

Building Volume Clouds In Bryce

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Landfall

Bryce is packed with options for making clouds. The most commonly used are probably the sky presets that come with the program. Using the Bryce Sky Lab, you can fine tune these presets or you can build a sky from scratch. For most applications, this approach works great, but it does have some drawbacks. The clouds produced by this method are always in the background and they are not real 3D objects. Clouds can also be surface mapped onto an object, but the most realistic results come from volume clouds and that's the topic of this tutorial.

What are Volume Clouds?

Surface materials are only applied to the surface of an object. For solid, non-transparent objects, this is all you usually need. A volume material is applied throughout the entire object. When a cloud-like volume material is applied to an object like a sphere, a volume cloud is produced.

Pros and Cons of Volume Clouds

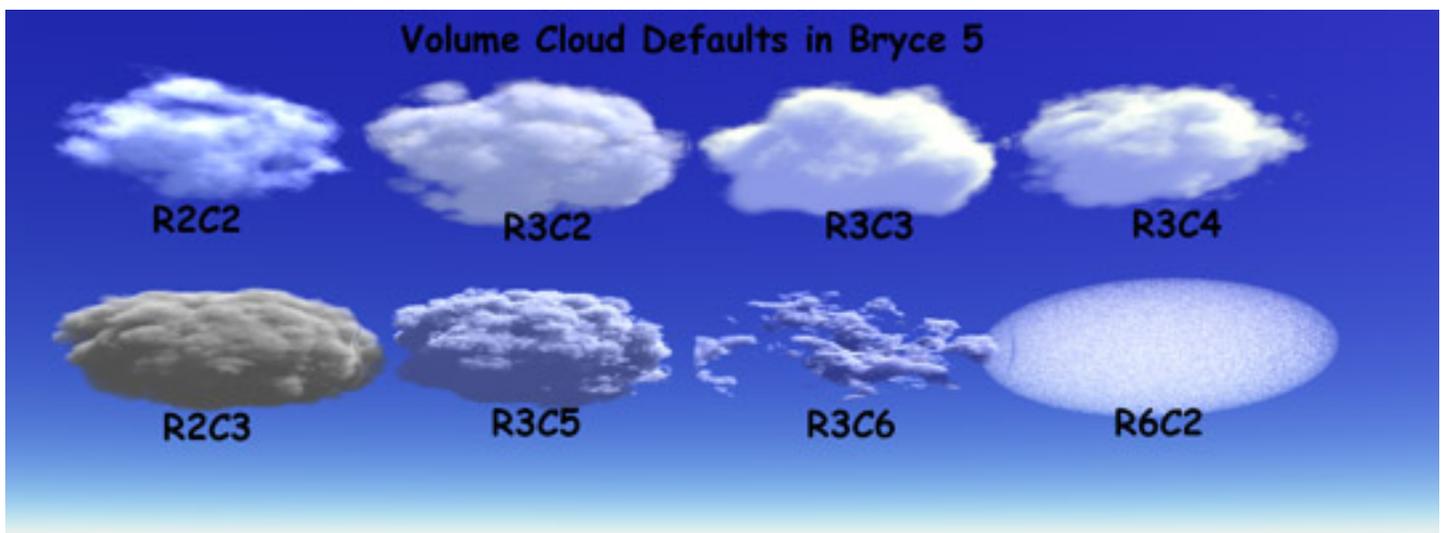
If you need realistic, well defined clouds, then volume clouds are the way to go. Volume clouds can cast shadows, and are easy to modify in the Deep Texture Editor (DTE). If you're doing an animated fly-through, the realism of passing through a volume cloud can't be beat. The price you pay for using volume clouds is render time.

Size Matters

In the real world, clouds are enormous in size, high above the ground, and seen at a great distance from the viewer. The closer to life-size you build the clouds in your Brycean landscape, the more life-like they will appear.

Some Default Volume Clouds

In the example below, a sphere was created with a size of 2700.0 in X and Z, and 1000.0 in Y. This was placed at a distance of about 10000.0 from the viewer and replicated to produce 8 objects. The objects were spread out and assigned different default volume materials. For example, the first cloud (R2C2) was assigned the material in Row 2, Column 2 of the Edit > Materials palette (Wispy Cloud). As you can see, the defaults offer a wide variety of starting points for clouds. Not all of the defaults produce a realistic result when used this way. The default in Row 6 Column 2 (Patchy Cloud Layers) is one such case. This default works better when applied to an infinite slab.



