



# What an awful sailing season

Georgina Griffiths, 25 May 2023

# What we are going to talk about tonight:

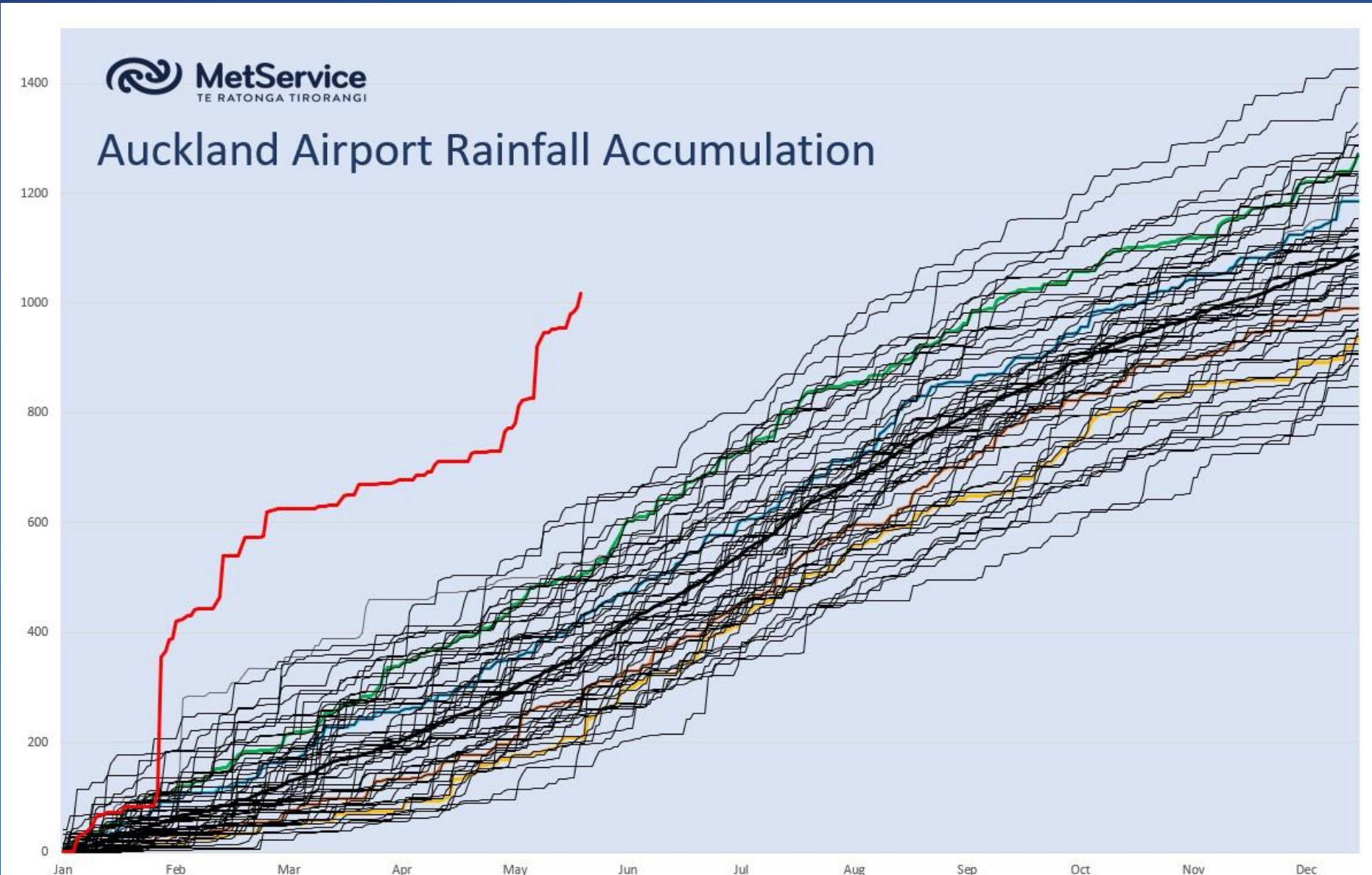
- Brief introduction – a bit about me
- Describing 2023 meteorologically
- The primary climate drivers behind this summer/autumn
- NE gales and rain in early January (personal perspective)
- Cyclone Hale (in brief)
- January 27<sup>th</sup> (in brief)
- Cyclone Gabrielle 14 February (in brief)
- Questions + discussion



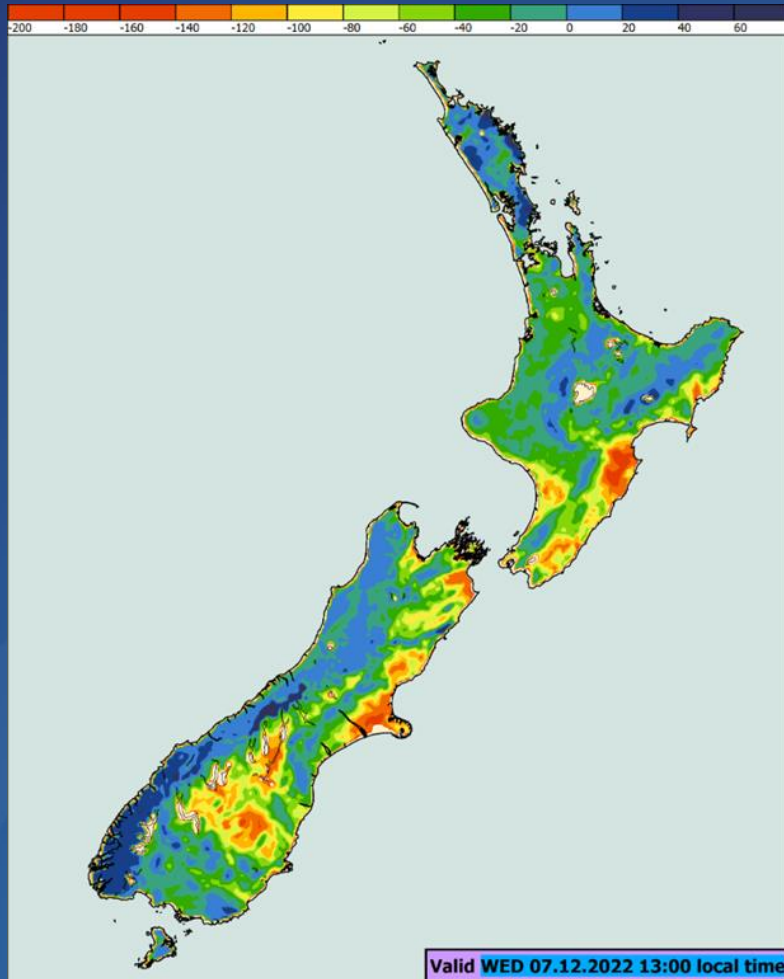
# A bit about me:



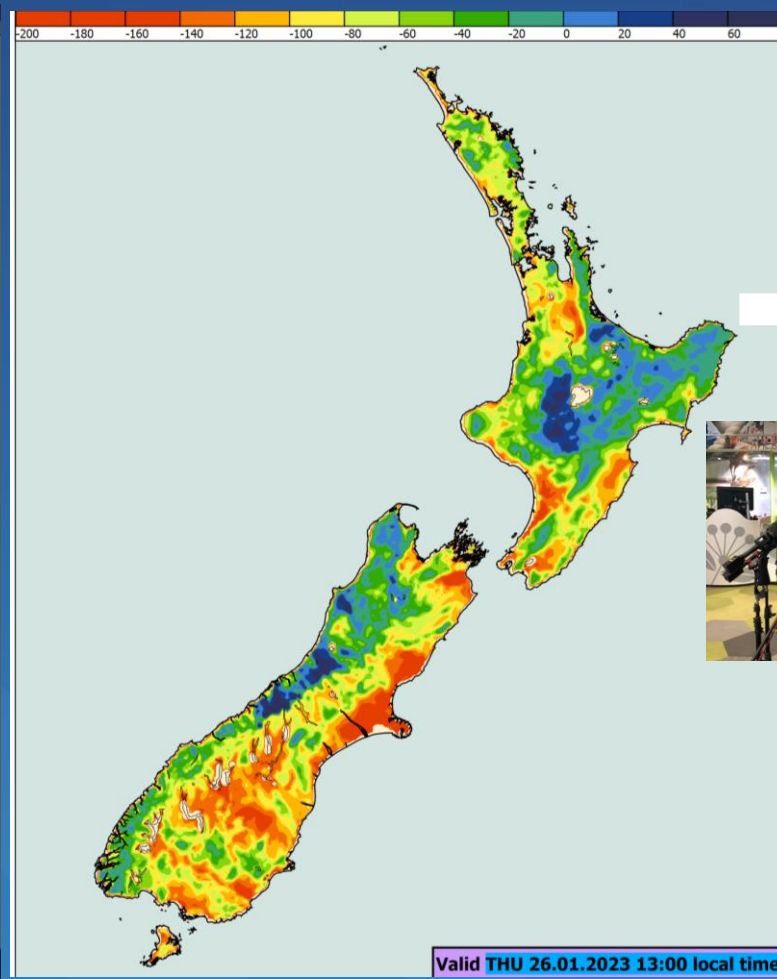
# On track for a record-breaking year in Auckland (1963-2023 shown)



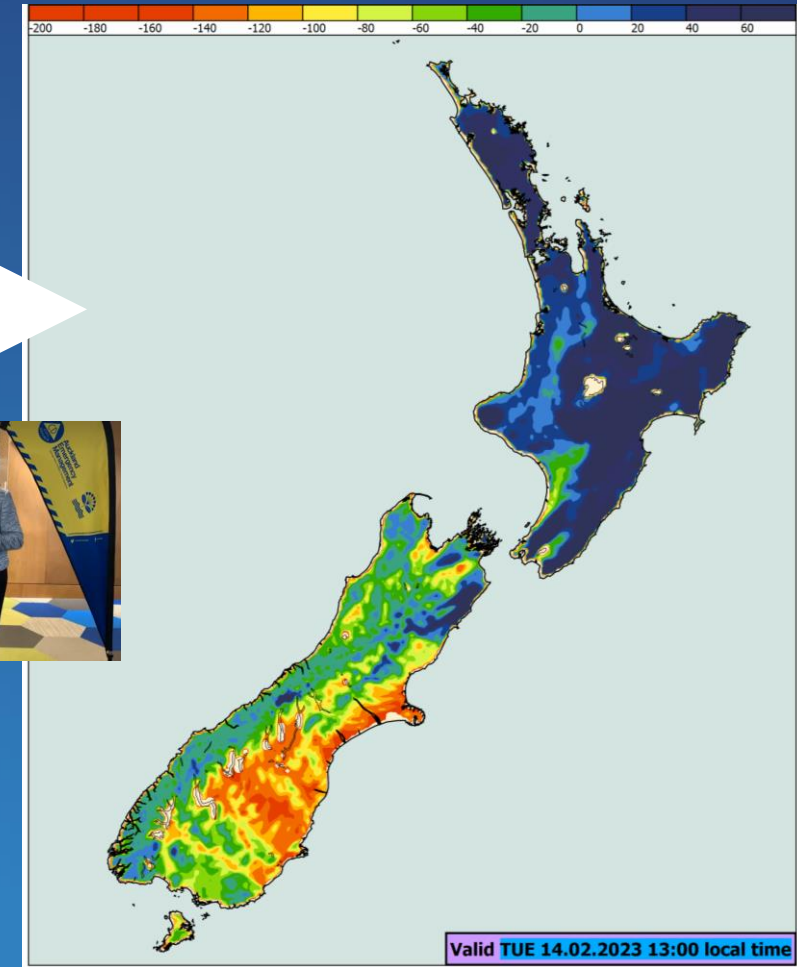
# Soil moisture were at record levels this summer



