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Chemical trends at lakes and streams in the UK Acid Waters Monitoring Network, 1988-2000: Evidence for recent recovery at a national scale

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Abstract. A detailed trend analysis of 12 years of data (1988-2000) for 22 surface waters in acid-sensitive regions of the United Kingdom, in which individual site data have been combined to identify national-scale trends, has shown strong common patterns of temporal variation. Results suggest a widespread reduction in sulphate concentrations, hydrogen ion and inorganic aluminium species, and increases in acid neutralising capacity. Many chemical changes have not been linear. However, the first five years were characterised by high concentrations of marine ions and relatively stable pollutant sulphate concentrations and the remaining period by lower concentrations of marine ions and declining sulphate. Genuine "recovery", in terms of declining acidity in response to reduced anthropogenic sulphur deposition is only apparent, therefore, for the latter part of the monitoring period. Reductions in calcium concentrations appear to have partially offset the influence of sulphate reductions on acidity, as have increases in organic acidity associated with strong and widespread rising trends in dissolved organic carbon. Fluctuations in a number of climatic factors over the monitoring period have led to significant inter-annual variability in nitrate, which exhibits little long-term trend, marine ions and acidity, emphasising the need for long monitoring periods if underlying trends are to be correctly identified.

Keywords: acidification, recovery, long-term trends, climate, Dissolved Organic Carbon, United Kingdom Acid Waters Monitoring Network

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