

A red hexagon with the year '2019' in white, surrounded by a thin red line and two diagonal lines extending from the top-left and top-right corners.

2019

Data Visualization with Origin 2019b

PRESENTED BY YUKI

Data Visualization with Origin 2019b

Origin Introduction

Origin is a powerful data analysis and publication-quality graphing software. This section contains basic information on navigating the Origin workspace, which could be helpful to get used to Origin.



Data Manipulation

Origin Graphs can be created from both hard data and from mathematical functions. Before that, we should learn how to prepare the data, like importing data, connecting data, selecting data and etc.

Origin 2019b New Feature

This section introduces Origin 2019b new features highlights, for example: Data Connectors, HTML and Markdown Reports, New Plot Menu...



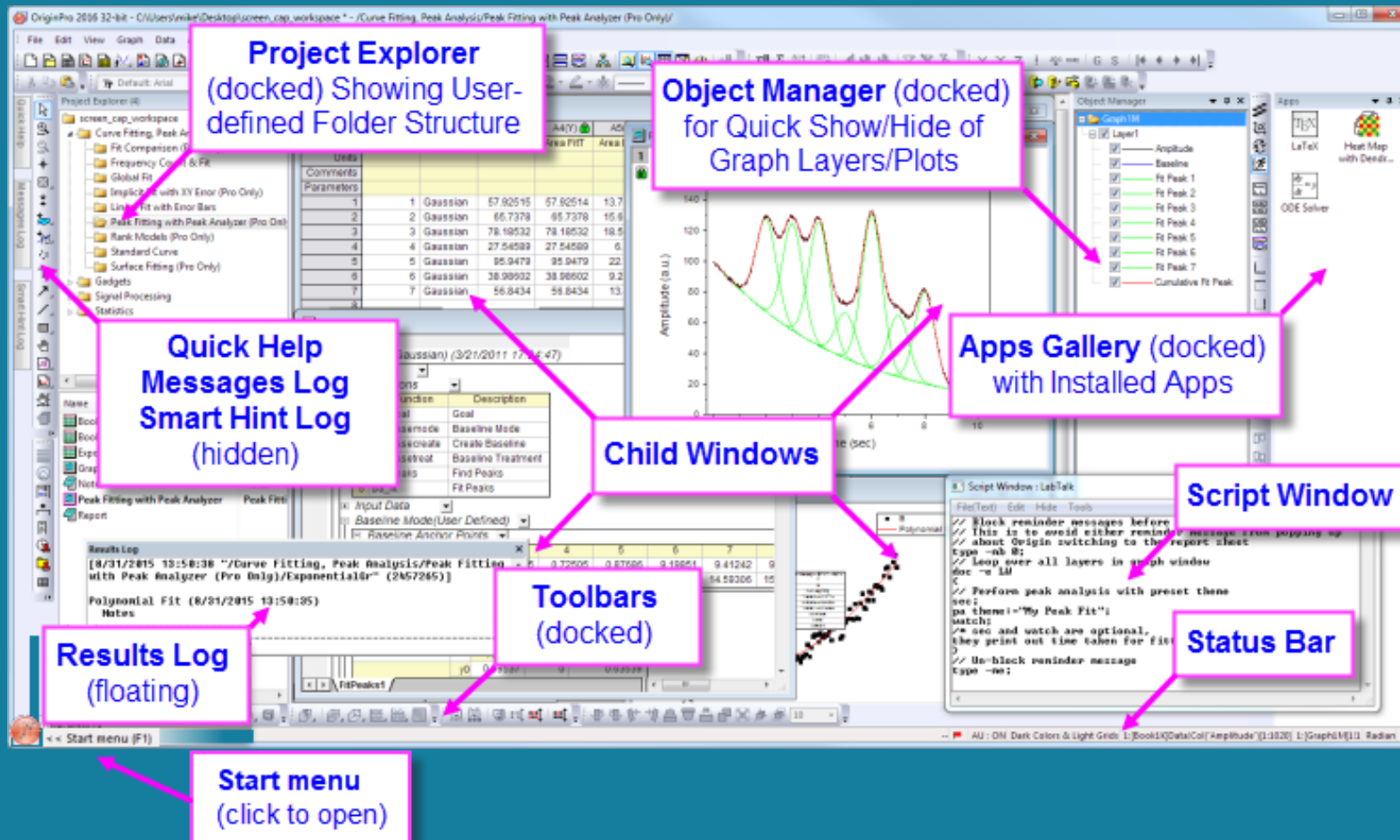
Graphing

With Origin, you can create over 100 graph types using Origin's built-in graph templates. This section introduces you to various aspects of graph customization.

Origin Introduction

Origin GUI

用户界面

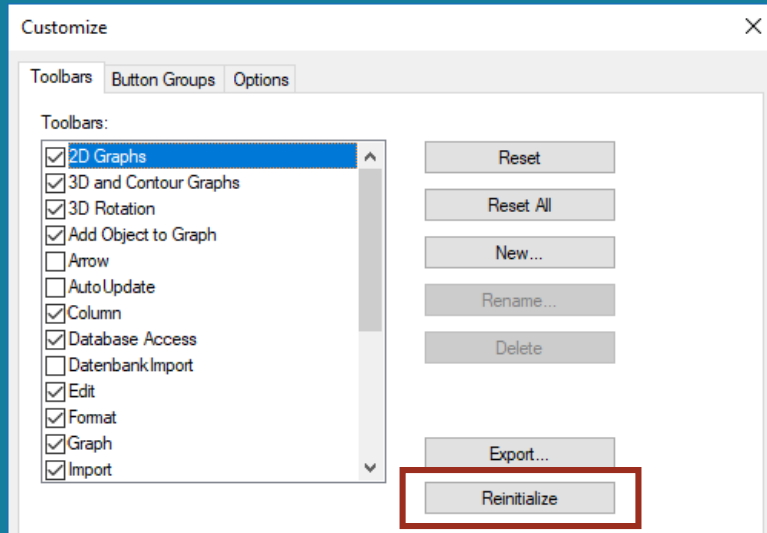


- Menus change as you change window type Menu, only menus pertinent to the active window will display
- Enter key words into the Starts menu to search info inside Origin

Note: We reorganization of the main menu in Origin 2019b

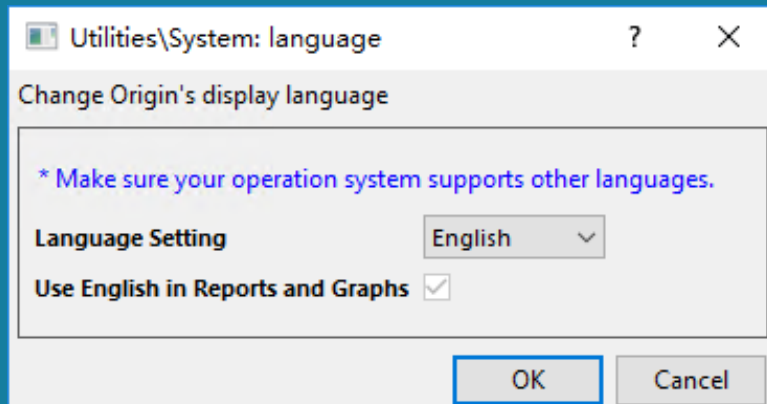
Origin GUI

用户界面



- Most of windows and toolbar can be floated, docked, auto-hidden, or hidden. This allows you to customize your Origin workspace so as to maximize utility and save screen space.

Note: Click **View: Tool: Reinitialization** button to reinitialize all toolbars and dockable windows.



