

# **Statgraphics *stratus***

## Statistical Analysis and Data Visualization

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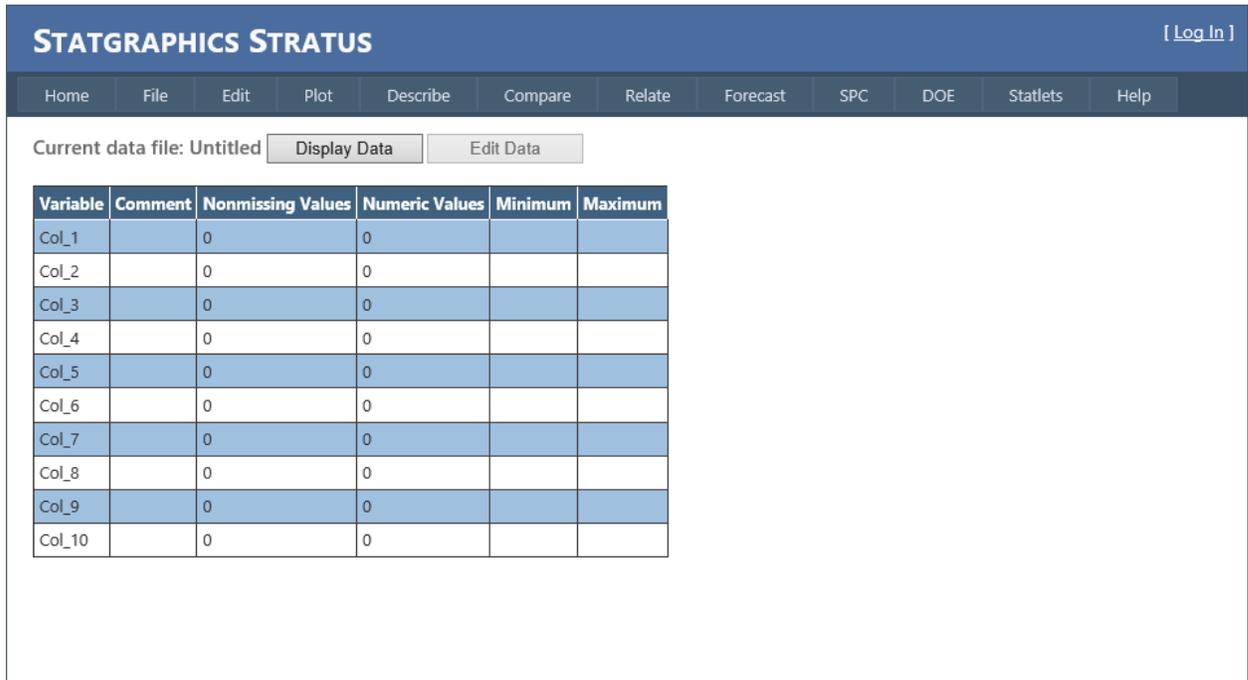
## Introduction

Statgraphics *Stratus* is a statistical package that assists data analysts in performing a wide variety of statistical analyses within a web browser. There is no need to download any software, since the program resides on a remote server. After loading data into a datasheet, statistical calculations are performed resulting in tabular and graphical output, all within the browser. This is accomplished using a combination of HTML5, JavaScript, and ASP.Net. Data may reside anywhere, including on your local computer.

To use Statgraphics *Stratus*, go to [www.statpoint.net](http://www.statpoint.net).

# Chapter 1: Getting Started

Statgraphics *Stratus* can analyze data residing in various types of files, including Excel workbooks, XML files, and delimited text files. The main page, which is displayed when you start the program, shows a summary of the variables in the active data file:



The screenshot shows the main interface of STATGRAPHICS STRATUS. At the top, there is a blue header bar with the text "STATGRAPHICS STRATUS" on the left and "[ Log In ]" on the right. Below the header is a menu bar with the following items: Home, File, Edit, Plot, Describe, Compare, Relate, Forecast, SPC, DOE, Statlets, and Help. Below the menu bar, there is a section for the current data file, labeled "Current data file: Untitled", with two buttons: "Display Data" and "Edit Data". Below this section is a table with the following columns: Variable, Comment, Nonmissing Values, Numeric Values, Minimum, and Maximum. The table contains 10 rows, labeled Col\_1 through Col\_10, with all values in the Nonmissing Values and Numeric Values columns set to 0.

Variable	Comment	Nonmissing Values	Numeric Values	Minimum	Maximum
Col_1		0	0		
Col_2		0	0		
Col_3		0	0		
Col_4		0	0		
Col_5		0	0		
Col_6		0	0		
Col_7		0	0		
Col_8		0	0		
Col_9		0	0		
Col_10		0	0		

Initially, an empty data file named *Untitled* is created, containing 10 columns and 100 rows.

If you wish to try out the statistical procedures using sample datasets, just select any menu item from the main item. The program will automatically load a sample dataset with data appropriate for the selected procedure. If you wish to analyze your own data, you must first login using the link in the upper right corner of the page.

## 1.1 Creating a User Account

In order to analyze your own data, you must first create a user account. When you press the *Login* link, you will see the following input fields:

If you have already created a user account, enter your user name and password. Otherwise, click on *Register* and enter the following information:

User names contain from 1 to 16 characters (with no blanks) and are used to identify data files belonging to an individual user. Both your user name and e-mail address

cannot already be in use. If you have forgotten your user name and/or password, use the links on the first login screen to retrieve them.

When you press the *Create User* button, your account will be created and you will be logged in. You will be returned to the main page and your username displayed at the top right. You can change your password at any time by selecting *My Account* under *Edit* on the main menu:

**STATGRAPHICS STRATUS** Welcome **myusername!** [ [Log Out](#) ]

Home File Edit Plot Describe Compare Relate Forecast SPC DOE Statlets Help

### MY ACCOUNT

**Username:** myusername  
**E-mail:** me@anywhere.com  
**Status:** Registered User  
**Date created:** 1/27/2015  
**Subscription expiration date:** (not a subscriber)

	Allocated	Used
Data files	10	0
Scripts	10	0

**Actions:**

The line labeled *Status* on the *My Account* page indicates what type of user you are:

1. *Guest* – Guests are users who have not created a username and password and are not logged in. Guests may only analyze the sample data sets. They cannot enter their own data, save files, or save output to the session log.
2. *Registered User* – Registered users are individuals who have created an account by registering a username and password, but have not purchased a monthly subscription. Registered users may enter up to 10 columns and 100 rows of their own data. They may save up to 10 data files and 10 scripts and may save output to the session log.
3. *Subscriber* – Subscribers are registered users who have also purchased a monthly subscription. They may enter up to 100 columns and 20,000 rows of their own data. They may also save more data files and scripts than nonsubscribers.

For information of becoming a subscriber to Statgraphics *Stratus*, please visit [www.statgraphics.com](http://www.statgraphics.com).

## Chapter 2: Entering and Manipulating Data

To enter data into Statgraphics *Stratus*, you must first login. You then have several choices:

1. Press the *Edit Data* button on the main page to load the data editor. This will display a datasheet of rows and columns into which you may type data.
2. Select *File – Open Sample Dataset* to load one of Statgraphics' sample datasets.
3. Select *File – Open User Data File – From Client* to load a data file residing on your computer.
4. Select *File – Open User Data File – From Server* to load a data file that you have previously saved on the Statgraphics server.
5. Select *File – Open User Data File – From Clipboard* to retrieve data that you have pasted on the system clipboard while in another application.
6. Select *File – Query Stock Prices* to retrieve historical stock prices from Yahoo Finance.

### 2.1 Entering Data into the Data Editor

When you press the *Edit Data* button on the main page, a spreadsheet style editor will be displayed, similar to that used in applications such as Microsoft Excel. The spreadsheet data editor has the appearance shown below:

Current data file: Untitled

File ▶ Rows ▶ Columns ▶ Cells ▶ Cancel

	A	B	C	D	E	F	G	H
Name	Col_1	Col_2	Col_3	Col_4	Col_5	Col_6	Col_7	Col_8
Comment								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

It contains a data book with two sheets: one sheet for *Input* data that you wish to analyze, and a second sheet into which calculated *Results* will be placed. You can switch between the two sheets using the toolbar along the bottom of the page. To enter data, simply type it into the cells of the table. You should also assign meaningful names to the columns of the table. Column names are used to select data while in the statistical procedures and are displayed on tables and graphs. You can also use the row beneath the column names to indicate additional information about each column, such as the unit of measurement. A typical completed data sheet is shown below:

	A	B	C	D	E	F	G	H	
Name	Make	Model	Type	Min Price	Mid Price	Max Price	MPG City	MPG Highway	
Comment				price for basic version in \$1,000	average of min and max prices	price for premium version in \$1,000	miles per gallon in city driving	miles per gallon in highway driving	1 2
1	Acura	Integra	Small	12.9	15.9	18.8	25	31	0
2	Acura	Legend	Midsize	29.2	33.9	38.7	18	25	2
3	Audi	90	Compact	25.9	29.1	32.3	20	26	1
4	Audi	100	Midsize	30.8	37.7	44.6	19	26	2
5	BMW	535i	Midsize	23.7	30	36.2	22	30	1
6	Buick	Century	Midsize	14.2	15.7	17.3	22	31	1
7	Buick	LeSabre	Large	19.9	20.8	21.7	19	28	1
8	Buick	Roadmaster	Large	22.6	23.7	24.9	16	25	1
9	Buick	Riviera	Midsize	26.3	26.3	26.3	19	27	1
10	Cadillac	DeVille	Large	33	34.7	36.3	16	25	1
11	Cadillac	Seville	Midsize	37.5	40.1	42.7	16	25	2
12	Chevrolet	Cavalier	Compact	8.5	13.4	18.3	25	36	0
13	Chevrolet	Corsica	Compact	11.4	11.4	11.4	25	34	1
14	Chevrolet	Camaro	Sporty	13.4	15.1	16.8	19	28	2
15	Chevrolet	Lumina	Midsize	13.4	15.9	18.4	21	29	0
16	Chevrolet	Lumina APV	Van	14.7	16.3	18	18	23	0
17	Chevrolet	Astro	Van	14.7	16.6	18.6	15	20	0
18	Chevrolet	Caprice	Large	18	18.8	19.6	17	26	1

