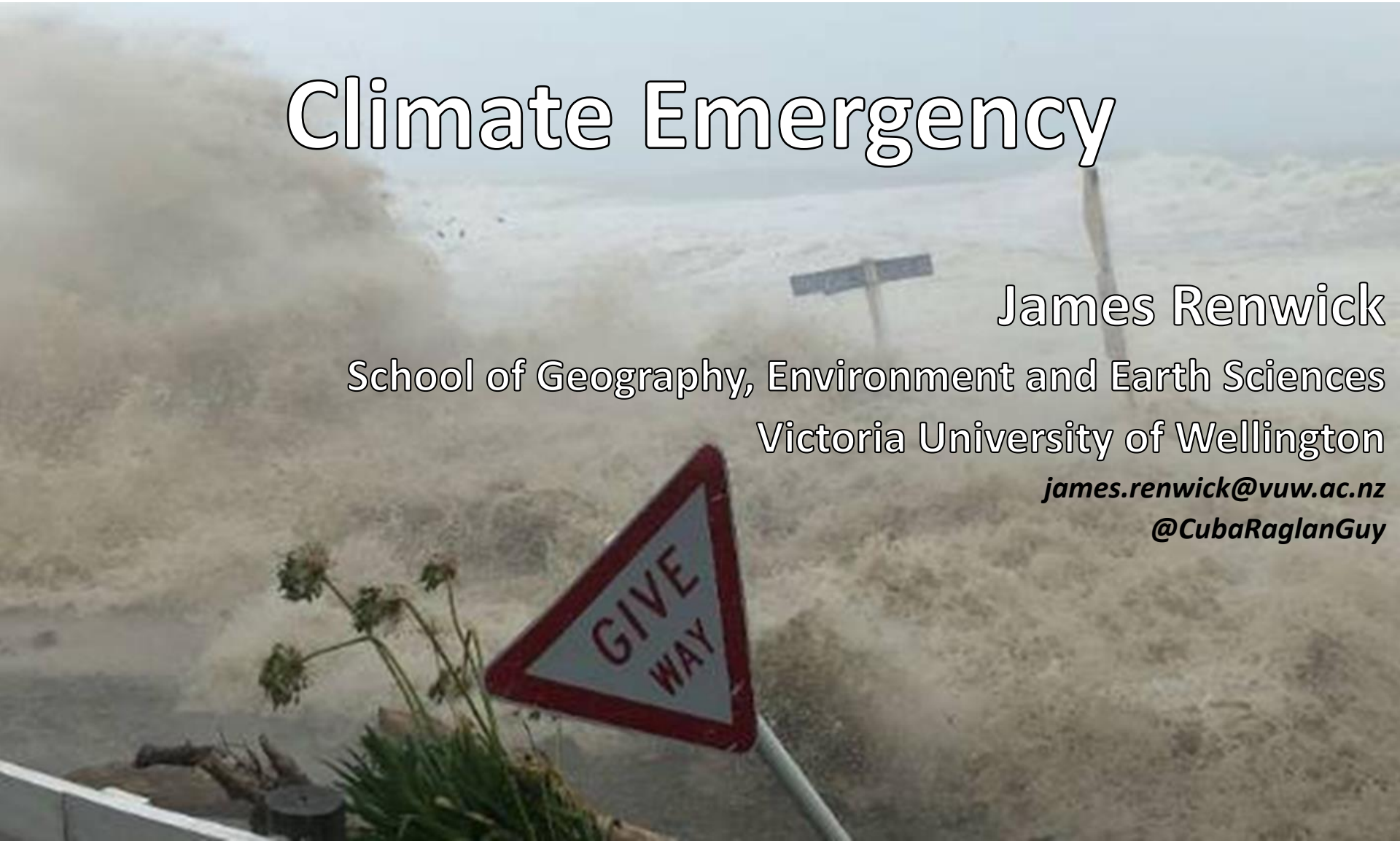
Climate Emergency



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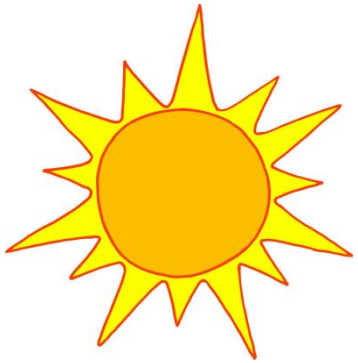
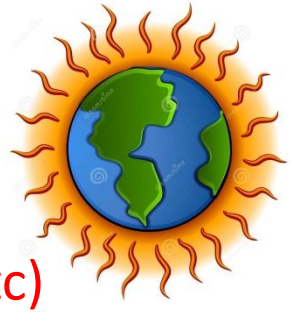
Climate Science 101

