A lead record from a raised bog north of Hadrians Wall

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Ombrotrophic bogs are reliable archives for the reconstruction of past changes in climate and atmospheric metal deposition as their nutrients predominately originate from the atmosphere. Here we present a 3500-year Pb record from a raised bog (Raeburn Flow) in the Scottish Borders, north of Hadrian's Wall. Although total lead concentrations are relatively low throughout the profile, ranging from 0.08 to 11 µg g^{-1} for pre-industrial times, the deposition increases up to 320 µg g^{-1} during the recent industrial revolution. The record shows phases of Pb enrichment during the late Iron Age/Roman period, medieval and Industrial periods, as well as the decrease of leaded petrol. In comparison with a raised bog in SW Ireland (Annaholty) we can identify similar patterns in enrichment for the Iron Age / Roman period as well as the Industrial period. No evidence of pre Iron Age Pb pollution was identified at Raeburn Flow. In contrast short-lived phases of Pb enrichment were identified from 1200 BC at Annaholty. It is likely that these elevated concentrations of Pb during the prehistoric and Roman period reflect long-distance pollution sources rather than local activities. However, juxtaposed to this a record from Wales (Tyndrain) is rather ambiguous; however, elevated Pb concentrations were recorded from 550 BC and a strong phase of Pb pollution occurred during historical times. This may be due to a stronger minerogenic influence at this site as well as continuous metalworking in the area. Furthermore, we will discuss and compare our identified patterns in relation with other geochemical archives and archaeological records for mining and metallurgy in the British Isles.

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