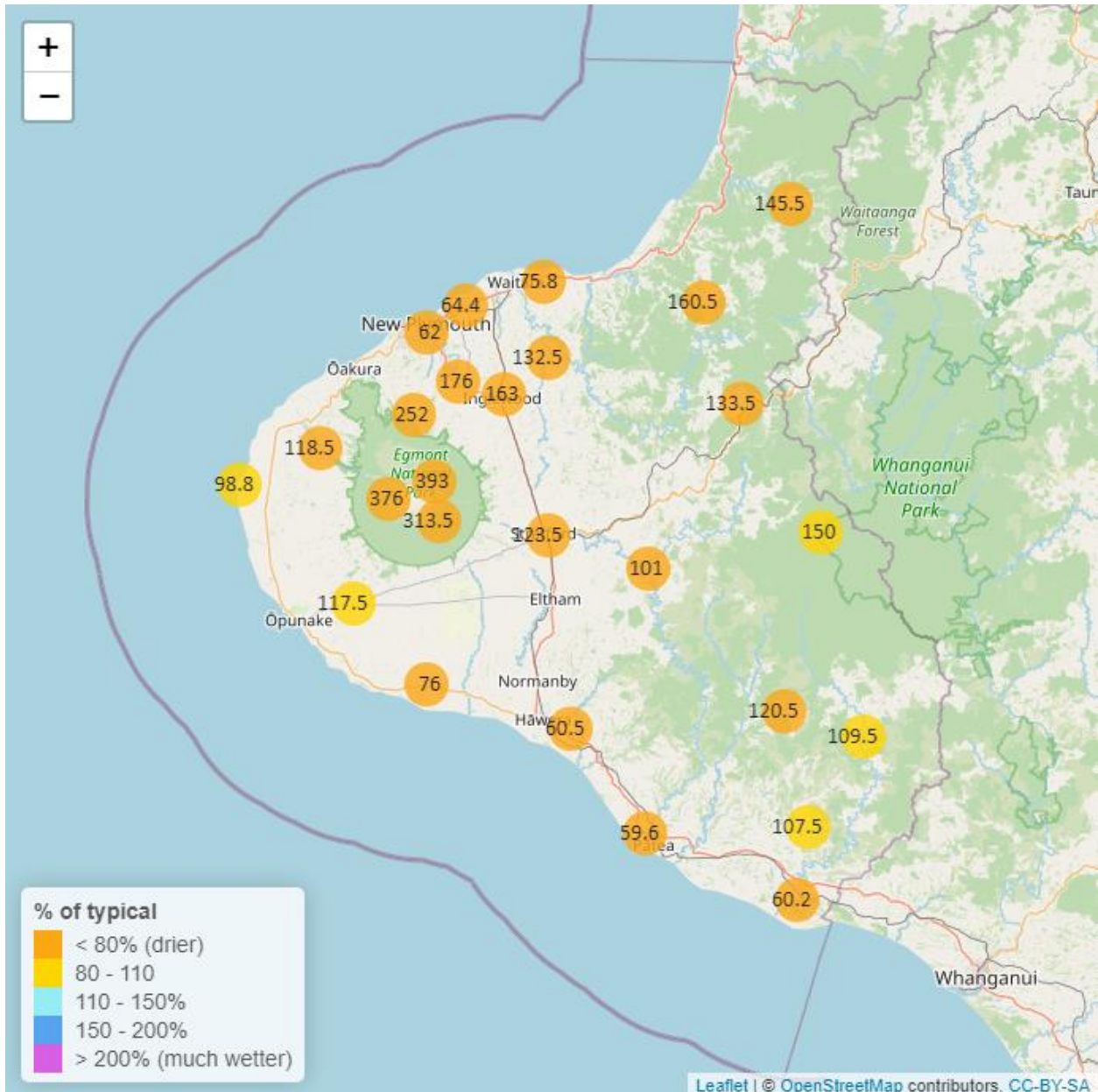


# Taranaki Regional Council Monthly Rainfall and Environmental Data Report for October 2023

Note: The data presented here is provisional data only and may change as a result of quality control at a later date.

## 1. Rainfall

Map 1: October total rainfall (mm) and percentage of long-term mean (colour key).





**Table 1: Rainfall October and year to date totals for rain gauge sites in Taranaki.**

Rain gauge	October			Year to Date			Records Began
	# days with rain	Total rain (mm)	% of typical month	Total to date (mm)	% of typical year to date	% of typical full year	
North Egmont at Visitors Centre	21	393.0	52.3	6151.0	105.1	88.6	1991
Dawson Falls	22	313.5	58.9	6157.5	121.1	103.6	1933
Kapoaiaia at Kahui Hut	18	376.0	75.9	4788.5	108.3	91.3	2006
Mangorei Upper at Forest Hill	19	252.0	78.2	2862.5	92.6	75.3	2018
Waiwhakaiho at Hillsborough	10	90.5	63.6	1434.5	92.2	78.3	2013
Brooklands Zoo at New Plymouth	11	62.0	51.7	1276.8	92.3	78.9	2012
Mangati at SH3	14	64.4	58.2	1217.6	93.0	78.6	2013
Motunui M39 at Weston W3	13	75.8	55.6	1245.6	94.2	79.1	1999
Waiwhakaiho at Egmont Village	13	176.0	72.9	2019.5	100.5	83.3	1991
Manganui at Everett Park	15	132.5	64.6	1605.0	93.2	77.3	1987
Inglewood at Oxidation Ponds	16	163.0	70.4	1885.0	96.6	80.1	2000
Stony at Mangatete Bridge	17	118.5	64.4	1601.0	95.5	79.7	2004
Kapoaiaia at Lighthouse	11	98.8	82.3	1161.0	97.8	83.5	1930
Taungatara at Eltham Rd	13	117.5	83.0	1330.5	100.6	83.9	2005
Kaupokonui at Glenn Rd	11	76.0	68.5	999.5	101.9	85.3	1998
Patea at Stratford	18	123.5	67.6	1677.5	98.6	84.3	1999
Mangaehu at Bridge	16	101.0	71.3	1330.0	99.8	83.5	1999
Kotare at OSullivans	16	145.5	64.4	1686.5	95.2	78.1	1998
Uruti at Kaka Rd	14	160.5	71.2	1580.5	86.8	70.7	1991
Pohokura Saddle	19	133.5	66.7	1457.0	88.5	73.0	1991
Omaru at Charlies	20	150.0	91.0	1695.0	110.5	93.2	2006

Rain gauge	October			Year to Date			Records Began
	# days with rain	Total rain (mm)	% of typical month	Total to date (mm)	% of typical year to date	% of typical full year	
Omahine at Moana Trig	19	120.5	73.4	1282.0	88.9	75.3	2007
Waitotara at Rimunui Station	16	109.5	82.5	1226.5	107.6	89.0	1994
Waitotara at Ngutuwera	12	107.5	88.8	1145.5	107.9	89.1	1999
Tawhiti at Duffys	13	60.5	58.2	984.0	108.1	88.8	1994
Patea at Bore 3	15	59.6	54.9	965.4	98.0	81.4	2006
Waitotara at Hawken Rd	12	60.2	71.7	933.4	93.1	77.4	2016

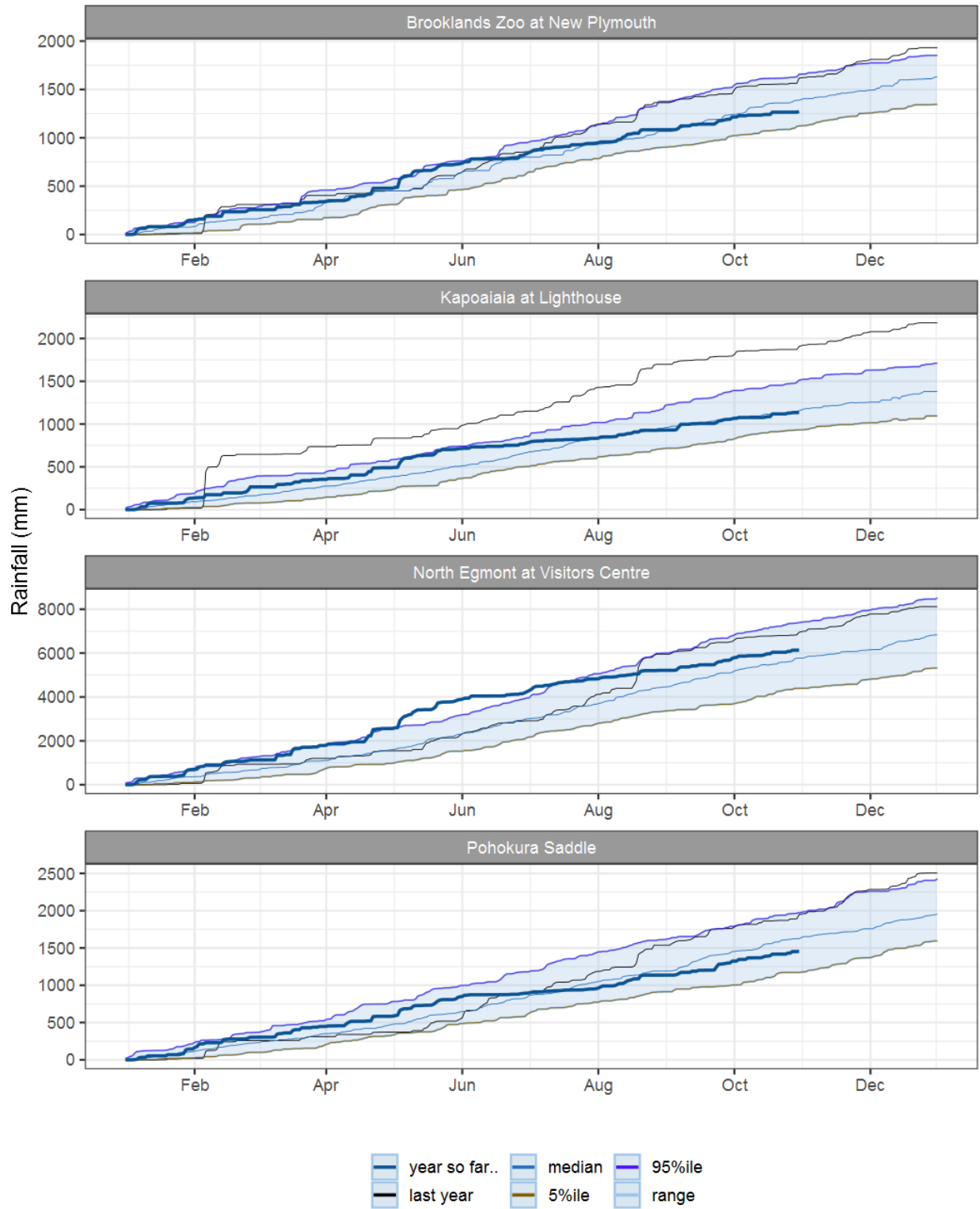


Figure 1.1: This year's and last year's data set in context of historic record at selected rain gauge sites in Taranaki.