The menu across the top of the *Data Editor* page allows you to perform several important operations. To save data you have entered, select *File - Save File As*, which will display the following page:

**STATGRAPHICS STRATUS** Welcome myusername! [ Log Out ]

Home File Edit Plot Describe Compare Relate Forecast SPC DOE Statlets Help

**SAVE DATA FILE**

User files on server:

Save data file as:   Replace existing file if present

- STATGRAPHICS file (.sgd)
- Excel file (.xls)
- XML file without comments (.xml)
- Tab delimited text file
- Comma delimited text file
- Blank delimited text file
- Semicolon delimited text file

You may save data in any of the indicated formats. If you plan to use the data only with STATGRAPHICS, we recommend that you save it as a STATGRAPHICS *.sgd* file. SGD files are XML files designed to contain information in a format that can be easily manipulated by the statistical procedures. A typical example is shown below:

```
<?xml version="1.0"?>
<statgraphics_data>
  <FORMAT>
    <DateOrder>MDY</DateOrder>
    <DateSeparator>/</DateSeparator>
    <DecimalSymbol>.</DecimalSymbol>
  </FORMAT>
  <COLUMNS>
    <C1 name="Make" type="C"/>
    <C2 name="Model" type="C"/>
    <C3 name="Type" type="C"/>
    <C4 name="Min Price" type="N" comment="price for basic version in $1,000"/>
    <C5 name="Mid Price" type="N" comment="average of min and max prices"/>
  </COLUMNS>
  <ROW>
    <C1>Acura</C1>
    <C2>Integra</C2>
    <C3>Small</C3>
    <C4>12.9</C4>
    <C5>15.9</C5>
  </ROW>
  <ROW>
    <C1>Acura</C1>
    <C2>Legend</C2>
    <C3>Midsize</C3>
    <C4>29.2</C4>
    <C5>33.9</C5>
  </ROW>
</statgraphics_data>
```

It contains information about how the data is formatted, column names and comments, and the raw data. You can also edit SGD files in any text editor, provided you maintain the same basic format.

Other operations that you can perform in the spreadsheet data editor include:

1. **Pasting columns of data from other applications** – First copy data from the other applications to the system clipboard. In the Statgraphics data sheet,

highlight the location at which you wish to paste the data. Then click on the *Copy* button in the lower toolbar.

2. **Paging within large datasets** – To reduce the amount of information that must be sent between your browser and the server, large datasets are displayed in blocks. The default block size is controlled by the setting on the *Edit – Preferences* page. You can page between blocks using the arrows on the lower toolbar.
3. **Printing data** – Click on the printer icon on the lower toolbar to send a copy of the data to your printer.
4. **Cancel entries** – As you make changes to your data, they are changed within the browser but not sent to the server until:
  - a. You perform an operation such as selecting something from the menu that causes a new page to be posted.
  - b. You click on *Update* on the lower toolbar.To undo all input since the last post to the server, click on *Cancel* on the lower toolbar. NOTE: changes posted to the server are not permanent until you select *File - Save* from the top menu.
5. **Delete rows, columns or cells** – Highlight the data to be deleted and select *Delete* from the top menu.
6. **Insert rows, columns or cells** – Highlight the data after which space is to be added and select *Insert* from the top menu.
7. **Sort data** – Highlight a single column and select *Rows – Sort* to sort data according to the values in the highlighted column.

After you enter and save the data, press *Cancel* to return to the main page. The name of the saved file and a summary of its contents will be displayed:

Current data file: 93cars.sgd

Variable	Comment	Nonmissing Values	Numeric Values	Minimum	Maximum
Make		93	0	Acura	Volvo
Model		93	7	190E	Vision
Type		93	0	Compact	Van
Min Price	price for basic version in \$1,000	93	93	6.7	45.4
Mid Price	average of min and max prices	93	93	7.4	61.9
Max Price	price for premium version in \$1,000	93	93	7.9	80
MPG City	miles per gallon in city driving	93	93	15	46
MPG Highway	miles per gallon in highway driving	93	93	20	50
Air Bags	0=none, 1=driver only, 2=driver and passenger	93	93	0	2
Drive Train		93	0	all	rear
Cylinders		92	92	3	8
Engine Size	liters	93	93	1	5.7
Horsepower	maximum	93	93	55	300
RPM	revs per minutes at maximum horsepower	93	93	3800	6500
Revs per Mile	revs per mile in highest gear	93	93	1320	3755
Manual	no, 1=yes	93	93	0	1
Fuel tank	gallons	93	93	9.2	27
Passengers		93	93	2	8
Length	inches	93	93	141	219
Wheelbase	inches	93	93	90	119
Width	inches	93	93	60	78
U Turn Space	feet	93	93	32	45
Rear Seat	inches	91	91	19	36
Luggage	cu. ft.	82	82	6	22

The summary shows:

1. *Nonmissing values* – the number of rows in the column for which an entry has been made. Empty cells will be treated as missing values by the statistical procedures.
2. *Numeric values* – the number of rows in the column that have valid numeric entries. When performing a statistical operation that requires numeric values, only these cells will be used in the analysis.
3. *Minimum and maximum* – the smallest and largest values in the column. For columns with no numeric values, this is based on an alphanumeric comparison.

## 2.2 Opening a Sample Dataset

Statgraphics Software has provided a collection of sample datasets that may be loaded by selecting *File – Open Sample Dataset*. Choose the file to be loaded and press *Open Dataset*.

### OPEN SAMPLE DATASET

Select one of the following sample data sets:

<input checked="" type="radio"/> Automobile data	<input type="radio"/> Opinion survey
<input type="radio"/> Baseball statistics	<input type="radio"/> Orange juice cans
<input type="radio"/> Blood pressures	<input type="radio"/> Pulse rates
<input type="radio"/> Circuit boards	<input type="radio"/> Process data
<input type="radio"/> Cloth samples	<input type="radio"/> Resistivity of silicon wafers
<input type="radio"/> Defect checksheet	<input type="radio"/> Shelf life study
<input type="radio"/> Demographic data	<input type="radio"/> Shock absorber failures
<input type="radio"/> Election poll	<input type="radio"/> Stress test
<input type="radio"/> Glass bottles	<input type="radio"/> Temperatures & heart rates
<input type="radio"/> Golden Gate Bridge traffic	<input type="radio"/> Wafers
<input type="radio"/> Mendel's pea plants	<input type="radio"/> Widgets
<input type="radio"/> Monthly sales volumes	

## 2.3 Opening a User File

Users may also open data files from their client machine by selecting *File – Open User Data File – From Client*. This will display the page shown below:

### OPEN USER DATASET FROM CLIENT

Step 1: Select the file to open:  

Step 2: Select the file attributes (except for SGD files):

Header	<input type="radio"/> Column names <input checked="" type="radio"/> Column names and comments <input type="radio"/> None
Delimiter (text files only)	<input type="radio"/> Tab <input checked="" type="radio"/> Comma (,) <input type="radio"/> Space <input type="radio"/> Semicolon (;)
Decimal symbol	<input type="radio"/> period (.) <input checked="" type="radio"/> comma (,)
Date separator	<input checked="" type="radio"/> slash (/) <input type="radio"/> period (.) <input type="radio"/> dash (-)
Date format	<input type="radio"/> M D Y <input type="radio"/> D M Y <input checked="" type="radio"/> Y M D

Step 3: Press the Open File button to read the file:

Open in readonly mode

Press the *Browse* button to search your computer for the file that you wish to load. The program will automatically determine the file type from the file extension. Indicate options for the file by editing the following fields:

- *Header*: indicate whether the first row of the file contains names for each of the columns and whether the second row contains comments for each of the columns.
- *Delimiter*: for text files, indicate the character that is used as a delimiter to separate values for each column in a row.
- *Decimal symbol*: indicate the character used as the decimal symbol in numeric values.
- *Date separator*: indicate the character used to separate the month, day and year in dates.
- *Date format*: indicate the order in which the month, day and year occur in dates.

When you press *Open File*, the program will:

1. Upload a copy of the file to the STATGRAPHICS *stratus* server.
2. Make the selected data file the active file for access by the statistical procedures.

You will then be returned to the main page.

NOTES:

1. If you wish to restrict the program (and yourself) from making changes to the input file, select *Open in readonly mode*. You will still be able to display the data in the data editor, but you will not be able to make changes to it.
2. If you open an Excel file, only the data in the first sheet of the Excel workbook will be copied to the server and loaded. If you make changes to the file and resave it on the server, please remember that it contains only that one sheet.

