



Supplement of

Evolution of submarine canyons and hanging-wall fans: insights from geomorphic experiments and morphodynamic models

Steven Y. J. Lai et al.

Correspondence to: Steven Y. J. Lai (stevenyjlai@mail.ncku.edu.tw)

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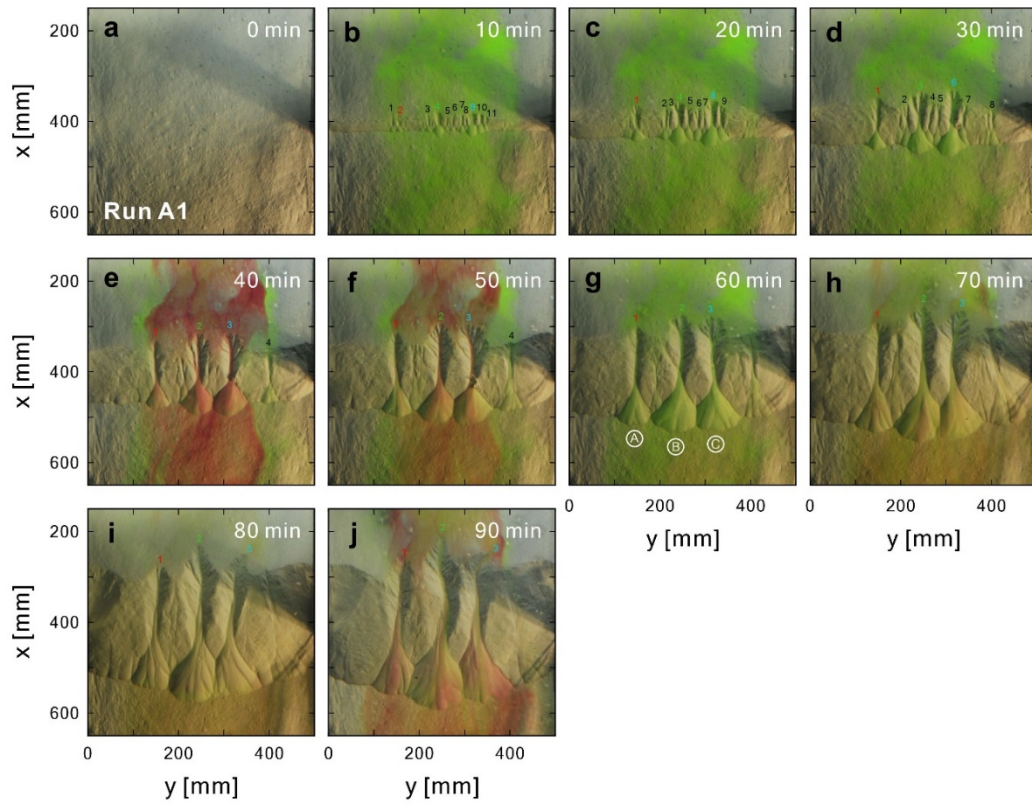


Figure S1. Orthophotos of Run A1 from $t = 0$ to 90 min. Stage interval is 10 min. Numbers at each canyon head represent each traced canyon-fan system.

