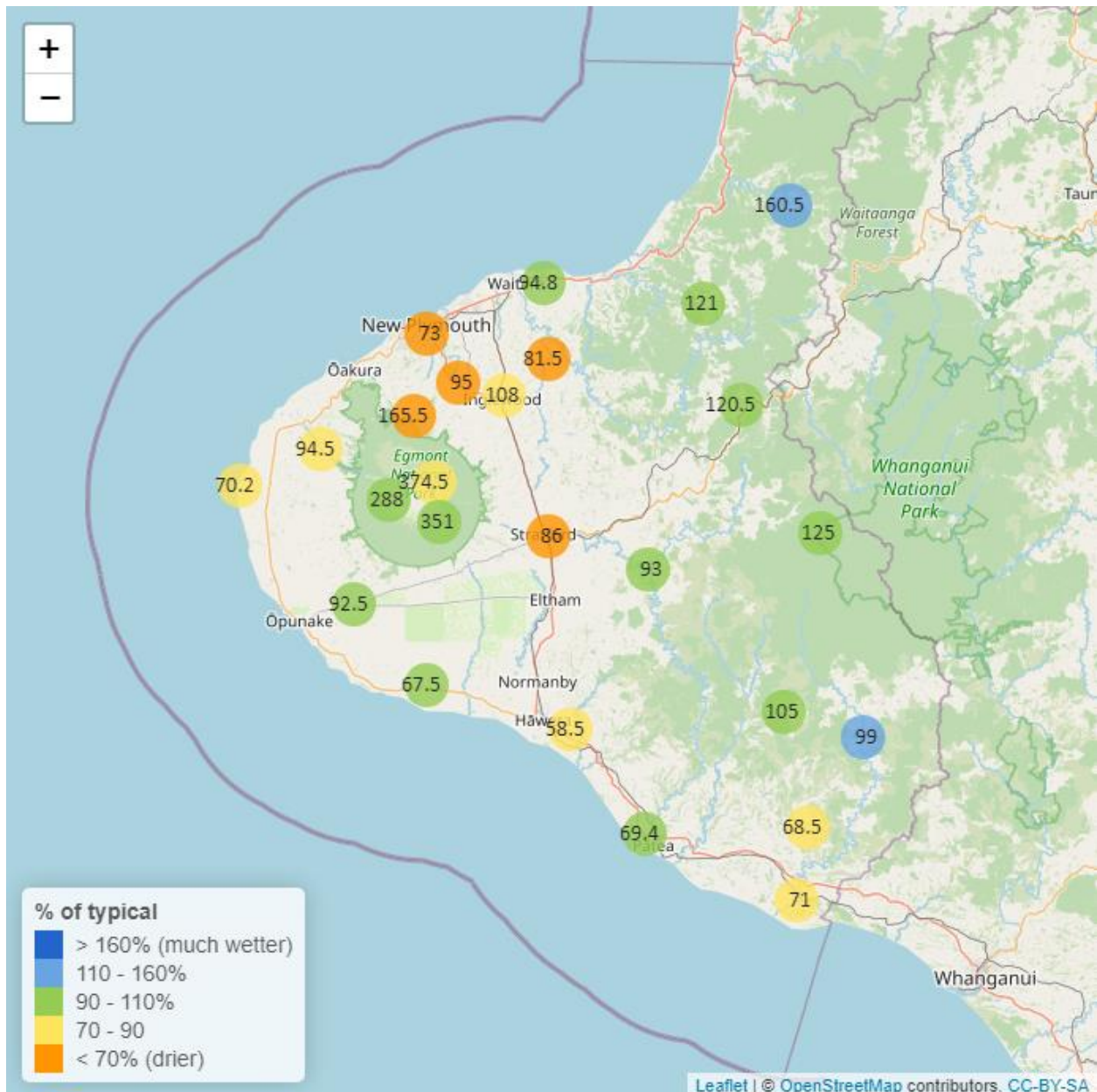


# Taranaki Regional Council Monthly Rainfall and Environmental Data Report for March 2024

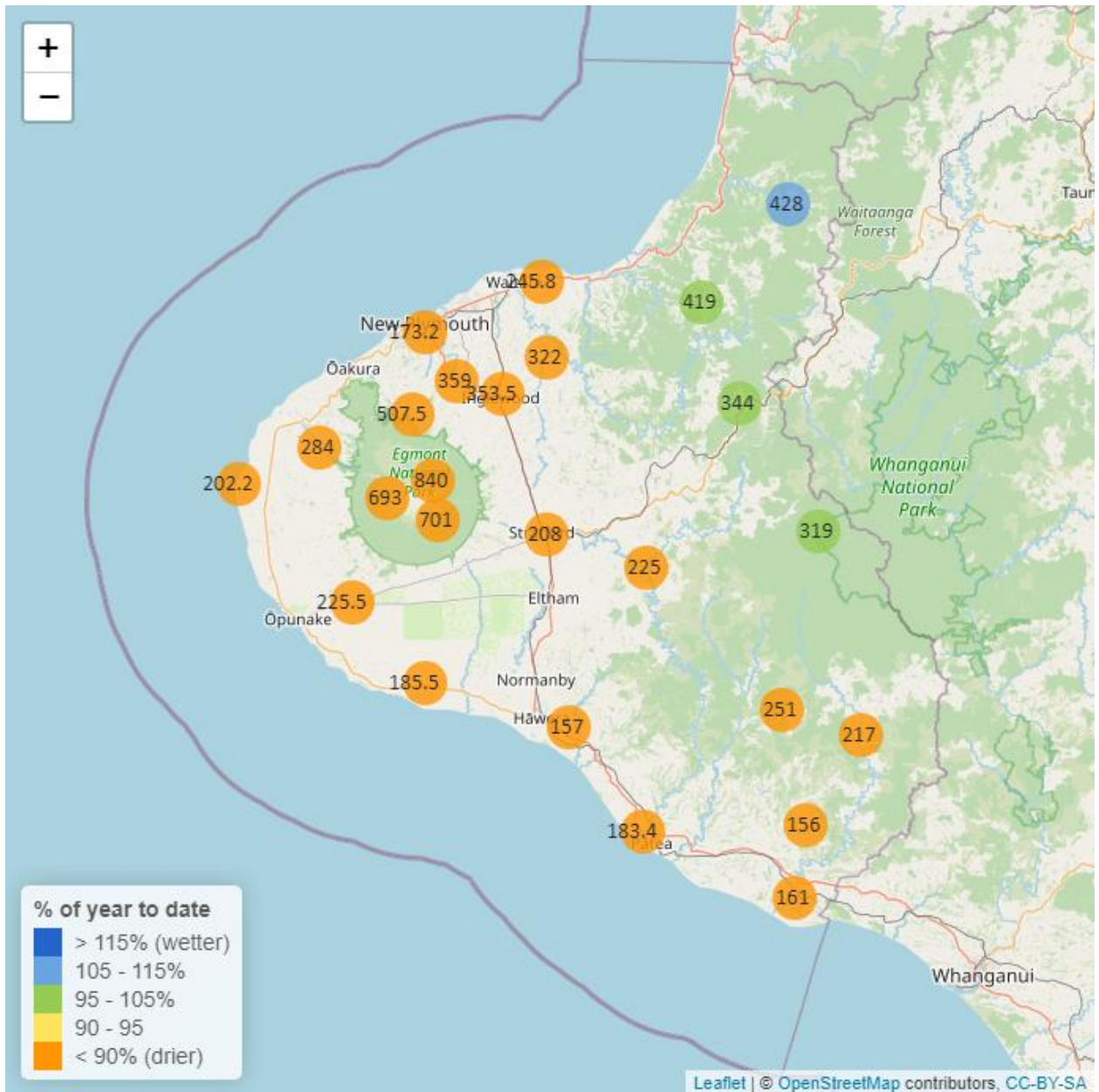
Note: The data presented here are provisional data only and may change as a result of quality control at a later date.

## 1. Rainfall

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



Map 1a. Total rainfall 1 January to end March (mm) and percentage of long-term mean (colour key).



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

Rain gauge	March			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	15	374.5	89.7	840.0	69.7	12.1	1991
Dawson Falls	19	351.0	95.7	701.0	67.5	11.8	1933
Kapoaiaia at Kahui Hut	22	288.0	91.0	693.0	78.6	13.2	2006
Mangorei Upper at Forest Hill	19	165.5	64.4	507.5	75.2	13.5	2018
Waiwhakaiho at Hillsborough	13	86.5	62.8	233.0	67.4	12.7	2013
Brooklands Zoo at New Plymouth	16	73.0	59.1	173.2	55.7	10.7	2012
Motunui M39 at Weston W3	18	94.8	97.1	245.8	85.2	15.6	1999
Waiwhakaiho at Egmont Village	16	95.0	60.2	359.0	78.8	14.8	1991
Manganui at Everett Park	13	81.5	61.1	322.0	82.6	15.5	1987
Inglewood at Oxidation Ponds	12	108.0	74.0	353.5	83.6	15.0	2000
Stony at Mangatete Bridge	20	94.5	75.7	284.0	75.5	14.2	2004
Kapoaiaia at Lighthouse	17	70.2	79.9	202.2	72.3	14.5	1930
Taungatara at Eltham Rd	17	92.5	93.1	225.5	82.2	14.3	2005
Kaupokonui at Glenn Rd	17	67.5	93.4	185.5	88.4	15.9	1998
Patea at Stratford	15	86.0	67.8	208.0	57.8	10.5	1999
Mangaehu at Bridge	15	93.0	90.0	225.0	75.1	14.1	1999
Kotare at OSullivans	17	160.5	133.1	428.0	111.6	19.8	1998
Uruti at Kaka Rd	14	121.0	90.3	419.0	102.0	18.8	1991
Pohokura Saddle	13	120.5	101.3	344.0	96.4	17.3	1991
Omaru at Charlies	16	125.0	105.8	319.0	99.0	17.4	2006
Omahine at Moana Trig	22	105.0	95.5	251.0	80.8	14.8	2007

	March			Year to Date			
Rain gauge	# days with rain	Total rain (mm)	% of typical month	Total to date (mm)	% of typical year to date	% of typical full year	Records Began
Waitotara at Rimunui Station	17	99.0	123.4	217.0	88.9	15.7	1994
Waitotara at Ngutuwera	16	68.5	82.2	156.0	63.4	12.1	1999
Tawhiti at Duffys	16	58.5	84.1	157.0	77.1	14.2	1994
Patea at Bore 3	18	69.4	99.3	183.4	85.3	15.5	2006
Waitotara at Hawken Rd	13	71.0	77.2	161.0	61.7	13.6	2016

## 1.2 Long-term data patterns

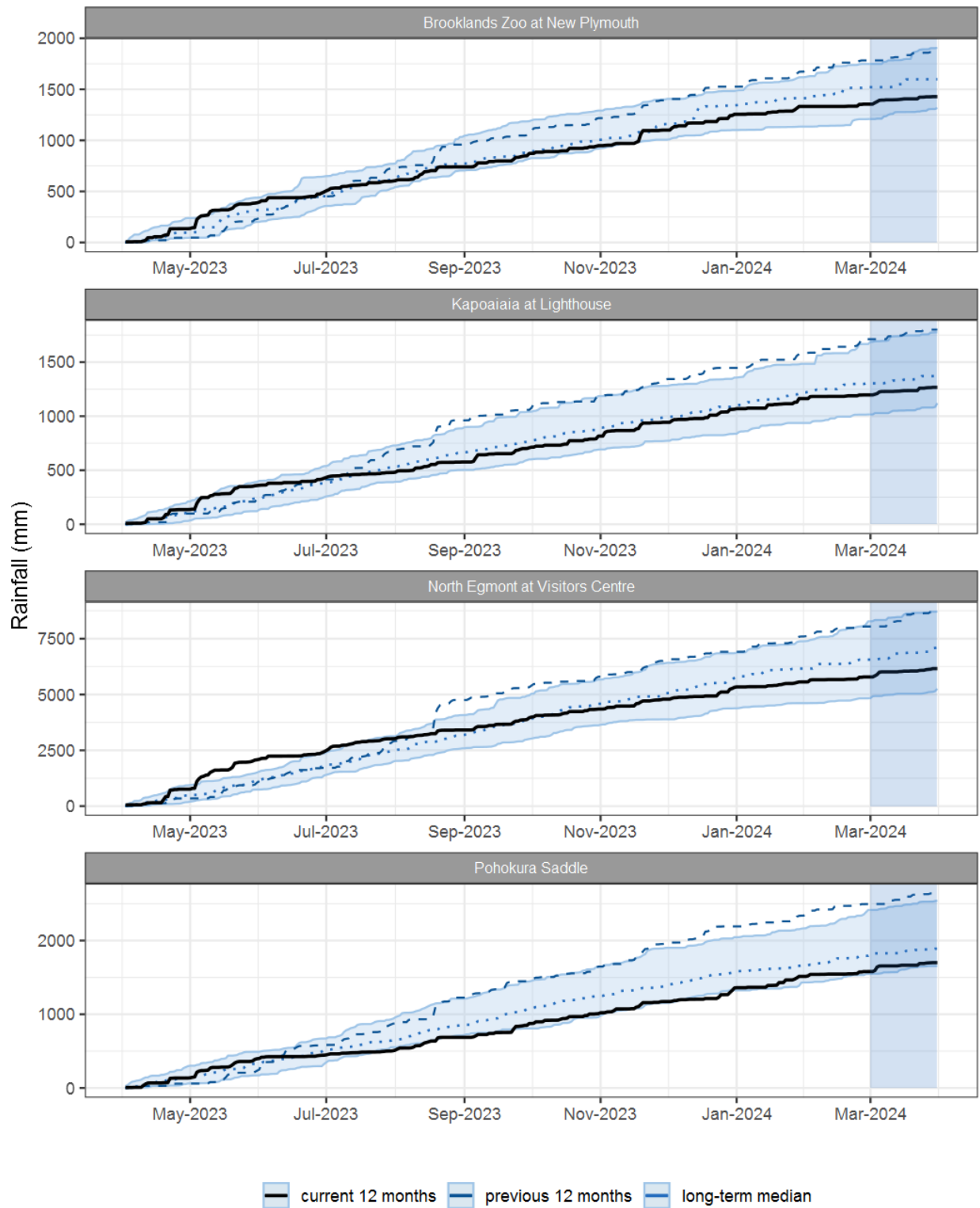


Figure 1.1: This year's and last year's data set in context of historic record at selected rain gauge sites in Taranaki.