## **2.4 Formatting Data**

When you read data from external files (non-STATGRAPHICS files), the data is assumed to follow the formatting conventions indicated on the dialog box shown above. When you type data into the Data Editor, you should use the format appropriate for your current locale. You can specify a different format for the statistical output if desired by changing the setting under *Edit – Set Preferences* on the main menu.

## **2.5 Managing Data Files**

The *File* menu contains a selection titled *Manage Data Files* that allows you to perform common operations on user data files that have been saved on the server. It displays the page shown below:

### MANAGE DATA FILES

User files on server: test1.sgd ▼

Okay to delete file

New name:

Replace existing file if present

User files on client:

Replace existing file if present

The buttons perform the following operations:

- **Rename** – To rename a file, select the file you wish to rename from the drop down list. Then enter a new name for the file. NOTE: since this option does not change the contents of the file, the file extension should usually not be changed.
- **Copy** – To create a copy of a file, select the file you wish to copy from the drop down list. Then enter a name for the new file. NOTE: since this option does not change the contents of the file, the file extension of the new file should usually be the same as the original file.
- **Delete** – To delete a file, select the file you wish to copy from the drop down list. Check the *Okay to delete file* box and press *Delete*.
- **Download** – This option is designed to allow you to download a file from the server to your client computer. Select the file you wish to copy from the drop down list. When you press download, a link will be added to the page specifying the URL necessary to access that file. You can then use your browser's capabilities to download the file to your computer.
- **Upload** - This option is designed to allow you to upload a file from your client computer to the server. Use the *Browse* button to locate the file you wish to upload and then press *Upload*.

## Chapter 3: Selecting System Preferences

The *Edit* menu contains a selection titled *Set Preferences* that allows you to change the default settings used by STATGRAPHICS *stratus*. It consists of multiple pages, each similar to the page shown below:

The screenshot shows the 'SET PREFERENCES' dialog box with the 'General Settings' page selected. The dialog has a dark blue sidebar on the left with the following menu items: General Settings (selected), Internationalization, Fonts, Graphics, Fills, Lines, and Points. The main area contains a table of settings:

Setting	Value
Significant digits	<input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input checked="" type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10
Default confidence level	<input type="radio"/> 90% <input checked="" type="radio"/> 95% <input type="radio"/> 99%
Rows to display in tables	1000
Table width in characters	120
StatAdvisor	<input type="radio"/> Tables <input type="radio"/> Graphs <input checked="" type="radio"/> Both <input type="radio"/> None
Data editor page size	<input type="radio"/> 10 rows <input checked="" type="radio"/> 25 rows <input type="radio"/> 50 rows <input type="radio"/> 100 rows <input type="radio"/> 250 rows
Main Tab	<input checked="" type="radio"/> Display summary <input type="radio"/> Display data
Analysis Output	<input checked="" type="radio"/> Main tab <input type="radio"/> New tab

At the bottom of the dialog are buttons for 'Save', 'Cancel', and 'Color Table: Foreground Background'.

### 3.1 General Settings

The *General Settings* page allows you to specify the following settings:

- *Significant digits* – the number of significant digits shown when displaying numeric values.
- *Default confidence level* – the confidence level used by default when creating interval estimates and hypothesis tests, and that used by the StatAdvisor when interpreting statistical results.
- *Rows to display in tables* – the maximum number of rows displayed when a table is created. This prevents tables from becoming excessively large when analyzing large datasets.
- *Table width in characters* – the maximum number of characters displayed across the page when outputting a table. Tables exceeding this width will be displayed in multiple segments.

- *StatAdvisor* – controls whether StatAdvisor information is displayed after tables and graphs. The StatAdvisor interprets the statistical output.
- *Data editor page size* – the number of rows displayed at one time within the spreadsheet data editor.
- *Main tab* – whether the default format for the home page is a summary of the variables in the data file or a listing of the actual data.
- *Analysis output* – whether each statistical analysis is displayed in the same main tab of the web browser as the home page or displayed using a new tab.

### 3.2 Internationalization

SET PREFERENCES		
<a href="#">General Settings</a> <b><a href="#">Internationalization</a></b> <a href="#">Fonts</a> <a href="#">Graphics</a> <a href="#">Fills</a> <a href="#">Lines</a> <a href="#">Points</a>	Output language	<input checked="" type="radio"/> English <input type="radio"/> French <input type="radio"/> German <input type="radio"/> Italian <input type="radio"/> Spanish
	Decimal symbol	<input checked="" type="radio"/> period (.) <input type="radio"/> comma (,)
	Date separator	<input checked="" type="radio"/> slash (/) <input type="radio"/> period (.) <input type="radio"/> dash (-)
	Date format	<input type="radio"/> m d yy <input checked="" type="radio"/> m d yyyy <input type="radio"/> d m yy <input type="radio"/> d m yyyy <input type="radio"/> yy m d <input type="radio"/> yyyy m d <input type="radio"/> mm dd yy <input type="radio"/> mm dd yyyy <input type="radio"/> dd mm yy <input type="radio"/> dd mm yyyy <input type="radio"/> yy mm dd <input type="radio"/> yyyy mm dd
Save	Cancel	Color Table: <input type="button" value="Foreground"/> <input type="button" value="Background"/>

- *Output language* – the language used in output tables and graphs. Currently, input pages are only available in English.
- *Decimal separator* – the decimal separator to be used in displaying *output*. All numeric values on *input* pages and in user data files are assumed to follow the conventions of the current locale setting for your computer.
- *Date separator* - the date separator to be used in displaying *output*. All date and date-time values on *input* pages and in user data files are assumed to follow the conventions of the current locale setting for your computer.
- *Date format* - the format for months, days and years to be used in displaying *output*. A double letter such as *mm* requests that numbers below 10 be written with a leading zero. All date and date-time values on *input* pages and in user data files are assumed to follow the conventions of the current locale setting for your computer.

### 3.3 Fonts

**SET PREFERENCES**

General Settings  
Internationalization  
**Fonts**  
Graphics  
Fills  
Lines  
Points

	Font	Bold	Italic	Color	Size
Tables	Calibri	<input type="checkbox"/>	<input type="checkbox"/>	Black	3
Graphs	Calibri	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Black	10

Save Cancel Color Table: Foreground Background

This page controls the fonts used when outputting tables and graphs. Press the *Foreground* button to display the available colors that may be selected in the dropdown lists:

AliceBlue	AntiqueWhite	Aqua	Aquamarine	Azure
Beige	Bisque	Black	BlanchedAlmond	Blue
BlueViolet	Brown	BurlyWood	CadetBlue	Chartreuse
Chocolate	Coral	CornflowerBlue	Cornsilk	Crimson
Cyan	DarkBlue	DarkCyan	DarkGoldenrod	DarkGray
DarkGreen	DarkKhaki	DarkMagenta	DarkOliveGreen	DarkOrange
DarkOrchid	DarkRed	DarkSalmon	DarkSeaGreen	DarkSlateBlue
DarkSlateGray	DarkTurquoise	DarkViolet	DeepPink	DeepSkyBlue
DimGray	DodgerBlue	Firebrick	FloralWhite	ForestGreen
Fuchsia	Gainsboro	GhostWhite	Gold	Goldenrod
Gray	Green	GreenYellow	Honeydew	HotPink
IndianRed	Indigo	Ivory	Khaki	Lavender
LavenderBlush	LawnGreen	LemonChiffon	LightBlue	LightCoral
LightCyan	LightGoldenrodYellow	LightGray	LightGreen	LightPink
LightSalmon	LightSeaGreen	LightSkyBlue	LightSlateGray	LightSteelBlue
LightYellow	Lime	LimeGreen	Linen	Magenta
Maroon	MediumAquamarine	MediumBlue	MediumOrchid	MediumPurple
MediumSeaGreen	MediumSlateBlue	MediumSpringGreen	MediumTurquoise	MediumVioletRed
MidnightBlue	MintCream	MistyRose	Moccasin	NavajoWhite
Navy	OldLace	Olive	OliveDrab	Orange
OrangeRed	Orchid	PaleGoldenrod	PaleGreen	PaleTurquoise
PaleVioletRed	PapayaWhip	PeachPuff	Peru	Pink
Plum	PowderBlue	Purple	Red	RosyBrown
RoyalBlue	SaddleBrown	Salmon	SandyBrown	SeaGreen
SeaShell	Sienna	Silver	SkyBlue	SlateBlue
SlateGray	Snow	SpringGreen	SteelBlue	Tan
Teal	Thistle	Tomato	Turquoise	Violet
Wheat		WhiteSmoke	Yellow	YellowGreen

### 3.4 Graphics

SET PREFERENCES		
<a href="#">General Settings</a> <a href="#">Internationalization</a> <a href="#">Fonts</a> <b><a href="#">Graphics</a></b> <a href="#">Fills</a> <a href="#">Lines</a> <a href="#">Points</a>	Graph width	740
	Graph height	480
	Function resolution	101
	Contour plot resolution	21
	Graph background color	White
	Graph border color	LightGray
	3D effects	<input type="checkbox"/> frame <input type="checkbox"/> filled areas
Save	Cancel	Color Table: <input type="button" value="Foreground"/> <input type="button" value="Background"/>

- *Graph width and height* – the size of graphs in pixels.
- *Function resolution* – the number of X values at which functions will be evaluated when drawn on a graph. Higher resolution results in smoother curves.
- *Contour plot resolution* – the number of X and Y values at which a function will be evaluated when contour plots are created. Higher resolution results in smoother divisions between the contour levels.
- *Graph background color* – the color displayed within the axes of a graph.
- *Graph border color* – the color displayed outside the axes of a graph.
- *3D effects* – whether 3D effects are used around the frame of a graph and when displaying filled areas such as bars and pie slices.

