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Supplement of

Timescales of carbon turnover in soils with mixed crystalline mineralogies

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Figure S1. Weight percent clay times the Fe oxides measured by XRD in the ClayXRD fraction versus the Fe oxyhydroxides estimated from bulk extracts (dithionite citrate minus oxalate). Both are expressed in weight percent of Fe (g Fe/100 g soil) The fitted line has slope 0.4 ±0.1 (95% confidence interval), and p-value: 0.0025. Differences between the two measurements can stem from either (1) Fe oxyhydroxide coatings on the fine earth fraction including particles > 2 um (i.e. when Fe(d) – Fe(o) is greater than the XRD measured Fe scaled to bulk soil), or (2) some crystalline iron phases can be extracted by oxalate as well as DCB (in which case Fe(d) – Fe(o) will be less than the scaled XRD-measured Fe.

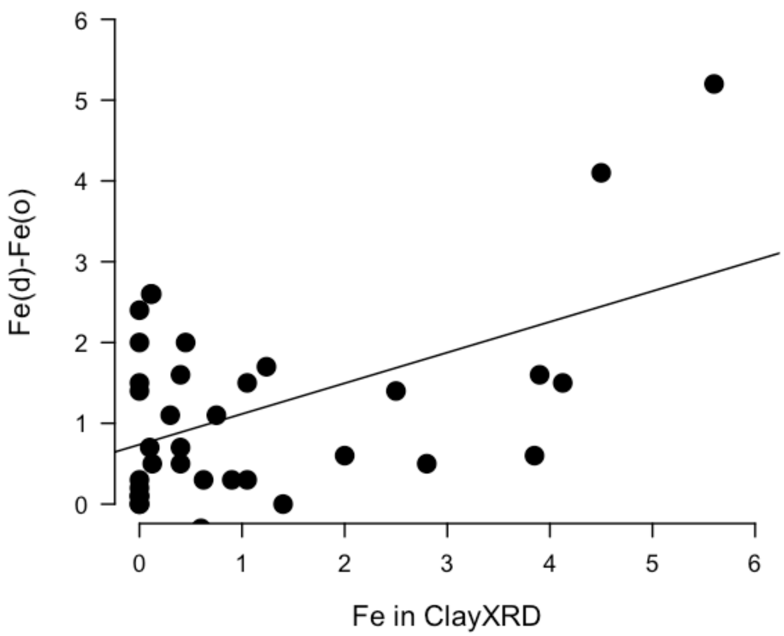

Table S1 (below) includes data used for this paper as comma-delimited text. It is also available as an excel file on request from the corresponding author.
This table contains all data from the soil profiles measured in this project.
The data are organized so that each row indicates all analyses for a given depth interval from a soil profile.
The columns are organized as follows:

Column Number	Column Heading	Description of the Column heading
1	Identifier	For each profile, a number and letter combination summarizing parent material lithology and annual rainfall
2	LAB ID	Identification number for Chadwick laboratory
3	PIT	Pit name (field notes)

4	geology	lithology of the parent rock
5	rainfall	mean annual precipitation in mm per year at sampling site
6	DATE	Year of soil sampling (important for radiocarbon modeling)
7	EASTING	Latitude of soil pit
8	NORTHING	Longitude of soil pit
9	DEPTH 1 (cm)	Top depth of horizon sampled (cm)
10	DEPTH 2 (cm)	Bottom depth of horizon sampled (cm)
11	Midpoint (cm)	midpoint depth of horizon sampled (cm)
12	THICKNESS (cm)	thickness of horizon (cm)
13	COLOR	Munsell color (at field moisture)
14	TEXTURE	standard classification; sl = silt loam
15	STRUCTURE	standard classification
16	HORIZON	standard classification
18	ROOTS	standard classification
19	GRAVEL (%)	per cent of total soil volume estimated to consist of gravel sized rock
20	Fraction fines	Fraction fines: fraction of total soil volume estimated to be less than gravel sized
21	mass fines	mass fines: fraction of fines * bulk density (g cm-3) * horizon thickness (cm) * 10^4 cm^2*m^-2* 1000kg/g, final units are kg m^-2
22	est. BD	bulk density (g cm-3) estimated using paraffin-clod method.
23	Fe(d)	Fe in dithionite citrate bicarbonate (DCB) extract), expressed as % (g Fe per 100 gram dry soil (<2mm) extracted)
24	Fe(o)	Fe(o): Fe in acid ammonium oxalate (AAO) extract, expressed as % (g Fe per 100 gram dry soil (<2mm) extracted)
25	Fe(d)-Fe(o)	units are g Fe per 100 g dry weight soil
26	Al(o)	Al in acid ammonium oxalate (AAO) extract (expressed as % (g Al per 100 gram dry soil (<2mm) extracted)
27	Conductivity	units are microS/cm
28	pH	no units
29	CEC	Cation Exchange capacity (milli-equivalents of charge per gram dry soil), determined by extracting the ammonium saturated samples with a 1 M potassium chloride solution in a Lachat analyzer

30	carbon-less CEC	CEC corrected for the contribution of organic matter by assuming a contribution of 200 cmol(+) per kg organic C (milli-equivalents of charge per gram dry soil)
31	% Base Saturation	percent of CEC from base cations
32	oven dry %C	Total C, reported as % (grams C per 100 gram soil).
33	%C organic	Organic C, reported as % (grams C per 100 gram soil). These are analyzed on samples acidified to remove carbonates
34	LOI inorg C	Determined as the difference between total C and organic C. Reported as % (g inorganic C/100 g soil).
35	oven dry %N	%N as measured with elemental analyzer, includes organic and inorganic N (g N per 100 gsoil).
36	kgC m-2 in horizon	kg of organic carbon per m^2 in horizon. Calculated as (mass fines (kg m-2) * org. C(g/100g soil)*1000gsoil/kg soil)
37	kgC m-2/cm depth	C density per cm depth, obtained by dividing horizon C inventory by horizon thickness
38	C:N	Organic C/LOI N
39	d13CaCO3	$\delta^{13}C$ of CO_2 released from acidification of soil (in ‰ PDB)
40	D14CaCO3	$\Delta^{14}C$ of $CaCO_3$: $\Delta^{14}C$ of CO_2 released from acidification of soil (‰), year of measurement should be assumed to be 2011 for conversion to fraction Modern
41	d13C bulk	$\delta^{13}C$ of bulk organic C (in ‰ PDB)
42	D14C bulk	$\Delta^{14}C$ of bulk organic C (‰), year of measurement should be assumed to be 2011 for conversion to fraction Modern
43	bulkTT	Turnover time (years) that yields the radiocarbon signature in the year the soil; see r code in Supplemental Material.
44	Fraction HF in soil	grams of HF fraction per gram of bulk soil extracted
45	%C HF	grams C in 100 g HF fraction soil
46	kgC m-2 in HF	heavy fraction C density
47	%totalC in HF	%totalC in HF: calculated as ([100*fraction HF (gHF/gsoil)] x [%C in HF])/(%C in bulk
48	d13C HF	$\delta^{13}C$ in heavy fraction (in ‰, PDB)
49	D14C HF	$\Delta^{14}C$ in heavy fraction (in ‰), assume 2011 as the measurement year.
50	HF TT	Turnover time (in years; determined using SoilR; Sierra et al. 2014) and the Intcal 2013 southern hemisphere zone 1,2 atmospheric 14C record.
51	grav fraction LF	grams of LF fraction per gram of bulk soil extracted
52	%C LF	grams C in 100 g root free free light fraction (density

