QuickPlot

Version 2

User's Manual

Sky Engineering Laboratory Inc.

contact@sky-engine.jp

April 23, 2019

Introduction

- **QuickPlot** is a <u>Scilab module</u> that provides a GUI to quickly create 2D line plots from data stored in files without writing a code. Its purpose is to make browsing and comparing a lot of data stored in files, such as simulation and experimental outputs, easy and quick.

- Requirement: Scilab-6.0 or above (with Tcl/Tk module)

- Copyright (C) 2019 Sky Engineering Laboratory Inc.

- License: GNU GPL v3 or later

Table of Contents

Starting QuickPlot

In Scilab console, enter "**quickplot**". The main window of QuickPlot will appear.

```
--> quickplot
```
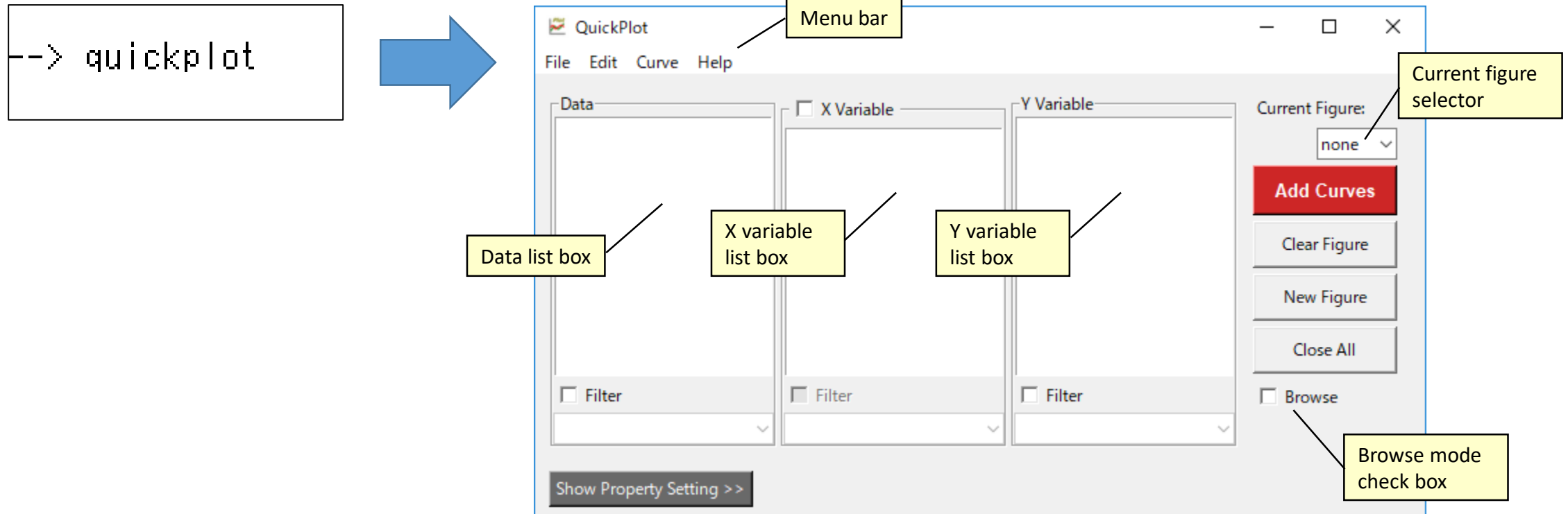
Data file format

Data files that can be imported to QuickPlot are ASCII files with column-wise numeric data separated by comma or spaces. Files can have header rows. If there are labels corresponding to columns of data present in a single row within the header, they can also be imported as variable names.

Header

Labels
(Variable names)

Column-wise
numeric data

```
Simulation Result
2019-04-18

Time [s],Position [m],Velocity [m/s]
0,1,0
0.01,0.9995017,-0.09948508
0.02,0.9980139,-0.1978813
0.03,0.995548,-0.2951016
0.04,0.9921161,-0.3910609
0.05,0.9877313,-0.4856763
0.06,0.9824073,-0.578867
0.07,0.9761589,-0.6705546
0.08,0.9690015,-0.7606627
0.09,0.9609512,-0.8491174
0.1,0.9520249,-0.9358471
0.11,0.9422402,-1.020783
0.12,0.9316154,-1.103858
0.13,0.9201695,-1.185008
0.14,0.9079219,-1.264171
0.15,0.8948929,-1.341289
0.16,0.8811031,-1.416306
0.17,0.866574,-1.489167
0.18,0.8513272,-1.559821
0.19,0.8353851,-1.62822
0.2,0.8187704,-1.694319
0.21,0.8015065,-1.758074
0.22,0.7836169,-1.819445
0.23,0.7651257,-1.878396
0.24,0.7460572,-1.934892
0.25,0.7264361,-1.9889
```

