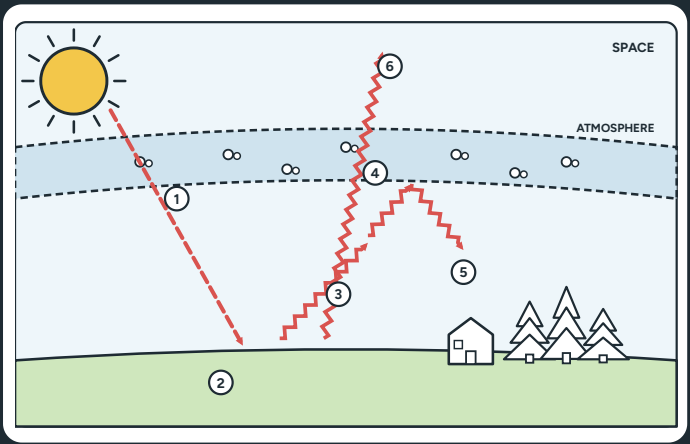
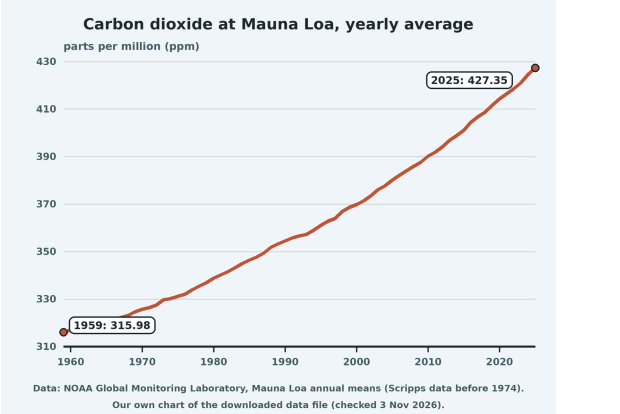
# Climate Change Free Sample