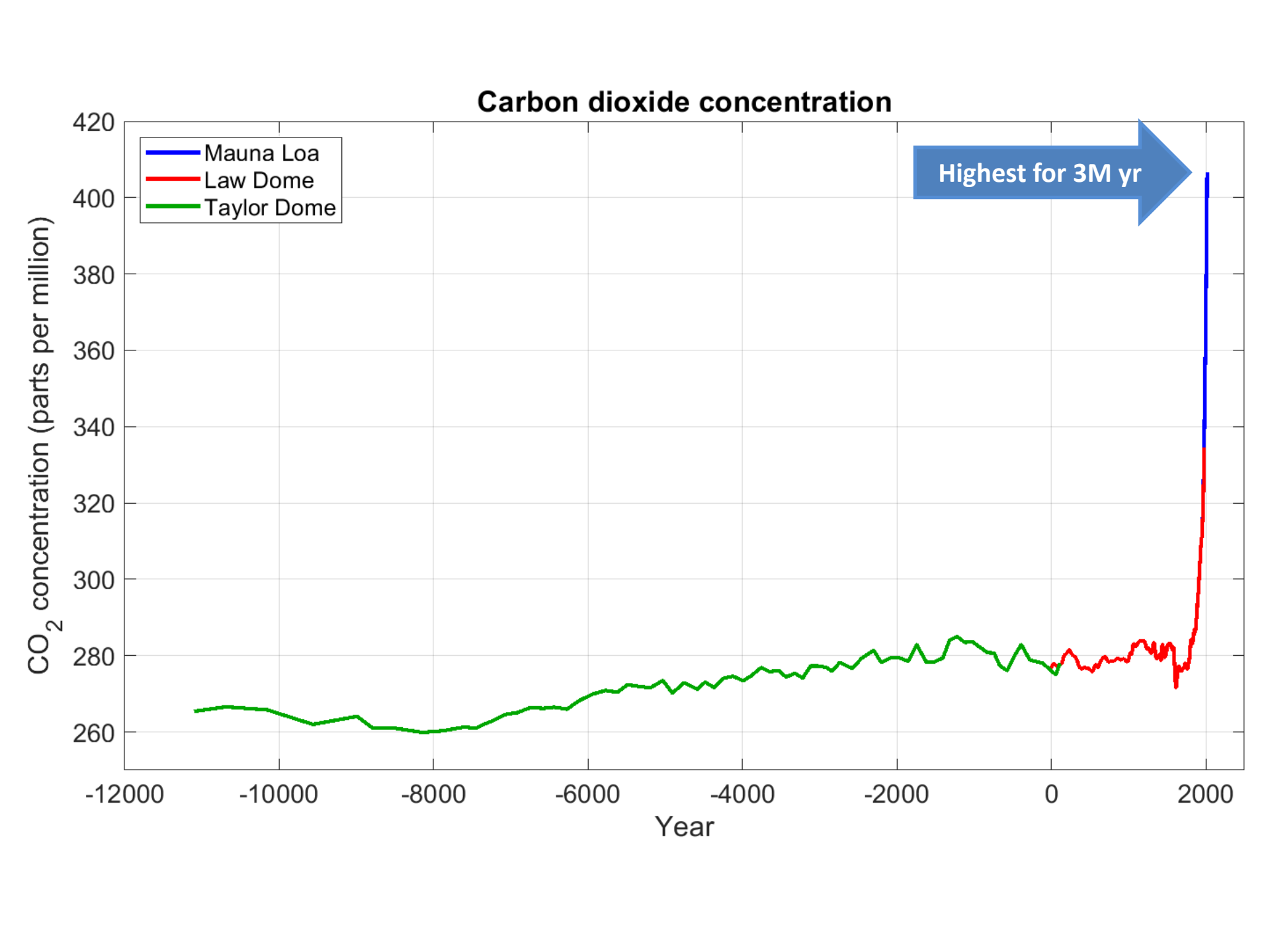


- The sun emits (mostly) visible light
  - Absorbed by the earth

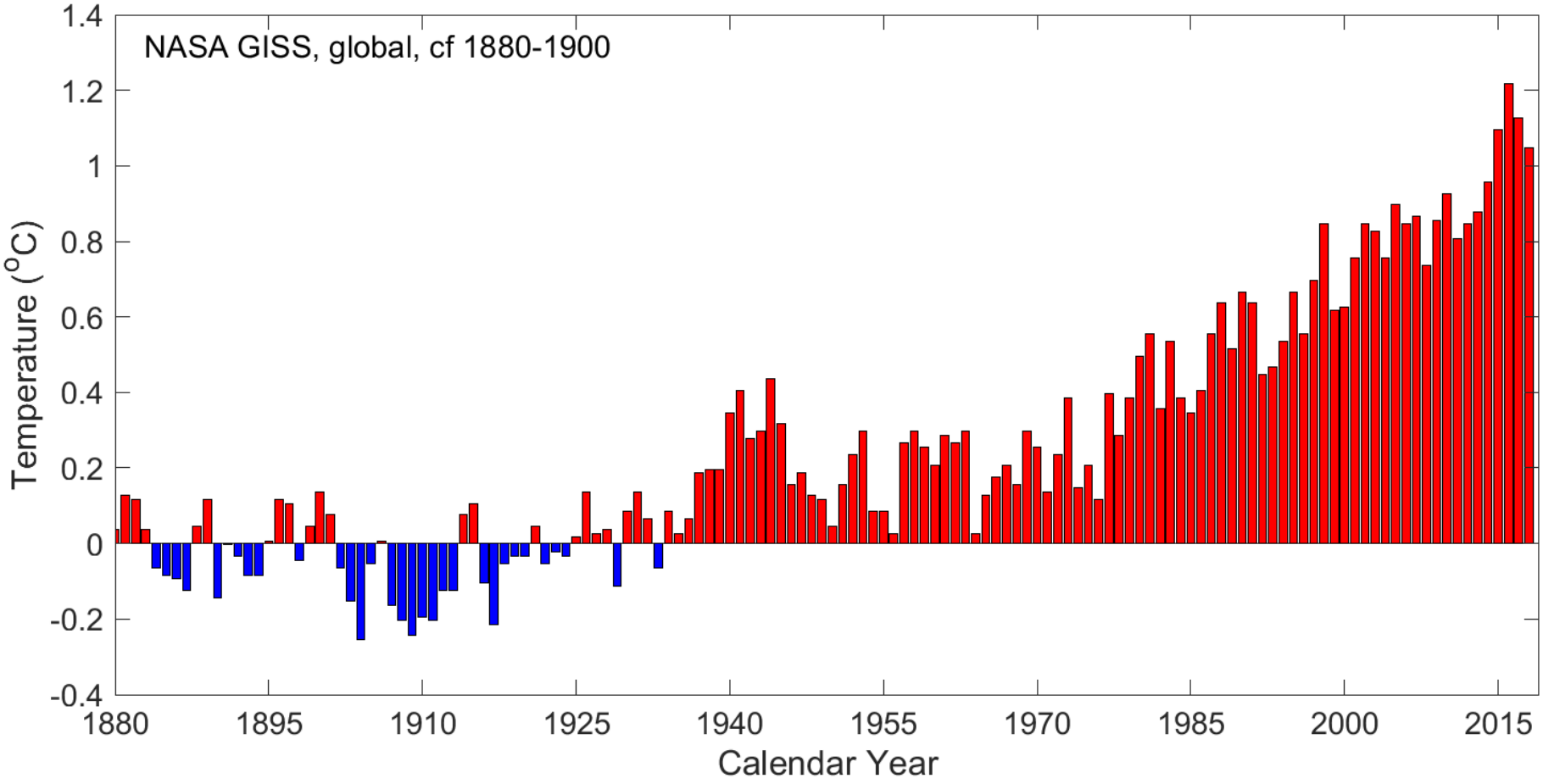


- The earth emits heat (infrared) radiation
  - Absorbed (and re-radiated) by the atmosphere
    - By “greenhouse” gases (carbon dioxide, water vapour, etc)

