

Non-Linear Clumped Isotopes from DIC Endmember Mixing and Kinetic Isotope Fractionation in High pH Anthropogenic Tufa

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Supplementary Materials

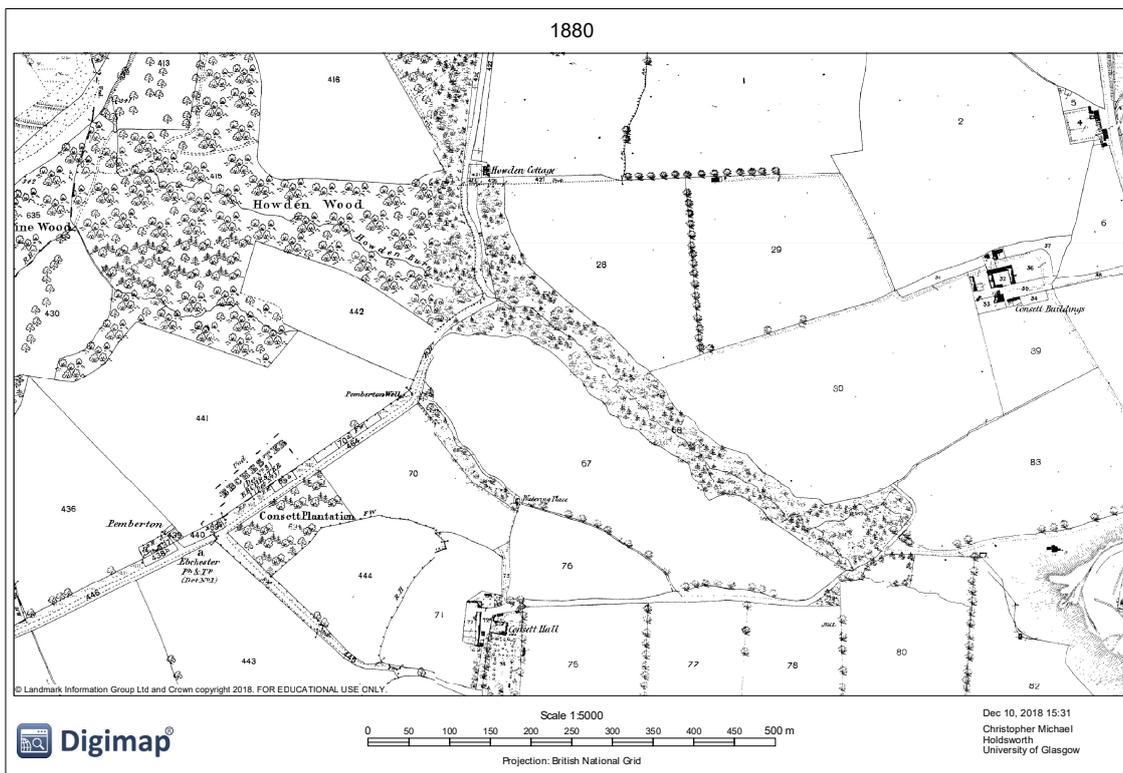


Figure S1. The original, pre-steelworks profile of the Howden Burn prior to slag infilling.

