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LIST OF ABBREVIATIONS

AME	Absolute mean error
ASCE	American Society of Civil Engineers
BOD	Biochemical Oxygen Demand
CE-QUAL-ICM	Three-Dimensional Eutrophication Model
CE-QUAL-W2	Two-Dimensional, Laterally Averaged Hydrodynamic and Water Quality Model
CH3D-WES	Curvilinear Hydrodynamics in 3-Dimensions Waterways Experiment Station
COD	Chemical oxygen demand
DID	Department of Irrigation and Drainage
DO	Dissolved oxygen
DOC	Dissolved organic carbon
DOE	Department of Environment
DYNHYD5	Link Node Tidal Hydrodynamic Model
EFDC	Environmental Fluid Dynamic Code
EPA	Environmental Protection Agency
HABs	Harmful algal blooms
HEM-3D	Three dimensional hydrodynamic eutrophication model
INWQS	Interim National Water Quality Standards for Malaysia
ME	Mean error
N	Nitrogen

NBOD	Nitrogenous Biochemical Oxygen Demand
NH^{+4}	Ammonium ions
NH_3-N	Ammoniacal Nitrogen
NO^{-3}	Nitrate ions
NO_3-N	Nitrate Nitrogen
P	Phosphorus
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biophenyls
PO_4	Inorganic Phosphorus
PO_4^{-3}	Inorganic Phosphate ions
POM	Princeton Ocean Model
QUAL-2E	Enhanced Stream Water Quality Model
RIVMOD-H	River Hydrodynamic Model
RMSE	Root mean square error
SOD	Sediment oxygen demand
SS	Suspended Solids
TMDLs	Total Maximum Daily Loads
TOC	Total Organic Carbon
USACOE	United State Army Corps of Engineer's
UTM	Universiti Teknologi Malaysia
WASP5	Water Quality Simulation Program
WQI	Water Quality Index

LIST OF SYMBOLS

u	=	velocity component in the x-direction
v	=	velocity component in the y-direction
w	=	velocity component in the z-direction
x, y	=	curvilinear horizontal coordinates
K_x	=	turbulent diffusivities in the x-direction
K_y	=	turbulent diffusivities in the y-direction
K_z	=	turbulent diffusivities in the z-direction
S_C	=	internal and external sources and sinks per unit volume
κ	=	von Karman constant
Δ_l	=	dimensionless thickness of the bottom layer
z_o	=	dimensionless roughness height
b	=	buoyancy
ρ	=	actual water density
ρ_o	=	reference water density
ρ_a	=	air density
ρ_w	=	water density
c_s	=	wind stress coefficient
c_b	=	bottom drag coefficient
Uw, Vw	=	component of the wind velocity at 10 meter above the water surface
A_H	=	horizontal turbulence mass diffusion coefficient
A_b	=	vertical turbulence mass diffusion coefficient
R_c	=	physical and biogeochemical sources and sinks
Q_H	=	volume sources and sinks including rainfall, evaporation, infiltration, and lateral inflows and outflows having negligible momentum fluxes
m_x , m_y	=	scale factors of the horizontal coordinates
w	=	vertical velocity in the stretched vertical coordinate

z_s*	=	physical vertical coordinate of the free surface
z_b*	=	physical vertical coordinate of the bottom bed
H	=	total water column depth
ϕ	=	free surface potential
Fe	=	effective Coriolis acceleration
Q	=	horizontal momentum diffusion terms
Av	=	vertical turbulent viscosity
ρ_{atm}	=	atmospheric pressure
u_*	=	shear velocity
c_b	=	bottom stress coefficient
U	=	flow velocity at the bottom layer
Av	=	viscosity
Kv	=	turbulent diffusivity
Rq	=	turbulent intensity Richardson Number

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