Altair HyperWorks

Altair HyperGraph 3D 2019 Tutorials

HG3D-1010: Editing Waterfall Plots

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In this tutorial, you will learn how to:

- Work with the **Axes** panel
- Query data
- Edit curve attributes
- Use the **Edit Legend** dialog

Tools

The **Curve Attributes** panel can be accessed one of the following ways:

- From the toolbar, click the **Curve Attributes** icon, 🌈

  Or

- From the menu bar, select **Curves > Curve Attributes**

Plot attributes, such as style, color, and weight are on the **Curve Attributes** panel. This panel also allows you to contour the surface and edit the legend, too.
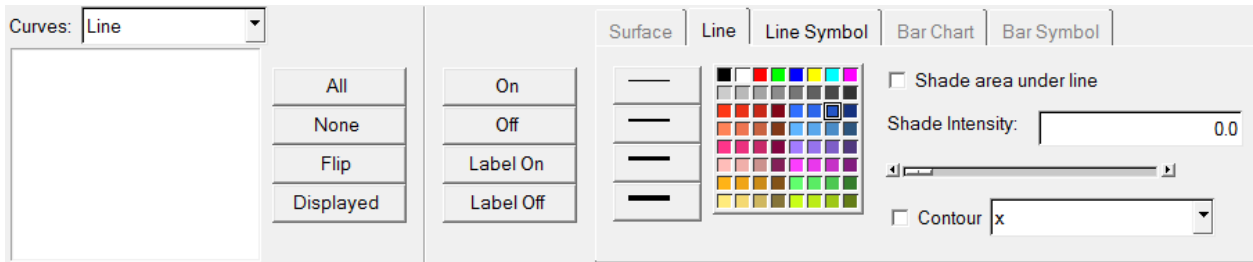
The **Coordinate Info** panel can be accessed in one of the following ways:

- From the toolbar, click the **Coordinate Info** icon, ✢

  Or

- From the menu bar, select **Curves > Coordinate Info**

The **Coordinate Info** panel allows you to retrieve individual point data on any curve in the active window. When a point on a curve is selected, the point data is displayed on the panel and in a bubble in the graphics area of the screen.
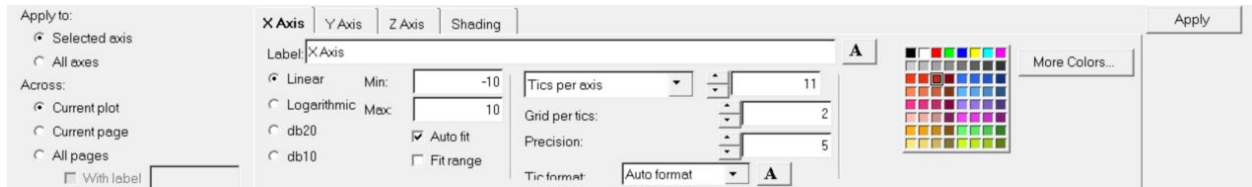
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The **Axes** panel can be accessed in one of the following ways:

- From the toolbar, click the **Axes** icon,

Or

- From the menu bar, select **Annotation > Axes**

Axis attributes such as labels, color, and scaling can also be modified using the **Axes** panel