### 1.3 Monthly Bar Charts

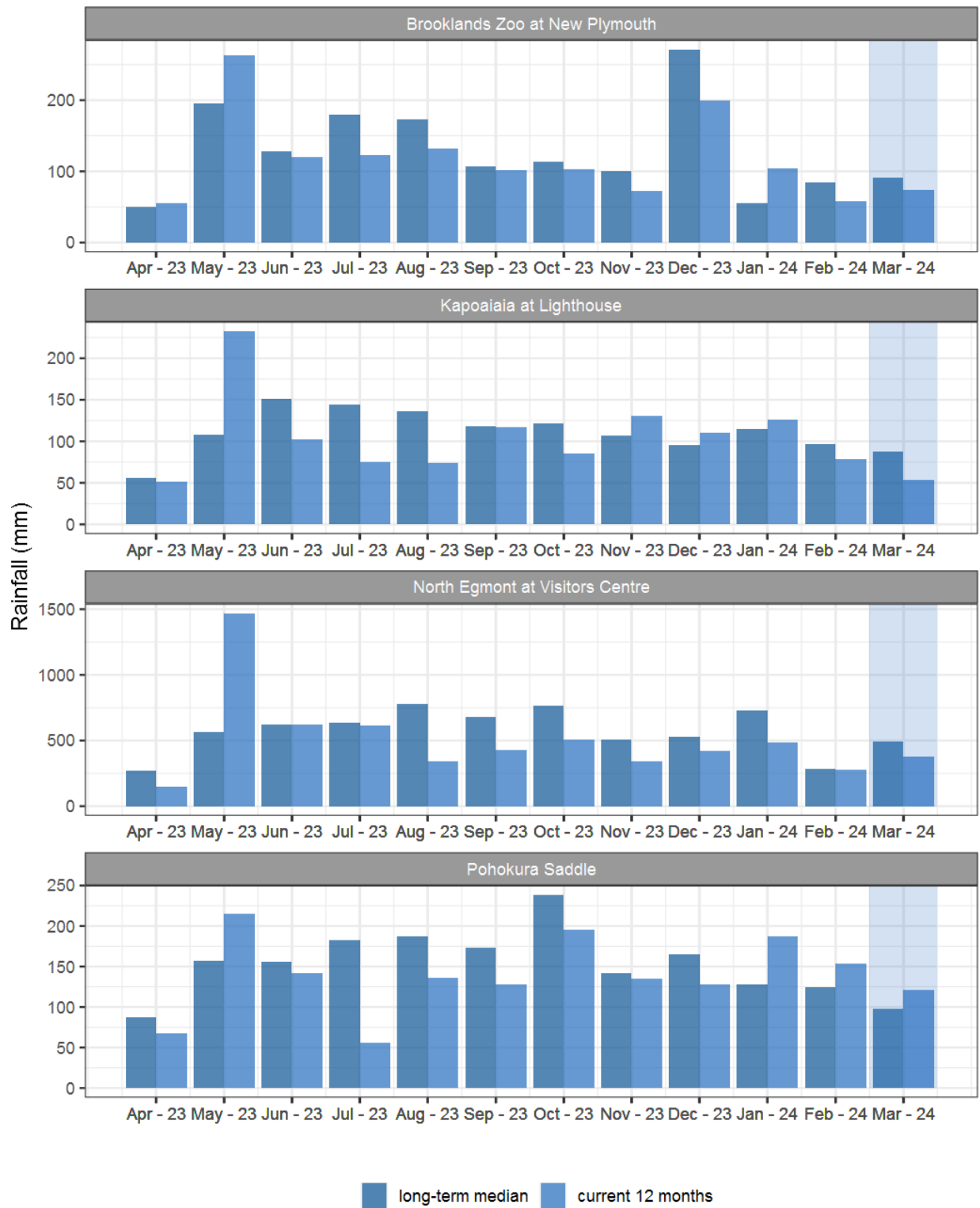
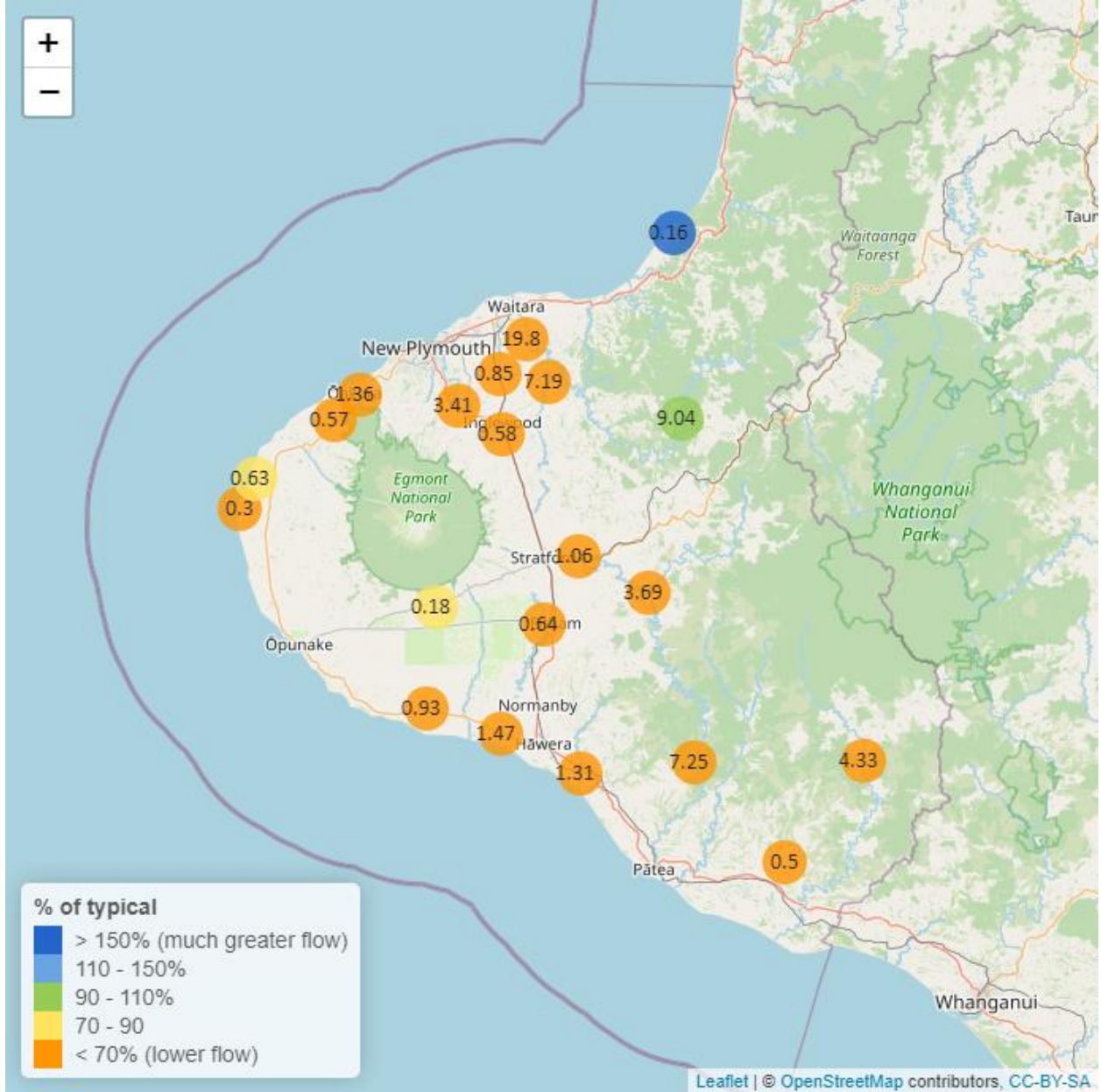


Figure 1.2: Monthly rainfall totals for this month and the mean of all previously recorded months.

## 2. River Flow

Map 2: March mean river flows (m<sup>3</sup>/sec), with difference as percentage of long-term mean.



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

March 2024 - Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	0.56	1.87	0.16	0.23	0.30	0.70	8.30	38
Kaupokonui at Glenn Rd	1.70	4.37	0.67	0.61	0.93	1.74	8.46	45
Mangaehu at Bridge	10.92	21.26	1.90	1.73	3.69	7.28	31.42	46
Manganui at Everett Park	13.24	30.30	4.48	2.89	7.19	10.43	174.96	31
Mangawheroiti Above Intake W.W	0.25	0.44	0.14	0.11	0.18	0.25	1.93	11
Moumahaki at Johnston Rd	1.35	3.71	0.28	0.36	0.50	1.47	3.22	5
Ngatoro at SH3	1.07	2.37	0.33	0.24	0.58	0.91	24.62	34
Oakura at Victoria Rd	3.32	6.79	0.61	0.40	1.36	1.98	55.31	5
Patea at McColls Bridge	17.85	49.99	3.01	1.97	7.25	13.89	41.44	35
Patea at Skinner Rd	2.43	8.76	0.63	0.58	1.06	2.87	28.41	46
Tangahoe below Railway Bridge	2.38	7.33	0.81	0.91	1.31	2.94	12.29	6
Timaru at Tataraimaka	1.06	2.34	0.32	0.25	0.57	1.03	29.66	10
Waikaramarama at Bridge	0.51	0.27	0.01	0.01	0.16	0.09	4.67	5
Waingongoro at Eltham Rd	1.71	4.34	0.28	0.34	0.64	1.46	21.42	49
Waingongoro at SH45	2.80	9.94	1.09	1.03	1.47	3.52	16.67	43
Waiongana at SH3a	1.74	4.61	0.52	0.33	0.85	1.57	19.96	43
Waitara at Bertrand Rd	72.95	107.04	7.55	5.71	19.80	31.49	196.09	44
Waitara at Purangi Bridge	37.49	31.84	1.24	0.49	9.04	8.23	158.97	25
Waitotara at Rimunui Station	8.07	20.89	2.22	2.62	4.33	7.92	50.25	18
Waiwhakaiho at Egmont Village	8.64	16.59	1.86	1.82	3.41	5.70	135.83	44
Warea at Coast	1.48	1.54	0.39	0.31	0.63	0.71	5.72	8