7 Dec 2022



26 January 2023



14 Feb, after Cyclone Gabrielle

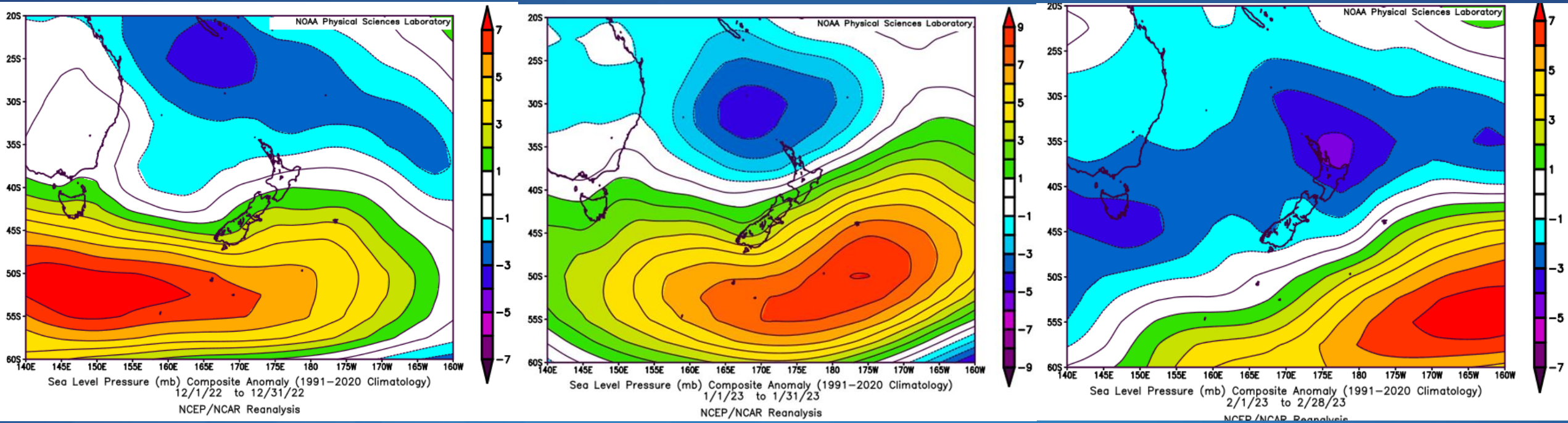


# Mean sea level pressure monthly anomalies

Mean sea level pressure anomaly:

Lower than normal pressures = blue

Higher than normal pressures = red



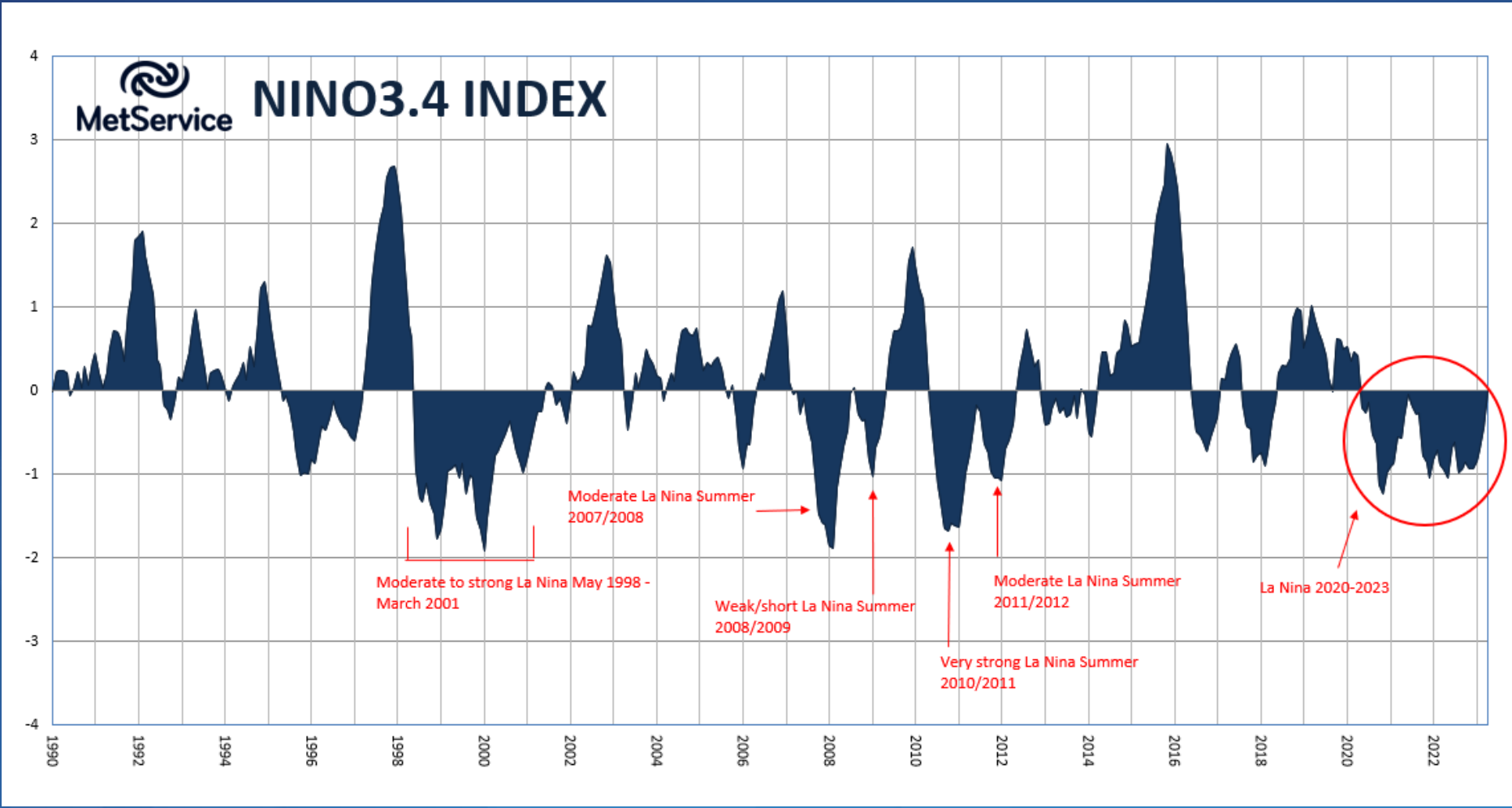
Dec 2023

Jan 2023

Feb 2023



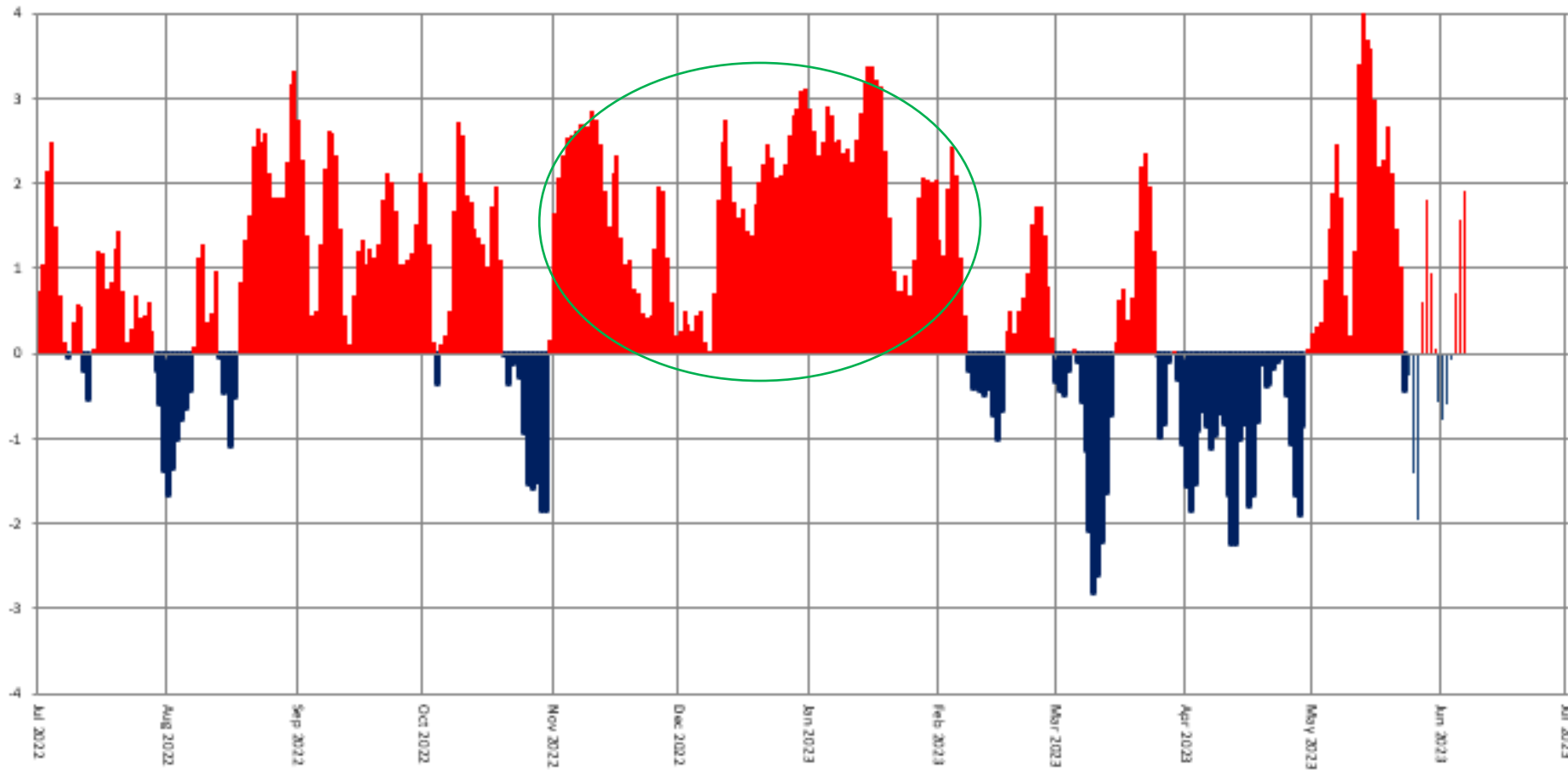
# La Nina (triple dip) – climate change + Aussie bushfires



# Southern Annular Mode (quiet southern Ocean):

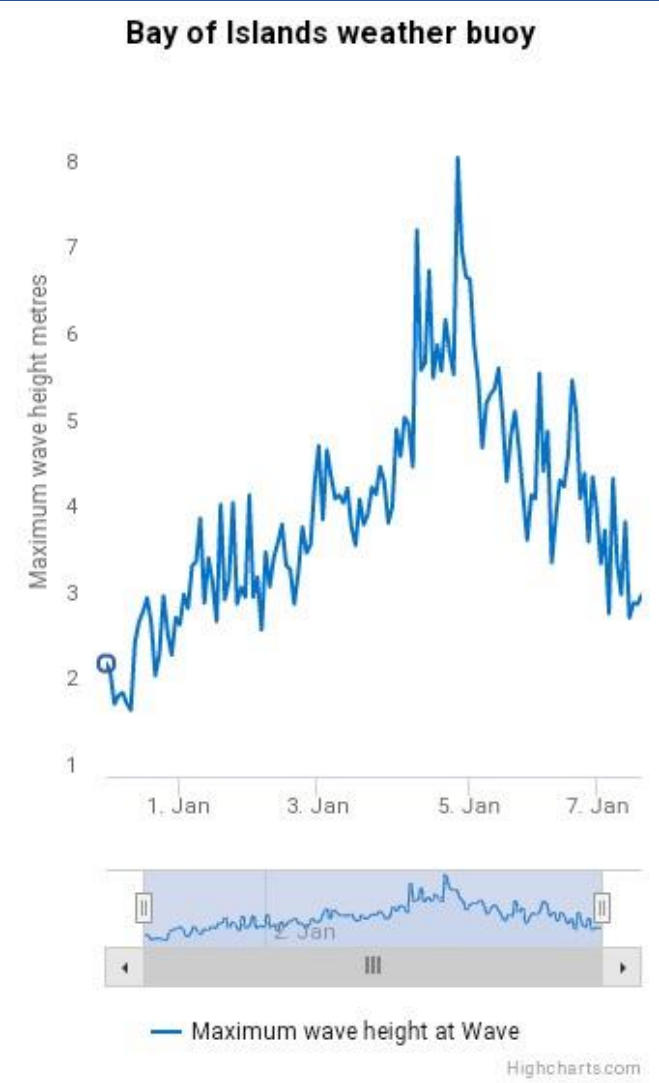
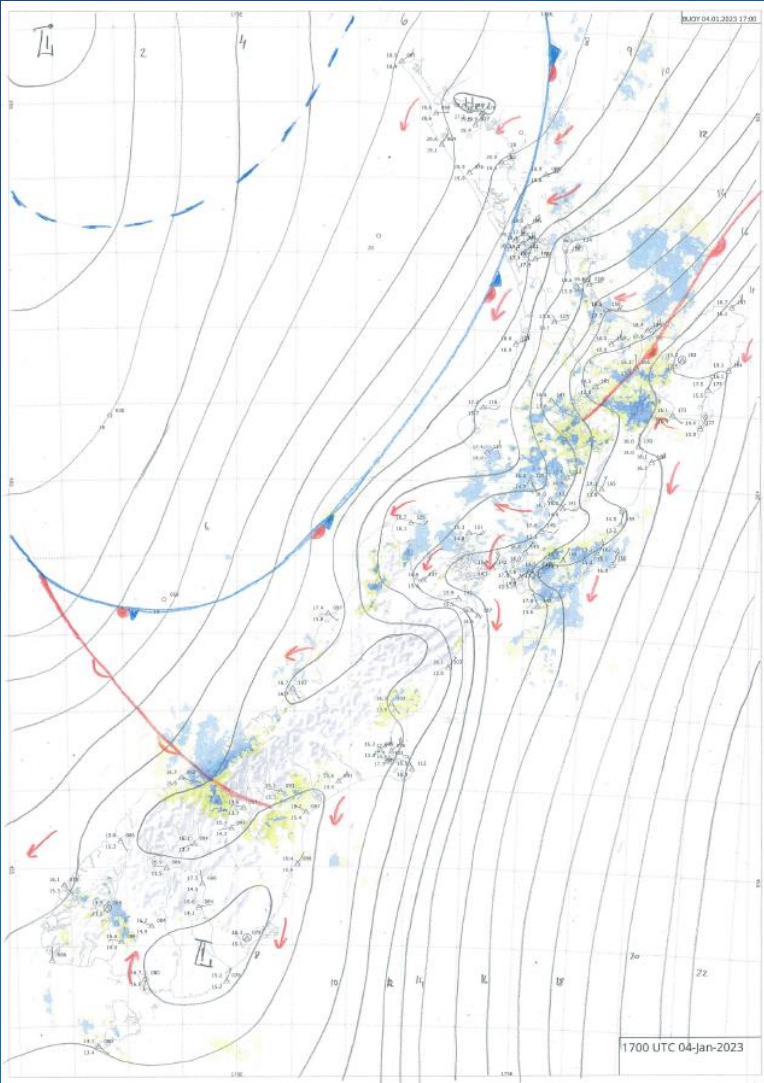