Exercise: Editing Waterfall Plots

Step 1: Open Session File `trimmer.mvw` and create HyperGraph 3D window

1. From the menu bar, select **File > Open > Session**.

2. Select the file `trimmer.mvw`, located in the `3dplotting` folder, and click **Open**.

3. Click **Close** on the message log that appears.

4. Click on the **Add Page**, , icon to add a page.

5. From the **Select application** menu, select **HyperGraph 3D**.

### Step 2: Create a Frequency versus Time waterfall plot

1. Click on the **Waterfall** icon, , on the toolbar to enter the panel.

2. Verify that **Frequency** and **Time** are the options set under **Plot type:**.

3. Click the curve selection icon, , in the **Response** field for **Data curves:**.

4. Choose the **Force vs Time – Raw** curve.

5. Click **Select**.

6. Verify that the curve referenced under **Response** is **p1w2c1**

7. Enter 100 for **Number** under **Waterfall Slices**.

8. Check the **Contour waterfall** option.

9. Click **Apply**.
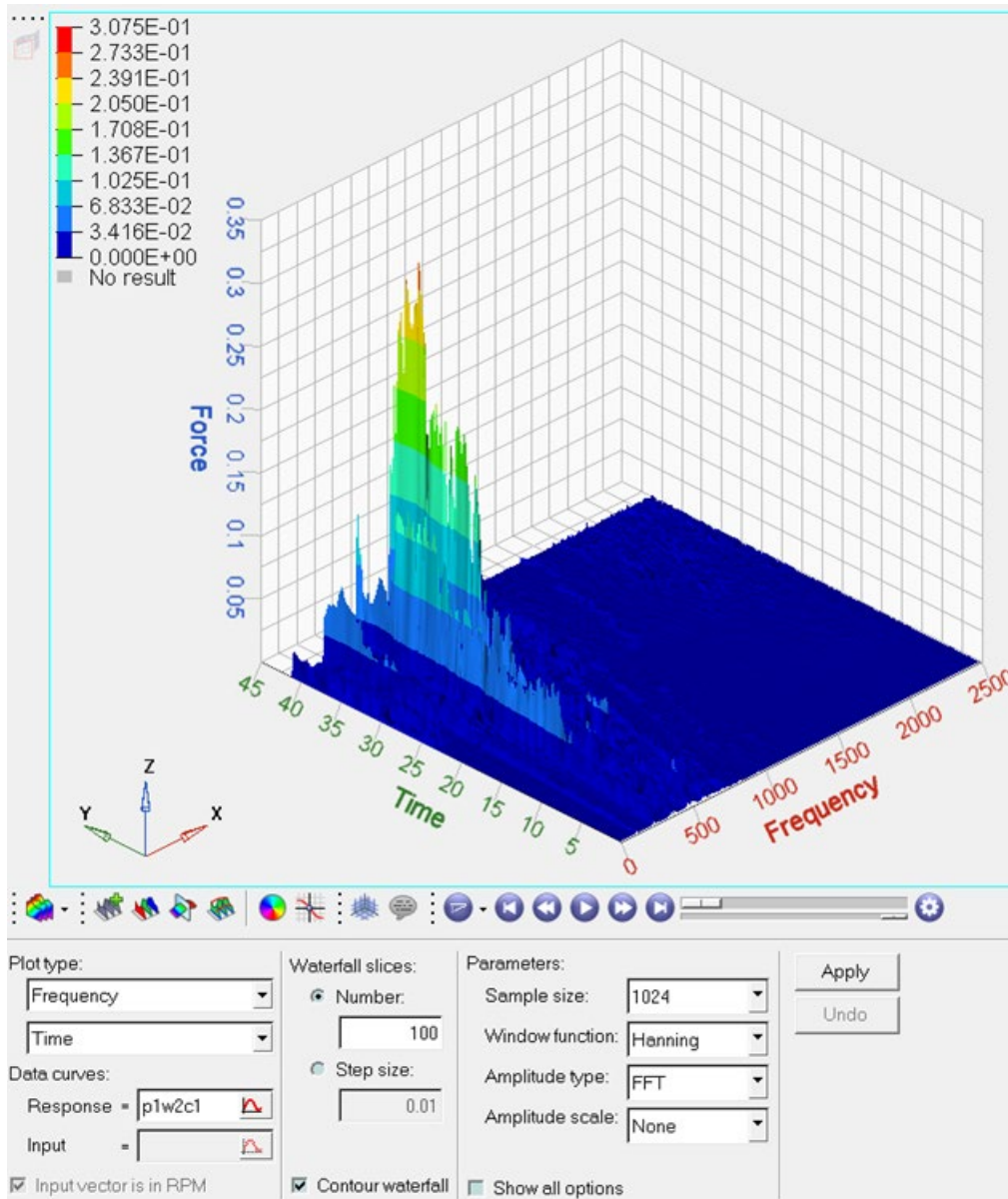
Step 3: Working with the Axes Panel

1. Click on the *Axes* panel icon, ✳.

2. Pick a color from the color palette for the **X axis**.

3. Change the number of **Tics per axis**.   Note what happens to the values on the **X axis** of the screen.

4. Click on the tabs for **Y** and **Z** axes, respectively, and change the colors of the respective axis.
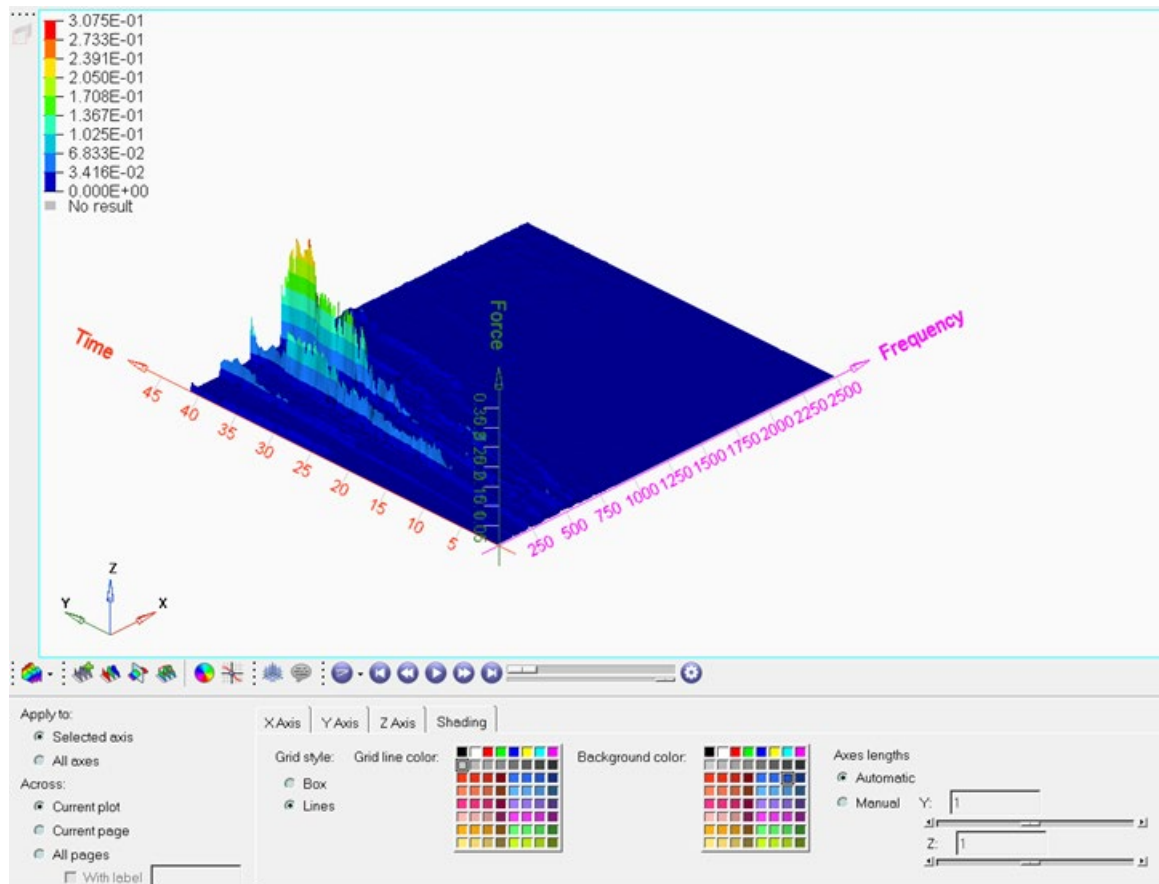
X Axis | Y Axis | Z Axis | Shading
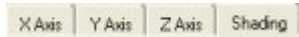
5. Click on the tab for **Shading**.
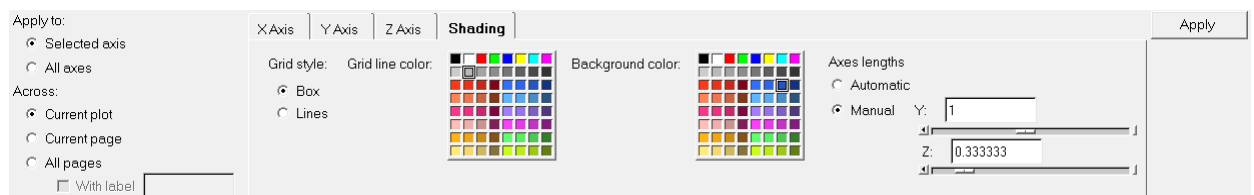
6. Verify that the **Grid style***:* is ***Box*** and change the **Grid line color**.

