

# Save and reuse settings of an analysis, example of Principal Component Analysis

Automation.zip

## Datasets for saving and reusing VBA codes

Two Excel workbooks with both the data and the results can be downloaded by clicking [here](#). The data used is the process of food measurements samples.

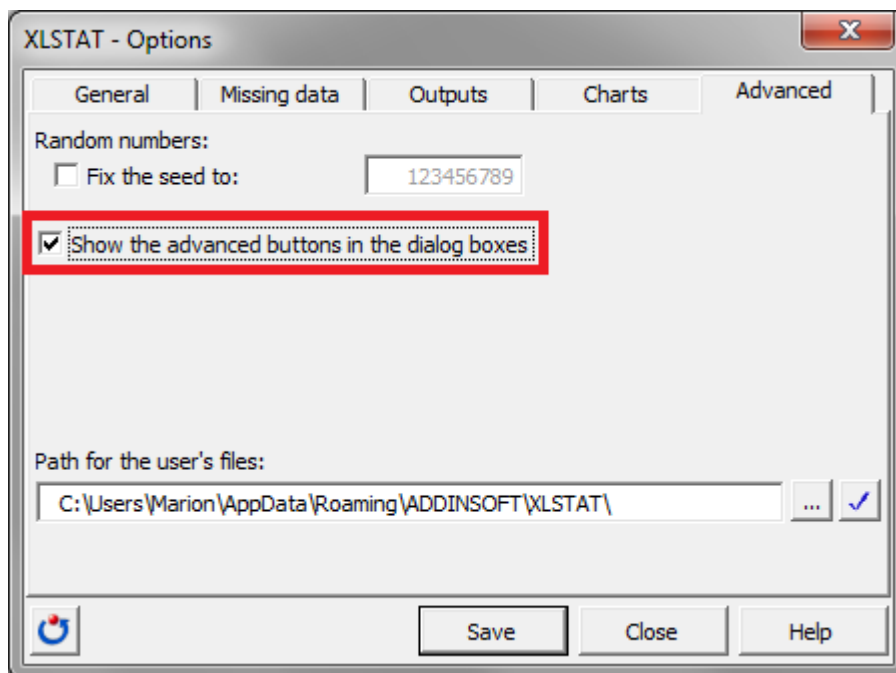
## Generating the settings to reuse

We are going to create a Principal component analysis template on one dataset and use it on the second.

Open the first file called Automation\_1.xls.

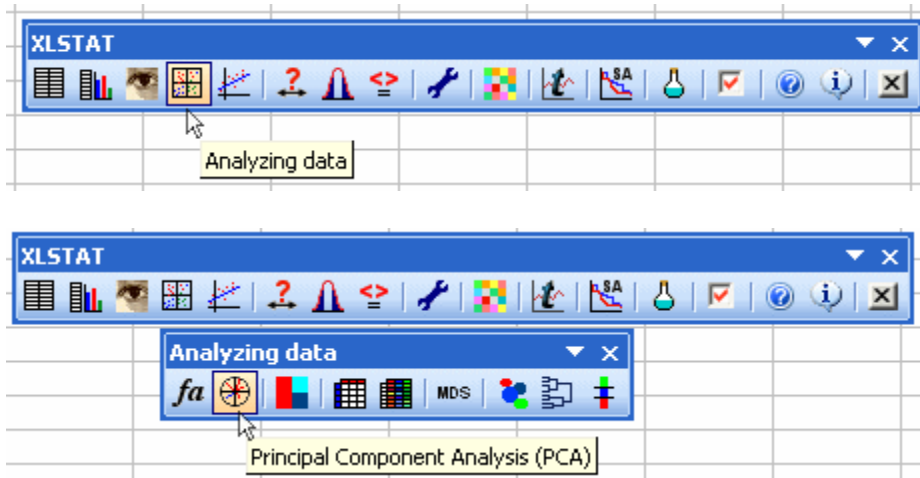
## Enabling advanced options

Once XLSTAT-Pro is activated, go to the menu **Options**, and in the tab **Advanced** enable the option named **Show the advanced buttons in the dialog boxes**.



