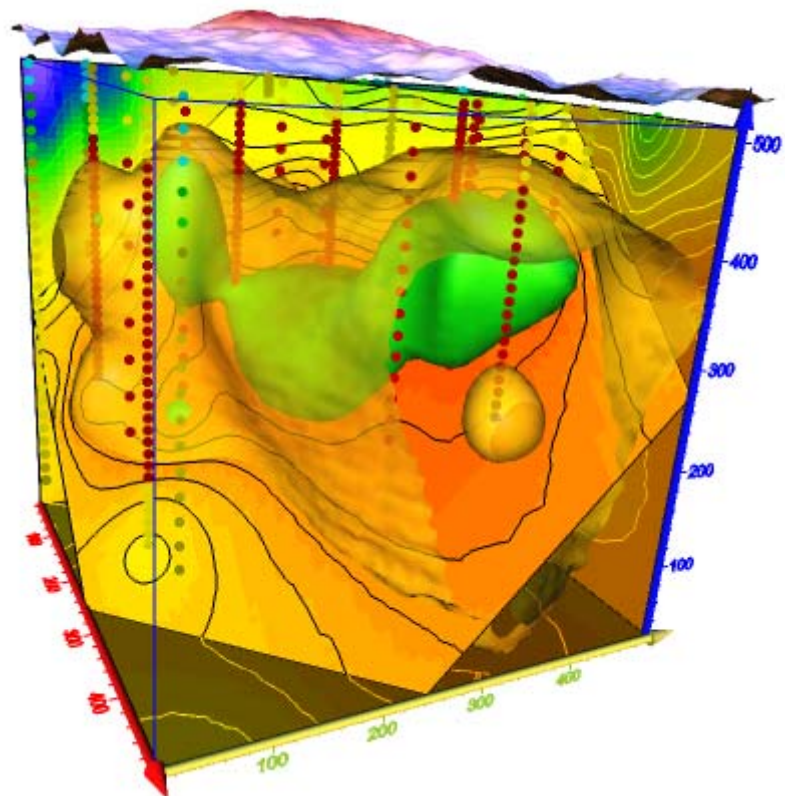




## Overview Voxler®

**Voxler®** A revolutionary new software program from Golden Software for the visualization of three-dimensional data. From the term **voxel**, a volumetric element.

Golden Software announces the release of Voxler, the NEW way to visualize your 3D data. It imports data from a plethora of sources, and creates stunning graphics that let you creatively visualize the crypt relationships in your data set.



*Voxler combines a multitude of data sources into a brilliant display of data points, DEM height field surfaces, data isosurfaces, contour maps and oblique image slices at any angle, and much more!*

## Explore the world of three-dimensional visualization with Voxler!

**Voxler** takes your raw, complex data and models it in a rich, interactive, visual environment. With an easy-to-use user interface, you will quickly visualize, evaluate, investigate, and examine your data.

- Geoscientists with 3D data from drill holes, petrography, seismic studies, and remote sensing surveys.
- Environmental Professionals with 3D data from groundwater and soil contaminant studies.
- Meteorologists with 3D data from atmospheric studies.
- Oceanologists with 3D data from ocean surveys of water temperature, salinity, and contaminants.
- Biologists with 3D data from organism sampling.
- Bio-technicians visualizing Confocal microscopy data.
- Medical Professionals with 3D data from MRI, CT, and ultrasound scans.

***“I’m enthusiastic about Voxler!  
Nice layout, fast running”***

*Dr. Niels Hartog  
Research Fellow, University of Waterloo*

***“Overall, a great piece of software... The abilities to rotate displays and adjust transparency are awesome.”***

*Gary Rice  
President, GeoFrontiers*

***“I was very impressed by the real-time dynamic cutting contour plane – awesome!  
You can be very proud of this software.”***

*Dave Eisler  
Head Developer, pixelmetrics*

- Engineers with 3D data showing parameters distributed throughout the volume of an object.
- Engineers dealing with the visualization of computational fluid dynamics.
- Research and Development Groups performing numerical simulations.
- Geo-Statisticians needing to illustrate reservoir characterizations.
- Seismologists requiring velocity modeling.
- Anyone who wishes to see the distribution of 3D data.

