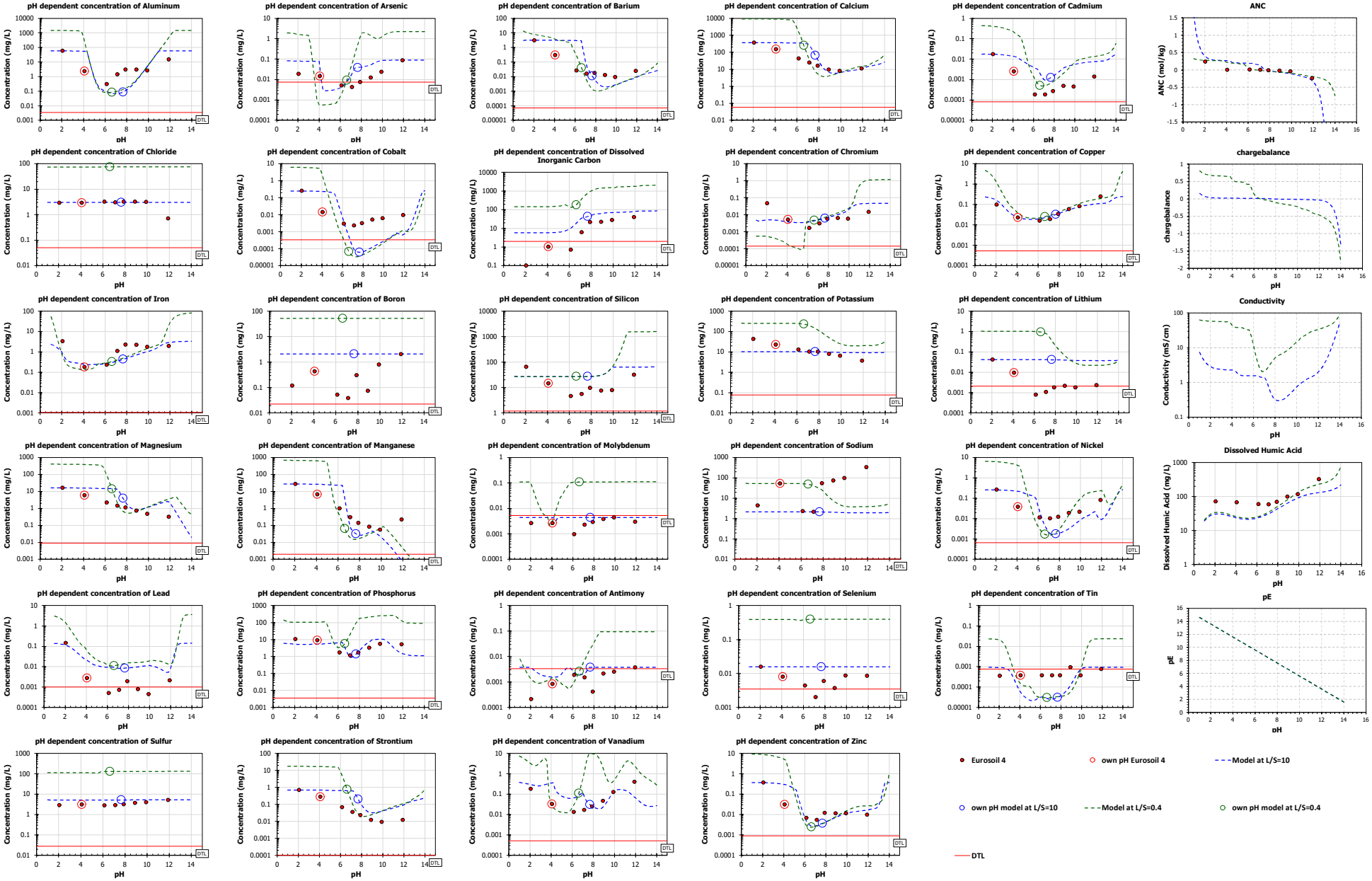
COMPARISON pH DEPENDENCE WITH MODEL



Object pH Dependent Leaching Test Model
Name Eurosoil 4

pH Dependent Leaching Test Scenario

Lab Test

Extra L/S Simulation

Lab Test

Model Parameters

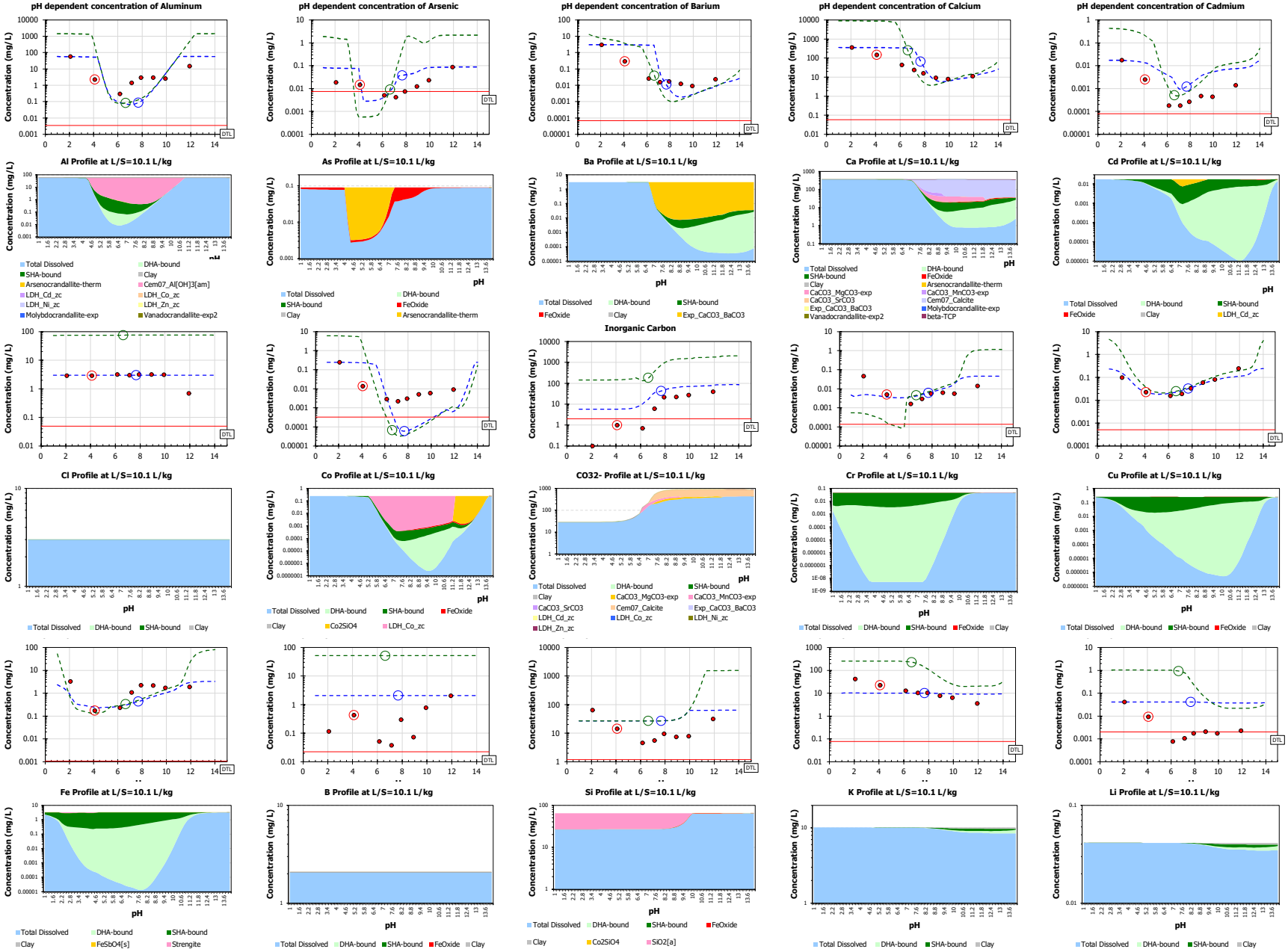
Entity	Unit	Default
c0		-5.698
c1		1.022
c2		-0.4064
c3		0.06648
c4		-0.004637
c5		0.0001168
Clay	mg/kg	3000
Hydrous Ferric Oxic	mg/kg	750.0
L/S	L/kg	10.05
pE		9.740
pH		5.860
Solid Humic Acid	mg/kg	2924
Simulated Low L/S	L/kg	0.4000