*A taste of the printable packs from climate-change.climates.im*



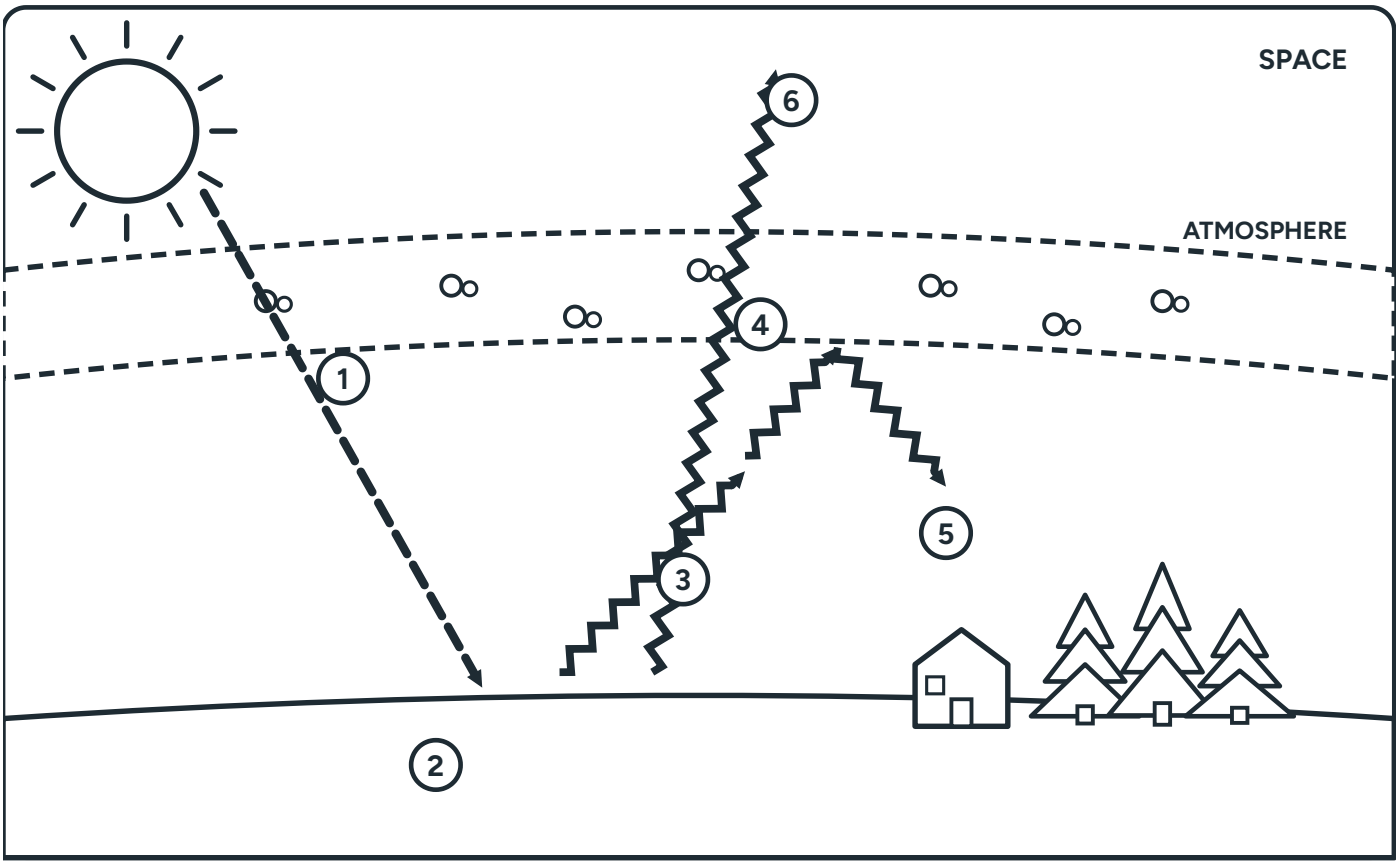

FREE · 9 PAGES · A4 + US LETTER

A diagram to label · a puzzle · four fact cards · a graph to plot · a worksheet · a poster

FROM THE COLOURING PACK

# The greenhouse effect

*Follow the sunlight down and the heat back up*




Our own simplified drawing, not to scale.

Write the letter from the word bank next to each number, then colour the drawing.

**1.** _____ **2.** _____ **3.** _____ **4.** _____

**5.** _____ **6.** _____

WORD BANK

**A.** Greenhouse gases catch some of the heat
**B.** Sunlight passes through the air
**C.** Some heat escapes to space
**D.** The ground warms up
**E.** Some heat is sent back down
**F.** The warm ground gives off infrared heat

The greenhouse effect itself is vital: without it the Earth would be bitterly cold and people could not survive.

Answers: 1) B 2) D 3) F 4) A 5) E 6) C

FROM THE PUZZLE PACK

# Climate true or false

*Circle T for true or F for false. Answers at the bottom.*

1. Without greenhouse gases, Earth would be about 30 degrees colder than it is today. **T** **F**

2. Volcanoes give out more carbon dioxide than people do. **T** **F**

3. Arctic sea ice is at its smallest in September. **T** **F**

4. The greenhouse effect works in just the same way as a glass greenhouse. **T** **F**

5. According to NASA, the 10 most recent years are the warmest on record. **T** **F**

6. The IPCC carries out its own research. **T** **F**

Answers: 1) T 2) F 3) T 4) F 5) T 6) F

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CC

CARD 1 OF 24 · THE BASICS

## What climate change is

Climate change is a large-scale, long-term shift in the planet's weather patterns and average temperatures.

Global warming means the long-term heating of Earth's surface seen since the pre-industrial period (1850 to 1900), caused mainly by burning fossil fuels.

NASA points out that "climate change" and "global warming" are often swapped around but do not mean quite the same thing.

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GH

CARD 4 OF 24 · THE GREENHOUSE EFFECT

## The greenhouse effect

Greenhouse gases act like a blanket round the Earth: sunlight passes through, the ground warms and gives off infrared heat, and some of that heat is caught and sent back down.

The greenhouse effect itself is vital: without it the Earth would be bitterly cold and people could not survive.

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1958

CARD 13 OF 24 · EVIDENCE

## The Keeling Curve

The Keeling Curve, devised by Charles David Keeling of the Scripps Institution of Oceanography, charts carbon dioxide at Mauna Loa since 1958.

It is the longest unbroken instrument record of carbon dioxide in the world.

Keeling chose Mauna Loa and the South Pole because they were far from big carbon dioxide sources such as cities.

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SEA

CARD 18 OF 24 · EFFECTS

## Rising seas

Between 1901 and 2018 the global average sea level rose by around 20 centimetres.

Sea level rise is speeding up: from 1.4 mm a year through most of the 20th century to 3.6 mm a year in 2006–2015.

Seawater expands as it warms, so a warmer ocean takes up more room and the sea rises. Meltwater from ice on land adds more.

