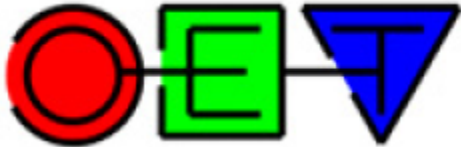


Detran manual

Detran
User Manual
Version 1.00
July 2010



An OpenEarth Product

Index

[Index](#)

[1 Introduction](#)

[2 Command line use](#)

[3 Graphical user interface](#)

1. Introduction

1.1 Application and features

Detran (**DE**lft **TR**ansport **AN**alyzer) is a matlab based computer program that calculates and shows sediment transport rates through arbitrary chosen transects on the basis of Delft3D model output. Detran can be used from the matlab command line as a toolbox (a collection of routines/functions) or as a stand-alone executable program with a graphical user interface (GUI).

The program is capable of the following:

- present map transport fields (magnitude by colour and direction by vectors)
- calculate and present transport rates through transects;
- load data from Delft3D map (trim) and history (trih) output files;
- load data from a single Delft3D simulation, from a simulation with multiple conditions or from a mormerge simulation;
- present bed load, suspended load or total transport;
- present transport on different time scales (from seconds to years and even a user defined time window);
- if a Delft3D simulation was carried out with multiple sediment fractions, the user can choose which fraction (or all fractions together) to present;
- load transects from a polygon (pol) file or create them by clicking within the graphical user interface of detran;
- save your clicked transects to a file;
- adjust plot settings, like colour scale, vector scale, vector thinning;
- load and plot a landboundary;
- export the results to a matlab figure, which can be customized and printed by the user
- save the transport data to a matlab file (mat) for later use in detran or matlab.

1.2 Manual Guide

For command-line use reference is made to [Chapter 2](#).

[Chapter 3](#) gives a description of the GUI.

2. Command line use

2.1 Getting started

For the use of the Detran toolbox routines in Matlab, it is required to have OpenEarth tools added to your Matlab path. This can be achieved by either downloading and installing the OpenEarth toolbox from the OpenEarth [products site](#) or by using to the OpenEarth Matlab repository which can be found [here](#).

Follow [this short step-by-step guide](#) to use the OpenEarth repository in Matlab.

To check whether the DETRAN toolbox routines are in the Matlab path, type:

```
>> which('detran')
```

If the OpenEarth toolbox is installed correctly, this command should return the path to 'detran.m'.

2.2 Using the toolbox

The toolbox consists of numerous Matlab functions, of which the most are the building blocks. In principle, the two main routines for the command-line use are:

- detran.m
- detran_plotTransportThroughTransect.m

Help on using these toolbox routines can be found by typing:

```
>> help detran  
>> help detran_plotTransportThroughTransect
```

The help block of all routines in the toolbox can be found on www.openeearth.nl. This information is constantly up to date (i.e. it is synchronized with the actual help blocks of the routines in the repository).

3. Graphical user interface

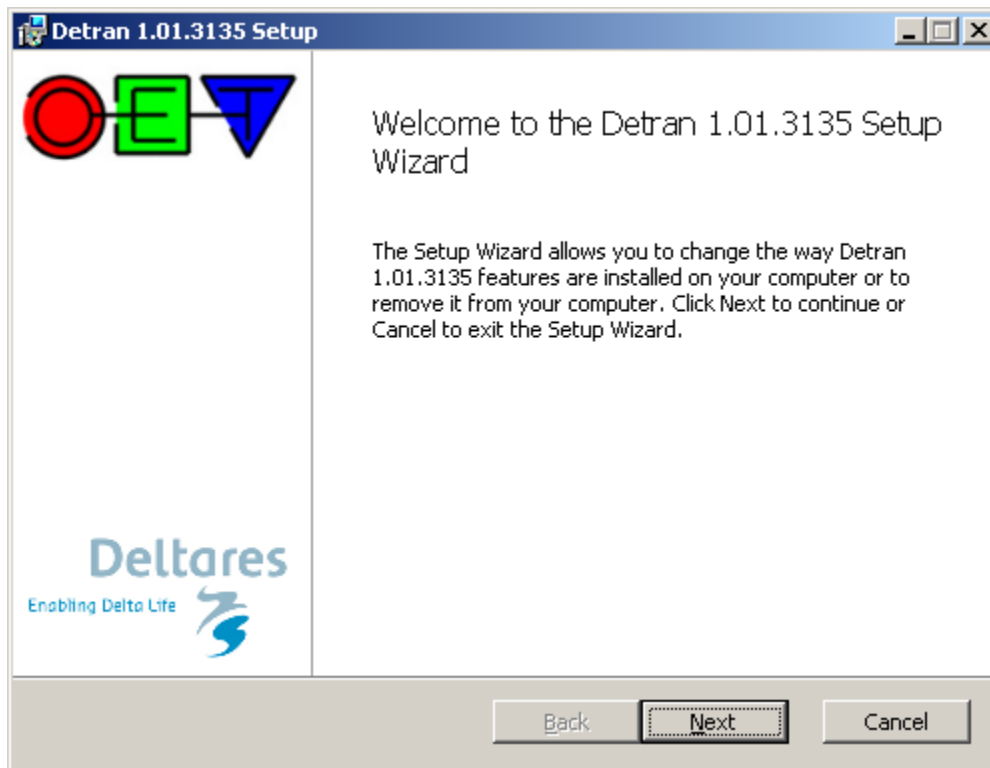
3.1 Getting started

2.1 MCR installer

Before installing SuperTrans, make sure that the Matlab Compiler Runtime (MCR) v7.11 has been installed on your system. If you already have other OpenEarth programs installed, this is probably the case. If not, you can download the MCR installer from [this website](#). After downloading, install the MCR and reboot your system.