Press the *Background* button to display the available colors that may be selected in the dropdown lists:

AliceBlue	AntiqueWhite	Aqua	Aquamarine	Azure
Beige	Bisque	Black	BlanchedAlmond	Blue
BlueViolet	Brown	BurlyWood	CadetBlue	Chartreuse
Chocolate	Coral	CornflowerBlue	Cornsilk	Crimson
Cyan	DarkBlue	DarkCyan	DarkGoldenrod	DarkGray
DarkGreen	DarkKhaki	DarkMagenta	DarkOliveGreen	DarkOrange
DarkOrchid	DarkRed	DarkSalmon	DarkSeaGreen	DarkSlateBlue
DarkSlateGray	DarkTurquoise	DarkViolet	DeepPink	DeepSkyBlue
DimGray	DodgerBlue	Firebrick	FloralWhite	ForestGreen
Fuchsia	Gainsboro	GhostWhite	Gold	Goldenrod
Gray	Green	GreenYellow	Honeydew	HotPink
IndianRed	Indigo	Ivory	Khaki	Lavender
LavenderBlush	LawnGreen	LemonChiffon	LightBlue	LightCoral
LightCyan	LightGoldenrodYellow	LightGray	LightGreen	LightPink
LightSalmon	LightSeaGreen	LightSkyBlue	LightSlateGray	LightSteelBlue
LightYellow	Lime	LimeGreen	Linen	Magenta
Maroon	MediumAquamarine	MediumBlue	MediumOrchid	MediumPurple
MediumSeaGreen	MediumSlateBlue	MediumSpringGreen	MediumTurquoise	MediumVioletRed
MidnightBlue	MintCream	MistyRose	Moccasin	NavajoWhite
Navy	OldLace	Olive	OliveDrab	Orange
OrangeRed	Orchid	PaleGoldenrod	PaleGreen	PaleTurquoise
PaleVioletRed	PapayaWhip	PeachPuff	Peru	Pink
Plum	PowderBlue	Purple	Red	RosyBrown
RoyalBlue	SaddleBrown	Salmon	SandyBrown	SeaGreen
SeaShell	Sienna	Silver	SkyBlue	SlateBlue
SlateGray	Snow	SpringGreen	SteelBlue	Tan
Teal	Thistle	Tomato	Turquoise	Violet
Wheat	White	WhiteSmoke	Yellow	YellowGreen

### 3.5 Fills

**SET PREFERENCES**

<a href="#">General Settings</a> <a href="#">Internationalization</a> <a href="#">Fonts</a> <a href="#">Graphics</a> <b><a href="#">Fills</a></b> <a href="#">Lines</a> <a href="#">Points</a>		Select new color: LightGreen	Select new type: Solid
	<input checked="" type="radio"/> Fill set #1	LightGreen	Solid
	<input type="radio"/> Fill set #2	DarkBlue	Solid
	<input type="radio"/> Fill set #3	ForestGreen	Solid
	<input type="radio"/> Fill set #4	LightGreen	Solid
	<input type="radio"/> Fill set #5	DarkOrange	Solid
	<input type="radio"/> Fill set #6	PaleTurquoise	Solid
	<input type="radio"/> Fill set #7	Teal	Solid
	<input type="radio"/> Fill set #8	Olive	Solid
	<input type="radio"/> Fill set #9	Khaki	Solid
	<input type="radio"/> Fill set #10	SteelBlue	Solid
	<input type="radio"/> Fill set #11	Tomato	Solid
	<input type="radio"/> Fill set #12	DarkOrchid	Solid
	<input type="radio"/> Fill set #13	SlateGray	Solid
	<input type="radio"/> Fill set #14	Goldenrod	Solid
	<input type="radio"/> Fill set #15	Purple	Solid
	<input type="radio"/> Fill set #16	Chocolate	Solid
	<input type="radio"/> Fill set #17	SpringGreen	Solid
	<input type="radio"/> Fill set #18	Coral	Solid
	<input type="radio"/> Fill set #19	Yellow	Solid
	<input type="radio"/> Fill set #20	LawnGreen	Solid
	Defaults	Defaults	

Save Cancel Color Table: Foreground Background

Graphs may contain up to 20 different types of filled areas. You may change the color and/or type of fill used in each area.

### 3.6 Lines

**SET PREFERENCES**

<a href="#">General Settings</a> <a href="#">Internationalization</a> <a href="#">Fonts</a> <a href="#">Graphics</a> <a href="#">Fills</a> <b><a href="#">Lines</a></b> <a href="#">Points</a>	Thickness: <input type="text" value="1"/>	Select new color: <input type="text" value="Blue"/>	Select new type: <input type="text" value="Solid"/>
	<input checked="" type="radio"/> Line set #1	Blue	Solid
	<input type="radio"/> Line set #2	Red	Solid
	<input type="radio"/> Line set #3	Fuchsia	Solid
	<input type="radio"/> Line set #4	Black	Solid
	<input type="radio"/> Line set #5	Olive	Solid
	<input type="radio"/> Line set #6	Gray	Solid
	<input type="radio"/> Line set #7	Purple	Solid
	<input type="radio"/> Line set #8	Aqua	Solid
	<input type="radio"/> Line set #9	SlateBlue	Solid
	<input type="radio"/> Line set #10	Maroon	Solid
	<input type="radio"/> Line set #11	Navy	Solid
	<input type="radio"/> Line set #12	Teal	Solid
	<input type="radio"/> Line set #13	Silver	Solid
	<input type="radio"/> Line set #14	Red	Solid
	<input type="radio"/> Line set #15	Green	Solid
	<input type="radio"/> Line set #16	DarkGray	Solid
	<input type="radio"/> Line set #17	DarkOrange	Solid
	<input type="radio"/> Line set #18	DarkCyan	Solid
	<input type="radio"/> Line set #19	Black	Solid
	<input type="radio"/> Line set #20	SaddleBrown	Solid
	<input type="button" value="Defaults"/>	<input type="button" value="Defaults"/>	

Color Table:

Graphs may contain up to 20 different line types. You may change the color and/or type of each line.

### 3.7 Points

**SET PREFERENCES**

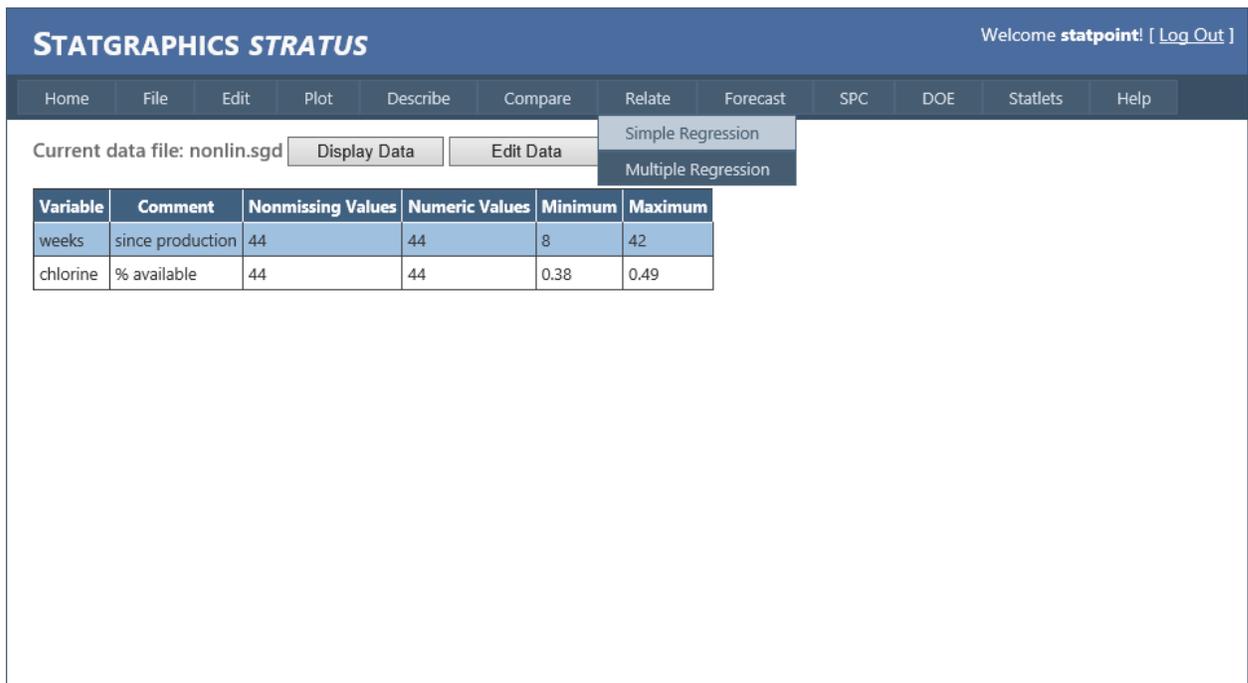
<a href="#">General Settings</a> <a href="#">Internationalization</a> <a href="#">Fonts</a> <a href="#">Graphics</a> <a href="#">Fills</a> <a href="#">Lines</a> <b>Points</b>	Size: <input type="text" value="3"/>	Select new color: <input type="text" value="Blue"/>	Select new type: <input type="text" value="Circle"/>
	<input checked="" type="radio"/> Point set #1	Blue	Circle
	<input type="radio"/> Point set #2	Red	X
	<input type="radio"/> Point set #3	Fuchsia	Circle
	<input type="radio"/> Point set #4	Black	Plus
	<input type="radio"/> Point set #5	Olive	Diamond
	<input type="radio"/> Point set #6	Gray	Asterisk
	<input type="radio"/> Point set #7	Purple	Triangle
	<input type="radio"/> Point set #8	Aqua	InvertedTriangle
	<input type="radio"/> Point set #9	SlateBlue	Square
	<input type="radio"/> Point set #10	Maroon	X
	<input type="radio"/> Point set #11	Navy	Circle
	<input type="radio"/> Point set #12	Teal	Plus
	<input type="radio"/> Point set #13	Silver	Diamond
	<input type="radio"/> Point set #14	Red	Asterisk
	<input type="radio"/> Point set #15	Green	Triangle
	<input type="radio"/> Point set #16	DarkGray	InvertedTriangle
	<input type="radio"/> Point set #17	DarkOrange	Square
	<input type="radio"/> Point set #18	DarkCyan	X
	<input type="radio"/> Point set #19	Black	Circle
	<input type="radio"/> Point set #20	SaddleBrown	Plus
	<input type="button" value="Defaults"/>	<input type="button" value="Defaults"/>	

Color Table:

Graphs may contain up to 20 different point types. You may change the size, color and/or type of each point set.

