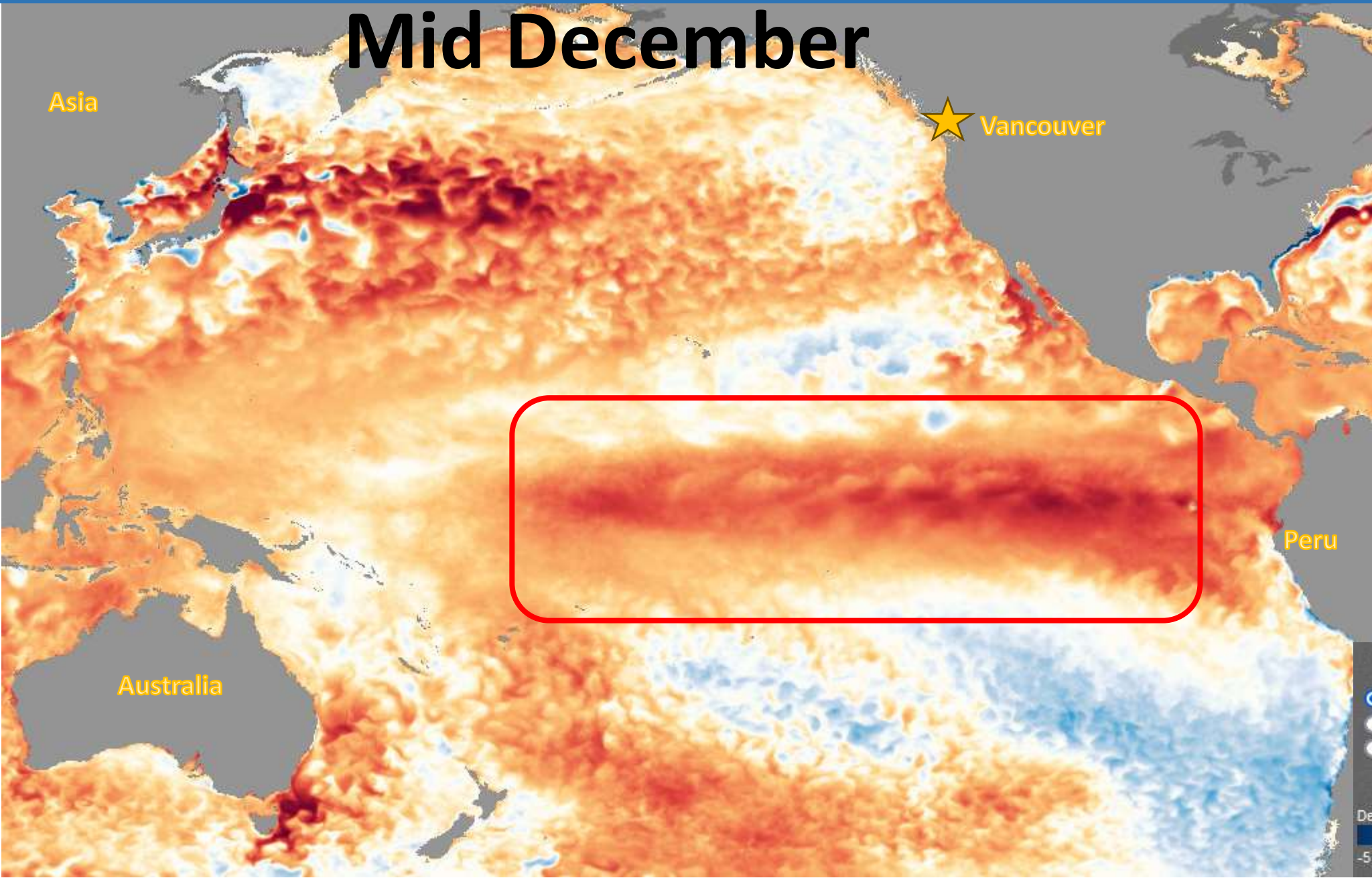


Ensemble model forecasts show a short-term drop in temperatures followed by a slow return to seasonal temperatures and eventually above by mid-month. A dry stretch mid week through the weekend.



