

# Flying Over Atoms

---

## Vistapro Lesson

by Jack Markham

Laconia High School, Rosendale, WI 54974

### Getting Started

This lesson will teach you how to use Vistapro to fly over atoms. All you have to do is follow the steps below. If you want to know more, you can study the Vistapro manual. This lesson assumes that you understand the basic operations of your computer, such as the file system. This lesson was made on a Macintosh using Vistapro 3.0. The version of Vistapro that you are using might look slightly different.

Start Vistapro.

Select **Open as DEM...** from the File menu. Open the STM data file you wish to work with as a DEM file. Data files are located on the Flying over Atoms CD, inside the DATA folder/directory, which is inside the SURFACES folder/directory.

Select **Save** from File menu to make a copy of the file as a Vistapro DEM file. You will use this copy as your working file. You will need to specify a location and type in a name for your file.

---

### Set Landscape Options

In the Landscape menu, select Smooth three times.

Select **Vertical Scale...** from the Landscape menu. In the dialog that appears set the vertical scale to **300**. You can experiment with these settings, but this is a good start.

Save your work by selecting **Save** from the File menu.

---

### Set Rendering Options

Click the Rendering Options button in the Controls Palette. It looks like a photograph of a mountain, see Figure 1.

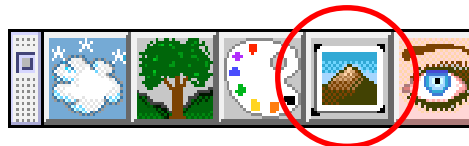


Figure 1. Controls Palette. Click here to view Rendering Options.

The Rendering Options dialog appears (Figure 2). Make the following selections then click **Okay**:

- Set Quality to **Excellent**.
- Set Texture to **High**.
- Check **Gouraud Shading**.

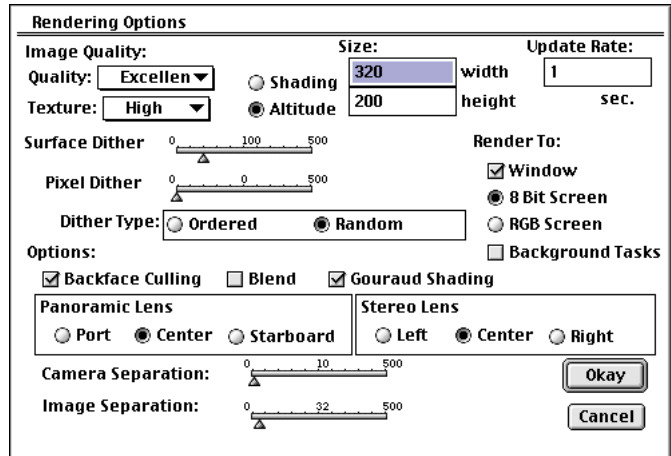


Figure 2. Set the Rendering Options as shown.

### Set Colors

In the Controls Palette, click the color palette button, as shown in Figure 3. The Color Controls dialog appears. Set **Sky, Ocean, Clouds, Sky Haze, and Haze** to white. To do this, double-click on the color box next to the item. The system color picker appears. Use this to make the New color white. When you are finished you can close the Color Controls dialog by clicking in the close box on its title bar. Save your work by selecting **Save** from the File menu.

