

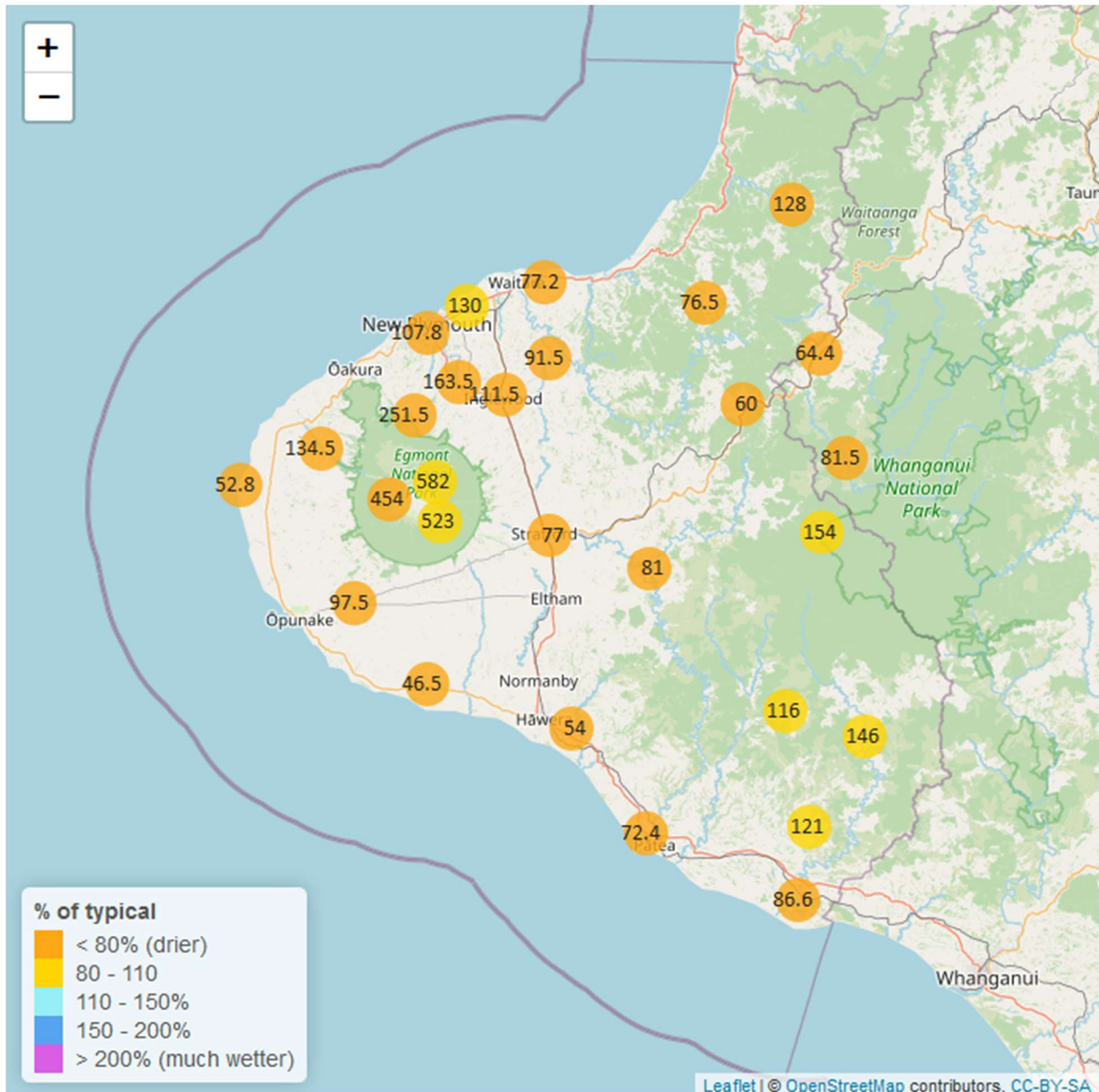
# Taranaki Regional Council Monthly Rainfall and Environmental Data Report for July 2023

09 August, 2023

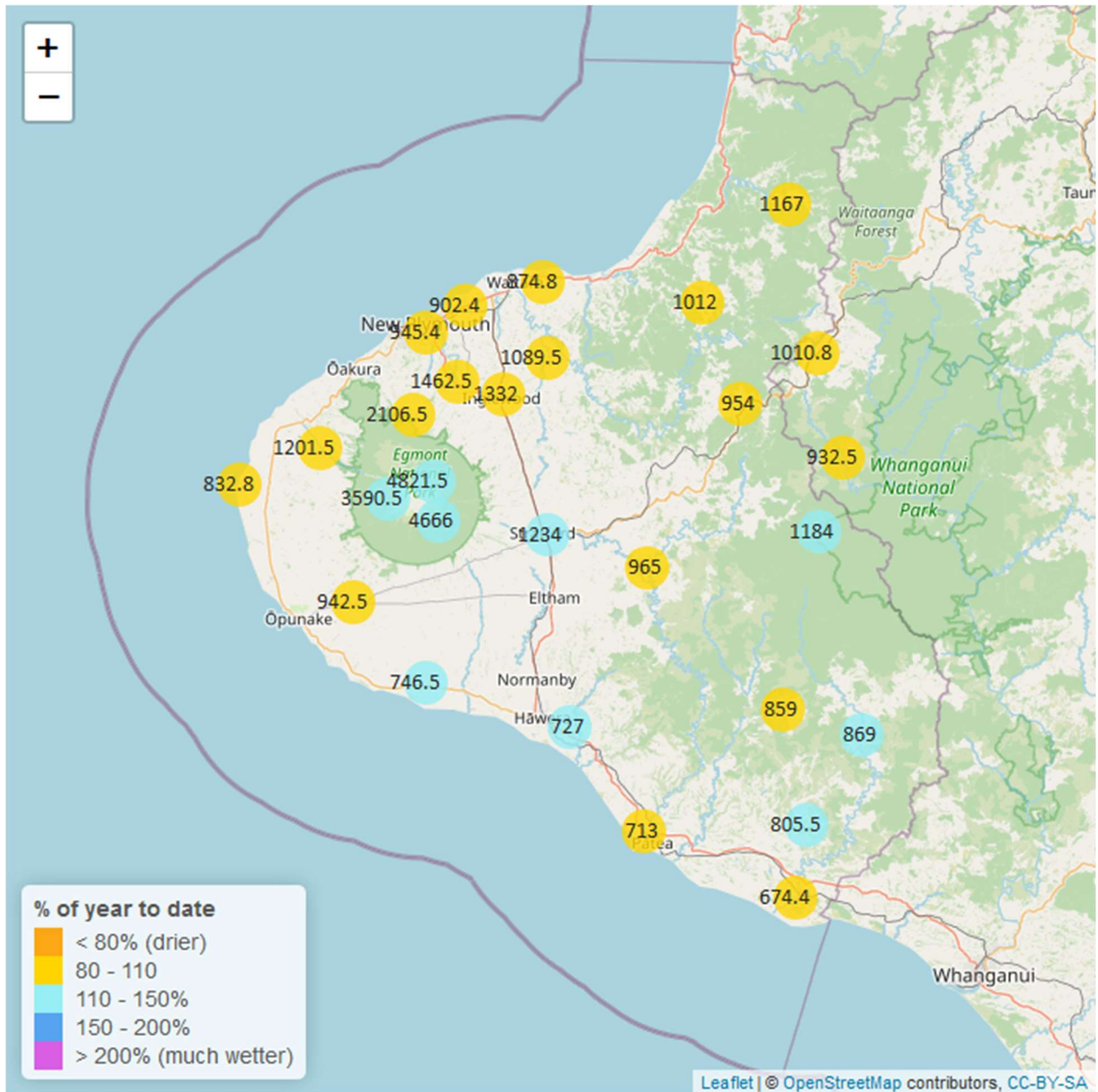
Note: The data presented here are provisional data only and may change as a result of quality control at a later date.

## 1. Rainfall

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



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



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

Rain gauge	July			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	27	582.0	82.9	4821.5	129.0	69.5	1991
Dawson Falls	29	523.0	84.7	4666.0	138.5	78.5	1933
Kapoaiaia at Kahui Hut	29	454.0	77.7	3590.5	124.3	68.5	2006
Mangorei Upper at Forest Hill	26	251.5	57.6	2106.5	101.0	55.4	2018
Waiwhakaiho at Hillsborough	21	114.5	60.8	1042.5	98.0	56.9	2013
Brooklands Zoo at New Plymouth	24	107.8	63.6	945.4	98.4	58.4	2012
Mangati at SH3	23	130.0	84.4	902.4	99.6	58.3	2013
Motunui M39 at Weston W3	19	77.2	50.3	874.8	97.3	55.5	1999
Waiwhakaiho at Egmont Village	25	163.5	68.8	1462.5	109.6	60.3	1991
Manganui at Everett Park	20	91.5	44.6	1089.5	95.1	52.4	1987
Inglewood at Oxidation Ponds	20	111.5	47.2	1332.0	103.7	56.6	2000
Stony at Mangatete Bridge	24	134.5	67.6	1201.5	106.4	59.8	2004
Kapoaiaia at Lighthouse	24	52.8	35.3	832.8	101.6	59.9	1930
Taungatara at Eltham Rd	27	97.5	56.4	942.5	106.2	59.5	2005
Kaupokonui at Glenn Rd	21	46.5	37.7	746.5	112.9	63.7	1998
Patea at Stratford	20	77.0	38.1	1234.0	114.0	64.3	1999
Mangaehu at Bridge	21	81.0	53.1	965.0	108.9	60.6	1999
Kotare at OSullivans	25	128.0	60.5	1167.0	102.2	54.1	1998
Uruti at Kaka Rd	23	76.5	37.0	1012.0	85.2	45.3	1991
Pohokura Saddle	22	60.0	31.4	954.0	89.9	47.8	1991
Omaru at Charlies	28	154.0	83.4	1184.0	116.9	65.1	2006
Omahine at Moana Trig	22	116.0	85.4	859.0	101.1	59.0	2007
Waitotara at Rimunui Station	22	146.0	107.0	869.0	115.0	63.0	1994
Waitotara at Ngutuwera	22	121.0	98.1	805.5	113.7	62.7	1999

Rain gauge	July			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	
Tawhiti at Duffys	20	54.0	47.9	727.0	117.4	65.6	1994
Patea at Bore 3	24	72.4	61.3	713.0	107.5	60.1	2006
Waitotara at Hawken Rd	22	86.6	72.0	674.4	94.9	55.9	2016
Whangamomona at Marco Road	20	64.4	28.8	1010.8	95.1	51.4	2018
Whangamomona at Bridge to Somewhere	18	81.5	40.3	932.5	100.0	53.7	2018
Waitanguru at Mangaotaki	25	227.5	80.2	1495.5	109.0	58.6	1990

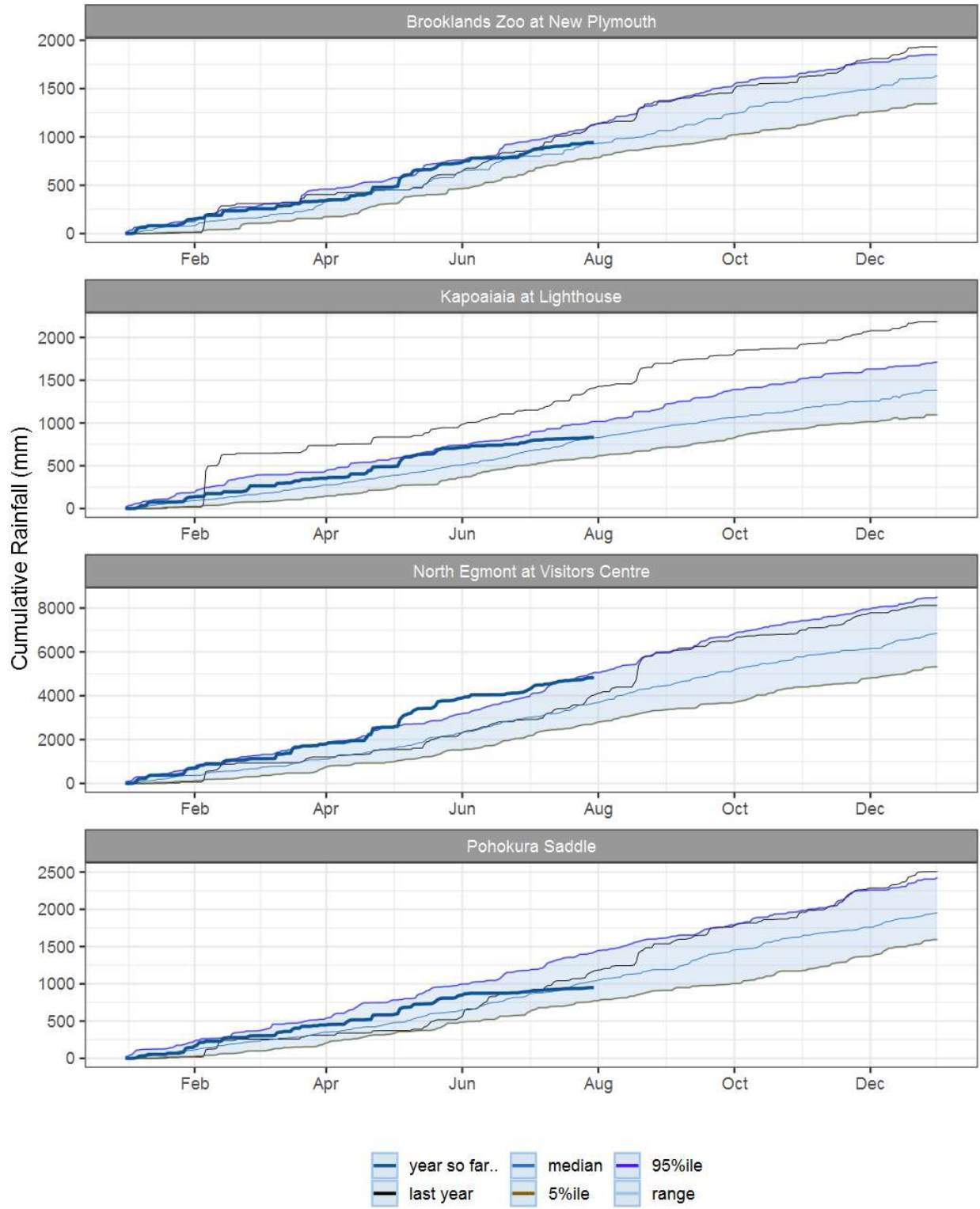


Figure 1.1: This year's and last year's data set in context of historic record at selected rain gauge sites in Taranaki.

