

No	Model Name	Dimension	Types of Boundary Conditions		Interaction with Other Media	
			Flow	Scalar Transport	Surface Runoff	Subsurface Flow
1	ADCIRC (WES)	2,3	DB, NB	DB, CB	None	None
2	QUAL2E (EPA)	2	DB, NB	DB, CB	None	None
3	WASP (EPA)	2	DB, NB	DB, CB	None	None
4	MIKE21 (DHI)	2	DB, NB	DB, CB	Linked	None
5	HSCTM2D	2	DB, NB	DB, CB	None	None
6	TRIM (USGS)	2	DB, NB	DB, CB	None	None
7	RMA-2, RMA-4 (WES)	2	DB, NB	DB, CB	None	None
8	CCHE2D (Univ. Mississippi)	2	DB, NB	DB, CB	Ad hoc	None
9	BEST2D (Penn State)	2	DB, NB	DB, CB, FLB	Input	Input
10	ADCIRC-3D (WES)	3	DB, NB	DB, CB	None	None
11	RMA-10/RMA-11 (WES)	3	DB, NB	DB, CB	None	None
12	GLLVHT (J.E. Edinger Associate)	3	DB, NB	DB, CB	None	None
13	SYSTEM 3 (Danish)	3	DB, NB	DB, CB	None	None
14	WASP (EPA)/CE-QUAL-ICM	3	DB, NB	DB, CB	None	None
15	CH3D (WES)/EHMS3D (shen)	3	DB, NB	DB, CB	None	None
16	TELEMAC-3D (France)	3	DB, NB	DB, CB	None	None
17	TRIM/UnTRIM (Italey)	3	DB, NB	DB, CB	None	None
18	WQMAP (ASA)	3	DB, NB	DB, CB	None	None
19	ECOM-3D (Hydroqual)	3	DB, NB	DB, CB	None	None
20	EFDC (EPA)	3	DB, NB, RADB	DB, CB	None	None
21	POM/ROMS (Princeton/Rutger)	3	DB, NB	DB, CB	None	None
22	COHERENS (Australia)	3	DB, NB	DB, CB	Linked	None
23	MIKE 3 (DHI)	3	DB, NB	DB, CB	Linked	Linked
23	HEM3D (Willima and Marry)	3	DB, NB	DB, CB	None	None
25	DELFT3D (Delft)	3	DB, NB	DB, CB	None	None
26	FVCOM	3	DB, NB	DB, CB	None	None
27	ELCIR/SELFE (Oregon State)	3	DB, NB	DB, CB	None	None
28	CCHE3D (Univ. Mississippi)	3	DB, NB	DB, NB	Ad hoc	None
29	BEST3D-ISGO (UCF, SFWMD)	3	DB, NB, RADB, MCWB, FSB, BBC	DB, CB, NB, VB, FLB, EB, SWB, WBIB	Physics-based Coupling	Physics-based Coupling

DB = Dirichlet boundary condition; NB = Neumann boundary condition; RADB = Radiation boundary condition; *Ad hoc* = Use empirical equation to input;

MCWB = Moving contact wall boundary condition; FSB = Free surface boundary condition; BBC = Bottom boundary condition; Linked = A linkage term to couple;

VB = Variable boundary condition; FLB = Flushing boundary condition; EB = Energy budget boundary condition at free surface;

SWB = Solid Wall boundary condition for k-epsilon; WBIB = Water-Bed Interface Boundary Condition for Sediment and Reactive Transport

