



# Key skills communication Level 3 - Global warming

Tuesday 20 May 2003

## Source Booklet

- This booklet contains source material for the level 3 communication test, May 2003
- The test questions will be based on this material
- You must hand in this source booklet at the end of the test, along with your question paper and answer booklet

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The level 3 communication test will assess your ability to:

- select and read material that contains the required information
- identify accurately, and compare the lines of reasoning and main points from the text and images
- synthesise the key information in a form that is relevant to the purpose
- select and use a form and style of writing that is appropriate to the purpose and subject matter
- organise relevant information clearly and coherently, using specialist vocabulary when appropriate
- ensure text is legible and spelling, grammar and punctuation are accurate so meaning is clear

# *A world of extremes as the planet heats up*

Scientists predict milder winters in Britain and an end to Europe's ski industry

By Paul Brown,  
Environment Correspondent

If the predictions in yesterday's report by leading climate scientists prove correct, millions living in Britain and other northern climes would gain from milder winters and a longer growing season but, further south, people would suffer the consequences of intense heatwaves that would kill many unused to extreme temperatures.

Insect pests would proliferate and there would be an increase in malaria; sun-seekers would find the Mediterranean too hot for holidays in July and August.

As the intergovernmental panel on climate change set out yesterday, the Earth is warming faster than at any time in the last 10,000 years and man is causing the increase by burning fossil fuels, cutting down forests and making changes in agriculture.

The changes predicted would cause coastal areas to be inundated and lead to major population changes. They would end the ski industry in Europe, cause the disappearance of many of the world's glaciers on which communities rely for regular summer water supplies, and have serious effects on agriculture.

The growing season for many of the staple crops in Africa would be cut too short for a reliable harvest because of excess heat and lack of moisture, and in Europe the Mediterranean fringe would be too dry for cereal crops. Many of the world's forests would die because of changes in water supply and the increasing heat.

Night-time average temperatures would increasingly leave much larger areas frost-free, leading to increases in

insect life. Heatwaves would increase over all northern land areas and droughts, already observed to be increasing in Africa and Asia, would become more severe.

According to the report, nearly all land areas, including northern Europe, Asia and the United States, will warm far faster than average, possibly by as much as 8°C.

Climate models worked out by giant super-computers have become far more reliable since the last report in 1995. This, combined with the climate changes observed over two decades, has convinced scientists that something very serious is happening and that it cannot be a natural process. There is far

greater unanimity among the world's scientists over the issue than among politicians.

The floods in Britain and other parts of northern Europe are entirely consistent with climate-change predictions. There has been an increase of 2% in cloud cover but it is the rise in rainfall during heavier storms that has caused the floods. This is expected to get worse each decade.

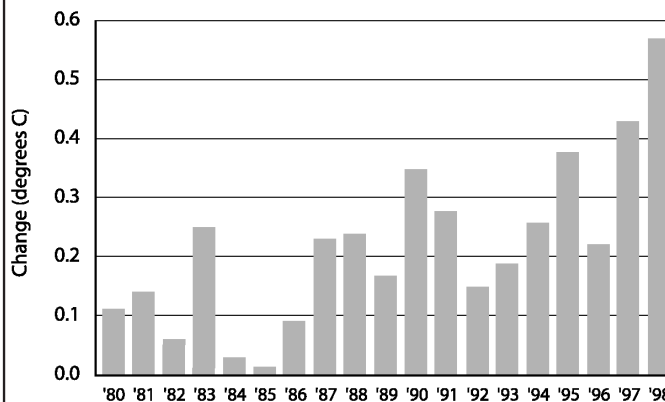
A reduction in snow cover and in the area of sea ice in the Arctic has been seen since the late 60s and is expected to accelerate. In the same period the remaining ice in the Arctic ice cap has become 40% less thick.

A fall of two weeks in the annual duration of lake and river ice-cover in mid and high latitudes of the northern hemisphere has already been observed.

Source: *The Guardian*, 23/1/01

## Global surface temperatures

Global surface temperatures, relative to average for 1961-90. The top ten warmest years since records began in 1860 have all occurred since 1980, and of these seven, including the warmest four, have been in the 1990s. We have to be careful of over-interpreting this statistic alone, as decadal variability in climate means that warm years will tend to be found in bunches.



Source: Hadley Centre for Climate Prediction and Research, Met Office, Crown Copyright

## Environment Reporter **Sarah Probert** looks at the implication of global warming on our everyday lives

If the idea of Birmingham inheriting Barcelona-style temperatures because of climate change sounds attractive, think again.

Outside the city suburbs, thousands of Midlanders will be paying the cost of global warming.

The winter floods that devastated towns such as Bewdley, in Worcestershire, will become a regular occurrence because of changing rainfall patterns.

Farmers will have to battle through drought-scarred summers and struggle to find water to quench their scorched crops in the hot summer sun.

Wildlife may also face a bleak future with some creatures simply dying out.

While other birds and insects may move in from mainland Europe to enjoy the warmer weather, scientists predict that the Midlands will be no sunny paradise.

“Over the next 100 years rainfall in winter will go up by 30 per cent and that will have an effect on water supplies and flooding,” says Brian Waters, regional water manager for the Environment Agency in the Midlands.

“There will also be less rainfall in the summer causing river levels to decline and therefore less water to extract.

