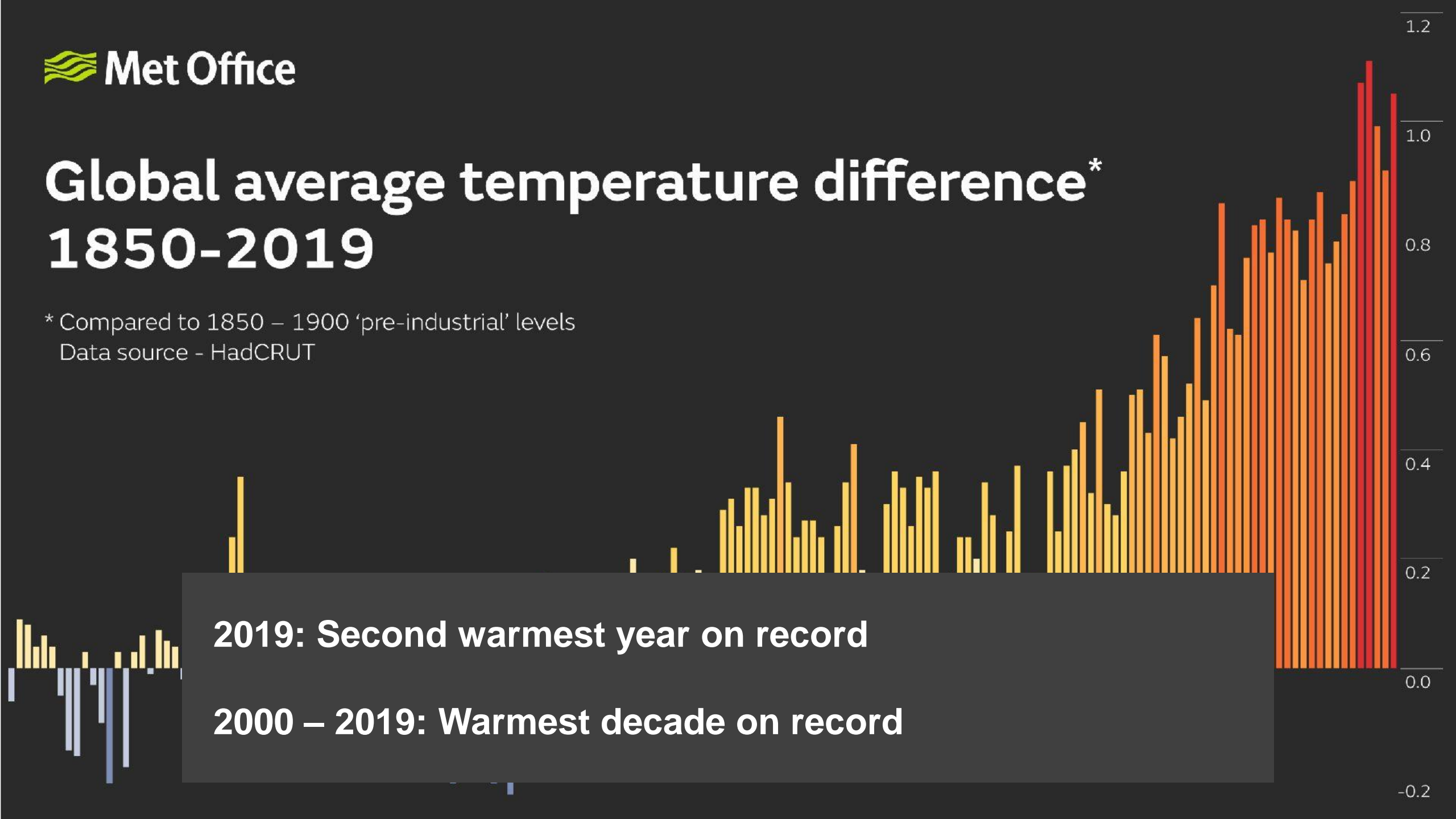


**“Climate is  
what you  
expect,  
weather is  
what you get”**

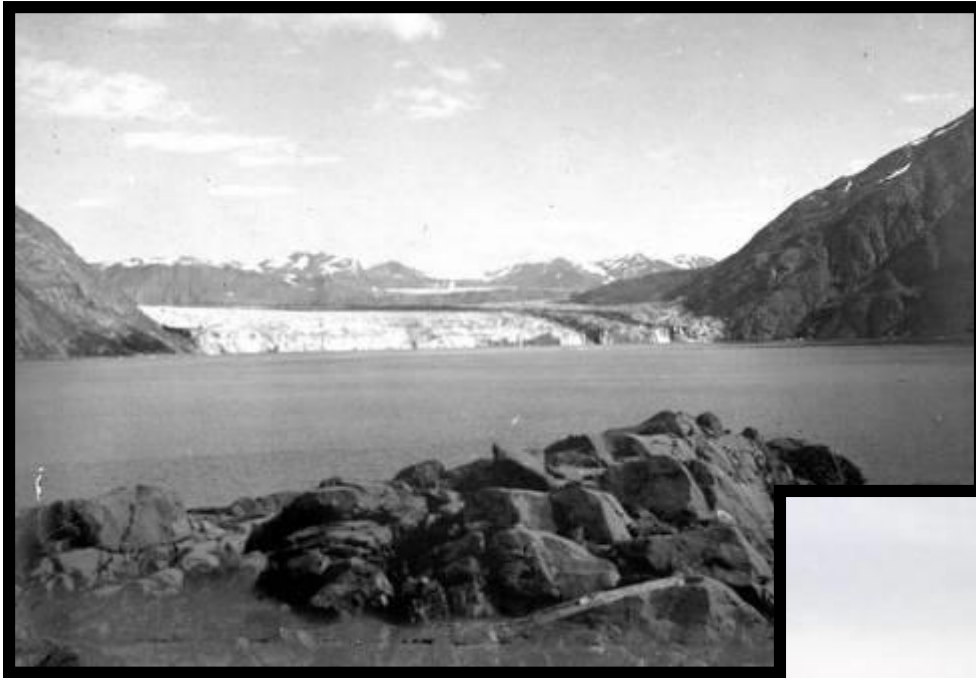
# Global average temperature difference\* 1850-2019