No	Model Name	Processes and Approaches						Numerical Method
		Flow	Temperature	Sediment Transport		Water Quality		
				Transport	Erosion/ Deposition	Transport	Bio-Geo-Chemistry	
1	ADCIRC (WES)	LWE	None	None	None	None	None	FE
2	QUAL2E (EPA)	None	ADE W/E	ADE	Empirical	ADE	L-M/E	FV
3	WASP (EPA)	None	ADE W/E	ADE	Empirical	ADE	L-M/E	FV
4	MIKE21 (DHI)	LWE	ADE WO/E	ADE	Empirical	ADE	None	FD
5	HSCTM2D	LWE	ADE WO/E	ADE	Empirical	ADE	Ad hoc	FE
6	TRIM (USGS)	LWE	None	ADE	Empirical	None	Ad hoc	FD
7	RMA-2, RMA-4 (WES)	LWE	ADE W/E	ADE	Empirical	ADE	L-M/E	FE
8	CCHE2D (Univ. Mississippi)	LWE	ADE W/E	ADE	Empirical	ADE	L-M/E	FV
9	BEST2D (Penn State)	LWE	ADE W/E	ADE	Empirical	ADE	R-M/E	FE/MOC
10	ADCIRC-3D (WES)	RAINS-HS	None	None	None	None	None	FE
11	RMA-10/RMA-11 (WES)	RAINS-HS	ADE W/E	ADE	Empirical	ADE	L-M/E	FE
12	GLLVHT (J.E. Edinger Associate)	RAINS-HS	None	None	None	None	None	FD
13	SYSTEM 3 (Danish)	NSE-HS	None	None	None	None	None	FD
13	WASP (EPA)/CE-QUAL-ICM	None	ADE W/E	ADE	Empirical	ADE	L-M/E	FV
14	CH3D (WES)/EHMS3D (shen)	RAINS-HS	ADE W/E	ADE	Empirical	ADE	L-M/E	FD
16	TELEMAC-3D (France)	RAINS-HS	None	ADE	Empirical	None	None	FE
17	TRIM/UnTRIM (Italey)	RAINS-HS	None	ADE	Empirical	None	None	FD
18	WQMAP (ASA)	RAINS-HS	None	ADE	Empirical	ADE	Ad hoc	FD
18	ECOM-3D (Hydroqual)	RAINS-HS	ADE WO/E	ADE	Empirical	ADE	L-M/E	FD
20	EFDC (EPA)	RAINS-HS	ADW W/E	ADE	Empirical	ADE	L-M/E	FD
21	POM/ROMS (Princeton/Rutger)	RAINS-HS	ADE WO/E	ADE	Empirical	None	None	FD
22	COHERENS (Australia)	RAINS-HS	ADE WO/E	ADE	Empirical	None	None	FV
23	MIKE 3 (DHI)	RAINS	ADE WO/E	ADE	Empirical	ADE	Ad hoc	FD
24	HEM3D (Willima and Marry)	RAINS-HS	None	ADE	Empirical	ADE	L-M/E	FD
25	DELFT3D (Delft)	LWE with $V_z$	ADE W/E	ADE	Empirical	ADE	Ad hoc	FD
26	FVCOM	RAINS-HS	ADE W/E	ADE	Empirical	None	None	FV
27	ELCIR/SELFE (Oregon State)	RAINS-HS	None	ADE	Empirical	ADE	Ad hoc	FE/LE
28	CCHE3D (Univ. Mississippi)	RAINS-HS	ADE WO/E	ADE	Empirical	ADE	L-M/E	FV
29	BEST3D-ISGO (UCF, SFWMD)	RAINS	ADE W/E	ADE	Empirical	ADE	R-M/E	FE/LE

LWE = Long wave equation; RAINS-HS = Reynolds averaged Navier-Stokes equations with hydrostatic assumptions;

RAINS = Reynolds averaged Navier-Stokes equations in its complete form or with hydrostatic options;

ADE W/E = Advection dispersion equation with evaporation; ADE WO/E = Advection dispersion equation without evaporation;

ADE = Advection dispersion equation; Ad hoc = Empirical; L-M/E = Lumped reactions with mechanistic or empirical rate;

R-M/E = Reaction based approach with mechanistic or empirical rate for every reaction; FE = Finite element method;

FV = Finite volume method; FD = Finite difference method; MOC = Method of characteristic; LE = Lagrangian-Eulerian approach