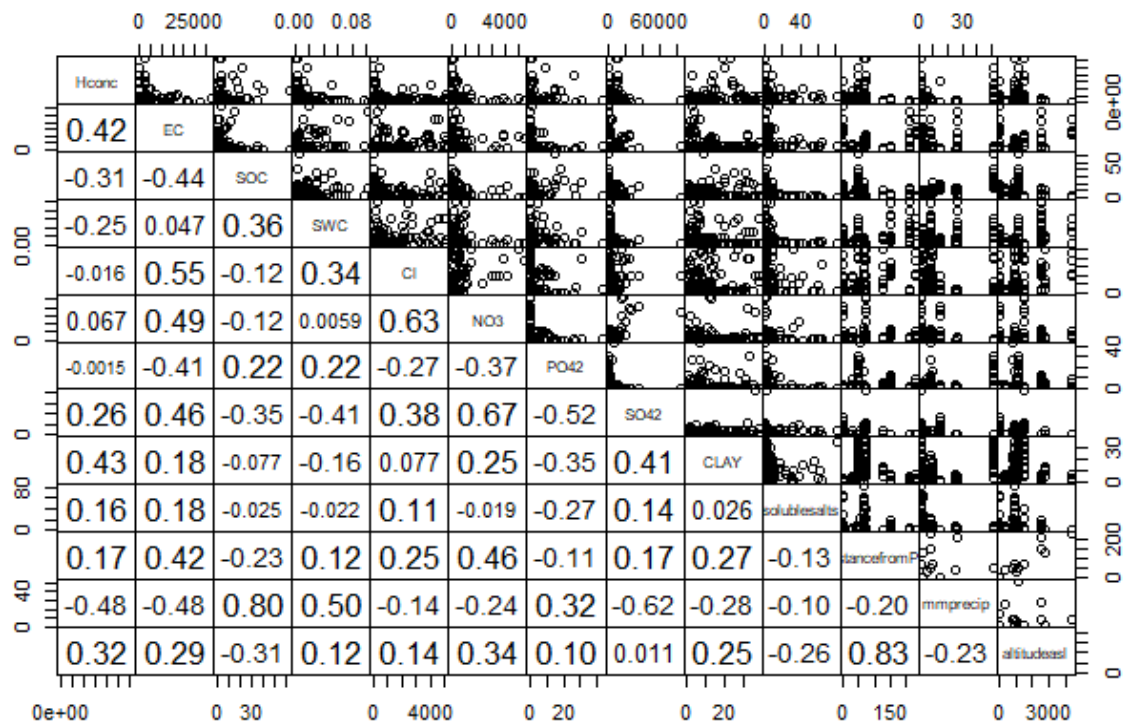
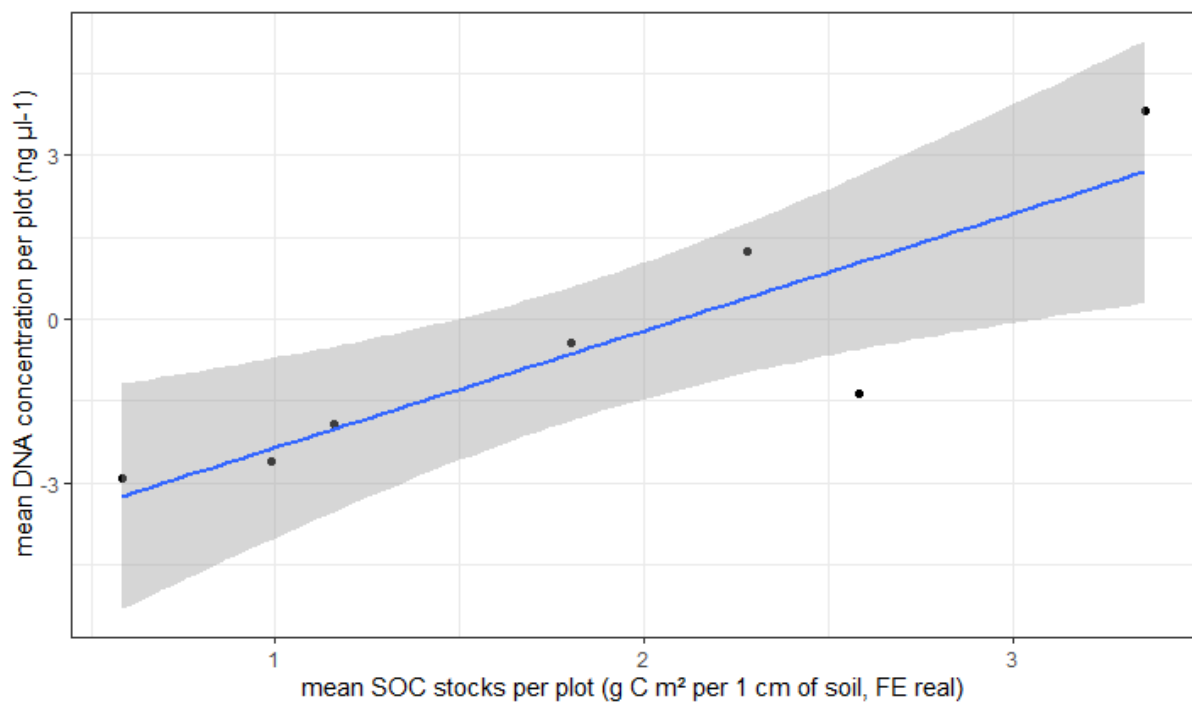