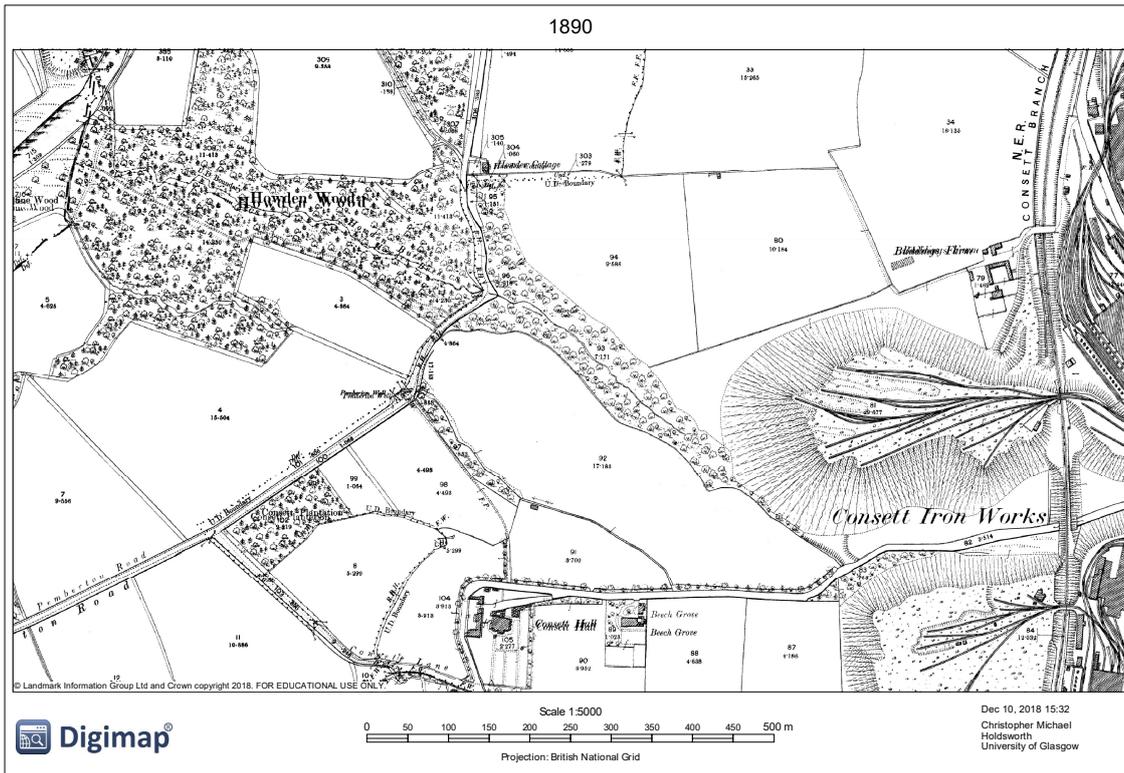


Figure S2. Initial infilling of the Howden Burn profile in its far SE area after the onset of production in 1880.