## 2.2 Long-term data patterns

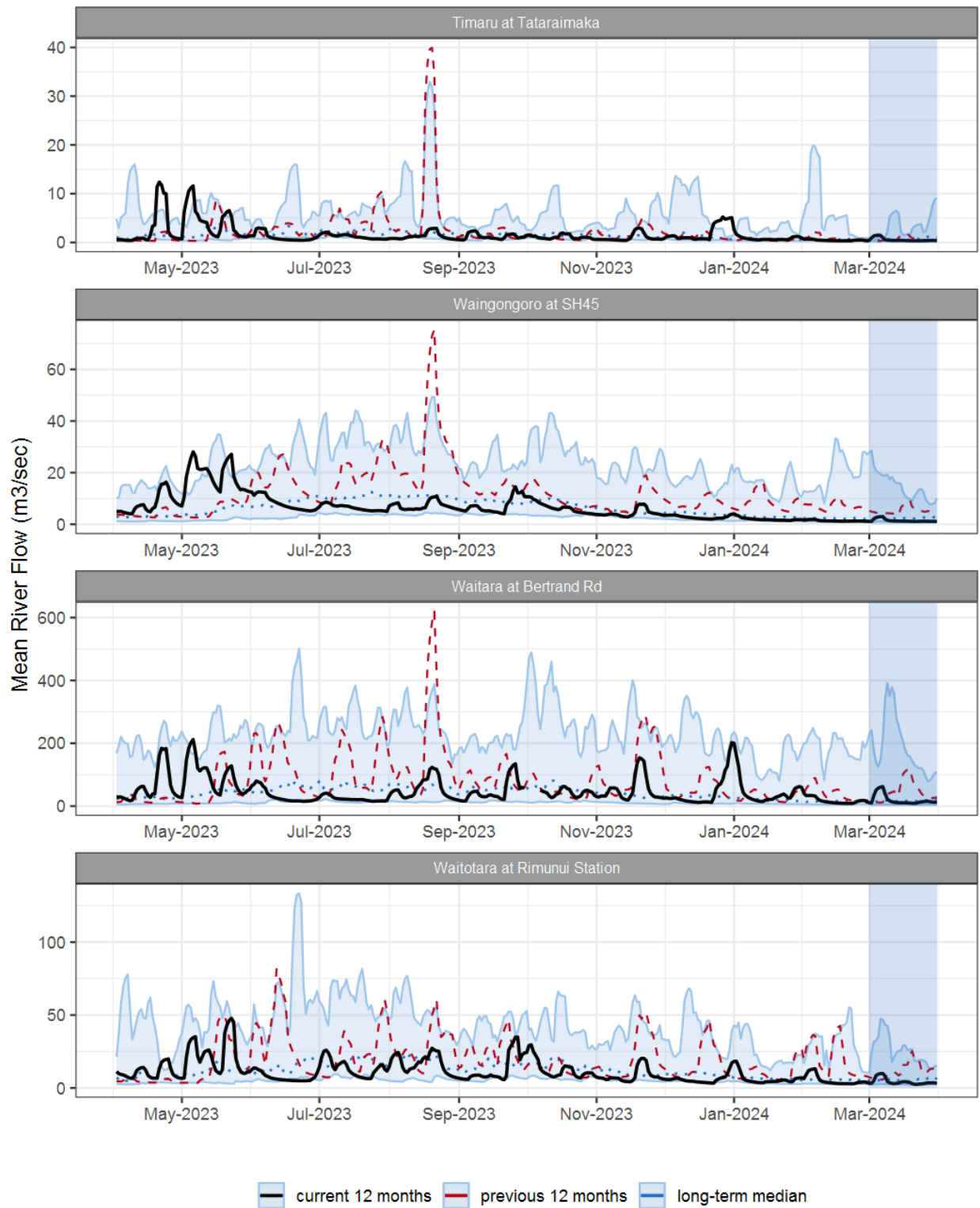


Figure 2.1: Running average river flows for selected sites, set in context of the historic record.

## 2.3 Monthly Bar Charts

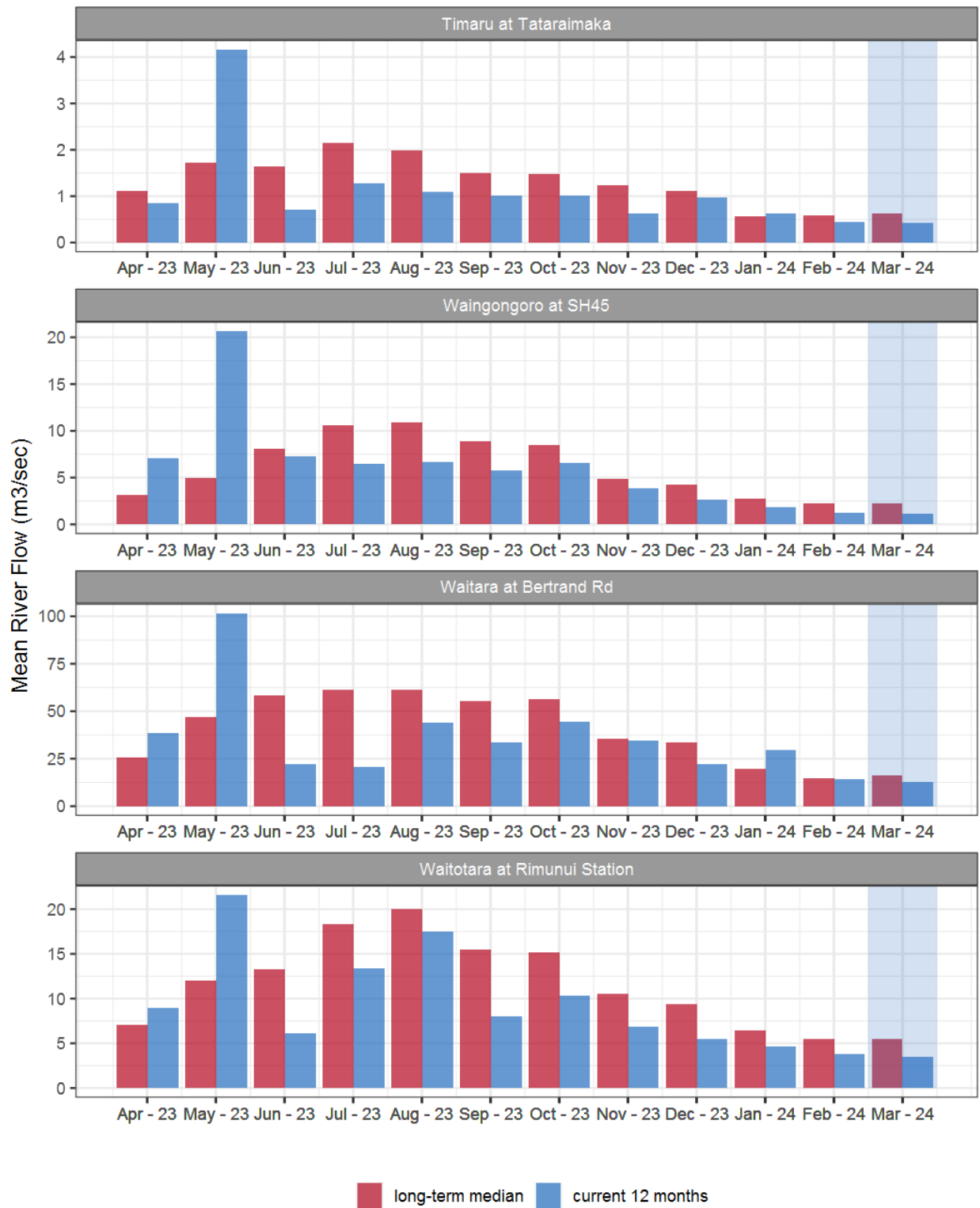
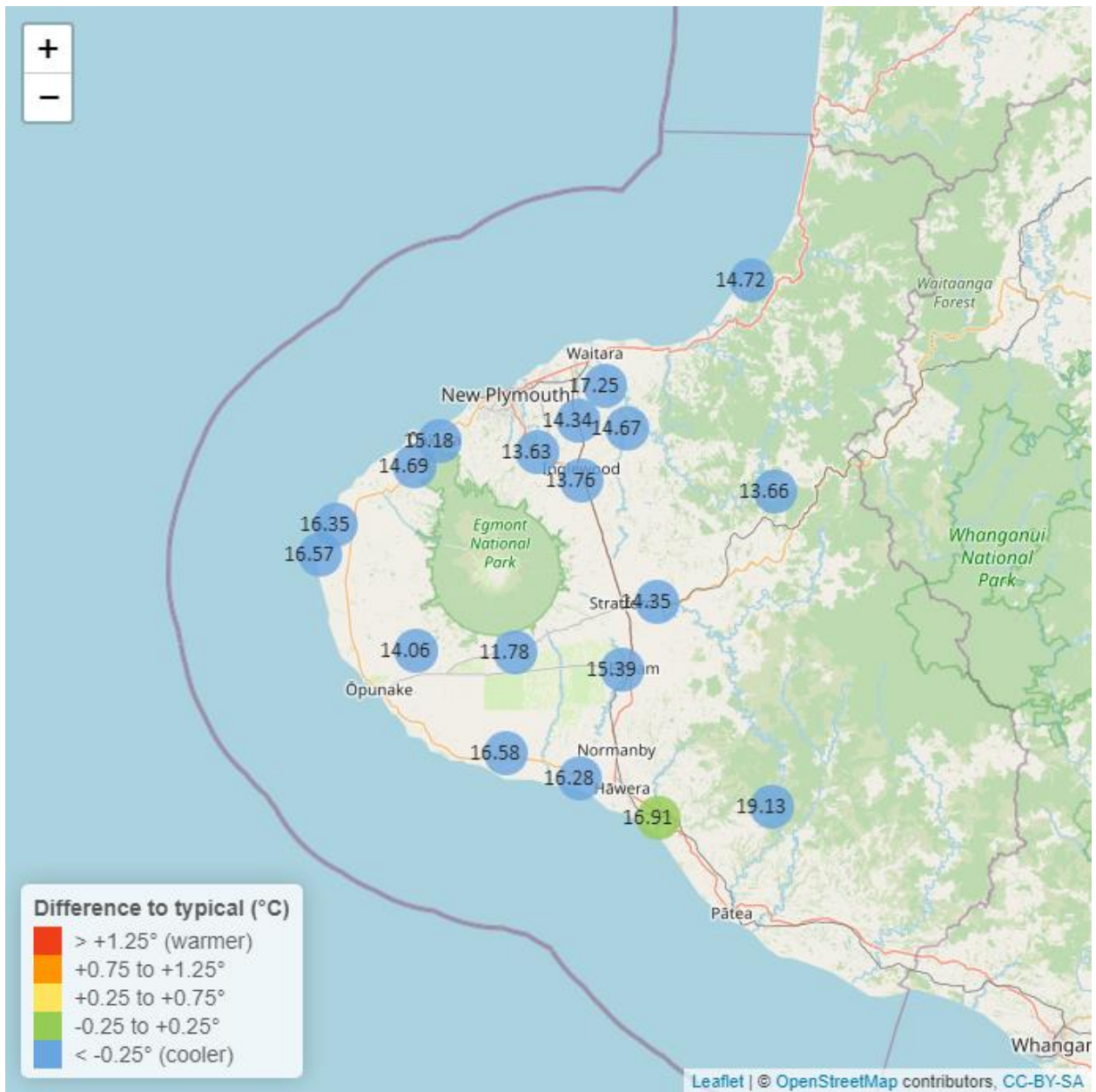


Figure 2.2: Monthly mean river flow for this month and the mean of all previously recorded months.

### 3. River Temperature

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



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

March 2024 - River Temperature (°C)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	19.56	21.45	13.08	14.19	16.57	17.78	20.85	24
Kaupokonui at Glenn Rd	20.74	21.16	12.50	13.75	16.58	17.41	22.51	35
Manganui at Everett Park	17.38	19.32	12.12	13.87	14.67	16.52	18.04	15
Mangawheroiti Above Intake W.W	14.23	14.48	9.13	10.06	11.78	12.32	15.19	11
Matau at Woolshed	16.68	18.60	10.31	12.16	13.66	15.27	18.22	6
Ngatoro at SH3	16.43	17.94	11.00	12.26	13.76	15.12	17.33	22
Oakura at Victoria Rd	17.56	19.46	12.53	13.61	15.18	16.48	18.83	5
Patea at McColls Bridge	20.94	22.31	17.32	17.57	19.13	19.80	21.50	9
Patea at Skinner Rd	17.30	18.20	11.39	12.54	14.35	15.44	18.35	20
Tangahoe below Railway Bridge	18.60	19.78	14.79	13.54	16.91	16.70	19.35	6
Timaru at Tataraimaka	16.94	18.62	11.77	13.38	14.69	15.97	17.82	9
Waiaua 2 at Barraclough Opua	17.62	19.02	10.29	10.90	14.06	14.85	19.67	5
Waikaramarama at Bridge	17.00	18.10	12.09	13.62	14.72	16.02	17.88	6
Waingongoro at Eltham Rd	18.12	18.81	12.55	12.76	15.39	15.83	19.36	20
Waingongoro at SH45	19.59	20.15	13.13	14.04	16.28	17.14	20.62	19
Waiongana at SH3a	16.91	18.70	11.39	13.19	14.34	15.92	18.20	12
Waitara at Bertrand Rd	19.53	21.20	15.16	15.51	17.25	18.22	20.98	36
Waiwhakaiho at Egmont Village	16.11	17.29	10.87	11.89	13.63	14.66	17.40	33
Warea at Coast	19.68	21.87	12.71	13.86	16.35	17.82	21.59	5