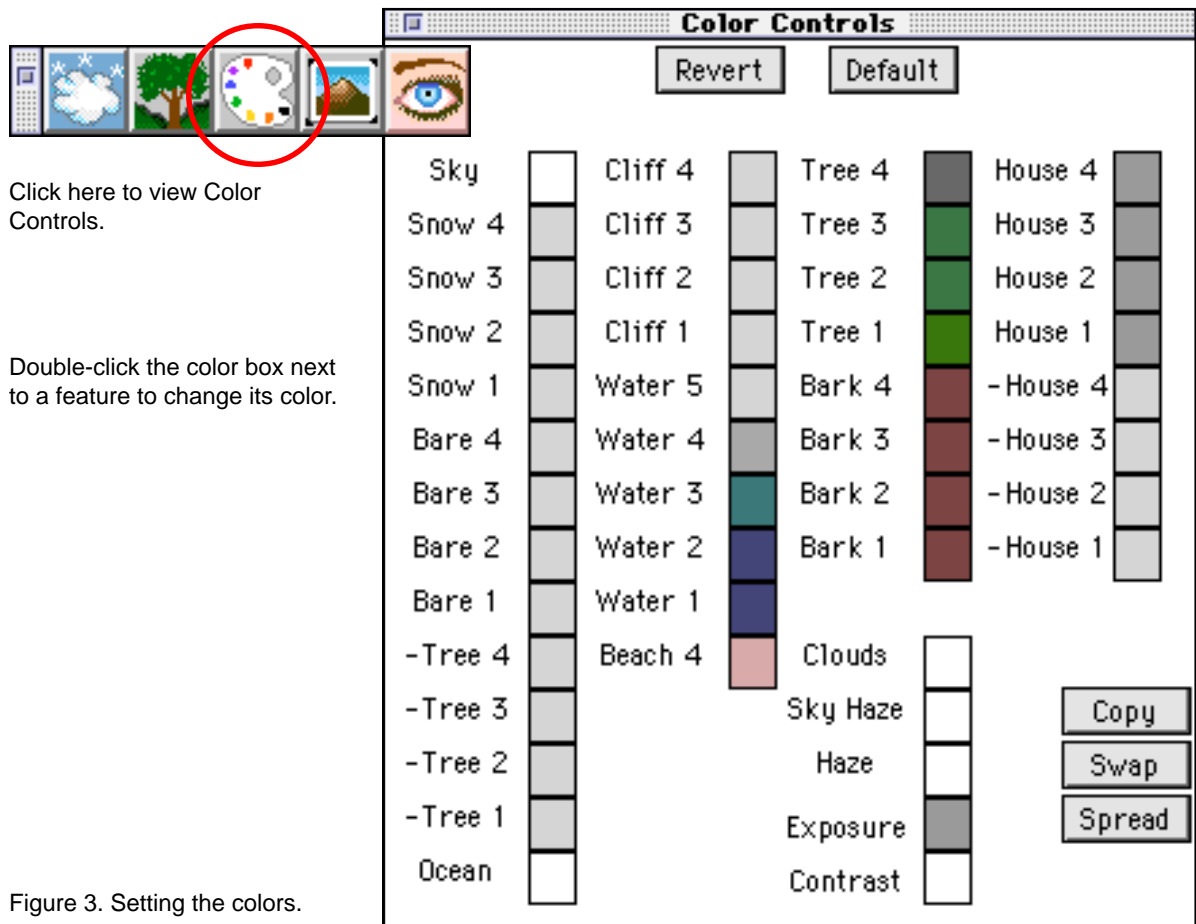


Figure 3. Setting the colors.

## Set Camera Options

Click the Camera Tool in the vertical Tool Palette (the icon that looks like a camera) identified in Figure 4. Click the spot on the surface where you want the camera to be positioned. Click the Target Tool. Click the spot on the surface at which you want the camera to point.

