Interactions between channels and tributary alluvial fans: channel adjustments and sediment-signal propagation

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Supplementary material

This document contains the measured and calculated data used for the analyses reported in the main manuscript. In the following pages the reader finds the raw data of the slope and Q_{s_out} measurements (Table S1 and S2) and of the volumes calculations (Tables S3 to S8). Additional data figures are also provided in support of the information reported in the main manuscript (Table S9 and Figure S1 to S7).

Table S1. Manually measured main channel slope (%) and Qs_out values (ml/s; normalized to Q_{s_in})

Run time	MC_NC		T_NC1		T_ISDS		T_DWIW		T_NC2		T_IWMC	
(min)	Slope	Q_{s_out}	Slope	Q_{s_out}	Slope	Q_{s_out}	Slope	Q_{s_out}	Slope	Q_{s_out}	Slope	Q_{s_out}
0	5.3		4.5		4.8		5.0		4.6		5.3	
10	7.3	21.3	6.8	14.0	6.8	19.8	7.4	10.1	7.1	5.9	6.9	5.6
20	7.2	16.7	7.0	6.9	6.8	12.4	7.6	13.4	7.3	5.9	7.0	7.2
30	7.3	7.0	6.9	8.6	7.1	7.3	7.5	11.1	7.2	3.2	7.1	2.9
40	7.4	9.7	7.0	4.6	6.9	4.2	7.9	7.9	7.3	3.6	7.4	3.9
50	7.6	10.1	7.1	8.9	7.3	8.6	7.8	8.5	7.4	2.9	7.5	2.6
60	7.5	9.8	7.3	7.2	7.0	7.9	7.8	9.2	7.4	4.0	7.5	1.8
70	7.6	6.4	7.3	6.2	7.3	8.1	8.0	6.3	7.7	3.4	7.4	2.0
80	7.7	9.1	7.4	4.6	7.4	4.9	8.0	4.7	7.9	2.3	7.6	2.0
90	7.8	5.1	7.4		7.5	4.3	8.0	3.6	7.8	3.0	7.7	2.4
100	7.7	10.1	7.5	7.0	7.6	4.3	8.0	5.9	7.8	2.1	7.8	2.1
110	7.6	4.3	7.6	2.6	7.6	4.6	8.1	2.3	7.9	4.9	7.9	1.6
120	7.4	9.0	7.5	2.6	7.6	8.3	8.1	4.3	7.9	4.5	7.8	1.9
130	7.6	3.6	7.4	9.8	7.9	3.4	8.1	3.3	8.1	4.2	7.9	4.3
140	7.4	3.6	7.5	2.0	8.1	4.3	8.0	2.9	8.1	4.0	7.9	3.2
150	7.4	4.3	7.6	5.0	7.9	2.3	7.9	3.4	8.2	1.4	8.0	2.4
160	7.4	5.9	7.8	4.7	8.0	4.4	8.0	3.9	8.1	2.5	8.0	2.0
170	7.6	8.2	7.8	2.7	7.9	2.9	8.0	4.3	8.3	2.3	8.2	1.3
180	7.4	4.0	7.8		7.9	4.6	8.0	3.2	8.2	2.9	8.1	2.7
190	7.4	4.2	7.6	5.1	7.9	1.7	8.0	3.0	8.1	1.9	7.5	4.7
200	7.5	3.9	7.5	4.3	7.9	3.7	8.0	2.2	8.3	3.2	7.4	3.9
210	7.3	3.4	7.3	7.3	7.6	4.9	8.0	2.4	8.3	1.3	7.3	3.7
220	7.2	2.9	7.6	3.2	7.6	2.9	8.0	3.6	8.2	2.9	7.3	5.7
230	7.3	3.6	7.5	2.4	7.6	6.0	7.9	3.2	8.3	1.9	7.1	2.9
240	7.1	2.9	7.6	4.1	7.6	5.7	7.6	2.8	8.3	2.6	6.9	6.4
250	7.1	2.3	7.5	3.0	7.8	2.6	7.6	3.7	8.3	2.4	7.1	2.6
260	7.1	3.6	7.6	6.3	7.5	3.3	7.8	3.2	8.4	1.9	7.0	2.5
270	7.1	2.6	7.4	2.9	7.6	2.0	7.6	3.7	8.3	1.3	7.0	3.4
280	7.2	5.6	7.5	2.9	7.8	2.6	7.6	3.2	8.4	1.7	7.1	3.2
290	7.3	3.3	7.6	4.9	7.8	3.0	7.4	4.0	8.5	3.0	7.0	2.6
300	7.0	5.4	7.5		7.6	3.5	7.3	5.7	8.4	2.7	6.9	2.0
310	7.1	2.8	7.5	2.9	7.4	1.2	7.4	1.8	8.4	1.3	6.9	3.7
320	7.1	5.2	7.5	2.6	7.6	1.8	7.1	3.3	8.6	1.9	7.0	3.4
330	7.0	4.0	7.5	2.6	7.6	2.2	7.0	1.6	8.5	0.9	6.8	2.3
340	7.1	3.0	7.4	5.9	7.3	2.4	7.3	1.6	8.6	1.7	6.9	3.3
350	7.1	4.4	7.4	3.6	7.3	1.5	7.1	1.4	8.6	1.3	6.9	2.2
360	7.1	3.6	7.4	3.9	7.4	2.8	7.2	1.9	8.5	2.7	6.8	2.2
370	7.0	2.0	7.4	3.9	7.5	1.7	7.3	1.7	8.6	1.6	6.9	3.3
380	7.1	3.1	7.1	2.5	7.5	1.1	7.3	1.7	8.6	0.9	6.9	2.8
390	6.9	4.7	7.4	5.3	7.8	0.9	7.2	2.0	8.5	2.0	6.8	2.2
400	7.1	2.3	7.3	1.7	7.6	1.2	7.4	3.7	8.6	2.2	6.8	2.7
410	7.1	2.3	7.3	3.4	7.5	1.6	7.1	5.2	8.7	2.6	7.0	4.9
420	7.0	3.2	7.4	2.0	7.4		7.3	2.3	8.4	2.1	7.0	2.1
430	6.9	2.8	7.1	1.8	7.3	1.2	7.3	3.4	8.6	2.3	7.0	3.4
440	7.0	3.6	7.3	1.5	7.3	0.5	7.1	4.2	8.6	1.4	6.9	4.9
450	6.9	4.2	7.3	1.5	7.3	2.4	7.3	3.2	8.6	1.0	6.9	2.3
460	6.9	1.4	7.3	1.3	7.1	1.9	7.3	3.4	8.6	1.5	6.9	5.2
470	7.1	2.8	7.1	1.7	7.1	2.3	7.5	2.6	8.5	2.7	6.6	2.5
480	7.0	2.4	7.1	1.9	7.3	1.7	7.5	1.9	8.4	1.8	6.8	4.3
490	7.0	1.9	7.3	1.9	7.4	2.5	7.3	3.9				
500	6.9	1.3	6.9	1.6	7.6	1.4	7.1	4.7				
510	6.9	3.1	6.8	1.6	7.4	1.7	7.2	2.5				
520	6.9	2.0	6.9	1.6	7.3	1.1	7.3	1.6				
530	6.9	1.7	6.8	1.4	7.3	4.5	7.4	2.2				

540	7.0	1.4	6.6	2.2	7.1	2.6	7.3	2.7				
550	6.8	2.0	6.8	1.7	7.1	1.1	7.2	3.0				
560	6.9	2.3	6.8	1.4	7.0	3.9	7.3	4.2				
570	6.9	2.9	6.5	1.3	7.1	6.3	7.4					
580	7.0	2.1	6.5	1.8	7.1	2.1	7.3	2.2				
590	6.9	2.2	6.6	1.3	7.4	2.1	7.4	2.0				
600	6.8	1.9	6.5	0.0	7.3	2.6	7.3					
610	7.0	4.7			7.3	2.6	7.3	2.1				
620	7.0	1.4			7.3	2.2	7.4	2.7				
630	6.8	1.6			7.3	2.4	7.4	2.3				
640	6.8	2.9			7.3	3.0	7.3	1.7				
650	6.9	2.3			7.1	1.4	7.3	1.8				
660	6.8	2.2			7.2	2.6	7.2	1.7				
670	7.1	1.9			7.3	0.9						
680	6.7	1.2			7.3	1.7						
690	6.7	2.5			7.1	2.4						
700					7.1	1.8						
710					7.1	1.4						
720					7.3	1.2						

Table S2. Calculated slope (%) for the tributary channel (using DEMs).