		<1.6 g cm-3) soil
53	kgC m-2 in LF	light fraction C density
54	%totalC in LF	alculated as ([100*fraction LF (gLF/gsoil)] x [%C in HF])/(%C in bulk soil)
55	%Croots	visible roots were picked from the LF fraction, this is the gC/100g roots
56	d13Croots	$\delta^{13}C$ of roots picked from LF (in ‰ PDB)
57	D14Croots	$\Delta^{14}C$ of roots picked from LF (‰), year of measurement should be assumed to be 2011 for conversion to fraction Modern
58	%CLF	gC/100g combusted of the LF fraction after removal of roots
59	d13CLF	$\delta^{13}C$ in root-free fLF (in ‰)
60	D14C LF	$\Delta^{14}C$ in root-free LF (in ‰, using 2010 as the date of measurement)
61	LFTT short	Turnover time estimated from $\Delta^{14}C$ of the root-free fLF - where two solutions are possible, the shorter of the two (in years)
62	LFTT long	Turnover time estimated from $\Delta^{14}C$ of the root-free fLF - where two solutions are possible, the longer of the two (in years)
63	%C clay	gC in 100g of isolated clay-sized XRD fraction. This fraction was also treated with 2% H2O2, so the C is assumed to be strongly associated with clay surfaces. This is the same fraction used for mineralogy analysis by XRD.
64	%total C in clay	calculated as ([100*gravimetric fraction clay (g clay/g soil)] x [%C in clay])/(%C in bulk soil)
65	d13 clay	$\delta^{13}C$ of the clay-sized XRD fraction(in ‰)
66	D14C clay	$\Delta^{14}C$ of C in the Clay XRD fraction, using 2011 as the date of measurement)
67	TT clay	Turnover time (years) estimated from $\Delta^{14}C$ that yields the radiocarbon signature in the clayXRD fraction using a simple one-pool model; see r code in Supplemental Material.
68	%C nonclay	(calculated using mass balance, see equations in text)
69	13C nonclay	$\delta^{13}C$ -C nonclay-sized fraction (calculated using mass balance, see equations in text)
70	14Cnonclay	$\Delta^{14}C$ in the nonclay-sized fraction (calculated using mass balance, see equations in text)
71	TT nonclay	TT of nonclay sized fraction estimated using a one-box model from Δ^{14}Cnonclay (see text)

72	sand	Particle size % of total mass in sand size particles
73	silt	Particle size % of total mass in silt size particles
74	clay	Particle size % of total mass in clay size particles
75	clay*smectite/100	%clay*% of clay-sized XRD fraction that is smectite/100
76	Quartz	per cent of clay-sized XRD fraction that is Quartz
77	Feldspars	per cent of clay-sized XRD fraction that is Feldspars
78	Calcite	per cent of clay-sized XRD fraction that is Calcite
79	Oxides	per cent of clay-sized XRD fraction that is Oxides
80	Kaolins	per cent of clay-sized XRD fraction that is Kaolins
81	Smectites	per cent of clay-sized XRD fraction that is Smectites
82	Chlorites	per cent of clay-sized XRD fraction that is Chlorites
83	Micas	per cent of clay-sized XRD fraction that is Micas

Table S1. Continued. Comma-delimited text file with data (metadata given above).

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1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28
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3,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,
78,79,80,81,82,83,84,85,86
Identifier, LAB ID,PIT   ME,geology,rainfall,DATE,EASTING,NORTHING,DEPTH 1
(cm),DEPTH 2 (cm),Midpoint (cm),THICKNESS
(cm),COLOR,TEXTURE,STRUCTURE,HORIZON,ROOTS,GRAVEL (%),Fraction fines,mass
fines,est. BD,Fe(d),Fe(o),Fe(d)-Fe(o),Al(o),Conductivity
(microS/cm),pH,CEC,carbon-less CEC,% Base Saturation,oven dry %C ,%C
organic,LOI inorg C ,oven dry %N,kgC m-2 in horizon,KgC m-2/cm
depth,C:N,d13 CO-3,D14C CO-3,d13C bulk,D14C bulk,bulkTT,Fraction HF in
soil,%C HF,kgC m-2 in HF,%totalC in HF,d13C HF,D14C HF,HF TT,grav fraction
LF,%C LF,kgC m-2 in LF,%totalC in LF,%C roots,d13C roots,D14C roots,%C
LF,d13C LF,D14C LF,LFTT short,LFTT long,%C clay,%total C in clay,d13
clay,D14C clay,TT clay,%C nonclay,13C nonclay,14Cnonclay,TT nonclay,Mass
non-clay in horizon,cumulative mass nonclay,mass clay I
nhorizon,cumulative mass
clay,sand,silt,clay,clay*smectite/100,Quartz,Feldspars,Calcite,Oxides,Kaol
ins,Smectites,Chlorites,Micas
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1,rhyolite,470,2010,351375,7421676,0,3,2,3,5yr3/4,sl,1fgr-
sg,A,1vf,5,0.95,29,1,2.7,0.11,2.6,0.1,22,6.7,4.4,1.7,120.79,0.82,0.82,<0.0
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,  ,  ,,  ,  ,  ,28,28,0.3,0.3,85,17.5,1,0.6,0,1,0,12,25,57,4,1
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m.co.vc,50,0.5,90,1.5,2.7,0.11,2.6,0.1,26,6.9,10.6,8.4,32.94,0.64,0.636,<0
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RH-450-C,SA 1618,kl2-
1,rhyolite,470,2010,351375,7421676,15,30,23,15,5yr3/4,sl-
scl~20%,1fgr,Bw2,3vf-f-1m-co-
vc,70,0.3,77,1.7,2.7,0.11,2.6,0.1,19,6.7,5.8,3.7,95.31,0.62,0.62,<0.01,0.0
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co,95,0.05,26,1.7,2.6,0.14,2.5,0.1,20,6.4,5.7,3.9,83.82,0.53,0.53,<0.01,0.
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2.5/2,ls,sg,BA,2f-vf-
1m,80,0.2,74,1.6,0.6,0.05,0.5,0,0.03,6.1,10.4,7.7,72.82,0.8,0.78,<0.01,0.0
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f,80,0.2,4,1,4.4,0.27,4.1,0.2,113,7,55,34.4,68.68,6.04,6.04,<0.01,0.51,0.2
4,0.12,12, , ,-17.8,65,135,0.92,4.18,0.154,63.7,-
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NE-450-C,SA 1614,le6-
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mgr,Bw1,2vf-f-
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3,gabbro,470,2010,321956,7449291,0,2,1,2,10yr2/1,sicl,pl-1f-
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16.8,44.1,none,185,4.69,21.6,-14.8,-64.6,800,3.01,-
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coabk,Bw3,2vf.f.m,10,0.9,149,1.5,1.2,0.07,1.1,0.1,134,8.4,47.1,33.5,142.09
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m,20,0.8,141,1.6,1.4,0.06,1.3,0.1,133,8.4,41.6,26.9,151.7,4.31,1.6,2.7,0.1
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,110,1.6,1,0.05,0.9,0.1,120,8.5,27.8,16.4,207.79,3.34,0.95,2.39,0.09,1.05,
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RB-450-C,SA 1500,le3-1,picrite/olivine-rich basalt/letaba basalt/black
basalt,470,2009,341888,7420588,0,4,2,4,10yr2/1,cl,1vf-f-mgr,A1,2vf-
f,5,0.95,38,1,1.6,0.14,1.5,0.1,
,7.4,51,44.4,69.92,1.94,1.94,<0.01,0.12,0.74,0.18,16, ,-455.3,-14.9,-
16,450,0.91,1.79,0.619,83.9,-14.8,-23.1,490,,11.56,,,51.95,-
16.6,75.5,11.56,-16.6,60,2.5,145,2.5,46.6,-14.1,-125.3,1350,1.62,-
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basalt,470,2009,341888,7420588,4,15,10,11,10yr2/2,cl,2f-mgr,A2,3vf-f-
1m,20,0.8,106,1.2,1.8,0.15,1.6,0.2,
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216.2,2280,0.84,1.28,1.687,83.5,-13.3,-216.2,2410,,11.18,,,33.61,-
12.4,76,11.18, ,-53,none,700,2.46,88.1,-13.5,-
192.6,2100,0.28,,,,84,259,72.3,,36,17,46,45.2,2,0,0,0,0,98,0,0
RB-450-C,SA 1504,le3-1,picrite/olivine-rich basalt/letaba
basalt,470,2009,341888,7420588,49,68,59,19,10yr7/2 (calcite nodule)
10yr4/3 (soil),cl,m,Bk3/C,1vf,90,0.1,30,1.6,1,0.12,0.9,0.2,
,8,46.7,32.7,129.7,4.1,0.84,3.26,0.06,0.25,0.01,14, , ,-13.3,-
216.1,2280, , , , , , , ,, ,,, , , , , , ,,, ,, , , ,, ,
,,, , ,,32,16,52,, , , , , , , ,
BB-450-C,SA 1506,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,0,3,2,3,7.5yr2.5/1,cl,1fsbk,A1,2vf-
f,20,0.8,26,1.1,2.1,0.156,2,0.1,
,6.9,41.1,32.9,85.05,2.41,2.41,<0.01,0.15,0.64,0.21,16, , ,-13.7,-
25.4,500,0.89,1.54,0.363,57.1,-13.7,-25.4,510,,10,,, , , ,10,-
15.4,33.5,none,217,2.48,40.4,-14.3,-91.7,1030,2.36,-
13.4,19.5,265,16,16,10.4,10.4,38,23,39,36.1,1,0,0,0,6,92,0,0
BB-450-C,SA 1507,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,3,11,7,8,7.5yr2.5/1,cl++,1vf-fsbk,A2,3f-
1vf,25,0.75,72,1.2,2.1,0.105,1.9,0.1,
,6.5,43.6,37.5,77.02,1.79,1.79,<0.01,0.11,1.29,0.16,17, , ,-12.9,-
65.6,810,0.88,1.61,1.019,78.9,-12.9,-65.6,810,,7.5,,, , , ,7.5,-
16.6,33.5,none,217,2.18,60, , , ,1.41, , ,,37,53,35.5,45.8,31,19,49,,
, , , , , , ,
BB-450-C,SA 1508,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,11,31,21,20,7.5yr3/2,cl+,2m-cosbk,Bw1,2vf-
f,15-Oct,0.865,260,1.5,2.5,0.094,2.4,0.1,
,6.7,54.5,49.2,69.87,1.56,1.56,<0.01,0.1,4.04,0.2,16, , ,-11.9,-
133.2,1270,0.88,1.39,3.168,78.5,-11.9,-133.2,1420,, ,,, , , , , ,
,,,1.89,52.5,-12.9,-
147,1590,1.3,,,,147,200,112.1,,28,29,43,40.2,2,0,0,0,5,93,0,0
BB-450-C,SA 1509,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,31,54,43,23,7.5yr3/2,cl+,2m-coabk,Bw2,1vf-
f-co,15,0.85,293,1.5,2.9,0.115,2.7,0.2,
,7.2,57.7,53.4,68.19,1.25,1.25,<0.01,0.09,3.67,0.16,14, , ,-12.3,-
209.9,2200,0.88,0.95,2.446,66.7,-12.3,-209.9,2320,, ,,, , , , , ,
,,,1.5,58.5, , , ,1.01, , ,,150,350,143,,27,24,49,, , , , ,
, , ,
BB-450-C,SA 1510,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,54,70,62,16,7.5yr3/3,cl+,1-2f-msbk,Bw3,1vf-
f-m-co,45,0.55,132,1.5,2.2,0.131,2,0.2,
,7.5,61,54.8,65.72,1.8,1.8,<0.01,0.07,2.38,0.15,25, , ,-12.3,-
197.6,2030,0.86,0.91,1.033,43.5,-12.3,-197.6,2180,, ,,, , , , , ,
,,,,, , , ,3.36, , ,,71,421,61.3,,29,25,46,, , , , , , ,
,
BB-450-C,SA 1511,le4-1,olivine-poor basalt/sabie
basalt,470,2009,344120,7421754,70,85,78,15,7.5yr4/3,scl,M,2Cr,1vf,45,0.55,
132,1.6,1.3,0.092,1.2,0.1,
,7.9,57.2,50.1,106.02,2.09,2.09,<0.01,0.05,2.76,0.18,14, , ,-7.6,-
380,5070,0.8,0.59,0.625,22.6,-7.6,-380,5150,, ,,, , , , , , ,,, ,,
, , ,, , ,,, , ,, , , ,, , , , , , , ,

