BC Wildfire Service – Predictive Services

2019 Wildfire Season Outlook

September 6, 2019

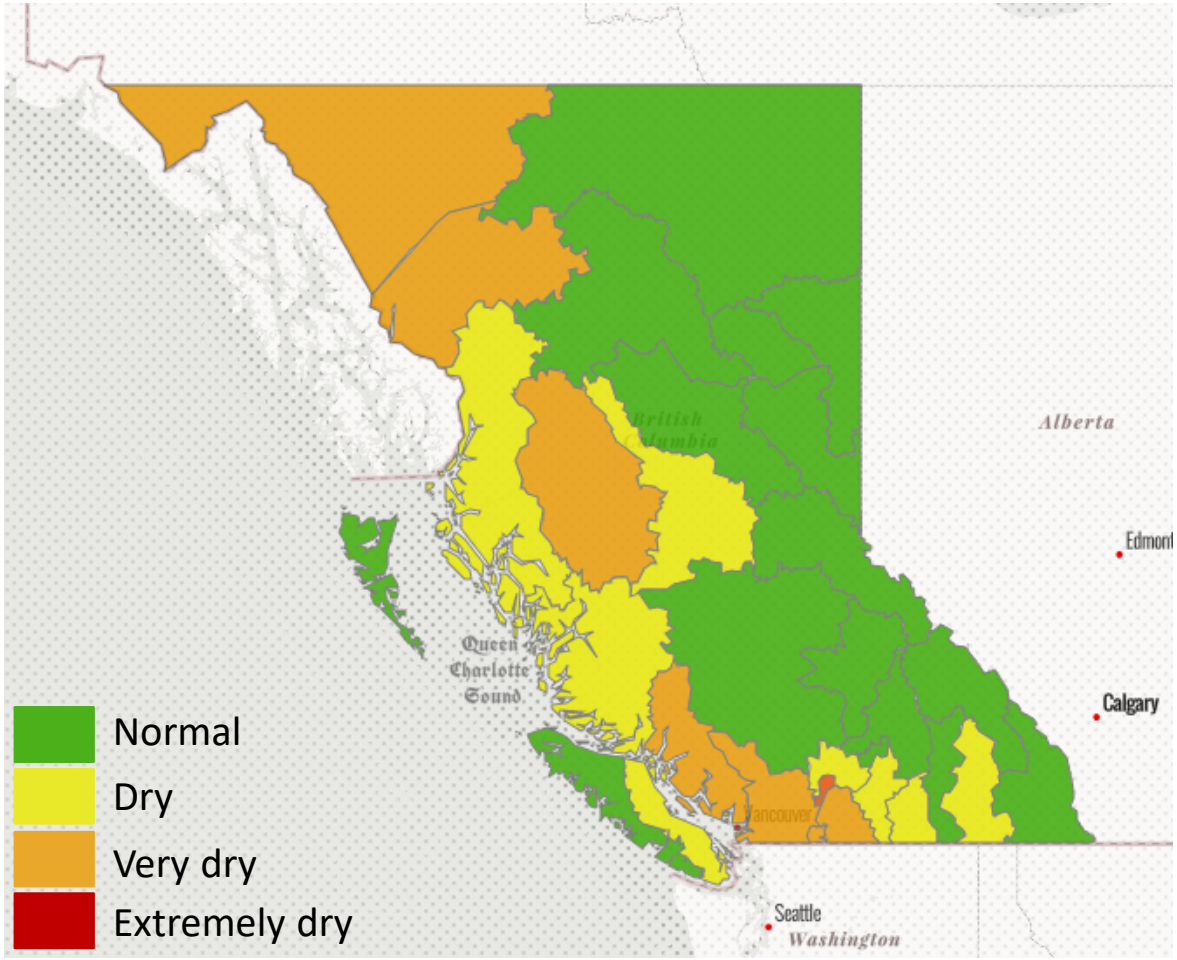
Prepared by:
Dana Hicks, Fire Behaviour Lead, PSU
Christina Van Eaton, Meteorologist, Contractor, BCWS
Joanna Wand, Wildfire Technician, PSU

Outline

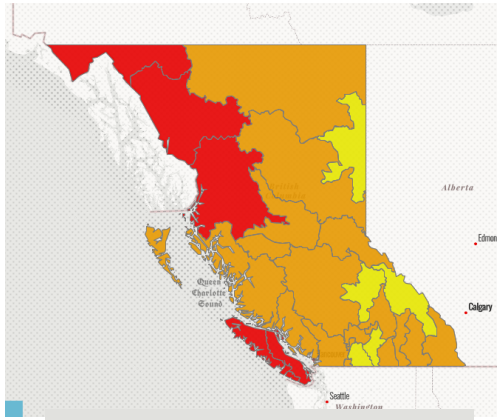
- Review
  - August weather patterns
  - August fire indices and behaviour
- Seasonal Models
  - Next 4 weeks
  - Next 3 months
- Fall outlook
  - Weather summary
  - Wildfire summary
- 2019 Fire Season Summary
  - Weather summary
  - Wildfire summary


Photo: Kathleen Cahoon

Drought Levels valid September 5th



- Most areas remain unchanged compared to last month, while a few have worsened.
- Overall, we are in better shape than we were last year.



5th September 2018

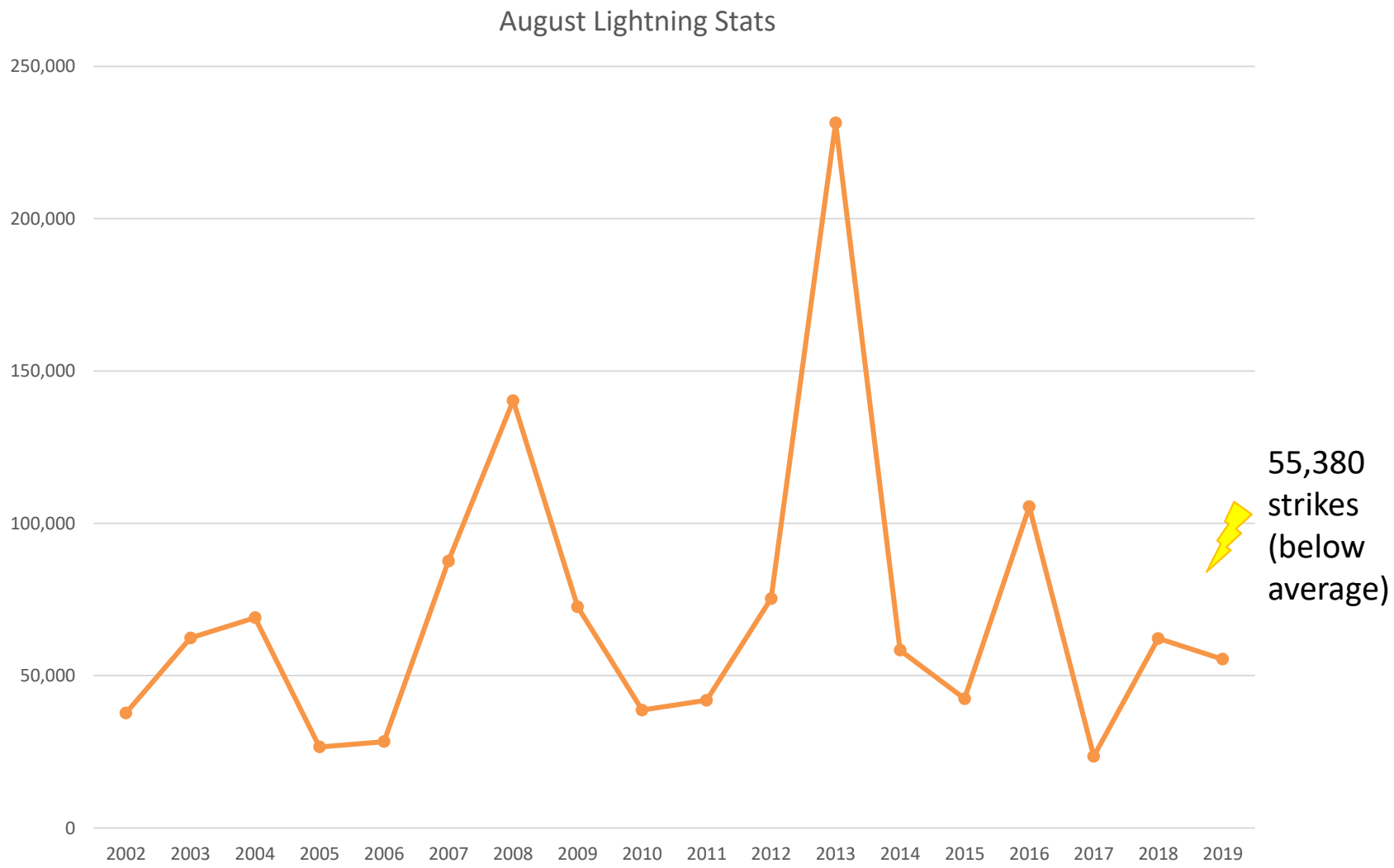
https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=838d533d8062411c820eef50b08f7ebc