- Change the climate by
  - Changing sunlight
  - Changing greenhouse gas amounts

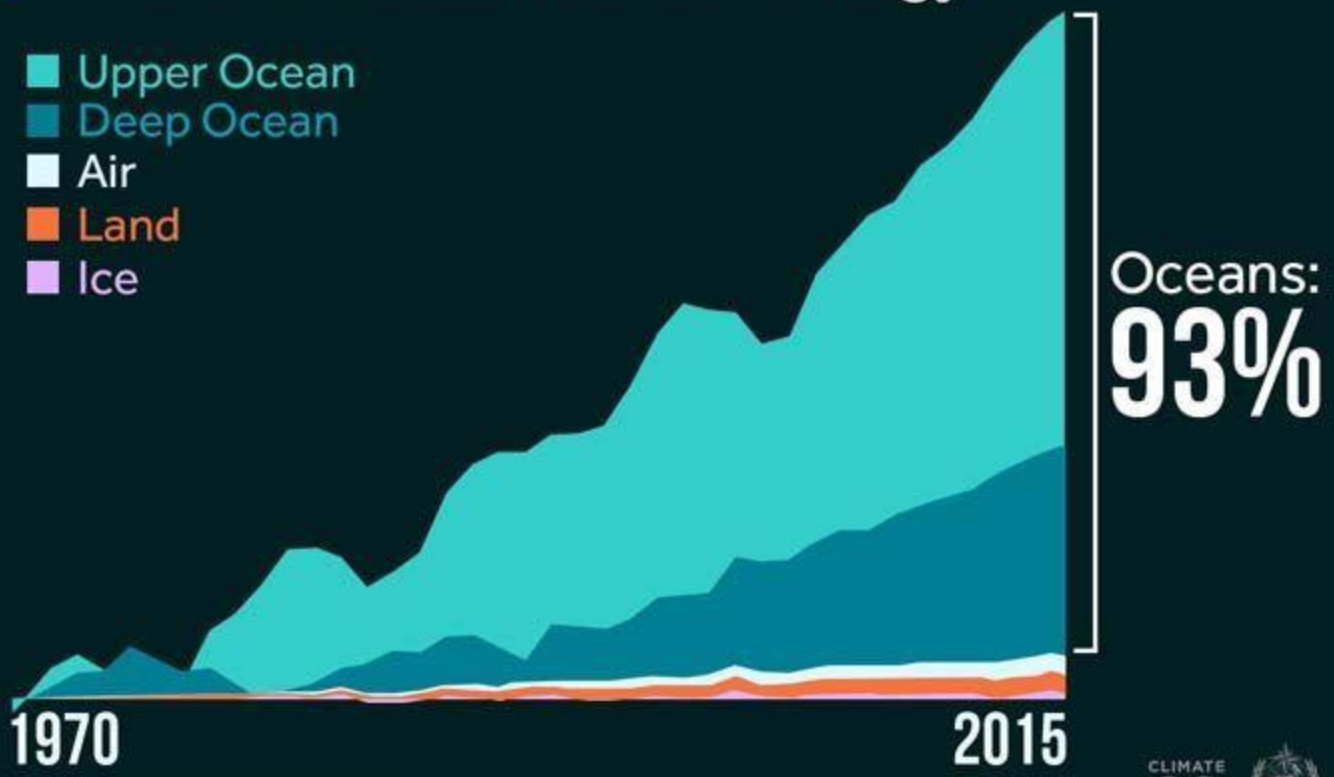

Carbon dioxide concentration
Mauna Loa
Law Dome
Taylor Dome
Highest for 3M yr
CO2 concentration (parts per million)
420
400
380
360
340
320
300
280
260
-12000
-10000
-8000
-6000
-4000
-2000
0
2000
Year

Global surface temperatures



WHERE'S THE HEAT?