\* Compared to 1850 – 1900 'pre-industrial' levels  
Data source - HadCRUT



**2019: Second warmest year on record**

**2000 – 2019: Warmest decade on record**



Carroll glacier, Alaska

1906

Carroll glacier, Alaska

2003





Muir glacier, Alaska

1941

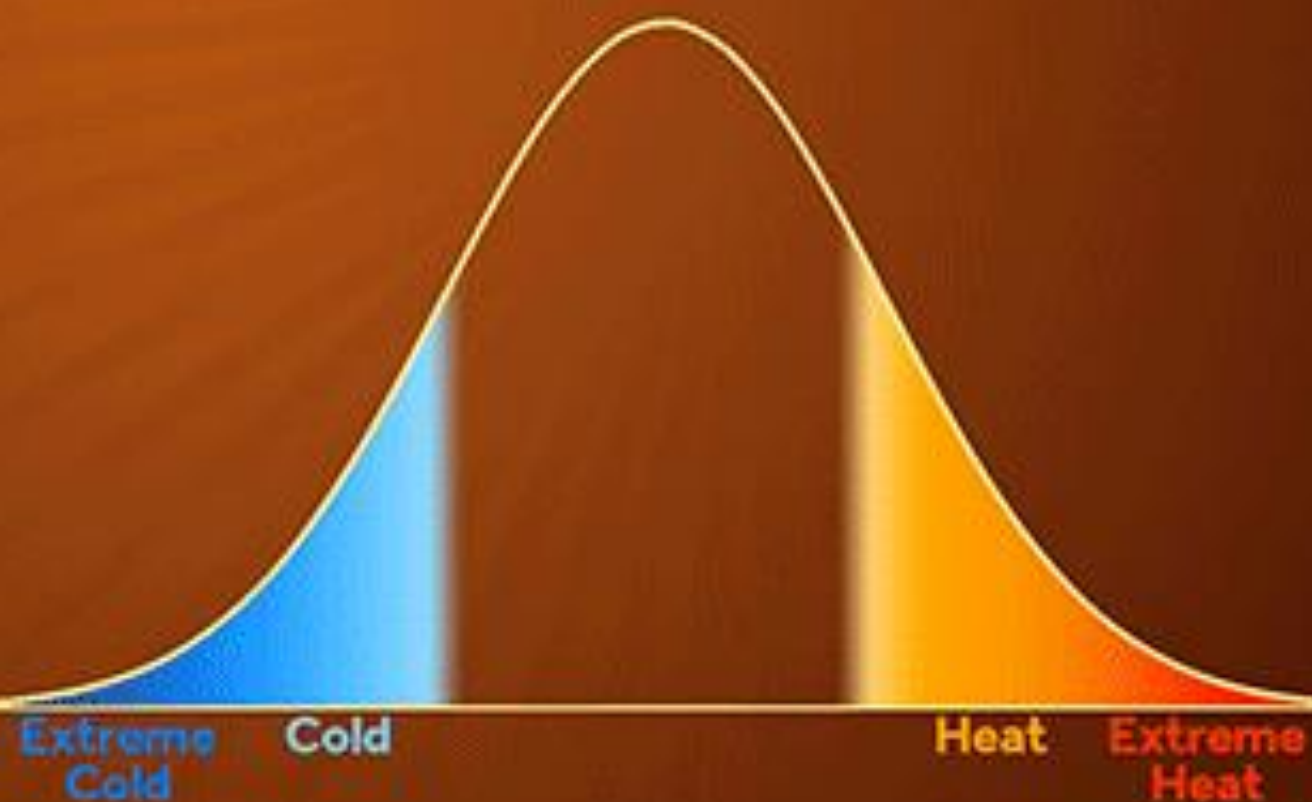
Muir glacier, Alaska

2004

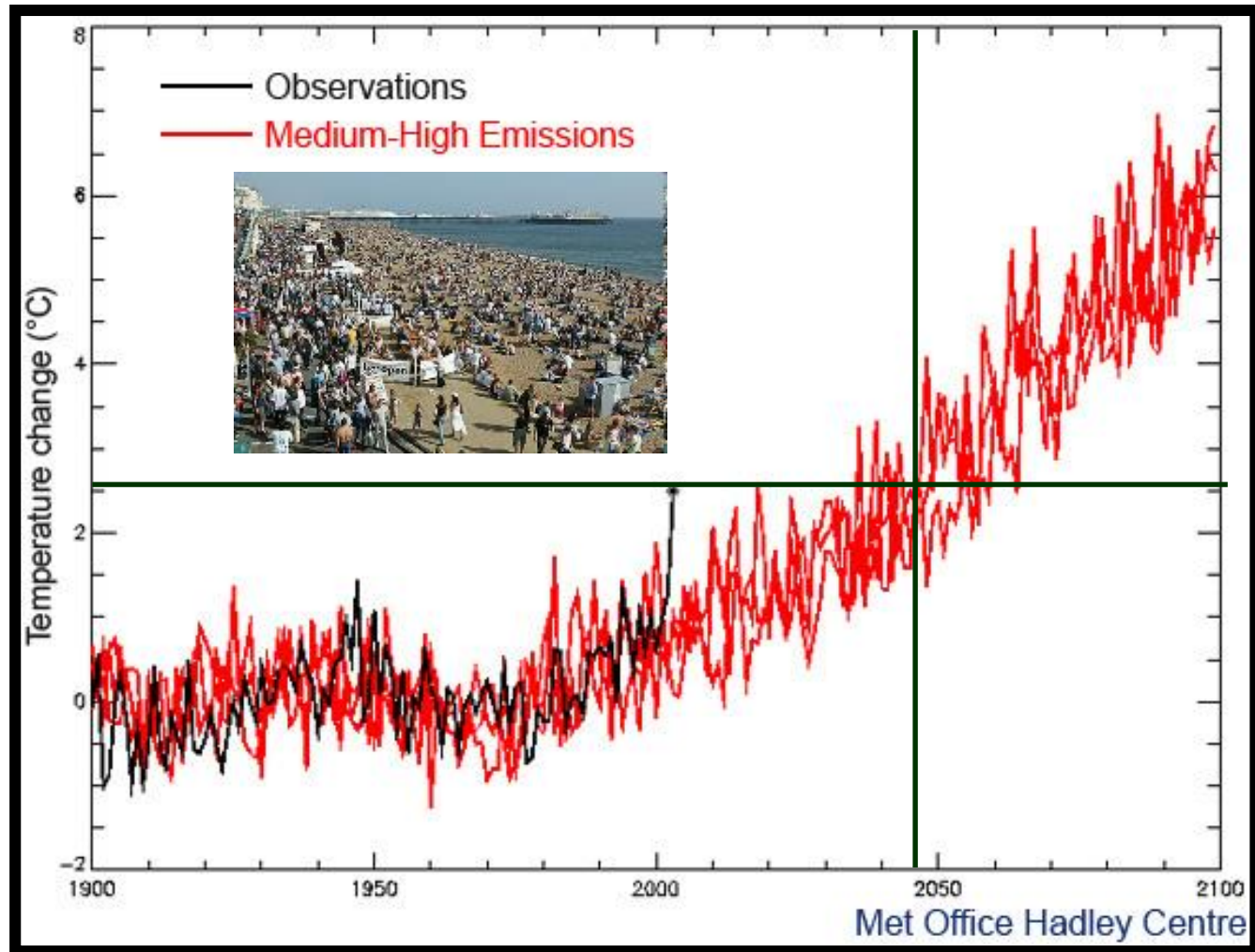




# SMALL CHANGE IN AVERAGE BIG