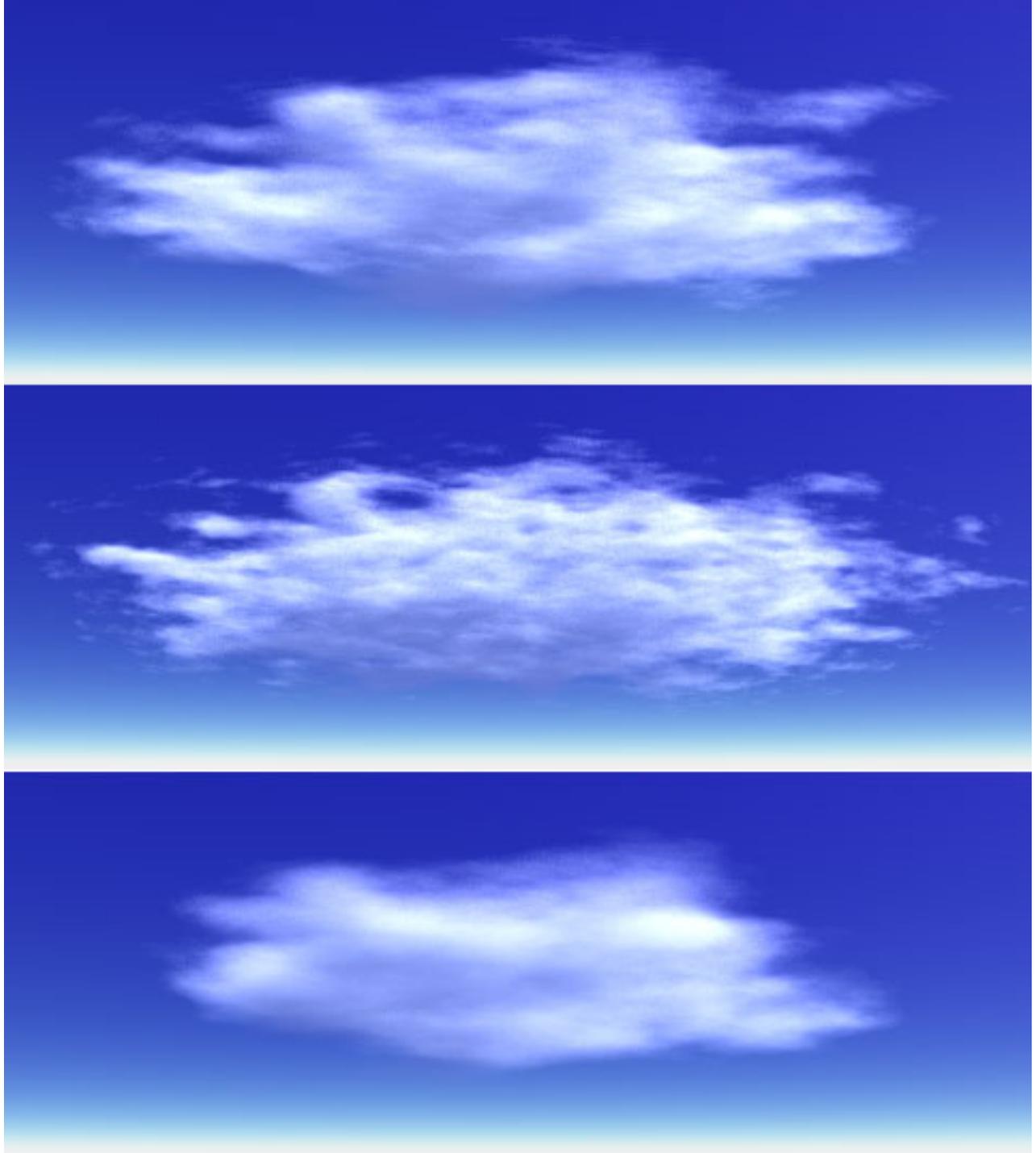
Cloud Adjustments in the Deep Texture Editor

Now we'll see a few of the ways that clouds can be changed in the DTE in the Materials Lab. Start with a single cloud using the Wispy Cloud default (R2C2) in the Volume materials. Enter the DTE and open the pop-up for the first component's noise channel. You should see something like the image below.



Effects of the Octave Setting in the DTE

In the 3 pictures below, the top cloud is the default setting. For the middle cloud, Octaves was changed from 4 to 3. For the bottom cloud, Octave was set to 5.



