

**Table 1.** Vegetation and wave parameters for each experimental scenario.

Case <sup>a</sup>	Vegetation type	$m^b$ (m <sup>-2</sup> )	$d^c$ (cm)	$h_v^d$ (m)	$h^e$ (m)	$a_w^f$ (cm)	$T^g$ (s)	$\lambda^h$ (m)	$k^i$ (m <sup>-1</sup> )	$u_{wmax}^j$ (cm/s)	$E_w^k$ (cm)	$KC^l$	$E_w/S^m$	$Re_d^n$
S0	-	-	-	-	2.20	1.75	2.0	6.1	1.03	4.0	1.27	-	-	-
A1	<i>A. selengensis</i>	480	0.5	0.90	0.65	0.45	1.1	1.8	3.41	1.5	0.26	3.3	0.06	90.3
A2	<i>A. selengensis</i>	420	0.5	1.00	0.90	0.42	1.6	3.6	1.72	2.5	0.64	8.0	0.13	47.5
A3	<i>P. arundinacea</i>	120	0.5	0.65	1.15	0.46	1.4	3.0	2.09	2.0	0.45	5.6	0.05	15.6
A4	<i>C. cinerascens</i>	1260	0.3	0.20	0.80	1.88	1.1	1.9	3.36	2.3	0.40	8.4	0.12	3.7
A5	<i>P. arundinacea</i>	520	0.5	1.00	1.80	3.66	1.1	1.9	3.33	1.0	0.18	2.2	0.04	14.2
B1	<i>P. arundinacea</i>	240	0.5	1.30	0.67	0.76	2.0	4.5	1.38	6.0	1.91	24.0	0.30	22.7
B2	<i>P. arundinacea</i>	280	0.5	0.60	1.66	1.41	1.7	4.4	1.42	2.0	0.54	6.8	0.08	26.8
B3	<i>P. arundinacea</i>	280	0.5	0.60	0.60	0.35	1.0	1.5	4.09	1.8	0.29	3.6	0.05	50.2
B4	<i>P. arundinacea</i>	320	0.5	0.90	0.90	1.06	1.0	1.6	4.03	5.5	0.88	11.0	0.16	41.3
B5	<i>P. arundinacea</i>	300	0.5	0.70	1.00	0.40	1.0	1.6	4.03	1.3	0.21	2.6	0.03	33.1

<sup>a</sup>S0 was the bare bed case. A1 ~ A5 and B1 ~ B5 were cases with the influence of AV and located in sites A and B (Fig. 1b), respectively.

<sup>b</sup>Stem density (stems per unit area). Please note that several stems are grown for each individual plant of *A. selengensis* and *P. arundinacea*. *C. cinerascens* was composed of basal blades, so that its stem density in present study referred to the numbers of blade per unit area.

<sup>c</sup>Stem diameter. For *C. cinerascens* this table gave the value of mean blade width.

<sup>d,e</sup>Height of vegetation ( $h_v$ ) and water depth ( $h$ ).

<sup>f</sup>Wave amplitude calculated by fitting eq. (6) to measured horizontal wave velocity ( $U_{w\_horiz}$ ) at the highest three measurement points.

<sup>g</sup>Wave period calculated as  $T = 1/f_p$  with  $f_p$  the peak frequency of the wave domain in the power spectral density of instantaneous vertical velocity.

<sup>h,i</sup>Wave length ( $\lambda = 2\pi/k$ ) and wave number ( $k$ ) estimated by linear wave theory, i.e.,  $\omega^2 = (kg)\tanh(kh)$ , with  $\omega$  ( $= 2\pi/T$ ) the wave radian frequency,  $g$  the gravitational acceleration, and  $h$  the water depth.

<sup>j</sup>Maximum velocity in wave cycle.

<sup>k</sup>Wave excursion (radius of wave orbital motion) estimated by  $E_w = u_{wmax}T/(2\pi)$ .

<sup>l</sup>Keulegan-Carpenter number estimated as  $KC = u_{wmax}T/d$ .

<sup>m</sup>Ratio of wave excursion ( $E_w$ ) to stem spacing ( $S$ ) with  $S = m^{-1/2}$ .

<sup>n</sup>Stem Reynolds number estimated by  $Re_d = U_{horiz}d/\nu$  (with  $\nu = 10^{-6}$  the water kinematic viscosity) within the vegetation.