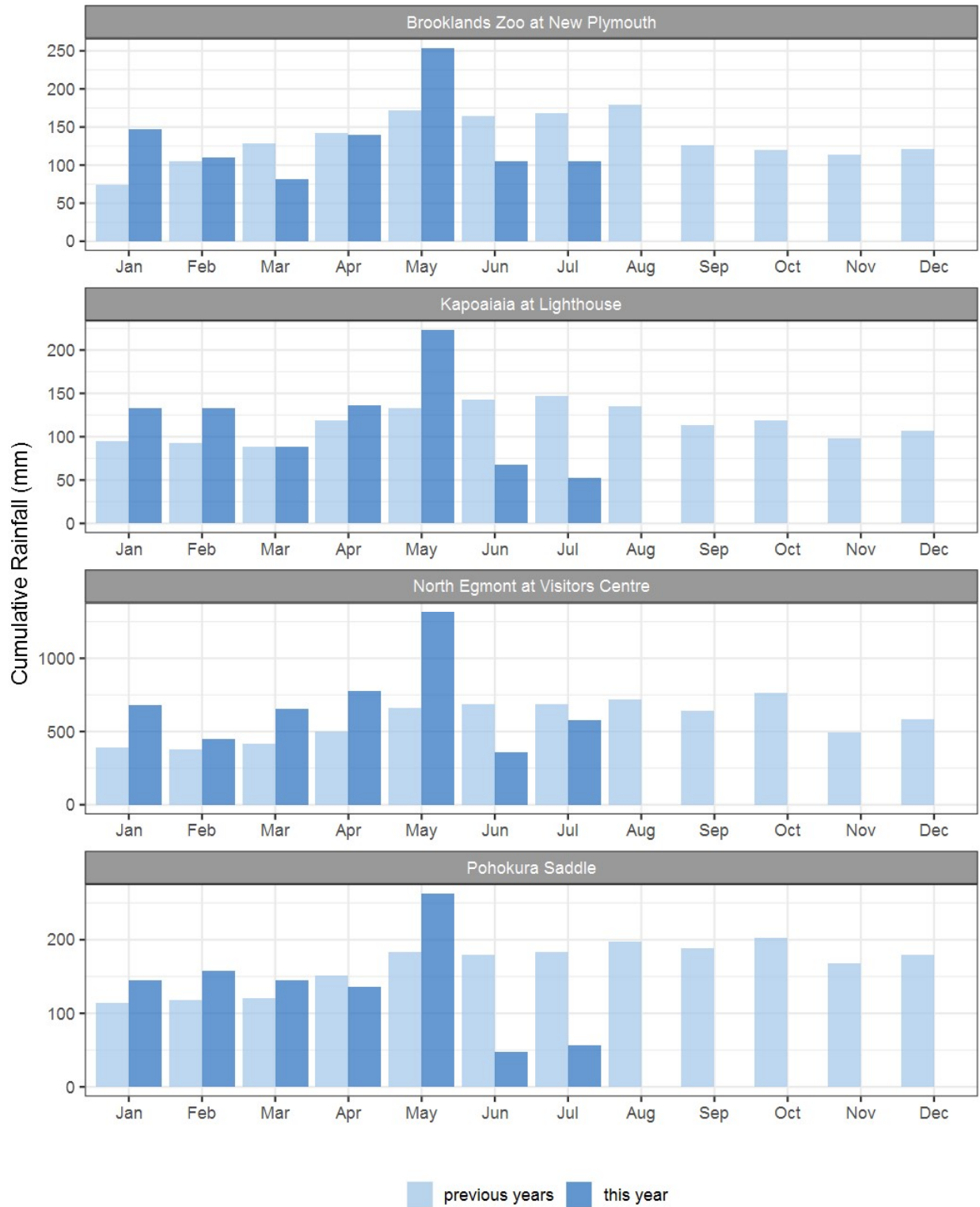


Figure 1.2: Monthly rainfall totals for this month and the mean of all previously recorded months.

## 2. River Flow

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

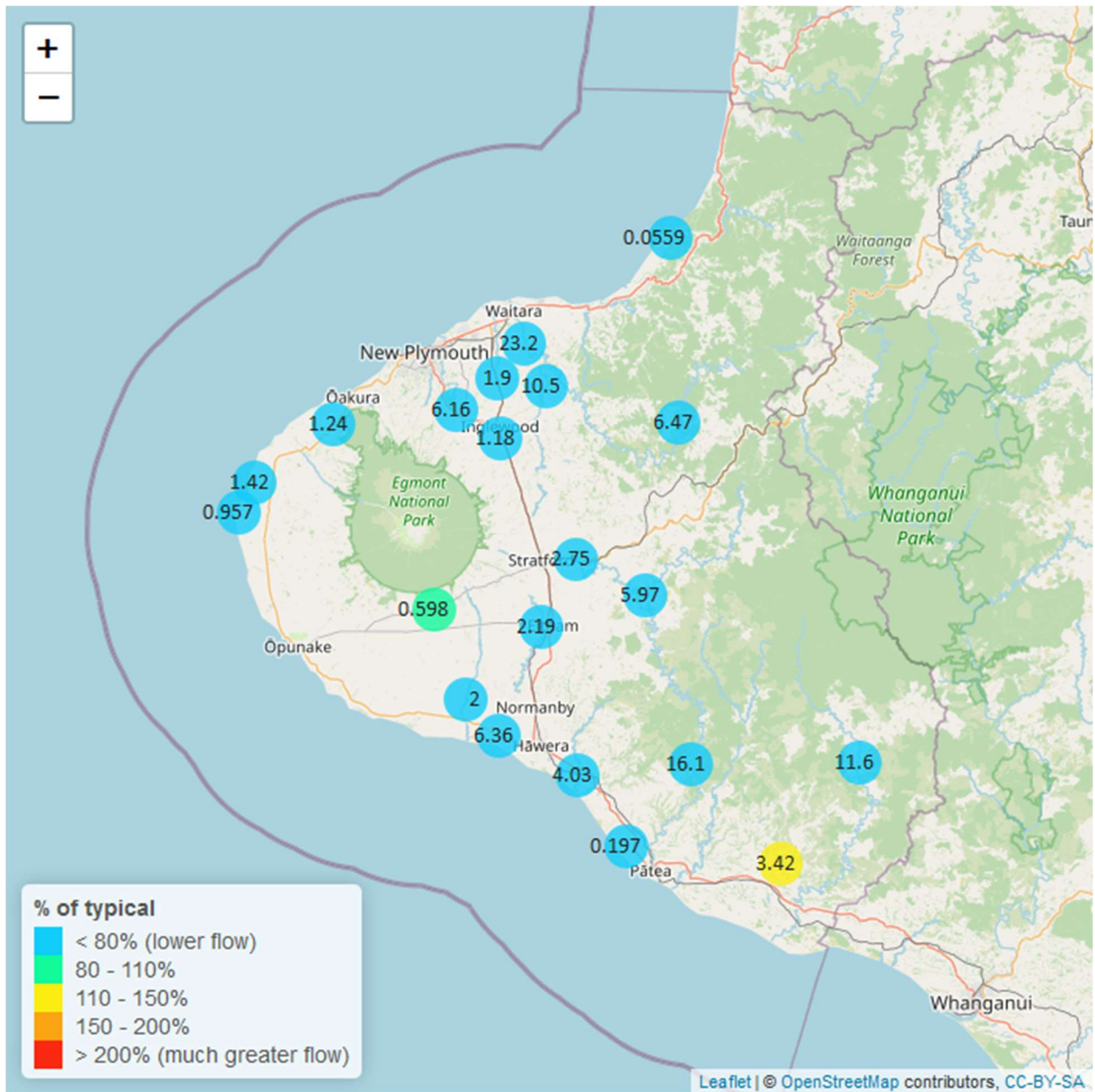


Table 2: Summary of high, low and mean flow for July and for July in all preceding years of record.

July 2023 - Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		July maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kaikura below 7346	0.23	0.56	0.17	0.18	0.20	0.32	0.25	8

July 2023 - Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		July maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	2.45	4.41	0.31	0.47	0.96	1.59	8.32	37
Kapuni at Normanby Rd	2.76	5.94	1.54	1.07	2.00	3.00	4.81	24
Mangaehu at Bridge	13.10	60.80	3.49	4.37	5.97	19.20	18.40	45
Manganui at Everett Park	19.70	79.70	6.91	5.40	10.50	26.30	75.70	32
Mangaoraka at Corbett Rd	3.32	7.93	1.12	0.78	1.89	3.18	9.74	48
Mangati at SH3	0.31	0.46	0.15	0.07	0.21	0.21	1.54	10
Mangawheroiti Above Intake W.W	0.91	1.71	0.42	0.26	0.60	0.66	1.74	10
Mangorei at Pipebridge	6.39	9.65	1.16	0.77	2.95	3.37	35.80	13
Moumahaki at Johnston Rd	8.92	9.08	1.05	0.91	3.42	3.11	49.50	5
Ngatoro at SH3	2.55	4.39	0.62	0.40	1.18	1.55	17.70	35
Patea at McColls Bridge	38.20	113.00	5.36	3.66	16.10	46.30	51.60	33
Patea at Skinner Rd	4.27	19.90	1.86	1.94	2.75	7.78	10.50	45
Tangahoe below Railway Bridge	7.02	23.40	2.52	3.63	4.03	8.97	18.70	5
Tawhiti at Duffys	1.48	2.58	0.79	0.39	1.06	1.25	1.78	38
Tawhiti below Meat Plant	1.00	2.00	0.85	0.42	0.90	0.99	1.09	12
Timaru at Tataraimaka	2.25	7.45	0.64	0.80	1.24	2.72	8.21	10
Waikaramarama at Bridge	0.14	1.19	0.02	0.04	0.06	0.33	1.15	5
Waingongoro at Eltham Rd	3.71	11.00	1.53	1.30	2.19	4.55	8.81	48
Waingongoro at SH45	8.95	27.50	4.84	4.28	6.36	12.40	15.50	42
Waiongana at SH3a	3.53	10.20	1.10	0.79	1.90	3.67	24.20	41
Waitara at Bertrand Rd	44.20	265.00	13.80	14.80	23.20	81.80	97.50	43
Waitara at Purangi Bridge	17.10	118.00	2.70	1.96	6.47	29.60	31.20	24
Waitotara at Rimunui Station	32.40	67.20	4.74	5.75	11.60	22.50	50.70	17
Waiwhakaiho at Egmont Village	13.50	29.00	2.80	2.40	6.16	9.47	73.90	43
Warea at Coast	2.71	6.70	0.73	0.61	1.42	2.36	6.35	6
Weraweraonga at 749 Mangawhio Rd	5.10	9.90	0.49	0.51	1.84	2.97	33.40	6



