SAAM II Version 2.2
Basic Tutorials

Working with Tables

There might be slight variations in the graphical representations and plot options in the latest version 2.2.3. However, navigating through them should be intuitive, as the core principles remain consistent.

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Working with Tables

Prerequisites

The prerequisite for this tutorial is having worked through the SAAM II introductory tutorial, "Getting Started with **SAAM II Compartmental**."

What you will learn in this tutorial

The purpose of this tutorial is to show you how to use Tables to export information from SAAM II to other applications. You will learn

- How to export information to a .CSV file (Part 1)
- How to change the number of solution points in your file to export (Part 2)
- How to export statistical information to a .CSV file.

Files Required

Study Files: The study file for this tutorial is

study_0.stu

This file is included as part of this tutorial. This file is the same as **study_0.stu** that is installed in the SAAM II program folder.

Introduction

This tutorial focuses on how to use tables that can be created by SAAM II for export to .CSV files. Many users want to post-process results from SAAM II. This can include using other graphics packages or statistical packages.

It should be pointed out that, while this tutorial will focus on tables created by SAAM II in the **Tables** window, SAAM II generates other tables of output that can be exported to a spreadsheet. For example, the results in the **Statistics** window following a Fit can be exported.

It is recommended you work through all three parts of this tutorial to best understand how to export tables.

Part 1. Exporting data from a table to a .CSV file.

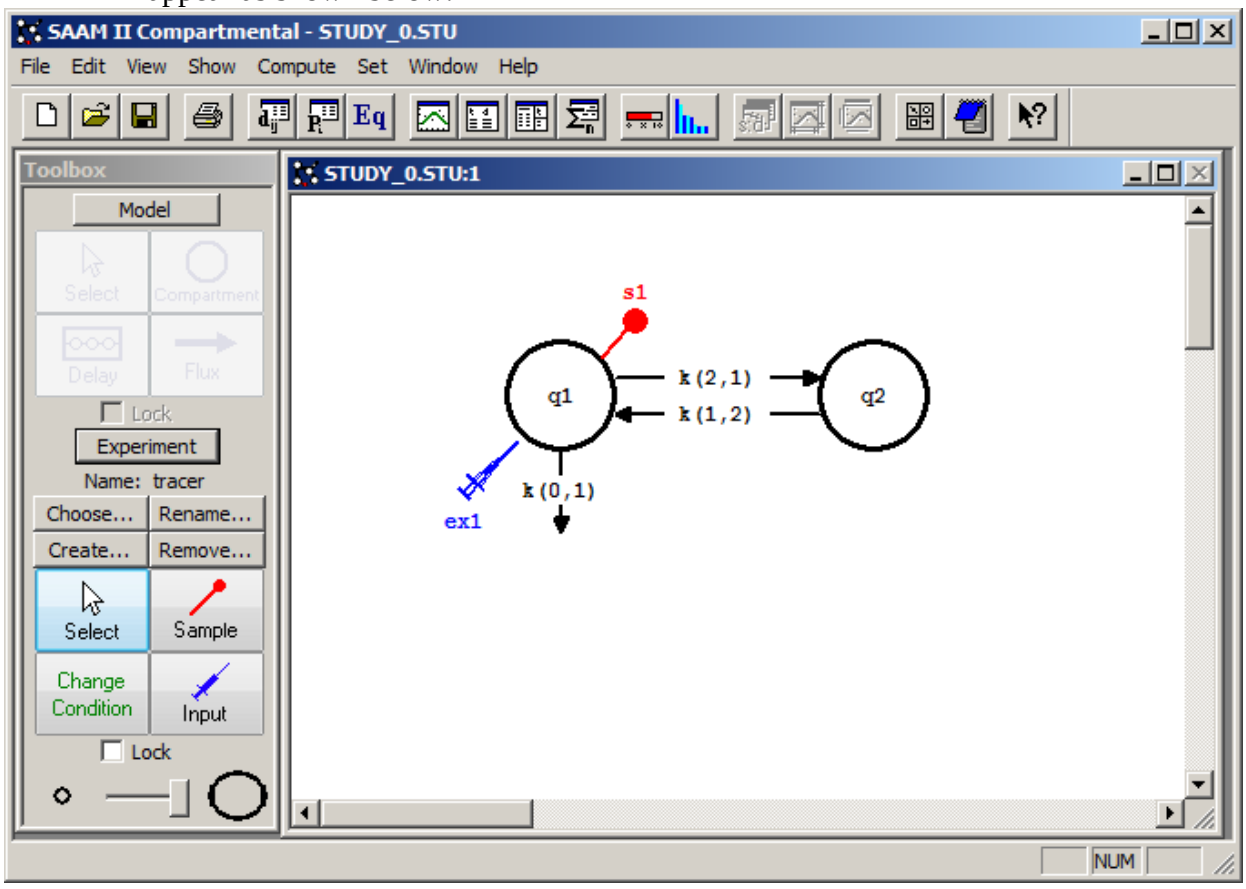
Suppose one desires to provide a customized plot of an associated sample(s) and data. Information to construct a plot can be created in a **Table** following a Solve or Fit and exported to a .CSV file which can then be used for other purposes. The **Tables** window's controls are similar to the **Plot** window's controls. They are found in the **Set** menu in **Plot/Table Variables** and **Plot/Table Scale**. In **Plot/Table Variables**, you choose the variables you want to appear in your table. In **Plot/Table Scale**, you set the scale (length of time or time interval) of your table.

1. **Start** the **SAAM II Compartmental** application. The **SAAM II Compartmental** main window will open.

