

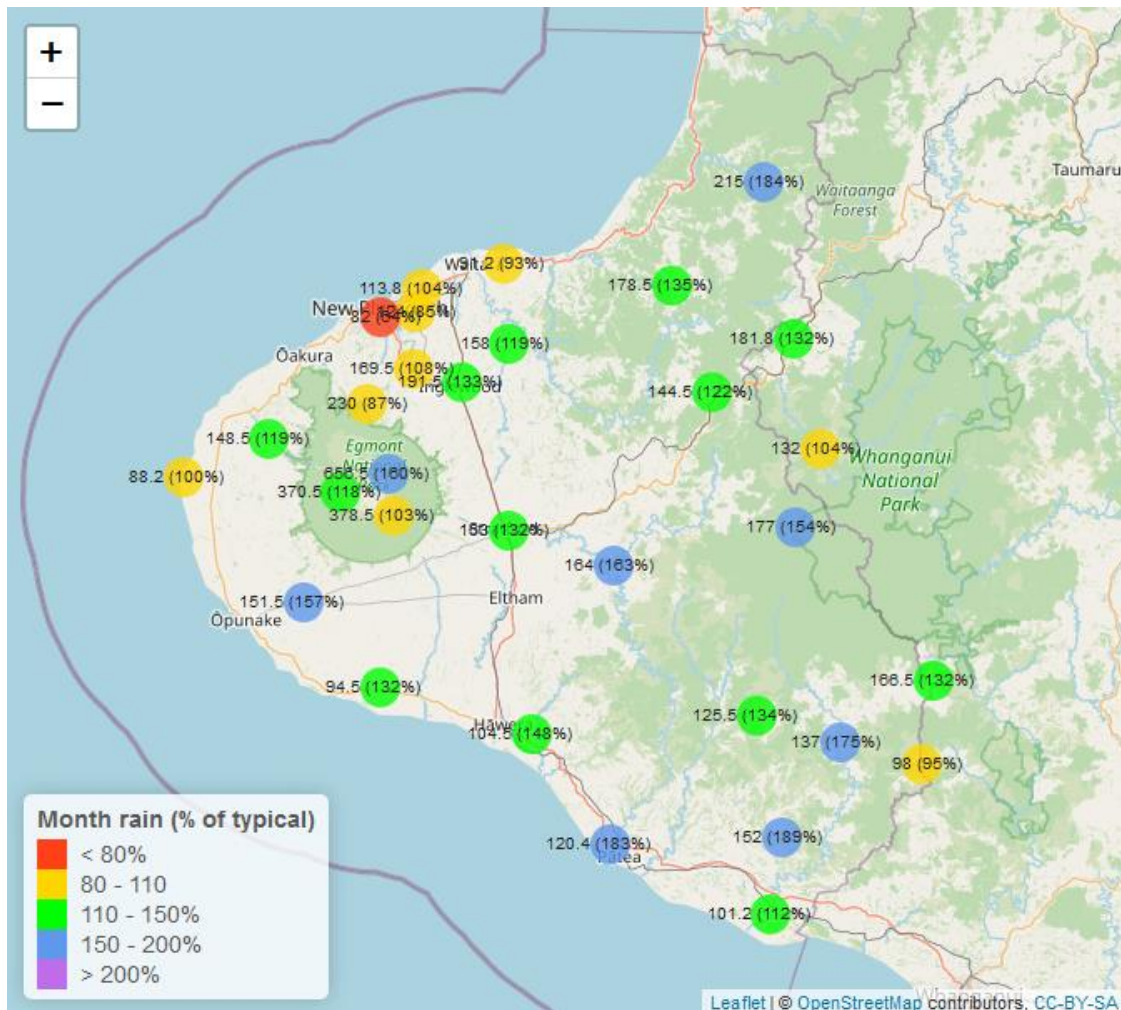
Taranaki Regional Council Monthly Rainfall and Environmental Data Report for March 2023

3 April, 2023

Note: Provisional Data Only.

1. Rain gauge values at 28 sites in Taranaki

The Taranaki Regional Council co-owns rain-gauges with Horizons, so we can assess rainfalls right over the Eastern Hill Country (these are included in our reporting since August 2022).

