Climate Briefing
12th December 2019

Kathleen Kozyniak – Principal Scientist Air

HAWKES BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Outline

1. Rainfall and PET
2. Soil moisture
3. River flows
4. Ground water levels
5. Water use
6. Status and outlook of climate modes
7. Forecasts

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Current State – rainfall, PET and soil moisture

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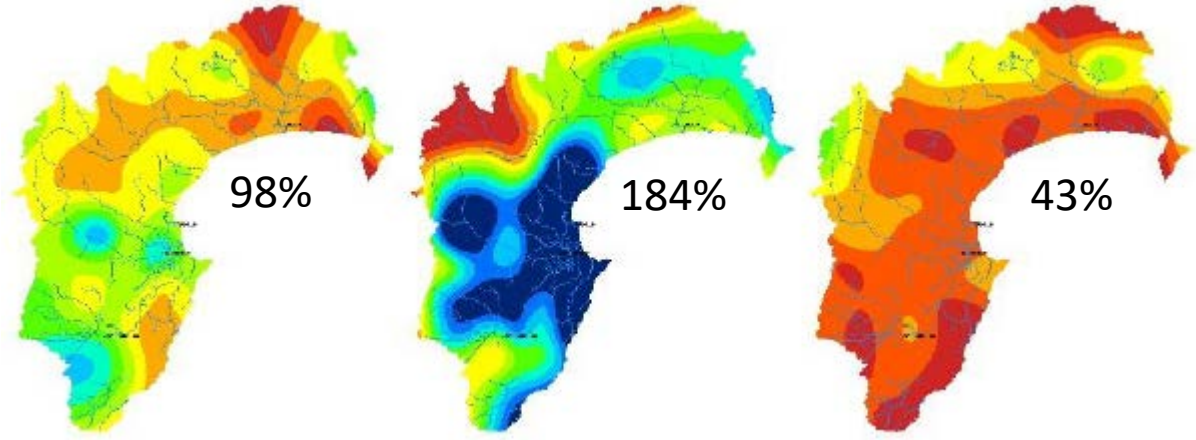
Current State - rainfall

Area	August (%) 64%	September (%) 98%	October (%) 184%	November (%) 43%
Waikaremoana	72	67	121	69
Northern HB	52	64	131	43
Tangoio	36	89	234	38
Kaweka	82	85	179	62
Ruahine	116	125	141	34
Heretaunga Plains	52	131	265	35
Ruataniwha Plains	57	114	191	37
Southern HB	45	113	212	29



September 2019 October 2019 November 2019

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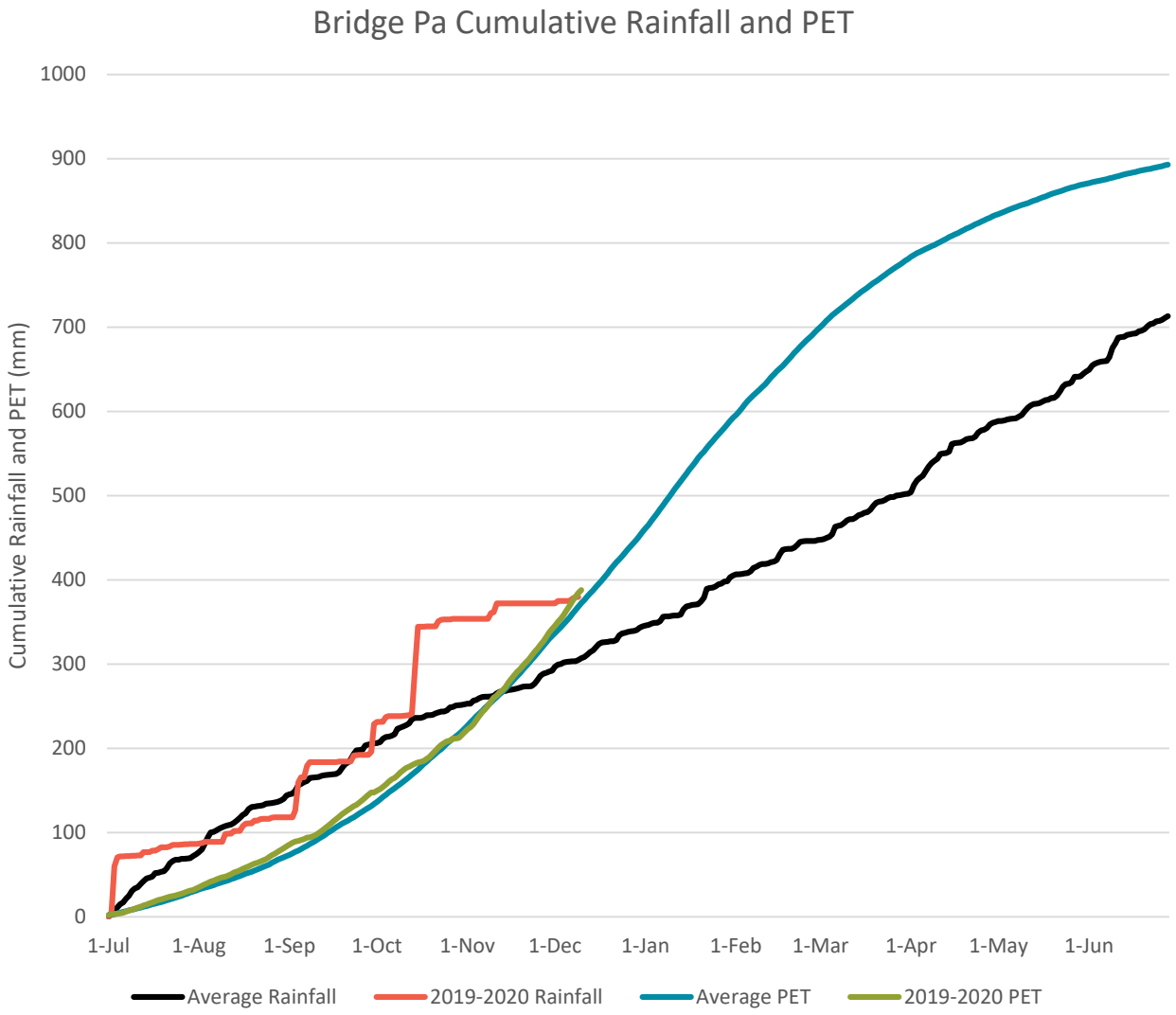

Cumulative Rainfall & Potential Evapotranspiration (PET)

Average cumulative rainfall and average cumulative PET are calculated from July 2009 to July 2018.

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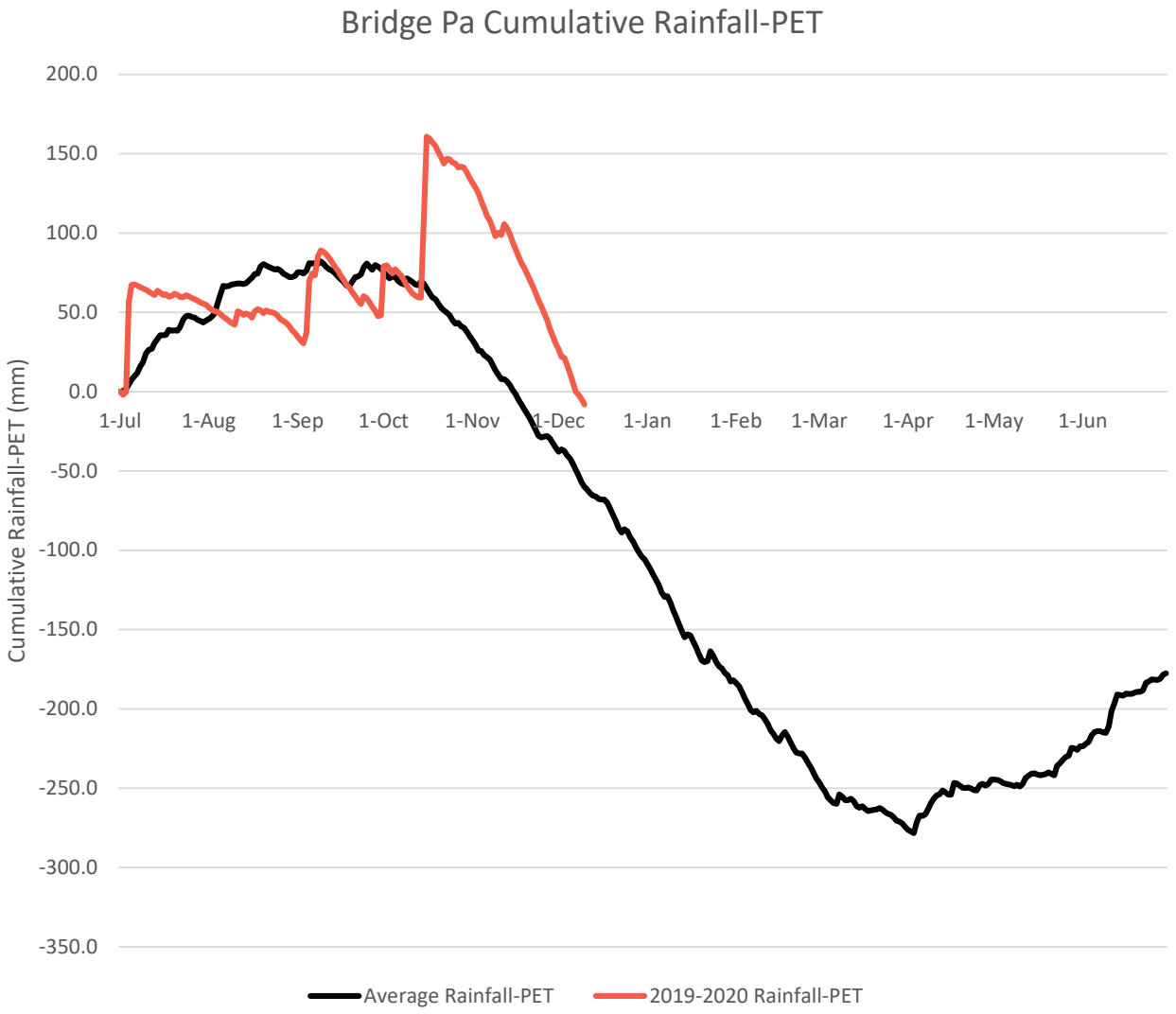

Cumulative Rainfall - Potential Evapotranspiration (PET)

Average cumulative rainfall and average cumulative PET are calculated from July 2009 to July 2018.