Available Content

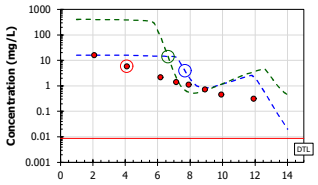
Entity	mg/kg	Entity	mg/kg	Entity	mg/kg	Entity	mg/kg
Al	587.7	Fe	33.07	Pb	1.437		
As	0.8998	B	20.88	PO4	319.3		
Ba	31.02	Si	649.9	Sb	0.03778		
Br	7.990E-08	Hg	2.006E-07	Se	0.1585		
Ca	3666	K	102.1	Sn	0.009325		
Cd	0.1756	Li	0.4161	SO4	157.5		
Cl	30.20	Mg	162.4	Sr	7.060		
Co	2.472	Mn	274.1	Th	2.320E-07		
CO32-	9000	Mo	0.04401	U	2.380E-07		
Cr	0.4657	Na	21.44	V	4.096		
Cu	2.490	Ni	2.589	Zn	3.761		
F	1.900E-08	NO3	20.00				

Minerals

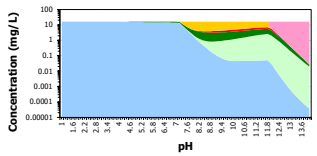
Name	Log(K)	Reaction
Arsenocrandallite-t	95.56	Arsenocrandallite-therm + 6 H2O -> 3 Al[OH]4- + 2 AsO4-3 + 1 Ca+2 + 7 H+
Ba[SCr]O4[96%SO4	9.790	Ba[SCr]O4[96%SO4] -> 1 Ba+2 + 0.04 CrO4-2 + 0.96 SO4-2
beta-TCP	28.93	beta-TCP -> 3 Ca+2 + 2 PO4-3
CaCO3_Li2CO3	21.30	CaCO3_Li2CO3 -> 2 CO3-2 + 1 Ca+2 + 2 Li+
CaCO3_MgCO3-exp	18.02	CaCO3_MgCO3-exp -> 2 CO3-2 + 1 Ca+2 + 1 Mg+2
CaCO3_MnCO3-exp	20.78	CaCO3_MnCO3-exp -> 2 CO3-2 + 1 Ca+2 + 1 Mn+2
CaCO3_Na2CO3	18.30	CaCO3_Na2CO3 -> 2 CO3-2 + 1 Ca+2 + 2 Na+
CaCO3_SrCO3	19.85	CaCO3_SrCO3 -> 2 CO3-2 + 1 Ca+2 + 1 Sr+2
Cem07_Al[OH]3[an	13.76	Cem07_Al[OH]3[am] + 1 H2O -> 1 Al[OH]4- + 1 H+
Cem07_Brucite	-16.83	Cem07_Brucite + 2 H+ -> 2 H2O + 1 Mg+2
Cem07_Calcite	8.485	Cem07_Calcite -> 1 CO3-2 + 1 Ca+2
Co2SiO4	6.289	Co2SiO4 + 2 H+ -> 2 Co+2 + 1 H2SiO4-2
Exp_CaCO3_BaCO3	21.30	Exp_CaCO3_BaCO3 -> 1 Ba+2 + 2 CO3-2 + 1 Ca+2
FeSbO4[s]	35.48	FeSbO4[s] + 6 H2O -> 1 Fe[OH]4- + 2 H+ + 1 Sb[OH]6-
LDH_Cd_zc	60.06	LDH_Cd_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 3 Cd+2 + 1 H+
LDH_Co_zc	60.01	LDH_Co_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 3 Co+2 + 1 H+
LDH_Ni_zc	57.91	LDH_Ni_zc + 1 H2O -> 1 Al[OH]4- + 3 CO3-2 + 1 H+ + 3 Ni+2
LDH_Zn_zc	20.91	LDH_Zn_zc + 3 H+ -> 1 Al[OH]4- + 1 CO3-2 + 3 H2O + 3 Zn+2
Manganite	-25.27	Manganite + 3 H+ + 1 e- -> 2 H2O + 1 Mn+2
Molybdocrandallite-exp	86.00	Molybdocrandallite-exp + 6 H2O -> 3 Al[OH]4- + 1 Ca+2 + 7 H+ + 3 MoO4-2
Ni[OH]2[s]	-10.80	Ni[OH]2[s] + 2 H+ -> 2 H2O + 1 Ni+2
Pb[Sb[OH]6]2_exp	29.00	Pb[Sb[OH]6]2_exp -> 1 Pb+2 + 2 Sb[OH]6-
PbMoO4[c]	15.80	PbMoO4[c] -> 1 MoO4-2 + 1 Pb+2
PbOH[Sb[OH]6]_exp	14.00	PbOH[Sb[OH]6]_exp + 1 H+ -> 1 H2O + 1 Pb+2 + 1 Sb[OH]6-
SiO2[a]	24.64	SiO2[a] + 2 H2O -> 2 H+ + 1 H2SiO4-2
Strengite	48.00	Strengite + 2 H2O -> 1 Fe[OH]4- + 4 H+ + 1 PO4-3
Vanadocrandallite-exp2	41.76	Vanadocrandallite-exp2 + 1 H+ + 2 H2O -> 3 Al[OH]4- + 1 Ca+2 + 2 VO2+