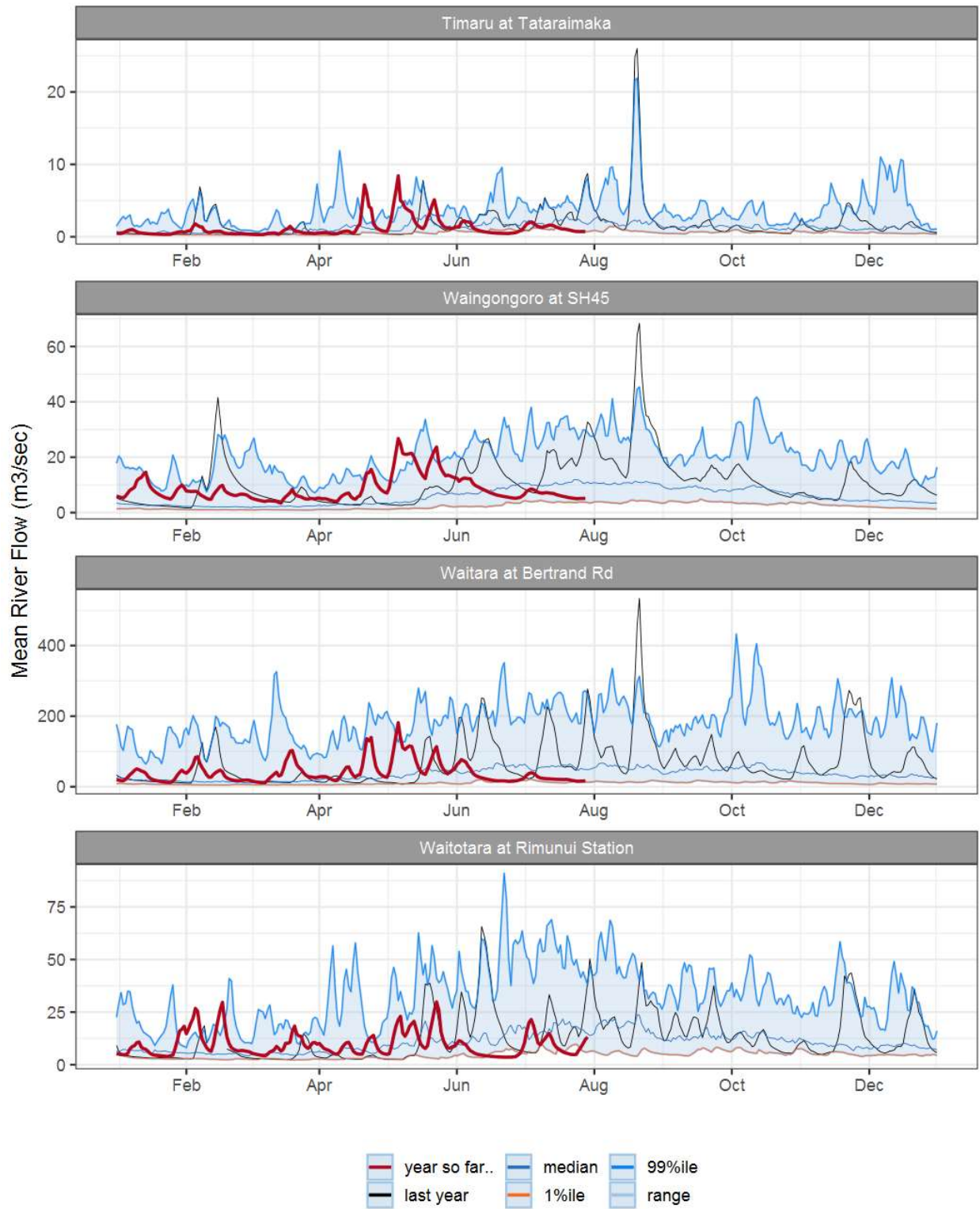


Figure 2.1: Running average river flows for selected sites, set in context of the historic record.

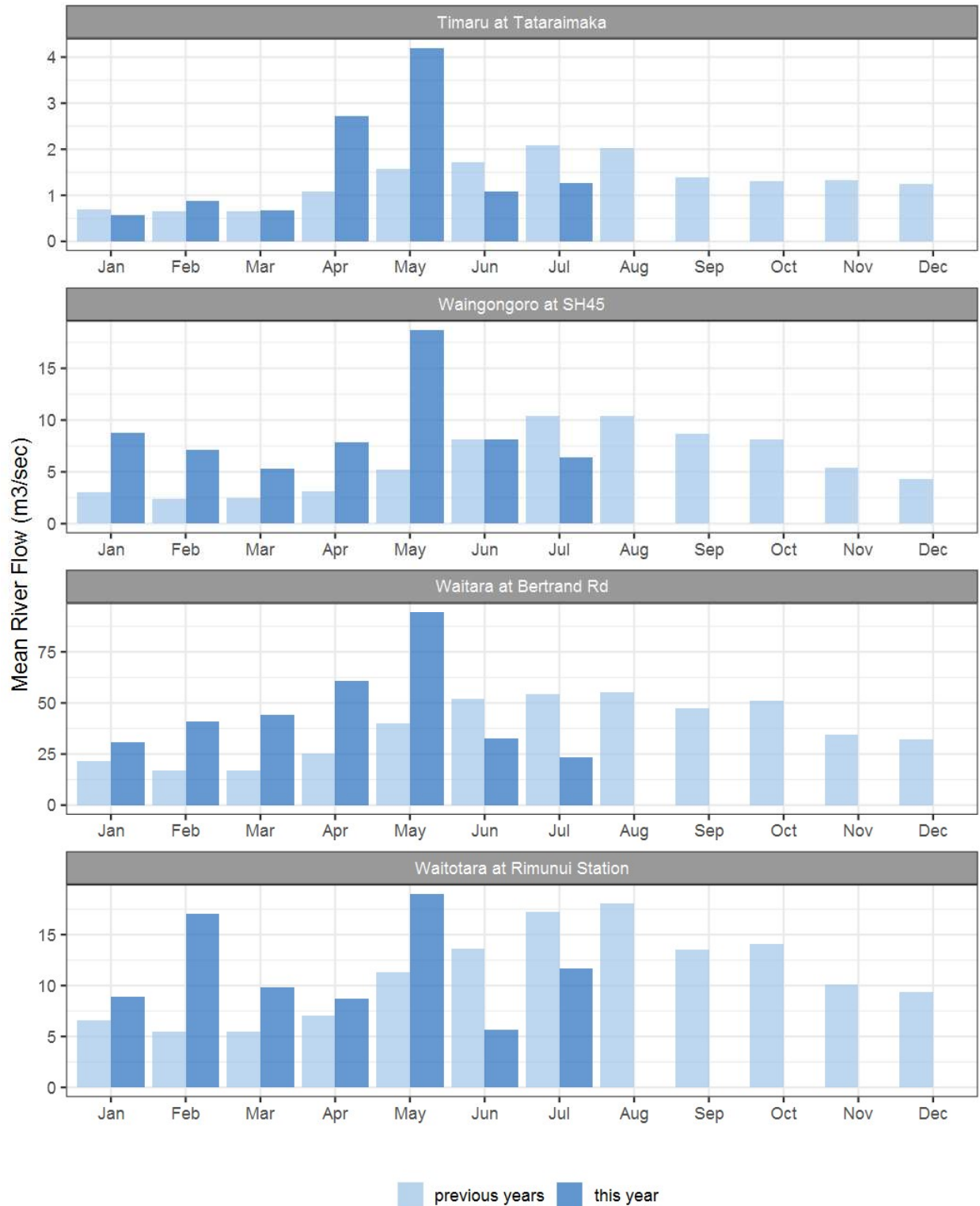
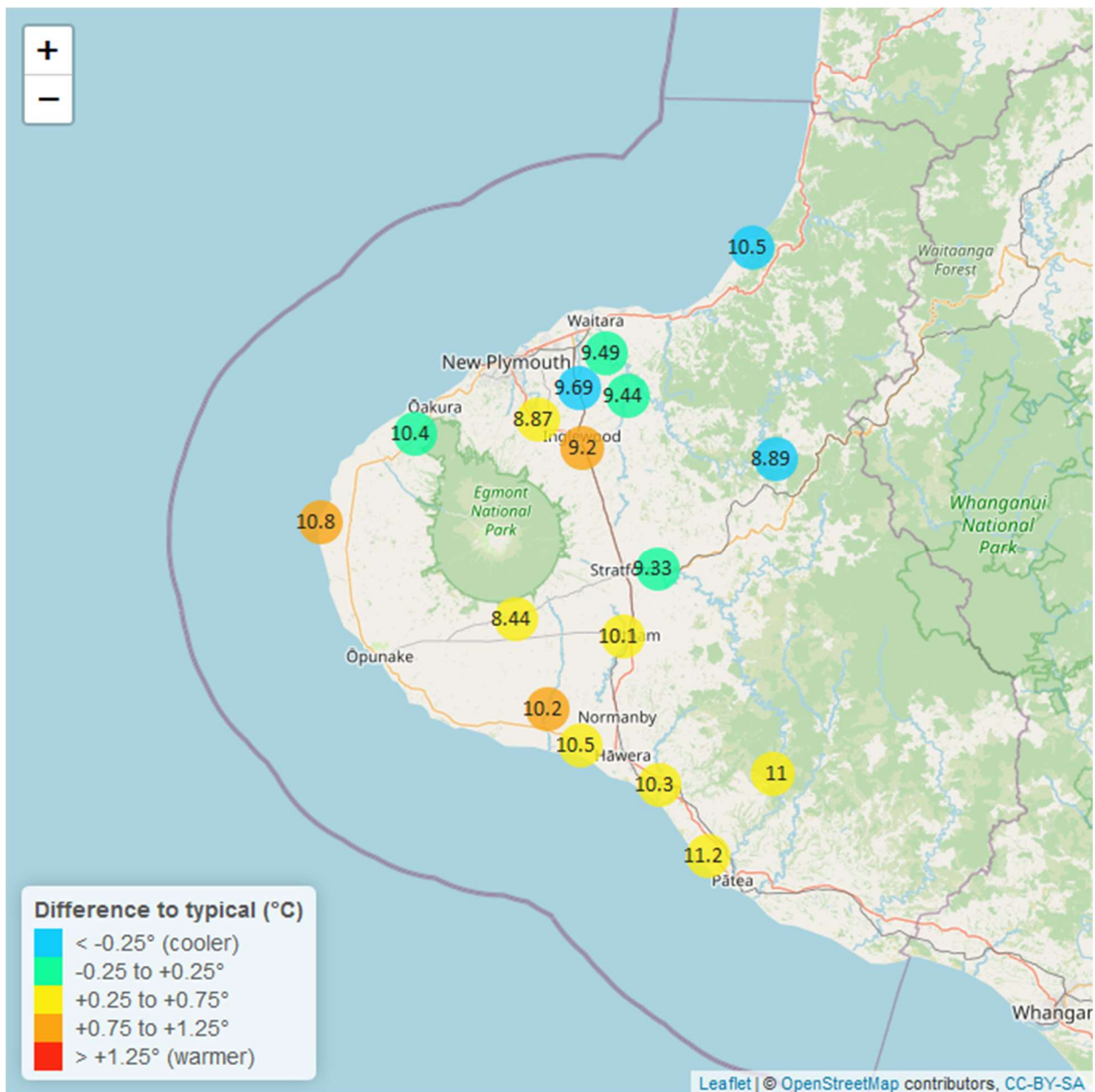


Figure 2.2: Monthly mean river flow for this month and the mean of all previously recorded months.

### 3. River Temperature

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



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

July 2023 - River Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		July maximum	data years
	current month	historic	current month	historic	current month	historic		
Kaikura below 7346	12.60	12.20	9.52	8.63	11.20	10.60	13.5	8
Kapoaiaia at Lighthouse	12.60	12.50	8.49	6.91	10.80	9.94	13.8	24
Kapuni at Normanby Rd	11.90	11.20	8.27	6.70	10.20	9.28	12.9	24
Manganui at Everett Park	10.90	11.40	7.67	6.90	9.44	9.35	11.6	14
Mangaoraka at Corbett Rd	12.40	12.80	8.89	8.60	11.00	10.90	13.4	19
Mangati at SH3	14.40	15.00	11.40	11.00	13.10	12.90	15.1	10
Mangawheroiti Above Intake W.W	9.66	9.49	7.05	6.40	8.44	8.07	10.3	10
Mangorei at Pipebridge	11.60	11.90	7.95	7.73	9.99	9.96	12.6	8
Matau at Woolshed	10.40	11.60	6.96	7.46	8.89	9.72	10.9	5
Ngatoro at SH3	10.40	10.40	7.64	5.95	9.20	8.37	10.9	21
Patea at McColls Bridge	11.70	11.50	10.20	9.69	11.00	10.60	12.0	9
Patea at Skinner Rd	10.90	11.40	7.50	7.20	9.33	9.49	11.3	19
Tangahoe below Railway Bridge	11.90	11.70	8.54	7.69	10.30	9.96	12.5	5
Tawhiti at Duffys	12.70	12.00	10.50	7.41	11.70	9.99	13.0	19
Tawhiti below Meat Plant	12.40	12.20	9.64	7.06	11.10	9.92	13.0	24
Timaru at Tataraimaka	12.10	12.40	8.46	7.97	10.40	10.30	13.0	8
Waikaramarama at Bridge	12.10	12.60	8.69	8.28	10.50	10.80	12.9	5
Waingongoro at Eltham Rd	11.60	11.10	8.30	7.20	10.10	9.48	12.0	19
Waingongoro at SH45	12.00	11.70	8.96	7.70	10.50	9.96	12.7	18
Waiongana at SH3a	11.30	11.90	8.14	7.79	9.69	10.10	12.1	12
Waitara at Bertrand Rd	10.60	11.60	8.18	6.97	9.49	9.25	11.2	33
Waiwhakaiho at Egmont Village	10.40	10.60	6.94	6.00	8.87	8.47	11.1	31