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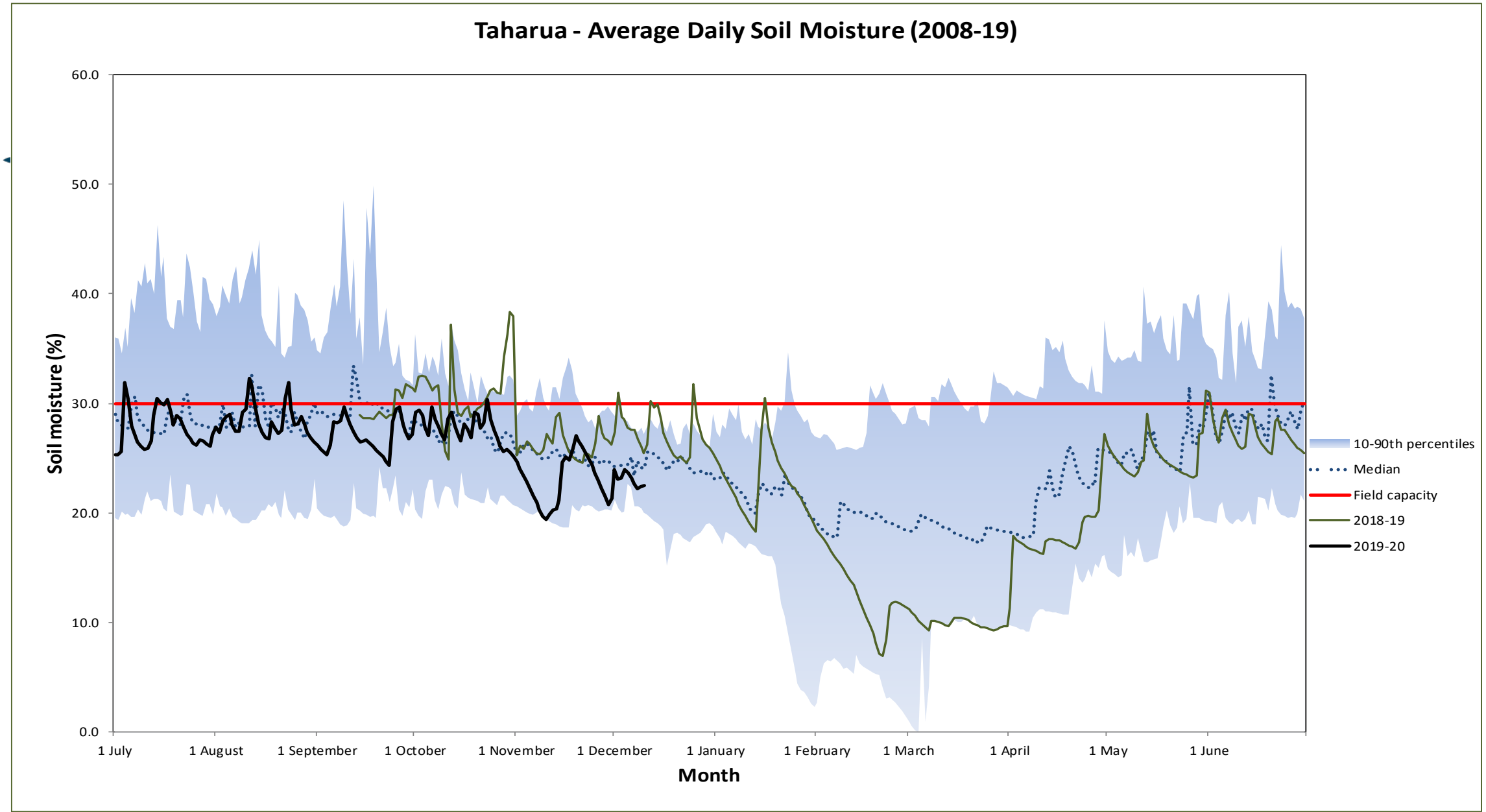
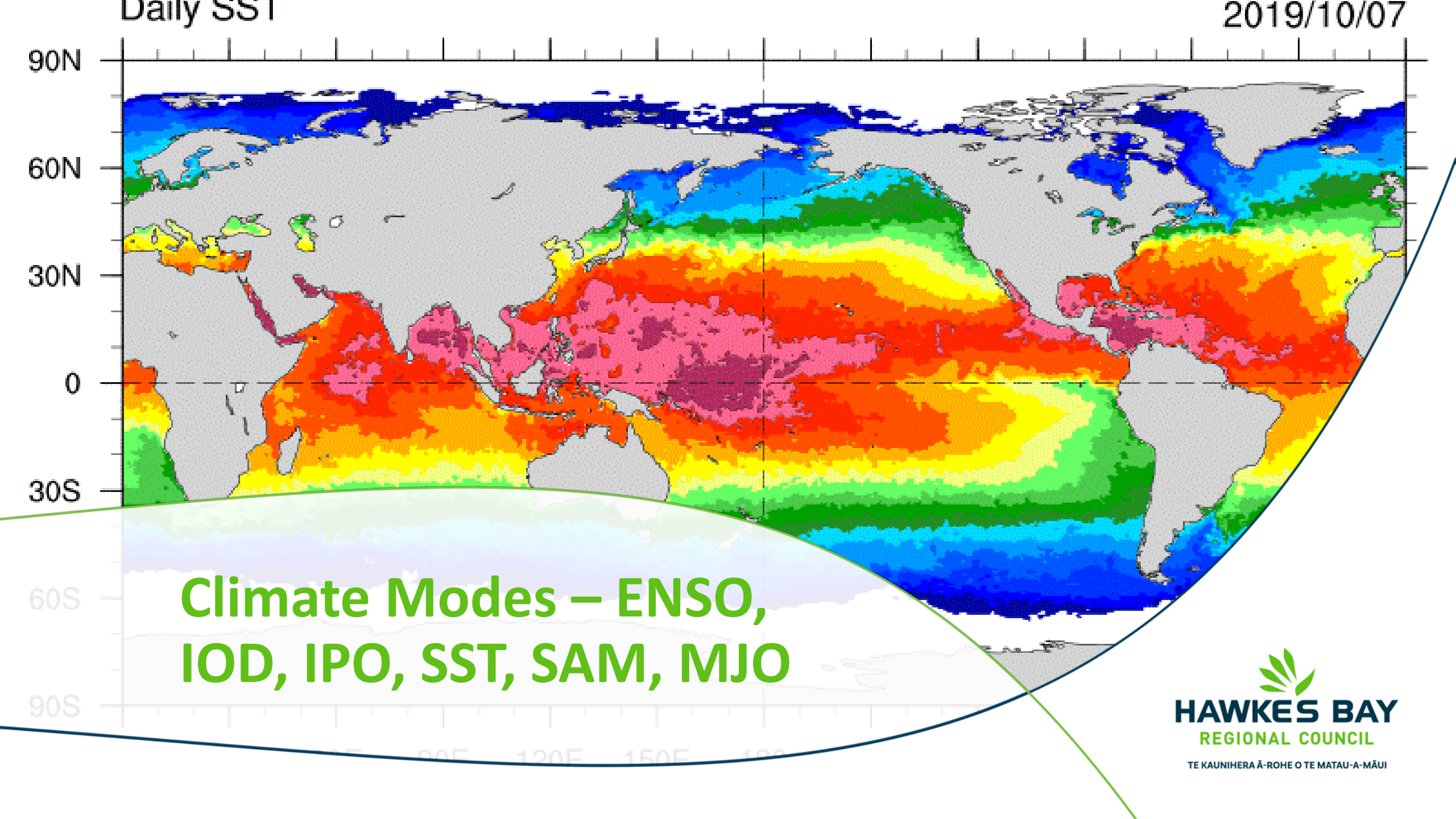
Current State – soil moisture