pH dependent concentration of Aluminum
pH dependent concentration of Arsenic
pH dependent concentration of Barium
pH dependent concentration of Calcium
pH dependent concentration of Cadmium
Al Profile at L/S=10.1 L/kg
As Profile at L/S=10.1 L/kg
Ba Profile at L/S=10.1 L/kg
Ca Profile at L/S=10.1 L/kg
Cd Profile at L/S=10.1 L/kg
Inorganic Carbon
Cl Profile at L/S=10.1 L/kg
Co Profile at L/S=10.1 L/kg
CO32- Profile at L/S=10.1 L/kg
Cr Profile at L/S=10.1 L/kg
Cu Profile at L/S=10.1 L/kg
Fe Profile at L/S=10.1 L/kg
B Profile at L/S=10.1 L/kg
Si Profile at L/S=10.1 L/kg
K Profile at L/S=10.1 L/kg
Li Profile at L/S=10.1 L/kg
Concentration (mg/L)
pH
DTL
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
Arsenocrandallite-therm
Cem07_Al[OH]3[am]
CaCO3_MgCO3-exp
CaCO3_MnCO3-exp
CaCO3_SrCO3
Cem07_Calcite
Exp_CaCO3_BaCO3
Molybdocrandallite-exp
Vanadocrandallite-exp2
beta-TCP
LDH_Cd_zc
LDH_Co_zc
LDH_Ni_zc
LDH_Zn_zc
Co2SiO4
FeSbO4[s]
Strengite
SiO2[a]

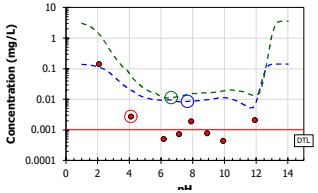
pH dependent concentration of Magnesium



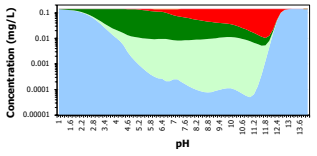
Mg Profile at L/S=10.1 L/kg



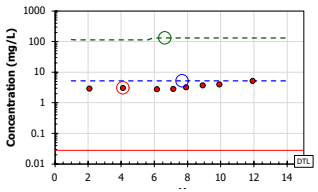
Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_MgCO3-exp Cem07_Brucite



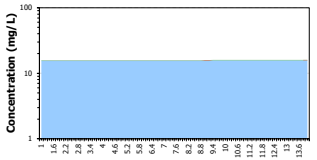
Pb Profile at L/S=10.1 L/kg



Total Dissolved DHA-bound SHA-bound FeOxide Clay PbOH[Sb[OH]6]_exp Pb[Sb[OH]6]2_exp

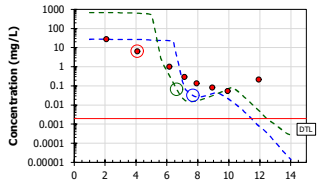


SO4 Profile at L/S=10.1 L/kg

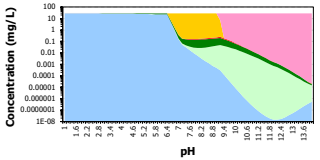


Total Dissolved DHA-bound SHA-bound FeOxide Clay

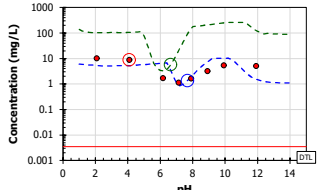
pH dependent concentration of Manganese



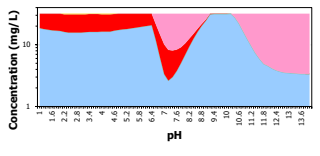
Mn Profile at L/S=10.1 L/kg



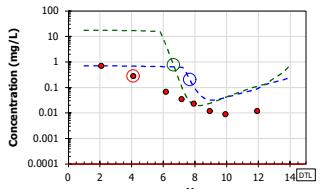
Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_MnCO3-exp Manganite