Sample data files

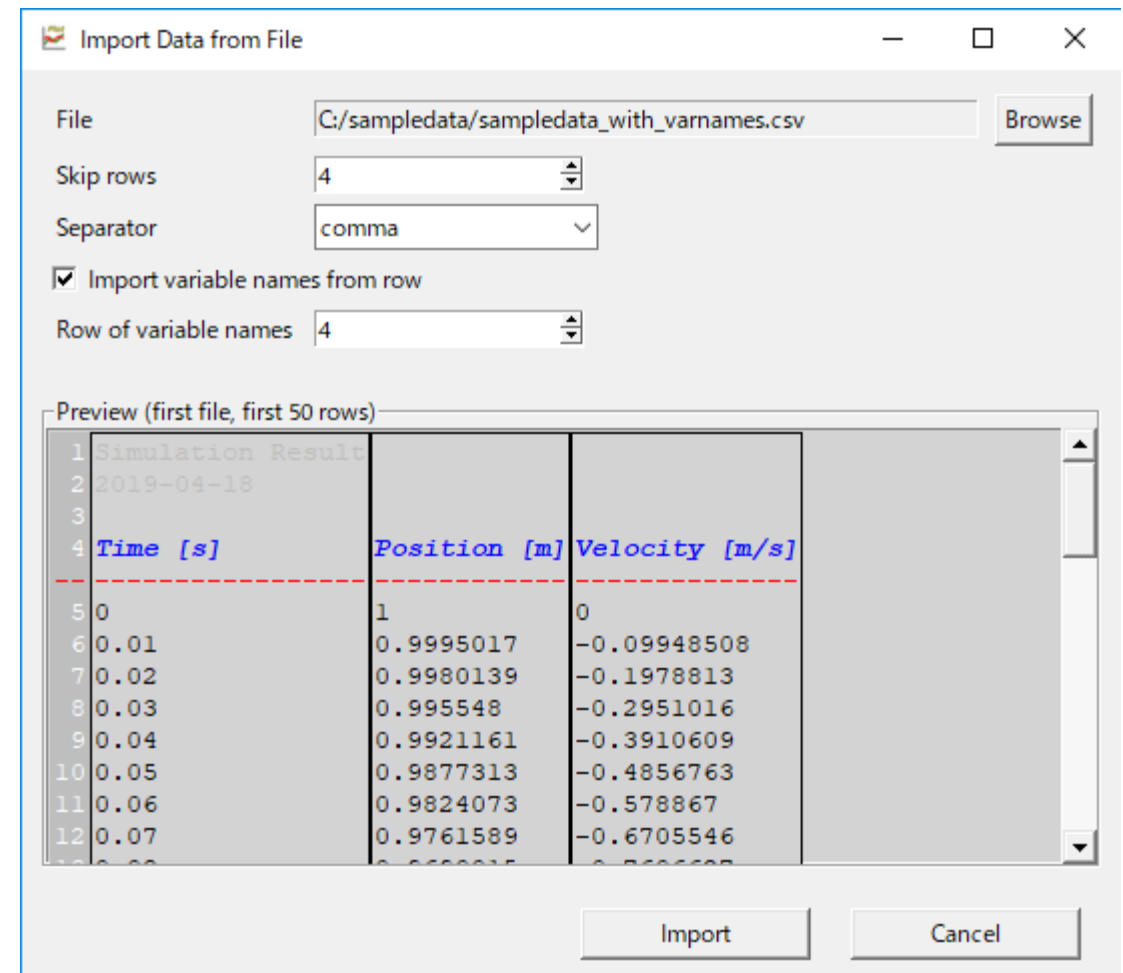QuickPlot comes with sample data files for users to play with. They are actually simulation results of a mass-spring-damper system.

Importing data from file

From "**File**" menu, select "**Import Data**" and the "**Import Data from File**" dialog box will appear. In the dialog box:

1. Select a file or files by clicking "**Browse**" button. Multiple files can be selected as long as they have the same format.
2. Enter the number of header rows at "**Skip rows**".
3. Select "**Separator**" from "comma" and "space/tab".
4. If you want to import variable names from a row in the header, check "**Import variable names from row**" and enter the row number at "**Row of variable names**".
5. Click "**Import**" button.

Import Data from File

File	C:/sampledata/sampledata_with_varnames.csv	Browse
Skip rows	4	
Separator	comma	

☑ Import variable names from row

Row of variable names 4

Preview (first file, first 50 rows)

```
 1 Simulation Result
 2 2019-04-18
 3
 4 Time [s]        Position [m] Velocity [m/s]
 -- ------------------------------------------
 5 0               1            0
 6 0.01            0.9995017    -0.09948508
 7 0.02            0.9980139    -0.1978813
 8 0.03            0.995548     -0.2951016
 9 0.04            0.9921161    -0.3910609
10 0.05            0.9877313    -0.4856763
11 0.06            0.9824073    -0.578867
12 0.07            0.9761589    -0.6705546
```

Import   Cancel

Plotting data (1)

Select data and variables from the list boxes and click "**Add Curves**" button. If there is no figure previously, a new figure will be created. If there has been a figure or figures already, the new curves will be added to the current figure, which may be selected using "**Current Figure**" selector.


8
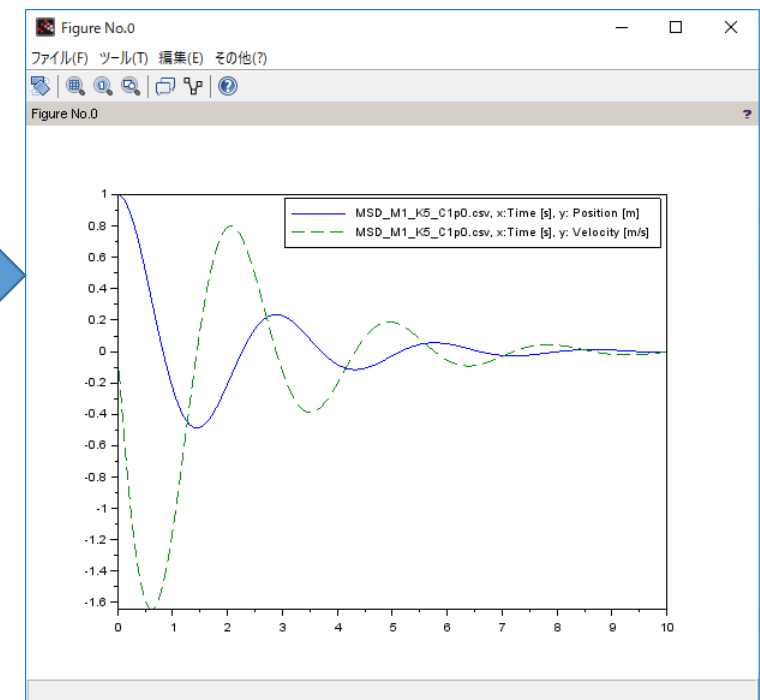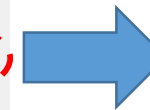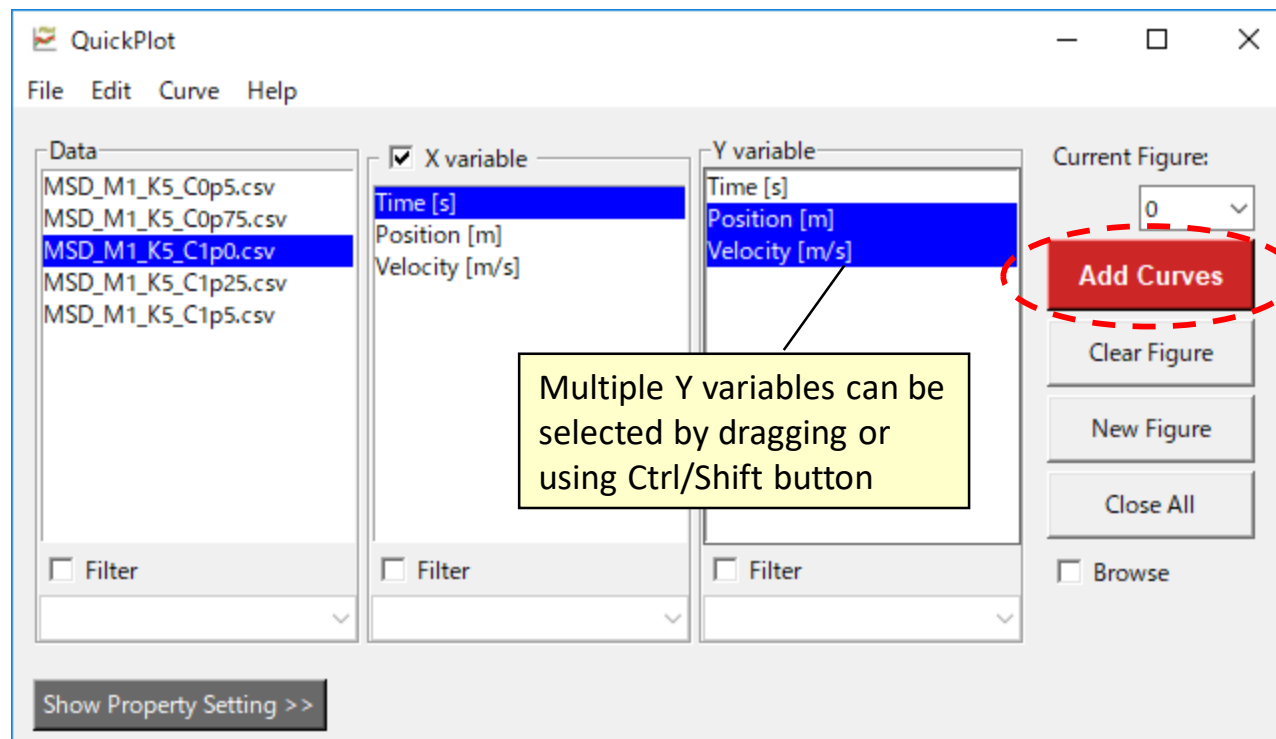
Plotting data (2)