Climate Modes – ENSO, IOD, IPO, SST, SAM, MJO

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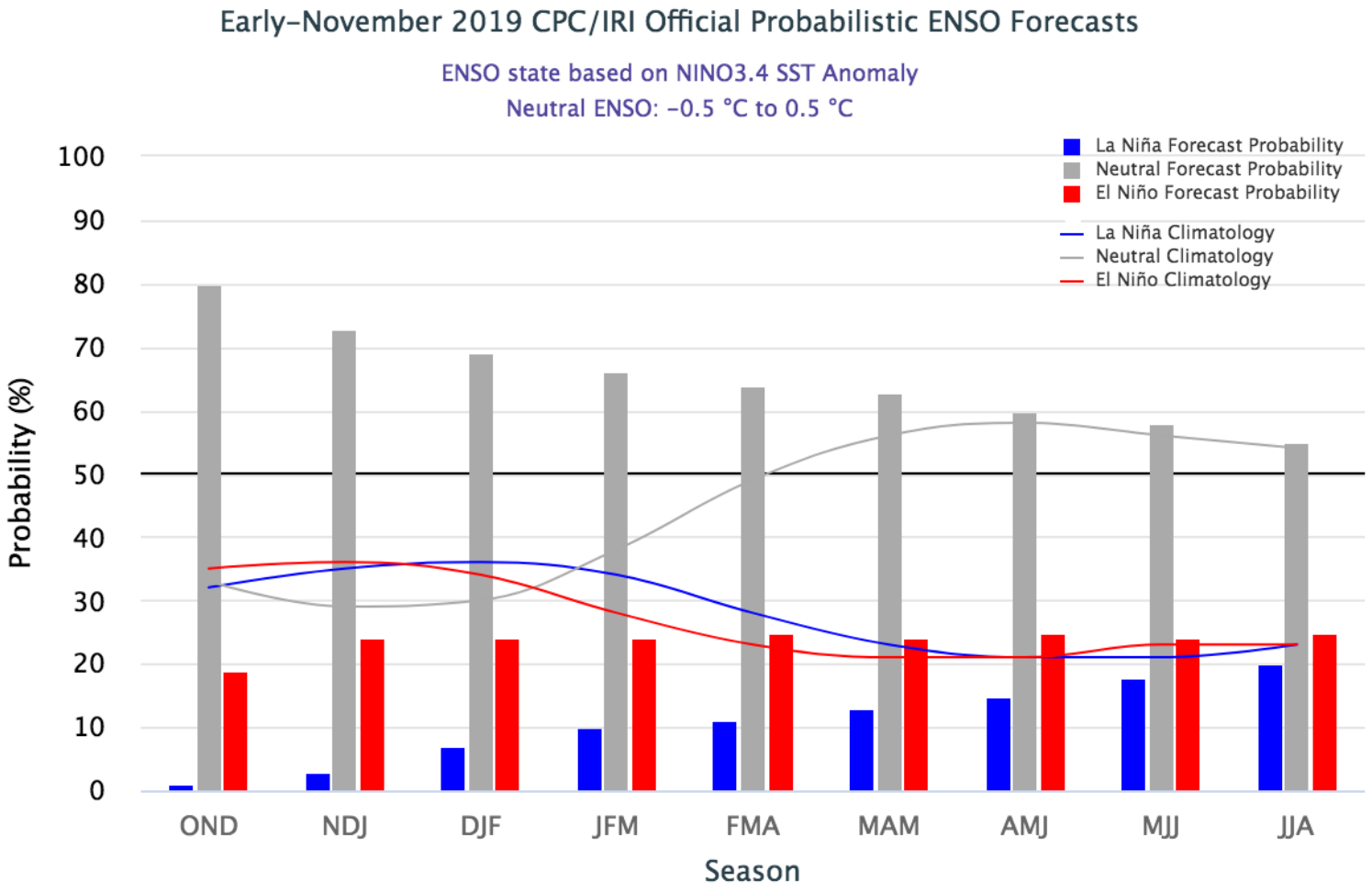

EL NIÑO – SOUTHERN OSCILLATION (ENSO)

NEUTRAL

Source:

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

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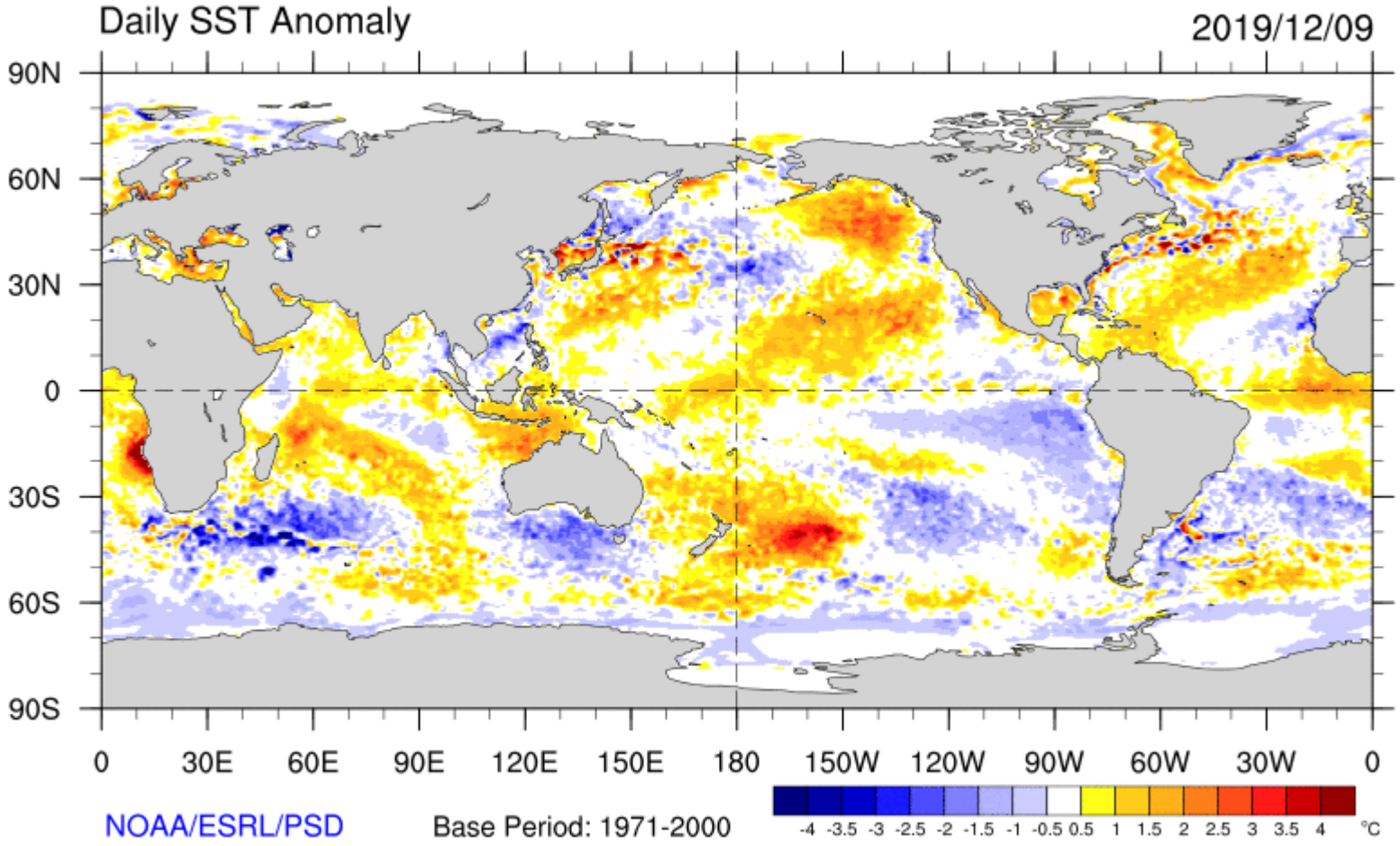

https://www.esrl.noaa.gov/psd/map/clim/sst.shtml

INTERDECADAL PACIFIC OCSCILLATION

POSITIVE

INDIAN OCEAN DIPOLE

POSITIVE

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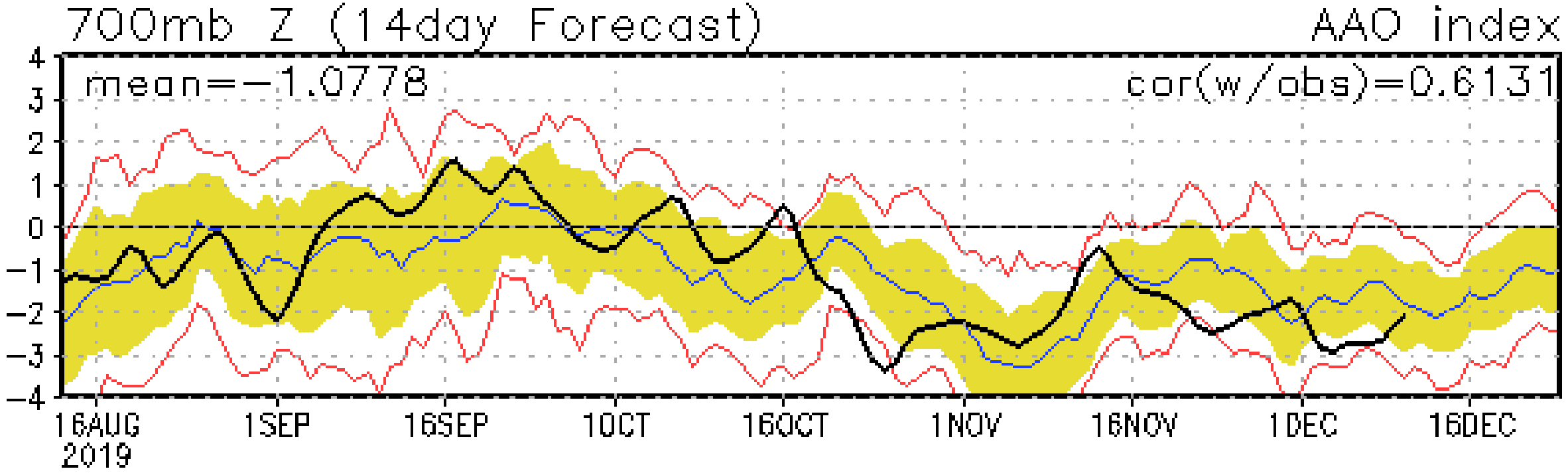
SEA SURFACE TEMPERATURES **ABOVE AVERAGE**