CHANGE IN EXTREMES



# 2003 heatwave









14/04/19 - Chablis lutte contre le gel - Titouan Rimbault Photographe

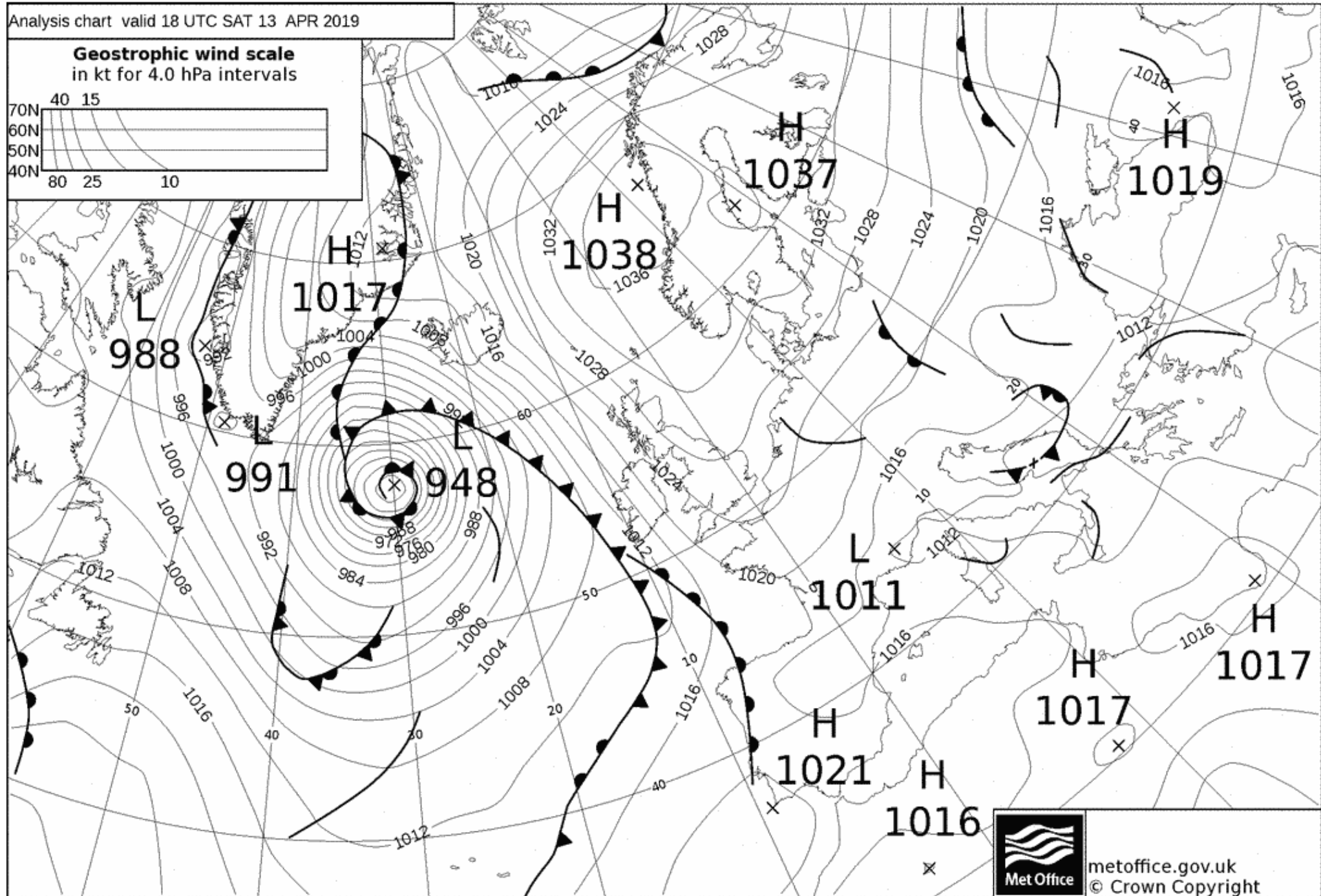
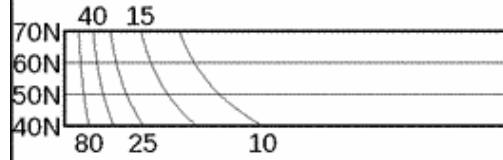