Multiple data can be selected in the data list box. In such cases, only variables having common name among the selected data are displayed in the variable list boxes.
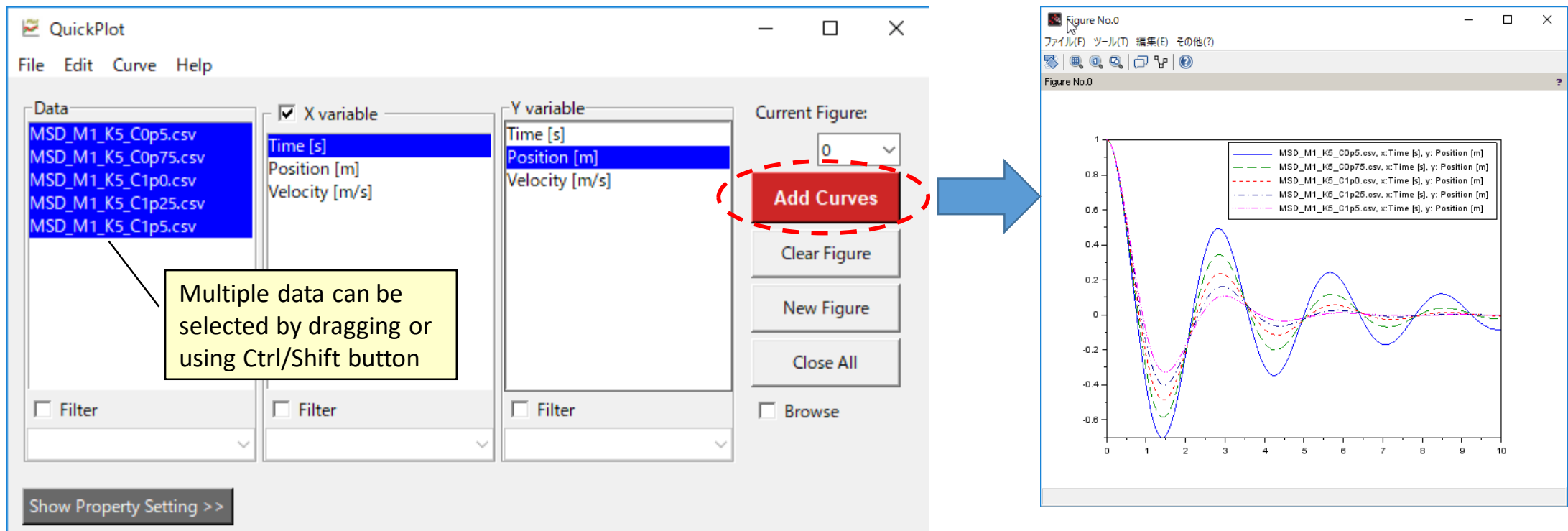
Plotting data in browse mode

