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Living with global uncertainty

Biogeochemical Cycles: Nitrogen and Carbon Export from the UK

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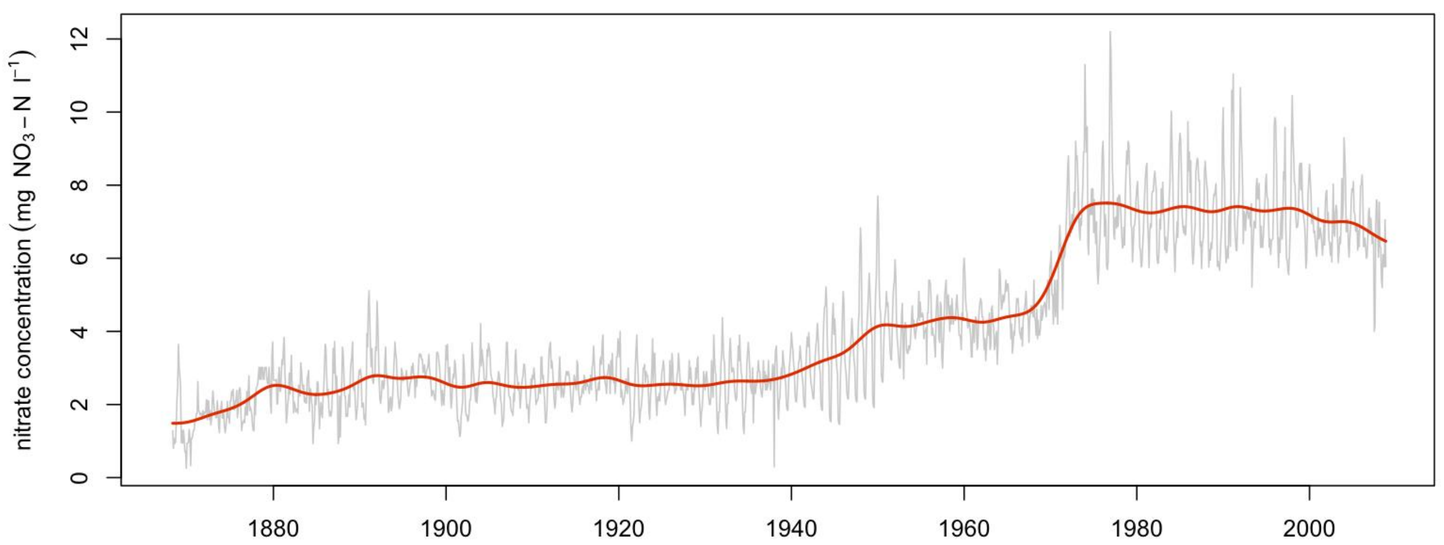
Bristol academics lead the field to develop understanding of long-term processes that control the quality and quantity of available freshwaters, and how this is affected by human activity (i.e. land use and land management), and past, present and future climate. We hold and analyse some of the longest and most comprehensive water quality records in the world.

Diffuse pollution from agriculture

- Building new model to link changes in climate, land use and land management with freshwater quality;
- Uses the longest water quality record in the world – nitrate in the River Thames, London from 1868 to the present.
- A collaboration with academics from Durham University is linking individual catchment responses to a UK-wide nitrogen budget.

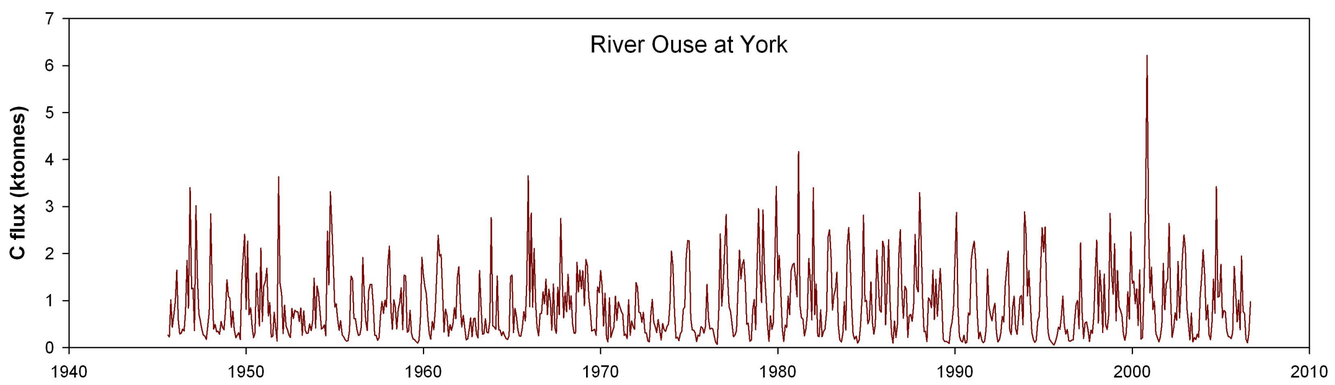
Nitrate in the River Thames, London, 1868 to 2008

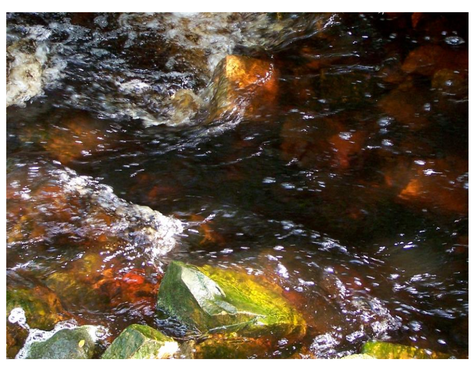


Understanding the causes of and controls on diffuse pollution is critical to our future water security, and important to inform future food production methods.

Carbon Export from UK Peatlands

- The northern peatlands contain a vast amount of carbon and over the past 10,000 years this has been accumulating;
- Recent observations suggest dissolved organic carbon export is increasing – but there is considerable uncertainty as to what is causing this;

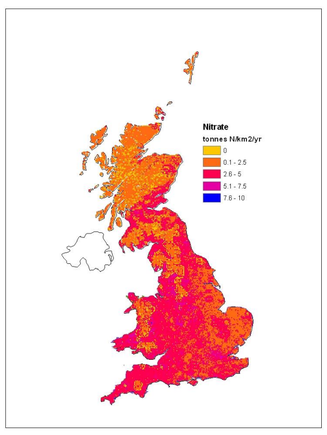




- Analyses are normally restricted by data availability;
- Bristol academics are using newly reconstructed long-term river water quality time series to identify previously unrecognised change drivers and to predict future carbon budget scenarios.

UK upland drainage waters

Additional research strengths:



- Using large datasets to explore new analysis techniques
- Data and modelling expertise enables a multi- spatial and temporal scale view.
- Developed modelling capabilities to forecast future climate and land-use impacts on water quality