Data access

making use of data and sites

A valuable data resource

High quality, long-term data are an important scientific resource and a national asset. The strength of ECN is that a wide range of driving and response variables are measured at a range of sites using common methods. These data are collated into a single database, providing the potential to compare data not just over time, but spatially. Data undergo a range of validation checks before they are entered onto the database, and we also conduct periodic quality assurance tests to ensure the data are of a high standard.

It has always been one of ECN's principles to make our data as widely accessible as possible. Provided they are used for *bona fide*, non-commercial, research purposes, ECN data are available at no charge, and are thus used by a wide range of researchers. Two levels of data access are provided:

- Summary data (monthly or annual means) are provided for most of the measured variables via a web-based interface (www.ecn.ac.uk/Database/index.html)
- Raw datasets are available under licence.

The summary data interface enables users to select any combination of dataset, sites and time period. The system queries the database, and summary results are presented graphically and in tabular form. They may also be downloaded as a file.

Sites for research

Active research by university departments and others is undertaken at many of the sites. Several sites have a long history of research. The availability of ECN's long-term biological, physical and chemical data make the network's sites attractive locations for many kinds of research, concerning not just the impacts of climate change but also other important topics, such as air pollution, population dynamics, biogeochemistry of soils and ecosystem services and function.

Much research undertaken at ECN sites, or using ECN data, is published in the scientific literature. We maintain a database of ECN-associated publications, available on the ECN website.

Strategically-driven research

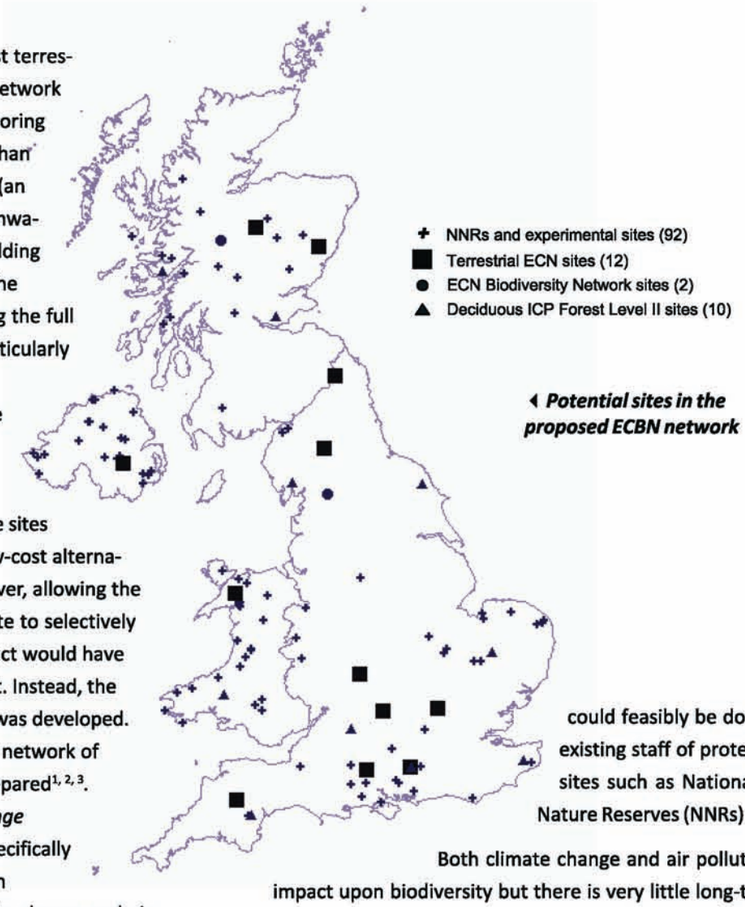
To really make the most of ECN requires a concerted effort. ECN's Research and Development Strategy[1] provides a framework enabling researchers, policymakers and others collectively to address key scientific questions. By combining research, datasets and expertise, we can extract the most from the national asset that is ECN.

- ECN Summary data are available from the ECN website, *www.ecn.ac.uk*. Click on *ECN data*. You can also find the raw data use request form here
- Since the summary database was launched in 1998 it has been accessed over 9200 times and we've registered over 1000 data downloads
- To date we have serviced over 600 requests for raw data
- Details of ECN sites are available by clicking *About ECN*, then *Sites*
- Information about ECN measurement protocols are available by clicking *About ECN*, then *Protocols*
- The ECN publications database is available by selecting *Publications* from the home page. Other ECN publications are also available here
- To discuss research ideas, please contact the ECN Research Coordinator, Don Monteith, at CEH Lancaster (E-mail: donm@ceh.ac.uk)

Tapping the ECN resource

Extending the network: ECBN

Since monitoring began at the first terrestrial ECN sites back in 1992, the network has expanded. We are now monitoring at 12 terrestrial sites (two more than in 1992) and 45 freshwater sites (an increase of seven from when freshwater monitoring began in 1995). Adding new sites increases the value of the data resource. However, operating the full set of monitoring protocols - particularly at terrestrial sites - requires a sizeable commitment in staff time and financial resources, limiting the network's rate of growth.



Potential sites in the proposed ECBN network

To extend ECN monitoring to more sites we needed a new approach, a low-cost alternative to full ECN monitoring. However, allowing the operators of any potential new site to selectively choose what monitoring to conduct would have yielded a very fragmented dataset. Instead, the concept of 'targeted monitoring' was developed. Using this model, plans for a new network of sites across the UK have been prepared[1, 2, 3]. The proposed *Environmental Change Biodiversity Network* (ECBN) is specifically designed to enable the impacts on biodiversity of two drivers, climate change and air pollution, to be distinguished from one another in sites with known management. The additional sites would also extend the habitat coverage of ECN sites. By basing the new network on ECN, it is possible to build on the wealth of experience and expertise within ECN, in areas such as monitoring methods, data management and engagement with policymakers and the research community.

At sites in the ECBN a smaller range of measurements would be conducted than at existing terrestrial ECN sites. Wherever possible, these measurements would use existing ECN protocols. The monitoring effort and associated costs would be much less (there would be no need for costly chemical analyses, for instance), and the work could feasibly be done by existing staff of protected sites such as National Nature Reserves (NNRs).

Both climate change and air pollution impact upon biodiversity but there is very little long-term data available to help distinguish the effects of the two drivers or to reliably determine the causes of observed changes. Based on statistical analyses, between 40 and 90 new sites would probably be needed in order to separate the effects of climate change and air pollution. Potential sites - mainly NNRs - were identified from existing biologically significant sites which have a history of relevant monitoring (see figure).

Other initiatives are underway to better integrate the UK's environmental monitoring capability, a move fully supported by ECN. The Environmental Change Biodiversity Network would extend and enhance ECN's long-term monitoring, providing the UK with two closely inter-related networks of monitoring sites.