

Climate change evidence

Learning Question:

- What evidence is there that climate change is happening?

Learning Objectives:

- I can compare the different scientific methods of climate change.
- I can judge the evidence of human made climate change.



WaterAid/ Ernest Randriamalala



WaterAid

Weather and Climate

**Name 5 ways we
measure the
climate?**

**Name 5 ways we
ways we can
measure climate
change over time?**

What is Climate Change?



Evidence for Climate Change

Since the start of quaternary period (about 2.6 million years ago) the earth's temperature has fluctuated between hot and cold. These cold periods are called glacial periods. The warmer periods are called inter-glacial.

Overall the temperature trend is that of global cooling.

However, since 1900 the world has been getting increasingly warmer than it has been for nearly all of the last 400,000 years.

The thermometer wasn't invented until 400 years ago.

So how is it that we know what the climate was like before?

How do we know? - Evidence for Climate Change

Task: In groups of three you are going to recreate an information sheet about the evidence for climate change.

You will each take it in turns to memorise parts of the information sheet and then return to your group to recreate it in your groups.

Rules:

- You will have one minute to remember as much as you can before returning to your group to write down what you remember.
- You can't take a piece of paper or pen with you to look at the sheet – memory only!
- The text is the most important with pictures and graphs less so.
- You only need to make one copy per group, you'll all get a copy of your groups sheet.

How do we know? - Evidence for Climate Change



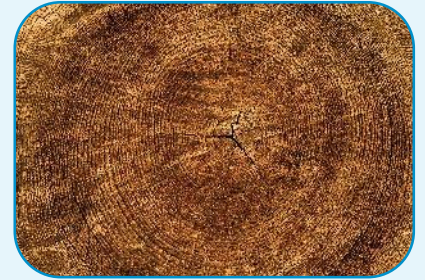
Fossils and
Sediment Cores



Ice Cores



Glacial/Ice
Sheet Retreat



Tree Rings

Arguments against climate change

“This is the coldest winter we’ve had in years! So much for global warming.”

“Climate change is natural and normal - it’s happened at other points in history.”

“Scientists can’t even agree that climate change is happening.”

“Plants and animals can adapt.”

“It won’t affect me or anyone I know.”

“OK, maybe climate change is real, but there’s nothing to be done—it’s too late.”

What does the evidence show us?

TASK: On the board will be a series of graphs showing data about climate change.

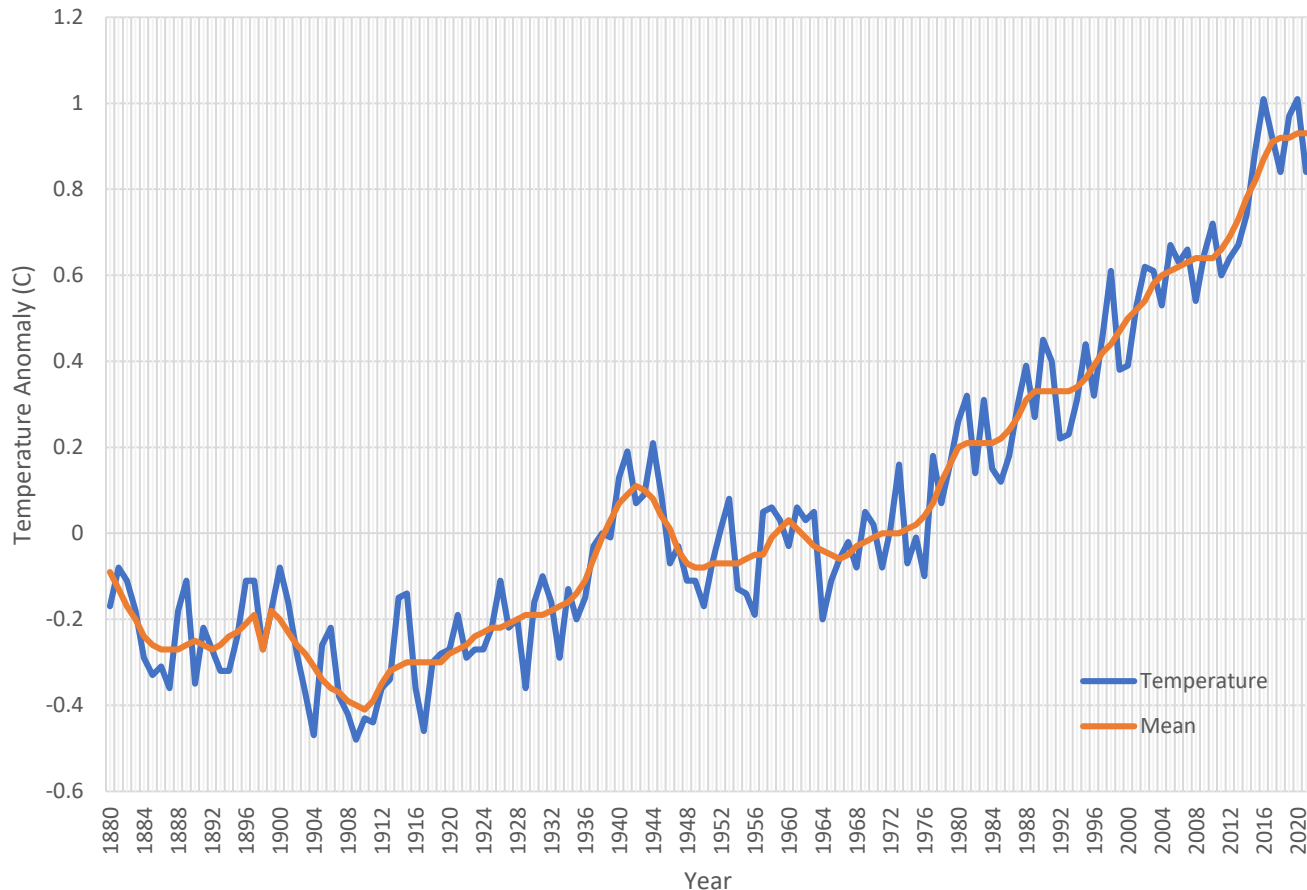
Using data as evidence from the graphs answer the questions for each graph.