August Temp/Precip Summary (Environment Canada Values)

Aug-19	T	Tnorm	Temp Anom	Colder Than, Normal, Warmer Than	Temp Rank	P	Pnorm	Precip % of Norm	Drier Than, Normal, Wetter Than	Precip Rank	Temp POR	Precip POR
Victoria	17.5	16.8	0.7	Warmer	15	12.0	23.8	50.4%	Normal	31	1941	1941
Victoria Gonzales	16.9	15.9	1.0	Warmer	11	20.2	19.7	102.5%	Wetter	40	1899	1899
Nanaimo (YCD)	19.2	18.2	1.0	Warmer	13	20.1	28.4	70.7%	Normal	56	1892	1892
Comox (YQQ)	18.9	17.9	1.0	Warmer	13	27.6	29.2	94.5%	Normal	61	1914	1894
Vancouver	18.7	18.0	0.7	Warmer	15	25.8	36.7	70.2%	Normal	62	1896	1896
Abbotsford	19.3	18.2	1.1	Warmer	9	20.5	45.9	44.7%	Drier	28	1945	1945
Penticton (YYF)	20.9	20.4	0.5	Warmer	26	21.0	28.3	74.2%	Normal	57	1908	1908
Kelowna	19.8	19.1	0.7	Warmer	23	14.6	32.1	45.5%	Drier	15	1969	1969
Vernon (WJV)	20.9	18.8	2.1	Warmer	17	19.3	42.3	45.6%	Drier	43	1900	1900
Cranbrook	18.9	18.2	0.8	Warmer	22	14.2	28.0	50.7%	Drier	34	1901	1902
Quesnel (VQZ)	16.3	16.4	-0.1	Normal	63	37.2	46.2	80.5%	Normal	55	1895	1893
Williams Lake (YWL)	M	15.3	M	M	M	33.3	46.1	72.2%	Normal	27	1961	1961
Prince George	14.3	15.0	-0.7	Colder	36	66.3	51.5	128.7%	Wetter	28	1943	1943
Kamloops	21.7	20.9	0.8	Warmer	22	14.2	23.7	60.0%	Normal	42	1892	1893
Terrace	16.9	16.3	0.6	Warmer	37	73.5	61.2	120.2%	Wetter	28	1913	1913
Smithers (YYD)	15.3	14.6	0.7	Warmer	23	20.4	43.8	46.5%	Drier	14	1938	1938
Fort St. John	13.3	14.9	-1.6	Colder	12	93.0	51.2	181.6%	Wetter	10	1942	1942
Fort Nelson (YYE)	13.1	15.1	-2.0	Colder	6	57.1	71.3	80.1%	Normal	45	1938	1938

Southern BC continues to trend warmer and normal, and less precipitation than normal

August Lightning

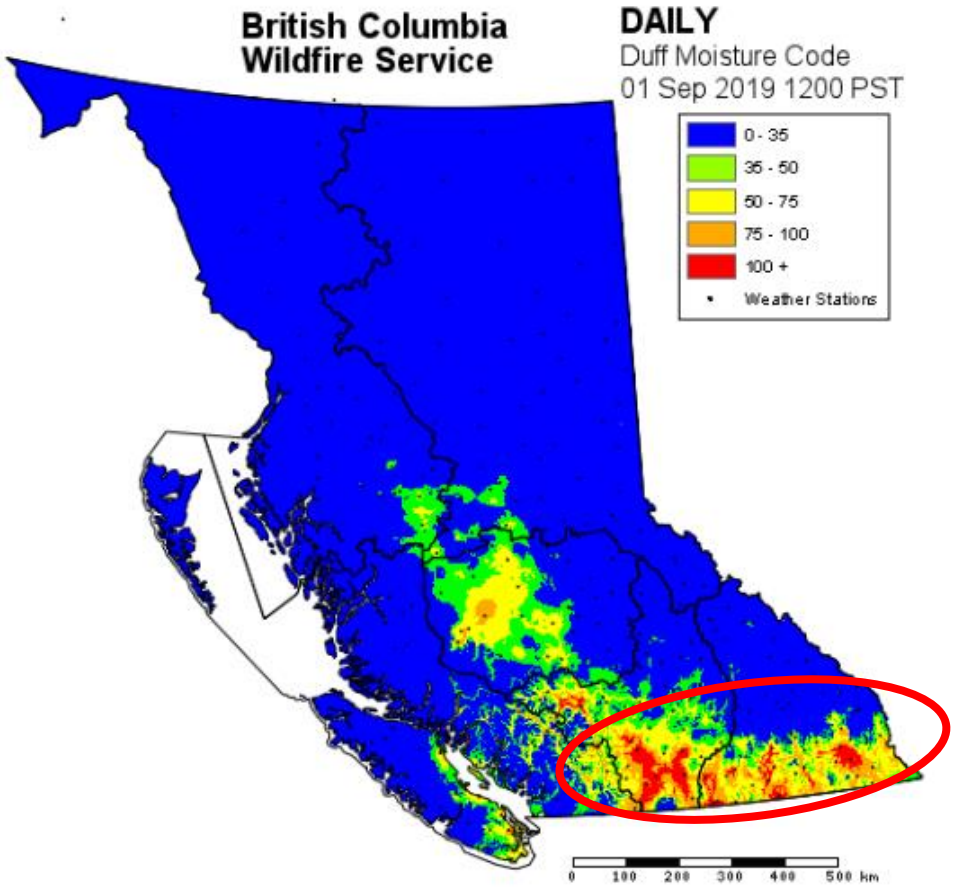


August Wildfire Summary

Wildfire Season 2019 until September 5					
Wildfires - 758			21 090 ha burnt		
Human-Caused Fires		Lightning-Caused Fires		Total Fires	
714		44		758	
Average Number of Wildfires until September 5					
	5 year	10 year	15 year	20 year	25 year
BC	1,460	1,522	1,595	1,570	1,635
Average Area Burned (Ha) until September 5					
	5 year	10 year	15 year	20 year	25 year
BC	632,840	378,363	279,712	223,539	185,385

- We are well below average on both number of wildfires and hectares burnt
- Largest wildfire:
  - Beaver River 5 800 ha (G90363 – Fort Nelson Zone)

