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Supplementary data for manuscript:

Title: Climate-driven mobilisation of acid and metals from acid sulfate soils
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Table 1. Locations of the acid sulfate soils used in the study

Site	Easting	Northing	Site	Easting	Northing
River Murray (16 sites, 39 samples)			**Lake Alexandrina (19 sites, 31 samples)**		
WL 2	346070	6109189	AT 3	339455	6089879
WL 5	346104	6109177	AA 8	339455	6089879
WL 6	346932	6136814	AA 9	339425	6089921
WL 7	347012	6136790	AA 10	339385	6089959
WL 8	368747	6150680	AA 11	332005	6083476
WL 9	368740	6150647	AA 12	331870	6083750
WL 11	372164	6186558	AA 13	331882	6083695
WL 12	372126	6186559	AA 14	316052	6079413
WL 14	373628	6195697	AA 15	316461	6079066
WL 15	373632	6195697	AA 18	322859	6069941
WL 17	370591	6182897	AA 19	322823	6069916
WW 3A 1	349450	6078069	AA 20	322835	6069901
WW 8A 2	349629	6077853	AA 22	322810	6069846
WW 20A 1	346419	6079832	AA 29	321236	6070291
WW 20C 1	347191	6080759	AA 30	321288	6070415
WWBH 20 11	347230	6080756	AA 31	325403	6081831
			AA 33	319041	6060550
			AA 34	315500	6062595
Lake Albert (16 sites, 44 samples)			**Wetlands (13 sites, 36 samples)**		
AT 1	349981	6061209	UKE 1	344545	6111773
AT 2	349983	6061209	UKE 1	344545	6111773
AT 4	349069	6049329	UKE 2	344544	6111775
AT 4	349069	6049329	UKE 3	344455	6111878
AT 6	343823	6044780	UKE 5	344415	6111993
AT 7	341103	6056622	JUR 2	346469	6119696
AT 9	341289	6056481	JUR 6	346480	6119931
AT 10	335000	6067500	MUR 1	352468	6091006
AT 11	352256	6059052	MUR 2	352564	6090525
AT 12	352352	6059098	MUR 3	352581	6090527
AT 14	349689	6049871	PA 4	351475	6121259
AT 16	349068	6049358	RIV 3	345243	6115055
AT 17	349053	6049396	RIV 4	345258	6115038
AT 18	341376	6054362	SPM 1	346521	6109005
AT 19	341105	6056636			
AT 20	335099	6067460			
AT 21	335274	6067653			
AT 3	339455	6089879			

Table 2. Description of the acid sulfate soils

Sulfidic, sulfidic material; sulfuric, sulfuric material; MBO, monosulfidic black ooze material; clayey, clayey material (>35% clay; light, medium and heavy clay texture); Sandy, sandy materials (sand, loamy, sand, clayey sand texture groups); organic, organic material (>10 % organic carbon); organic-rich (5–9% organic carbon)

Site code	Depth (cm)	Material	Description
WL 2.1	0–5	Sulfidic clayey	Grey sandy clay; top 1 cm algal mat; small fragments of calcrete
WL 2.2	5–20	Sulfidic clayey	Very dark grey heavy clay, black mottles; highly organic; orange mottles along old root channels; polyhedral structure (1–2 cm); probable old cracks filled with pale grey sand
WL 2.3	20–40	Clayey	Dark bluish grey heavy clay
WL 5.3	0–1	Sulfuric clayey organic-rich	Crust containing efflorescence and organic material
WL 5.4	1–5	Sulfuric clayey organic-rich	Brown organic loam, sapric, charcoal(?), common fine roots
WL 5.5	5–20	Sulfuric clayey organic-rich	Very dark brownish grey silty loam; pockets of sapric organic matter; mottled in top 5 cm
WL 6.3	0–1	Clayey	Brownish grey clay loam with crust
WL 6.4	1–8	Sulfidic clayey	Brownish grey clay loam; very sticky; lower 1 cm bleached; sharp
WL 6.5	8–20	Clayey	Dark grey brown medium clay; sapric decomposing roots; some orange brown staining around old roots; clear
WL 7.2	0–3	Sulfidic clayey	Dark brown medium heavy clay; sticky; porous and spongy; fine organic material; fine iron oxide mottles
WL 7.3	3–12	Clayey	Dark brown medium heavy clay; common, large orange brown coatings; clear boundary
WL 7.4	12.25	Clayey	Dark greyish brown heavy clay; sticky common orange brown mottles; appears porous along old root channels and oxygen probably enters along frequent, significant cracks
WL 8.2	0–1	Sulfidic clayey	Dark grey heavy clay; hard
WL 8.3	1–3	Sulfidic clayey	Very dark brownish grey heavy clay; sticky; organic material around pores
WL 8.4	3–6	Sulfidic clayey	As above, but distinctly massive and 'sedimentary' not porous; diffuse pale orange mottles
WL 8.5	6–25	Sulfidic clayey	Grey heavy clay; organic; porous; granular structure (possibly)
WL 9.2	0–5	Sulfidic clayey	Dark grey heavy clay with sandy or silty, pale, horizontal layers a few mm thick
WL 9.3	5–30	Sulfidic clayey	Dark brownish grey heavy clay with some orange mottles on vertical crack planes as seen at other sites; also similar to material at site WL8
WL 11.1	0–5	Sulfidic clayey	Yellowish grey, gel-like
WL 11.2	5–10	Sulfidic clayey	Bluish grey heavy clay with common strong brown mottles along root channels; polyhedral structure
WL 11.3	10–20	Sulfidic sandy	Bluish grey fine sandy light clay, micaceous; distinct, strong orange mottles along root channels
WL 12.2	1–5	Sulfidic sandy	Dark grey fine sand; sulfidic
WL 12.3	5–15	Sulfidic clayey	As above, with clayey, black sulfidic mottles
WL 14.2	0–2	Sulfidic sandy	Grey loamy sand with distinct black and diffuse orange brown mottles
WL 14.4	2–7	Sulfidic sandy	Yellowish grey fine sand with occasional black and orange brown mottles along root channels
WL 15.1	0–5	Sulfidic sandy	Yellowish grey fine sand with some diffuse mottles; many roots
WL 15.2	5–10	Sulfidic sandy	Dark grey sand; soft iron rich nodules at ~10 cm; no roots
WL 17.1	0–15	Sulfidic sandy	Yellowish grey medium sand with 20% orange mottles around weed root, dark grey at base; contains charcoal

Table 2. Description of acid sulfate soils (continued)

Site code	Depth (cm)	Material	Description
WW3A 1.1	0–8	Sandy	Yellowish grey medium sand; stratified with yellow sand and sulfidic-like material
WW3A 1.2	8–20	Sandy	Greyish black; stratified with sulfidic-like material
WW3A 2.1	15–20	Sandy	Black medium sand; sulfidic-like; some shell
WW3A 4.1	0–5	Sandy	Yellow very coarse sand, pinkish in part; few shells
WW3A 4.2	15–25	Sandy	Black coarse sand; sulfidic-like; very shelly
WW3A 4.5	25–50	Clayey	Very dark grey with bluish green mottles; strongly gleyed; some decomposing carbonate; pH >8, but 5.8 in places
WW8A 2.1	0–5	Sulfidic organic	Brownish litter, peat; highly decomposed organic matter; part fibric; pH 5.3–5.5
WW8A 2.2	5–15	Sulfidic organic	As above, but more sapric; shiny crystals (gypsum?); pH 4.7
WW8A 2.3	15–30	Sulfidic organic	Light brown sapric peat; some decomposed plant remains; pH 4.4–4.7
WW20A 1.1	0–5	Organic	Peat; pH 5.5
WW20A 1.2	5–18	Sulfidic organic	Peat; pH 5.0
WW20C 1.1	30–40	Sulfidic clayey organic-rich	Black peat; sulfidic
WWBH20 11.1	0–5	Clayey	Brown clayey silty fine to medium sand; some roots and organic matter
WWBH20 11.2	5–15	Sulfidic clayey	As above
AT 1.1	0–5	Sandy	Yellowish grey medium sand
AT 1.3	15–30	Sandy	Grey medium sand
AT 2.1	0–3	Sandy	Grey to brownish grey medium sand
AT 2.2	3–5	Sandy carbonate-rich	Yellowish grey medium sand; carbonate fragments or small shell to 2 mm
AT 2.3	5–20	Sulfidic organic	Rubbery, compressed organic remains; layered with blocky fracture; material known as ‘Coorongite’
AT 2.6	30–35	Sulfidic sandy	Brownish grey sand to clayey sand; residual concentrations of organic matter
AT 4.1	0–5	Sandy	Yellowish grey medium sand
AT 6.1	0–2	Sandy	Reddish brown to orange medium sand
AT 7.1	0–5	Sandy	Yellowish grey medium sand
AT 7.2	5–20	Sulfuric clayey organic-rich	Grey heavy clay; common decomposing roots
AT 7.3	20–40	Sulfidic clayey	Grey heavy clay; decomposing reeds
AT 9.1	0–5	Sulfuric clayey organic-rich	Dense root mat with brownish grey clay
AT 9.2	5–20	Sulfuric clayey organic-rich	Grey heavy clay; common fine roots
AT 10.1	0–5	Sulfidic clayey	Grey heavy clay
AT 10.2	5–15	Sulfidic clayey	Grey heavy clay; few fine roots
AT 11.1	0–5	Sandy	Yellowish grey medium sand (loose)
AT 11.2	5–50	Sulfidic sandy	Brownish grey medium sand with patches of grey silt or clay
AT 12.1	0–5	Sulfidic sandy	Yellowish grey medium sand (loose); pH 4–4.5.
AT 12.2	5–25	Sulfuric sandy	Pale grey medium sand; pH 3.9–4
AT 12.3	25–40	Sulfuric sandy	Grey medium sand to loamy sand; sulfidic
AT 14.1	0–3	Sandy	Yellow oxidised sand, even under shallow water
AT 14.2	3–15	Sandy	Greyish-brown sulfidic-like sand
AT 14.3	5–25	Sulfidic clayey	Very dark greyish-black sticky clay. Black sulfidic mottles. Medium clay. N > 2
AT 14.4	25–30	Sulfidic clayey	Greyish-olive clay (sticky) with many small shells. Medium-heavy clay. N > 2
AT 14.5	30–60	Sulfidic clayey	Black sulfidic with patches of OM. N > 3

