Appendix A: Notations

Table A1. Notations

Symbols	Units	Definitions
$*$	$-$	represents the mathematical convolution function
C_M	$[\text{m.s}^{-1}]$	parameter controlling the solute mass flux celerity
C_Q	$[\text{m.s}^{-1}]$	flood wave celerity
D_M	$[\text{m}^2.\text{s}^{-1}]$	parameter controlling the solute mass flux diffusivity
D_Q	$[\text{m}^2.\text{s}^{-1}]$ flood wave diffusivity	
(K_Q, K_M)	$-$	Hayami kernel function for water flow and mass flux modelling, respectively
m	$[\text{kg.s}^{-1}.\text{m}^{-1}]$	lateral mass flux per length unit
M	$[\text{kg.s}^{-1}]$	mass flux
$(M_{I,base}, M_{I,flood}, M_{I,tot})$	$[\text{kg.s}^{-1}]$	upstream base, flood and total mass flux, respectively
$(M_{O,base}, M_{O,flood}, M_{O,tot})$	$[\text{kg.s}^{-1}]$	downstream base, flood and total mass flux, respectively
$(M_{A,base}, M_{A,flood}, M_{A,tot})$	$[\text{kg.s}^{-1}]$	lateral base, flood and total mass flux exchanges, respectively
q	$[\text{m}^2.\text{s}^{-1}]$	lateral flow per length unit
Q	$[\text{m}^3.\text{s}^{-1}]$	discharge
$(Q_{I,base}, Q_{I,flood}, Q_{I,tot})$	$[\text{m}^3.\text{s}^{-1}]$	upstream base, flood and total flow, respectively
$(Q_{O,base}, Q_{O,flood}, Q_{O,tot})$	$[\text{m}^3.\text{s}^{-1}]$	downstream base, flood and total flow, respectively
$(Q_{A,base}, Q_{A,flood}, Q_{A,tot})$	$[\text{m}^3.\text{s}^{-1}]$	lateral base, flood and total flow exchanges, respectively
$(R1, R2)$	$-$	reach 1 (s1 to s2) and reach 2 (s2 to s3), respectively
$(s1, s2, s3)$	$-$	monitoring station 1, 2 and 3, respectively
$(S_{I,base}, S_{I,flood}, S_{I,tot})$	$[\text{g.l}^{-1}]$	upstream solute base, flood and total concentrations, respectively
$(S_{O,base}, S_{O,flood}, S_{O,tot})$	$[\text{g.l}^{-1}]$	downstream solute base, flood and total concentrations, respectively
$(S_{A,base}, S_{A,flood}, S_{A,tot})$	$[\text{g.l}^{-1}]$	lateral solute base, flood and total concentrations, respectively
t	$[\text{s}]$	time
U	$-$	percentage of the unsaturated conduit length along R2
x	$[\text{m}]$	downstream distance