

SUPPLEMENTARY MATERIAL

Morphological and morphometric analysis of debris flow sites using satellite imagery in the Ile Alatau Mountains, Kazakhstan

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Table S1. Morphometric characteristics of debris flow sites

Number	Number on the map	Area (km ²)	Maximum altitude (m a.s.l.)	Length (m)	Mean slope (°)	Mouth elevation (m a.s.l.)
1	1	1.37	1,662	1,910	8.9	1,325
2	2	0.38	1,557	1,581	5.9	1,320
3	3	2.20	3,720	2,728	17.6	3,072
4	4	1.10	3,869	2,200	19.4	3,080
5	5	0.88	2,547	1,815	16.8	2,149
6	6	0.58	2,453	1,352	15.0	2,082
7	6a	0.89	2,363	1,905	16.0	1,965
8	7	0.18	2,089	606	13.8	1,928
9	8	0.37	2,145	837	14.9	1,899
10	9	4.72	3,239	7,573	10.3	2,483
11	10	1.65	2,917	1,418	16.8	2,459
12	14	3.64	3,424	3,185	12.8	3,016
13	15	2.02	2,926	2,300	18.5	2,132
14	16	0.46	2,790	1,740	23.0	2,124
15	16a	0.38	3,094	1,099	27.7	2,442
16	16b	0.51	3,034	3,518	19.6	1,848
17	17	0.29	2,293	709	18.4	2,017
18	18	0.94	2,536	1,383	17.8	2,040
19	19	0.28	2,295	782	25.2	1,907
20	20	3.35	2,749	1,532	32.4	1,768
21	21	1.87	2,797	2,285	24.3	1,955

Number	Number on the map	Area (km ²)	Maximum altitude (m a.s.l.)	Length (m)	Mean slope (°)	Mouth elevation (m a.s.l.)
22	22	0.85	3,062	1,886	28.5	2,171
23	23	0.41	3,080	1,216	27.7	2,369
24	24	2.34	3,650	2,018	15.5	3,073
25	25	0.42	3,347	1,138	28.4	2,929
26	26	0.83	3,550	1,841	28.6	2,822
27	27	0.27	3,443	690	18.0	2,934
28	28	0.88	3,421	2,143	24.8	2,587
29	28a	0.93	3,261	2,127	24.4	2,417
30	29	0.29	3,138	994	29.6	2,656
31	30	0.97	3,118	1,117	22.5	2,739
32	30a	0.71	3,218	1,023	27.6	2,738
33	31	0.15	3,107	784	30.5	2,693
34	32	0.29	3,228	1,220	30.3	2,597
35	33	0.21	3,012	952	30.4	2,510
36	34	3.94	3,239	1,991	20.7	2,478
37	35	0.28	3,370	1,005	32.1	2,753
38	36	3.12	3,294	3,315	21.0	2,441
39	37	0.24	2,820	878	31.2	2,402
40	53	0.18	2,954	641	31.0	2,591
41	54	0.31	3,051	1,184	28.1	2,592
42	55	0.27	3,270	1,185	32.7	2,515
43	56	0.38	3,178	1,072	33.2	2,616
44	57	0.40	3,278	1,003	32.7	2,701
45	58	0.66	3,216	698	33.2	2,849
46	59	0.32	3,320	698	26.7	2,796
47	60	1.00	3,788	2,268	23.7	2,662
48	61	1.56	3,813	2,444	23.4	2,729
49	61e	1.00	3,276	1,764	25.8	2,358
50	61d3	0.70	3,433	1,224	15.7	3,086
51	61c2	0.62	3,843	1,882	17.2	3,237
52	61c	0.46	3,783	1,357	19.2	3,287
53	61b	0.81	3,740	1,293	15.3	3,321
54	61a	2.11	3,469	1,827	13.4	3,019
55	61a1	0.89	2,834	1,600	22.2	2,058
56	61a2	1.61	3,804	1,493	26.2	2,957
57	61a3	0.35	3,389	1,090	33.2	2,842
58	61a4	1.15	3,415	1,141	31.4	2,771
59	61a5	0.24	3,390	2,336	25.9	2,519

Number	Number on the map	Area (km ²)	Maximum altitude (m a.s.l.)	Length (m)	Mean slope (°)	Mouth elevation (m a.s.l.)
60	62	0.27	3,275	1,383	30.0	2,517
61	63	1.49	3,179	1,264	31.6	2,516
62	64	0.78	3,133	1,253	31.2	2,529
63	65	0.38	3,100	1,594	17.5	2,526
64	66	0.60	3,184	1,178	22.8	2,792
65	67	4.75	3,132	778	20.2	2,831
66	67a	0.39	2,781	2,060	20.9	1,874
67	67b	1.79	2,492	1,619	29.6	1,866
68	67c	1.28	3,172	2,068	17.6	2,511
69	68	0.46	2,962	1,594	23.2	2,210
70	68a	0.43	2,749	2,209	24.7	1,830
71	68b	0.30	2,442	800	26.7	1,923
72	70	0.77	2,973	1,571	30.0	2,100
73	71	1.49	3,271	2,019	32.0	2,224
74	72	0.64	3,506	1,539	32.7	2,604
75	73a	1.05	3,365	1,270	29.2	2,890
76	73b	0.68	3,754	2,540	18.9	2,888
77	74	1.49	3,267	1,556	23.6	2,950
78	75	4.50	3,202	884	17.9	2,932
79	44	0.23	3,457	735	33.8	2,998
80	45	0.41	3,709	1,389	29.2	3,032
81	46	0.44	3,816	1,587	28.1	3,058
82	47	0.28	3,816	1,212	30.8	3,102
83	48	0.20	3,816	942	31.2	3,293
84	49	0.57	3,792	1,269	24.9	3,160
85	50	0.29	3,696	1,022	27.7	3,130
86	51	1.43	3,835	2,483	12.8	3,101
86	51	1,43	3,835	2,483	12,8	3,101

Source: own study based on field and remote sensing data.