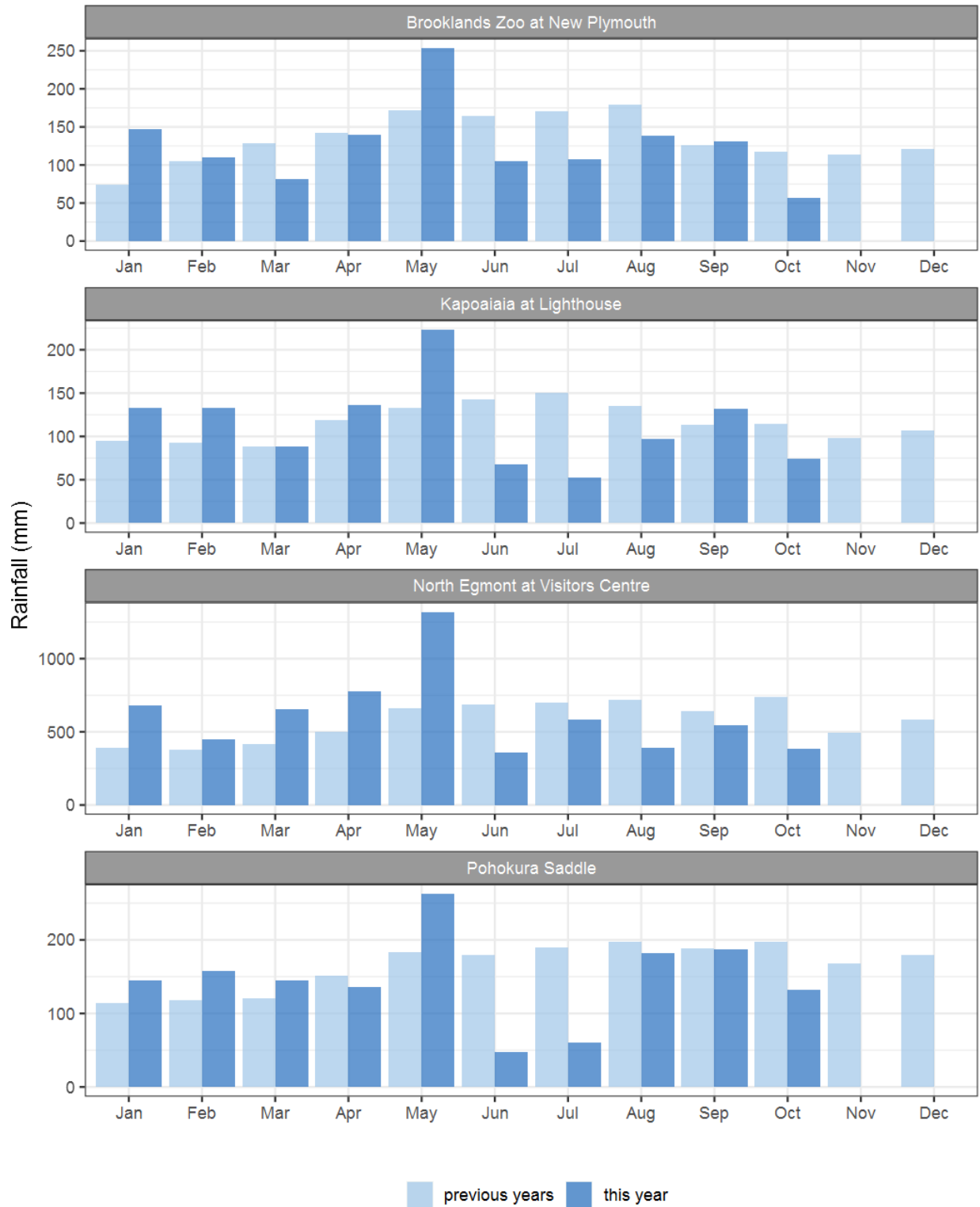


Figure 1.2: Monthly rainfall totals for this month and the mean of all previously recorded months.



## 2. River Flow

Map 2: October mean river flows (m3/sec), with difference as percentage of long-term mean.

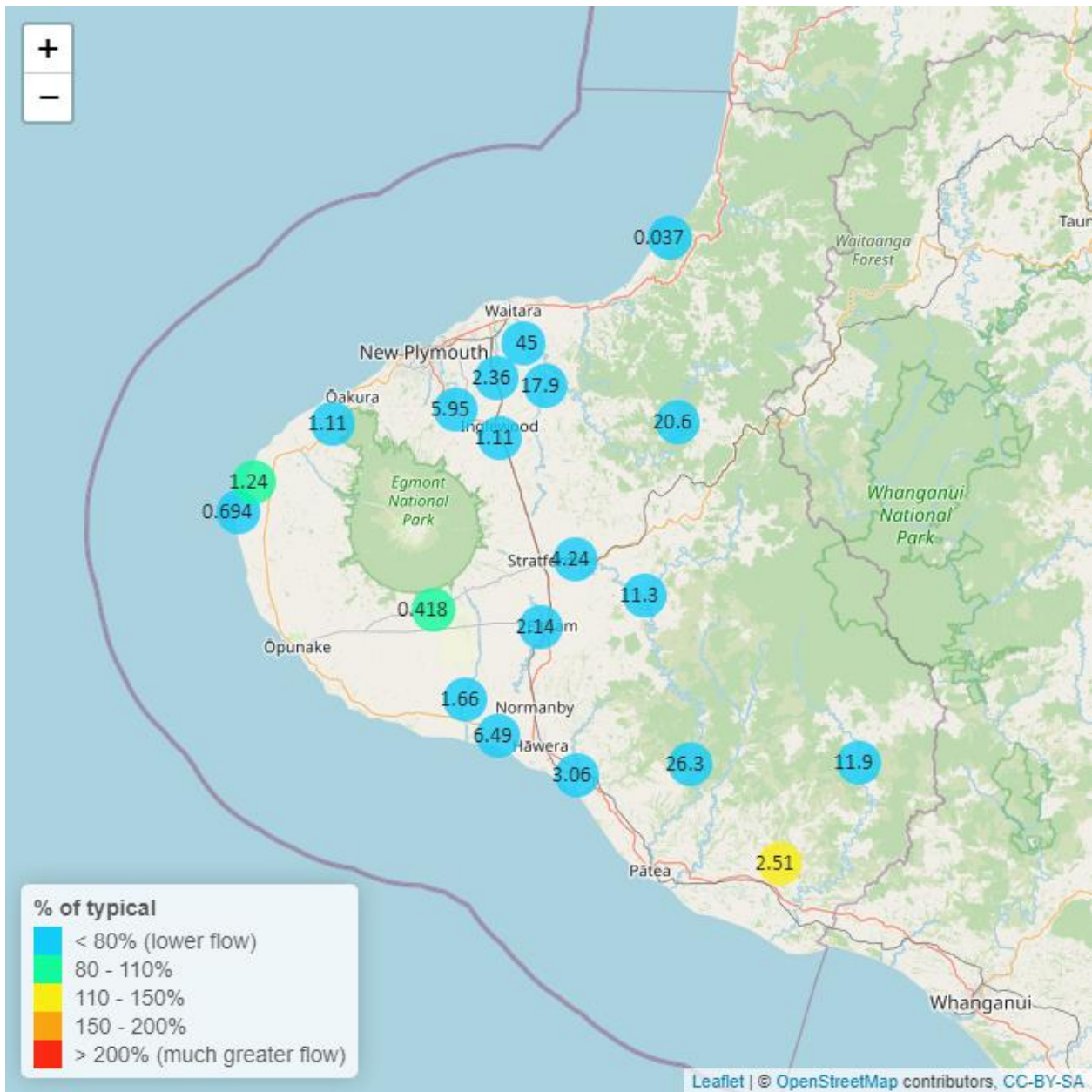


Table 2: Summary of high, low and mean flow for October and for October in all preceding years of record.

October 2023 - Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		October maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	2.55	4.35	0.16	0.43	0.69	1.46	14.60	37

October 2023 - Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		October maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapuni at Normanby Rd	2.69	4.22	1.05	0.88	1.66	2.23	7.10	24
Mangaehu at Bridge	28.80	49.20	4.75	4.08	11.30	16.50	36.90	45
Manganui at Everett Park	48.10	82.60	8.84	5.61	17.90	25.90	164.00	32
Mangaoraka at Corbett Rd	3.49	6.90	1.01	0.63	1.92	2.65	22.80	48
Mangawheroiti Above Intake W.W	0.75	0.80	0.29	0.22	0.42	0.41	2.23	11
Mangorei at Pipebridge	6.19	7.56	0.91	0.68	2.29	2.65	43.00	14
Moumahaki at Johnston Rd	8.73	5.12	0.87	0.74	2.51	2.05	35.50	6
Ngatoro at SH3	2.56	4.61	0.59	0.39	1.11	1.44	12.20	35
Patea at McColls Bridge	51.40	72.20	6.57	2.62	26.30	36.30	71.80	33
Patea at Skinner Rd	7.58	17.40	2.61	1.58	4.24	6.56	35.00	45
Tangahoe below Railway Bridge	7.51	11.50	1.38	2.22	3.06	5.04	33.00	5
Tawhiti at Duffys	1.36	2.02	0.59	0.40	0.87	1.03	2.01	38
Tawhiti below Meat Plant	0.97	1.38	0.59	0.57	0.76	0.92	1.23	13
Timaru at Tataraimaka	2.45	4.81	0.62	0.52	1.11	1.91	13.40	10
Waikaramarama at Bridge	0.10	0.42	0.01	0.02	0.04	0.13	1.94	6
Waingongoro at Eltham Rd	4.17	9.38	1.13	0.96	2.14	3.63	10.30	48
Waingongoro at SH45	11.20	22.10	3.74	3.42	6.49	9.73	18.00	42
Waiongana at SH3a	5.20	10.60	1.13	0.76	2.36	3.60	38.10	43
Waitara at Bertrand Rd	93.10	240.00	21.70	14.80	45.00	75.70	172.00	43
Waitara at Purangi Bridge	62.20	101.00	4.44	2.14	20.60	29.30	127.00	24
Waitotara at Rimunui Station	32.90	48.40	5.78	5.71	11.90	18.00	60.70	18
Waiwhakaiho at Egmont Village	16.70	32.50	2.67	2.63	5.95	10.10	88.00	43
Warea at Coast	2.86	3.49	0.63	0.55	1.24	1.44	13.60	7
Weraweraonga at 749 Mangawhio Rd	5.83	4.20	0.34	0.40	1.28	1.42	28.80	6



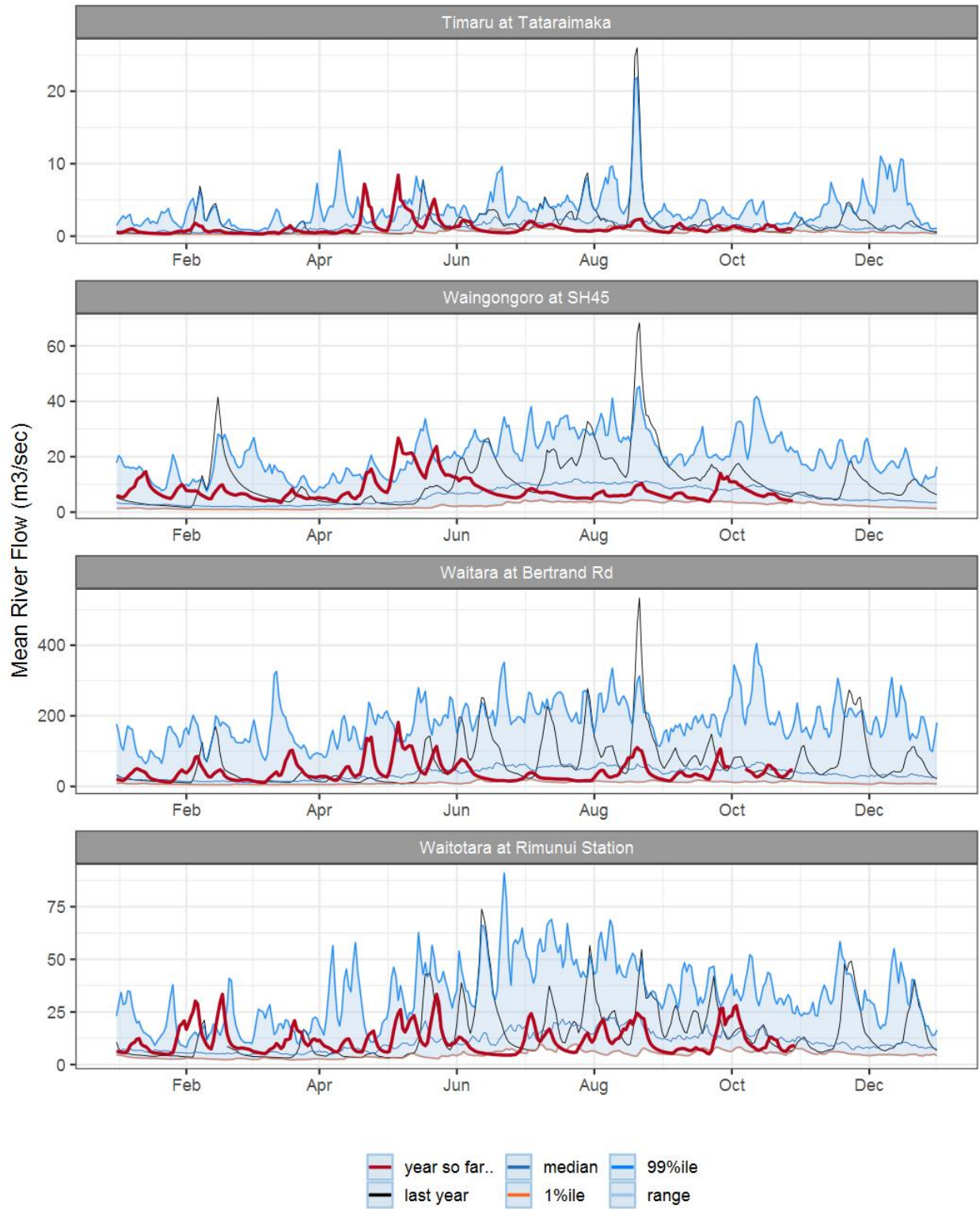


Figure 2.1: Running average river flows for selected sites, set in context of the historic record.