SOUTHERN ANNULAR MODE (SAM)



https://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/aao/aao.sprd2.gif

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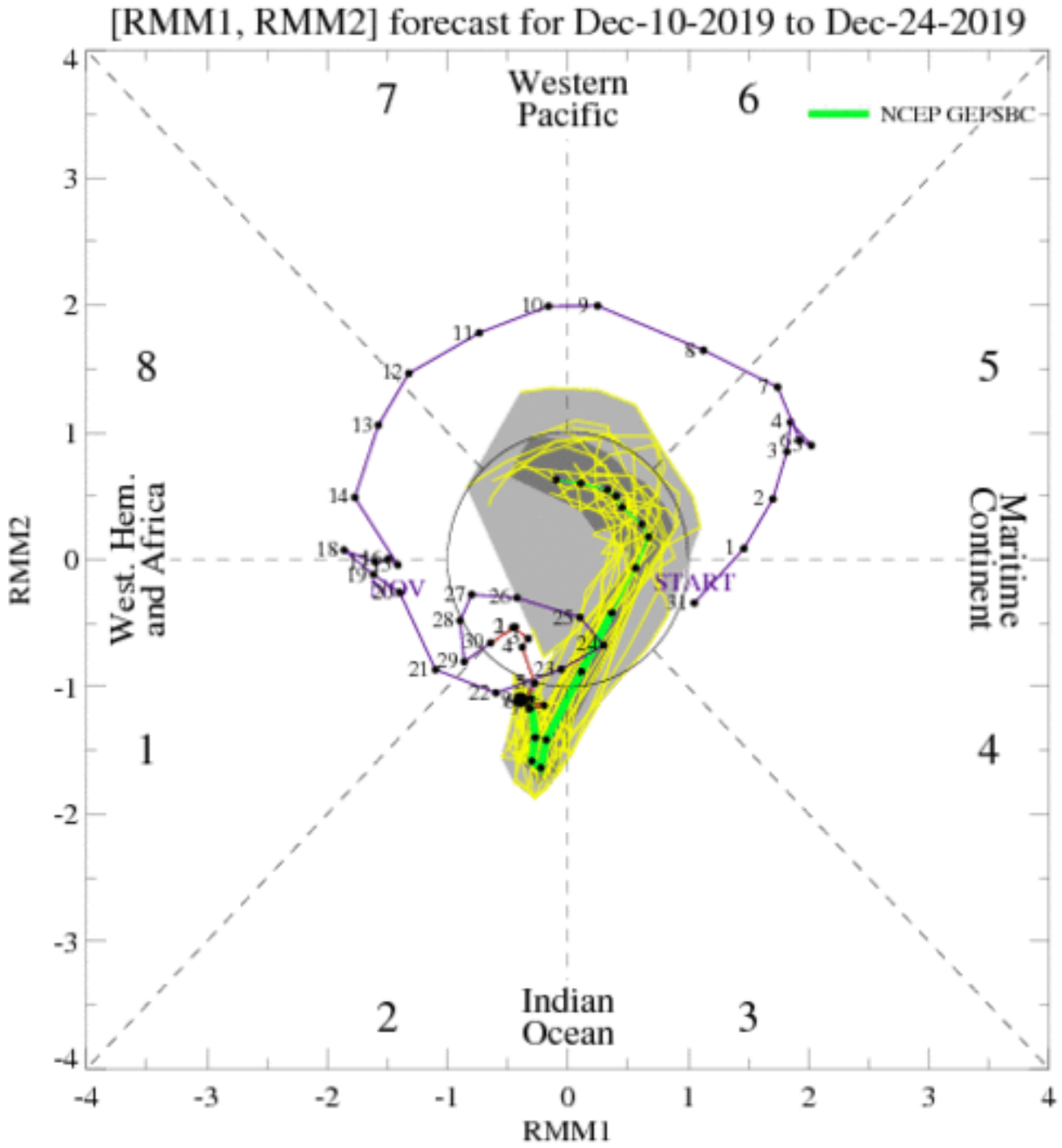

MADDEN-JULIAN OSCILLATION

Sources:

http://www.bom.gov.au/climate/mjo/

https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/foregfs.shtml

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River flows

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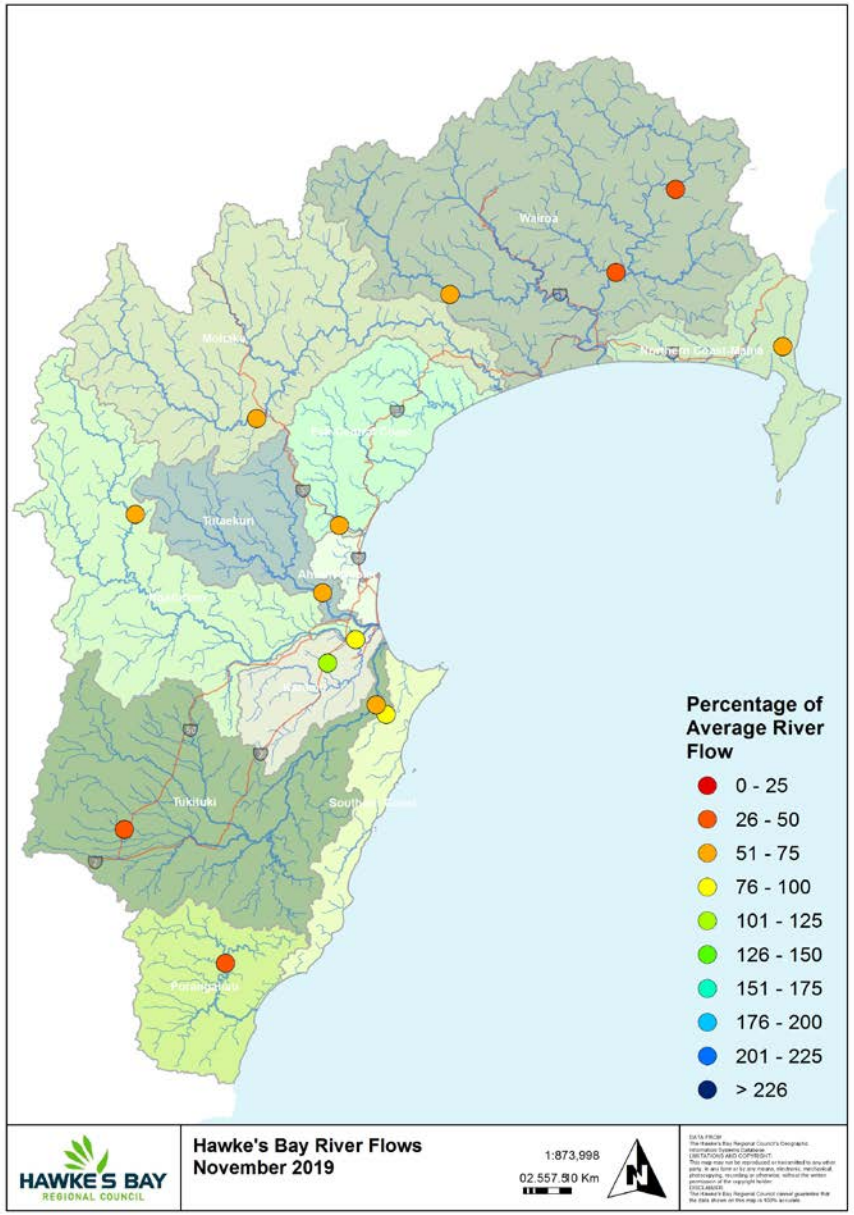
River flow sites



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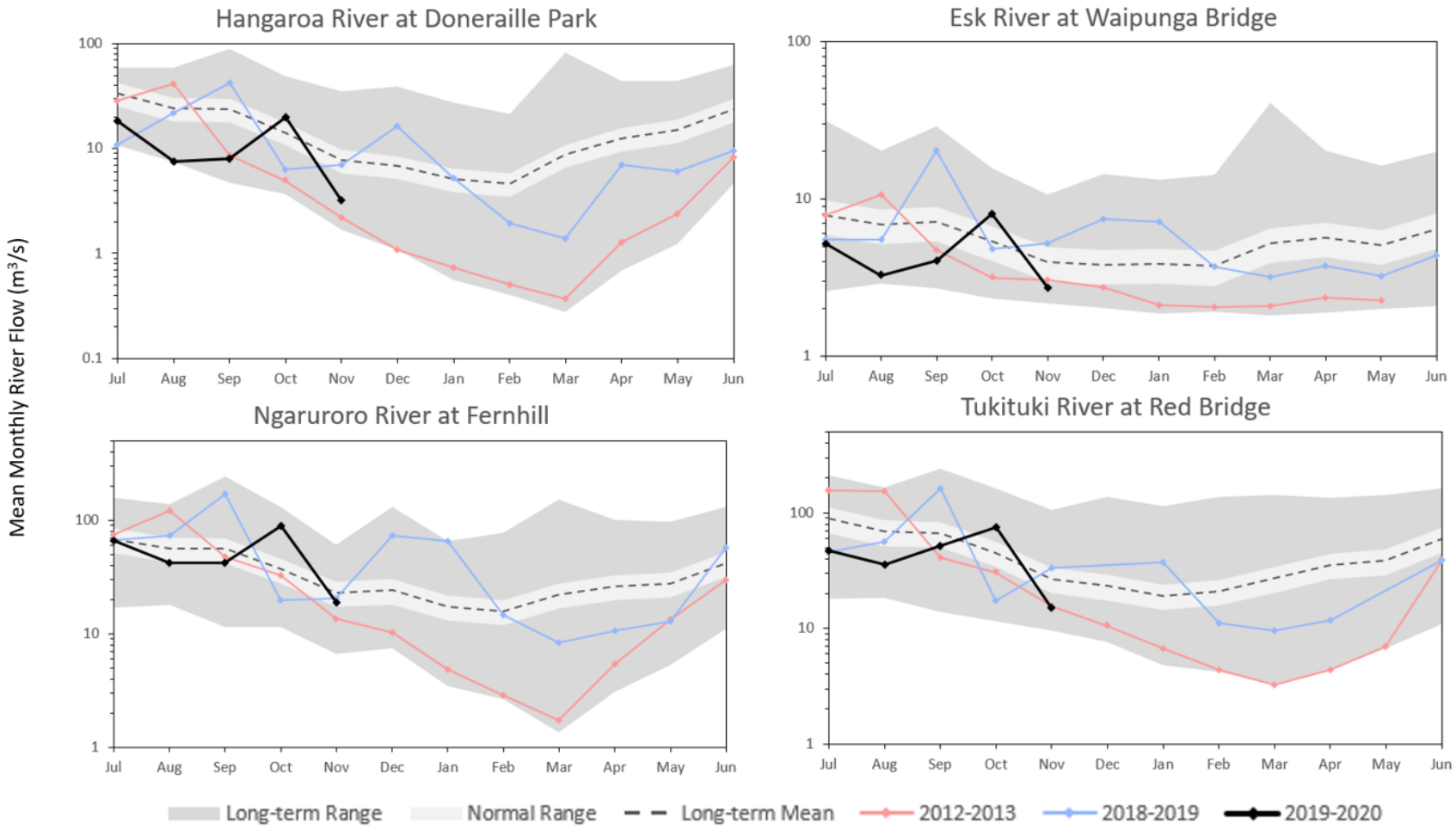
River flows in November