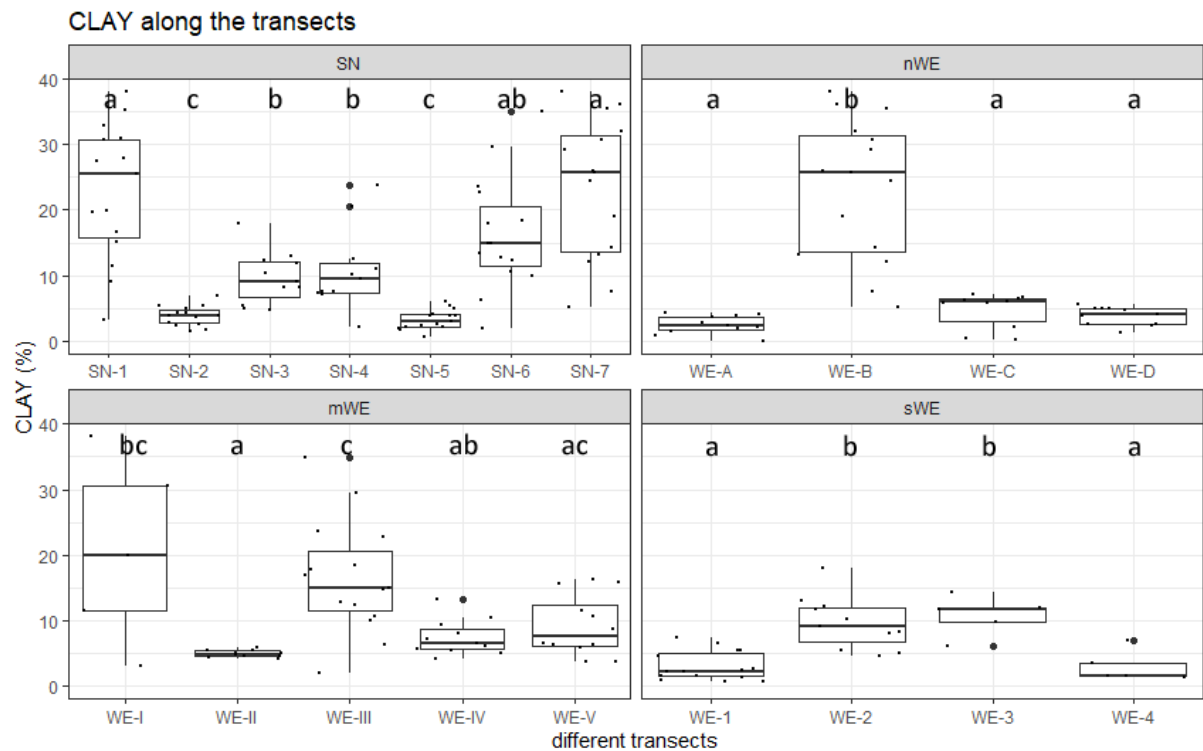
Supplementary



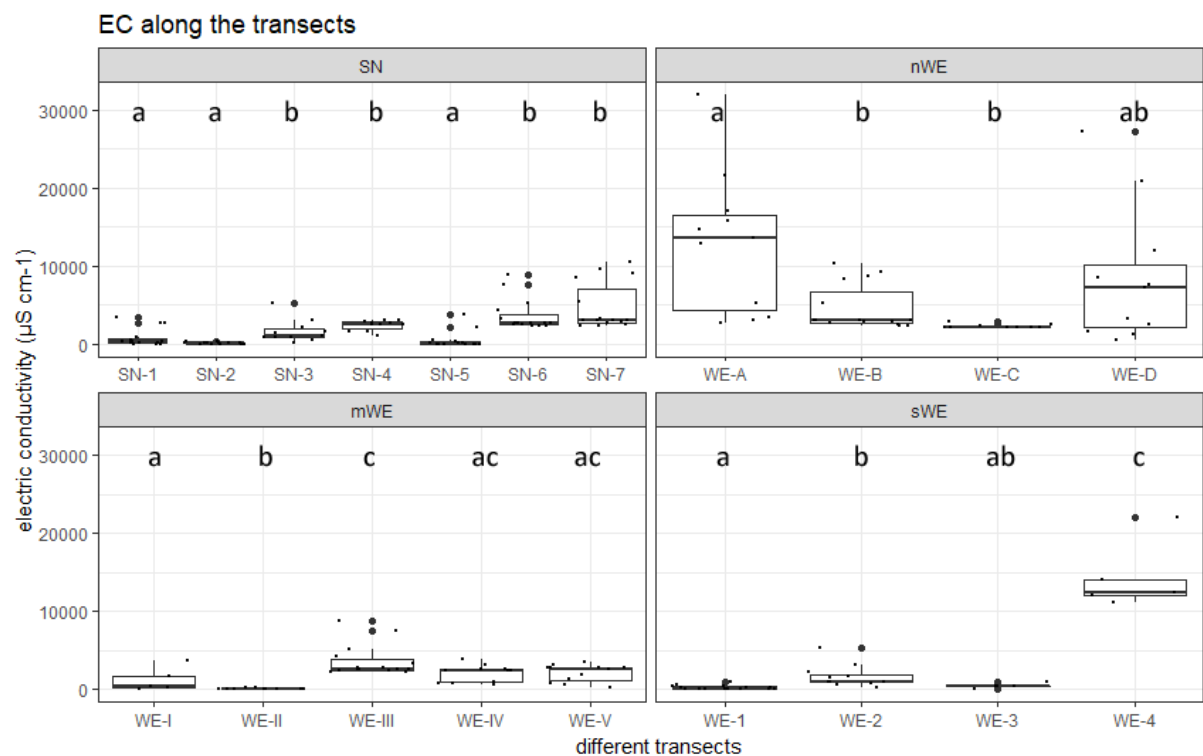
Supp. 1: Pearson correlation matrix of the log10-transformed dataset.