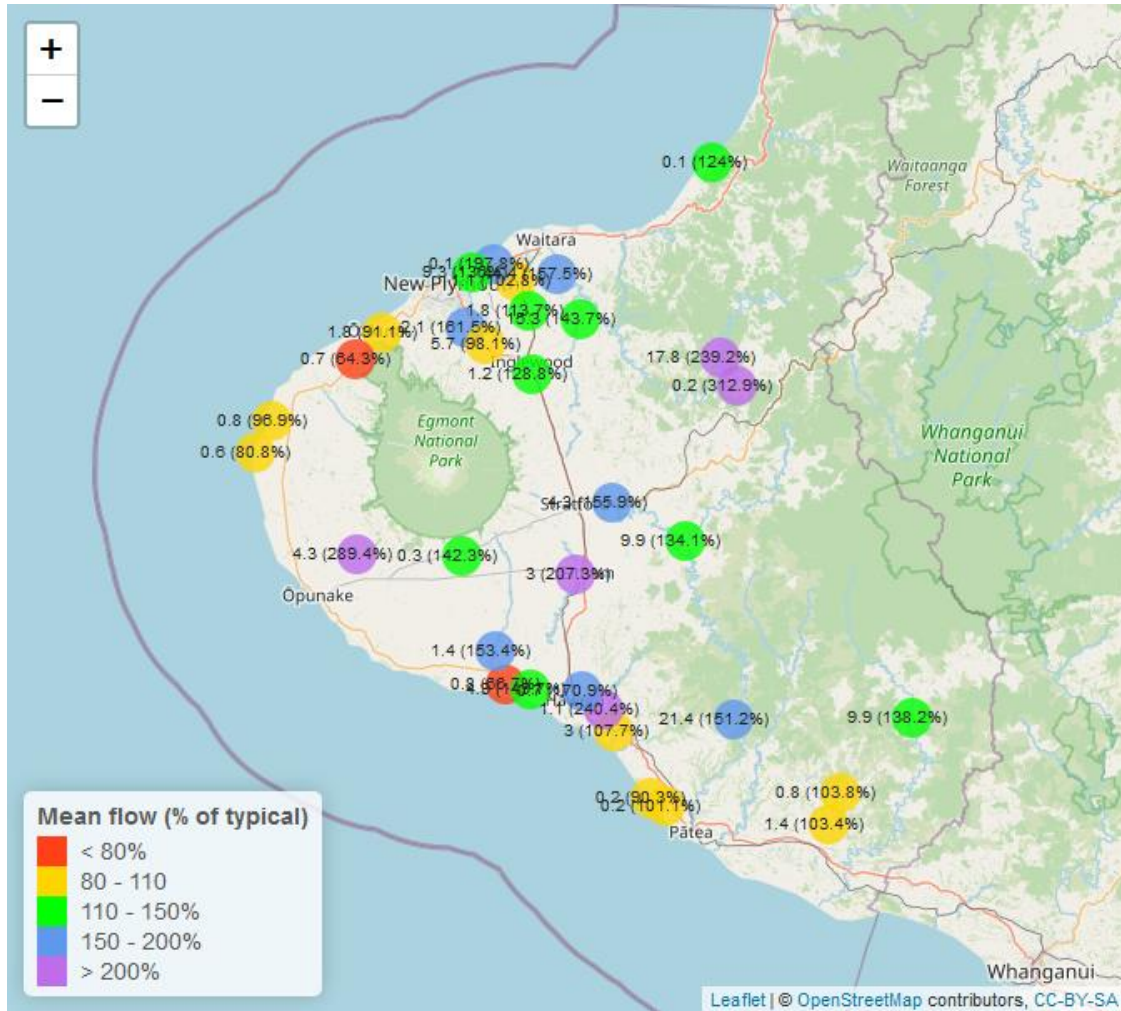


Map 1. Month total rain (mm) and percentage of long-term mean.

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	
N Egmont VC	13	656.5	160	1787.0	151	26	1991
Dawson Falls	16	378.5	103	1783.5	175	30	1933
Kahui Hut	18	370.5	118	1364.5	160	26	2006
Forest Hill	12	230.0	87	671.0	108	18	2017
Hillsborough	10	124.0	85	347.5	102	19	2012
Brooklands Zoo	10	82.0	64	334.4	109	21	2012
Bell Block	12	113.8	104	339.2	120	22	2013
Motunui	13	91.2	93	391.2	141	25	1998
Egmont Vill	12	169.5	108	513.5	113	21	1991
Everett Pk	12	158.0	119	498.0	129	24	1987
Inglewood	14	191.5	133	523.5	125	22	2000
Stony R	15	148.5	119	425.0	113	21	2004
Cape Egmont	12	88.2	100	354.0	127	25	1930
Taungatara	13	151.5	157	455.5	172	29	2005
Kaupokonui	11	94.5	132	368.5	181	31	1998
Stratford	10	163.0	132	498.5	145	26	1999
Mangaehu	15	164.0	163	456.0	156	29	1999
Kotare OSullivans	18	215.0	184	532.0	141	25	1998
Uruti Kaka Rd	16	178.5	135	487.0	119	22	1991
Pohokura Saddle	16	144.5	122	447.5	126	22	1991
Omaru Charlies	19	177.0	154	561.5	182	31	2006
Omahine Moana Trg	17	125.5	134	419.5	153	29	2007
Rimunui Station	15	137.0	175	438.0	185	32	1994
Ngutuwera	13	152.0	189	424.0	178	33	1999
Hawera Tawhiti	11	104.5	148	358.0	182	32	1993
Patea Bore3	11	120.4	183	356.6	173	30	2006
Hawken Rd	12	101.2	112	306.0	120	25	2016
Te Tuhi Jn	12	98.0	95	400.0	183	28	2018
Mataimona Trig	14	166.5	132	613.5	236	35	2018