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Groundwater levels

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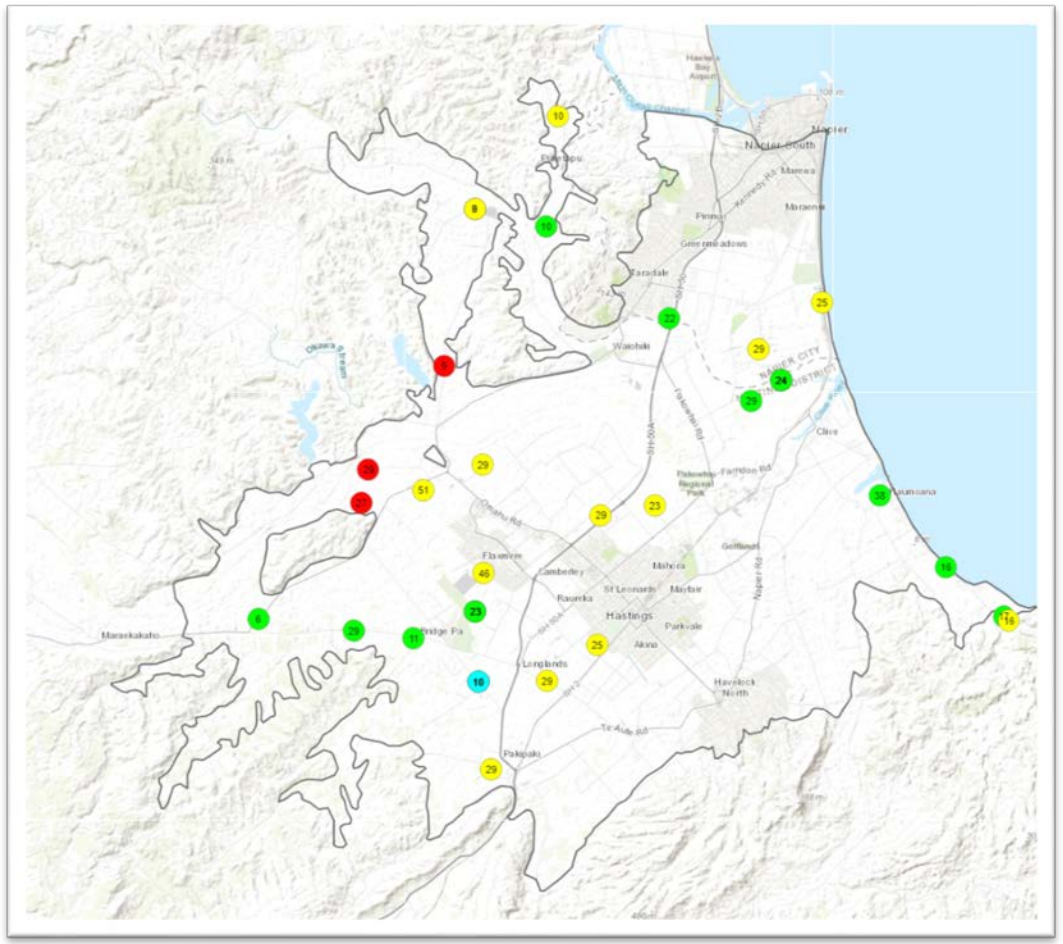
Heretaunga Plains



Legend

- highest recorded
- above normal
- normal
- below normal
- lowest recorded
- 12 Years of monitoring

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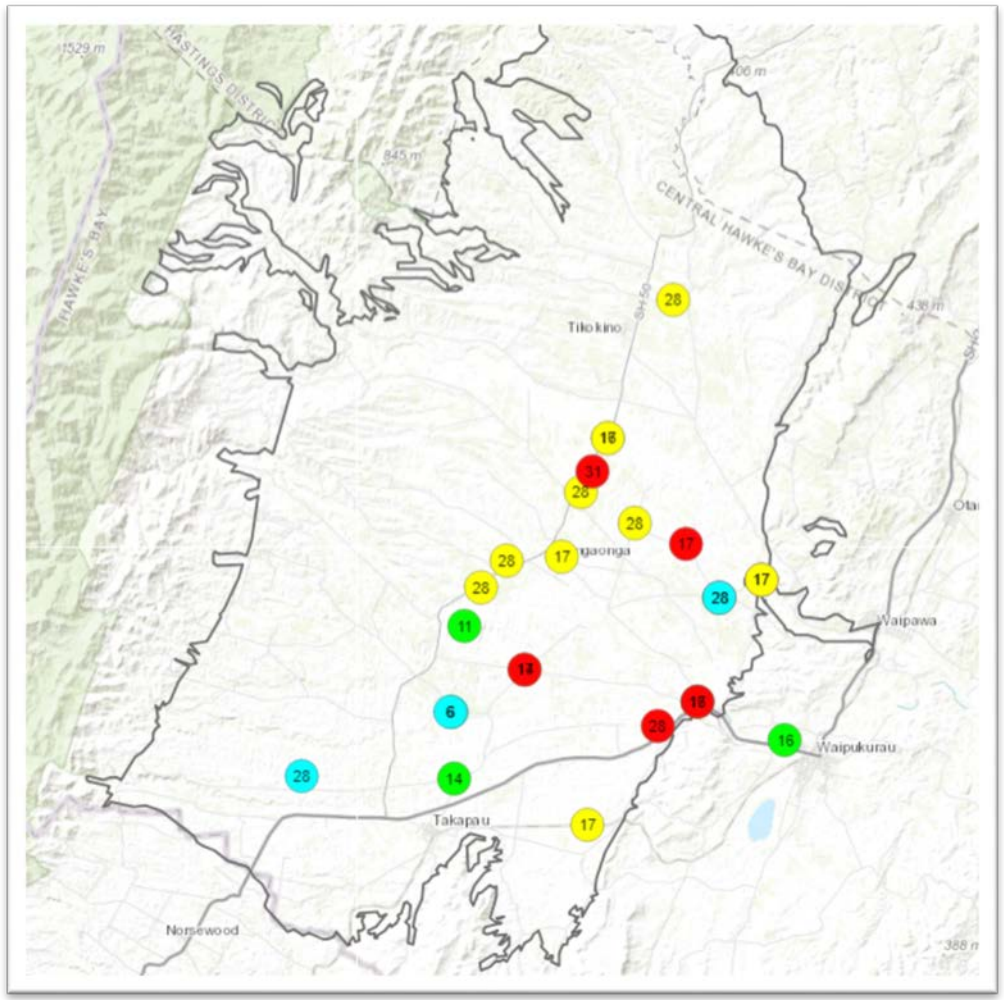
Ruataniwha Plains



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Water use

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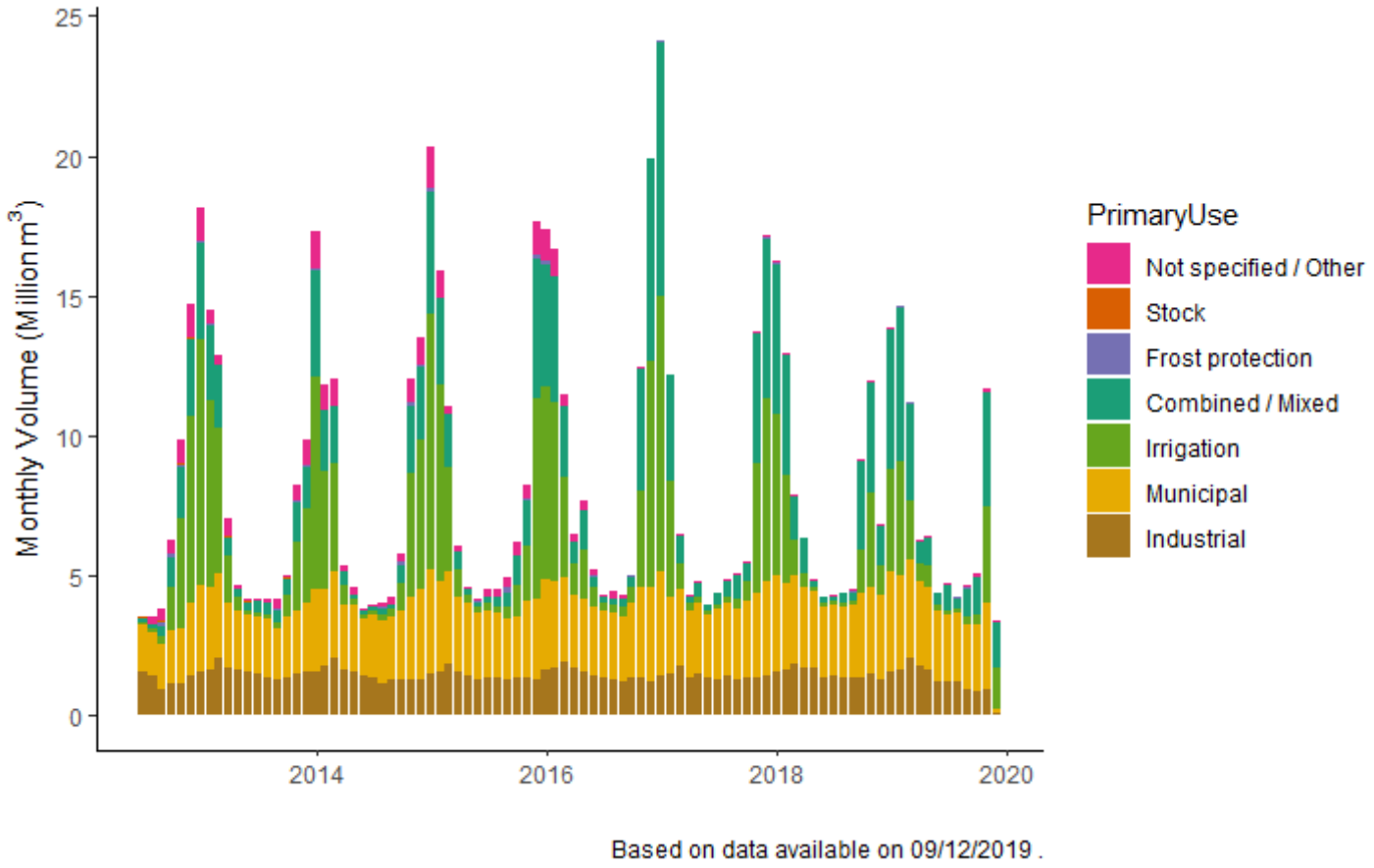
Hawke's Bay Water Use By Activity 2012 - 2019



Industrial and Water Supply have a base usage year round.