### 3.2 Long-term data patterns

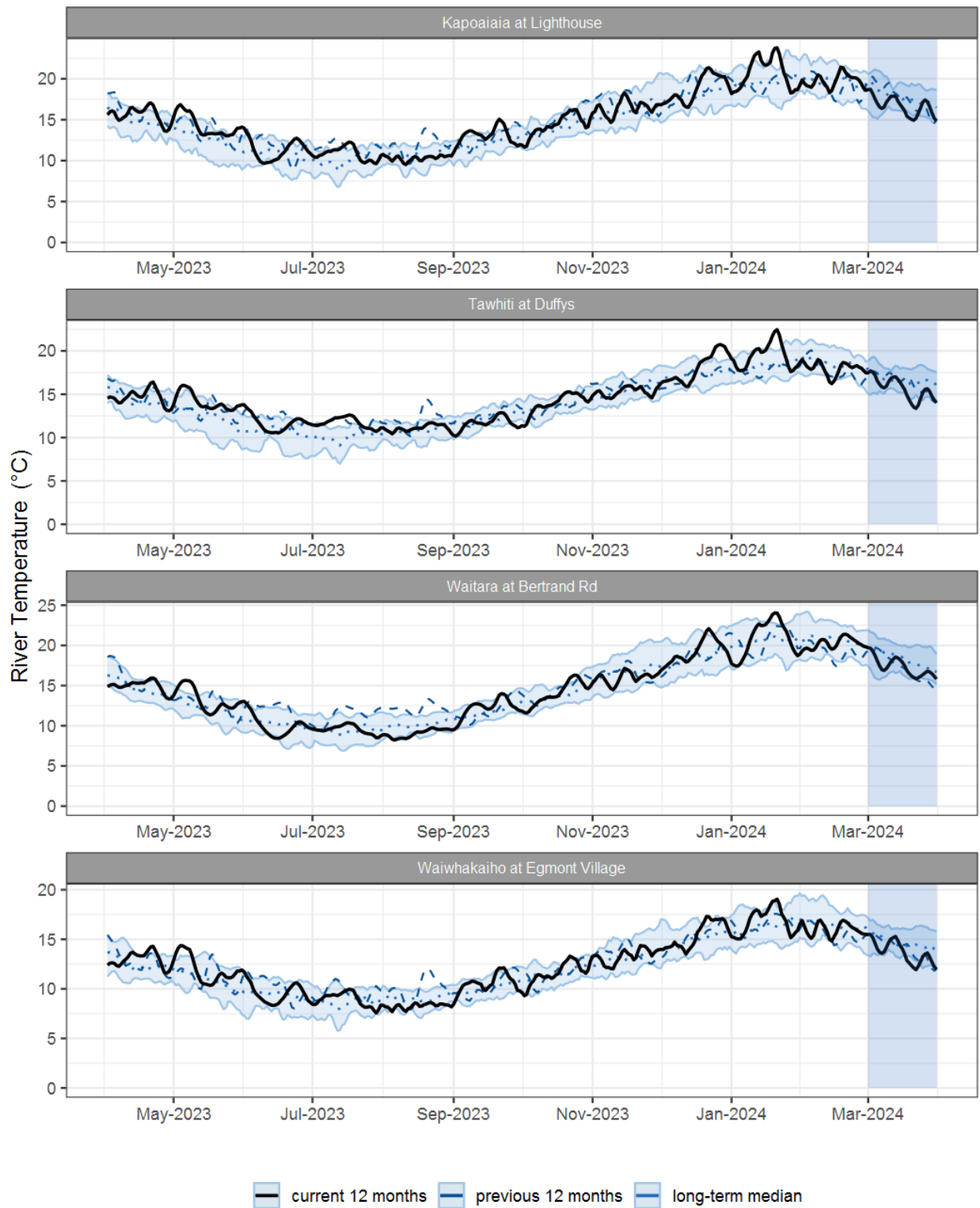


Figure 3.1: Running average river temperature for selected sites, set in context of the historic record.

### 3.3 Monthly Bar Charts

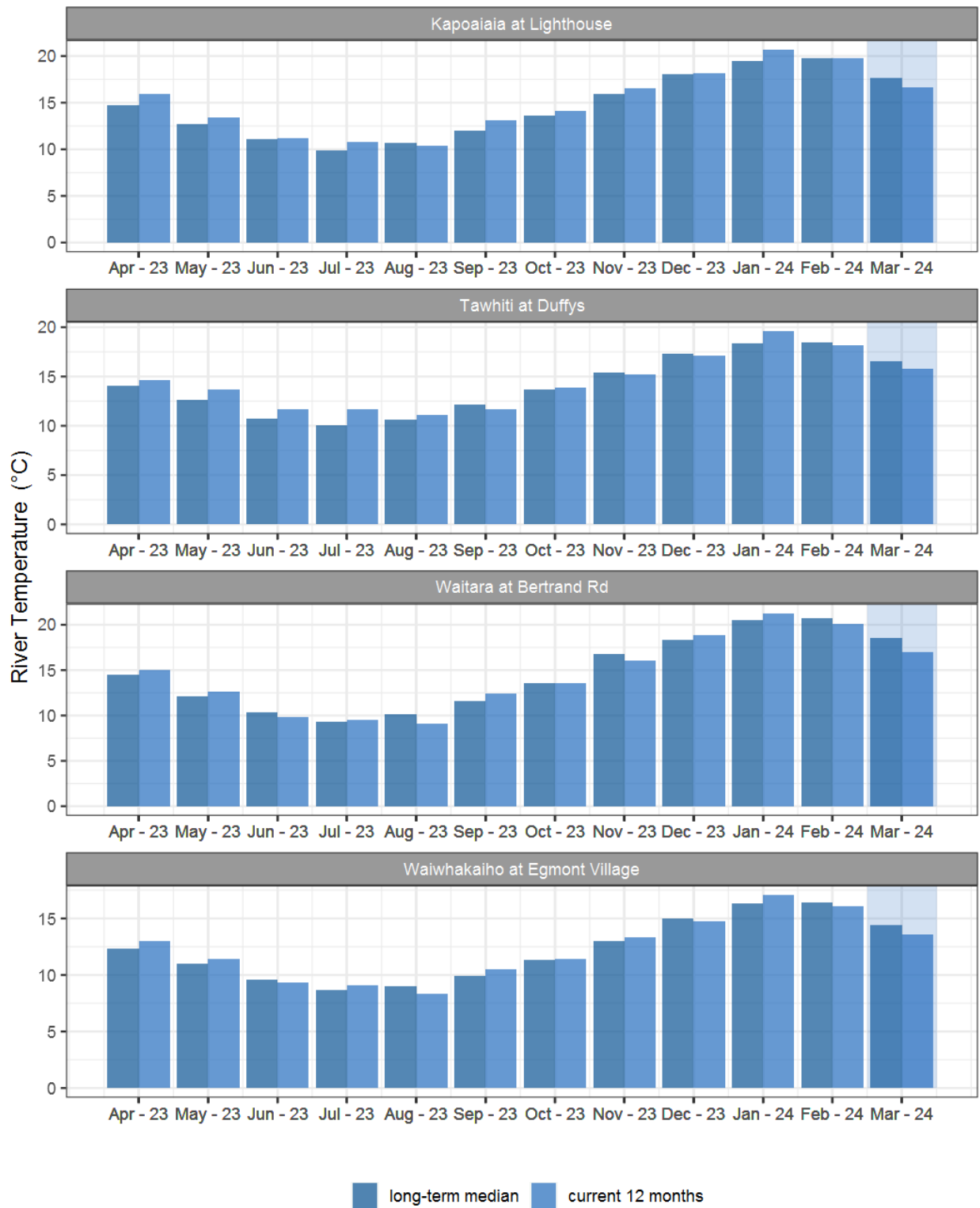
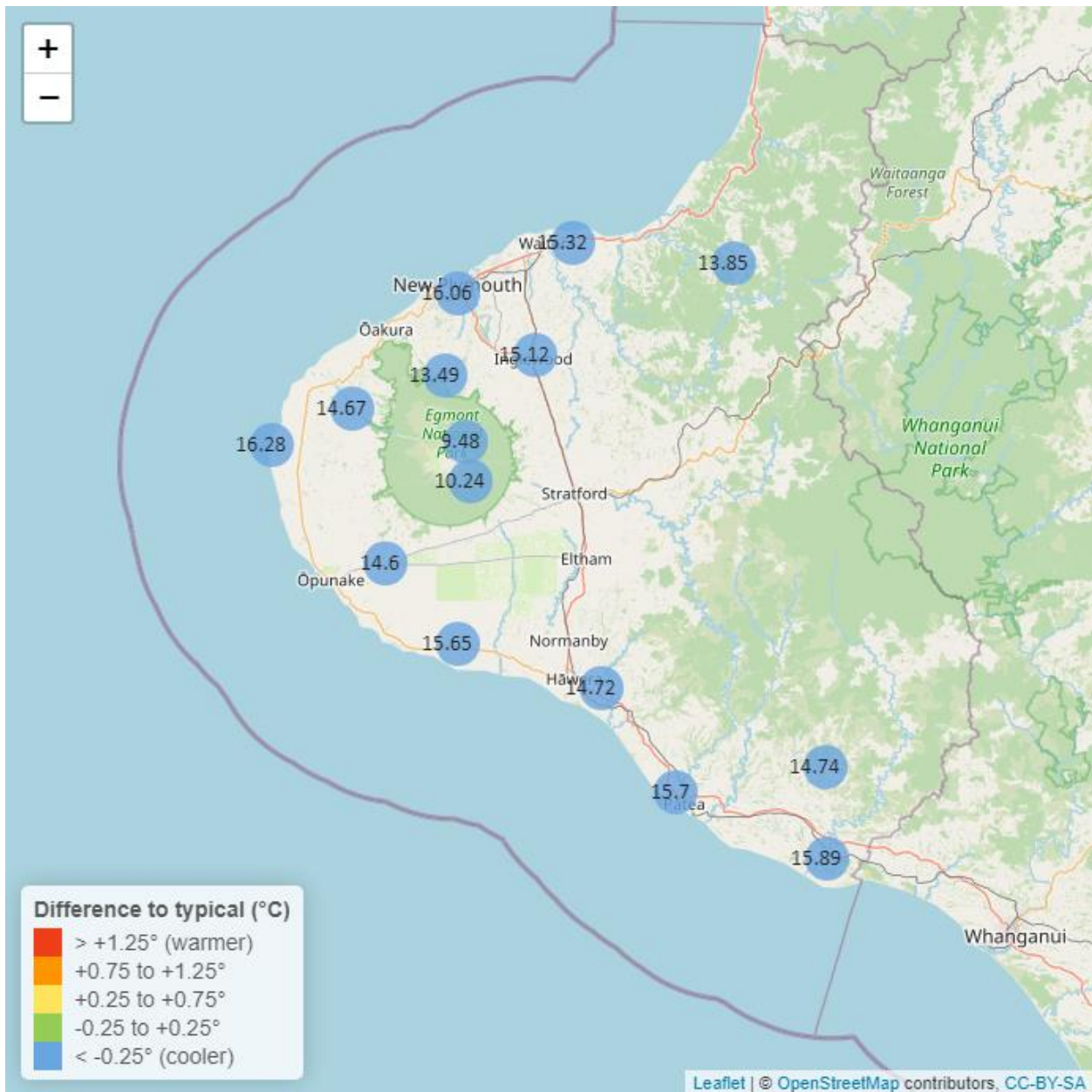


Figure 3.2: Monthly mean river temperature for this month and the mean of all previously recorded months.

## 4. Air Temperature

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



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

March 2024 - Air Temperature (°C)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Brooklands Zoo at New Plymouth	21.46	23.75	9.82	11.58	16.06	17.58	24.29	11
Dawson Falls	16.28	17.28	4.94	6.74	10.24	12.19	19.27	8
Inglewood at Oxidation Ponds	21.02	23.10	8.61	9.41	15.12	16.10	25.70	12
Kapoaiaia at Lighthouse	19.66	21.55	10.58	12.33	16.28	17.48	20.66	12
Kaupokonui at Glenn Rd	20.56	22.63	8.60	10.50	15.65	16.98	23.28	9
Mangorei Upper at Forest Hill	18.12	19.87	8.19	10.58	13.49	15.39	20.81	7
Motunui M39 at Weston W3	19.85	21.98	8.71	11.35	15.32	17.10	22.06	7
North Egmont at Visitors Centre	15.17	17.33	4.38	6.96	9.48	12.29	18.27	9
Patea at Bore 3	19.85	22.18	10.33	11.06	15.70	16.85	22.82	12
Stony at Mangatete Bridge	18.64	22.04	9.33	11.12	14.67	16.95	21.42	8
Taungatara at Eltham Rd	18.86	21.50	8.96	10.66	14.60	16.36	21.46	8
Tawhiti at Duffys	20.08	22.44	5.81	6.90	14.72	16.12	22.23	11
Uruti at Kaka Rd	18.74	21.42	8.51	10.33	13.85	15.79	21.32	5
Waitotara at Hawken Rd	21.09	22.82	9.65	10.42	15.89	16.94	23.67	6
Weraweraonga at 749 Mangawhio Rd	21.19	23.45	6.78	8.36	14.74	16.29	23.71	6