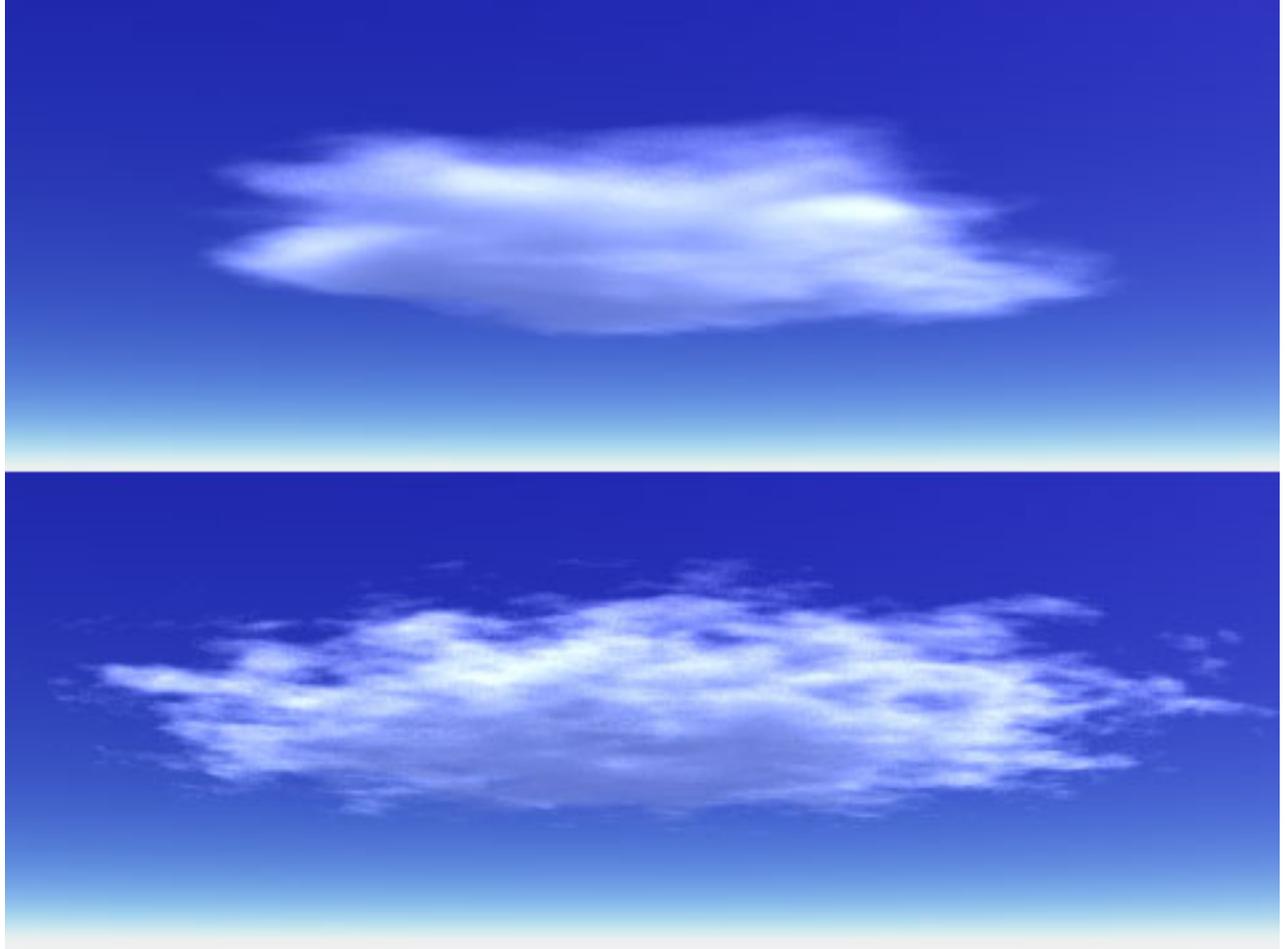
Rotating the Noise in the DTE

In the next two images, the Cloud was restored to default conditions (Octave=4) and the noise was rotated. In the top picture, a 45 degree rotation was applied to the XY plane. In the bottom picture, a 45 degree rotation was applied to the YZ plane.