Runtime (min)	T_NC1	T_ISDS	T_DWIW	T_NC2	T_IWMC
30	11.0	11.2	9.4	12.8	10.6
60	8.6	9.9	12.0	12.5	12.7
90	9.6	11.7	10.9	12.6	12.3
120	9.6	10.9	11.1	13.2	13.2
150	9.7	11.7	10.5	11.7	12.4
180	6.4	10.3	11.3	11.5	12.0
210	8.2	9.0	10.7	11.1	11.9
240	7.4	9.1	10.4	12.0	13.0
270	10.0	8.0	11.0	10.9	13.5
300	9.1	8.2	9.7	13.1	12.5
330	11.4	8.3	11.5	10.3	12.2
360	11.8	11.0	11.1	11.4	11.4
390	10.5	11.4	13.0	11.4	11.7
420	8.6	11.9	11.2	12.1	12.0
450	9.3	11.9	10.4	10.2	13.2
480	8.7	10.2	9.1	11.1	12.0
510	8.8	12.6	10.4		
540	10.8	12.5	9.8		
570	8.9	9.4	9.2		
600	10.5	10.8	9.0		
630		10.2	10.1		
660		10.1	9.8		
690		9.6	10.4		
720		9.6			

Table S3 to S8. Volumes of mobilize sediment for each experiment. Data are divided into upper, middle, and lower sections. The volumes mobilized in the whole system is additionally provided at the bottom of each experiment table. The bank contribution in percent is calculated on the total volume of sediment exiting the system.

Table S3. MC_NC experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.490	-1.010	0.000	0.000	0.000
90	4	0.422	-1.841	-0.491	0.000	0.491
120	5	0.058	-1.590	-0.212	0.000	0.212
150	6	0.173	-1.986	-0.024	0.000	0.024
180	8	0.037	-1.462	0.000	0.000	0.000
210	9	0.118	-0.843	-0.001	0.000	0.001
240	10	0.107	-1.768	0.000	0.000	0.000
270	11	0.416	-1.054	0.000	0.000	0.000
300	12	0.270	-0.638	0.000	0.000	0.000
330	13	0.473	-1.032	-0.018	0.000	0.018
360	14	0.129	-1.222	0.000	0.000	0.000
390	15	0.092	-1.064	0.000	0.000	0.000
420	16	0.212	-0.836	-0.033	0.000	0.032
450	17	0.455	-0.710	-0.126	0.001	0.125
480	19	0.279	-0.521	-0.055	0.001	0.054
510	20	0.110	-0.558	-0.160	0.002	0.158
540	21	0.332	-0.518	-0.224	0.000	0.224
570	22	0.096	-0.727	-0.313	0.000	0.313
600	23	0.512	-0.400	-0.045	0.002	0.043
630	24	0.433	-0.429	-0.124	0.085	0.039
660	25	0.040	-1.500	-0.201	0.000	0.201
690	26	0.168	-0.680	-0.006	0.001	0.005
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.002	-3.665	-2.831	0.000	2.831
90	4	0.041	-2.736	-1.730	0.000	1.730
120	5	0.367	-0.927	-2.467	0.000	2.467
150	6	0.077	-1.875	-1.201	0.001	1.200
180	8	0.257	-1.394	-0.560	0.002	0.558
210	9	0.005	-2.815	-0.120	0.002	0.118
240	10	0.982	-0.729	-1.804	0.011	1.793
270	11	0.849	-0.840	-1.363	0.006	1.357
300	12	0.125	-1.919	-1.342	0.109	1.233
330	13	0.300	-1.869	-0.917	0.007	0.909
360	14	0.151	-1.641	-0.418	0.094	0.324
390	15	0.672	-1.000	-0.881	0.031	0.850
420	16	0.391	-1.166	-0.419	0.001	0.418
450	17	0.280	-1.006	-0.404	0.101	0.302
480	19	0.650	-0.504	-0.157	0.029	0.128
510	20	0.457	-0.479	-0.001	0.008	-0.007
540	21	0.442	-0.649	-0.533	0.004	0.529
570	22	0.345	-1.208	-0.279	0.105	0.174
600	23	0.963	-0.955	-0.958	0.001	0.957
630	24	0.471	-1.615	-1.104	0.345	0.759
660	25	0.964	-0.947	-0.222	0.078	0.144
690	26	0.714	-0.959	-1.133	0.278	0.856

Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.093	-5.770	-5.938	0.078	5.860
90	4	0.039	-3.997	-1.633	0.003	1.630
120	5	0.382	-1.800	-1.847	0.002	1.845
150	6	0.684	-1.522	-2.689	0.006	2.682
180	8	0.637	-1.557	-0.238	0.001	0.237
210	9	0.384	-2.268	-1.149	0.041	1.108
240	10	1.032	-1.117	-1.457	0.048	1.409
270	11	1.007	-2.156	-3.332	0.584	2.749
300	12	1.162	-1.209	-1.400	0.190	1.210
330	13	0.690	-1.655	-0.317	0.006	0.311
360	14	0.467	-2.126	-0.244	0.002	0.242
390	15	1.069	-1.521	-1.018	0.317	0.701
420	16	1.041	-1.421	-0.560	0.054	0.506
450	17	0.565	-1.373	-1.072	0.025	1.047
480	19	0.523	-1.200	-0.001	0.001	0.001
510	20	1.084	-1.644	-1.654	0.001	1.653
540	21	1.202	-1.265	-0.691	0.040	0.651
570	22	0.961	-1.241	-0.360	0.007	0.353
600	23	0.616	-1.278	-0.142	0.000	0.142
630	24	0.730	-0.845	-0.188	0.004	0.184
660	25	0.747	-1.146	-0.389	0.022	0.366
690	26	0.547	-1.083	-0.553	0.026	0.527

Whole system

Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution**	
						(V_b)	**(%)**
60	3	1.696	-10.882	-9.342	0.078	9.263	50.2
90	4	0.542	-8.893	-3.871	0.007	3.864	31.6
120	5	0.860	-4.679	-4.821	0.013	4.808	55.7
150	6	1.092	-5.579	-4.113	0.007	4.105	47.8
180	8	1.057	-4.601	-0.902	0.003	0.899	20.2
210	9	0.665	-6.133	-1.414	0.049	1.365	20.0
240	10	2.136	-3.888	-3.288	0.059	3.228	64.8
270	11	2.308	-4.242	-4.697	0.590	4.107	68.0
300	12	1.815	-3.859	-3.269	0.299	2.971	59.2
330	13	1.506	-4.774	-1.270	0.014	1.256	27.8
360	14	0.763	-5.297	-0.663	0.097	0.566	11.1
390	15	1.946	-3.793	-1.900	0.349	1.550	45.6
420	16	1.816	-3.508	-1.012	0.056	0.956	36.1
450	17	1.350	-3.243	-1.607	0.128	1.479	43.9
480	19	1.501	-2.403	-0.213	0.031	0.182	16.8
510	20	1.814	-2.819	-1.814	0.011	1.804	64.2
540	21	2.106	-2.546	-1.452	0.044	1.408	76.2
570	22	1.540	-3.302	-0.953	0.112	0.841	32.3
600	23	2.155	-2.754	-1.145	0.003	1.142	65.6
630	24	1.729	-3.008	-1.416	0.437	0.979	43.4
660	25	1.893	-3.755	-1.112	0.118	0.994	34.8
690	26	1.556	-2.914	-2.055	0.395	1.660	55.0

Table S4. T_NC1 experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.775	-0.696	-0.020	0.000	0.020
90	4	1.303	-0.715	-0.183	0.000	0.183
120	5	0.691	-0.869	-0.496	0.000	0.496
150	6	0.386	-1.060	-0.706	0.000	0.706
180	7	0.204	-0.993	-0.517	0.003	0.514
210	8	0.162	-2.010	-0.696	0.000	0.695
240	9	0.282	-1.653	-0.400	0.000	0.400
270	10	0.247	-1.301	-0.436	0.000	0.436
300	11	0.175	-0.521	-1.426	0.000	1.426
330	12	0.221	-1.362	-1.407	0.001	1.407
360	14	0.424	-1.809	-2.210	0.002	2.208
390	15	0.333	-2.045	-0.283	0.002	0.281
420	16	0.240	-2.095	-0.137	0.004	0.134
450	17	0.037	-2.155	-0.013	0.019	-0.005
480	18	0.176	-2.328	-0.853	0.123	0.729
510	19	0.293	-2.059	-0.303	0.005	0.299
540	20	0.106	-2.333	-0.003	0.000	0.003
570	21	0.226	-1.495	-0.002	0.001	0.001
600	22	0.122	-1.399	-0.080	0.002	0.078
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.210	-3.311	-12.683	0.000	12.683
90	4	0.208	-3.819	-3.665	0.000	3.665
120	5	0.236	-3.086	-2.456	0.002	2.454
150	6	0.360	-2.600	-1.102	0.009	1.093
180	7	0.431	-2.372	-1.178	0.269	0.909
210	8	0.288	-5.014	-0.860	0.065	0.795
240	9	0.242	-2.959	-1.455	0.005	1.451
270	10	0.470	-4.149	-1.629	0.002	1.626
300	11	0.406	-2.279	-0.372	0.004	0.367
330	12	0.166	-3.429	-2.012	0.002	2.010
360	14	1.205	-2.012	-1.526	0.004	1.522
390	15	0.229	-4.455	-1.599	0.003	1.596
420	16	0.158	-3.501	-0.350	0.002	0.348
450	17	0.977	-2.187	-0.579	0.005	0.573
480	18	0.490	-3.108	-0.573	0.003	0.570
510	19	0.809	-1.400	-0.270	0.003	0.267
540	20	1.487	-1.411	-0.672	0.050	0.623
570	21	0.481	-2.106	-0.372	0.003	0.369
600	22	0.979	-1.921	-0.910	0.008	0.902
Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.016	-5.110	-12.381	0.016	12.364
90	4	0.990	-1.676	-15.225	0.012	15.213
120	5	0.729	-1.493	-16.743	0.122	16.621
150	6	0.252	-2.875	-11.660	0.238	11.422
180	7	0.640	-2.737	-9.402	0.038	9.364

