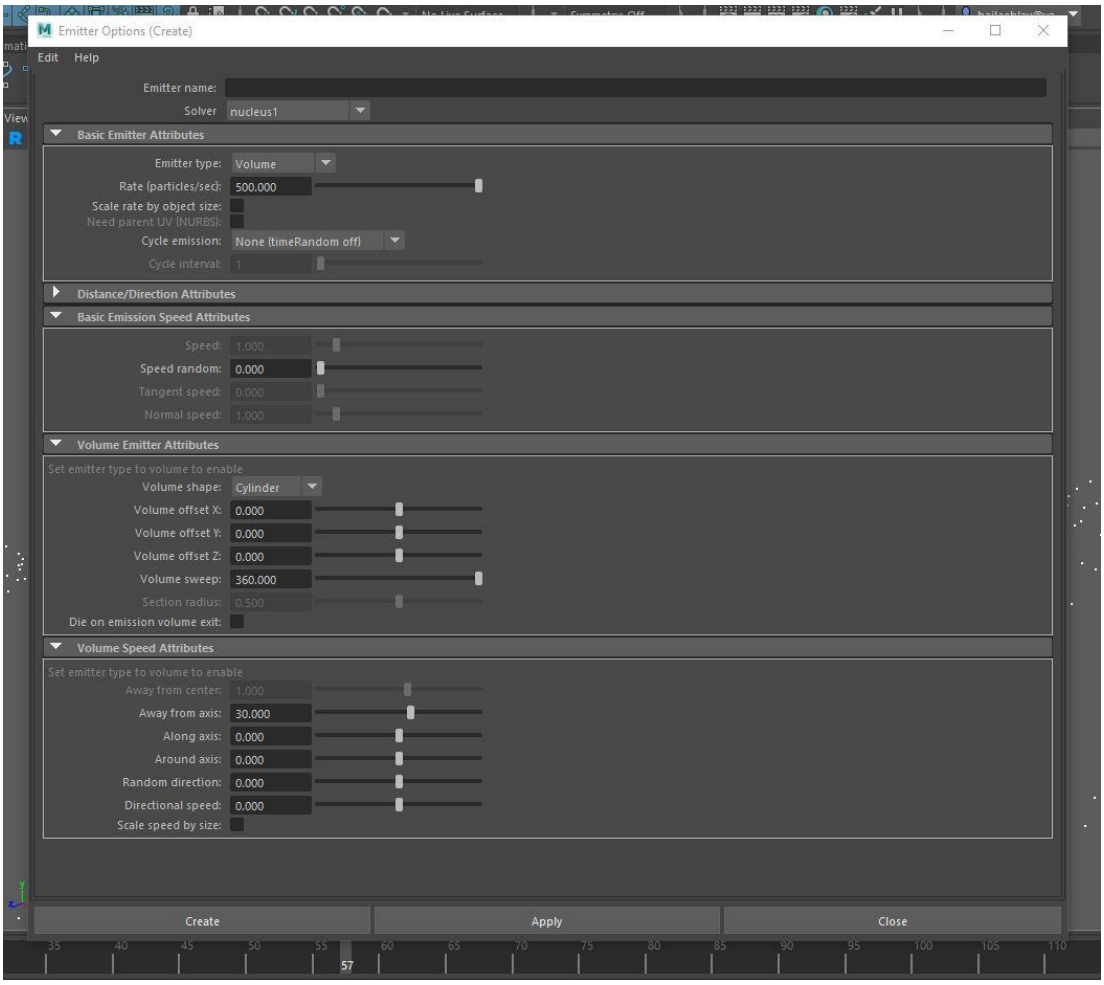
Maya FX tutorial: making a shock wave/ sonic boom effect with Maya fluid and nparticle

Step 1:

Go into the FX menu in Maya.

