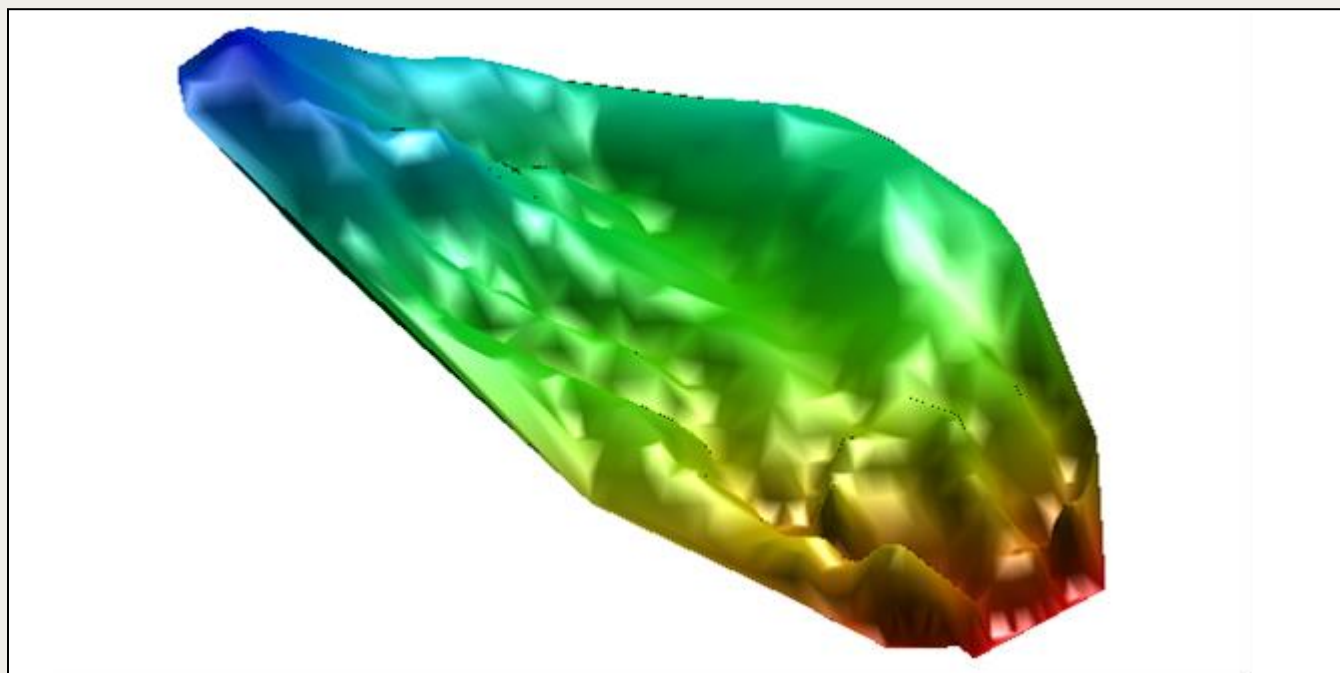*SMS 13.3 Tutorial*

Lighting Options

Explore Lighting Display Options in SMS

Objectives

This tutorial gives an overview of how to use the lighting options in SMS.

Prerequisite Tutorials	Required Components	Time
• None	• SMS Core	• 10–20 minutes

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1   Introduction

The lighting options in SMS can control the shading of faces on objects. Lighting is a general option, so it can be used with scatter sets, 2D mesh, 2D grids, UGrids, and GIS objects. Once the lighting options have been set, it will apply to all objects that are visible, even when switching between modules.

Lighting options are set through the *Lighting* tab in the *Display Options* dialog. This tutorial will go over:

- Importing a TIN file to use an example object.

- Turning on contours and adjusting the Z-magnification.

- Turning on lighting options in the *Display Options* dialog.

- Changing the direction of the light source.

- Changing the intensity of the lighting source.

2   Importing a TIN File

For this tutorial, a TIN file will be imported into the Scatter module. The TIN file contains elevation data obtained from a survey done in Clear Creek Canyon located in Sevier County, Utah.

To import the file:

1.   Select *File* | **Open**. This will bring up the *Open* dialog.

2.   Select the file "trailmount.tin" from the *data files* folder in the *Lighting* folder.

3.   Click **Open** to import the file.

The image should be visible in the Graphics Window as in Figure 1.