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	
Marco Road	14	181.8	132	477.8	144	24	2018
Br to Somewhere	10	132.0	104	432.0	145	25	2018

2. River Flow at 32 sites in Taranaki



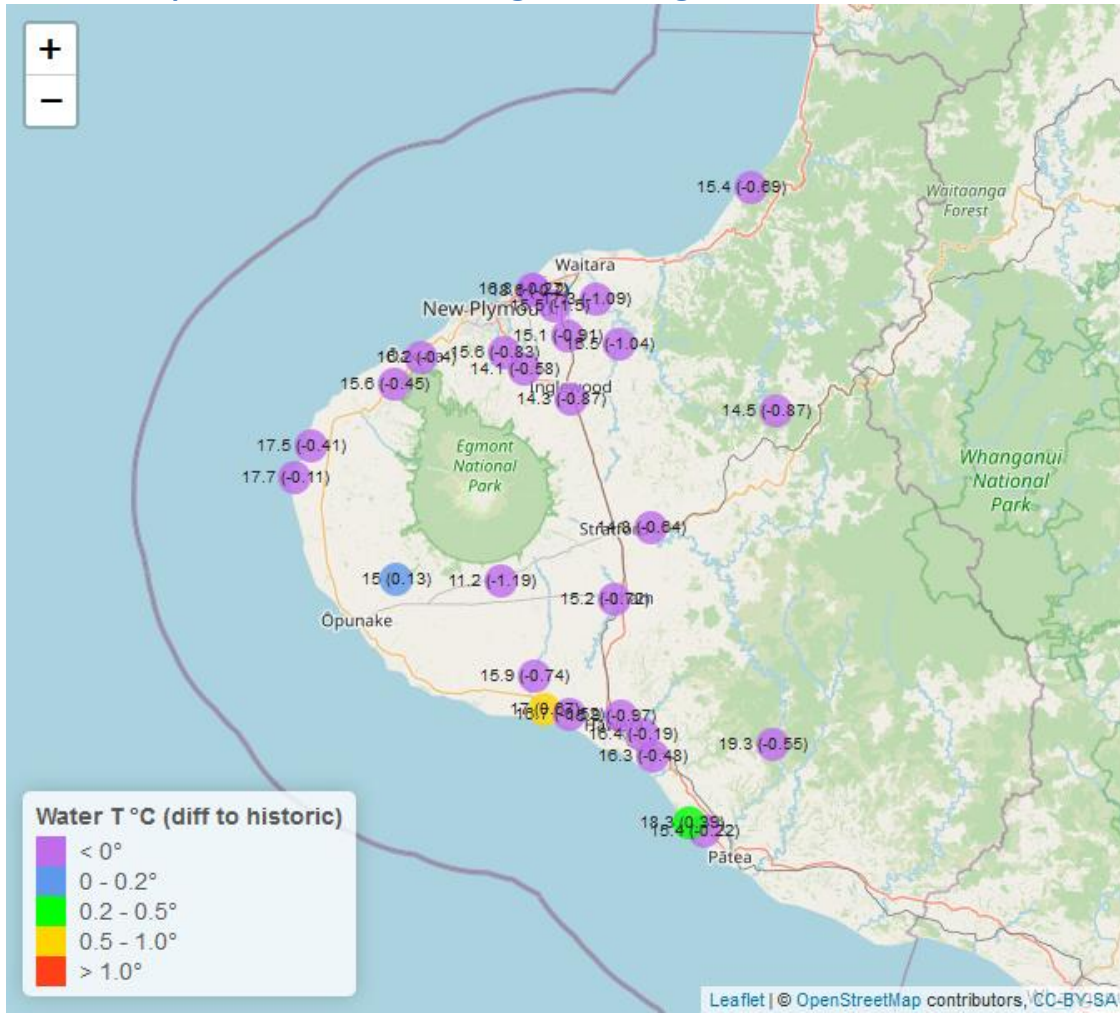
Map 2: Month mean river flows (m³/sec), with difference as % of long-term mean.

Table 2: Summary of high, low and mean flow for the current reporting month and the same month for all preceding years of record.

Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		Data years	Records began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Inaha at Lower Inaha Rd	1.500	3.554	0.544	0.266	0.8	1.214	3	2020
Kaikura below 7346	0.298	0.333	0.117	0.086	0.2	0.178	8	2015
Kapoaiaia at Lighthouse	2.061	2.151	0.192	0.225	0.6	0.746	37	1986
Kapuni at Normanby Rd	2.068	2.576	0.911	0.209	1.4	0.921	23	2000
Mangaehu at Bridge	36.724	20.377	2.974	1.653	9.9	7.381	42	1981
Manganui at Everett Park	37.617	32.846	5.267	2.998	15.3	10.652	30	1992
Mangaoraka at Corbett Rd	2.531	3.271	0.372	0.182	1.1	1.032	41	1982
Mangaroa at Manawapou Rd	0.312	0.709	0.142	0.050	0.2	0.259	4	2019
Mangati at SH3	0.177	0.114	0.050	0.010	0.1	0.046	10	2013
Mangawheroiti Above Intake W.W	0.533	0.424	0.267	0.105	0.3	0.241	10	2013
Mangorei at Pipebridge	6.624	3.577	0.707	0.330	2.1	1.279	13	2010
Matau at Woolshed	1.142	0.145	0.053	0.026	0.2	0.070	5	2018
Moumahaki at Johnston Rd	4.630	2.697	0.588	0.347	1.4	1.335	5	2018
Ngatoro at SH3	2.626	2.469	0.446	0.241	1.2	0.900	27	1982
Oakura at Victoria Rd	6.677	6.756	0.552	0.377	1.8	2.023	4	2019
Patea at McColls Bridge	60.071	50.857	3.834	2.208	21.4	14.146	36	1987
Patea at Skinner Rd	9.473	8.594	1.577	0.586	4.3	2.738	44	1979
Tangahoe below Railway Bridge	7.668	6.372	1.503	0.893	3.0	2.740	5	2018
Tawhiti at Duffys	1.642	1.417	0.880	0.151	1.1	0.455	37	1986
Tawhiti below Meat Plant	0.921	0.825	0.534	0.220	0.7	0.385	13	2010
Timaru at Tataraimaka	2.016	2.375	0.287	0.253	0.7	1.049	10	2013
Waiaua 2 at Barraclough Opu	10.574	3.429	2.538	0.944	4.3	1.485	4	2019
Waikaramarama at Bridge	0.364	0.178	0.014	0.011	0.1	0.075	5	2018
Waingongoro at Eltham Rd	4.500	4.581	1.953	0.318	3.0	1.429	40	1982
Waingongoro at SH45	6.931	9.569	3.343	0.997	4.9	3.274	41	1982

Recorded flows (m3/sec)								
River and Site	Highs		Lows		Mean		Data years	Records began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Waiongana at SH3a	4.668	5.071	0.606	0.329	1.8	1.590	41	1982
Waitara at Bertrand Rd	168.882	90.084	10.636	5.314	44.4	28.209	40	1983
Waitara at Purangi Bridge	88.521	24.807	1.257	0.496	17.8	7.449	24	1999
Waitotara at Rimunui Station	28.983	18.846	4.086	2.379	9.9	7.140	18	2005
Waiwhakaiho at Egmont Village	19.107	18.728	2.004	1.759	5.7	5.839	41	1982
Waiwhakaiho at Vickers Rd	32.972	25.565	2.287	1.687	9.3	6.816	3	2020
Warea at Coast	2.002	2.115	0.341	0.307	0.8	0.775	5	2016
Weraweraonga at 749 Mangawhio Rd	3.336	1.852	0.313	0.046	0.8	0.781	6	2017

3. River Temperature at 28 sites throughout the region



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

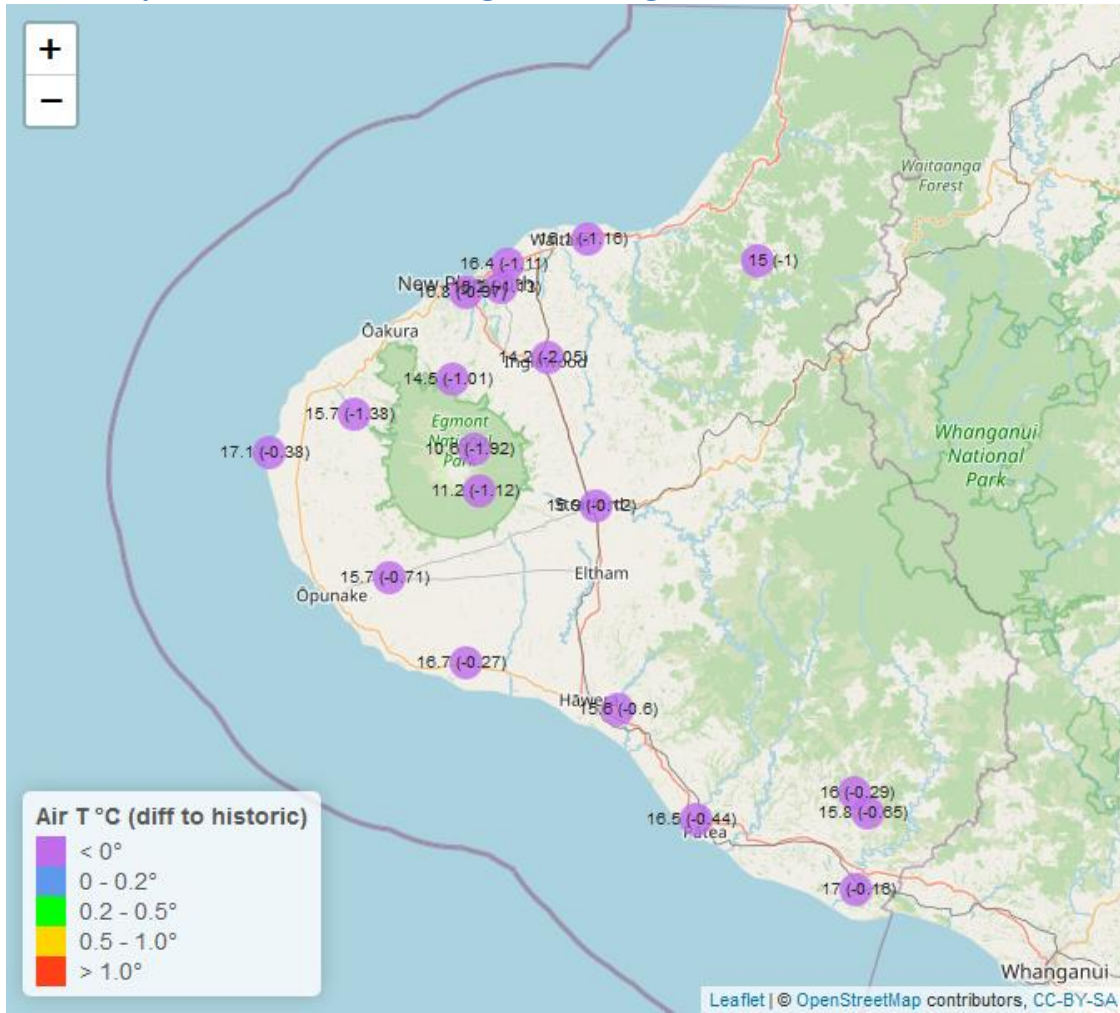
Table 3: Summary of high, low and mean river temperature for the current reporting month and the same month for all preceding years of record.

