Existing Models

The following tables summarize some of the characteristics of existing hydrodynamic or coupled hydrodynamic / sediment-transport models that might be suitable starting points for a community model effort. Some, in fact, are available to the community now (highlighted in blue). The vast white space represents information we could not find quickly on the web. Please send suggestions for corrections / additions to this table to Chris Sherwood (csherwood@usgs.gov).

Model	Source Code	Vertical turbulence model	Horizontal mixing	Sediment	Morphology	Stratigraphy	Wetting/ Drying	Language	Horiz. Disretization	Horizontal Grid	Vertical Grid	Parallel Processing	Wave forces	Bedload	Sediment Buoyancy	Bank Erosion
ADCIRC3D									FE							
CH3D	P	ARAP	Y				Y	F90		C,I	S, Z	Y	Y			
CH3D-IMS	P	ARAP	Y				Y	F90		C,I	S, Z	Y	Y			
CH3D-WES	PDLD	KE	Y							C	S, Z					
COHERENS	PD	MY25,KE	Y	Limited	N	N	Y	F77	FD	R, S	S	N	N	N	N	N
DELFT3D	P	KE	Y	B	Y	Limited	Y	F77	FD	R,C	S,Z	N	Y	Y	Y	Beta
ECOMSED	PD	MY25	Y	B	N	Y	N	F77	FD	R, C	S	N	N	N	N	External Input
EFDC	PD	MY25	Y	B	Y	Y	Y	F77	FD	CO	S	On Cray MPI Soon	Y	Y	Y	Y
GETM	O	KE	Y	N			Y	F90/95	FD	C	S	Y				
HAMSON	P							F90			Z					
HYDRO3D/SED3D																
Mars3D									FE							
MECO	C	MY25,KE	Y	Y		Y	Y	C	FD	C	Z					
MIKE3D	P	KE		E												
MOHID							Y									
NCOM	PDLD	MY25	Y	Beta	N	N	N	F90	FD	C	M	Y	N	N	N	N
POLCOMS	PDLD	MY25	Y	Y	N	N	N	F10	FD	B	S	Y	N	N	N	Y
POM2K, OZPOM	PD	MY25	Y	N	N	N	N	F77	FD	C	S	Y	N	N	N	N
QUODDY4	PD	MY25		N			N	F77 or C	FE	Z	S	Y	N	N	N	
RMA10-11		MY25														
ROMS	C	MY25, GLS, KPP		B	Y	Limited	N	F77	FD	C	S	Y	N	N	Y	N
SHORECIRC	PDLD			N	Y				FD				Y	Y	?	N
SYMPHONIE	PDLD	K + pronostic l	Y	C		N	N	F77	FD	R	S	N	Y	N	N	N
TELEMAC-3D	P						Y									
TRIM	P								FE							
UnTRIM	P															

Notes:
Source code: Proprietary (P), Copywrite (C), Open (O), Public domain (PD; limited distribution PDLD)
Turbulence models: Mellor-Yamada 2.5 (MY25), Generic length scale (GLS), K-epsilon (KE), K-omega (KW), Aeronautical Res. Associates of Princeton (ARAP)
Sediment: Non-cohesive (N), Cohesive (C), both (B), either (E)
Horizontal Grid: Rectangular (R), Curvilinear (C), Spherical (S), Irregular (I)

Model	Current Developers	Web Site	Reference
ADCIRC3D	ERDC		
CH3D	University of Florida	http://www.coastal.ufl.edu/~pete/CH3D/ch3d.html	
CH3D-IMS	University of Florida	http://www.coastal.ufl.edu/~pete/CH3D/ch3d.html	
CH3D-WES	U.S. Army Engineer Waterways Experiment	http://smig.usgs.gov/cgi-bin/SMIC/model_home_pages/model_home?selection=ch3dwes	Chapman, Johnson, and Vemulakonda (1996)
COHERENS	EC Management Unit Mathematical Models, Brussels; Proudman Ocean. Lab.; Napier Univ.		
DELFT3D	WL|Delft Hydraulics	http://www.netcoast.nl/tools/rikz/delft3d.htm	Lesser et al (2000)
ECOMSED	Hydroqual, USGS	www.hydroqual.com	Blumberg and Mellor (1980, 1987); HydroQual (2002)
EFDC	Tetratech	Email John.Hamrick@tetratech-ffx.com	
GETM	EC Joint Research Centre; University of Hamburg		Burchard and Bolding (2002)
HAMSON	University of Hamburg	http://www.ifm.uni-hamburg.de/~wwwsh/res/HAMSOM/hamsom.html	Backhaus (1985); Pohlmann (1996)
HYDRO3D/SED3D	USF	http://www.epa.gov/epa_ceam/wwwhtml/softdect.htm	
Mars3D			
MECO	CSIRO		
MIKE3D	DHI	http://www.dhisoftware.com	
MOHID	Instituto Superior Tecnico, Universidad Tecnica de Lisboa		Martins et al. (1998)
NCOM	NRL, VIMS		Martin (2000)
POLCOMS	Proudman Oceanographic Laboratory	http://www.pol.ac.uk/home/research/p3t1mdev.html	Holt and James (2001)
POM2K, OZPOM	Princeton, Univ. Tasmania		
QUODDY4	Dartmouth, NH		
RMA10-11	UC Davis		King (1982)
ROMS	Rutgers, UCLA, USGS		
SHORECIRC	U. Delaware		
SYMPHONIE			
TELEMAC-3D	Laboratoire d'Hydraulique, Electricite de France		
TRIM			
UnTRIM	Univesita degli Studi di Trento		Casulli and Cheng (1992)