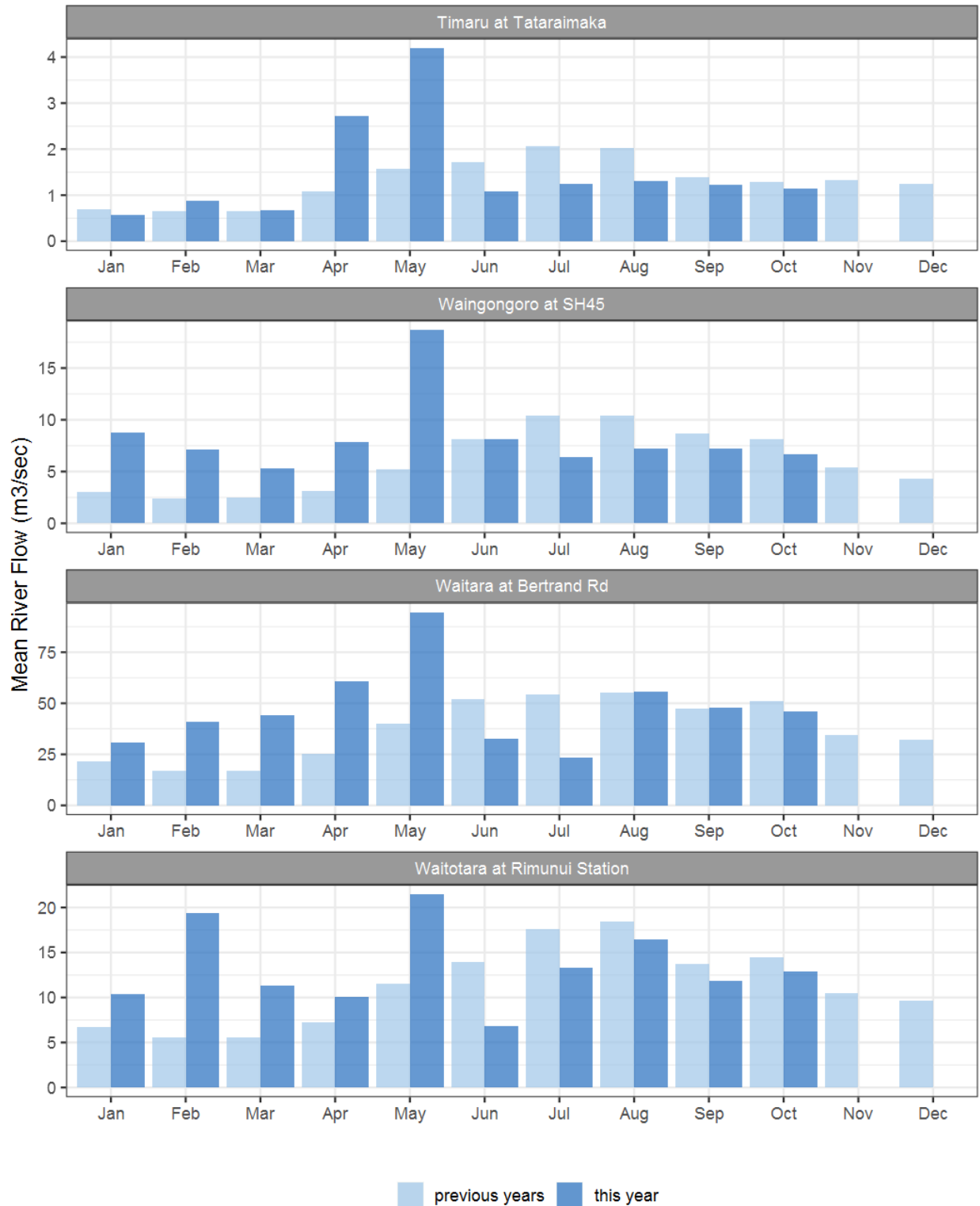
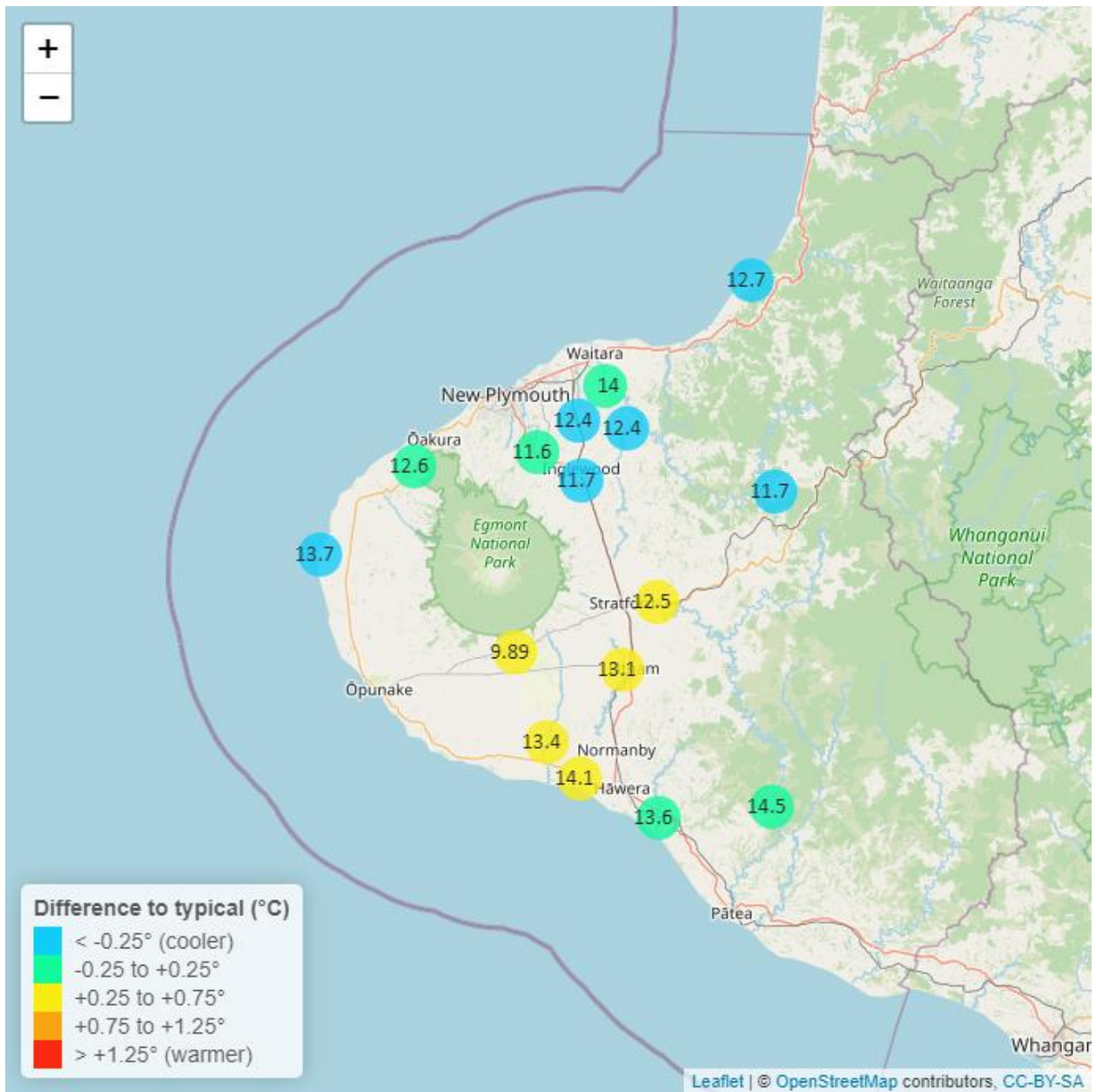


Figure 2.2: Monthly mean river flow for this month and the mean of all previously recorded months.

### 3. River Temperature

Map 3: October mean water temperature with difference to long-term mean (°C).



**Table 3: Summary of high, low and mean river temperature for October and for October in all preceding years of record.**

October 2023 - River Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		October maximum	data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	17.5	17.6	9.91	11.00	13.70	14.2	19.4	24
Kapuni at Normanby Rd	17.1	16.2	10.20	9.62	13.40	12.7	18.6	24
Manganui at Everett Park	14.6	15.6	9.76	10.60	12.40	13.0	15.4	15
Mangaoraka at Corbett Rd	15.9	16.0	11.60	11.10	13.70	13.6	16.9	19
Mangawheroiti Above Intake W.W	12.0	11.6	8.00	7.67	9.89	9.6	12.7	11
Mangorei at Pipebridge	15.4	15.3	10.00	10.20	12.70	12.8	16.5	9
Matau at Woolshed	14.7	15.4	9.06	9.89	11.70	12.5	16.8	6
Ngatoro at SH3	14.3	14.7	8.88	9.23	11.70	12.0	15.0	24
Patea at McColls Bridge	16.7	16.8	12.50	12.30	14.50	14.4	17.4	9
Patea at Skinner Rd	14.9	14.6	10.20	9.83	12.50	12.2	15.7	19
Tangahoe below Railway Bridge	16.4	16.5	11.20	10.90	13.60	13.6	17.3	5
Tawhiti at Duffys	15.8	15.9	11.40	11.60	13.90	13.7	16.1	19
Tawhiti below Meat Plant	16.1	16.0	11.40	11.40	13.60	13.7	17.3	25
Timaru at Tataraimaka	14.9	14.8	10.40	10.30	12.60	12.5	16.1	10
Waikaramarama at Bridge	14.9	15.0	10.20	11.00	12.70	13.2	15.7	6
Waingongoro at Eltham Rd	15.9	14.9	10.40	9.97	13.10	12.4	17.3	18
Waingongoro at SH45	16.9	16.0	11.50	11.30	14.10	13.6	17.5	18
Waiongana at SH3a	14.8	15.1	9.92	10.40	12.40	12.8	16.0	12
Waitara at Bertrand Rd	16.6	16.5	11.30	11.70	14.00	13.9	17.9	33
Waiwhakaiho at Egmont Village	14.5	14.2	8.96	8.75	11.60	11.5	15.5	32

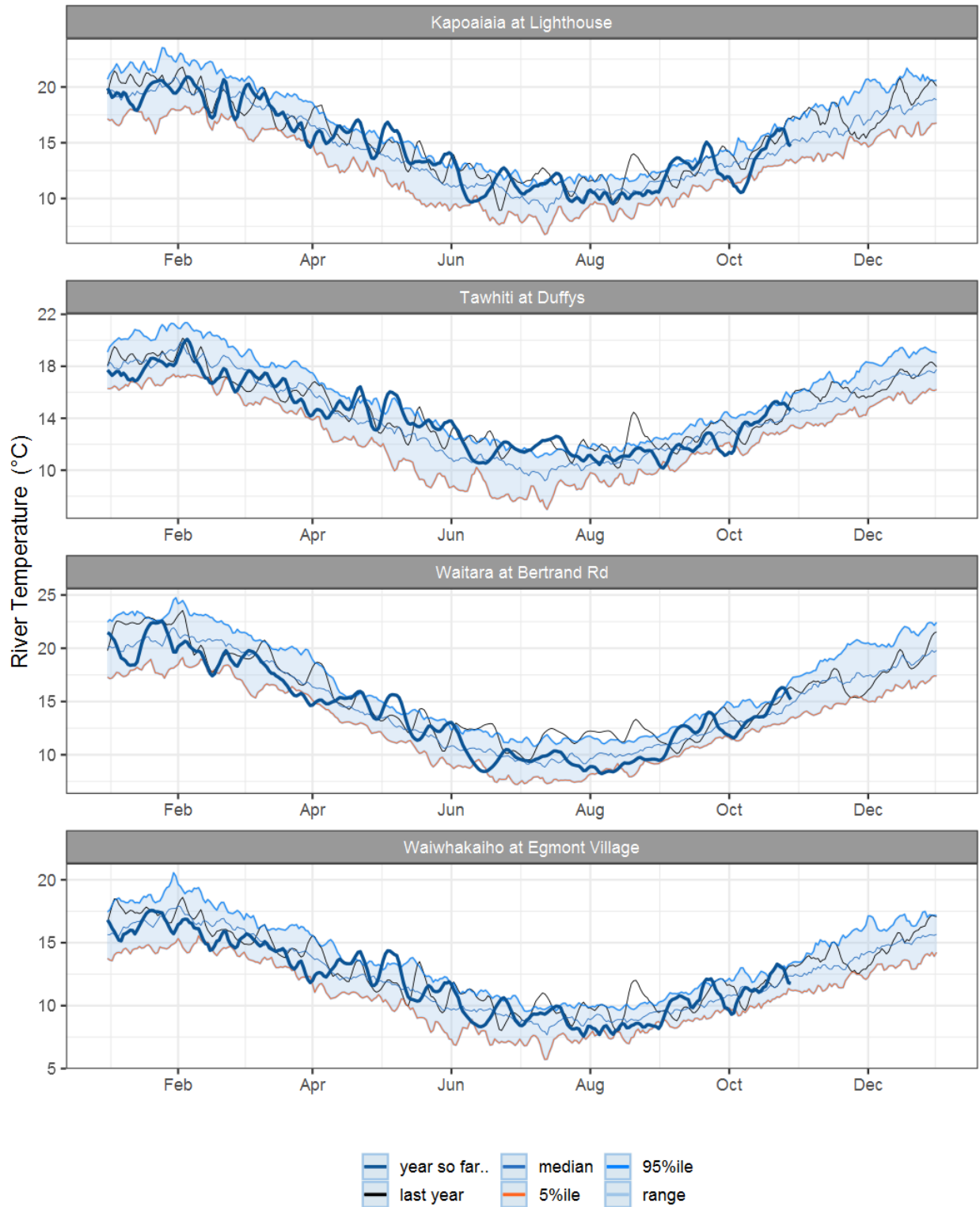


Figure 3.1: Running average river temperature for selected sites, set in context of the historic record.