210	8	0.231	-5.420	-5.717	0.041	5.676
240	9	1.036	-2.232	-10.947	0.013	10.935
270	10	1.030	-3.369	-4.215	0.118	4.097
300	11	1.563	-2.496	-9.180	1.431	7.749
330	12	0.479	-3.487	-4.139	0.183	3.956
360	14	1.241	-1.945	-4.929	3.103	1.826
390	15	1.139	-3.009	-4.460	0.048	4.413
420	16	0.999	-3.683	-0.612	0.016	0.596
450	17	1.268	-2.914	-0.472	0.032	0.439
480	18	0.929	-1.683	-0.016	0.026	-0.010
510	19	1.238	-1.378	-0.013	0.028	-0.016
540	20	1.687	-1.924	-0.089	0.021	0.068
570	21	1.092	-1.472	-0.014	0.026	-0.013
600	22	0.558	-2.424	-0.037	0.020	0.018

Whole system

Run time	DEM	Aggradation (A_{vf})	Erosion (E_{vf})	Bank erosion (E_b)	Bank deposits (A_b)	Bank contribution	
						(V_b)	(%)
60	3	2.116	-9.359	-26.362	0.016	26.346	78.4
90	4	2.650	-6.327	-20.389	0.012	20.376	84.7
120	5	1.846	-5.586	-19.792	0.126	19.665	84.0
150	6	1.132	-6.659	-14.314	0.515	13.799	71.4
180	7	1.414	-6.224	-11.688	0.311	11.377	70.3
210	8	0.719	-12.803	-7.295	0.108	7.187	37.3
240	9	1.648	-7.054	-12.811	0.030	12.781	70.3
270	10	1.905	-9.027	-6.684	0.135	6.548	47.9
300	11	2.179	-5.586	-11.238	1.437	9.801	74.2
330	12	0.990	-8.393	-8.373	0.246	8.127	52.3
360	14	2.910	-6.167	-10.165	3.545	6.620	67.0
390	15	2.134	-9.640	-7.248	0.054	7.194	48.9
420	16	1.441	-9.745	-1.523	0.023	1.500	15.3
450	17	2.430	-7.576	-1.154	0.064	1.089	17.5
480	18	1.713	-7.309	-1.884	0.157	1.727	23.6
510	19	2.420	-5.252	-0.711	0.040	0.672	19.2
540	20	3.397	-5.965	-0.766	0.073	0.694	21.3
570	21	1.971	-5.141	-0.389	0.032	0.357	10.1
600	22	1.721	-5.879	-1.030	0.031	0.999	19.4

Table S5. T_ISDS experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.733	-0.651	-0.024	0.000	0.024
90	4	1.656	-0.833	-0.085	0.000	0.085
120	5	1.032	-0.871	-0.420	0.000	0.420
150	6	0.779	-1.094	-1.308	0.000	1.308
180	7	0.817	-0.813	-1.170	0.000	1.170
210	9	0.272	-2.324	-0.935	0.001	0.933
240	11	0.522	-1.055	-0.878	0.006	0.872
270	12	0.495	-0.692	-0.521	0.001	0.521
300	13	0.337	-1.154	-0.818	0.003	0.815
330	14	0.125	-1.516	-2.384	0.008	2.376
360	15	0.022	-1.806	-0.187	0.001	0.186

390	16	0.097	-1.319	-0.052	0.035	0.017
420	17	0.186	-0.552	-0.562	0.001	0.561
450	19	0.458	-0.814	-0.583	0.006	0.577
480	20	0.572	-1.226	-0.523	0.030	0.493
510	21	0.246	-2.032	-1.472	0.271	1.201
540	22	0.745	-1.731	-1.299	0.055	1.244
570	23	0.471	-0.977	-1.172	0.001	1.171
600	24	0.836	-1.499	-0.311	0.078	0.232
630	25	0.304	-0.665	-0.362	0.018	0.345
660	26	0.408	-1.371	-0.256	0.001	0.255
690	27	0.734	-1.060	-0.027	0.005	0.022
720	28	0.316	-0.659	-0.883	0.301	0.582
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.558	-1.489	-13.991	0.000	13.991
90	4	0.168	-5.316	-7.828	0.027	7.802
120	5	0.239	-2.597	-4.204	0.001	4.203
150	6	0.961	-1.566	-4.134	0.011	4.123
180	7	0.561	-4.485	-1.829	0.278	1.551
210	9	1.462	-3.040	-2.131	0.018	2.113
240	11	1.708	-2.441	-0.496	0.278	0.218
270	12	0.583	-3.631	-0.980	0.504	0.476
300	13	0.545	-3.996	-1.543	0.019	1.524
330	14	1.169	-2.262	-0.717	0.048	0.669
360	15	1.696	-3.458	-0.038	0.003	0.035
390	16	3.359	-1.155	-0.674	0.002	0.672
420	17	3.106	-1.109	-0.707	0.017	0.689
450	19	3.016	-1.115	-1.412	0.747	0.665
480	20	2.730	-2.975	-2.446	0.239	2.208
510	21	0.907	-2.679	-1.275	0.054	1.221
540	22	1.457	-2.017	-0.354	0.003	0.351
570	23	1.847	-2.646	-3.076	0.744	2.332
600	24	1.322	-3.256	-2.434	0.002	2.432
630	25	0.665	-2.032	-2.671	0.032	2.640
660	26	1.383	-2.565	-0.560	0.017	0.544
690	27	1.695	-2.410	-2.386	0.002	2.384
720	28	1.505	-4.083	-0.406	0.125	0.281
Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.450	-1.853	-16.482	0.000	16.482
90	4	0.516	-4.613	-11.784	1.038	10.746
120	5	0.583	-3.192	-9.337	0.398	8.938
150	6	1.347	-2.221	-8.146	0.173	7.973
180	7	0.657	-4.074	-8.794	3.060	5.734
210	9	1.448	-1.525	-9.024	2.001	7.023
240	11	2.665	-1.447	-12.243	0.555	11.688
270	12	0.532	-4.877	-5.675	0.007	5.668
300	13	0.840	-2.245	-4.870	2.504	2.366
330	14	1.721	-1.620	-6.417	0.068	6.349
360	15	0.659	-4.546	-0.907	0.012	0.894
390	16	1.238	-2.528	-5.398	2.270	3.128
420	17	1.287	-2.107	-2.920	0.010	2.910
450	19	3.109	-0.640	-7.602	2.356	5.247
480	20	0.228	-4.964	-1.137	0.007	1.130
510	21	1.449	-2.011	-2.039	0.007	2.031
540	22	1.778	-2.432	-1.376	0.014	1.363
570	23	2.092	-1.620	-9.518	4.648	4.870

600	24	1.876	-2.551	-6.514	2.266	4.248
630	25	0.838	-3.997	-3.124	0.009	3.115
660	26	1.224	-2.177	-2.396	0.007	2.389
690	27	1.993	-2.429	-1.264	0.010	1.254
720	28	1.068	-2.940	-4.726	1.884	2.841

Whole system

Run time	DEM	Aggradation (A_{vf})	Erosion (E_{vf})	Bank erosion (E_b)	Bank deposits (A_b)	Bank contribution	
						(V_b)	(%)
60	3	4.917	-4.199	-31.161	0.000	31.161	102.4
90	4	2.486	-11.114	-20.217	1.065	19.153	68.9
120	5	1.989	-7.102	-14.506	0.400	14.107	73.4
150	6	3.340	-4.981	-14.580	0.184	14.395	89.8
180	7	2.110	-9.482	-11.797	3.342	8.455	53.4
210	9	3.270	-7.124	-12.104	2.024	10.080	72.3
240	11	5.153	-5.084	-14.680	1.154	13.526	100.5
270	12	1.856	-9.462	-7.576	0.514	7.062	48.1
300	13	1.776	-7.654	-7.233	2.526	4.707	44.5
330	14	3.137	-5.561	-9.672	0.125	9.547	79.7
360	15	2.393	-10.168	-1.154	0.017	1.137	12.8
390	16	4.872	-5.081	-6.139	2.308	3.831	94.8
420	17	4.610	-4.007	-4.189	0.030	4.160	117.0
450	19	6.939	-2.698	-9.695	3.109	6.586	280.9
480	20	3.587	-9.543	-4.111	0.277	3.834	39.2
510	21	2.749	-6.897	-4.794	0.337	4.458	51.8
540	22	4.023	-6.526	-3.310	0.073	3.237	56.4
570	23	4.593	-5.411	-13.926	5.394	8.531	91.3
600	24	4.237	-7.462	-9.279	2.349	6.930	68.2
630	25	1.889	-6.840	-6.168	0.059	6.108	55.2
660	26	3.170	-6.284	-3.221	0.026	3.195	50.6
690	27	4.533	-6.040	-4.432	0.019	4.414	74.6
720	28	2.975	-7.930	-7.218	2.530	4.688	48.6

