

Supplementary material

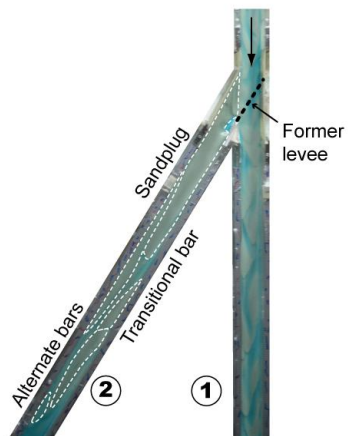
Experiment	Bifurcation angle α (°)	Distributary 1						Distributary 2						Sandplug			
		$\beta 1$ (°)	Bed Slope S1 (%)	Equilibrium water discharge ($L \cdot h^{-1}$)	Shields parameter θ	Froude number	Reynolds number	$\beta 2$ (°)	Bed Slope S2 (%)	Equilibrium water discharge ($L \cdot h^{-1}$)	Shields parameter θ	Froude number	Reynolds number	Length / channel width	Sandplug volume (cL)	Total sand volume (cL)	Sandplug slope (%)
1	30	10	1.468	-	0.213	-	-	20	1.418	-	0.123	-	-	-	-	-	-
2				-	0.213	-	-			-	-	-	0.082	-	-	-	-
3		15	1.443	153.4	0.209	0.94	833	15	1.443	146.6	0.209	0.94	833	-	-	-	-
4				150.6	0.209	0.999	874			149.4	0.084	3.74	952	-	-	-	-
5		0	1.48	250	0.172	1.31	864	30	1.312	50	0.114	2.03	910	10.5	13.09	-	2.5/1
6				262	0.214	1.24	1098			38	0.076	2.54	646	6.625	8.84	13.25	3.9/2.5
7	45	22.5	1.405	150.6	0.204	1.85	829	22.5	1.405	149.4	0.204	2.19	982	-	-	-	-
8				161.4	0.204	0.987	874			138.6	0.244	0.894	792	-	-	-	-
9		0	1.48	299	0.172	2.08	1377	45	1.193	1	0.138	0.54	359	9.625	12.38	-	2.7/1
10				274.2	0.214	6.296	1604			25.8	0.069	1.14	290	5.25	9.12	18.86	4/1.1
11	60	30	1.312	181.5	0.190	1.75	1157	30	1.312	118.5	0.114	1.35	604	-	-	-	-
12				270.1	0.214	0.63	561			29.9	0.085	2.685	1202	8	9.45	-	4.3/0.6
13		0	1.48	294.3	0.214	1.39	1232	60	0.98	5.7	0.085	1.06	472	3.4	6.16	17.51	5/3.4
14	90	45	1.193	193.6	0.138	1.69	1120	45	1.193	106.4	0.207	0.51	568	-	-	-	-
15				294.3	0.172	1.45	957			5.7	0.116	1.18	779	4.375	6.31	-	7.8/3.4
16		0	1.48	258	0.214	1.593	1411	90	0	42	0.058	1.14	290	1.845	2.76	12.61	4/3.4
17				299	0.214	1.64	1456			1	0.087	0.51	229	7.375	7.32	-	10.6/2.2
18				294.3	0.214	1.47	1299			1.282	5.7	0.149	0.58	383	10	7.87	-
19	291.6	0.214	1.83	1620	2.56	8.4	0.074	0.581	55	11.125	4.8	-	1.45				

5 Table S1: Detailed list and parameters of the conducted experiments. Froude and Reynolds number are added for each distributary, as well as sandplug length, volume and slope and total sediment volume in Distributary 2.

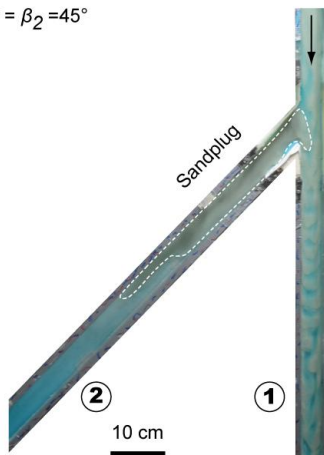
(a) $\alpha = \beta_2 = 30^\circ$



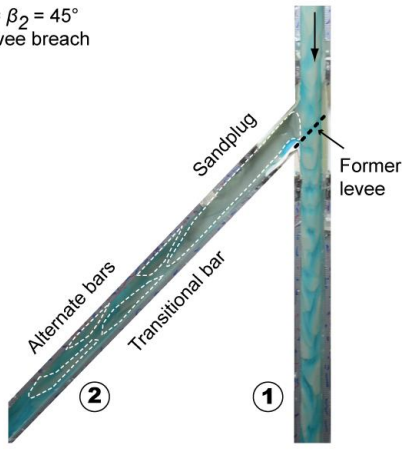
(b) $\alpha = \beta_2 = 30^\circ$
Levee breach



(c) $\alpha = \beta_2 = 45^\circ$

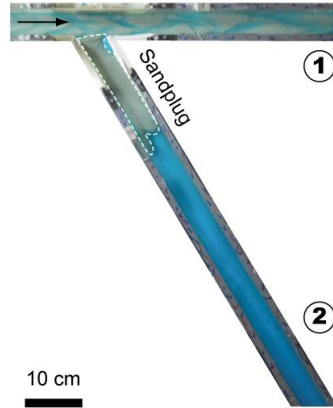


(d) $\alpha = \beta_2 = 45^\circ$
Levee breach

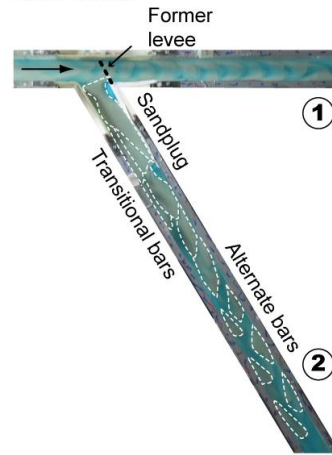


10 **Figure S2: Final deposits of the 8 asymmetrical experiments, without and with levee breach. (a-b) $\beta_2 = 30^\circ$. (c-d) $\beta_2 = 45^\circ$. (e-f) $\beta_2 = 60^\circ$. (g-h) $\beta_2 = 90^\circ$.**

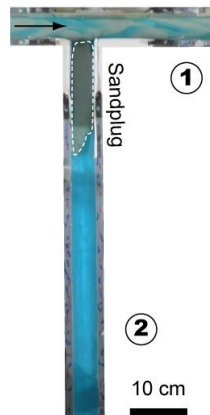
(e) $\alpha = \beta_2 = 60^\circ$



(f) $\alpha = \beta_2 = 60^\circ$
Levee breach



(g) $\alpha = \beta_2 = 90^\circ$



(h) $\alpha = \beta_2 = 90^\circ$
Levee breach

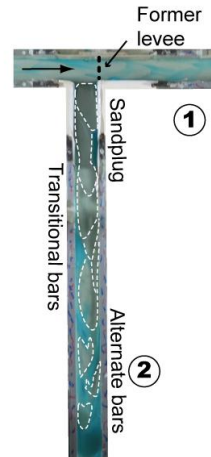


Figure S2 (continued)