# El Niño: Sea Surface Temperature Anomalies

## Mid December



**El Niño**

Ocean Temperature Departure

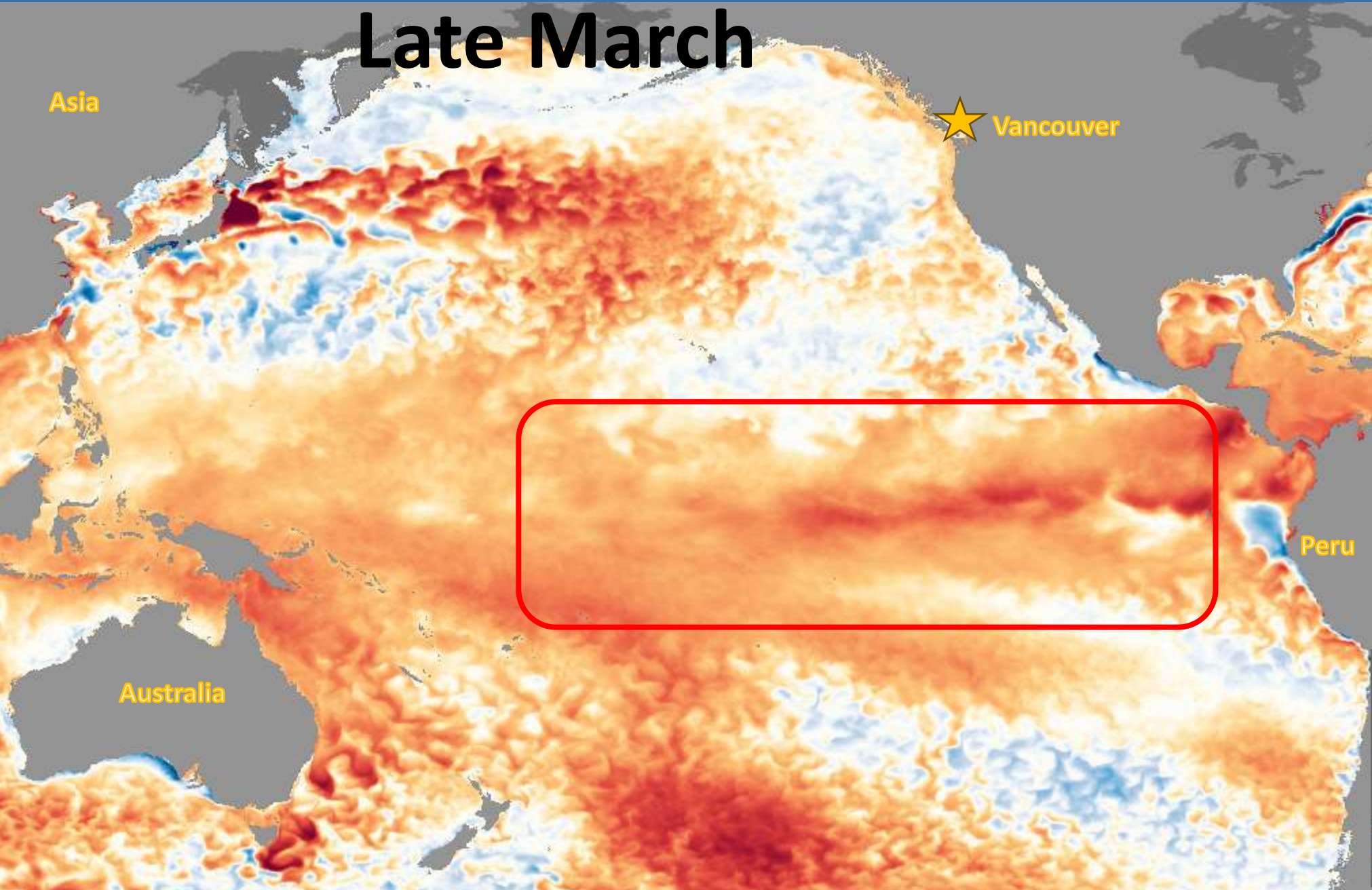
- Weekly
- Monthly
- Yearly





# El Niño: Sea Surface Temperature Anomalies

## Late March



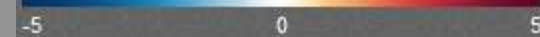
## El Niño

- Weakening El Niño signature along the equator

Ocean Temperature Departure

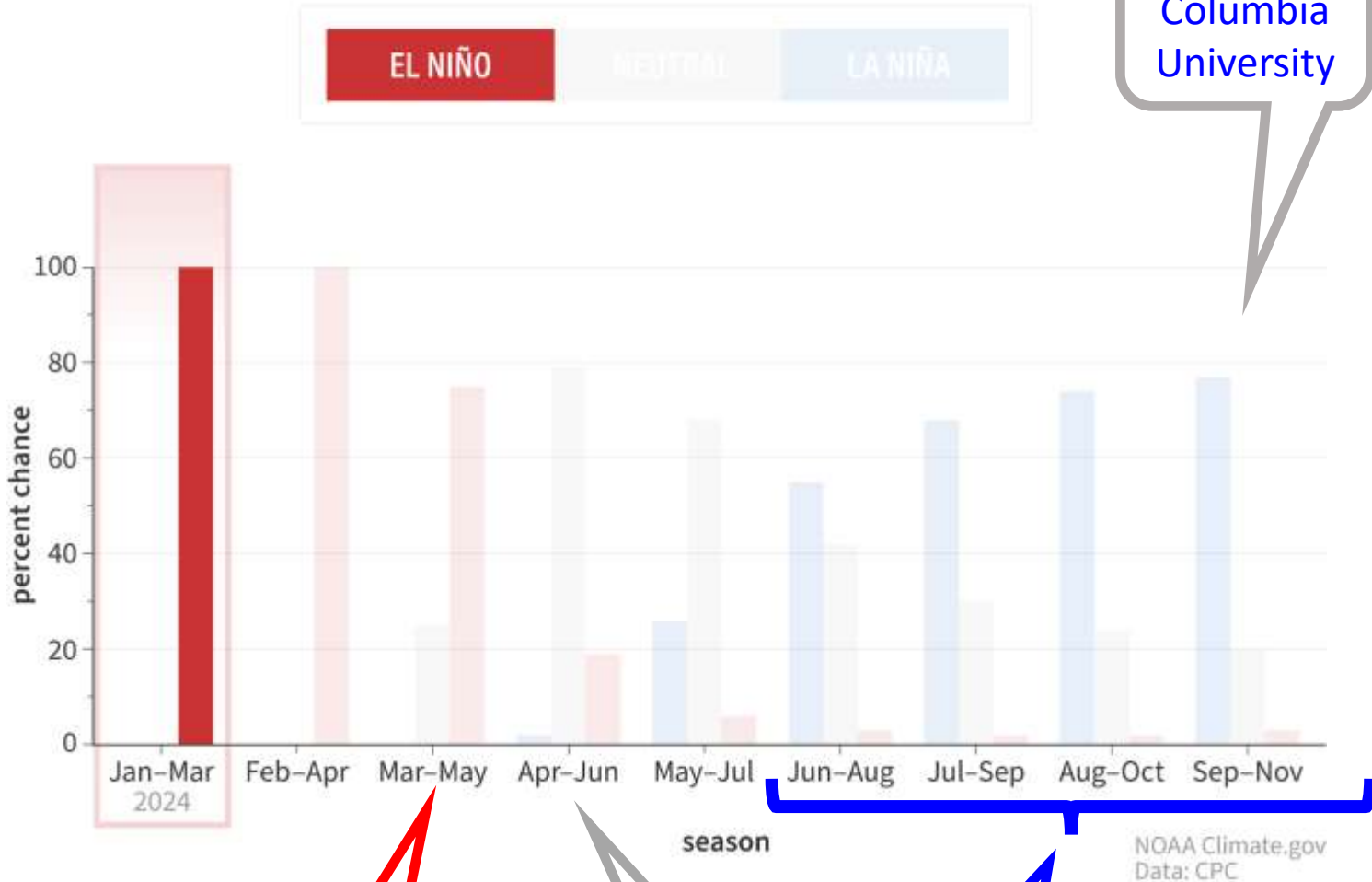
- Weekly
- Monthly
- Yearly

Degrees C



# El Niño – La Niña Evolution

ENSO probabilities issued February 2024



IRI  
Columbia  
University

March  
April  
May

April  
May  
June

June –  
Winter  
2025

- El Niño conditions are still observed and forecast to fade in April-May-June
- Impacts fade for our mid-latitudes around these dates as well.
- La Niña is forecast by fall but has no statistical impact on our summer weather.

