

Project	Physical and geochemical properties of Scottish saltmarsh soils.
Funding	USA/015/20
Staff Responsible	William Austin
Research Team	<ol style="list-style-type: none"> 1. Lucy C. Miller (<i>University of St Andrews</i>) 2. Craig Smeaton (<i>University of St Andrews</i>) 3. Handong Yang (<i>University College London</i>) 4. William E.N. Austin (<i>University of St Andrews/Scottish Association of Marine Science</i>)

Metadata Type	Details
Data Resource ID	Radiometric measurements of soil cores from across Scottish saltmarshes.
Description of dataset	Radiometric measurements of seven saltmarsh cores across five marshes. Lead-210, ¹³⁷ Cs and ²⁴¹ Am radionuclides were used to develop a chronology for the last ~150 years facilitating the calculation of liner sedimentation rates (LSR) and mass accumulation rates (MAR).
Locations of the observations	<p>Scotland</p> <p>Geographic Extent: 54.251069, -6.262840 54.564402, 0.464285 58.742170, -0.204728 58.994955, -7.092833</p> <p>Site locations presented as decimal longitude and latitude (WGS84), and as X easting and Y northing in the data resource.</p>
Location Descriptions	All sites are located in similar environmental regions of Scotland to allow for comparable data. Furthermore, the sites were chosen from around Scotland's coastline to provide an accurate representation of saltmarshes, sediment types, and organic carbon content within Scotland.
Names of the variables or parameters observed or simulated	Total ²¹⁰ Pb activity (Bq kg ⁻¹) Supported ²¹⁰ Pb activity (Bq kg ⁻¹) Unsupported ²¹⁰ Pb activity (Bq kg ⁻¹) Cumulative unsupported ²¹⁰ Pb activity (Bq kg ⁻¹) Cesium-137 activity (Bq kg ⁻¹) Americium-241 activity (Bq kg ⁻¹)

	<p>Chorological age (Year AD)</p> <p>Sample age (years)</p> <p>Mass Accumulation rate ($\text{g cm}^{-2} \text{yr}^{-1}$)</p> <p>Linear sedimentation rate (cm yr^{-1})</p>
All procedures used to make observations or simulations (field/lab where applicable)	<p>Seven saltmarsh cores (wide diameter gouge) were analysed for ^{210}Pb, ^{226}Ra, ^{137}Cs by direct gamma assay at the Environmental Radiometric Facility at University College London. The analyses were carried out using ORTEC HPGe GWL series well-type coaxial low background intrinsic germanium detector. Lead-210 was determined via its gamma emissions at 46.5 keV, and ^{226}Ra by the 295 keV and 352 keV gamma rays emitted by its daughter isotope ^{214}Pb following 3 weeks storage in sealed containers to allow radioactive equilibration. Cesium-137 and ^{241}Am were measured by their emissions at 662 keV and 59.5 keV respectively (Appleby et al., 1986).</p>
Calibration procedures, where applicable	<p>The absolute efficiencies of the detectors were determined using calibrated sources and sediment samples of known activity. Corrections were made for the effect of self-absorption of low energy gamma rays within the sample (Appleby and Oldfield, 1992).</p>
Statistical treatment of the observations or simulations	NA
Data checking procedures (quality control)	NA
File formats used	.csv
Other information	NA indicates no data in cells.
References	<p>Appleby, P.G., Nolan, P.J., Gifford, D.W., Godfrey, M.J., Oldfield, F.J.A.N., Anderson, N.J. and Battarbee, R.W., 1986. ^{210}Pb dating by low background gamma counting. <i>Hydrobiologia</i>, 143(1), pp.21-27.</p> <p>Appleby, P.G. and Oldfield, F., 1992. Applications of lead-210 to sedimentation studies. In <i>Uranium-series disequilibrium: applications to earth, marine, and environmental sciences</i>. 2. ed.</p>

Data resource description for Radionuclide_activities_chronologies.csv		
Header	Description	Cell Format
Core_ID	Core identification	Text
Marsh_ID	Saltmarsh name	Text
Sampling_year	Year of sample collection	Number
Local_authority	Local authority responsible for the saltmarsh	Text
Marsh_type	Back-barrier	Text
	Fringing	
	Estuarine	
	Embayment	
Marsh_zone	Low-Mid	Text
	High	
	Soil C Stocks and burial rates	
	Soil C stocks	
Depth_cm	Sample depth (cm)	Number
Total_Pb-210_Bq_kg	Total ²¹⁰ Pb activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Supported_Pb-210_Bq_kg	Supported ²¹⁰ Pb activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Unsupported_Pb-210_Bq_kg	Unsupported ²¹⁰ Pb activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Cum_Unsupported_Pb-210_Bq_kg	Cumulative unsupported ²¹⁰ Pb activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Cs-137_Bq_kg	Cesium-137 activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Am-241_Bq_kg	Americium-241 activity (Bq kg ⁻¹)	Number
Std_dev_Bq_kg	Standard Deviation (Bq kg ⁻¹)	Number
Year_AD	Year AD	Number
Age_yr	Age (years)	Number
Std_dev_yrs	Standard Deviation (years)	Number
MAR_g_cm_2_yr	Mass Accumulation Rate (g cm ² yr ⁻¹)	Number
LSR_cm_yr	Linear Sedimentation Rate (cm yr ⁻¹)	Number
Std_dev_%	Standard Deviation (%)	Number