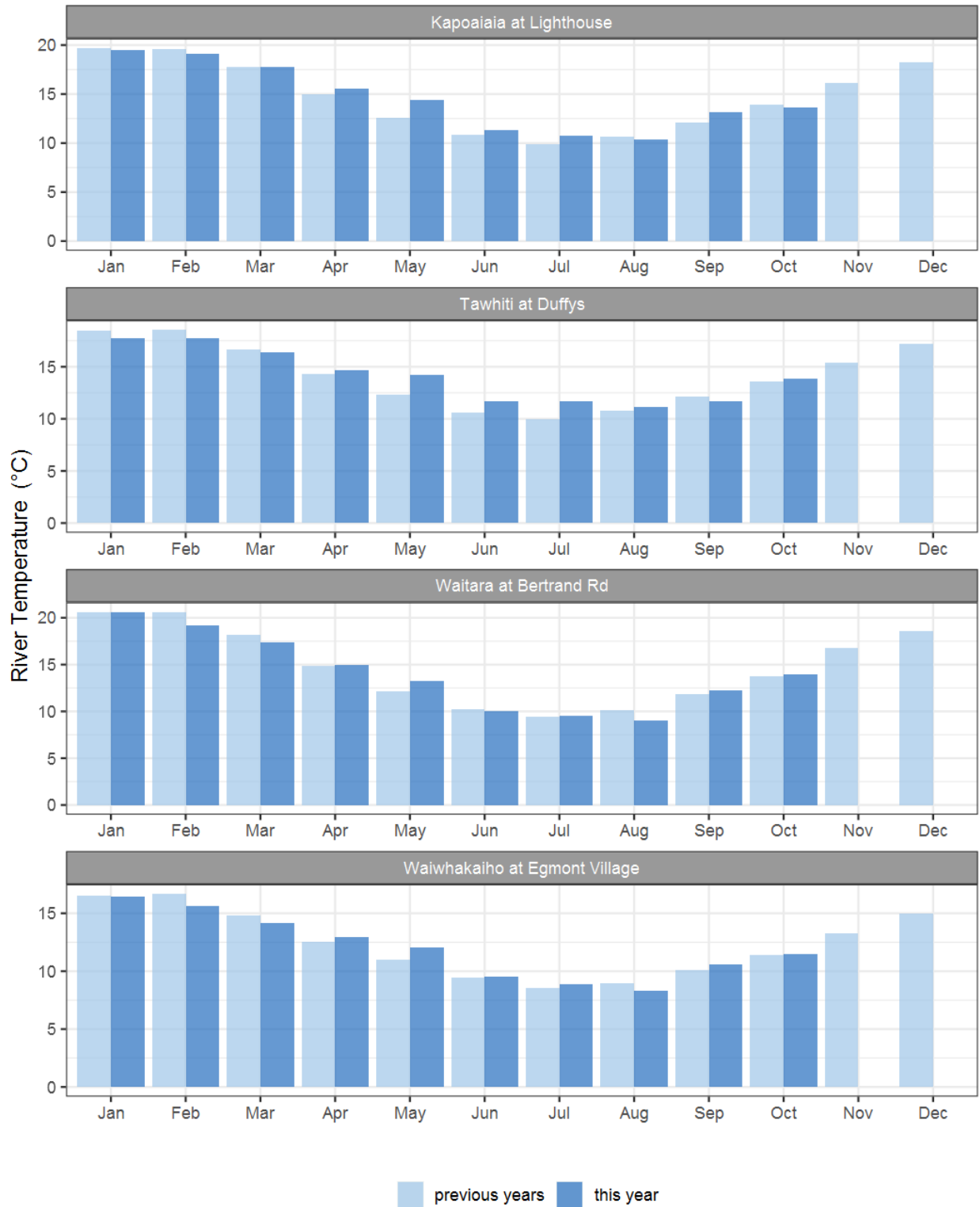
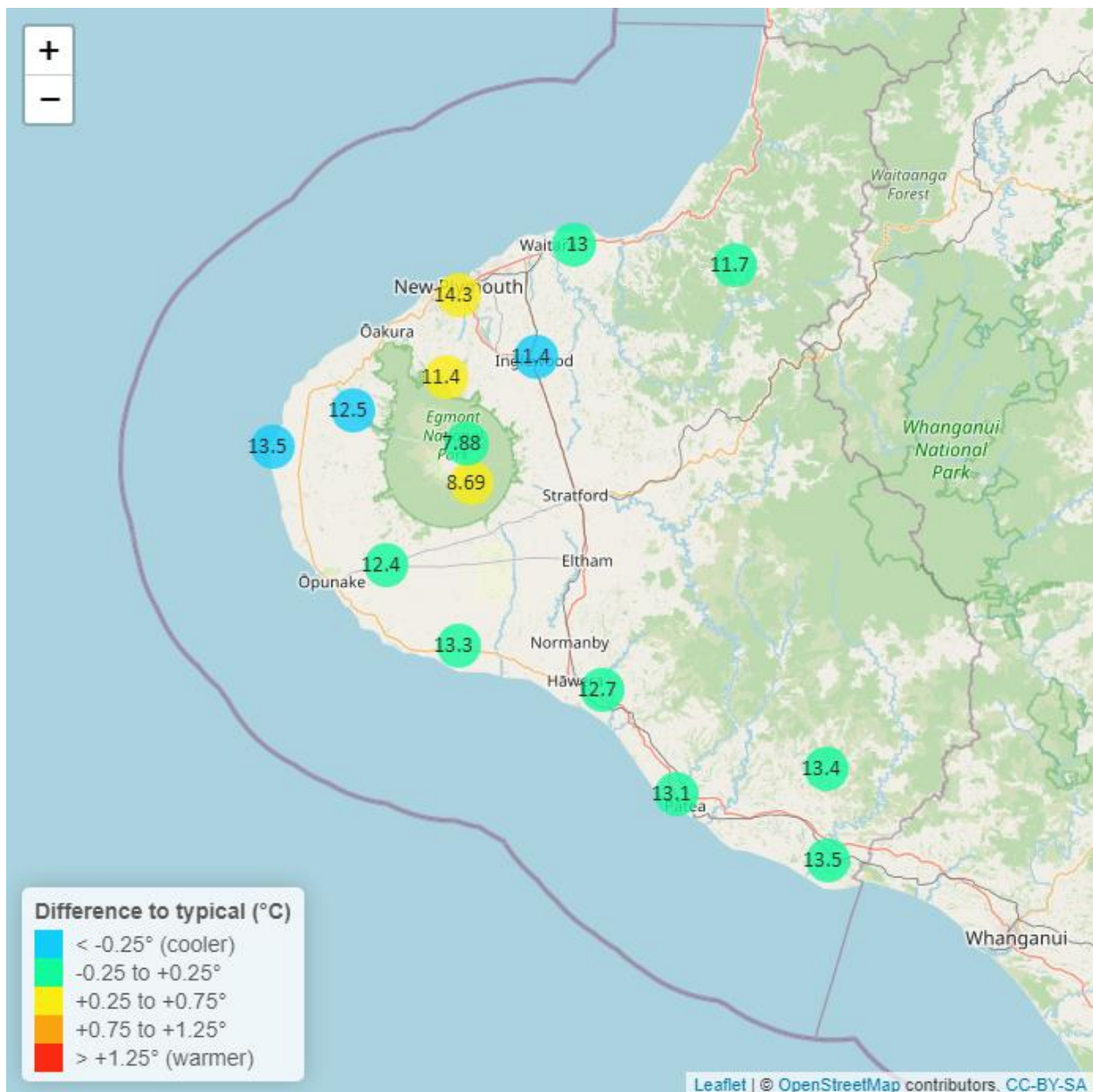


Figure 3.2: Monthly mean river temperature for this month and the mean of all previously recorded months.



## 4. Air Temperature

Map 4: October mean air temperature with difference to long-term mean (°C).





**Table 4: Summary of high, low and mean air temperature for October and for October in all preceding years of record.**

October 2023 - Air Temperature (°C)								
Monitoring Site	Highs		Lows		Mean		October maximum	data years
	current month	historic	current month	historic	current month	historic		
Brooklands Zoo at New Plymouth	18.3	18.8	8.14	8.19	14.30	13.70	25.6	11
Dawson Falls	14.8	13.8	3.06	2.80	8.69	8.24	19.7	8
Inglewood at Oxidation Ponds	17.2	18.0	5.45	6.03	11.40	12.30	21.8	12
Kapoaiaia at Lighthouse	16.6	16.8	9.80	9.59	13.50	13.80	20.1	11
Kaupokonui at Glenn Rd	17.5	18.1	7.65	8.10	13.30	13.30	19.0	9
Mangorei Upper at Forest Hill	16.1	15.0	6.54	6.32	11.40	10.90	20.8	6
Motunui M39 at Weston W3	17.0	17.1	7.18	7.64	13.00	13.20	22.2	7
North Egmont at Visitors Centre	14.0	13.1	2.53	2.44	7.88	7.86	20.9	9
Patea at Bore 3	17.0	17.2	8.14	8.30	13.10	13.10	19.2	12
Stony at Mangatete Bridge	16.6	16.8	8.03	8.21	12.50	12.80	21.6	7
Taungatara at Eltham Rd	16.4	16.8	7.66	7.74	12.40	12.50	18.7	8
Tawhiti at Duffys	17.6	17.7	4.85	6.06	12.70	12.90	20.0	10
Uruti at Kaka Rd	16.7	16.3	6.76	6.70	11.70	11.70	21.2	5
Waitotara at Hawken Rd	18.1	18.2	6.78	7.71	13.50	13.30	21.7	8
Waitotara at Ngutuwera	17.3	17.6	6.90	7.06	12.60	12.60	21.5	5
Waiwhakaiho at Hillsborough	17.4	16.8	8.67	8.15	13.30	12.80	23.1	11
Weraweraonga at 749 Mangawhio Rd	19.6	19.1	5.91	6.25	13.40	13.20	23.5	6

