

Climate film > The Climate System

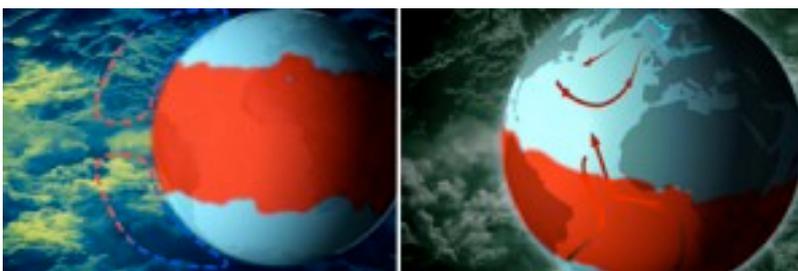
What is climate? Climate can be explained as changes occurring in the weather over time. The different components of the climate system are dependent on and interact with each other. The climate has always been in constant change, and many factors, both natural and man-made, play a role. The last 30–40 years we have seen that the climate is changing quicker than can be explained just by natural causes, and we have many observations that global warming has occurred. The UN climate panel is almost totally convinced that the most significant explanation lies in human activity that has led to the increased concentration of greenhouse gases in the atmosphere, and which is contributing to reinforcing the greenhouse effect.

Assignments to complete before you see the film

1. What is the difference between climate and weather?
2. What affects the temperature of the planet?
3. How has the climate changed over thousands of years?

Assignments relating to the film

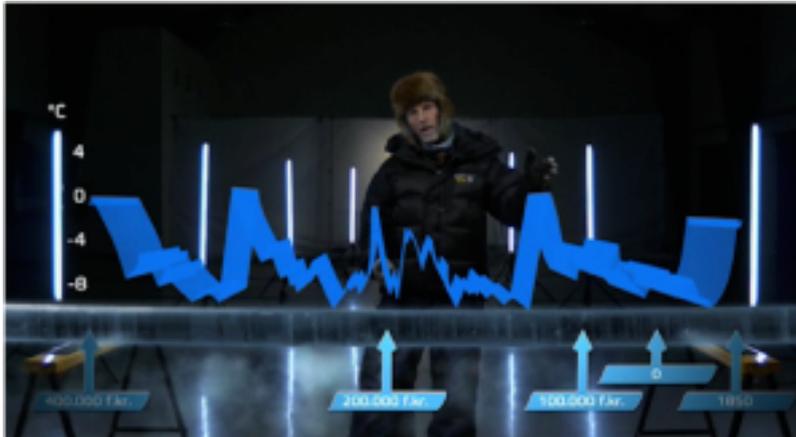
1. The climate system is made up of which components?
2. Why is there such a big difference in temperatures between the equatorial and polar regions?
3. Describe how the differences in temperature between equatorial and polar regions affects this planet's winds and ocean currents. Use the images below in your description.



4. El Niño and la Niña are the names of two complex weather patterns in the sea and atmosphere of the Pacific Ocean, which occur at irregular intervals. Describe the characteristics of el Niño.
5. Provide an example of how el Niño affects weather patterns in extensive expanses of the planet.
6. Refer to historical el Niño occurrences to explain why small changes in the climate system can have major consequences for the climate of this planet.
7. How do researchers use ice cores to calculate the temperature and

CO₂ content in the atmosphere several hundred thousand years back in time?

8. The curve in the image below shows temperatures that have occurred during the last 400 000 years. Use the curve to determine whether there was an ice age or an interglacial period in the years 400 000 B.C., 200 000 B.C. and 1850 A.D.



9. What could be the causes for the average temperature on this planet having varied the last 400 000 years?
10. We can say that there is a correlation between the CO₂ curve and the temperature curve during the last 400 000 years. Try to explain what is meant by the term 'correlation'.
11. After 1850 levels of CO₂ concentration in the atmosphere have increased significantly. What has caused this surge?
12. Why do researchers believe that increased levels of CO₂ concentration in the atmosphere will result in a higher average temperature on the planet?
13. Explain the term 'feedback'.
14. Sea ice covered by snow reflects 85–90 % of sunlight, while sea water only reflects 10 %. Vegetation and dark soil reflect around 20 % of sunlight. What do you think will happen with the temperature of the Earth if the ice melts?
15. Give three examples of 'feedback'.

Intensified assignments

1. Find out what la Niña is. Why do we call el Niño a hot phase and la Niña a cold phase?
2. Describe various methods employed by researchers in charting past changes to the climate.
3. Why is it difficult to draw a definite conclusion as to the cause of changes to the climate?