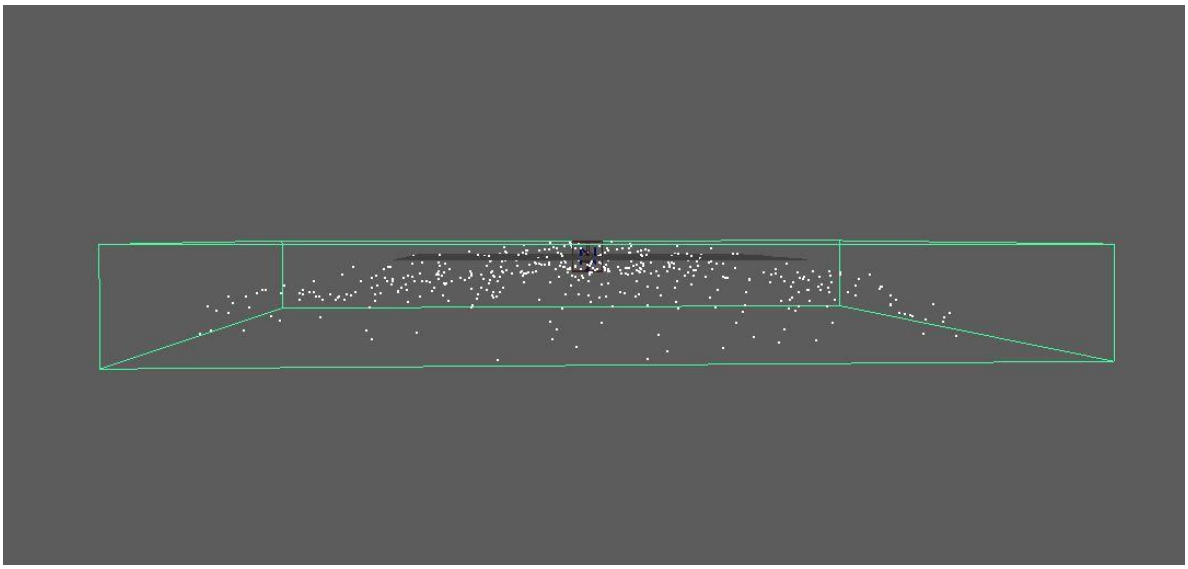
- Click on the nParticles window and then click on the create emitter option box.
- Make sure the emitter type is set to volume, that the rate is set to 500, and the volume emitter attributes is set to cylinder.
- Scroll to the bottom to volume speed attributes and change away from axis to 30.
- Now hit create.



Step 2:

- Press the play button and pause around frame 25.

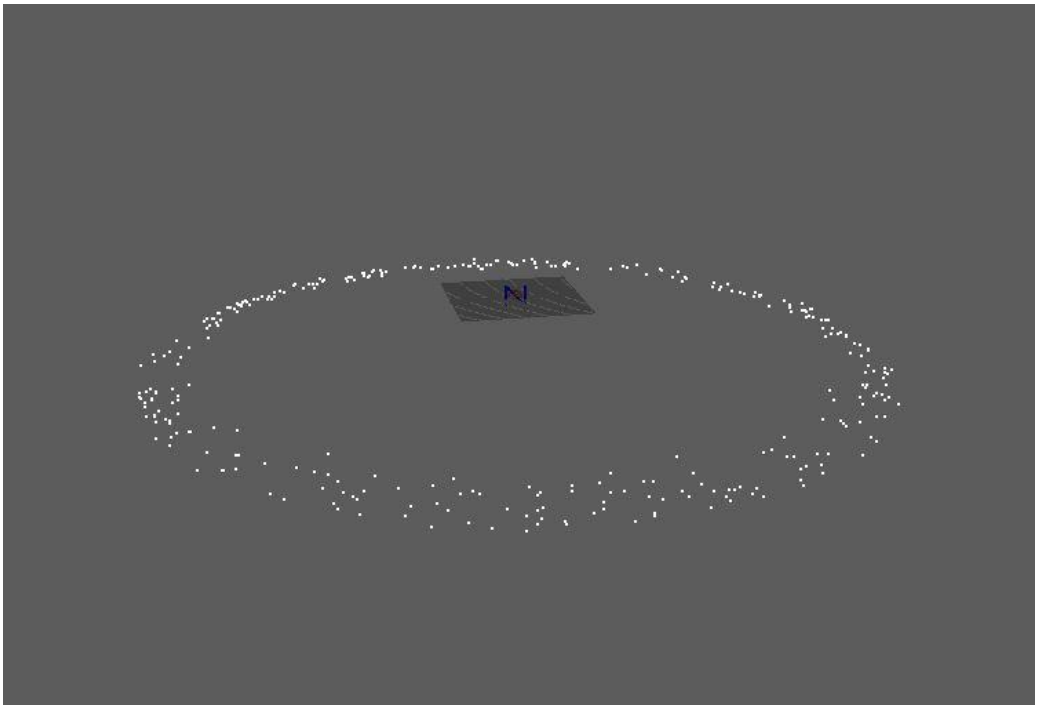
- Here we can adjust our particle system to be the way we actually want it to while viewing it in the perspective window.
- Select the particle system in the window.



- Select emitter1 in the attribute editor.
- Change away from axis to 50.
- Change the rate (particle/sec) to 4000.