Table 2. Description of acid sulfate soils (continued)

Site code	Depth (cm)	Material	Description
AT 16.1	0–5	Sandy	Yellowish-grey oxidised sand
AT 16.2	5–20	Sulfidic sandy	Light greyish-white sand
AT 16.3	20–45	Sulfidic sandy	Blackish-grey sand
AT 16.4	45–75	Sulfidic sandy	Black sulfidic sandy clay with abundant very fine shells. Could be neutralising, but do not believe so
AT 17.1	0–1	Sandy	Yellowish grey medium sand, loose
AT 17.2	1–10	Sandy	Brownish grey medium sand
AT 17.3	10–20	Sulfidic sandy	Dark grey sandy clay
AT 17.4	20–30	Sulfidic clayey	Bluish grey heavy clay (soft)
AT 18.1	0–8	Sandy	Greenish-yellow sand, pH 5.5
AT 18.2	18–28	Sulfidic sandy	Dark greenish sand with black mottles in layers 2 cm thick
AT 18.3	28–40	Sandy	Dark greyish sand with thick 2–3 cm of sandy clay sulfidic-like material. Few shells
AT 19.1	0–8	Sandy	Sand, greenish-yellow. pH 4.7
AT 19.2	8–18	Sulfuric clayey organic-rich	Sand (30%) in organic clay matrix. Jarosite in bright yellow mottles/streaks. Sulfuric pH 2.5
AT 19.3	18–28	Sulfuric clayey	Sandy clay with many fossil roots and yellow mottles, particularly along root pores (large) and orange mottles. Sulfuric, pH 3.3
AT 20.1	0–2	Sulfidic clayey	Light grey hard flakes, cemented; hard with orange Fe-oxide; heavy clay
AT 20.2	2–10	Sulfuric clayey	Very hard, massive clay; dark grey; white salt efflorescence on edges of cracks. Cracks 3 cm wide
AT 20.3	10–20	Sulfidic clayey	Black heavy clay. Abrupt, but wavy transition
AT 21.1	0–1	Sulfidic clayey	Black flakes; heavy clay
AT 21.2	1–10	Sulfidic clayey	Black heavy hard clay. Moist and friable and 20 cm
AA 3 (AT3)	5–5.5	Sandy	Sandy with shells and sulfidic-like
AA 8.1	0–5	Sandy	Yellowish orange sand, small pale grey mottles areas
AA 8.2	5–20	Sulfidic sandy	Grey fine sand; silty fine sand from 15 cm with black mottles; shiny mica flakes (~1mm); few small shells
AA 9.1	0–5	Sulfidic sandy	Yellowish orange medium sand; sharp, irregular boundary
AA 10.1	0–10	Sulfidic sandy	Yellowish orange to grey fine sand becoming black with depth; few shells (3-5 mm)
AA10.2	10–30	Clayey	Grey silty fine sand with black and greenish mottles
AA 11.1	0–3	Sandy	Yellowish grey medium sand; mica flakes throughout
AA 11.2	3–10	Sulfidic sandy	Dark grey medium sand; sulfidic; black mottles
AA 12.1	0–5	Sandy	Yellowish grey medium to coarse sand; contains angular quartz to 2.5 cm
AA 12.2	5–20	Sandy	Dark grey medium sand; smelly (sulfidic-like); sharp wavy boundary
AA 13.2	3–15	Sulfidic sandy	Grey sandy clay, black mottles
AA 14.2	2–7	Sulfidic sandy	Pale grey medium sand; sharp wavy boundary
AA 15.1	0–5	Sandy	Yellowish medium sand; abrupt boundary
AA 18.2	2–12	Sandy	Very dark grey sand with black mottles
AA 19.1	0–5	Sandy	Grey sand with pelican excreta; some shell; smelly (not sulfidic)
AA 20.1	0–5	Sandy	Yellowish grey sand; small pieces of calcrete
AA 20.2	5–20	Sulfidic sandy	Grey sand and clayey sand; abundant decomposing roots (~30%); strong sulfidic and other odours
AA 22.1	0–5	Clayey	Dark brownish grey heavy clay much organic matter and roots; moist; earth worms present
AA 29.5	0–3	Sulfuric sandy	Pale yellowish grey fine sand; slightly moist
AA 29.6	3–10	Sulfuric sandy	Pale yellowish brown to white medium to fine sand; few root remnants

Table 2. Description of acid sulfate soils (continued)

Site code	Depth (cm)	Material	Description
AA 30.1	0–0.05	Sandy	Yellowish grey medium to fine sand
AA 30.2	0.05–20	Sandy	As above; saturated, black and sulfidic-like
AA 31.2	0–10	Sulfidic sandy	Black sand with clay; old reed bed; sharp wavy boundary
AA 31.3	10–18	Sulfidic clayey	Olive grey and yellowish grey heavy clay; block to columnar structure; common remnant roots
AA 33.1	0–1	Sulfidic sandy	Black monosulfidic black ooze, drying with a pale grey surface crust
AA 33.2	0–10	Sulfuric organic	Peaty with some grey clay; Phragmites root mat (pH 2.2)
AA 33.3	10–25	Sulfuric clayey organic-rich	Peaty with grey clay (pH 2.5)
AA 33.4	25–40	Sulfuric clayey	Yellowish grey sand; saturated; strong sulfidic smell; fresh reed roots
AA 33.5	40–60	Sandy	Dark grey sand
AA 34	0 –10	MBO	Monosulfidic black ooze
UKE 1.1	0–10	Sulfidic clayey	Light grey clay (heavy clay), sticky, sulfidic with 20% Phragmites roots (fossil); few sandy lenses
UKE 1.2	10–30	Sulfidic clayey	Dark grey clay (heavy) with N > 2. Sulfidic with 20% of relict Phragmites
UKE 2.1	0–5	Sulfidic clayey	Organic-rich, with live roots plus 30% sapric (brown-olive colour). Rest is dark brown. Matrix mostly sandy
UKE 2.2	5–20	Sulfidic clayey	Very dark grey heavy clay with few black sulfidic mottles. N > 2. 10–15% relict Phragmites roots. Sticky
UKE 3.1	0–0.5	Sulfuric clayey	Salt efflorescence. pH 3.2. Bright yellow salts on upper edge of ped face. Bright yellow salts in middle of upper pad face. White salts at base of cracks between peds
UKE 3.2	0.5–1	Sulfuric clayey	Black moist plus hard areas; heavy clay. Massive. Very few orange mottles
UKE 3.3	1–8	Sulfuric clayey	Light grey; very hard and dry, heavy clay; massive, very few orange mottles
UKE 3.4	8–12	Sulfuric clayey	Light grey heavy clay (cracked to 1–2 cm), with many mottles of orange colour in crack and root pores
UKE 3.5	12–20	Sulfuric clayey	Sand. Abrupt transition. Moist
UKE 5.1	0–0.5	Sulfuric clayey	Whitish–bright yellow salt efflorescent flakes and salts. Jarosite pH 3.9–4.2
UKE 5.2	0.5–10	Sulfuric clayey	Organic-rich. Light grey peaty/clay with abundant root/plant material (fossil and remnant), much fibric material
UKE 5.3	10–30	Sulfidic clayey	Black heavy clay. Abrupt transition. At interface abundant orange mottling in pores and fractures (Schwertmannite mottles) particularly in pores to a depth of 50 cm
JUR 2.3	0–2	Sulfuric clayey organic-rich	Very hard with yellowish salt efflorescence
JUR 2.4&5	2–10	Sulfuric clayey organic	As above, but no salt efflorescence and more organic matter
JUR 2.6&7	10–40	Sulfuric clayey	Brownish-black heavy clay; reddish to orange mottles on surface coatings. Dry to moist. Hard
JUR 6.5	40–60	Sulfidic organic	Black, peaty/organic with clay. N > 2