Monthly River Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		Data years	Records began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Inaha at Lower Inaha Rd	19.938	19.438	13.500	13.500	17.0	16.369	3	2020
Kaikura below 7346	17.750	17.938	12.438	13.000	15.4	15.655	8	2015
Kapoaiaia at Lighthouse	21.664	21.450	13.298	14.260	17.7	17.786	24	1999
Kapuni at Normanby Rd	19.453	21.000	12.000	12.875	15.9	16.670	23	2000
Manganui at Everett Park	17.899	19.378	12.158	13.980	15.5	16.592	14	2009
Mangaoraka at Corbett Rd	17.938	20.066	12.756	14.100	15.5	17.008	19	2004
Mangaroa at Manawapou Rd	18.414	20.737	18.234	15.000	18.3	17.928	4	2019
Mangati at Ponds	20.660	21.514	15.888	16.326	18.6	18.800	4	2019
Mangati at SH3	18.809	19.086	14.389	14.880	16.8	17.044	10	2013
Mangawheroiti Above Intake W.W	13.121	14.562	8.670	10.280	11.2	12.428	10	2013
Mangorei at Pipebridge	18.390	19.342	12.123	13.644	15.6	16.398	9	2014
Matau at Woolshed	16.980	18.860	11.657	12.279	14.5	15.410	5	2018
Ngatoro at SH3	16.625	17.780	11.125	12.530	14.3	15.217	20	1984
Oakura at Victoria Rd	19.579	19.450	12.618	13.910	16.2	16.561	4	2019
Patea at McColls Bridge	20.953	22.412	16.625	17.625	19.3	19.856	8	2015
Patea at Skinner Rd	17.375	18.262	11.814	12.600	14.8	15.466	19	2004
Tangahoe below Railway Bridge	19.125	19.938	12.812	13.812	16.3	16.777	5	2018
Tawhiti at Duffys	18.240	19.300	13.663	13.746	16.4	16.557	19	2004
Tawhiti below Meat Plant	18.084	19.920	12.899	13.829	15.9	16.836	23	1994
Timaru at Tataraimaka	18.397	18.576	12.093	13.577	15.6	16.021	10	2013
Waiau 2 at Barraclough Opua	18.950	19.047	10.718	10.920	15.0	14.823	4	2019
Waikaramarama at Bridge	17.362	18.182	12.364	13.900	15.4	16.140	5	2018
Waingongoro at Eltham Rd	17.943	18.843	11.998	12.800	15.2	15.875	19	2000

Monthly River Temperatures (°C)

Monitoring Site	Highs		Lows		Mean		Data years	Records began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Waingongoro at SH45	19.493	20.198	13.279	14.200	16.7	17.210	19	2004
Waiongana at SH3a	17.562	18.750	11.875	13.300	15.1	15.985	12	2011
Waitara at Bertrand Rd	20.201	21.300	14.391	15.675	17.3	18.429	34	1984
Waiwhakaiho at Egmont Village	16.527	17.300	10.908	11.991	14.1	14.689	31	1991
Warea at Coast	21.850	21.812	12.788	14.062	17.5	17.869	4	2019