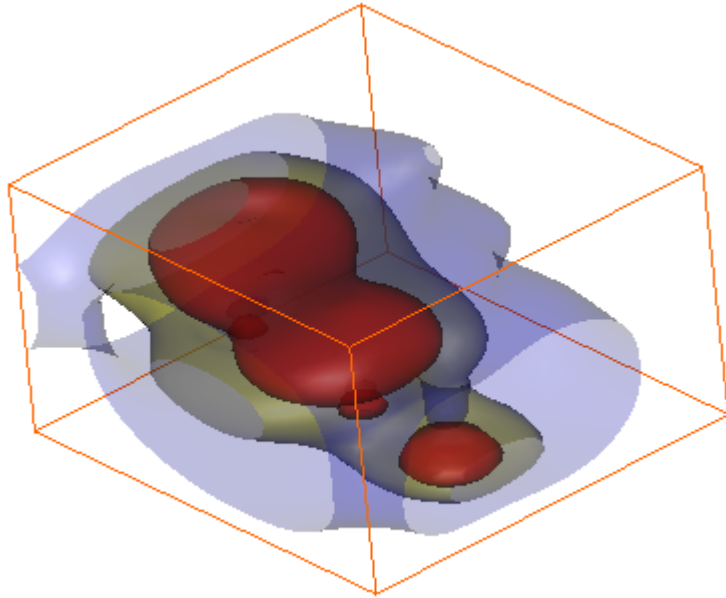
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## Voxler Features

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### Isosurface

A **Voxler** isosurface extends the concept of the contour line (a line of constant data value in two dimensions) to display a surface of constant data value in three dimensions. Combine multiple Isosurfaces color-coded by data value to show discrete values through a 3D grid.

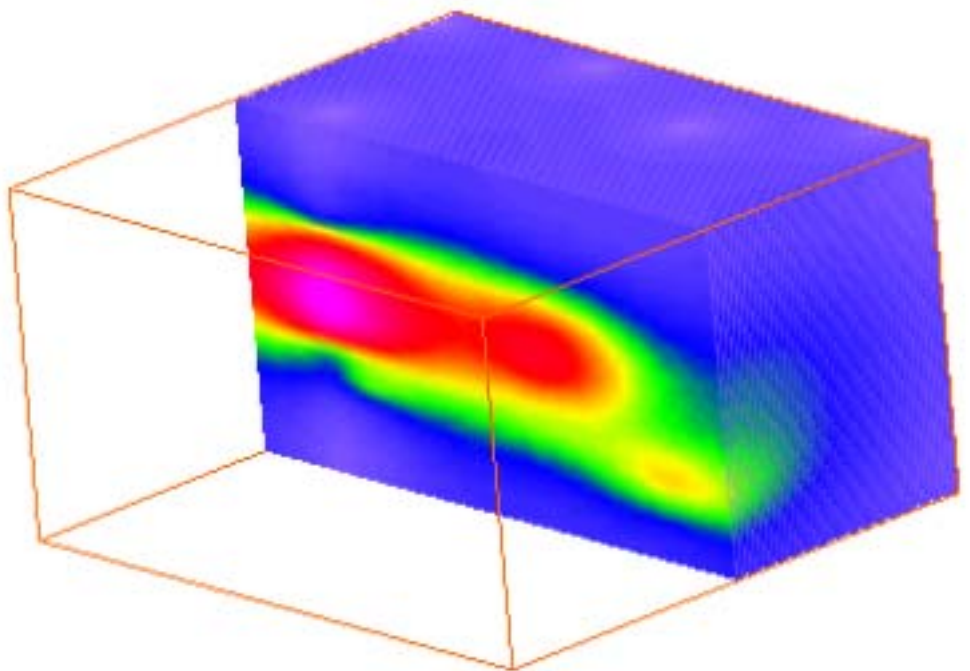


*Isosurfaces display surfaces of constant data value. Specify the color and transparency for each surface to indicate its value.*

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## Rendered Volume

A rendered volume assigns a color and transparency value to every element in the 3D grid. Add a ClipPlane to display a slice through the volume at any angle.

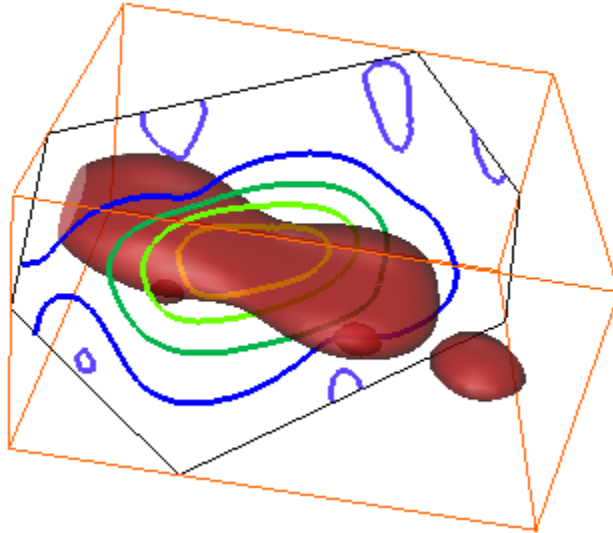


*A rendered volume displays a color for every element in the 3D grid. Add a ClipPlane to display a slice at any angle.*

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## Contours

Contours display lines of constant data value along a plane. For a 3D grid, the plane can be oriented at any angle.