Earth's Accumulated Energy



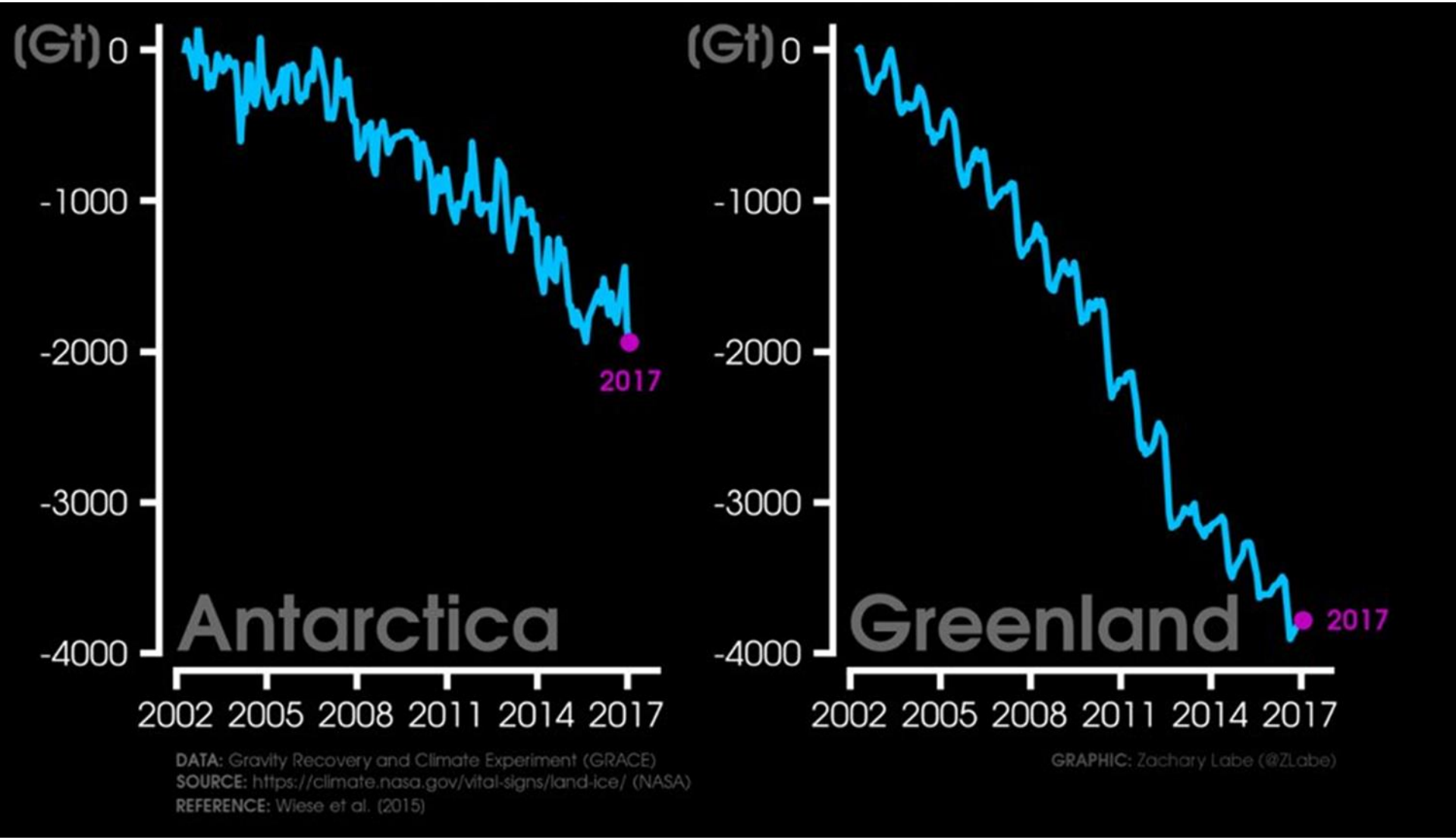
Accumulated heat energy measured in Zettajoules

Source: Climate Change 2013: the Physical Science Basis (IPCC) Chapter 3

CLIMATE CENTRAL

WMO

Ice Sheet Melt



Rule of thumb: 360Gt ice = 1mm SLR

Where are we at?

