

# SNOW USING DELTA PARTICLES

By Mr. D at Delta3D

**Note 1:** As much of creating snow is the same as for rain kindly look at that paper if you have not already. I will go over in this paper more of what changes you will make for snow as opposed to rain, instead of going over the entire setup. Also look at the *Graphical Particle Editor* paper.

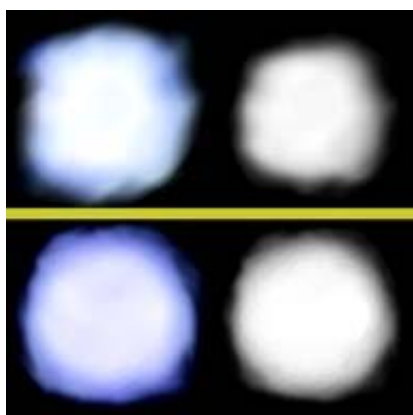
**Note 2:** Quickly things from the rain paper to remember; first the two main ways of doing it a) particle emitter over camera, with position constraint. b) particle emitters setup to cover defined areas.

Secondly - quick setup

**Particles**> Alignment-Billboard/Quad or Quad Tri Strip with texture for the snowflake (this does not have to look like a crystalline snowflake, more of a whitish blob; however if you wanted a cartoonish look you could make crystal snow flakes).

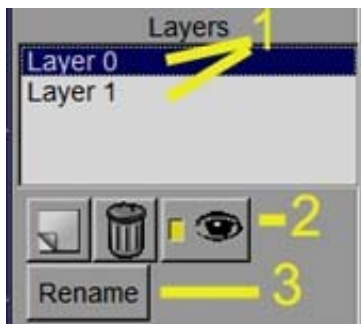
**Placer**> Type-Sector Placer, if over camera remember to set a *Min Radius* value high enough to create and opening for your camera to sit in.

**Shooter**> Elevation Range Min/Max -3.14



Here are the two snowflake textures I made along with their alphas for this paper. Why two? As with rain, perhaps more so with snow, you'll be looking to create a variety of snowflakes. I'll just be using two in this paper but you can choose to use more.

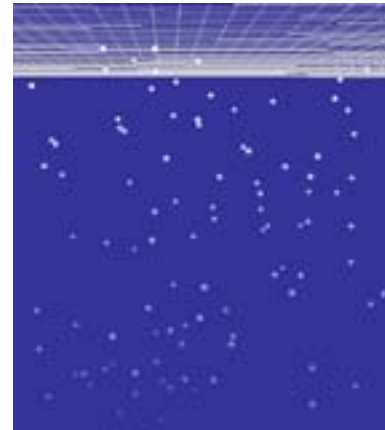
**NOTICE:** As with most texture art I do for these papers I'm creating art that hopefully will get me a better screen grab and may not be exactly what I would use in engine.



- 1) Made two layers for the snow effect.
- 2) Layer Visibility button, if you want to only see one Layer at a time while working on it.
- 3) Renaming Button, if your going to have a lot of effects in your scene you should get in the habit of naming them. Also for setting up names code will be looking for.

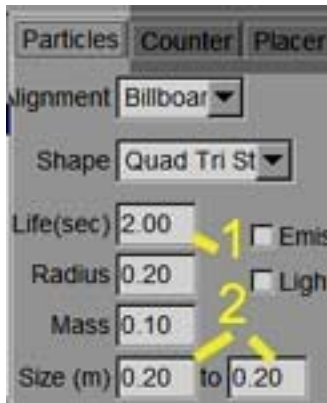


With Placers set at Min 0/ Max 10, and Textures added I get something that looks like this, which looks quite a bit like rain.



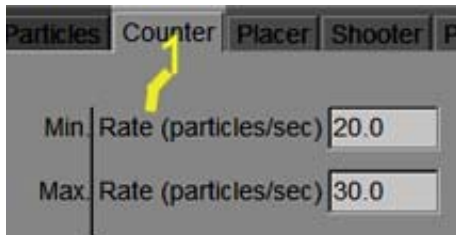
## ADDING VARIETY TO YOUR SNOW

Now you will want to make your snow less uniform, so use the Layer visibility button to turn off one layer.



### Particles Tab

- 1) You may want to have your two emitters have slightly different Life(sec) numbers so all the snow does not disappear at the same depth. Remember this may have to be readjusted in game because you will want the snow to disappear before hitting the ground.
- 2) Size(m)-set a range to create flakes of different size



### Counter Tab

- 1) Change Min/Max particle rate



### Shooter Tab

- 1) Elevation Range – snow due to its flatter shape (unlike the sphere of a raindrop) and lightness tends to drift and tumble as it falls. By slightly upping the **Max (rad)** a tad to say -2.82 will help give your snow an appearance of drifting down.
- 2) Initial Velocity Range- try changing the Min/Max values till you get a speed you like. People looking at snow see flakes more as they approach the ground then when in the air, hence they think the flake is slowing when coming down. So try having a Max value slightly less than the Min.

- 3) As stated above snowflakes drift and tumble as they fall, so try adding just a bit to the max **Initial Rotational Velocity Range** to have your flakes spin very slightly as they fall.

Next once you're happy with your first emitter hide it, unhide the second, then follow the same steps to vary it some, but try different values from the first emitter.

## GETTING A BIT MORE FANCY

Snow can vary in weight due to size and moisture content of the snow, with lighter dry smaller flakes more easily blown about, so let's try faking adding some wind.



If you want to try to get even fancier with your snow you can try to add a **Program** > **New Acceleration** to each emitter, which basically acts as a wind blowing on your particles.

### **Program Tab**

As before hide one emitter using Visibility to better view the **Acceleration** force you're applying to the particles.

With one Layer selected in the **Program Tab** click on **New Acceleration** and X-Y-Z boxes appear for numeric input. Try small numbers to see the effect they have on your particles. When

happy switch hidden layers about and set the other emitter, then switch on both to view full effect.



### A View Points

OK I dropped a snowy mountain textured plane through the **File** > **Load Reference**. The **Flakes** I had to make bigger and brighter to get them to show, but hopefully you get the idea. As with rain remember you need snowy textures on your level to help carry off the idea it is snowing.

Also with heavier snowfall you usually

will want to add depth fogging or a fog plane to help further convince you viewer they are in a snow storm.



## Particle Tab

Remember

1:

a) **Emissive** check means glowing particle

b) **Lighting** means particle affected by scene lighting.

c) Neither checked means texture color is

displayed as drawn, and it is unaffected by scene lighting.

2:

Look for the *Color* area; R(ed) G(reen) B(lue) and A(lpha) meaning **At Start** to **At End**. And they go from 0 to 1 as a percentage of the texture's rgb values, allowing color manipulation over the particles life. So if I wanted a more Blue snow flake when it first appears I could reduce the red and green start values.

More important, for snowflakes they tend to be translucent, which for appearance in a game engine means you would want a little Alpha transparency from the start of generation. While you could handle this in your texture's alpha, if it is not quite transparent enough when you see it in-engine, instead of reworking your texture over till it looks right. You can just use the A(lpha) value here to make the snowflake more transparent. But remember it can only go down from what is already there, meaning more transparent and not more opaque.

Such as in my snow scene above, I would not really want those flakes that bright against that background and if I was making that effect for a game I'd adjust the A(lpha) value downward to accomplish that.