

The Earth is getting warmer

Teaching tips

This activity should be introduced by a class discussion based on the information on the student sheet, which can be used as an OHT.

The use of this section is threefold:

- It presents an opportunity to recap on what has been achieved so far and to make sure that everyone is following the argument.
- It introduces the possible causes of global warming; supporting the greenhouse gas theory with some real data.
- It asks the questions ‘what will the effect of global warming be?’ and ‘should we be doing anything about it?’

The aim of the final section of speech bubbles is to introduce the ideas about what will happen when the world warms up and what should we be doing about it? It provides a further focus for a class or group discussion.

The future climate activities page offers a choice of different activities.

It is not intended that all of the activities should be done by everyone. Some teachers may give a free choice, whereas others might decide that only some are appropriate for a particular class. You may wish to give the students some help by supplying them with more information.

Other greenhouse gases

The aim of this activity is to show that carbon dioxide is not the only greenhouse gas and the recent increase in global temperatures may be attributed to an increase in the amounts of CO₂, CH₄, CFCs and O₃ in the atmosphere due to human activities.

Resources

- Student worksheets
 - A global warning – the Earth is getting warmer
 - Looking at the data – the Earth is getting warmer
 - Theories about global warming
 - Future climates – activity page
- Internet access

Timing

Allow 30 minutes for the discussion section. The other activities are research based and are good for homework and/or another 1 hour lesson.

Adapting materials

Some teachers may wish not wish to offer all the activities on the **Future climates** activity page and therefore wish to delete some of them.

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Opportunities for using ICT

- Internet research
- Modelling
- Writing a report, which may include downloaded photographs or graphs.

Opportunities for other key skills

- Communication – designing a questionnaire and letter writing
- Working in groups.

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Looking at the data – the Earth is getting warmer

The evidence strongly suggests that there is a firm link between the amount of CO₂ in the air and the average surface temperature of the Earth.

Other greenhouse gases

1. It increases.
2. Yes, because the data appears to show a link between the temperature and the amount of CH₄ in the atmosphere.
3. 1800
4. It increased at a much faster rate.
5. 1950s
6. Around 1950
7. Yes, because the global temperature increase since 1950 corresponds to the increased levels of these gases.
8. CH₄ at 10 years
9. Accept N₂O or CO₂
10. If time permits teachers could give the opportunity for some pupils to present their speeches to the class. In which case, please specify how long the speech should be. You may need to make some of the other worksheets such as **The greenhouse effect and global warming** available. This could be carried out as a group activity.

References

1. J.E.Francis, *Terra Antarctica* 1996, **3(2)**, 135-140.
2. J.E.Francis, *Terra Antarctica Reports*, 1999, **3**, 43-52.