Fuel Dryness – Duff Moisture Code

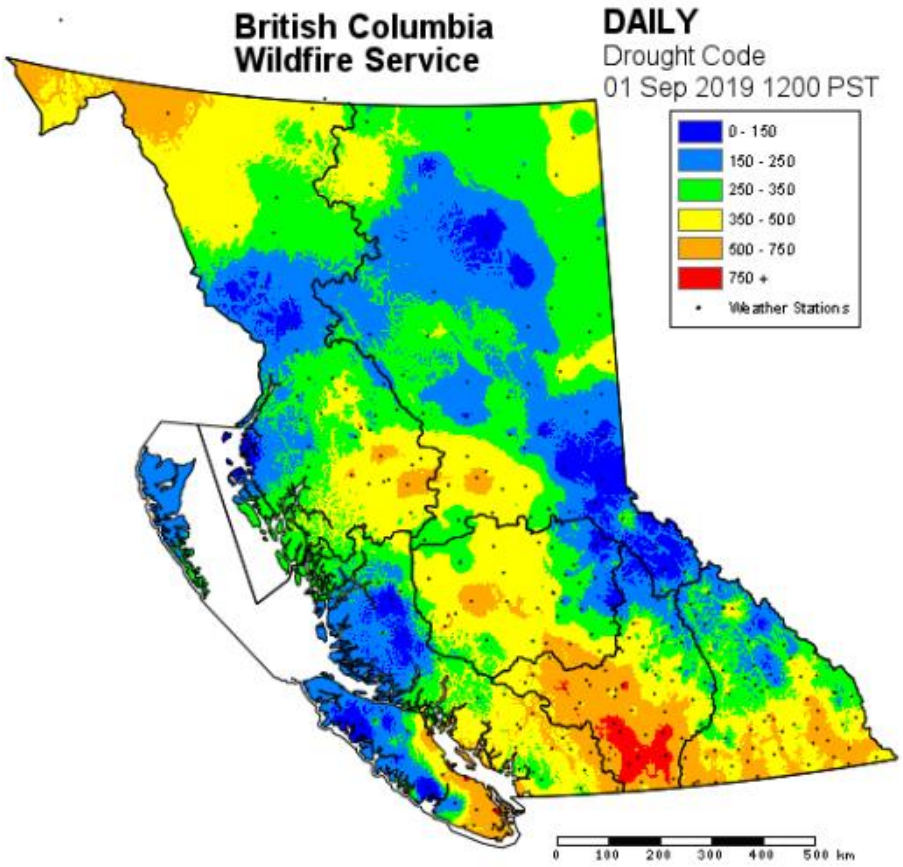


- Duff Moisture Code (DMC) is an indicator of dryness in the shallow (2-5cm) organic layer of the soil.
- DMC is often used to predict the likelihood of lightning holdover potential (DMC>35)

In Southern BC fuels are in a typical Pattern for this time of year.

https://bcfireweatherp1.nrs.gov.bc.ca/scripts/public/common/Map_new.asp

Fuel Dryness – Drought Code



- Drought Code (DC) is an indicator of dryness in deep (+5cm) organic layer of the soil.
- DC is a good indicator of persistent, deep burning wildfire (DC>500 in the south and DC >350 in the north).

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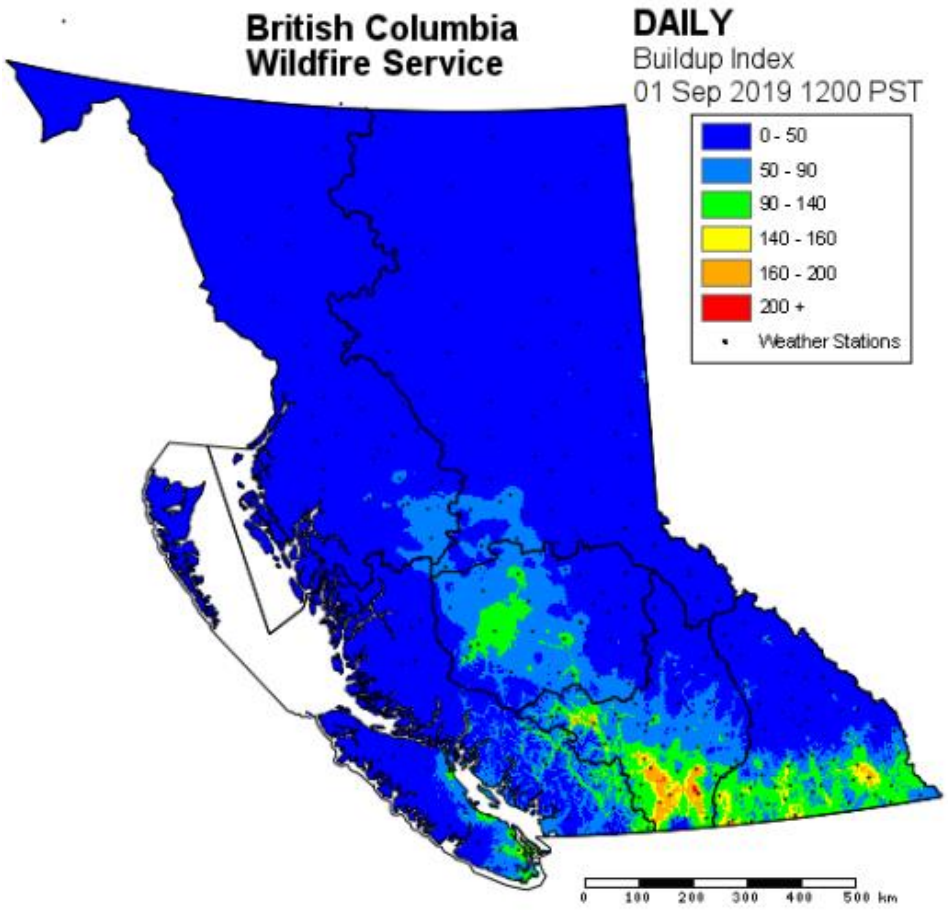
Fuel Dryness – Buildup Index

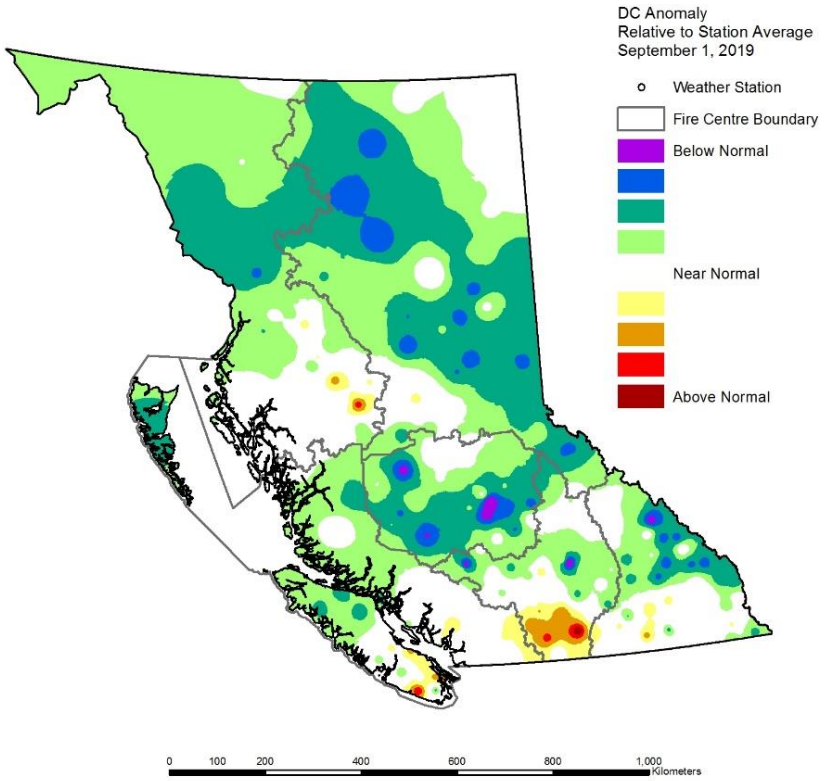


- Buildup Index (BUI) is calculated using the Duff Moisture Code and Drought Code.
- BUI is a good indicator of persistent, deep burning wildfire (BUI>140 in the south and BUI >80 in the north).

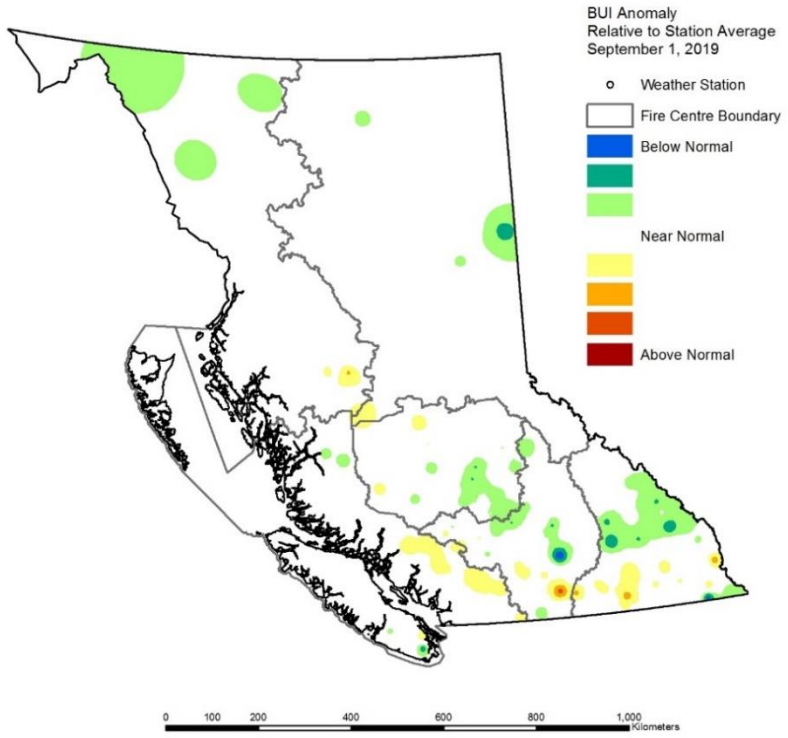
https://bcfireweatherp1.nrs.gov.bc.ca/scripts/public/common/Map_new.asp

Current DC and BUI values compared to historical average

The current DC and BUI values range reflect the past weather patterns for this summer, cooler and damper in the northern half of BC and warmer and drier than normal in the southern half of BC. The good news is the drought conditions in NW BC have moderated.