Table S6. T_DWIW experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.048	-1.367	-0.012	0.000	0.012
90	4	0.767	-0.970	-0.248	0.000	0.248
120	5	0.482	-0.852	-0.531	0.000	0.531
150	6	0.195	-1.327	-0.369	0.000	0.369
180	7	0.170	-1.581	-0.457	0.000	0.456
210	8	0.160	-1.071	-0.410	0.001	0.409
240	9	0.541	-1.699	-0.242	0.000	0.242
270	10	0.035	-2.822	-0.724	0.000	0.724
300	11	0.090	-1.624	-0.282	0.000	0.282
330	13	0.036	-1.879	-0.102	0.001	0.102
360	14	0.133	-1.412	-0.001	0.000	0.001
390	15	0.217	-0.769	-0.009	0.001	0.008
420	16	0.600	-0.550	-0.369	0.003	0.366
450	17	0.552	-0.874	-1.134	0.009	1.125
480	18	0.620	-1.779	-0.089	0.000	0.089
510	19	0.077	-1.221	-0.083	0.000	0.083

540	20	0.563	-1.709	-0.062	0.000	0.062
570	21	0.590	-1.606	-0.139	0.000	0.139
600	22	0.732	-0.602	-0.446	0.000	0.446
630	23	0.157	-0.717	-0.051	0.037	0.014
660	24	0.370	-0.804	-0.109	0.002	0.107
690	25	0.052	-0.675	-0.071	0.000	0.071
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.635	-3.560	-5.567	0.000	5.567
90	4	0.689	-2.503	-4.365	0.000	4.365
120	5	0.670	-1.847	-6.316	0.000	6.316
150	6	0.467	-2.802	-1.306	0.161	1.144
180	7	0.395	-2.856	-1.483	0.036	1.447
210	8	0.256	-3.247	-0.085	0.020	0.065
240	9	0.721	-2.469	-0.665	0.018	0.647
270	10	0.152	-4.597	-0.144	0.003	0.141
300	11	0.590	-4.727	-0.323	0.009	0.314
330	13	1.280	-1.845	-1.464	0.125	1.339
360	14	1.750	-1.802	-0.316	0.004	0.312
390	15	0.959	-0.861	-0.010	0.012	-0.002
420	16	2.326	-1.442	-3.676	0.141	3.535
450	17	2.715	-2.749	-6.680	0.014	6.666
480	18	0.557	-3.791	-1.448	0.003	1.446
510	19	1.019	-3.313	-4.474	0.022	4.451
540	20	0.853	-4.344	-2.725	0.161	2.564
570	21	1.813	-3.366	-5.011	1.800	3.210
600	22	1.095	-3.360	-3.059	0.003	3.056
630	23	1.142	-2.503	-0.320	1.452	-1.132
660	24	2.158	-2.246	-7.080	1.934	5.146
690	25	1.103	-3.125	-0.284	0.016	0.268
Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.129	-3.326	-11.569	0.020	11.549
90	4	0.733	-2.896	-17.922	0.006	17.916
120	5	0.361	-4.085	-4.880	0.179	4.701
150	6	0.300	-5.205	-8.545	1.094	7.451
180	7	2.931	-1.254	-11.580	2.407	9.173
210	8	0.555	-2.438	-9.934	0.232	9.701
240	9	1.106	-3.421	-10.849	0.187	10.662
270	10	0.321	-4.213	-7.876	0.006	7.871
300	11	0.786	-3.940	-10.673	4.263	6.410
330	13	1.119	-2.037	-4.303	0.037	4.266
360	14	0.219	-2.342	-2.478	0.009	2.469
390	15	0.995	-1.824	-3.870	0.675	3.195
420	16	1.087	-2.459	-2.617	0.002	2.614
450	17	1.577	-1.377	-0.399	0.024	0.376
480	18	0.918	-2.979	-1.209	0.692	0.517
510	19	1.411	-1.463	-9.344	5.989	3.355
540	20	1.112	-2.042	-3.908	0.064	3.843
570	21	1.388	-2.530	-2.060	0.009	2.051
600	22	0.927	-2.390	-1.937	0.009	1.927
630	23	1.145	-1.537	-0.167	0.017	0.150
660	24	0.710	-2.831	-0.434	0.022	0.412
690	25	2.649	-0.838	-3.556	0.109	3.447

Whole system

Run time	DEM	Aggradation (A_{vf})	Erosion (E_{vf})	Bank erosion (E_b)	Bank deposits (A_b)	Bank contribution	
						(V_b)	(%)
60	3	1.990	-8.639	-18.494	0.021	18.474	73.5
90	4	2.481	-6.552	-23.348	0.008	23.340	85.1
120	5	1.641	-7.143	-12.961	0.333	12.629	69.7
150	6	1.007	-9.587	-10.979	1.260	9.719	53.1
180	7	3.919	-5.824	-13.791	2.506	11.285	85.6
210	8	1.110	-7.011	-10.503	0.254	10.249	63.5
240	9	2.445	-8.028	-11.814	0.207	11.607	67.5
270	10	0.548	-11.991	-8.753	0.010	8.743	43.3
300	11	1.474	-10.676	-11.522	4.274	7.248	44.1
330	13	2.487	-6.004	-5.895	0.164	5.731	62.0
360	14	2.154	-5.711	-2.796	0.013	2.782	43.9
390	15	2.306	-3.518	-3.890	0.689	3.201	72.5
420	16	4.162	-4.620	-7.167	0.262	6.905	93.8
450	17	4.912	-5.253	-8.338	0.047	8.291	96.1
480	18	2.160	-8.697	-3.411	1.023	2.388	26.8
510	19	2.658	-6.110	-14.341	6.013	8.328	70.7
540	20	2.635	-8.371	-6.721	0.226	6.495	53.1
570	21	3.922	-7.791	-7.315	1.810	5.506	58.7
600	22	2.932	-6.544	-5.442	0.013	5.429	60.0
630	23	2.515	-4.903	-0.538	1.506	-0.968	68.1
660	24	3.358	-5.994	-7.623	1.958	5.665	68.2
690	25	3.866	-4.765	-3.911	0.125	3.786	80.8

Table S7. T_NC2 experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.998	-0.480	0.000	0.000	0.000
90	5	2.082	-0.435	-0.024	0.000	0.024
120	6	1.669	-0.395	-0.033	0.000	0.033
150	7	1.324	-0.470	-0.006	0.000	0.006
180	8	1.502	-0.438	-0.045	0.000	0.045
210	9	1.261	-0.337	0.000	0.000	0.000
240	10	1.546	-0.618	-0.198	0.000	0.198
270	12	1.311	-0.504	-0.066	0.000	0.066
300	13	1.328	-0.519	-0.129	0.000	0.129
330	14	1.140	-0.452	-0.162	0.000	0.162
360	15	0.598	-0.471	-0.096	0.000	0.096
390	16	0.944	-0.359	-0.013	0.000	0.013
420	17	0.985	-0.248	0.000	0.000	0.000
450	18	0.326	-0.494	-0.209	0.000	0.209
480	19	1.016	-0.396	-0.643	0.000	0.643
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	2.269	-1.347	-5.030	0.000	5.030
90	5	1.734	-1.062	-4.686	0.000	4.686
120	6	1.645	-1.771	-3.598	0.000	3.598
150	7	2.176	-0.926	-2.967	0.488	2.479
180	8	1.470	-1.354	-2.919	0.001	2.918
210	9	2.533	-0.723	-3.288	0.083	3.205
240	10	1.511	-1.232	-1.123	0.004	1.120
270	12	2.962	-1.525	-1.157	0.059	1.097
300	13	1.066	-1.610	-2.216	0.037	2.179