4. Air Temperature at 19 sites throughout the region

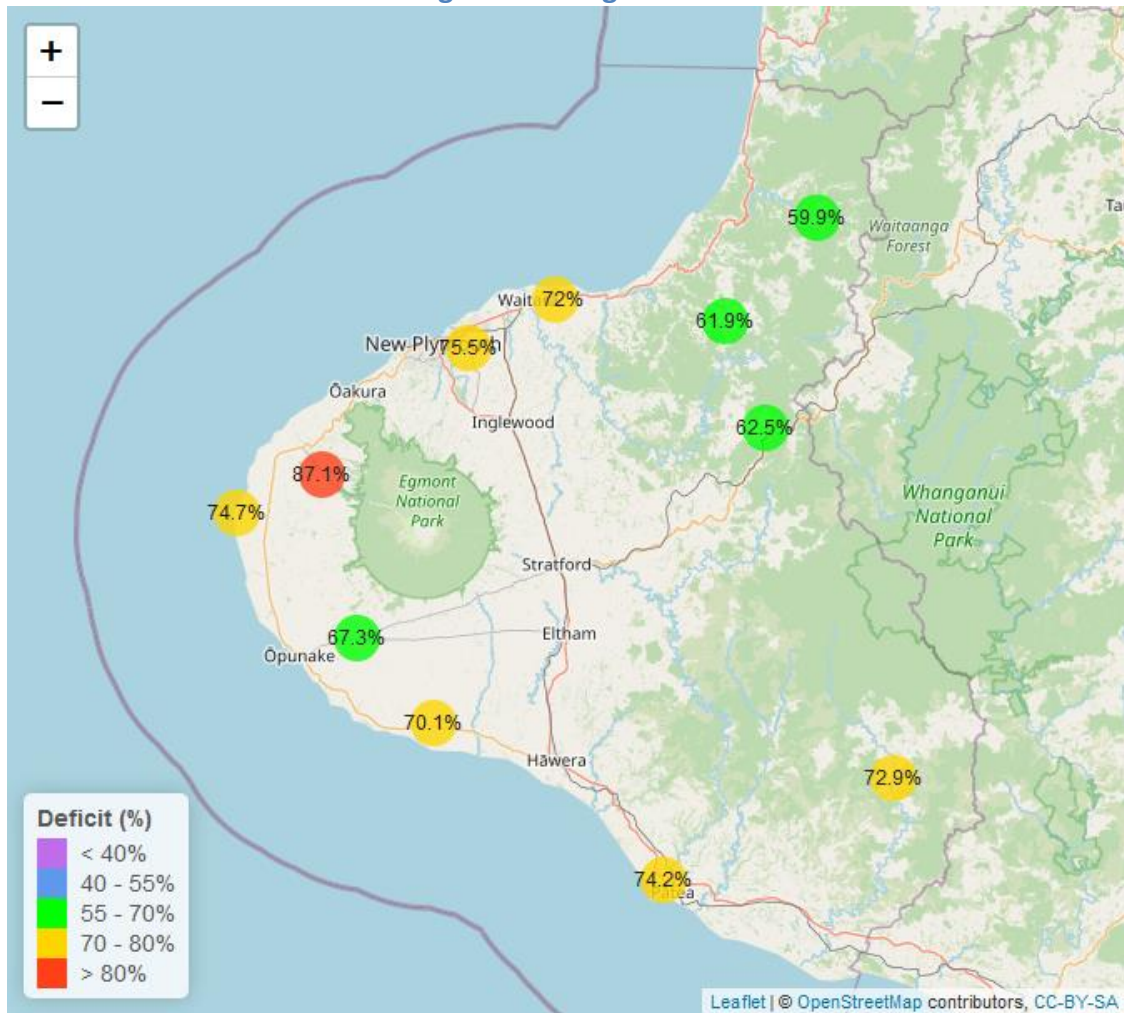


Map 4: Month mean air temperature with difference to long-term mean (°C).

Table 4: Summary of high, low and mean air temperature for the current reporting month and the same month for all preceding years of record.

Monthly Air Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		Data years	Records Began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Brooklands Zoo at New Plymouth	23.201	24.031	9.487	11.865	16.8	17.778	11	2012
Dawson Falls	16.880	17.404	5.116	7.099	11.2	12.326	7	2016
Inglewood at Oxidation Ponds	20.905	23.299	6.532	9.870	14.2	16.274	11	2012
Kapoaiaia at Lighthouse	20.721	21.654	10.713	12.460	17.1	17.508	11	2012
Kaupokonui at Glenn Rd	21.980	22.762	9.265	10.734	16.7	17.011	8	2015
Mangati at SH3	21.413	22.659	9.139	11.638	16.4	17.540	10	2013
Mangorei Upper at Forest Hill	19.280	20.025	8.675	10.877	14.5	15.532	6	2017
Motunui M39 at Weston W3	21.070	22.151	8.953	11.739	16.1	17.265	6	2017
North Egmont at Visitors Centre	16.414	17.527	4.335	7.407	10.6	12.500	8	2015
Patea at Bore 3	21.053	22.364	9.519	11.210	16.5	16.890	11	2012
Patea at Stratford	22.629	22.635	8.729	9.820	15.9	15.984	11	2012
Stony at Mangatete Bridge	20.293	22.277	9.240	11.381	15.7	17.119	7	2016
Taungatara at Eltham Rd	20.259	21.686	9.001	11.030	15.7	16.445	8	2015
Tawhiti at Duffys	21.543	22.617	6.193	6.888	15.6	16.172	10	2013
Uruti at Kaka Rd	20.079	21.587	8.967	10.679	15.0	15.959	5	2018
Waitotara at Hawken Rd	22.724	22.910	9.799	11.032	17.0	17.146	7	2016
Waitotara at Ngutuwera	21.022	22.217	8.630	10.841	15.8	16.444	5	2018
Waiwhakaiho at Hillsborough	20.944	22.517	9.759	12.120	16.2	17.381	11	2012
Weraweraonga at 749 Mangawhio Rd	22.903	23.433	7.943	8.627	16.0	16.261	6	2017