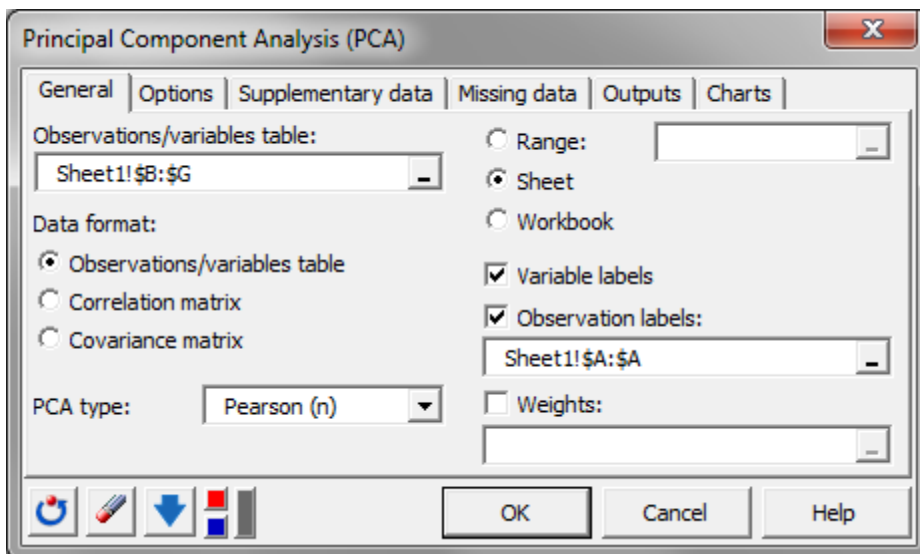
## Setting up an analysis - example of Principal Component Analysis

Then select the **XLSTAT / Analyzing data / Principal components analysis** command, or click on the corresponding button of the **Analyzing Data** toolbar (see below).

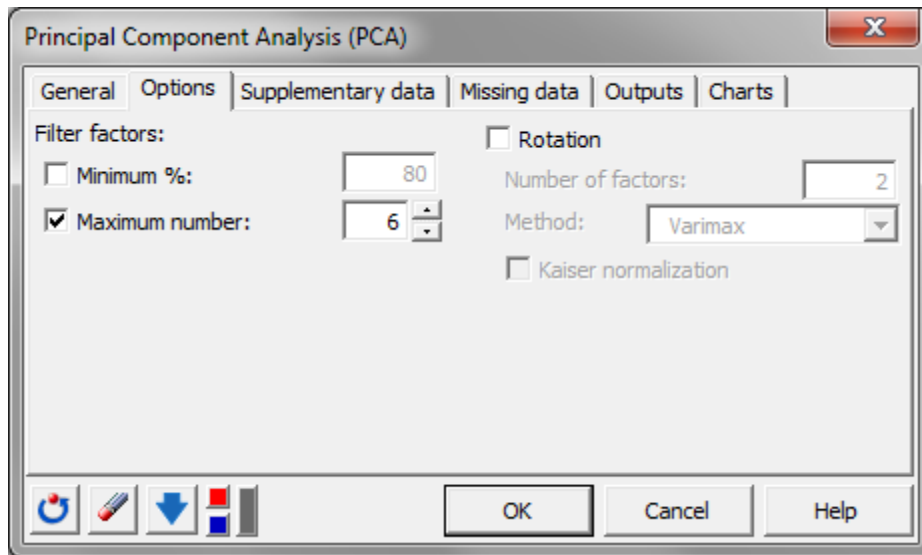


In the **General** tab, set the following:

- **Observations/variables table:** Columns B to G
- **Data format:** Observations/variables table
- **PCA type:** Pearson (n)
- **Variable labels:** enabled
- **Observation labels:** ticked and select the column A for the sample name
- **Sheet:** chosen to display the results in a new sheet

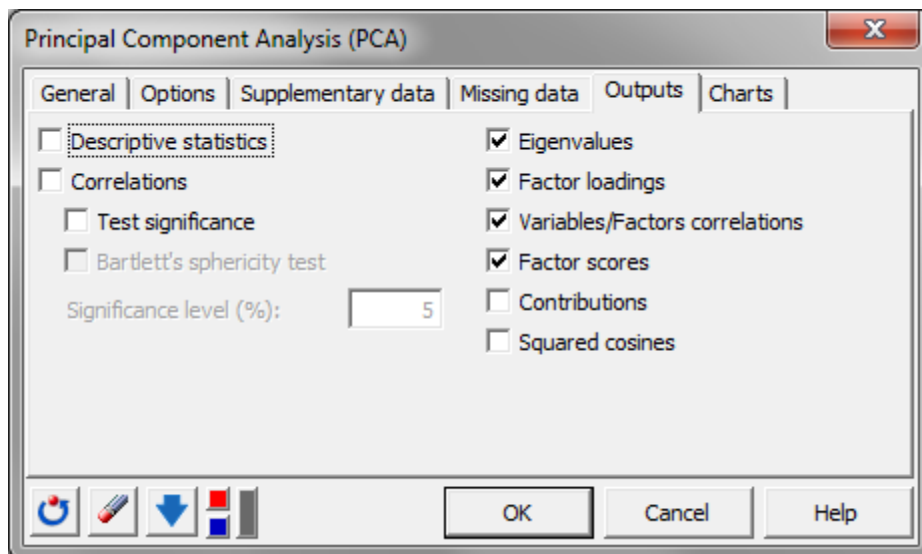


Go to the next tab **Options**. For the option **Filter factors**, choose **Maximum number** and set the value to six. This way all the components will be calculated.