Table 2. Description of acid sulfate soils (continued)

Site code	Depth (cm)	Material	Description
MUR 1.2	30–40	Sulfuric clayey organic	Very dark brown heavy clay strongly intermixed with 50% organic matter; common fine roots
MUR 1.3	40–70	Sulfidic clayey organic-rich	Black to very dark brown heavy clay with few slickensides; thin coatings of reddish-brown iron oxide coatings on fractures and organic matter
MUR 2.2	5–10	Sulfidic clayey	Black heavy clay; damp; very hard, with sand
MUR 2.3	10–45	Sulfidic clayey	Black heavy clay, very hard; moist, N > 0.8
MUR 2.4	45–70	Sulfidic organic	Very dark brown to black with 30% sapric organic material; sulfidic with Typha and Phragmites roots
MUR 3.1	0–15	Sulfidic clayey	Black heavy clay; subaqueous (Murray River); 10% plant remains, buried reed bed; N > 2
MUR 3.2	15–30	Sulfidic clayey	Dark olive grey clay; very organic, plant remains (30%)
PA 4.1	0–1	Organic	Black dry crust of old algal matting. Almost ‘coal-like’ with shiny morphology
PA 4.2	1–3	Clayey	Greyish-white silty clay, very hard. White shiny surfaces
PA 4.3	3–8	Sulfidic clayey	Dark grey clay. Very hard
PA 4.4	8–15	Sulfidic clayey	Dark greyish brown heavy clay with 20% yellowish orange mottles associated with roots; polyhedral (2–5mm) structure; very hard dry
PA 4.5	15–50	Sulfidic clayey	Dark greyish brown heavy clay, similar to PA4.4, but with 10% orange mottle
RIV 3.2	0–1	Sulfidic clayey	Hard greyish-white heavy clay with micro cracks
RIV 3.4	1–10	Sulfidic clayey	To depth of cracking; very hard very heavy clay. Dark greyish with faint orange mottles
RIV 3.5	10–20	Clayey	Very dark brown heavy clay. Moist, pliable, sticky
RIV 4.2	0.02–2	Clayey	Blackish-brown, very fluffy flocculated MBO type material. Light clay with few reddish-brown mottle
RIV 4.3	2–10	Sulfidic clayey	Medium to heavy clay. Brownish-black
RIV 4.4	10–30	Clayey	Greenish-blue heavy clay with deep crotovina filled with brownish clayey sulfidic material. Few slickensides. Old remnant flattened Phragmites roots. Water sampled for buffering capacity
SPM 1.1	0–0.5	Sulfuric clayey organic-rich	Yellow-white salt efflorescence. Very thin crust, which flakes. Mostly in centre of pad
SPM1.3	5–10	Sulfuric clayey organic-rich	Sandy/silty loam. Hard to friable brownish with grey mottles and reddish-brown streaks. Massive. Very porous when dry. Many fine roots and decomposed organic matter

Table 3. Soil properties

Paste pH: Wet, as collected; Dry, after drying for 5 days at 40ºC. pH_W of ~2:1 water:soil slurry of field moist soil. pH_{Perox} of field soil after peroxide treatment. ANC, acid neutralising capacity (as $\%CaCO_3$); CRS, chromium-reducible S (%S); MBO, monosulfidic black ooze material; TAA, total actual acidity; TOC, total organic carbon (% dry weight)

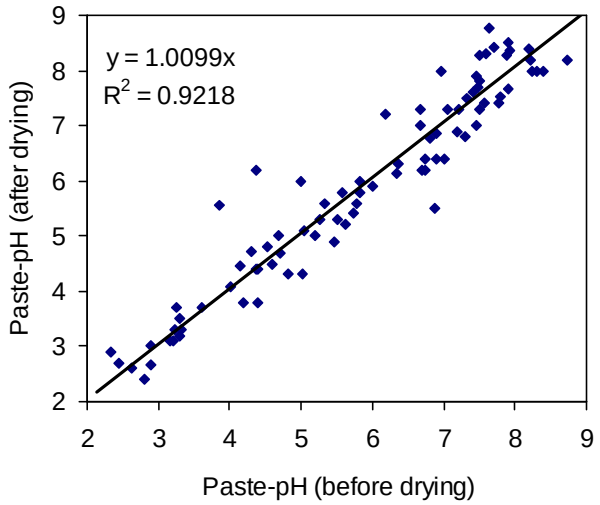
Sample	Depth (cm)	Moisture (%)	Paste pH Wet	Dry	pH_w	pH_{Perox}	TAA pH_{KCl}	CRS (%S)	ANC (%)	TOC (%)
WL 2.1	0–5	51	4.4	6.2	7.2	2.1	5.65	0.046	No data	5.41
WL 2.2	5–20	25	7.0	No data	6.8	3.2	6.50	0.043	0.01	1.11
WL 2.3	20–40	25	5.5	No data	7.5	6.5	7.41	0.047	0.40	1.40
WL 5.3	0–1	28	2.3	No data	2.5	1.0	3.24	0.069	0.00	6.15
WL 5.4	1–5	48	2.8	2.4	2.7	1.5	3.24	0.054	0.00	5.93
WL 5.5	5–20	56	2.6	2.6	2.8	1.2	3.33	0.180	0.00	6.43
WL 6.3	0–1	32	8.7	8.2	7.7	6.6	8.16	0.081	3.46	1.91
WL 6.4	1–8	34	7.3	6.8	7.2	4.5	8.10	0.191	1.63	1.60
WL 6.5	8–20	40	7.4	7.6	7.3	5.3	7.99	0.280	6.28	2.34
WL 7.2	0–3	57	5.6	5.2	6.9	3.0	5.40	0.023	0.00	0.50
WL 7.3	3–12	59	7.6	7.4	7.3	6.4	7.81	0.025	3.35	3.10
WL 7.4	12–25	42	7.3	7.5	7.1	6.4	7.87	0.059	3.87	2.22
WL 8.2	0–1	38	6.7	7.0	6.7	3.1	6.95	0.069	0.37	2.41
WL 8.3	1–3	47	4.8	4.3	5.6	2.0	5.55	0.118	0.00	2.58
WL 8.4	3–6	53	4.6	4.5	6.2	2.1	5.71	0.170	0.00	3.22
WL 8.5	6–25	46	4.7	5.0	5.7	2.4	4.93	0.077	0.00	3.51
WL 9.2	0–5	34	4.7	4.7	4.8	2.8	5.30	0.005	0.00	1.97
WL 9.3	5–30	37	5.6	5.8	5.2	3.1	5.25	0.008	0.00	1.59
WL 11.1	0–5	26	6.8		6.9	3.7	6.07	<0.005	0.00	No data
WL 11.2	5–10	No data	No data	No data	5.7	3.6	4.90	0.012	0.00	0.30
WL 11.3	10–20	25	5.0	No data	6.0	3.8	5.17	0.010	0.00	0.27
WL 12.2	1–5	21	5.3	No data	6.7	2.2	5.65	0.022	0.00	0.35
WL 12.3	5–15	29	5.3	5.6	6.7	1.8	5.80	0.046	0.00	0.70
WL 14.2	0–2	18	6.2	No data	5.7	4.4	5.71	<0.005	0.00	0.24
WL 14.4	2–7	18	4.9	No data	5.4	3.7	5.50	<0.005	0.00	0.23
WL 15.1	0–5	21	3.2	No data	6.3	2.1	6.40	0.237	0.00	0.07
WL 15.2	5–10	21	3.9	No data	6.7	1.8	5.78	0.182	0.00	0.10
WL 17.1	0–15	23	5.7	No data	6.1	2.4	6.32	0.010	0.00	0.45
WW3A 1.1	0–8	17	8.0	No data	7.4	5.7	No data	No data	No data	0.09
WW3A 1.2	8–20	17	7.9	8.4	7.7	5.3	No data	No data	No data	0.07
WW3A2.1	15–20	15	7.7	No data	7.8	6.6	No data	No data	No data	0.08
WW3A 4.1	0–5	15	7.9	No data	8.3	7.7	9.72	0.003	1.23	0.03
WW3A 4.2	15–25	15	7.6	No data	7.9	7.2	9.81	0.008	10.4	0.10
WW 3A 4.5	25–50	22	4.9	No data	No data	No data	8.77	0.016	0.13	0.18
WW 8A 2.1	0–5	72	5.8	5.8	6.7	3.0	7.14	0.057	1.85	No data
WW 8A 2.2	5–15	73	5.2	5.0	5.7	2.3	6.38	0.049	0.00	No data
WW 8A 2.3	15–30	78	4.2	3.8	4.4	2.2	4.70	0.072	0.00	No data
WW20A 1.1	0–5	57	6.9		7.3	3.5	6.70	0.031	1.49	13.2
WW20A 1.2	5–18	42	5.8	6.0	6.5	3.4	6.47	0.013	0.00	9.05
WW20C	30–40	51	4.4	4.4	5.9	1.7	No data	No data	No data	No data
WWBH20B 1.1	0–5	19	8.0	No data	7.6	5.4	No data	No data	No data	0.16
WWBH20B 1.2	5–15	17	5.0	No data	7.1	3.6	No data	No data	No data	No data
AT 1.1	0–5	18	7.6	No data	8.2	7.4	No data	No data	No data	No data
AT 1.3	15–30	17	7.6	No data	8.1	6.9	No data	No data	No data	0.1
AT 2.1	0–3	20	8.1	No data	7.6	7.3	9.19	0.015	2.09	0.15
AT 2.2	3–5	21	6.8	No data	8.1	6.9	9.18	0.055	2.21	5.49
AT 2.3	5–20	74	4.4	3.8	7.3	1.9	7.25	0.769	0.95	0.23
AT 2.6	30–35	18	3.5	No data	No data	No data	6.46	0.155	0.00	0.18
AT 3	5–5.5	9	7.5	No data	No data	No data	6.46	0.155	0.00	9.72
AT 4.1	0–5	19	7.9	No data	7.9	6.8	9.22	0.009	0.38	0.24
AT 6.1	0–2	17	8.0	No data	7.4	7.3	9.21	0.024	0.63	No data
AT 7.1	0–5	18	8.0	No data	8.0	6.7	9.18	0.003	0.20	No data
AT 7.2	5–20	68	3.6	3.7	3.0	1.5	7.23	1.079	1.50	0.13
AT 7.3	20–40	73	5.0	4.3	8.2	1.3	6.96	2.367	1.22	No data
AT 9.1	0–5	60	3.3	3.7	3.2	1.7	No data	No data	No data	8.01
AT 9.2	5–10	72	2.9	3.0	3.0	1.8	3.12	0.044	0.00	6.12

