

DSI 35 Project 1: Singapore Rainfall Data

Benedict Ong

Context

Extreme Weather in Singapore
and
CO₂ Emission Levels

Extreme Weather in Singapore: Floods



The Straits Times
19 January 1987

Extreme Weather in Singapore: Floods

Sections of Ulu Pandan Park Connector
briefly closed after flash flood warning



The Straits Times
18 September 2022

Extreme Weather in Singapore: Dry Spells

Haze hits levels not seen since 1997 record



BY ALFRED CHUA

BY LOW JEN THYE KENNETH

Published June 18, 2013

Updated April 12, 2021



Today
18 June 2013

Haze over Singapore, view from Upper Thomson Road on June 17, 2013. Photo: Ernest Chua.

Extreme Weather in Singapore: Dry Spells

Singapore experiencing record dry spell
- and it could get worse: NEA



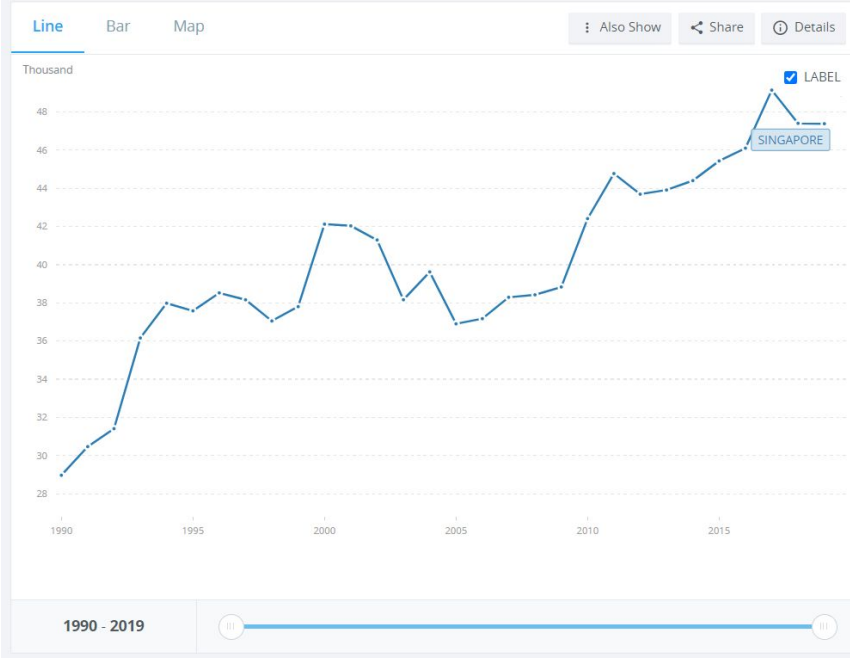
Today
25 February 2014

Singapore CO₂ emissions in kilotonnes

CO2 emissions (kt) - Singapore

Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: climatewatchdata.org/ghg-emissions.