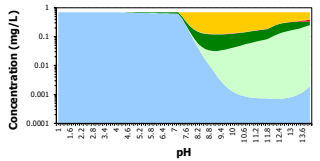
PO4 Profile at L/S=10.1 L/kg



Total Dissolved DHA-bound SHA-bound FeOxide Clay Strengite beta-TCP

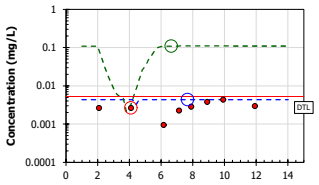


Sr Profile at L/S=10.1 L/kg

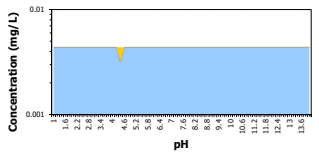


Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_SrCO3

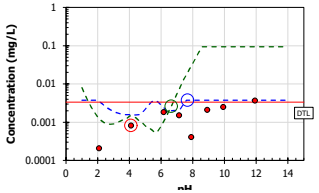
pH dependent concentration of Molybdenum



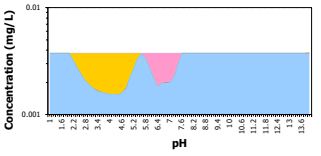
Mo Profile at L/S=10.1 L/kg



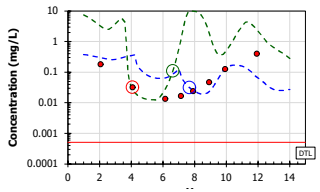
Total Dissolved DHA-bound SHA-bound FeOxide Clay Molybdocrandallite-exp



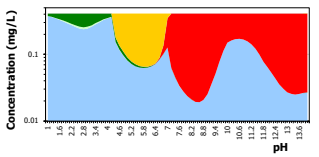
Sb Profile at L/S=10.1 L/kg



Total Dissolved SHA-bound FeOxide Clay FeSbO4[s] PbOH[Sb[OH]6]_exp Pb[Sb[OH]6]2_exp

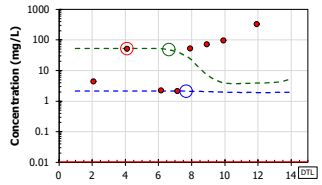


V Profile at L/S=10.1 L/kg

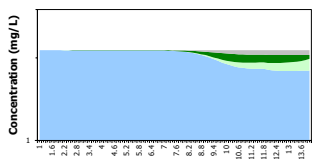


Total Dissolved DHA-bound SHA-bound FeOxide Clay Vanadocrandallite-exp2

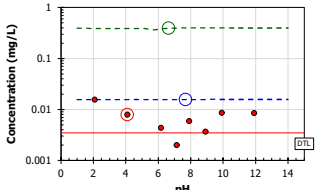
pH dependent concentration of Sodium



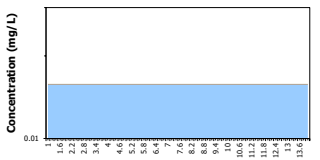
Na Profile at L/S=10.1 L/kg



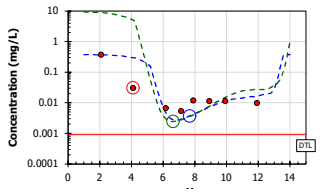
Total Dissolved DHA-bound SHA-bound Clay



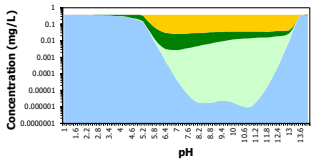
Se Profile at L/S=10.1 L/kg



Total Dissolved DHA-bound SHA-bound FeOxide Clay

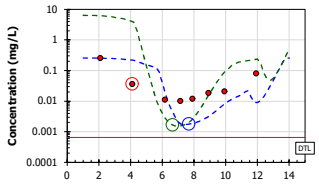


Zn Profile at L/S=10.1 L/kg

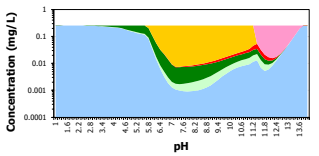


Total Dissolved DHA-bound SHA-bound FeOxide Clay LDH_Zn_zc

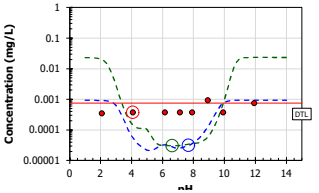
pH dependent concentration of Nickel



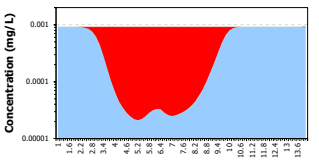
Ni Profile at L/S=10.1 L/kg



Total Dissolved DHA-bound SHA-bound FeOxide Clay LDH_Ni_zc Ni[OH]2[s]