## Chapter 4 – Running Statistical Procedures

The main menu provides access to a large collection of statistical procedures. After opening the file containing the data you wish to analyze, use the menu to select the desired procedure. For example, suppose you wished to analyze the data contained in the sample dataset titled “Shelf Life Study”. This dataset contains 44 samples of a product. For each sample, the number of weeks since it was produced is recorded, as is the concentration of chlorine. Select *File – Open Sample Dataset* to open the desired file. Then select *Relate – Simple Regression* from the main menu, as shown below:



The screenshot shows the STATGRAPHICS STRATUS software interface. The title bar reads "STATGRAPHICS STRATUS" and "Welcome statpoint! [ Log Out ]". The main menu includes: Home, File, Edit, Plot, Describe, Compare, Relate, Forecast, SPC, DOE, Statlets, and Help. The "Relate" menu is open, showing "Simple Regression" and "Multiple Regression" options. Below the menu, the current data file is "nonlin.sgd", with "Display Data" and "Edit Data" buttons. A data summary table is displayed below the buttons.

Variable	Comment	Nonmissing Values	Numeric Values	Minimum	Maximum
weeks	since production	44	44	8	42
chlorine	% available	44	44	0.38	0.49

### 4.1 Data Input

Whenever you select a statistical procedure from the main menu, a page will be displayed on which to specify the columns containing the data that you wish to analyze. The initial page for the *Simple Regression* procedure is shown below:

**SIMPLE REGRESSION**

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

Data Input Analysis Options Tables and Graphs Results to Save Output

Dependent variable (Y): chlorine Edit

Independent variable (X): weeks Edit

(Select:) Help

You can specify the name of a variable in either of two ways:

1. Press the arrow to dropdown the list of variables and select the desired column.
2. Press the *Edit* button to the right of the column to display an edit field to the right of the button, as shown below:

**SIMPLE REGRESSION**

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

Data Input Analysis Options Tables and Graphs Results to Save Output

Dependent variable (Y): LOG(chlorine) <--- LOG(chlorine)

Independent variable (X): weeks Edit

(Select:) Help

You can type any valid STATGRAPHICS expression into the edit field, such as the expression above which will calculate the natural logarithms of *chlorine*. Then press the arrow button to put the edit field contents into the dropdown list.

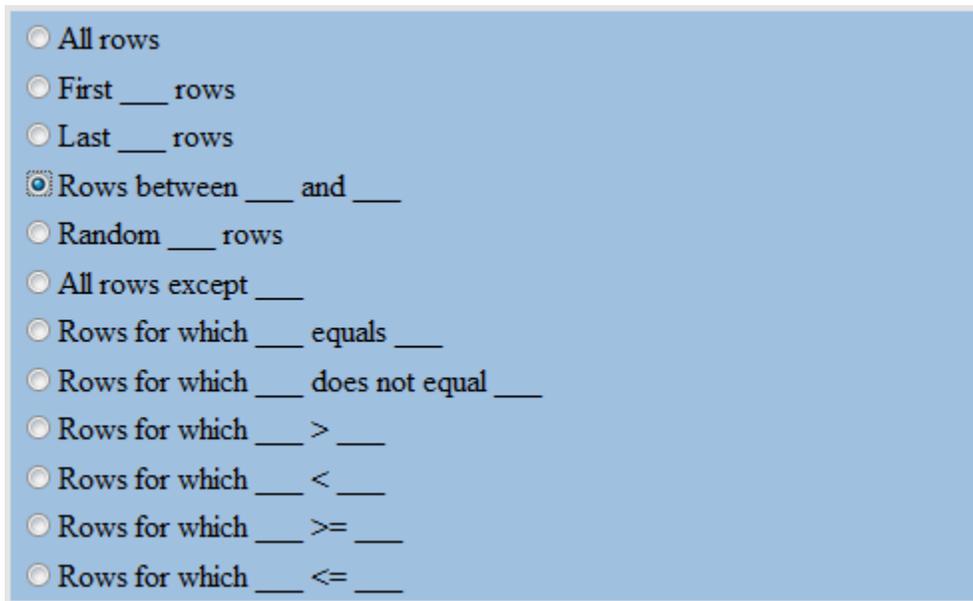
STATGRAPHICS expressions are described in detail in the document [STATGRAPHICS Operators.pdf](#).

Each *Data Input* page also contains a *Select* field, which can be used to select a subset of the rows in the file. Typical entries include:

<i>Entry</i>	<i>Use</i>	<i>Example</i>
FIRST (k)	Selects the first <i>k</i> rows.	FIRST(25)
LAST (k)	Selects the last <i>k</i> rows.	LAST(25)
ROWS (start,end)	Selects rows between <i>start</i> and <i>end</i> , inclusive.	ROWS(21,30)

RANDOM (k)	Selects a random set of <i>k</i> rows.	RANDOM(25)
EXCLUDE(k)	Selects all rows except row <i>k</i> .	EXCLUDE(25)
column = value	Selects only rows for which <i>column</i> equals <i>value</i> .	weeks = 30
column <> value	Selects only rows for which <i>column</i> does not equal <i>value</i> .	weeks <> 30
column > value	Selects only rows for which <i>column</i> is greater than <i>value</i> .	weeks > 30
column < value	Selects only rows for which <i>column</i> is less than <i>value</i> .	weeks < 30
column >= value	Selects only rows for which <i>column</i> is greater than or equal to <i>value</i> .	weeks >= 30
column <= value	Selects only rows for which <i>column</i> is less than or equal to <i>value</i> .	weeks <= 30
condition1 & condition2	Selects only rows that meet both conditions.	weeks >= 20 & weeks <= 40
condition1   condition2	Selects only rows that meet at least one of the conditions.	weeks = 30   weeks = 40

If you push the *Help* button next to the *Select* field, it will display a list showing typical structures:



If you select a radio button and then press *Help* again, an entry will be placed in the *Select* field as shown below:

(Select) ROWS(???.???)

Replace any ???'s with your desired entries.

## 4.2 Analysis Options

After specifying the columns containing the data to be analyzed, click on the *Analysis Options* button to display a second page containing overall options for the selected statistical procedure:

**SIMPLE REGRESSION**

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

**Data Input** | **Analysis Options** | **Tables and Graphs** | **Results to Save** | **Output**

**Model:**

<input checked="" type="radio"/> Linear	<input type="radio"/> Squared-Y Square Root-X	<input type="radio"/> Double Reciprocal
<input type="radio"/> Square-Root Y	<input type="radio"/> Logarithmic-X	<input type="radio"/> Squared-Y Reciprocal-X
<input type="radio"/> Exponential	<input type="radio"/> Square Root-Y Logarithmic-X	<input type="radio"/> Squared-X
<input type="radio"/> Reciprocal-Y	<input type="radio"/> Multiplicative	<input type="radio"/> Square Root-Y Squared-X
<input type="radio"/> Squared-Y	<input type="radio"/> Reciprocal-Y Log-X	<input type="radio"/> Log-Y Squared-X
<input type="radio"/> Square Root-X	<input type="radio"/> Squared-Y Log-X	<input type="radio"/> Reciprocal-Y Squared-X
<input type="radio"/> Double Square Root	<input type="radio"/> Reciprocal-X	<input type="radio"/> Double Reciprocal
<input type="radio"/> Log-Y Square Root-X	<input type="radio"/> Square Root-Y Reciprocal-X	<input type="radio"/> Logistic
<input type="radio"/> Reciprocal-Y Square Root-X	<input type="radio"/> S-Curve	<input type="radio"/> Log Probit

**Include constant in model**

**Alternative Fit:**

<input checked="" type="radio"/> None (least squares only)
<input type="radio"/> Minimum absolute deviations
<input type="radio"/> Use medians of 3 groups

You can stick with the default settings or make any desired changes.

