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Supplement of

Application of wave–current coupled sediment transport models with variable grain properties for coastal morphodynamics: a case study of the Changhua River, Hainan

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Table S1. List of main parameters of survey vessel

Parameter	Value	Instrument diagram
LOA	11 m	
Breadth	2.8 m	
Modeled Depth	1.2 m	
Design Draft	0.8 m	
Speed	6.0 kn	
Hull Material	Fiber-reinforced plastic (FRP)	

Table S2. List of main parameters of ADCP

Main parameters	Value	Instrument diagram
Working frequency	600 kHz	
Velocity accuracy	± 0.3 % ± 3 mm/s	
Velocity resolution	1 mm/s	
Velocity range	± 10 m/s	
Layer thickness	0.5 m ~ 4 m	
Number of plies	1 – 128	
Temperature sensor range	- 10 ℃ ~ + 85 ℃	
Accuracy of temperature sensor	± 0.5 ℃	

Table S3. List of main parameters of clam grab sampler

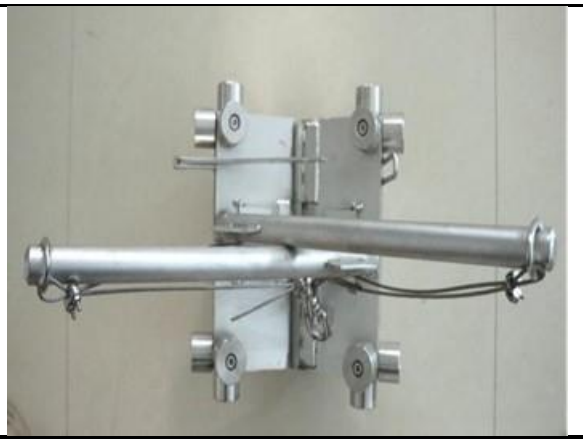
Main parameters	Value	Instrument diagram
Operational depth	≤ 50 m	
Material	Stainless steel	
Sampling area	500 cm^2	
Weight	9 kg	
Maximum sampling volume	3.5 L	

Table S4. List of main parameters of laser particle size analyzer

Main parameters	Value	Instrument diagram
Measuring principle (dry)	0.1 μ to 2500 μ	
Measuring principle (wet)	0.04 μ to 2500 μ	
Dry dispersion	Venturi/free fall	
Repeatability	< 1%	
Precision	< 3%	
Weight	55 kg	
Volume	35 inches× 21 inches× 17 inches	

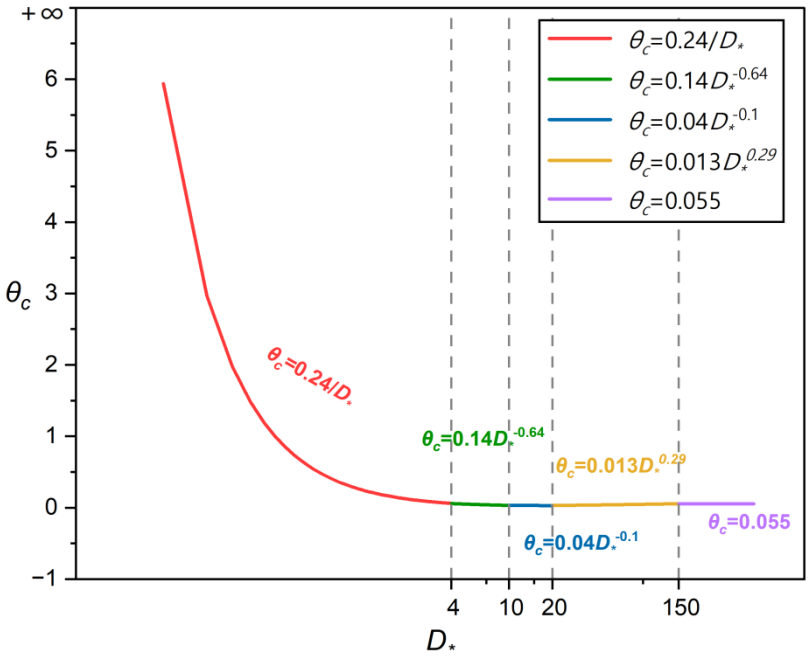


Figure S1. Relations for determination of critical Shields stress

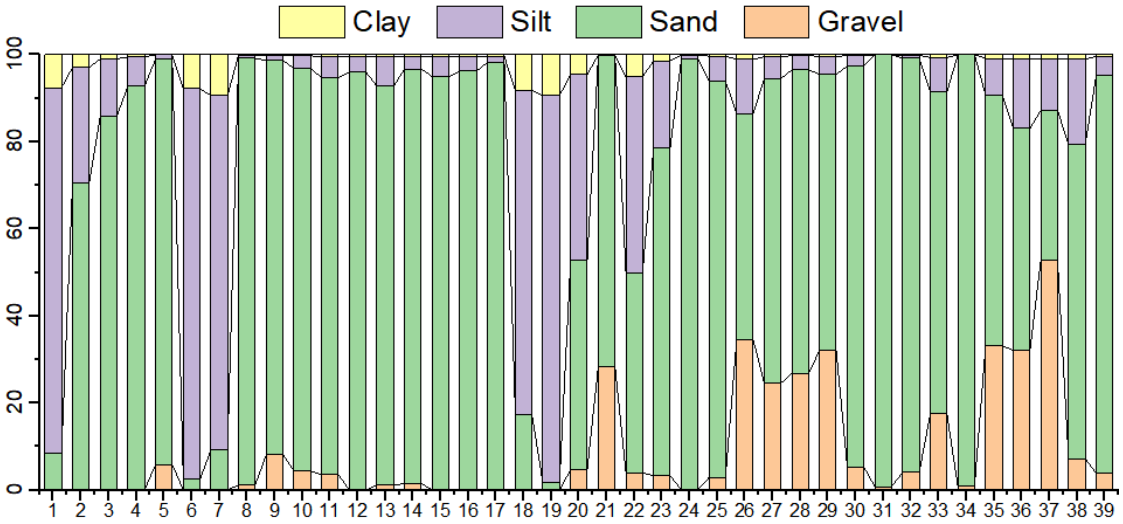


Figure S2. Percentage composition of components in river samples