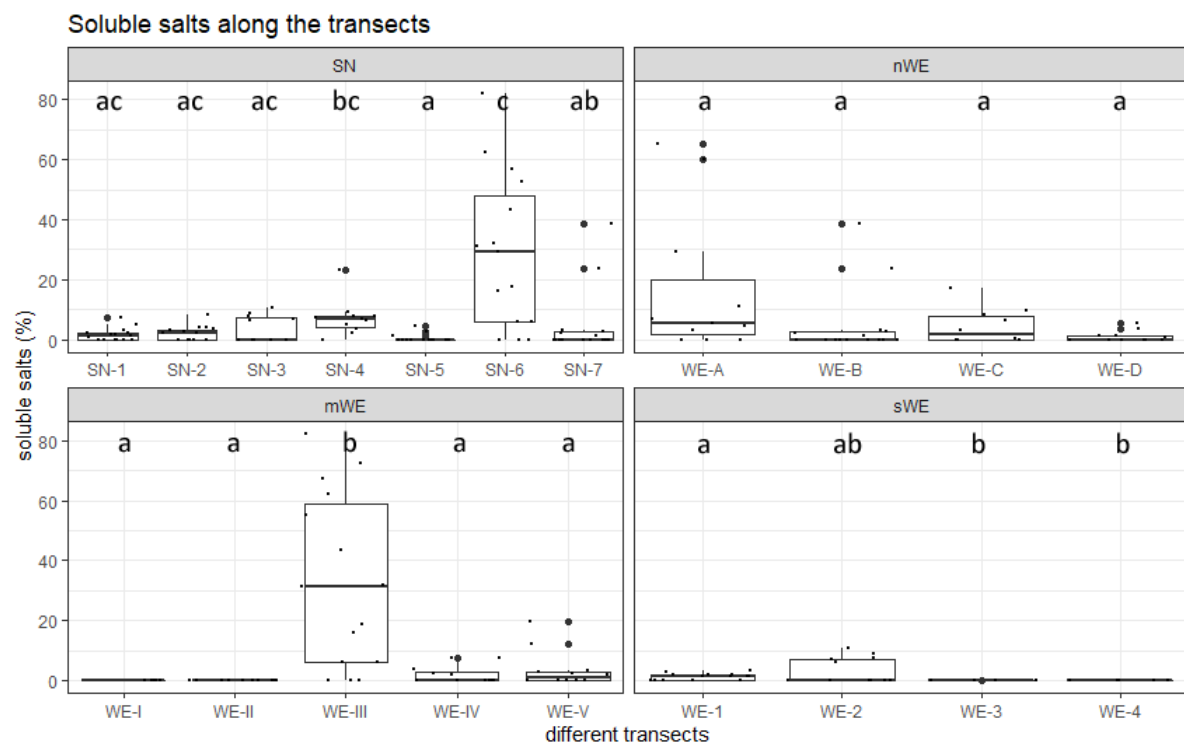
Supp. 2: Spearman correlation of log-transformed mean SOC stocks with DNA concentration of 50 samples along the SN aridity gradient. R^2 of 0.89, $p = 0.0123$



Supp. 3: CLAY (%) along the four gradients. The high standard deviations are due to measurements at different soil depths.



Supp. 4: Electric conductivity (EC) along the four different transects. Mean values and standard deviation are shown per plot. The high standard deviations are due to measurements at different soil depths.



Supp. 5: Soluble salts (%) along the four transects. Soluble salts (%) constitute the relative losses of water-soluble salts when soil is repeatedly washed down to an electric conductivity of $400 \mu\text{S cm}^{-1}$

Table 4: Means and standard deviations for the measured soil parameters per depth.
Means and standard deviation are shown.