## The Southern Annular Mode (Southern Ocean storminess)





# Prolonged NE in early January



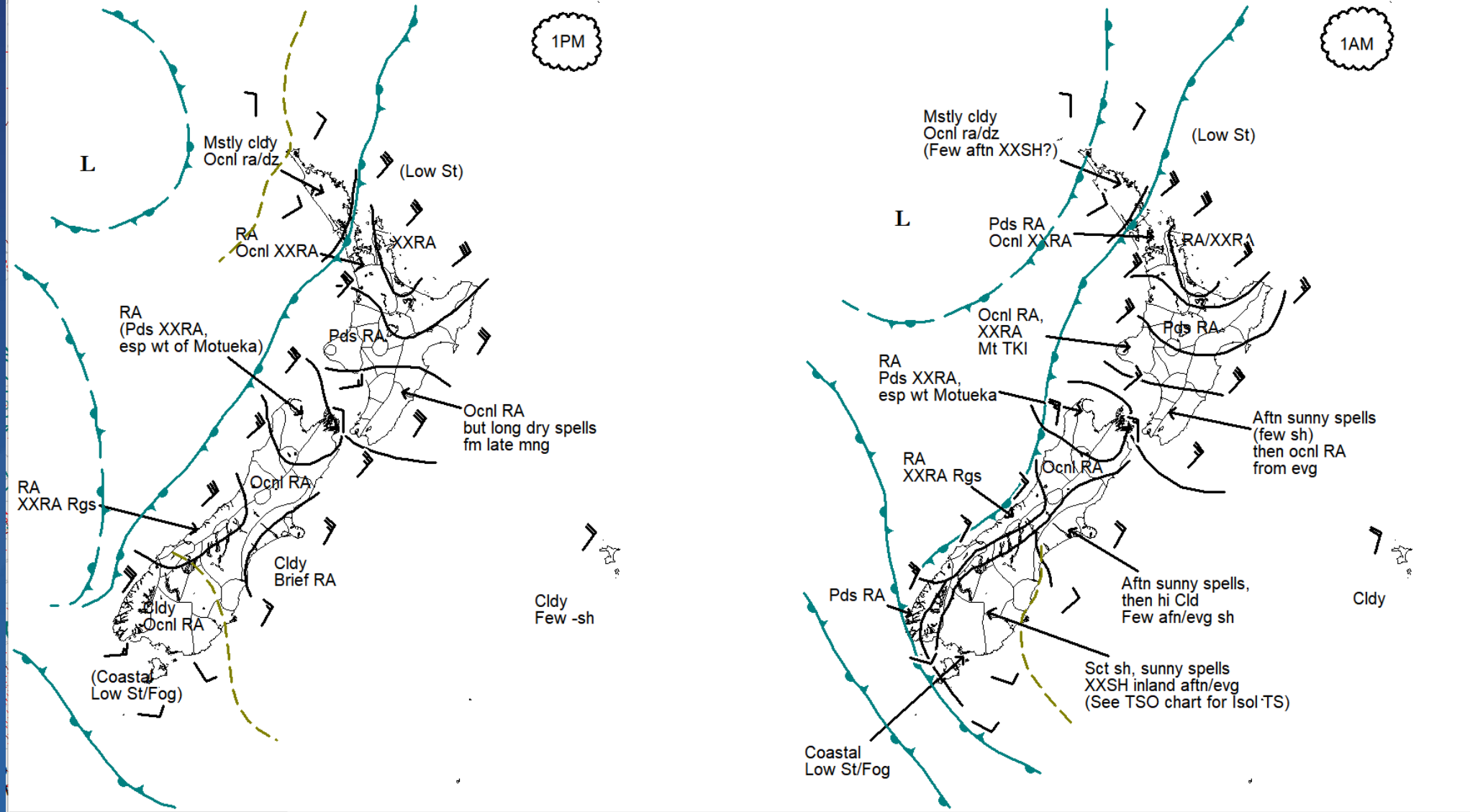
5 Jan 2023



# Waves running down the back edge of occluded front

H+06 VALID: 05-Jan-2023 00:00Z ISSUED: 04-Jan-2023 18:57Z

H+18 VALID: 05-Jan-2023 12:00Z ISSUED: 04-Jan-2023 18:57Z



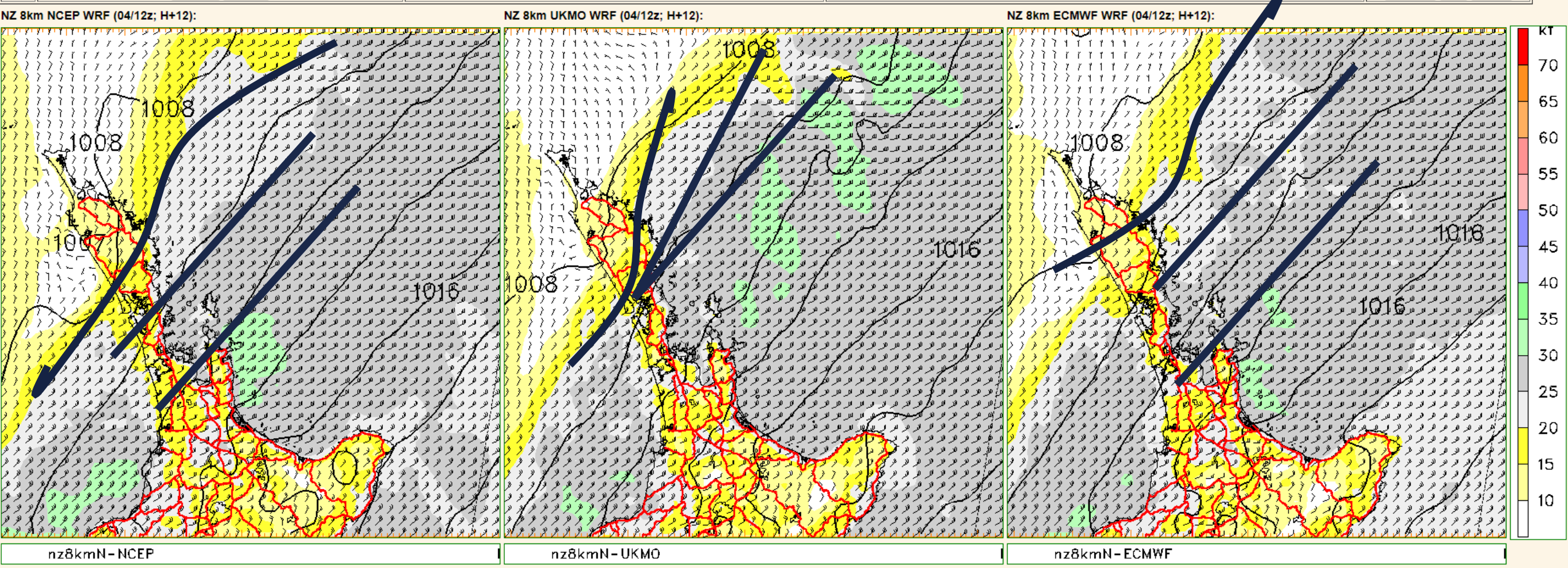
T + 06 prog noon 5 Jan 2023

T + 18 prog midnight 5 Jan 2023



# Low model confidence

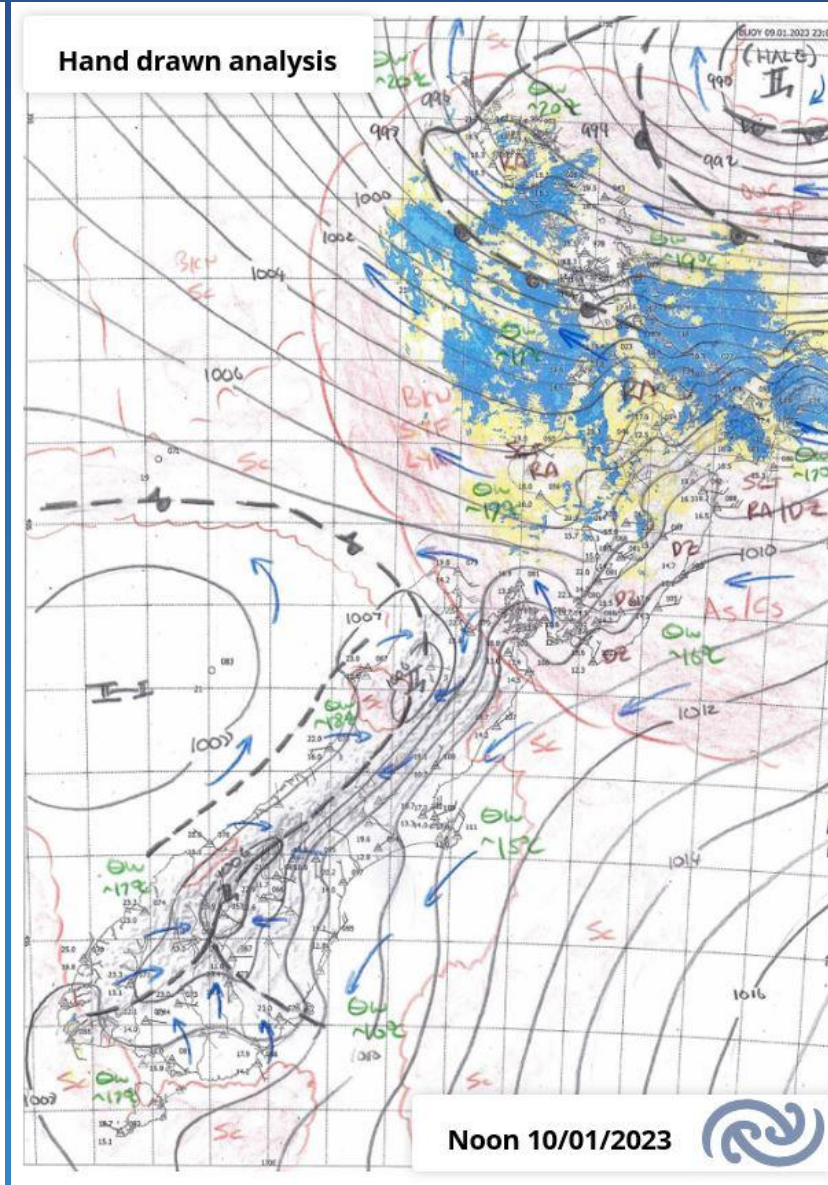
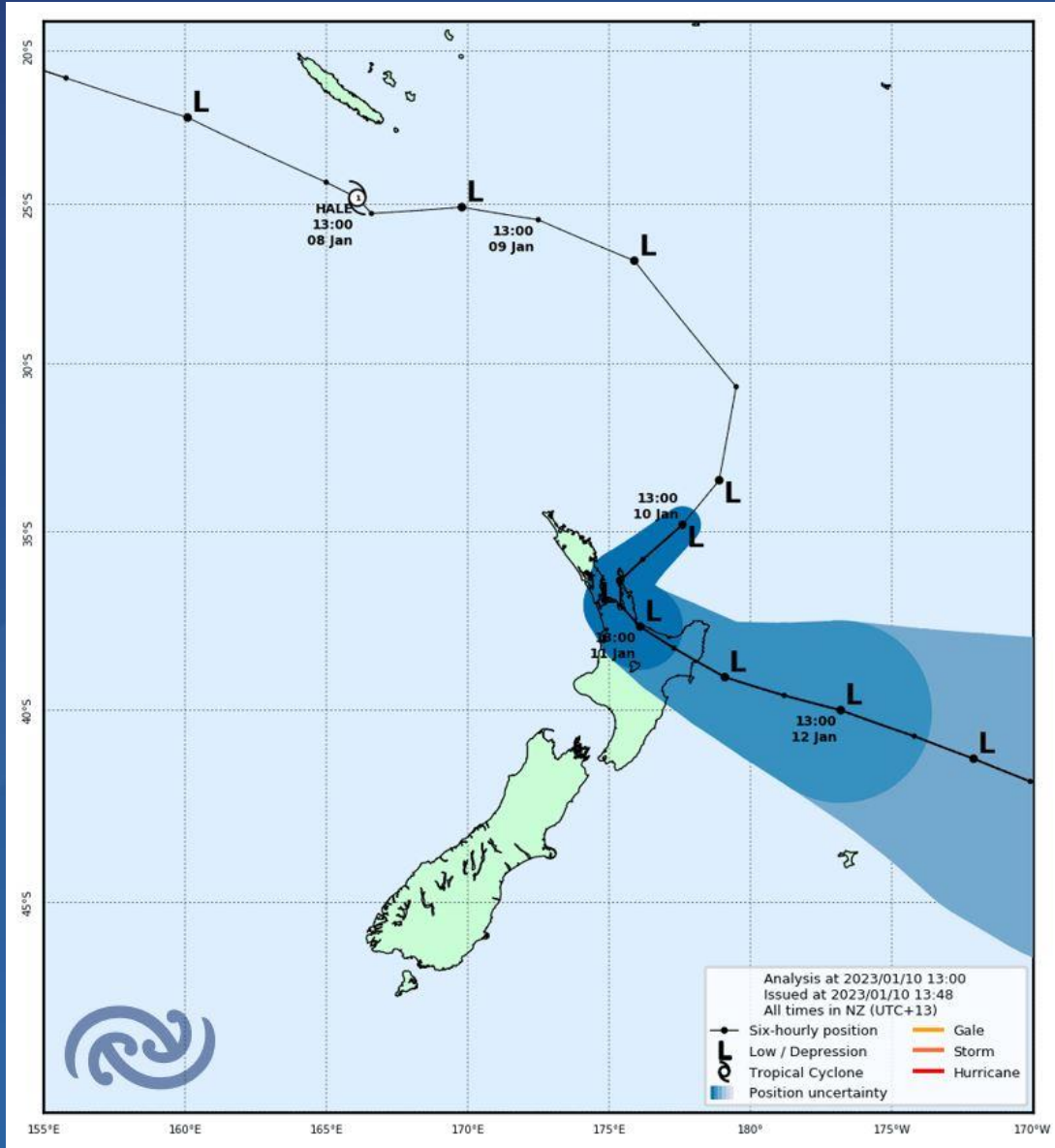
Field: WIND: MSLP + 10m wind - North	NZ 8km NCEP / 8km UKMO / 8km ECMWF	Runs: L (00,06,12,18 UTC); M (00,12 UTC); R (00,12 UTC);	Overlays: Off
Run: < Back Next >	Current run Latest run Set: YYYYMMDDHH Go	Reference model run: Wed, 04 Jan 2023 12:00:00 GMT	Regional RC Road
Prog: < Back Next >	Reference Prog: H+12	Validity Time: Thu, 05 Jan 2023 00:00:00 GMT	Coastal R4 Snow



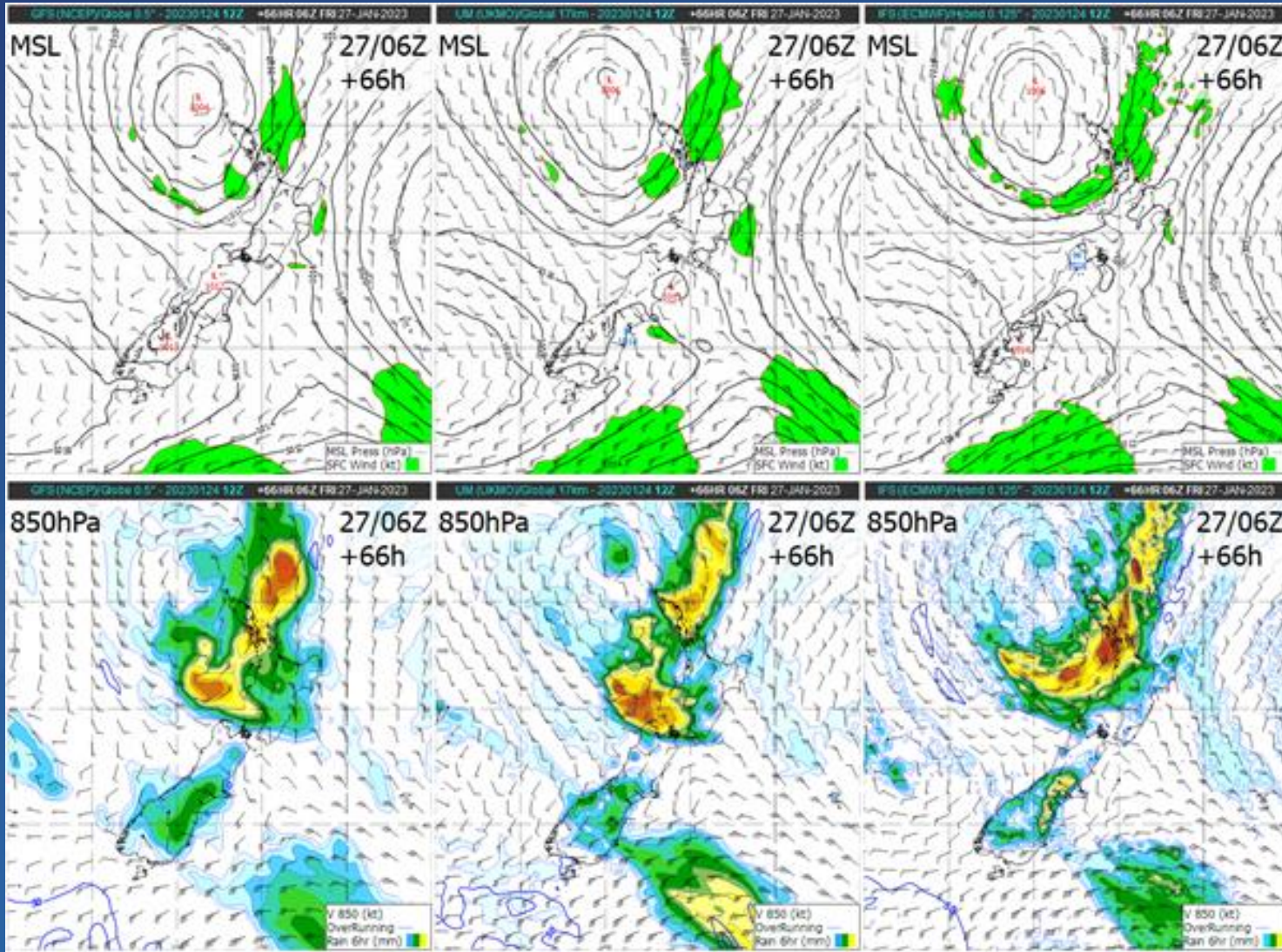
Midday Thursday 5 January 2023, T + 12,  
comparing x3 global models downscaled



# Cyclone Hale 10/11 Jan 2023



# January 27 Auckland floods



Wed 25 Jan – Information sent to Auckland Council Emergency Management



[Click here to download pictures.](#) To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

### **MetService Severe Weather Watch**

Issued at 9:48am Thu 26 Jan 2023

Heavy rain and strong northeasterlies for parts of the upper North Island

A subtropical low lies to the northwest of New Zealand today through to Saturday, directing a strong and humid northeast flow across the North Island. Significant rainfall is expected in Northland, Coromandel Peninsula and western Bay of Plenty where Heavy Rain Warnings are in force. Meanwhile, Heavy Rain Watches are in force for northern parts of Auckland and Mount Taranaki, and a Strong Wind Watch is in effect for Auckland.

People are advised to keep up to date with the latest forecasts in case any changes are made, or further areas are added.

### **Heavy Rain Watch**

Area: Auckland about and north of Whangaparaoa Peninsula, also Great Barrier Island

Valid: 15 hours from 7:00am Fri 27 Jan to 10:00pm Fri 27 Jan

Forecast: Periods of heavy rain, with thunderstorms possible. Rainfall amounts may approach warning criteria.

Area: Mount Taranaki

Valid: 12 hours from 4:00pm Fri 27 Jan to 4:00am Sat 28 Jan

Forecast: Periods of heavy rain. Rainfall amounts may reach warning criteria.

### **Strong Wind Watch**

Area: Auckland

Valid: 15 hours from 7:00am Fri 27 Jan to 10:00pm Fri 27 Jan

Forecast: Northeast winds may approach severe gale in exposed places.