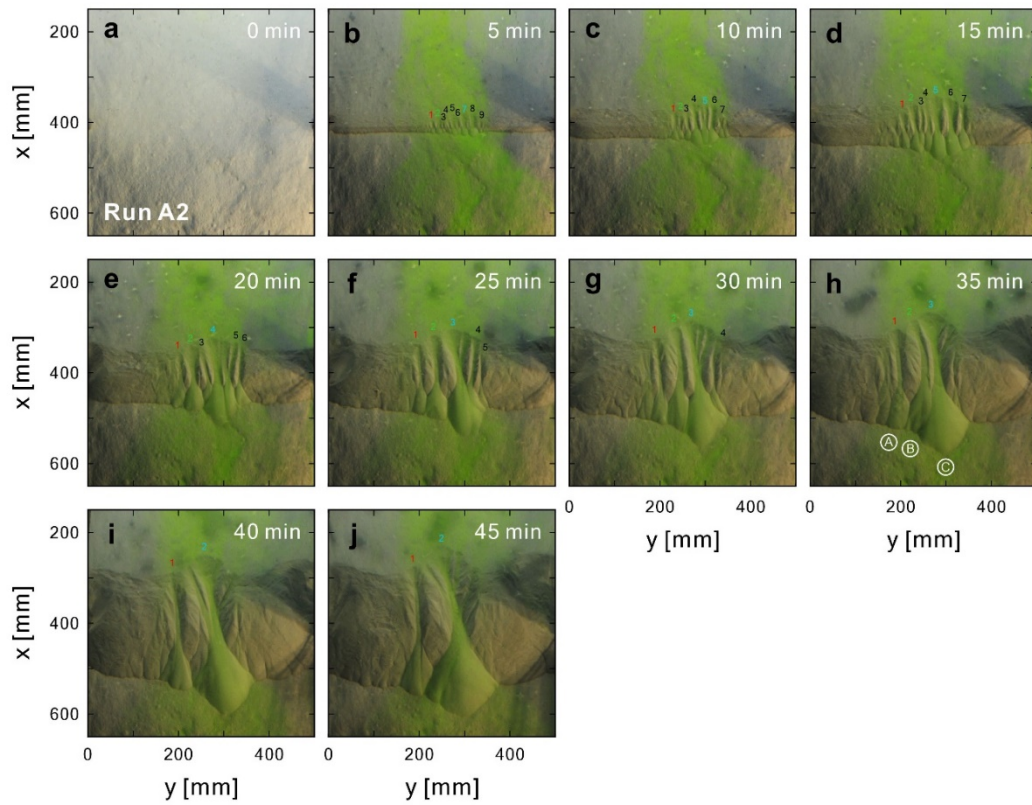


Figure S2. Orthophotos of Run A2 from $t = 0$ to 45 min. Stage interval is 5 min.

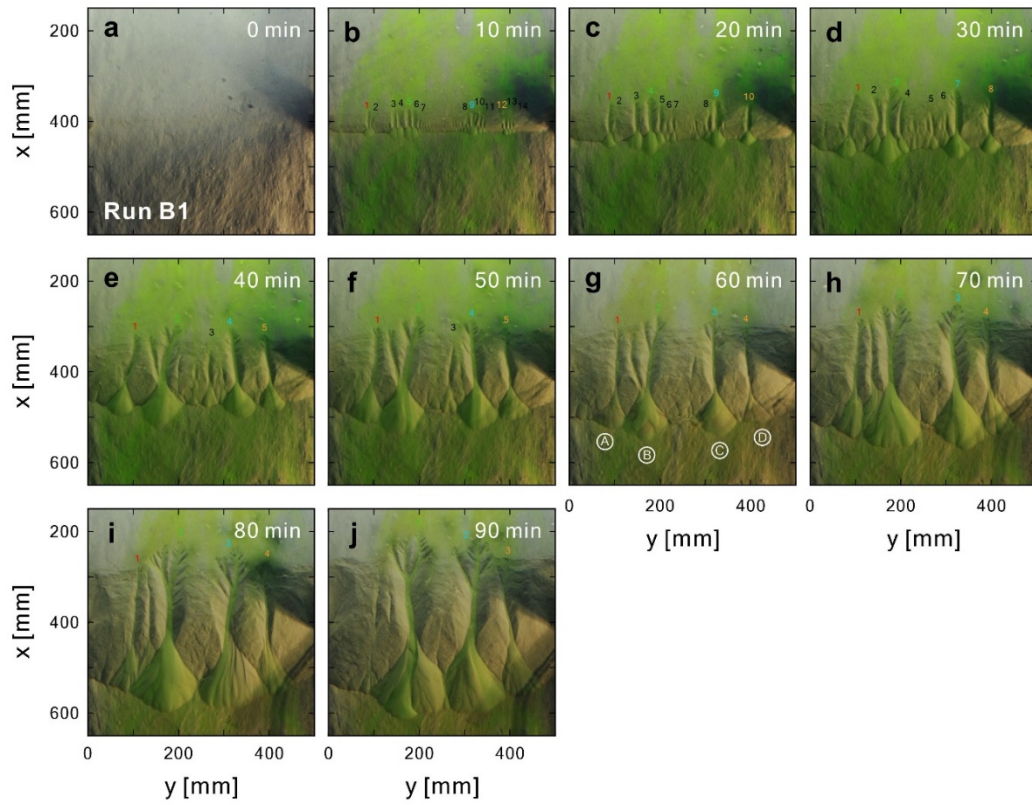


Figure S3. Orthophotos of Run B1 from $t = 0$ to 90 min. Stage interval is 10 min.