GR-550-C,SA 774,ST1,granite,550,2006,348678,7231971,0,15,8,15,7.5YR
3/2,sandy loam,1 fm sbk,A,2 vf m,3,0.97,249,1.7,0.34,0.12,0.2, ,
,5.1,5.2,2.7,36.63,0.7,0.72,<0.01,0.02,1.81,0.12,29, , ,-
16.2,67.5,130,0.988,0.51,1.262,69.9,-18.1,50.3,170,,16,,, , , ,16,-
22.2,57.7,1,152,,, , , ,, ,
,,214,214,34.6,34.6,75,11,14,0,0,0,0,0,79,0,21,0
GR-550-C,SA 775,ST1,granite,550,2006,348678,7231971,15,41,28,26,7.5YR
3/4,sandy loam,1 fmco sbk,Bw1,1 co- 2 vffm,5,0.95,448,1.8,0.36,0.12,0.2,
, ,5.4,3.5,2.7,41.64,0.2,0.22,<0.01,0.01,1,0.04,19, , ,-14.1,-
35.6,575,0.985,0.36,1.575,156.8,-17.1,59,148,,14.45,,, , , ,14.45,-
21.9,82.3,2.5,107,,, , , ,, , ,,385,600,62.2,96.7,72,14,14,, , ,
, , , , ,
GR-550-C,SA 776,ST1,granite,550,2006,348678,7231971,41,62,52,21,7.5YR
4/4,sandy loam,1 f sbk- 1 fm gr,Bw2,1 vff,10,0.9,333,1.8,0.36,0.03,0.3, ,
,5.6,4.7,4.2,37.01,0.2,0.16,<0.01,0.01,0.53,0.03,18, , ,-14.9,-
85.6,1000, ,0.16, , , ,-85.6,990,, ,,, , , , , , ,,,,, , , ,,
, ,,278,878,55.6,,75,8,17,0.2,0,0,0,0,79,1,21,0
GR-550-C,SA 777,ST1,granite,550,2006,348678,7231971,62,95,79,33,10YR
4/6,sandy loam,1 vff gr- sg,2BC,1 vff,80,0.2,128,1.9,0.94,0.05,0.9, ,
,5.6,5.7,5.2,25.47,0.2,0.15,<0.01,0.01,0.19,0.01,21, , ,-15.9,-
170.6,1700, , , , , ,-170.6,1850,, ,,, , , , , , ,,, ,, , ,
,, , ,,128,,,,75,11,14,, , , , , , , ,
GR-550-C,SA 778,ST1,granite,550,2006,348678,7231971,95,105,100,10,10YR
5/4,sandy loam/loamy sand,ma,2C,1 vf,80,0.2,37,1.9,1.54,0.24,1.3, , ,
,6.3,5.8,30.63,0.1,0.13,<0.01,0,0.05,0,28, , ,-16.4,-32.9,560, , , ,
, ,-32.9,500,, ,,, , , , , , ,,, ,, , , ,, ,
,,37,,,,81,8,11,, , , , , , , ,
GR-550-S,SA 512,ST5,granite,550,2006,348755,7231990,0,2,1,2,10YR 6/2,loamy
sand, ,A , ,2,1,38,1.9,0.06,0.02,0, ,
,6.2,4.9,2.6,64.37,0.7,0.66,<0.01,0.05,0.25,0.13,14, , ,-
20.2,72.3,125,0.99,0.48,0.18,71.8,-18.8,62.9,140,,22.49,,, , , ,22.49,-
20.8,62.4,1,135,,, , , ,, ,
,,36,36,2.1,2.1,82,13,6,0.9,0,0,0,0,76,17,7,0
GR-550-S,SA 513,ST5,granite,550,2006,348755,7231990,2,10,6,8,10YR
6/3,sandy loam/loamy sand,,Bw1, ,4,1,1512,1.9,0.06,0.04,0, ,
,5.5,1.9,0.7,94.51,0.4,0.35,<0.01,0.04,5.36,0.07,10, , ,-
19,63,140,0.99,0.4,6.004,112,-19.1,96.1,88,,21.31,,, , , ,21.31,-
20.2,82.1,2.5,107,,, , , ,, , ,,1386,1422,126,128.1,78,14,8,, , ,
, , , , ,
GR-550-S,SA 514,ST5,granite,550,2006,348755,7231990,10,20,15,10,10YR
6/3,loamy sand, ,Bw2, ,10,1,1890,1.9,0.06,0.02,0, ,
,4.9,3.5,2.7,36.16,0.3,0.25,<0.01,0.03,4.76,0.05,10, , ,-17.7,53.6,160,
,0.25, , , ,53.6,160,, ,,, , , , , , ,,,,, , , ,, ,
,,1759,3180,131.3,,81,13,7,1.7,0,0,0,0,65,25,11,0
GR-550-S,SA 515,ST5,granite,550,2006,348755,7231990,20,30,25,10,10YR
6/3,loamy sand, ,Bw3, ,3,1,1890,1.9,0.05,0.02,0, ,
,4.9,4.3,3.7,31.54,0.2,0.18,<0.01,0.03,3.42,0.03,7, , ,-18.2,36,205,
,0.18, , , ,36,210,, ,,, , , , , , ,,,,, , , ,, ,
,,1733,4913,157.5,,81,11,8,, , , , , , , ,
GR-550-T,SA 516,ST5,granite,550,2006,348755,7231990,30,41,36,11,10YR
7/2,loamy sand, ,Bw4, ,4,1,2079,1.9,0.04,0.01,0, ,
,5,3.3,3,20.32,0.1,0.1,<0.01,0,1.98,0.02,48, , ,-18.7,18.5,265, ,0.1,
, , ,18.5,270,, ,,, , , , , , ,,,,, , , ,, ,
,,1935,6848,144.4,,78,15,7,, , , , , , , ,