“This could have an effect on fruit farmers who rely on small streams for water in the summer.”

On the plus side, farmers will enjoy longer growing seasons.

Meteorologist John Kings, from the University of Birmingham, says the global temperature has risen by 0.6°Celsius, of which about 0.2°Celsius is as a result of human activity. “We do know that fossil fuels are still having a marked effect on the climate because greenhouse gases are still being emitted from motor vehicles,” says Mr Kings.

A Government-backed West Midlands Climate Change Impact Study, carried out by Severn Trent Water, estimates annual temperatures in the region will warm up 1.3°Celsius by the 2020s and up to 2.2°Celsius by the 2050s.

The study advises businesses how they could adapt and take advantage of the problems caused by temperature changes.

“If the climate determines what we buy and how we live, businesses have to start providing different services and products,” said John Firth, strategic manager for Severn Trent Water.

The health of the region will also change, according to the report, with fewer deaths predicted in the winter due to the warmer climate. But hot weather will bring its own health problems – heat exhaustion, sunburn and skin cancer.

So why is this happening? On a worldwide scale, experts say

warming is being caused by the huge rise in carbon dioxide and other greenhouse gases due to burning coal, gas and oil.

Now that the Kyoto agreement on carbon monoxide emissions lies in tatters at the feet of the “toxic Texan”, President George W Bush, there’s no agreement in place to prevent an escalation and therefore the threat of flooding, drought and widespread disease is looming.

The UN Intergovernmental Panel on Climate Change (IPCC), which met earlier this year, said the effects of climate change are expected to be greatest in developing countries in terms of loss of life and relative effects on investment and the economy.

Within 25 years, the report said 5.4 billion people will live in areas where water is scarce – presently the number is 1.7 billion.

Developed countries will also be threatened by the changes, including flooding and landslides.

Changes are already evident in the Midlands, such as the flooding at Bewdley. As well as the cost in human misery, wildlife will also have to adapt to the new climate.

“The key message is that there are going to be winners and losers, some species will benefit, some will not,” says Colin Wilkinson, conservation officer for the RSPB in Central England.

One new bird species beginning to make an appearance in the region is the Mediterranean Dartford Warbler.

But with the warmer temperatures come more insects and pests – and a probable increase in pesticide use, which is already contributing to a decline in farmland birds, such as the skylark.

Global warming also means that spring is likely to arrive earlier, confusing bird breeding patterns.

Source:  
*Birmingham Post*, 28/4/01

It may become warmer over the next few decades, but the pleasant climates will cause environmental devastation



### **Global Warming in Brief**

#### **Is global warming occurring?**

- According to Accu-Weather, the world's leading commercial forecaster, "Global air temperatures as measured by land-based weather stations show an increase of about 0.45 Celsius over the past century. This may be no more than normal climatic variation... [and] several biases in the data may be responsible for some of this increase."
- Satellite data indicate a slight cooling in the climate in the last 18 years. These satellites use advanced technology and are not subject to the "heat island" effect around major cities that alters ground-based thermometers.
- Projections of future climate changes are uncertain. Although some computer models predict warming in the next century, these models are very limited. The effects of cloud formations, precipitation, the role of the oceans, or the sun, are still not well known and often inadequately represented in the climate models – although all play a major role in determining our climate. Scientists who work on these models are quick to point out that they are far from perfect representations of reality, and are probably not advanced enough for direct use in policy implementation. Interestingly, as the computer climate models have become more sophisticated in recent years, the predicted increase in temperature has been lowered.

#### **Are humans causing the climate to change?**

- 98% of total global greenhouse gas emissions are natural (mostly water vapour); only 2% are from man-made sources.
- By most accounts, man-made emissions have had no more than a minuscule impact on the climate. Although the climate has warmed slightly in the last 100 years, 70% of that warming occurred prior to 1940, before the upsurge in greenhouse gas emissions from industrial processes. (Dr. Robert C. Balling, Arizona State University)
- A Gallup survey indicated that only 17% of the members of the American Meteorological Society and the American Geophysical Society thought the warming of the 20<sup>th</sup> century was the result of an increase in greenhouse gas emissions.

#### **If global warming occurs, will it be harmful?**

- The idea that global warming would melt the ice caps and flood coastal cities seems to be mere science fiction. A slight increase in temperature – whether natural or mankind induced – is not likely to lead to a massive melting of the earth's ice caps, as sometimes claimed in the media. Also, sea-level rises over the centuries relate more to warmer and thus expanding oceans, not to melting ice caps.
- Contrary to some groups' fear-mongering about the threat of diseases, temperature changes are likely to have little effect on the spread of diseases. Experts say that deterioration in public health practices such as rapid urbanisation without adequate infrastructure, forced large scale resettlement of people, increased drug resistance, higher mobility through air travel, and lack of insect-control programs have the greatest impact on the spread of water borne diseases.
- Larger quantities of CO<sup>2</sup> in the atmosphere and warmer climates would likely lead to an increase in vegetation. During warm periods in history vegetation flourished, at one point allowing the Vikings to farm in now frozen Greenland.

*Source: Cooler Heads Coalition website*

*The Cooler Heads Coalition is an American pressure group concerned that policies to reduce global warming "would drastically restrict energy use and raise costs for consumers".*