*\*\*\*El Niño/La Niña play a role in our winter and early spring weather in BC*

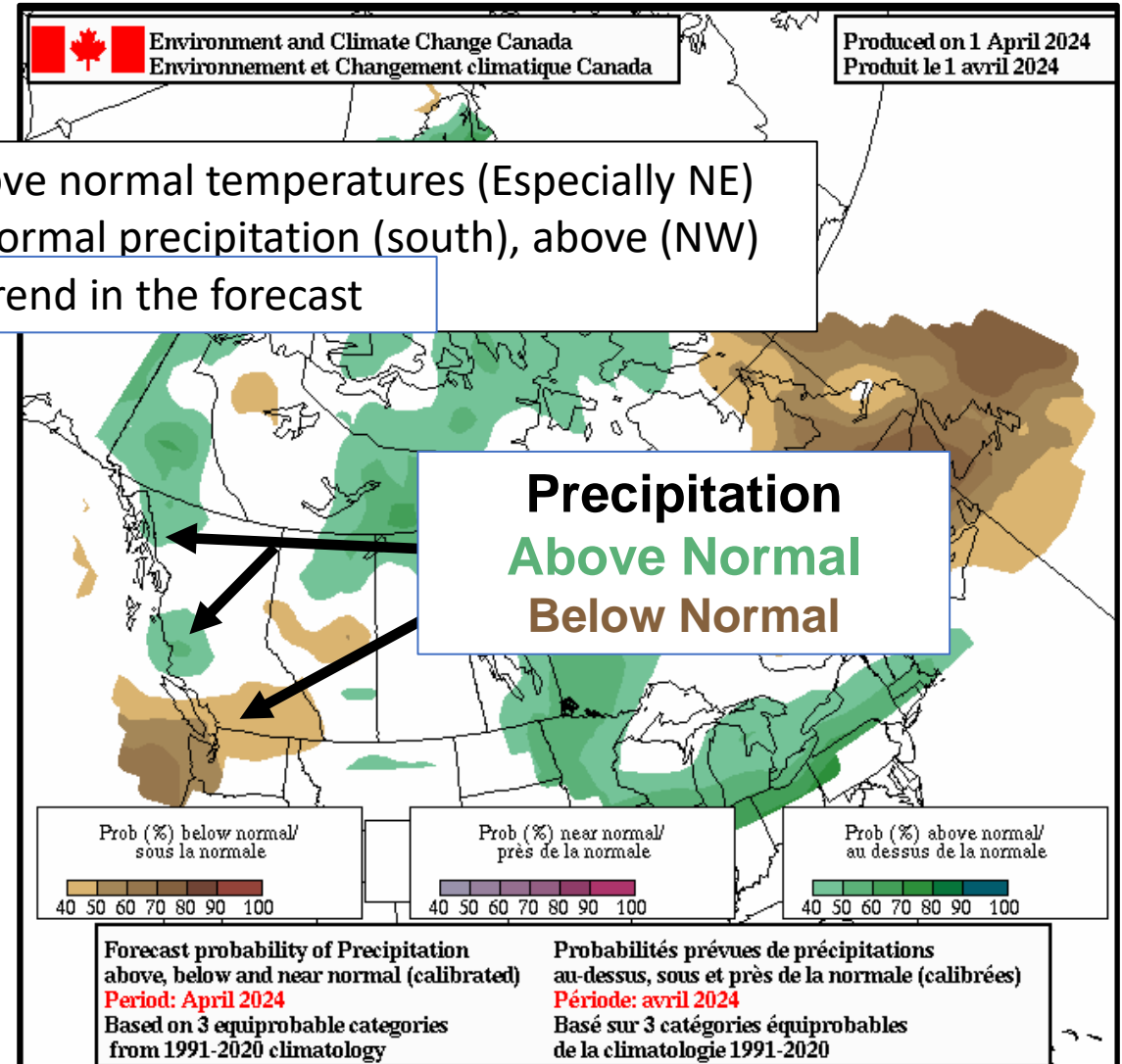
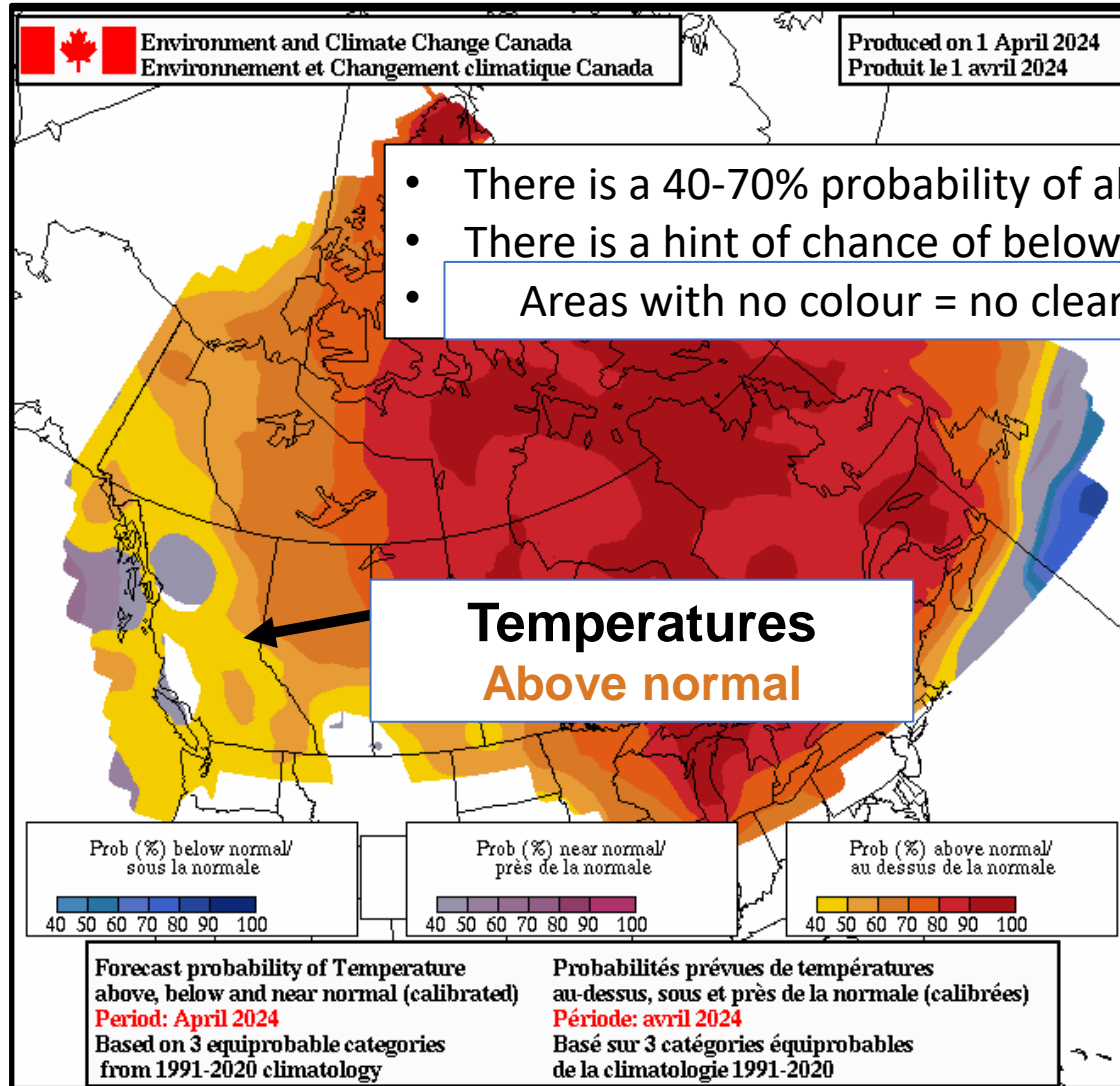
# Seasonal Forecast Caveat

## Seasonal forecasts predict the tendency of weather conditions

- Seasonal forecasts are different from weather forecasts.
  - They cover longer time periods and therefore incorporate greater uncertainty
  - They do not predict weather conditions on any given day and do not identify extreme conditions
  - They forecast the tendency of the weather relative to long term trends by predicting the probability that temperature or precipitation will exceed or be less than the long-term climatic average
- **When assessing the impact of seasonal forecasts, it is important to consider the antecedent conditions.**