GR-550-T,SA 517,ST5,granite,550,2006,348755,7231990,41,56,49,15,10YR
8/2,loamy sand, ,BC1, ,23,1,2835,1.9,0.03,0,0, ,
,5.5,5.1,4.8,13.23,0.1,0.08,<0.01,0,2.4,0.02,50, , ,-20.4,-60.8,750, ,
, , , ,-60.8,770,, ,,, , , , , , ,,, ,, , , ,, , ,,, ,
,,78,17,6,, , , , , , , ,
GR-550-T,SA 518,ST5,granite,550,2006,348755,7231990,56,70,63,14,10YR
8/2,sand, ,BC2, ,93,0.9,2381,1.9,0.04,0,0, , , , , ,
,0.2,0.18,<0.01,0.07,4.31,0.03,3, , ,-19.7,-195.1,2000, , , , , ,-
195.1,2100,, ,,, , , , , , ,,, ,, , , ,, , ,,, , ,, , ,
,, , , , , , , ,
GR-550-T,SA 740,ST10,granite,550,2006,348831,7231986,0,8,4,8,7.5YR
2.5/2,sandy clay loam,1 fm sbk,A,2 vff,5,0.95,1324,1.7,0.15,0.08,0.1, ,
,6.5,10.1,7.4,65.9,0.8,0.8,<0.01,0.03,10.59,0.13,24, , ,-
16.7,58,150,0.96,0.76,9.648,91.1,-16.7,58,150,,21.16,,, , , ,21.16,-
18,54.7,1,157,,, , , ,, ,
,,993,993,331,331,61,14,25,6.5,0,0,0,0,57,26,17,0
GR-550-T,SA 741,ST10,granite,550,2006,348831,7231986,8,15,12,7,7.5YR
3/1,sandy clay,1 fm sbk,2Btn1,2 vff,35,0.65,868,1.9,0.2,0.15,0.1, ,
,6.5,21.4,19.1,56.84,0.7,0.7,<0.01,0.02,6.04,0.09,29, , ,-
14.1,39.6,195,0.98,0.49,4.151,68.7,-17.4,79,110,,15.17,,, , , ,15.17,-
19.9,74.4,2,120,,, , , ,, , ,,530,1523,337.4,668.4,53,8,39,, , ,
, , , , ,
GR-550-T,SA 742,ST10,granite,550,2006,348831,7231986,15,29,22,14,10YR
3/2,clay,2 mco abk,2Btn2,2 vff- 1 vco,15,0.85,2296,1.9,0.16,0.07,0.1, ,
,6.8,34.8,33.1,55.65,0.5,0.48,<0.01,0.02,11.12,0.08,24, , ,-
13.8,2.6,340, ,0.3, , , ,2.6,345,, ,,, , , , , , ,,,,, , , ,,
, ,,1212,2735,1084,,44,8,47,10.9,0,0,0,0,53,23,15,10
GR-550-T,SA 743,ST10,granite,550,2006,348831,7231986,29,46,38,17,10YR
2/1,sandy clay loam,1 m abk- ma,2Btn3,1
vff,15,0.85,2730,1.9,0.27,0.04,0.2, ,
,7.6,42.5,41.5,60.35,0.3,0.3,<0.01,0.02,8.08,0.05,17, , ,-13.8,1,345,
,0.09, , , ,1,355,, ,,, , , , , , ,,,,, , , ,, ,
,,1403,4138,1327.2,,45,6,49,, , , , , , , ,
GR-550-T,SA 744,ST10,granite,550,2006,348831,7231986,46,55,51,9,10YR
6/4,sandy loam,1 f sbk- sg,2Cr,1 f,20,0.8,1436,2,0.33,0.01,0.3, ,
,8.9,13.8,13.5,78.84,0.1,0.09,<0.01,0,1.25,0.01,31, , ,-13.8,-6,380, ,
, , , ,-6,390,, ,,, , , , , , ,,, ,, , , ,, , ,,, ,
,,71,10,19,, , , , , , , ,
GA-740-C1,SA 1625,pkop3a-
3,gabbro,740,2010,329124,7218015,0,4,2,4,10yr2/2,sl,1fgr,A,
,5,0.95,418,1.1,2.2,1.72,0.5,0.2,43,7.1,30.8,23.4,60.38,2.18,2.18,<0.01,0.
17,9.1,0.23,13, ,-22.3,-11.8,-62.1,755,0.97,1.58,6.405,70.4,-
13.4,78.2,112,0.006,34.72,0.943,10.4, , , ,34.72,-
16.9,72.6,1,134,0.96,8.8,-17.6,-91.7,1040,2.48,-11.2,-
59.2,750,334,334,83.6,83.6,62.5,17.5,20,12,0,1,0,14,10,60,6,9
GA-740-C1,SA 1626,pkop3a-
3,gabbro,740,2010,329125,7218016,4,24,14,20,10yr2/2,scl,1f-msbk,Bw1,
,30,0.7,2100,1.5,2.7,2.12,0.6,0.3,42,7.1,45.1,38.4,63.59,1.97,1.97,<0.01,0
.16,41.33,0.21,12, ,-20.6,-13,-99.1,1100,0.95,1.51,30.146,72.9,-
11.8,6.1,325,0.009,23.24,4.499,10.9, , , ,23.24,-
14.8,40.5,none,195,0.87,11,-15.5,-129.9,1400,2.34,-12.7,-
95.3,1050,1575,1909,525,608.6,60,15,25,17,0,1,0,8,16,68,6,1
GA-740-C1,SA 1627,pkop3a-
3,gabbro,740,2010,329126,7218017,24,44,34,20,10yr3/4,sl,1-2fsbk,Bw2,