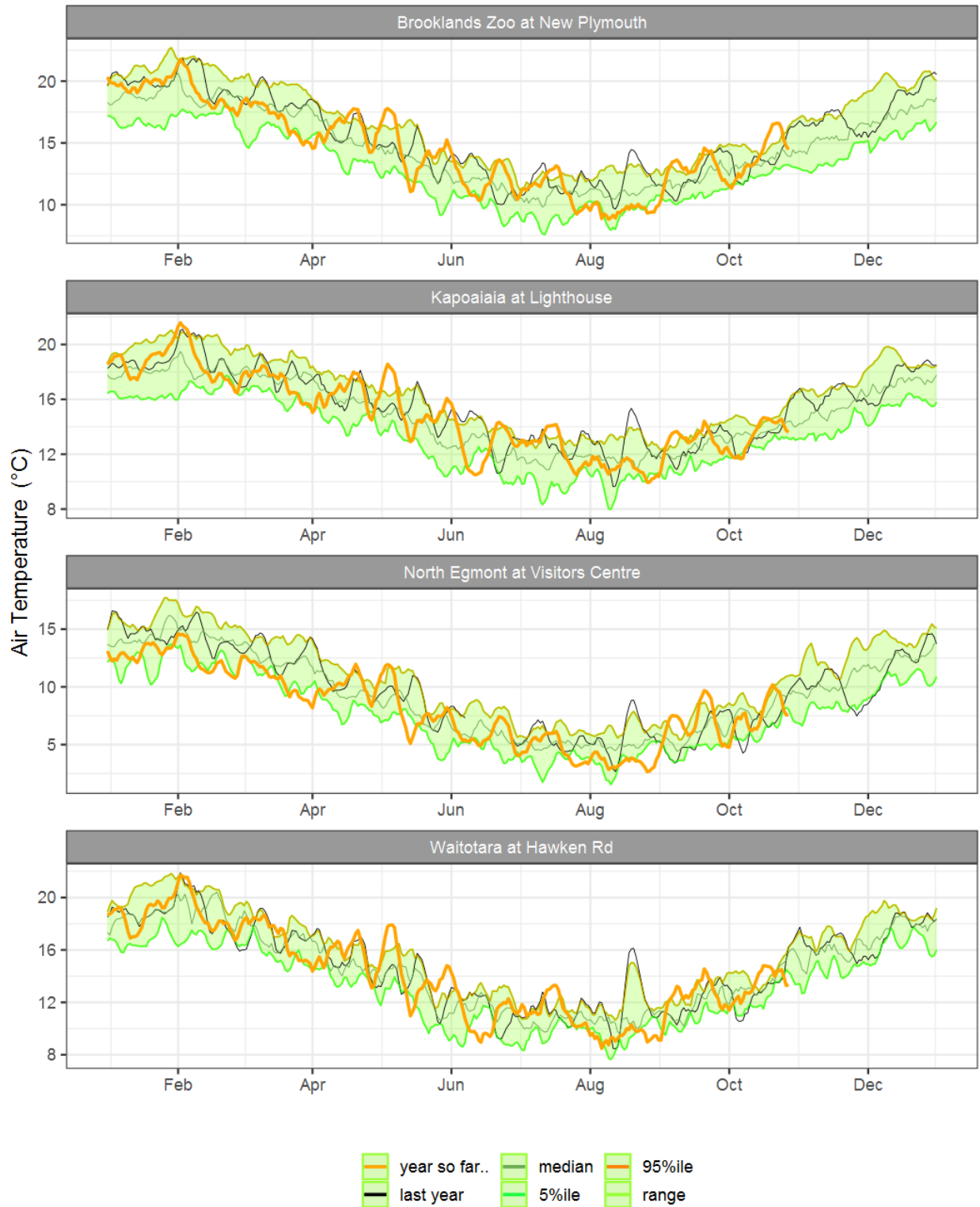


Figure 4.1: Running average air temperature for selected sites, set in context of the historic record.

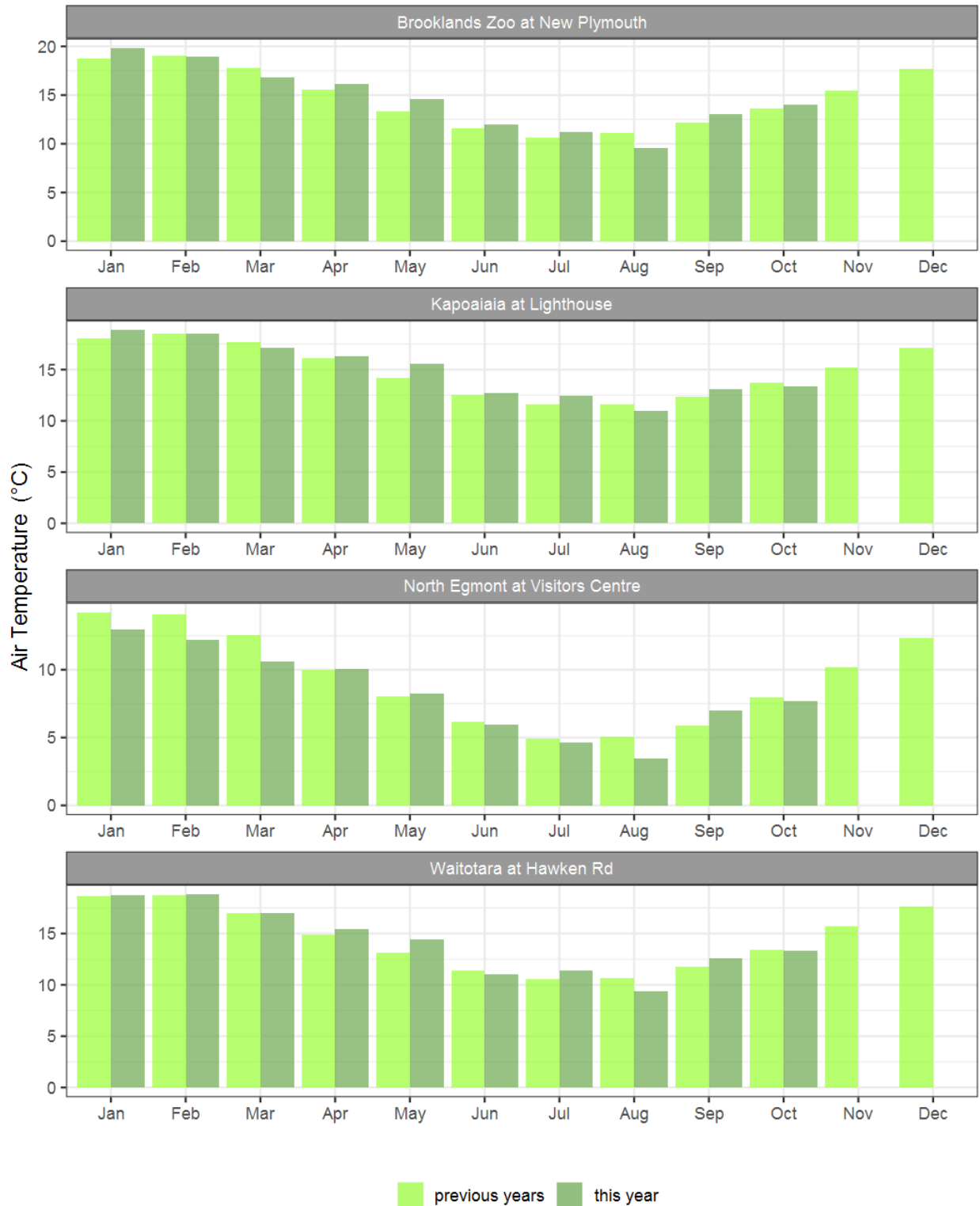
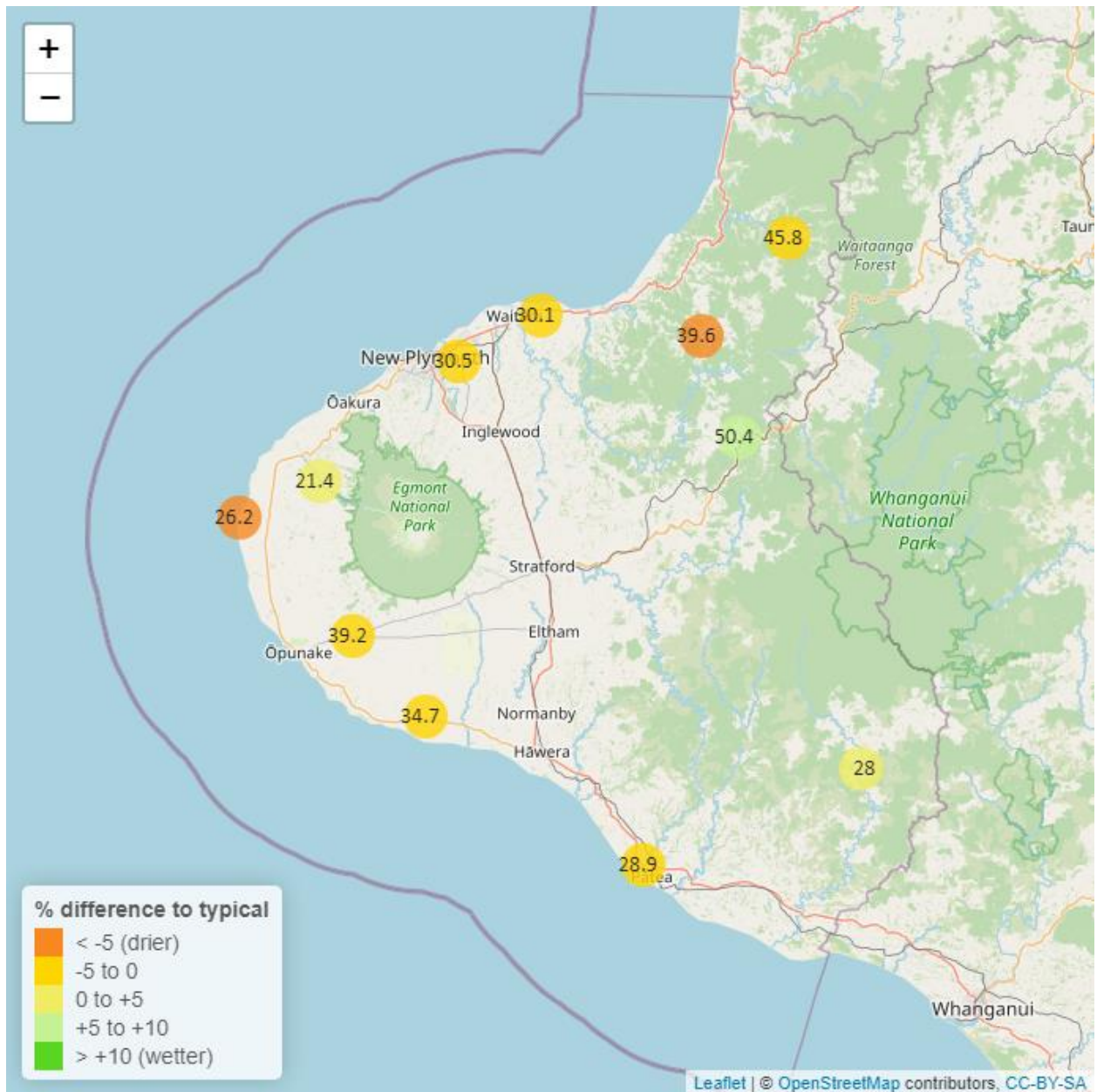


Figure 4.2: Monthly mean air temperature for October and the mean of all previously recorded months.

## 5. Soil Moisture

Map 5: October mean soil moisture content (%).