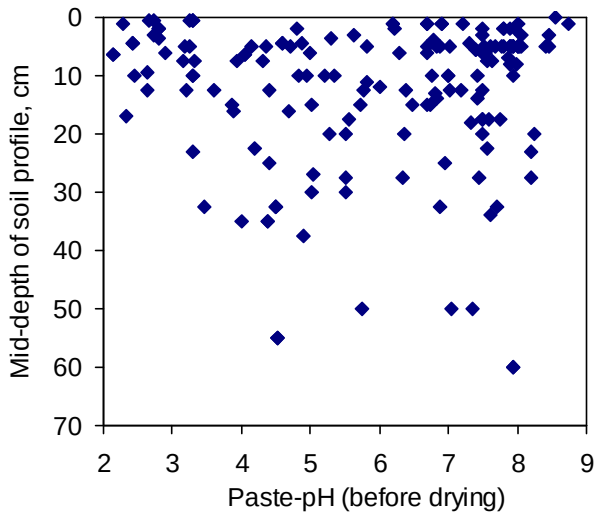
Table 3. Soil properties (continued)

Sample	Depth (cm)	Moisture (%)	Paste pH Wet	Paste pH Dry	pH_w	pH_{Perox}	TAA pH_{KCl}	CRS (%S)	ANC (%$CaCO_3$)	TOC (%)
AT 10.1	0–5	55	7.0	6.4	7.3	2.9	6.57	0.135	0.88	No data
AT 10.2	5–15	61	4.8		5.8	2.9	7.14	0.140	1.24	2.75
AT 11.1	0–5	22	7.9	8.3	7.4	6.6	8.55	0.010	0.33	No data
AT 11.2	5–50	42	6.3	6.2	6.8	2.6	5.49	0.178	<0.05	No data
AT 12.1	0–5	6	4.2	4.5	4.9	3.3	7.98	0.821	2.70	No data
AT 12.2	5–25	22	3.9	5.6	2.9	1.9	6.54	0.006	0.17	No data
AT 12.3	25–40	60	6.9	5.5	4.4	1.9	4.82	0.004	<0.05	No data
AT 14.1	0–3	17	8.5	9.5	7.6	7.2	8.89	0.008	3.65	No data
AT 14.2	3–15	19	7.6	8.8	7.8	7.5	9.15	0.005	2.83	No data
AT 14.3	15–25	54	7.5	7.7	7.8	4.6	7.98	0.289	1.83	No data
AT 14.4	25–30	57	8.2	8.2	7.7	2.6	7.94	1.372	2.82	No data
AT 14.5	30–60	67	7.5	7.0	7.6	1.6	7.52	1.231	1.93	No data
AT 16.1	0–5	2	8.4	8.0	7.9	6.0	8.78	<0.005	0.25	No data
AT 16.2	5–20	10	7.5	8.3	8.1	3.4	8.73	0.007	0.07	No data
AT 16.3	20–45	16	7.7	8.4	7.1	2.2	No data	No data	No data	No data
AT 16.4	45–70	23	8.0	No data	8.1	4.3	6.24	0.014	<0.05	No data
AT 17.1	0–1	19	8.0	No data	7.7	7.4	9.52	0.006	1.19	No data
AT 17.2	1–10	17	7.6	No data	7.9	7.1	9.34	0.019	0.80	No data
AT 17.3	10–20	65	6.7	7.3	7.2	4.0	8.12	0.141	1.29	No data
AT 17.4	20–30	64	7.0	8.0	No data	No data	8.26	0.971	1.63	No data
AT 18.1	0–8	11	9.1	9.5	8.6	7.0	No data	No data	No data	No data
AT 18.2	18–28	18	8.2	8.4	8.0	3.4	8.46	0.013	0.00	No data
AT 18.3	28–40	21	7.6	8.3	7.8	5.5	8.71	0.012	0.38	No data
AT 19.1	0–8	1	7.9	8.5	8.0	6.7	No data	No data	No data	No data
AT 19.2	8–18	39	6.8	6.8	2.5	1.4	7.97	0.370	0.85	No data
AT 19.3	18–28	22	3.3		3.4	1.5	5.70	0.101	<0.05	0.47
AT 20.1	0–2	12	7.5	7.8	7.4	4.3	7.26	0.210	1.44	No data
AT 20.2	2–10	6	6.3		6.2	2.5	6.48	0.180	0.61	No data
AT 20.3	10–30	46	8.2	7.9	5.8	3.4	6.01	<0.005	0.56	No data
AT 21.1	0–1	8	6.9	6.9	7.0	3.6	8.96	<0.005	35.2	2.86
AT 21.2	1–10	43	7.5	7.3	No data	No data	7.36	0.218	1.09	No data
AA 8.1	0–5	19	7.7	No data	7.9	5.4	5.90	0.010	0.00	No data
AA 8.2	5–20	24	6.4	No data	7.1	2.3	5.98	0.009	0.00	No data
AA 9.1	0–5	18	8.1	No data	7.3	4.3	6.65	<0.005	0.09	No data
AA 10.1	0–10	29	7.4	No data	6.8	4.4	8.36	0.024	0.61	No data
AA10.2	10–30	28	5.5	No data	7.3	5.4	5.66	0.022	0.00	0.43
AA 11.1	0–3	22	7.5	No data	7.5	5.7	6.98	<0.005	0.10	No data
AA 11.2	3–10	21	4.1	No data	6.9	3.1	6.54	0.010	0.03	No data
AA 12.1	0–5	21	8.2	No data	7.6	6.7	8.11	<0.005	0.10	0.08
AA 12.2	5–20	20	5.8	No data	7.1	4.9	7.03	0.008	0.03	No data
AA 13.2	3–15	33	3.2	3.1	8.0	2.0	6.83	0.521	0.36	0.32
AA 14.2	1–4	18	7.6	No data	7.8	3.9	6.76	0.010	0.12	0.17
AA 15.1	0–5	18	8.1	No data	7.3	4.9	6.87	0.006	0.12	0.13
AA 18.2	2–12	16	7.9	No data	8.2	6.2	9.25	0.016	0.19	No data
AA 19.1	0–5	17	9.3	No data	8.4	6.9	9.38	0.020	0.17	0.13
AA 20.1	0–5	20	7.8	No data	7.4	5.8	9.37	0.016	0.69	No data
AA 20.2	5–20	30	3.2	3.1	8.1	1.4	7.00	0.204	0.17	No data
AA 22.1	0–5	60	7.8	7.4	7.5	6.1	8.12	0.047	7.18	No data
AA 29.5	0–3	1	2.7	No data	3.0	2.2	3.11	0.006	0.00	No data
AA 29.6	3–10	6	2.1	No data	2.8	1.5	5.24	<0.005	0.00	0.26
AA 30.1	0–0.05	16	8.6	No data	8.8	7.2	9.01	0.020	1.01	0.44
AA 30.2	0.05–20	16	7.5	No data	8.2	6.9	8.92	0.014	0.20	No data
AA 31.2	0–10	29	6.8	6.2	7.2	2.9	6.31	0.028	<0.05	No data
AA 31.3	10–18	25	6.8	No data	7.3	3.9	6.60	0.060	<0.05	No data
AA 33.1	0–1	44	6.2	7.2	7.1	3.4	No data	No data	No data	No data
AA 33.2	0–10	70	2.4	2.7	2.75	1.6	3.19	0.076	<0.05	12.8
AA 33.3	10–25	72	2.3	2.9	2.6	1.7	3.15	0.105	<0.05	6.11
AA 33.4	25–40	20	4.5	No data	3.7	2.0	6.02	0.065	<0.05	No data
AA 33.5	40–60	19	7.4	No data	7.6	6.6	8.63	0.076	7.19	No data
AA 34 (MBO)	0–10	76	7.1	7.3	7.4	6.6	7.96	0.603	9.88	No data