,30,0.7,2100,1.5,2.5,2.45,0,0.5,33,7.4,43.1,39.9,63.42,0.95,0.95,<0.01,0.0
8,20.02,0.1,12, , ,-16.7,65.8,134, ,0.75, , ,-15.3,-62.1,780,, ,,,
, , , , , ,,,2.14,22.4,-13.1,-171.3,1900,0.82,-
17.7,134.2,,1890,3799,210,,75,15,10,7.7,0,0,0,14,3,77,3,3
GA-740-C1,SA 1628,pkop3a-
3,gabbro,740,2010,329127,7218018,44,62,53,18,10yr3/4,sl,1fgr-sg-M,BC,
,50,0.5,1350,1.5,1.8,2.06,-
0.3,0.3,28,7.6,32.1,30.4,65.9,0.49,0.49,<0.01,0.05,6.67,0.04,10, , ,-
14.8,41.8,190, , , , , ,-117.7,1280,, ,,, , , , , , ,,,,, , ,
,, , ,,,, ,,82.5,10,7.5,5.2,0,0,0,8,12,69,8,2
GA-740-C1,SA 1629,pkop3a-
3,gabbro,740,2010,329128,7218019,62,86,74,24,green,s,M-sg,Cr,
,70,0.3,1152,1.6,1.2,1.78,-
0.6,0.3,42,7.9,18.1,17.4,83.35,0.2,0.2,<0.01,0.01,2.34,0.01,41, , ,-
17.8,63.1,140, , , , , ,-99.1,1120,, ,,, , , , , , ,,,,, , ,
,, , ,,, , ,,87.5,7.5,5,, , , , , , , ,
GR-740-C,SA 119,ptk1a,granite,740,2004,326823,7211630,0,8,4,8,10YR
2/2,ls,0sg/1vfsbk,
,2vff,0,1,1200,1.5,0.4,0,0.4,0,0.11,6.5,32.8,24.9,5,2.3,2.34,<0.01,0.16,28
.08,0.35,15, , ,-19.8,142.8,50,0.96,0.99,11.504,41,-
16.8,143.9,45,,32.73,,, , , ,32.73,-21.3,145.8,18,47,,, , , ,, ,
,,1170,1170,30,30,80,17.5,2.5,, , , , , , , ,
GR-740-C,SA 120,ptk1a,granite,740,2004,326823,7211630,8,17,13,9,7.5YR
3/3,s,1vfmsbk/0sg,
,3vff1c,2,0.98,1499,1.7,0.4,0,0.4,0,0.01,6.1,8,6.4,18.27,0.5,0.48,<0.01,0.
04,7.13,0.08,12, , ,-15.8,94.9,92,0.98,0.32,4.683,65.7,-
15.1,109.4,90,,18.55,,, , , ,18.55,-17.8,95,8,91,,, , , ,, ,
,,1462,2632,37.5,67.5,82.5,15,2.5,, , , , , , , ,
GR-740-C,SA 121,ptk1a,granite,740,2004,326823,7211630,17,39,28,22,7.5YR
4/4,s,0sg/1mcsbk, ,2vffmc,5,0.95,3219,1.5,0.5,0,0.4,0,
,5.9,13,12,3.14,0.3,0.31,<0.01,0.03,9.86,0.04,12, , ,-16.8,78.9,115,
,0.31, , ,-16.8,78.9,115,, ,,, , , , , , ,,,,, , , ,, ,
,,3058,5690,160.9,,77.5,17.5,5,, , , , , , , ,
GR-740-C,SA 122,ptk1a,granite,740,2004,326823,7211630,39,70,55,31,7.5YR
4/6,s,1mcsbk/0sg, ,3vffmc,5,0.95,4741,1.6,0.4,0,0.4,0,
,5.8,3.8,3.5,4.41,0.1,0.08,<0.01,0.01,3.69,0.01,11, , ,-18.5,-
131.1,1260, ,0.08, , ,-18.5,-131.1,1430,, ,,, , , , , , ,,,,, ,
, ,, , ,,4623,10312,118.5,,85,12.5,2.5,, , , , , , , ,
GR-740-C,SA 123,ptk1a,granite,740,2004,326823,7211630,70,93,82,23,7.5YR
5/6,s,1mcsbk, ,3vff1mc,10,0.9,3705,1.8,0.5,0,0.5,0,
,5.2,1.7,1.5,56.73,0.1,0.07,<0.01,0.01,2.51,0.01,10, , ,-18.4,-
172.6,1720, , , , ,-18.4,-172.6,1900,, ,,, , , , , , ,,, ,, ,
, ,, , ,, , , ,,77.5,17.5,5,, , , , , , , ,
GR-740-C,SA 124,ptk1a,granite,740,2004,326823,7211630,93,115,104,22,5YR
5/4,s,1mcsbk, ,2vff1mc,80,0.2,752,1.7, , ,, ,
,5.1,11.5,11.2,10.31,0.1,0.09,<0.01,0.01,0.71,0,10, , , , ,, , , ,
, , , ,, ,,, , , , , , ,,, ,, , , , , , ,, , ,
,,76.25,13.75,10,, , , , , , , ,
GR-740-C,SA 125,ptk1a,granite,740,2004,326823,7211630,115,142,129,27,5YR
5/4,s,2msbk, ,2fm1vc,65,0.35,1616,1.7, , ,, ,
,5.4,8.6,8.4,14.47,0.1,0.06,<0.01,0.01,0.99,0,10, , , , ,, , , ,
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,,72.5,16.25,11.25,, , , , , , , ,