Irrigation and related uses have the largest seasonal variation.

Combined / Mixed category consists of consents with multiple uses specified, often "Irrigation and Frost" or "Irrigation and …"

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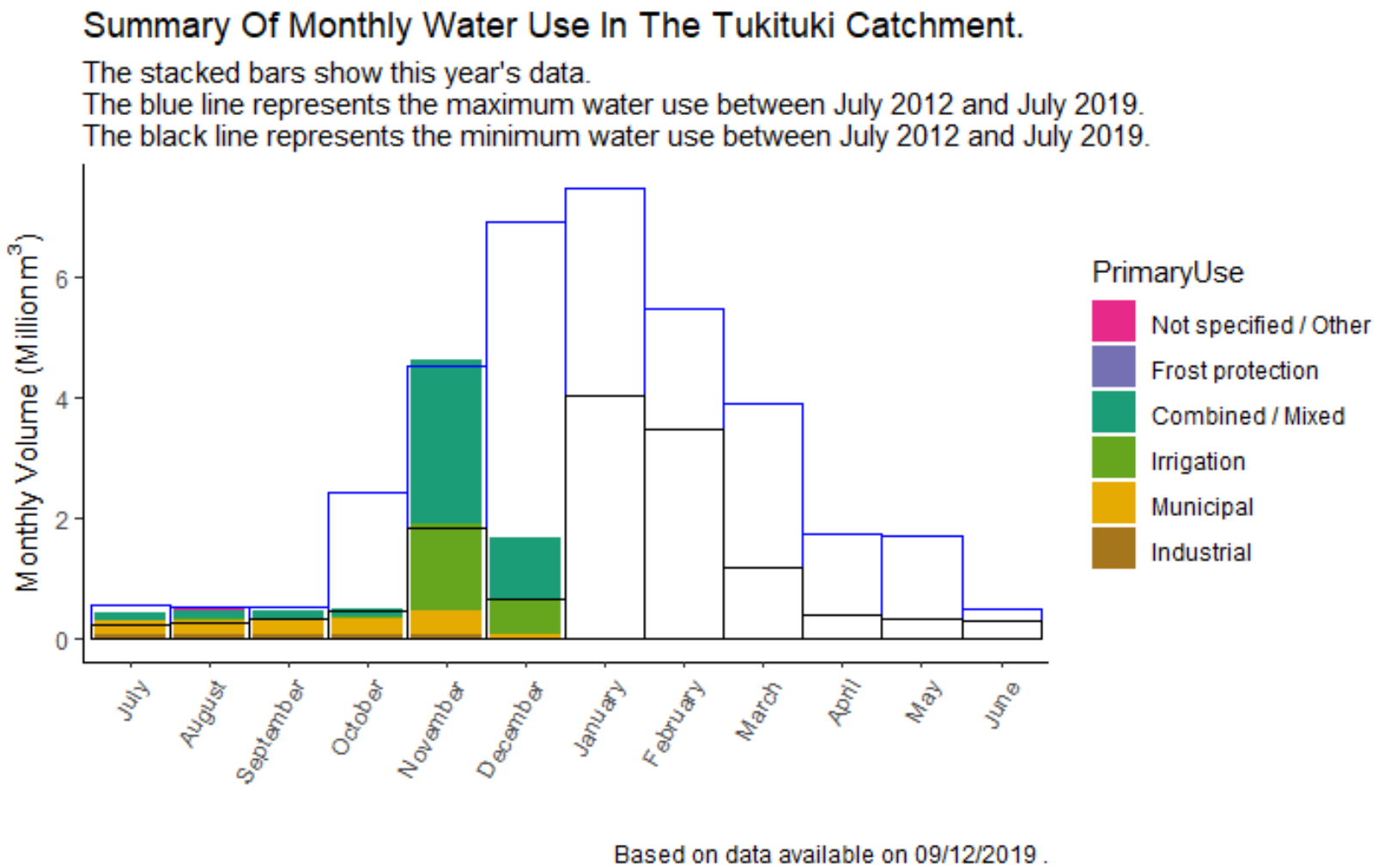
Tukituki water use



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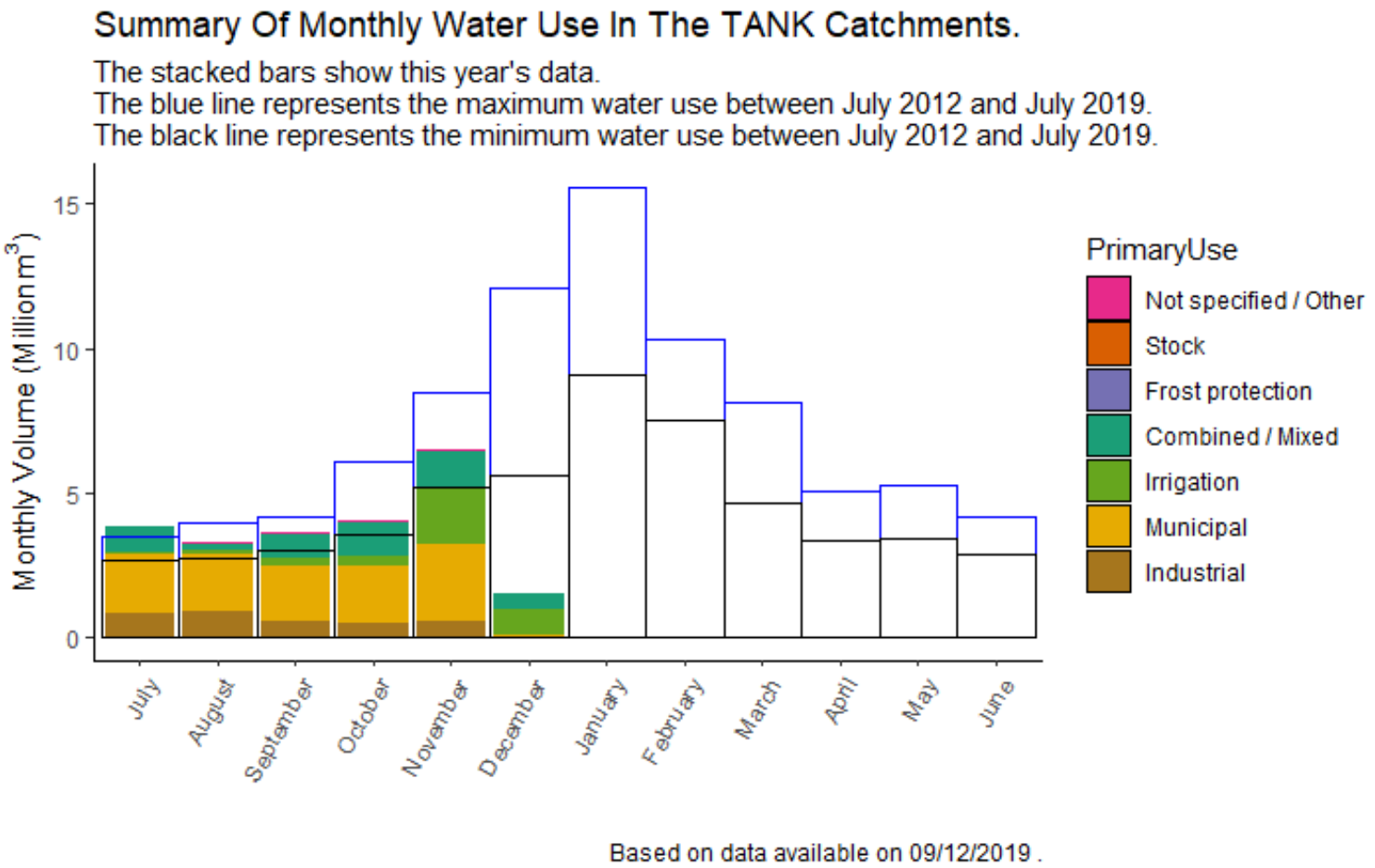
TANK water use