**Thursday 26 Jan A.M – Information updated for all Auckland clients + heavy rain WATCH issued**



### **MetService Severe Weather Warning**

Issued at 8:24pm Thu 26 Jan 2023

Heavy rain and strong northeasterlies for parts of the upper North Island

A subtropical low lies to the northwest of New Zealand today through to Saturday, directing a strong and humid northeast flow across the North Island. Significant rainfall is expected in Northland, Auckland, Coromandel Peninsula and western Bay of Plenty where Heavy Rain Warnings are in force. Meanwhile, a Heavy Rain Watch is in force for Mount Taranaki, and a Strong Wind Watch is in effect for Auckland.

People are advised to keep up to date with the latest forecasts in case any changes are made, or further areas are added.

#### **Heavy Rain Warning - Orange**

Heavy rain may cause streams and rivers to rise rapidly. Surface flooding and slips are also possible and driving conditions may be hazardous.

Area: Northland

Valid: 20 hours from 8:00pm Thu 26 Jan to 4:00pm Fri 27 Jan

Forecast: Expect 100 to 130mm of rain, especially in the east and north, with thunderstorms possible. Peak rates of 15 to 25mm/h expected during Friday morning and afternoon. However, rates of 25 to 40mm/h are possible in localised downpours.

Note, once the broadscale heavy rain eases, heavy showers are expected on Friday night.

Area: Auckland

Valid: 16 hours from 6:00am Fri 27 Jan to 10:00pm Fri 27 Jan

Forecast: Expect 70 to 100mm of rain, especially in the east and north, with thunderstorms possible. Peak rates of 15 to 25mm/h expected during Friday morning and afternoon. However, rates of 25 to 40mm/h are possible in localised downpours.

**Thursday 26 Jan P.M – Heavy Rain WARNING ISSUED**



**MetService Severe Thunderstorm Watch**

Issued at 9:10am Fri 27 Jan 2023

Area: Northland, Auckland

Valid: 9 hours 59 minutes from 9:01am Fri 27 Jan to 7:00pm Fri 27 Jan

Bands of heavy rain and embedded thunderstorms are expected to move across Northland and Auckland today. About Northland this morning and afternoon, and Auckland north of about Albany until early evening, some of these thunderstorms may be SEVERE, producing localised downpours of 25 to 40 mm/h. Rainfall of this intensity can cause surface and/or flash flooding, especially about low-lying areas such as streams, rivers or narrow valleys, and may also lead to slips. Driving conditions will also be hazardous with surface flooding and poor visibility in heavy rain.

Note: A Severe Thunderstorm Watch means conditions are favourable for severe thunderstorms in and close to the watch area. People in these areas should be on the lookout for threatening weather conditions and monitor for possible Severe Thunderstorm Warnings.