14/04/19 - Choblis lutte contre le gel - Titouan Rimbault Photographie

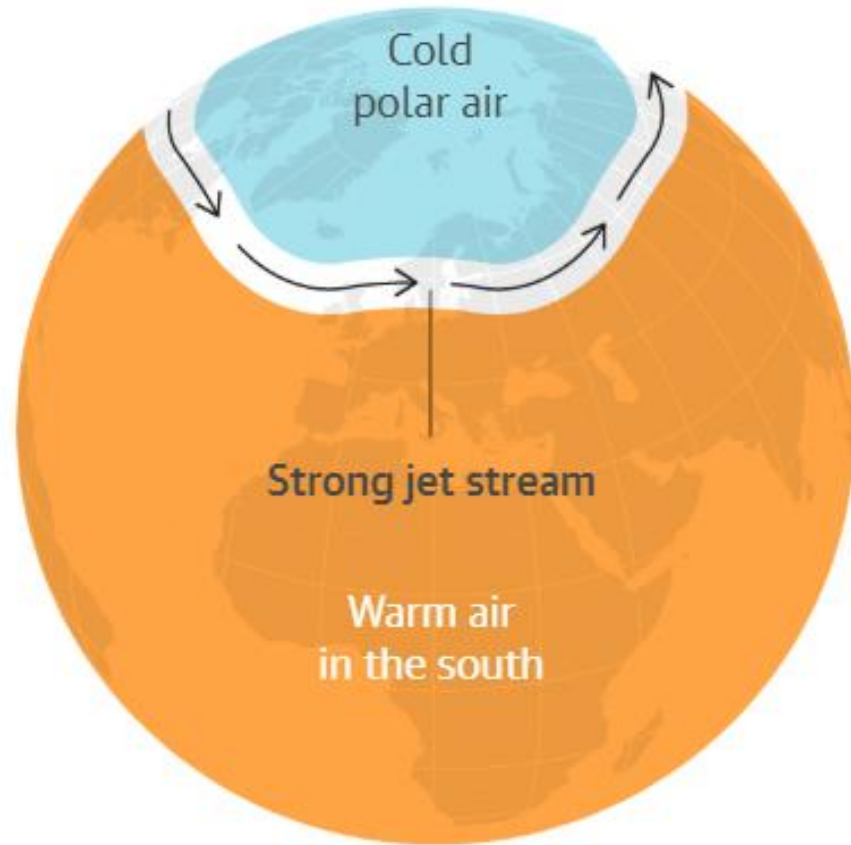


Analysis chart valid 18 UTC SAT 13 APR 2019

Geostrophic wind scale  
in kt for 4.0 hPa intervals

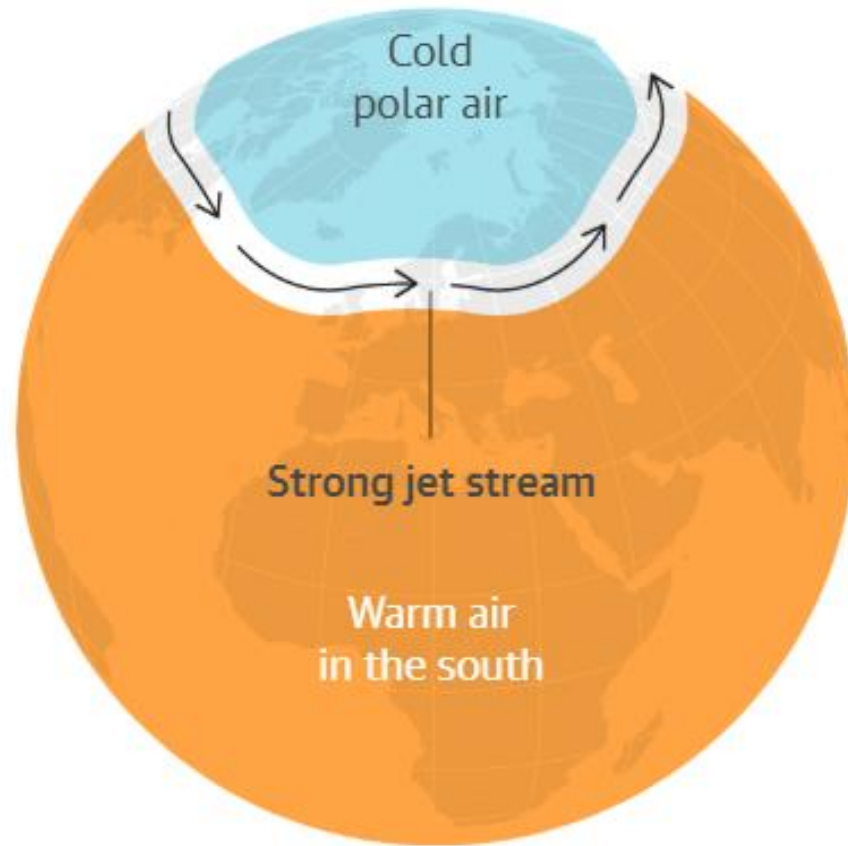


## Normal polar jet stream



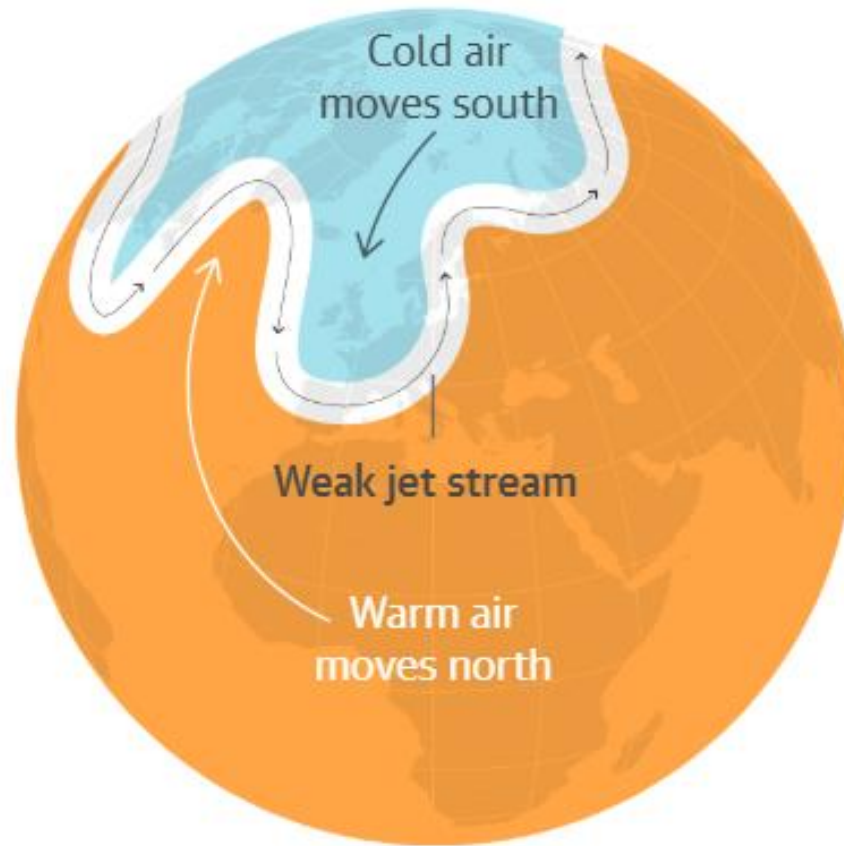
The jet stream forms a boundary between the cold north and warmer south. The temperature difference between these two areas powers the jet stream to speeds up to 250mph at about 8km above the surface

## Normal polar jet stream



The jet stream forms a boundary between the cold north and warmer south. The temperature difference between these two areas powers the jet stream to speeds up to 250mph at about 8km above the surface