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World Bank Data

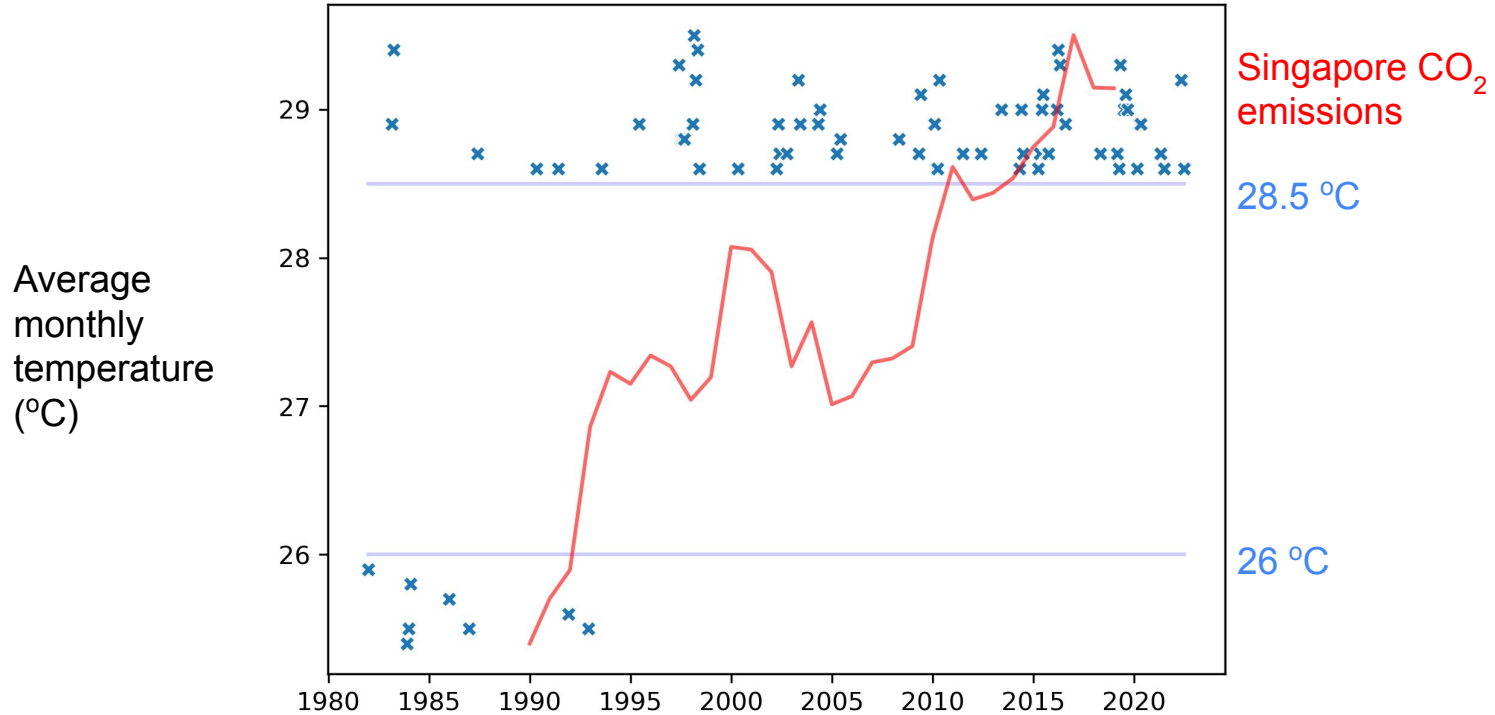
1990 to 2019

Problem Statement

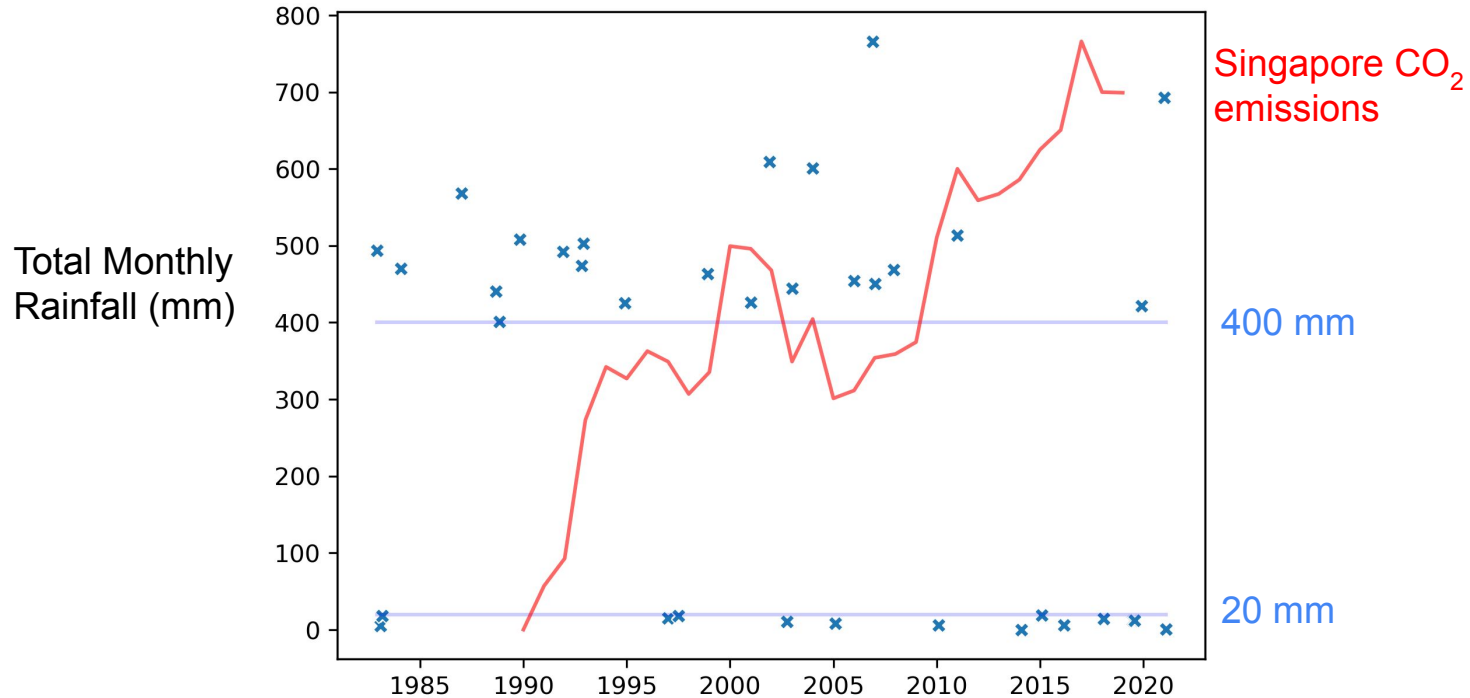
The NEA communications arm has decided to attribute Singapore's extreme weather events to CO₂ emissions.