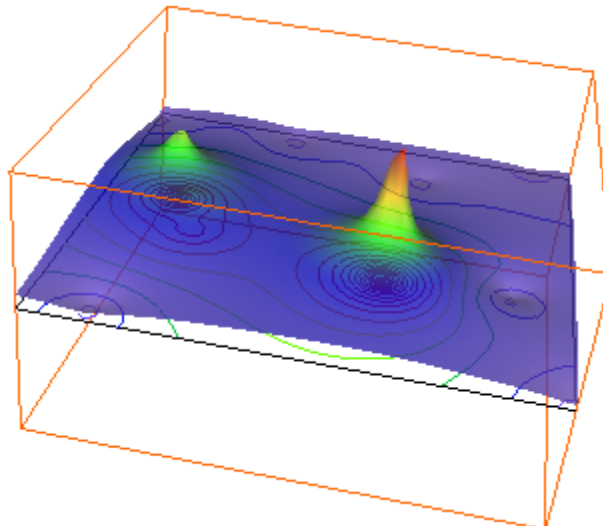


*Add contours along a plane at any angle through a 3D grid.  
This example illustrates the contours intersecting a semi-transparent isosurface.*

---

## Height Field

A height field displays data values as colors for a 2D grid, a 2D orthogonal slice of a uniform 3D grid, or along a 2D curvilinear lattice. The data magnitude is also depicted by the amount of displacement above or below the slice. The displacement is perpendicular to the plane or curvilinear lattice and is adjusted by the scale factor.

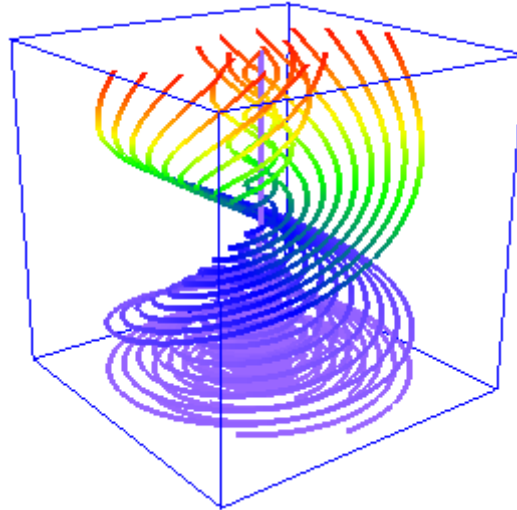


*The height field displays data values from an orthogonal slice through a 3D grid. The height field opacity is set to be partially transparent to view the underlying contours the slice.*

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## Stream Lines

Stream lines are used to display the path of particles through a velocity field, the distribution of velocities of a medium in 3D space. Different colors indicate the magnitude of the velocities.

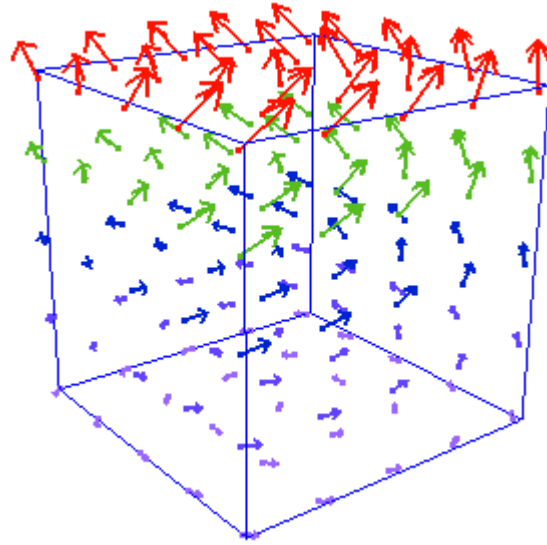


*Stream lines indicate particle paths through a vortex. Colors show the relative velocities of the particles, with purple being slower and red being faster.*

---

## Vector Plot

A vector plot displays lines or arrows indicating the direction and magnitude indicated by the components of a 3D grid or point data set. The magnitude of the vectors is shown by length and color.