5. Soil Moisture at 11 sites throughout the region

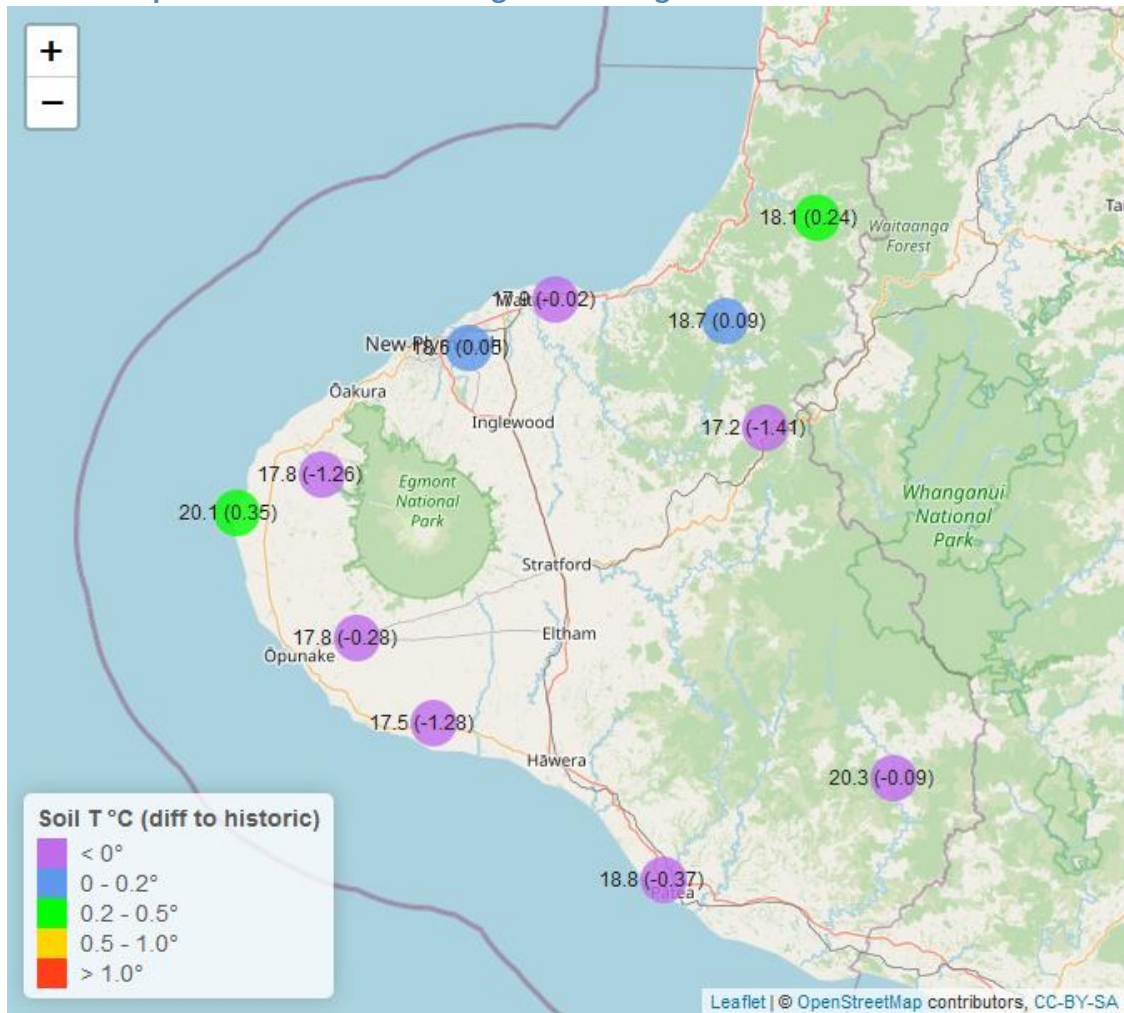


Map 5: Month mean soil moisture deficit (100 - soil moisture, %).