Figure 1   Imported TIN file

3   Displaying Contours

For lighting options to be of much value, the contours for the object must be turned on. The exception for this would be when using lighting options on a DEM or raster file imported to the GIS module. Otherwise most data—such as scatter sets, meshes, or grids—will need to have the contour options active.

1. Select *Display* | **Display Options…** to open the *Display Options* dialog.

2. Select *Scatter* from the list on the left.

3. On the *Scatter* tab, turn off *Points* and turn on *Contours*.

4. On the *Contours* tab, in the *Contour method* section, select "Color Fill" from the first drop-down.

5. In the *Contour interval* section, change the *Number* to "1". This is only in order to make the effect of the lighting options clearer.

6. Select *General* from the list on the left.

7. On the *General* tab, turn off "Auto z-mag" in the *Drawing Options* section.

8. Enter "1.0" as the *Z magnification*.

9. Click **OK** to close the *Display Options* dialog.

The Graphics Window should appear like Figure 2. Notice that even though the z-direction was amplified, no features can be seen. This is because the contours have been set to a solid color. Turning on the lighting options will fix this problem.
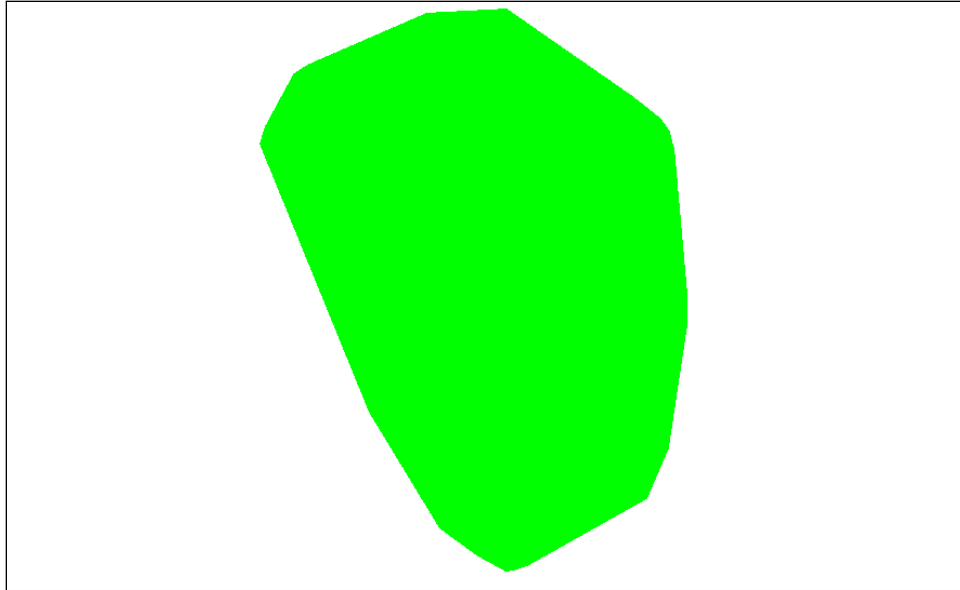
Figure 2   TIN with solid contours turned on

4   Enabling Lighting

Now to turn on the lighting options so the changes in elevation can be seen.