## 4.2 Long-term data patterns

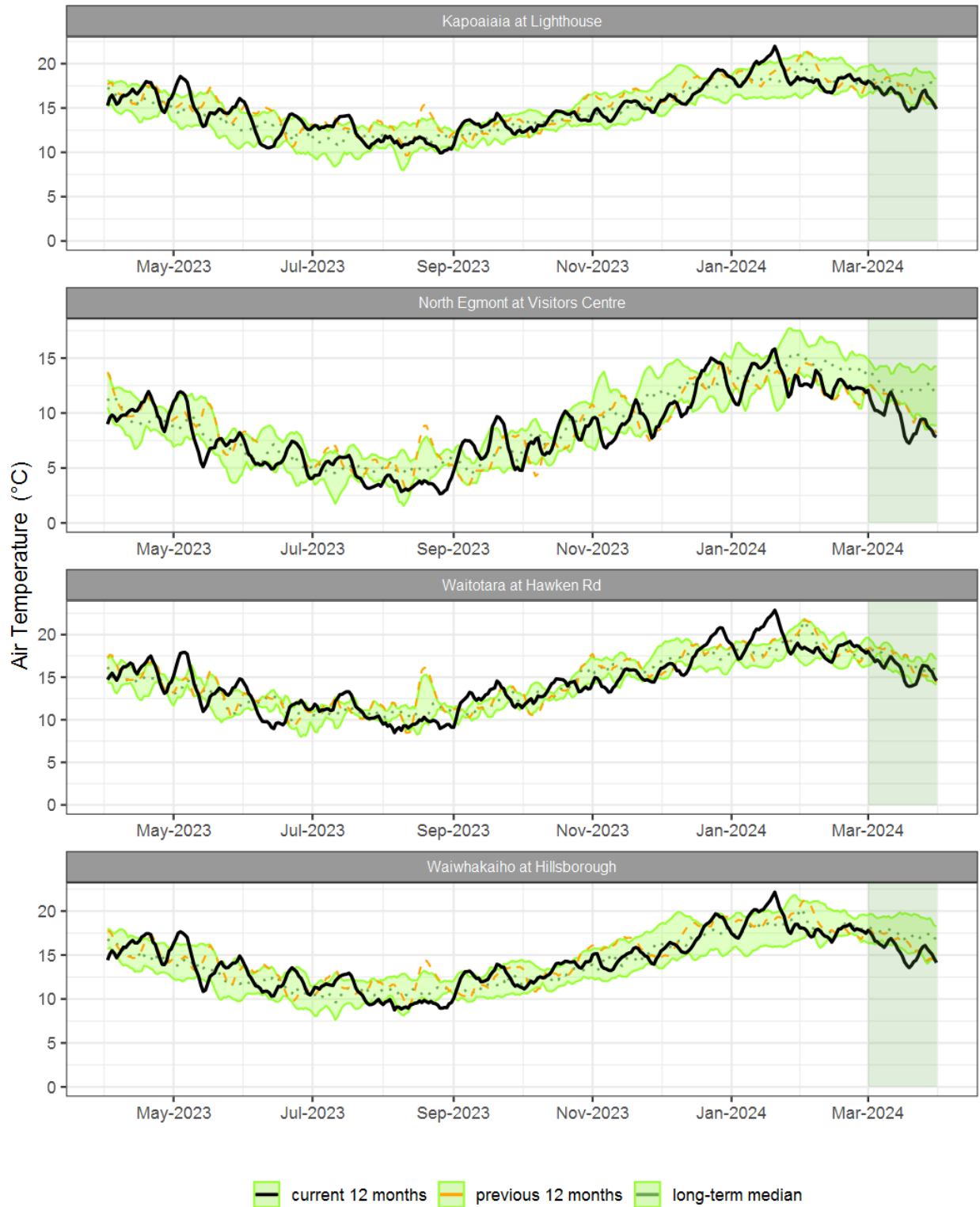


Figure 4.1: Running average air temperature for selected sites, set in context of the historic record.

### 4.3 Monthly Bar Charts

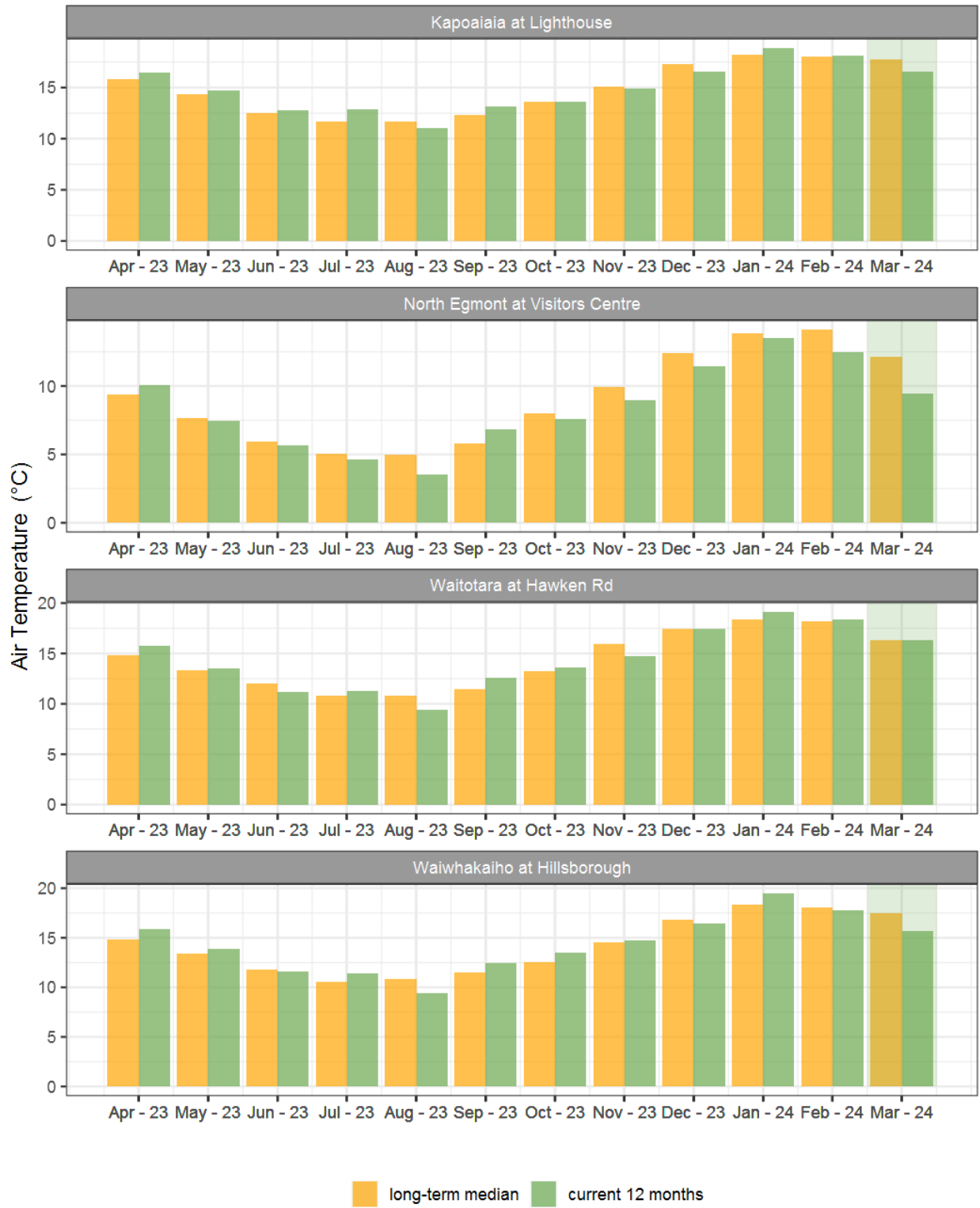
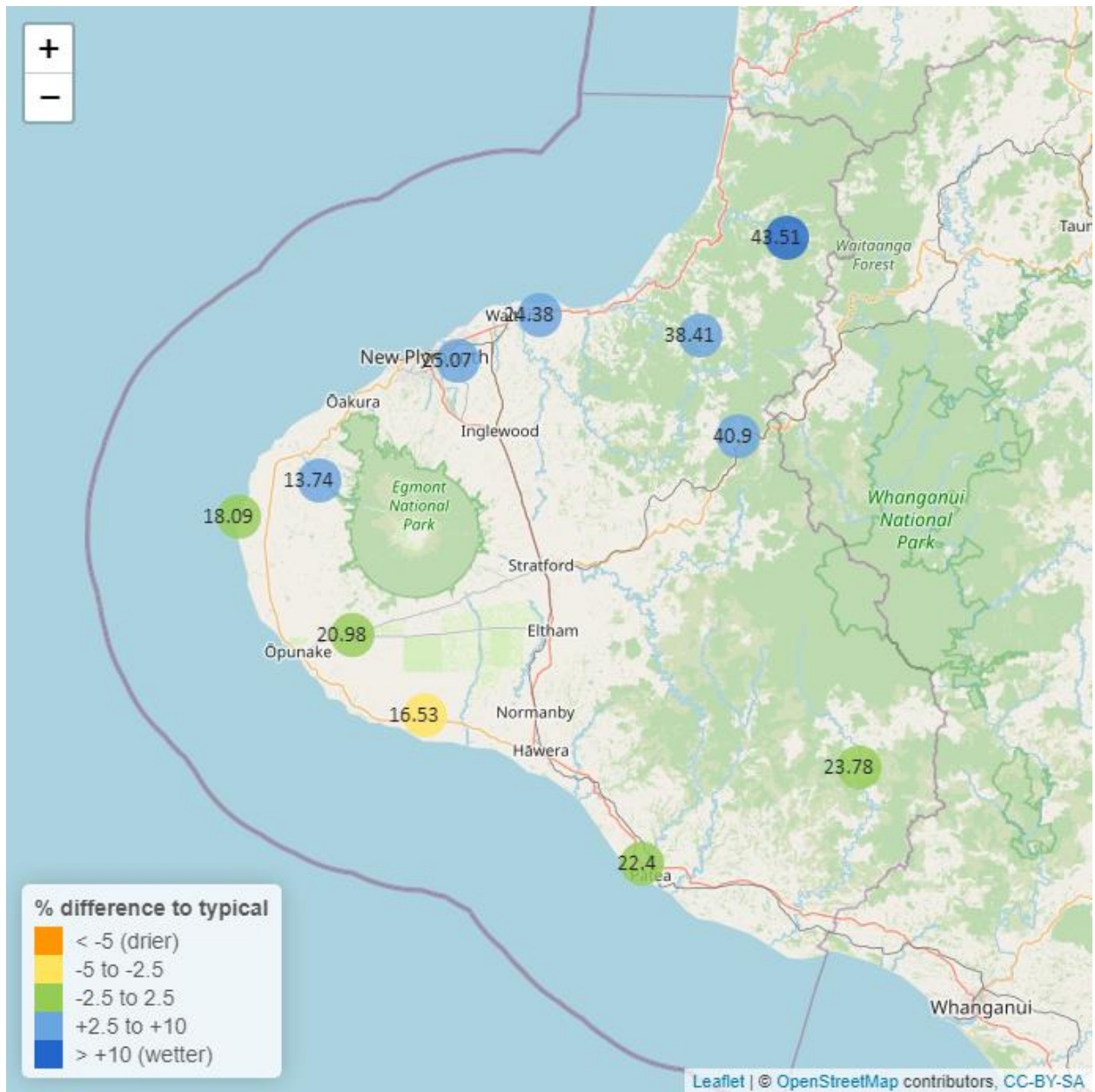


Figure 4.2: Monthly mean air temperature for March and the mean of all previously recorded months.

## 5. Soil Moisture

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



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

March 2024 - Soil Moisture (%)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	18.96	27.29	17.17	7.21	18.09	18.50	19.08	12
Kaupokonui at Glenn Rd	18.04	32.32	12.29	9.00	16.53	20.91	18.16	13
Kotare at OSullivans	48.40	42.63	36.51	18.70	43.51	31.07	53.87	12
Motunui M39 at Weston W3	25.92	29.43	23.04	13.58	24.38	21.45	26.08	10
Patea at Bore 3	23.47	27.60	21.37	18.28	22.40	23.74	24.32	7
Pohokura Saddle	45.67	44.02	33.71	23.58	40.90	34.18	47.85	9
Stony at Mangatete Bridge	15.62	17.49	10.43	5.33	13.74	10.96	17.07	8
Taungatara at Eltham Rd	23.91	35.40	14.48	13.62	20.98	22.76	24.22	10
Uruti at Kaka Rd	40.07	41.98	36.64	16.50	38.41	32.30	40.70	12
Waitotara at Rimunui Station	26.26	28.20	19.37	15.65	23.78	22.48	27.29	7
Waiwhakaiho at Hillsborough	26.93	27.05	22.56	10.52	25.07	20.17	27.75	11