If "**Browse**" check box is checked, plots of selected variables appear in the current figure as soon as data and variables are selected. Browse mode may be convenient when you want to browse through data.
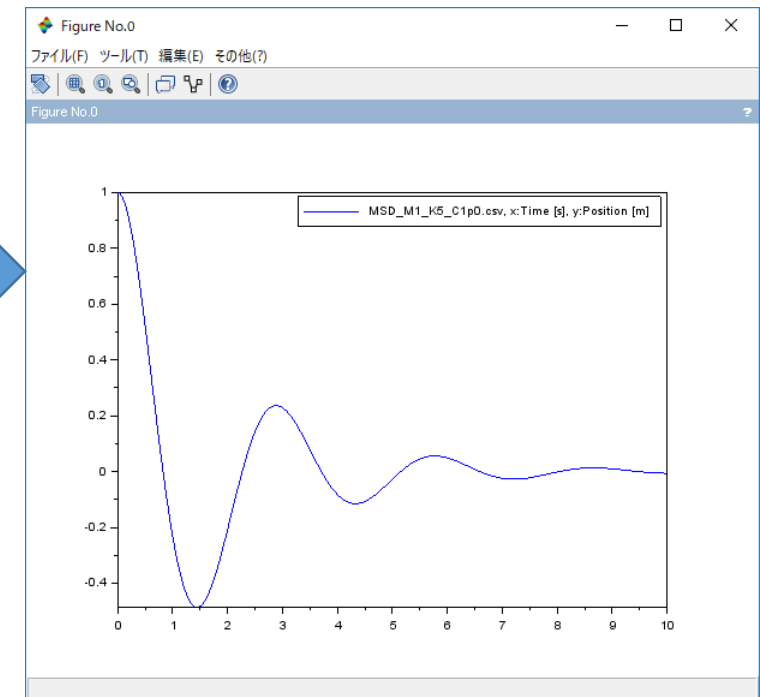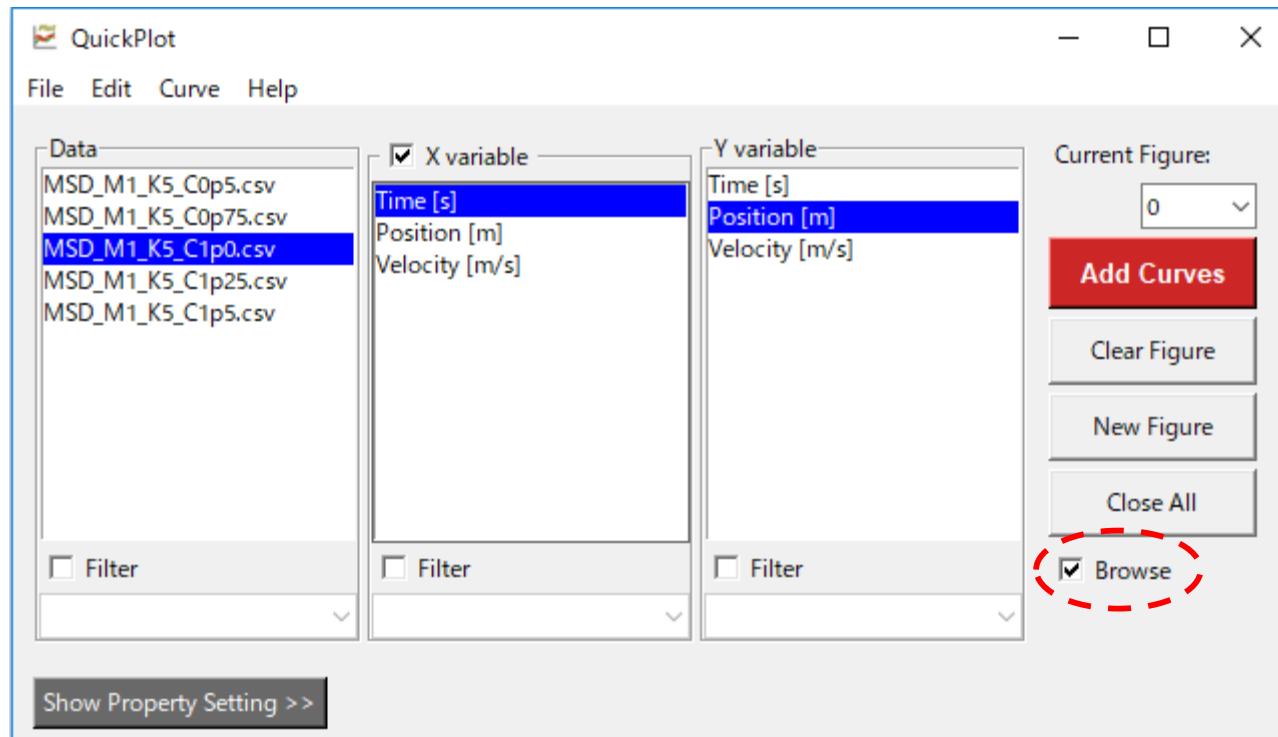
Changing graph property

Click "**Show Property Setting**" button to show graph property setting GUIs. Set the graph property as desired and click "**Apply**" button. Make sure that the target figure has been selected as the current figure before applying.

Further editing of the graph property may be achieved through Scilab graphic editor.

11

Importing variable names

If variable names are stored in a separate file, you can import them after you import data.

From "**File**" menu, select "**Import Variable Names**" and the "**Import Variable Names from File**" dialog box will appear.
In the dialog box:
1. Select data to which variable names are imported. Multiple data can be selected as long as they have the same number of columns.
2. Select a file that contains variable names by clicking "**Browse**" button. This file should contain variable names such that the i-th row contains the variable name for the i-th column of the data. The number of variable names must match the number of columns of the data.
3. Click "**Import**" button.
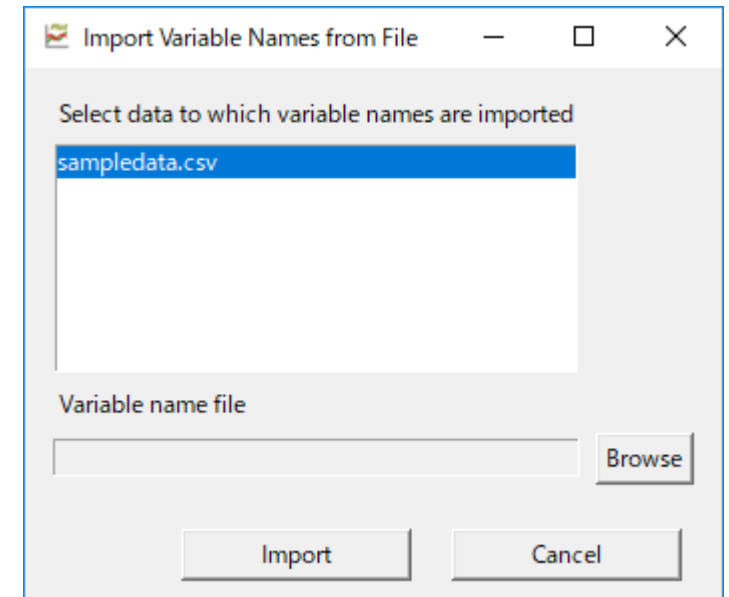
```
time
position
velocity
```

← Example of variable name file contents

Filtering data and variables

You can filter data and/or variables using "glob" matching patterns. Beneath the data and variable list boxes, check "**Filter**" and enter a glob pattern. For admissible glob patterns, see "string match" section of the Tcl manual (https://www.tcl.tk/man/tcl/TclCmd/string.htm). If there are preset filters, they can be selected from the pull-down menu.