plot	depth	Cl ⁻ mg kg ⁻¹	SO ₄ ²⁻ mg kg ⁻¹	PO ₄ ²⁻ mg kg ⁻¹	NO ₃ ⁻ mg kg ⁻¹	soluble salts %
SN-1	0-1	13.04±3.53	20.52±12.77	19.67±6.23	30.73±17.94	4.8±2.60
SN-1	5-10	140.3±236.6	6.93±2.94	14.86±6.15	17.48±12.49	1.1±1.10
SN-1	10-20	13.77±236.4	81.30±120.7	8.15±7.89	88.62±131.8	0.00±0.00
SN-1	30-40	15.18±211.1	234.50±326.9	12.00±16.20	93.95±45.69	0.99±0.99
SN-1	50-60	2116±2501	361.43±483.3	0.21±0.36	83.43±43.10	1.66±1.66
SN-2	0-1	29.26±2.24	74.10±12.77	1.89±0.14	5.30±1.04	3.1±0.34
SN-2	5-10	2.02±0.39	6.26±3.54	1.57±0.37	2.39±0.62	0.0±0.00
SN-2	10-20	3.34±1.70	6.10±1.72	0.94±0.18	1.84±0.23	2.15±2.15
SN-2	30-40	238.6±244.5	36.34±29.52	0.31±0.25	8.33±5.23	2.15±2.15
SN-2	50-60	282.7±48.05	14.17±2.08	0.24±0.23	8.72±2.18	5.67±3.62
SN-3	0-1	264.2±97.13	759.6±584.2	2.31±1.28	29.62±11.74	0.0±0.00
SN-3	5-10	1338±558.7	729.2±272.4	5.07±8.78	149.3±76.60	0.0±0.00
SN-3	10-20	1196±993.9	764.0±530.0	0.00±0.00	111.3±102.6	7.94±2.35
SN-3	30-40	4740±0.00	274.5±0.00	0.00±0.00	450.3±0.00	7.66±0.00
SN-3	50-60	4097±0.00	8027±0.00	0.00±0.00	510.1±0.00	8.97±0.00
SN-4	0-1	420.8±144.6	2801±694.2	9.03±15.63	21.23±36.78	5.86±2.96
SN-4	5-10	583.9±405.6	7307±119.7	0.00±0.00	100.3±39.60	7.57±0.56
SN-4	10-20	537.0±290.9	7329±140.2	14.37±24.88	84.34±32.33	2.96±3.29
SN-4	30-40	847.1±423.8	4290±4137	0.00±0.00	35.29±49.91	15.32±11.12
SN-5	0-1	303.5±117.8	75.7±27.42	2.70±0.65	5.14±0.53	0.0±0.00
SN-5	5-10	7.07±1.25	5.32±1.17	1.47±0.27	2.62±0.80	1.43±1.43
SN-5	10-20	154.3±261.4	111.2±182.6	4.40±3.24	14.22±18.91	0.0±0.00
SN-5	30-40	596.9±1020	3046±5230	0.98±0.86	152.9±251.1	1.48±1.48
SN-5	50-60	684.1±1162	325.8±506.6	0.82±0.77	351.2±592.8	0.00±0.00
SN-6	0-1	82.58±36.27	8460±26.33	1.49±0.26	233.8±47.08	2.02±3.50
SN-6	5-10	269.5±194.4	8455±334.5	0.00±0.00	302.4±167.5	17.64±11.52
SN-6	10-20	141.7±41.76	7301±245.0	0.00±0.00	53.85±27.34	56.65±25.53
SN-6	30-40	790.8±1070	7607±150.2	0.00±0.00	75.64±59.42	52.79±52.79
SN-6	50-60	3978±1103	15844±4735	0.00±0.00	1057±434.3	16.00±16.00
SN-7	0-1	41.63±20.27	10701±477.6	0.93±0.94	100.2±37.99	0.0±0.00
SN-7	5-10	93.18±41.21	7546±154.6	0.00±0.00	510.7±271.2	1.51±1.52
SN-7	10-20	372.9±578.3	11950±7462	0.00±0.00	786.1±1254	20.76±19.43