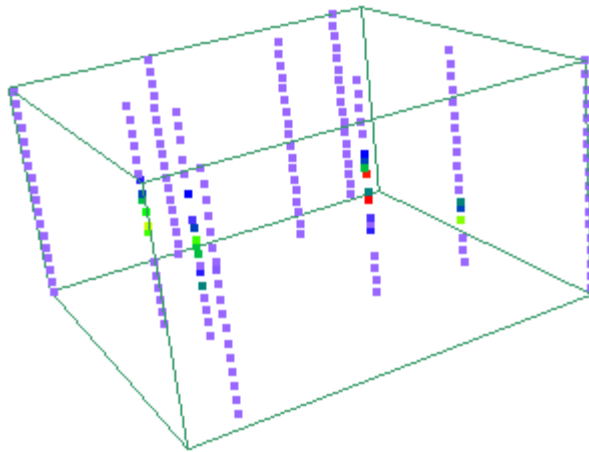


*Vector arrows indicate direction and magnitude of the three components parallel to the X, Y, and Z axes in a 3D grid. Magnitude is also shown by color with red being higher magnitude and purple showing lower magnitude.*

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## Scatter Plot

A scatter plot displays symbols at the XYZ location specified in the data file. If the data file has a value at each data point, specify different colors for different data values.

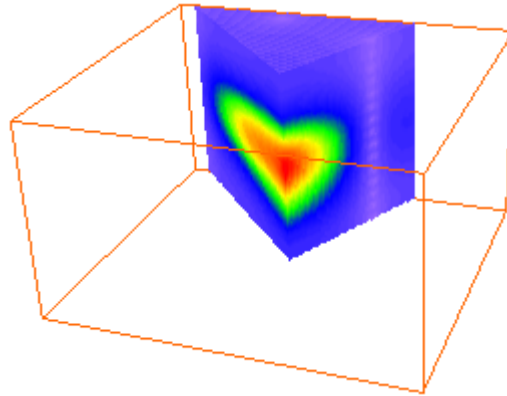


*A scatter plot displays symbols for the data sampled in boreholes. Different colors indicate different levels of concentration at each XYZ location.*

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## Clip Plane

Add a clip plane to any graphic to remove the portion on one side of the clip plane. Add multiple clip planes at different angles to display the area of interest without obstruction.



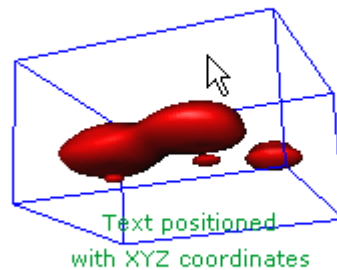
*Clip planes remove a portion of a graphic to display the sections hidden by the intervening parts of the object. Here, two clip planes allow the display of an irregularly shaped region.*

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## Annotation and Text

Use annotation and text to add textual information to a plot. Annotation is used to display textual information positioned at the specified screen coordinates. Text is used to display textual information anchored at data XYZ coordinates.

### Annotation positioned with screen coordinates

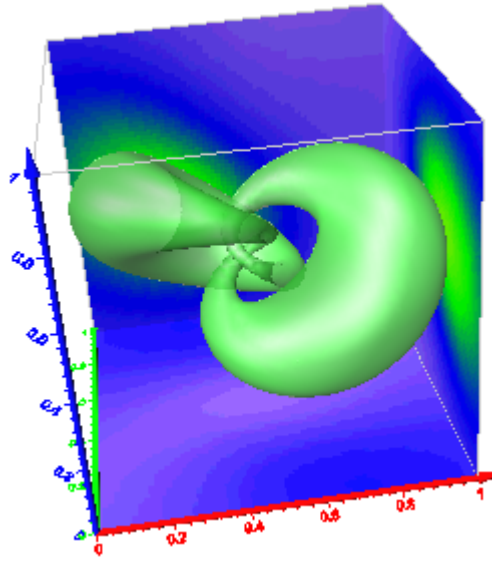


*This animation shows how text moves when the graphic is rotated. Annotation remains stationary on the screen.*

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## Axes

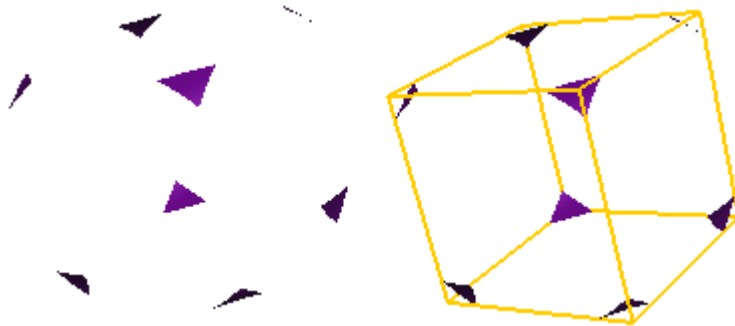
Add axes to a plot to display the XYZ coordinate ranges. Axes are color-coded to identify each direction. Change the plane of the axis labels the axis and rotate the labels around a point centered at each tick mark.