They have hired me from fiverr.com to recommend the data and visualizations to show how increasing CO₂ emissions is changing Singapore's weather.

More extremely hot days

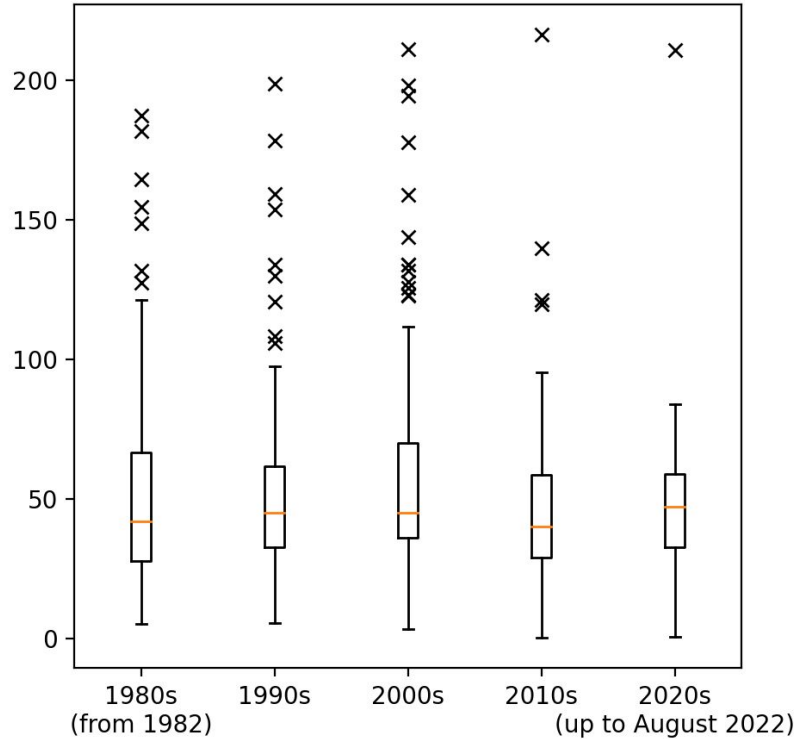


More dry spells and more extreme rainfall



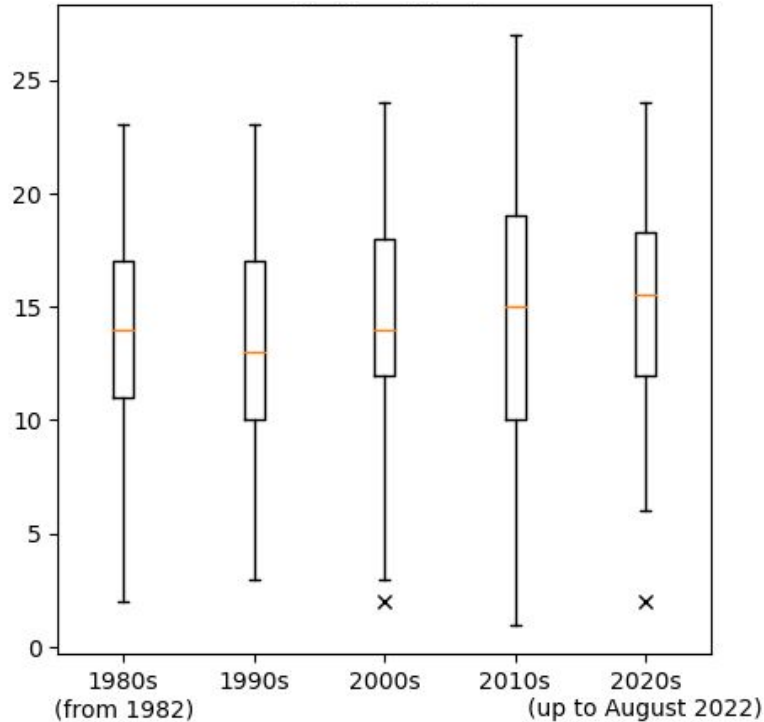
Heavier rains in a day

Monthly
maximum
rainfall in a day
(mm)