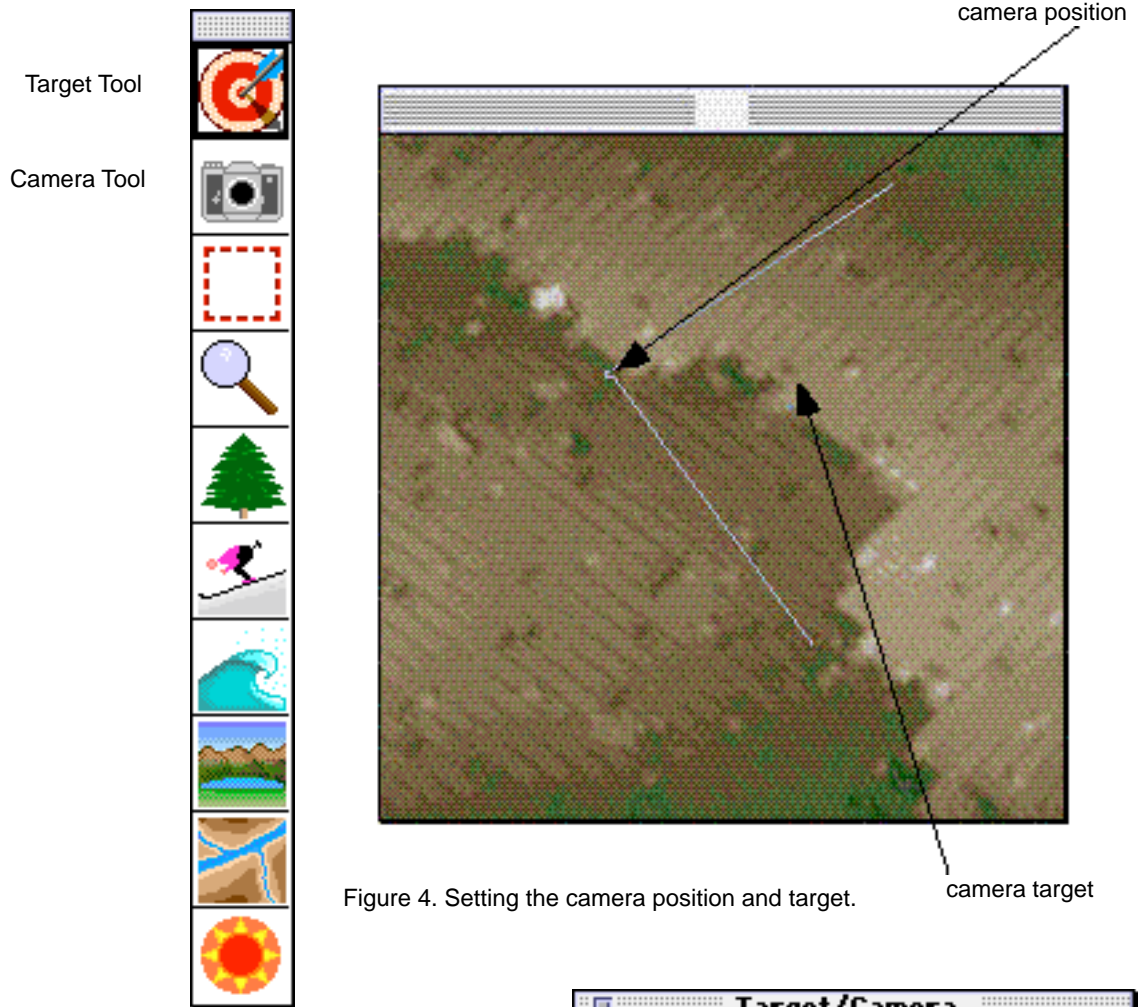


Figure 4. Setting the camera position and target.

Select **Target/Camera** from the Window menu, see Figure 5. Raise the camera by entering a new number in the Camera Z box. Tilt the camera down by entering a negative number in the Pitch box. Zoom the camera angle with the Zoom slider.