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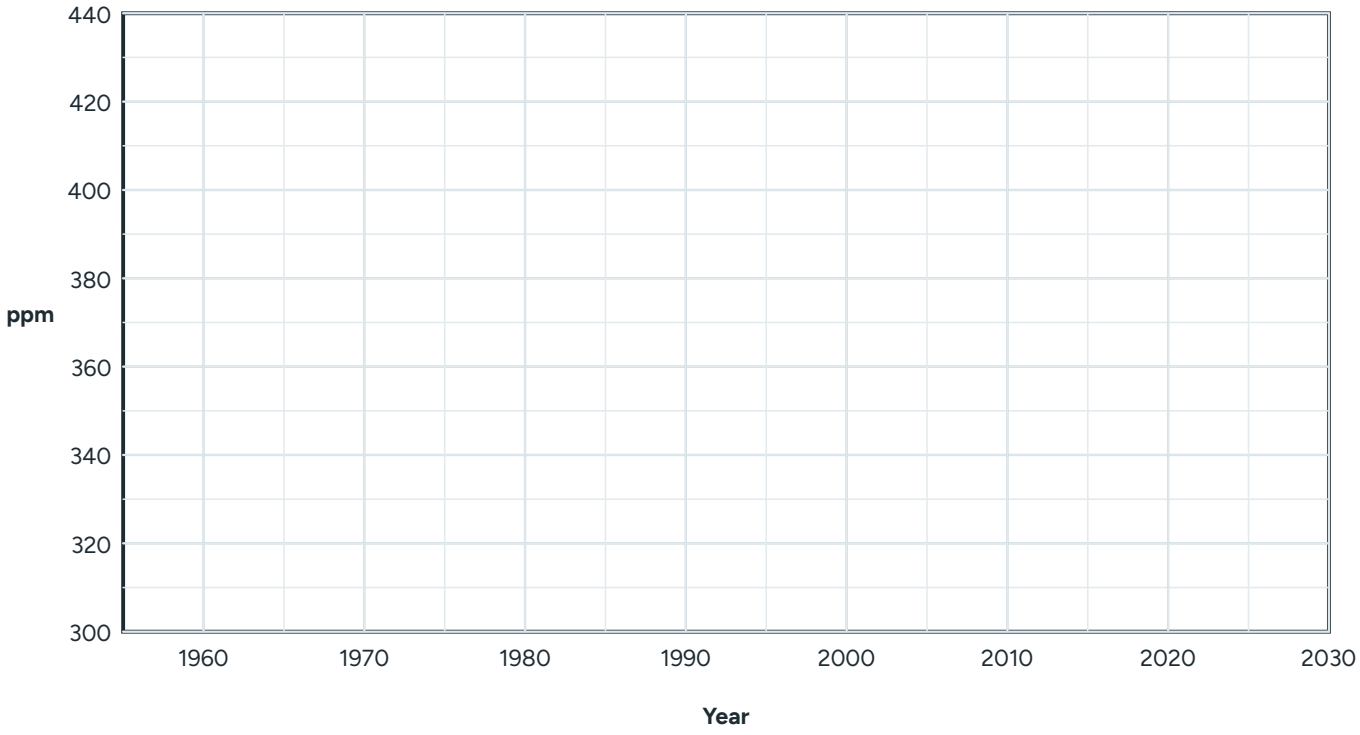
FROM THE GRAPHING WORKBOOK

# Plot the Keeling Curve

*Put a dot for each year, then join the dots with a smooth line*

| YEAR | $CO_2$ (PPM) |
|---|---|
| 1960 | 316.91 |
| 1965 | 320.04 |
| 1970 | 325.68 |
| 1975 | 331.13 |
| 1980 | 338.76 |
| 1985 | 346.35 |
| 1990 | 354.45 |

| YEAR | $CO_2$ (PPM) |
|---|---|
| 1995 | 360.97 |
| 2000 | 369.71 |
| 2005 | 379.98 |
| 2010 | 390.10 |
| 2015 | 401.01 |
| 2020 | 414.21 |
| 2025 | 427.35 |




Data: NOAA Global Monitoring Laboratory, yearly mean carbon dioxide at Mauna Loa, Hawaii (ppm).

CAUSE OR EFFECT?

