

DYNAMIC SKY TUTORIAL

Dynamic skies are a new feature in the 3DNA Desktop V1.0. Dynamic skies feature moving clouds, sunrise, sunset and night skies, all matched to your local time. To use dynamic skies, you'll need the [full version of 3DNA](#).

WHAT IS A DYNAMIC SKY?

Dynamic skies are multiple-component skies that are animated and change their appearance depending on the time of day. Dynamic skies are made up of 7 components, including clouds, terrain and the sun. Some components have multiple parts, based on the time of day, while others (like clouds) stay the same during the day.

Each of the 7 components can be mixed and matched in the Dynamic Sky Chooser, to make an unlimited number of combinations and sky variations. You might decide to use wispy clouds with an Arctic terrain and a winter sun, or put yourself in an active volcano under blackened clouds and a blood-red sun, for instance.

The wind speed can also be changed to alter the speed that the clouds move across the sky, from a lazy breeze to a blustering gale.

You can find a list of all the components that make up a dynamic sky at the end of this tutorial.

HOW DO I MAKE A DYNAMIC SKY?

Depending on your skill level, you can edit any part of a dynamic sky, from a simple moon image, to an entire set of terrain images. In this tutorial, we'll start with the moon, and end with the terrain, in order of difficulty.

1) HOW TO MAKE THE MOON

The moon is a simple, square image with a transparent background that gives the moon its roundness and glow.

- ii) Create a white image at 256x256 and draw or paste an image of the moon onto the square so that there is a fair amount of white space between the edge of the moon and the edge of the image. This white space will be used to add a glow to the moon. The lighter your moon is in the image, the brighter it will appear in the night sky.
- iii) Select the empty portion of the image, then invert the selection. Create an alpha channel and colour in the selected area on the alpha channel in white. You should have a white disk on a black background that matches the size of your moon. On the alpha channel, you can experiment with adding a halo or glow around the moon that will blend with the sky.
- iv) Save the image as a 32bit PNG into the Moon folder.

2) HOW TO MAKE STARS

The stars appear (naturally) at night, and are made of a large tiling image that extends from horizon to horizon.

- i) Create a white image at 512x512. If you would like some subtle coloration in your stars you can add light shades of colour to the image at this stage.

- ii) Create an alpha channel and draw or generate a starfield on to the alpha channel. You can create stars in varying shades of gray to vary their brightness.
- iii) If you have added nebulas or other continuous objects to the starfield, make sure the starfield tiles in all directions.
- iv) What you will have is a white or gray image (or any other colour of your choice!) with an alpha channel in the shape of your stars.
- v) Save the image as a 32bit PNG into the Stars folder.

3) HOW TO MAKE OVERHEAD CLOUDS

Like the stars, the overhead clouds are created using a single tiling image that extends from horizon to horizon.

- i) Create a white image at 512x512. If you would like to create rain clouds, you can use a darker gray to fill in the white background with.
- ii) Create an alpha channel and draw or paste a photograph of some clouds onto the alpha channel. Wherever the image is white, the clouds will show, and wherever the image is black, the sky will show through. Make sure that areas where you don't want clouds to show are pure black. Clouds that have soft edges blend better and tend to look more realistic.
- iii) Edit the alpha channel to make sure that it tiles in all directions, or you'll see seams in the clouds when you load them into your dynamic sky.
- iv) What you will have is a white or gray image (or any other colour of your choice!) with an alpha channel in the shape of your clouds.
- v) Save the image as a 32bit PNG into the Clouds folder.

4) HOW TO MAKE HORIZON CLOUDS

The horizon clouds are made using a single wide image that wraps on itself.

- i) Create a white image at 512x128 (a very wide image). If you would like to create rain clouds, you can use a darker gray to fill in the white background with.
- ii) Create an alpha channel and draw or paste a photograph of distant clouds onto the alpha channel. Wherever the image is white, the clouds will show, and wherever the image is black, the sky will show through. Make sure that areas where you don't want clouds to show are pure black.
- iii) Make sure the clouds don't touch the top edge of the alpha channel,
- iv) Make sure the image tiles horizontally, other wise you will see a vertical seam where the sky wraps around on itself.
- v) What you will have is a white or gray image (or any other colour of your choice!) with an alpha channel in the shape of your clouds.
- vi) Save the image as a 32bit PNG into the Clouds folder.