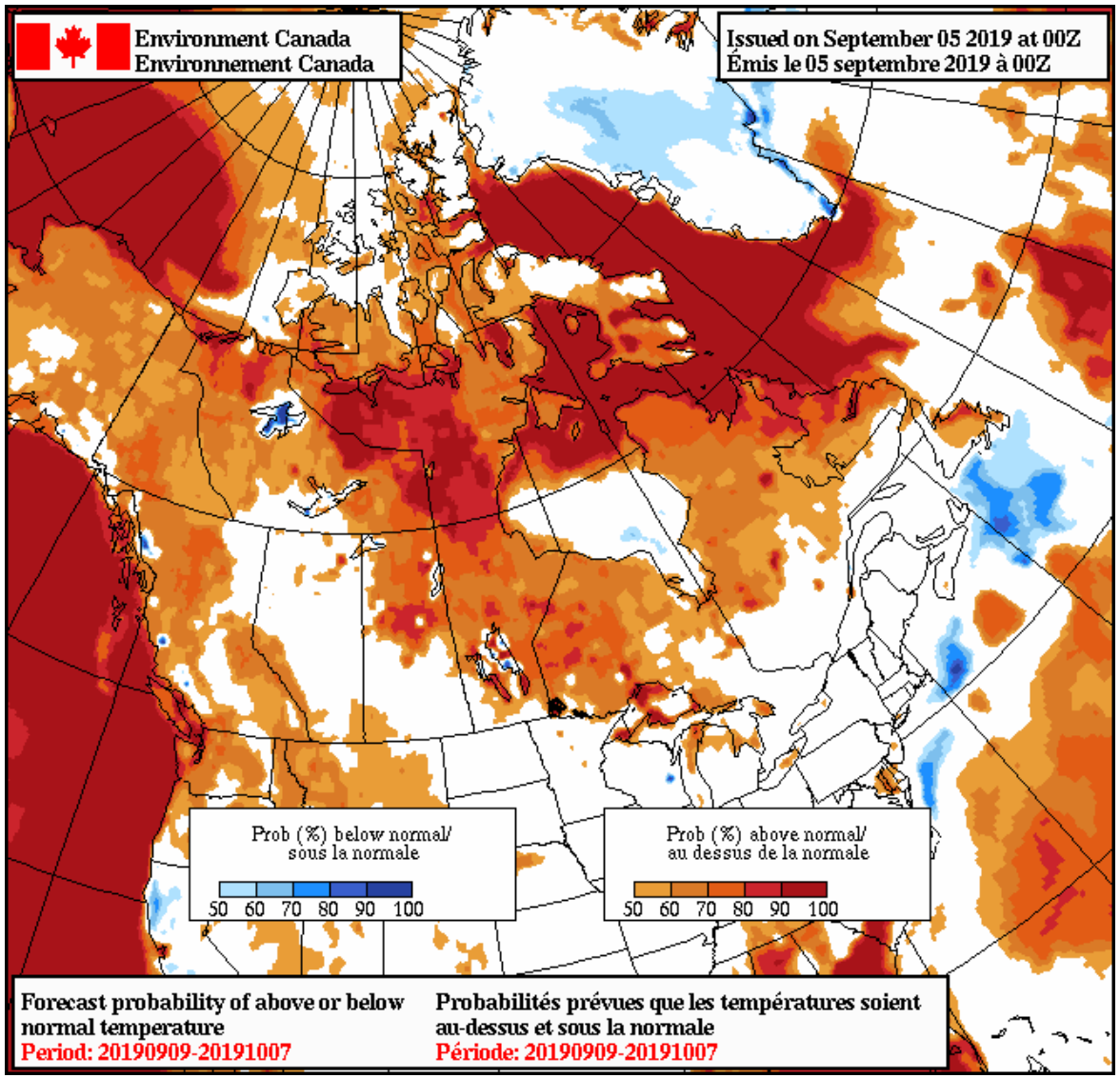


August 1, 2019 DC values compared to historical average



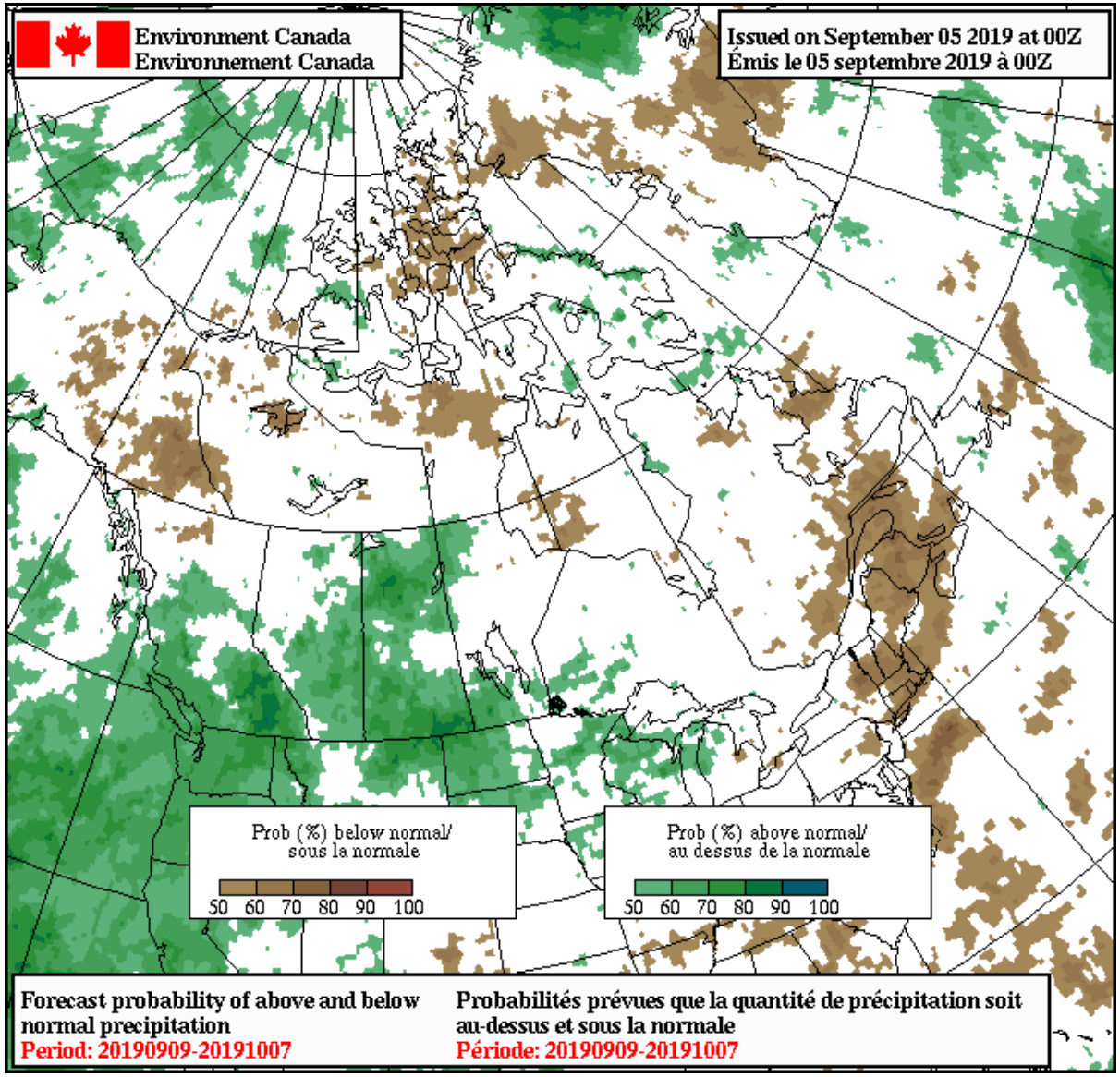
August 1, 2019 BUI values compared to historical average

Four Week Temperature Forecast issued September 5th, 2019



- A number of areas of the province have a probability of above normal temperatures in the upcoming weeks, ranging from 50 to 80%. The remainder of the province is not considered statistically significant.
- The northwest continues to be a region targeted for warmer temperatures.
- In the two week timeframe, no strong upper ridging features are seen and the pattern continues to be quite variable, however of note the longer range guidance has been showing a lot of variability.