- Select Menu **Help : Change Language** to change Origin language

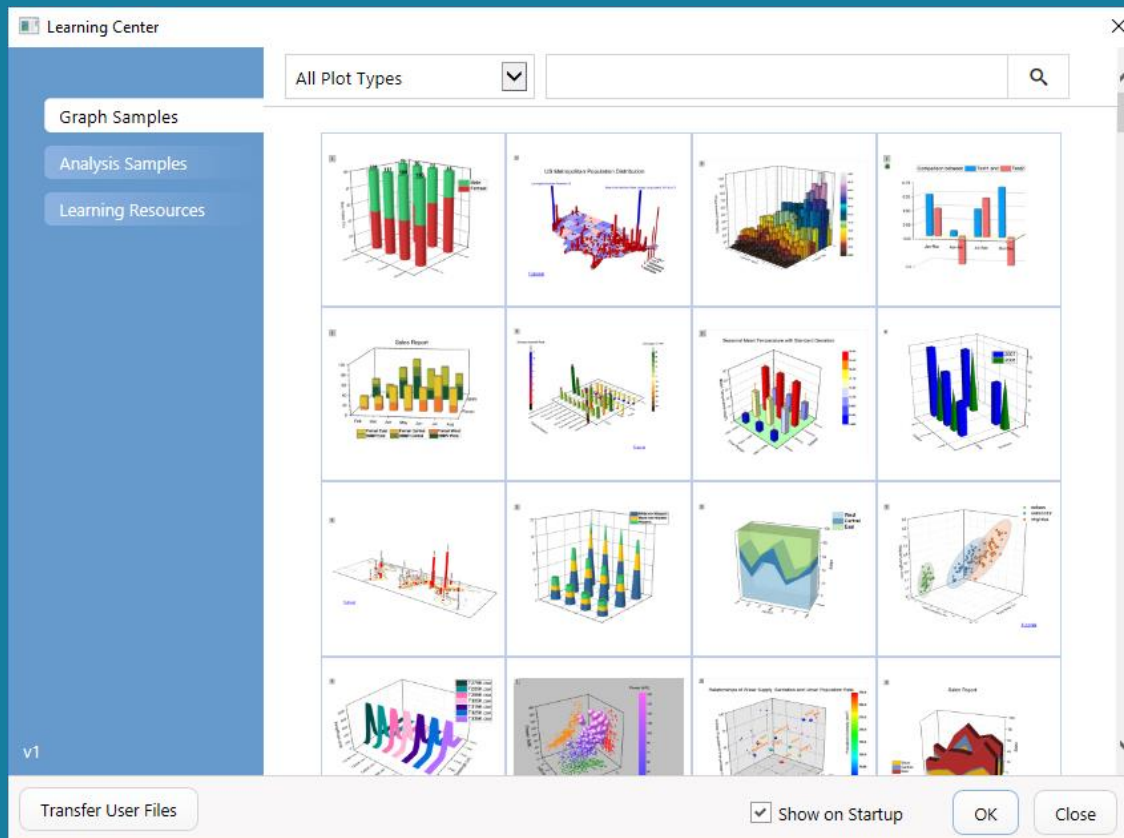
Learning Center

学习资源

To open the dialog, choose Help: Learning Center or press F11.

Learning Center intended to give you quick access to key files and support information

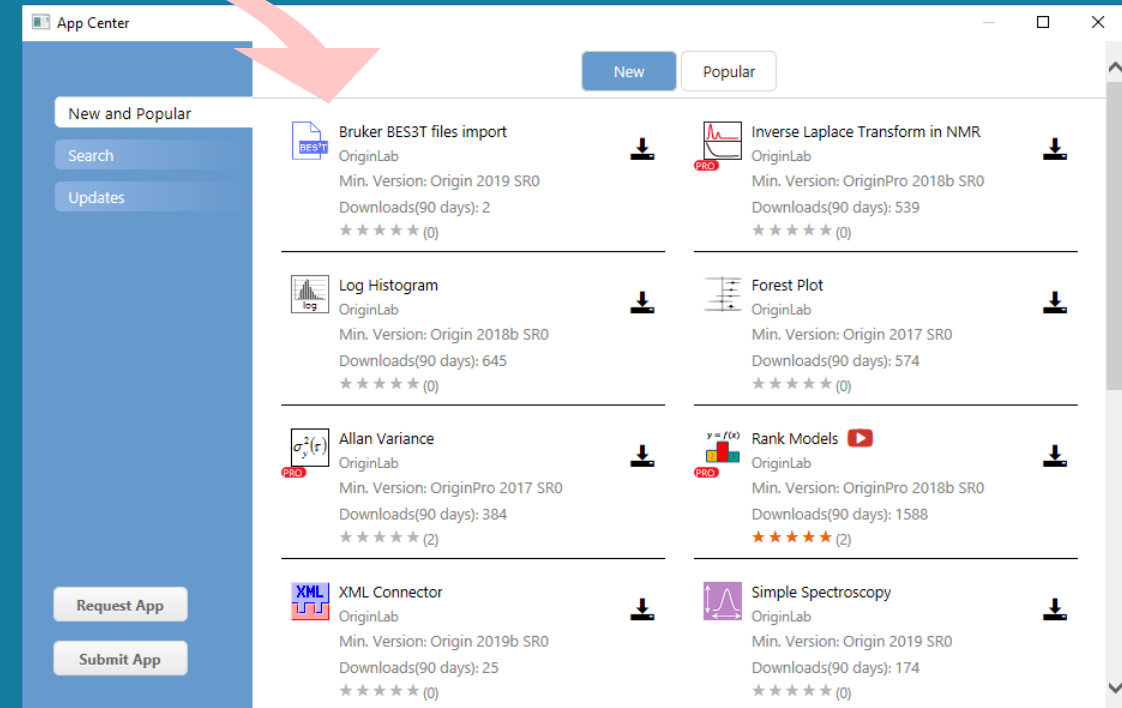
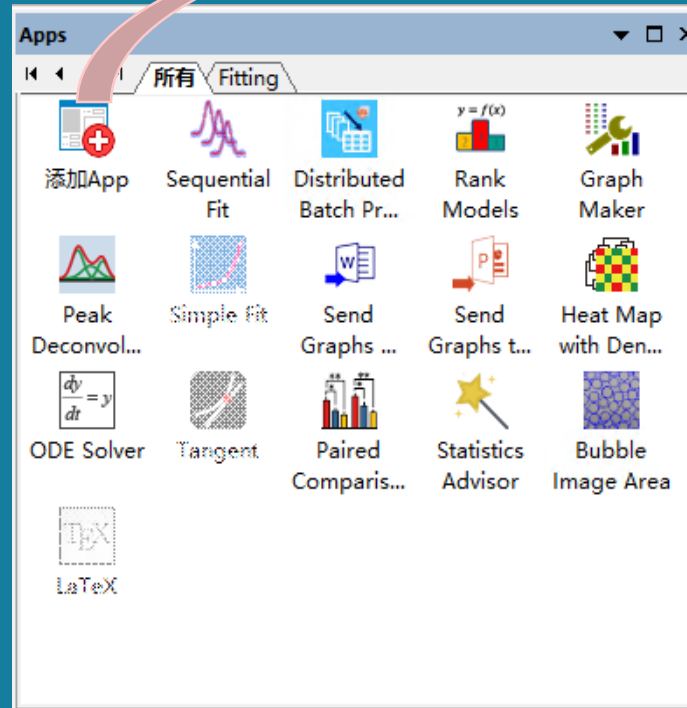
- View and load sample graphs
- Load analysis samples with data.
- Browse the Learning Resources tab for tutorials.
- Move files from your previous User Files Folder to your new User Files Folder.