7. Verify that the **Axes lengths** is set to ***Automatic***.

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8. Check the *Lines* option for **Grid Style**.

9. Change the **Background color** by selecting a color from the palette.
10. Go back to the *Box* option for **Grid Style**.

Step 4: Query XYZ Values Using the Coordinate Info Panel

1. Click the **Coordinate Info** icon, ⚹.

   Note that a bubble with the XYZ values is seen in the graphics area.

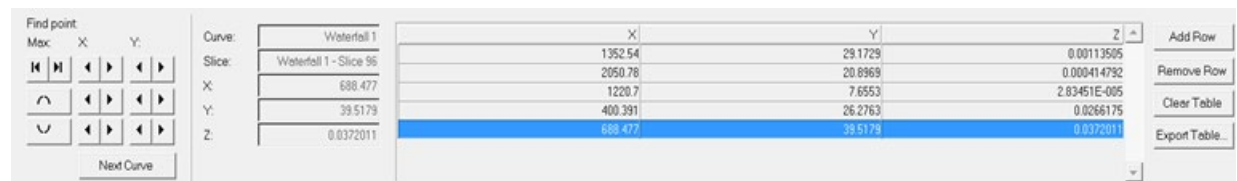2. Click on the surface to see the XYZ values at that point.

   Note that the panel area displays the XYZ values of the point chosen.

3. Click **Add Row** to add an additional row.

4. Click on another point on the surface.

   The value in the newly added row is updated to that of the new point.

5. Repeat the operation to build a table.

6. Click on any one of the rows in the table and then click **Remove Row**.

Step 5: Editing the Curve Attributes and contouring the plot

1. Click on the *Curve Attributes* icon, 🌈.

2. From the **Curves:** drop-down menu, select *Waterfall*.

3. Verify that the *Surface* tab is active.

4. Change the **Display mode** of the surface to slices only by clicking 🔩 from the **Display mode** options in the panel.