*Display axes on a plot to show the X, Y, and Z ranges.  
Change the axis colors and text angles to differentiate each direction.*

## Bounding Box

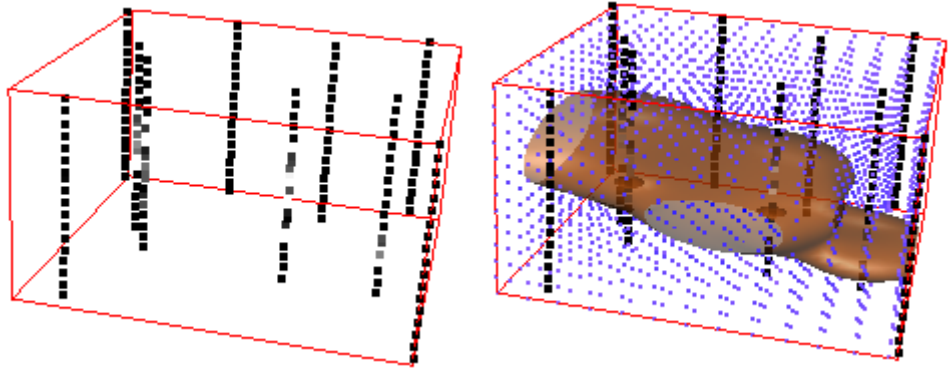
The bounding box is a part of a plot that shows the limits of the XYZ data ranges. It is a good way to show the ranges when the settings produce a graphic that does not cover the entire range, as for some isosurfaces. It also provides a good reference system to orient the graphic output.



*The isosurface on the left is difficult to interpret without any reference points.  
The same isosurface on the right makes a lot more sense  
with the addition of a bounding box.*

## 3D Gridding

Voxler can take scattered XYZC data (XYZ coordinates with a data value C) and produce a uniform 3D grid using Inverse Distance, and Local Polynomial gridding methods. It also can calculate a large number of Data Metrics within the specified search radii, including minimum, maximum, median, mean, quartiles, standard deviation, variance, count, density, and distance to nearest and farthest point.



*Voxler takes XYZC data (black) and calculates a uniform 3D grid (purple) to use for displaying isosurfaces, rendered volumes, and other graphics. with the addition of a bounding box.*

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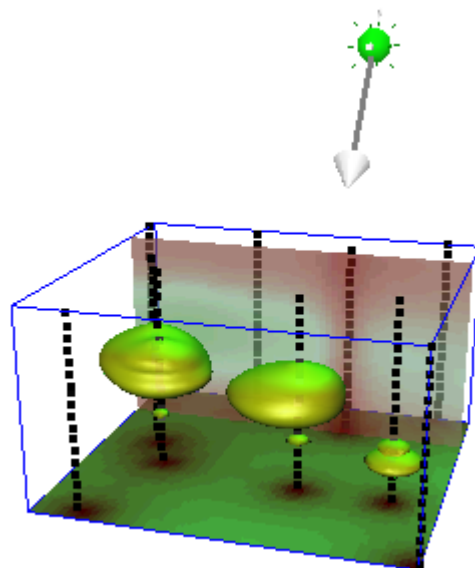
## More Computation Options

Voxler provides a number of computational options including filters for eliminating duplicate data points, removing data points based on the X, Y, Z, or data values, calculating normal, distance-weighted, Gaussian averaging, data metrics, and image processing. Other computational modules calculate gradient, grid math with up to three 3D grid files, merge up to five 3D grid files, resample, subset, and transform operations.

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## Adding Light to a Scene

Lighting options include ambient light, camera headlight, directional, point, and spot lights with settings for color, intensity and direction. Use the graphical Dragger tool to aim and position directional, point, and spot lights.