Using data helps strengthen your points and make them more valid.

REMEMBER: It's hard to win an argument without evidence!



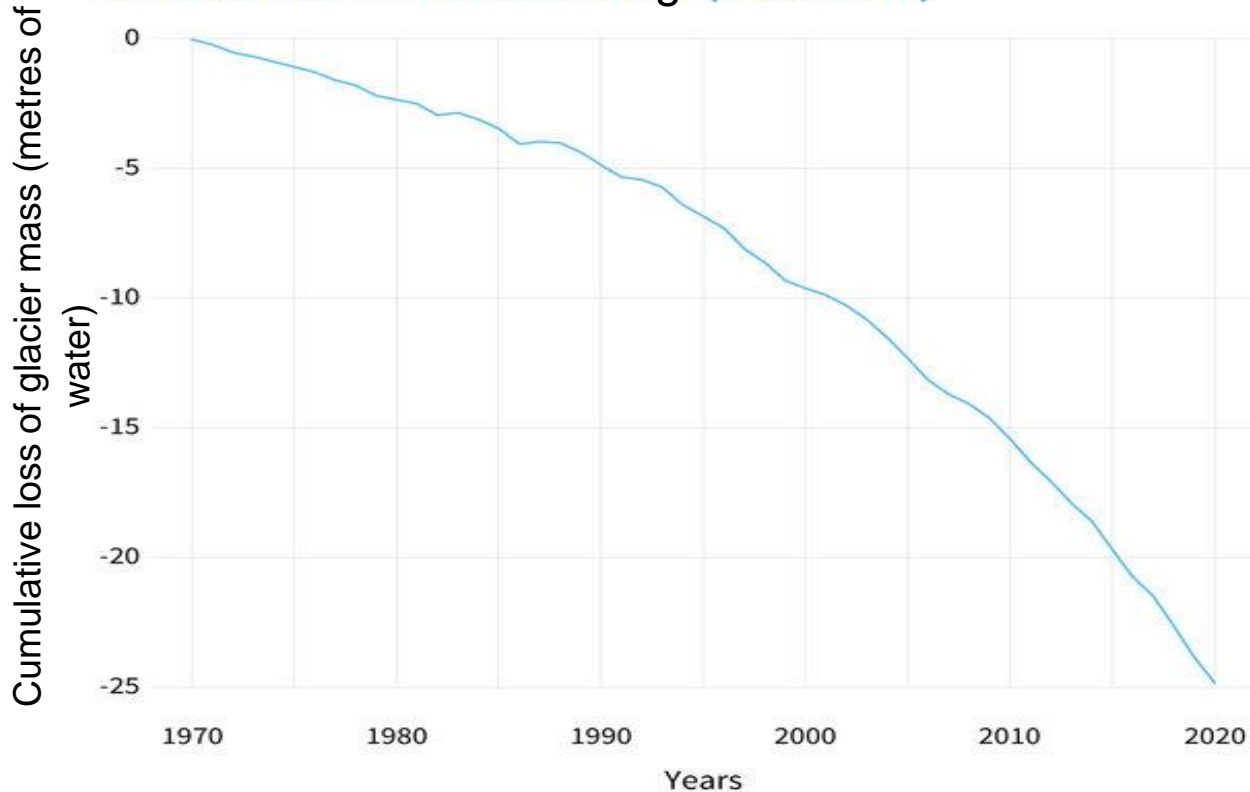
Graph showing change in global surface temperature from 1880-2020 relative to 1951-1980 average from temperature monitoring data