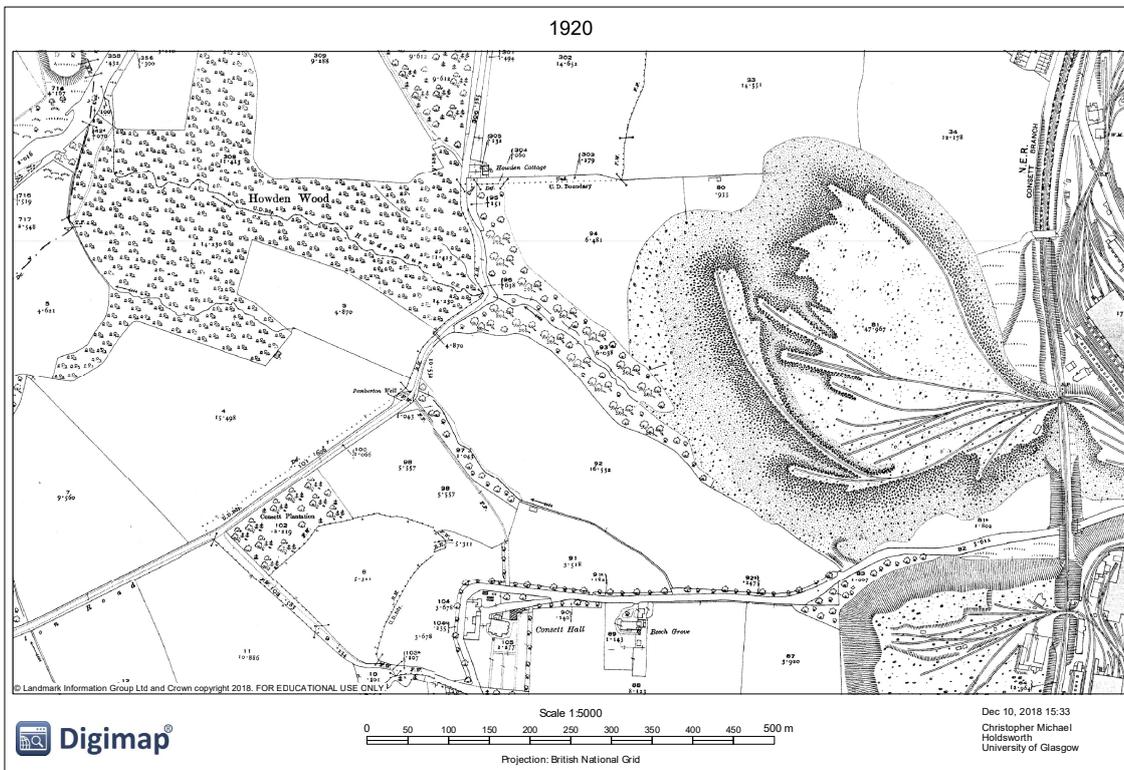


Figure S3. Further infilling of Howden Burn headwaters and NW migration of heaps following a further 30 years of production.

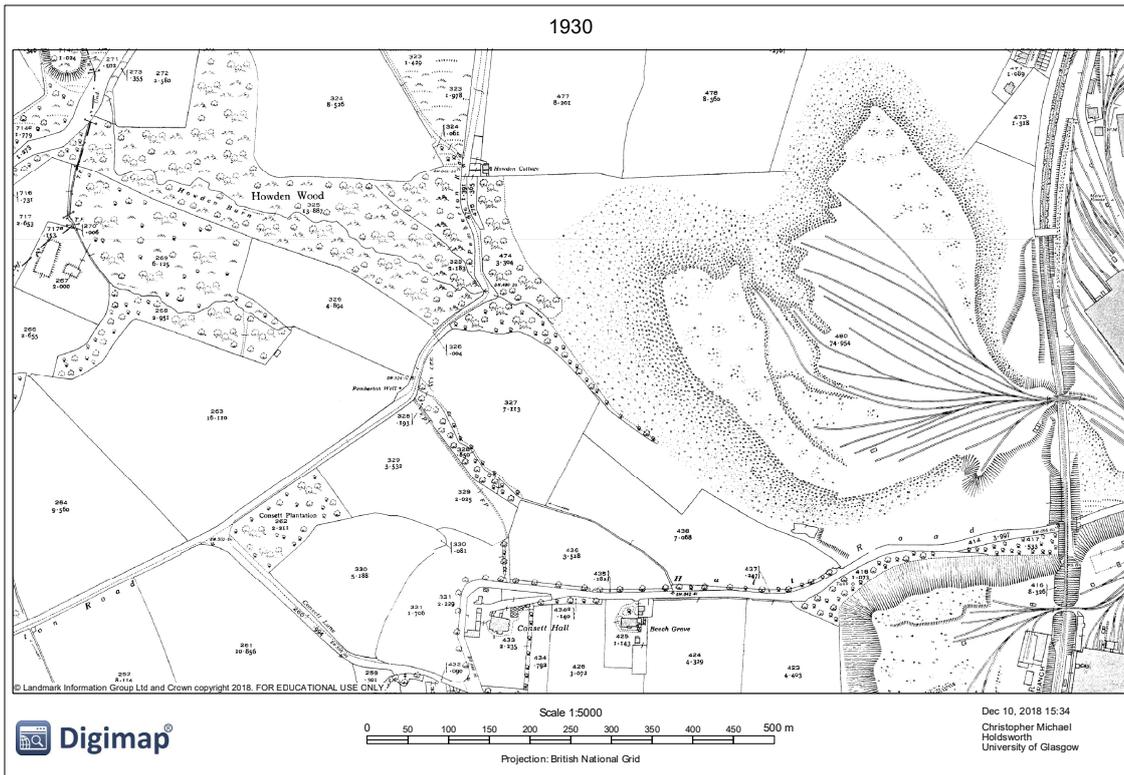


Figure S4. Slag deposition by 1930 is such that almost all of the Howden Burn profile east of what is today Pemberton Road is infilled.