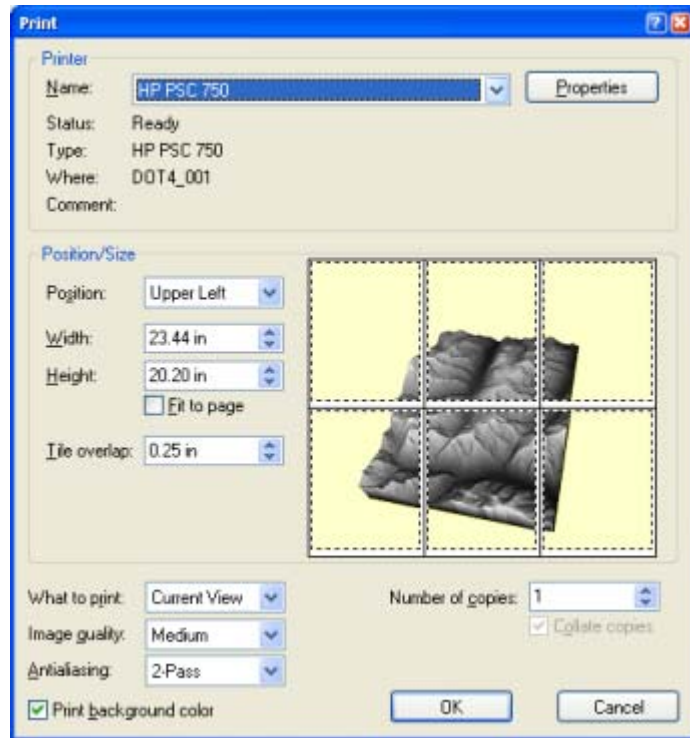


*Use the Dragger tool (shown in the upper portion of the illustration) to graphically position and angle a directional green light on the scene.*

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## Printing

Voxler features an improved print dialog with a print preview that is especially helpful when printing graphics that cover several pages. Don't guess at how many pages a large plot will need! View the page requirements in the dialog preview. Print everything, or just the current view. Control image quality, add antialiasing to smooth a print out, and print the background color as needed.

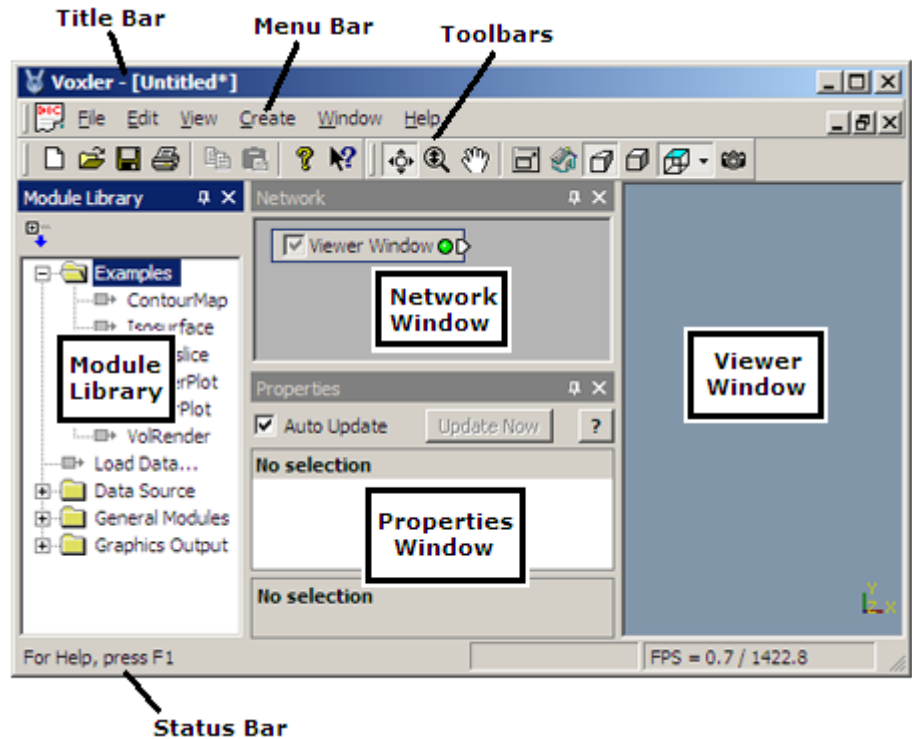


*Control your printed output with precision and ease.  
Preview the look of a large plot that spans several pages  
before you send the print job to the printer.*

