Table S1 Simulation results for each criterion according to changes in the Voellmy rheology.

Parameters			Debris flow				Water	
μ	ξ (m/s^2)	Water level (m)	Maximum flow height[1] (m)	Maximum velocity[1] (m/s)	Maximum momentum[1] (ton·m/s)	Underwater flow distance[2] (m)	Amplitude of the first wave[3] (m)	Maximum crest amplitude (m)
0.030	500	118[a]	3.72	5.61	13.82	165	1.018	1.819
0.035			3.56	4.70	10.68	140	0.766	1.477
0.040			3.38	3.89	8.19	117	0.593	1.101
0.045			2.75	2.89	3.98	82	0.329	0.517
0.050	500		0.76	1.59	1.08	23	0.083	0.085
0.050	400		0.59	1.24	0.56	17	0.042	0.045
0.050	800		1.24	2.49	2.37	34	0.181	0.181
0.050	1000		1.30	2.94	2.70	37	0.191	0.204
0.050	1500		1.67	4.67	4.50	55	0.457	0.473
0.050	2000		1.70	4.97	4.86	58	0.473	0.514
0.030	500	119[b]	3.56	7.02	17.58	183	1.420	1.883
0.035			3.54	6.44	13.37	148	1.160	1.481
0.040			3.22	5.78	9.42	117	0.881	1.093
0.045			2.51	4.94	5.73	84	0.584	0.702
0.050	500		1.09	3.52	2.06	44	0.231	0.327
0.050	400		1.18	3.27	1.88	46	0.221	0.336
0.050	800		1.90	4.31	3.04	61	0.284	0.477
0.050	1000		1.74	4.33	2.74	59	0.237	0.440
0.050	1500		2.06	5.08	3.83	68	0.420	0.593
0.050	2000		2.01	5.30	4.07	69	0.452	0.664

[1] Observed near the reservoir ([a] 1391 m; [b] 1378 m)

[2] Measured from the point where the water meets the ground ([a] 1392 m; [b] 1379 m)

[3] Observed in p1, Fig. 7 (1450 m)