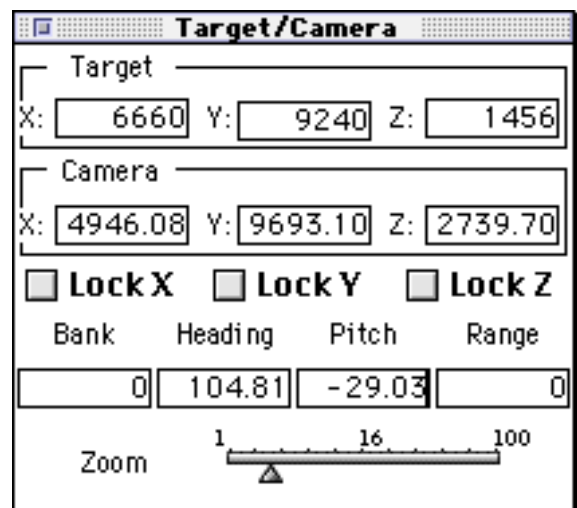


Figure 5. Target/Camera window.

## Preview and Render the Landscape

Select **Preview** from the Window menu. The Preview window shows you a wire frame rendering of what the camera sees, as shown in Figure 6.

Choose **Render** from the Landscape menu. After a few moments an image appears in a new window.

The image in the Viewer window is a landscape at the atomic scale, as shown in Figure 7.

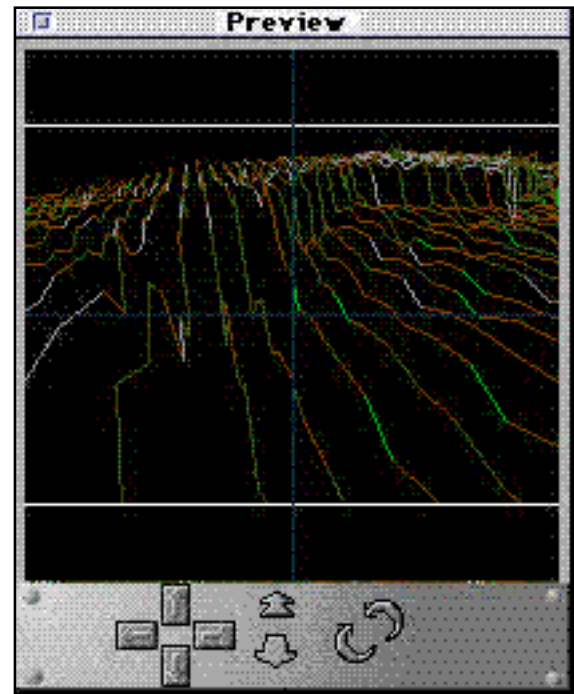


Figure 6. The Preview window.

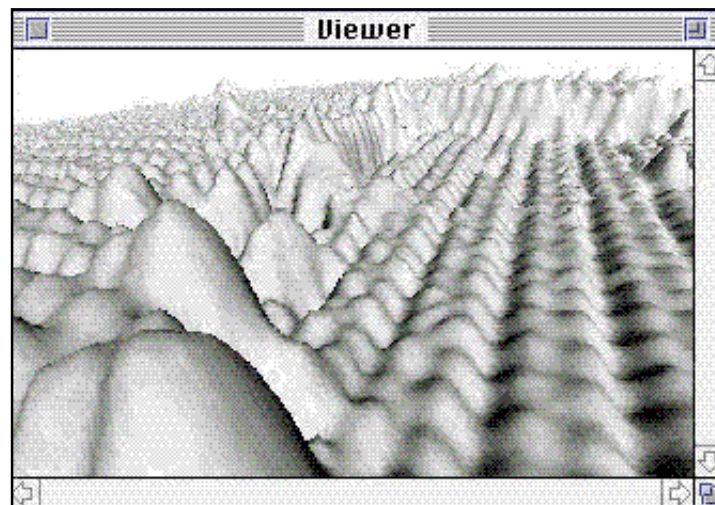


Figure 7. Atomic landscape in the Viewer

If the shadows are not as you like them select **Light** from the Window menu and, change the direction of the light in the dialog shown in Figure 8. Select **Render** from the Landscape menu again to see the result. When you are happy with the image, save your work.