330	14	1.408	-1.019	-1.372	0.053	1.319
360	15	1.832	-0.978	-0.864	0.002	0.862
390	16	1.567	-1.591	-2.137	0.001	2.136
420	17	0.715	-2.778	-0.980	0.015	0.965
450	18	1.458	-1.811	-1.102	0.010	1.092
480	19	1.205	-1.125	-0.833	0.092	0.741
Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.399	-1.956	-5.741	0.002	5.739
90	5	0.330	-2.057	-4.739	0.033	4.706
120	6	0.903	-1.570	-5.584	0.068	5.516
150	7	0.228	-3.140	-2.848	0.018	2.830
180	8	2.177	-1.495	-2.978	0.004	2.974
210	9	0.958	-2.083	-6.084	0.062	6.022
240	10	1.605	-1.273	-3.964	0.003	3.961
270	12	2.603	-1.233	-3.834	0.158	3.676
300	13	1.131	-1.953	-1.865	0.020	1.845
330	14	0.858	-2.271	-5.217	0.757	4.460
360	15	1.154	-1.566	-2.897	0.025	2.872
390	16	1.364	-1.261	-5.408	2.125	3.284
420	17	0.532	-2.196	-1.780	0.078	1.702
450	18	1.515	-1.301	-5.371	0.896	4.475
480	19	1.848	-1.890	-5.235	0.221	5.013

Whole system

Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution**	
						(V_b)	**(%)**
60	3	4.785	-4.009	-12.082	0.002	12.081	106.9
90	5	4.303	-3.883	-9.753	0.041	9.713	104.5
120	6	4.523	-3.915	-9.571	0.068	9.503	106.8
150	7	3.828	-4.807	-6.099	0.507	5.592	85.1
180	8	5.515	-3.401	-6.348	0.005	6.342	150.0
210	9	4.853	-3.294	-9.418	0.146	9.273	120.2
240	10	4.815	-3.225	-5.777	0.006	5.770	138.0
270	12	7.223	-3.300	-5.202	0.218	4.984	469.9
300	13	3.786	-4.185	-4.637	0.057	4.580	92.0
330	14	3.710	-4.073	-6.769	0.810	5.958	94.3
360	15	3.701	-3.096	-3.870	0.029	3.841	118.7
390	16	3.979	-3.298	-7.670	2.187	5.483	114.2
420	17	2.320	-5.396	-2.799	0.093	2.706	46.8
450	18	3.390	-3.785	-6.686	0.906	5.780	93.6
480	19	4.389	-3.606	-6.743	0.326	6.417	113.9

Table S8. T_IWMC experiment. All values are reported in 10^{-3} m^3 over a period of 30 minutes (Run time is in minutes).

Upper section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.600	-0.516	0.000	0.000	0.000
90	4	1.524	-0.553	-0.003	0.000	0.003
120	5	1.294	-0.423	-0.062	0.000	0.062
150	6	1.320	-0.380	-0.001	0.000	0.001
180	7	1.383	-0.337	-0.010	0.000	0.010

210	8	0.495	-2.022	-0.499	0.000	0.499
240	9	0.067	-2.934	-0.285	0.000	0.285
270	11	0.309	-1.496	-0.618	0.000	0.618
300	12	0.050	-2.686	-0.206	0.000	0.206
330	13	0.243	-1.108	-0.097	0.000	0.097
360	14	0.313	-0.739	-1.490	0.151	1.340
390	15	0.246	-0.838	-2.745	0.003	2.742
420	16	0.273	-0.638	-1.602	0.000	1.602
450	17	0.273	-2.962	-0.309	0.019	0.290
480	18	0.476	-1.369	-0.904	0.001	0.903
Middle section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	1.682	-2.136	-1.687	0.000	1.687
90	4	1.411	-1.829	-3.157	0.000	3.157
120	5	1.668	-0.633	-4.575	0.318	4.258
150	6	1.588	-0.769	-5.283	0.000	5.283
180	7	1.334	-0.836	-3.001	0.003	2.998
210	8	0.352	-2.967	-2.863	0.017	2.845
240	9	0.938	-2.962	-3.873	0.994	2.879
270	11	0.791	-1.751	-2.602	0.015	2.586
300	12	0.447	-3.482	-3.124	0.004	3.120
330	13	0.678	-2.051	-5.551	0.010	5.541
360	14	0.294	-2.736	-3.209	0.009	3.199
390	15	0.712	-3.250	-1.085	0.690	0.395
420	16	0.926	-3.109	-1.437	0.522	0.916
450	17	0.837	-3.403	-1.709	0.026	1.682
480	18	0.703	-5.280	-0.446	0.018	0.428
Lower section						
Run time	**DEM**	**Aggradation (A_{vf})**	**Erosion (E_{vf})**	**Bank erosion (E_b)**	**Bank deposits (A_b)**	**Bank contribution (V_b)**
60	3	0.116	-3.941	-4.646	0.000	4.646
90	4	0.099	-1.925	-3.218	0.000	3.218
120	5	0.397	-1.817	-2.224	0.003	2.221
150	6	0.381	-1.399	-2.896	0.090	2.806
180	7	1.269	-1.001	-5.157	0.776	4.382
210	8	3.897	-0.789	-12.035	0.087	11.947
240	9	0.773	-2.528	-10.169	0.044	10.124
270	11	0.285	-4.738	-3.719	0.026	3.693
300	12	0.605	-3.440	-3.396	0.112	3.283
330	13	0.329	-3.524	-2.842	0.029	2.813
360	14	0.548	-2.966	-3.685	0.015	3.669
390	15	2.586	-1.425	-8.784	2.222	6.562
420	16	0.837	-3.309	-8.083	0.023	8.060
450	17	2.327	-1.713	-2.948	0.636	2.312
480	18	1.212	-3.872	-8.081	0.217	7.864

Whole system

Run time	DEM	Aggradation (A_{vf})	Erosion (E_{vf})	Bank erosion (E_b)	Bank deposits (A_b)	Bank contribution	
						(V_b)	(%)
60	3	3.542	-6.894	-6.816	0.000	6.816	67.0
90	4	3.156	-4.456	-6.614	0.000	6.614	83.6
120	5	3.470	-3.062	-6.863	0.320	6.543	106.7
150	6	3.451	-2.669	-8.429	0.091	8.338	110.3
180	7	4.123	-2.324	-8.272	0.779	7.493	131.6
210	8	4.942	-6.149	-16.173	0.106	16.067	93.0
240	9	1.923	-8.787	-15.008	1.043	13.965	67.0

270	11	1.458	-8.211	-7.479	0.113	7.366	52.2
300	12	1.170	-9.939	-7.008	0.118	6.890	44.0
330	13	1.364	-6.912	-8.515	0.041	8.474	60.4
360	14	1.162	-6.716	-8.426	0.177	8.249	59.8
390	15	3.899	-5.642	-12.723	2.919	9.805	84.9
420	16	2.097	-7.379	-11.129	0.548	10.581	66.7
450	17	3.517	-8.309	-4.981	0.683	4.297	47.3
480	18	2.482	-10.735	-9.785	0.238	9.547	53.6

Table S9. Fan (a)symmetry measured from the DEMs.

	Runtime	**Upstream side**	**Central line**	**Downstream side**
	(min)		**(m)**	
T_NC1	120	0.665	0.745	0.898
	180	0.549	0.699	0.884
	240	0.595	0.638	0.78
	300	0.607	0.635	0.714
	360	0.531	0.664	0.741
	420	0.523	0.626	0.706
	480	0.512	0.745	0.946
	540	0.621	0.645	0.814
	600	0.63	0.741	0.905
T_ISDS	120	0.816	1.096	1.199
	180	0.874	1.081	1.178
	240	0.801	0.886	0.953
	300	0.689	0.841	0.951
	360	0.866	0.978	1.031
	420	0.844	1.071	1.244
	480	1.046	1.079	1.181
	540	0.996	1.075	1.286
	600	0.856	1.193	1.354
T_DWIW	120	0.829	0.994	1.181
	180	0.845	0.887	0.935
	240	0.698	0.799	0.896
	300	0.697	0.832	0.948
	360	0.804	0.949	1.066
	420	0.772	0.869	1.199
	480	0.82	1.067	1.211
	540	0.859	1.111	1.032
	600	0.778	1.252	1.356
T_NC2	120	0.898	0.956	1.023
	180	0.841	0.972	1.101
	240	0.724	0.982	1.057
	300	0.823	1.068	1.141
	360	0.768	0.889	1.016
	420	0.784	1.077	1.156
	480	0.7	0.942	1.122
T_IWMC	120	0.848	0.961	1.023
	180	0.803	0.891	1.031
	240	0.801	0.862	0.997
	300	0.842	0.977	1.071
	360	0.741	0.811	0.996
	420	0.788	0.940	1.055
	480	0.692	0.796	1.08

