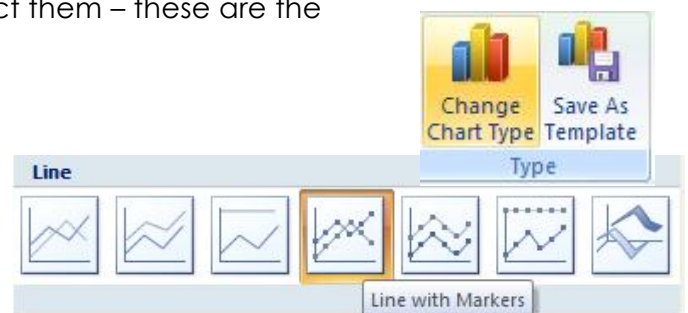# Producing a Hydrograph in Excel 2007

Save a copy of the **Boscastle Flood Data Spreadsheet** (find it at the web address in the header – go into the Geography section) and use this to work through your chart production.

Step 1 – Basic column chart

1. **Highlight** cells A5 to C22

2. Click **Insert** and choose **Column** from the Charts section

3. Choose a normal **Clustered Column** chart

4. If you want your rainfall bars to join up with each other then choosing '**Layout 8**' (great name that!) from the **Chart Layouts** section of the **Design** tab

   This produces a double set of bars - now let's get a line for the discharge.

5. Click one of the **discharge** columns to select them – these are the bigger bars towards the right.

6. Click **Change Chart Type** on the **Design** tab of the ribbon

7. Choose the **Line** type and then select the **Line with Markers** option **> OK**
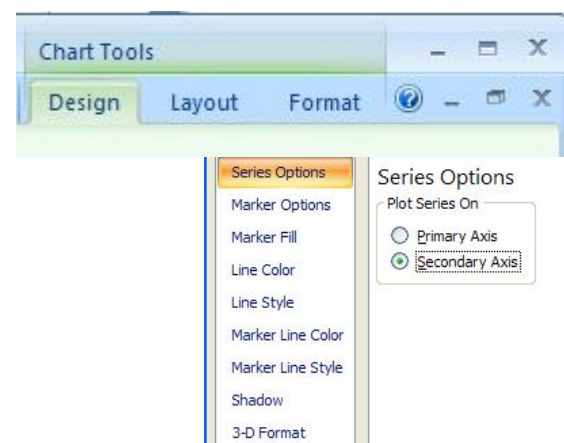
The discharge will now be shown as a line.

Note: you can't get a smooth line as far as I can tell. It won't work with the time on the x-axis. If you find a way to do this please let me know!

Word 2011 (Mac version) & Word 2010 (probably…) – it's simpler to get the line with these versions. Just click on one of the discharge bars to select them and choose a line chart from the charts section of the ribbon (you'll notice that it says "Change chart type" above the chart types now).
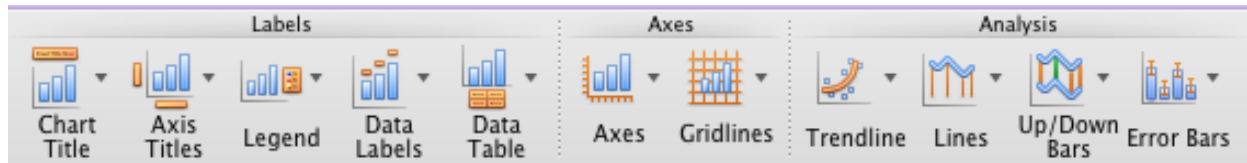
Step 2 – Discharge axis

1. Click to select the **discharge** line

2. Click the **Layout** tab at the top

3. Choose **Format Selection** from the left

4. Choose the **Secondary Axis** button **> OK**

Step 3 – Titles and Labels

Click the **Layout** tab. From here we can then add a **Chart Title** and **Axis Titles**. The options are fairly obvious from the ribbon.

I went with:

- Chart title (choose **Above chart**): Flood Hydrograph for Boscastle, 16 August 2004
- Primary Horizontal Axis: Time
- Primary Vertical Axis (choose **Rotated**): Rainfall (mm)
- Secondary Horizontal Axis: leave blank
- Secondary Vertical Axis (choose **Rotated**): Discharge (Cumecs)

Remember: a Cumec is 1 cubic metre per second of water flowing through a point in the river. Sometimes it's shown as m^3/sec.

Step 4 – Put the chart on its own page

You don't **have** to do this, but personally I prefer it.

1. Click the **Design** tab

2. Choose **Move Chart** and select a **New Sheet > OK**

If you don't want the chart on it's own page then you might need to resize it at some point.

Step 5 – Format the line

I like to use crosses for points on the line and to reduce the weight of the line a little. To do this:

1. **Right click** on the line > **Format Data Series**

2. Investigate **Marker Options > Built In option** (Mac2011: Marker Style) to change the markers

3. Use **Line Style** (Mac2011: Line) to change the weight of the line – I usually aim for a 2pt weight of line and for crosses for markers.
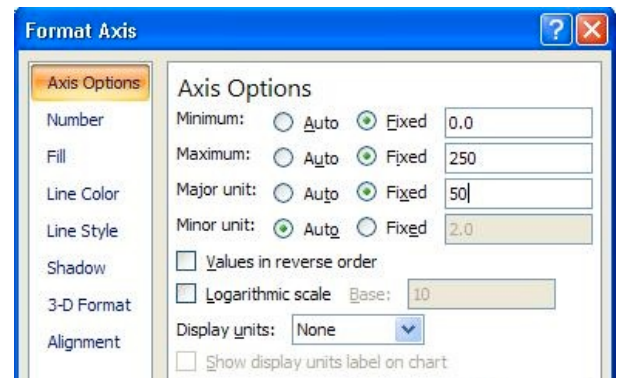
Step 6 – Formatting Axes

You might need to change the **maximum** and **minimum** values on the axes of the graphs.

In this case I made my maximum value for the rainfall axis 60 with a major unit of 5. I didn't want the bars to look too massive and it made the graph look better in my view – and the gridlines match up with the discharge lines as well.

To do this:

1. **Right click** on the axis you want to change (it's easiest to click on one of the numbers)

2. Choose **Format Axis**

3. Click the radio buttons and enter the values you need as the max or min. You can also deal with the major and minor units at this point - these determine where gridlines appear.

You can do this on both vertical axes if you need to.

You will probably want to add dividing tick marks to the Time axis.

1. **Right click** the Time axis and > **Format Axis**

2. Set **Major tick mark type** to **Outside** > **OK**

Options:

You might want to:

Move the Legend – on the **Layout** tab click the **Legend** button and make a choice

Remove Gridlines – on the **Layout** tab click the **Gridlines** button

Show the Data Table – on the **Layout** tab click the **Data Table** button