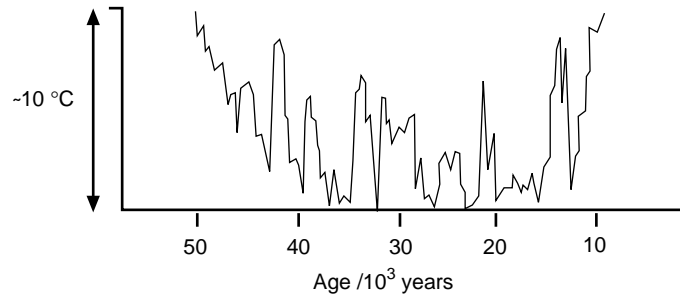


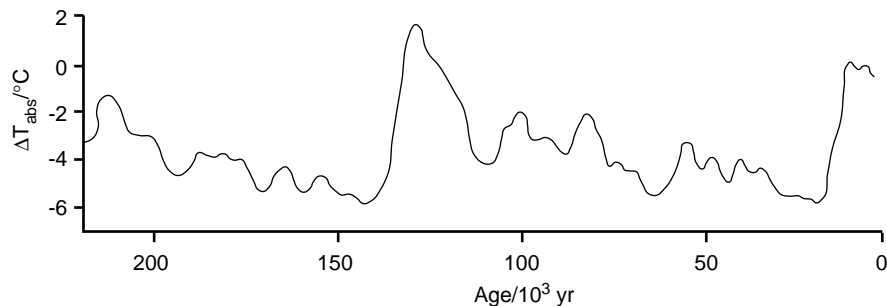
Looking at climatic data from the past



Data collected from ocean sediments of the North Atlantic Ocean – 50000 years old
(Data source: Intergovernmental Panel on Climate Change.)

Using the ocean sediment data above:

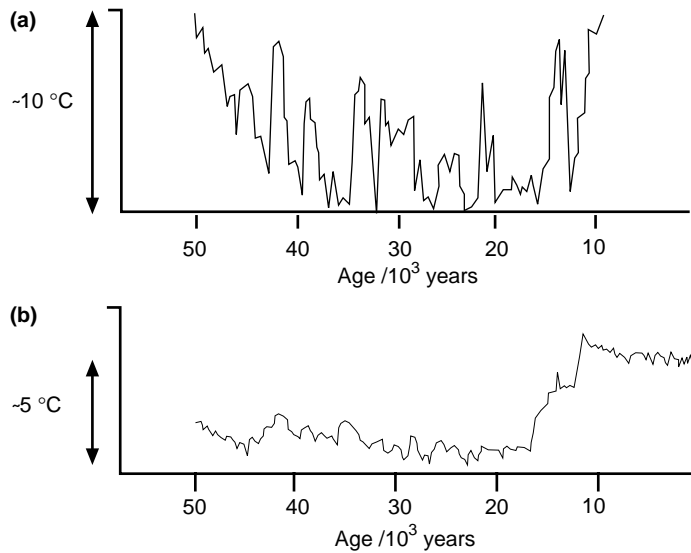
1. How has the temperature of the Earth varied over the last 10 000 years?
2. When was the last time the temperature was similar to today's temperature?
3. When was the temperature 10 °C lower than it is today?
4. Using this data, how do you think the temperature will vary over the next 10,000 years?



Data collected from Antarctic Ice Cores for 240000 years
(Reproduced with permission from *Nature*.)

Using the ice core data above:

5. How has the temperature of the Earth varied over the last 10,000 years?
6. When was the last time the temperature was similar to today's temperature?
7. What was the lowest recorded temperature?
8. When did this low temperature occur?
9. When was the temperature last stable for 10,000 years?
10. What happened over the next 10,000 years from the period of stability?
11. Describe what happened after that?
12. How do you think the temperature will vary over the next 10,000 years?