Table 3. Soil properties (continued)

Wetlands sample	Depth (cm)	Moisture (%)	Paste pH Wet	Paste pH Dry	pH_w	pH_{Perox}	TAA pH_{KCl}	CRS (%S)	ANC (%$CaCO_3$)	TOC (%)
UKE 1.1	0–10	38	7.0	0.0	6.5	1.6	4.64	0.051	<0.05	2.24
UKE 1.2	10–30	48	6.4	6.3	5.4	1.6	5.32	0.073	<0.05	6.75
UKE 2.1	0–5	65	6.7	6.2	6.5	2.9	5.60	0.120	<0.05	4.06
UKE 2.2	5–20	39	7.2	6.9	6.3	1.7	3.73	0.273	<0.05	2.38
UKE 3.1	0–0.5	57	3.2	3.3	3.4	1.6	3.71	0.105	<0.05	5.12
UKE 3.2	0.5–1	26	2.7	No data	2.8	1.4	3.11	0.241	<0.05	0.23
UKE 3.3	1–8	10	2.4	No data	2.6	1.2	2.76	0.034	<0.05	7.95
UKE 3.4	8–12	30	3.3	3.5	3.5	1.8	3.46	0.222	<0.05	3.49
UKE 3.5	12–20	5	3.9	No data	4.0	1.3	4.61	0.590	<0.05	0.28
UKE 5.1	0–0.5	12	2.7	No data	3.1	1.3	3.33	0.010	<0.05	No data
UKE 5.2	0.5–10	8	2.6	No data	3.0	1.4	3.11	0.045	<0.05	7.93
UKE 5.3	10–30	32	5.3	5.3	6.0	3.2	5.56	0.009	<0.05	2.62
JUR 2.3	0–2	11	2.8	No data	2.6	1.3	3.00	0.242	<0.05	8.73
JUR 2.4&5	2–10	33	2.9	2.7	2.9	1.0	No data	No data	No data	9.06
JUR 2.6&7	10–40	46	4.4	4.4	4.2	2.3	No data	No data	No data	3.85
JUR 6.5	40–60	73	5.7	5.4	6.7	2.5	5.23	0.191	<0.05	11.3
MUR 1.2	30–40	44	4.0	4.1	4.0	1.5	4.21	0.067	<0.05	11.9
MUR 1.3	40–70	35	4.5	2.4	5.1	2.7	4.77	0.013	<0.05	4.74
MUR 2.2	5–10	30	4.3	4.7	5.0	2.5	4.23	0.015	<0.05	3.52
MUR 2.3	10–45	39	5.1	5.1	5.5	2.3	5.24	0.041	<0.05	No data
MUR 2.4	45–60	74	5.5	4.9	4.9	1.2	5.07	1.373	<0.05	11.1
MUR 3.1	0–15	51	6.5	No data	6.4	2.7	5.58	0.067	<0.05	No data
MUR 3.2	15–30	82	5.8	5.6	5.5	1.3	4.38	1.385	<0.05	14
PA 4.1	0–1	4	6.9	6.4	7.0	5.5	7.15	0.263	8.94	No data
PA 4.2	1–3	4	7.9	7.7	7.2	6.1	7.72	0.634	11.37	No data
PA 4.3	3–8	10	7.4	No data	6.6	3.5	7.59	0.616	10.45	No data
PA 4.4	8–15	29	6.0	5.9	6.0	3.2	5.76	0.022	<0.05	4.66
PA 4.5	15–50	41	5.5	5.3	5.4	2.6	5.49	0.021	<0.05	No data
RIV 3.2	0–1	8	7.2	7.3	6.7	3.2	6.46	0.273	<0.05	No data
RIV 3.4	1–10	18	6.7	No data	5.9	3.0	6.15	0.105	<0.05	No data
RIV 3.5	10–20	53	7.5	7.9	7.7	4.7	6.18	0.101	<0.05	No data
RIV 4.2	0.02–2	11	7.8	7.5	7.7	6.3	7.49	0.218	4.74	No data
RIV 4.3	2–10	42	5.0	6.0	4.8	2.8	6.21	0.034	<0.05	No data
RIV 4.4	10–30	53	8.2	8.0	7.5	5.2	6.58	0.222	<0.05	No data
SPM 1.1	0–0.5	3	3.3	3.2	3.1	1.2	No data	No data	No data	5.67
SPM1.3	5–10	38	3.3	3.3	3.3	1.3	3.29	0.052	<0.05	7.51





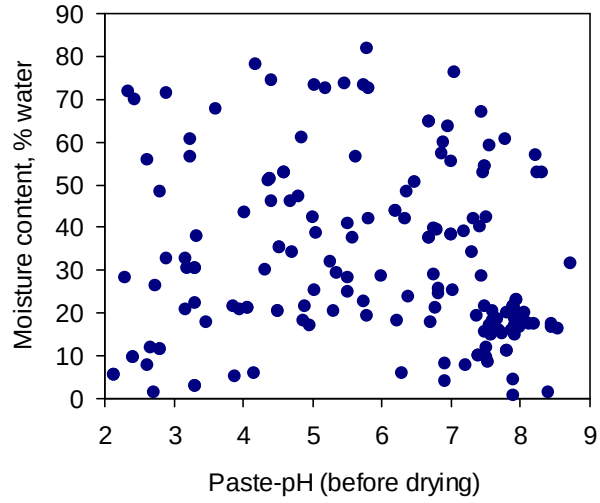


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Fig. 1. Relationships between paste-pH (before drying) and (*a*) paste-pH after drying, (*b*) soil depth (mid-range of the profile sampled) and (*c*) moisture content of the soil (when collected).