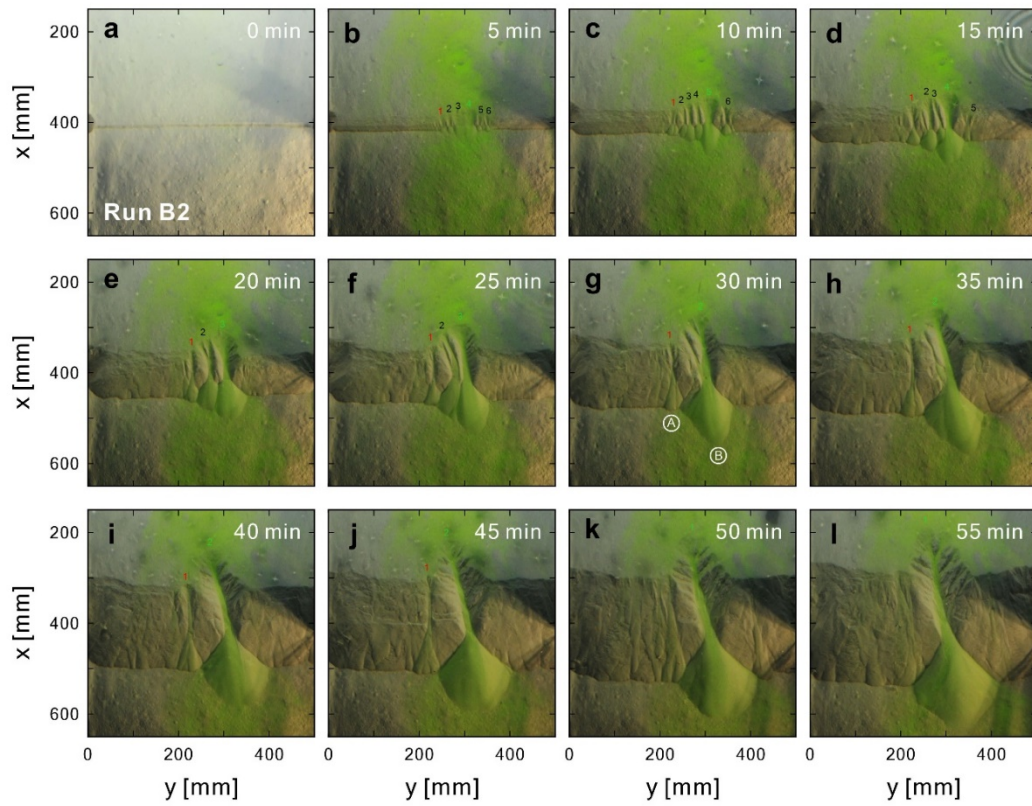


Figure S4. Orthophotos of Run B2 from $t = 0$ to 55 min. Stage interval is 5 min.

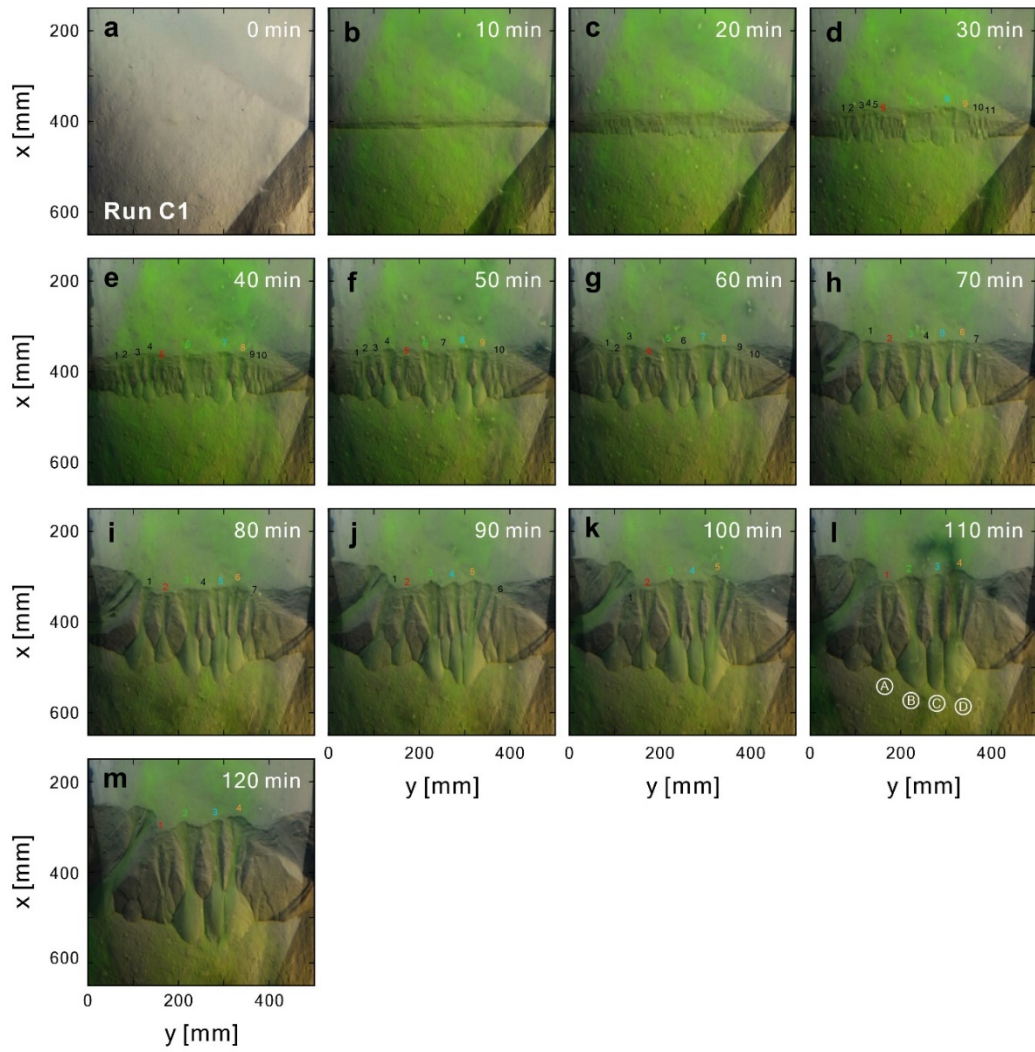


Figure S5. Orthophotos of Run C1 from $t = 0$ to 120 min. Stage interval is 10 min.