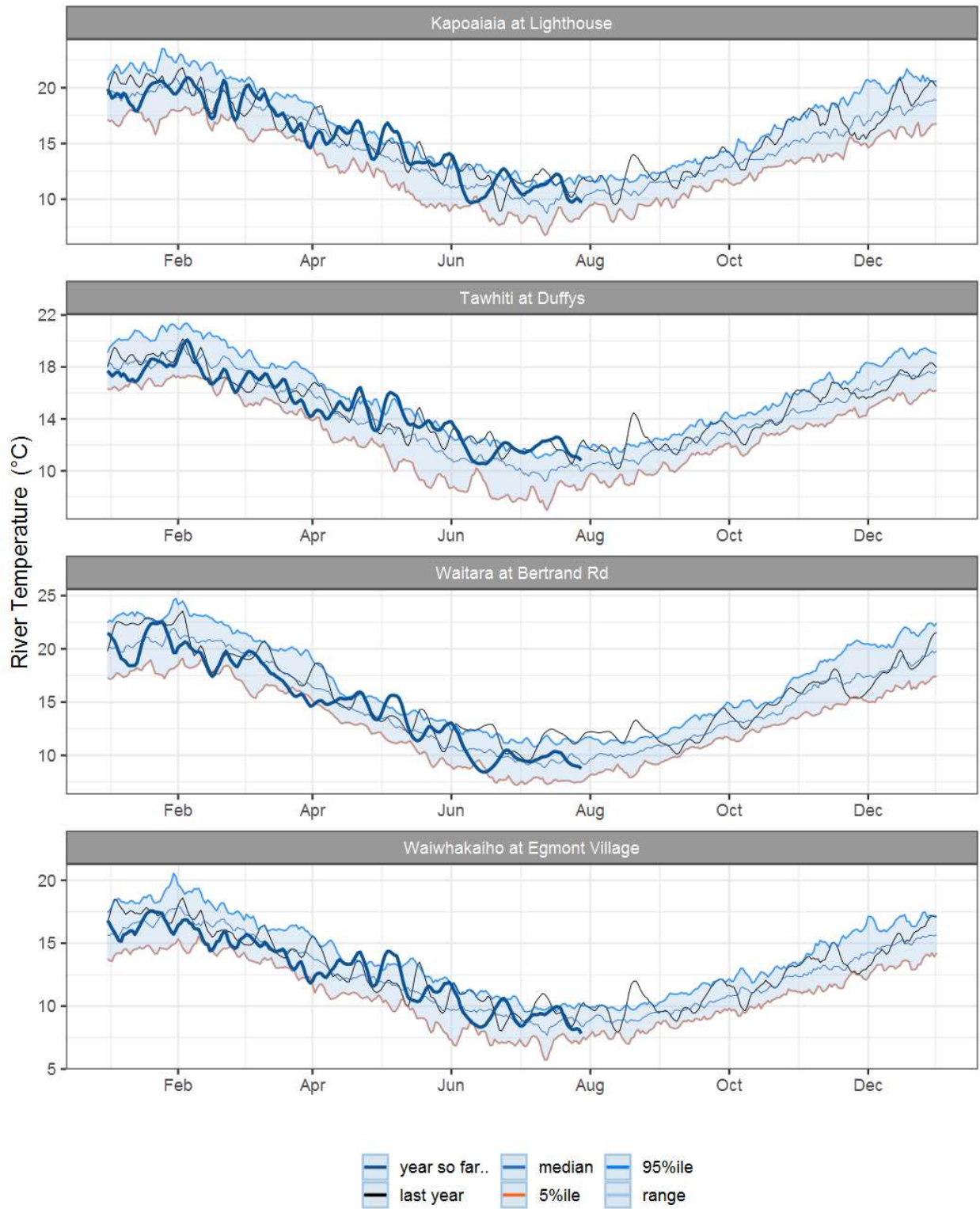


Figure 3.1: Running average river temperature for selected sites, set in context of the historic record.

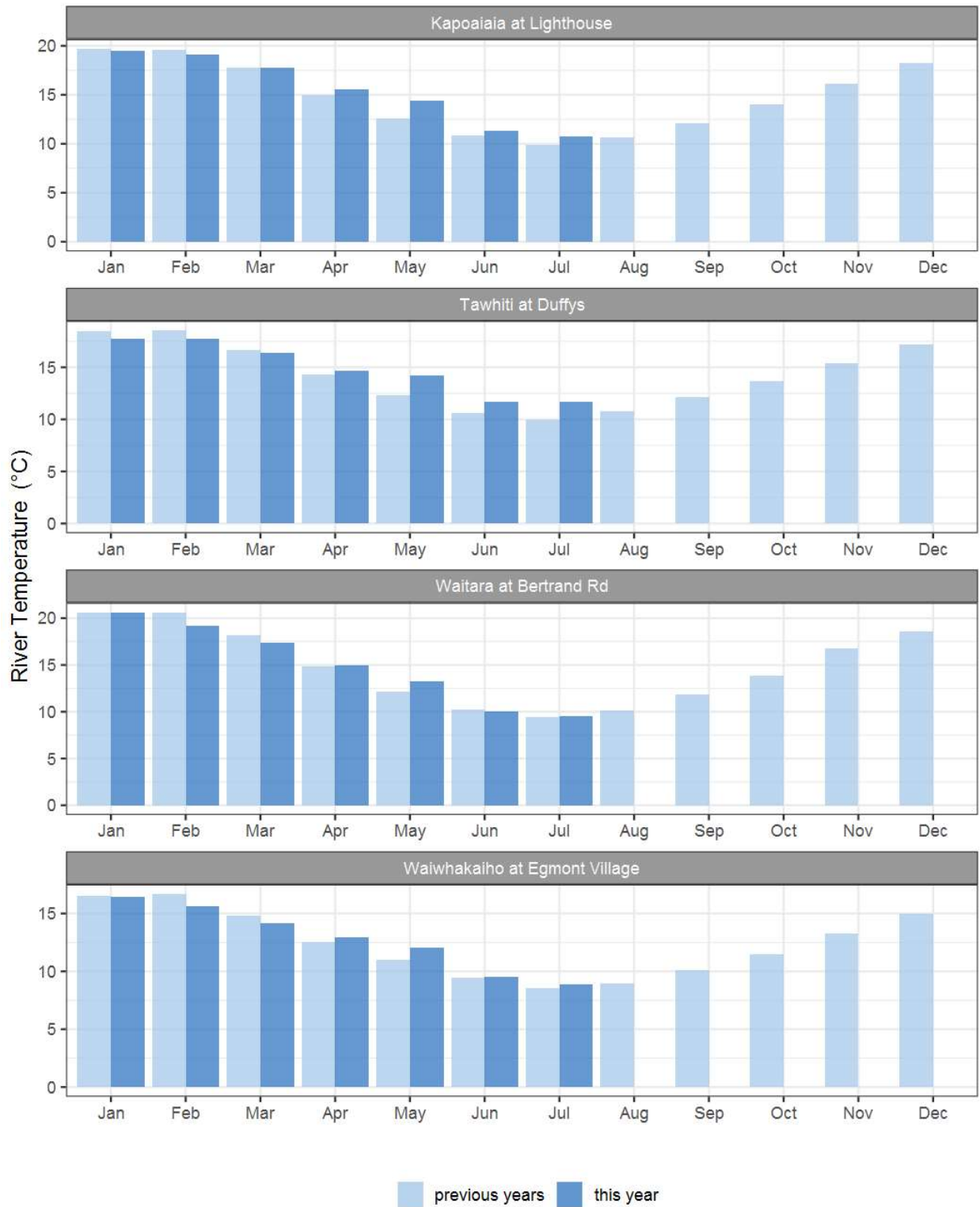


Figure 3.2: Monthly mean river temperature for this month and the mean of all previously recorded months.

## 4. Air Temperature

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

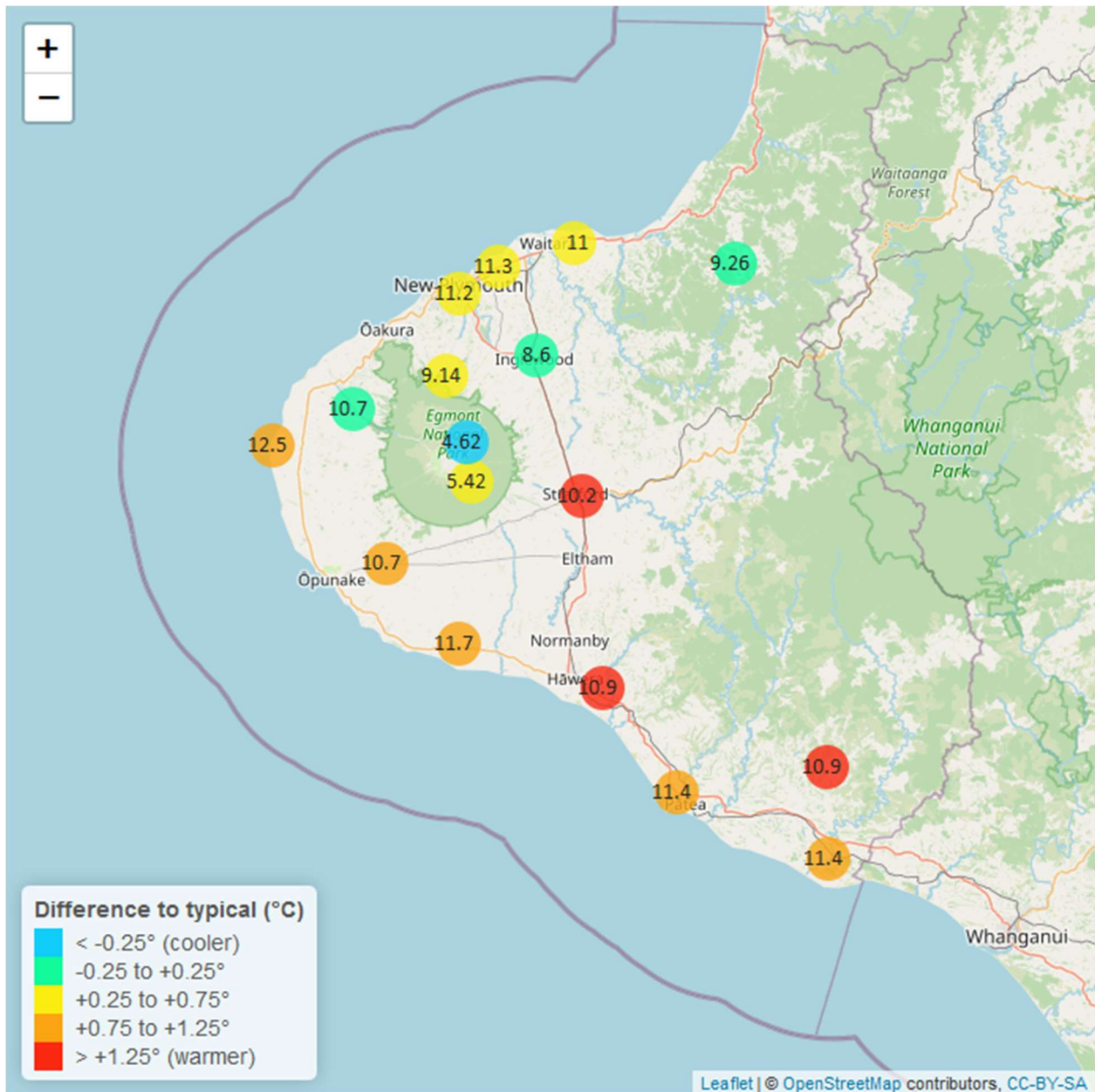


Table 4: Summary of high, low and mean air temperature for July and for July in all preceding years of record.

July 2023 - Air Temperature (°C)								
Monitoring Site	Highs		Lows		Mean		July maximum	data years
	current month	historic	current month	historic	current month	historic		
Brooklands Zoo at New Plymouth	15.50	15.30	6.180	5.120	11.20	10.70	17.1	11

July 2023 - Air Temperature (°C)								
Monitoring Site	Highs		Lows		Mean		July maximum	data years
	current month	historic	current month	historic	current month	historic		
Dawson Falls	8.33	9.05	2.030	0.576	5.42	5.11	10.6	8
Inglewood at Oxidation Ponds	12.70	13.70	2.930	2.480	8.60	8.83	14.4	11
Kapoaiaia at Lighthouse	15.00	14.80	7.900	6.000	12.50	11.50	16.1	11
Kaupokonui at Glenn Rd	14.50	14.80	7.270	4.580	11.70	10.60	16.4	8
Mangati at SH3	14.90	15.10	6.010	4.650	11.30	10.80	15.9	10
Mangorei Upper at Forest Hill	11.70	12.10	5.060	4.140	9.14	8.65	13.2	6
Motunui M39 at Weston W3	14.50	14.60	6.800	5.060	11.00	10.60	15.8	6
North Egmont at Visitors Centre	7.69	8.69	0.972	0.563	4.62	4.90	10.0	8
Patea at Bore 3	14.30	14.60	7.110	5.050	11.40	10.50	15.5	10
Patea at Stratford	14.40	13.60	5.550	3.240	10.20	8.92	17.4	11
Stony at Mangatete Bridge	13.50	14.10	6.440	5.730	10.70	10.50	15.2	7
Taungatara at Eltham Rd	13.60	14.10	5.630	4.290	10.70	9.94	15.2	8
Tawhiti at Duffys	14.50	14.50	4.200	1.520	10.90	9.62	16.3	10
Uruti at Kaka Rd	12.70	13.20	5.080	4.500	9.26	9.22	13.9	5
Waitotara at Hawken Rd	14.80	15.00	6.880	5.140	11.40	10.60	16.7	7
Waitotara at Ngutuwera	13.60	14.20	6.290	5.310	10.60	10.20	17.1	5
Waiwhakaiho at Hillsborough	14.10	14.30	7.090	5.780	11.20	10.60	15.5	11
Weraweraonga at 749 Mangawhio Rd	15.20	15.00	5.060	3.020	10.90	9.60	18.5	6