Use data from the graphs to make your points.

1. What was the average temperature in 1880?
2. What was the average temperature in 2020?
3. What has been the trend of global temperature since 1880?

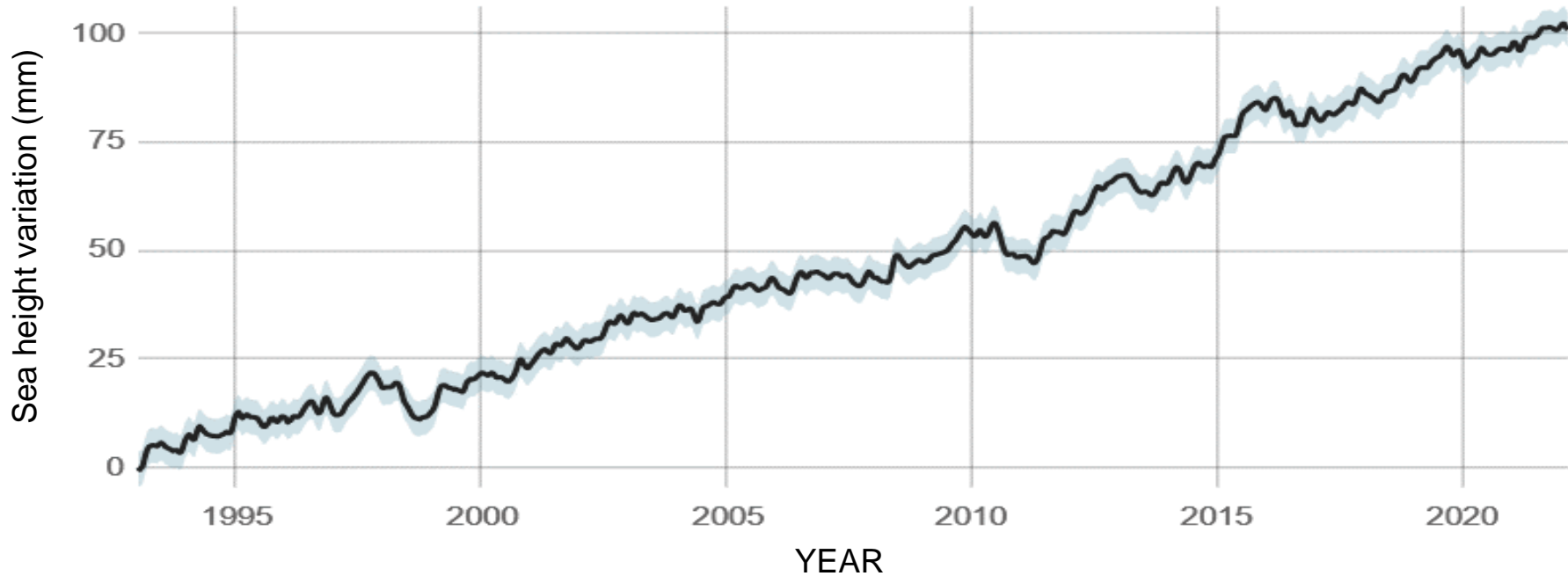
Graph to show ice lost from glaciers using data from glacier monitoring stations



Use data from the graphs to make your points.

1. How much ice has been lost since 1970?
2. What has been the trend in ice loss since 1970?
3. Has the decline been steady or steep?