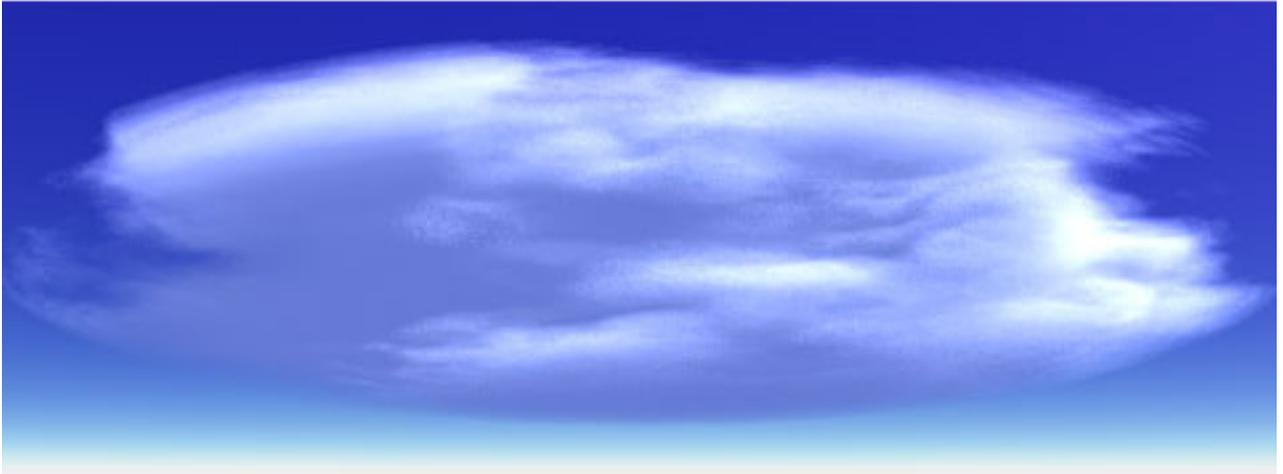
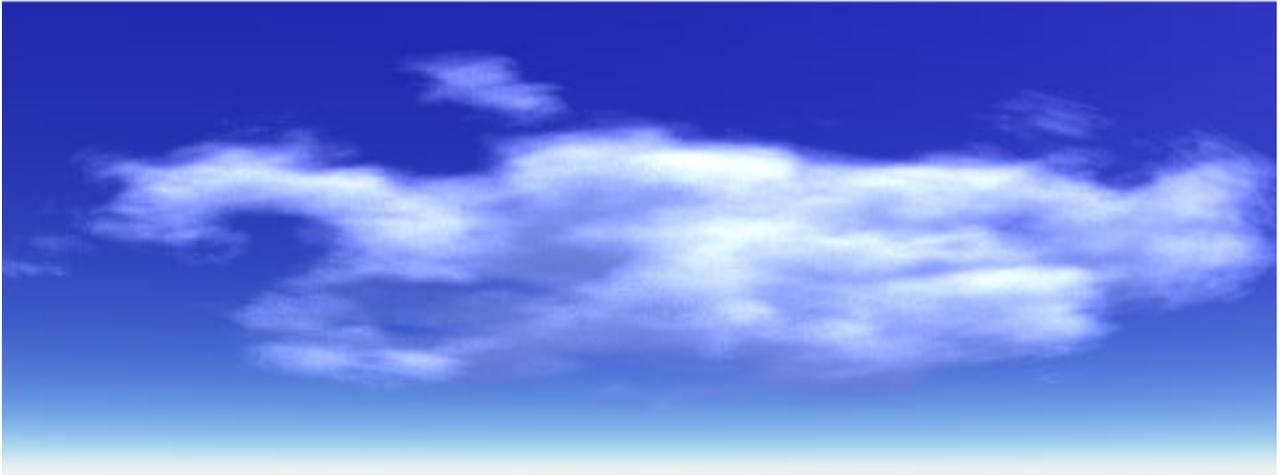
Changing Noise Frequency in the DTE

In the next two images, the cloud was restored to default conditions (rotations=0) and the frequency of the noise was varied from its default value of 203 for X,Y, and Z. In the top picture, the frequency was changed to 101 for X,Y, and Z. In the bottom picture, frequency for X,Y, and Z is 406.