Apps Gallery & App Center

扩展功能

1. Apps are add-on applications for Origin that perform specific graphing and/or analysis tasks
2. Right click to select **Update** when a red dot appears
3. Right click to select **Uninstall** to delete the app



Data Manipulation

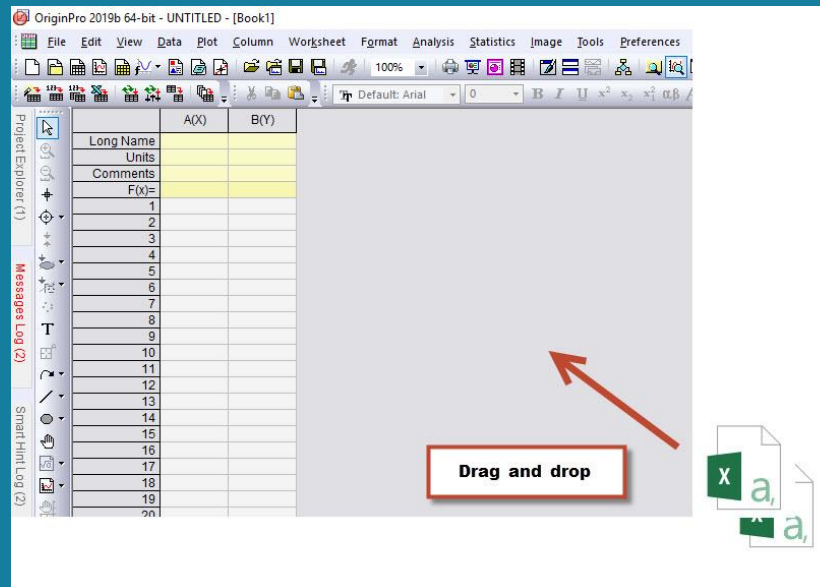
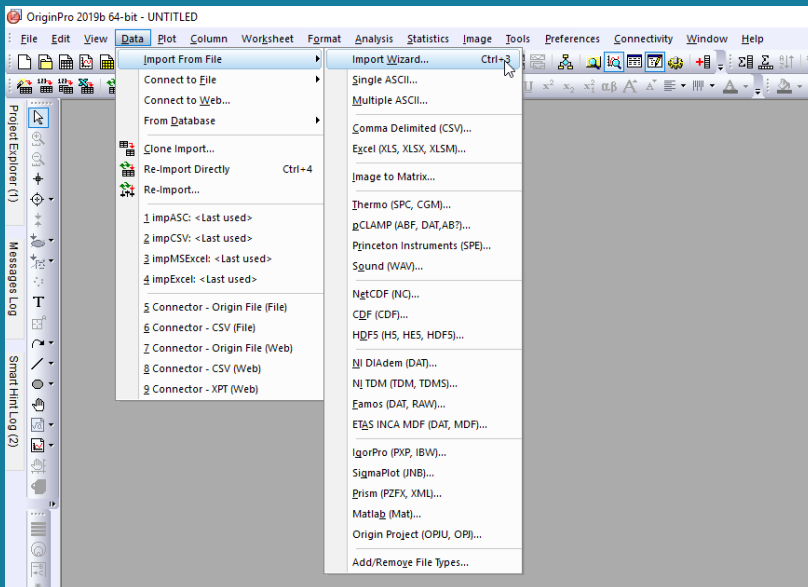
Importing Data

导入数据

Origin supports an expanded list of options for data import, like ASCII, CVS, JSON and etc.

Your data import options include:

- **Data: Import From File menu**
- **Drag and drop**



Connecting Data

连接数据

Data Connector is a new mechanism for importing data from file or a web page

- Select **Data: Connect to File** menu or **Data: Connect to Web** menu
- Select **Apps Gallery: Connector**

https://en.wikipedia.org/wiki/World_population

Rank	Country / Territory	Population	Date	% of world population	Source
1	China ^[note 4]	1,396,890,000	April 14, 2019	18.1%	[84]
2	India	1,345,930,000	April 14, 2019	17.5%	[85]
3	United States	329,028,000	April 14, 2019	4.27%	[86]
4	Indonesia	265,015,300	July 1, 2018	3.44%	[87]
5	Pakistan	212,742,631	May 25, 2017	2.76%	[88]
6	Brazil	209,772,000	April 14, 2019	2.72%	[89]
7	Nigeria	188,500,000	October 31, 2016	2.45%	[90]
8	Bangladesh	166,380,000	April 14, 2019	2.16%	[91]
9	Russia ^[note 5]	146,877,088	January 1, 2018	1.91%	[92]
10	Japan	126,440,000	October 1, 2018	1.64%	[93]

Connect to Web

Recent URLs

• Basic ○ Advanced

URL

URL Preview (you can use LabTalk string variables in the url above)

OK Cancel

Data Connector Browser

Contents (Double-click to select)

Tables

- 0 2 * 1
- 1 5 * 14
- 2 Population by continent (2016 estimates) 5 * 8
- 3 10 * 4
- 4 2 * 1
- 5 6 * 11
- 6 10 most densely populated countries (with population above 5 million) 5 * 11
- 7 Countries ranking highly in both total population (more than 20 million people) and population density (r
- 8 World historical and predicted populations (in millions)[107][108][109] 15 * 8





6 Tables/ 6

OK Cancel

Connecting Data

连接数据

Sample Data : C:\Program Files\OriginLab\Origin2019\Samples\Import and Export\United States Energy (1980-2013).xls

-  - the sheet is used as the destination of a data connector,
-  - the sheet is not yet used by a data connector,
-  - there is updates in the data source
-  - the data source is from a file and the file does not exist.

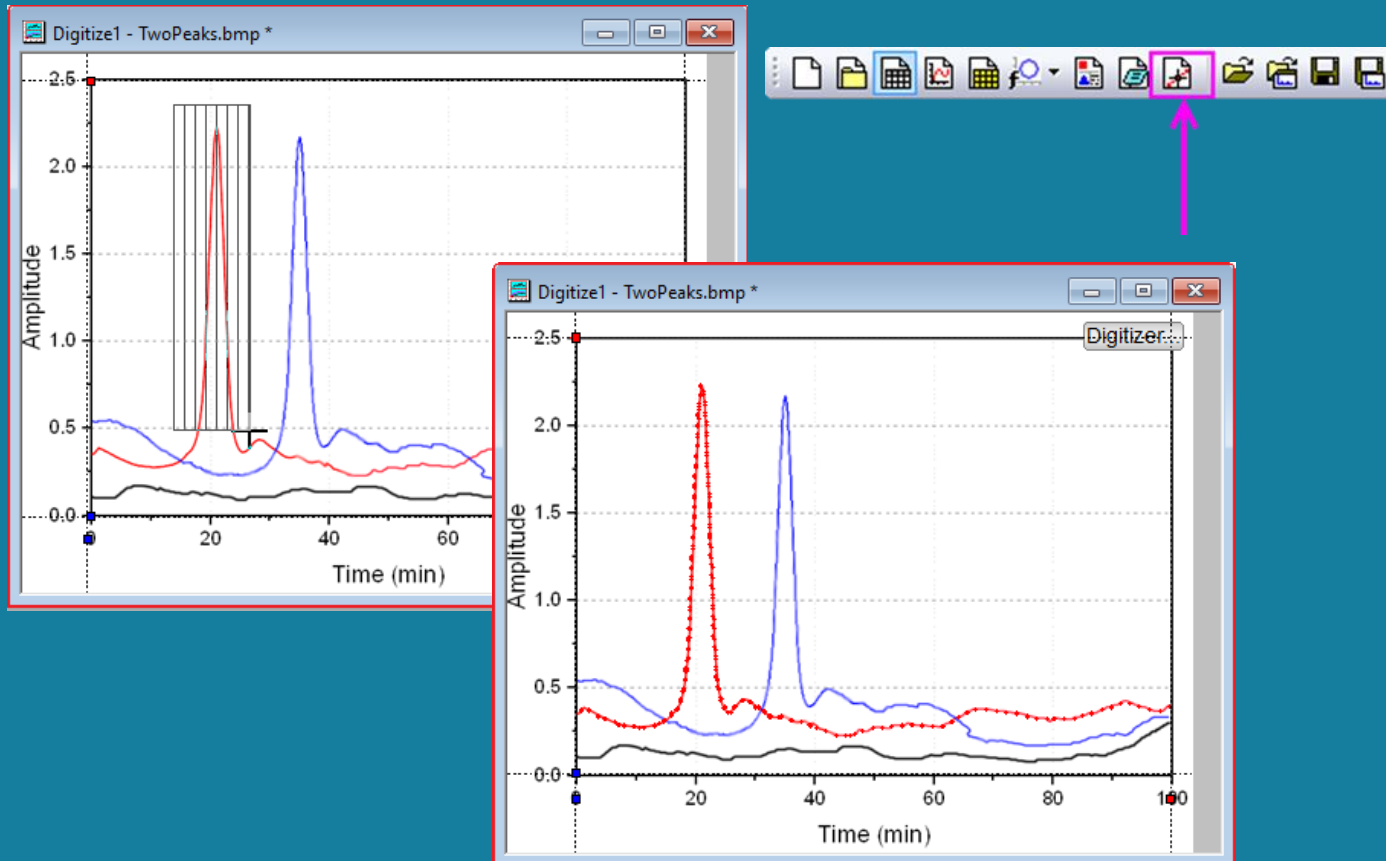
Notes : Comparing to the traditional import tools, Data Connector has several advantages