Increasing variation of rainy days between months

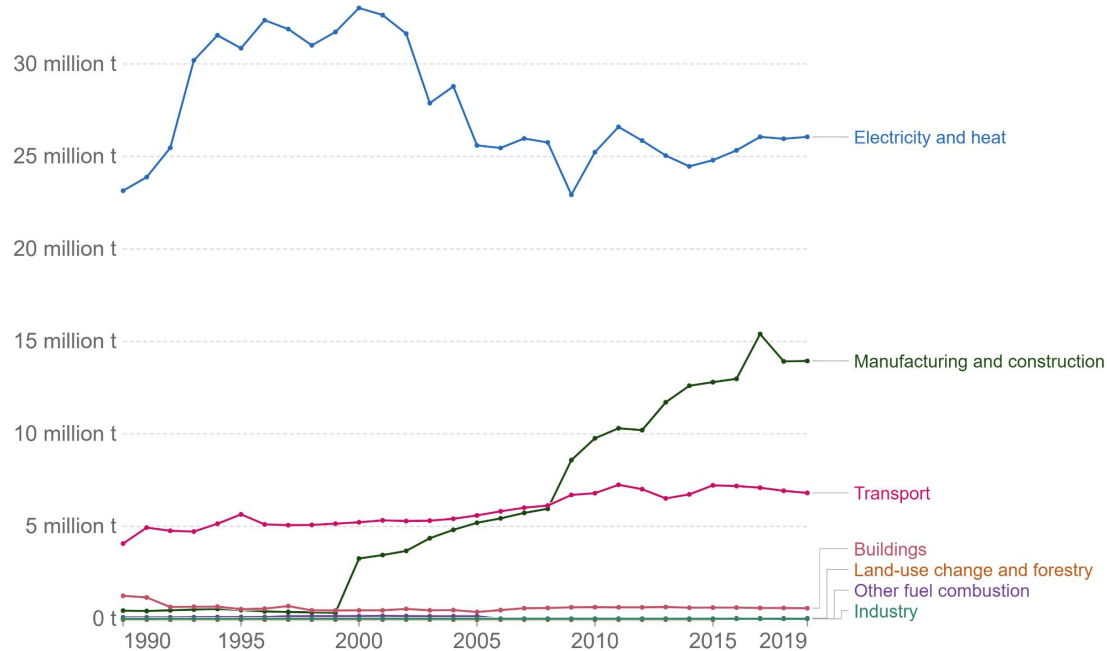
Rainy days in
a month



More efficient use of electricity needs encouraged

CO₂ emissions by sector, Singapore

Our World
in Data



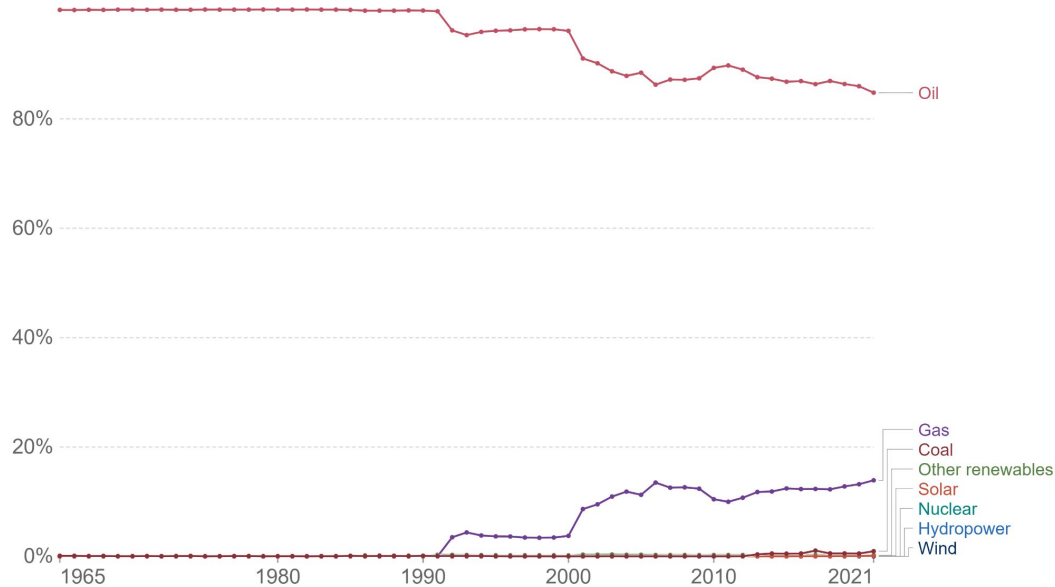
Source: Our World in Data based on Climate Analysis Indicators Tool (CAIT). OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

Continue reducing oil, increase more renewables

Share of energy consumption by source, Singapore

To convert from primary direct energy consumption, an inefficiency factor has been applied for fossil fuels (i.e. the 'substitution method').

Our World
in Data



Source: Our World in Data based on BP Statistical Review of World Energy (2022)

OurWorldInData.org/energy • CC BY

Recommendations

- Use data and visualizations on temperature, total rainfall and max. rainfall
- Focus on energy efficiency
- More efforts into promoting green/renewable energy