13
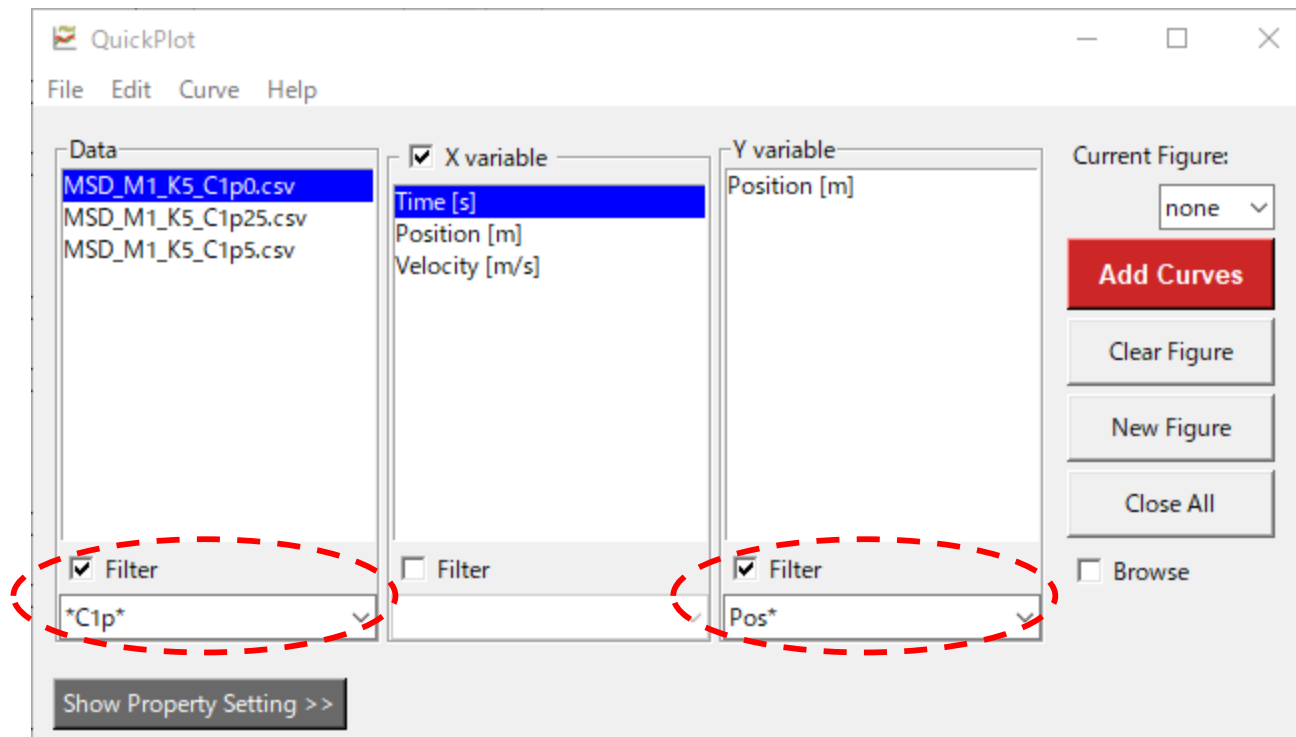
Importing data and variable filters

Preset filters for data and variables can be imported from files. For the data filter, from "**File**" menu, select "**Import Data Filter**". For the variable filter, from "**File**" menu, select "**Import Variable Filter**". In both cases, a file-open dialog box will appear. Select a file that contains glob patterns for data or variable filter.

```
*.csv
sample*
aaa
```

← Example of filter file contents

After importing preset filters they are available to be selected from the pull-down menu.

14
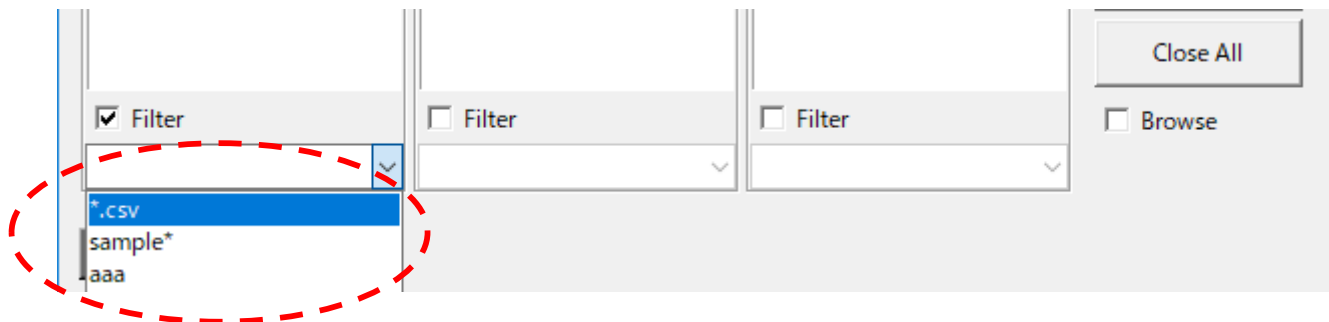
Renaming data

Data name is initially the name of the file from which the data is imported. You can rename data as desired.
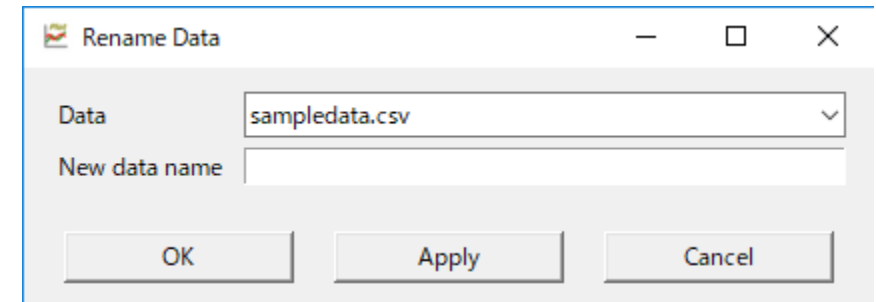
Either:
- From "**Edit**" menu, select "**Rename Data**".
- Select data in "**Data**" list box. Right click the mouse button and select "**Rename Data**" from the pop-up menu.