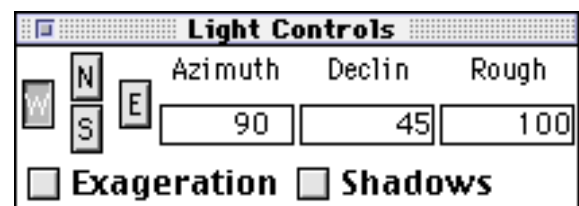


Figure 8. Adjust the direction of the light.

## Make a Flight Plan

Open MakePath Flight Director. Open the DEM file that you were working with in Vistapro by selecting **Open DEM...** from the File menu and navigating to your working file.

In the Makepath Characteristics window shown in Figure 9, select the vehicle of your choice from the pop-up menu. Also, make the following selections:

- Set Path Mode to **Speed**
- Set Speed to **1000**.

Click on the Pen button in the tool palette, shown in Figure 10. Click several points on the surface to create a path. Double-click to end the path.

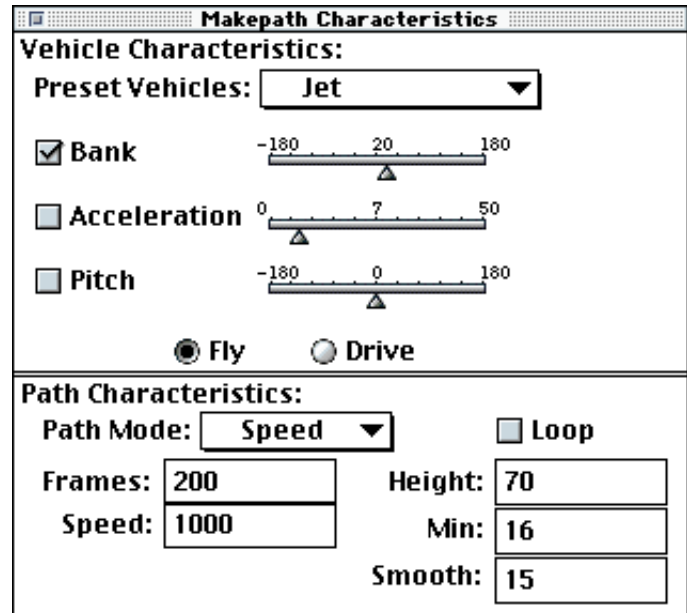


Figure 9. The Makepath Characteristics window.

Click the MakePath button, see Figure 10, to generate a flight path as shown in Figure 11.

Click the **Preview** button, see Figure 10, to see a wire frame preview of your flight path. The preview will repeat (loop) until you stop it by pressing **Command-**. (Command key and period pressed simultaneously) on your keyboard.

Select **Save Script** from the File menu. Enter a name and location for your script. Quit MakePath Flight Director.

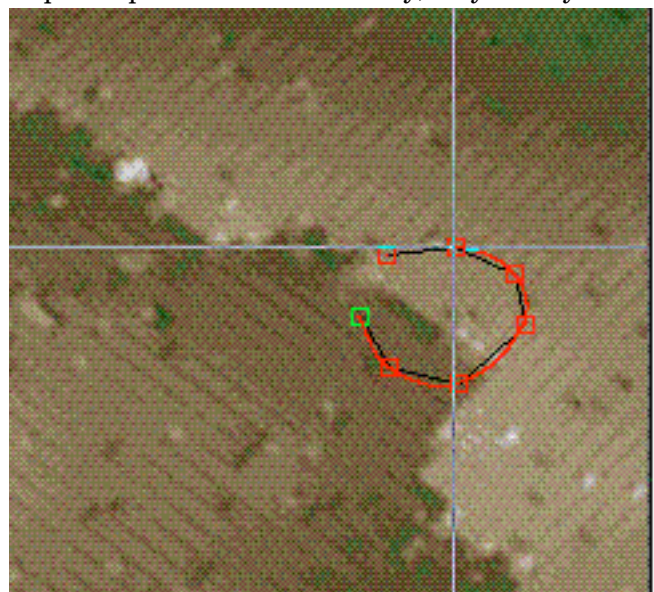
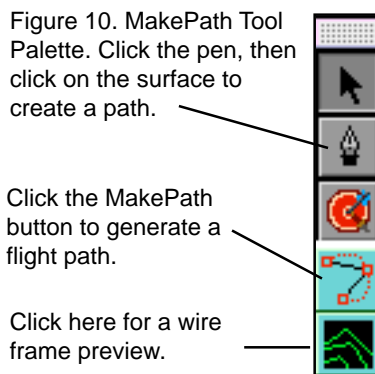