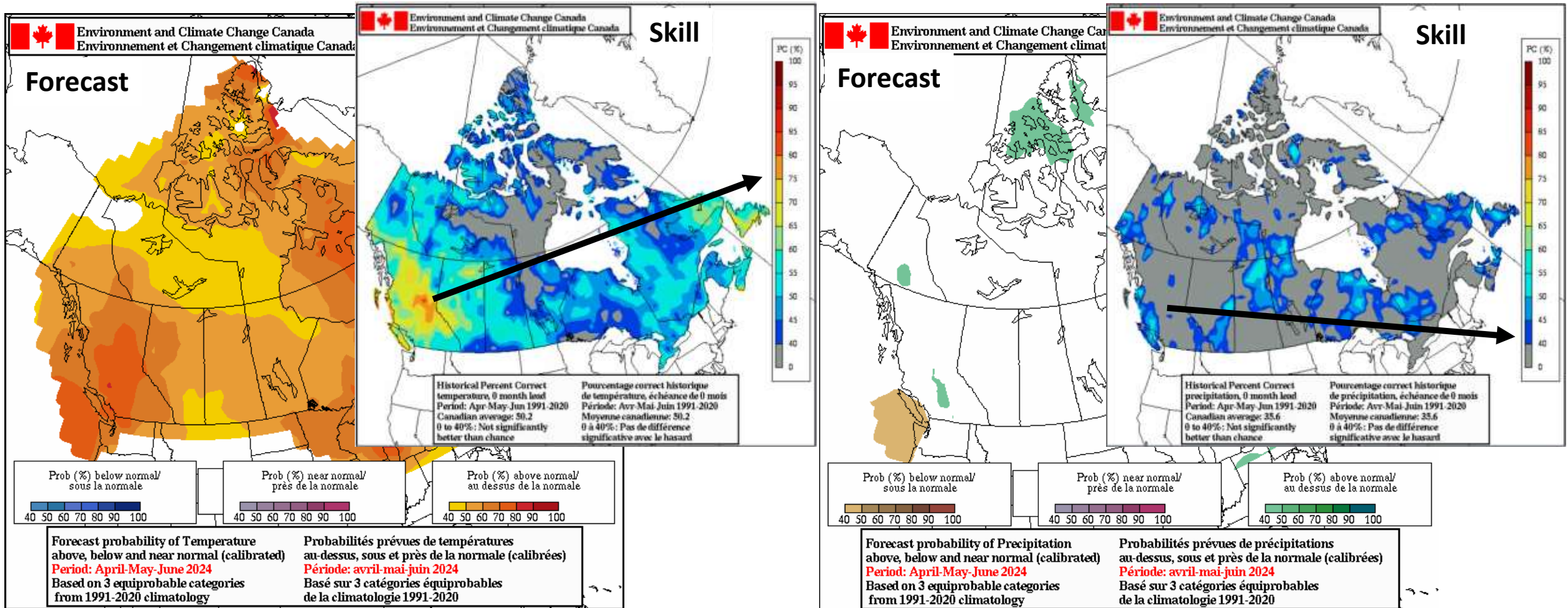


# Outlook for April, 2024






# Seasonal Outlook Probabilities: April – May – June

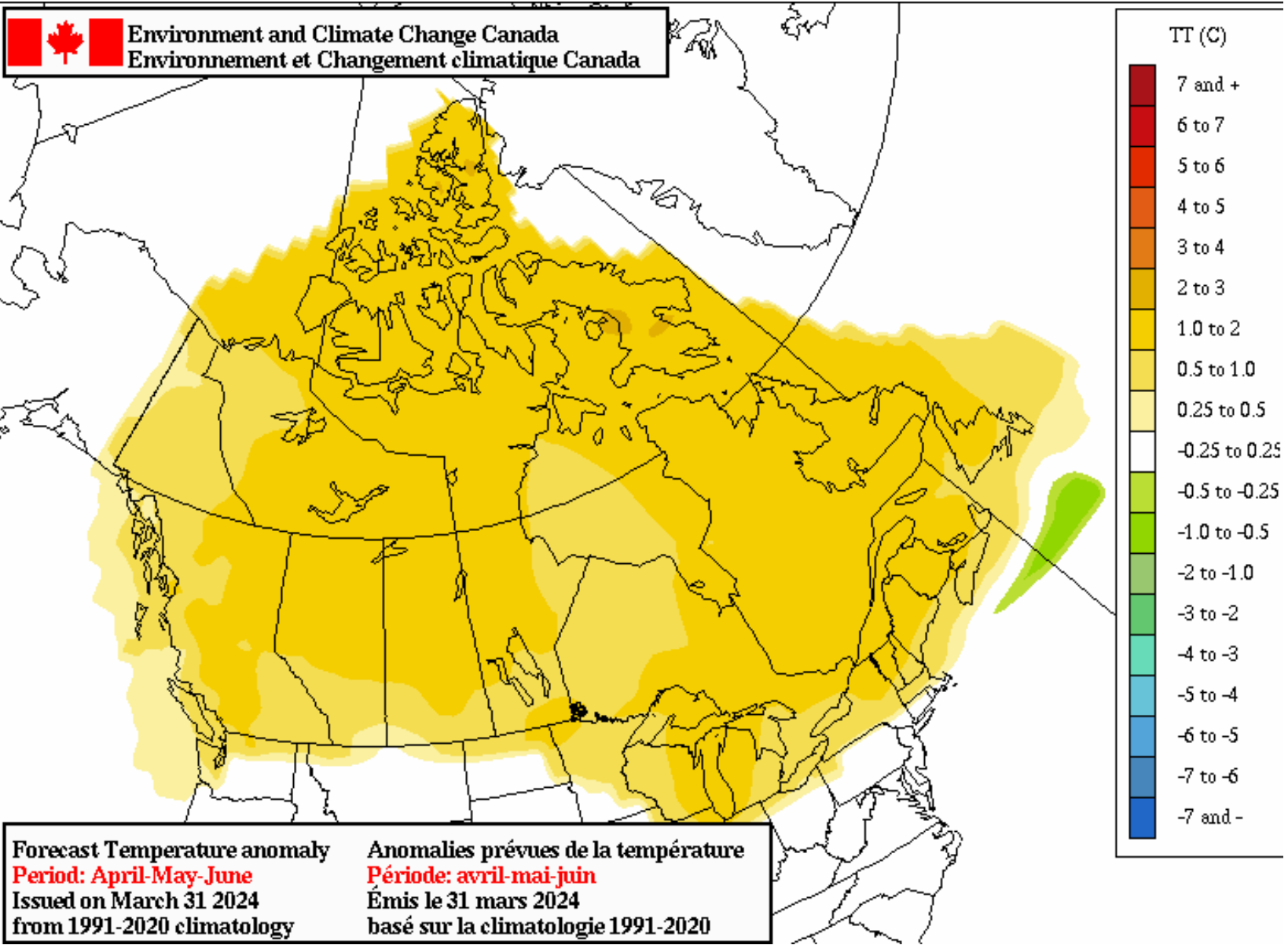


50-80% probability of above normal temperatures; little precipitation trend

Areas with no colour = no clear trend in the forecast

# Seasonal Outlook – Anomalies (°C): April-May-June

 Environment and Climate Change Canada  
Environnement et Changement climatique Canada



Predicted anomalies are 0.5-2.0°C above 1991-2020 climatology in B.C.