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GR-740-C,SA 126,ptk1a,granite,740,2004,326823,7211630,142,164,153,22,5YR
4/4,ls,1cmsbk,  ,1fm,65,0.35,1317,1.7,  ,  ,,  ,
,5.7,11.2,11,16.28,0.1,0.06,<0.01,0.01,0.76,0,8,  ,  ,  ,  ,,  ,  ,  ,  ,
,  ,  ,,  ,,,  ,  ,  ,  ,  ,  ,,,  ,,  ,  ,  ,  ,  ,  ,,  ,  ,
,,72.5,16.25,11.25,,   ,   ,   ,   ,   ,   ,   ,
GR-740-C,SA 127,ptk1a,granite,740,2004,326823,7211630,164,184,174,20,5YR
4/6,sl,2cmsbk,  ,.5fm,70,0.3,1062,1.8,  ,  ,,  ,
,5.9,11.1,10.8,23.83,0.1,0.06,<0.01,0.01,0.65,0,7,  ,  ,-20.1,-407.5,5700,
,  ,  ,  ,  ,  ,  ,  ,,  ,,,  ,  ,  ,  ,  ,  ,,,  ,,  ,  ,  ,  ,  ,  ,,  ,  ,
,,76.25,8.75,15,0,8,5,0,1,65,0,5,16
GR-740-C,SA 128,ptk1a,granite,740,2004,326823,7211630,184,205,195,21,5YR
4/6,sl,1msbk/2csbk,  ,.5m,65,0.35,1338,1.8,  ,  ,,  ,
,5.7,13.8,13.6,20.55,0.1,0.05,<0.01,0.01,0.73,0,8,  ,  ,  ,  ,,  ,  ,  ,
,  ,  ,  ,,  ,,,  ,  ,  ,  ,  ,  ,,,  ,,  ,  ,  ,  ,  ,  ,,  ,  ,
,,67.5,20,12.5,,   ,   ,   ,   ,   ,   ,   ,
GR-740-C,SA 129,ptk1a,granite,740,2004,326823,7211630,205,230,218,25,7.5YR
4/6,sc,1mcsbk/0sg,  ,.5f,35,0.65,2909,1.8,  ,  ,,  ,
,6.2,14.6,14.4,18.97,0,0.05,<0.01,0,1.4,0.01,10,  ,  ,-21.9,-424.3,6085,
,  ,  ,  ,  ,  ,  ,  ,,  ,,,  ,  ,  ,  ,  ,  ,,,  ,,  ,  ,  ,  ,  ,  ,,  ,  ,
,,62.5,25,12.5,,   ,   ,   ,   ,   ,   ,   ,
GR-740-C,SA 130,ptk1a,granite,740,2004,326823,7211630,230,245,238,15,7.5YR
5/6,s,0ma,  ,  ,45,0.55,1419,1.7,  ,  ,,  ,
,6.2,14.4,14.3,18.86,0,0.03,<0.01,0,0.46,0,9,  ,  ,-23.5,-555.2,10190,  ,
,  ,  ,  ,  ,  ,  ,,  ,,,  ,  ,  ,  ,  ,  ,,,  ,,  ,  ,  ,,,,,  ,  ,
,,75,17.5,7.5,,   ,   ,   ,   ,   ,   ,   ,
MG-550-C1,SA 1630,sb7a-2,mixed
granite/gabbro,550,2010,341298,7232342,0,3,2,3,10yr3/3,sl,1f-vfgr,A,1-2vf-
f,10,0.9,297,1.1,1.3,0.93,0.4,0.1,48.7,7,16.9,12.7,
,1.25,1.25,<0.01,0.11,3.71,0.12,12,  ,  ,-13.5,-42,620,  ,1.25,  ,  ,
,65.8,135,,  ,,,  ,  ,  ,  ,  ,  ,,,,,,,,,,,,  ,,  ,,  ,  ,  ,,   ,   ,
,   ,   ,   ,   ,
MG-550-C1,SA 1631,sb7a-2,mixed
granite/gabbro,550,2010,341298,7232342,3,15,9,12,10yr3/3,sl,1f-
msbk,Bw1,1f-vf-vc,10,0.9,1728,1.6,1.3,1,0.3,0.2,30,7,5.6,2.9,
,0.82,0.82,<0.01,0.07,14.1,0.12,12,  ,  ,-13.7,-77.4,910,  ,0.82,  ,  ,
,41.8,190,,  ,,,  ,  ,  ,  ,  ,  ,,,,,,,,,,,,1469,,259.2,,  ,
,15,6.2,0,1,0,7,28,41,5,18
MG-550-C1,SA 1632,sb7a-2,mixed
granite/gabbro,550,2010,341298,7232342,15,38,27,23,7.5yr3/3,sl,1fgr-
sg,Bw2,1f-m-co-vc,70,0.3,1173,1.7,1.4,0.83,0.6,0.2,32,6.6,16.2,13.8,
,0.71,0.71,<0.01,0.06,8.34,0.04,11,  ,  ,-14.2,-65.5,810,  ,0.71,  ,  ,,-
65.5,790,,  ,,,  ,  ,  ,  ,  ,  ,,,,,,,,,,,,  ,,  ,,  ,  ,  ,,   ,   ,   ,
,   ,   ,   ,
MG-550-C1,SA 1633,sb7a-2,mixed
granite/gabbro,550,2010,341298,7232342,38,60,49,22,2.5yr3/4,sl-scl,sg-
M,BC,1vf,90,0.1,374,1.7,1.5,0.77,0.7,0.2,18,6.5,20.3,18.7,
,0.48,0.48,<0.01,0.05,1.78,0.01,9,  ,  ,-13.9,-130.7,1250,  ,  ,  ,  ,,-
130.7,1450,,  ,,,  ,  ,  ,  ,  ,  ,,,,,,,,,,,,  ,  ,  ,,  ,  ,  ,,   ,   ,
,   ,   ,   ,   ,
MG-550-C2,SA 1634,sb7a-3,mixed
granite/gabbro,550,2010,341298,7232342,0,3,2,3,10yr3/3,sl,1fgr,A,1vf-
f,5,0.95,314,1.1,1.2,0.88,0.3,0.1,71,6.7,13.6,9.9,
,1.07,1.07,<0.01,0.09,3.37,0.11,12,  ,  ,-
17.8,63.1,140,0.99,0.91,2.829,84,-16.6,60.2,140,0.006,36.87,0.702,20.8,  ,
```

, ,36.87,-22.3,71.7,5.5,125,,,,,,,,,266,266,47,, ,
,15,7.2,1,1,0,6,26,48,2,15
MG-550-C2,SA 1635,sb7a-3,mixed
granite/gabbro,550,2010,341298,7232342,3,10,7,7,10yr2/2,sl-scl,1f-
msbk,Bw1,2vf-f,10,0.9,1008,1.6,1.1,0.74,0.3,0.1,160,6.6,16.4,13.7,
,0.8,0.8,<0.01,0.07,8.03,0.11,11, , ,-
16.8,0.2,360,0.98,0.75,7.393,92.1,-15.3,54.1,160,0.008,15.51,1.213,15.1,
, , ,15.51,-20.6,80.5,6.8,110,1,15.7, , , ,0.77,,,,882,1148,126,, ,
,12.5,6.6,1,1,0,5,21,53,2,17
MG-550-C2,SA 1636,sb7a-3,mixed
granite/gabbro,550,2010,341298,7232342,10,35,23,25,10yr3/4,scl,2msbk,BC1,2
-3vf-f-2co-vc,70,0.3,1275,1.7,1.3,0.89,0.5,0.2,60,7.2,20.7,18.1,
,0.75,0.75,<0.01,0.07,9.52,0.04,11, , ,-13.5,-42,625, , , , , ,-
42,640,, ,,, , , , , , ,,,0.71,9.6,-19.7,-322.4,4000,,,,, , , ,,
, ,10,5.5,0,1,0,4,25,55,4,10
MG-550-C2,SA 1637,sb7a-3,mixed
granite/gabbro,550,2010,341298,7232342,35,60,48,25,7.5yr3/3,sl,sg-
1fsbk,BC2,1vf-f,90,0.1,425,1.7,1.2,0.52,0.7,0.2,31,7.2,17.6,15.5,
,0.62,0.62,<0.01,0.06,2.65,0.01,11, , ,-13.7,-77.4,925, , , , , ,-
77.4,900,, ,,, , , , , , ,,,0.64,10.3,-18.5,-338.6,4200,,,,, , ,
,, , ,10,6.3,0,1,0,4,26,63,1,5
GA-550-C,SA 428,sb7a,gabbro,550,2005,333525,7230774,0,9,5,9,10YR 2/2,sl-
scl,2f-msbk-1mgr-1vnpl,BA,3f-vf,5,0.95,1197,1.4, , ,,
,0.11,7.15,36.7,30.4,41.83,1.9,1.86,<0.01,0.13,22.31,0.25,15, , ,-
16.1,58.7,150,0.98,2.76,32.385, ,-14.4,45.8,180,,29.93,,, , , ,29.93,-
18.1,98.3,5,86, ,, , , ,,,,, , , ,,220.9,22.5,12.5,,   ,   ,   ,
,   ,   ,   ,
GA-550-C,SA 429,sb7a,gabbro,550,2005,333525,7230774,9,24,17,15,7.5YR
2.5/1,scl,3f-mabk,Bw1,3vf-f-m-1vc,5,0.95,2360,1.7, , ,,
,0.09,7.44,42.5,37.2,49.54,1.5,1.54,<0.01,0.1,36.31,0.24,16, , ,-
14.5,38.4,195,0.99,2.27,52.878, , ,38.4,200,,15.22,,, , , ,15.22,-
13.2,88,4,98, ,, , , ,,,,, , , ,,220.9,13.75,27.5,,   ,   ,   ,   ,
,   ,   ,
GA-550-C,SA 430,sb7a,gabbro,550,2005,333525,7230774,24,43,34,19,7.5YR
2.5/2,scl,3f-m-co-abk,Bw2,1vf-m,5,0.95,2888,1.6, , ,,
,0.14,7.37,43.3,39.3,51.09,1.2,1.17,<0.01,0.08,33.67,0.18,14, , , , ,,
,1.17, , , , , , ,, ,,, , , , , , , ,,, ,, , , ,,,,, , ,
,,220.9,20,27.5,,   ,   ,   ,   ,   ,   ,   ,
GA-550-C,SA 431,sb7a,gabbro,550,2005,333525,7230774,43,66,55,23,7.5YR
2.5/2,scl,2f-mabk,Bw3,1vf-f,15,0.85,2957,1.5, , ,, ,
,7.4,47.2,43.7,50.25,1,1.03,<0.01,0.07,30.33,0.13,14, , , , ,, ,1.03,
, , , , , ,, ,,, , , , , , , ,,, ,, , , ,,,,, , ,
,,220.9,15,25,,   ,   ,   ,   ,   ,   ,   ,
GA-550-C,SA 432,sb7a,gabbro,550,2005,333525,7230774,66,84,75,18,7.5YR
2.5/3,scl,2vf-fsbk,Bw4,1vf,25,0.75,2080,1.5, , ,,
,0.1,7.51,119.8,117.6,19.86,0.6,0.65,<0.01,0.05,13.49,0.07,14, , , ,
,, ,0.37, , , , , , ,, ,,, , , , , , , ,,, ,, , , ,,,,, , ,
,,220.9,17.5,17.5,,   ,   ,   ,   ,   ,   ,   ,
GA-550-C,SA 433,sb7a,gabbro,550,2005,333525,7230774,84,110,97,26,5YR
4/3,sl, ,"M,sg", ,57,0.43,1677,1.5, , ,,
,0.08,7.73,44.4,43.2,54,0.4,0.37,<0.01,0.03,6.28,0.02,15, , , , ,, ,