Four Week Precipitation Forecast issued September 5th, 2019

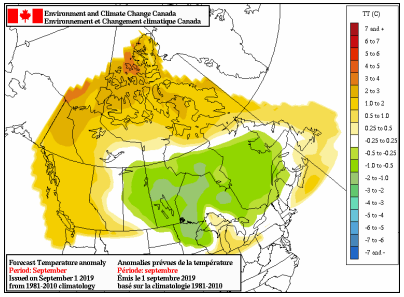


- While long range precipitation forecasts are generally not considered reliable, of note is the southern areas of the province with probabilities of higher than normal precipitation.
- Offshore sea surface temperatures are higher than normal through most of the northeastern Pacific (which has likely also contributed to the pattern seen over the summer), which potentially leads to warmer/wetter airmasses and increased precipitation. This forecast still has low confidence.

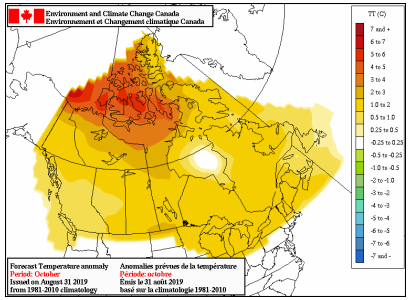
Three Month Temperature Anomaly: Breaking it down

BRITISH COLUMBIA

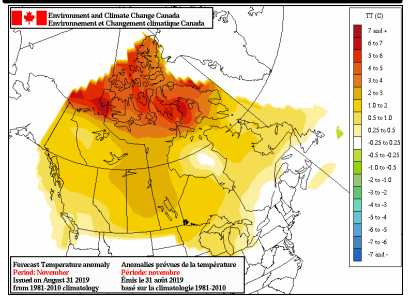
September



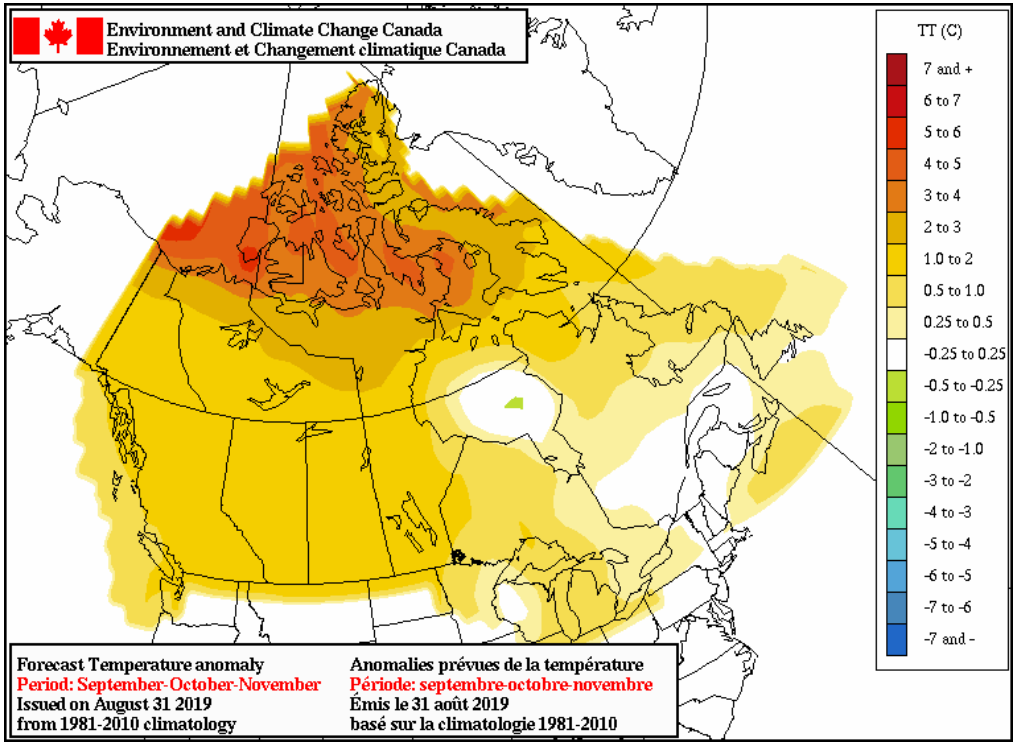
October



November

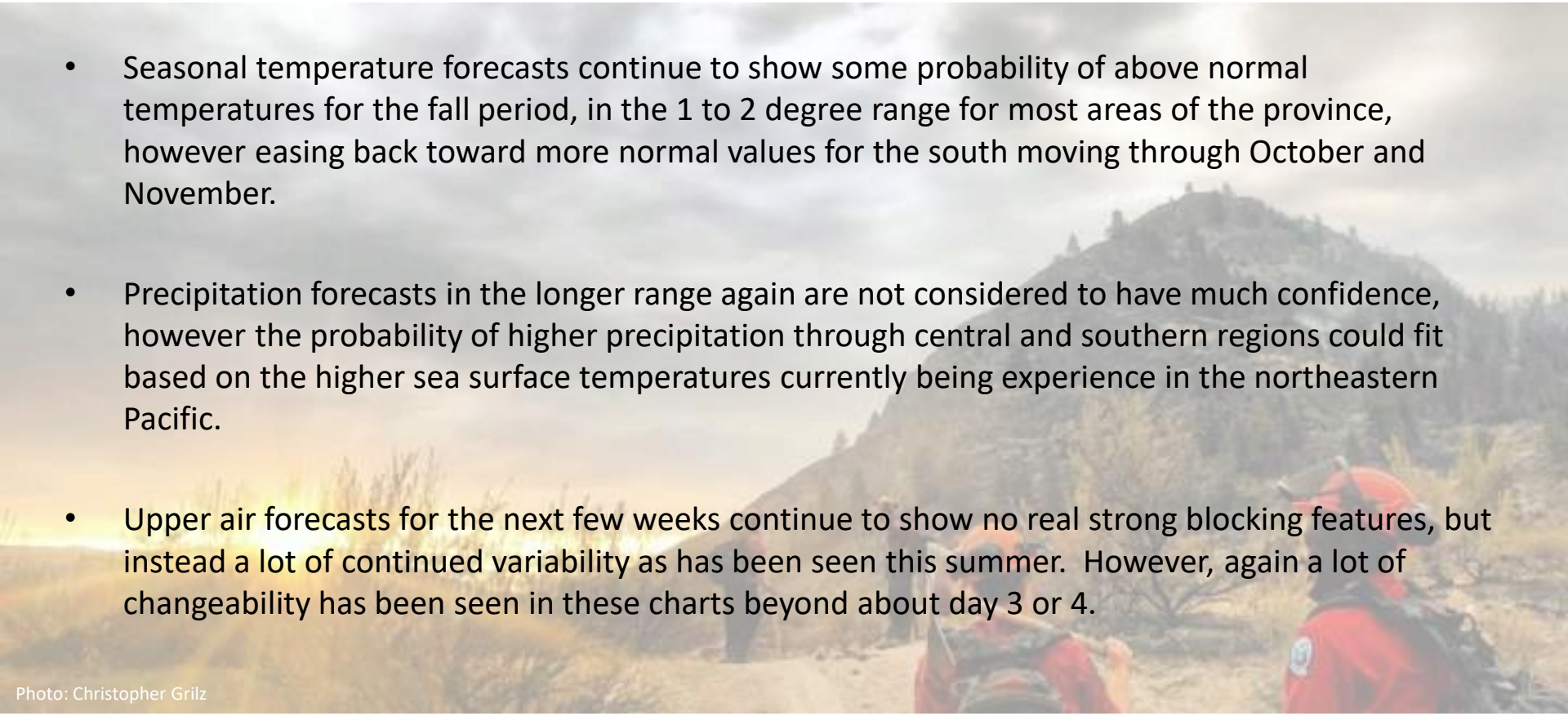


September-October-November



The fall timeframe is still expected to see warmer temperatures, with values in the 1 to 2 degree above normal range, gradually easing back toward normal moving through October and November for the south. As mentioned in the previous slide, this could be supported by warmer sea surface temperatures through the northeastern Pacific.