## 4.3 Tables and Graphs

The third page lists all of the tables and graphs that can be generated by the selected statistical procedure, together with any options:

## SIMPLE REGRESSION

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

Data Input	Analysis Options	Tables and Graphs	Results to Save	Output
------------	------------------	-------------------	-----------------	--------

Tables/Graphs	All	Clear	Options										
<input checked="" type="checkbox"/> Analysis Summary													
<input checked="" type="checkbox"/> Plot of Fitted Model <b>Titles and Scaling</b>			Plot: <input checked="" type="radio"/> All models <input type="radio"/> Least squares fit only <input type="radio"/> Alternative fit only X-axis resolution: <input type="text" value="101"/> Include: <input checked="" type="checkbox"/> Prediction limits <input checked="" type="checkbox"/> Confidence limits Confidence level: <input type="text" value="95"/> % <input checked="" type="radio"/> Two-sided interval <input type="radio"/> Lower bound <input type="radio"/> Upper bound										
<input type="checkbox"/> Forecasts			Forecast at X: <table border="1"><tr><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td><input type="text"/></td><td><input type="text"/></td></tr></table> Type of limits: <input checked="" type="radio"/> Two-sided interval <input type="radio"/> Lower bound <input type="radio"/> Upper bound Confidence level: <input type="text" value="95"/> %	<input type="text"/>									
<input type="text"/>	<input type="text"/>												
<input type="text"/>	<input type="text"/>												
<input type="text"/>	<input type="text"/>												
<input type="text"/>	<input type="text"/>												
<input type="text"/>	<input type="text"/>												
<input type="checkbox"/> Observed versus Predicted <b>Titles and Scaling</b>													
<input type="checkbox"/> Lack-of-Fit Test													
<input type="checkbox"/> Comparison of Alternative Models													
<input type="checkbox"/> Unusual Residuals													
<input type="checkbox"/> Residuals versus X <b>Titles and Scaling</b>			<input type="radio"/> Residuals <input checked="" type="radio"/> Studentized residuals <input type="radio"/> Residuals from alternative model Smoother: <input checked="" type="radio"/> None <input type="radio"/> Running means <input type="radio"/> Running lines <input type="radio"/> LOWESS <input type="radio"/> Robust LOWESS Smoothing fraction: <input type="text" value="50"/> %										

Press *All* to select all of the available output, or check only the tables and graphs that you want.

For each graph, there is a button labeled *Titles and Scaling* that allows you to override the default selections. These buttons display the page shown below:

Graphics Options for		Plot of Fitted Model			(leave blank for defaults)		Return	Cancel
Item	Text	Scale From	Scale To	Scale By	Skip Increment	Options		
Title	<input type="text"/>							
Subtitle	<input type="text"/>							
X-axis	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/> Log scale <input type="checkbox"/> Powers of 10 <input type="checkbox"/> No power <input type="checkbox"/> Skip repeats <input type="checkbox"/> Rotate tickmarks		
Y-axis	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/> Log scale <input type="checkbox"/> Powers of 10 <input type="checkbox"/> No power <input type="checkbox"/> Skip repeats		
Z-axis	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/> Log scale <input type="checkbox"/> Powers of 10 <input type="checkbox"/> No power <input type="checkbox"/> Skip repeats		
Right-axis	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/> Log scale <input type="checkbox"/> Powers of 10 <input type="checkbox"/> No power <input type="checkbox"/> Skip repeats		
Legend title	<input type="text"/>	X offset: <input type="text" value="1.1"/>						
		Y offset: <input type="text" value="1.0"/>						

To override the title or scaling for an axis, enter the desired information. Otherwise, default settings will be applied. Some of the special options available on this page are:

- *Log scale* – Check this box to draw an axis using a logarithmic scale. Note that graphs on which logarithmic scaling does not make sense will ignore this setting.

- *Powers of 10* – Check this box to draw an axis using an alternative logarithmic scale where the tickmarks are all powers of 10. Note that graphs on which logarithmic scaling does not make sense will ignore this setting.
- *No power* – Check this box to suppress scaling axes using a notation such as (*X 1000*) for very large or very small numbers.
- *Skip repeats* – Check this box to indicate that consecutive axis labels that are identical should not be drawn. This applies only to non-numeric axes.
- *X and Y offset* – This indicates the desired position of the legend block (if any) with respect to the axes. For offset purposes, the axes are considered to extend from (0, 0) at the bottom left corner to (1, 1) at the upper right corner. A value such as 1.1 for the X offset indicates that the legend block should be offset by 10% to the right of the axes. If a legend block is partially offscreen, use this setting and the page margins to adjust its position.

Additional fields are displayed in the lower half of the page:

**Grid direction:**

None
  Horizontal
  Vertical
  Bidirectional

---

**Margins:**

Top:	Bottom:	Left:	Right:
<input type="text" value="22.0"/>	<input type="text" value="22.0"/>	<input type="text" value="22.0"/>	<input type="text" value="22.0"/>
%	%	%	%

---

**3D Viewpoint:**

Horizontal angle:	Vertical angle:
<input type="text" value="20"/>	<input type="text" value="20"/>

---

**Jittering**

X axis:	Y axis:	Z axis:
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text"/>
%	%	%

The fields include:

- *Grid* – the direction of an optional grid that may be added to the plot.

- *Margins* – This indicates the offset of each axis from the edge of the graphics drawing area.
- *3D viewpoint* – These angles specify the location of the viewer with respect to the origin of a 3D graph. Increasing the angles moves the viewer farther to the right and farther above the graph.
- *Jittering* – the percentage by which point symbols are jittered with respect to each axis. Jittering adds a random offset to each point to reduce overplotting when there are identical data values.

Press *Return* to redraw the plot with the new features or *Cancel* to abandon any new entries.

## 4.4 Results to Save

The *Results to Save* button indicates which results, if any, should be saved for later access:

**SIMPLE REGRESSION**

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

Data Input   Analysis Options   Tables and Graphs   **Results to Save**   Output

Result to Save	Column name
<input checked="" type="checkbox"/> Predicted values	PREDICTED
<input checked="" type="checkbox"/> Lower limits for predictions	LOWERPLIMS
<input checked="" type="checkbox"/> Upper limits for predictions	UPPERPLIMS
<input type="checkbox"/> Lower limits for forecast means	LOWERCLIMS
<input type="checkbox"/> Upper limits for forecast means	UPPERCLIMS
<input type="checkbox"/> Residuals	RESIDUALS
<input type="checkbox"/> Studentized residuals	SRESIDUALS
<input type="checkbox"/> Leverages	LEVERAGES
<input type="checkbox"/> Predictions from resistant model	ALTPREDICTED
<input type="checkbox"/> Residuals from resistant model	ALTRESIDUALS
<input type="checkbox"/> Model statistics	MODELSTATS
<input type="checkbox"/> Model statistics identifiers	STATLABELS

When results are saved, they are placed in an XML file and a link to that file is added to the bottom of the output page. In addition, the results are loaded into the second page of the *Data Editor*.

## 4.5 Output

Once all desired options have been selected, press the *Output* button to begin the statistical calculations. An XML script is automatically created and sent to the server. The server reads the indicated data, performs the calculations, and sends back an HTML page to the web browser for display. The HTML page contains tabular output and imbedded images, as in the example below:

**SIMPLE REGRESSION**

This procedure fits a linear or nonlinear model relating a dependent variable Y to an independent variable X. [Documentation](#)

Data Input
Analysis Options
Tables and Graphs
Results to Save
Output

**Statgraphics stratus**  
Generated: 4/1/2015 7:10:55 PM

**Data file: nonlin.sgd**

**Simple Regression - chlorine vs. weeks**  
Dependent variable: chlorine (% available)  
Independent variable: weeks (since production)  
Linear model:  $Y = a + b \cdot X$