For information on preparing for and keeping safe during a storm, see the Civil Defence Get Ready website

An update will be issued by 2:00pm Fri 27 Jan

**Friday 27 Jan 9.10am – Heavy Rain WARNING REISSUED, all Auckland stakeholders updated**  
**Friday 27 Jan 9.10am - SEVERE THUNDERSTORM WATCH ISSUED**





**SEVERE THUNDERSTORM WARNING**  
**TOP PRIORITY FOR IMMEDIATE BROADCAST**

Issued by MetService at 03:31 pm Friday 27 January 2023.  
Valid until 04:22 pm Friday 27 January 2023.

This warning affects people in the following local government areas:  
KAIPARA, AUCKLAND CITY, WAITAKERE, RODNEY and ALBANY.

At 03:22 pm, MetService weather radar detected a line of severe thunderstorms lying from PORT ALBERT to KAUKAPAKAPA to MANUKAU HEADS.

This line of severe thunderstorms is moving towards the eastsoutheast, and is expected to lie from PORT ALBERT to DAIRY FLAT to MANUKAU HEADS at 03:52 pm and from TAUHOA to DAIRY FLAT to AUCKLAND AIRPORT at 04:22 pm.

These thunderstorms are expected to be accompanied by very heavy rain.

Very heavy rain can cause surface and/or flash flooding about streams, gullies and urban areas, and make driving conditions extremely hazardous.

A Severe Thunderstorm Watch remains in force for NORTHLAND and AUCKLAND.

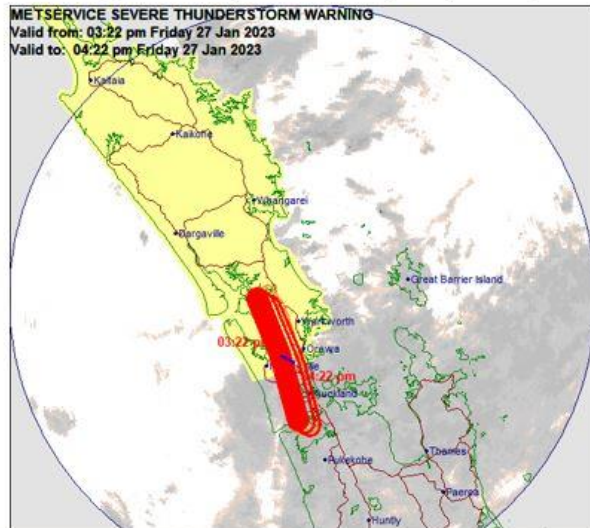
The National Emergency Management Agency advises that as storms approach you should:

- Take shelter, preferably indoors away from windows;
- Avoid sheltering under trees, if outside;
- Get back to land, if outdoors on the water;
- Move cars under cover or away from trees;
- Secure any loose objects around your property;
- Check that drains and gutters are clear;
- Be ready to slow down or stop, if driving.

During and after the storm, you should also:

- Beware of fallen trees and power lines;
- Avoid streams and drains as you may be swept away in flash flooding.

This warning is due to be updated or lifted by 04:22 pm Friday 27 January 2023.



Heavy rain = rainfall rates exceeding 5 mm per hour.

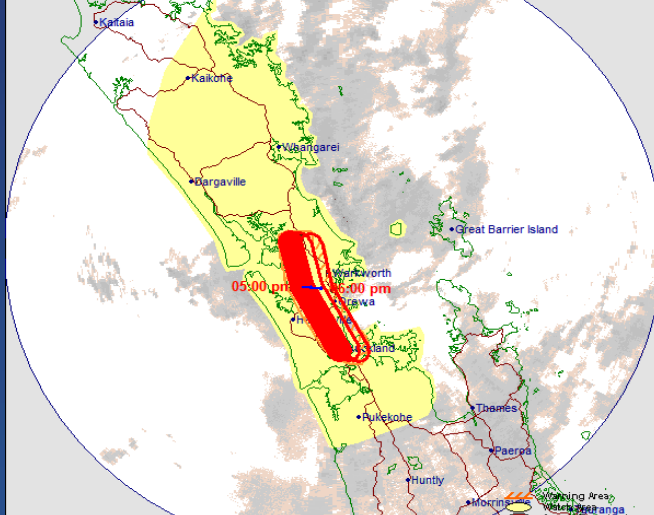
Downpours = rainfall rates exceeding 25 mm per hour.

- **16 Feb 1966:** Whenuapai downpours. Rain rates peaked at **107 mm/hr**, setting a **New Zealand hourly rainfall record for low-elevation locations**.
- **24 May 1997:** Auckland City floods. The peak hourly rainfall recorded was at Avondale (**57 mm/hr**), followed by Ann's Creek (**52 mm/hr**).
- **21 Jan 1999:** Pukekohe flash floods. Pukekohe recorded 94.2 mm in just two hours, peaking at **50 mm/hr**.
- **30 May 2001:** Leigh floods. Leigh recorded **109.4 mm/hr** between 1:30 am and 2:30 am, breaking the 1966 record, and **setting a new national hourly rainfall benchmark for low-elevation gauges**.
- **28 Jan 2004:** 'Sunshine and storms'. Isolated thunderstorms bubbled up in the afternoon in the west of the region, with peak rain rates **63 mm/hr** in the Waitakere Ranges, and **43 mm/hr** at Kumeu.
- **7-12 March 2017:** Rain rates in 3 downpours events peaked at **60 mm/hour**



**METSERVICE SEVERE THUNDERSTORM WARNING**

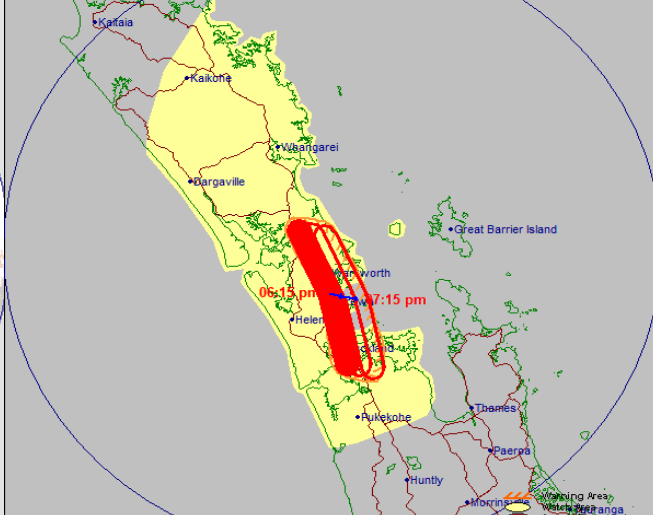
Valid from: 05:00 pm Friday 27 Jan 2023  
Valid to: 06:00 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

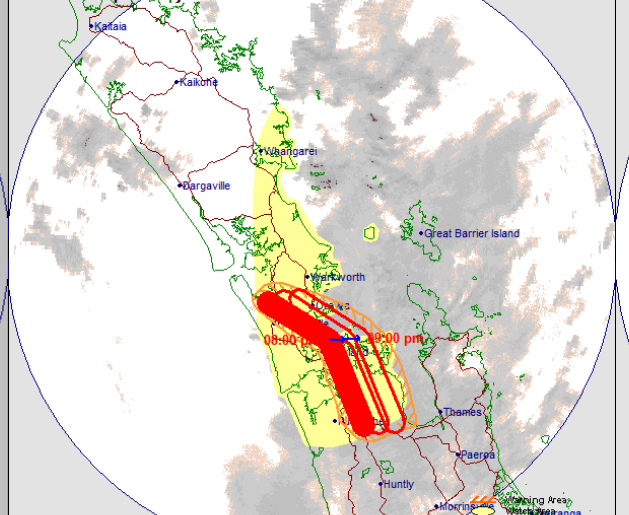
Valid from: 06:15 pm Friday 27 Jan 2023  
Valid to: 07:15 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

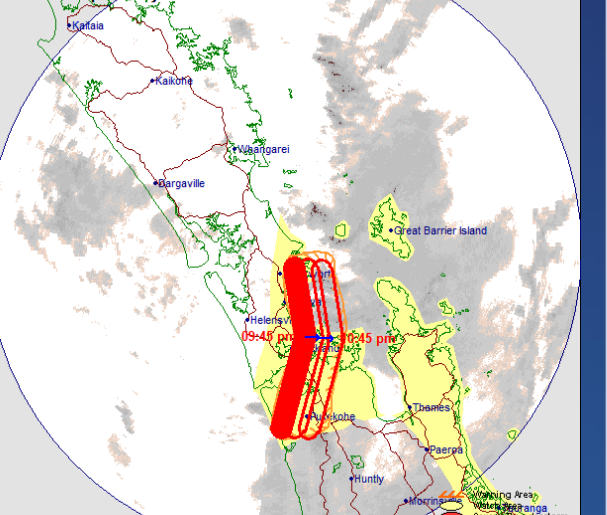
Valid from: 08:00 pm Friday 27 Jan 2023  
Valid to: 09:00 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

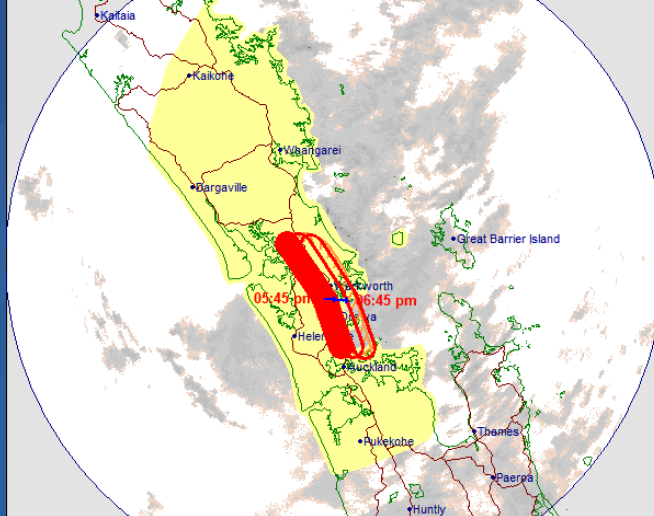
Valid from: 09:45 pm Friday 27 Jan 2023  
Valid to: 10:45 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

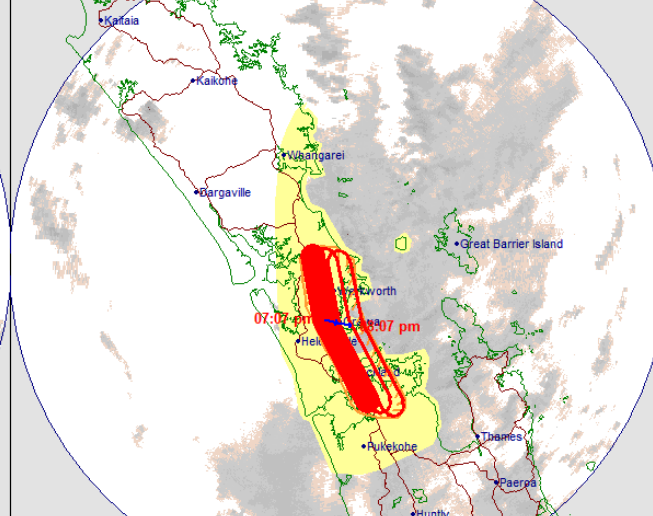
Valid from: 05:45 pm Friday 27 Jan 2023  
Valid to: 06:45 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

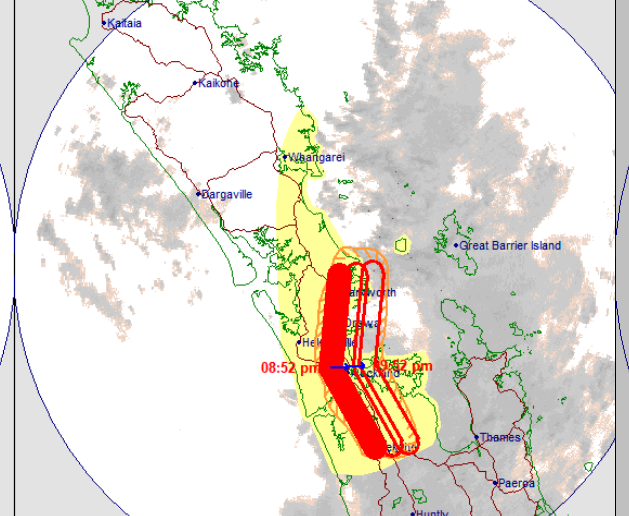
Valid from: 07:07 pm Friday 27 Jan 2023  
Valid to: 08:07 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