, , , , , ,, ,,, , , , , , , ,,, ,, , , ,,,,, , ,
,,220.9,12.5,7.5,,   ,   ,   ,   ,   ,   ,   ,

GA-450-C,SA 1601,ph4a-
2,gabbro,470,2010,322035,7449339,0,2,1,2,10yr3/2,scl,1f-mgr-pl,A,1vf-
f,2,0.98,216,1.1,1.7,0.14,1.6,0.1,94.9,7.9,26.8,21.3,100,1.62,1.62,0.01,,3
.5,0.18,15, , ,-16.6,22,250,0.96,2.75,5.708, ,-19.2,-
16.1,450,0.006,41.08,0.537,15.3, , , ,41.08,-
19.2,61,3.5,145,1.29,11.9,-16.3,-4.4,380,1.68,-
16.7,25.6,240,183,183,32.3,,220.9,30,15,1.8,36,8,0,26,0,12,0,18
GA-450-C,SA 1602,ph4a-
2,gabbro,470,2010,322035,7449339,2,11,7,9,10yr3/2,scl,2f-msbk,Bw1,2-3vf-f-
1m,5,0.95,1197,1.4,1.9,0.19,1.7,0.2,126.2,8.1,32.2,25.8,82.9,1.86,1.86,0.0
1,,22.29,0.25,19, , ,-14.5,-0.1,350,0.95,1.07,12.174,54.6,-17,-
0.1,360,0.009,35.11,3.656,16.4, , , ,35.11,-17,54.4,2,160,1,7.4, , ,
,2,,,,1032,1216,164.6,,220.9,24,14,5.6,9,3,0,9,3,41,6,29
GA-450-C,SA 1603,ph4a-
2,gabbro,470,2010,322035,7449339,11,20,16,9,10yr2/2,scl,1f-vfsbk-
1mgr,Bw2,2vf-f-1m-
co,10,0.9,1215,1.5,2.2,0.18,2,0.2,117.3,8.3,36.1,29.1,130.92,2.06,1.74,0.3
2,,21.09,0.23,20, , ,-14.3,-54.6,710, ,1.74, , , ,-54.6,710,, ,,, ,
, , , , ,,,1,2.9, , ,
,1.77,,,,1154,2370,60.8,,220.9,38,5,3.1,2,1,0,9,8,62,2,16
GA-450-C,SA 1604,ph4a-
2,gabbro,470,2010,322035,7449339,20,34,27,14,10yr4/2,scl,1m-cogr,Bw3,1vf-
f-
m,35,0.65,1365,1.5,1.7,0.15,1.6,0.2,112,8.4,32.9,23.2,153.56,2.84,1.43,1.4
1,,19.57,0.14,20, , ,-15.9,-70.8,825, ,1.43, , , ,-70.8,850,, ,,, ,
, , , , ,,,0.8,5.6, , ,
,1.5,,,,1229,3598,136.5,,220.9,40,10,6.4,1,1,26,4,3,64,0,2
GA-450-C,SA 1605,ph4a-
2,gabbro,470,2010,322035,7449339,34,48,41,14,10yr4/4,sl-scl~20%,1vfgr-
sg,BC1,1vf-f-
m,30,0.7,1568,1.6,1.2,0.1,1.1,0.2,106,8.5,24.9,16.3,213.24,2.53,0.73,1.8,,
11.47,0.08,16, , ,-15.9,-103,1125, , , , , ,-103,1150,, ,,, , ,
, , , ,,, ,, , , ,,,,, , , ,,220.9,20,15,9.3,0,2,29,2,3,62,0,1
GA-450-C,SA 1606,ph4a-
2,gabbro,470,2010,322035,7449339,48,70,59,22,10yr4/6,sl<15%,sg,BC2,1vf,45,
0.55,1936,1.6,1,0.09,0.9,0.1,103,8.6,22.5,15,216.73,2.19,0.4,1.79,0.04,7.7
2,0.04,10, , ,-15.1,-138.8,1330, ,1.7, , , ,-138.8,1500,, ,,, , ,
, , , ,,, ,, , , ,,,,, , , ,,220.9,18,13,, , , , , ,
, ,
GA-740-C,SA 1620,pkop3a-
2,gabbro,740,2010,329124,7218015,0,3,2,3,10yr3/2,sl-scl,1fsbk-1fgr,A,36vf-
f,5,0.95,314,1.1,2.2,0.77,1.5,0.2,35,6.9,19.5,13.5,
,1.76,1.76,<0.01,0.14,5.53,0.18,13, ,-20.8,-
13.6,88.1,98,0.97,1.55,4.697,85,-13.1,85.2,105,0.007,35.65,0.78,14.1, ,
, ,35.65,-16.1,67.6,4,133,1.17,14.8,-19.1,-160,1720,1.93,-
12.7,131.1,53,244,244,69.9,, , ,27.5,19.8,0,1,0,15,6,72,3,4
GA-740-C,SA 1621,pkop3a-
2,gabbro,740,2010,329125,7218016,3,9,6,6,10yr3/3,sl-scl,1fsbk,Bw1,2vf-f-
vc,10,0.9,648,1.2,2.7,2.12,0.6,0.3,55,7.1,32.2,24.6,
,2.24,2.24,<0.01,0.18,14.48,0.24,12, ,-16.1,-
13.4,70,123,0.96,1.77,11.018,76.1,-12.8,60.6,145,0.01,35.27,2.307,15.9, ,
, ,35.27,-16.9,64.4,3.5,137,1.1,10.3,-17.7,-116.1,1270,2.54,-
12.9,91.4,96,513,756,135.5,, , ,27.5,19.8,0,0,0,14,8,72,3,3

GA-740-C,SA 1622,pkop3a-
2,gabbro,740,2010,329126,7218017,9,25,17,16,10yr3/4,scl,1f-msbk,Bw2,1vf-
f,15,0.85,2040,1.5,2.4,2.18,0.2,0.3,44,7.4,40.5,36.4,
,1.21,1.21,<0.01,0.1,24.61,0.15,12, ,-16.9,-13.2,-12.1,425, ,1.21, , ,
,-12.1,430,, ,,, , , , , ,78.5,6,113,1,13.9, , ,
,1.25,,,,1698,2454,342.4,, , ,25,, , , , , , , ,

Table S2. Correlation matrices (using Hmisc package in R; Harrell et al. 2016). Number of observations =15; Table 5 was the basis for the correlation matrix. Geology was assigned numeric values from felsic to mafic lithologies (1=rhyolite, 2=granite, 2.5= mixed granite, 3=gabbro, 4 = nephelenite, 5=basalt). Depth = maximum soil depth used in the study. CEC = cation exchange capacity corrected for organic C contribution (see text).Clay = mass fraction of soil that is in the clay-sized fraction; Smec = % of clay that is smectite; clay.smec = Clay*smectite (i.e. the average amount (in %) of smectite clay in the profile). Fed and Feo are the citrate-dithionite and oxalate extractable Fe fractions expressed as per cent. (In general extractable Al was much lower and not considered). 13C is the profile-averaged $\delta^{13}C$ (‰) and 14C the profile-averaged $\Delta^{14}C$ (‰). TT is estimated turnover time (in years) and was derived from the C-weighed averages as were the isotopic values.

Significance is indicated as * p<.05, **p<.01, ***p <.001

	geology	rainfall	Fe(d)	Fe(o)	Fe.d - Fe.o.	pH	Cless_ CEC	ORGA NIC.C	mC.N	mean 13C	mean D14C	TT (year)	Fclay-sized	mean Clay content	phosph ate
geology															
rainfall	-0.34														
Fe(d)	0.57*	-0.27													
Fe(o)	0.28	0.44	0.28												
Fe.d - Fe.o.	0.53	-0.38	0.97 ***	0.06											
pH	0.62*	-0.25	0.46	0.28	0.42										
Cless_CEC	0.77**	-0.19	0.72**	0.21	0.70 **	0.59 *									
ORGANIC.C	0.7**	-0.28	0.91***	0.26	0.88 ***	0.53	0.84								
mC.N	-0.07	-0.53	-0.2	-0.43	-0.11	-0.14	-0.01	-0.07							
mean 13C	0.52	-0.21	0.32	0.16	0.29	0.78 **	0.47	0.37	0.2						
mean D14C	-0.83 ***	0.35	-0.29	-0.17	-0.26	-0.6 *	-0.55	-0.33	-0.07	-0.7**					
TT (year)	0.79**	-0.19	0.36	0.3	0.3	0.83***	0.61*	0.45	-0.12	0.66*	-0.82***				
Fclay-sized	0.16	0.14	-0.32	-0.32	-0.26	-0.05	0.23	-0.2	0.16	0.09	-0.32	0.27			
mean Clay content	0.64 *	-0.29	0.35	-0.02	0.37	0.4	0.83***	0.49	0.16	0.41	-0.61*	0.5	0.53		
smectitie (fraction of	0.92 ***	-0.24	0.39	0.3	0.34	0.64 *	0.73**	0.53	-0.07	0.47	-0.85***	0.84***	0.24	0.62*	

clay)															
phosphate content	0.79**	-0.47	0.38	0.15	0.36	0.42	0.54	0.48	0.03	0.18	-0.54	0.62*	0.19	0.53	0.67*
Clay*smec	0.85***	-0.32	0.39	0.02	0.4	0.48	0.79**	0.48	0.07	0.44	-0.83***	0.73**	0.54	0.84***	0.87**

Code for generating radiocarbon for a given TT.
For additional information on SoilR please see Sierra et al. 2014 (in main text references). S O I L R version 1.1 can be downloaded from the Comprehensive R Archive Network (CRAN) or RForge. Source code and test framework can be obtained from these two repositories. To install, use the function install.packages("SoilR",repo), specifying either a CRAN mirror or RForge in the repo argument.