1.   Select *Display* | **Display Options…** to open the *Display Options* dialog.

2.   Select *General* from the list on the left.

3.   On the *Lighting* tab, turn on *Enable lights*.

4.   Click **OK** to close the *Display Options* dialog.

With the lighting enabled, the Graphics Window now shows shading where the elevation changes (Figure 3).
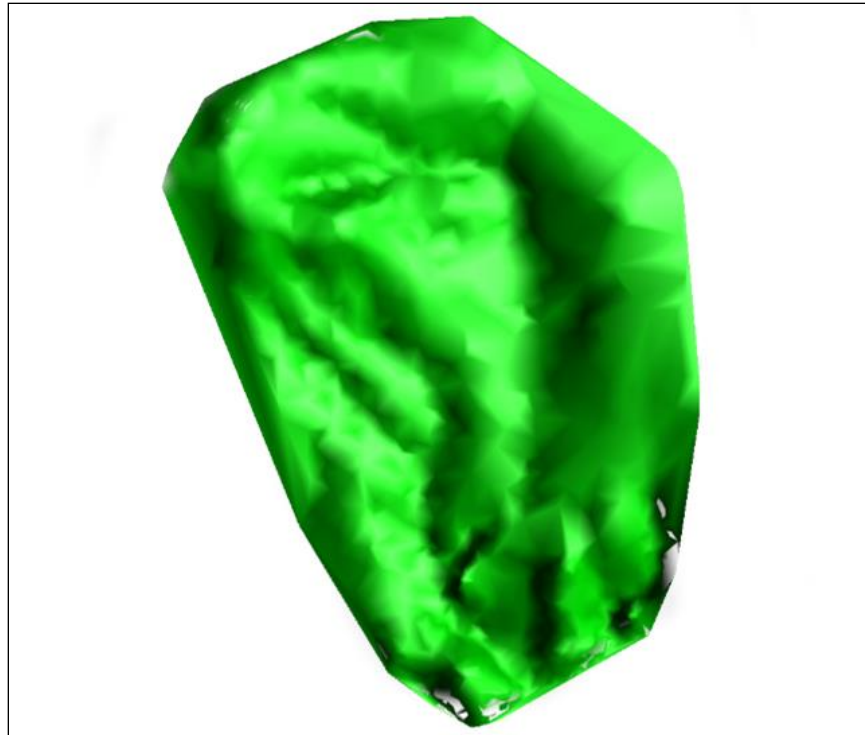
Figure 3   Lights enabled

5   Changing the Light Direction

Currently, the lighting is coming from a default setting. There are a number of preset lighting options that can be selected. Another preset lighting package can be used to move the light direction.

1. Click the **Lighting** 💡 macro to open the *Display Options* dialog with *Lighting* tab active. Using the macro can save time in getting to the lighting options.

2. Select **Enable lights** to turn on the lighting options.

3. Select the preset option "South".

4. Click **OK** to close the *Display Options* dialog.

The lighting source direction is now coming from the South (Figure 4) instead of from the North as with the previous setting.
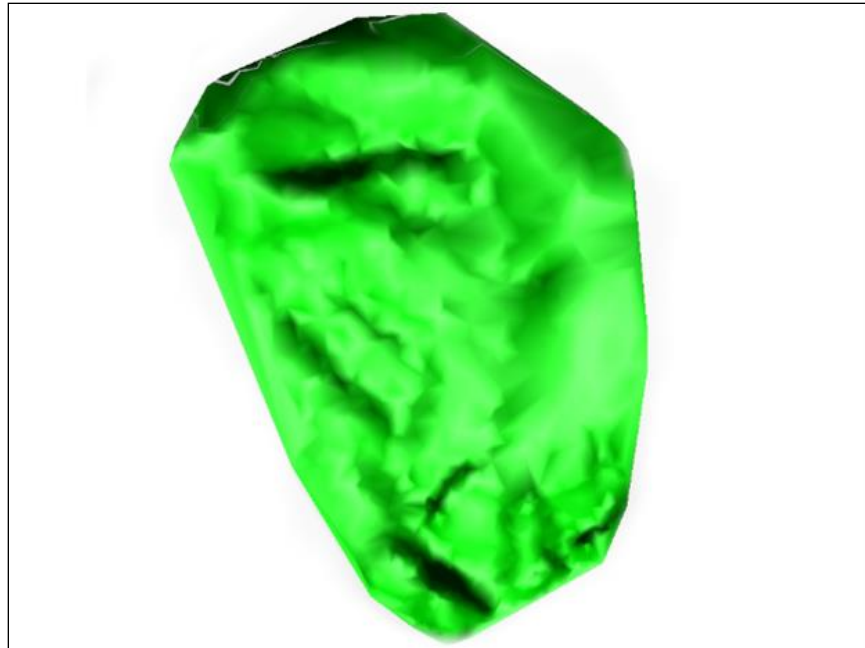
Figure 4   Southern lighting source direction

Another method of changing the lighting direction is to manually change it.

1. Click the **Lighting** ☼ macro to open the *Display Options* dialog with *Lighting* tab active.

2. Using the sphere in the upper right corner of the tab, click and drag on the sphere to show the light source coming from the northeast direction as seen in Figure 5.

Notice that as the point is moved, the values in the table in the lower part of the Lighting tab change. These values can be edited to change the precise location of the light source and to adjust the intensity values.

