



Spatial variations in biosphere $87\text{Sr}/86\text{Sr}$ in Britain and the implications for human migration studies.

Jane Evans (1) and Janet Montgomery (2)

(1) British Geological Survey, NIGL, Nottingham, United Kingdom (je@bgs.ac.uk), (2) Durham University, Dept of Archaeology, South Road, Durham, DH1 3LE ,

The potential of $87\text{Sr}/86\text{Sr}$ isotope composition to the tracking and origin of material, whether it is humans, animals, water or wine can only be fully realised if high-quality reference data sets are available against which to compare the unknowns. Until recently, in the UK, such data were not available. Despite the rapid increase in $87\text{Sr}/86\text{Sr}$ -based provenance studies of biosphere materials there were no well documented maps available. Most researchers resort to generating reference maps from a variety of geological datasets and the analysis of sparse “environmental” samples. A major reason for this lack of reference material is the investment needed to undertake systematic sampling and analysis over large areas. A further problem is associated with choice of proxy material, as organisms differ in their habitat and exploitation of resources. We present a map of strontium isotope variations across Britain for use in archaeological and other studies. It is produced by direct measurement of strontium isotope compositions of biosphere components, predominantly plants. The map characterizes the biosphere signature of individual lithologies: a technique that is applicable worldwide. Marine derived strontium, from both rainwater and coastal sea-splash and spray, is an important contribution to the British biosphere particularly on the western seaboard which is subject to high rainfall and prevailing westerly winds.