

# SEDMODL2

Release version

December 2002

## Release Notes

### 1.0 What's changed from SEDMODL 1.0

- 1.1** – Look-up tables that are created during the process of mapping road coverage attributes to SEDMODL2 model parameters are not deleted. SEDMODL2 detects the existence of these look-up tables at the start of subsequent runs and asks the user if they want to apply the look-up table values to the current analysis session. This functionality eliminates the need to re-map item values to parameters during each run. Look-up tables are only valid from previous runs utilizing the same relationships. If a subsequent model run has different relationships between coverage attributes values and the existing look-up tables, the user will need to decline the use of existing look-up tables and create new ones.
- 1.2** – User-supplied road attributes available on the road coverage can be used to override calculations previously performed by SEDMODL 1.0. These attributes include:
- Cutslope vegetation cover (includes rock or non-erosive surface) – Cutslope cover must be expressed as a number ranging from 0 to 100. If this item is present and identified by the user, values occurring in each record will be applied to the model. Records where no data exists must be coded to –9999 prior to running SEDMODL2. Data records with –9999 values will be modeled with a user-supplied default value.
  - Cutslope height – Cutslope height is measured in feet. Height can be recorded in tenths of a foot. Records where no data exists must be coded to –9999 prior to running SEDMODL2. Data records with –9999 will be modeled using values derived from the digital elevation model (DEM).
  - Road gradient – Road gradient must be expressed as a whole number greater than or equal to 0. Records where no data exists must be coded to –9999 prior to running SEDMODL2. No data records will be modeled using values derived from the DEM.
  - Road prism geometry (insloped, outsloped, crowned) – Road prism geometry must be defined as a text data type with legal values of “INSLOPED”, “OUTSLOPED”, or “CROWNED”. Unpopulated records will be modeled as “INSLOPED.” Outsloped roads with a berm or tire tracks/ruts should be coded as insloped.
  - Construction Year – The effects of new roads can be modeled if the construction year is known for a given road segment and that item is available and specified by the user. The user will have an opportunity to specify a reference year that will be used by the model to calculate road age from. This functionality allows the user to *go back or forward in time* to determine the effect of road age on sediment production.
- 1.3** – Gravel with ruts has been added as road surface type.
- 1.4** – Indirect delivery calculations have changed from horizontal distance units to slope distance units. This change more accurately represents sediment transport.
- 1.5** – Drainage structures, represented as an ArcInfo point coverage, can be specified by the user. A drainage structure located at a stream crossing must be coincident with the road/stream intersection point. Additionally, ditch relief drainage structure locations must be coincident with the road centerline (arc). Skewed results will occur if the provided drainage structure coverage is not complete for the entire analysis area.

- 1.6** – If a culvert inventory coverage is not available then the user can specify an average drainage structure spacing. Road arcs greater than or equal to this spacing are segmented using this distance. This results in a shortening of the delivery distance, which can potentially reduce the amount of sediment delivered from a road segment.
- 1.7** – SEDMODL 2.0 defaults to SEDMODL 1.0 methodology when no drainage structure coverage or maximum delivery distance is specified. This means that the entire arc length of a road segment identified by the model as delivering sediment will be used to calculate sediment quantity.
- 1.8** – In version 2.0, the issue of roads that drain to roads has been addressed. In version 1.0 this connectivity was ignored. This release extends the drainage network to include roads that drain to either direct or indirect delivery roads.
- 1.9** – Batch processing capabilities have been provided to process multiple project areas during one SEDMODL2 session. This functionality is implemented through the user by specifying a boundary coverage composed of more than one polygon. Two name sensitive text items must exist in the boundary coverage. The name of the project area or watershed name (item name: bndryname) and a three letter designation that is unique in the boundary coverage (item name: prefix).
- 1.10** – Upon successful completion of a SEDMODL2 run, the user can view the results through an ArcPlot graphic device. A pre-determined classification system and symbology set is used to create the map composition. An ArcInfo graphics file is created as well as a map composition directory for future viewing or hardcopy map production. SEDMODL2 creates an Arc Macro Language (AML) program that contains the commands and settings used to produce the map composition, allowing the analyst to edit the map. Every attempt has been made to accommodate a wide range of map scales, layout style, and page size. There are bound to be a few configurations that don't fit into this environment. Editing the map AML will allow the user to address these differences.
- 1.11** – Once the spatially explicit modeling is complete, it is possible to perform *what if scenario modeling* by altering model parameters and coefficients. To facilitate this functionality a Microsoft Access Application has been developed. The user can edit model parameters and recalculate sediment generation within Access. The application also allows the user to view the GIS outputs through a MapObjects component distributed with the application.
- 1.11** – Improvements to the precipitation adjustment factor have been made by acquiring and processing PRISM climate data from the Climate Source, LLC, Corvallis, Oregon. The effects of snow cover have been considered and the rainfall values have been adjusted using the Water Erosion Prediction Project (WEPP) model.
- 1.12** – The Geologic Erosion Factor has been modified based on the new precipitation factor.  
**ANY USER-SPECIFIED GEOLGY COVERAGE USED FOR VERSION 1.0 MUST BE MODIFIED FOR THE NEW GEOLOGIC EROSION FACTOR.**
- 1.13** – Performance has been improved by applying new methodology and processing logic.
- 1.14** – A new output directory structure has been developed to organize project results into.

