

The bioavailable Sr isotope reference database of France - a tool for archaeology and forensic sciences

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⁸⁷Sr/⁸⁶Sr ratios measured in human and faunal remains can be used to infer their geographic origin. From the eroding bedrock Sr is transported into the soils and plants and incorporated into the food chain. This bioavailable Sr signature is different from the bulk Sr signature of the bedrock, mainly due to the preferential weathering of different minerals. ⁸⁷Sr/⁸⁶Sr ratios measured in skeletal remains reflect the concentration-weighted average of dietary Sr that was consumed when the skeletal tissue was formed.

We present the first results of a sampling campaign with the aim of creating a database of bioavailable Sr for France useful for investigating geographic mobility in archaeological and forensic sciences. At this stage we have analysed plant and soil samples from ~200 locations across France. The isotope data and detailed sample descriptions are available through our database iRhum (<http://rses.anu.edu.au/research/ee>).

We performed a case study to reconstruct human migration at a Bell Beaker (2500-2000 BC) site at Le Tumulus des Sables, south-west France. Teeth enamel and dentine from 16 adult and 8 juvenile individuals was analysed using laser ablation ICP-MS. The teeth showed clear differences between enamel and dentine, the former representing the Sr isotope signature acquired during childhood, while the latter is diagenetically overprinted with the local signature. While this indicates mobility it is currently not possible to distinguish between migration from outside of the Médoc region from mobility within the region because the sediment units in the close vicinity to the site show large variations in their ⁸⁷Sr/⁸⁶Sr ratios.