Table 4. Particulate metal concentrations in the soil samples

	Depth	Trace metal concentrations (mg kg^{-1})															
	(cm)	Ag	As	Cd	Co	Cr	Cu	Mn	Ni	Pb	Se	V	Zn	K	Ca	Mg	Al	Fe
WL 2.1	0–5	<0.4	1.6	<0.4	6.3	1.6	3.7	120	3.3	2.3	No data	6.2	7.4	510	1810	540	730	2210
WL 2.2	5–20	<0.4	2.6	<0.4	18	4.6	8.4	290	9.9	6.3	No data	14	17	2340	4360	1550	1840	4970
WL 2.3	20–40	<0.4	2.7	<0.4	8.7	2.8	5.8	98	5.3	6.8	No data	9.9	11	1060	1830	699	1330	3500
WL 5.3	0–1	<0.4	1.1	<0.4	9.1	4.8	15	44	9.3	11	<0.4	12	14	1440	5130	866	1770	9215
WL 5.4	1–5	<0.4	1.5	<0.4	4.3	4.5	11	25	4.1	8.1	<0.4	14	9.9	930	550	460	1570	7640
WL 5.5	5–20	<0.4	4.6	<0.4	8.3	8.3	19	51	8.2	9.6	<0.4	33	20	1380	1240	959	2980	9990
WL 6.3	0–1	<0.4	9.4	<0.4	9.8	8.8	8.1	200	12	6.4	No data	20	20	3450	13800	3440	1700	7640
WL 6.4	1–8	<0.4	9.3	<0.4	14	10	10	73	11	8.0	No data	21	18	2960	8900	2080	1870	7050
WL 6.5	8–20	<0.4	12	<0.4	15	13	11	130	12	8.7	No data	29	75	3570	13400	2250	2150	9330
WL 7.2	0–3	<0.4	13	<0.4	14	19	20	150	16	13	<0.4	53	30	4950	4760	3650	8650	16200
WL 7.3	3–12	<0.4	21	<0.4	22	22	19	450	19	14	No data	63	31	5500	13800	4820	3020	15400
WL 7.4	12.25	<0.4	4.8	<0.4	12	6.6	16	385	12	9.3	No data	24	22	3270	8480	4330	2320	5580
WL 8.2	0–1	<0.4	6.0	<0.4	13	7.4	17	270	13	9.3	<0.4	26	22	2930	4440	3150	4710	6180
WL 8.3	1–3	<0.4	6.2	<0.4	16	8.4	19	260	14	11	<0.4	30	26	3550	5330	3250	5440	6570
WL 8.4	3–6	<0.4	4.8	<0.4	12	9.5	21	260	15	12	<0.4	34	27	4070	4700	3180	4570	7170
WL 8.5	6–25	<0.4	1.9	<0.4	7.4	6.0	11	205	9.2	7.0	No data	17	15	2330	2340	2040	4590	4230
WL 9.2	0–5	<0.4	3.6	<0.4	4.5	9.5	21	160	12	11	No data	32	22	3590	3810	3320	2920	5520
WL 9.3	5–30	<0.4	<0.4	<0.4	3.7	1.9	2.7	39	2.1	2.7	No data	6.5	4.4	620	570	640	1110	2060
WL 11.1	0–5	<0.4	<0.4	<0.4	3.6	3.8	7.2	57	3.3	5.2	No data	12	9.4	1380	1050	1310	1640	2830
WL 11.3	10–20	<0.4	1.0	<0.4	1.3	1.3	2.2	24	1.4	1.8	No data	3.8	3.2	400	370	370	700	1190
WL 12.3	5–15	<0.4	1.0	<0.4	4.9	2.5	2.9	550	3.2	3.3	No data	5.4	6.6	900	870	960	1180	4770
WL 14.2	0–2	<0.4	<0.4	<0.4	1.8	2.2	2.7	72	1.7	2.9	No data	4.9	5.8	710	350	680	1150	2020
WL 15.1	0–5	<0.4	1.0	<0.4	4.4	0.9	1.1	230	1.9	2.1	No data	2.7	3.3	340	390	340	610	3090
WL 15.2	5–10	<0.4	0.8	<0.4	3.4	1.3	1.5	22	1.5	2.5	No data	3.5	4.3	460	370	330	700	1370
WL 17.1	0–15	<0.4	1.4	<0.4	4.8	1.7	2.3	33	1.9	2.9	No data	5.0	5.5	490	390	390	810	1750
WW3A 1.1	0–8	<0.4	<0.4	<0.4	0.6	<0.4	<0.4	8.3	<0.4	<2	No data	<2	<2	41	141	37	59	450
WW3A 1.2	8–20	<0.4	<0.4	<0.4	1.2	<0.4	<0.4	13	<0.4	<2	No data	<2	<2	82	210	61	140	610
WW3A2.1	15–20	<0.4	<0.4	<0.4	0.8	<0.4	<0.3	9.0	<0.3	<2	No data	<2	<2	47	304	43	76	450
WW3A 4.1	0–5	<0.4	1.0	<0.4	0.6	<0.4	0.4	14	<0.4	<2	No data	<2	<2	40	486	45	60	440
WW3A 4.2	15–25	<0.4	<0.4	<0.4	1.1	<0.4	0.4	79	<0.4	<2	No data	<2	<2	75	9800	376	110	660
WW 3A 4.5	25–50	<0.4	1.6	<0.4	0.9	0.4	0.7	16	<0.4	<2	No data	<2	<2	150	254	123	255	330
WW 8A 2.1	0–5	<0.4	7.0	<0.4	10	5.6	15	540	11	4.0	No data	24	21	4710	7380	2970	3040	9800
WW 8A 2.2	5–15	<0.4	9.8	<0.4	13	6.1	15	600	13	5.9	No data	36	21	5960	9040	3560	2110	12300
WW 8A 2.3	15–30	<0.4	16	<0.4	19	8.4	32	210	19	12	No data	37	20	4100	5880	3120	1920	13200

Table 4. Particulate metal concentrations in the soil samples (continued)

	Depth	Trace metal concentrations (mg kg^{-1})																
	(cm)	Ag	As	Cd	Co	Cr	Cu	Mn	Ni	Pb	Se	V	Zn	K	Ca	Mg	Al	Fe
WW20A 1.1	0–5	<0.4	3.1	<0.4	6.4	5.8	9.4	590	7.2	2.7	No data	17	13	3590	4430	2870	1920	4940
WW20A 1.2	5–18	<0.4	2.3	<0.4	5.5	7.2	12	210	8.0	4.7	No data	22	8.8	2220	2720	2460	3880	5220
WW20C	30–40	<0.4	7.4	<0.4	9.2	8.1	32	160	17	7.0	0.5	28	15	2460	2670	1940	3400	7380
WWBH20 11.1	0–5	<0.4	<0.4	<0.4	1.4	<0.4	<0.4	12	0.5	<2	No data	<2	<2	145	183	113	200	754
WWBH20 11.2	5–15	<0.4	<0.4	1.5	<0.4	<0.4	4.0	<0.4	<2	No data	<2	<2	<2	140	110	46	136	446
AT 2.3	5–20	<0.4	28	0.7	2.9	2.2	17	57	15	0.8	0.7	22	6.2	620	2570	1970	992	4530
AT 2.6	30–35	<0.4	2.7	<0.4	0.2	1.4	0.9	17	0.8	1.2	<0.4	3.1	0.5	265	375	240	410	1040
AT 7.2	5–20	<0.4	17	<0.4	26	7.0	18	150	29	11	<0.4	31	23	2000	3580	4540	4020	17000
AT 9.1	0–5	<0.4	12	<0.4	5.9	6.9	16	150	11	12	<0.4	34	21	1610	8610	3510	4840	22000
AT 9.2	5–20	<0.4	8.3	<0.4	5.9	7.1	21	130	24	12	<0.4	32	27	1190	3440	5980	5180	13800
AT 10.2	5–15	<0.4	7.4	<0.4	5.4	6.9	20	220	11	11	<0.4	30	20	1440	3510	2570	4010	6840
AT 11.1	0–5	<0.4	2.2	<0.4	1.5	34	0.7	34	0.8	1.5	No data	3.2	1.0	230	760	250	305	1555
AT 11.2	5–50	<0.4	4.5	<0.4	<0.4	3.6	9.1	97	5.1	5.2	No data	16	9.0	1770	1330	2580	1660	6200
AT 12.1	0–5	<0.4	0.5	<0.4	0.9	<0.3	0.5	5.1	0.4	<1	No data	1.4	<1	160	140	120	200	610
AT 12.2	5–25	<0.4	0.6	<0.4	1.0	0.4	1.1	9.6	0.4	<1	No data	2.3	<1	235	250	230	350	686
AT 12.3	25–40	<0.4	11	<0.4	8.4	4.9	23	240	10	7.8	No data	20	13	2370	3800	2800	1740	9960
AT 14.1	0–3	<0.4	2.2	<0.4	0.7	0.8	0.6	20	0.3	<1	No data	3.1	1.3	320	14000	830	290	950
AT 14.2	3–15	<0.4	2.1	<0.4	0.8	0.7	0.3	17	0.5	<1	No data	2.5	0.6	190	9390	390	240	860
AT 14.3	15–25	<0.4	3.8	<0.4	4.6	5.7	12	110	6.6	7.0	No data	20	14	2600	6650	3330	2070	6120
AT 14.4	25–30	<0.4	4.0	<0.4	7.3	4.5	8.4	170	4.7	5.5	No data	14	9.0	2200	15600	2470	1830	6950
AT 14.5	25–30	<0.4	4.5	<0.4	7.4	6.7	11	135	7.6	7.6	No data	20	12	3170	3740	4850	2250	9510
AT 16.1	0–5	<0.3	1.5	<0.3	0.7	<0.3	0.4	7.3	<0.3	1.4	No data	2.0	0.5	127	1160	180	180	660
AT 16.2	5–20	<0.3	0.6	<0.3	0.5	<0.3	<0.3	5.8	<0.3	<1	No data	<1	<1	96	450	120	160	360
AT 16.3	20–45	<0.3	<0.3	<0.3	<0.3	4.6	<0.3	4.6	<0.3	<1	No data	<1	<1	120	170	180	190	360
AT 16.4	45–75	<0.3	0.9	<0.3	1.9	1.5	2.8	37	1.6	<1	No data	5.1	2.9	930	4720	990	930	2300
AT 17.1	0–1	<0.3	<0.3	<0.3	1.0	0.5	0.5	28	0.6	<1	No data	2.9	1.1	360	3450	700	320	950
AT 17.2	1–10	<0.3	0.8	<0.3	0.9	<0.3	0.7	21	0.6	<1	No data	2	<1	270	1820	365	350	815
AT 17.3	10–20	<0.3	4.1	<0.3	5.4	5.2	9.4	150	6.2	<1	No data	19	13	2320	4190	2250	2030	5550
AT 17.4	20–30	<0.3	8.2	<0.3	9.9	6.8	12.3	170	8.6	<1	No data	23	15	3500	9830	3370	2300	11400
AT 18.1	0–8	<0.3	0.7	<0.3	<0.3	<0.3	<0.3	16	<0.3	<1	No data	<1	<1	110	930	160	110	370
AT 18.2	18–28	<0.3	0.5	<0.3	<0.3	<0.3	0.4	5.3	<0.3	<1	No data	<1	<1	110	300	120	140	350
AT 18.3	28–40	<0.3	<0.3	<0.3	1.0	<0.3	0.4	12	<0.3	<1	No data	1.5	<1	150	430	130	240	555
AT 19.1	0–8	<0.3	2.4	<0.3	0.7	<0.3	0.6	20	<0.3	1.3	No data	2.7	<1	280	1630	360	280	840
AT 19.2	8–18	<0.3	5.5	<0.3	7.7	2.8	7.3	64	5.2	4.5	No data	11.3	6.5	1070	11900	895	1260	5290
AT 19.3	18–28	<0.3	1.4	<0.3	2.1	0.4	0.7	13	1.1	<1	<0.4	1.9	1.0	230	550	280	308	1370