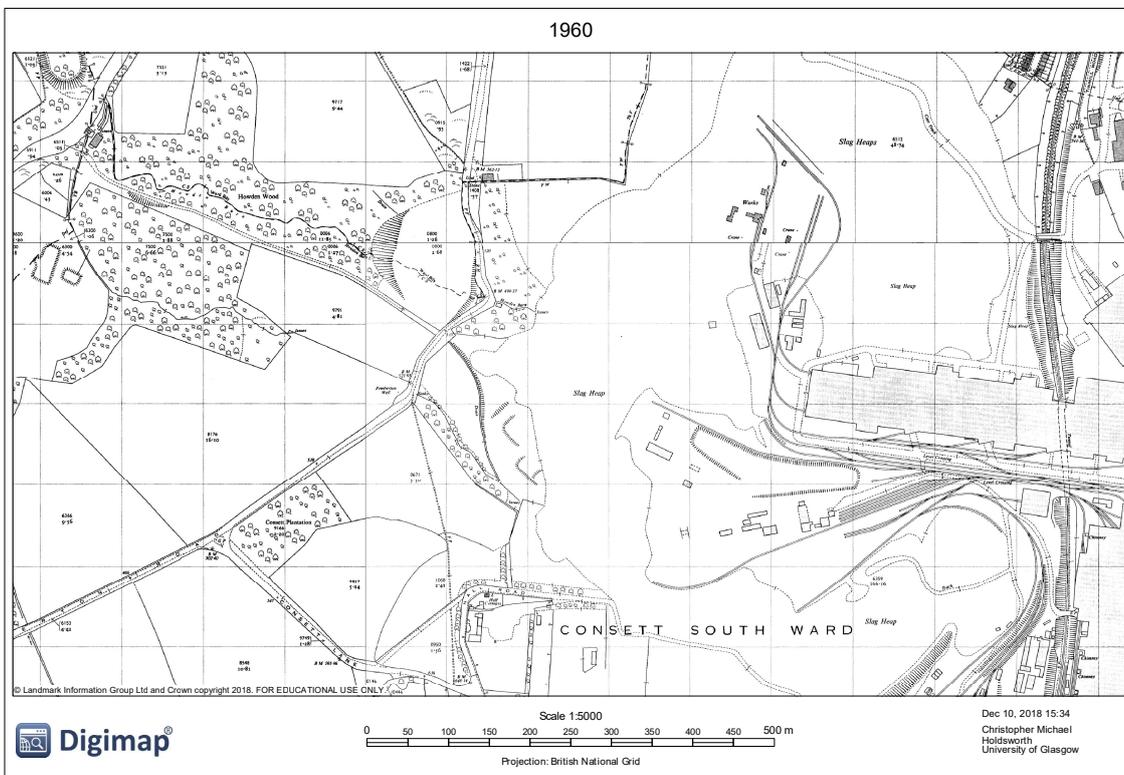


Figure S5. By 1960 some re-profiling of the Burn under Pemberton Road had been completed.



Figure S6. Aerial photography at the end of WW2 captures the extent of slag deposition in the Howden Burn profile.



Figure S7. Present day aerial view of Howden Burn and now-vegetated western extent of Consett heaps, with pre-steelworks profile, final slag heap extent and sample locations annotated. Burn profile is visible due to carbonate precipitation coating the stream bed white.



Figure S8. Cut face of upstream Howden Burn tufa hand specimen CHS5, with layers sampled for clumped isotope analysis annotated. Layer A corresponds to the outermost and youngest layer; layer E corresponds to the innermost and oldest layer.