## 5.2 Long-term data patterns

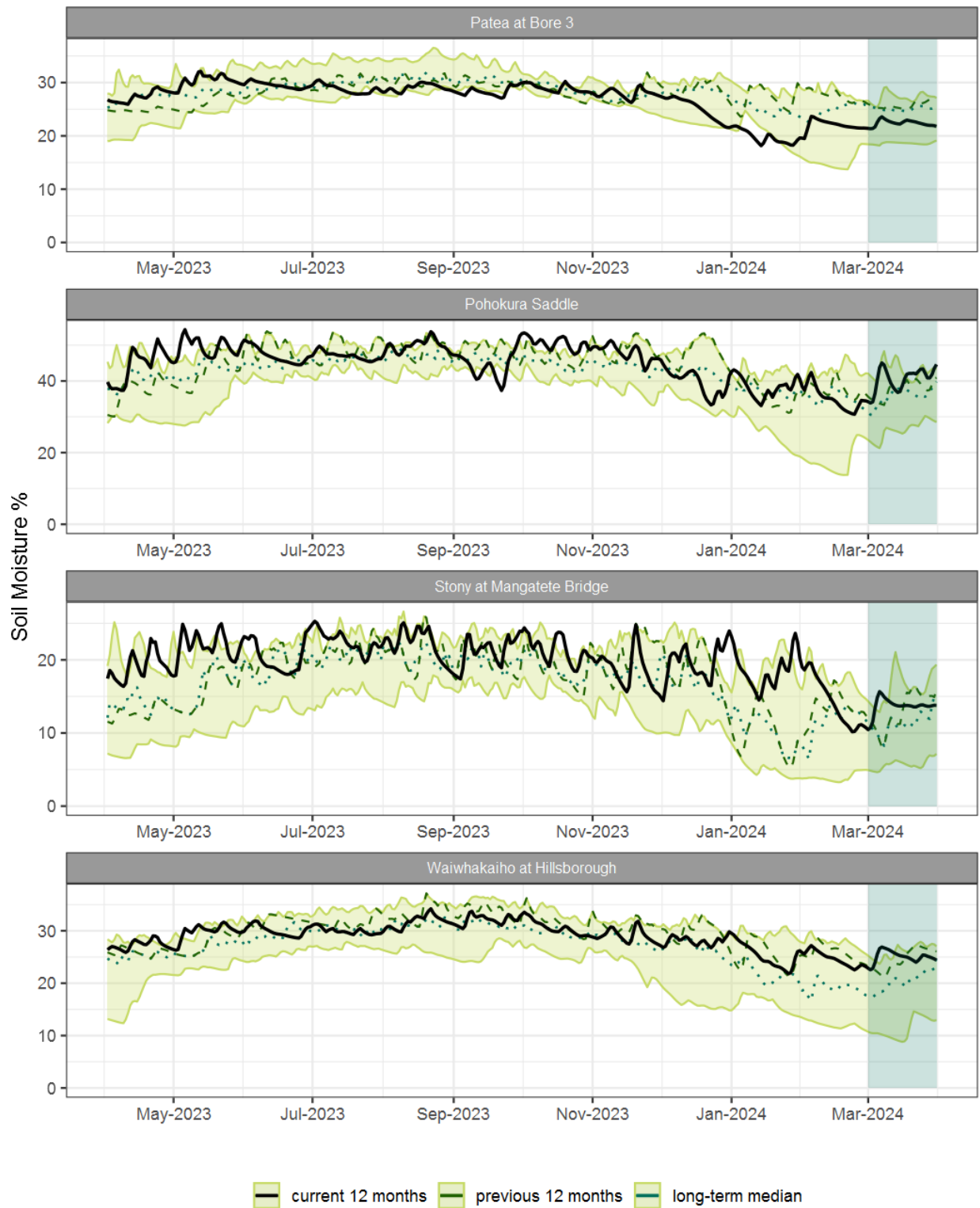


Figure 5.1: Running average soil moisture for selected sites, set in context of the historic record.

### 5.3 Monthly Bar Charts

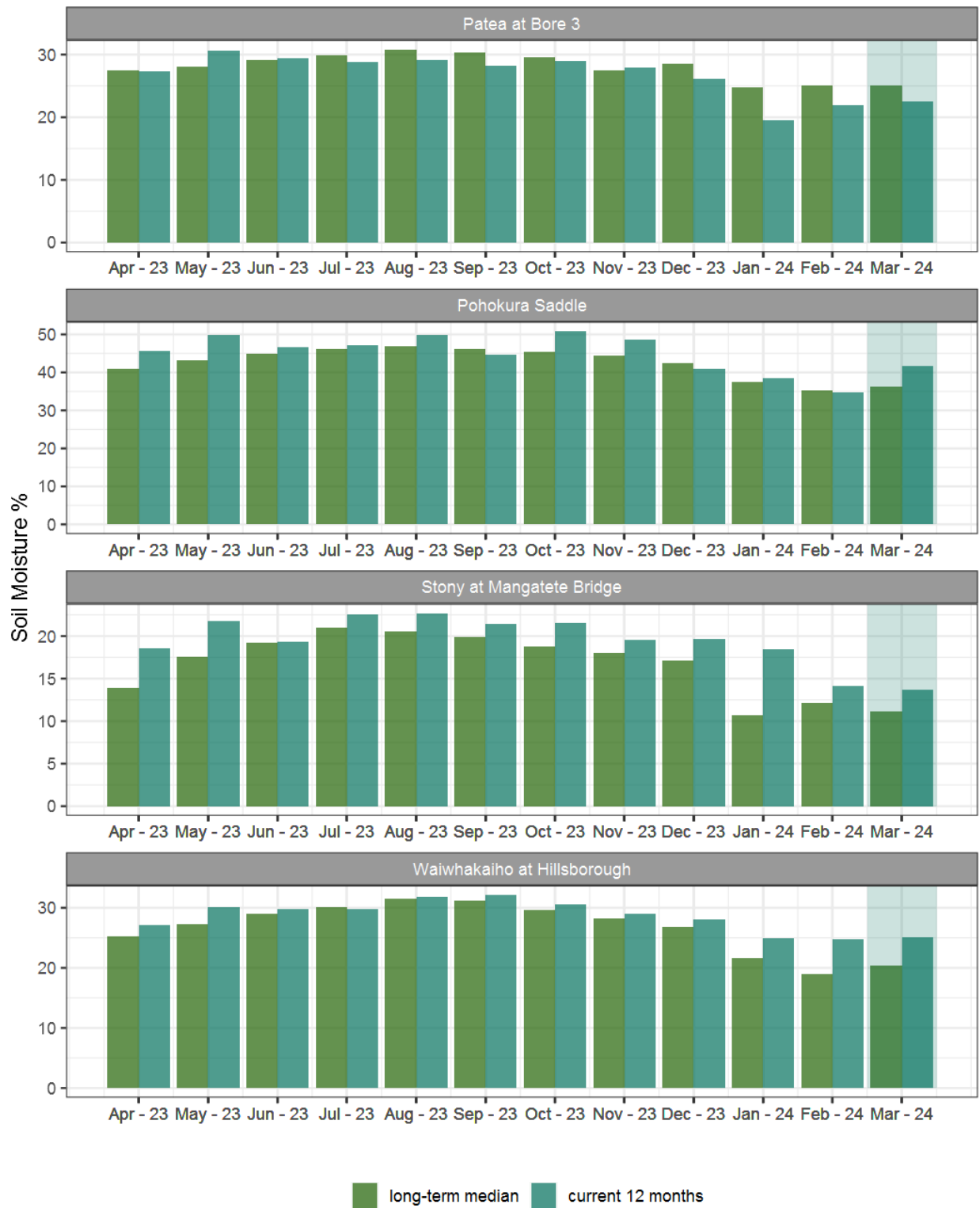
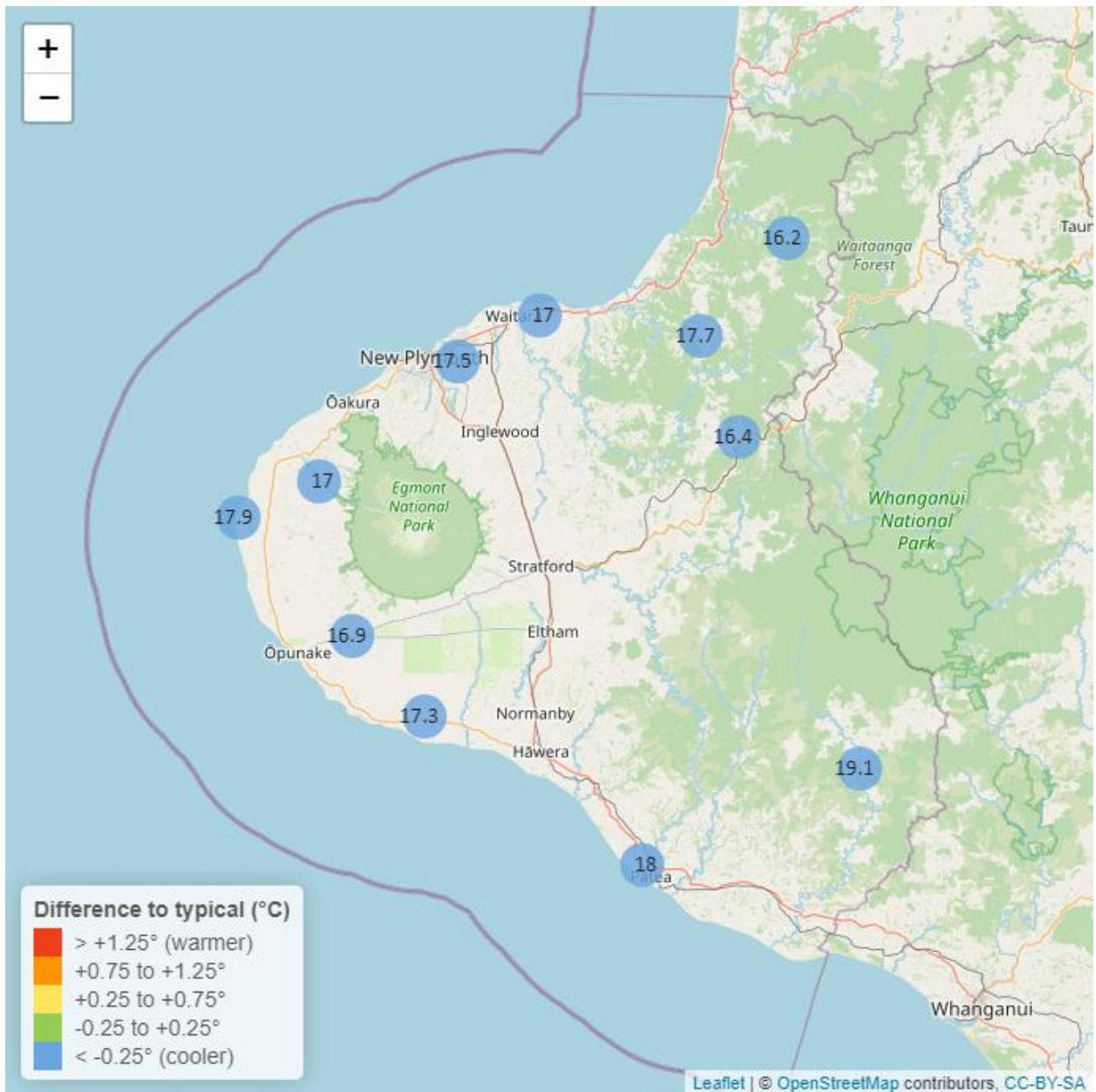


Figure 5.2: Monthly mean soil moisture for this month and the mean of all previously recorded months.

## 6. Soil Temperature

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



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

March 2024 - Soil Temperatures (°C)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	19.81	22.59	15.98	17.31	17.9	19.83	20.51	12
Kaupokonui at Glenn Rd	19.31	21.53	15.40	16.20	17.3	18.69	19.90	13
Kotare at OSullivans	18.00	20.34	14.46	15.40	16.2	17.92	18.10	12
Motunui M39 at Weston W3	19.01	19.86	15.22	15.91	17.0	17.91	19.39	10
Patea at Bore 3	20.65	21.83	15.79	16.62	18.0	19.14	21.56	7
Pohokura Saddle	18.46	20.41	14.47	16.43	16.4	18.45	18.95	9
Stony at Mangatete Bridge	19.01	21.34	14.39	16.30	17.0	18.93	19.60	7
Taungatara at Eltham Rd	19.47	20.29	13.95	15.80	16.9	18.12	20.40	10
Uruti at Kaka Rd	18.89	20.44	16.39	16.50	17.7	18.61	19.06	12
Waitotara at Rimunui Station	21.61	23.23	16.42	17.50	19.1	20.36	22.94	6
Waiwhakaiho at Hillsborough	19.13	20.57	15.56	16.78	17.5	18.65	19.54	11



## 6.2 Long-term data patterns

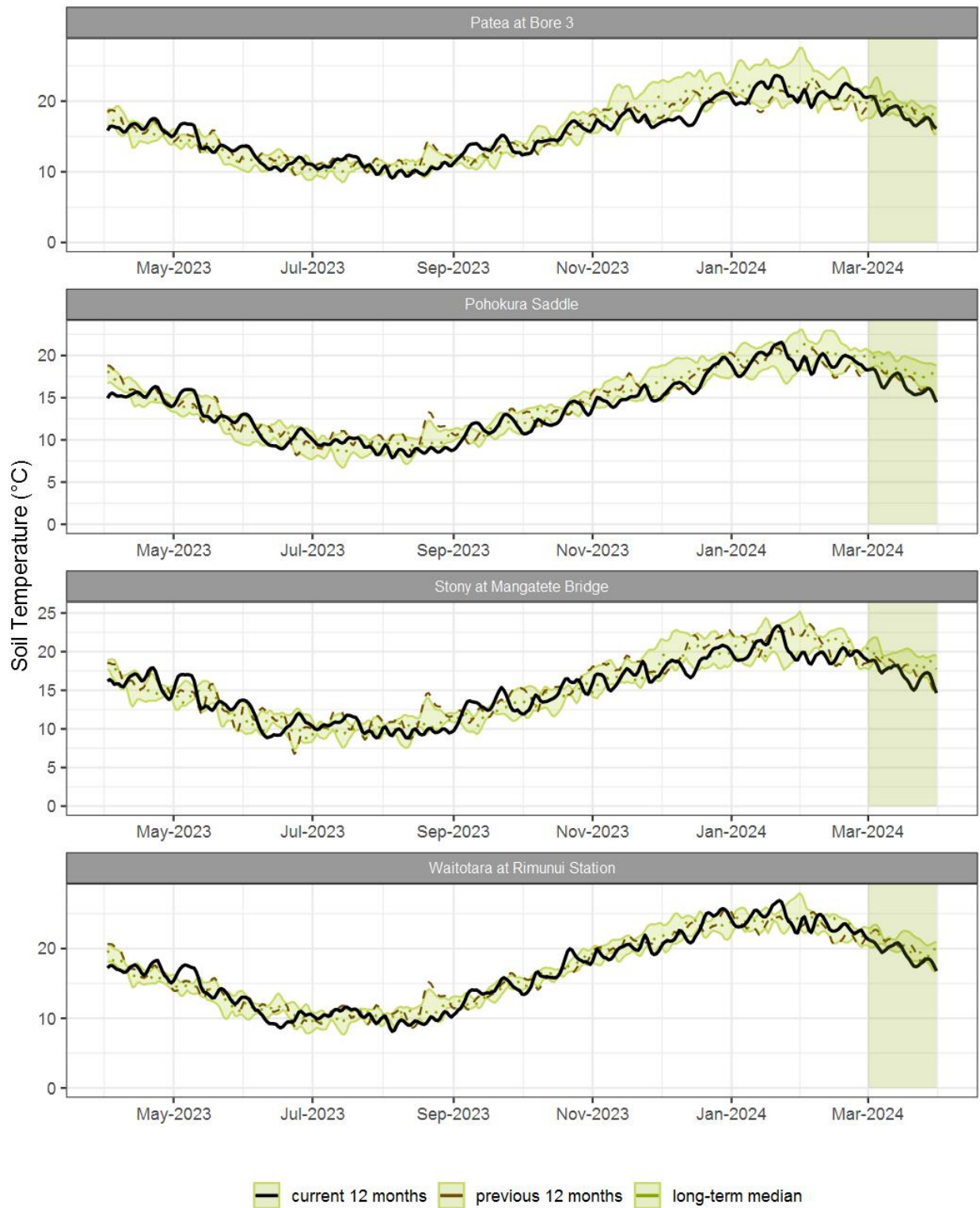


Figure 6.1: Running average soil temperature for selected sites, set in context of the historic record.