Fall Weather Summary



- Seasonal temperature forecasts continue to show some probability of above normal temperatures for the fall period, in the 1 to 2 degree range for most areas of the province, however easing back toward more normal values for the south moving through October and November.

- Precipitation forecasts in the longer range again are not considered to have much confidence, however the probability of higher precipitation through central and southern regions could fit based on the higher sea surface temperatures currently being experience in the northeastern Pacific.

- Upper air forecasts for the next few weeks continue to show no real strong blocking features, but instead a lot of continued variability as has been seen this summer. However, again a lot of changeability has been seen in these charts beyond about day 3 or 4.

Photo: Christopher Grilz

Fall Fire Summary

- Wildfire occurrence should continue should stay below normal for this time of year
- Most wildfires should be IA successes
- The short term forecast (September 6 – 9th) is bringing showers across Southern BC
- Shorter daylight hours and good relative humidity recoveries are helping to moderate fire behaviour

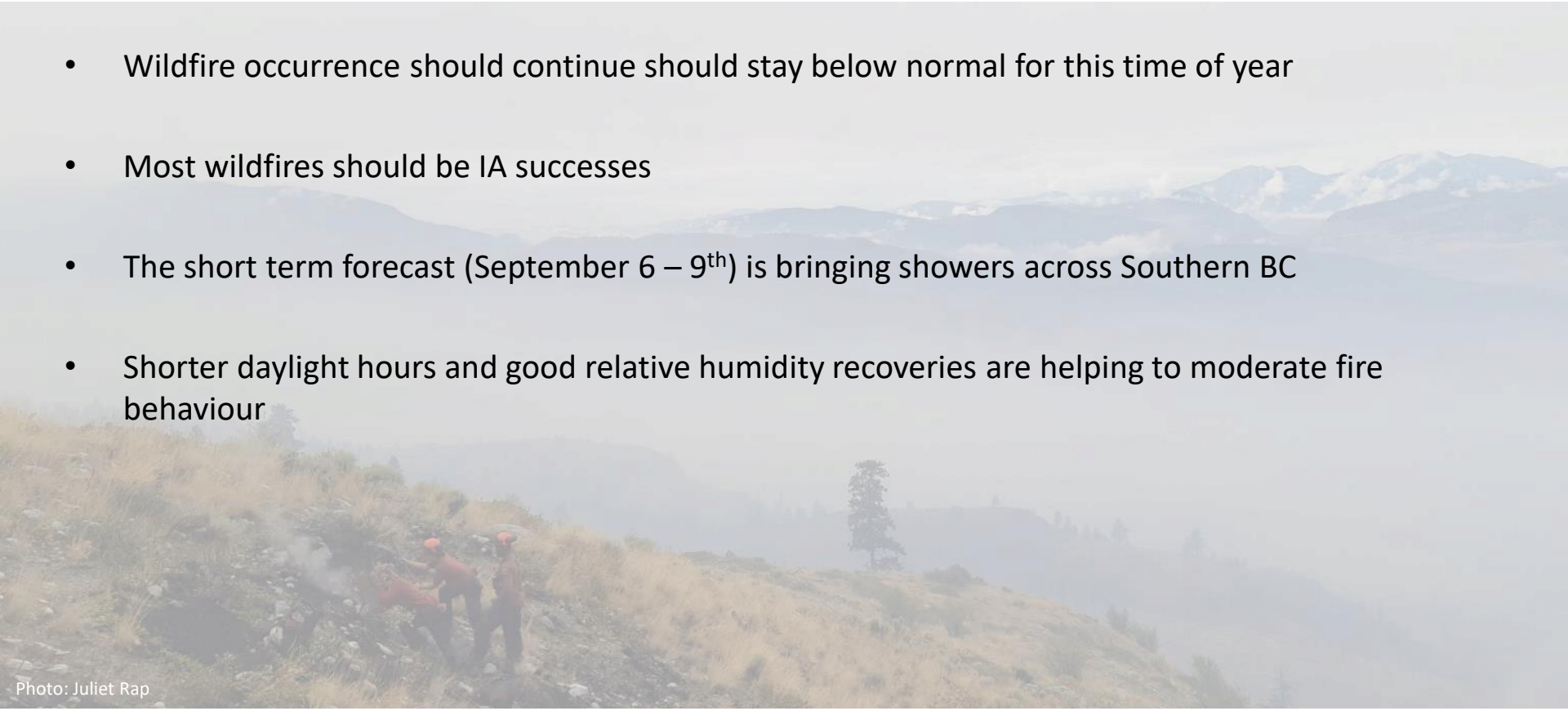
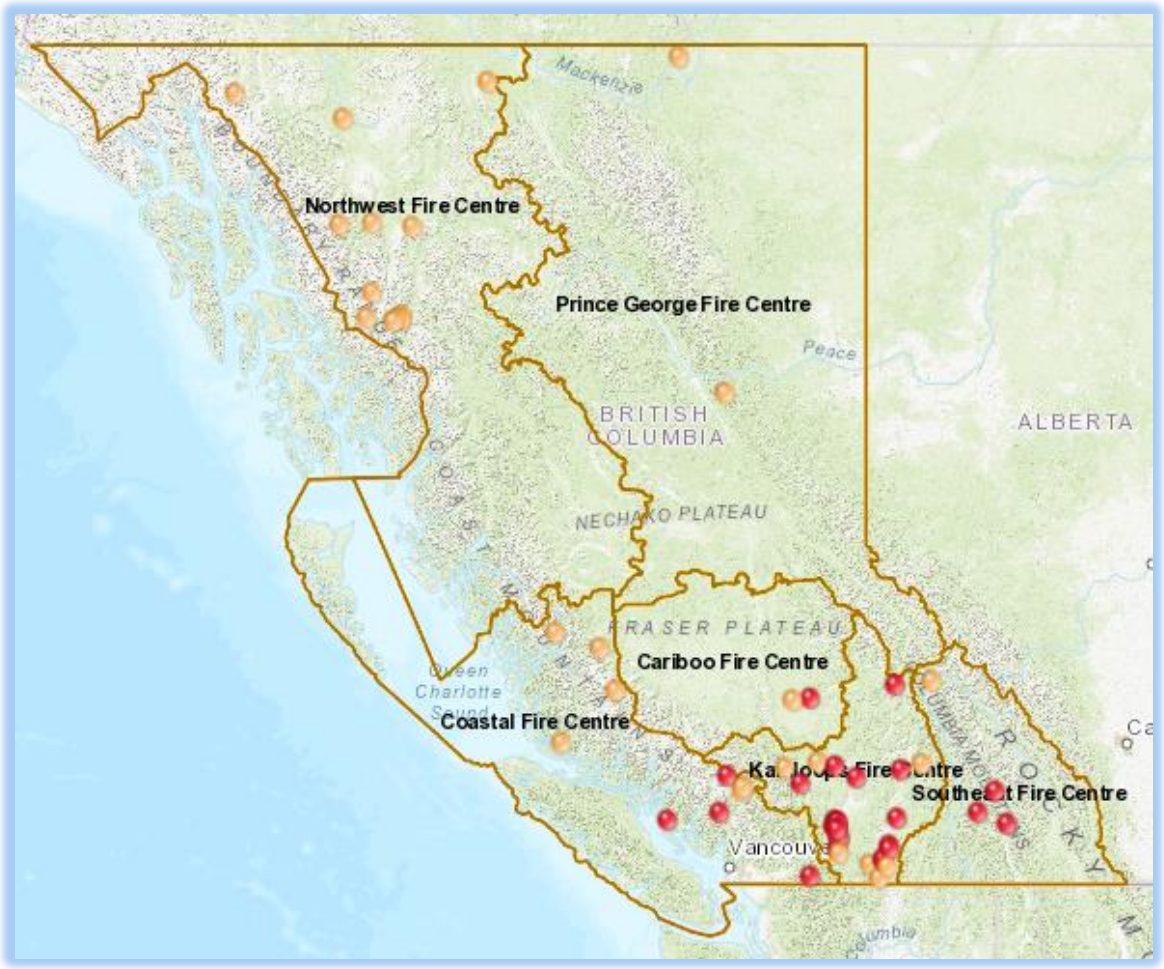
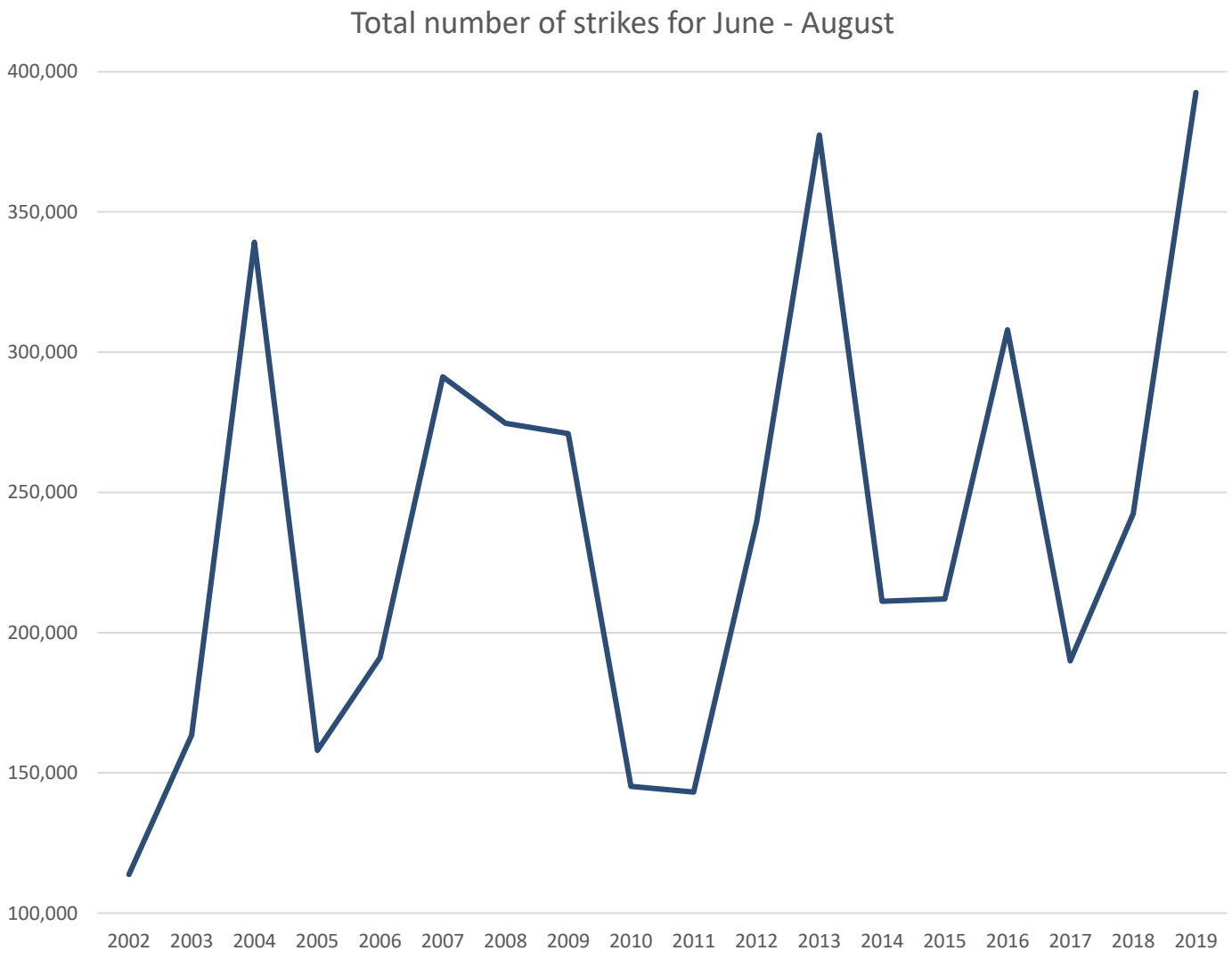