# What makes it happen, and what happens next?

*Circle CAUSE or EFFECT for each one*

1. Burning coal, oil and gas for power

**CAUSE · EFFECT**

2. Sea level rising

**CAUSE · EFFECT**

3. Cutting down forests

**CAUSE · EFFECT**

4. Arctic sea ice shrinking

**CAUSE · EFFECT**

5. Methane from farm animals

**CAUSE · EFFECT**

6. Glaciers losing ice

**CAUSE · EFFECT**

7. Aeroplane fuel

**CAUSE · EFFECT**

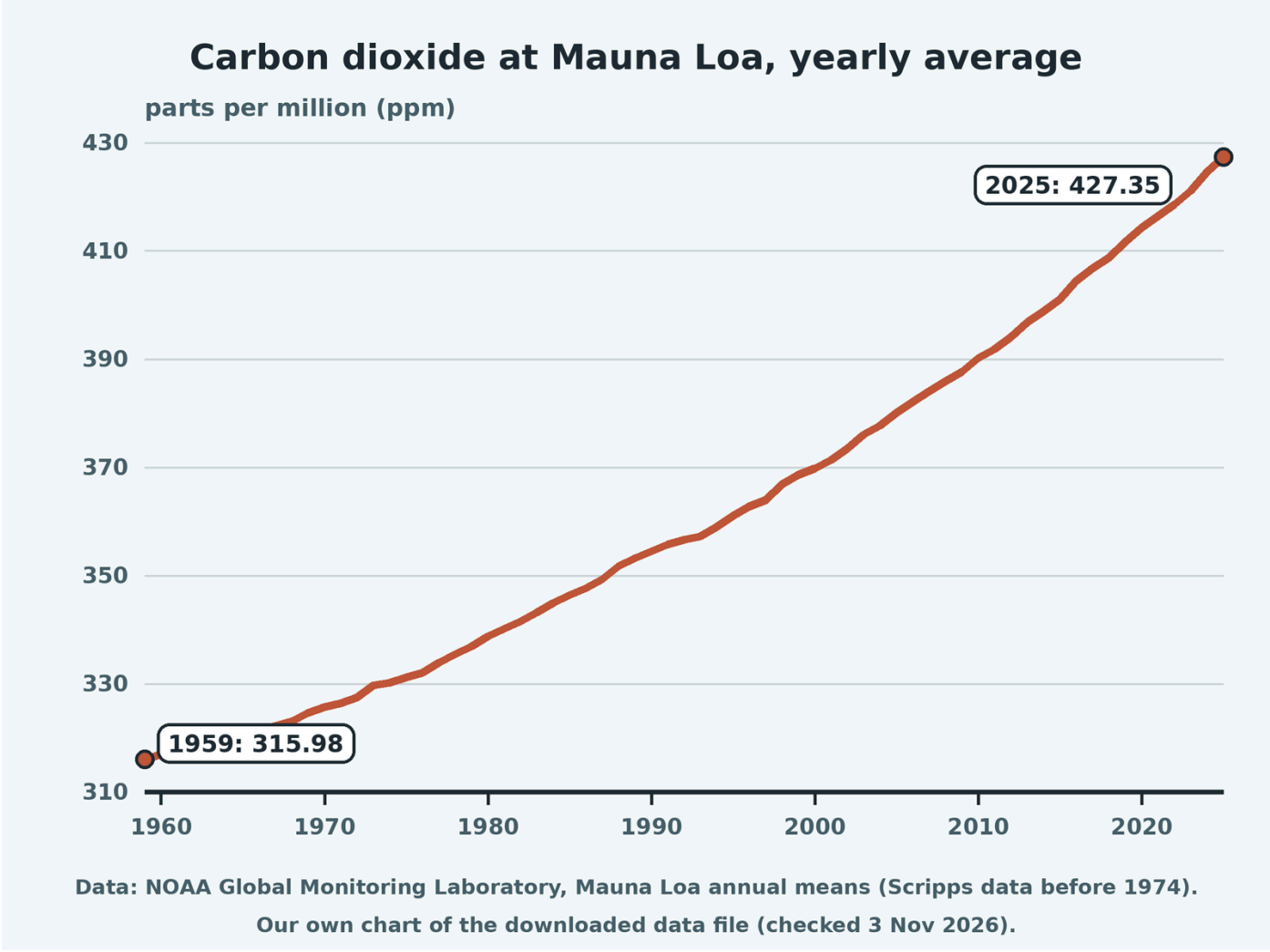
8. Plants flowering sooner

**CAUSE · EFFECT**

Answers: 1) cause 2) effect 3) cause 4) effect 5) cause 6) effect 7) cause 8) effect

CLIMATE CHANGE POSTER

# The Keeling Curve




Data: NOAA Global Monitoring Laboratory, Mauna Loa annual means (Scripps data before 1974).
Our own chart of the downloaded data file (checked 3 Nov 2026).

Chart: our own, drawn from NOAA's yearly means for Mauna Loa, 1959 to 2025.