3. Click **OK** to close the *Display Options* dialog.

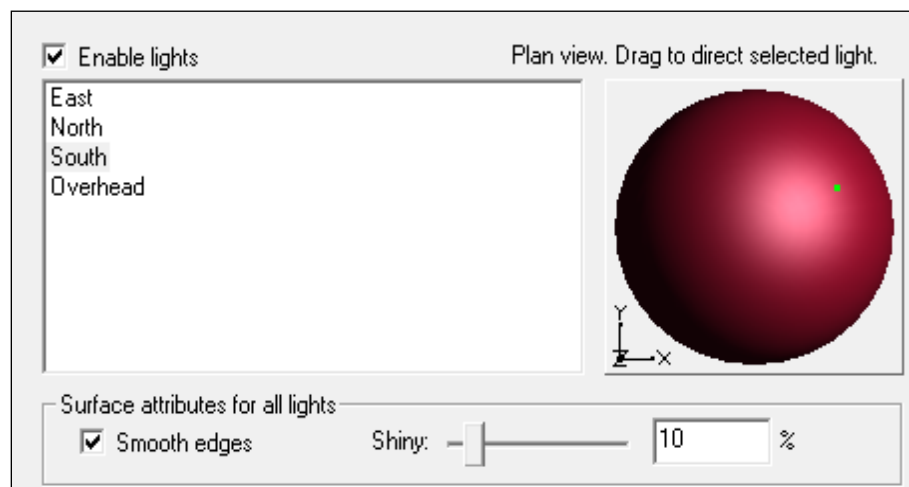The Graphics Window should appear similar to Figure 6.

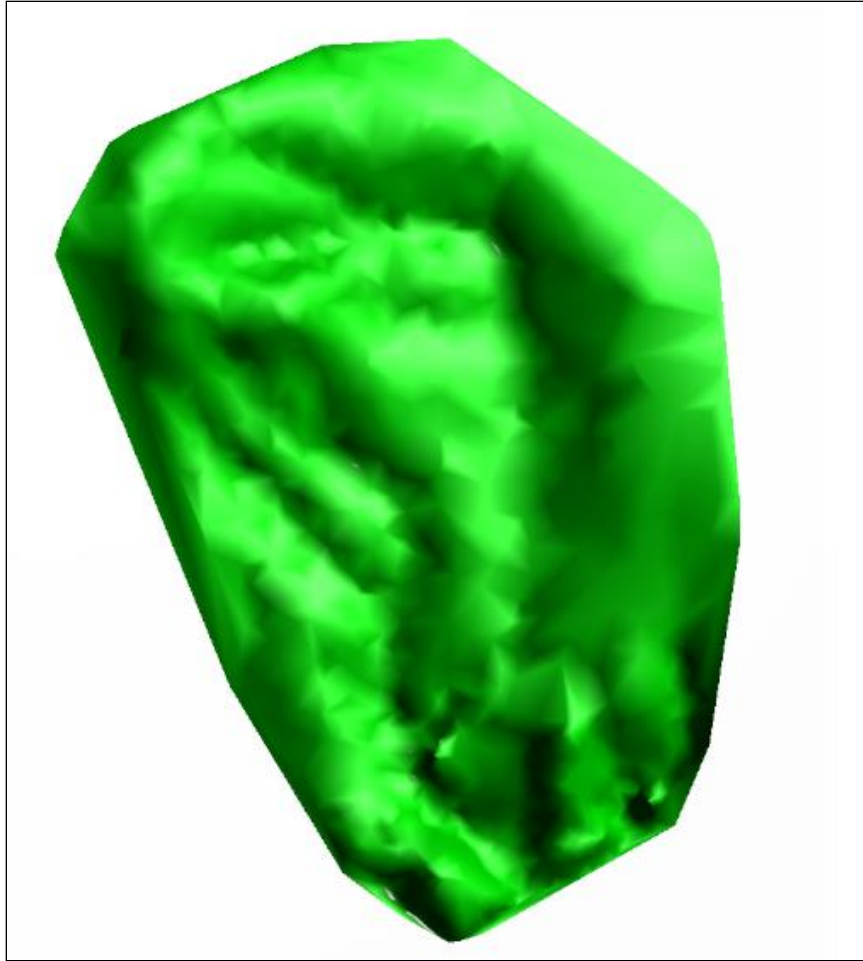*Figure 5   Lighting tab light position*

Figure 6   Northeastern lighting

6   Adjusting the Lighting Intensity

Just as the light direction can be altered, the intensity of the lighting can be changed. Doing this can either sharpen or dull the changes in elevation shown on the object in the Graphics Window.