**Table 5: Summary of high, low and mean soil moisture for October and for October in all preceding years of record.**

October 2023 - Soil Moisture (%)								
Monitoring Site	Highs		Lows		Mean		October maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	27.1	29.7	25.3	19.6	26.2	25.3	27.2	10
Kaupokonui at Glenn Rd	37.1	37.4	33.1	28.3	34.7	33.9	37.4	12
Kotare at OSullivans	50.1	51.0	41.8	35.6	45.8	42.0	58.1	11
Motunui M39 at Weston W3	32.4	33.5	28.5	27.2	30.1	30.3	32.7	10
Patea at Bore 3	30.3	31.4	28.0	24.2	28.9	28.5	32.1	7
Pohokura Saddle	53.8	50.3	47.3	39.0	50.4	44.3	54.6	9
Stony at Mangatete Bridge	25.6	24.2	18.5	14.6	21.4	18.7	30.8	7
Taungatara at Eltham Rd	42.8	44.1	37.5	28.5	39.2	36.7	44.9	10
Uruti at Kaka Rd	41.6	46.8	37.6	37.6	39.6	42.1	41.9	12
Waitotara at Rimunui Station	30.4	29.6	26.5	24.8	28.0	27.0	31.8	6
Waiwhakaiho at Hillsborough	33.1	34.1	28.9	25.6	30.5	29.8	34.9	11

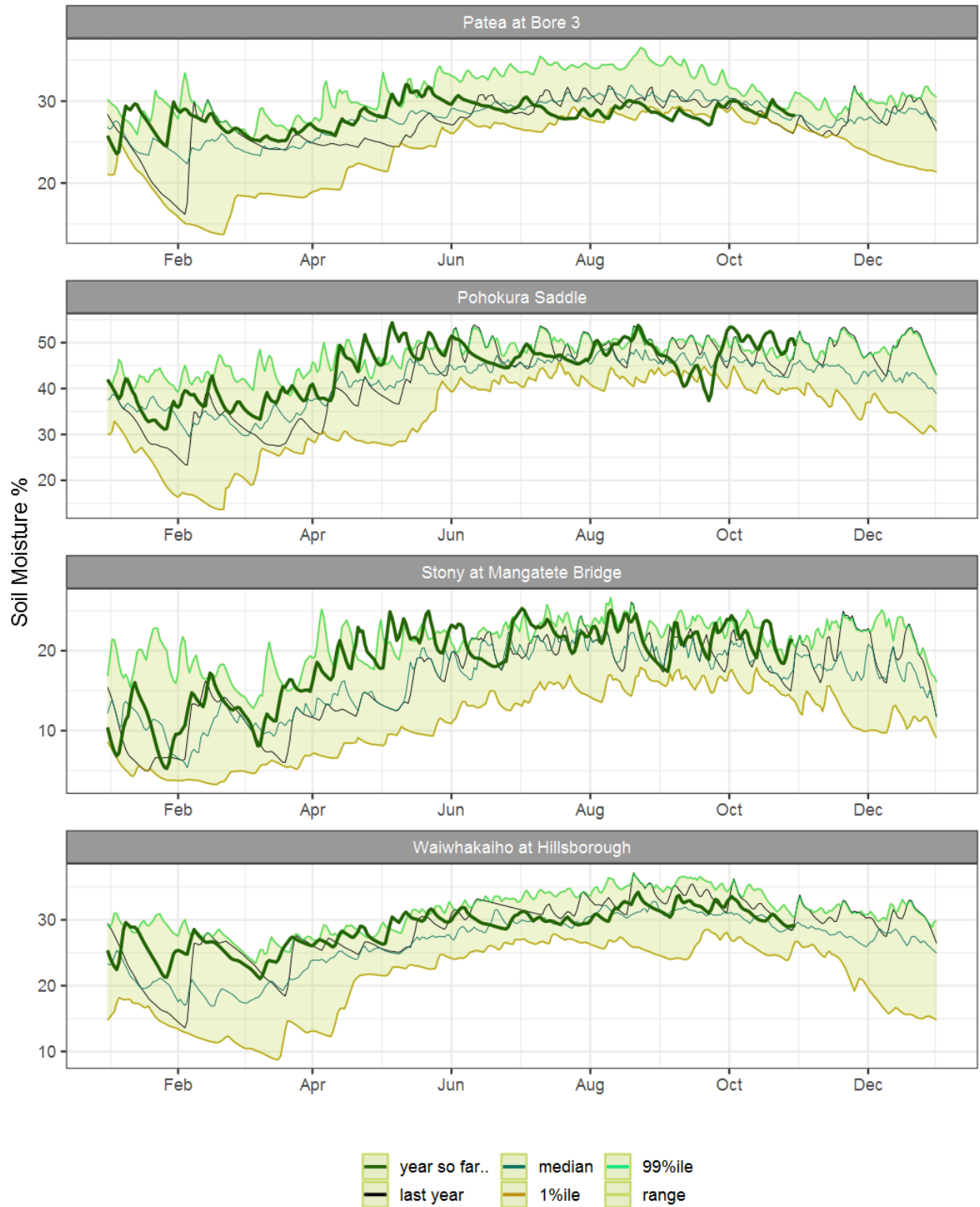


Figure 5.1: Running average soil moisture for selected sites, set in context of the historic record.

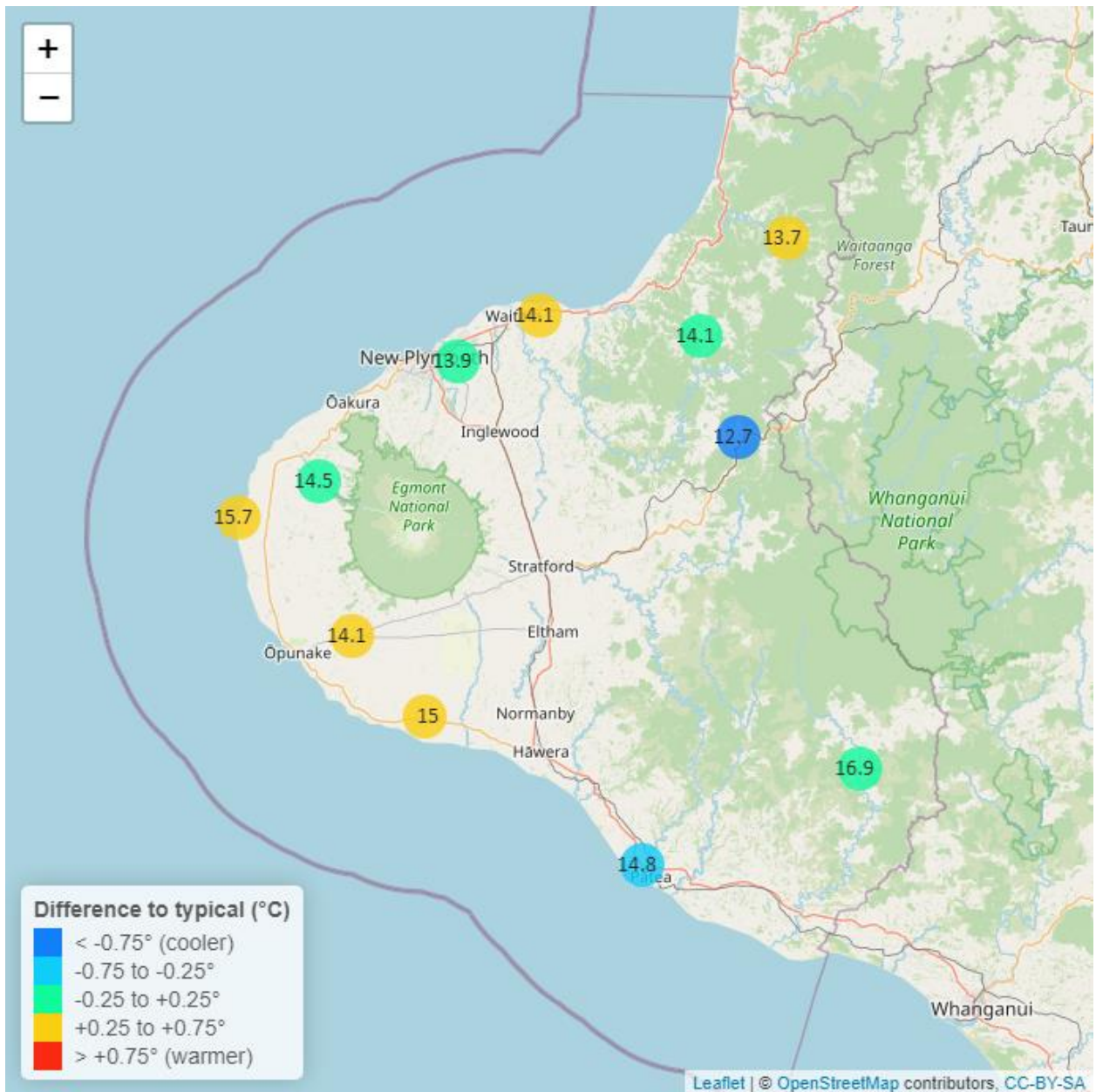


Figure 5.2: Monthly mean soil moisture for this month and the mean of all previously recorded months.



## 6: Soil Temperature

Map 6: October mean soil temperatures with difference to long-term mean (°C).



**Table 6: Summary of high, low and mean soil temperature for October and for October in all preceding years of record.**

October 2023 - Soil Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		October maximum	data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	20.5	18.5	10.9	13.1	15.7	15.2	23.4	10
Kaupokonui at Glenn Rd	17.4	17.3	12.4	12.6	15.0	14.7	18.2	12
Kotare at OSullivans	15.3	16.2	11.8	11.0	13.7	13.4	15.5	11
Motunui M39 at Weston W3	16.2	15.8	12.0	11.7	14.1	13.5	16.5	10
Patea at Bore 3	16.7	18.6	12.2	12.6	14.8	15.4	17.6	7
Pohokura Saddle	14.6	15.5	10.6	11.5	12.7	13.6	15.0	9
Stony at Mangatete Bridge	17.0	17.1	11.9	11.8	14.5	14.5	18.0	6
Taungatara at Eltham Rd	16.5	16.1	11.8	11.7	14.1	13.8	17.8	10
Uruti at Kaka Rd	16.4	16.2	12.2	12.1	14.1	14.1	16.5	12
Waitotara at Rimunui Station	20.6	19.8	13.4	14.4	16.9	16.9	22.1	6
Waiwhakaiho at Hillsborough	16.0	16.3	11.8	12.2	13.9	14.1	16.5	11