"**Rename Data**" dialog box will appear.

In the dialog box:
1. Select data to rename.
2. Enter a new data name.
3. Click "**OK**" or "**Apply**" button.

15

Changing the order of data

You can change the order of data in the data list box.

Either:
- From "**Edit**" menu, select "**Permute Data**".
- Select data in "**Data**" list box. Right click the mouse button and select "**Permute Data**" from the pop-up menu.

The "**Permute Data**" dialog box will appear.

In the dialog box:
1. Select data to move up or down.
2. Click either "**Move Up**" or "**Move Down**" button repeatedly until the data comes to a desired position.
3. Repeat 1 and 2 for other data until the order of data becomes desirable.
4. Click "**OK**" button.
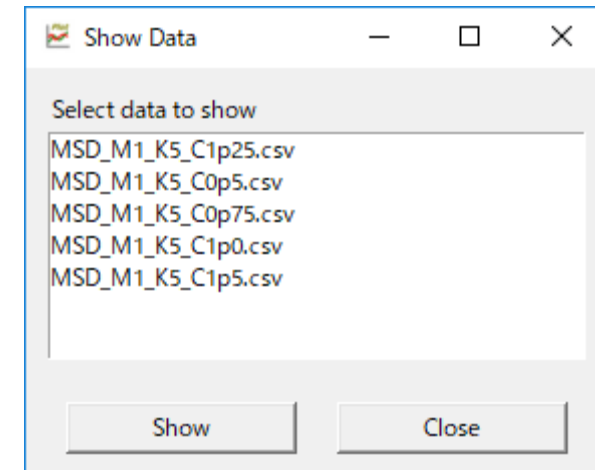

16
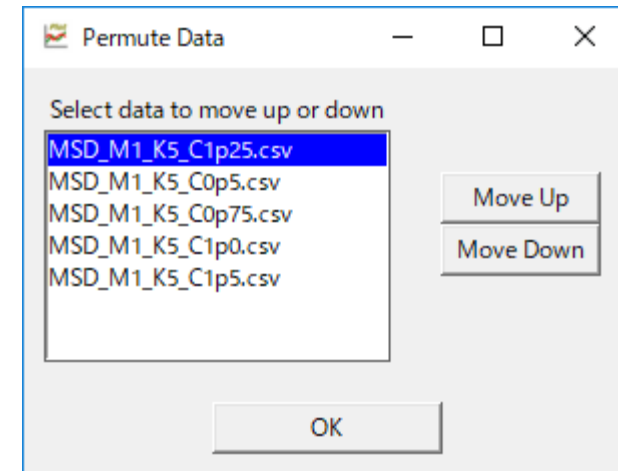
Displaying data in console

There are two ways to display data in console:

[1]
1. From "**Edit**" menu, select "**Show Data**" and the "**Show Dat**a" dialog box will appear.
2. In the dialog box, select data and click "**Show**".

[2]
1. Select data you want to display in "**Data**" list box. Right click the mouse button and select "**Show Data**" from the pop-up menu.
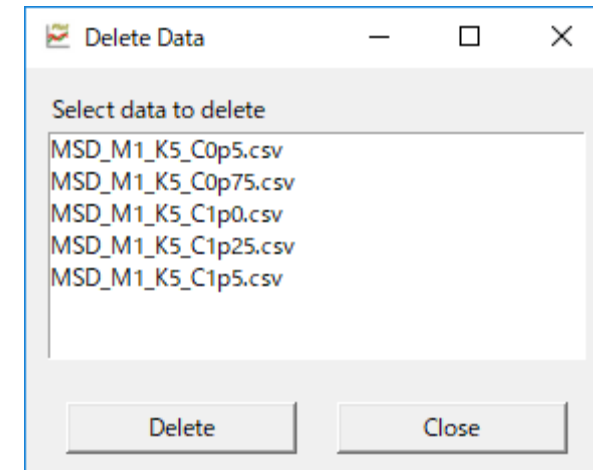
Deleting data

There are two ways to delete data:

[1]
1. From "**Edit**" menu, select "**Delete Data**" and the "**Delete Data**" dialog box will appear.
2. In the dialog box, select data and click "**Delete**" button.

[2]
1. Select data you want to delete in "**Data**" list box. Right click the mouse button and select "**Delete Data**" from the pop-up menu.
2. A confirmation dialog box will appear. Click "**Yes**" button.

Editing variable names

Either:

- From "**Edit**" menu, select "**Edit Variable Names**".
- Select data in "**Data**" frame. Right click the mouse button and select "**Edit Variable Names**" from the pop-up menu.
- Select variable in "**X variable**" or "**Y variable**" list box. Right click the mouse button and select "**Edit Variable Names**" from the pop-up menu.

The "**Edit Variable Names**" dialog box will appear.

In the dialog box:

1. Select data from the pull-down menu.
2. Edit variable names
3. Click "**OK**" button.
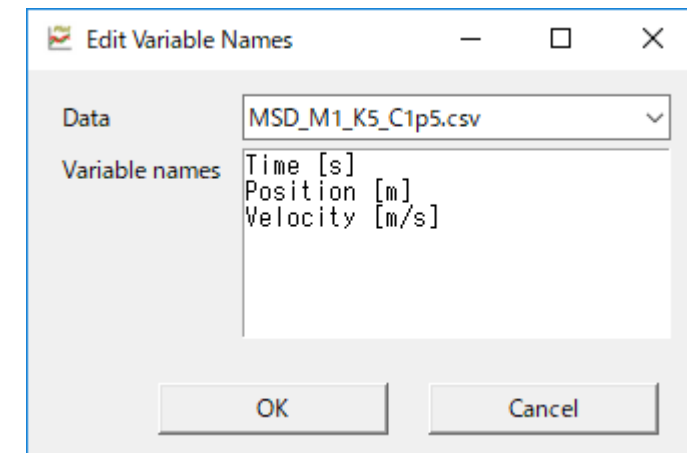
Creating variables

You can improvise variables for comparison.