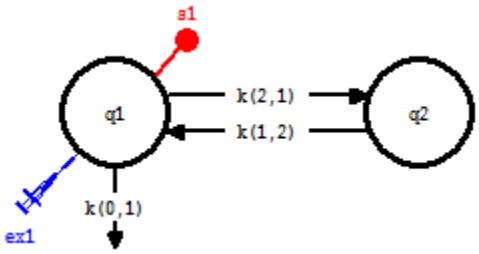
2. Open the **SAAM II Compartmental** study file **study_0**.

   a. In the **File** menu, click **Open**. The file **study_0.stu** should appear in the file list; if it does not, find the folder where you put this tutorial. **Open** the study file.

   b. In the **File** menu, click **Open**. The **SAAM II Compartmental** main window will appear as shown below:



3. View the model and the experiment on the model. In the **SAAM II Toolbox**, click **Experiment**. The model of the experiment will appear on the **Drawing Canvas** as follows:



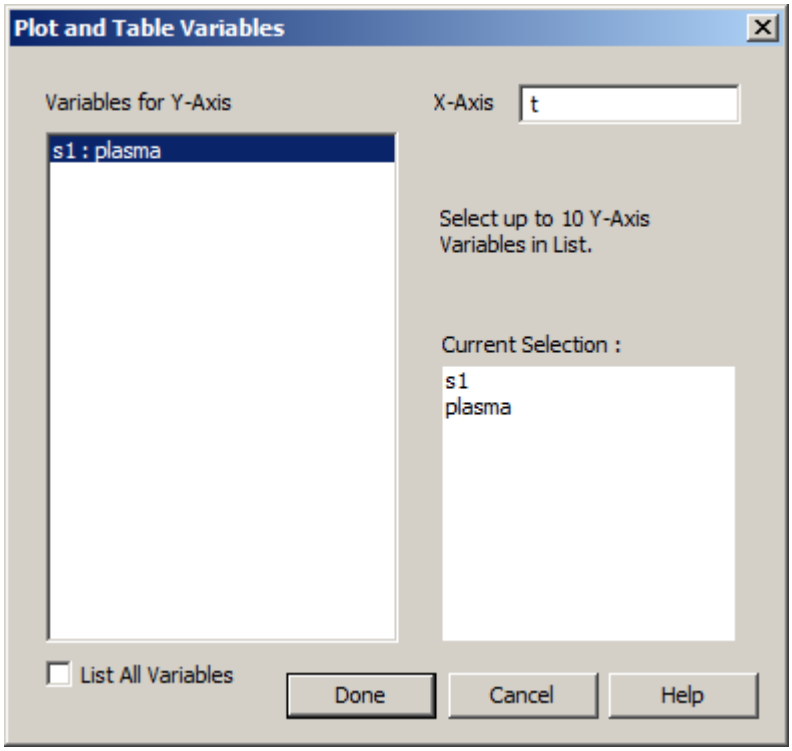
This is the experimental model developed and used in the **Getting Started with Compartmental** tutorial.

4. Solve the model and view the solution.

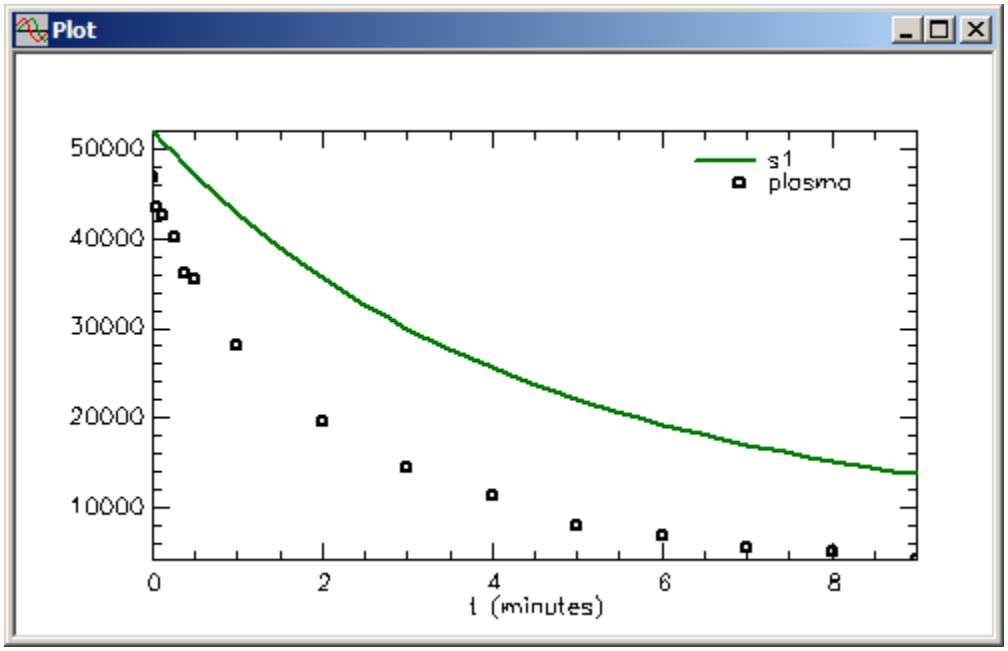
   a. In the **Compute** menu, click **Solve**, or alternatively, on the **SAAM II Toolbar,** click **Solve**  .

   b. In the **Show** menu, click **Plot**, or alternatively, on the **SAAM II Toolbar,** click **Plot**  . The **Plot and Table Variables** dialog box will open. Be sure the **List All Variables** check box is not selected.

   c. Click **s1:plasma** to move this to the **Current Selection** pane. The **Plot and Tables Variables** dialog box will appear as follows:



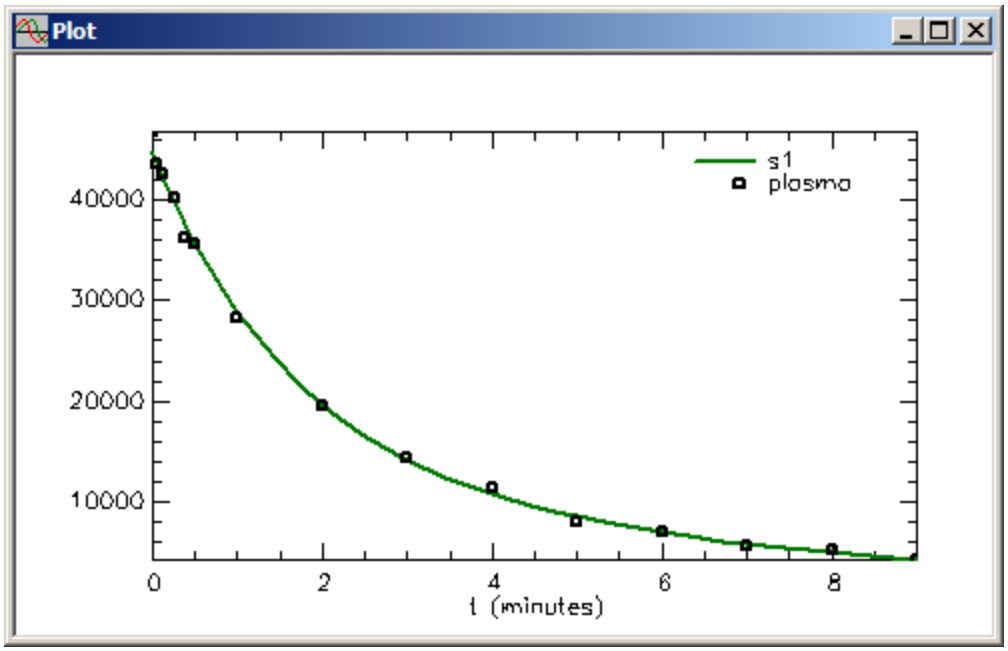
d. Click **Done**. Your plot will appear as shown below (in linear mode):



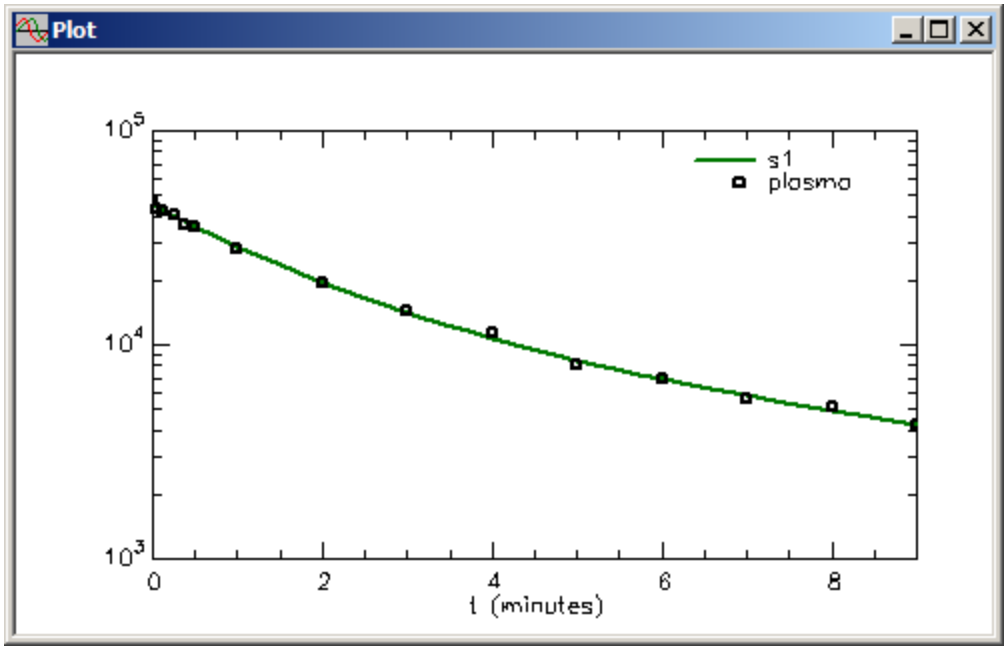
Leave the **Plot** window open.

*Leaving the **Plot** window open*. During your modeling exercise, you can leave the **Plot** window open and perform operations such as changing parameter values, solving and fitting. As soon as you change a characteristic of your model such as changing the value of the parameter, the solution will disappear from your plot. As soon as you Solve or Fit, the updated solution will reappear.

5. Fit the model to your data. In the **Compute** menu, click **Fit**, or alternatively, on the **SAAM II Toolbar** click **Fit**  . Since the **Plot** window was open during the "Fit", the **Plot** window will be updated as shown below:



If you wish to see the plot in semilog mode, in the **View** menu, click **Semilog**. The plot will change from linear to semilog as shown below:



Linear and semilog plots. To switch back and forth between linear and semilog plots, in the **View** menu or right-click in the plot window, locate **Semilog**. If **Semilog** is checked, the plot is semi-logarithmic. If **Semilog** is not checked, the plot is linear. To switch back and forth, you need to go to the **View menu**, and select or cancel the

Semilog option. You may also access the Semilog selection by ***right-clicking your mouse in the plot window***.

Close the **Plot** window.