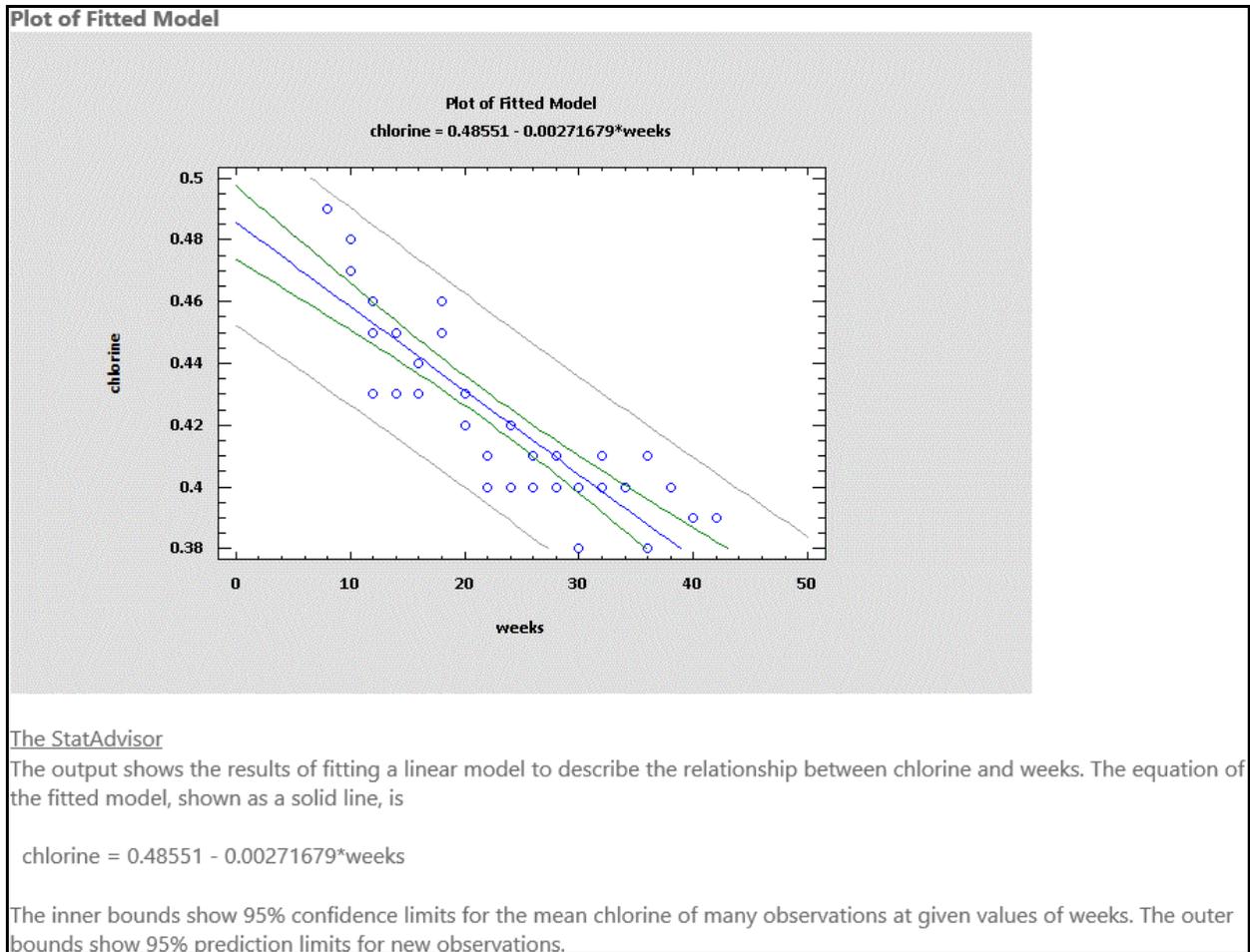
**Coefficients**

	<i>Least Squares</i>	<i>Standard</i>	<i>T</i>	
<i>Parameter</i>	<i>Estimate</i>	<i>Error</i>	<i>Statistic</i>	<i>P-Value</i>
Intercept	0.48551	0.00589066	82.4204	0.0000
Slope	-0.00271679	0.000243115	-11.1749	0.0000

**Analysis of Variance**

<i>Source</i>	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F-Ratio</i>	<i>P-Value</i>
Model	0.0295587	1	0.0295587	124.88	0.0000
Residual	0.00994133	42	0.000236698		
Total (Corr.)	0.0395	43			

Correlation Coefficient = -0.865055  
R-squared = 74.8321 percent  
R-squared (adjusted for d.f.) = 74.2328 percent  
Standard Error of Est. = 0.015385  
Mean absolute error = 0.012834  
Durbin-Watson statistic = 0.992081 (P= 0.0001 )  
Lag 1 residual autocorrelation = 0.451981



The StatAdvisor

The output shows the results of fitting a linear model to describe the relationship between chlorine and weeks. The equation of the fitted model, shown as a solid line, is

$$\text{chlorine} = 0.48551 - 0.00271679 * \text{weeks}$$

The inner bounds show 95% confidence limits for the mean chlorine of many observations at given values of weeks. The outer bounds show 95% prediction limits for new observations.

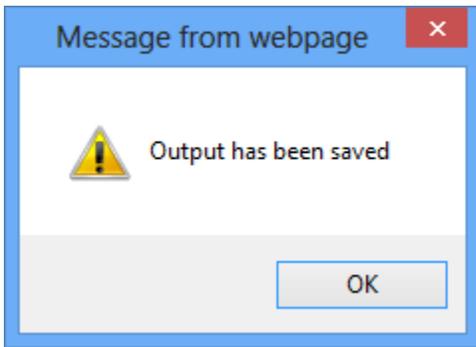
Once in the browser, you can scroll through the output. You can also use the browser to print the output, copy it to your system's clipboard, or save the graphics images on your computer.

## 4.6 Preferences

At any time while in a statistical procedure, you can press the *Preferences* from the top menu to change system preferences. This accesses each of the pages described earlier in Chapter 3, which include settings such as the output language. If the *Output* button has already been pressed, it will be executed again using the new settings.

## 4.7 Add to Session Logfile

If you wish to save the current output to the session logfile, select *Add to Session Logfile* from the top menu. All the tables and graphs currently displayed in the *Output* page will be added to the session log and a message similar to that shown below will appear:



When finished with the current analysis, you may return to the *Home* page and select *File – Manage Session Logfiles* to display the contents of the session log.

## 4.8 Save Script

If you wish to view or save the XML script used to create the current statistical output, select *Save Script* from the top menu. This will display the following page:

A screenshot of a web page titled "SAVE SCRIPT". It features a dropdown menu labeled "User scripts on server:" with "myscript.sgs" selected. Below this is a text input field labeled "Save script as:" containing the text "myscript". To the right of the input field is a checked checkbox labeled "Replace existing script if present". At the bottom, there are two buttons: "Save Script" and "Return". Below the buttons is a blue hyperlink labeled "Display Script".

Scripts contain instructions about the statistical analysis to be performed, the input data, and the desired output. They are normally saved with the extension *.sgs*. Once a script has been saved, it can be executed again at a later time by selecting *File - Execute Script* from the main menu. The next chapter describes scripts in more detail.

## Chapter 5 – Working with Scripts

The instructions sent to the server when the *Output* button is pressed within a statistical procedure are contained in an XML script. The script tells the .NET Web Services where to locate the data to be analyzed, which procedure to execute, and what options are desired. As outlined in Chapter 4, these scripts may be saved for later reexecution.

A typical script contains several sections. The top section indicates the identity of the script and specifies the values of any global settings:

```
<?xml version="1.0" ?>
<statgraphics>
  <globals>
    <BorderColor Value="SpringGreen" />
    <InputDateFormat Value="M/D/YYYY" />
    <OutputDateFormat Value="M/D/YYYY" />
    <ThreeDFrameEffects Value="Yes" />
    <FillColor1 Value="SteelBlue" />
    <PointType1 Value="Plus" />
  </globals>
```

Each global setting is followed by its desired value.

The second section of the script indicates the name of the data source and information about how the data is formatted:

```
<data Alias="nonlin.xml" Source="temp/nonlin.sgd">
  <DecimalSeparator Value="." />
  <DateFormat Value="M/D/YYYY" />
  <MissingValue Value="" />
</data>
```

The *Alias* is the name of the original data file. *Source* specifies the relative location where the data is stored on the server. Data not contained in STATGRAPHICS .SGD files on the server are copied to a STATGRAPHICS data file when first loaded.

The last part of the script specifies information about the procedure to be run:

```
<proc name="SREG">
  <input>
    <Y Value="chlorine" />
    <X Value="weeks" />
  </input>
  <options>
    <Model Value="SquaredYReciprocalX" />
```

```

</options>
<output>
  <table Name="Summary" />
  <graph Name="Model">
    <Resolution Value="101" />
  </graph>
  <table Name="Forecasts">
    <X Value="10" />
    <X Value="20" />
    <X Value="30" />
    <X Value="40" />
  </table>
  <graph Name="Observed" />
  <table Name="LackOfFit" />
  <table Name="Comparison" />
  <table Name="Residuals" />
  <graph Name="ResidsVsX" />
  <graph Name="ResidsVsPred" />
  <graph Name="ResidsVsRow" />
  <table Name="Influential" />
</output>
<results>
  <Residuals Name="RESIDS" />
</results>
</proc>
</statgraphics>

```

The *Input* section specifies the columns containing the data to be analyzed. The *Options* section sets the values of any analysis options. The *Output* section identifies the tables and graphs to be created. The *Results* section indicates which numerical results should be saved for later use.

Currently, there are two procedures on the STATGRAPHICS *stratus* menu that deal with scripts:

1. *Execute script* – This option executes a saved script. When the script is executed, it will look for the original data file specified in the *Alias* tag. If the data has changed, the results will be different.
2. *Manage Scripts* – This option allows scripts to be copied, renamed, deleted, or downloaded to your client machine.

Beginning with Version XVI of STATGRAPHICS Centurion, these scripts may also be executable by the desktop Windows program.

## Chapter 6 – Statlets

The main menu contains a special section labeled Statlets that provides access to special procedures that allow you to interact dynamically with your data. For example, select *File - Open Sample Dataset* from the main menu and open the sample dataset for the *Shelf life study*. Then select *Statlets - Regression Analysis - Curve Fitting* from the menu. This will display the page shown below:

**CURVE-FITTING STATLET**

This applet fits linear and nonlinear models involving a dependent variable Y and a single independent variable X. To remove a individual point, select it and then press the +/- button. If your browser is Java-enabled, you can also use your mouse to drag points to new locations. If the linear model is not adequate, you can try transforming X or Y or both. [Documentation](#)

Y:

X:

(Labels):

(Select):