1. Click the **Lighting** 💡 macro to open the *Display Options* dialog with *Lighting* tab active.

2. Change *Shiny* to "50%".

3. Move the *Specular* slider all the way to the right (100.0 in the table below).

4. Click **OK** to close the *Display Options* dialog.

With the changes, the TIN now appears much brighter with higher contrast (Figure 7).
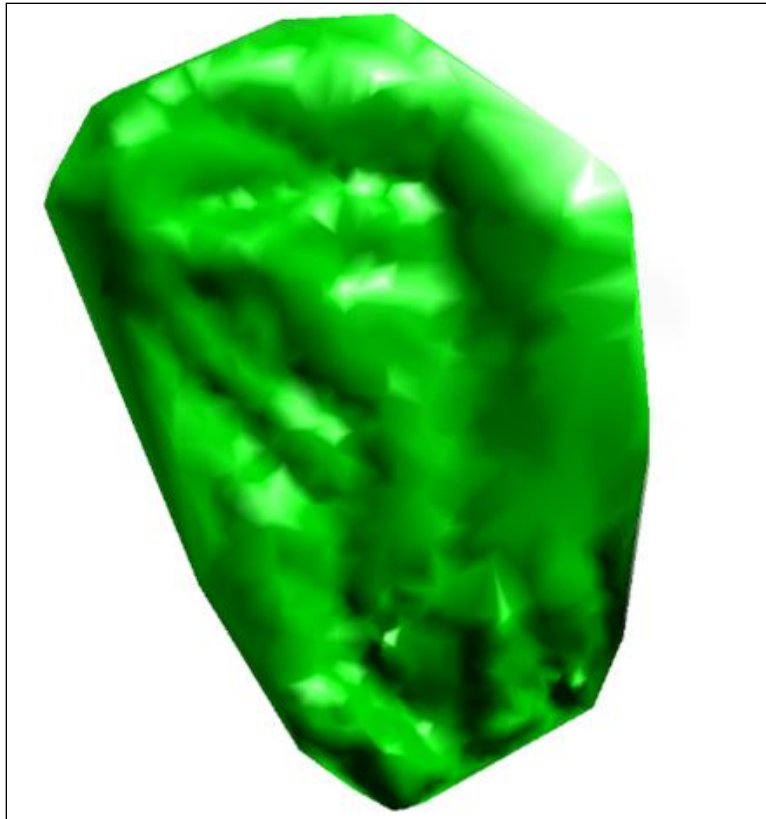
Figure 7   Increased lighting intensity

The light source on the TIN will change with the viewing angle. To see this:

5.   Using the **Rotate** ✣ tool, change the angle of the TIN to see how the light changes.

Notice the light source stays fixed. This can be useful in making it easier to see features in a TIN, mesh, or grid.
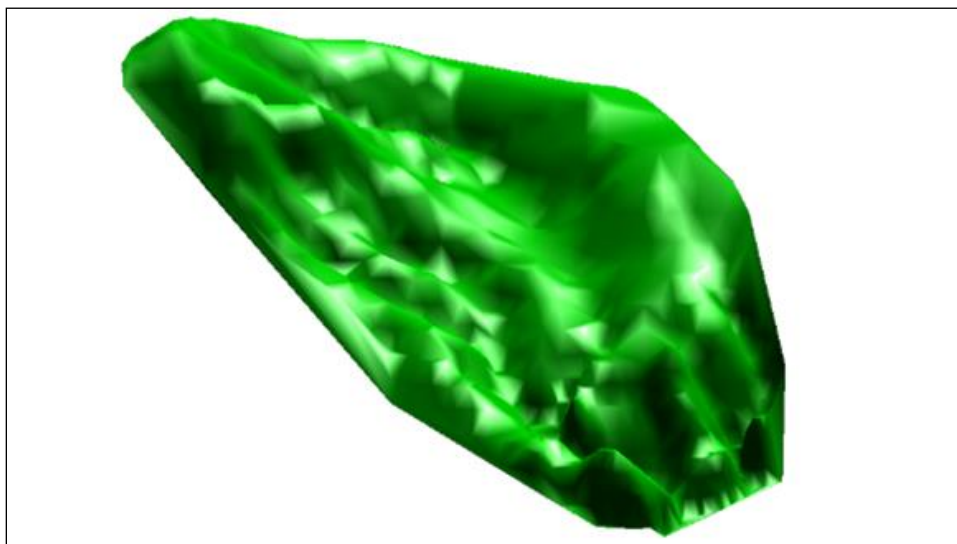

Figure 8   Lighting after changing the viewing angle

7   Conclusion

This concludes the "Lighting Options" tutorial. Feel free to continue experimenting with this part of SMS, or exit the program.