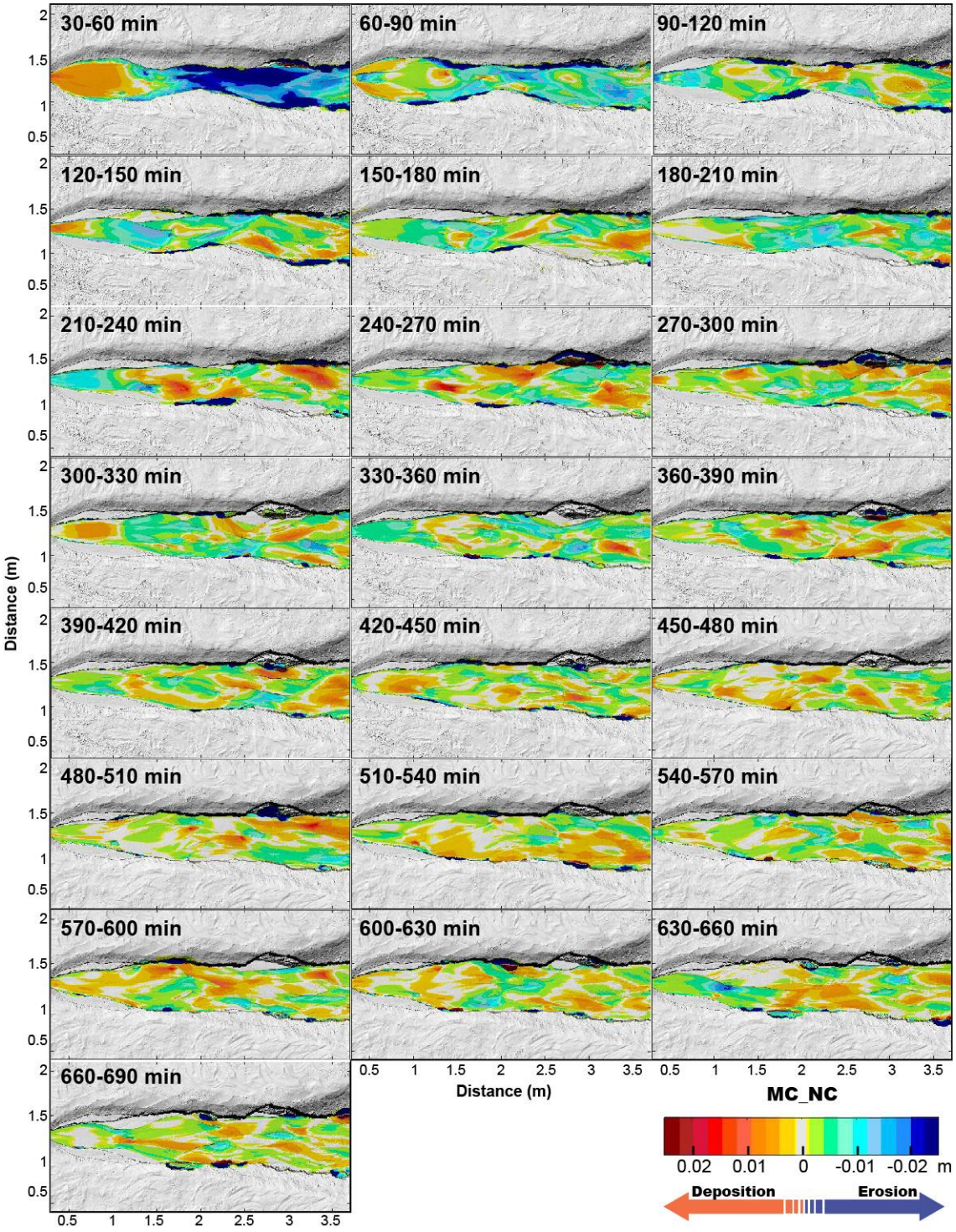

Figure S1. Sediment transfer dynamics from DoDs analysis. Variations between -0.001 and +0.001 m are considered as "no change" (in gray) to account for the DEMs accuracy (i.e., 1 mm resolution).

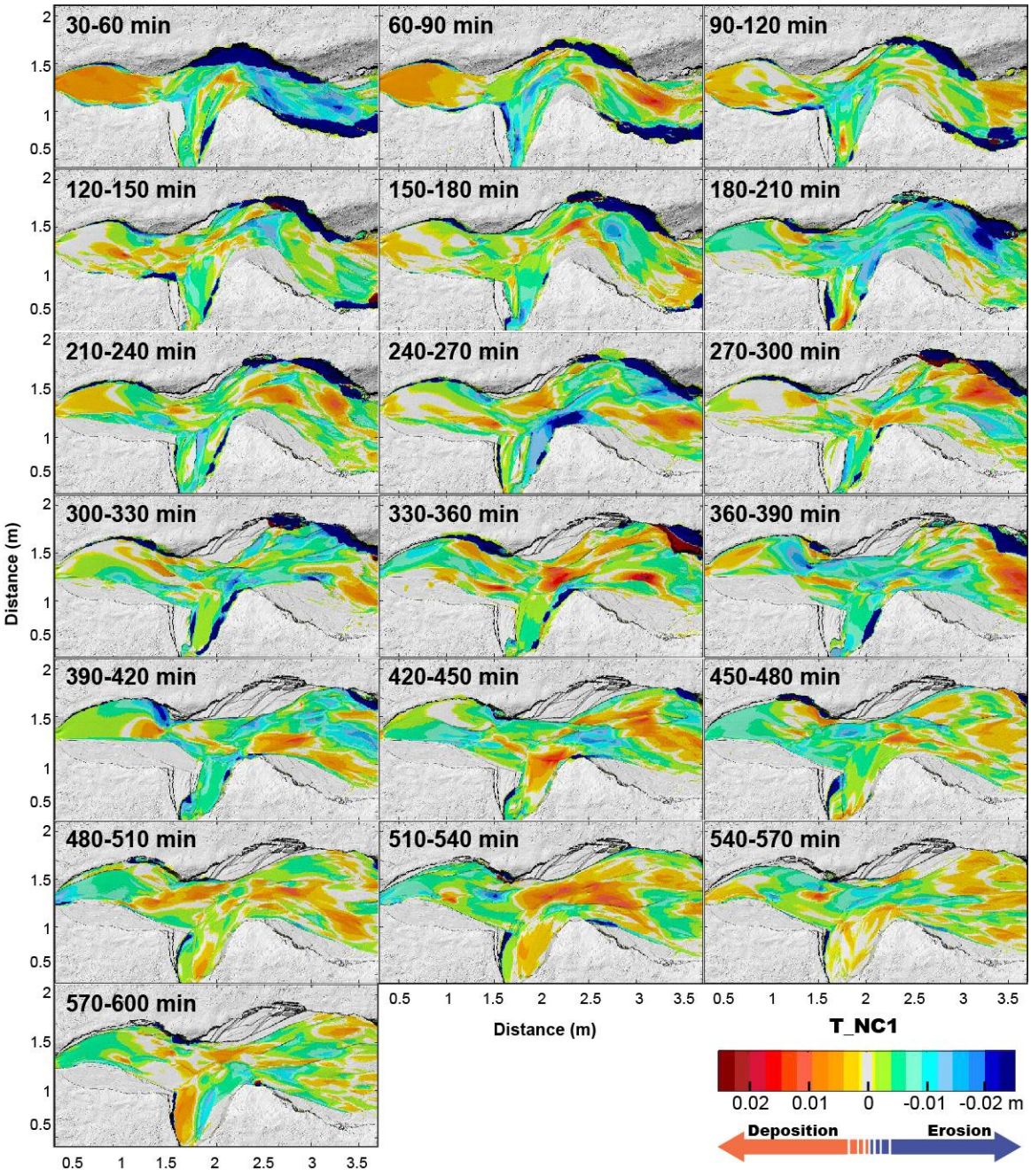

Figure S2. Sediment transfer dynamics from DoDs analysis. Variations between -0.001 and +0.001 m are considered as "no change" (in gray) to account for the DEMs accuracy (i.e., 1 mm resolution).