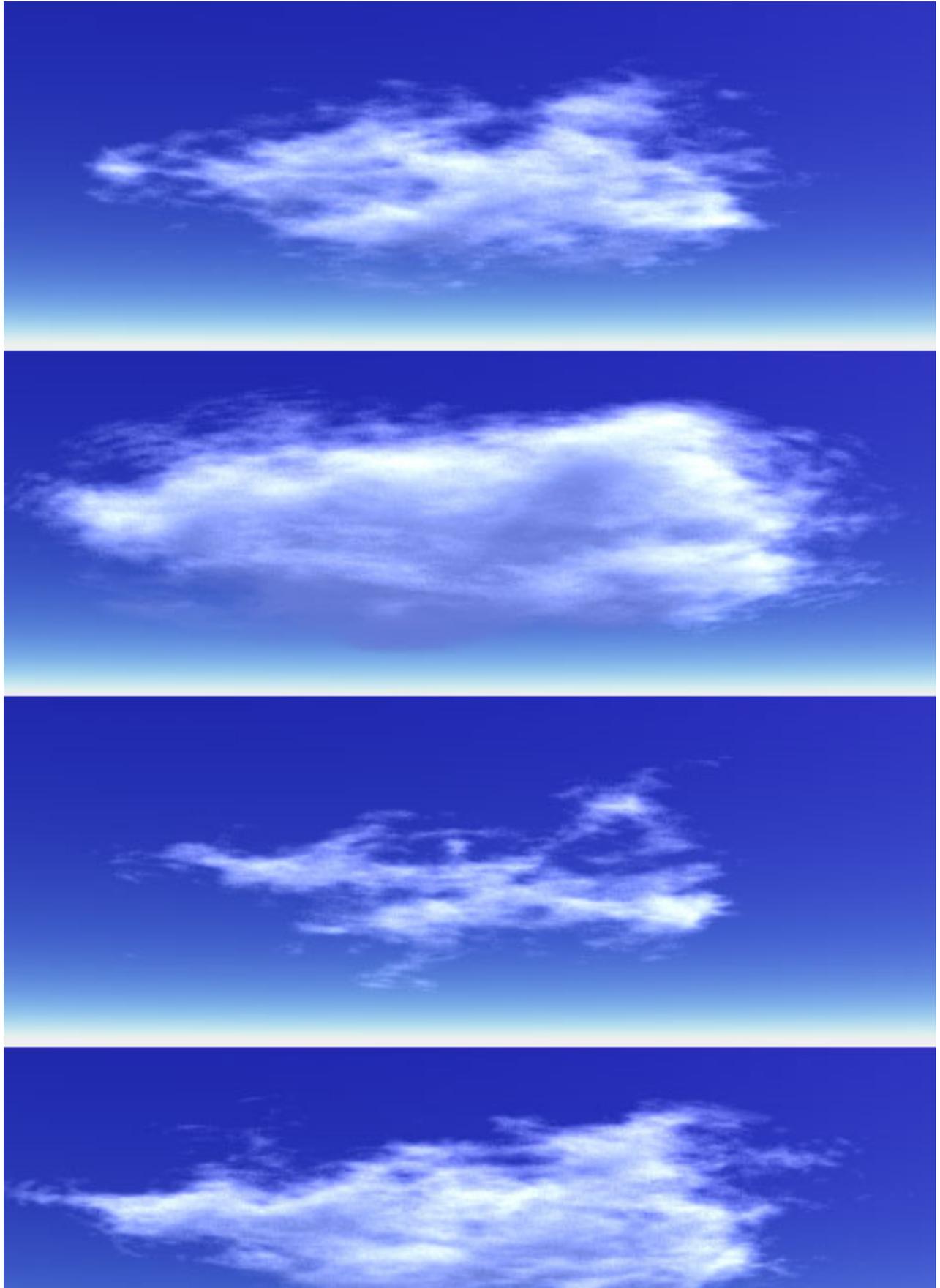
Other Noise Types

Changing the type of noise used can have a big impact on the character of the cloud you produce. The Wispy Cloud default used Gradient Noise. The four images below were produced using Leopard Noise, Random Saw Noise, Value Noise, and Stucco Noise (top to bottom).



Voronoi Noise

The four images below were produced using the following types of noise: Voronoi Distance 1, Voronoi Distance 2, Voronoi Distance Sq2, and Voronoi Distance Sq3.





The Rest of the Picture

The picture at the top of this tutorial, "Landfall" was produced using four volume clouds. These clouds are all at about the same height and at different distances from the viewer. The Sky Lab was tweaked to produce a slight haze with a few barely visible stratus clouds. The island was built from three identical terrains in the same position - the first for the actual island, the second had noise added with a vegetation material and it was lowered a bit to produce the trees, and the third was made white and its height was decreased a little to produce the island's waterline. The ship model was downloaded from 3dmodelz.com. The wake behind the ship was produced by adding a clipped terrain with a cloud texture applied.

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