```
#### R Code for determining the 14C of a steady state homogeneous, one-pool model
##### uses the SoilR package and the Hua et al. (2013) Curve for the Southern Hemisphere
### First, install the SoilR package.

install.packages("SoilR", repo)   ## repo is the repository (CRAN mirror or RForge, as needed)

##### Load the SoilR library

library(SoilR)

#Bind the IntCal13 dataset and Hua2013 for the Southern Hemisphere Zones 1,2
# This produces the atmospheric 14C record from 50,000 BP to 2010 in Years AD

ad=bind.C14curves(prebomb=IntCal13,postbomb=Hua2013$SHZone12,time.scale="AD")

## Plot the atmospheric record
plot(ad[,1:2],type="l")
plot(ad[,1:2],type="l",xlim=c(0,2010))
abline(v=1950,lty=2)

####### To estimate the Value of 14C as a function of time for a given Turnover time (TT)
## Example given is for 50 year TT (you can change the value as needed)
TT=50  ###  Put in the value of the TT in years you wish to use (in years)

### Other factors will be calculated to make sure model is at steady state
k1=1/TT   ### k1 is the decomposition rate (1/TT) in 1/yr
la = 1/8267 ### la is the radio-decay constant for radiocarbon 1/mean life
Fz = k1/(k1+la)     ### Steady state pre-bomb estimate of the Absolute Fraction Modern (see
Sierra et al. 2014)
DFz = 1000*(Fz-1)   ### Expressed as Delta 14C

##### Other model inputs are calculated so as to have the model remain at steady state
LitterInput=10   # arbitrary inputs
Cinit=LitterInput*TT  #  Inventory at steady state = initial Cinventory (arbitrary units)
####  Next step is to run the model
## In SoilR the one pool model is a function that can be called
years=seq(1901,2010,by=0.5)   # time scale for running the model (expressed in years AD)
```

```
Ex=OnepModel14(t=years,k=k1,C0=Cinit,F0=DFz,In=LitterInput, inputFc=ad)   #Soil R model
function
C14t=getF14(Ex)   # Extracts 14C for each year
Ct=getC(Ex)    # Extracts C inventory for each year (check for steady state)
DEL = C14t[217,]   # This extracts the 14C signature in the year 2010
## Next steps make a plot of 14C versus year
plot(C14Atm_NH,type="l",xlab="Year",ylab="Delta 14C (per mil)",xlim=c(1940,2010))
lines(years, C14t[,1], col=4)
points(2010, DEL,  cex=1.5)
legend(
  "topright",
  c("Delta 14C Atmosphere", "Delta 14C in SOM"),
  lty=c(1,1),
  col=c(1,4),
  lwd=c(1,1),
  bty="n"
)

#####
C14t[217,]  #This line will return only the Del14C for the year 2010 (to be compared with the
measured value)
#########
#########

### This code generates a table and a plot of the 14C signature
#### expected in 2010 for the one-pool, homogeneous, steady state model
### assimung a range of TTs (1 to 2000 years).
## This generates a "lookup" table for comparing with the data

sol1=2000   ### This is the end TT, starts with 1 year
sols= data.frame(1:sol1, 1:sol1) ## makes a data frame of the right size
for(i in 1:sol1) ## number of calculations
{
TT=i
k1=1/TT
la = 1/8267
Fz = k1/(k1+la)
DFz = 1000*(Fz-1)
LitterInput=10
Cinit=LitterInput*TT
Cinit
years=seq(1901,2010,by=0.5)
Ex=OnepModel14(t=years,k=k1,C0=Cinit,F0=DFz,In=LitterInput, inputFc=ad)
C14t=getF14(Ex)
DEL = C14t[206,]
sols[i,1] = i
```

```
sols[i,2] = DEL
i=i+1
}
## Write the whole file
write.csv(sols, file = "Solutions.csv")
## make a plot of the 14C expected in 2010 for each TT.
plot(sols[,1],sols[,2],xlab="TT",ylab="Delta 14C (per mil)"
```

References:

Harrell, F.E., Jr, with contributions from Charles Dupont and many others.: Hmisc: Harrell Miscellaneous. R package version 3.17-2. https://CRAN.R-project.org/package=Hmisc, 2016.

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Sierra, C., Müller, M.M., Trumbore, S.E.: Modeling radiocarbon dynamics in soils: SoilR version 1.1, Geoscientific Model Development 7 (5), 1919-1931, 2014.