Table 4. Particulate metal concentrations in the soil samples (continued)

	Depth	Trace metal concentrations (mg kg^{-1})															
Site	**(cm)**	**Ag**	**As**	**Cd**	**Co**	**Cr**	**Cu**	**Mn**	**Ni**	**Pb**	**Se**	**V**	**Zn**	**K**	**Ca**	**Mg**	**Al**	**Fe**
AT 20.1	0–2	<0.3	12	<0.3	15	10	22	545	15	14	No data	39	29	4020	2830	3580	2700	11900
AT 20.2	2–10	<0.3	8.6	<0.3	11	9.3	20	170	12	12	No data	34	24	3520	3930	2690	2610	7790
AT 20.3	10–20	<0.3	4.8	<0.3	3.3	14	27	56	7.4	14	No data	45	15	5700	3510	5650	2960	4660
AT 21.1	0–1	<0.3	14	<0.3	8.1	12	22	195	17	13	No data	36	20	6670	4430	5730	3440	13000
AT 21.2	1–10	<0.3	7.7	<0.3	5.4	14	20	155	14	14	No data	41	19	6530	6230	5590	3470	8840
AA 3	5–5.5	<0.4	<0.4	<0.4	0.6	0.4	0.4	6.6	0.4	<1	No data	1.3	1.0	220	245	170	260	480
AA 8.2	5–20	<0.4	1.3	<0.4	<0.4	1.6	1.9	44	1.5	<1	No data	4.7	3.2	700	378	410	890	1350
AA10.2	10–30	<0.4	3.2	<0.4	12	4.1	6.7	270	9.3	3.5	<0.4	12	9.4	1010	17	950	1600	6750
AA 13.2	3–15	<0.4	3.9	<0.4	6.2	2	3.2	51	5.1	4.1	<0.4	7.0	5.8	540	52	873	1160	2880
AA 29.5	0–3	<0.4	1.7	<0.4	9.0	0.8	0.9	94	4.2	1.1	<0.4	5.6	3.7	430	3330	666	544	3790
AA 29.6	3–10	<0.4	<0.3	<0.4	1.9	<0.4	0.4	9.6	0.5	<1	<0.4	1.7	0.5	100	180	62.0	162	1003
AA 30.1	0–0.05	<0.4	0.9	<0.4	1.4	<0.4	0.4	65	0.4	0.7	No data	2.0	<1	440	3250	948	266	835
AA 30.2	0.05–20	<0.4	<0.3	<0.4	0.8	<0.4	<0.3	7.6	<0.3	<1	No data	<1	<1	70	444	85.5	110	373
AA 31.3	0–10	<0.4	1.4	<0.4	0.4	4.7	8.3	54	4.1	4.2	No data	10	13	1660	1170	1080	1720	3040
AA 31.5	10–18	<0.4	9.4	<0.4	3.1	42	19	150	24	17	No data	62	40	15300	840	7900	3590	24400
AA 33.1	0–1	<0.4	5.9	<0.4	24	7.5	11	240	7.9	7.5	No data	23	17	8290	11900	11200	2210	8110
AA 33.2	0–10	<0.4	7.3	<0.4	6.5	5.8	23	100	20	5.7	<0.4	41	27	5600	3540	4930	3570	6740
AA 33.3	10–25	<0.4	5.5	<0.4	15	7.3	13	76	12	7.5	<0.4	41	25	2680	2830	2670	4520	9900
AA 33.4	25–40	<0.4	0.6	<0.4	1.3	0.8	0.9	3.2	0.7	2.0	No data	1.8	1.4	200	28	38	350	648
AA 33.5	40–60	<0.4	0.9	<0.4	1.1	1.4	0.8	21	0.7	<1	No data	2.5	1.4	400	14000	1070	476	1030
AA 34(MBO)	40–60	<0.4	5.1	<0.4	7.6	11	12	180	8.9	<1	No data	26	22	9330	10950	5610	2470	9440
UKE 1.1	0–10	<0.4	1.7	<0.4	5.7	8.3	8.5	76	6.1	7.0	No data	23	12	1610	1350	1760	2270	6080
UKE 1.2	10–30	<0.4	3.7	<0.4	7.8	9.3	14	110	8.4	7.9	No data	32	15	1850	1990	2340	2530	7860
UKE 2.1	0–5	<0.4	1.8	<0.4	4.8	5.2	9.5	63	5.9	10	No data	22	10	1190	2820	1530	2900	2950
UKE 2.2	5–20	<0.4	2.4	<0.4	6.0	8.7	11	120	7.0	8.1	No data	30	14	1910	2320	2100	2390	6840
UKE 3.1	0–0.5	<0.4	4.4	<0.4	47	8.0	37	460	42	25	No data	49	88	9910	71400	7370	7140	41100
UKE 3.2	0.5–1	<0.4	3.9	<0.4	68	9.9	30	540	62	25	<0.4	55	125	6580	32500	12050	5590	23300
UKE 3.3	1–8	<0.4	4.5	<0.4	17	9.7	25	110	16	16	0.5	42	38	2350	2760	2300	4640	14400
UKE 3.4	8–12	<0.4	5.3	<0.4	11	8.6	14	83	10	6.8	<0.4	35	25	2630	5730	2000	5010	8850
UKE 3.5	12–20	<0.4	0.2	<0.4	24	15	12	1050	11	13	<0.4	35	34	3160	2170	2340	6120	9210
UKE 5.1	0–0.5	<0.4	2.2	<0.4	6.0	6.7	36	55	7.5	18	<0.4	24	15	8300	52600	830	2590	23000
UKE 5.2	0.5–10	<0.4	4.1	<0.4	8.9	9.5	21	95	9.7	6.1	<0.4	27	22	3170	1910	2230	4090	13000
UKE 5.3	10–30	<0.4	3.9	<0.4	16	11	19	230	18	13	No data	32	31	4630	4040	3450	9290	14400

Table 4. Particulate metal concentrations in the soil samples (continued)

	Depth	Trace metal concentrations (mg kg^{-1})															
Site	**(cm)**	**Ag**	**As**	**Cd**	**Co**	**Cr**	**Cu**	**Mn**	**Ni**	**Pb**	**Se**	**V**	**Zn**	**K**	**Ca**	**Mg**	**Al**	**Fe**
JUR 2.3	0–2	<0.4	5.1	<0.4	7.5	12	24	82	9.3	17	0.5	21	19	6120	12800	2580	2140	25200
JUR 2.4&5	2–10	<0.4	8.5	<0.4	6.3	11	23	65	9.1	17	<0.4	47	18	4170	5380	2010	2510	19700
JUR 2.6&7	10–40	<0.4	6.3	<0.4	7.1	12	22	120	18	17	<0.4	47	22	1440	5350	3120	11600	12300
JUR 6.5	40–60	<0.4	4.9	<0.4	7.5	13	20	120	16	9.0	<0.4	48	29	3230	38800	4830	3530	8720
MUR 1.2	30–40	<0.4	5.9	<0.4	6.0	12	16	58	14	7.6	<0.4	37	27	2720	7410	2920	2960	10700
MUR 1.3	40–70	<0.4	5.4	<0.4	8.7	14	17	110	15	2.6	<0.4	44	25	3520	4910	3590	15600	14100
MUR 2.2	5–10	<0.4	1.8	<0.4	6.1	7.2	12	33	7.2	7.0	<0.4	21	13	1390	1780	1370	2410	6020
MUR 2.3	10–45	<0.4	3.2	<0.4	5.4	15	17	70	9.9	1.8	No data	47	16	2540	3590	2870	3390	8500
MUR 2.4	45–60	<0.4	5.2	<0.4	9.0	12	22	67	13	<1	<0.4	44	13	1930	3610	3400	9310	7960
MUR 3.2	15–30	<0.4	9.9	<0.4	14	11	24	53	19	<1	<0.4	50	15	1870	2620	2840	8640	10800
PA 4.1	0–1	<0.4	5.5	<0.4	8.7	5.8	11	760	22	1.4	No data	17	22	3530	21300	9440	2150	6460
PA 4.2	1–3	<0.4	12	0.42	13	9.8	19	1070	14	10	No data	31	39	6180	27100	9820	2640	11400
PA 4.3	3–8	<0.4	14	0.49	13	9.9	20	460	15	11	No data	38	47	5990	5200	8050	2560	13700
PA 4.4	8–15	<0.4	14	0.45	120	16	27	200	16	15	No data	51	33	4130	4870	4100	3130	14400
PA 4.5	15–50	<0.4	11	<0.4	8.8	140	26	140	13	17	<0.4	54	28	3150	2910	3640	3125	16400
RIV 3.2	0–1	<0.4	7.9	<0.4	14	12	22	1490	17	12	No data	30	29	4950	5690	5550	2920	13200
RIV 3.4	1–10	<0.4	6.9	<0.4	14	13	23	610	18	13	No data	33	25	4560	12000	4600	3160	10600
RIV 3.5	10–20	<0.4	6.6	<0.4	13	16	24	485	19	15	No data	44	21	6700	5980	6940	3780	18200
RIV 4.3	2–10	<0.4	6.2	<0.4	8.3	800	15	800	13	8.6	No data	20	18	6050	13000	11000	2855	9160
RIV 4.4	10–30	<0.4	6.7	<0.4	19	15	26	360	24	14	No data	39	16	7520	4000	7960	3680	13600
SPM 1.1	0–0.5	<0.4	5.7	<0.4	15	8.8	25	65	16	33	<0.4	46	27	7600	3220	1080	2060	7440
SPM1.3	5–10	<0.4	10	<0.4	9.8	12	29	63	12	16	<0.4	38	20	1650	9290	1420	2410	9010