Either:
- From "**Edit**" menu, select "**Create Variable**".
- Select variable in "**X variable**" or "**Y variable**" list box. Right click the mouse button and select "**Create Variable**" from the pop-up menu.
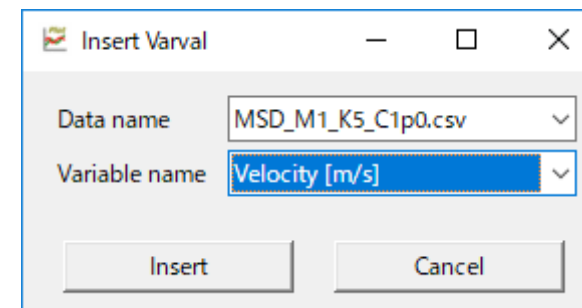
"**Create Variable**" dialog box will appear.

In the dialog box:
1. Select data to which the variable is added.
2. Enter the name of the variable.
3. Enter a valid Scilab expression that generates a column vector of length equal to the length of other variables.
4. Click "**OK**" or "**Apply**" button.
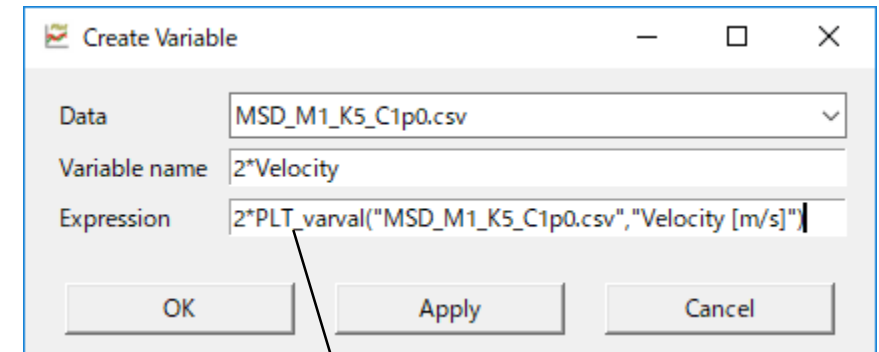
A special function "**PLT_varval(dataname, varname)**" can be used in "**Expression**". This function outputs a column vector of data specified by a data name and a variable name. An easy way to insert this function is to use "**Insert Varval**" dialog box, which appears if you right click the mouse button and select "**Insert varval()**" in "**Expression**".

20

Deleting variables

There are two ways to delete variables:

[1]

1. From "**Edit**" menu, select "**Delete Variable**" and the "**Delete Variable**" dialog box will appear.
2. In the dialog box, select data and variables and click "**Delete**".

[2]

1. Select variables you want to delete in "**X variable**" or "**Y variable**" list box. Right click the mouse button and select "**Delete Variable**" from the pop-up menu.
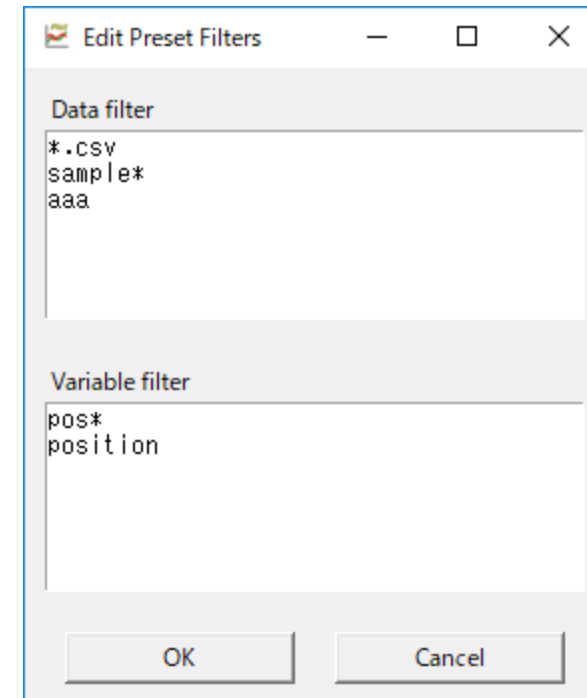2. A confirmation dialog box will appear. Click "**Yes**" button.
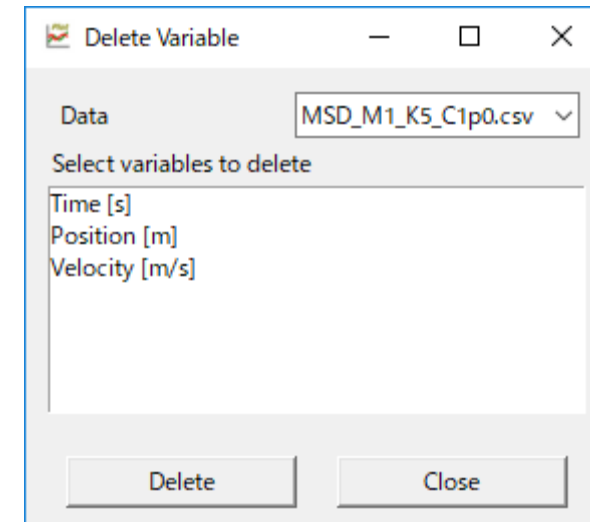
Editing preset filters