**Downstream
(CHS16)**

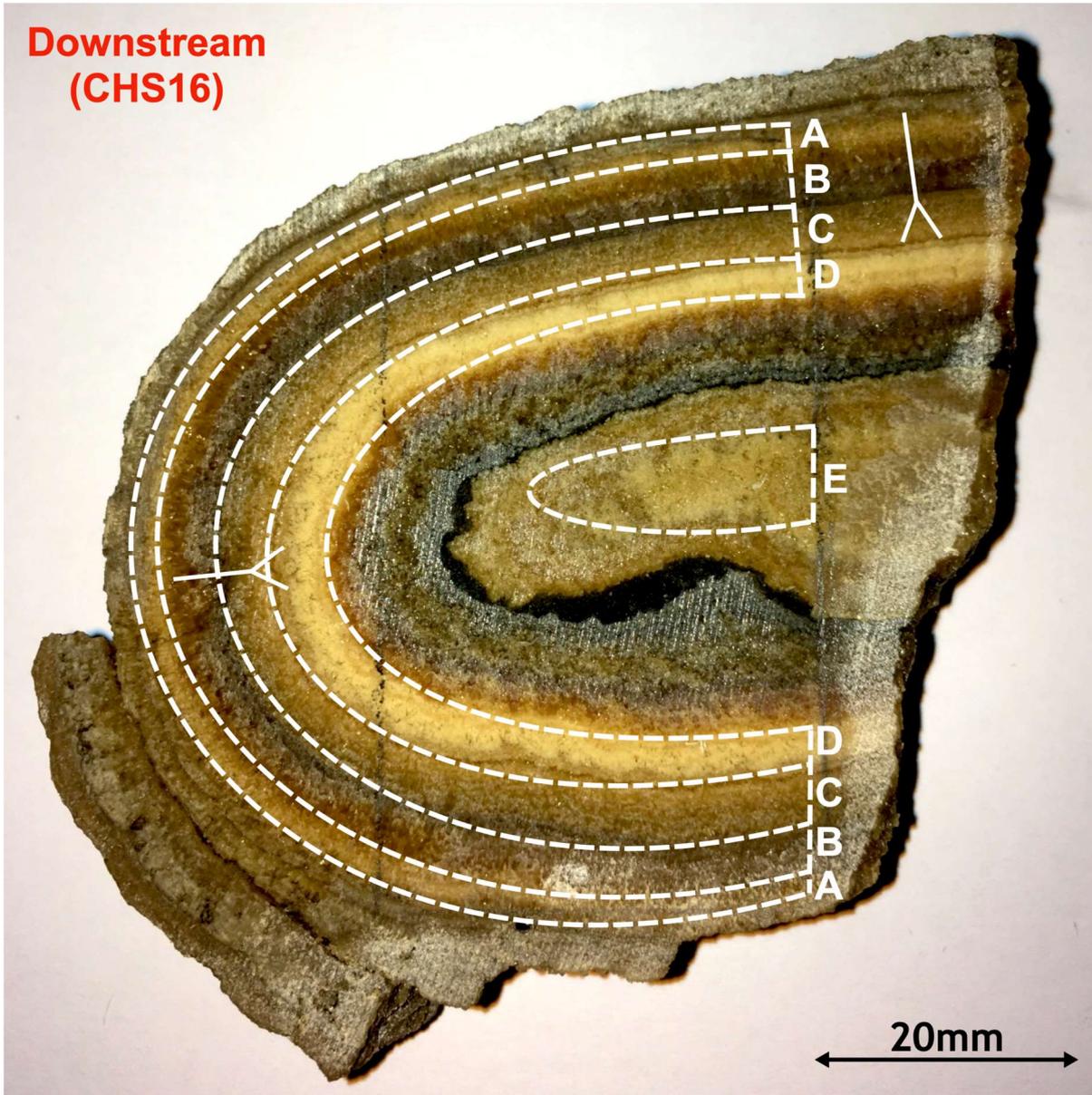


Figure S9. Cut face of downstream Howden Burn tufa hand specimen CHS16, with layers sampled for clumped isotope analysis annotated. Layer A corresponds to the outermost and youngest layer; layer E corresponds to the innermost and oldest layer.