1. Makes your worksheets more dynamic.
2. By default, only the connection is kept on saving. This reduces the project file size.

Digitizer

图像数据转化工具

Sample Data: <EXE>\Samples\Import and Export\TwoPeaks.bmp



1. Import Image

Click **Digitize Image** button on toolbar and import the image

2. Edit Axes

Setup axes on the image using **Rotate** button and **Edit Axes** button

Note: Select **Axes: Cartesian Coordinate/ Polar Coordinate/ Ternary Coordinate** to change coordinate system

3. Capture Data Points

Click the **Manually Pick Points** button or the other auto trace buttons to pick the data point

Graphing

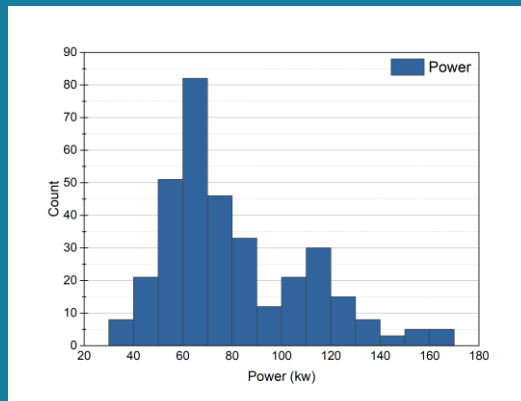
Data Dimension & Data Plot

数据维度与数据绘图

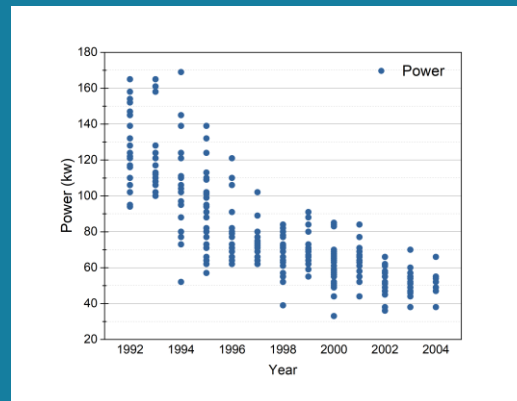
Sample Data: <EXE>\Samples\Statistics\automobile.dat

Data Dimension

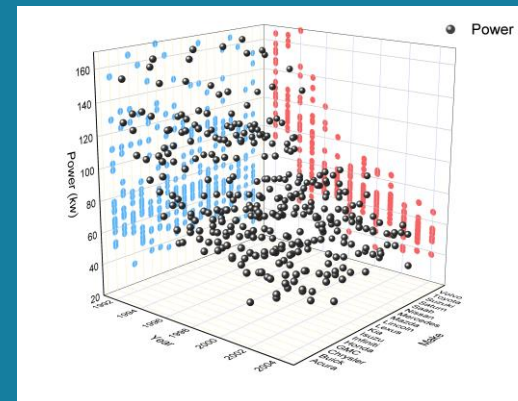
One Dimension



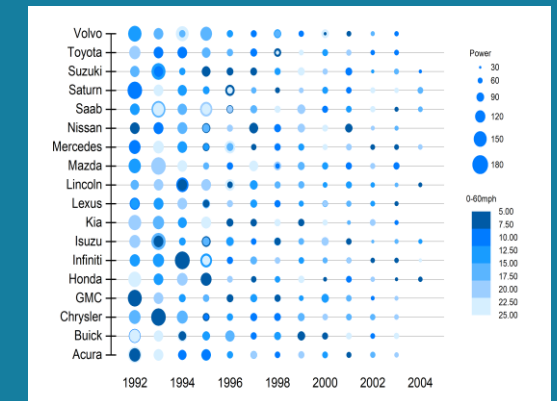
Two Dimensions



Three Dimensions



Multiple Dimensions



- Notes :
1. 2D graphs: Adding a new plot to an existing graph
 2. 3D graphs: Projection
 3. Multiple-Dimension graph: Mapping Size and mapping color

Axis & Reference Line

坐标轴与参考线

Log Scale

➤ Axis dialog: Scale: Type

Adding straight line

➤ Axis dialog: Reference Lines: At Axis Value

Adding Mean line

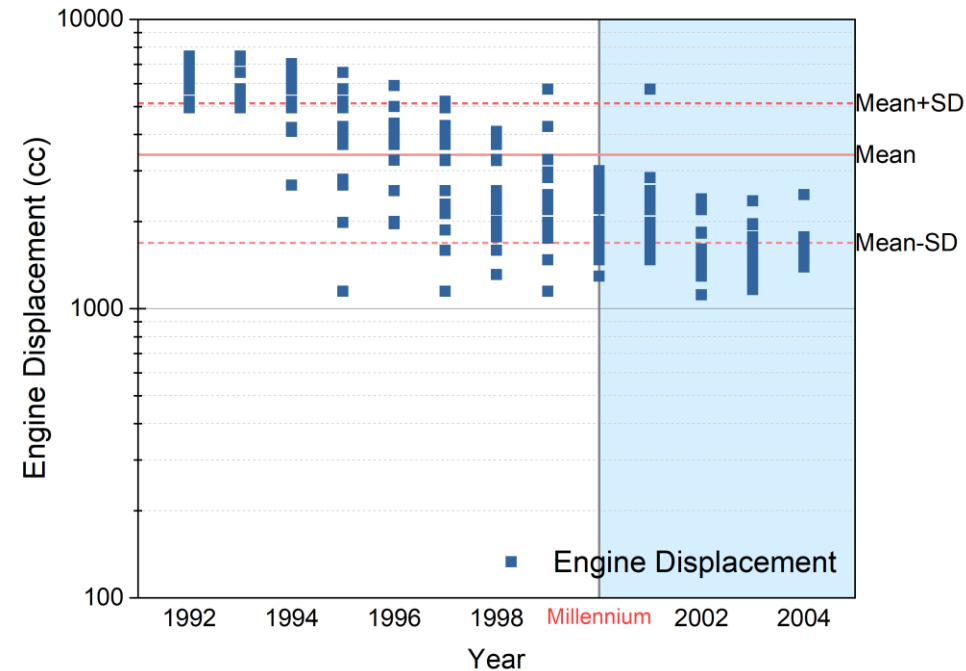
➤ Axis dialog: Reference Lines: Details: Value Type: Statistics