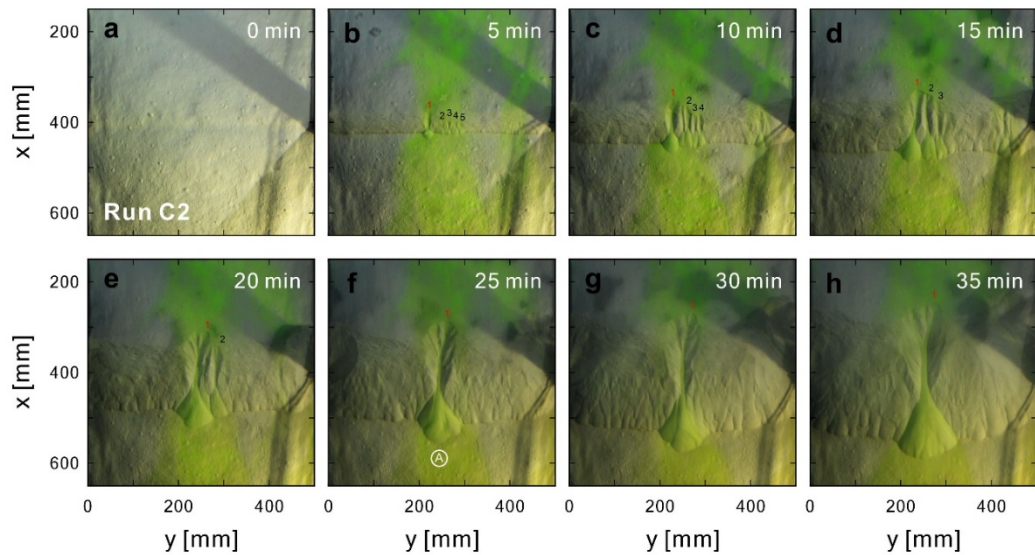


Figure S6. Orthophotos of Run C2 from $t = 0$ to 35 min. Stage interval is 5 min.

Table S1. Evolution history of identified and traced submarine canyon-fan systems of Run A1.

	System	System A			System B				System C			
	Type	Shallow shelf-incising canyon-fan system			Deep shelf-incising canyon-fan system				Deep shelf-incising canyon-fan system			
Run A1	Stage	System number identified										
	Stage01	1	2	3	4	5	6	7	8	9	10	11
	Stage02		1	2	3	4	5	6	7	8	9	
	Stage03		1		2	3	4	5		6	7	8
	Stage04		1			2				3		4
	Stage05		1			2				3		4
	Stage06		1			2				3		
	Stage07		1			2				3		
	Stage08		1			2				3		
	Stage09		1			2				3		
	Total number of identified systems											42
	Numbers of traced system											27

Table S2. Evolution history of identified and traced submarine canyon-fan systems of Run A2.

	System	System A	System B					System C		
	Type	Shallow shelf-incising canyon-fan system	Shallow shelf-incising canyon-fan system					Deep shelf-incising canyon-fan system		
Run A2	Stage	System number identified								
	Stage01	1	2	3	4	5	6	7	8	9
	Stage02	1	2	3	4			5	6	7
	Stage03	1	2	3	4			5	6	7
	Stage04	1	2	3				4	5	6
	Stage05	1	2					3	4	5
	Stage06	1	2					3	4	
	Stage07	1	2					3		
	Stage08	1						2		
	Stage09	1						2		
	Total number of identified systems									45
	Numbers of traced system									25

Table S3. Evolution history of identified and traced submarine canyon-fan systems of Run B1.

	System	System A				System B				System C				System D			
	Type	Shallow shelf-incising canyon				Deep shelf-incising canyon				Deep shelf-incising canyon				Shallow shelf-incising canyon			
	Stage	System number identified															
Run B1	Stage01	1	2	3	4	5	6	7		8	9	10	11	12	13	14	
	Stage02	1	2	3		4	5	6	7		8	9		10			
	Stage03	1		2		3	4			5	6	7		8			
	Stage04	1				2				3		4		5			
	Stage05	1				2				3		4		5			
	Stage06	1				2					3			4			
	Stage07	1				2					3			4			
	Stage08	1				2					3			4			
	Stage09					1					2			3			
	Total number of identified systems																57
Numbers of traced system																35	

Table S4. Evolution history of identified and traced submarine canyon-fan systems of Run B2.

