

Climate change impacts

evidence from ECN sites



Edited by

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**Environmental
Change
Network**



ECN partners

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- Biotechnology and Biological Sciences Research Council, through:
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 - Institute of Grassland and Environmental Research, North Wyke
 - Rothamsted Research
- Cyngor Cefn Gwlad Cymru - Countryside Council for Wales
- Cynulliad Cenedlaethol Cymru - The National Assembly for Wales
- Defence Science and Technology Laboratory
- Department for Environment Food and Rural Affairs, through:
 - UK Acid Waters Monitoring Network (Environmental Change Research Unit, University College London)
- Environment Agency
- Forest Research
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 - Centre for Ecology and Hydrology
- Northern Ireland Environment Agency
- Scottish Environment Protection Agency
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 - The Macaulay Institute
 - Fisheries Research Services, Freshwater Laboratory, Pitlochry
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On the cover: (i) Part of an automatic weather station (AWS) at the Moor House-Upper Teesdale ECN site; (ii) red admiral

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Climate change impacts: Evidence from monitoring



We are living through a period of unprecedented global warming. In the UK, this may be having various impacts, as a result of a changing climate, on animal and plant species and the ecosystems they inhabit. Some of these changes may be beneficial, but others may represent a serious threat to 'ecosystem services', i.e. the processes by which environments produce resources of benefit to people.

The Environmental Change Network (ECN) provides detailed, regular and high quality measurements at a range of sites across the UK to identify and quantify ecological responses to changes in climate and other pressures. This publication highlights some of the findings from ECN monitoring and research which provide evidence of the sensitivity of natural ecosystems in the UK to variability and change in climate. These include assessments of population dynamics, responses to extreme events (drought), changes to the timing of lifecycle events (phenological changes) and biological responses affecting the carbon cycle.

The UK Environmental Change Network was launched in 1992 as a multi-agency programme with the aim of establishing a well-designed and cost-effective network to identify, assess and research environmental change nationally and to provide a basis for international collaboration. The network has grown from 8 terrestrial sites in 1993, the first full year of operation, to 12 terrestrial and 45 freshwater (river and lake) sites in 2008¹. The network has adopted a whole ecosystem approach; standard protocols have been published for a total of 260 measurements^{2,3}, covering physical, chemical and biological aspects of the environment. A central database⁴ was established from the start and quality control and assurance procedures have been developed and implemented.

Attribution of climatic effects on ecosystems is not easy, as there are many other pressures to consider. Drivers such as atmospheric pollution and land use change, for example, can bring about profound changes in ecosystems. Furthermore, drivers may act in combination. Further monitoring and research are required to gain a greater understanding of the cause of observed trends, and ECN is a valuable resource to support this work.

