



Training School on
Digital Soil Geochemistry
Mineralogy, Isotope & Moisture Characterisation



The James
Hutton
Institute

Aberdeen, Scotland, UK
2-4 March 2020



The aim of this activity is to improve participant's ability to obtain, analyse and interpret soil moisture and geochemical data with relevance to archaeological investigations

Soils contain geochemical signatures linked to their origin, development and management. Distinct characteristics are measurable in soils and solutes (pore water) at a laboratory and field scale, thus the accurate determination of soil moisture is of vital importance in the understanding and interpretation of geochemical data derived from geochemically diverse soils. New and ever more accurate 'digital' techniques for studying soil geochemistry will be the focus of this training school.

Contents

- **Introduction to soil mineralogy**
Data analysis and interpretation session with a variety of soils from Scotland 'natural' and local archaeological sites TBC).
- **Applications of stable isotopes**
Seminar/discussion session on identifying soil provenance from isotopic analysis, with reference to local archaeology case studies.
- **Sampling and measurement of soil moisture**
Interactive classroom and field session using the latest TDR and other devices for soil moisture sampling and analysis (field location TBC).

Learning outcomes

- **Enhanced understanding of a variety of soil mineralogy data**
Participants will gain a broader understand of the importance of mineralogy analyses related to a range of important processes in soils.
- **Broader knowledge of application of stable isotopes**
Participants will be able to explore the linkages between soils and other environmental samples, through their stable isotope ratios.
- **Hands-on experience with state-of-the-art TDR soil moisture equipment**
Participants will have broadened their knowledge of how soil moisture is sampled and measured in the field with a variety of instruments.

Indicative schedule

	9.30-10.30	10.30-11.00	11.00-13.00	13.00-14.00	14.00-17.00	17.00-19.30	19.30-22.00
Mon 2 nd Mar	Welcome & intro to soil geochemistry (Ben Butler, Luke Beesley; JHI)	Coffee	Soil minerology practical session PT 1 (Ben Butler; JHI)	Lunch	Soil minerology practical session PT 2 (Ben Butler; JHI)	Free time	Social dinner & local music
Tue 3 rd Mar	Intro to soil moisture collection and analysis methods (Vincent Van Walt, Jess Irvine; Van Walt Ltd)	Coffee	Soil moisture collection and analysis by TDR; theory session (Vincent Van Walt, Jess Irvine; Van Walt Ltd)	Lunch	Hands on session with soil moisture measurement using TDR & other devices (All)	Free time	Visit to local pub
Weds 4 th Mar	Applications of stable isotopes analyses; case studies in archaeology (Kate Britton, University of Aberdeen)	Coffee	Applications of stable isotopes analyses; theory and practice (Barry Thornton; JHI)	Lunch & Close			



The James
Hutton
Institute

Location & venue

- **Aberdeen**; Scotland's 3rd largest city, 200k population
- **How to get here**; airport with connections to London, Paris, Amsterdam, Copenhagen, Oslo & 2.5hrs from Edinburgh/Glasgow by train or bus
- **Venue**; 'The James Hutton Institute' Home to the National Soil Archive of Scotland
- **Local attractions**; beaches, Cairngorm National Park, castles, distilleries



Questions? Contact the Local Organiser:

luke.beesley@hutton.ac.uk