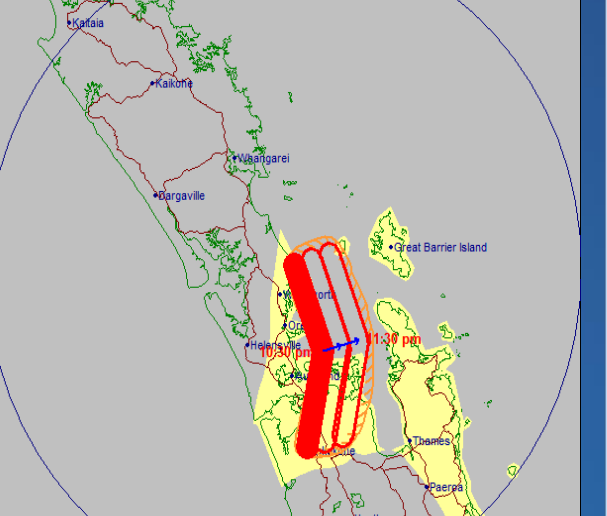
Valid from: 08:52 pm Friday 27 Jan 2023  
Valid to: 09:52 pm Friday 27 Jan 2023



**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**

**METSERVICE SEVERE THUNDERSTORM WARNING**

Valid from: 10:30 pm Friday 27 Jan 2023  
Valid to: 11:30 pm Friday 27 Jan 2023



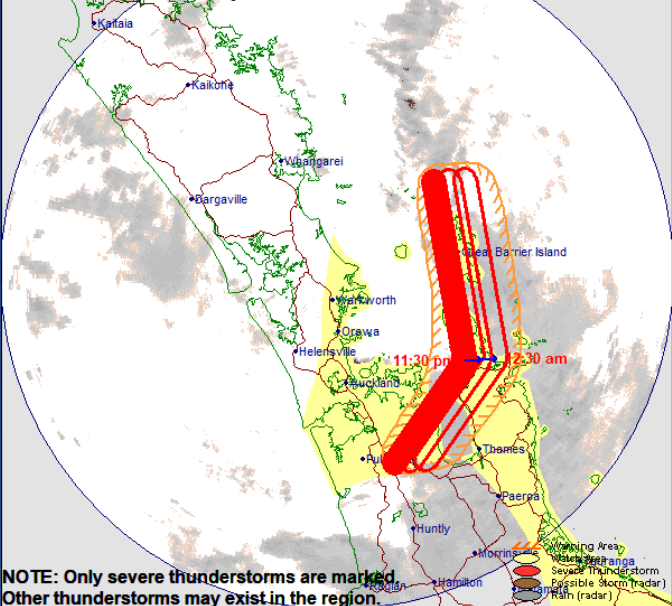
**NOTE: Only severe thunderstorms are marked. Other thunderstorms may exist in the region.**



**METSERVICE SEVERE THUNDERSTORM WARNING**

Valid from: 11:30 pm Friday 27 Jan 2023

Valid to: 12:30 am Saturday 28 Jan 2023



# January 27 Auckland Floods

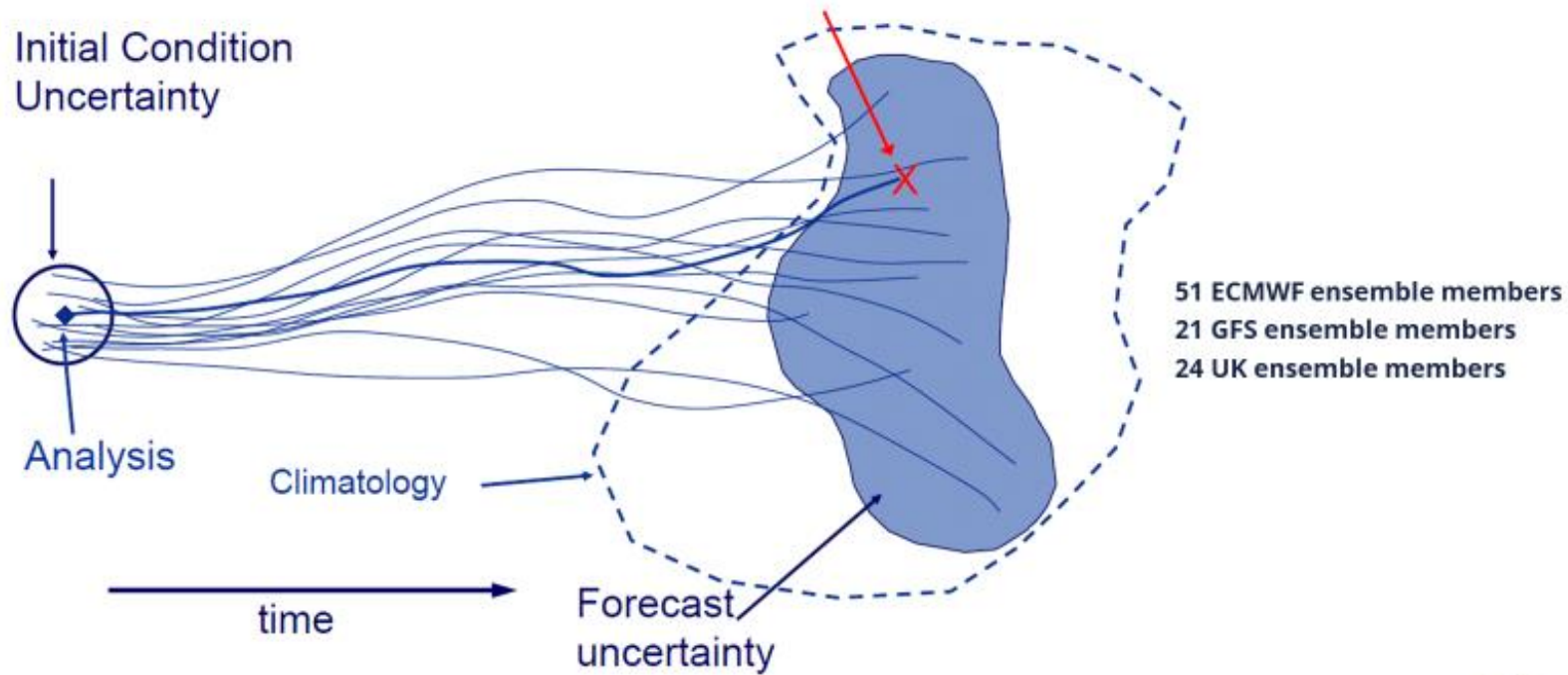




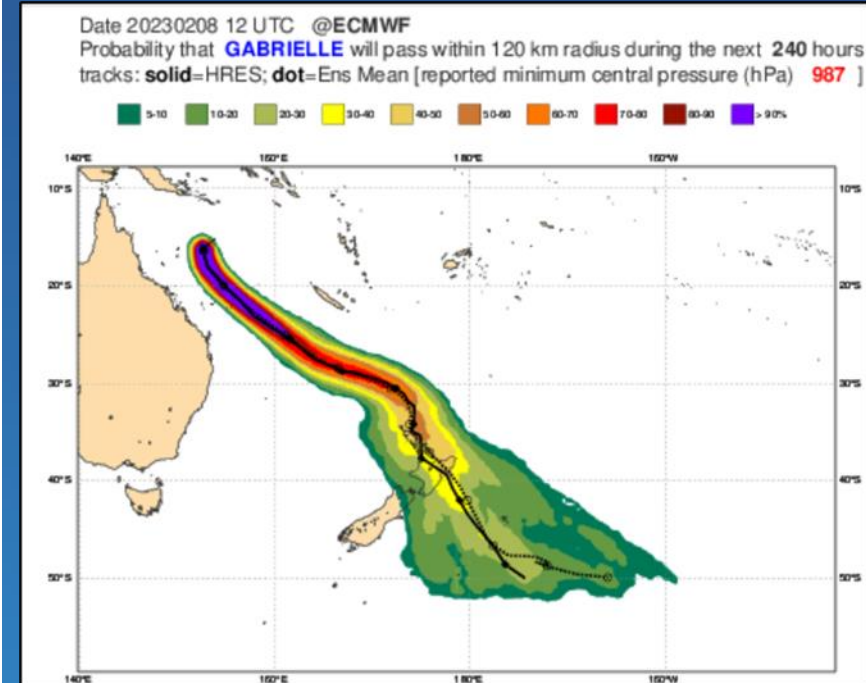
January 27 Auckland floods

# Cyclone Gabrielle – ensembles were VERY tight on track

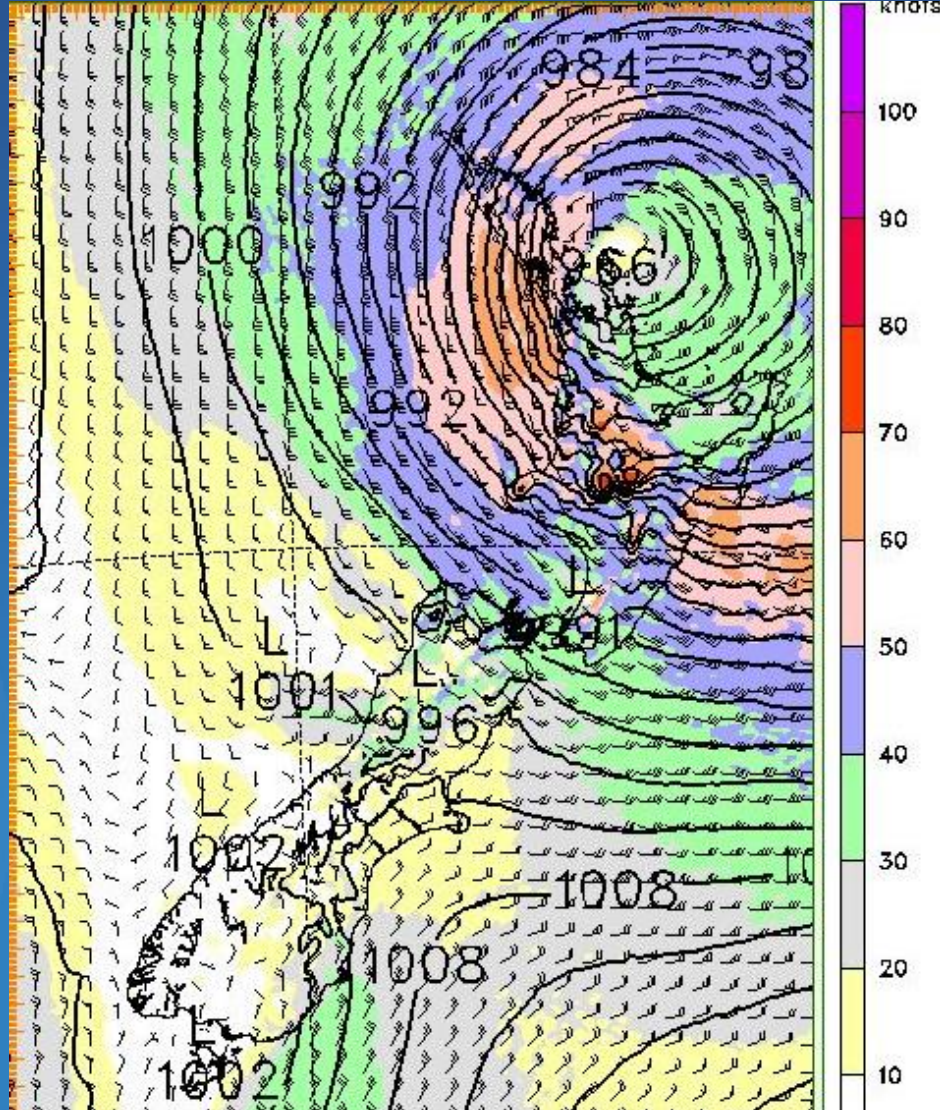
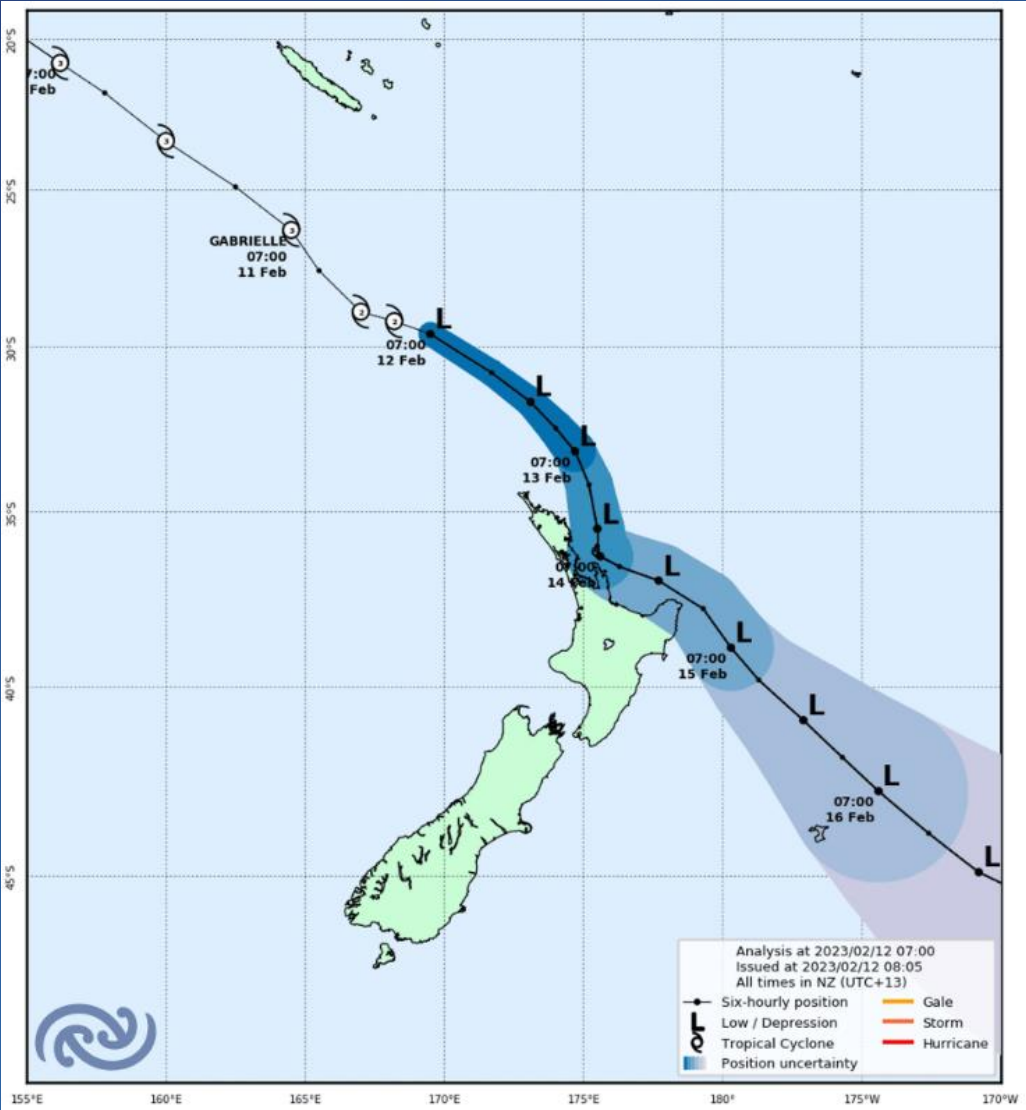
Q: Single model forecast – how do you know if it is any good?