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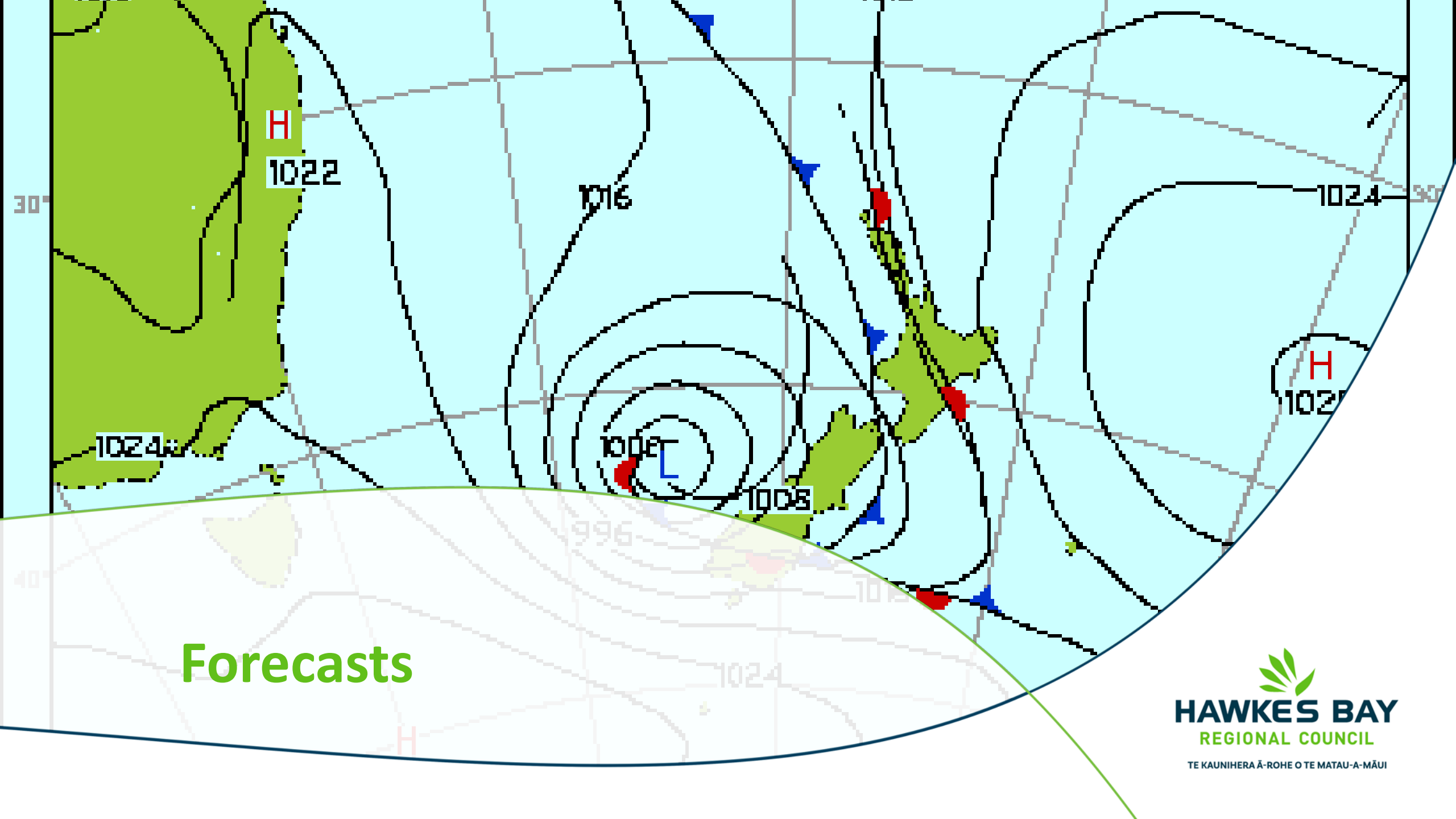

Forecasts

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NIWA Seasonal Forecast
December 2019 to February 2020

- Temperatures are most likely to be above average (55% chance)

- Rainfall totals are most likely to be near normal (40% chance)

- Soil moisture levels are most likely to be near normal (30-35% chance)

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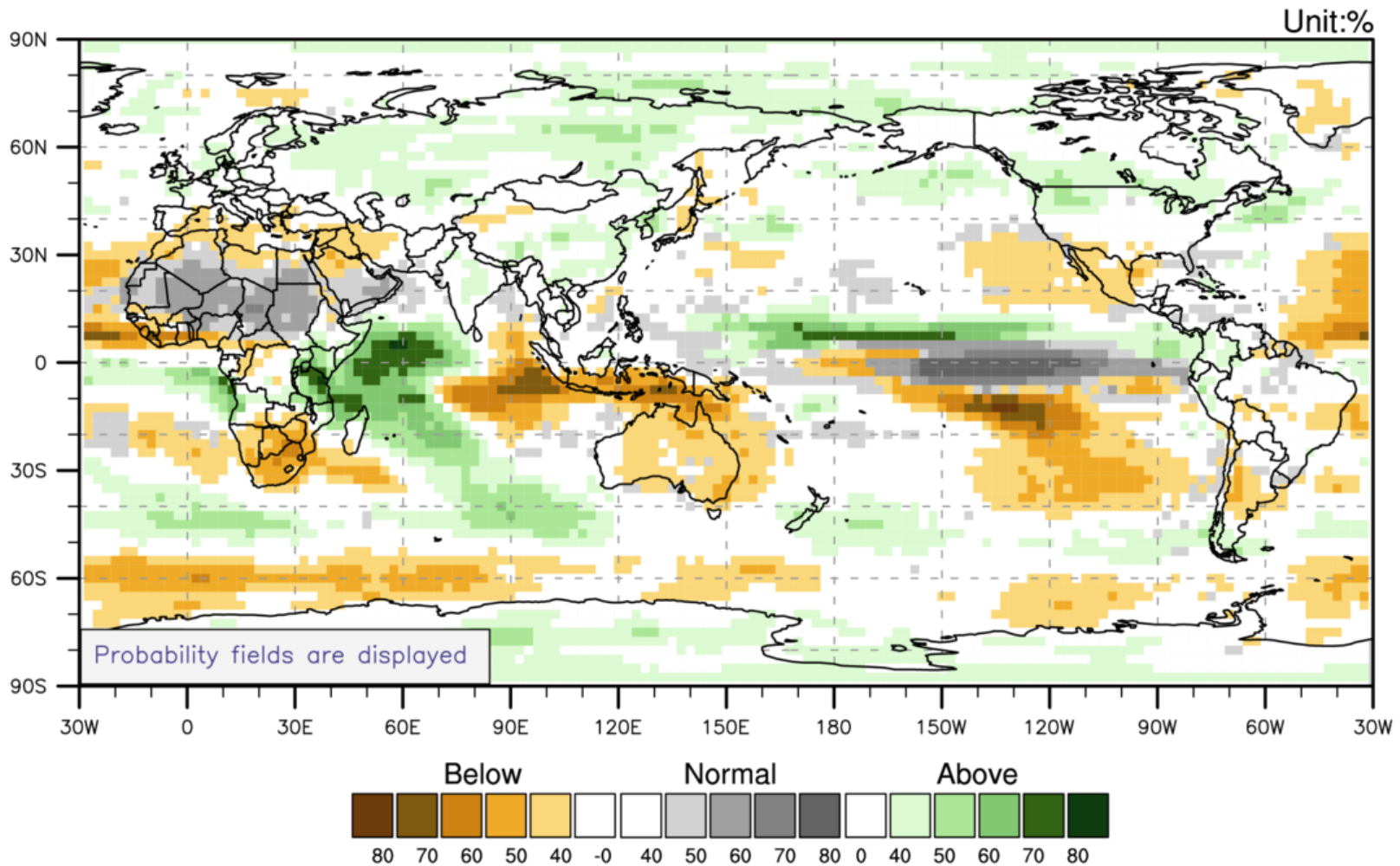
https://www.niwa.co.nz/climate/seasonal-climate-outlook