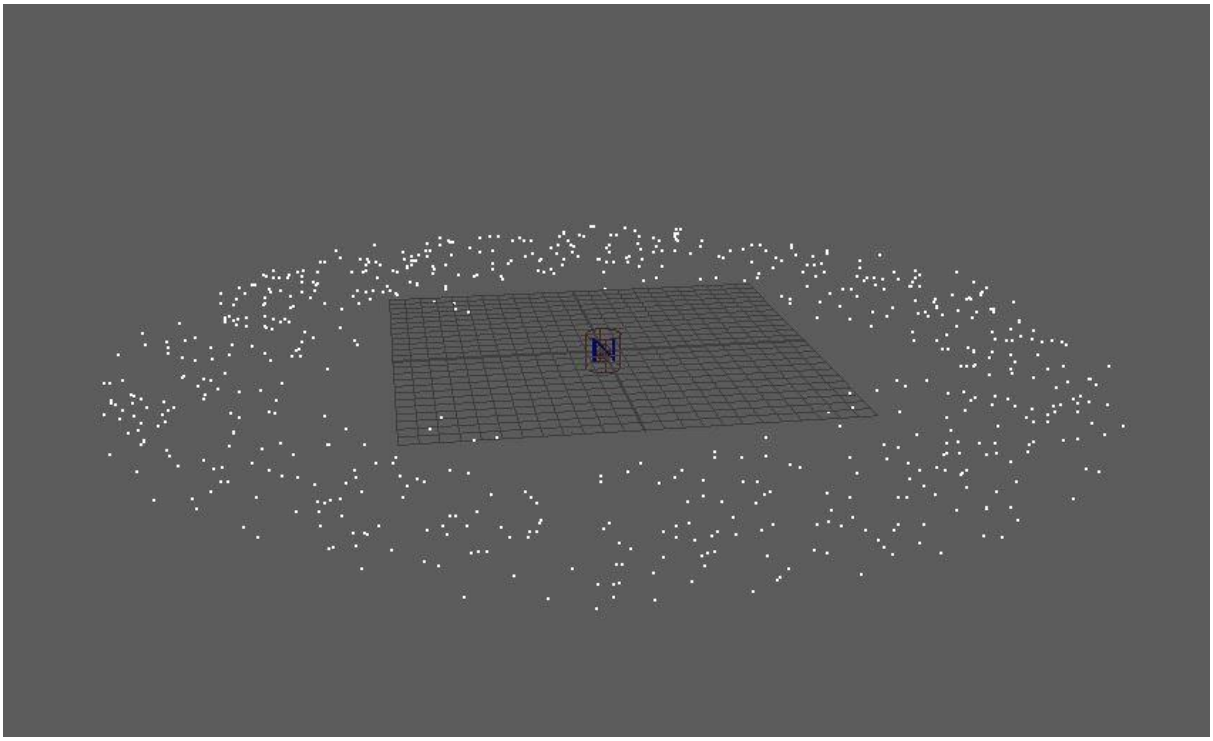
Step 3:

- Set a key on the rate when the emitter is at frame 1.
- Change the rate to 0 and set a key on the rate when the emitter is at frame 10.



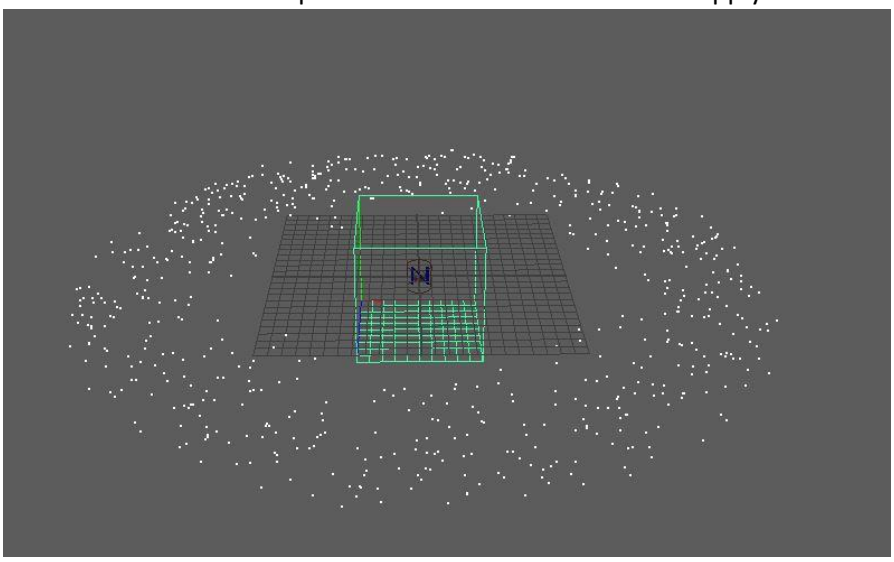
Step 4:

- Click on nucleus1 in the attribute editor and change gravity to 0.
- Click on nParticleShape1 and find Lifespan in the dropdown. Change lifespan Mode to Random range, change lifespan to: 0.800, change Lifespan Random to: 0.400.

