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3D Animation Using Blender 2.7 - **Advanced 1 - Install Converter and Import From Game**

Get the minecraft world: File Explorer, This PC, Resources (or R:\) Classes\3DAnimation\Examples

* Then double-click on “Get-minecraft-world”
* Wait for it to finish

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| **If you don’t have the converter (Mineways icon) yet:**  Download mineways: <http://www.realtimerendering.com/erich/minecraft/public/mineways/>  Click Download for Windows  Save the zip file to downloads & Open/Run it (click the download finished message)  At the top, click Extract All Files  The folder will open. |

Double-click the mineways icon

* File, Open World, choose a world.
* To pan, drag with left button
* To see underground, you can change the “Lower depth” slider
* To see the tops of mountains, change the Max height slider
* File, Export for Rendering
* OK, then right-click and drag to draw a box around the area you want (if the area is large, such as several chunks, mineways and Blender may take a minute or more to process the file).
* OK to confirm default height.
* File, Export for Rendering, save that OBJ file to your home drive (such as T:\*username* or H:)
  + Name it “minecraft world try1”
  + OK, choose options, OK
  + Wait for export to finish (may take a minute or more)

Import the file into Blender:

* Open Blender, File, Import, Wavefront OBJ, choose that file, Import (may take a minute or more)
* File, Save As, 3dv1minecraft

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| Tips:  To make an object’s texture more pixelated, make sure you are in object mode, click the object, click the texture button, scroll down and in the sampling section uncheck the “Interpolation” checkbox.  To fix semitransparent objects that have a white background that should be transparent, make sure you are in object mode, click the object, click the texture button, choose the alpha (black&white) texture, then scroll down and under “Alpha:” uncheck the “Use” checkbox |

**BONUS: Animate a character in the scene (realistically on the ground or on a structure), and render a video file where the camera shows the animated character.**

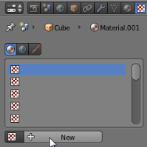
(continued on next page)

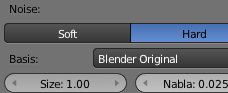
3D Animation Using Blender 2.7 – **Advanced 1.2: Volumetric Clouds**

Make sure you are finished page 1 and have 3dv1 open.

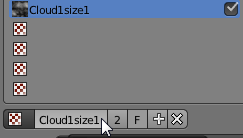
* Create a UV Sphere, Click “Smooth” button, Click **Material ** button, New, “Volume” 
* In the Lighting category, change drop-down to “Multiple Scattering” for realism overlaying more than 1 Volume object.

**Using Displace Modifier**

* Click **Texture**  button, click the other texture button under it, then click New:
* Change to “Cloud” then select “Hard” option to get a marble-like cloud texture & you can change size so bumps are bigger (Size: about 1.0)

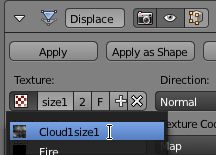
 result: 

Now name that texture something like CloudDisplace so you can find it in a list box we will use later(click name, type name, press Enter key:



* Scroll down and check “World” If you chose an object instead of World texture, uncheck the box by it to avoid changing the object color.

* Click Modifiers  button, Add Modifier, Displace, & click checkerboard button to choose texture you named:



* + With any Displace modifier, it is good to set Strength so dark parts of Texture don’t push surface way in:

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| Strength: 1.0 | Strength: 0.4 |
| If self-intersecting black shards still appear, a quick way to eliminate that is decimate modifier, Ratio about .1 or .01 | |

* For more realistic cloud: click Texture button, World, click an **empty** slot (any slot under the texture you named earlier), repeat all steps from “Using Displace Modifier” with **1** subdivision (another SubSurf is needed so that new normals will be used instead of unrealistically pushing from center), less Strength & smaller Size. Repeat third time even less & smaller. You could use “Displace” checkbox (below & right of the “Color”) instead of modifier to only displace render.
* Apply the first (top) Subdivision Surface modifier so we can do proportional editing, then make a cloud shape (a little bit like it is melting onto a flat surface would look more realistic. You can try looking at cloud photos).
* Here is how to could tweak the material to make render more realistic: Increase the **Density Scale** a little to help with detail. Turn **Reflection** up a little so the surface is more clear. Increase **Resolution** to reduce blockiness between different levels of transparency. For Transparency choose **Raytrace**. Then make the step size much lower to reduce the noise side effect of the volumetric transparency
* Lighting will also help with realism. You can add a **yellowish-white** Sun (Add Lamp, Sun, click Sun object data button ) with high Energy (about 3) and a **light blue** Sun with low Energy (about 2) pointing straight down to add the glow from the atmosphere.
* For background, a gradient is more realistic, so under the World button choose “**Blend Sky**” then make top dark blue and bottom light blue—that way it is like real life how you are seeing more of the dark color of space when you look up but you are looking through more atmosphere (lit light blue by sun) when you look to the side.

If cloud glitches, the displacement may have made part of the cloud inside out. Make sure it is not too flat & that points are spread evenly. First make sure it is not too flat. Then Select a vertex in the middle of an area where vertices are spread apart & scale down to pull in the dense areas and make them less dense. (“Volumetric”)