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## User Interface

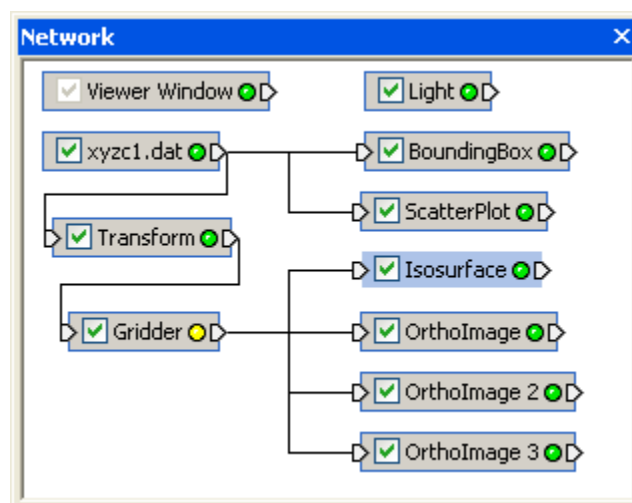
Voxler implements a modern user interface with dockable and floating windows and toolbars. The Network window graphically displays the connections between data and output, and Properties window lists the settings specified for each module.



The Voxler user interface consists of windows and toolbars that are docked to the edge of the Voxler application window, or detached and floating.

## Network Window

The Voxler Network window graphically displays the modules (input data, computational, graphic output, and info) and their connections. "LED" lights display green, yellow, or red to indicate the status of the module. Click on a module to select it and to display its settings in the Properties window.

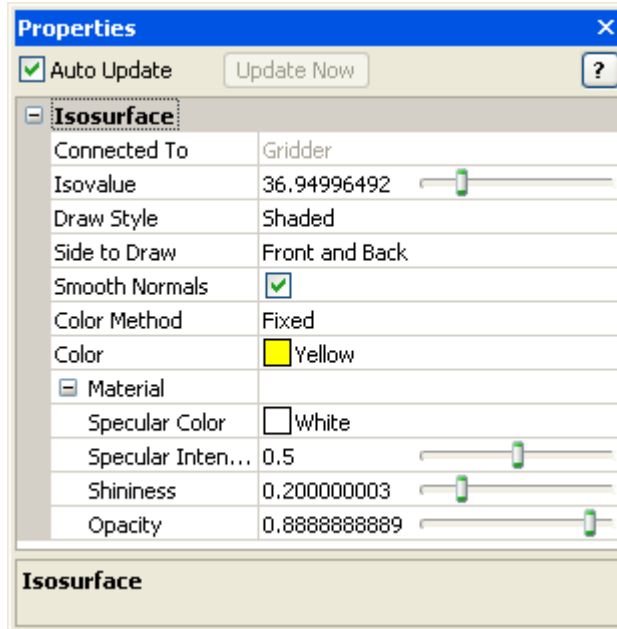


The Network window presents a graphical display of the input data, computational, graphic output, and info modules and the connections between the modules.

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## Properties Window

The Properties window lists the settings for the selected module with edit boxes, sliders, and buttons for changing the settings.

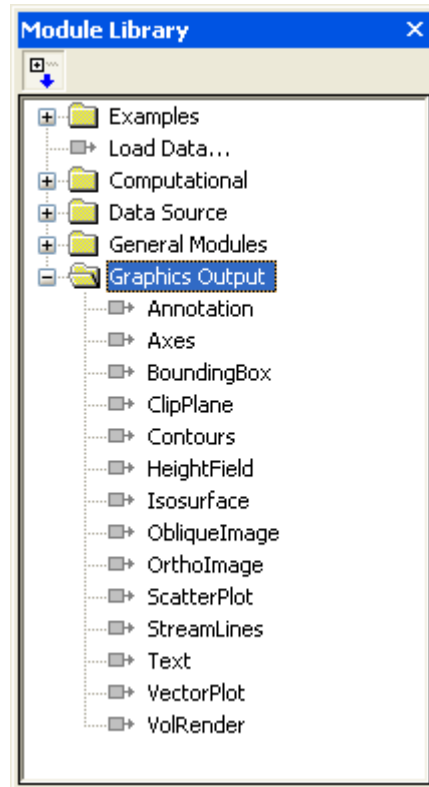


*The Properties window displays a list of the settings for the selected module. Edit boxes, sliders, and buttons provide the methods for changing the settings.*