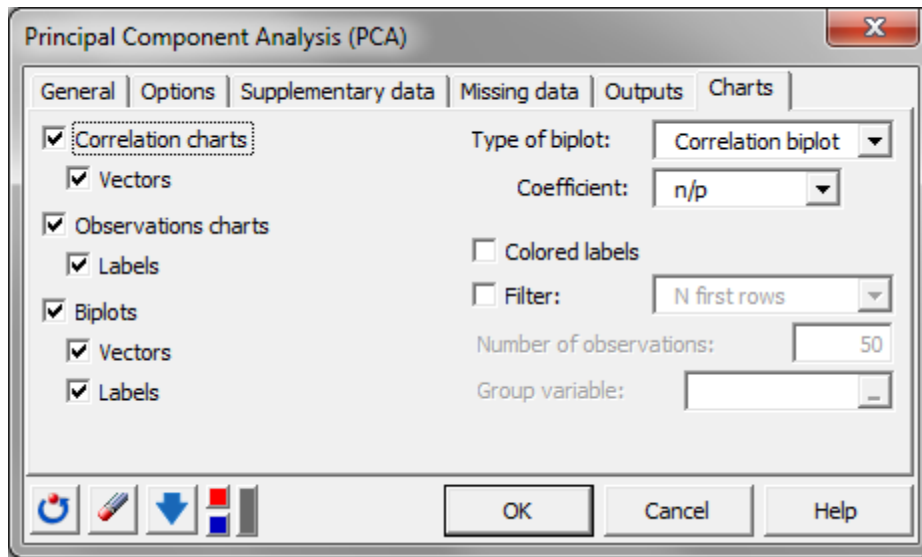
Go to the tab **Outputs**. Here we want to get a synthetic report so we will only select the following:

- Eigenvalues,
- Factor Loadings,
- Variables/Factors correlations,
- Factor scores.



Finally we are going to use all three plots that can be selected in the **Charts** tab:

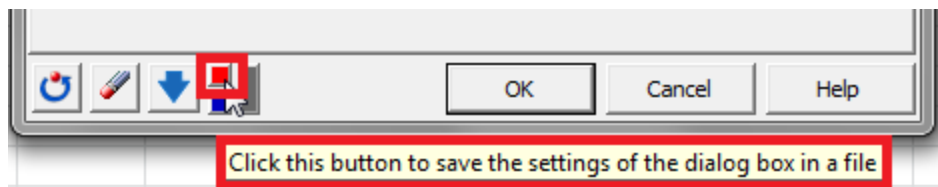
- Correlation charts
- Observations charts
- Biplots