	System	System A				System B				
	Type	Shallow shelf-incising canyon-fan system				Deep shelf-incising canyon-fan system				
	Stage	System number identified								
Run B2	Stage01	1				2	3	4	6	
	Stage02	1	2			3	4	5	6	
	Stage03	1				2	3	4	5	
	Stage04	1				2		3		
	Stage05	1				2		3		
	Stage06	1						2		
	Stage07	1						2		
	Stage08	1						2		
	Stage09	1						2		
	Stage10							1		
	Stage11							1		
	Total number of identified systems									
Numbers of traced system										20

Table S5. Evolution history of identified and traced submarine canyon-fan systems of Run C1.

Run C1	System						System A	System B		System C	System D		
	Type						Slope-confined canyon-fan system	Shallow shelf-incising canyon-fan system		Shallow shelf-incising canyon-fan system	Shallow shelf-incising canyon-fan system		
	Stage	System number identified											
	Stage01	No canyon-fan systems											
	Stage02	No canyon-fan systems											
	Stage03	1	2	3	4	5	6	7		8	9	10	11
	Stage04	1	2		3	4	5	6		7	8	9	10
	Stage05	1	2		3	4	5	6	7	8	9	10	
	Stage06		1		2	3	4	5	6	7	8	9	10
	Stage07					1	2	3	4	5	6	7	
	Stage08					1	2	3	4	5	6	7	
	Stage09					1	2	3		4	5	6	
	Stage10					1	2	3		4	5		
	Stage11						1	2		3	4		
	Stage12						1	2		3	4		
Total number of identified systems												74	
Numbers of traced system												40	

Table S6. Evolution history of identified and traced submarine canyon-fan systems of Run C2.

Run C2	System	System A				
	Type	Deep shelf-incising canyon-fan system				
	Stage	System number identified				
	Stage01	1	2	3	4	5
	Stage02	1	2	3	4	
	Stage03	1	2		3	
	Stage04	1			2	
	Stage05	1				
	Stage06	1				
	Stage07	1				
	Total number of identified systems					17
	Numbers of traced system					7

Captions for Video S1 to S6 (Files uploaded separately at: <http://doi.org/10.5281/zenodo.7271139>)

Video S1. This film shows the evolution of submarine canyon-fan systems of Run A1 from $t = 0$ to 90 min.

Video S2. This film shows the evolution of submarine canyon-fan systems of Run A2 from $t = 0$ to 45 min.

Video S3. This film shows the evolution of submarine canyon-fan systems of Run B1 from $t = 0$ to 90 min.

Video S4. This film shows the evolution of submarine canyon-fan systems of Run B2 from $t = 0$ to 55 min.

Video S5. This film shows the evolution of submarine canyon-fan systems of Run C1 from $t = 0$ to 120 min.

Video S6. This film shows the evolution of submarine canyon-fan systems of Run C2 from $t = 0$ to 35 min.

