It is also the rain: Natural Hazards, Climate Change and Assessing Impacts

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The Problem

- How we consider the environment defines the impacts we expect
- The impacts we expect define the costs to benefits justifications and manage plans
- Get the definitions wrong and the impacts will be unanticipated
- Unanticipated impacts can be disasters

(Rain is a hazard, not a disaster. Social failure to managing rainfall leads to a disaster.)

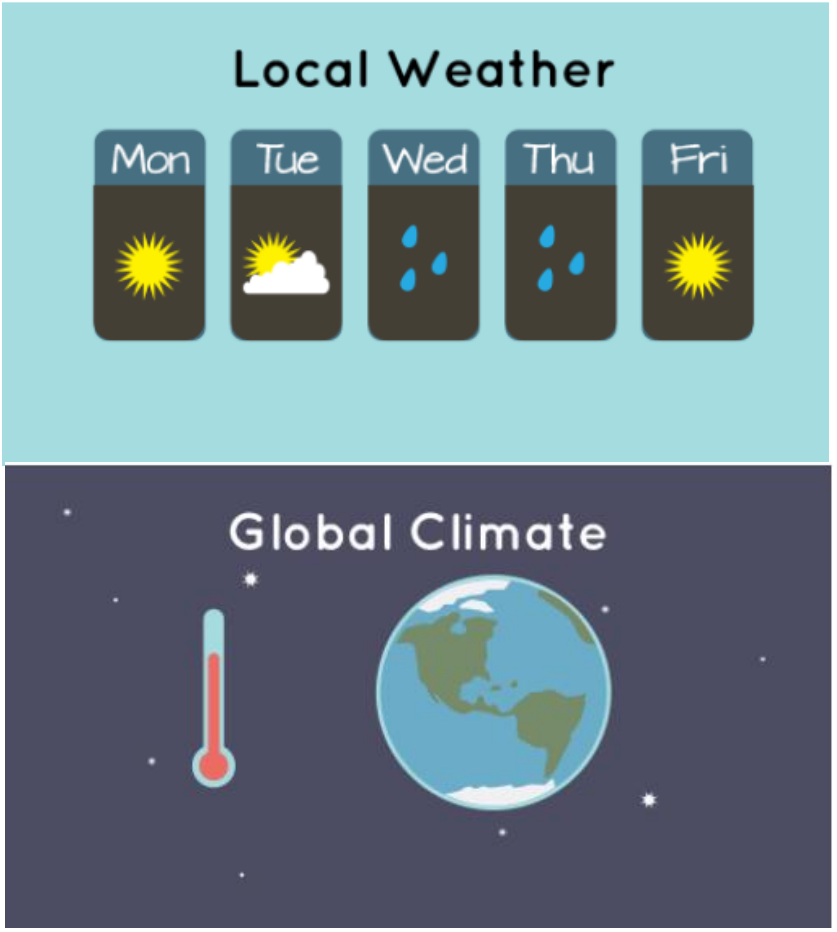
A Question of Definitions

Climate change is

"long-term shifts in temperatures and weather patterns" (https://www.un.org/en/climatechange/what-is-climate-change)