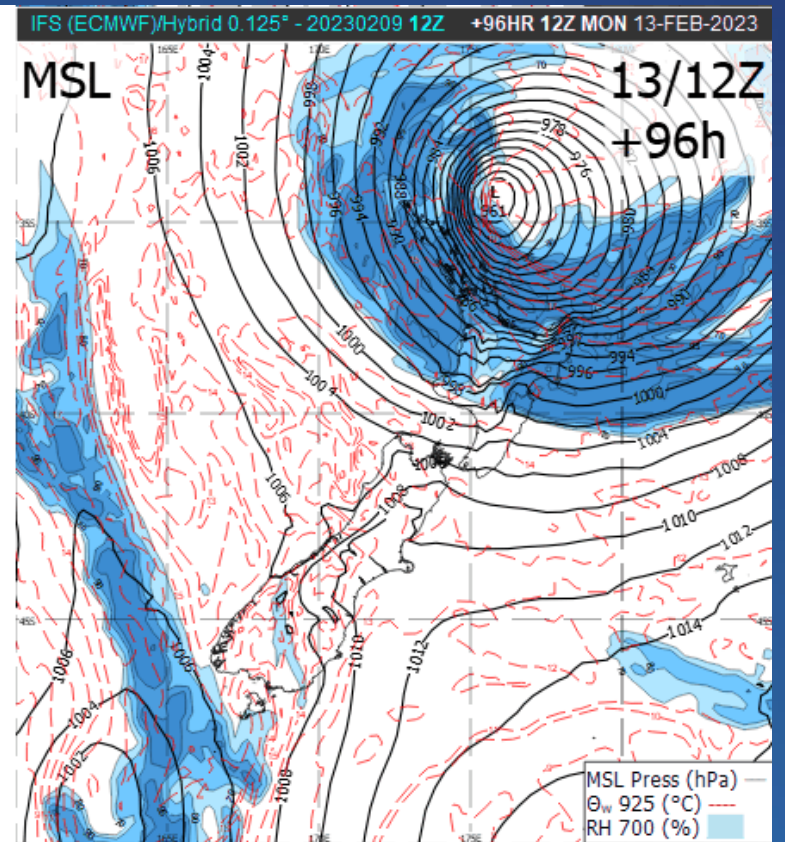
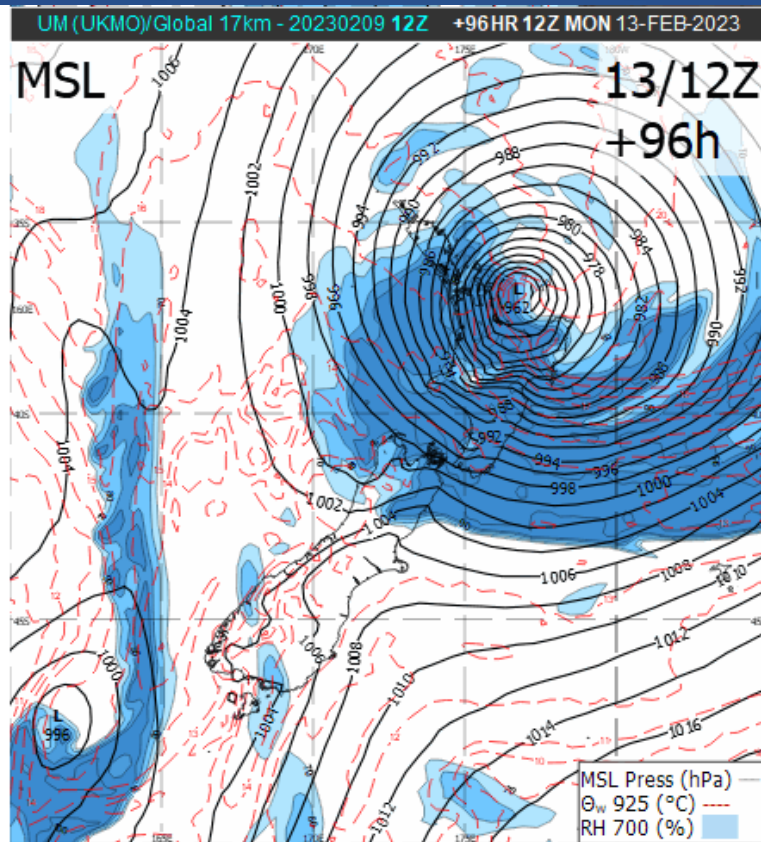
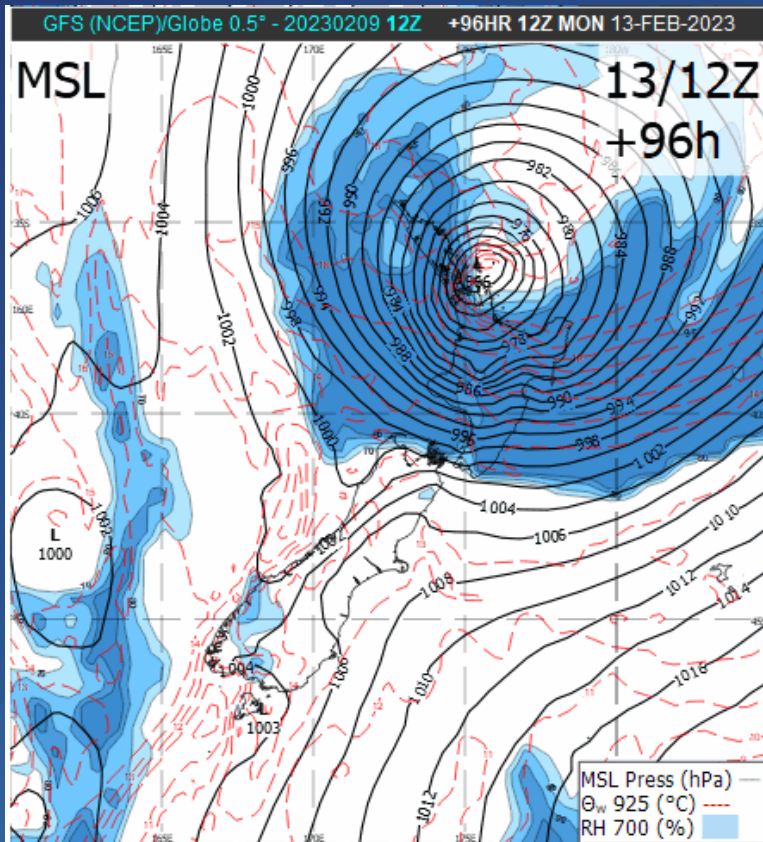


A: You don't, unless you run a group (ensemble)