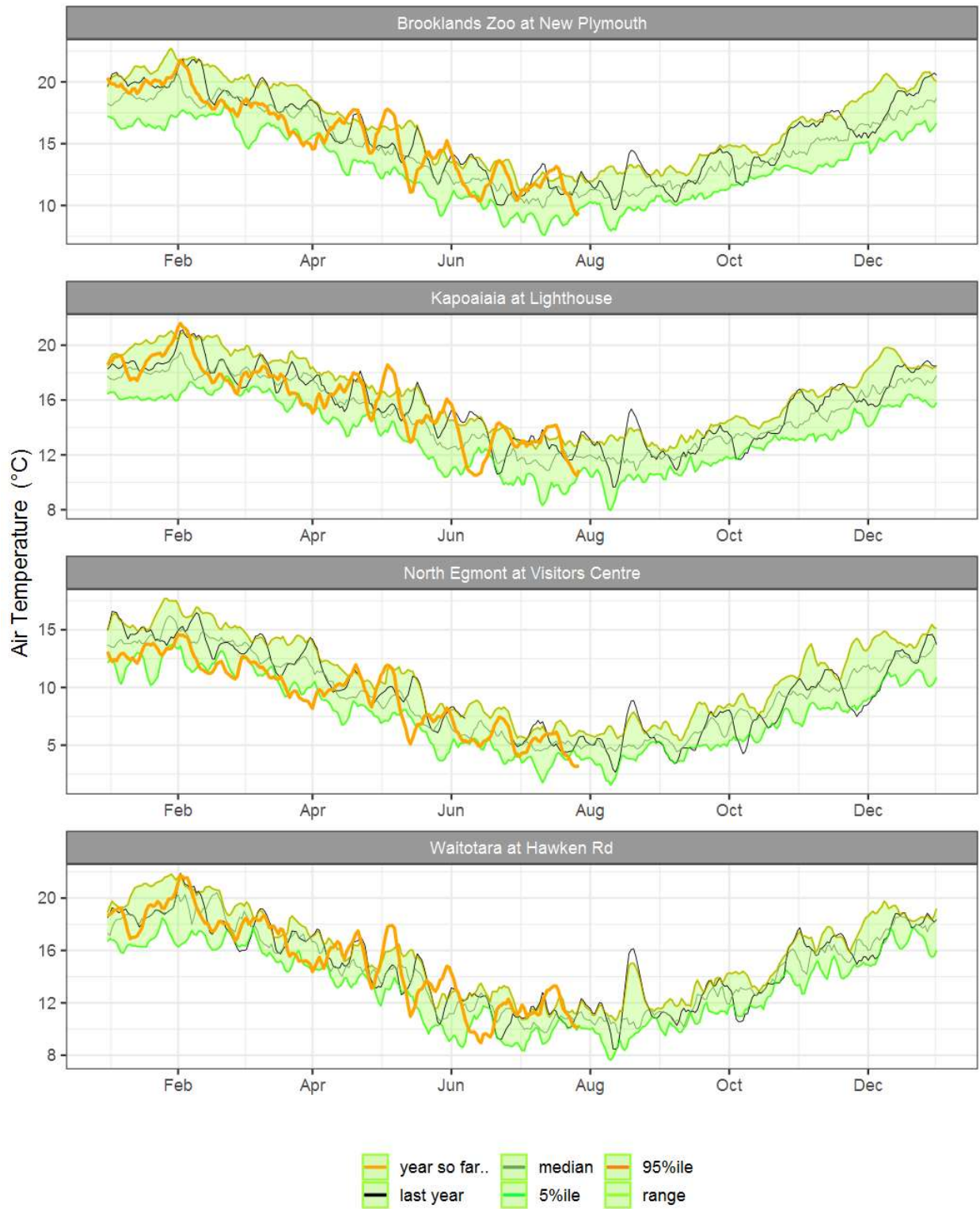


Figure 4.1: Running average air temperature for selected sites, set in context of the historic record.

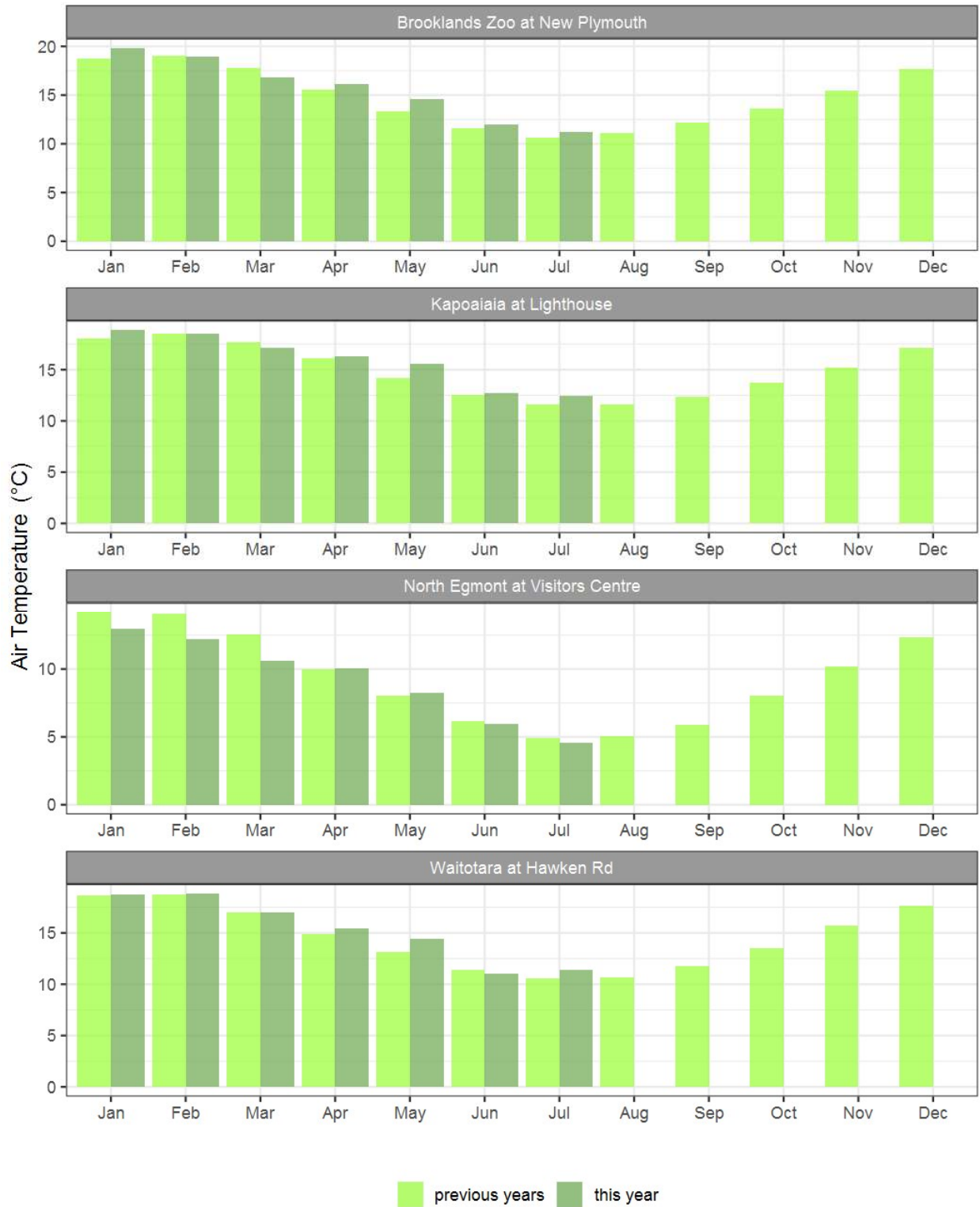
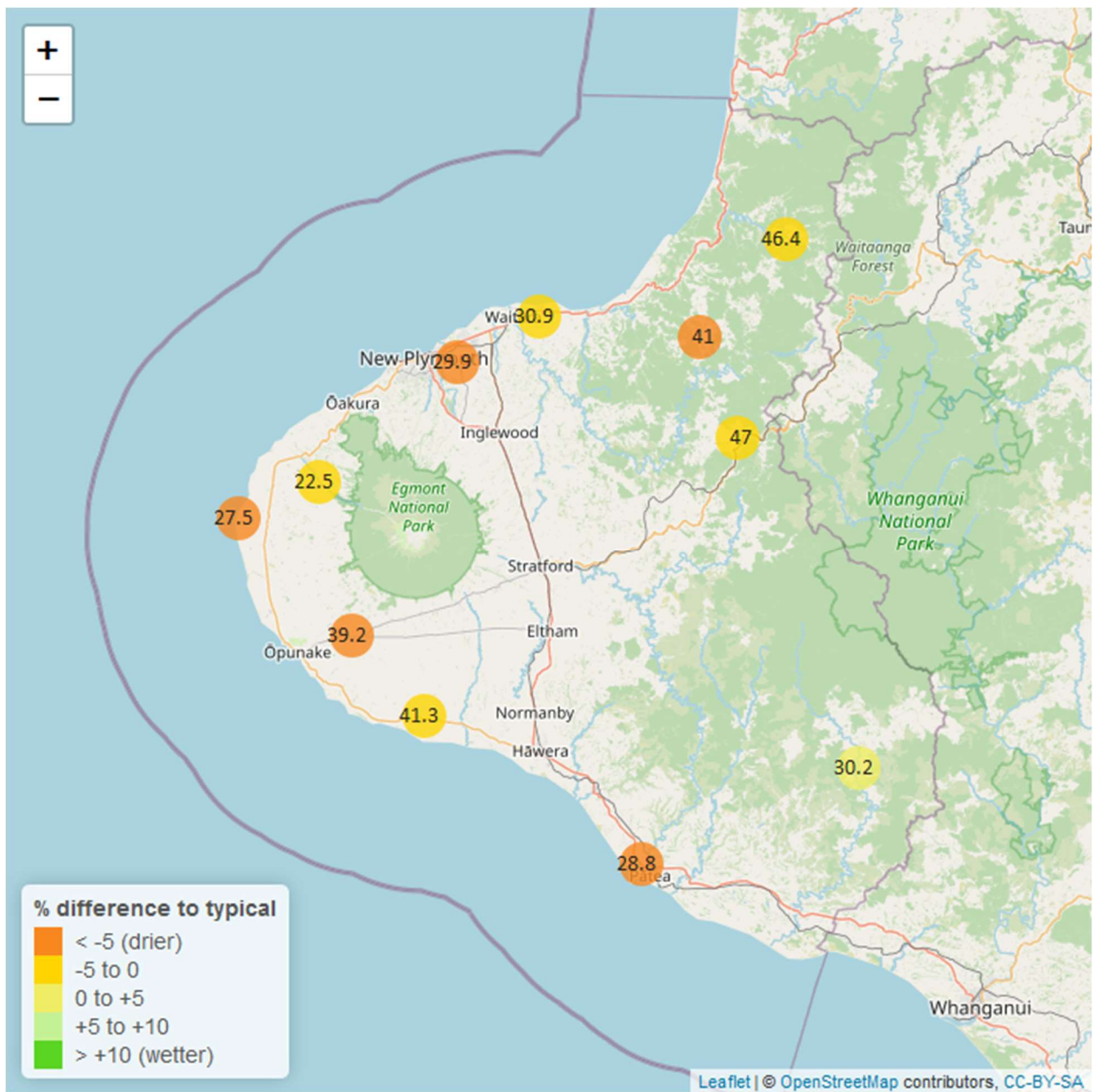


Figure 4.2: Monthly mean air temperature for July and the mean of all previously recorded months.

## 5. Soil Moisture

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



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

July 2023 - Soil Moisture (%)								
Monitoring Site	Highs		Lows		Mean		July maximum	Data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	28.3	34.4	27.0	24.0	27.5	28.3	28.5	11
Kaupokonui at Glenn Rd	45.3	45.8	38.3	32.4	41.3	38.6	46.7	12
Kotare at OSullivans	49.5	51.5	44.0	37.7	46.4	43.6	55.5	11
Motunui M39 at Weston W3	31.8	33.1	30.3	28.4	30.9	30.9	32.9	10
Patea at Bore 3	30.5	34.6	27.8	26.0	28.8	29.7	31.2	7
Pohokura Saddle	49.7	51.8	45.4	40.3	47.0	45.6	50.4	9
Stony at Mangatete Bridge	25.2	25.5	19.6	14.3	22.5	20.0	27.2	7
Taungatara at Eltham Rd	41.4	48.1	37.8	29.8	39.2	39.2	44.2	10
Uruti at Kaka Rd	41.6	46.8	40.2	39.8	41.0	43.0	41.9	12
Waitotara at Rimunui Station	32.3	31.9	28.9	26.9	30.2	29.2	32.8	6
Waiwhakaiho at Hillsborough	31.4	34.4	29.1	26.5	29.9	30.1	32.6	11

