Source apportionment of Pb pollution in saltmarsh sediments from southwest England

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The local availability of metal resources played a crucial role in Britain's development during the industrial revolution, but centuries of mining within Cornwall and Devon (UK) have left a legacy of contamination in river basin and estuary sediments. Improved knowledge of historical heavy metal sources, emissions and pathways will result in a better understanding of the contemporary pollution conditions and a better protection of the environment from legacy contaminants. Our study aims to trace historical sources of Pb pollution in the area of east Cornwall and west Devon, UK, using a multi proxy approach for contaminants stored in saltmarsh sediment columns from 3 systems characterized by different contamination patterns.

Source apportionment investigations included the determination of Pb concentration and Pb isotopic composition ($204Pb$, $206Pb$, $207Pb$, and $208Pb$) for selected down-core sediment samples, and for local ore and parent rock materials. General trends in pollutant loading (e.g. Pb) could be identified, with maximum inputs occurring in the middle of the 19th century and decreasing towards the present day, while an increase in the catchment disturbance was apparent for the last decades. The isotopic ratios of Pb further indicate that sediments with higher Pb content have a less radiogenic signature, these particular inputs being derived from Pb mining and smelting sources in the catchment area.