## Weak polar jet stream

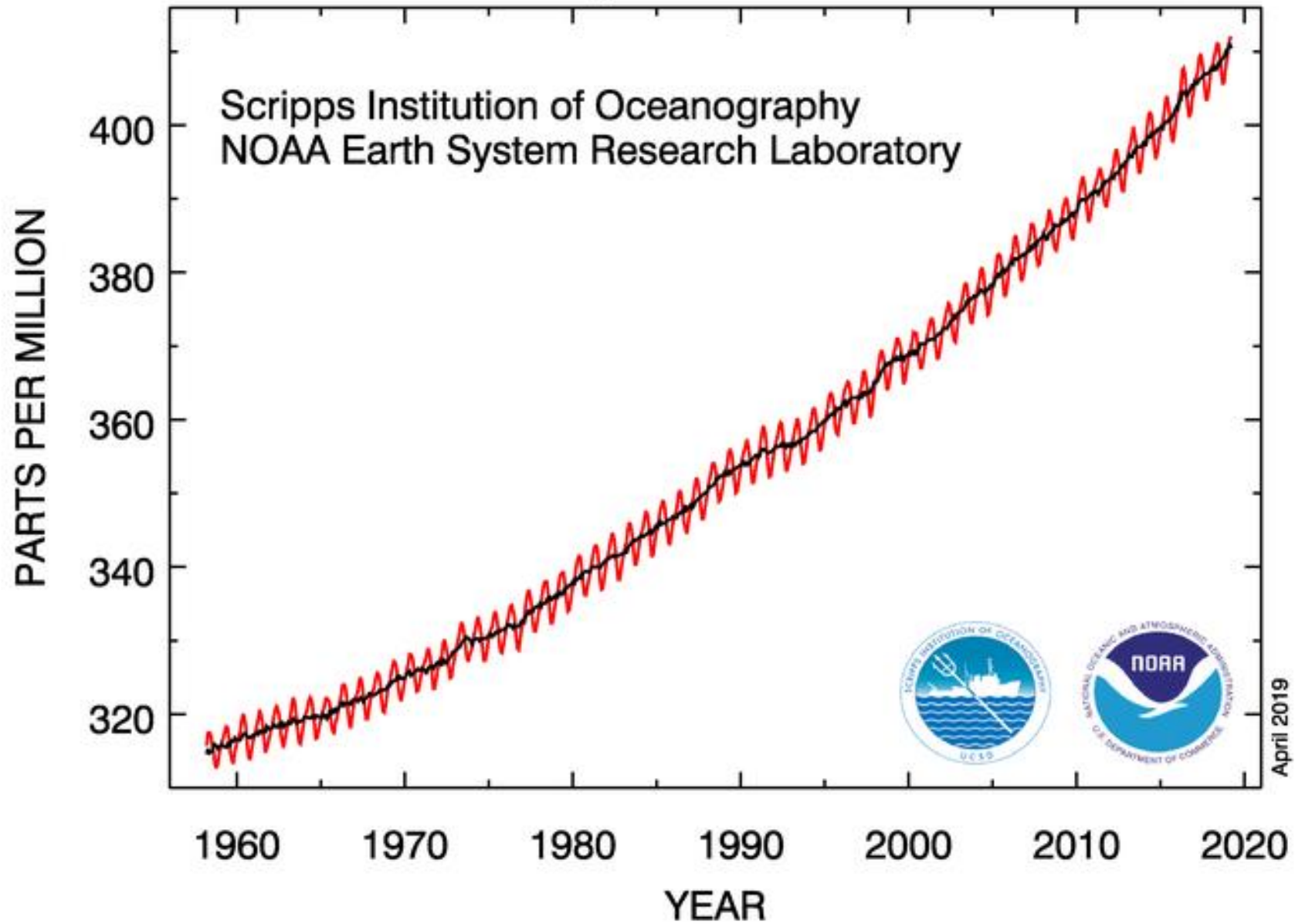


Arctic warming narrows the temperature difference, resulting in a slower jet stream that meanders more. The loops bring extreme weather to lower latitudes

“The highest effect of the sun’s rays I have found to be in carbonic acid gas. ... An atmosphere of that gas would give to our earth a high temperature; and if, as some suppose, at one period of its history, the air had mixed with it a larger proportion than at present, an increased temperature from its own action, as well as from increased weight, must have necessarily resulted.”