Table 5: Summary of high, low and mean soil moisture for the current reporting month and the same month for all preceding years of record.

Monthly Soil Moisture Extremes (%)								
Monitoring Site	Highs		Lows		Mean		Data years	Records began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Kapoaiaia at Lighthouse	25.789	27.411	24.802	7.180	25.260	17.888	11	2012
Kaupokonui at Glenn Rd	32.880	31.980	27.460	8.970	29.912	20.164	12	2011
Kotare at OSullivans	47.557	41.242	33.146	18.600	40.134	30.246	11	2012
Motunui M39 at Weston W3	29.816	29.361	26.533	13.560	27.974	20.727	9	2014
Patea at Bore 3	27.415	27.744	24.958	18.254	25.815	23.399	6	2017
Pohokura Saddle	42.933	44.292	33.342	22.631	37.516	33.773	8	2015
Stony at Mangatete Bridge	16.842	17.830	7.665	5.260	12.922	10.682	7	2016
Taungatara at Eltham Rd	37.053	34.758	29.950	13.600	32.677	21.654	10	2013
Uruti at Kaka Rd	41.152	42.200	33.669	16.420	38.087	31.782	11	2012
Waitotara at Rimunui Station	30.311	26.477	25.166	15.592	27.096	21.713	6	2017
Waiwhakaiho at Hillsborough	27.398	28.067	20.989	10.440	24.532	20.289	11	2012

6: Soil Temperature at 11 sites throughout the region



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

Table 6: Summary of high, low and mean soil temperature for the current reporting month and the same month for all preceding years of record.

Monthly Soil Temperatures (°C)								
Monitoring Site	Highs		Lows		Mean		Data years	Records Began
	March 2023	March Historic	March 2023	March Historic	March 2023	March Historic		
Kapoaiaia at Lighthouse	22.508	22.597	17.303	17.300	20.1	19.794	11	2012
Kaupokonui at Glenn Rd	18.700	21.600	15.600	16.300	17.5	18.790	12	2011
Kotare at OSullivans	20.178	20.345	15.437	15.400	18.1	17.903	11	2012
Motunui M39 at Weston W3	19.072	19.895	15.253	15.922	17.9	17.912	9	2014
Patea at Bore 3	21.025	21.972	15.321	16.760	18.8	19.193	6	2017
Pohokura Saddle	18.723	20.428	14.577	16.889	17.2	18.599	8	2015
Stony at Mangatete Bridge	19.600	21.400	15.100	16.600	17.8	19.105	6	2016
Taungatara at Eltham Rd	20.300	20.260	14.500	16.000	17.8	18.126	10	2013
Uruti at Kaka Rd	20.132	20.493	16.580	16.500	18.7	18.601	11	2012
Waitotara at Rimunui Station	23.228	23.256	17.299	17.593	20.3	20.377	5	2018
Waiwhakaiho at Hillsborough	20.816	20.533	15.774	16.700	18.6	18.574	11	2012

Summary of month's conditions

Rainfall

Rainfall for March was on average 128.4% of the long-term average, and ranged from 64% at Brooklands Zoo at New Plymouth to 189% at Waitotara at Ngutuweru.

Year to date rainfall is sitting between 102% (Waiwhakaiho at Hillsborough) and 236% (Whanganui at Mataimona Trig) with an average of 146.7% of normal. Compared to typical full year totals, sites on average have already received 25.9% of a typical year's rainfall, with the highest value 35% at Whanganui at Mataimona Trig, whereas Mangorei Upper at Forest Hill sits at 18% of the typical year's total.

River Flow

Mean river flows for March were 144.5% of typical values, low flows were 246.2%, and high flows 151.4%, of typical values.

River Water Temperature

Mean river (non-mountain) water temperatures were 16°C, an average of -0.5°C different to long-term March values. Nighttime-low water temperatures were on average -0.8°C cooler than historic lows, and daytime high temperatures were on average -0.9°C below historic highs.

Air Temperature

The average air temperature for the region (excluding Te Maunga sites) was 16°C, which is -0.9°C relative to long-term March averages. Low air temperatures for March were on average -2°C cooler than the March average for previous years. Daytime high temperatures were on average -1.1°C below historic highs.

Soil Moisture

Mean soil moistures for March were 6.33% higher than typical historical values. On average, low soil moistures were 12.5% wetter than previous lows, and the average difference of the highs was 0.7% relative to previous highs for March. The average soil moisture was 29.3%.

Soil Temperature

March soil temperatures were generally -0.4°C relative to the long-term average. Average nighttime low soil temperatures were -0.8°C relative to recorded lows, and upper daytime soil temperatures were on average -0.8°C relative to long-term March highs.

Notes: Above we have referred to low and high values, from the December 2022 onwards, these are the upper and lower 5th percentiles, these values give a better indication of the general upper and lower range of the historic observations against which to compare the current month. In particular, low used to accentuate the difference of the current month's coldest value relative to the historical low, the general difference, however, is not so great.

Report date 3 April, 2023.