3.1.1 Installing Detran

Download the Detran installer (Detran.msi) from the download section of the [Detran product page](#). After downloading, execute Detran.msi to start the installation (see figure below). The installer will guide you through the installation process. If the installation of MCR is not found on your system, the Detran installation will be canceled automatically.



3.1.2 Starting Detran

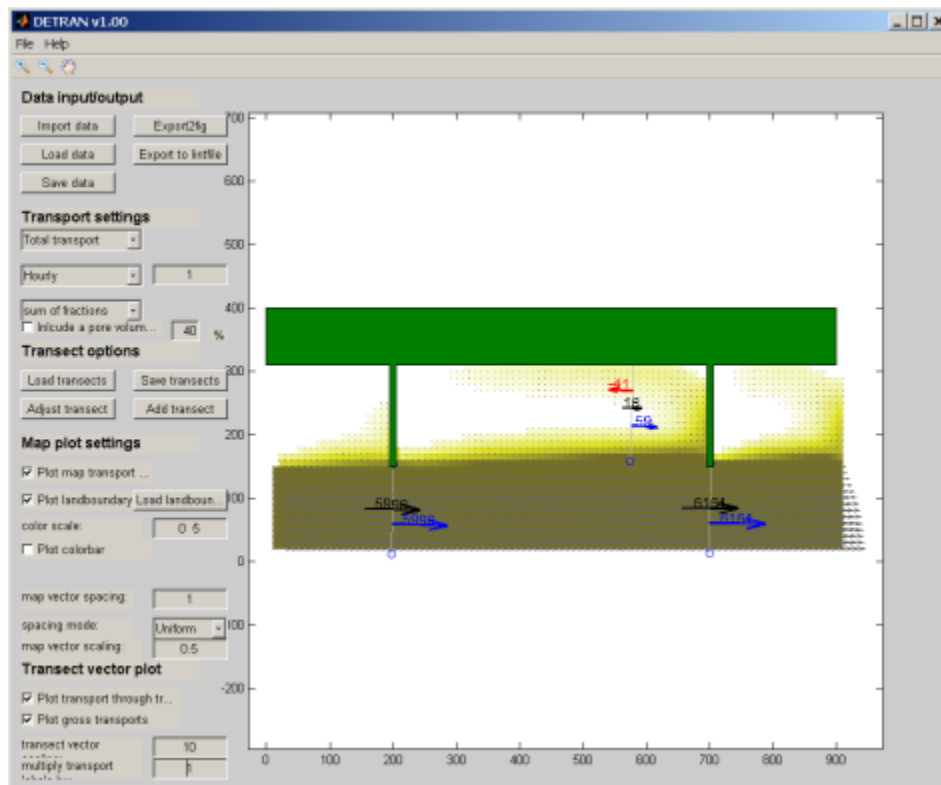
You can start Detran through the windows start menu (Start > Programs > Detran > Detran). It will open the Detran Graphical User Interface. Besides, a dos box is opened, which shows verbose output (messages, warnings or errors) from the program will appear.

3.2 Using the GUI

The first step before using detran is to have available sediment transport data. Currently only results from Delft3D simulations is supported. The resulting files (both trim and trih files) can be used as input for detran. Various types of Delft3D simulations are supported. This can be a single simulation (one condition), but also a simulation with multiple (parallel computed) conditions and even a mormerge simulation. In the latter case, the weight of each conditions is loaded automatically from the mormerge mm-file, otherwise the use can specify the weights of multiple conditions by a tekal-file. It is also possible to load data from a mat-file in which detran data was stored earlier.

After loading the data, the map transport field can be plotted. It is possible to plot bed load, suspended load or total transport at different time scales. The magnitude of the transport field will be represented by colours, while the direction and magnitude of the transport field is represented by vectors. Various options are available to customize the plotted transport field. Besides a map transport field, it is possible to plot transport rates through user-defined transects. These transects may be loaded from a polygon file or they can be generated interactively (by clicking) within detran.

On the basis of the figure below, showing a screen shot of the program, the available buttons will be explained.



Button	Functionality
<i>Data input/output</i>	
Import data	Import data from a Delft3D output (trim or trih) file
Load data	Load a mat-file with saved detran data
Save data	Save data to a mat-file
Export to lintfile	Export transport data to a lint file (e.g. for use in Muppet)
<i>Transport settings</i>	
1 st popup menu	Select which transport type to plot (total, bed or suspended)
2 nd popup menu	Select time frame (e.g. per year or per second). In case of user defined, specify time window (in sec.) in adjacent input field
3 rd popup menu	Select which sediment fraction to use
<i>Transect options</i>	
Load transects	Load transects from a polygon file

Adjust transects	Adjust a transects: first click an existing transect point, then click again to indicate the new position of that point
Save transects	Save transects to a polygon file
Add transects	Add a new transect by clicking the start and end point
<i>Map plot settings</i>	
Plot map transport field	Click to plot the map field (incl. vectors)
Plot landboundary	Click to plot a landboundary
Load landboundary	Load a landboundary file
Colour scale	Specify range scale of the map transport field (magnitudes)
Map vector spacing	Specify the vector spacing of the map transport field
Spacing mode	For a certain map vector spacing n , there are two options: uniform: a vector will be plotted at every n^{th} grid point distance: the vector locations are spaced at least n m
Map vector scaling	This value controls the scaling of the map vectors
<i>Transect vector plot settings</i>	
Plot transport through transects	Click to plot the transport rates through transects
Plot gross transports	Click to also plot the gross transport rates
Transport vector scaling	This value controls the scaling of the transect vectors
Multiply transport labels	Multiply the plotted labels (e.g. to present thousands m^3)
Export2fig	Copy the plotted items to a matlab figure