Photo: Juliet Rap

2019 Fire Season Summary



Lightning Stats



July was well above average, while June and August were within average.

Summer (Jun/Jul/Aug) Summary (Environment Canada Values)

J-J-A 2019	T	Tnorm	Temp Anom	Colder Than, Normal, Warmer Than	Temp Rank	P	Pnorm	Precip % of Norm	Drier Than, Normal, Wetter Than	Precip Rank	Temp POR	Precip POR
Victoria	17.0	16.2	0.8	Warmer	9	72.1	72.3	99.8%	Normal	45	1941	1941
Victoria Gonzales	16.0	15.6	0.4	Warmer	20	47.6	50.1	95.1%	Normal	59	1899	1899
Nanaimo (YCD)	17.9	17.3	0.6	Warmer	17	69.2	97.2	71.2%	Drier	37	1892	1892
Comox (YQQ)	18.1	17.1	0.9	Warmer	11	87.4	98.6	88.6%	Normal	42	1914	1894
Vancouver	17.9	17.2	0.7	Warmer	12	82.8	126.1	65.7%	Drier	40	1896	1896
Abbotsford	18.1	17.3	0.8	Warmer	12	98.7	167.2	59.0%	Drier	16	1945	1945
Penticton (YYF)	19.8	19.7	0.2	Normal	27	70.6	104.1	67.8%	Drier	45	1908	1908
Kelowna	19.7	18.6	1.0	Warmer	11	84.1	109.7	76.6%	Drier	21	1969	1969
Vernon (WJV)	19.6	18.7	0.9	Warmer	13	111.3	132.1	84.2%	Normal	65	1900	1900
Cranbrook	17.2	17.3	-0.1	Normal	74	133.3	128.5	103.8%	Normal	32	1901	1902
Quesnel (VQZ)	15.9	15.9	0.0	Normal	73	150.0	170.2	88.1%	Normal	43	1899	1893
Williams Lake (YWL)	M	M	M	M	M	182.4	157.3	116.0%	Wetter	16	1961	1961
Prince George	14.2	14.8	-0.6	Colder	34	182.6	176.7	103.3%	Normal	35	1943	1943
Kamloops	20.4	20.3	0.2	Normal	34	71.4	93.0	76.8%	Drier	50	1892	1895
Terrace	16.5	15.7	0.8	Warmer	25	206.3	165.0	125.0%	Wetter	17	1913	1913
Smithers (YYD)	14.8	14.3	0.6	Warmer	18	105.2	144.6	72.8%	Drier	25	1938	1938
Fort St. John	14.3	15.1	-0.8	Colder	23	223.5	192.1	116.3%	Wetter	27	1943	1943
Fort Nelson (YYE)	14.7	15.7	-1.1	Colder	11	281.5	211.1	133.3%	Wetter	10	1938	1938

After a warmer and dryer than normal start to summer, anomaly values have somewhat balanced with June/July rainfall

Summer Weather Summary

- Summer was a mixed bag in terms of weather conditions. No strong, blocking types of features built over top of the province, they seemed inclined to remain more offshore and affect areas like Alaska and the Yukon.

- A number of active systems brought somewhat regular rainfall through most of the summer to many areas of the province, with a bit more focus through central and northeastern regions and with some notable storms with high rainfall amounts also affecting the northeast. The northwest, coast, and southern interior regions in general trended the driest partially due to overall climatology (subsident zones), but also because they caught some of the offshore upper ridging conditions when they set up.

- Temperatures were running very close to seasonal instead of values upward of 5 to 10 degrees above, like has been seen in previous years. Most sites only averaged a half to full degree above seasonal through the summer.

- Lightning tended to come wetter as well in this pattern, particularly over northern regions of the province. Due to the orientation of the upper pattern with a more persistent ridge offshore, less subtropical intrusion events were seen which are contributors to dry lightning through the south and central regions.

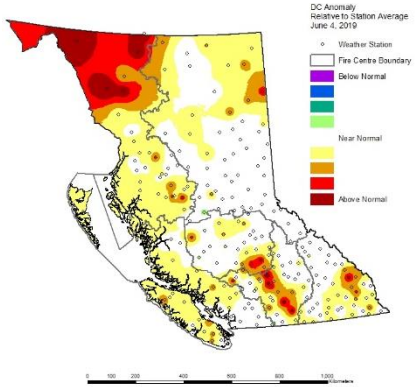
- Overall, temperatures and precipitation closer to the seasonal mark meant less/slower growth in fire weather indices compared to previous years, with a few notable rainfall events knocking numbers down quite significantly in some areas.