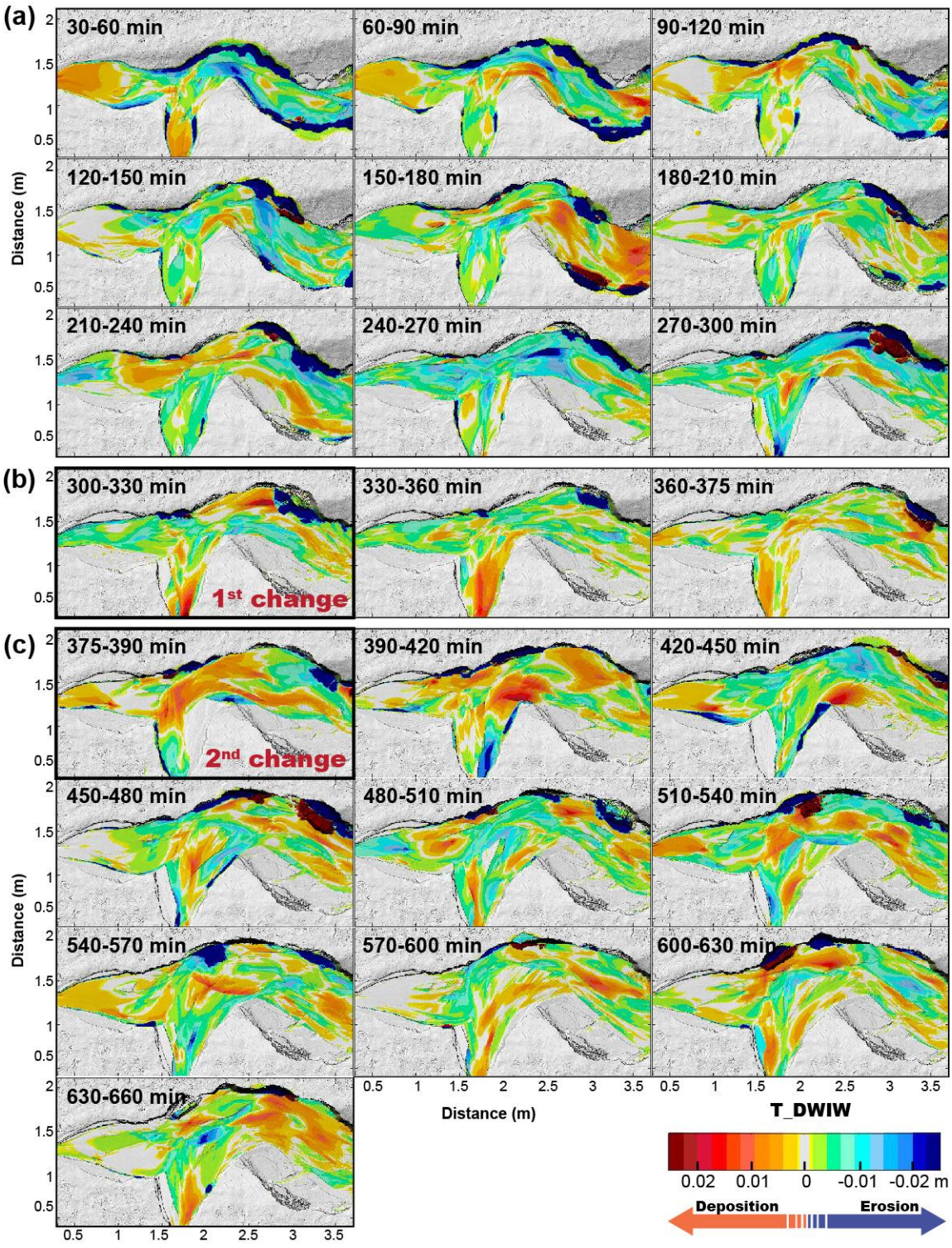

Figure S3. Sediment transfer dynamics from DoDs analysis. Variations between -0.001 and +0.001 m are considered as "no change" (in gray) to account for the DEMs accuracy (i.e., 1 mm resolution).

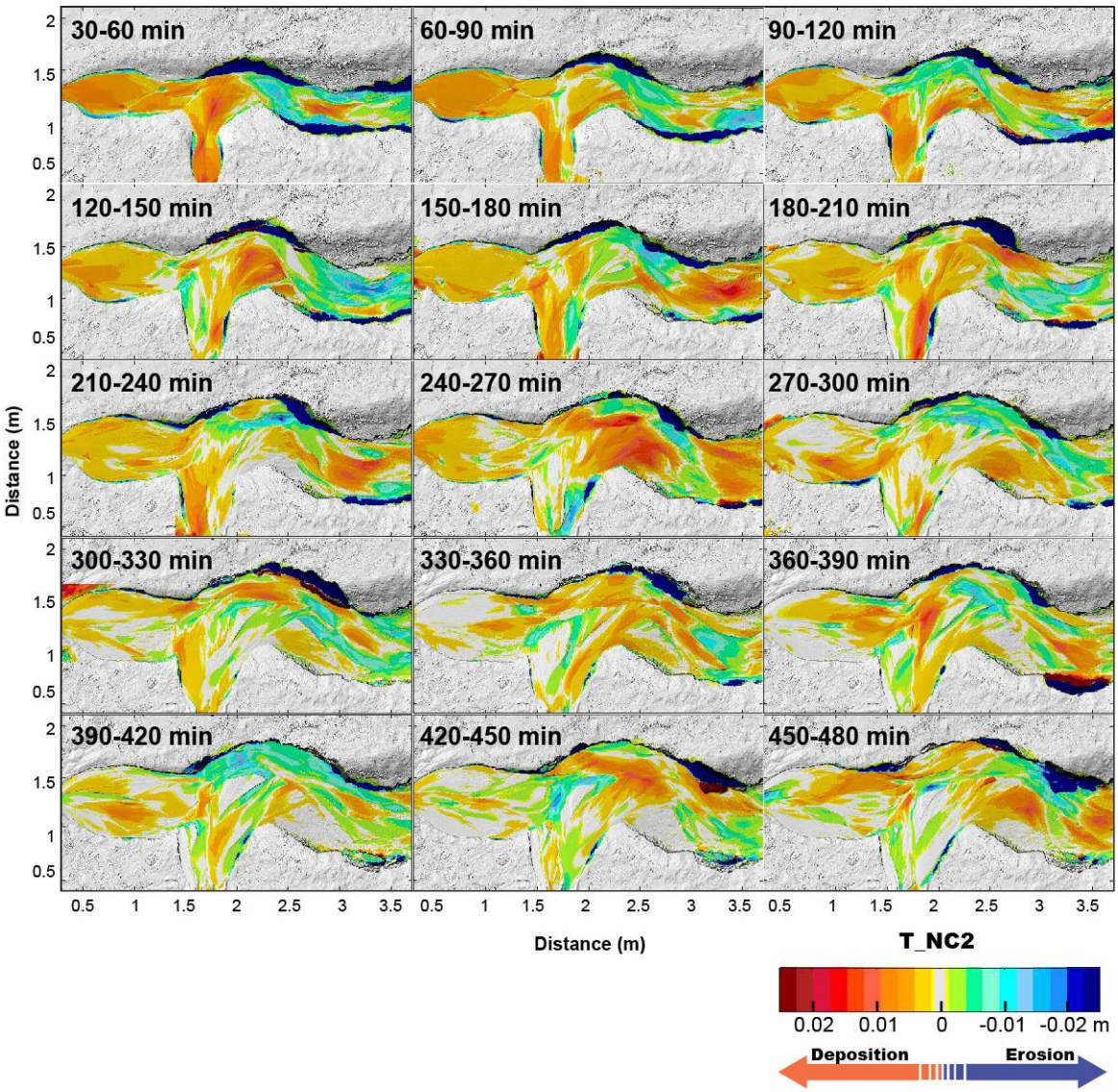

Figure S4. Sediment transfer dynamics from DoDs analysis. Variations between -0.001 and +0.001 m are considered as "no change" (in gray) to account for the DEMs accuracy (i.e., 1 mm resolution).