5. Change **Opacity** for the surface to **Transparent** by clicking 🔲.

6. Change the **Display mode** back to waterfall as a shaded surface.

7. Verify that the *Contour* option is active.

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8. Select the axis in the pull-down menu to select the **X** axis.
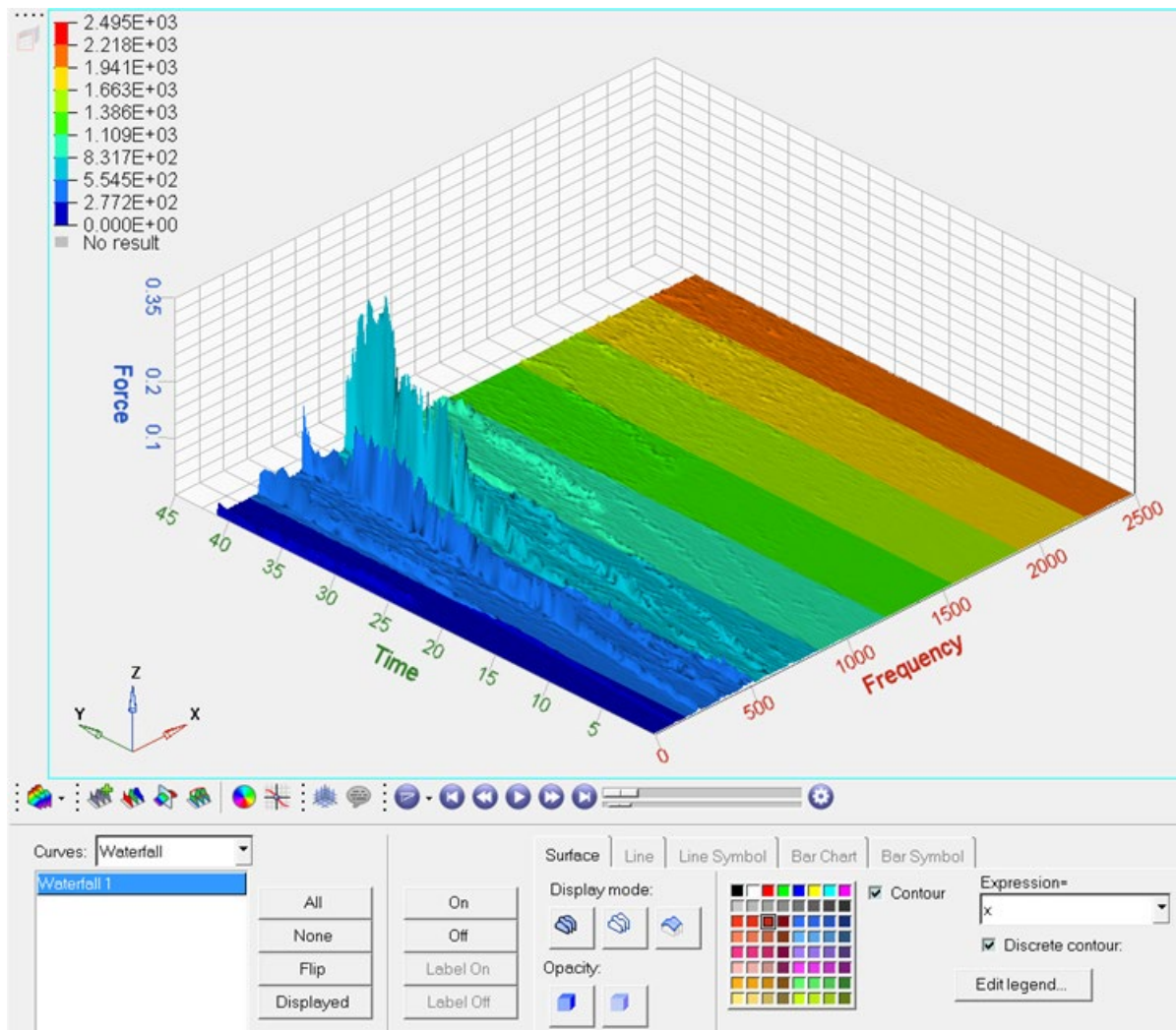
9. Repeat the previous step for the **Z** Axis.

Step 6: Using the Edit Legend dialog.

1. Click *Edit legend*.

2. Experiment with the following:

   – Change the numeric format.

   The format automatically changes in the legend box.

   – Change the numeric precision.

   – Change the number of levels.

   The number of color bands in the legend box automatically changes.

3. Click on a number in the legend box and enter a new value.

4. Press ENTER.

5. The edited value is displayed in bold font.   The remaining values linearly interpolate.

6. Add a header and footer to the legend.

   – Activate the *Header* check box and enter text in the text box.

   – Click the font button and change the font type and size.

   – Click *OK*.

   – Activate the *Footer* check box and enter text in the text box.

   – Click the font button and change the font type and size.

   – Click *OK*.

7. Click *Apply*.

8. Change the color of a legend band.

   – Click on a color band.

   – Select a new color.

   – Click *OK*.

9. Change another color.

10. Interpolate colors between two color bands.

    – Click *Interpolate*.

    – Click on the first changed color.

    – Click on a second changed color.

    – The colors between the two selected colors are interpolated.

11. Click *Apply*.

Step 7: Save legend settings for future use.

Once you have completed your legend settings, you can save them for future use. Items that can be saved are listed in the **Save options** section.

1. Activate the check boxes for the attributes you want to save.

2. Designate a file name.

    Files are saved in Tcl format.

4. Click ***Save...***.

5. Click ***Default*** to return to the default settings.

6. Click ***Open...*** to open the saved file and load the previously determined legend settings.

    The contour colors and legend are retrieved just as you saved them.