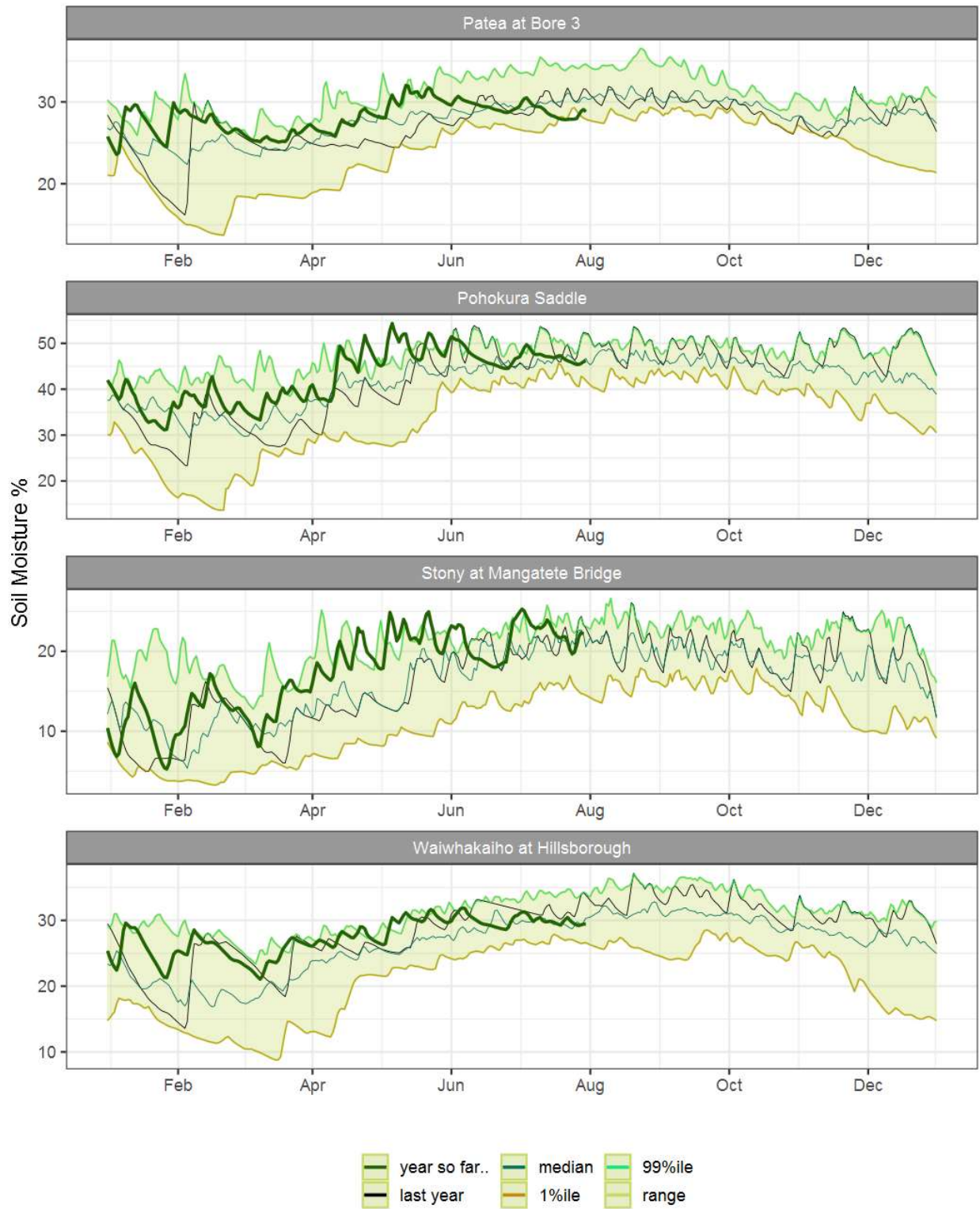


Figure 5.1: Running average soil moisture for selected sites, set in context of the historic record.

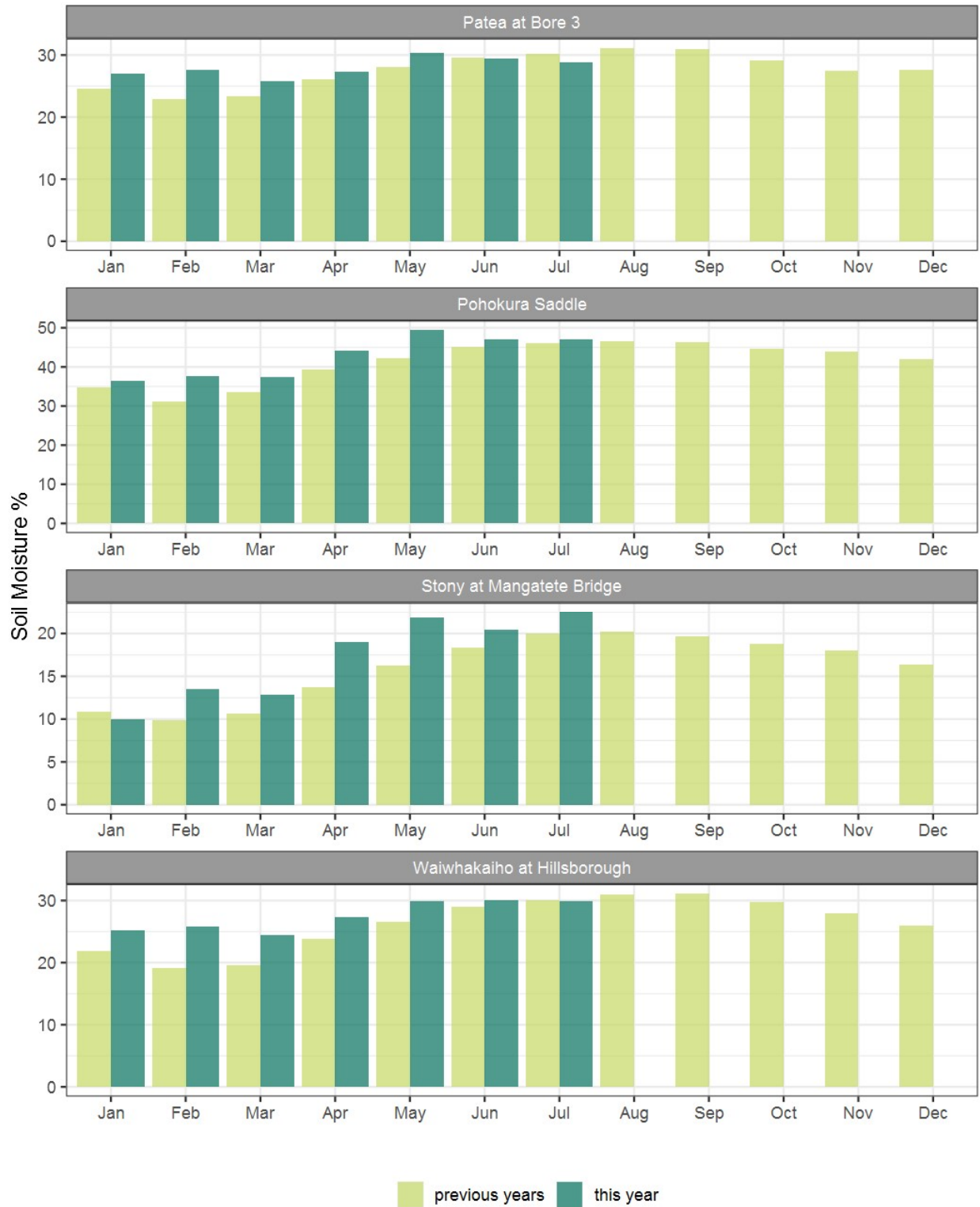
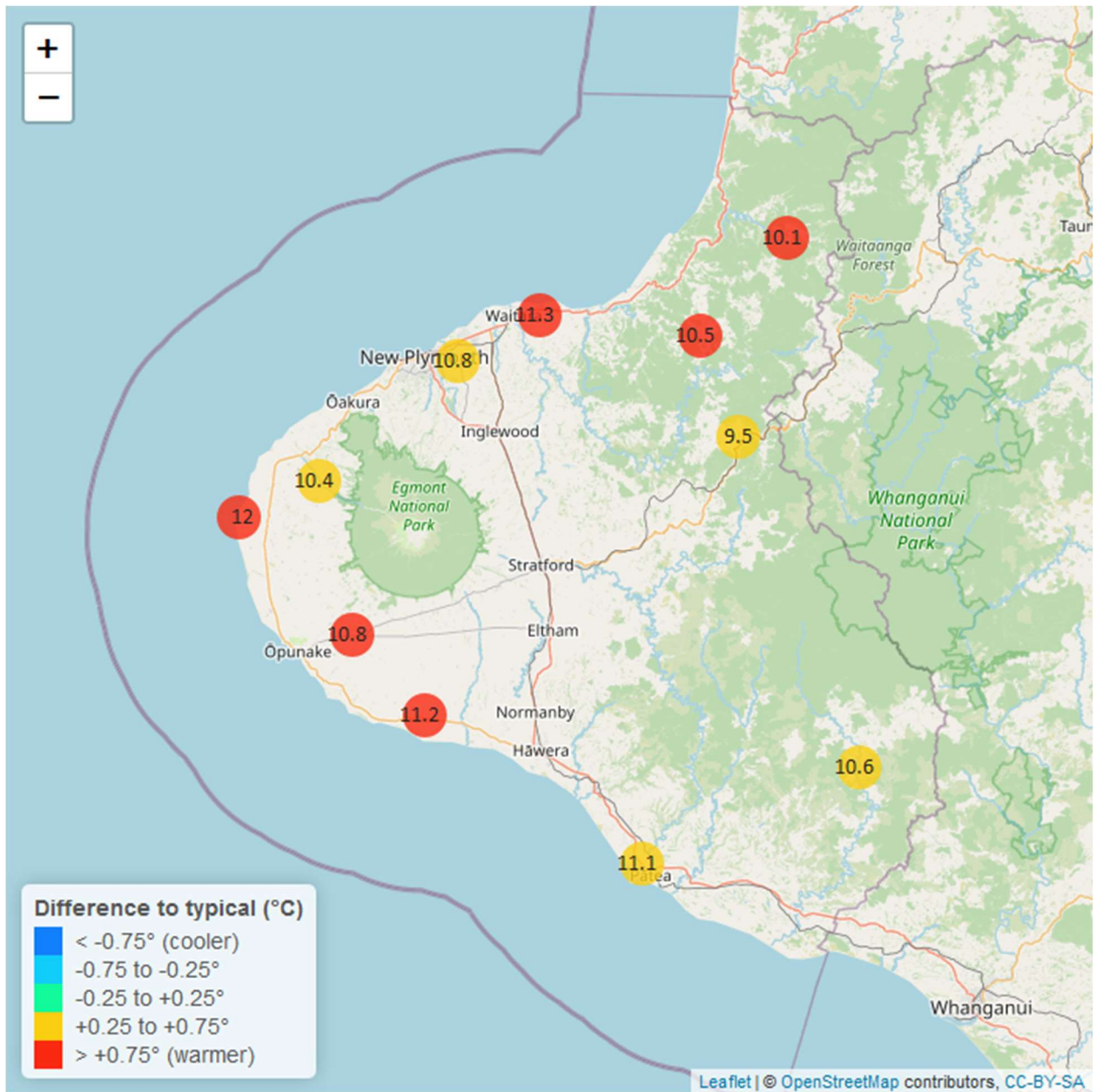


Figure 5.2: Monthly mean soil moisture for this month and the mean of all previously recorded months.

## 6: Soil Temperature

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



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

July 2023 - Soil Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		July maximum	data years
	current month	historic	current month	historic	current month	historic		
Kapoaiaia at Lighthouse	13.8	13.1	9.95	8.69	12.0	11.10	14.6	11
Kaupokonui at Glenn Rd	12.3	11.8	10.10	8.32	11.2	10.10	12.6	12
Kotare at OSullivans	11.0	11.3	8.52	6.29	10.1	9.06	11.3	11
Motunui M39 at Weston W3	12.6	12.0	10.00	7.69	11.3	10.00	13.3	10
Patea at Bore 3	12.6	11.9	9.54	8.86	11.1	10.50	13.1	7
Pohokura Saddle	10.4	10.8	8.24	7.31	9.5	9.15	10.6	9
Stony at Mangatete Bridge	11.8	11.9	8.84	7.90	10.4	9.94	12.3	6
Taungatara at Eitham Rd	12.2	11.6	9.10	8.14	10.8	9.98	12.8	10
Uruti at Kaka Rd	11.0	11.1	9.55	6.91	10.5	9.50	11.2	12
Waitotara at Rimunui Station	11.9	11.7	9.19	8.11	10.6	10.10	12.4	6
Waiwhakaiho at Hillsborough	12.0	12.1	9.47	8.35	10.8	10.30	12.6	11