SN-7	30-40	2439±2325	13343±3194	0.00±0.00	1870±2734	0.00±0.00
SN-7	50-60	3181±1030	41764±36843	0.00±0.00	4206±1076	1.72±1.72
WE-1	0-1	83.23±9.09	8408±1664	1.72±0.81	88.55±2.92	0.92±0.74
WE-1	5-10	156.4±41.82	8247±842.5	0.85±0.07	409.2±47.02	1.30±1.14
WE-1	10-20	333.3±21.01	11440±1963	0.00±0.00	590.1±65.23	1.27±1.12
WE-1	30-40	956.2±61.61	12481±50.14	0.01±0.01	1093±111.4	1.12±1.01
WE-1	50-60	2004±10.46	25387±9817	0.00±0.00	3555±534.6	2.20±1.92

plot	depth	Cl ⁻ mg kg ⁻¹	SO ₄ ²⁻ mg kg ⁻¹	PO ₄ ²⁻ mg kg ⁻¹	NO ₃ ⁻ mg kg ⁻¹	soluble salts %
WE-2	0-1	264.2±97.13	759.6±584.2	2.31±1.28	29.62±11.74	0.00±0.00
WE-2	5-10	1338±558.7	729.2±272.4	5.07±8.78	149.3±76.60	0.00±0.00
WE-2	10-20	1196±993.9	764.0±530.0	0.00±0.00	111.3±102.6	7.94±2.35
WE-2	30-40	4740±0.00	274.5±0.00	0.00±0.00	450.3±0.00	7.66±0.00
WE-2	50-60	4097±0.00	8027±0.00	0.00±0.00	510.1±0.00	8.97±0.00
WE-3	0-1	496.4±0.00	2471±0.00	5.51±0.00	40.76±0.00	0.00±0.00
WE-3	5-10	1043±0.00	2797±0.00	5.28±0.00	117.9±0.00	0.00±0.00
WE-3	10-20	1433±0.00	1124±0.00	2.01±0.00	133.0±0.00	0.00±0.00
WE-3	30-40	2952±0.00	2705±0.00	0.52±0.00	167.5±0.00	0.03±0.00
WE-3	50-60	5118±0.00	7048±0.00	0.03±0.00	288.2±0.00	0.00±0.00
WE-4	0-1	1993±0.00	1007±0.00	8.29±0.00	1072±0.00	0.00±0.00
WE-4	5-10	2203±0.00	1200±0.00	5.51±0.00	554.9±0.00	0.00±0.00
WE-4	10-20	2058±0.00	1322±0.00	0.44±0.00	617.8±0.00	0.00±0.00
WE-4	30-40	3794±0.00	1460±0.00	0.57±0.00	408.1±0.00	0.00±0.00
WE-4	50-60	4655±0.00	2223±0.00	0.02±0.00	553.7±0.00	0.00±0.00
WE-A	0-1	585.0±32.32	788.8±21.99	0.68±0.25	33.12±9.74	3.46±3.02
WE-A	5-10	1135±516.6	956.1±16.47	1.50±0.66	45.42±5.29	14.47±13.35
WE-A	10-20	813.9±169.2	946.8±75.12	0.31±0.18	29.67±6.20	22.36±32.97
WE-A	30-40	3226±0.00	1853±0.00	0.16±0.00	59.14±0.00	65.23±0.00
WE-A	50-60	4298±0.00	3568±0.00	0.05±0.00	88.60±0.00	0.00±0.00
WE-B	0-1	41.63±20.27	10701±477.6	0.93±0.94	100.2±37.99	0.00±0.00
WE-B	5-10	93.18±41.21	7546±154.6	0.00±0.00	510.7±271.2	1.51±1.52
WE-B	10-20	372.9±578.3	11950±7462	0.00±0.00	786.1±1254	20.76±19.43
WE-B	30-40	2439±2325	13343±3194	0.00±0.00	1870±2734	0.00±0.00
WE-B	50-60	3181±1030	41764±36843	0.00±0.00	4206±1076	1.72±1.52
WE-C	0-1	2099±59.55	1039±44.04	11.51±0.48	520.0±35.57	10.14±7.01
WE-C	5-10	2680±85.41	1367±161.25	8.37±2.00	828.0±46.66	2.76±4.77