From "**Edit**" menu, select "**Edit Preset Filters**".
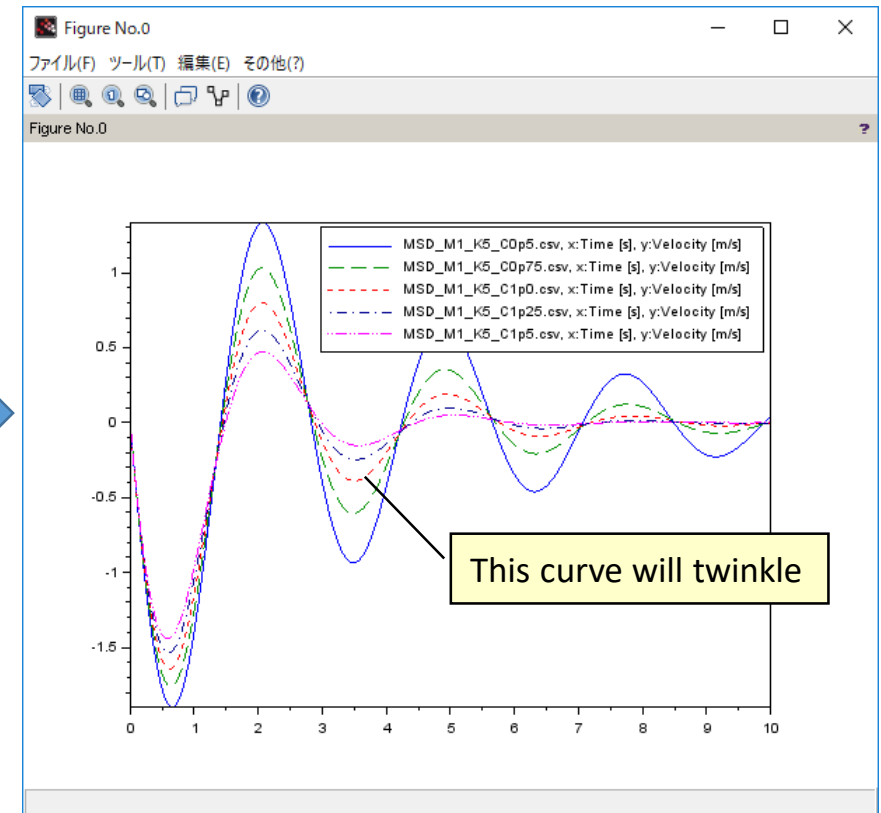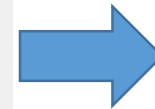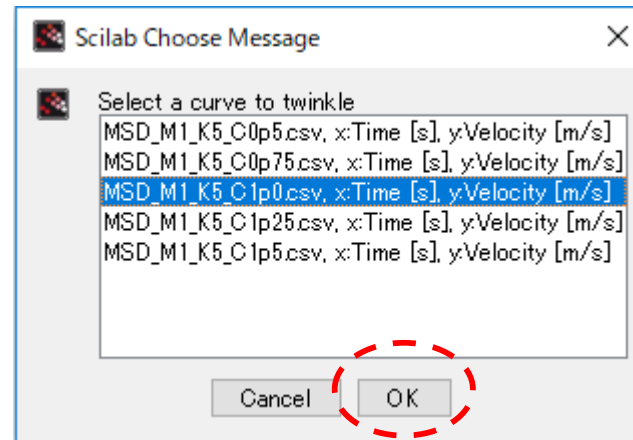The "**Edit Preset Filters**" dialog box will appear.
In the dialog box, add, delete, or edit glob patterns for data and variable filters.

Making a curve twinkle

From "**Curve**" menu, select "**Twinkle**" and a Scilab
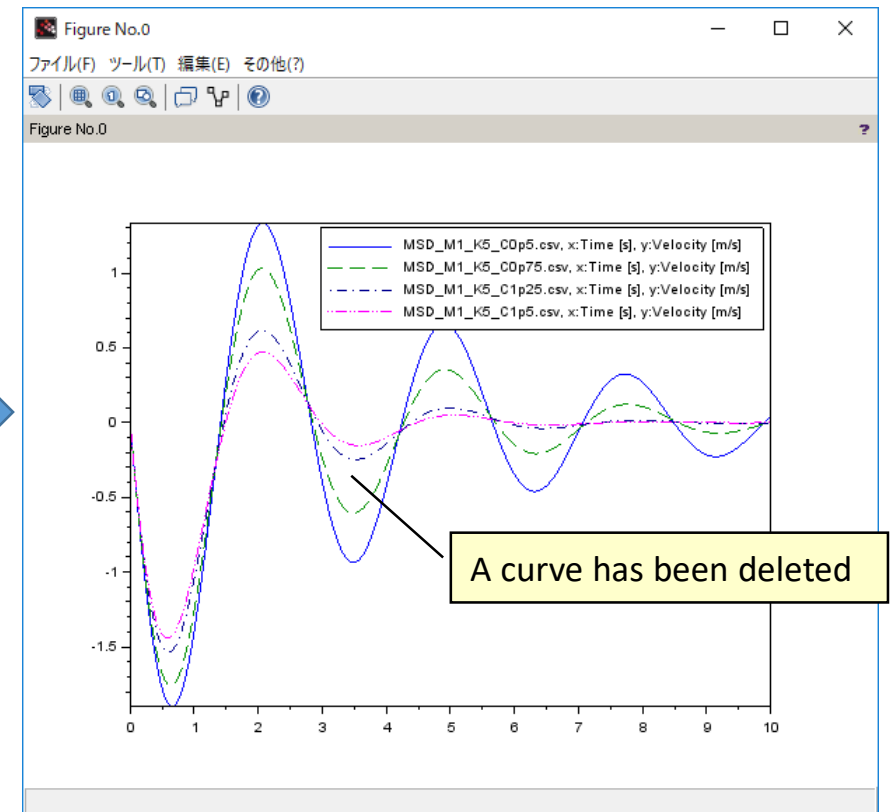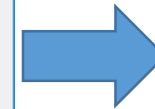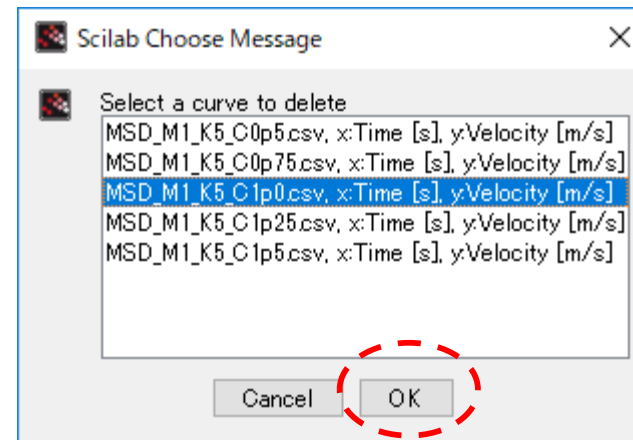Choose Message dialog box will appear.
In the dialog box, select a curve and click "**OK**" button, or
double click a curve.

Deleting curves

From "**Curve**" menu, select "**Delete**" and a Scilab Choose Message dialog box will appear.
In the dialog box, select a curve and click "**OK**" button, or double click a curve.

A curve has been deleted

24

Exporting curve data to workspace

From "**Curve**" menu, select "**Export to Workspace**" and a Scilab Choose Message dialog box will appear.
In the dialog box, select a curve and click "**OK**" button, or double click a curve.
A Scilab Multiple Values Request dialog box will appear.
Enter the name of a variable to which the curve data is substituted and click "**OK**" button.