5) HOW TO MAKE THE SUN

The sun is prepared in a similar way to the moon, except there are 5 different images for the five times of day (there is no 6th image, because the sun sets after the fifth, and is replaced by the moon).

- i) Create a new folder in the Sun folder with the same name as you're the sun images you are about to create.
- ii) Create a white image at 256x256 and draw or paste an image of the sun onto the square so that there is a fair amount of white space between the edge of the moon and the edge

of the image. This white space will be used to add a glow to the sun. The lighter your sun is in the image, the brighter it will appear in the night sky.

- iii) Select the empty portion of the image, then invert the selection. Create an alpha channel and colour in the selected area on the alpha channel in white. You should have a white disk on a black background that matches the size of your sun. On the alpha channel, you can experiment with adding a halo or glow around the sun that will blend with the sky.
- iv) Save the first sun in your new sun folder as a 32bit PNG. The first sun (dawn) will be named *YourSunName_1*, the mid-morning sun will be named *YourSunName_2* etc. Check the table at the end of the tutorial to see the order in which the different suns appear. The folder in this case would be named *YourSunName*.
- v) Follow steps ii) through iv) for each image in the series, until you have 5 suns in a folder with the same name as your sun images. You should have a series that looks like this:

YourSunName_1.PNG (Dawn)
YourSunName_2.PNG (Mid morning)
YourSunName_3.PNG (Noon)
YourSunName_4.PNG (Afternoon)
YourSunName_5.PNG (Sunset)

In a folder called (in this example) *YourSunName*, in the Sun folder.

6) HOW TO MAKE THE SKY HAZE

The sky haze creates the effect of the colour of the sky, and the way the sky haze changes colour as it gets closer to the horizon. It also shows the colours of sunset and sunrise and simulates the night sky colours. It is set up in the same way as the horizon clouds, except that there are 6 images that represent different times of day.

- i) Create a new folder in the Haze folder with the same name as the haze images you are about to create.
- ii) Create an image at 512x128 (a very wide image). The first image will be the dawn image. The dawn and mid morning haze will have the main glow (from the sun) in the center of the image.
- iii) Paint the colours of the sky haze however you would like. A realistic sky would emphasise the colours of the sunrise and the way that the sky turns a deeper shade of blue as it climbs away from the horizon.
- iv) Make sure the image tiles horizontally, other wise you will see a vertical seam where the sky wraps around on itself.
- v) Save the first haze image in your new haze folder as a 32bit PNG. The first haze (dawn) will be named *YourHazeName_1*, the mid-morning haze will be named *YourHazeName_2* etc. Check the table at the end of the tutorial to see the order in which the different Hazes appear. The folder in this case would be named *YourHazeName*.
- vi) Follow steps ii) through v) for each image in the series, until you have 6 hazes in a folder with the same name as your haze images. You should have a series that looks like this:

YourHazeName_1.PNG (Dawn)
YourHazeName_2.PNG (Mid morning)
YourHazeName_3.PNG (Noon)
YourHazeName_4.PNG (Afternoon)
YourHazeName_5.PNG (Sunset)
YourHazeName_6.PNG (Night)

In a folder called (in this example) *YourSunName* , in the Sun folder.

7) HOW TO MAKE THE TERRAIN

Creating the terrain is the most complex part of the process. If you haven't made a skybox before, you should probably try the static sky tutorial before tackling dynamic terrain. Unlike static skies, the dynamic sky terrain does not include an UP image (the sky), since in dynamic skies, the sky is created with other images, like the sky haze and moving clouds. This tutorial assumes you are using Terragen to render your sky. If you are using a different app, you can still follow this tutorial anyway to see how terrain is used as part of a dynamic sky.

- i) Download the Dynamic Sky script and the Dynamic Night script.
- ii) Create a new folder in the Terrain folder with the same name as the Terrain images you are about to create.
- iii) In Terragen, set up your scene as you would for a static skybox.
- iv) Disable sky rendering.
- v) Disable cloud shadows and atmosphere shadows (since clouds are moving, these shadows won't make sense on your terrain).
- vi) Run the Dynamic Sky Script to generate 5 sets of images (5 images for each time of day except night).
- vii) Set up a night scene with your terrain and run the Dynamic Night Script to generate the 5 night images.
- viii) Rename the skies that are generated in this order (make sure the Terrain images have the same name as the folder you created).