### 6.3 Monthly Bar Charts

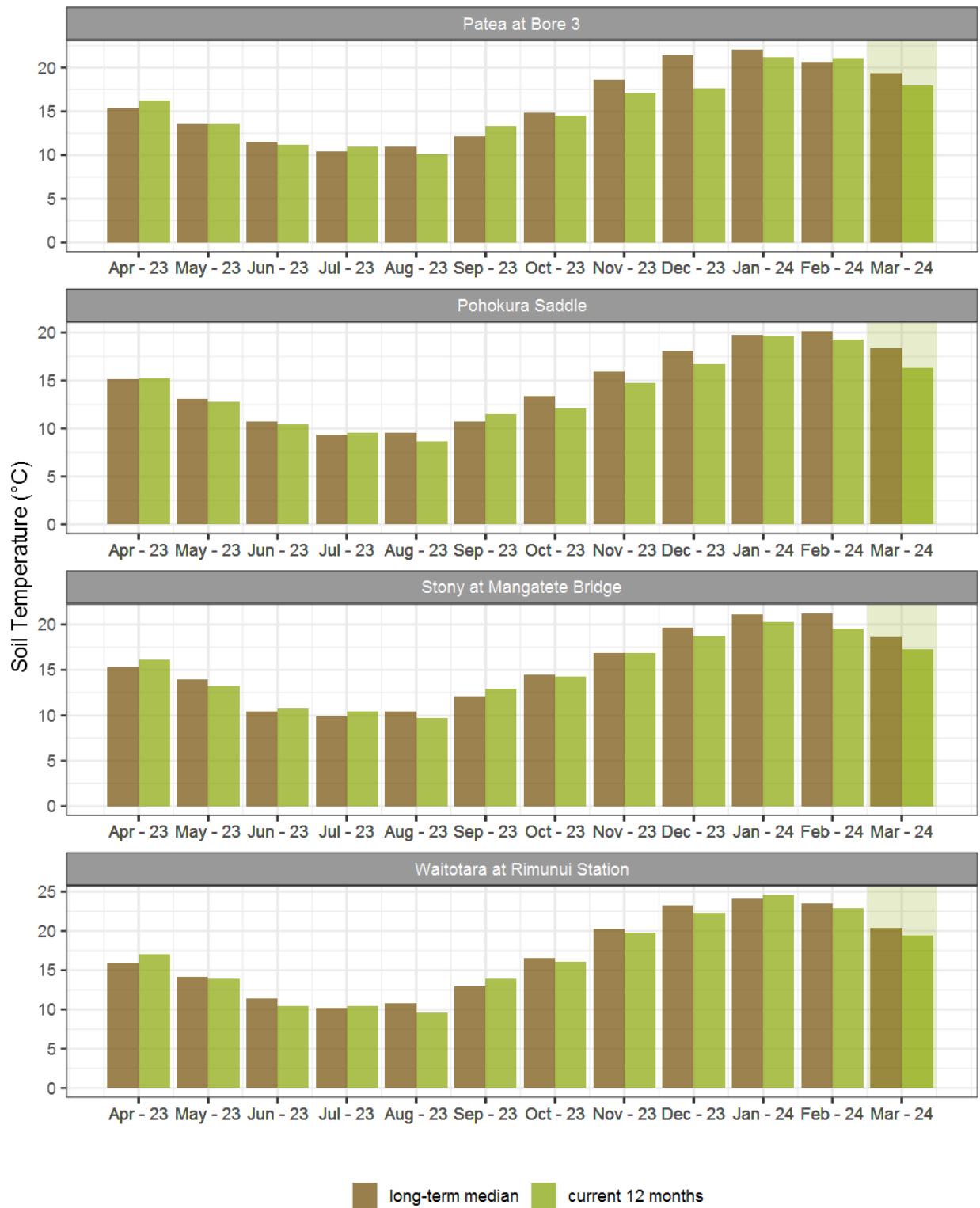


Figure 6.2: Monthly mean soil temperature for this month and the mean of all previously recorded months.

## 7. Wind Speed and Maximum Gusts

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



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

March 2024 - Wind Speed (average) - (km/hr)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	34.26	36.11	8.33	3.70	20.0	17.37	42.60	19
Kapoaiaia at Lighthouse	33.52	39.83	7.41	6.14	19.2	19.66	42.20	24
New Plymouth AWS	34.26	37.04	6.48	5.56	20.1	18.23	44.45	16
Patea at Bore 3	40.56	37.32	7.17	5.83	22.2	18.14	49.72	8
Patea at Stratford	13.77	16.21	2.32	1.86	6.4	6.95	27.92	18
Taungatara at Eltham Rd	26.29	31.19	7.25	6.13	16.0	16.09	49.50	8
Uruti at Kaka Rd	19.32	21.50	3.71	3.13	10.0	10.22	38.12	27
Waitotara at Ngutuwera	21.26	20.61	3.40	1.72	11.4	9.46	32.92	25
Waiwhakaiho at Hillsborough	26.71	31.31	4.96	3.79	14.1	13.62	36.11	6

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

March 2024 - Wind Gusts (Maximum) - (km/hr)								
River and Site	Highs		Lows		Mean		March maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	62.97	72.23	33.34	22.22	48.8	44.38	79.64	19
Kapoaiaia at Lighthouse	66.50	78.90	23.60	22.30	44.1	45.92	66.50	24
New Plymouth AWS	64.82	70.38	27.78	22.22	46.6	43.94	70.38	16
Patea at Bore 3	75.00	71.60	27.00	23.20	52.2	43.60	83.50	8
Patea at Stratford	56.88	56.80	21.96	18.70	33.6	33.68	74.88	18
Taungatara at Eltham Rd	62.50	71.60	30.60	23.30	44.1	43.26	91.80	8
Uruti at Kaka Rd	56.16	61.56	23.76	20.70	39.9	36.66	99.36	24
Waitotara at Ngutuwera	86.76	64.44	28.44	19.90	52.8	37.46	99.72	25
Waiwhakaiho at Hillsborough	59.70	66.60	26.60	21.50	43.1	40.01	67.90	6

## 7.2 Long-term data patterns

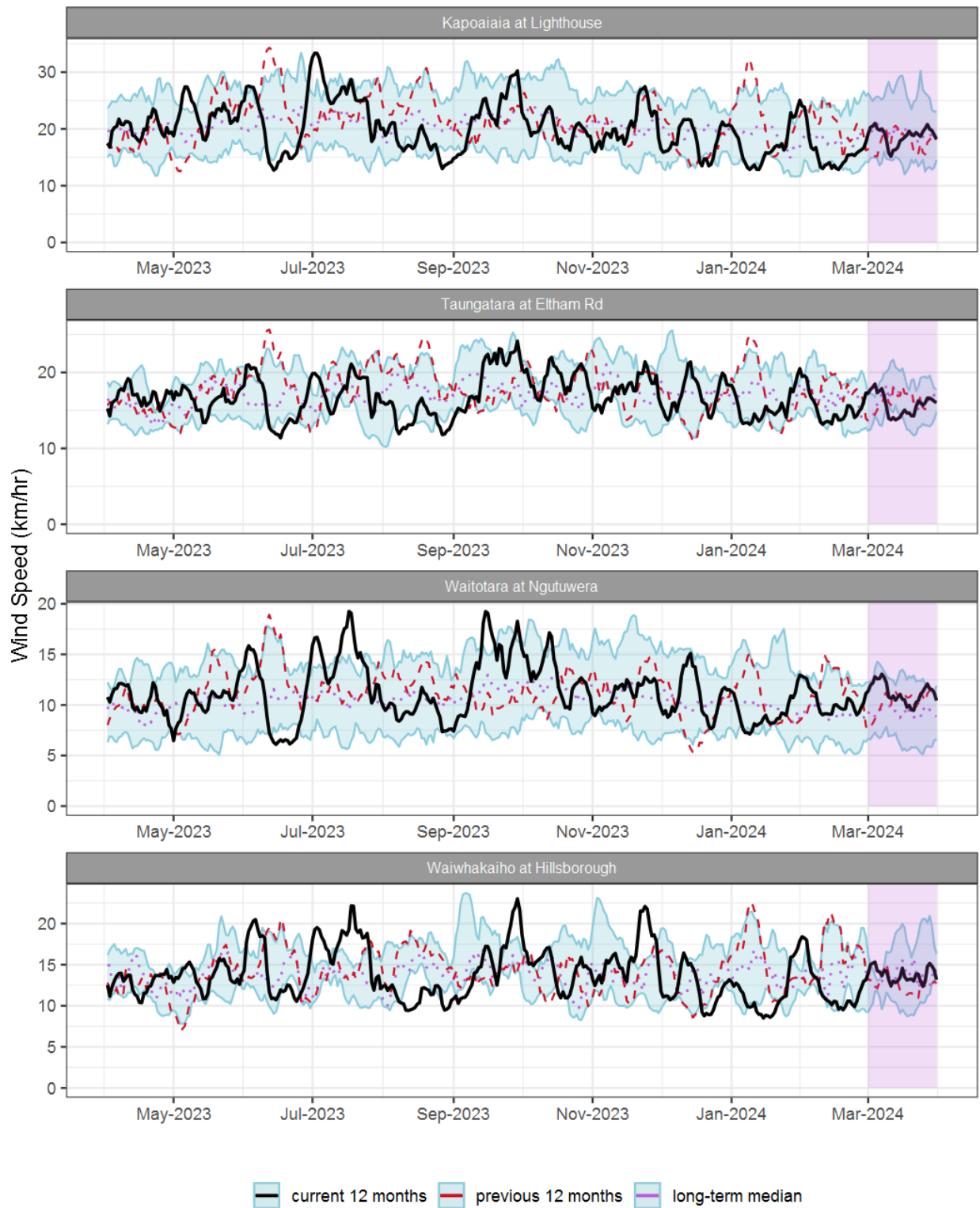


Figure 7.1: Running average wind speed (km/hr) for selected sites, set in context of the historic record.