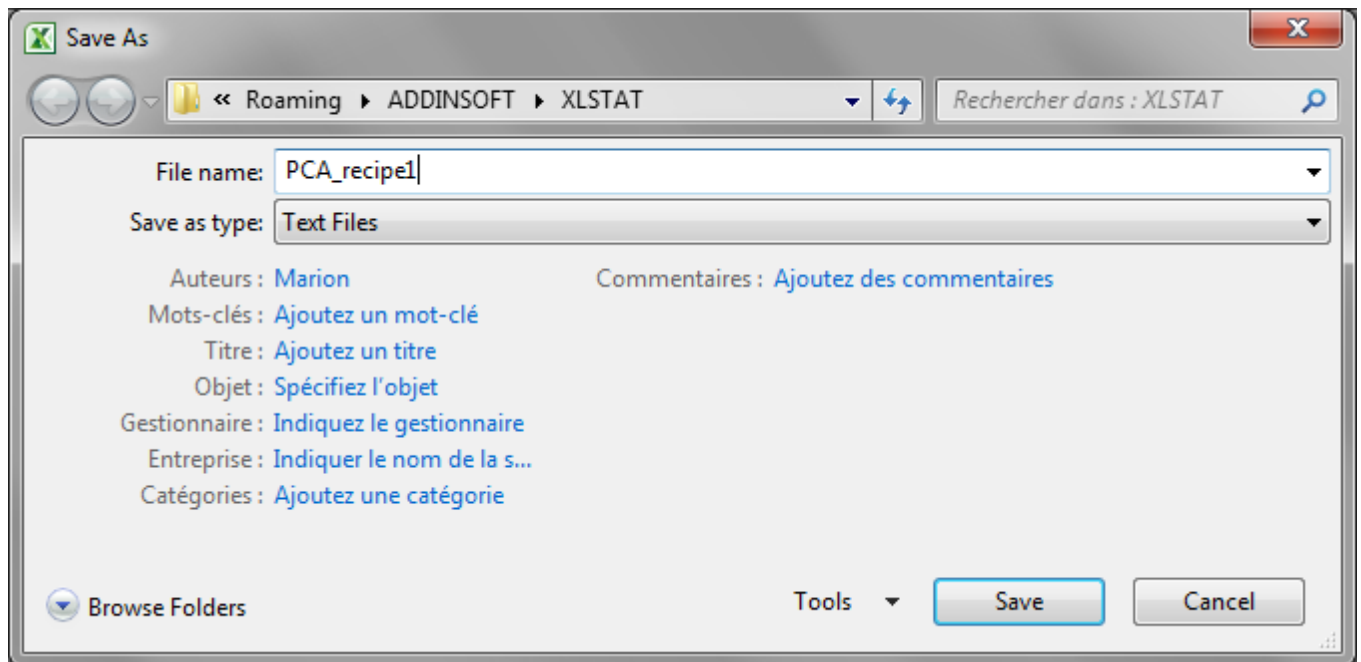
Now we have specified all the settings we will save the code to be reused.

### **Generating and saving the settings to be reused**

Click on the red button at the bottom left of the dialog box.



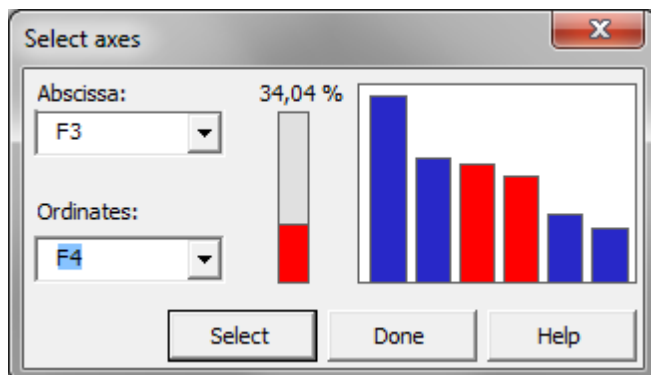
Save the code under a name that is easy for you to remember, for example in this case we use "PCArecipe1".



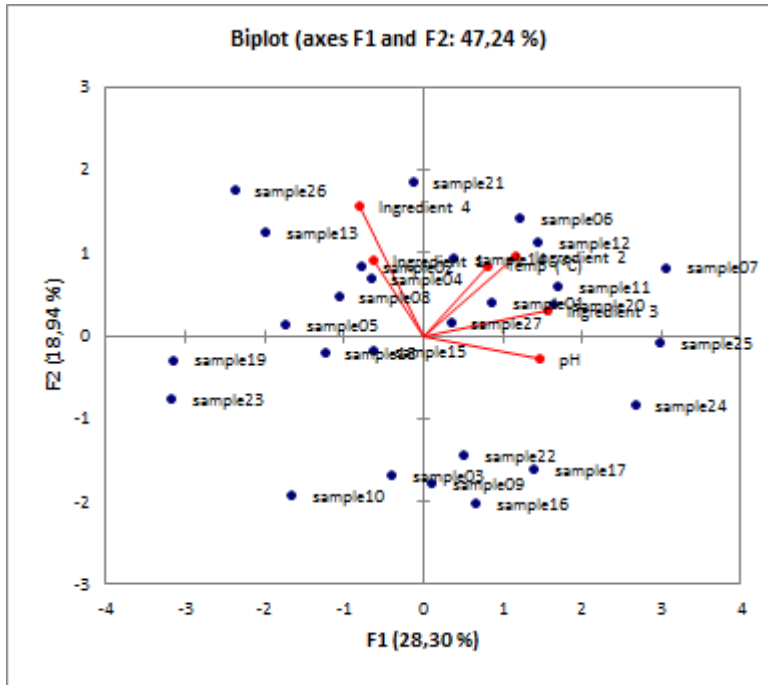
Press **OK** to launch the analysis.