Adding recession bars

➤ Axis dialog: Reference Lines: Fill To

Adding special ticks

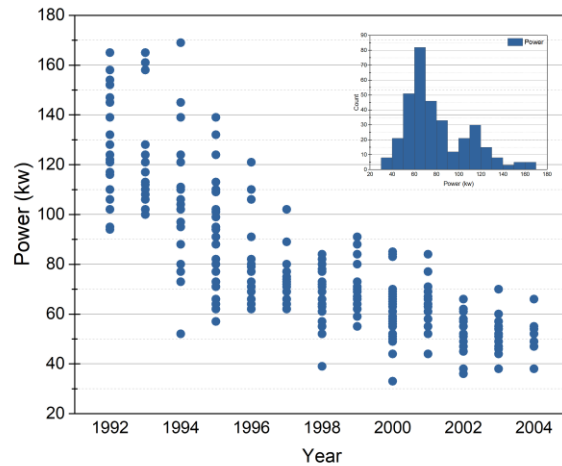
➤ Axis dialog: Special Ticks: At Axis Value



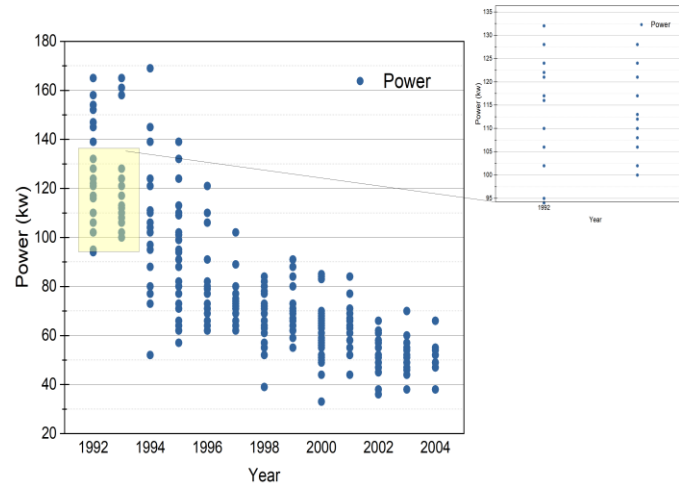
Arranging Layer

组合图层

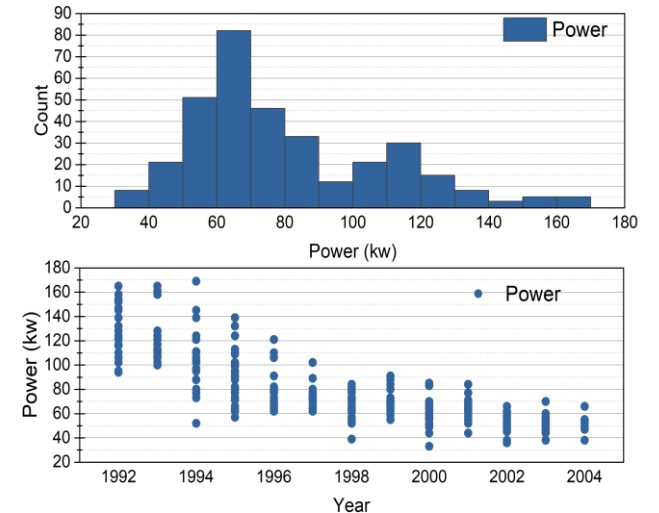
Embedded Graph



Zoomed Inset



Merge/Extract Graphs



Copy Page and Paste Link

Zoomed Inset App

<https://www.originlab.com/FileExchange/details.aspx?fid=310>

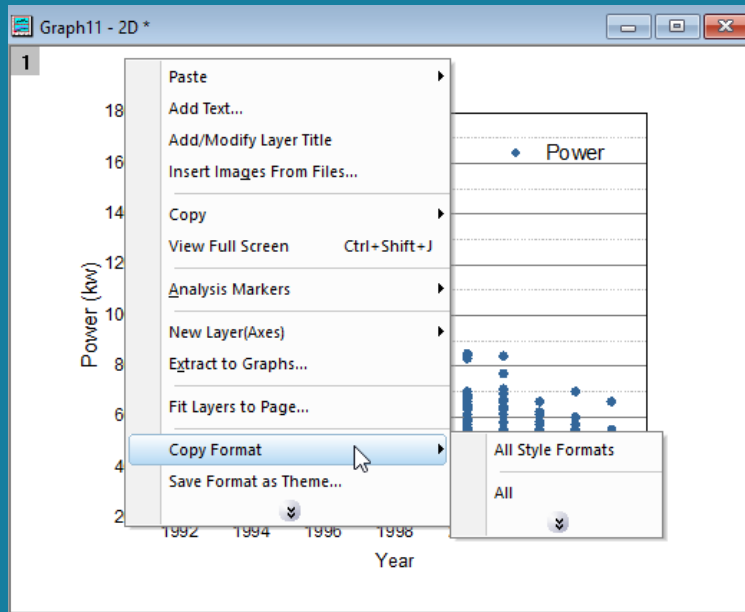
Menu: Graph: Merge Graph Windows

Menu: Graph: Extract to Graphs

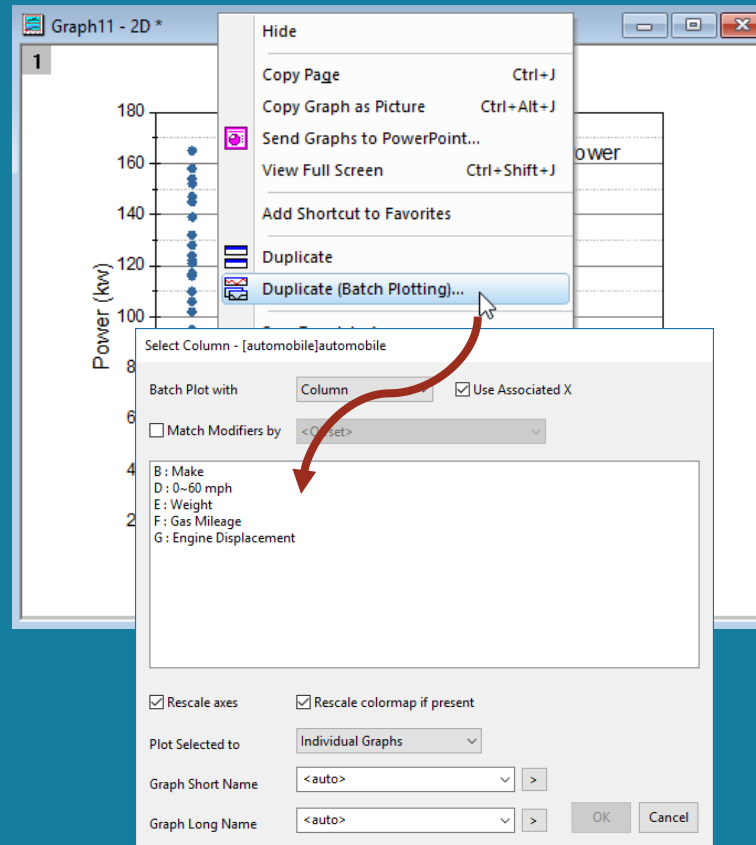
Batch Plotting

批量绘图

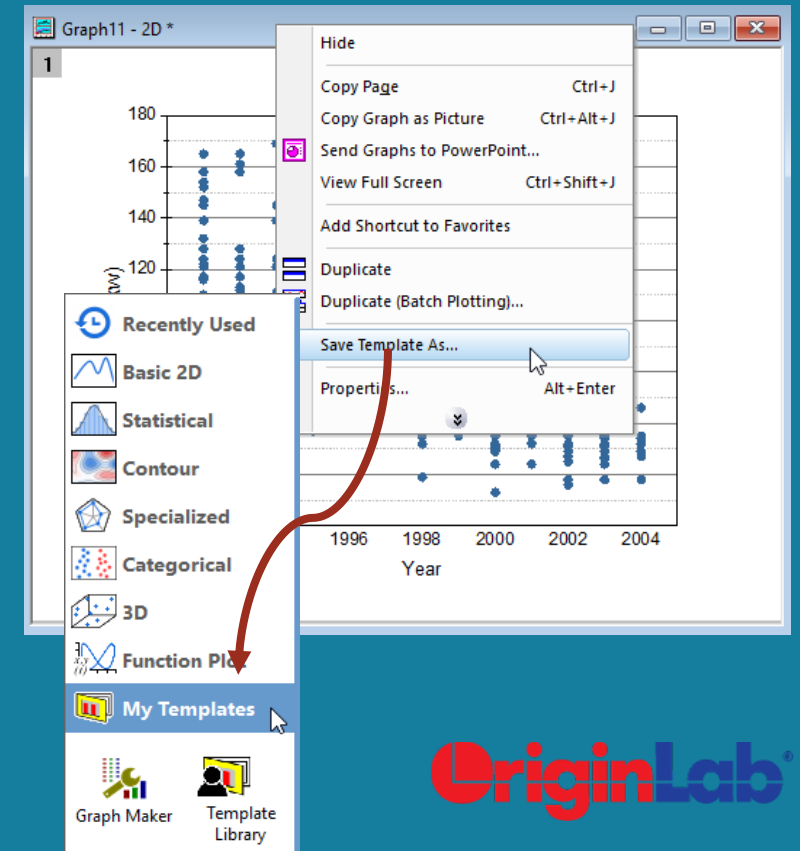