6. View the results in tabular form and save them to a .CSV file.

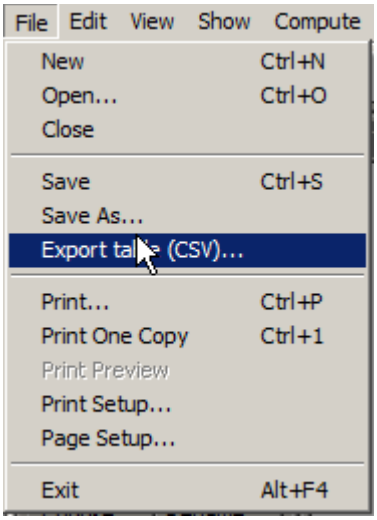
   a. In the **Show** menu, click **Table**, or alternatively, on the **SAAM II Toolbar,** click **Table**  . Since the **Plot** window was previously opened with a plot of **s1** and **plasma**, the **Table** window will open as follows:

Table

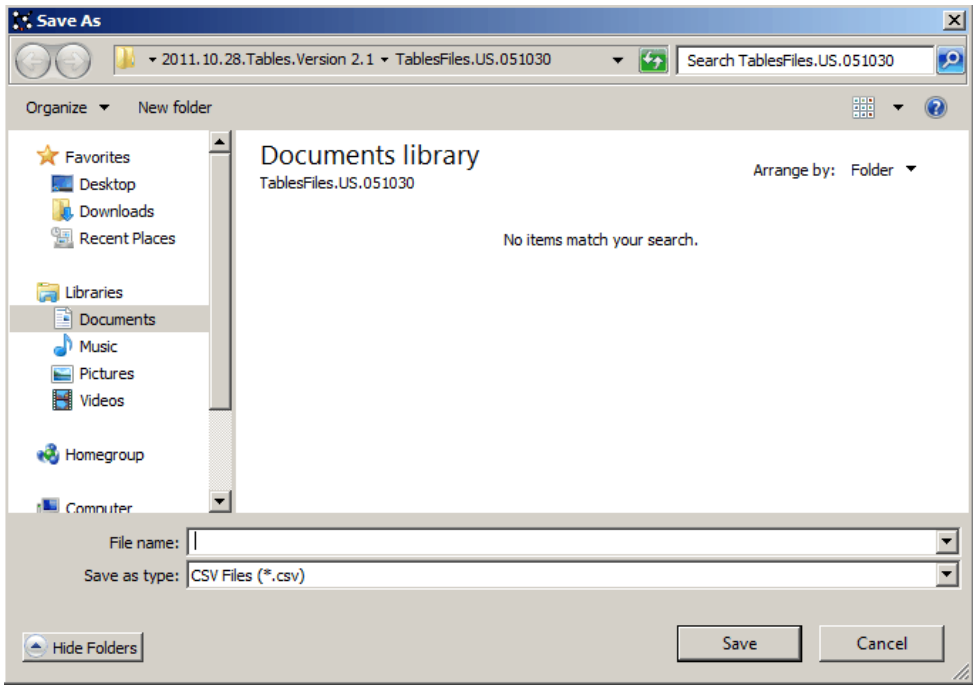
t	s1	plasma
0.000	44754.732	-
7.00000e-003	44608.789	46780.000
4.20000e-002	43887.777	43522.000
0.125	42234.517	42535.000
0.250	39887.687	40125.000
0.375	37701.625	36221.000
0.500	35664.642	35562.000
0.750	31995.409	-
1.000	28802.603	28194.000
1.450	24050.218	-
1.725	21664.652	-
2.000	19601.193	19573.000
2.450	16796.027	-
2.725	15368.982	-
3.000	14121.006	14403.000
3.450	12397.968	-
3.725	11506.245	-
4.000	10715.665	11278.000
4.450	9603.457	-
4.725	9016.183	-
5.000	8487.392	8081.000
5.450	7728.050	-
5.725	7318.556	-
6.000	6944.009	6999.000
6.450	6395.269	-
6.725	6093.436	-
7.000	5813.411	5653.000
7.450	5395.888	-
7.725	5162.366	-
8.000	4943.185	5139.000
8.450	4611.791	-
8.725	4424.042	-
9.000	4246.276	-
9.000	4246.276	4210.000

Generating tables. The table contains the model calculated values at the times at which there are data, and at times at which there are "calculation points". The "calculation points" are determined by the Minimum Number of Calculation Intervals. This is a mechanism in SAAM II by which the user can control the number of values for samples that are saved for plotting and tabular purposes. Some plotting packages may require more sample calculations. This can be achieved by increasing the Minimum Number of Calculation Intervals as shown in the next part of this Tutorial.

b. With the Table active (i.e. click the open Table), in the **File** menu, click **Export table (CVS)…**,



The **Save As** dialog box will open:

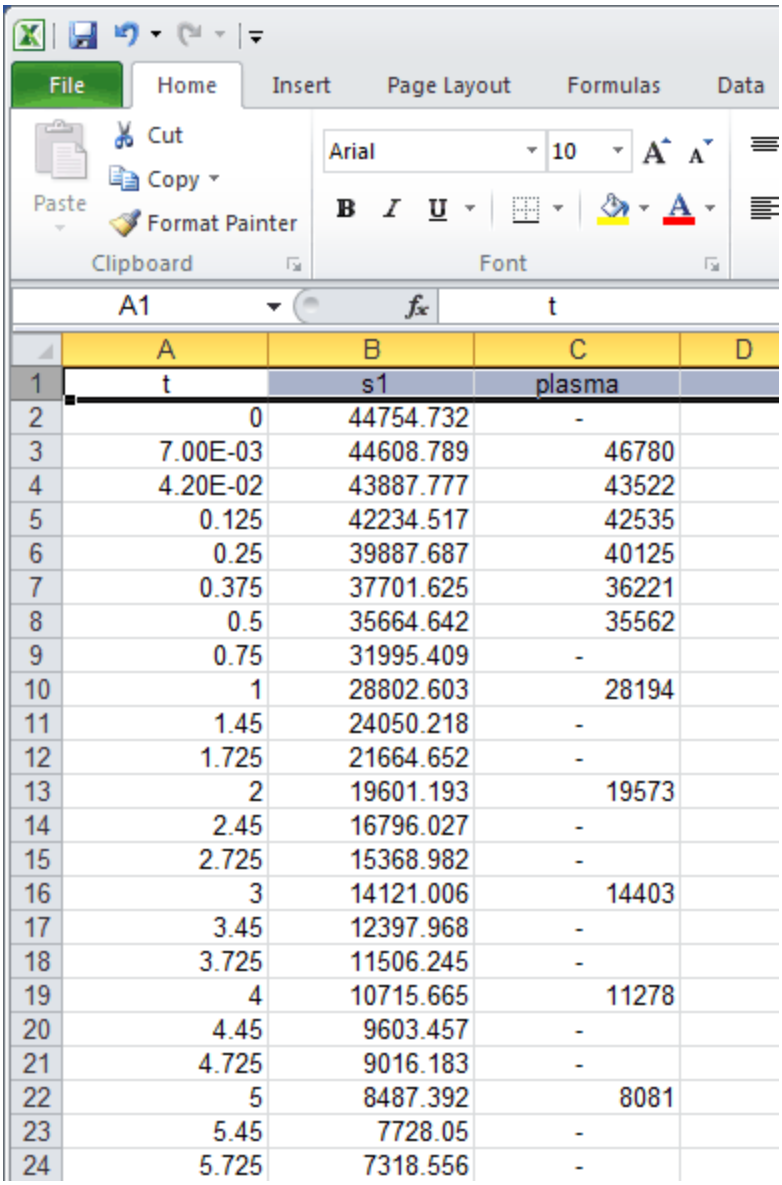


Name your file "Study0 Best Fit", and click **Save**. {You should keep track of where the file is being saved.}

{You may also ***copy and paste Table Data directly*** into Excel or Word files: With Table window active, hit Ctrl + C or select Copy in the Edit Menu; you may now paste directly into another application.**}**

Close the table, but keep your SAAM II model running.

7. Examine your .CSV file in Excel; it will look approximately:



	A	B	C	D
1	t	s1	plasma	
2	0	44754.732	-	
3	7.00E-03	44608.789	46780	
4	4.20E-02	43887.777	43522	
5	0.125	42234.517	42535	
6	0.25	39887.687	40125	
7	0.375	37701.625	36221	
8	0.5	35664.642	35562	
9	0.75	31995.409	-	
10	1	28802.603	28194	
11	1.45	24050.218	-	
12	1.725	21664.652	-	
13	2	19601.193	19573	
14	2.45	16796.027	-	
15	2.725	15368.982	-	
16	3	14121.006	14403	
17	3.45	12397.968	-	
18	3.725	11506.245	-	
19	4	10715.665	11278	
20	4.45	9603.457	-	
21	4.725	9016.183	-	
22	5	8487.392	8081	
23	5.45	7728.05	-	
24	5.725	7318.556	-	

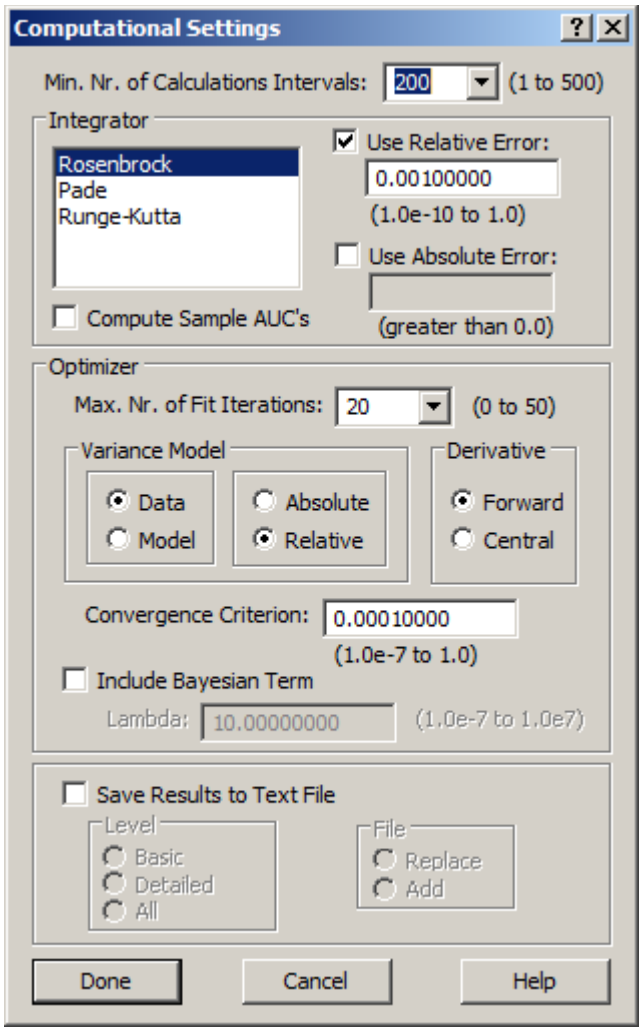
Return to your SAAM II application and close all open Windows.

Part 2. Changing the resolution of the table.

1. Change the resolution of the table.

   a. In the **Compute** menu, click **Computational Settings**. The **Computational Settings** dialog box will open.

   b. Change the **Min. Nr. of Calculation Intervals** from "20" to "200". The **Computational Settings** dialog box will appear as follows:



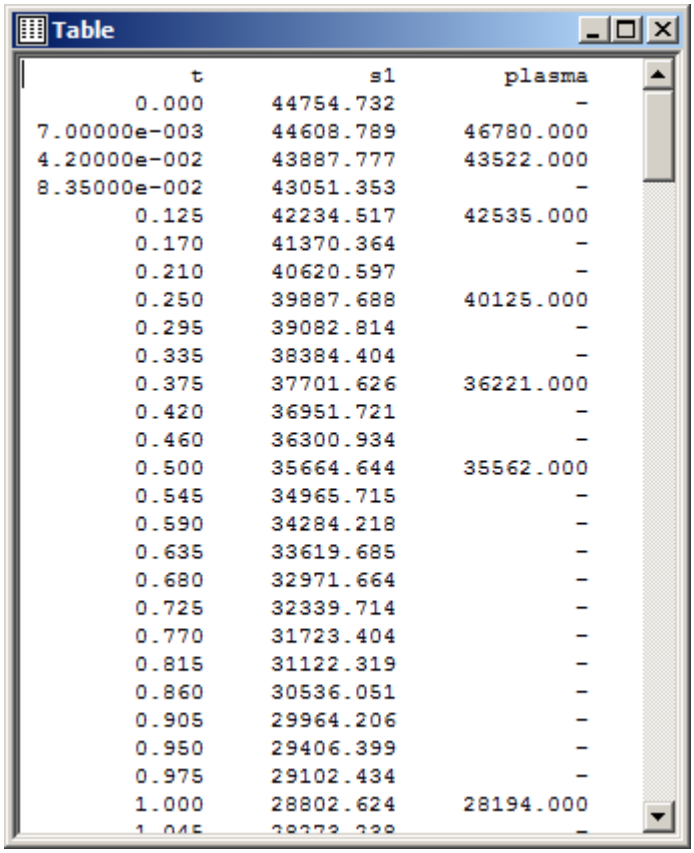
   c. Click **Done**. The **Table** window will appear as follows:

Table

t	s1	plasma
7.00000e-003	-	46780.000
4.20000e-002	-	43522.000
0.125	-	42535.000
0.250	-	40125.000
0.375	-	36221.000
0.500	-	35562.000
1.000	-	28194.000
2.000	-	19573.000
3.000	-	14403.000
4.000	-	11278.000
5.000	-	8081.000
6.000	-	6999.000
7.000	-	5653.000
8.000	-	5139.000
9.000	-	4210.000

Changing a computational setting. When you change a computational setting in the **Computational Settings** dialog box, this will change the characteristics of the current solution. In this case, the Minimum Number of Calculation Intervals has been increased. The reason why there are no values for **s1** is that the computational settings have changed. The **Table** window can be updated with a Solve or a Fit.

e. Re-Solve  the model. The **Table** window will appear (in part) as follows:



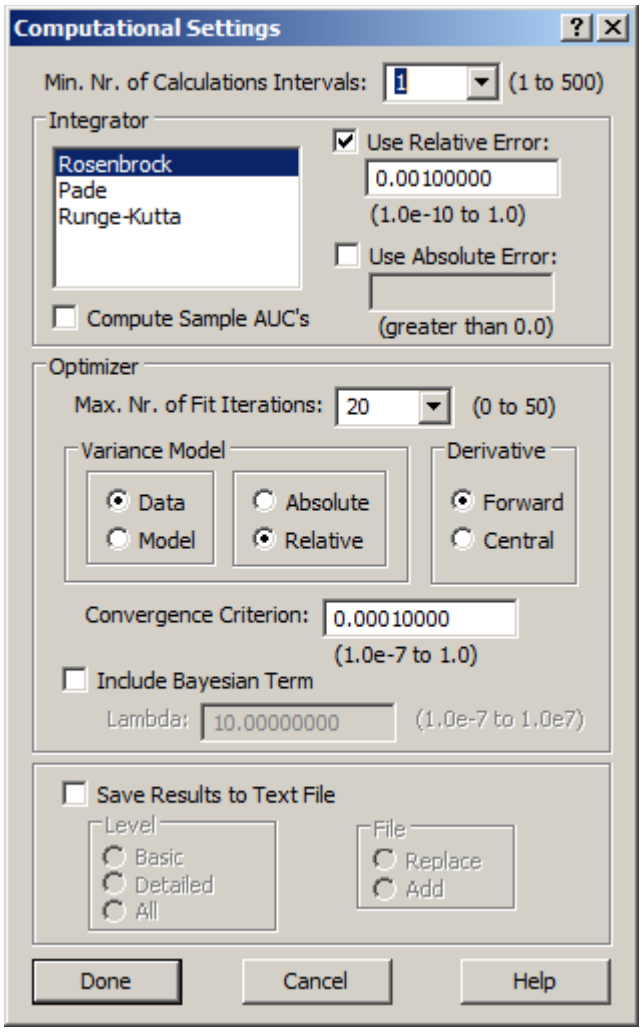
t	s1	plasma
0.000	44754.732	-
7.00000e-003	44608.789	46780.000
4.20000e-002	43887.777	43522.000
8.35000e-002	43051.353	-
0.125	42234.517	42535.000
0.170	41370.364	-
0.210	40620.597	-
0.250	39887.688	40125.000
0.295	39082.814	-
0.335	38384.404	-
0.375	37701.626	36221.000
0.420	36951.721	-
0.460	36300.934	-
0.500	35664.644	35562.000
0.545	34965.715	-
0.590	34284.218	-
0.635	33619.685	-
0.680	32971.664	-
0.725	32339.714	-
0.770	31723.404	-
0.815	31122.319	-
0.860	30536.051	-
0.905	29964.206	-
0.950	29406.399	-
0.975	29102.434	-
1.000	28802.624	28194.000

Now there are many more values for **s1** that have been saved in tabular form. This is because of the increase in the minimum number of calculation intervals.