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Your project area has been processed through Sedmodl.
The directory structure for the output is listed below.

c:\sedmodl\TST_010523\
|__access (sedmodl.dbf, db_ini.dbf, TST_010523.mde)
|__aml (map.aml)
|__docs (TST_3-010523.txt)
|__graphics (TST_map.gra)
|__info
|__outcovs\
|   |__TST_rdsed
|   |__TSTbndry
|   |__TSThydro
|   |__info
|__shapefiles (TSTsegs.shp)

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At the completion of a SEDMODL2 analysis session, the user can locate a new workspace located directly below the root SEDMODL workspace. The naming convention for this workspace is the three letter prefix specified by the user during the SEDMODL2 run (or in the boundary polygon coverage if SEDMODL2 is run in batch mode) an underscore (“\_”) and the date the analysis was completed (date format = yymmdd). Six subdirectories and one additional workspace are located beneath this new workspace. The contents of these subdirectories is:

- access – This subdirectory contains the dBase files that will be imported into SEDMODL scenario modeler, and a copy of the Access application that should be used to import the files into.
- aml – This subdirectory contains the map composition program that can be edited or run to produce the map composition for the project area.
- docs – This subdirectory contains the documentation file that describes the input parameters and results of the analysis session.
- graphics – This subdirectory contains the ArcInfo graphics file that was created from the map composition.
- map – This subdirectory contains the individual graphics files that constitute the map composition.
- outcovs – This workspace contains the output road coverage as well as the boundary and hydrography coverages. The Access application expects to find these coverages in this subdirectory.
- shapefiles – This subdirectory contains a shapefile that is based on the route created during the SEDMODL2 run.

**1.15** – It is no longer necessary to set a system level environment variable that references the location of the SEDMODL2 directory.

## **2.0 Installation of Runtime Access Application**

- 2.1** – Before the SEDMODL What-If Scenario Modeler can be run it is necessary to install certain files onto your system. A file named Setup.exe has been included with your distribution set. Copy the setup file into a temporary folder and either double click on the file to run it from explorer, or from the “Run...” menu choice under the Start button. Running this program adds the following files to the shared files directory (e.g. C:\Program files\Common files\ESRI) on your local hard drive:

<b>File</b>	<b>Version</b>	<b>Comments</b>
MOLT20.ocx	2.0.1.0	MapObjects LT 2.0 ActiveX Control
AFLT20.dll	2.0.1.0	MapObjects LT support library
PE.dll	4.0.0	SDE 3.0 projection support library
SG.dll	3.0.2.1	SDE 3.0 shape geometry support library
ShapeLT20.dll	2.0.1.0	Shape support library
CoverageLT20.dll	2.0.1.0	Coverage support library

And the following core Microsoft component files are installed into the system folder:

<b>File</b>	<b>Version</b>	<b>Comments</b>
mfc42.dll	6.00.8267.0	Microsoft Dynamic Link Library
Msvcp60.dll	6.00.8168.0	Microsoft Dynamic Link Library
msvcrt.dll	6.00.8337.0	Microsoft Dynamic Link Library
Msvcrt40.dll	4.21.000	Microsoft Dynamic Link Library
oleaut32.dll	2.40.4268	Microsoft Dynamic Link Library
olepro32.dll	5.00.4268	Microsoft Dynamic Link Library
stdole2.tlb	2.30.4268	Microsoft Type Library
comdlg32.ocx	6.00.8418	Microsoft ActiveX Control

You will be prompted to restart your computer after the setup program completes copying files. This application is based on ESRI's MapObjects LT 2.0 technology. The software components are lightweight, royalty-free version of ESRI's GIS and mapping components. Since it is distributed royalty-free you can install SEDMODL2 Mapper on as many machines as you find necessary.

The runtime Microsoft Access application is supported on both Access 97 and Access 2000. If you have installed Access on your computer you will need to select the version that matches your system and copy the zero.mde file to the lib directory where you run SEDMODL2 from.

## **3.0 SEDMODL2 Analysis Preparation**

- 3.1** – Before SEDMODL2 can be run, please insure that the following requirements have been met.
- User provided ArcInfo coverage or grid names should be no more than 9 characters long.
  - If present, drop node features from your road coverage.
  - All required and optional coverages must be copied to the SEDMODL2 workspace.
  - If polygon features exist on you stream coverage then drop this feature class from the coverage.