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## Module Library

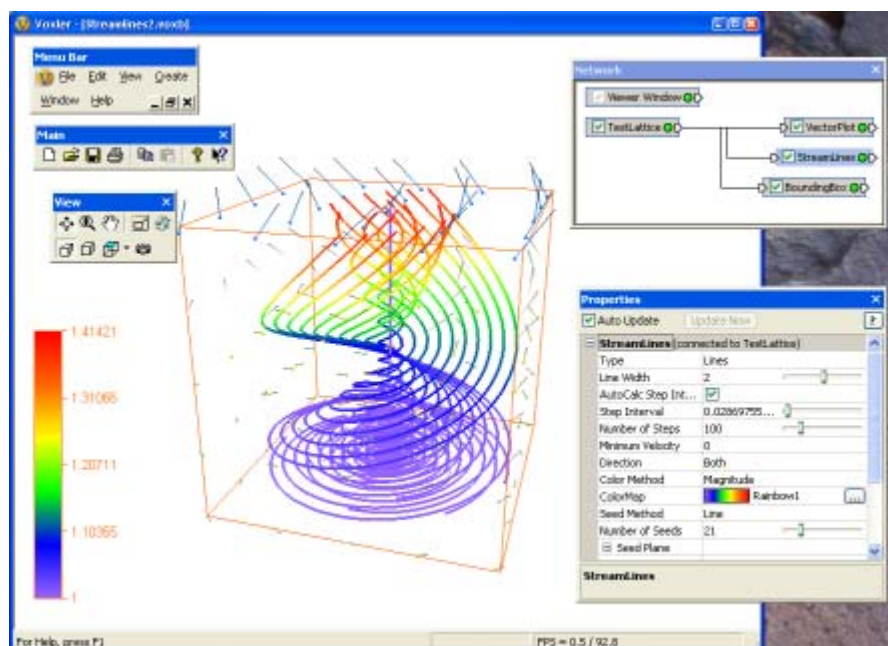
The Module Library shows a list of available modules and commands in an accessible format. The window is docked by default, and drag the title bar to float the window.



*The Module Library lists the available modules. Double-click on a module to load it to the Network window.*

## Reposition Toolbars and Windows

Toolbars and windows are docked to the Voxler application window by default, or drag the title bar to a new location to float the windows in any position.



*Detach the menu bar, toolbars, and windows to rearrange your workspace the way you want it.*

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## Import/Export Formats

Voxler imports a wide variety of data types including the following:

- Voxler Data (VDAT)
- ACR-NEMA Medical Image (AN1, AN2)
- Amira Mesh (AM, COL)
- Amira Stacked Images (ASI)
- Analyze 7.5 Medical Images (IMG)
- AVS Field (FLD)
- AVS X-Image (X, XIMG)
- Comma-Separated Variable (CSV)
- ASCII Data (DAT, TXT)
- DICOM2 Medical Image (DIC, DCM)
- DTED Elevation Data (DT\*)
- Excel Spreadsheet (XLS)
- GIF Image (GIF)
- GTOPO-30 Elevation Data (HDR, DEM)
- Hierarchical Data Format (HDF)
- Inventor (IV)
- Iris Explorer (LAT)
- Visualization Toolkit (VTK)
- Leica Confocal Raw Slices (INFO)
- Lotus Worksheet (WK\*)
- Metamorph (STK)
- ZSoft / Paintbrush (PCX)
- PLOT-3D (P3D, XYZ)
- PNM, PPM, PGM, PBM Image (PNM, PPM, PGM, PBM)
- Portable Network Graphics (PNG)
- Raw Binary Lattice (RAW, BIN)
- SDTS DEM Elevation Data (DDF)
- SEG-Y Seismic Data Log (SGY, SEG Y)
- SGI- RGB Image (RGB, RGBA, BW)
- Stanford (PLY)
- Sun Raster Image (RAS, SUN)
- Surfer Grid (GRD)
- SYLK Spreadsheet (SLK)
- Tagged Image (TIF, TIFF)
- Targa (TrueVision) (TGA)
- USGS DEM Elevation Data (DEM)
- JPEG Compressed Bitmap (JPG, JPEG)
- Windows Bitmap (BMP)

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## Exporting Images

Voxler supports all the major bitmap file formats for exporting images, including the following:

- AVS X-Image (X, XIMG)
- GIF Image (GIF)
- JPEG Compressed Bitmap (JPG, JPEG)
- PNM, PPM, PGM, PBM Image
- Portable Network Graphics (PNG)
- SGI-RGB Image (RGB, RGBA, BW)
- Sun Raster Image (RAS, SUN)
- Tagged Image (TIF, TIFF)
- Targa (TrueVision) (TGA)
- Windows Bitmap (BMP)

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## System Requirements

- Windows 2000, XP or higher.
  - 256 MB minimum RAM. More memory is suggested for large data sets.
  - 100 MB of hard disk space.
  - Video card with 1024x768x16-bit color minimum resolution.
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