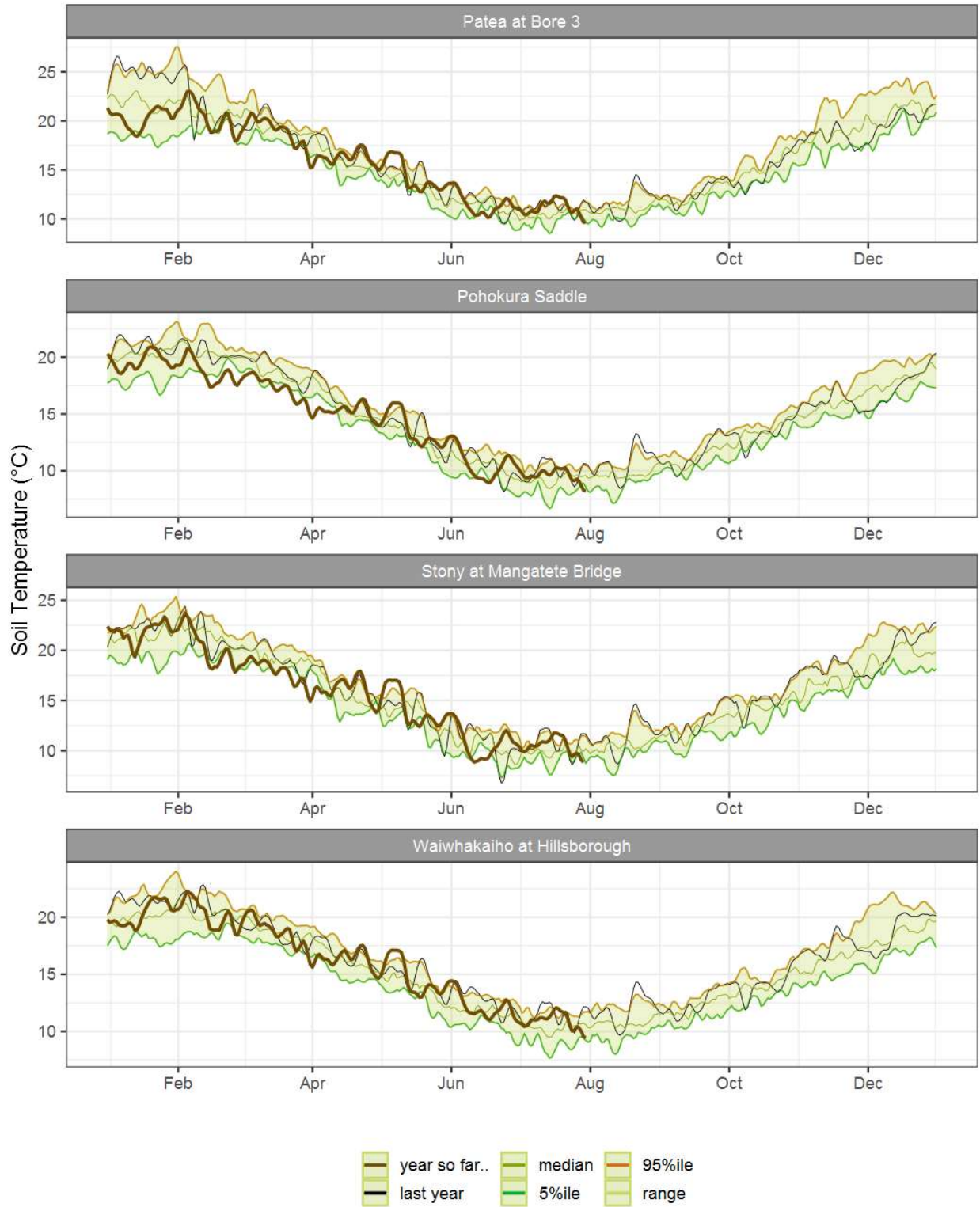


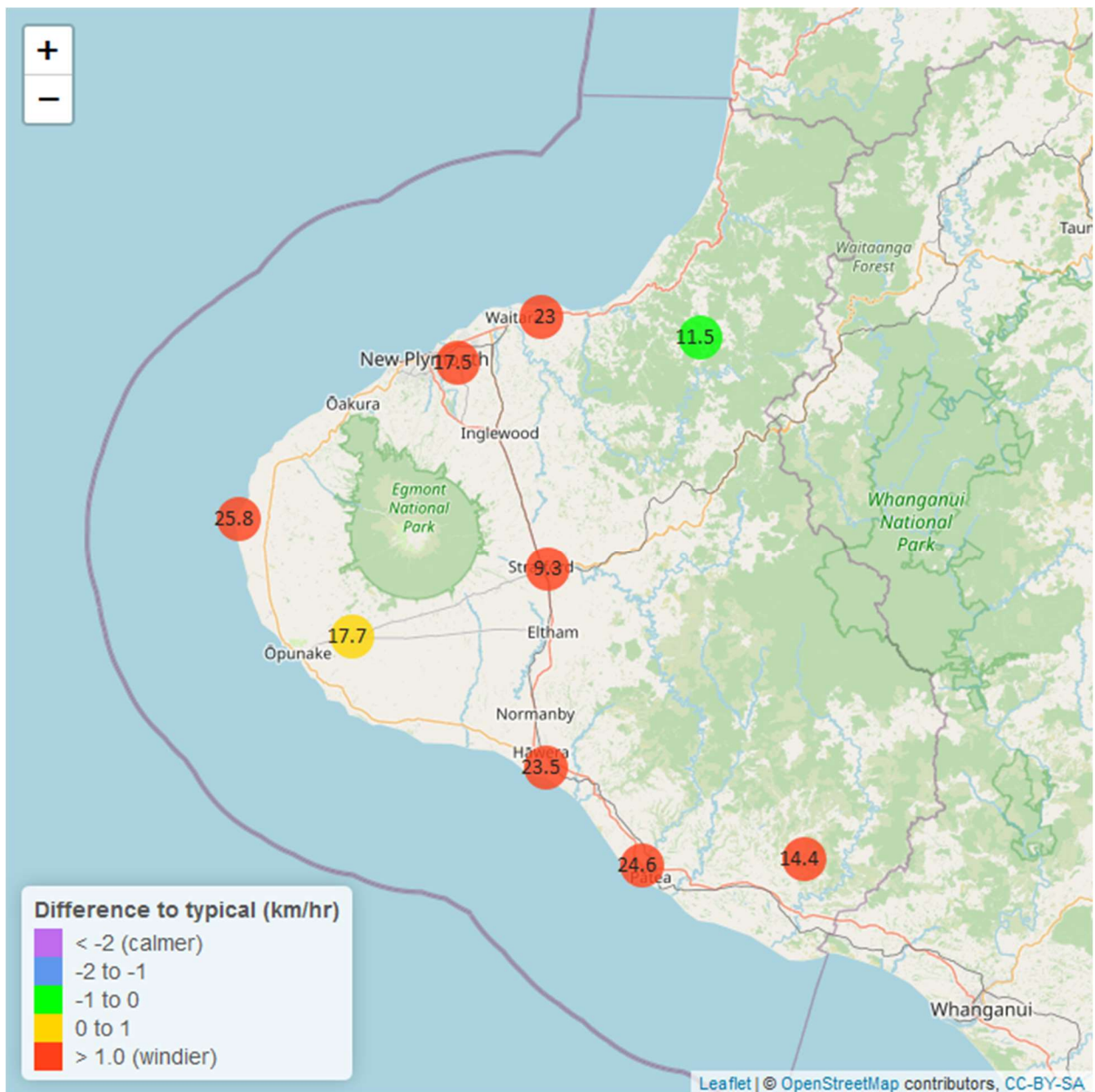
Figure 6.1: Running average soil temperature for selected sites, set in context of the historic record.



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



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

July 2023 - Wind Speed (average) - (km/hr)								
Monitoring Site	Highs		Lows		Mean		July maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	42.6	38.9	8.33	5.56	23.5	18.70	55.6	18
Kapoaiaia at Lighthouse	46.5	43.7	6.82	6.32	25.8	21.60	68.2	24
New Plymouth AWS	45.4	42.6	6.48	5.56	23.0	19.70	57.4	15
Patea at Bore 3	45.9	42.8	6.87	6.82	24.6	20.50	59.3	7
Patea at Stratford	18.9	18.8	2.84	2.39	9.3	8.18	26.6	17
Taungatara at Eltham Rd	33.2	34.6	7.05	6.38	17.7	17.40	53.9	7
Uruti at Kaka Rd	24.9	25.8	3.27	3.32	11.5	11.80	35.0	24
Waitotara at Ngutuwera	28.1	23.8	3.86	1.96	14.4	10.80	38.6	25
Waiwhakaiho at Hillsborough	39.0	27.4	4.74	4.15	17.5	13.80	51.1	6

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

July 2023 - Wind Speed (Max. Gust) - (km/hr)								
Monitoring Site	Highs		Lows		Mean		July maximum	Data years
	current month	historic	current month	historic	current month	historic		
Hawera AWS	81.5	83.3	29.6	20.4	57.1	48.2	87.0	18
Kapoaiaia at Lighthouse	91.8	86.1	27.4	22.6	52.5	52.0	97.1	23
New Plymouth AWS	81.5	87.0	25.9	20.4	57.1	49.4	92.6	15
Patea at Bore 3	86.1	85.5	27.4	21.4	55.9	49.8	92.1	7
Patea at Stratford	65.9	65.5	18.0	15.8	41.4	36.7	66.2	17
Taungatara at Eltham Rd	78.5	92.0	26.1	21.4	49.8	49.0	85.0	7
Uruti at Kaka Rd	74.9	78.8	23.0	19.7	48.9	42.3	76.7	23
Waitotara at Ngutuwera	108.0	71.6	28.4	16.4	64.4	40.8	113.0	25
Waiwhakaiho at Hillsborough	86.4	71.7	22.3	20.4	54.2	43.2	86.5	6

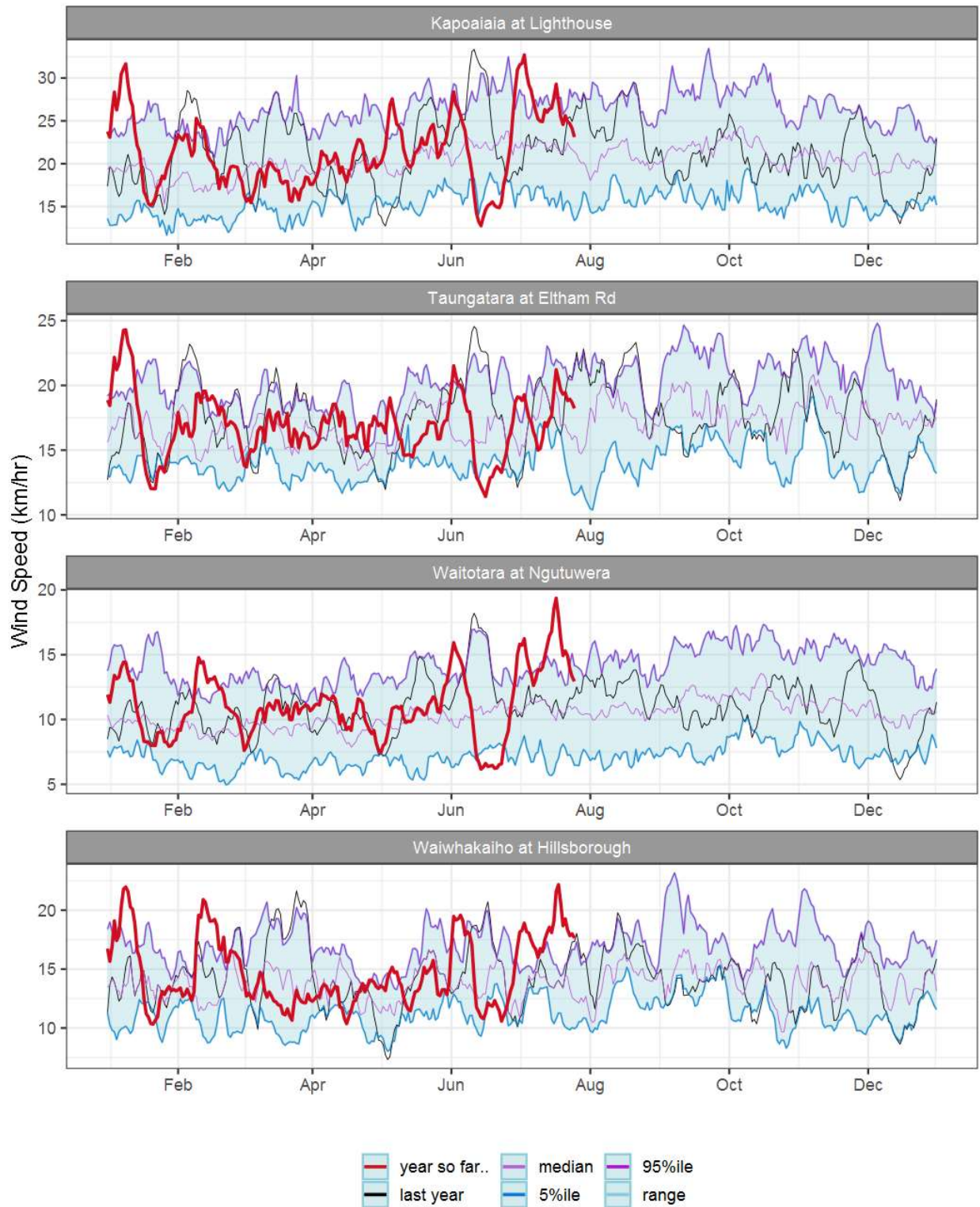


Figure 7.1 : running average Wind Speed (km/hr) for selected sites, set in context of the historic record.