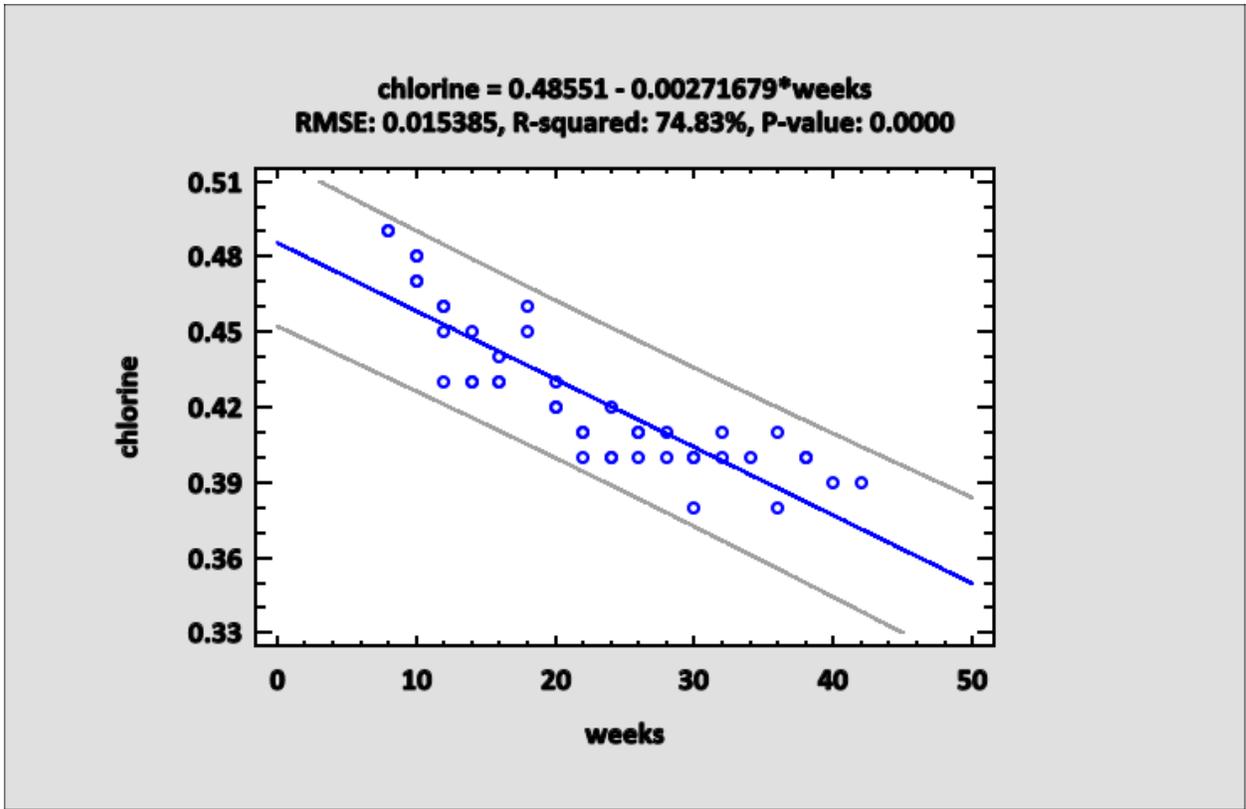
Add regression curve    Confidence limits:      Prediction limits:

X power:     Y power:                

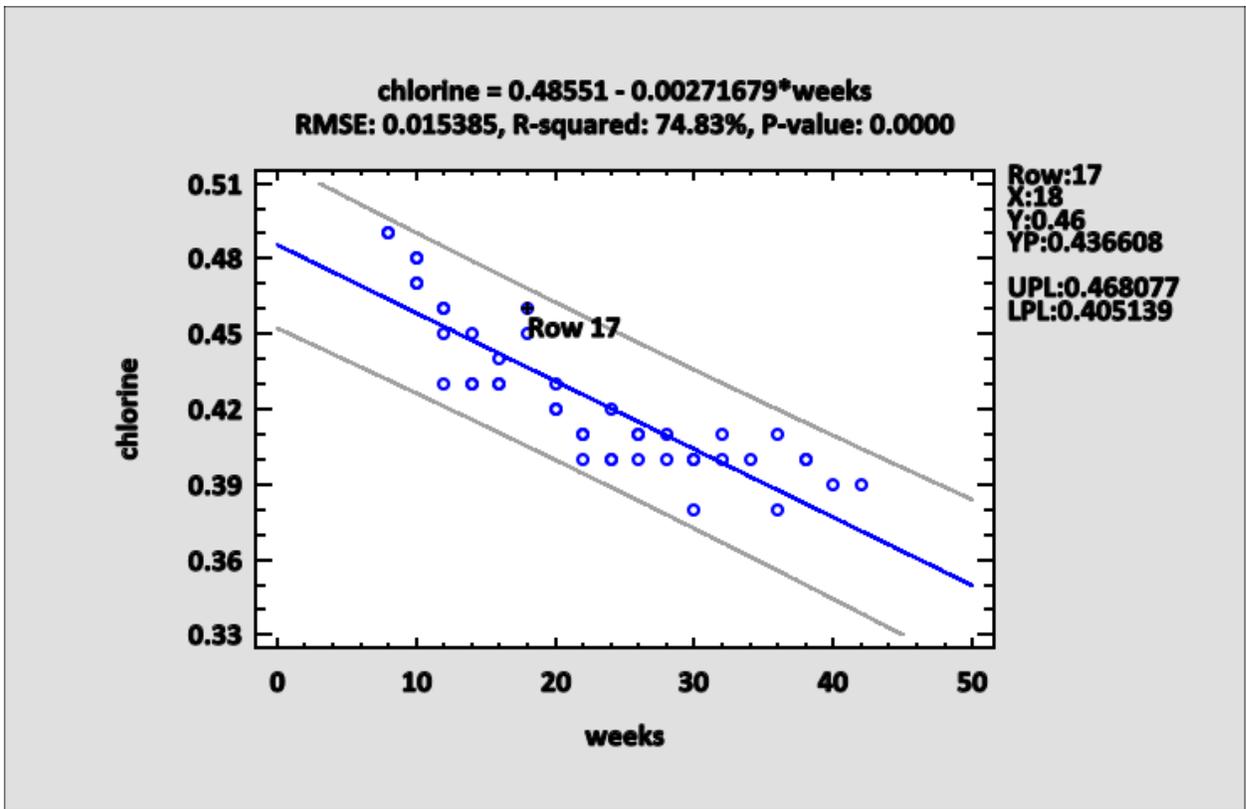
Add LOWESS Smooth    Window:

        Lock points

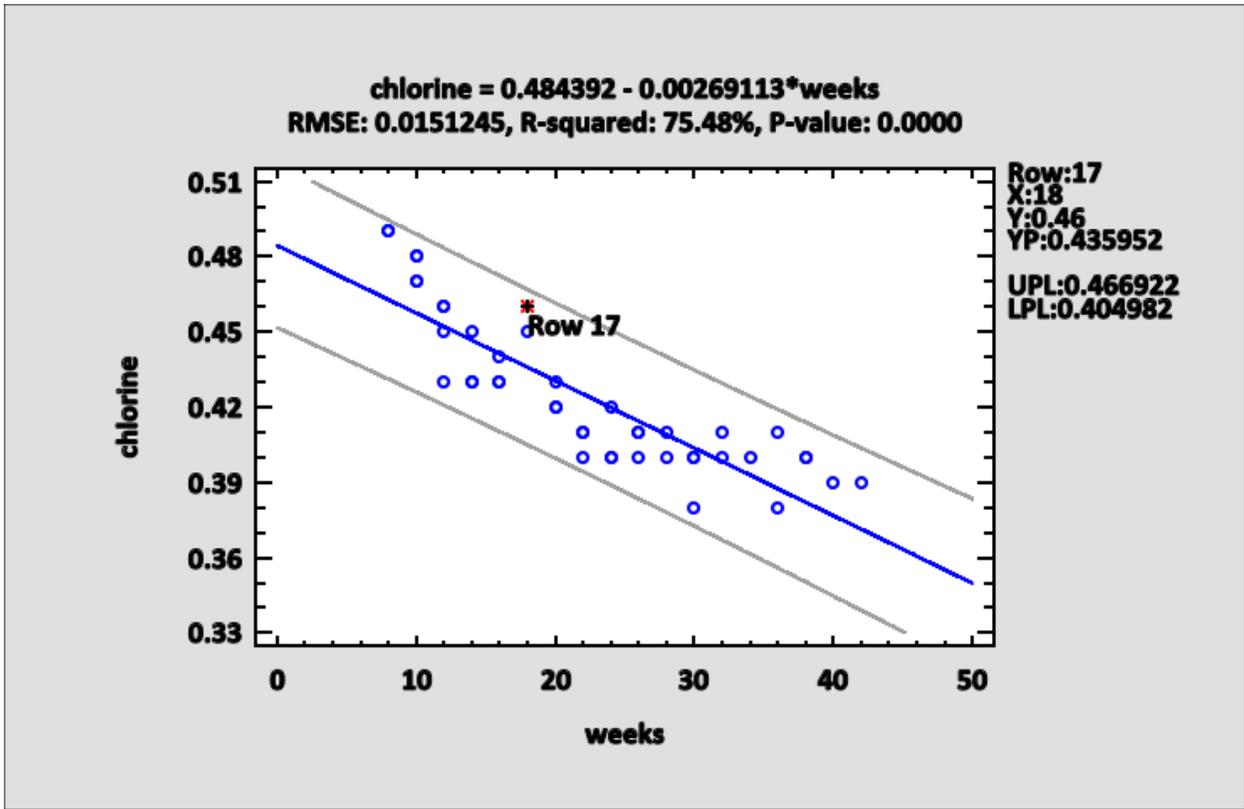
Select the Y and X variables and then press *Update Plot*. This will add the graph shown below to the page:



If your web browser supports HTML5 canvases, you may click on or touch any point on the graph to display its row number and coordinates:



After clicking on a point, you may then press the *Exclude/include selected point* button to remove it from the fit:



Excluded points are displayed in red.

Consult the documentation for each Statlet to learn what dynamic operations are currently supported by that procedure,

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