Copy Format



Batch Plotting



Graph Template



Exporting Graphs

导出图形

Pasting Graphs to Other Applications

In Power Point or Word

- >> 点击**粘贴**按钮，选择**选择性粘贴**
- 粘贴为 Origin 图形文件链接（要求现在的 Origin Project已保存）
- 粘贴为嵌入式 Origin 图形（可双击该图形然后再次在Origin中打开）
- 粘贴为图片（不可修改）

*Note: Preferences : Options : Page : Copy Page Settings :
Advanced : Set Resolution



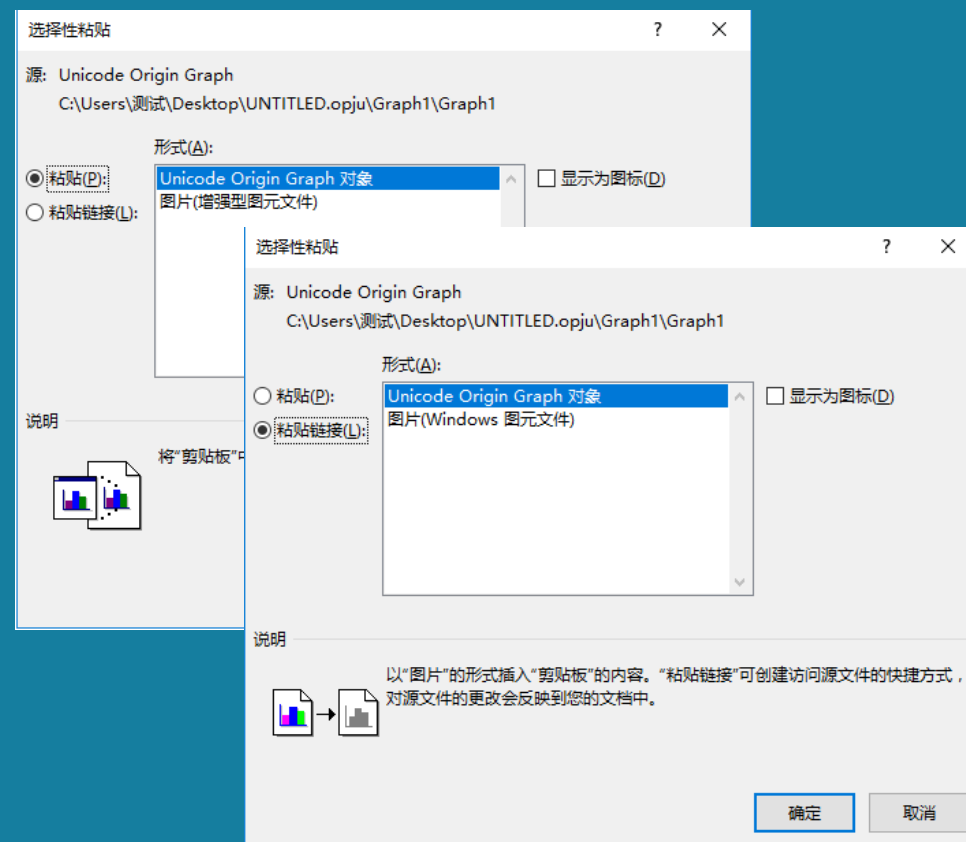
Send Graphs to PowerPoint App

<https://www.originlab.com/FileExchange/details.aspx?fid=374>



Send Graphs to Word App

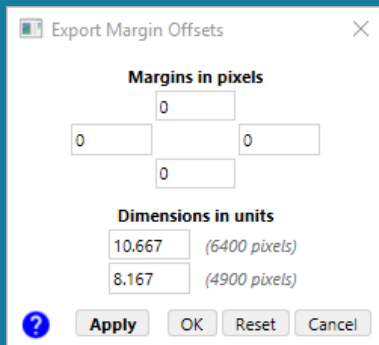
<https://www.originlab.com/FileExchange/details.aspx?fid=238>