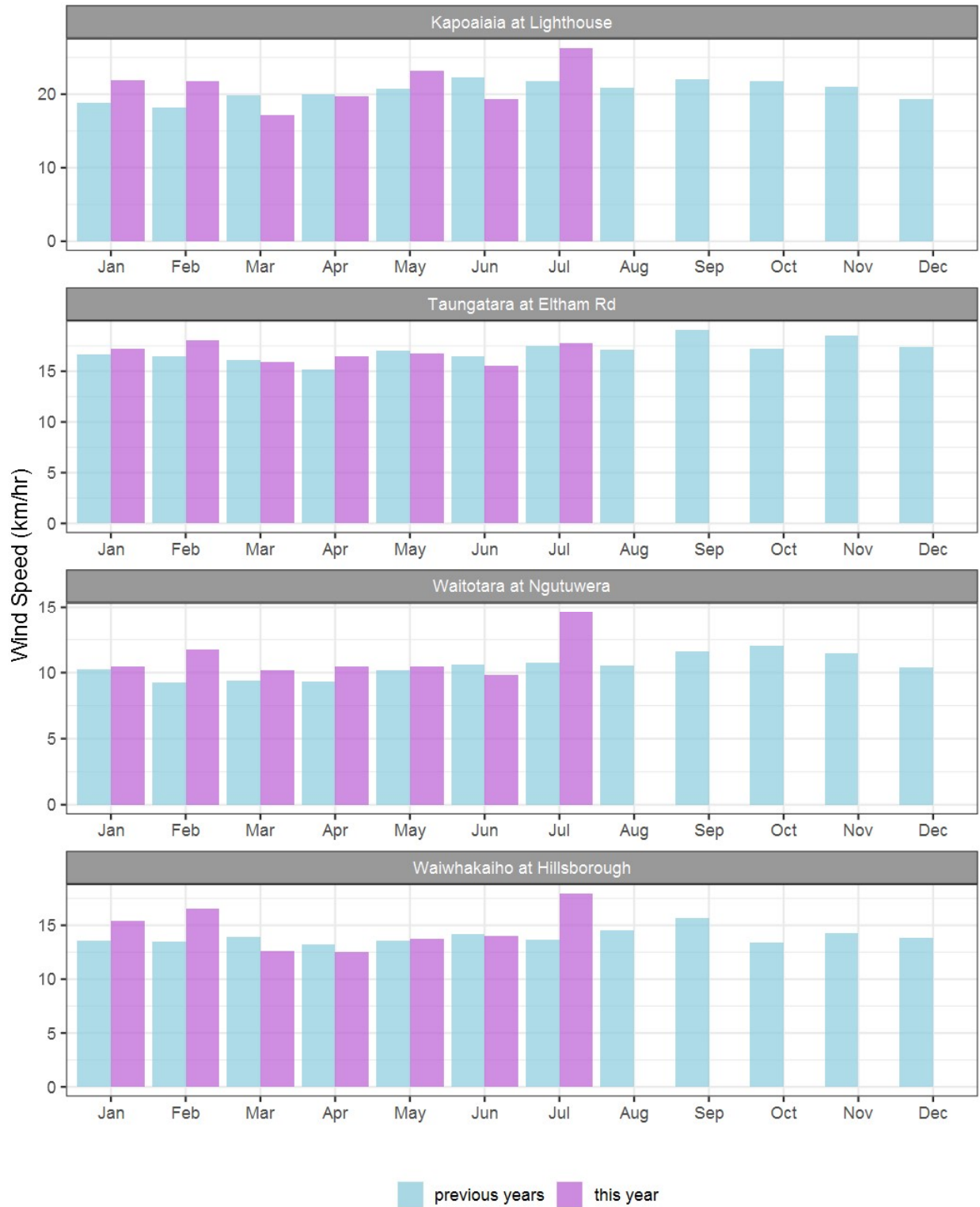


Figure 7.2: Monthly mean Wind Speed (km/hr) for selected sites, in context to the mean of all previously recorded months.

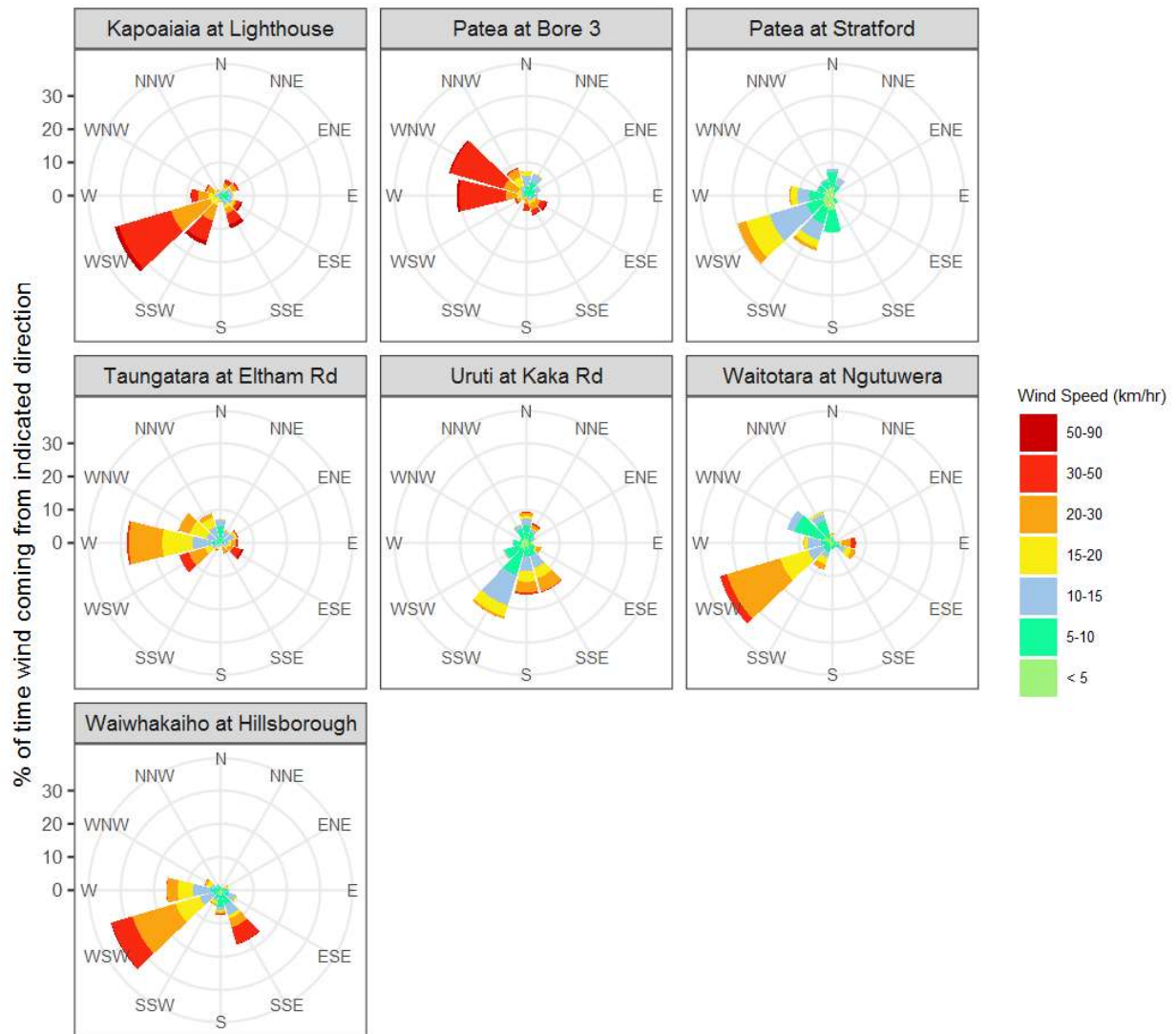


Figure 7.3: Wind roses for this month showing mean wind speed.

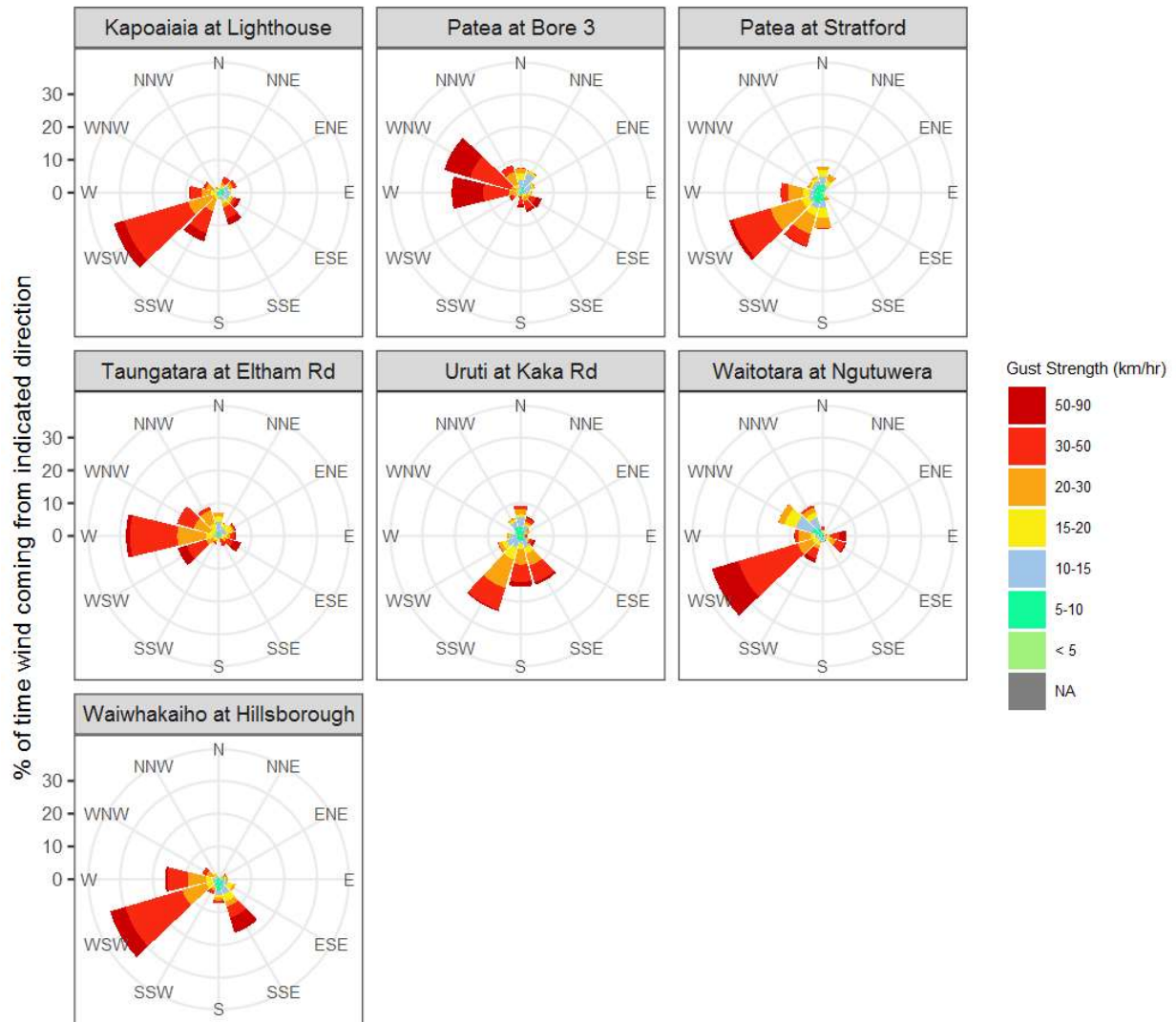


Figure 7.4: Wind roses for July for Wind Speed (km/hr) .



## Summary of month's conditions

### Rainfall

On average rainfall for July was 108.3 mm, 41% less than typical July rainfall, and ranging from 71% less than rainfall at Whangamomona at Marco Road, and 7% more than rainfall at Waitotara at Rimunui Station than a typical July.

Year to date rainfall ranges from 15% less rainfall at Uruti at Kaka Rd, and 17% more rainfall at Tawhiti at Duffys, with an average of 4% more than normal. Compared to typical full year totals, on average sites have already received 58% of a typical year's rainfall, with the highest value at Tawhiti at Duffys, 66% of normal, whereas Uruti at Kaka Rd sits at 45% of the typical years total.

### River Flow

Mean river flows for July were 41.4% lower than typical values, low flows were 23% greater, and high flows 58.2% lower than typical values. The maximum river flow recorded in July was 97.5m<sup>3</sup>/sec at Waitara at Bertrand Rd.

### River Water Temperature

Mean river (non-mountain) water temperatures were 10.3°C, an average of 0.4°C warmer than long-term July values. Nighttime-low water temperatures were on average 1°C warmer than historic lows, and day-time high temperatures were on average 0.1°C cooler than historic highs. The maximum river water temperature recorded in July was 15.1°C at Mangati at SH3.

### Air Temperature

The average air temperature for the region (excluding Te Maunga sites) was 10.1°C, which is 0.6°C warmer than long-term July averages. Low air temperatures for July were on average 1.4°C warmer than the July average for previous years. Day-time high temperatures were on average 0.3°C cooler than historic highs. The maximum air temperature recorded in July was 18.5°C at Weraweraonga at 749 Mangawhio Rd.

### Soil Moisture

The average soil moisture for July across sites in Taranaki Region was 35%. Soil moistures were on average 0.6% wetter than typical July values. On average, low soil moistures were 3.8% wetter than previous lows, and the highs were on average 2.8% drier than previous values for July.

### Soil Temperature

July soil temperatures were generally 0.8°C warmer than long-term averages. Average nighttime low soil temperatures were 1.4°C warmer than recorded lows, and upper day-time soil temperatures were on average 0.2°C warmer than long-term July highs. The maximum soil temperature recorded in July was 14.6°C at Kapoiaia at Lighthouse.

## Wind Speed (average and 10 minute gust)

July average wind speeds were 19.8km/hr, with average gust strength of 55km/hr, these were 3km/hr stronger, and 8.2km/hr gustier than the long-term average. Average calm weather wind speeds were 0.9km/hr stronger than recorded lows, and windy conditions were on average 3.2km/hr stronger than long-term July highs. The maximum wind gust recorded in July was 113km/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 09 August, 2023.