## Results of the Principal Component Analysis

Choose the plot for the axes F1 and F2 by clicking **Select**, then change the selection to **Abscissa** F3 and **Ordinates** F4. Once you have completed this, simply click again on **Select** and then press **Done**.



Take a look at the biplot (shown below).

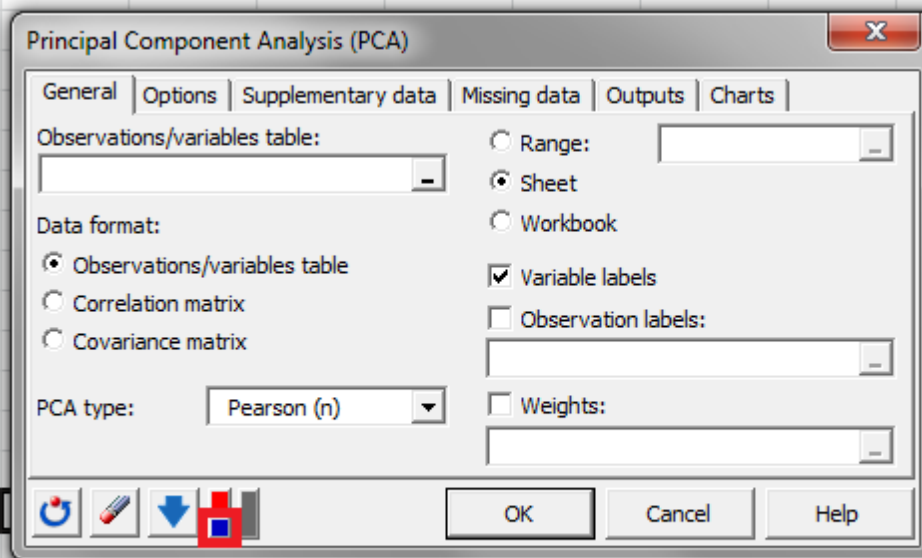


This process is usually to be stable so we can expect little variation. You can see that all the samples are centered tidily around the middle of the plot.

## Reusing the settings

Now open the second file Automation\_2.xls

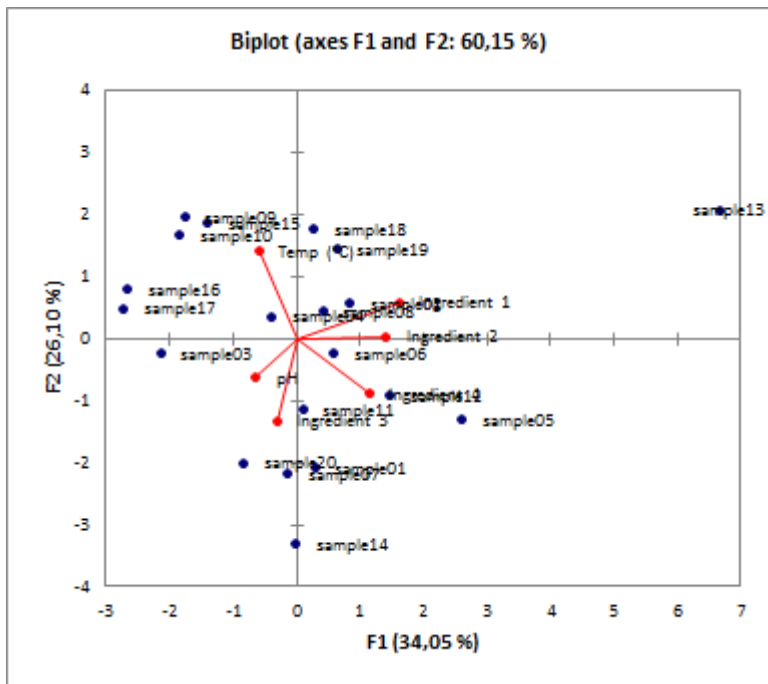
Go to the menu **Analyzing data / Principal Component Analysis** and when the dialog box is open click on the blue button to load the code.



Click this button to load previously saved settings for this dialog box from a file

Select the code "PCArecipe1.txt".

The settings are automatically established. So now simply click on **Continue** and have a look at the biplot.



This time one of the samples seems to be further away than the other samples. The sample 13 may be an outlier.

Have a look at this video to see how to save and reuse the parameters of an analysis in XLSTAT.

[http://www.youtube.com/watch?v=2-fZ3JmtUiY&feature=player\\_embedded](http://www.youtube.com/watch?v=2-fZ3JmtUiY&feature=player_embedded)