Sn Profile at L/S=10.1 L/kg



Total Dissolved DHA-bound SHA-bound FeOxide Clay

Model Comparison: residuals - Concentration

Name **Eurosoil 4**

Legend

Total Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the entire X rang
User Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the user defined
Fractional Average Devi Square root of the sum of the squared values of residuals divided by the number of values, over the fraction.
Note that the Total and User Average Deviation columns are averages as well.

Residual details, concentrations

Residuals as log(model/sample)

Fraction	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*Total Avg*
pH	*2.07*	*4.09*	*6.15*	*7.13*	*7.90*	*8.91*	*9.91*	*11.9*	*Deviation*
Al	-0.01	1.36	-0.53	-1.32	-1.45	-0.73	0.29	0.59	0.33
As	0.62	0.32	-0.07	0.67	0.73	0.64	0.55	0.00	0.18
Ba	0.00	1.02	2.05	0.56	-0.45	-0.81	-0.52	-0.47	0.33
Br	-	-	-	-	-	-	-	-	-
Ca	0.00	0.38	0.91	1.03	0.36	-0.14	-0.10	-0.03	0.19
Cd	-0.01	0.73	1.31	0.72	0.74	0.87	1.08	0.73	0.30
Cl	0.02	0.02	-0.02	0.00	-0.03	-0.03	-0.02	0.63	0.08
Co	0.00	1.22	0.09	-1.39	-1.69	-1.63	-1.37	-1.15	0.44
CO32-	-	-	-	-	-	-	-	-	-
Cr	-0.98	-0.13	0.37	0.23	0.08	0.21	0.52	0.50	0.16
Cu	0.20	0.02	0.11	0.14	0.02	-0.04	-0.03	-0.34	0.05
F	-	-	-	-	-	-	-	-	-
Fe	-0.61	0.14	0.06	-0.49	-0.68	-0.49	-0.23	0.18	0.15
B	1.25	0.68	1.61	1.74	0.84	1.45	0.42	0.01	0.41
Si	-0.38	0.27	0.77	0.69	0.46	0.61	0.87	0.30	0.21
Hg	-	-	-	-	-	-	-	-	-
K	-0.62	-0.34	-0.10	0.00	-0.01	0.10	0.16	0.40	0.11
Li	0.00	0.64	1.72	1.59	1.36	1.28	1.33	1.21	0.44
Mg	0.00	0.43	0.83	0.98	0.31	0.06	0.39	0.86	0.21
Mn	0.00	0.61	1.37	-0.51	-0.70	-0.33	-0.39	-2.42	0.38
Mo	0.22	0.22	0.66	0.28	0.18	0.06	0.00	0.17	0.10
Na	-0.31	-1.39	-0.03	0.00	-1.40	-1.54	-1.69	-2.23	0.47
Ni	-0.01	0.77	0.28	-0.74	-0.81	-0.77	-0.42	-0.94	0.24
NO3	-	-	-	-	-	-	-	-	-
Pb	-0.10	0.87	1.27	1.06	0.66	1.09	1.41	0.51	0.34
PO4	-	-	-	-	-	-	-	-	-
Sb	1.23	0.27	0.11	0.16	0.96	0.25	0.18	0.01	0.20
Se	0.00	0.30	0.55	0.89	0.42	0.63	0.26	0.27	0.17
Sn	0.42	-0.83	-1.06	-1.17	-1.02	-0.88	0.29	0.09	0.29
SO4	-	-	-	-	-	-	-	-	-
Sr	0.00	0.40	0.99	1.25	0.69	0.43	0.64	0.87	0.27
Th	-	-	-	-	-	-	-	-	-
U	-	-	-	-	-	-	-	-	-
V	0.22	1.04	0.69	0.67	0.02	-0.31	0.01	-0.76	0.21
Zn	-0.01	0.99	-0.15	-0.28	-0.46	-0.20	0.00	0.21	0.15
Avg Deviati	0.09	0.14	0.18	0.17	0.15	0.15	0.14	0.17	0.25