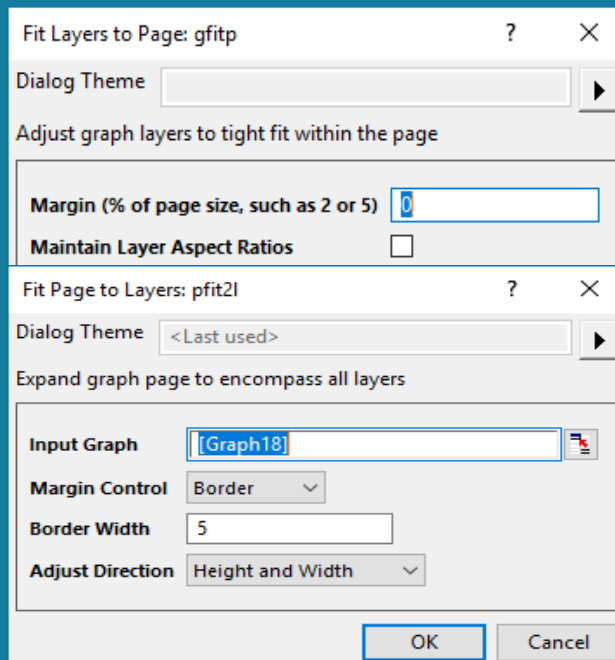
Exporting Graphs

导出图形

Margin Control



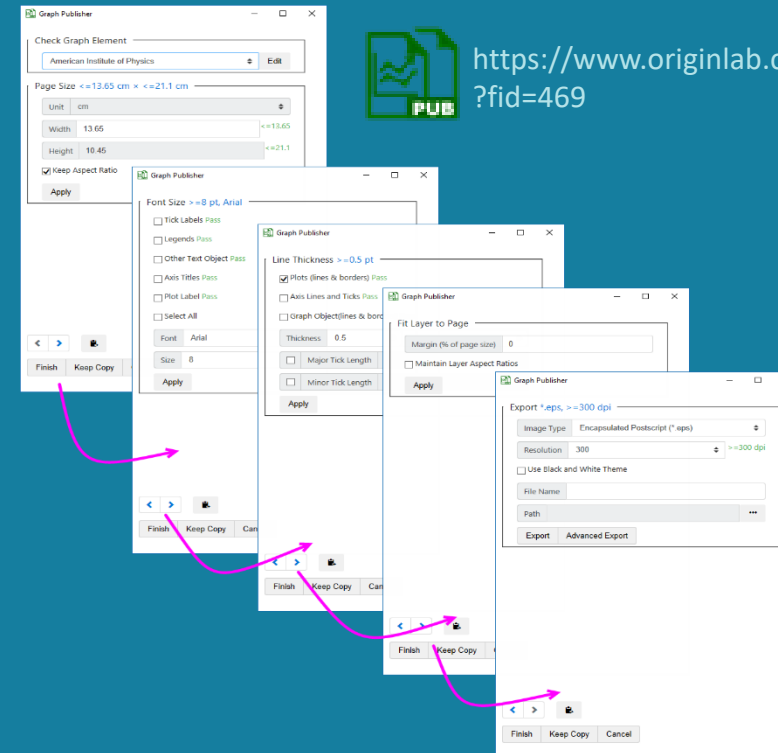
Edit: Export Margin Offsets



Graph: Fit Layer to Page

Graph: Fit Page to Layer

Graph Publisher App

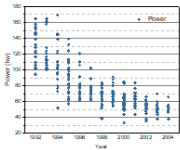
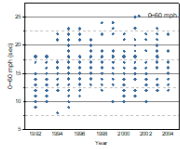
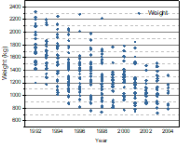
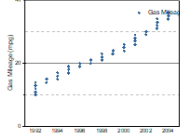


<https://www.originlab.com/FileExchange/details.aspx?fid=469>

- ← Page Size
- ← Font & Font Size
- ← Line Thickness
- ← Margin
- ← Export

Custom Report

定制报表

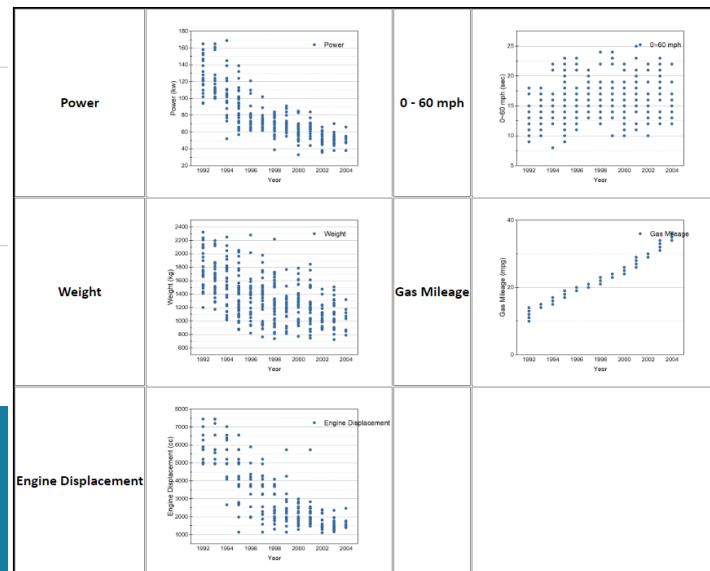
	A(X)	B(Y)
1	Automobile Research	
2	Power	
3	0-60mph	
4	Weight	
5	Gas Mileage	

Using Worksheet to Create Custom Report

1. Copy and paste link
2. Worksheet properties : Size, Edit Column Label Rows...

Automobile Research

Year vs. Property



Using Notes Window to create HTML and Markdown Report

1. Edit Mode & Render Mode
2. Copy and paste link
3. Syntax: Text, HTML, Markdown
4. Load Sample
5. Export to Webpage

Creating Animation

制作动画



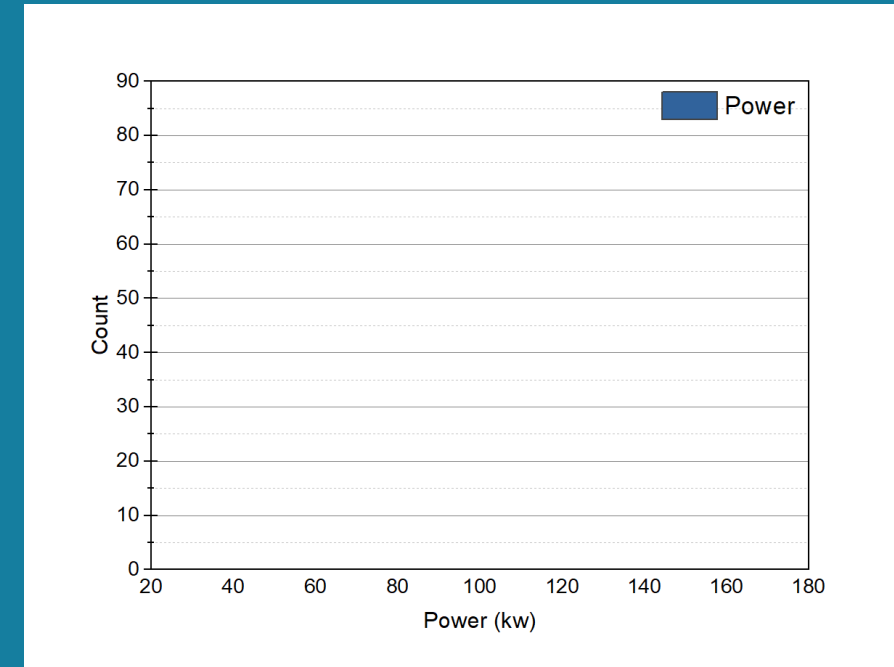
Graph Anim App

<https://www.originlab.com/FileExchange/details.aspx?fid=482>

1. Press F1 to check help document
2. Set the width for GIF, and height is calculated automatically
3. Set the running time for GIF
4. Specify if the plots morph one by one or together
5. Specify the animation effect
6. Click to preview animation. Do NOT click OK button when the preview is running.
7. Do NOT close the command window manually during the process.

The screenshot shows the 'Graph Animation' dialog box with the following settings and annotations:

- Output File:**
 - File Name and Type (.gif, .avi): C:\Users\yuki\Desktop\Animation.gif (Annotation 1)
 - File already exists and will be overwritten
 - Split Animation Sequentially: ☐
 - Width (px): 1200 (Annotation 2)
 - Number of Frames: 20 (Annotation 3)
 - Frames per Second: 7 (Annotation 3)
 - Info: GIF file will play 21 frames at 7.1 fps for 3.00 s
 - Info: Individual GIF files are automatically joined by command line. During this process, DO NOT close the DOS command prompt window.
 - Preview Animation: Click to Preview Animation ---> Preview (Annotation 6)
- Animation:**
 - Initialization: Simultaneous (Annotation 4)
 - Animation Order: Simultaneous (Annotation 4)
 - Animation Effect: Constant Velocity (Annotation 5)
- Options:**
 - Morph Plot Color: ☐
- DataPlots to Animate:**
 - ☒ Layer1! Plot1 (Y) from Zero (Annotation 7)
- Buttons: OK, Cancel



