

HSCTM2D

Model Uses HSCTM2D is a two-dimensional hydrodynamic model that is used to simulate surface water flow, sediment and contaminant transport.

Major Categories Hydrology and Water Use; Geomorphology; Water Quality

Subject Knowledge Level
Intermediate

Minor Categories Flow; Sediment Sources; Transport

Technical Difficulty Level
Intermediate

Model Type Physical Model

Geographic in Nature?
No

Abstract

The Hydrodynamic, Sediment, and Contaminant Transport Model (HSCTM2D) is a finite element modeling system for simulating two-dimensional, vertically-integrated, surface water flow (typically riverine or estuarine hydrodynamics), sediment transport, and contaminant transport.

The modeling system consists of two modules, one for hydrodynamic modeling (HYDRO2D) and the other for sediment and contaminant transport modeling (CS2D). One example problem is included. The HSCTM2D modeling system may be used to simulate both short term (less than 1 year) and long term scour and/or sedimentation rates and contaminant transport and fate in vertically well mixed bodies of water.

Future Developments

Unknown

Model Limitations

Currently HSCTM-2D has the capability of simulating the transport and fate of only four constituents: salinity, one representative size or fraction of cohesionless sediment, one size fraction of cohesive sediment, and one inorganic contaminant.

It is possible, however, to modify the model so that a greater number of constituents may be included.

Model Features

Two separate sub-modules / models:

- Hydrodynamic modeling module (HYDRO2D)
- Contaminant transport modeling module (CS2D)

Required Data Types

All data should be in ASCII or standard Binary form and include:

- (1) hydrographic survey information
- (2) sediment sampling data
- (3) measurement of suspended sediment concentration, water temperature and salinity
- (4) determination of sediment settling velocity.

Model Outputs

Output binary files generated by HSCTM-2D are written by standard FORTRAN unformatted write statements. The variable types follow standard FORTRAN assignments and can be displayed in a text editor.

Source

US Environmental Protection Agency

Source (URL)

<http://www.epa.gov/ceampubl/swater/hsctm2d>

Hardware Requirements

Standard DOS requirements.

		Supported Platforms	
DOS	<input checked="" type="checkbox"/>	UNIX	<input type="checkbox"/>
Windows	<input type="checkbox"/>	Macintosh	<input type="checkbox"/>

Software Requirements

No additional software is required.

Cost, Licensing and Availability

Model is offered free of charge from US EPA through the link provided above.