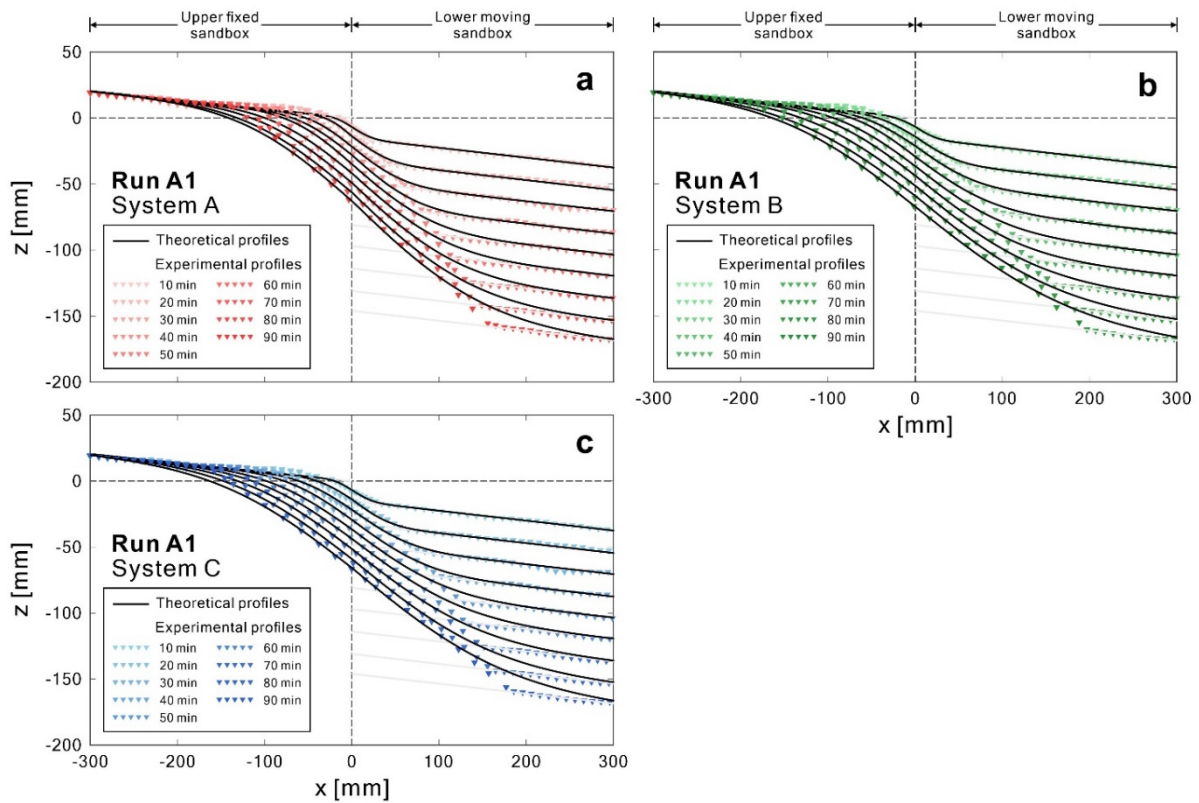


Figure S7. Comparisons between experimental and modeled submarine canyon-fan long profiles of each system at different stages for Run A1.

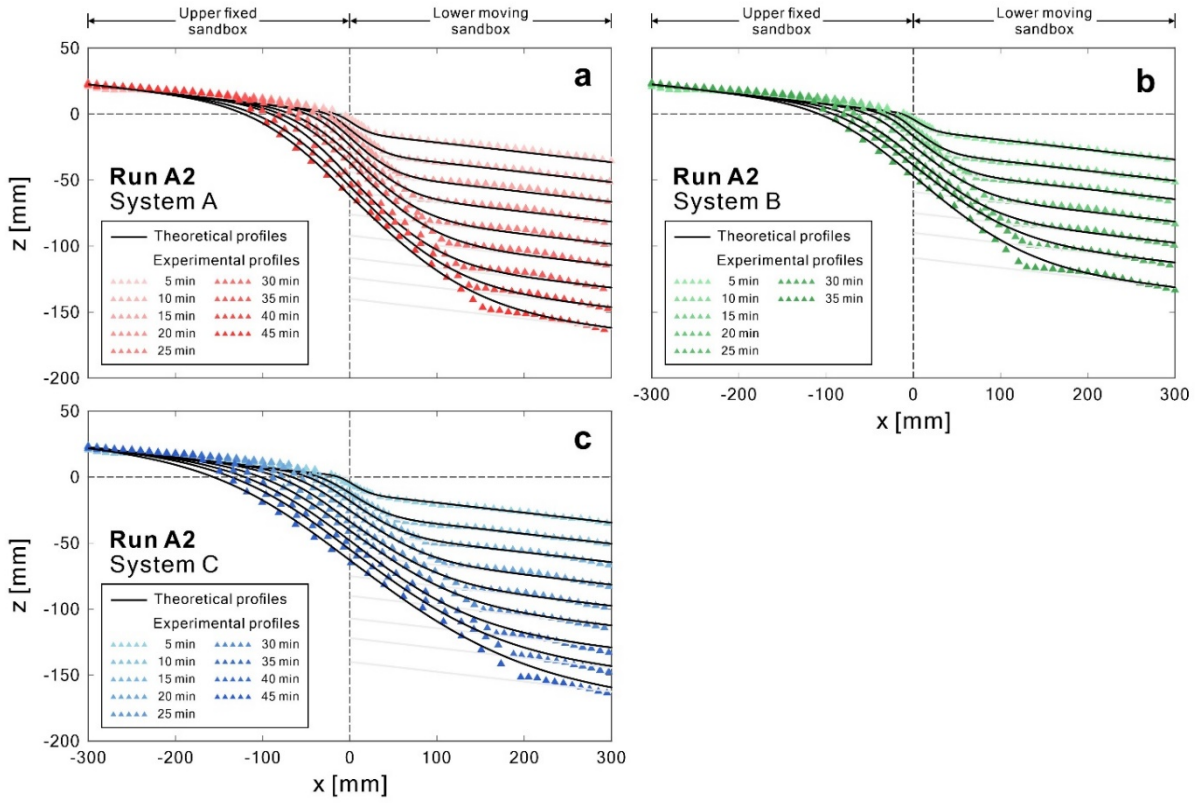


Figure S8. Comparisons between experimental and modeled submarine canyon-fan long profiles of each system at different stages for Run A2.