Origin 2019b New Features

Key Feature Overview

Origin 2019b 重点功能

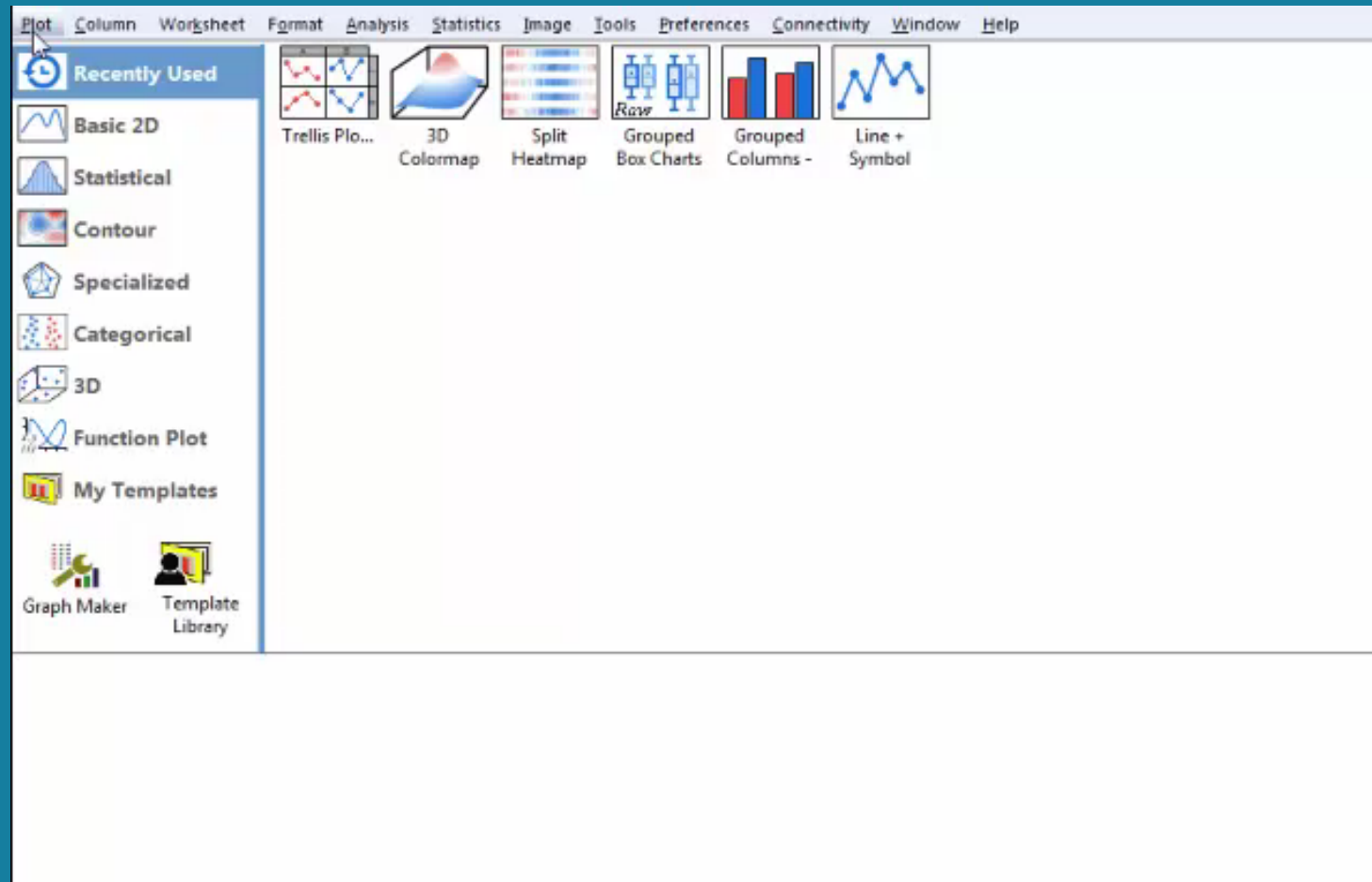
- ❑ **HTML and Markdown Reports**
- ❑ **Data Connectors**
- ❑ Clone an Origin Project
- ❑ **Data Highlighter Improvement**
- ❑ **Copy and paste a workbook or an entire project folder, within or across Origin sessions**

- ❑ **New Graph Types**
 - Rug Plot
 - Split Heatmap
 - Soil Texture Triangle
 - Heatmap from XYZ or XY data
 - Custom line segments
 - Windrose with open circle for calms

- ❑ **Improved Plot Menu**
- ❑ **New Apps**
 - Speedy Fit
 - Fit ODE
 - Quantile Regression
 - Hysteresis
 - 2D Correlation
 -

New Plot Menu

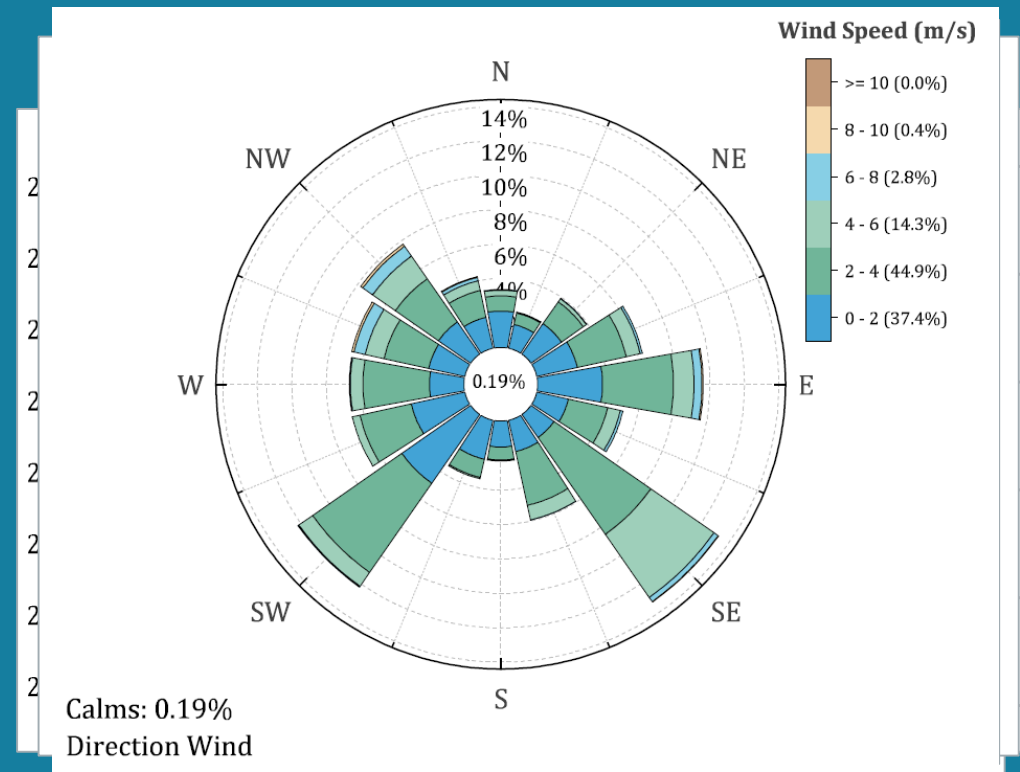
新绘图菜单



New Graph Types

新绘图类型

- Split Heatmap
 - Rug Plot
- Heatmap from XYZ or XY data
 - Soil Texture Triangle
 - Custom line segments
- Windrose with open circle for calms



Help

Origin Support

技术支持资源

- Technical Support: tech@originlab.com 或点击主页右上角的 Chat 按钮（暂时只提供英文技术支持）
- Origin Blog: <http://blog.originlab.com/>
- Origin 中文视频教程： <http://i.youku.com/oringiz>
- Origin 中文论坛： http://www.originlab.com/forum/forum.asp?FORUM_ID=28
- Origin软件用户（华东）QQ交流群：140825885；Origin软件上海科技大学交流群: 278919679

Q&A

Questions

问题

1. What is the different between importing data and connecting data?
2. What kind of coordinate systems do digitizer support?
3. How do I add a new plot to an existing graph?
4. Can I merge multiple graph windows into one?
5. How do I add mean lines for every group? (e.g. add a mean line for every year in Page 15)

Origin
2019b
THANK YOU