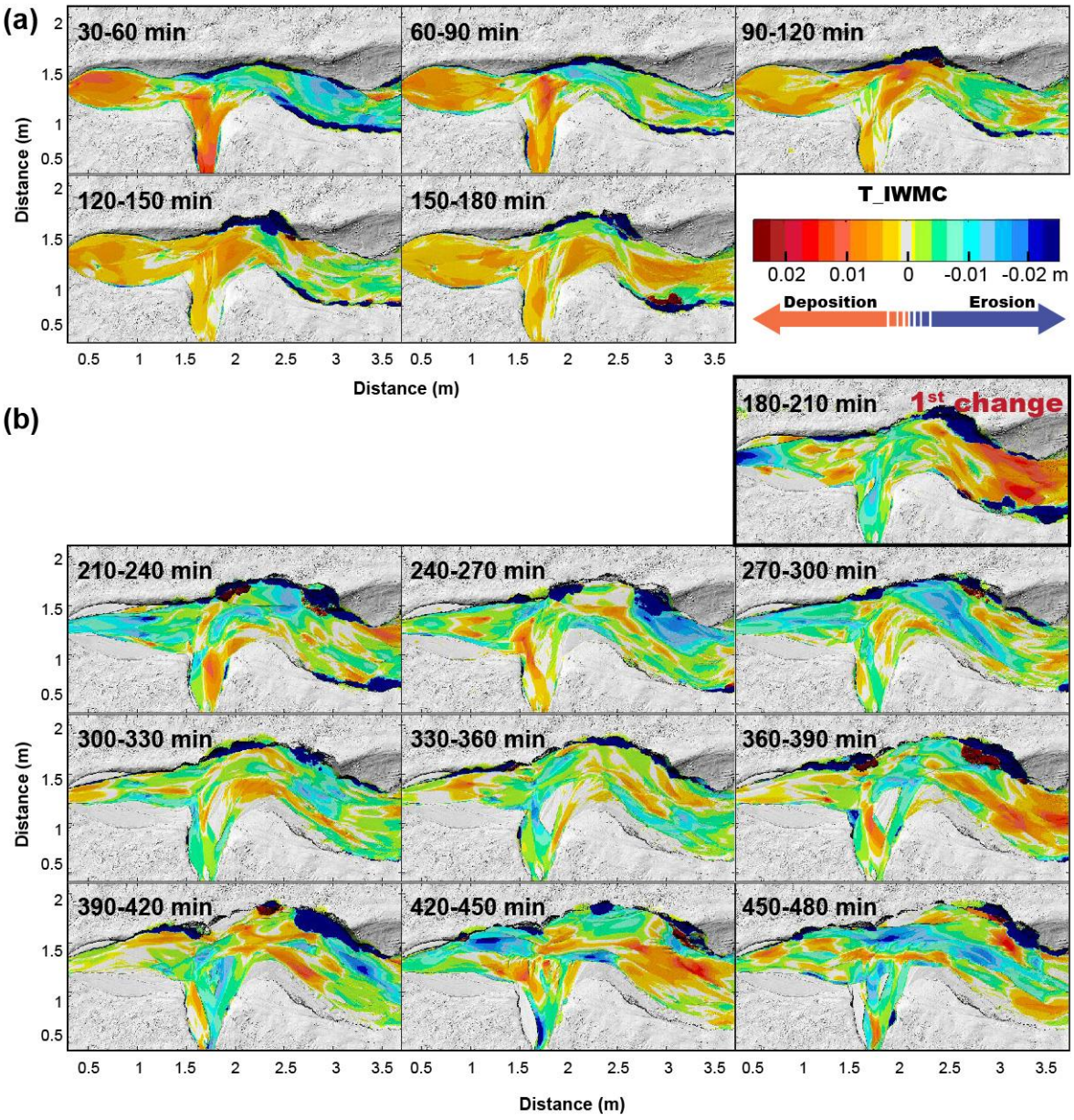

Figure S5. Sediment transfer dynamics from DoDs analysis. Variations between -0.001 and +0.001 m are considered as "no change" (in gray) to account for the DEMs accuracy (i.e., 1 mm resolution).

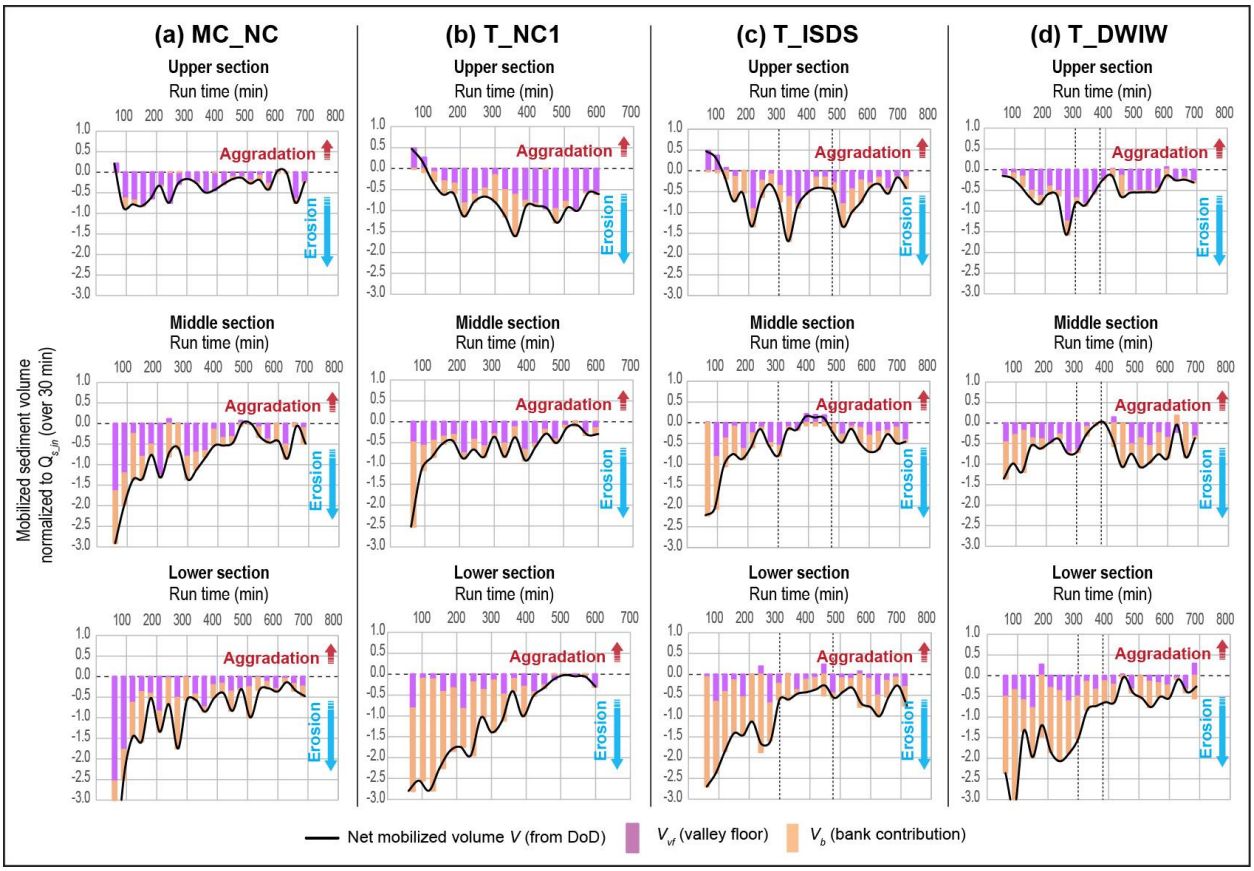

Figure S6. Net volume of sediment mobilized in the upper, middle, and lower sections (normalized to Q_{s_in}). Net V values are in black; bank contribution (V_b) is in orange, whereas valley floor (V_{af}) is in violet.

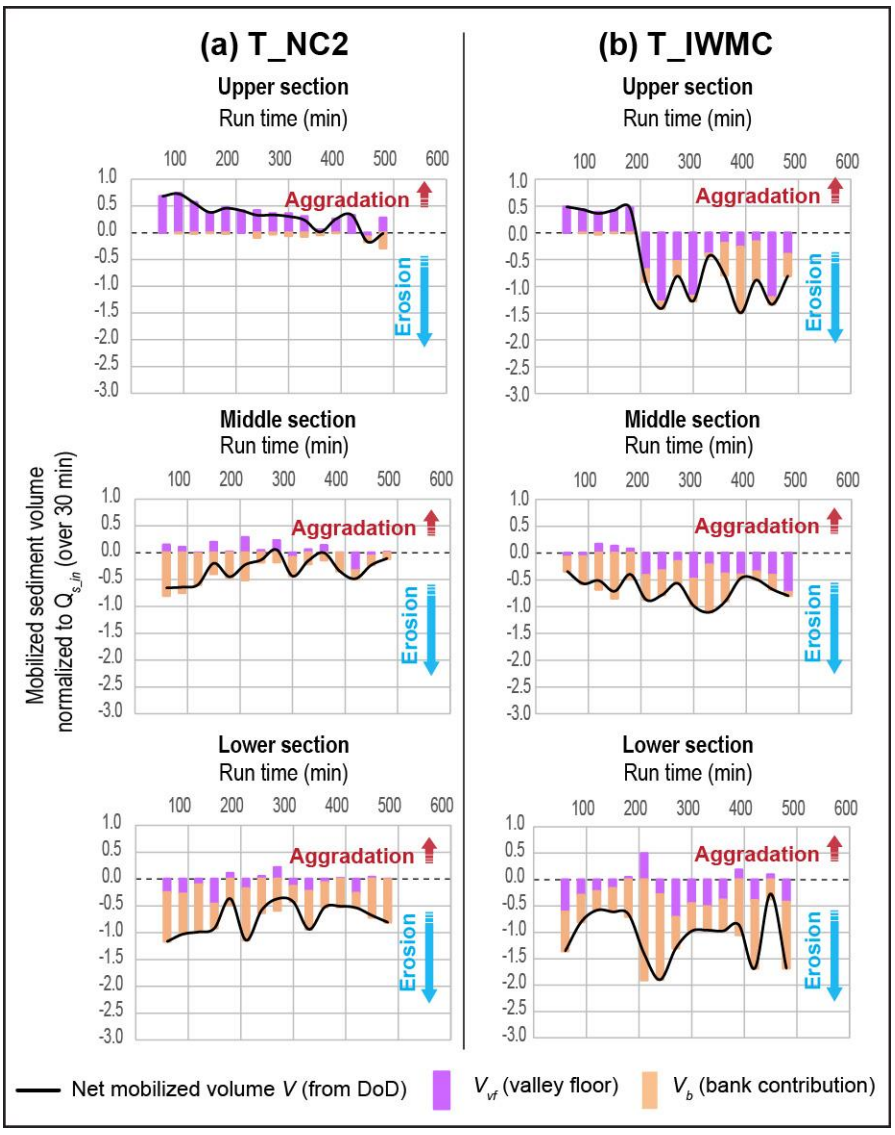

Figure S7. Net volume of sediment mobilized in the upper, middle, and lower sections (normalized to Q_{s_in}). Net V values are in black; bank contribution (V_b) is in orange, whereas valley floor (V_{af}) is in violet.