DSky1_10001 to *YourSkyName_1F*
DSky1_10002 to *YourSkyName_1L*
DSky1_10003 to *YourSkyName_1B*
DSky1_10004 to *YourSkyName_1R*
DSky1_10005 to *YourSkyName_1D*

DSky1_20001 to *YourSkyName_2F*
DSky1_20002 to *YourSkyName_2L*
DSky1_20003 to *YourSkyName_2B*
DSky1_20004 to *YourSkyName_2R*
DSky1_20005 to *YourSkyName_2D*

DSky1_30001 to *YourSkyName_3F*
DSky1_30002 to *YourSkyName_3L*
DSky1_30003 to *YourSkyName_3B*
DSky1_30004 to *YourSkyName_3R*
DSky1_30005 to *YourSkyName_3D*

DSky1_40001 to *YourSkyName_4F*
DSky1_40002 to *YourSkyName_4L*
DSky1_40003 to *YourSkyName_4B*
DSky1_40004 to *YourSkyName_4R*
DSky1_40005 to *YourSkyName_4D*

DSky1_50001 to *YourSkyName_5F*
DSky1_50002 to *YourSkyName_5L*
DSky1_50003 to *YourSkyName_5B*
DSky1_50004 to *YourSkyName_5R*
DSky1_50005 to *YourSkyName_5D*

DSky1_60001 to *YourSkyName_6F*
DSky1_60002 to *YourSkyName_6L*
DSky1_60003 to *YourSkyName_6B*

DSky1_60004 to *YourSkyName_6R*
DSky1_60005 to *YourSkyName_6D*

- ix) Create a new alpha channel for each of the F, L, B and R images (“Front”, “Left”, and “Back”, “Right”).
- x) For each image with an alpha channel, select the sky portion of the image (the black area) and use the selection as a mask for the alpha channel. Invert the selection and paint the selected area white in the alpha channel, so that you end up with a white silhouette of the terrain on a black background as your alpha channel.
- xi) Save out each of the F, L, B, and R images as a 32bit PNG into the Terrain folder you created.
- xii) Save out all the D images (“Down” images) as JPG into the Terrain folder you created.
- xiii) You should now have a folder in the Terrain folder containing 30 images. 24 of the images will be PNG, and 6 of them will be JPG.

WELL DONE!

If you’ve followed through with all the tutorials, you are now fully equipped to make a complete dynamic sky. Congratulations!

This tutorial only covers the basics. With tweaking and experimentation you should be able to create some very interesting effects and sky styles.

If you have any questions about dynamic skies and how they work, or questions about the tutorial, please visit our forums.

Components of a Dynamic Sky

Terrain

1 = Dawn	2 = Morning	3 = Noon
TerrainName_1F TerrainName_1L TerrainName_1B TerrainName_1R TerrainName_1D	TerrainName_2F TerrainName_2L TerrainName_2B TerrainName_2R TerrainName_2D	TerrainName_3F TerrainName_3L TerrainName_3B TerrainName_3R TerrainName_3D
4 = Afternoon	5 = Sunset	6 = Night
TerrainName_4F TerrainName_4L TerrainName_4B TerrainName_4R TerrainName_4D	TerrainName_5F TerrainName_5L TerrainName_5B TerrainName_5R TerrainName_5D	TerrainName_6F TerrainName_6L TerrainName_6B TerrainName_6R TerrainName_6D

Haze

1 = Dawn 2 = Morning 3 = Noon 4 = Afternoon 5 = Sunset 6 = Night	HazeName_1 HazeName_2 HazeName_3 HazeName_4 HazeName_5 HazeName_6
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Sun

1 = Dawn 2 = Morning 3 = Noon 4 = Afternoon 5 = Sunset	SunName_1 SunName_2 SunName_3 SunName_4 SunName_5
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Moon

MoonName

Stars

StarsName

Clouds

CloudsName

Horizon (Clouds)

HorizonCloudsName