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Super-Computer Predicts Runaway Greenhouse Effect

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Large swathes of the planet will be plunged into misery by climate change in the next 50 years, with many millions ravaged by hunger, water shortages and flooding, according to evidence published yesterday.

Findings from Britain's Hadley Centre for Climate Change presented to 170 countries in Buenos Aires show that parts of the Amazon rain forest will turn into desert by 2050, threatening the world with an unstoppable greenhouse effect.

The startling findings are the result of billions of calculations made by the world's biggest super-computer, installed at the Hadley Centre in Berkshire. The latest figures show the earth is heating up fast, with 1998 already the hottest year since reliable records began 140 years ago.

Among the findings are: * Land temperatures will go up 6C by the end of the next century.

* The number of people on the coast subject to flooding each year will rise from 5 million now to 100 million by 2050 and 200 million by 2080.

* Another 30 million people will be hungry in 50 years because it will be too dry to grow crops in large parts of Africa.

* An extra 170 million people will live in countries with extreme water shortages.

* Malaria, one of the world's most dread diseases, will threaten much larger areas of the world - including Europe - by 2050.

The new predictions include far better representations of ocean currents, which drive the world's climate. The Gulf Stream, which is important for warming Britain in the winter, will be 20 per cent less strong in the future but Europe will still warm considerably.

Western Europe, including Scotland, will gain the ability to grow extra grain, but the storms of the past few weeks will be typical of the more extreme weather conditions the country can expect.

The impact on food supply will be particularly bad for Africa and the United States. The whole of central and southern Africa will have reduced ability to grow staple crops, but in world political terms the adverse affects on the US prairies is likely to prove very important.

Droughts and extra heat leading to evaporation means that wheat and maize yields will drop up to 10 per cent. Since the vast surplus of the US wheat belt is important to the country's wealth and its hold on world food supplies, this prediction will be bad news for the White House.

The US stands accused of holding up talks designed to reduce the world's output of carbon dioxide, so it is ironic that on the first day of the two-week meeting in Argentina the latest models show that the US will be among the countries most severely affected. Canada, on the other hand, will see wheat production increase by 2.5 per cent. The Canadian forests will extend northwards into what is now tundra.

Perhaps the most startling finding is the prospect of a runaway greenhouse effect at 2050. It has been thought that the speed of global warming would be moderated by the extra growth in plants and trees made possible because of more carbon dioxide in the atmosphere. This carbon dioxide fertiliser effect stimulates plants to grow faste

The latest information shows that this benefit will be lost in 2050 because of lack of rainfall in key areas. Worst affected will be northern Brazil, where the Amazon rain forest will turn into desert, and the eastern United States. Parts of southern Europe will become virtual deserts at the same time.

Many tropical grasslands will also be transformed into deserts, leading to widespread extinction of wildlife.

The rise in global sea level will be 21cm (3.2in) by 2050. The coasts of the southern Mediterranean, Egypt, west and east Africa, south and south-east Asia are most vulnerable. The islands of the Caribbean, Indian and Pacific Oceans, some only a few feet above sea level, are at risk of being overwhelmed during storms.

Increased warmth leads to a dramatic rise in the number of malaria cases where the disease is already endemic. It is already spreading north - Italy had an outbreak last year - and is expected to reach the Baltic by 2050. Although parts of Britain are already warm enough for the mosquitoes that carry the lesser Vivax malaria, no infection has so far reached these shores. The more dangerous P. falciparum form needs warmer temperatures but conditions will be right for it within 50 years over large parts of Europe.

The problem for doctors is that in 60 per cent of the world where malaria is current unknown populations have little or no immunity to the disease and an epidemic could cause high death rates in adults and children.

Michael Meacher, the environment minister who is going to Argentina, said: "These are sobering findings. Millions of people will have life made miserable by climate change, with increased risk of hunger, water shortages and extreme events like flooding. Combating climate change is the greatest challenge of human history."

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