Eunice Newton Foote, 1856

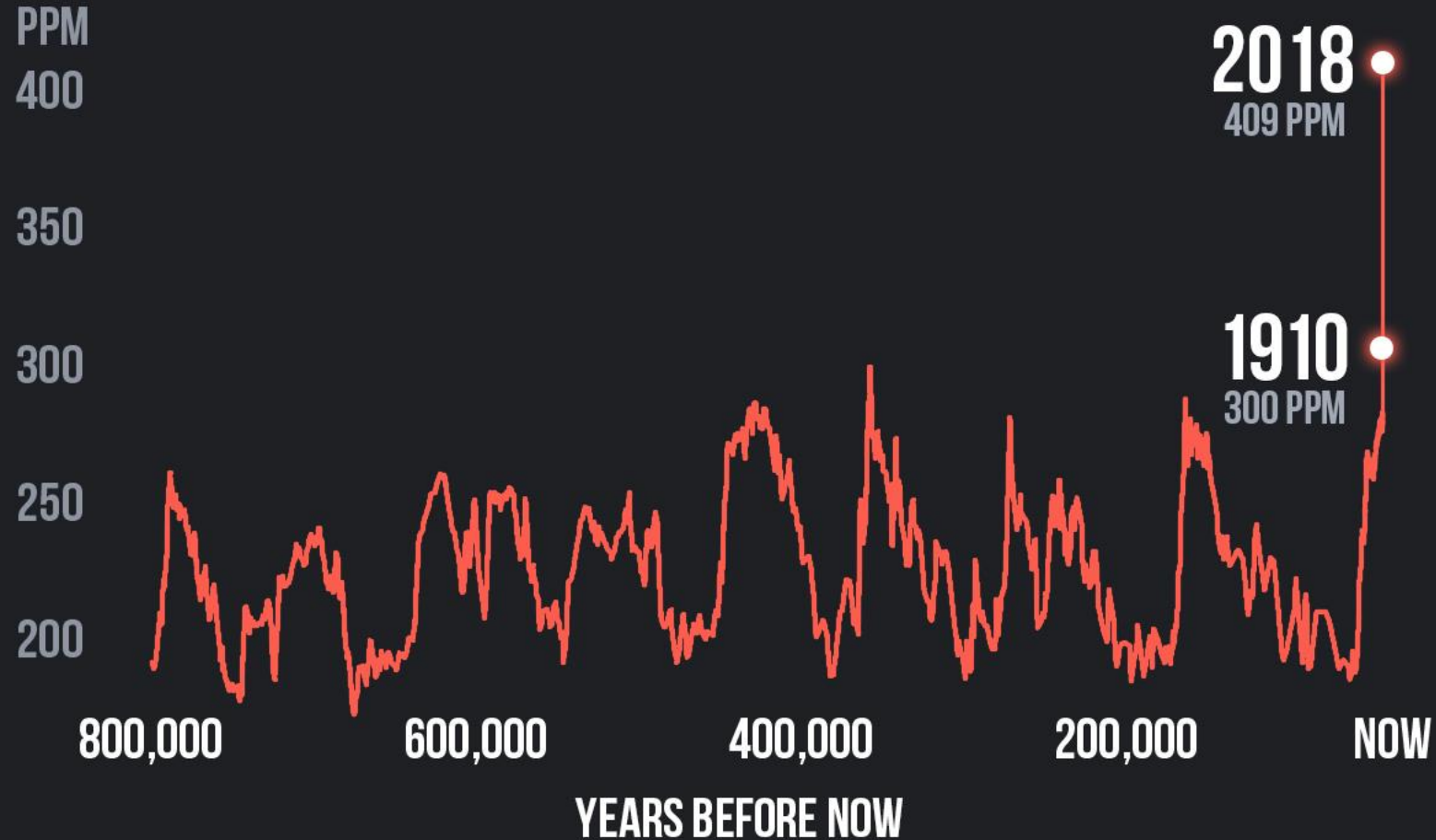
# Atmospheric CO<sub>2</sub> at Mauna Loa Observatory





# CHANGING OUR ATMOSPHERE

800,000 Years of Carbon Dioxide



Source: Luthi et al (2008) ([cdiac.ornl.gov](http://cdiac.ornl.gov)) & NOAA ESRL ([esrl.noaa.gov](http://esrl.noaa.gov))

CLIMATE  CENTRAL



## UK Climate Projections (UKCP)

---

The UK Climate Projections (UKCP) provides the most up-to-date assessment of how the climate of the UK may change over the 21st century. Find information to help with your climate change risk assessments and adaptation plans.

The UK Climate Projections (UKCP) is a climate analysis tool that forms part of the Met Office Hadley Centre Climate Programme which is supported by the Department of Business, Energy and Industrial Strategy (BEIS) and the Department for Environment, Food and Rural Affairs (Defra).

---

<https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

An outline map of the British Isles, including Great Britain, Ireland, and the surrounding islands, rendered in a light gray color. The map is centered in the background of the slide.

**Warmer & Wetter Winters**

**Hotter & Drier Summers**



Royal  
Horticultural  
Society

Sharing the best in Gardening

# Gardening in a Changing Climate



Committee on  
Climate Change