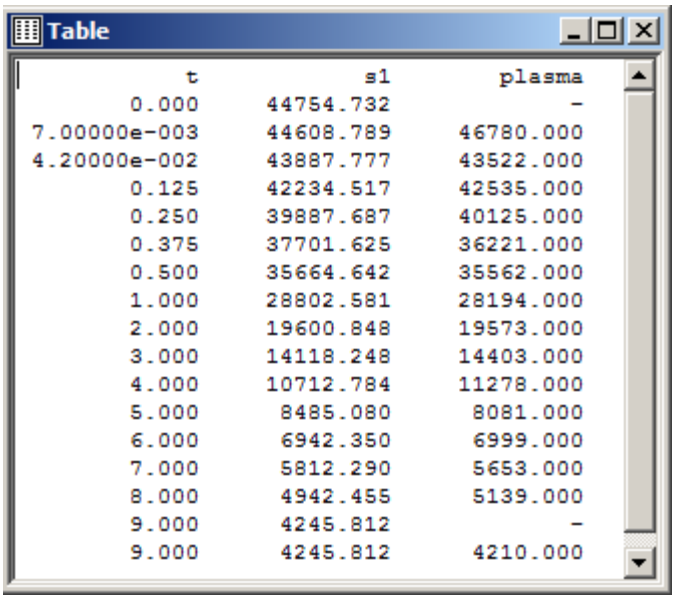
You can copy the contents of the table or export into a .CVS file as described previously in Part 1.

Post plotting SAAM II output. Expanding the number of calculation intervals is very useful if you want to post-process your output in a plotting package that requires frequent calculated values.

3. In the **Set** menu, open the **Computational Settings** dialog box, and set the **Min.Nr. of Calculations Intervals** to 1:



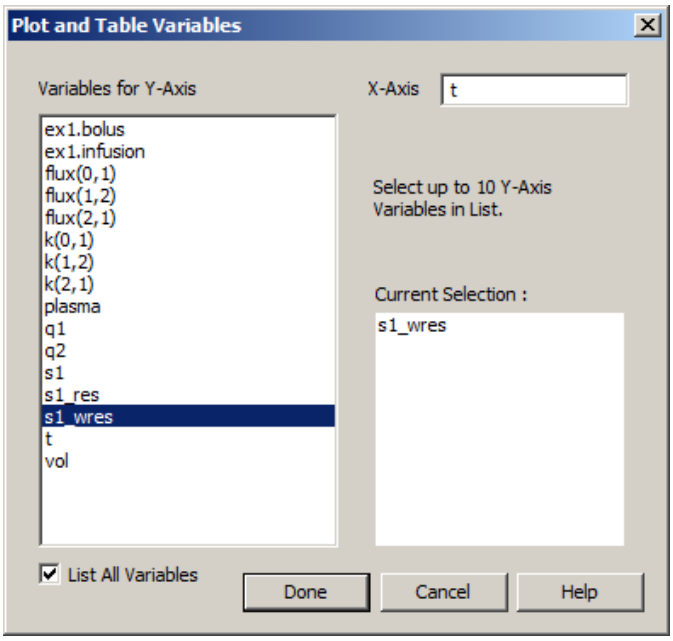
4. Click **Done**. Solve  the model. Your table will appear:



This table, which can be exported, has just the model solutions and data. In a .CVS file it can be copied into other documents such as Word.

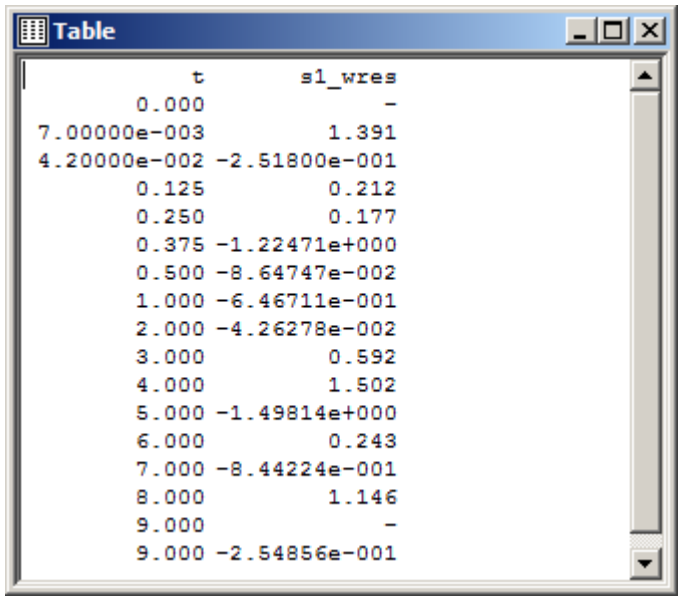
5. Create a table of weighted residuals

   a. With the minimum number of calculation intervals set equal to 1, tabular output can be quite useful for, for example, statistical testing. With your table open, in the **Set** menu, **Click Plot/ Table Variables**, or alternatively click the **Select variables** tool on the **SAAM II Toolbar**. Be sure the **List All Variables** check box is checked. Click on *s1_wres*; the **Plot and Tables Variables** dialog box will appear:



b. Click **Done**.

c. Fit  your model to your data. Your table will be updated:



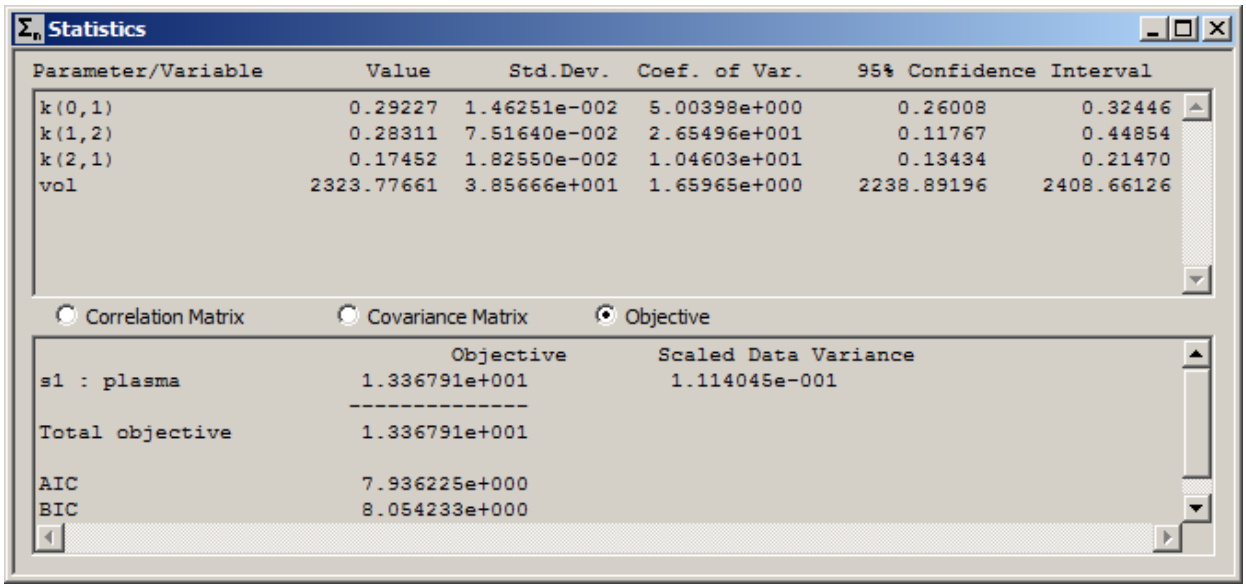
The weighted residuals can now be exported to a .CSV file, and can be used, for example, in a runs test for goodness-of-fit.

d. Close your table; leave your model running.

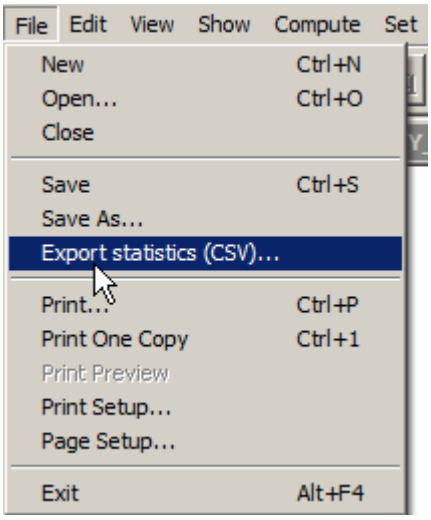
Part 3. Exporting Statistical Information

1. View the statistical information

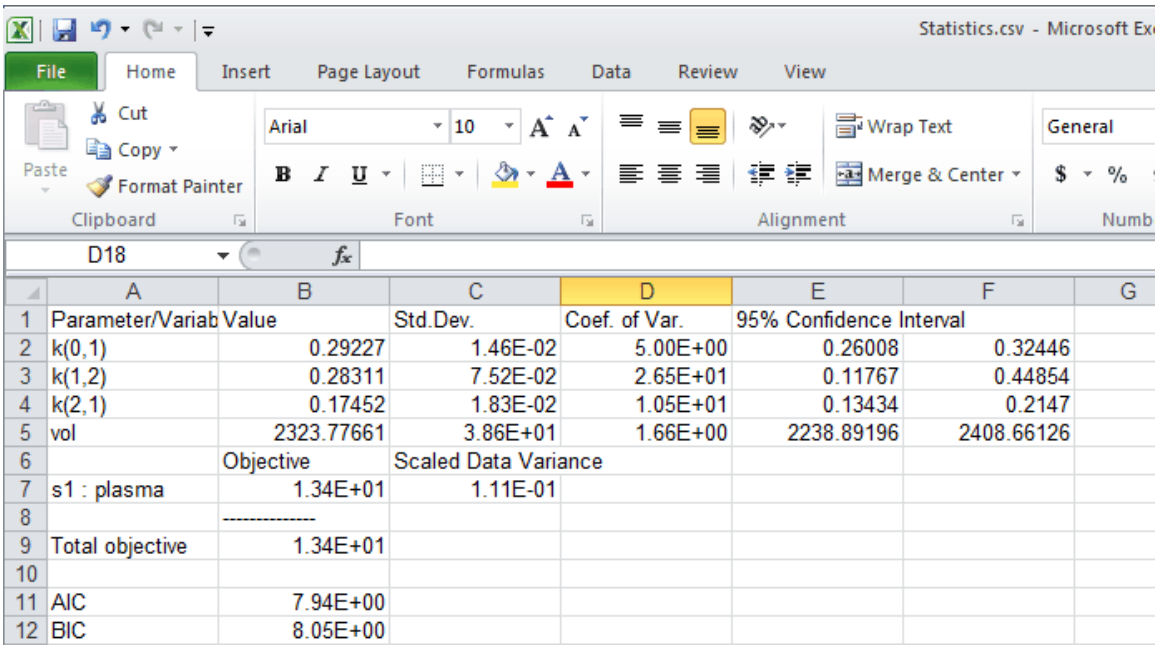
2. Be sure you have fitted your model to your data. Open the **Statistics** window:



3. On the **File** menu, click **Export statistics (CSV)…**



The **Save As** dialog box will open. You can save the file as a .CSV file; with the column width adjusted, in Excel it will look like:



	A	B	C	D	E	F	G
1	Parameter/Variab	Value	Std.Dev.	Coef. of Var.	95% Confidence Interval		
2	k(0,1)	0.29227	1.46E-02	5.00E+00	0.26008	0.32446	
3	k(1,2)	0.28311	7.52E-02	2.65E+01	0.11767	0.44854	
4	k(2,1)	0.17452	1.83E-02	1.05E+01	0.13434	0.2147	
5	vol	2323.77661	3.86E+01	1.66E+00	2238.89196	2408.66126	
6		Objective	Scaled Data Variance				
7	s1 : plasma	1.34E+01	1.11E-01				
8		----------					
9	Total objective	1.34E+01					
10							
11	AIC	7.94E+00					
12	BIC	8.05E+00					

The Excel file can then be used in other applications if you wish.

4. Close all open windows in SAAM II.

Quit the **SAAM II Compartmental** application.