**Forecast Temperature anomaly**  
**Period: April-May-June**  
Issued on March 31 2024  
from 1991-2020 climatology

**Anomalies prévues de la température**  
**Période: avril-mai-juin**  
Émis le 31 mars 2024  
basé sur la climatologie 1991-2020

# Temperature – Monthly Forecast (broken down)

Mid April - Mid May

Temperature Outlook

May

June

Probability (%)  
Below Normal



40 50 60 70 80 90 100 %

Probability (%)  
Near Normal

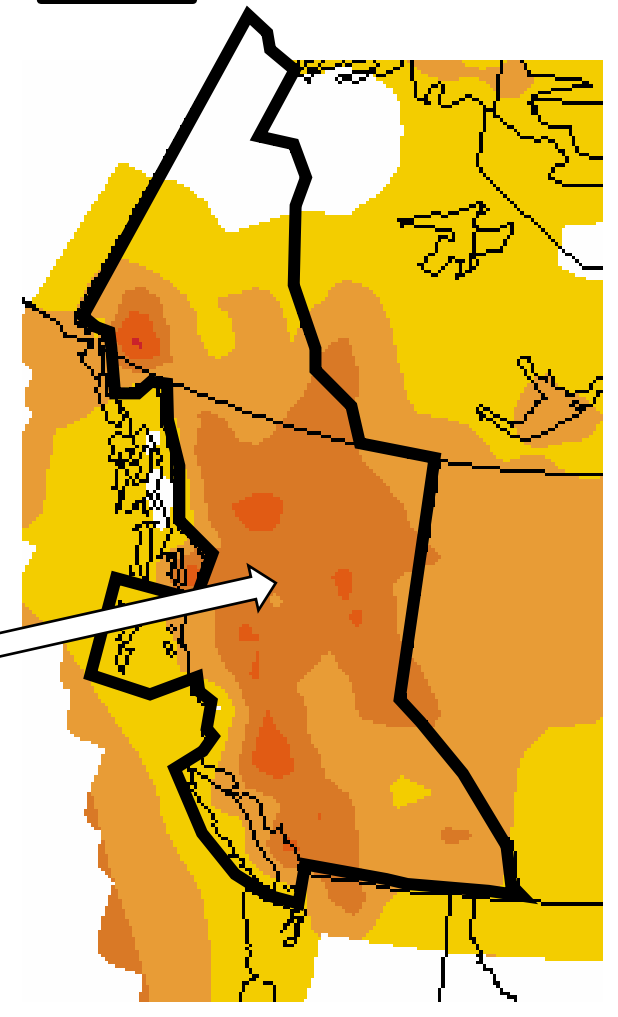
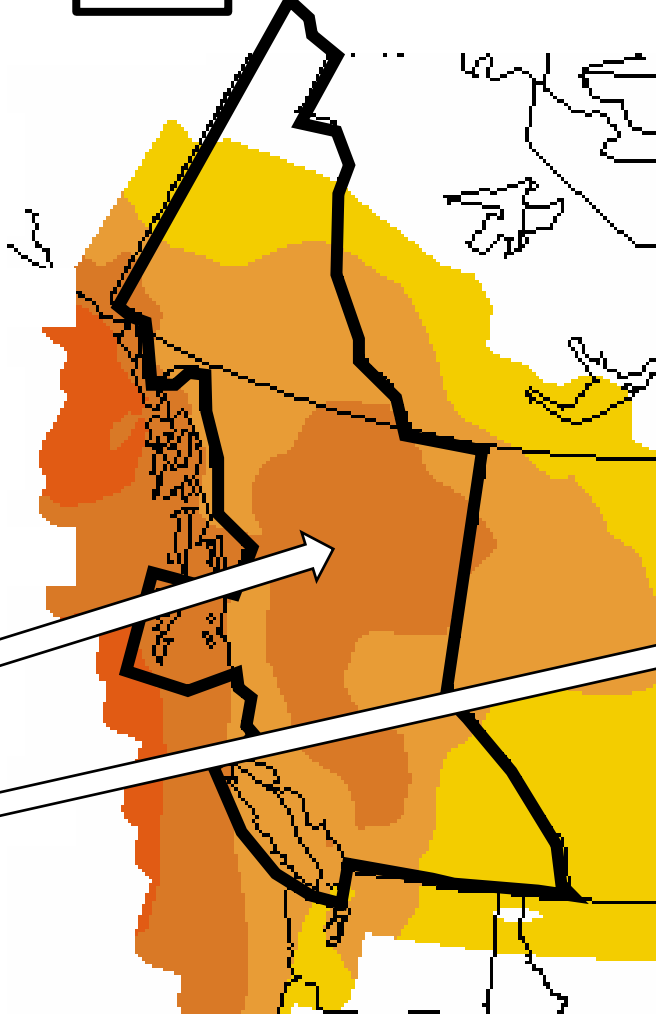
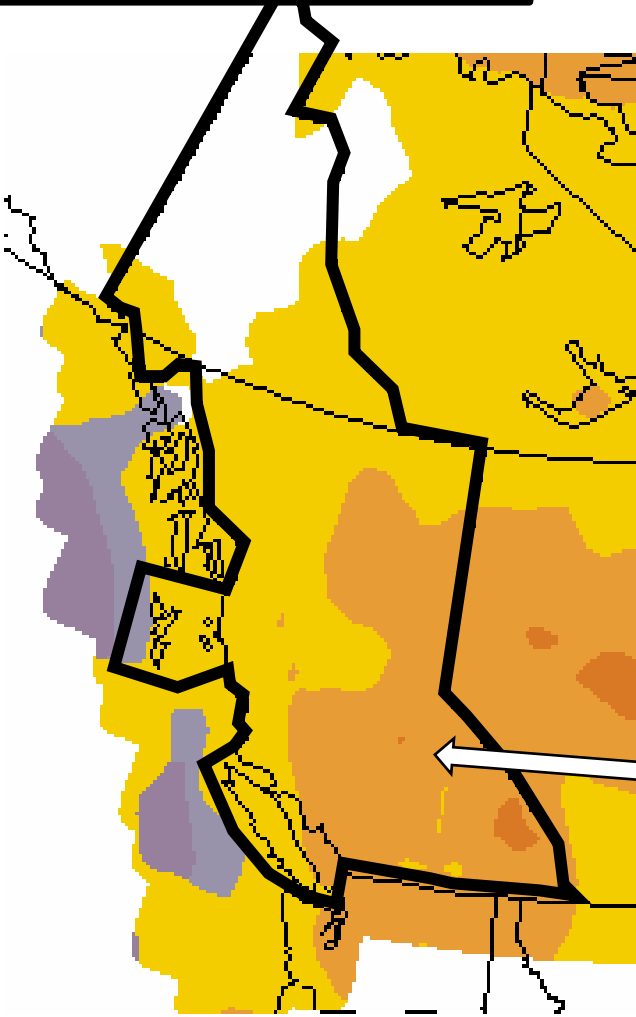