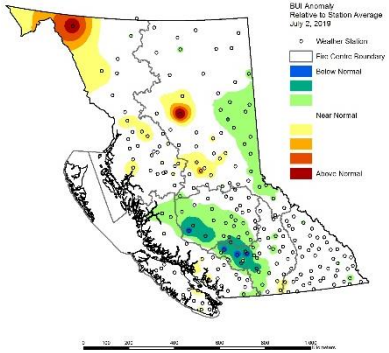
Season BUI/DC values

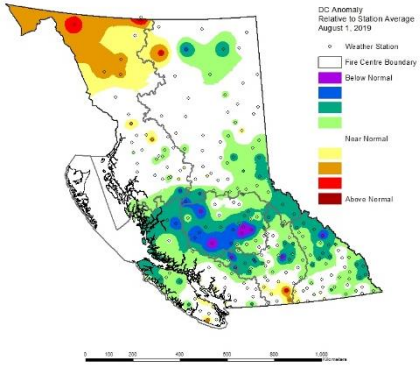
Maps show the DC and BUI values from the beginning of every month compared to historical averages.

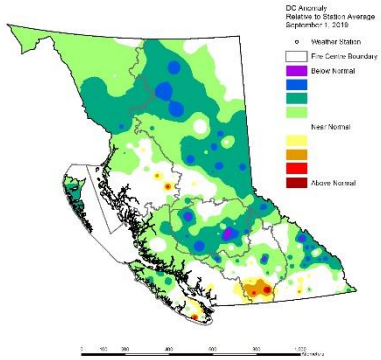
Note the impact of rainfall from June – July across most of the province (excluding the NW). Lack of rainfall in the far southern of the province in August – September is also evident.

DC

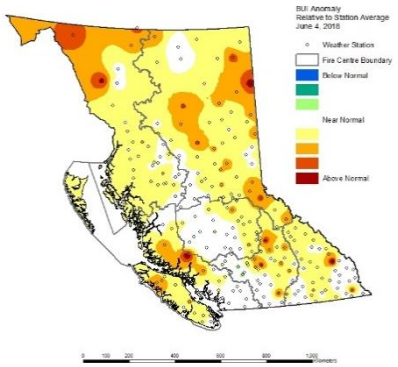


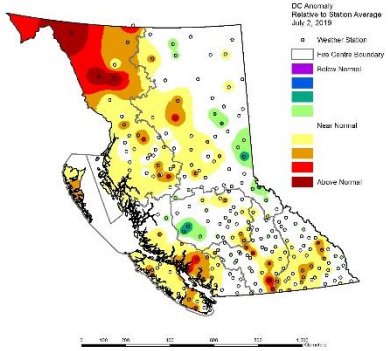


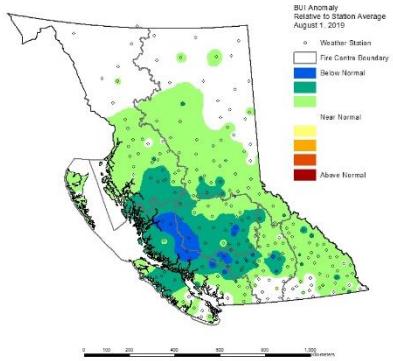


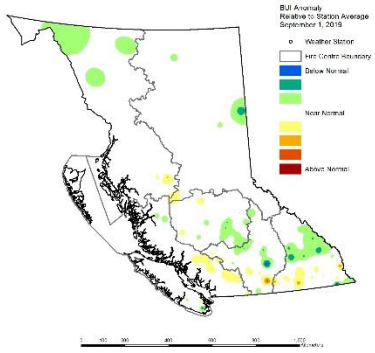


BUI









June July August September

2019 Fire Season Summary

- The wildfire season began with continued drought conditions and low snowpack in many areas of the province.
- The long range weather forecast predicted a hot, dry summer.
- The outlook was for a wildfire season similar to the last two seasons.
- After a warm, dry spring, the June rains appeared causing flooding in some areas of the province. The weather conditions moderated after June with a cycle of warm/ dry followed by cooler/ wet for many areas of the province. Even the south which was warmer and dry than normal seemed to get rainfall at the most opportune times.

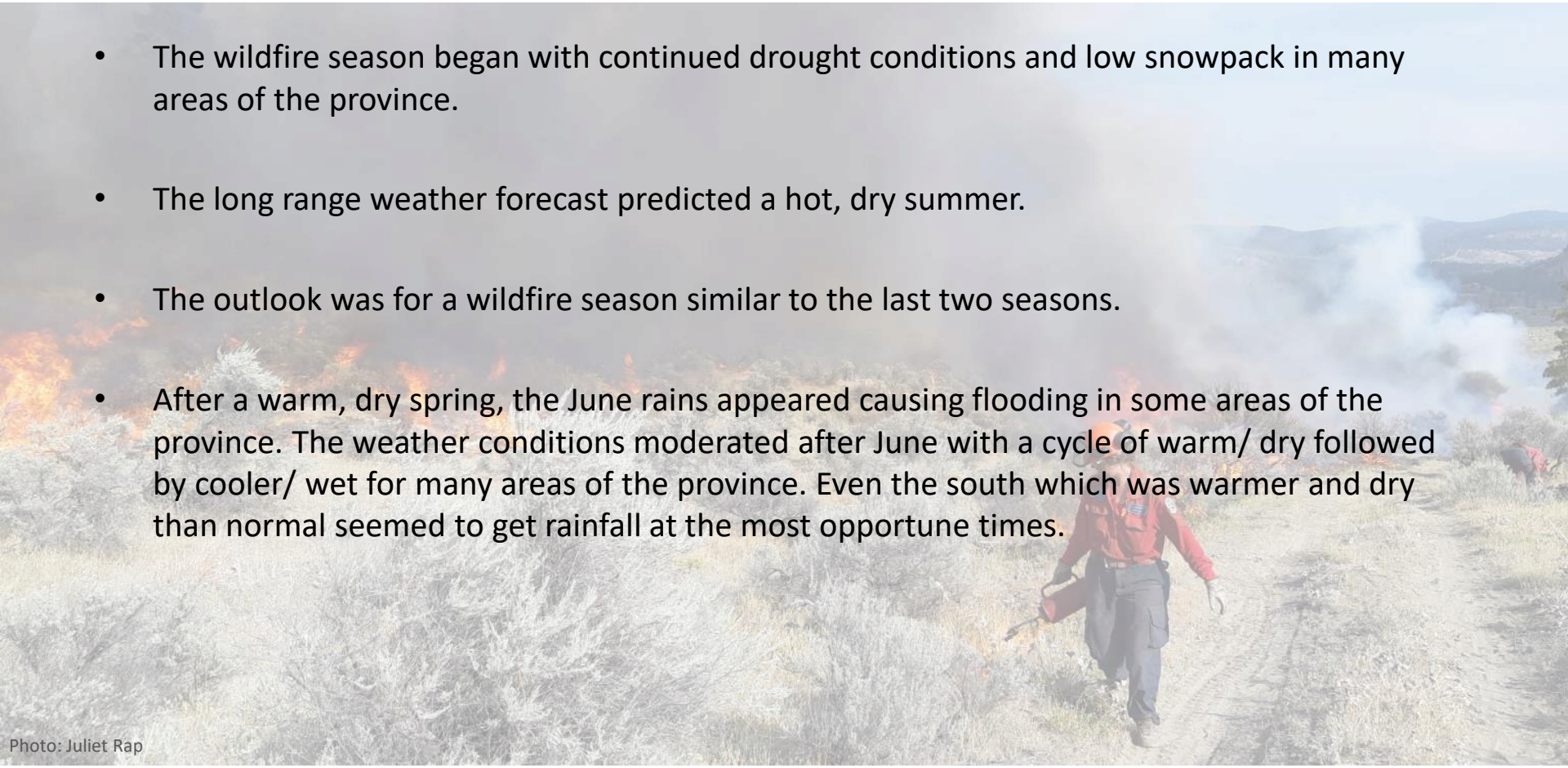


Photo: Juliet Rap

2019 Fire Season Summary

- Well below average number of wildfires and area burnt this wildfire season.
- There were 9 wildfires of note.
- Extreme fire behaviour events were minimal in 2019
- We will continue to monitor drought conditions throughout the Fall/ Winter to prepare for the 2020 wildfire season.

Photo: Cove Bennett

Questions?

Contact: Dana.Hicks@gov.bc.ca