

Table S1. Abbreviations and chemical formulae of minerals cited in the text.

Abbreviation	Mineral	Chemical formula
Alu	Alunogen	$\text{Al}_2(\text{SO}_4)_3(\text{H}_2\text{O})_{12} \cdot 5\text{H}_2\text{O}$
Amp	Amphiboles	–
Ang	Anglesite	PbSO_4
Ba	Barite	BaSO_4
Cc	Calcite	CaCO_3
Cp	Copiapite	$\text{Fe}^{2+}\text{Fe}^{3+}_4(\text{SO}_4)_6(\text{OH})_2 \cdot 20\text{H}_2\text{O}$
Cpy	Chalcopyrite	CuFeS_2
Cq	Coquimbite	$\text{Fe}_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$
Ep	Epsomite	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
Fd	Feldspars	–
Fh	Ferrihydrite	$\text{Fe}_{10}\text{O}_{14}(\text{OH})_2$
Fs	Phyllosilicates	–
Gn	Galena	PbS
Go	Goethite	FeOOH
Gy	Gypsum	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
Hlt	Halotrichite	$\text{FeAl}_2(\text{SO}_4)_4 \cdot 22\text{H}_2\text{O}$
Ha	Halite	NaCl
Hex	Hexahydrite	$\text{MgSO}_4 \cdot 6\text{H}_2\text{O}$
Hm	Hematite	Fe_2O_3
Js	Jarosite	$\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6$
K	Kaolinite	$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$
Me	Melanterite	$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$
Mz	Monazite	$(\text{Ce}, \text{La}, \text{Nd}, \text{Sm})\text{PO}_4$
Njs	Natrojarosite	$\text{NaFe}_3(\text{SO}_4)_2(\text{OH})_6$
Py	Pyrite	FeS_2
Qz	Quartz	SiO_2
Sph	Sphalerite	ZnS
Sw	Schwertmannite	$\text{Fe}_8\text{O}_8(\text{OH})_6(\text{SO}_4) \cdot n\text{H}_2\text{O}$
Sz	Szomolnokite	$\text{FeSO}_4 \cdot \text{H}_2\text{O}$
Zr	Zircon	ZrSiO_4

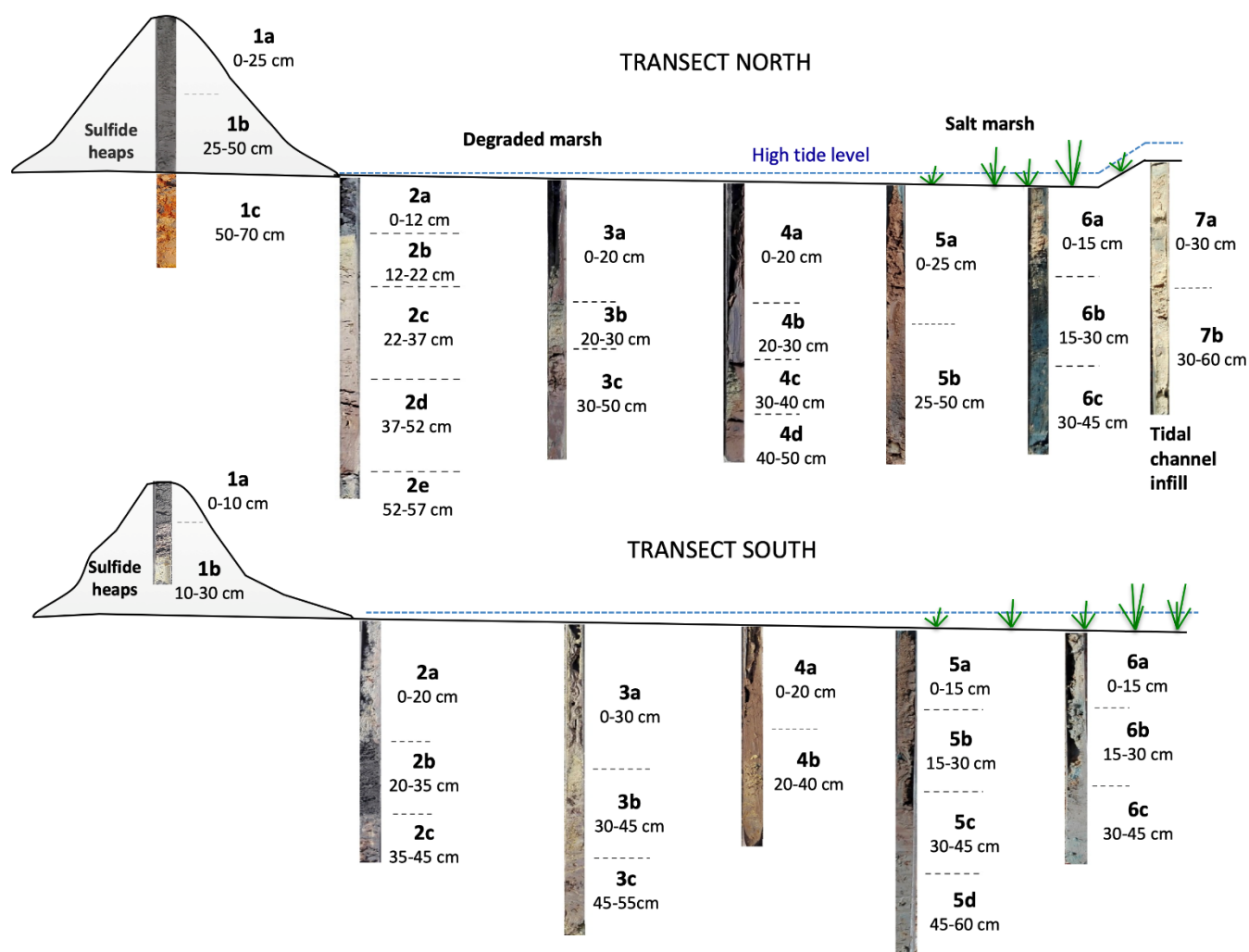


Figure S1. Schematic depiction of the soil sections from the extracted core samples.