40 50 60 70 80 90 100 %

Probability (%)  
Above Normal



40 50 60 70 80 90 100 %



Produced April 2, 2024

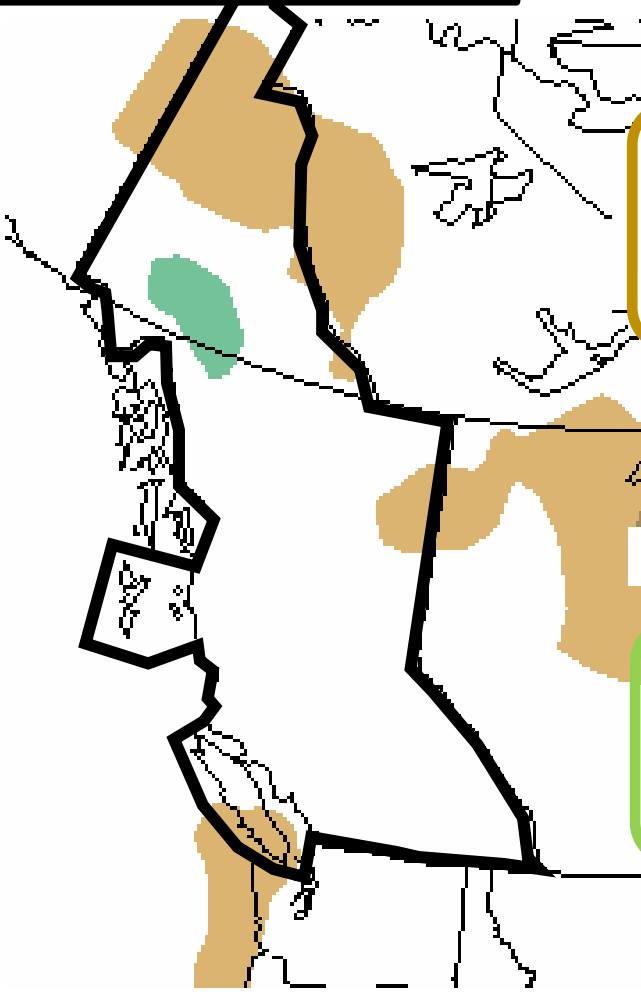
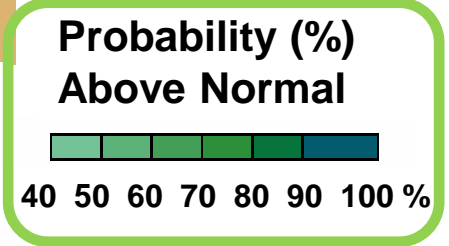
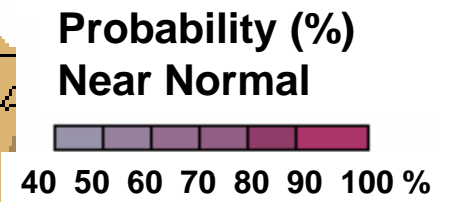
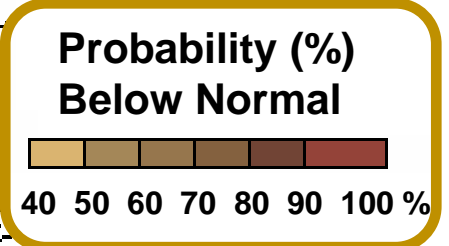
Produced March 31<sup>st</sup>, 2024

