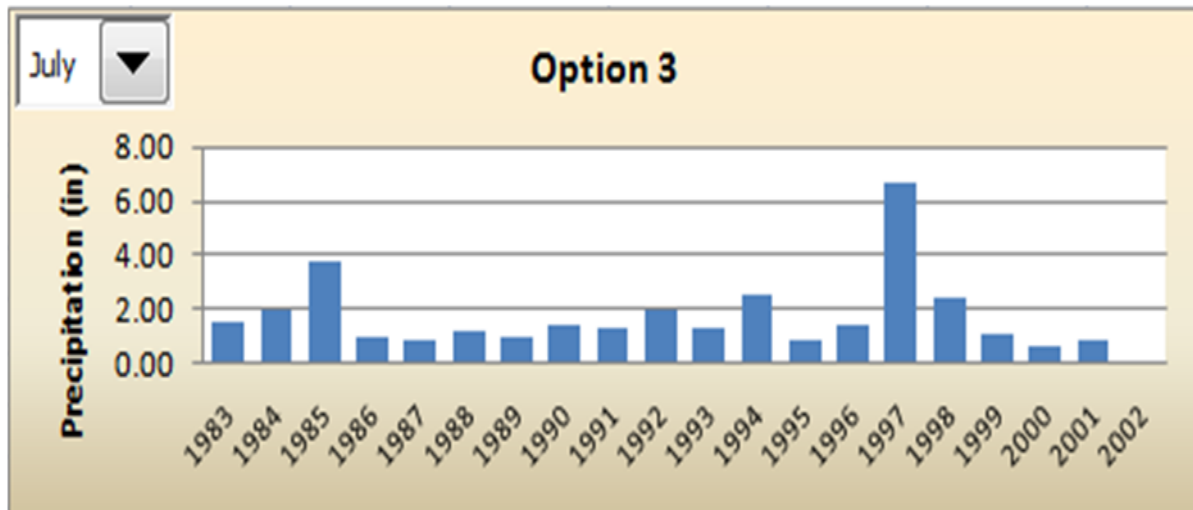




## Creating Dynamic Graphs

You can use the table lookup functions with list boxes or dropdown lists in a cell to create a dynamic graph. You can even use nested logical IF statements, however, table functions are less complex. In an EXCEL graph the user has to manually change the definition of the series if they want to change the information that is being plotted. However with a dynamic graph, the user simply selects from a list the variable that is to be plotted on the x-axis or the y-axis. An example of such a graph is shown below:

Figure 1. Example Dynamic Graph with a Combo Box



A dynamic graph is useful for exploring the data in a table or the relationship between variables. A simple variation of a dynamic graph will fix the variable on the x-axis and then use a list to select the variable for the y-axis. This is useful if you want to quickly view graphs of a lot of variables plotted against a common variable, for example, time.

The provided spreadsheet illustrates a number of ways to create a dynamic graph.

To build a simple dynamic graph we first need a table of input data to be plotted, such as illustrated below. The headings on the columns will be used as our choices for the lists of options for the y-axis. The basic concept is to create an additional column to contain the data to be plotted. This additional column will contain the table lookup functions that will produce the selected data to be plotted. Create an additional column on the right-side of the data table. Use Data Validation to put a list of the column headings in the first cell of the additional column.

Table 1. Example Data Table to Create a Dynamic Graph

| No. | Year | July | Aug  | Sep  | Oct  | Nov  | Dec  |  |
|-----|------|------|------|------|------|------|------|--|
| 1   | 1983 | 1.57 | 1.02 | 0.28 | 0.17 | 2.13 | 0.51 |  |
| 2   | 1984 | 1.96 | 0.57 | 0.80 | 2.53 | 0.02 | 0.27 |  |
| 3   | 1985 | 3.71 | 0.24 | 1.37 | 1.17 | 1.38 | 1.25 |  |
| 4   | 1986 | 0.95 | 1.21 | 0.74 | 1.58 | 1.53 | 0.27 |  |
| 5   | 1987 | 0.80 | 0.76 | 0.65 | 0.51 | 1.61 | 0.78 |  |
| 6   | 1988 | 1.15 | 2.00 | 1.95 | 0.13 | 0.18 | 1.30 |  |
| 7   | 1989 | 0.93 | 1.16 | 2.33 | 0.73 | 0.23 | 0.36 |  |
| 8   | 1990 | 1.39 | 1.69 | 1.36 | 0.57 | 0.87 | 0.25 |  |
| 9   | 1991 | 1.34 | 2.21 | 0.85 | 0.69 | 1.48 | 0.01 |  |
| 10  | 1992 | 1.96 | 2.64 | 0.02 | 0.23 | 1.72 | 0.44 |  |
| 11  | 1993 | 1.35 | 1.14 | 2.62 | 2.36 | 1.23 | 0.14 |  |
| 12  | 1994 | 2.51 | 1.92 | 0.48 | 1.63 | 0.50 | 0.45 |  |
| 13  | 1995 | 0.90 | 0.37 | 2.88 | 0.27 | 0.54 | 0.17 |  |
| 14  | 1996 | 1.46 | 0.51 | 1.34 | 0.49 | 0.59 | 0.02 |  |
| 15  | 1997 | 6.71 | 5.11 | 2.06 | 1.70 | 0.46 | 0.21 |  |
| 16  | 1998 | 2.38 | 0.57 | 0.78 | 2.90 | 1.03 | 0.52 |  |
| 17  | 1999 | 1.02 | 2.14 | 2.46 | 0.72 | 0.59 | 0.07 |  |
| 18  | 2000 | 0.64 | 1.47 | 2.66 | 0.87 | 0.34 | 0.39 |  |
| 19  | 2001 | 0.89 | 1.07 | 0.88 | 0.28 | 0.86 | 0.07 |  |
| 20  | 2002 | 0.07 | 0.65 | 1.45 | 1.14 | 0.74 | 0.43 |  |

An INDEX function can be used in the cells of this additional column to get the data from the column selected by the in-cell list. The first step is to determine the number of the selected column. This can be done using a MATCH function in a nearby cell. You want to match the selected column heading in the in-cell list with the array containing all the column headings displayed in the list. The cell with the MATCH function will be the column number used in the INDEX function. Put an INDEX function in the first cell below the heading in the additional column. The array for the INDEX function consists of the columns of data in the original table (not including the headings), the row number is the row number of the table (for the first cell this is row 1) and the column number is the cell with the MATCH function. Be sure to make the array reference and column reference absolute. Copy this INDEX function down the other cells in the additional column. See Option 2 in the provided spreadsheet as an illustration of these steps. Note that as you change the selected heading in the additional column the data to be plotted changes. Plot this additional column and you have a dynamic graph.

The example spreadsheet shows other options to create the dynamic graph. Note that you can link cell information directly to the graph titles.