Figure 11. A flight path (red line) is generated when you click the MakePath button.



## Make a Movie

Open Vistapro.

Select **Preview...** from the Script menu, navigate to the script you just saved. Click 3D to preview your script.

Select **Run...** from the Script menu . Navigate to your script. Click **Quicktime** in the dialog that appears.

In the Compression Settings dialog, select 24 frames per second and the other settings shown in Figure 12 for the best quality movie. Click **OK**.

Your movie may take several hours to render.

When the rendering is complete, you can play your movie in Vistapro by selecting **Play Movie...** from the Script menu. You may also open the movie in the QuickTime MoviePlayer application or use it in an application that is compatible with QuickTime.

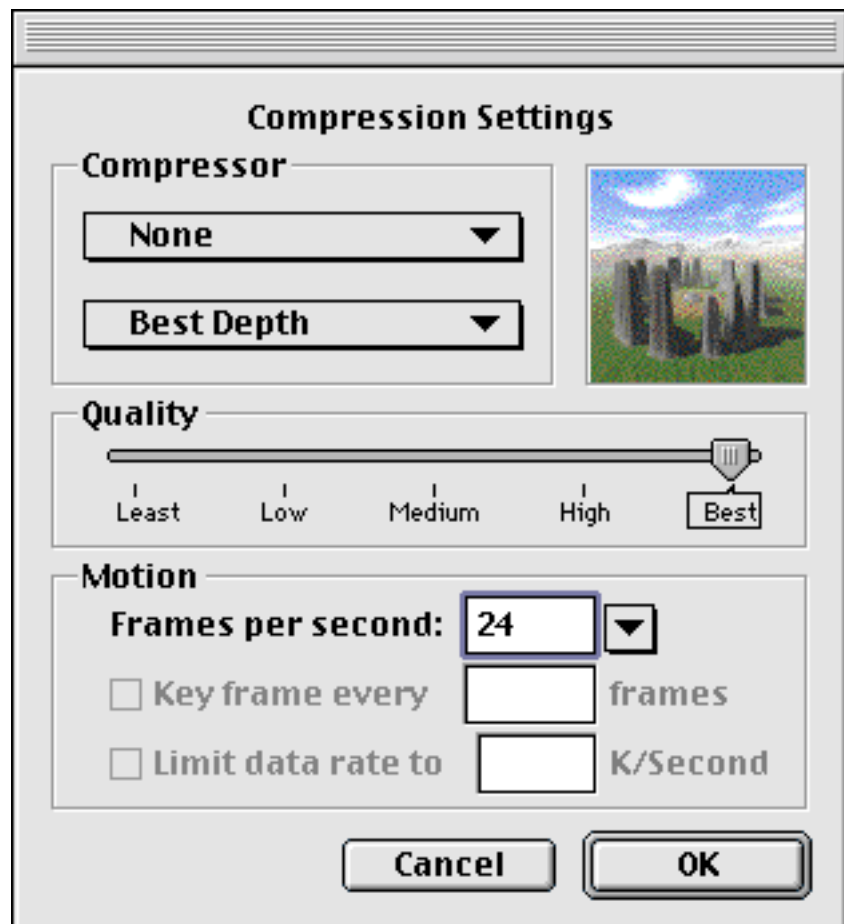


Figure 12. Compression settings dialog.