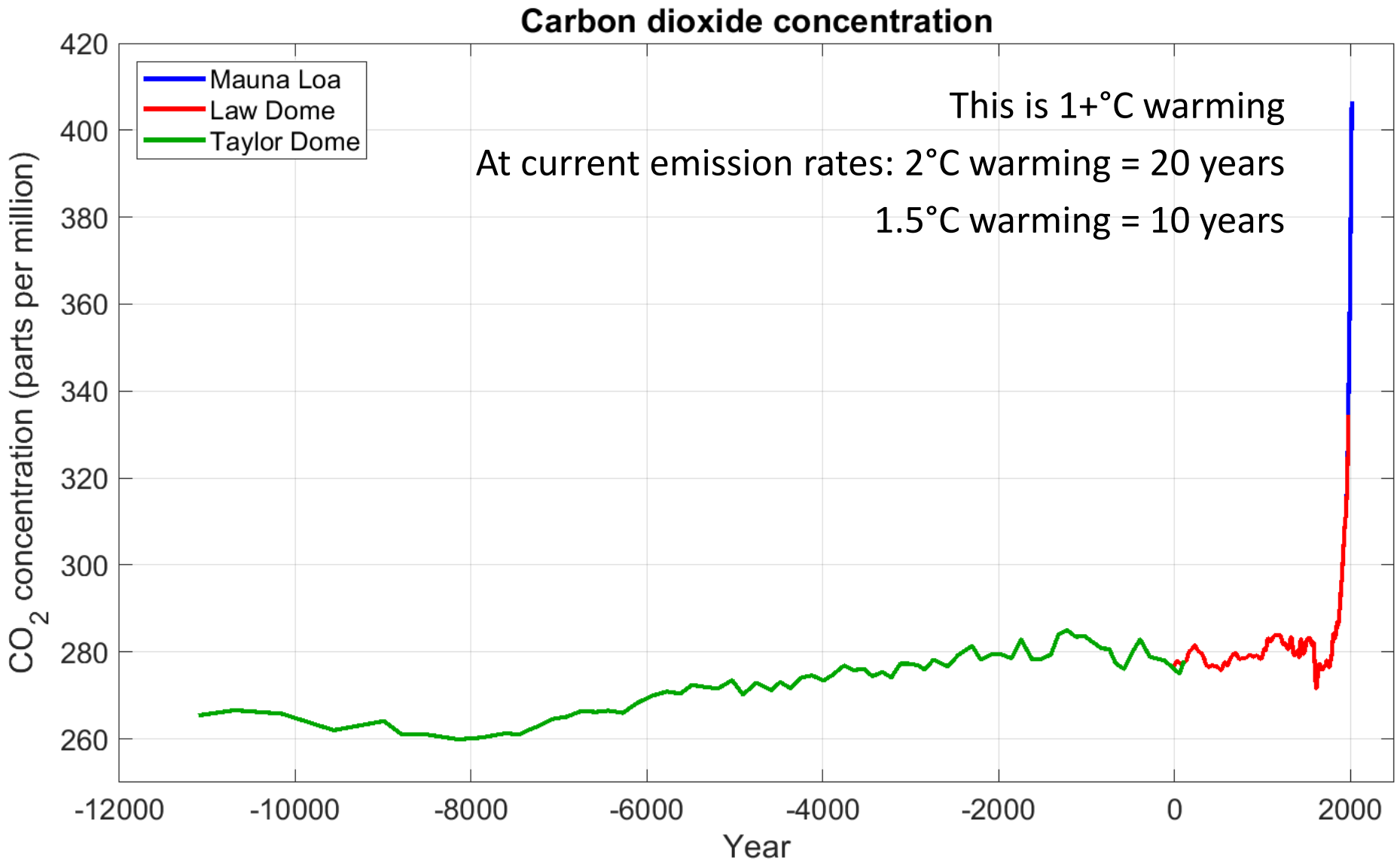
- The atmosphere is in uncharted territory
  - The total energy budget of the Earth is changing
- Our world is changing
  - Temperature, rainfall, wind, storms, extremes
  - All ecosystems are affected, everywhere
- This is an unprecedented point in human history
  - “Civilisation” has never had to deal with this
- The future is very hard to read
  - Unpredictable consequences, cascading impacts
  - Rates of change vary regionally and climatically
- Future risks dependent on global action

Sydney, Melbourne urged to prepare for 50C days by end of century

By Jake Evans

Updated Wed at 10:29pm

Stopping the warming



New Zealand's role