WE-C	10-20	2288±146.8	1486±52.47	3.51±0.84	944.2±43.11	2.27±3.52
WE-C	50-60	3510±0.00	1806±0.00	0.49±0.00	1408±0.00	0.00±0.00
WE-D	0-1	196.4±8.09	33.86±10.42	0.52±0.41	154.9±25.66	1.78±3.08
WE-D	5-10	208.3±14.91	38.74±17.82	0.15±0.11	167.7±23.53	1.20±2.08
WE-D	10-20	284.1±1.23	54.06±23.04	0.01±0.00	221.2±10.89	0.70±0.70
WE-D	30-40	433.3±0.00	310.4±0.00	0.00±0.00	312.4±0.00	1.37±0.00
WE-D	50-60	404.0±0.00	212.6±0.00	0.00±0.00	403.6±0.00	0.00±0.00
WE-I	0-1	58.8±0.00	27.08±0.00	1.80±0.00	2.58±0.00	0.00±0.00
WE-I	5-10	174.4±0.00	196.9±0.00	1.34±0.00	14.43±0.00	0.00±0.00
WE-I	10-20	301.3±0.00	81.98±0.00	4.25±0.00	12.95±0.00	0.00±0.00
WE-I	30-40	2077±0.00	732.6±0.00	0.00±0.00	39.91±0.00	0.00±0.00
WE-I	50-60	5225±0.00	1038±0.00	0.00±0.00	88.05±0.00	0.00±0.00
WE-II	0-1	34.23±23.03	41.05±29.37	1.91±0.75	10.96±6.42	0.00±0.00
WE-II	5-10	29.94±29.46	81.41±100.0	1.08±0.43	13.82±12.75	0.00±0.00
WE-II	10-20	24.70±23.38	56.80±63.07	0.65±0.36	10.40±9.07	0.00±0.00

plot	depth	Cl ⁻ mg kg ⁻¹	SO ₄ ²⁻ mg kg ⁻¹	PO ₄ ²⁻ mg kg ⁻¹	NO ₃ ⁻ mg kg ⁻¹	soluble salts %
WE-II	50-60	8.59±0.00	15.33±0.00	1.36±0.00	3.46±0.00	0.00±0.00
WE-II	30-40	8.50±0.00	15.99±0.00	0.66±0.00	4.25±0.00	0.00±0.00
WE-III	0-1	82.58±36.27	8460±26.33	1.49±0.26	233.8±47.09	2.02±3.50
WE-III	5-10	269.5±194.4	8455±334.5	0.00±0.00	302.4±167.5	18.62±12.50
WE-III	10-20	141.7±41.76	7301±245.0	0.00±0.00	53.85±27.34	72.18±9.99
WE-III	30-40	790.8±1070	7607±150.2	0.00±0.00	75.64±59.42	55.30±11.90
WE-III	50-60	3978±1103	15844±4735	0.00±0.00	1057±434.3	16.00±16.00
WE-IV	0-1	375.1±198.0	953.0±84.23	1.04±0.04	38.74±12.24	0.72±1.25
WE-IV	5-10	236.6±26.09	5575±3285	0.00±0.00	26.25±12.07	0.00±0.00
WE-IV	10-20	216.0±186.0	7377±196.2	0.00±0.00	33.40±22.74	3.29±3.96
WE-IV	30-40	547.4±0.00	8768±0.00	0.00±0.00	361.5±0.00	3.88±0.00
WE-IV	50-60	466.8±0.00	10467±0.00	0.00±0.00	1125±0.00	7.41±0.00
WE-V	0-1	148.4±196.0	640.5±367.3	1.41±0.51	287.0±385.0	0.00±0.00
WE-V	5-10	666.1±440.3	3239±3534	0.00±0.00	1072±626.8	1.97±1.79
WE-V	10-20	394.9±250.7	7643±321.5	0.00±0.00	686.9±437.4	7.35±10.91
WE-V	30-40	695.0±611.2	6250±2925	0.00±0.00	1106±956.7	7.44±6.72
WE-V	50-60	2272±0.00	1875±0.00	0.00±0.00	4033±0.00	0.00±0.00