Table 1 Parameters for experiment and simulations.

Parameters	Values
Average velocity of the overlying water	13.3 cm s^{-1}
Average depth of the overlying water (H)	10.75 cm
Initial concentration of colloids in overlying water (C_0)	0.2 kg m^{-3}
Initial concentration of colloids in bedform (S_0)	0
Bedform length (L)	15.50 cm
Stoss length (L_c)	11.00 cm
Lee length (L_l)	4.50 cm
Bedform height (H_b)	2.00 cm
Average streambed depth (d_b)	13.16 cm
Hydraulic conductivity (K)	8.84×10^{-4} m s^{-1}
Bulk porosity (ε)	0.33
Water density (ρ)	1000 kg m^{-3}
Water dynamic viscosity (μ)	0.001 Pa s

Table 2 Parameters for small ($d_p < 1.10$ μm), middle (1.10 μm $< d_p < 3.06$ μm) and large ($d_p > 3.06$ μm) -sized particles.

	Total	Small-sized	Middle-sized	Large-sized
Initial mass proportion	100%	25.13%	39.35%	35.51%
Final mass proportion	100%	61.77%	38.22%	0.01%
Settling velocity v_s (m s^{-1})	1.75×10^{-6}	1.22×10^{-6}	1.51×10^{-6}	4.83×10^{-6}
Transfer coefficient α (s^{-1})	1.79×10^{-7}	1.33×10^{-6}	4.65×10^{-7}	3.51×10^{-9}
Settlement-transfer number N_s	78.0	8.53	30.2	1.28×10^{4}
Equal effect settlement-transfer number N_{se}	3.14	3.14	3.14	3.14
Release coefficient k_s (s^{-1})	/	0.501	/	/
Poisson process parameter λ	/	1.06×10^{-4}	/	/