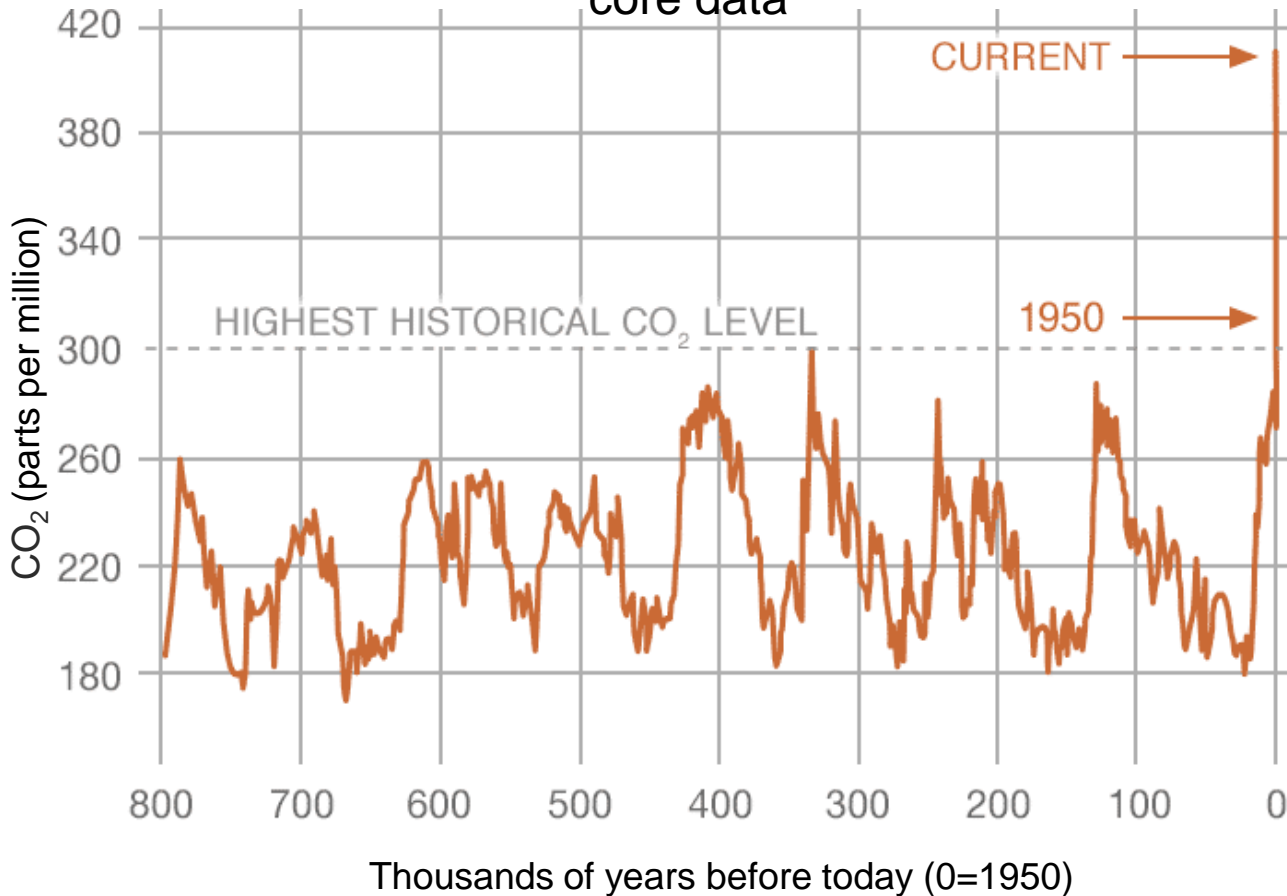
A graph showing global sea level rise since 1995 from satellite data



Use data from the graphs to make your points.

1. How much ice has been lost since 1970?
2. What has been the trend in sea levels since 1995?
3. Has the change been slow or quick?

Global CO₂ levels over the last 800,000 years from ice core data



Use data from the graphs to make your points.

1. What happened with global levels of carbon dioxide before 1950?
2. What has been happening since 1950?
3. What words would you use to describe the change in carbon dioxide in the atmosphere since 1950?

What's your reply?

“This is the coldest winter we’ve had in years! So much for global warming.”

“Climate change is natural and normal - it’s happened at other points in history.”

“Scientists can’t even agree that climate change is happening.”

“Plants and animals can adapt.”

“It won’t affect me or anyone I know.”

“OK, maybe climate change is real, but there’s nothing to be done—it’s too late.”

TASK: In pairs, write a response to the above statements.

Challenge: Use facts from the graphs to help support your point.



**Clean water.
Decent toilets.
Good hygiene.**