# Precipitation – Monthly Forecast

Areas with no colour = no clear trend in the forecast

Mid April – Mid May

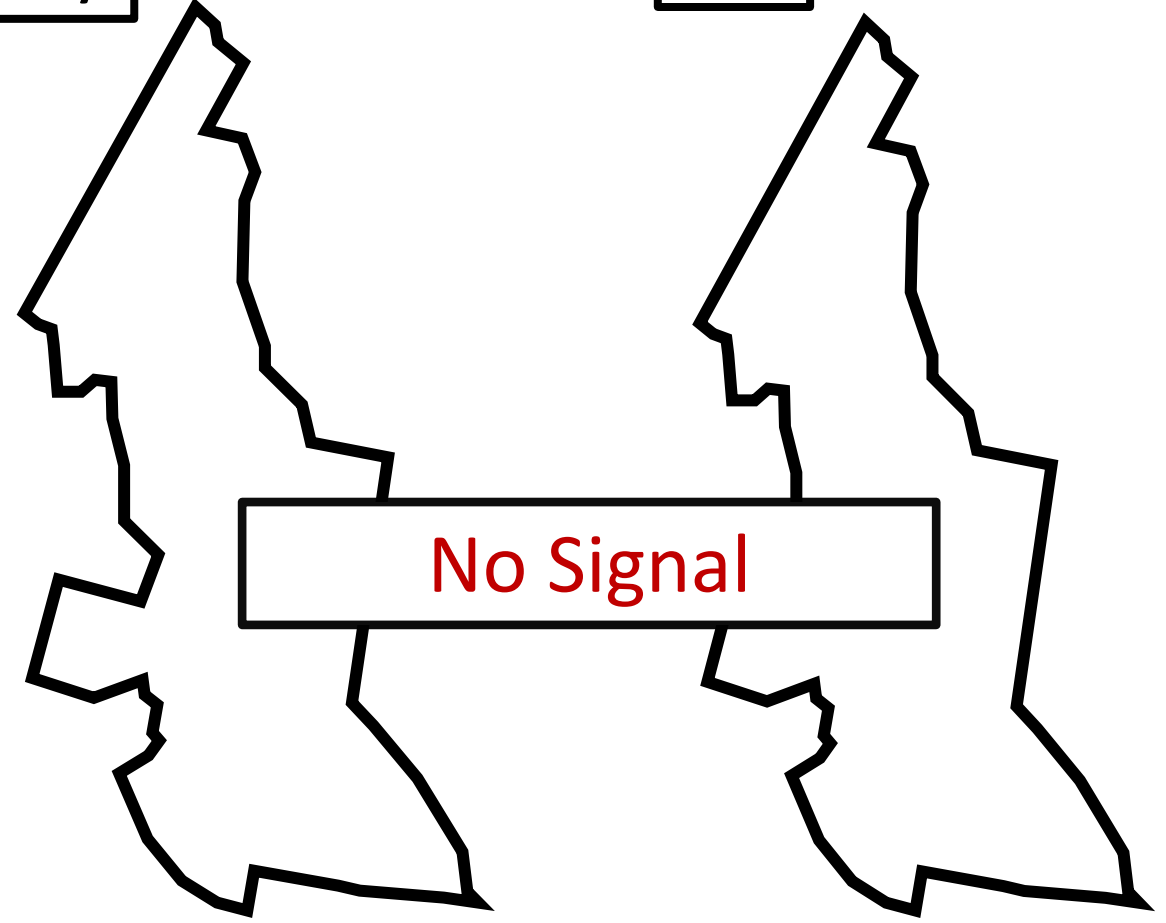
## Precipitation Outlook



Produced April 2, 2024

May

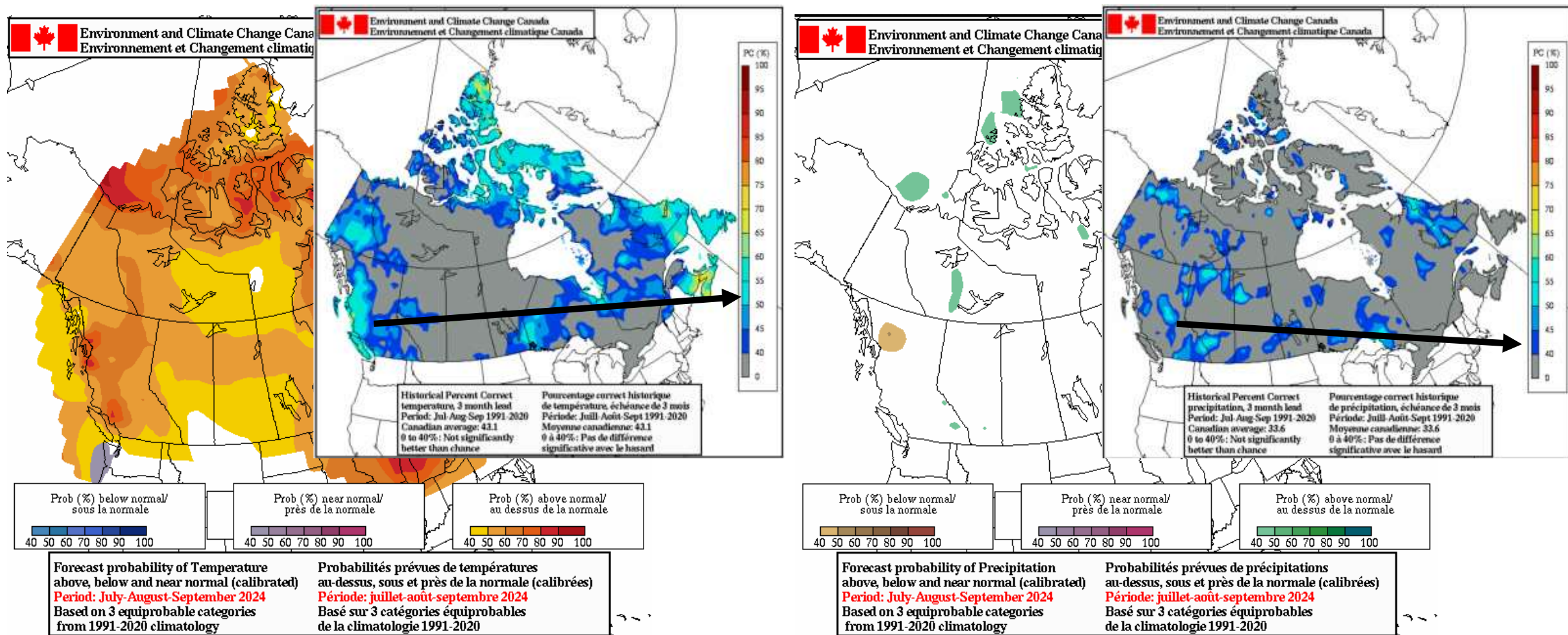
June



Produced April 2, 2024



# Seasonal Outlook Probabilities: **Summer** + (July-August-September)



50-80% probability of above normal temperatures; little precipitation trend

Areas with no colour = no clear trend in the forecast

# Seasonal Weather Outlook Summary

- Short term
  - Cool Start to April
  - Near normal to above normal temperatures and dry conditions for mid April
- Spring (April-May-June)
  - Significant signal for above normal temperatures, but no trend for precipitation
  - El Niño effect expected to fade
  - Low snowpack and above normal temperatures = potential early melt heading into Spring freshet
- Summer (July August September)
  - Continued signal for above normal temperatures, and no trend for precipitation
  - Much publicized transition to La Niña will not impact our summer weather (B.C. can see cool/wet impacts in winter and early spring **2025**)

## Caveat #1

Spring is our “Goldilocks” season; we don’t want it to be **too warm/too cold** OR **too dry/too wet**. It sets the stage to possibly enhance our flood, wildfire conditions when it swings to an extreme.

**Caveat #2** It is difficult to plan using only the seasonal forecasts, so

**let’s be ready for anything & everything**

# Partner Agency Summaries



BRITISH  
COLUMBIA

**River Forecast Centre**



BRITISH  
COLUMBIA

**BC Wildfire  
Service**

## Seasonal Flood Outlook

- Decreased flood hazard in areas with lower snowpack
- Snow accumulation season is not over
- Extreme weather, including hot and/or wet conditions can lead to flooding, even in areas with below normal snowpack
- El Niño - Increased chance of earlier snow melt this year - not guaranteed

## Seasonal Drought Outlook

- Significant drought in Summer 2023
- Lingering drought conditions into winter through much of Interior (especially north)
- Spring-Summer weather is a critical factor for drought



# BC Wildfire Service – Early Season Outlook



The underlying deep drought conditions will persist as we approach the beginning of the 2024 fire season.



While strong El Niño conditions are currently fading, the residual heat in the Pacific will continue to support the likelihood for warmer and drier than normal conditions through this spring.



Long-range precipitation forecasts have limited skill. The amount of rain required to mitigate the current drought is unlikely.



Given the antecedent conditions, an early start to the spring 2024 fire season is expected along with increased wildfire activity.



The majority of spring wildfires are human-caused. Take extra caution with outdoor activities this spring.

# Weather Resources



## Weather Notifications (EMO Audience Only)

- Risk based product
- Advance notice for planning ahead of impactful weather events
- Uncertainty info

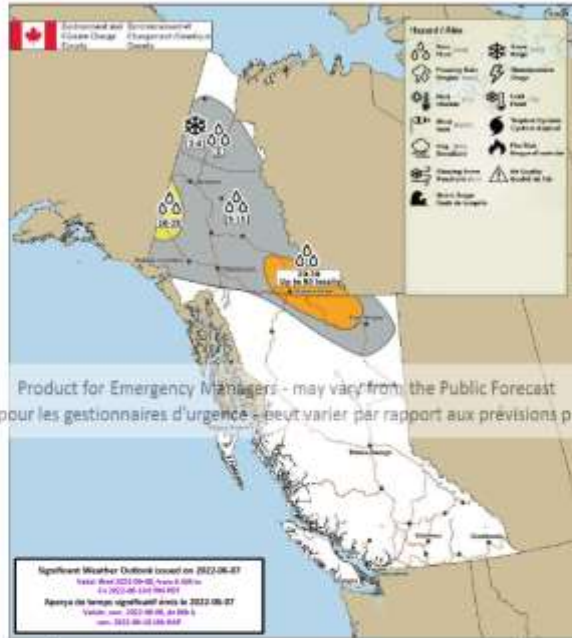
## Public-Facing Alerts

- **Special Weather Statement**
  - No criteria
  - Sub-warning, but significant
  - Issued prior to warning
- **Warnings, Watches**
  - Hazard based alerts
  - [Criteria](#)

# Weather Notifications

## Significant Rain Over Yukon/B.C. Liard

Event Duration: Wed Jun 8 to Fri Jun 10, 2022



### Impacts

- Yukon creeks and streams are flowing at or near bankfull, this significant precipitation event has the potential to generate overbank flooding and cause significant sediment and material transport. Culvert clogging and washouts are a significant risk.
- Northern B.C. river systems may see an enhanced response in elevated stream levels from the precipitation to the already vulnerable Liard basin.

Sign up by emailing  
[MeteoPac@ec.gc.ca](mailto:MeteoPac@ec.gc.ca)

Include regions of interest:

- Southern Interior
- Central and Northern Interior
- Peace
- Yukon
- South Coast
- North Coast