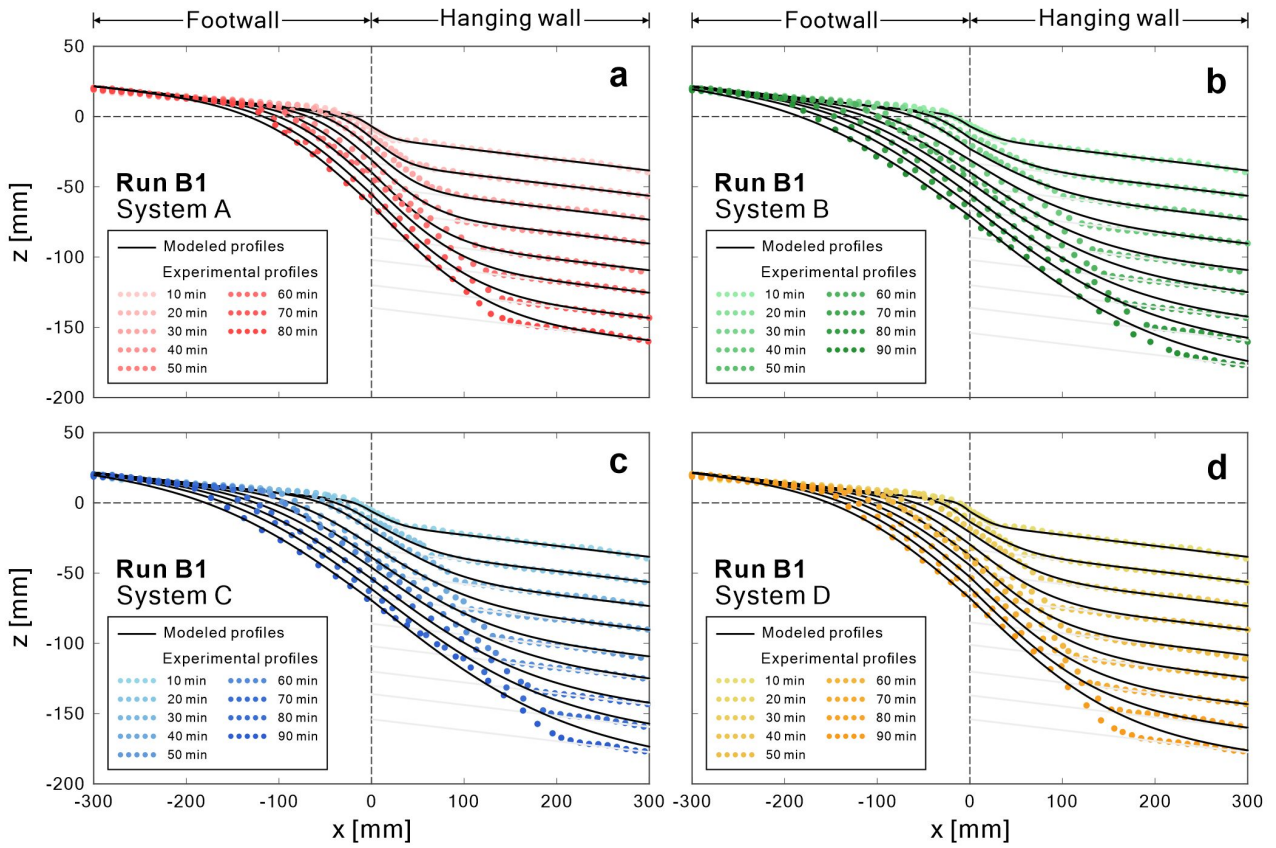


Figure S9. Comparisons between experimental and modeled submarine canyon-fan long profiles of each system at different stages for Run B1.

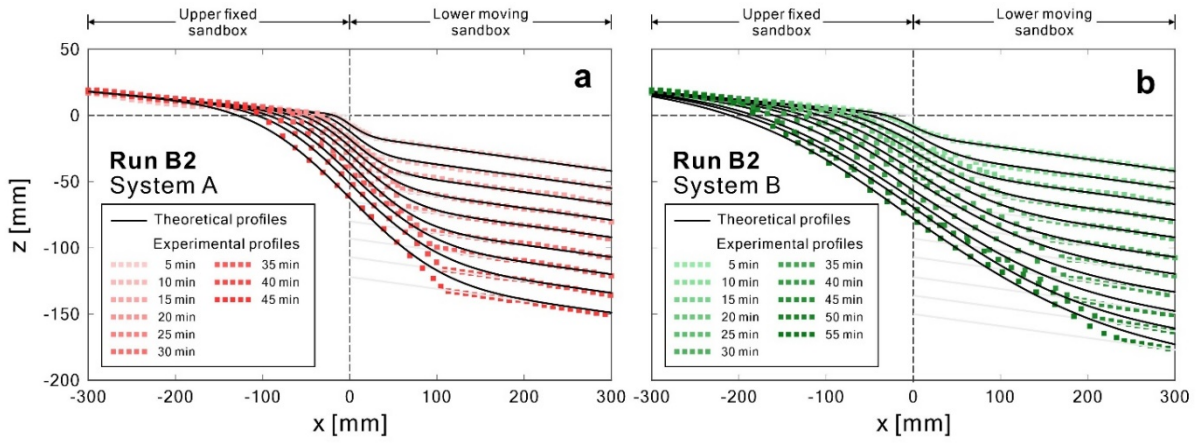


Figure S10. Comparisons between experimental and modeled submarine canyon-fan long profiles of each system at different stages for Run B2.

