

Geochemical and Pb isotopic signatures of an Alpine minerotrophic peat core: A geochemical study to reconstruct periods of salt mining activity in the high valley of Hallstatt (Austria) in prehistoric times

Wolfgang Knierzinger, *Michael Wagreich, **Daniela Festi, ***Kerstin Kowarik,
Hans Reschreiter, *Michael Strasser, ****Jhy-Steven Huang

* Department of Geodynamics and Sedimentology, University of Vienna

**Institute of Mountain Research, Austrian Academy of Science

***Natural History Museum, Vienna

****Institute of Geology, University of Innsbruck

Anthropogenic trace elements

- Can trace elements be a proxy for mining activity during Bronze to Iron Age?
- Problems of various influences besides anthropogenic activities like groundwater on **minerotrophic peat archives** (versus ombotrophic)

Atmospheric deposition of trace elements

- Is it possible to quantify the **average transport distances** of trace elements (e.g. Pb, Sb, Cu, Hg) emitted during smelting processes?

Local or Non-local Pb-isotopes?

- Indicate lower $^{206}\text{Pb} / ^{207}\text{Pb}$ ratios in peat (Siegmoos) corresponding to the Bronze Age regional or non-regional anthropogenic signals?
- How to determine whether lower $^{206}\text{Pb} / ^{207}\text{Pb}$ ratios in peat indicate regional (local) or non-regional anthropogenic signals?

Peat growth vs. palaeoclimate

- Is it reasonable to correlate peat growth rates with palaeoclimate ?
- Or do other factors (e.g. deer/cattle trampling, drainage, tree cover) preclude a meaningful correlation?

Trace elements normalized by the humification proxy?

- Due to the relatively high ash contents in the minerotrophic mire (Siegmoos), the effect of **humification** (determined by FTIR) on the enrichment of trace elements seems to be negligible.
- Is it possible to set a threshold in terms of ash content of peatlands below which the concentrations of trace elements should be normalized by the humification proxy?