Include Job title

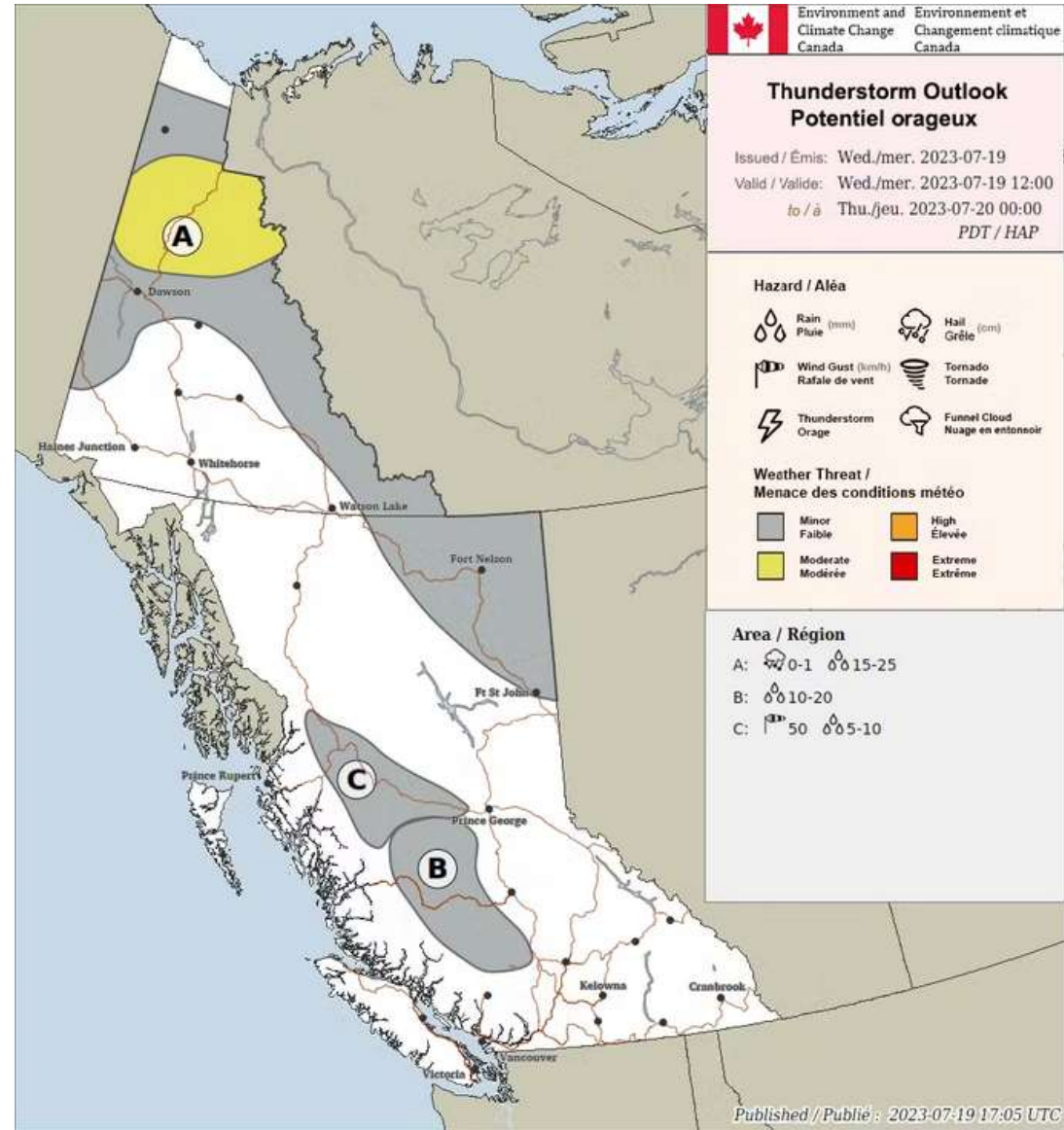


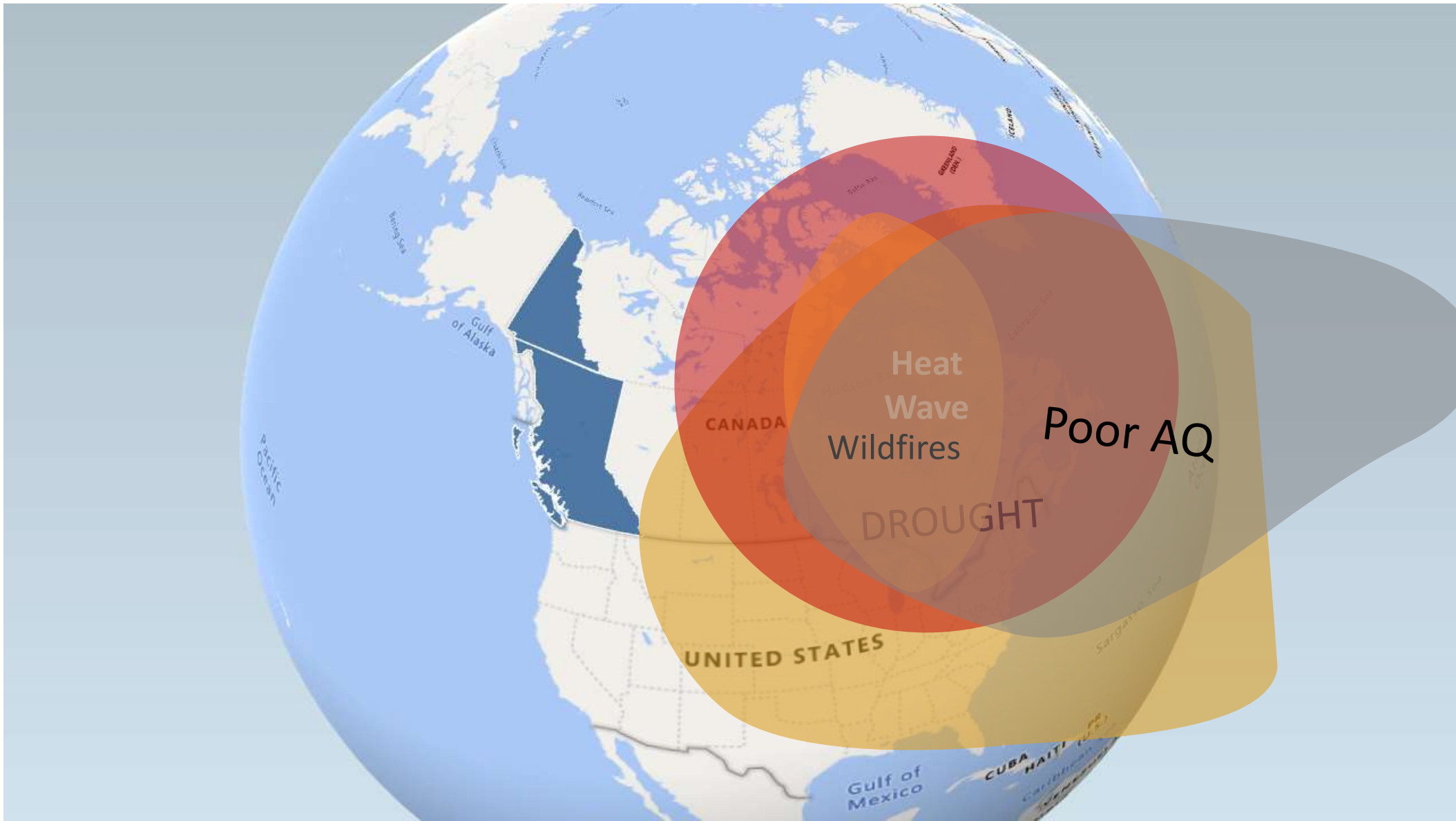
# Thunderstorm Outlook

Available beginning May

- Published daily
  - 930am & 2pm approximately
- Highlight areas of thunderstorm potential

<https://hpx.collab.science.gc.ca/~rum001/eccc/tso/>







# Thank You on Behalf of the Pacific Services Team

Contact us at [MeteoPac@ec.gc.ca](mailto:MeteoPac@ec.gc.ca)

\*EMCR Prov Duty Manager (on weekends/holidays hours)

WeatherCAN



## British Columbia - Weather Conditions and Forecast by Locations



## Public Weather Alerts for British Columbia



[weather.gc.ca](http://weather.gc.ca)



Canada