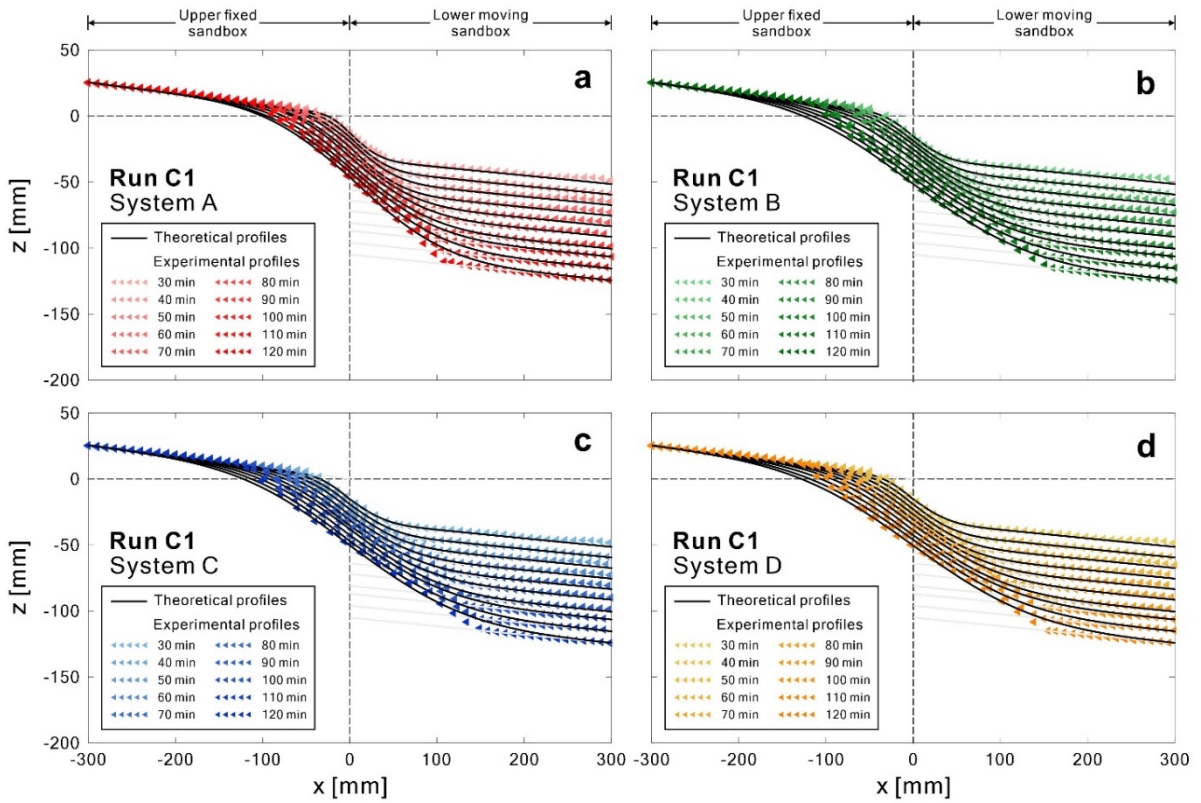


Figure S11. Comparisons between experimental and modeled submarine canyon-fan long profiles of each system at different stages for Run C1.

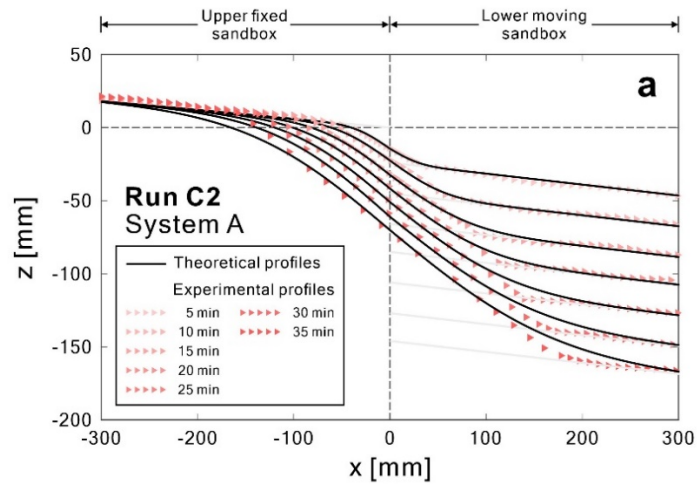


Figure S12. Comparisons between experimental and modeled submarine canyon-fan long profiles of System A at different stages for Run C2.