Precipitation for December 2019-February 2020



Issued: 20 Nov, 2019

https://apcc21.org/ser/outlook.do?lang=en

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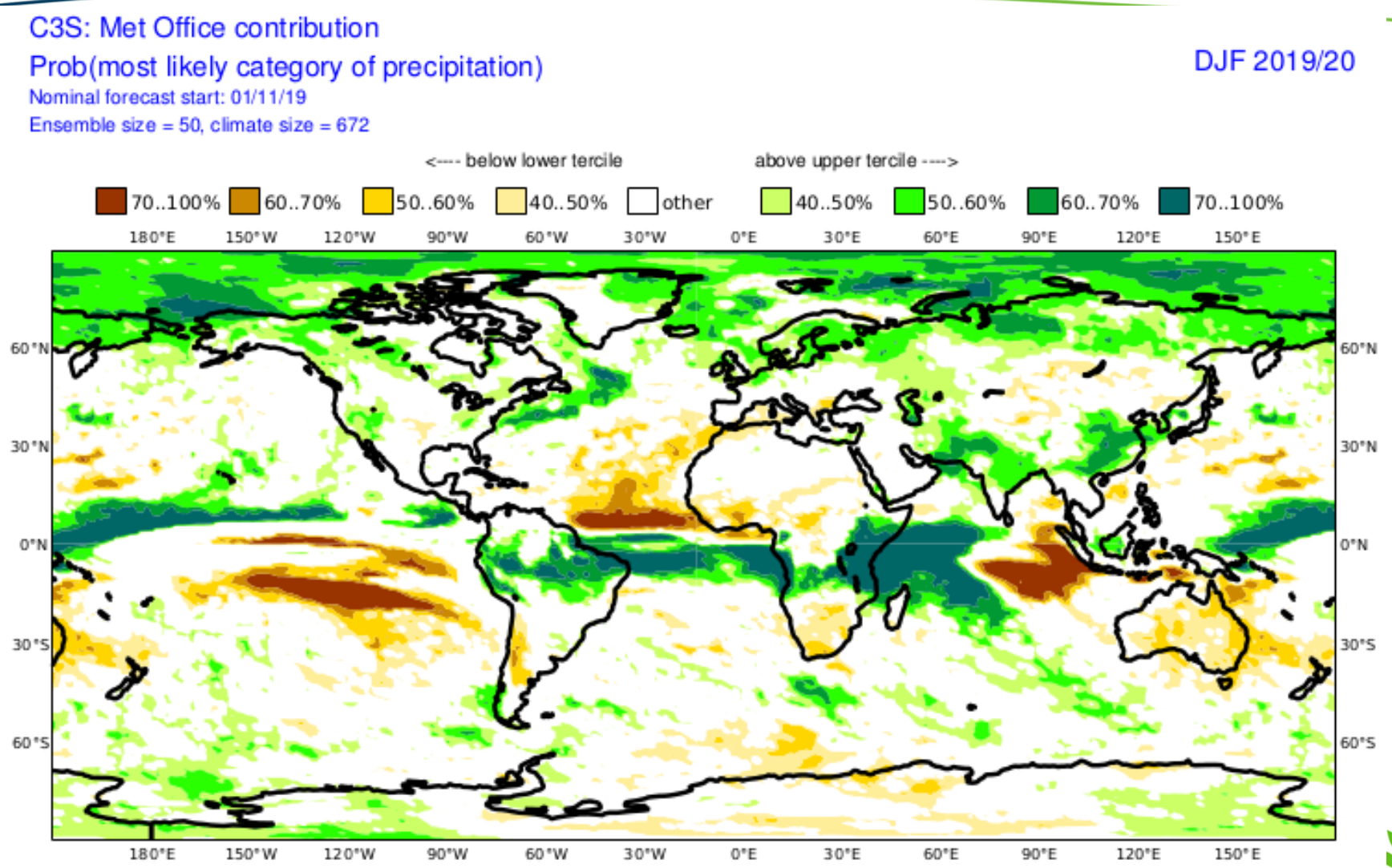
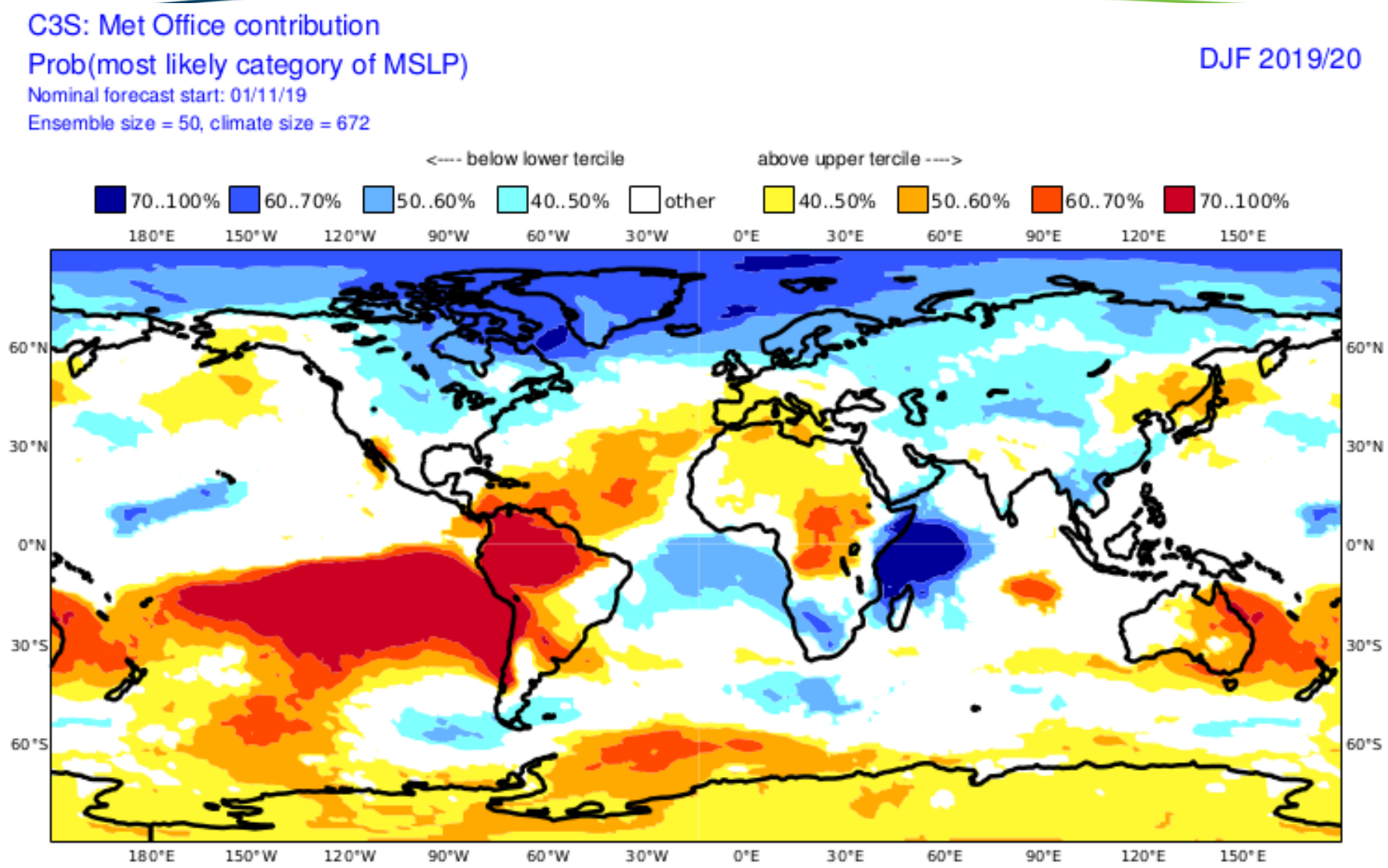
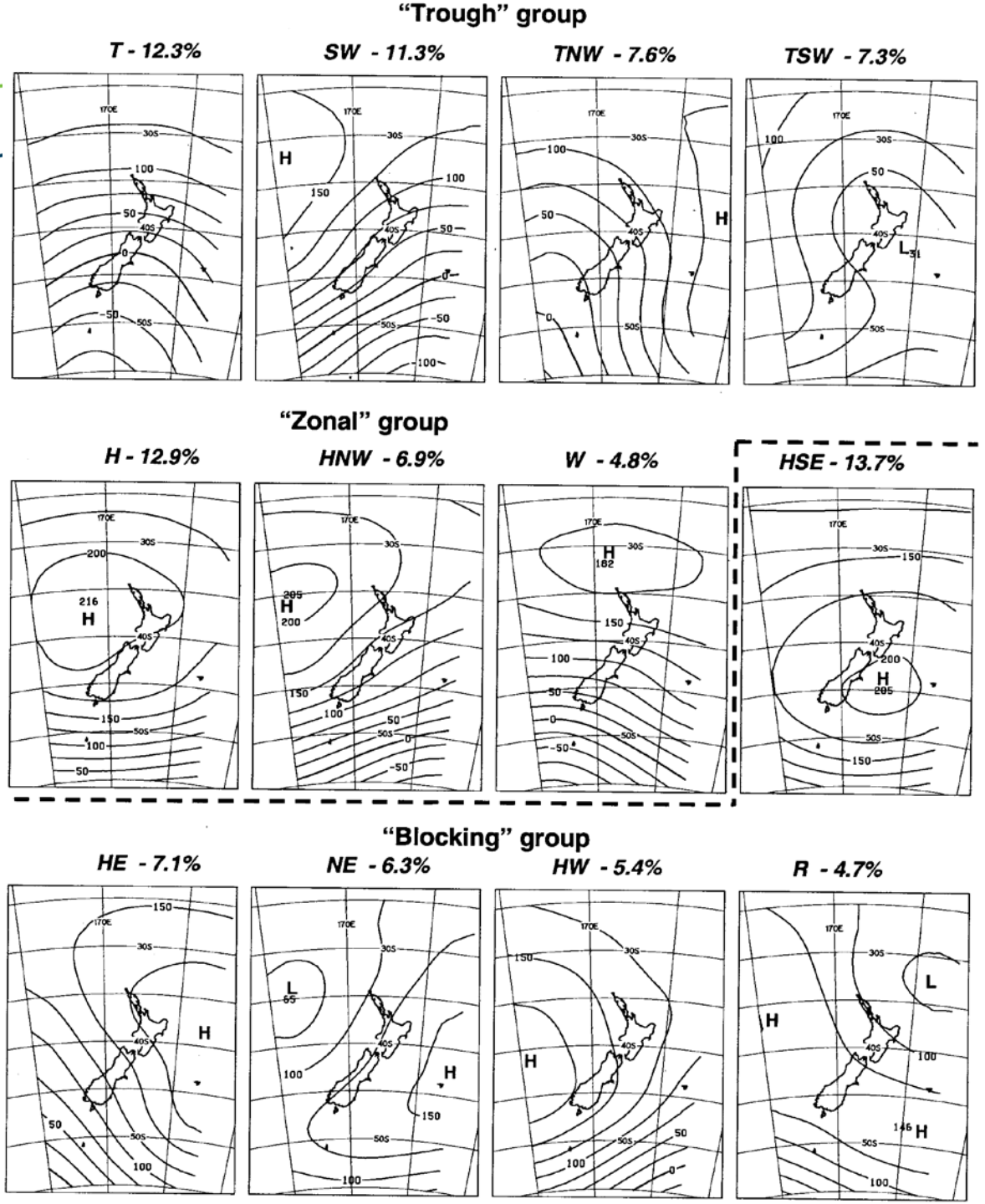


https://climate.copernicus.eu/charts/c3s_seasonal/c3s_seasonal_spatial_mm_mslp_3m?facets=undefined&time=20190901
00,720,2019100100&type=tsum&area=area08



https://climate.copernicus.eu/charts/c3s_seasonal/c3s_seasonal_spatial_egrr_mslp_3m?facets=undefined&time=20191101000,720,2019120100&type=tsum&area=area08



Twelve Kidson Weather Types

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SPRING	Waikaremoana	Northern HB	Tangoio	Kaweka	Ruahine	Heretuanga Plains	Ruataniwha Plains	Southern HB
T	1	-12	-5	-2	28	-7	-18	-12
SW	-10	-20	-24	-37	-5	-32	-39	-30
TNW	5	26	15	9	5	19	18	15
TSW	36	38	27	27	-8	55	47	41
H	-12	-18	-28	-38	-44	-26	-10	-10
HNW	-1	4	-10	-23	-15	-24	-7	-1
W	-28	-19	-14	-1	34	-19	-14	2
HSE	-14	4	8	19	8	3	4	2
HE	-16	-22	-5	-6	-13	-3	3	-4
NE	2	3	13	34	7	19	19	11
HW	5	26	15	9	5	19	16	15
R	35	37	62	26	55	48	30	44

Correlation (r) between the seasonal frequency of Kidson Weather Types and seasonal rainfall at sites with 30 year records

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