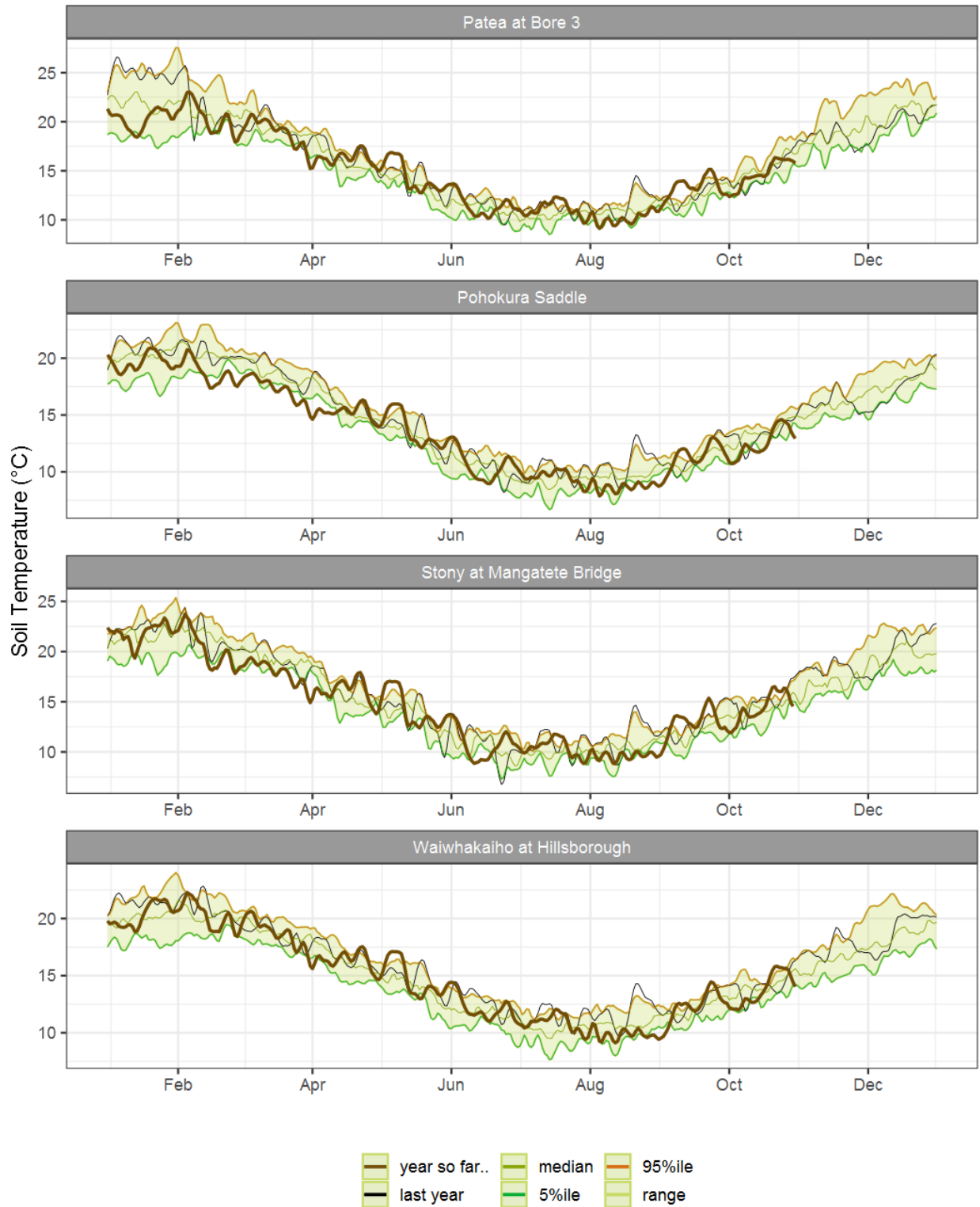


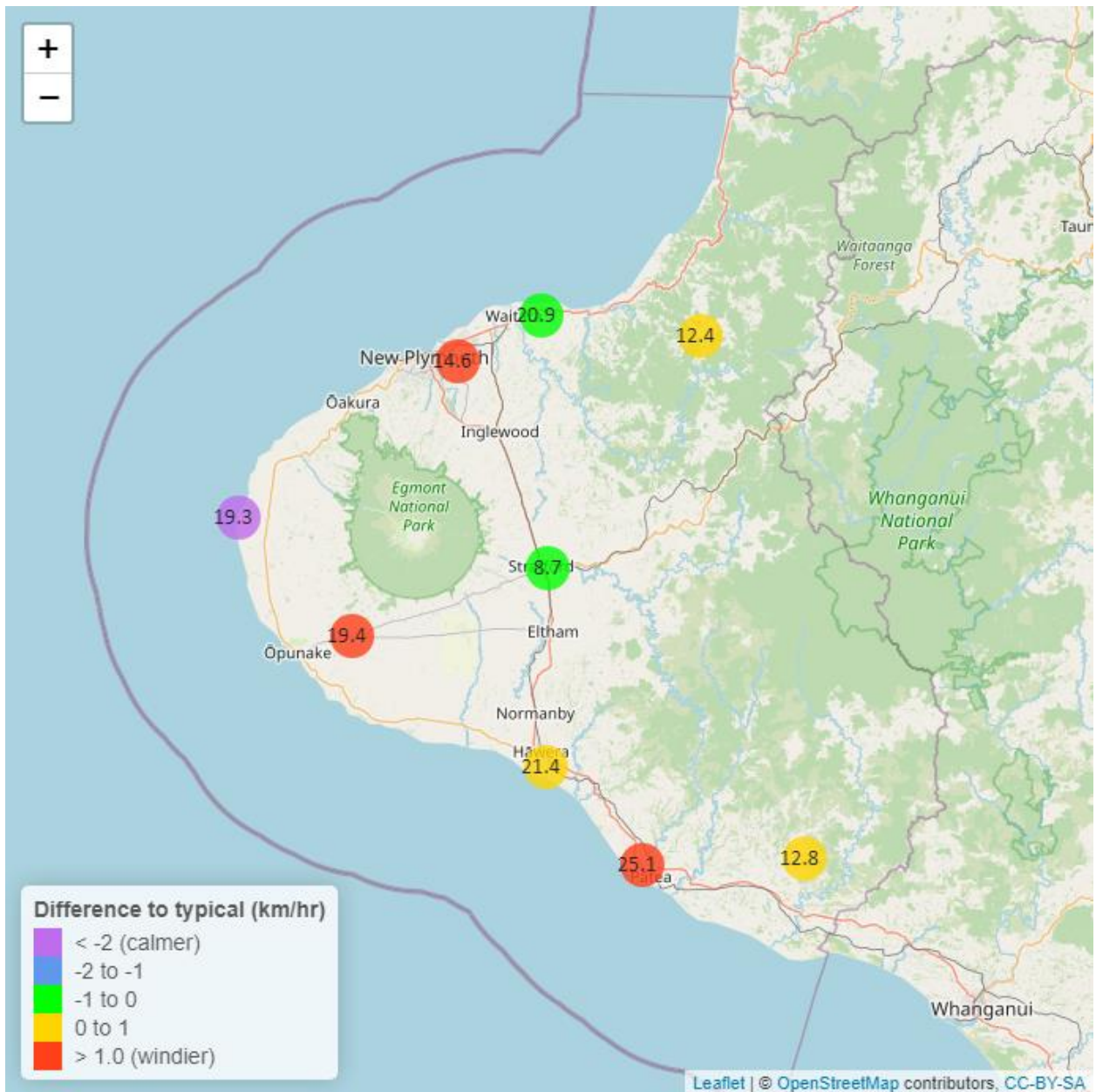
Figure 6.1: Running average soil temperature for selected sites, set in context of the historic record.



Figure 6.2: Monthly mean soil temperature for this month and the mean of all previously recorded months.

## 7: Wind Speed and Maximum Gusts

Map 7: October mean of wind speed with difference to long-term values (km/hr).



**Table 7: Summary of high, low and mean wind speed for October and for October in all preceding years of record.**

October 2023 - Wind Speed (average) - (km/hr)								
Monitoring Site	Highs		Lows		Mean		October maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	38.0	38.9	7.41	5.56	21.4	20.90	48.2	18
Kapoaiaia at Lighthouse	32.0	42.1	6.89	6.68	19.3	22.00	45.8	24
New Plymouth AWS	37.9	40.7	7.41	5.56	20.9	21.30	46.3	16
Patea at Bore 3	42.3	40.4	8.63	6.27	25.1	21.60	51.0	8
Patea at Stratford	19.5	20.5	2.09	2.31	8.7	9.61	30.2	17
Taungatara at Eltham Rd	38.3	32.3	8.46	6.01	19.4	17.50	44.6	8
Uruti at Kaka Rd	24.8	25.4	4.58	3.78	12.4	12.20	33.6	26
Waitotara at Ngutuwera	26.4	24.8	3.01	2.54	12.8	12.30	34.8	25
Waiwhakaiho at Hillsborough	27.0	28.0	4.58	3.66	14.6	13.50	36.2	6

**Table 8: Summary of high, low and maximum wind gusts for October and for October in all preceding years of record.**

October 2023 - Wind Speed (Max. Gust) - (km/hr)								
Monitoring Site	Highs		Lows		Mean		October maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	77.8	77.8	29.6	25.9	52.8	50.3	77.8	18
Kapoaiaia at Lighthouse	59.8	83.6	14.4	23.3	38.0	49.8	74.7	23
New Plymouth AWS	66.7	77.8	25.9	24.1	48.4	49.3	75.9	16
Patea at Bore 3	76.3	76.7	25.4	24.6	52.5	49.2	76.9	8
Patea at Stratford	61.9	66.9	20.9	21.6	39.5	41.9	68.4	17
Taungatara at Eltham Rd	82.0	74.9	28.6	25.4	49.9	46.9	83.9	8
Uruti at Kaka Rd	76.0	74.1	24.8	23.9	45.4	44.9	78.8	25
Waitotara at Ngutuwera	104.0	73.0	24.1	22.3	61.4	46.1	130.0	25
Waiwhakaiho at Hillsborough	60.7	69.9	22.9	23.6	42.4	42.0	69.7	6



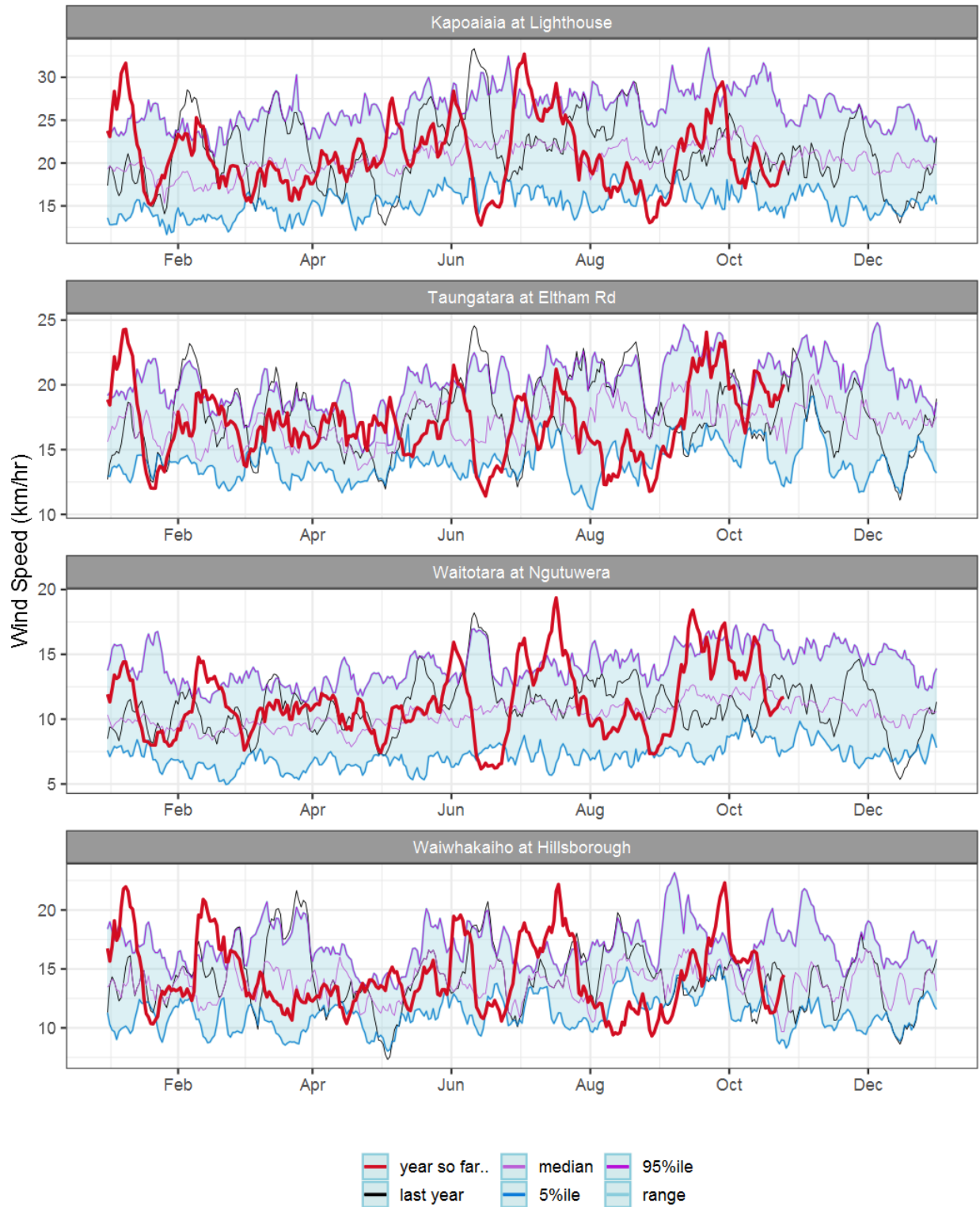


Figure 7.1: Running average wind speed (km/hr) for selected sites, set in context of the historic record.



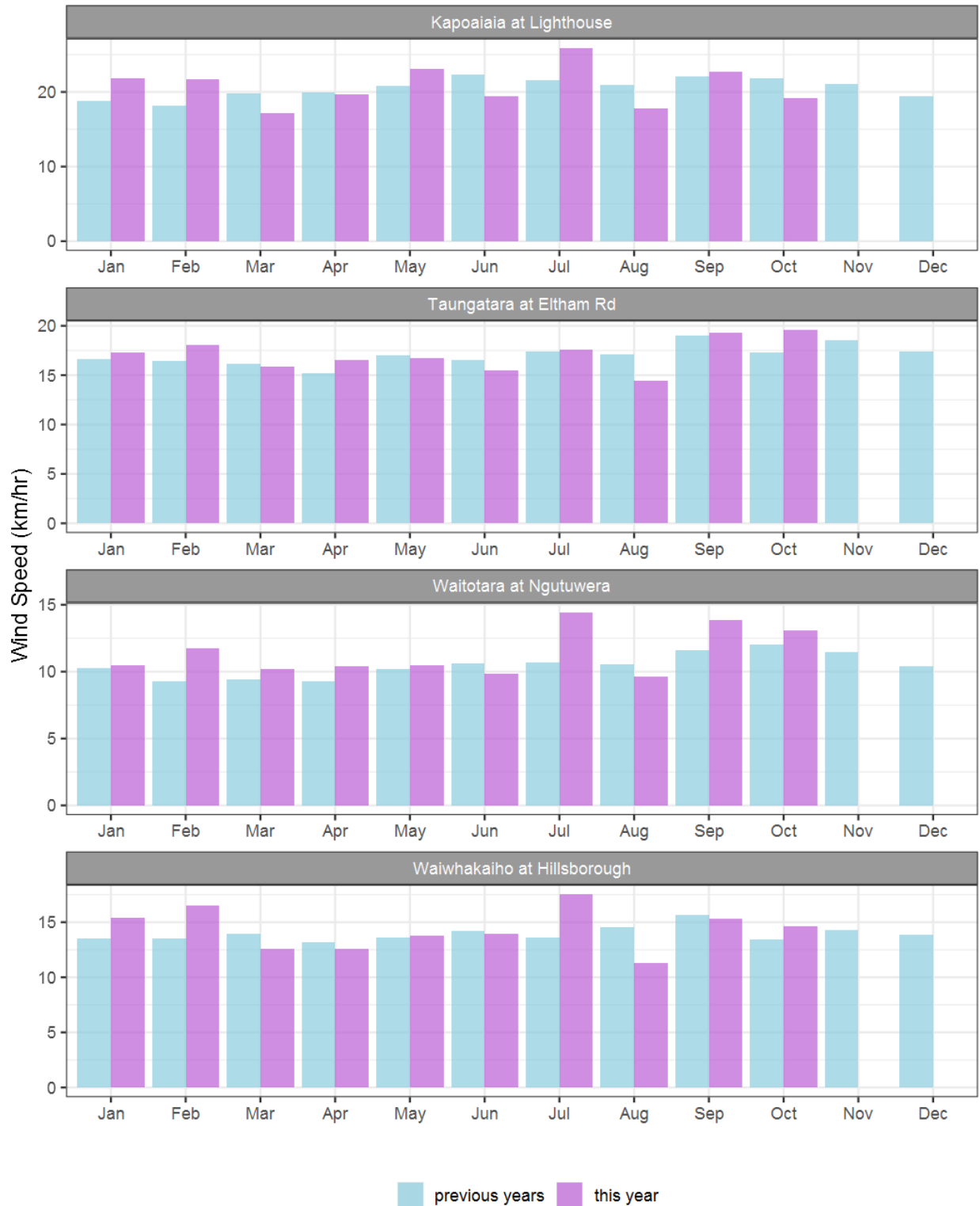


Figure 7.2: Monthly mean wind speed (km/hr) for selected sites, relative to the mean of all previously recorded months.