## Carbon dioxide at Mauna Loa

The Keeling Curve, devised by Charles David Keeling of the Scripps Institution of Oceanography, charts carbon dioxide at Mauna Loa since 1958.

NOAA's yearly averages for Mauna Loa run from 315.98 ppm in 1959 to 427.35 ppm in 2025.

Carbon dioxide is now 50% higher than before the Industrial Revolution.

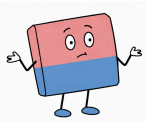
WANT MORE?

# Six full climate change packs

*All checked against the Met Office, NASA, NOAA, the UN and Encyclopaedia Britannica*

| PACK | WHAT'S INSIDE |
|---|---|
| **Colour the Greenhouse Effect: Diagram & Colouring Pack** | Label-and-colour diagrams of the greenhouse effect, the carbon cycle and rising seas, plus colouring pages of sea ice, glaciers, coral, coasts and a mountain-top observatory |
| **Climate Change Puzzle Pack: Crosswords, Codes & Carbon Logic** | A crossword, a word search, a timeline sort, a code-cracker, cause-or-effect sorting and graph-reading puzzles, all with answer keys |
| **Climate Change Fact Cards: Causes, Evidence & Effects** | Twenty-four fact-checked cards on the causes, the evidence, the effects, the scientists and the agreements, each with its source |
| **Read the Data: A Climate Graphing Workbook** | Plot real NOAA carbon dioxide and NASA temperature figures, read the Keeling Curve, and keep a year of your own weather records |
| **Our Warming World: Kids' Climate Change Worksheets** | For ages 7 to 11: label the greenhouse effect, true or false, cause or effect, climate maths, a maze, colouring, a word search and riddles, with answer keys |
| **Climate Change Poster Set** | Six fact-checked posters: what climate change is, the greenhouse effect, the Keeling Curve, warming since 1880, rising seas and the Paris Agreement |

Each pack comes in A4 and US Letter, and all six come together in The Complete Climate Change Printables Bundle. See climate-change.climates.im/shop/ for links. Free climate change games: climate-change.climates.im



Free! Like me. Nobody paid for me either.

# Credits, licence & help

*The small print, kept short*

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### PICTURES

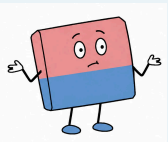
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### WHERE THE FACTS COME FROM

Every fact in this pack was checked against the pages below (the Met Office, NASA, NOAA, the United Nations and Encyclopaedia Britannica) on 3 Nov 2026. Charts are drawn from NOAA's Mauna Loa yearly averages and NASA's GISTEMP table. The diagrams are our own, simplified and not to scale. Not endorsed by the Met Office, NASA, NOAA, the UN or Britannica.

Met Office: What is climate change?: weather.metoffice.gov.uk/climate-change/what-is-climate-change
Met Office: Causes of climate change: weather.metoffice.gov.uk/climate-change/causes-of-climate-change
NOAA Climate.gov (archived June 2025): Arctic sea ice: www.climate.gov/news-features/understanding-climate/climate-change-arctic-sea-ice-summer-minimum
Encyclopaedia Britannica: greenhouse effect: www.britannica.com/science/greenhouse-effect
NASA: Global temperature (vital sign): climate.nasa.gov/vital-signs/global-temperature/
Encyclopaedia Britannica: Intergovernmental Panel on Climate Change: www.britannica.com/topic/Intergovernmental-Panel-on-Climate-Change
NASA Science: What is climate change?: science.nasa.gov/climate-change/what-is-climate-change/
Encyclopaedia Britannica: Keeling Curve: www.britannica.com/science/Keeling-Curve
Met Office: Effects of climate change: weather.metoffice.gov.uk/climate-change/effects-of-climate-change
NOAA Climate.gov (archived June 2025): Global sea level: www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level
NOAA Global Monitoring Laboratory: Mauna Loa CO2 annual mean data (text file): gml.noaa.gov/webdata/ccgg/trends/co2/co2_annmean_mlo.txt
NOAA Climate.gov (archived June 2025): Mountain glaciers: www.climate.gov/news-features/understanding-climate/climate-change-mountain-glaciers
NASA Science: Effects: science.nasa.gov/climate-change/effects/
NOAA Climate.gov (archived June 2025): Atmospheric carbon dioxide: www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide



### NEED HELP?

**Useless** can't help (he's an eraser, and he's busy reading the Keeling Curve), but we can. Problems with your file, or spotted something we should fix? Email **info@reallybyte.com**.

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