Table 5. Concentrations of trace metals mobilised by soils during the re-wetting tests

Site	Depth (cm)	Ag (µg/L^{-1})	As (µg/L^{-1})	Cd (µg/L^{-1})	Co (µg/L^{-1})	Cr (µg/L^{-1})	Cu (µg/L^{-1})	Mn (µg/L^{-1})	Ni (µg/L^{-1})	Pb (µg/L^{-1})	Sb (µg/L^{-1})	Se (µg/L^{-1})	V (µg/L^{-1})	Zn (µg/L^{-1})
WL 5.3	0–1	0.05	15	2.6	370	28	200	3800	710	2.8	<0.5	0.3	150	520
WL 5.4	1–5	<0.02	3.1	0.67	90	8.0	68	1100	150	2.6	<0.5	0.2	69	210
WL 5.5	5–20	<0.02	3.9	1.6	190	6.9	68	2600	280	17	<0.5	<0.2	22	380
WL 7.2	0–3	<0.02	4.0	0.05	3.8	0.36	2.8	270	4.7	<0.1	<0.5	0.4	1.1	3.9
WL 8.3	1–3	0.04	1.7	0.17	34	0.2	2.5	3600	18	0.1	<0.5	0.3	0.69	24
WL 8.4	3–6	<0.02	3.2	0.13	31	0.2	1.5	2650	15	0.2	<0.5	0.4	1.5	19
WL 8.5	6–25	<0.02	1.5	0.07	11	0.2	1.2	1700	6.8	<0.1	<0.5	0.2	1.1	6.9
WL 9.2	0–5	<0.02	1.1	<0.05	1.8	<0.1	1.5	710	4.4	<0.1	<0.5	<0.2	0.97	5.5
WL 15.1	0–5	<0.02	1.8	0.23	110	<0.1	12	3900	76	0.7	<0.5	<0.2	<0.1	60
WL 15.2	5–10	<0.02	1.5	<0.05	3.2	<0.1	11	46	3.6	<0.1	<0.5	<0.2	0.45	1.4
WW 8A 2.1	0–5	<0.02	1.5	0.07	0.4	0.3	2.0	56	2.3	0.2	<0.5	0.6	4.9	25
WW20C	30–40	<0.02	0.8	0.05	10	0.2	1.1	1950	9.9	0.1	<0.5	<0.2	1.0	9.2
WWBH20 11.2	5–15	<0.02	3.3	<0.05	1.5	3.8	9.0	150	6.4	0.3	0.6	0.4	7.3	1.8
AT 2.3	5–20	0.04	18	0.67	110	0.3	12	2100	180	0.8	<0.5	0.3	2.1	66
AT 2.6	30–35	0.03	3.0	0.13	12	0.2	2.1	1100	17	0.1	<0.5	<0.2	0.2	20
AT 7.2	5–20	0.05	19	3.0	1200	0.8	2.8	3800	780	6.2	<0.5	1.1	5.4	160
AT 9.1	0–5	0.03	5.5	2.1	190	1.3	19	7500	340	5.4	<0.5	0.3	0.4	270
AT 9.2	5–20	0.06	11	2.5	260	6.0	63	4100	510	8.5	<0.5	0.4	2.8	480
AT 10.2	5–15	0.04	1.7	0.15	6.1	0.1	2.7	1400	9.3	<0.1	<0.5	0.3	1.7	9.8
AT 19.3	18–28	<0.02	4.2	0.38	120	0.4	3.3	990	120	2.1	<0.5	<0.2	0.6	72
AT 21.1	0–1	<0.02	0.7	<0.05	6.7	0.1	1.4	200	4.8	<0.1	<0.5	<0.2	1.2	4.3
AA10.2	10–30	0.04	1.5	<0.05	28	<0.1	3.1	3200	13	<0.1	<0.5	0.2	0.9	6.1
AA 13.2	3–15	0.02	9.0	4.1	350	0.6	5.7	2500	220	8.5	<0.5	0.4	0.4	150
AA 20.2	5–20	0.02	3.0	1.3	170	0.3	3.3	560	150	0.5	<0.5	<0.2	0.9	120
AA 29.5	0–3	<0.02	7.1	0.6	97	1.1	17	6800	230	0.1	<0.5	0.2	0.3	160
AA 29.6	3–10	<0.02	2.7	0.08	14	2.2	23	690	24	0.6	<0.5	0.2	2.9	24
AA 33.2	0–10	0.04	32	5.0	290	17	170	4600	520	4.3	<0.5	0.7	120	950
AA 33.3	10–25	<0.02	16	2.6	210	20	110	2900	300	1.8	<0.5	0.2	230	370

Table 5. Concentrations of trace metals mobilised by soils during the re-wetting tests (continued)

Site	Depth (cm)	Ag (µg/L^{-1})	As (µg/L^{-1})	Cd (µg/L^{-1})	Co (µg/L^{-1})	Cr (µg/L^{-1})	Cu (µg/L^{-1})	Mn (µg/L^{-1})	Ni (µg/L^{-1})	Pb (µg/L^{-1})	Sb (µg/L^{-1})	Se (µg/L^{-1})	V (µg/L^{-1})	Zn (µg/L^{-1})
UKE 3.1	0–0.5	<0.02	51	18	2800	66	160	43000	4500	0.5	<0.5	1.1	97	7800
UKE 3.2	0.5–1	0.02	43	20	4400	120	220	60000	6900	3.2	<0.5	0.9	1130	14000
UKE 3.3	1–8	0.06	10	4.5	445	43.5	160	5350	660	7.4	<0.5	0.4	660	1700
UKE 3.4	8–12	<0.02	13	1.2	155	12	51	3550	235	1.9	<0.5	0.5	56	240
UKE 3.5	12–20	<0.02	0.7	<0.05	26	<0.1	1.6	7800	22	<0.1	<0.5	<0.2	<0.1	4.7
UKE 5.2	0.5–10	<0.02	5.4	1.3	210	16	31	6800	250	1.5	0.6	0.5	110	670
UKE 5.3	10–30	<0.02	3.2	<0.05	0.6	<0.1	4.5	380	2.3	<0.1	<0.5	4.9	2.8	0.4
JUR 2.3	0–2	0.12	15	2.4	310	42	67	7500	400	0.6	0.8	0.8	260	1040
JUR 2.4&5	2–10	<0.02	6.7	0.53	90	17	52	1900	160	3.6	<0.5	0.3	200	300
JUR 2.6&7	10–40	<0.02	1.1	0.08	15	0.4	0.6	740	11	0.1	<0.5	<0.2	1.4	9.8
JUR 6.5	40–60	<0.02	2.1	<0.05	1.8	0.4	1.4	740	1.4	<0.1	0.6	0.3	7.4	2.4
MUR 1.2	30–40	0.03	2.5	0.24	27	1.2	2.3	970	22	0.6	<0.5	<0.2	4.8	52
MUR 1.3	40–70	<0.02	1.0	<0.05	0.6	0.4	1	74	1.2	<0.1	<0.5	0.2	2.7	1.4
MUR 2.2	5–10	<0.02	0.8	<0.05	5.8	0.4	0.5	220	5.1	<0.1	<0.5	<0.2	1.0	4.7
MUR 2.4	45–60	<0.02	2.1	<0.05	8.3	<0.1	11	740	8.8	<0.1	<0.5	<0.2	1.3	4.7
MUR 3.2	15–30	<0.02	2.0	<0.05	5.7	0.2	1.8	210	3.7	<0.1	0.8	1.6	7.8	1.7
PA 4.4	8–15	<0.02	4.7	<0.05	6.6	0.4	4.3	180	5.3	<0.1	0.9	1.6	15	2.2
SPM 1.1	0–0.5	<0.02	16	3.3	440	16	44	4600	700	0.1	0.6	0.7	97	460
SPM1.3	5–10	0.02	9.6	2.1	280	9.6	20	3300	430	2.7	<0.5	0.4	52	300