

Supplementary Materials:

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Table S1. Table S1 Clay mineral contents in the ZSP section

Age (ka)	Smectite(%)	Illite(%)	Chlorite (%)	Kaolinite (%)
2.422	1.169	62.928	26.907	8.995
3.229	2.072	62.237	27.115	8.575
4.036	5.729	65.851	20.340	8.079
4.844	5.241	61.777	23.315	9.668
5.651	5.375	77.755	12.404	4.465
6.458	4.923	57.884	24.972	12.221
7.265	3.891	58.979	26.493	10.637
8.073	2.936	58.084	28.673	10.307
8.880	3.849	59.774	26.563	9.814
9.687	3.368	59.681	25.756	11.195
10.494	3.943	59.446	26.368	10.243
11.323	2.517	62.374	24.698	10.411
12.169	2.831	64.854	25.185	7.130
12.976	1.241	62.206	27.749	8.804
13.784	1.375	66.913	23.128	8.585
14.640	2.386	64.658	24.043	8.914
15.429	2.247	67.998	21.621	8.134
16.270	4.933	65.523	18.549	10.995
17.112	2.968	63.684	23.099	10.249
17.716	0.000	64.141	26.188	9.672
18.293	2.477	62.860	24.530	10.133
18.892	1.585	62.566	25.877	9.972
19.466	1.589	65.061	24.430	8.920
20.042	1.639	62.638	25.273	10.449
20.631	0.812	64.169	25.507	9.512
21.219	0.000	66.952	24.158	8.890
21.798	0.000	65.764	26.368	7.868
22.403	0.000	84.367	11.230	4.403
22.958	0.000	65.082	25.725	9.193
23.527	0.000	61.755	27.455	10.791
24.070	1.252	62.227	24.930	11.591
24.611	0.000	64.598	25.648	9.754
25.155	0.000	65.164	26.110	8.726
25.704	1.544	63.629	25.824	9.003

Table S2. Calibrated lightness (ΔL^*) in the ZSP section.

Age (ka)	ΔL^*
0	0.40296
0.40363	-1.90887
0.80725	-2.30226
1.21088	-2.66372
1.6145	0.16591
2.01813	-1.77251
2.42175	-2.00535
2.82538	-0.94666
3.229	-1.66653
3.63263	-2.19484
4.03625	-1.44187
4.43988	-0.43147
4.8435	-1.79031
5.24713	-1.88879
5.65075	-1.33982
6.05438	-1.30398
6.458	-1.63067
6.86163	0.14432
7.26525	0.66934
7.66888	0.4765
8.0725	1.45511
8.47613	0.76706
8.87975	0.09779
9.28338	0.61376
9.687	0.32335
10.076	0.50763
10.494	0.71332
10.904	1.07705
11.323	0.72395
11.748	0.52143
12.169	1.19455
12.575	0.568
12.976	0.32987
13.4	1.4257
13.784	0.24917
14.219	-0.04479
14.64	0.67499
15.021	-0.2261
15.429	1.94252
15.834	0.56683
16.27	-0.50466
16.688	1.02546
17.112	0.47437
17.412	0.28498
17.716	1.294026216
18.004	0.94939
18.293	0.83171
18.6	0.9927
18.892	1.03492
19.177	0.89195
19.466	0.22223
19.754	0.69973

20.042	0.8439
20.339	0.05251
20.631	-0.43559
20.931	-0.12642
21.219	0.32119
21.507	0.17649
21.798	-0.51146
22.104	-0.03582
22.403	-0.09595
22.677	0.11587
22.958	-0.73012
23.243	-1.27175
23.527	0.77104
23.798	-1.25763
24.07	0.10147
24.338	0.10241
24.611	-0.88609
24.883	-0.28686
25.155	-0.51612
25.427	-0.26219
25.704	0.27607
25.974	-0.04862