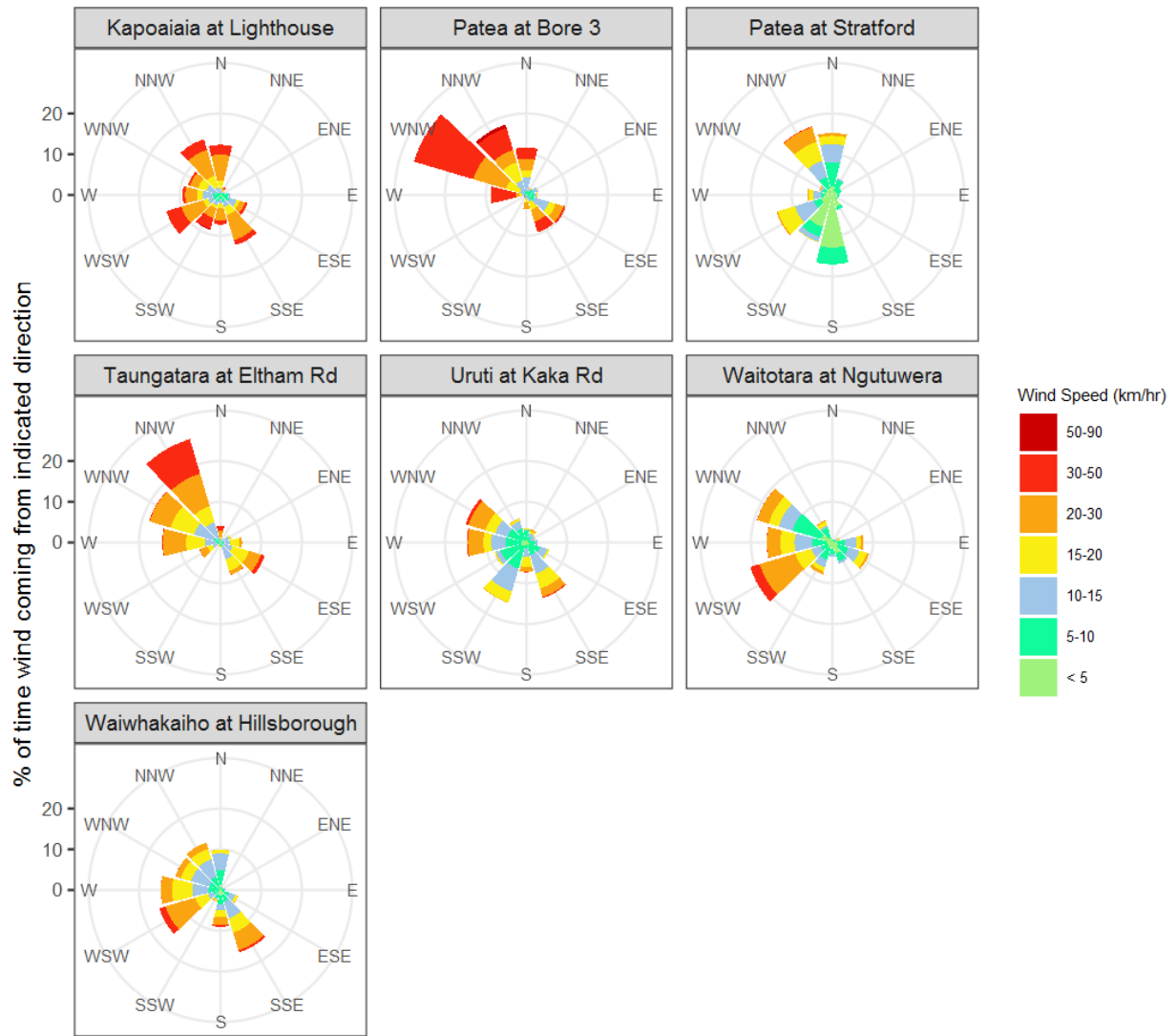


Figure 7.3: Wind roses for October for average wind speed (km/hr).

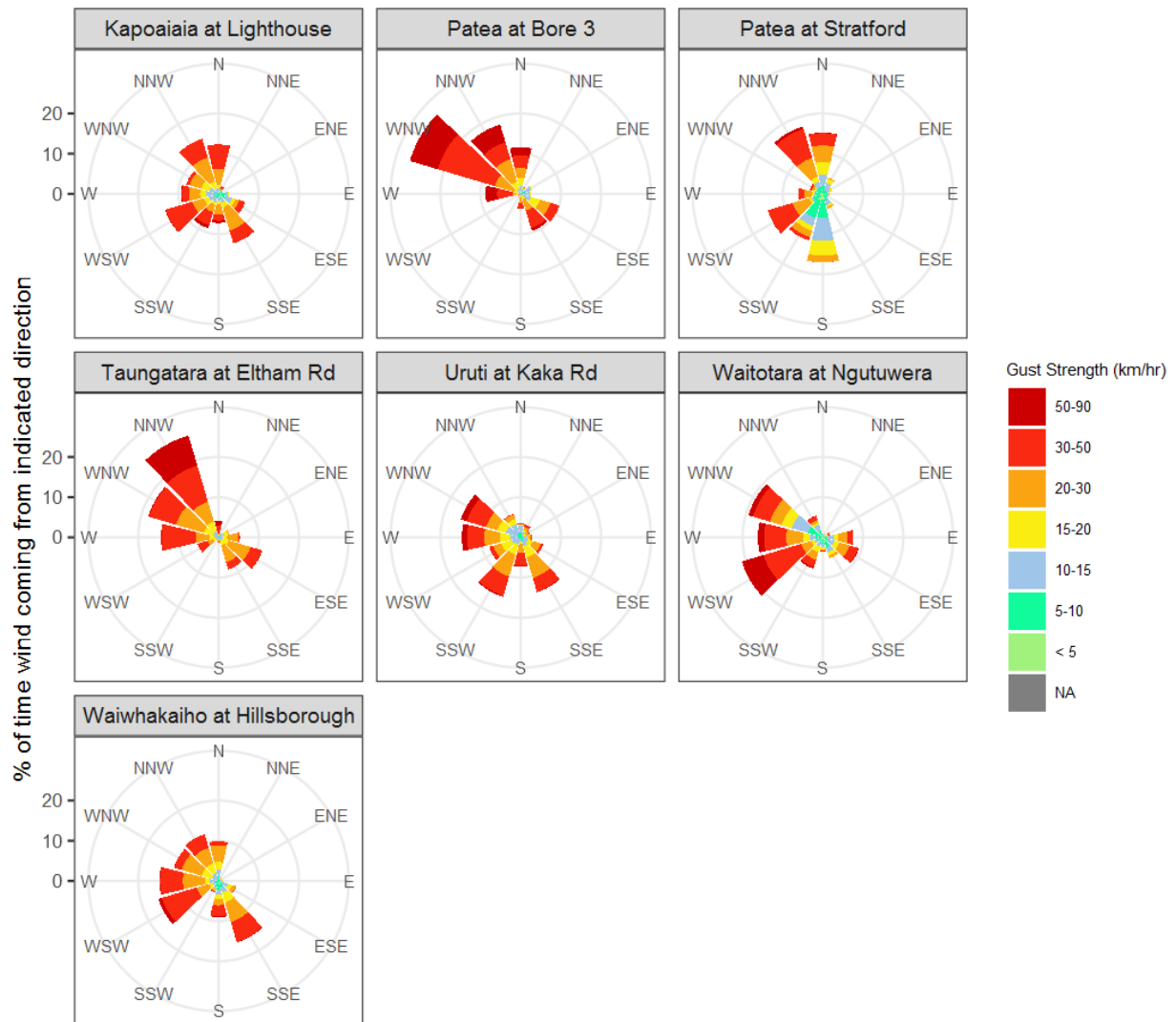


Figure 7.4: Wind roses for October for maximum wind gust (km/hr).

## Summary of month's conditions

### Rainfall

On average October rainfall was 115mm, 30% less than usual, ranging from 48% less rain at Brooklands Zoo at New Plymouth, and 9% less at Omaru at Charlies.

Year to date rainfall ranges from 13% less rainfall at Uruti at Kaka Rd, and 10% more rainfall at Omaru at Charlies, with an average of 3% less than normal. Compared to typical full year totals, on average sites have already received 81% of a typical year's rainfall, with the highest value at Omaru at Charlies, 93% of normal, whereas Uruti at Kaka Rd sits at 71% of the typical years total.

### River Flow

Mean river flows for October were 28.3% lower than typical values, low flows were 26.1% greater, and high flows 33.1% lower than typical values. The maximum river flow recorded in October was 172m<sup>3</sup>/sec at Waitara at Bertrand Rd.

### River Water Temperature

Mean river (non-mountain) water temperatures were 12.9°C, the same as long-term October values. Nighttime-low water temperatures were on average 0.1°C cooler than historic lows, and day-time high temperatures were similar to historic highs. The maximum river water temperature recorded in October was 19.4°C at Kapoaiaia at Lighthouse.

### Air Temperature

The average air temperature for the region (excluding Te Maunga sites) was 12.3°C, which is the same as long-term October averages. Low air temperatures for October were on average 0.2°C cooler than previous years. Day-time high temperatures were on average 0.1°C warmer than historic highs. The maximum air temperature recorded in October was 25.6°C at Brooklands Zoo at New Plymouth.

### Soil Moisture

The average soil moisture for October across sites in Taranaki region was 34.1%. Soil moistures were on average 1.5% wetter than typical October values. On average, low soil moistures were 4.4% wetter than previous lows, and highs were on average 0.7% drier than previous highs for October.

### Soil Temperature

October soil temperatures were generally the same as long-term averages. Average nighttime low soil temperatures were 0.3°C cooler than recorded lows, and upper day-time soil temperatures were on average the same as long-term October highs. The maximum soil temperature recorded in October was 23.4°C at Kapoaiaia at Lighthouse.

## Wind Speed (average and 10 minute gust)

October average wind speeds were 18.2km/hr, with average gust strength of 48.9km/hr, these were 0.6km/hr stronger, and 1.5km/hr gustier than the long-term average. Average calm weather wind speeds were 1.4km/hr stronger than recorded lows, and windy conditions were on average 0.7km/hr lighter than long-term October highs. The maximum wind gust recorded in October was 130km/hr at Waitotara at Ngutuwera. Cape Egmont is generally the windiest station the TRC monitors, and Stratford is often the calmest.

Notes: Low and high values refer to the upper and lower 5th percentiles of the historic record for each site (wind, river flow and soil moisture are upper and lower 1st percentiles). These percentile values give a better indication of the general upper and lower range of the historic data against which to compare the current month. For example, minimum air temperature, because it is the lowest recorded value, accentuates the difference of the current month's colder conditions relative to the historical data. The start year (records began) for each site and variable in the respective tables shows the length of data used to compute historic highs, lows, and "typical values". Sites with a longer data record will generally provide a more reliable comparison to values in the current year.

Report date: 15 November 2023.