**Comparing data from (a) sediments of the North Atlantic Ocean, with
(b) data collected from Antarctic ice cores**

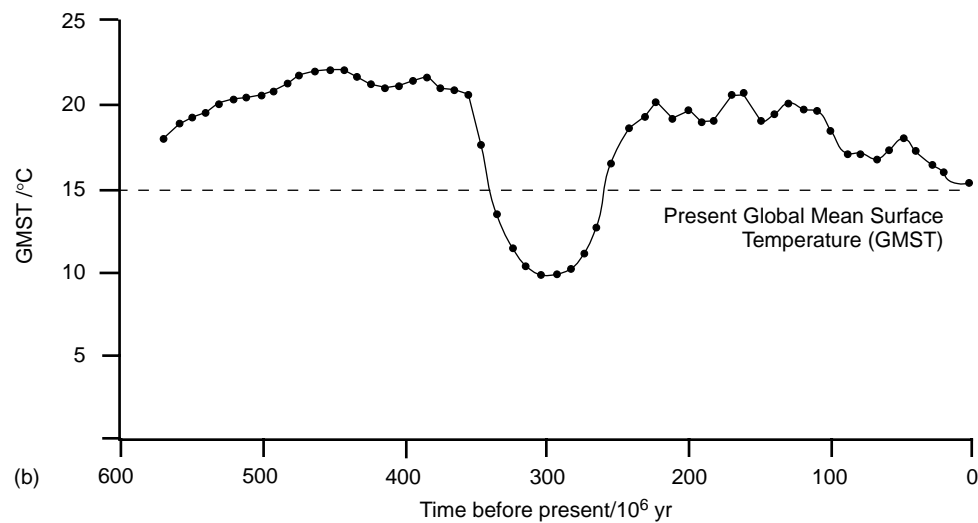
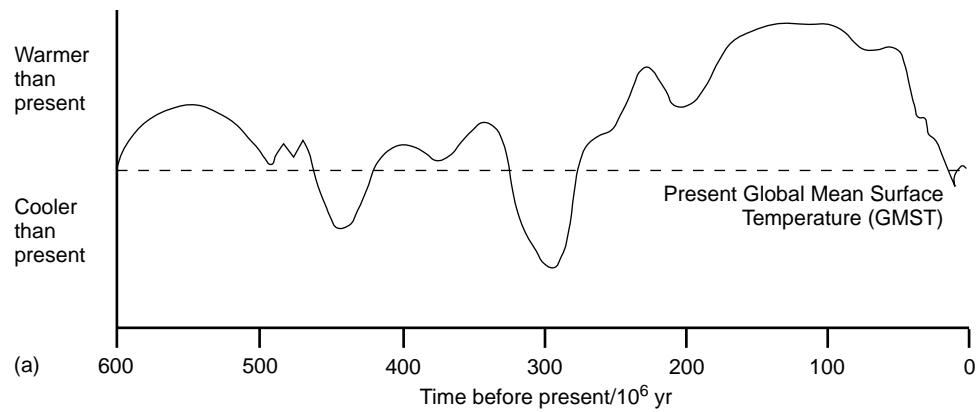
(Data source: Intergovernmental Panel on Climate Change)

13. Look at the two data sets above and write down when the results agree.
14. Look at the two data sets and write down when the results disagree.
15. Do the two sets of data follow the same patterns?
16. Suggest a reason why the data sets are not the same.
17. When interpreting data and predicting future global temperatures what do you think are the main problems / questions facing scientists?

Many scientists are very concerned about the temperature of the Earth and thus many are employed to research into the past to try and understand what is happening in the present.

Data covering even longer timescales is shown on the next page.

The figure below shows how scientists think the surface temperature of the Earth has changed over 600 million years.



Graph (a) has been constructed from fossils and other evidence found by geologists. Graph (b) has been estimated using a computer model, which is known to scientists as the GEOCARB model

Reproduced with permission from the Open University (P. Francis and N. Dise, *Atmosphere, Earth and Life*, Milton Keynes: The Open University, 1997.)

18. Looking back over the last 2000 million years:

- How has the temperature generally compared with today's temperature?
- How many ice ages have there been?
- How often does an ice age occur?

19. Does this new evidence help us to predict the future temperature of our planet?