Or, better yet -

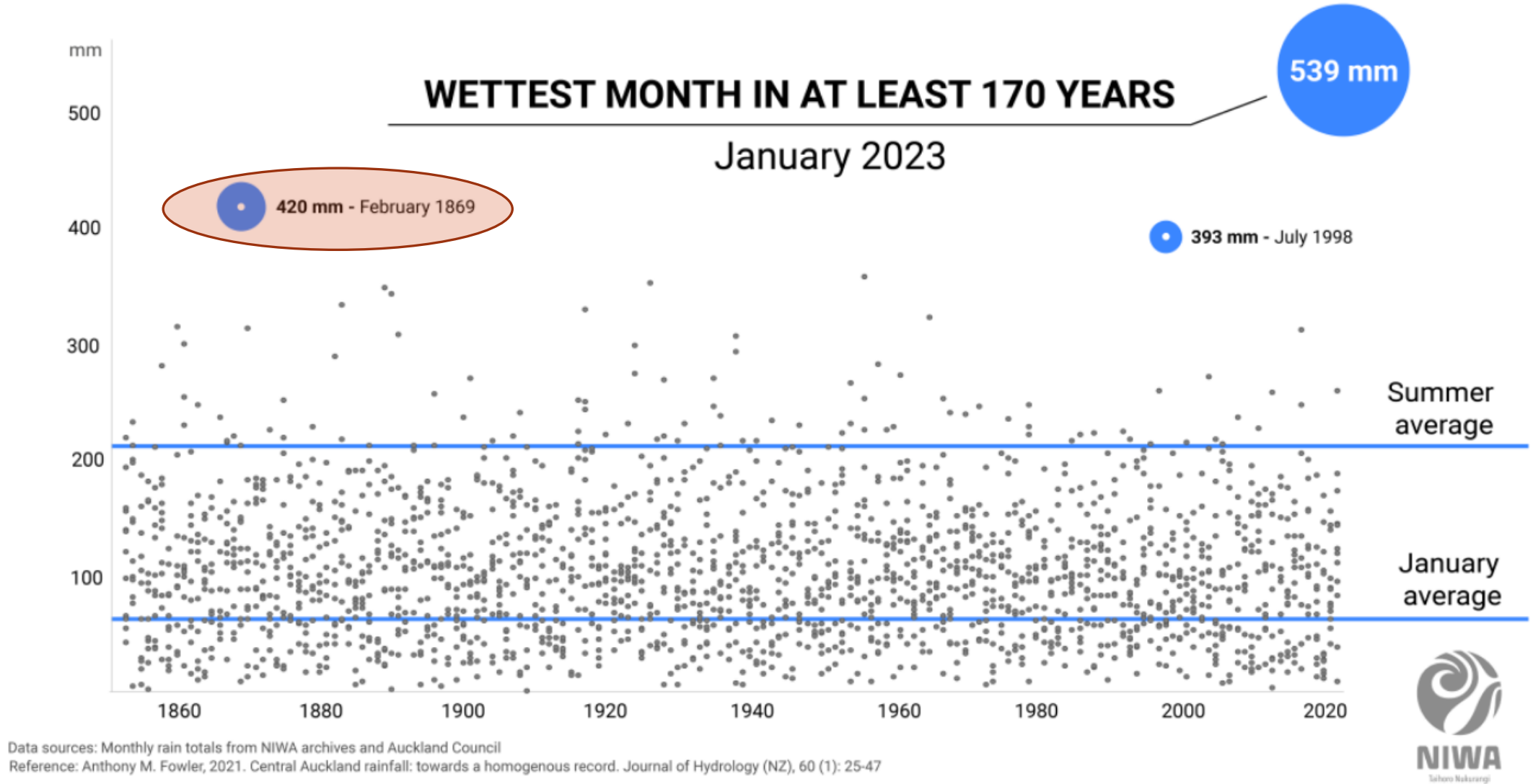
"a change in the average conditions — such as temperature and rainfall — in a region over a long period of time" (https://climatekids.nasa.gov/climate-change-meaning/).



https://www.1news.co.nz/2023/05/09/photos-parts-of-auckland-underwater-as-flooding-hits/

https://www.1news.co.nz/2023/01/27/photos-auckland-flooded-after-torrential-downpour/

Central Auckland monthly rainfall (1853 - 2023)



Central Auckland monthly rainfall (1853-2023) [NIWA graphic]

https://niwa.co.nz/news/auckland-suffers-wettest-month-in-history

Auckland suffers wettest month in history

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The fiercest rainfall produced widespread flooding across Auckland on Friday 27 January, which NIWA describes as at least a 1-in-200-year event. On that day, Auckland's Albert Park was drenched with 280 mm of rain in under 24 hours and 211 mm in under 6 hours.

> *"A slew of environmental factors contributed to this extreme event - a formidable La Niña and marine heatwave led to more moisture being available, which was harnessed by an atmospheric river. High pressure to the south then blocked it, keeping it in place. The storm was also supported by unique phenomenon called a low-level jet, as well as converging winds that extended lengthwise across the most populated part of the country.*

The Earth has warmed by about 1.1 °C already because of human activity and this extra heat gives more power to extreme rainfall. All other things being equal, we would expect climate change to contribute between 10-20% more rain in the most intense part of this storm.

But does focusing on rainfall provide the full picture?

Many parts of the network are aging and under increasing pressure from ***continued urbanisation*** *and greater rainfall intensity.*

(https://niwa.co.nz/news/auckland-suffers-wettest-month-in-history)

https://nzhistory.govt.nz/keyword/bastion-point

https://www.auckland.ac.nz/en/news/2018/03/06/experts-address-urban-challenges.html

Concluding Thoughts

Climate Events are Not Linear

Rain does not always equal floods; floods are not always disasters

Embrace the Extreme

If it is supposed to be built for 50 years, plan for a changing 50 years of extreme events

Let’s continue the conversation!

Post questions and comments in the IAIA23 app.

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