### 7.3 Monthly Bar Charts

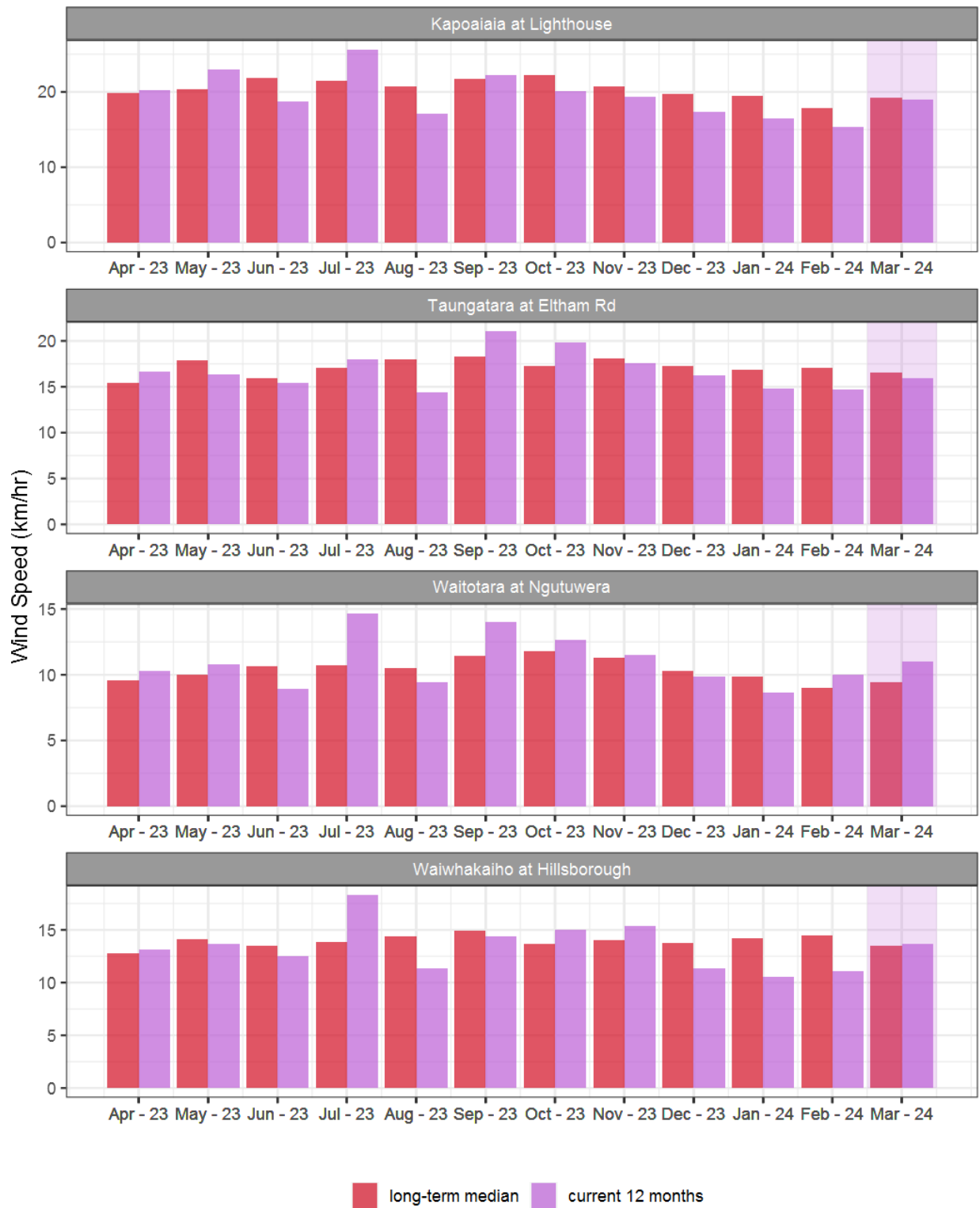


Figure 7.2: Monthly mean wind speed (km/hr) for selected sites, relative to the mean of all previously recorded months.

## 7.4 Wind roses for March 2024

### Average wind speed

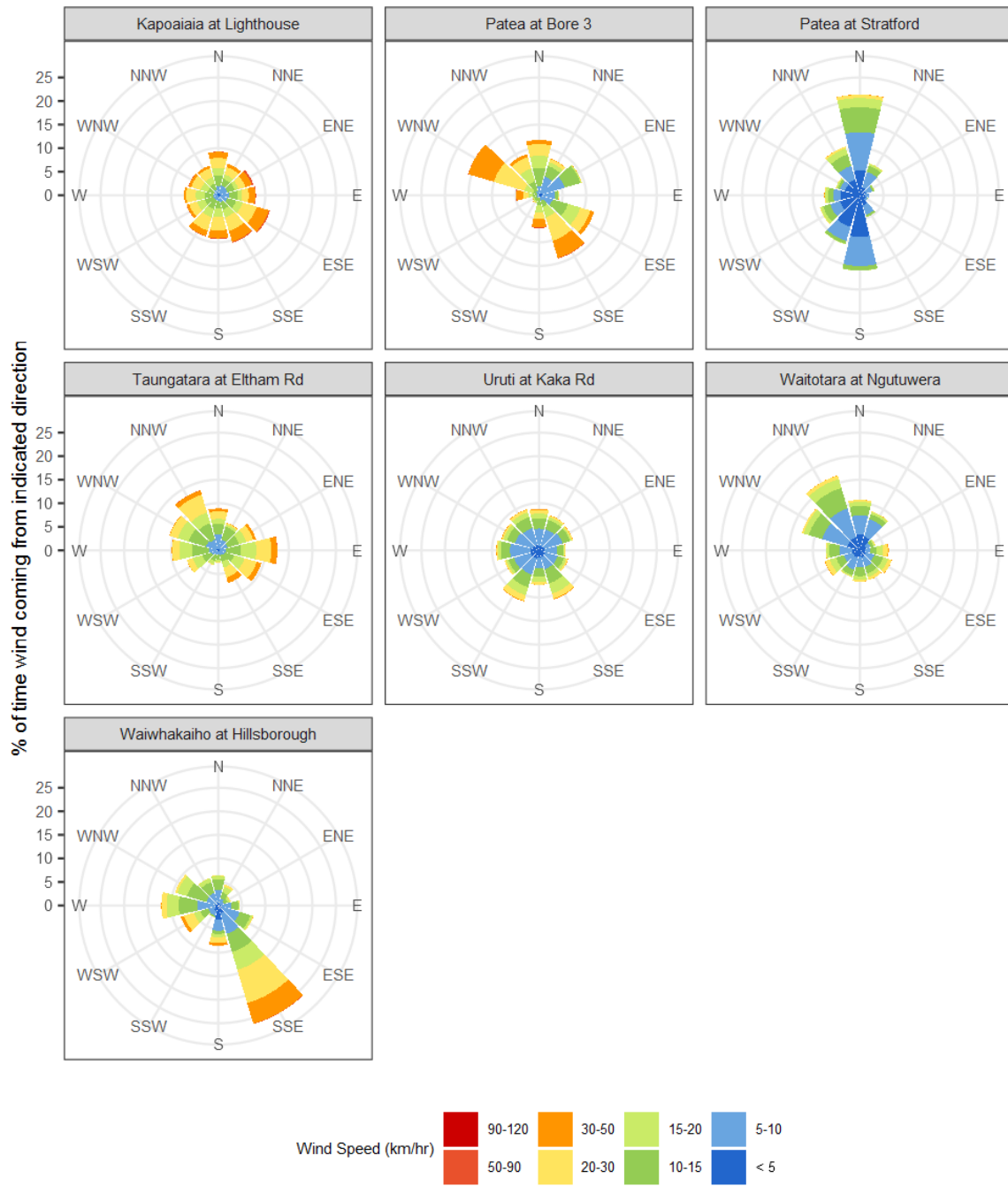


Figure 7.3: Wind roses for March for average wind speed (km/hr).

## Maximum gust strength

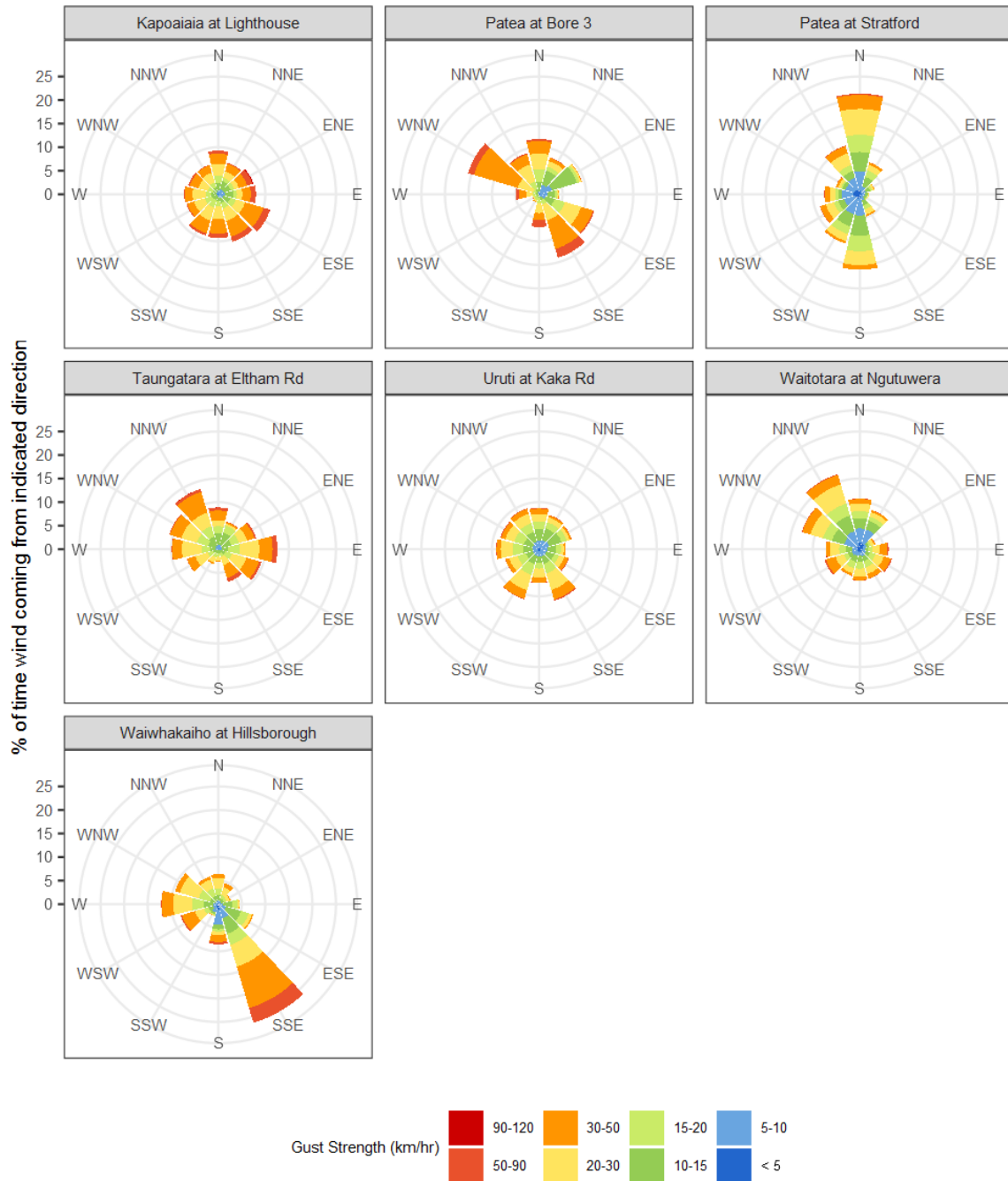


Figure 7.4: Wind roses for March for maximum wind gust (km/hr).



## 8. Summary of month's conditions

### Rainfall

On average March rainfall was 95.9mm, 14% less than usual, ranging from 41% less rain at Brooklands Zoo at New Plymouth and 33% more at Kotare at OSullivans.

Year to date rainfall ranges from 44% less rainfall at Brooklands Zoo at New Plymouth, and 12% more rainfall at Kotare at OSullivans, with an average 20% less than normal.

Compared to typical full year totals, on average sites have already received 15% of a typical year's rainfall, with the highest value at Kotare at OSullivans, 20% of normal, whereas Pātea at Stratford sits at 10% of the typical year's total.

### River Flow

Mean river flows for March were 38.7% lower than typical values, low flows were 19.3% greater, and high flows 48.4% lower than typical values. The maximum river flow recorded in March was 196m<sup>3</sup>/sec at Waitara at Bertrand Rd, on 5 March at 11am.

### River Water Temperature

Mean river (non-mountain) water temperatures were 15.3°C, an average of 1°C cooler than long-term March values. Nighttime-low water temperatures were on average 1°C cooler than historic lows, and day-time high temperatures were on average 1.5°C cooler than historic highs. The maximum river water temperature recorded in March was 22.51°C at Kaupokonui at Glenn Rd, on 12 March at 4pm.

### Air Temperature

The average air temperature for the region (excluding Te Maunga sites) was 14.5°C, which is 1.7°C cooler than long-term March averages. Low air temperatures for March were on average 1.6°C cooler than the March average for previous years. Day-time high temperatures were on average 2.2°C cooler than historic highs. The maximum air temperature recorded in March was 25.7°C at Inglewood at Oxidation Ponds, on 1 March at 2.30pm.

### Soil Moisture

The average soil moisture for March across sites in Taranaki region was 26.2%. Soil moistures were on average 2.6% wetter than typical March values. On average, low soil moistures were 8.7% wetter than previous lows, and the highs were on average 3.6% drier than previous values for March.

### Soil Temperature

March soil temperatures were generally 1.4°C cooler than long-term averages. Average nighttime low soil temperatures were 1.1°C cooler than recorded lows, and upper daytime soil temperatures were on average 1.7°C cooler than long-term March highs. The maximum

soil temperature recorded in March was 22.9°C at Waitotara at Rimunui Station, on 1 March at 7pm.

### **Wind Speed (average and 10 minute gust)**

March average wind speeds were 13.5km/hr, with average gust strength of 46.5km/hr, these were 1.9km/hr lighter, and 4.5km/hr gustier than the long-term average. Average calm weather wind speeds were 1.6km/hr stronger than recorded lows, and windy conditions were on average 2.3km/hr lighter than long-term March highs. The maximum wind gust recorded in March was 99.7km/hr at Waitotara at Ngutuwera, on 4 March at 1am.

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: 9 April 2024.