

# The UK Environmental Change Network

Data, monitoring and research to detect and interpret environmental change



## What we measure

We are the UK's long-term environmental monitoring and research (LTER) programme. We make regular, highly detailed measurements of plant and animal communities and their physical and chemical environment. Our long-term datasets are used to increase understanding of the effects of climate change, air pollution and other environmental pressures on UK ecosystems.

### TERRESTRIAL SITE MEASUREMENTS

12 SITES

#### Vertebrates

Grazing animals, e.g. deer, sheep, rabbits (twice a year); Bats (four times a year); Frogs (weekly phenological recording from adult congregation to full metamorphosis of tadpoles); Birds, using BTO Breeding Bird Survey methodology (twice a year).

#### Invertebrates

Moths (nightly or weekly at remote sites); Butterflies (weekly; based on UK Butterfly Monitoring Scheme methodology); Spittle bugs (annually); Ground predators (beetles and spiders) (two-weekly).

#### Vegetation

Whole site baseline survey (species presence related to the National Vegetation Classification); Permanent plots monitored for species presence. Recording intervals for different plots are 1, 3 or 9 years. Some sites also record additional information on woodland plots, vegetation boundaries, grass yields and cereal field monitoring.

#### Land use and site management

Records of management activities.

#### Automatic Weather Station recording

(hourly summaries from 5-sec samplings)  
Solar radiation; Net radiation; Humidity; Air temperature; Wind speed; Wind direction; Rainfall; Albedo (sky and ground); Soil temperature at 10cm and 30cm; Surface wetness; Soil water content.

#### Manual meteorological recording (daily or weekly)

Dry bulb & wet bulb temperature; Maximum & minimum temperature; Grass minimum temperature; Soil temperature; Rainfall; Wind run.

#### Atmospheric chemistry

Nitrogen dioxide (two-weekly analyses); Ammonia (monthly).

#### Precipitation chemistry (weekly)

pH; Conductivity; Alkalinity; Sodium; Potassium; Calcium; Magnesium; Iron; Aluminium; Phosphate; Ammonium; Nitrate; Chloride; Sulphate.

#### Surface water discharge (at some sites)

Continuous discharge measurements (summarised every 15 minutes).

#### Surface water chemistry (weekly at some sites)

pH; Conductivity; Alkalinity; Sodium; Potassium; Calcium; Magnesium; Iron; Aluminium; Total phosphorus\*; Phosphate; Total nitrogen\*; Ammonium; Nitrate; Chloride; Sulphate; Dissolved organic carbon.

*continued overleaf*



## Terrestrial site measurements *(continued)*

### Soil solution chemistry\* *(two-weekly at some sites)*

pH; Conductivity; Alkalinity; Sodium; Potassium; Calcium; Magnesium; Iron; Aluminium; Total phosphorus\*; Phosphate; Total nitrogen\*; Ammonium; Nitrate; Chloride; Sulphate; Dissolved organic carbon.

### 5-yearly soil survey

Horizon depth and thickness; Soil moisture; pH; Exchangeable acidity; Exchangeable sodium,

potassium, calcium, magnesium, manganese and aluminium; Total nitrogen, phosphorus, sulphur, organic carbon and inorganic carbonate.

### 20-year soil survey monitoring

As fine-grain monitoring, with the addition of: Bulk density; Total lead, zinc, cadmium, copper, mercury, cobalt, molybdenum, arsenic, chromium, and nickel; Extractable iron, aluminium and phosphorus.

\*Additional measurement made at some sites



## FRESHWATER SITE MEASUREMENTS

45 SITES

### Macro-invertebrates *(three times per year)*

Species presence, abundance and deformities.

### Zooplankton & phytoplankton *(monthly; some lakes only)*

Species presence and abundance.

### Aquatic macrophytes *(rivers: annually; lakes: every two years)*

Species presence, abundance and distribution.

### Epilithic diatoms

Samples collected at most sites and archived for future analysis *(three times per year)*.

### Surface water discharge

Continuous stage and discharge at river sites.

### Freshwater chemistry *(at least monthly)*

pH; Alkalinity; Chlorophyll a; Suspended solids and/or turbidity/secchi disk; Temperature; Conductivity; Dissolved oxygen; Ammonium; Total nitrogen; Nitrate; Nitrogen dioxide; Chloride; Total organic carbon; Dissolved organic carbon; Particulate organic carbon; Biological Oxygen Demand; Total phosphorus; Particulate phosphorus; Phosphate; Silicate; Sulphate; Total and dissolved sodium, potassium, calcium, magnesium, tin, manganese, iron, vanadium, nickel, mercury, copper, zinc, cadmium and lead; Total and labile aluminium; Total arsenic.

\*Additional measurement made at some sites



## Find out more

Scan the QR code, visit our website or contact Andrew Sier: [arjs@ceh.ac.uk](mailto:arjs@ceh.ac.uk).

Full details of measurements at

[www.ecn.ac.uk/measurements](http://www.ecn.ac.uk/measurements)



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