# 14 February Cyclone Gabrielle



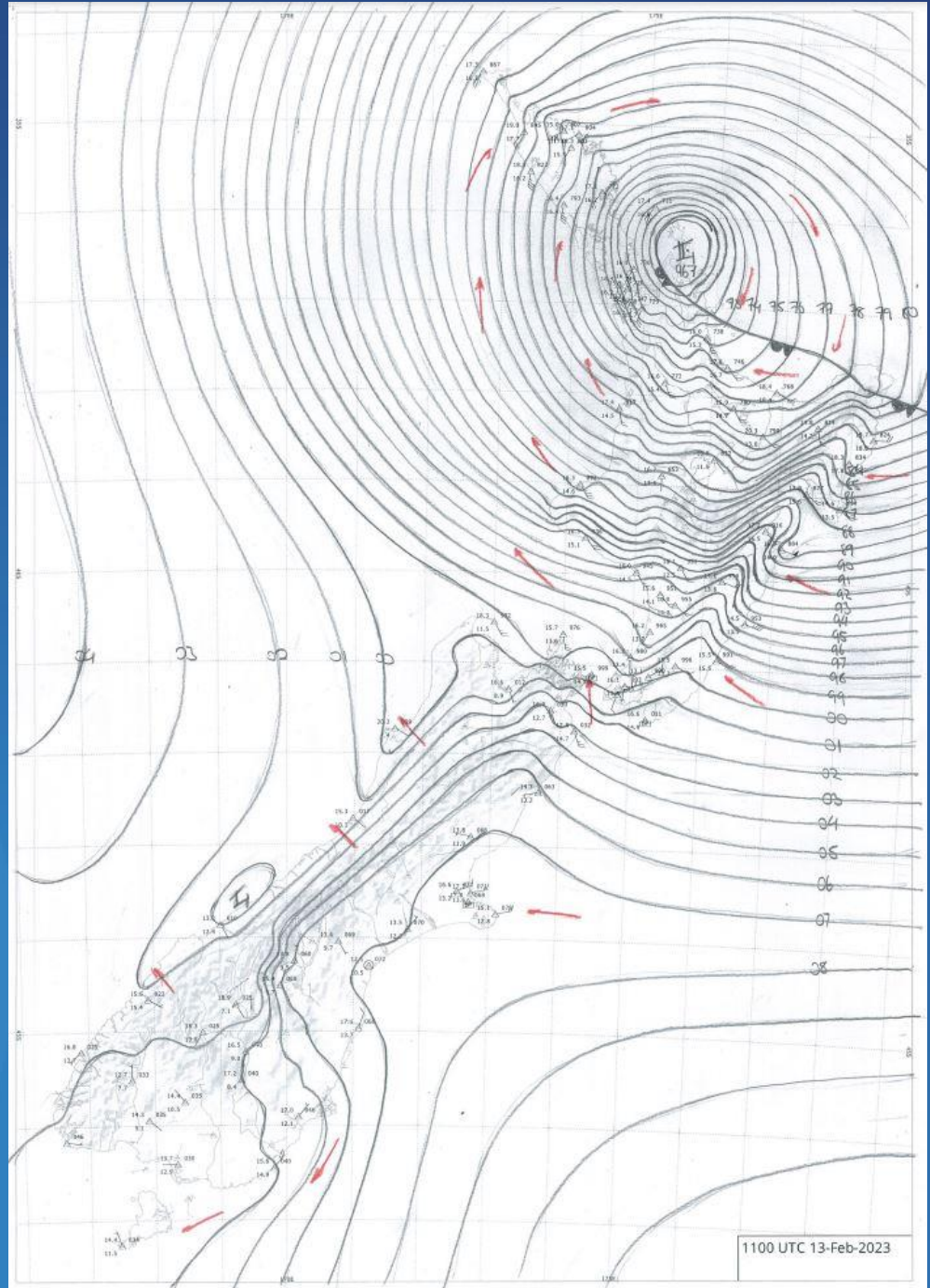
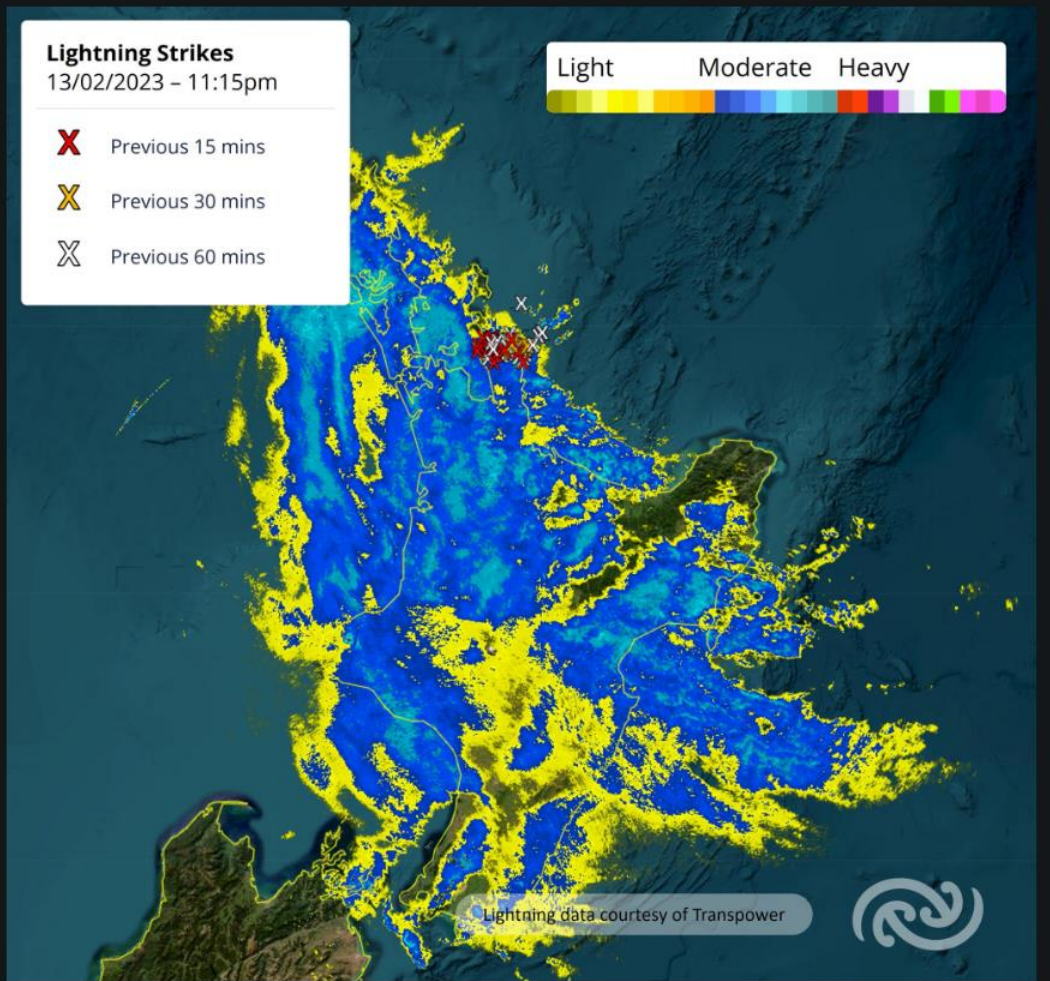


Three global weather model solutions for Midnight Monday Feb 13<sup>th</sup> – data that was available Friday 10<sup>th</sup>





# Cyclone Gabrielle: Hand drawn weather map by our expert forecasters, midnight 13 February 2023, and associated rain radar:



# Napier (Cyclone Gabrielle)



# Napier (Cyclone Gabrielle)



# Compare TC Oma

**stuff** February 18 2019, updated 5:28pm

National World Business Opinion **Sort** Entertainment Life & Style Travel

will mega-merger fix polytechs? tenure review Land we've lost for good Sex for rent Lime

**Nelson fires** *givealittle*

## FAIR WARNING



**'This is the ka-boom weekend'**  
Cyclone Oma could bring severe weather to NZ, but it's too early to pinpoint where.

### Taxing internet giants

8:00 PM The Government is moving to tax digital giants like Facebook and Google more for their income made within NZ.

### Cricket attack 'absolute thuggery'

4 min ago Cricket player-umpire sucker-punched, then kicked on the ground, witness says

### Backpacker surprised by ad replies

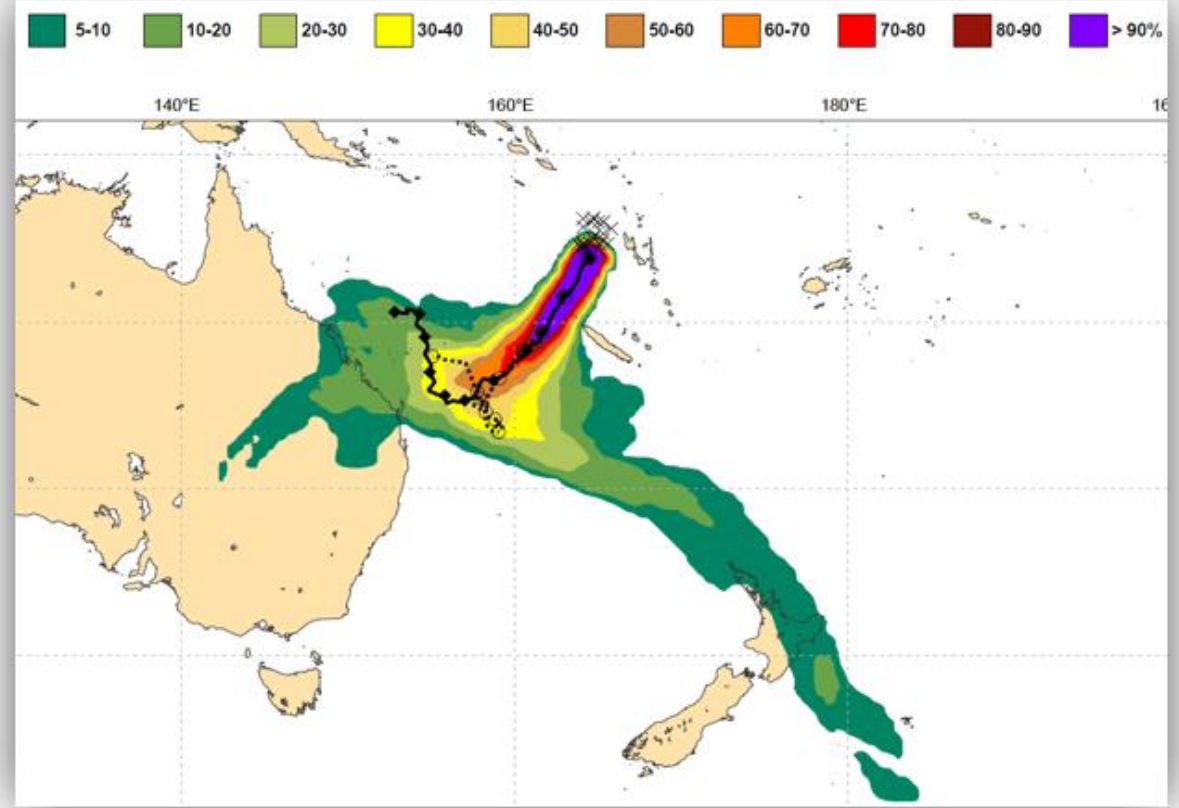
4:57 PM Mari Vahanan wants a farming job. What she got was a lot of comment on her appearance

### Councils v holiday parks

4:57 PM Holiday parks are upset councils are setting up user-pays freedom camping units.

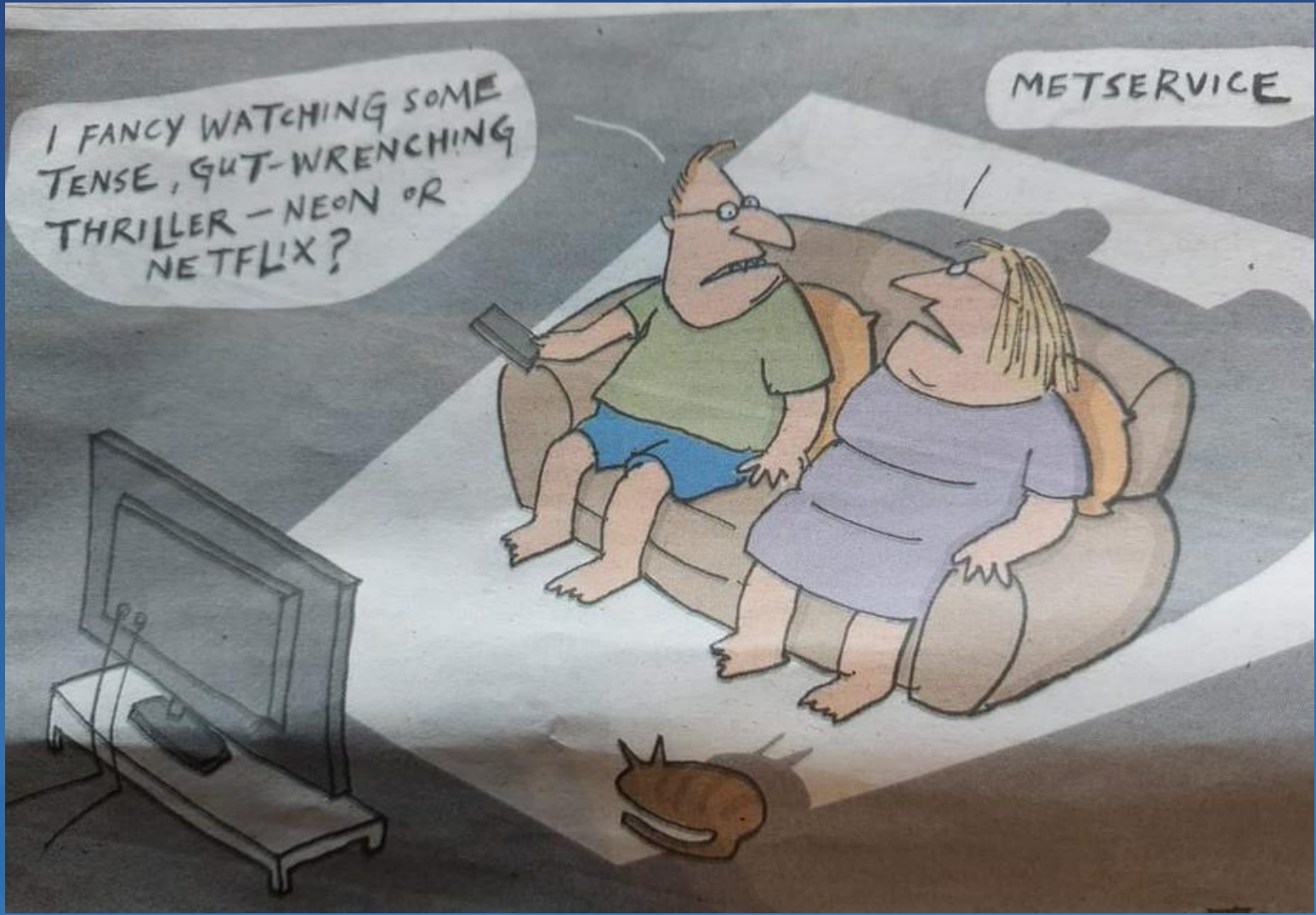
### Holding back the tide

4:11 PM Councils have tried - and failed - to tackle sea level rise. One seems to have it right.



MetService meteorologists have access to multiple global models and **ensembles**  
– beware the single model solution!







Thank you 