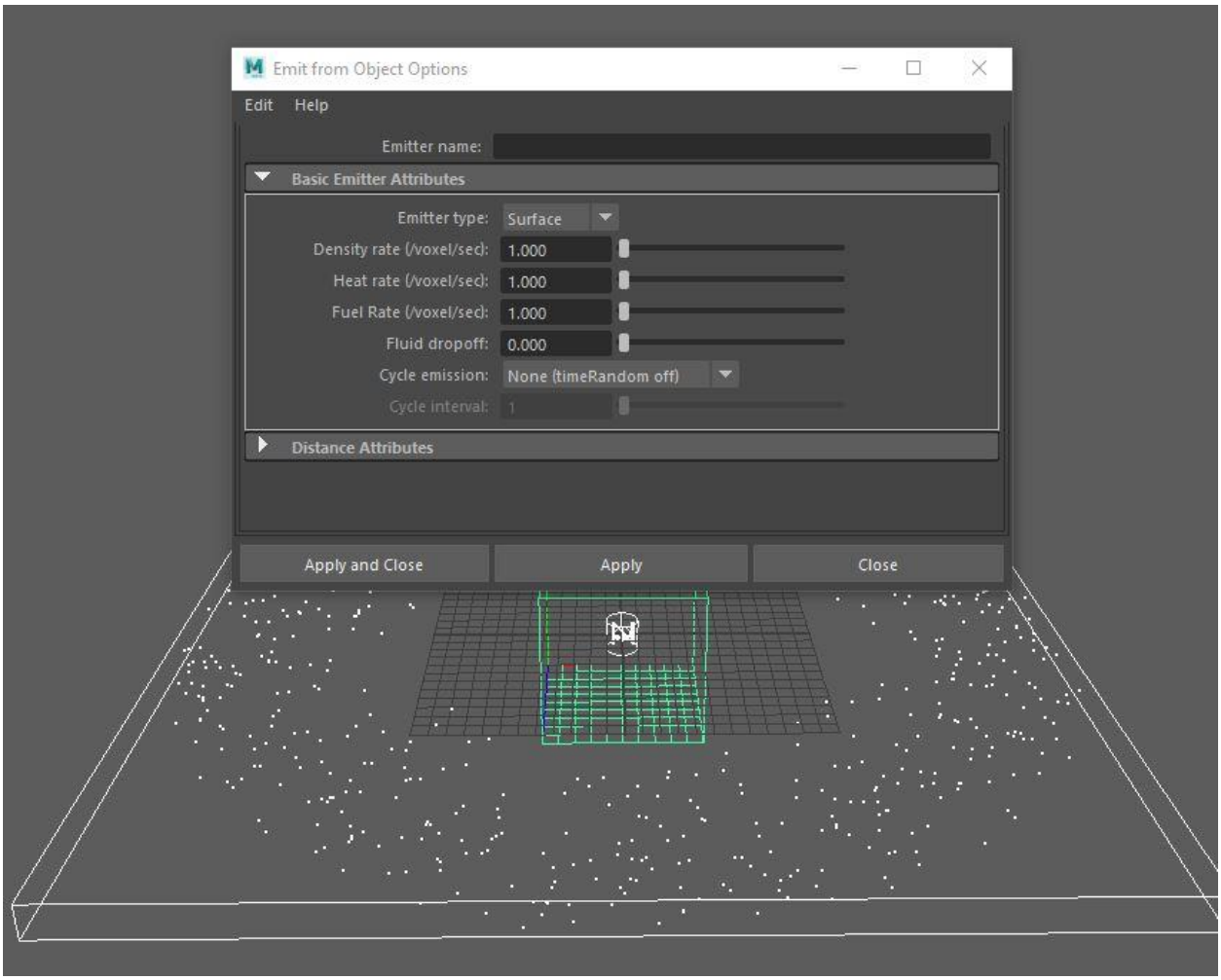


Step 5:

- Go to Fluids at the top of the screen. Select the 3D Container option box.
- Make sure add emitter option box is turned off and select apply and close.



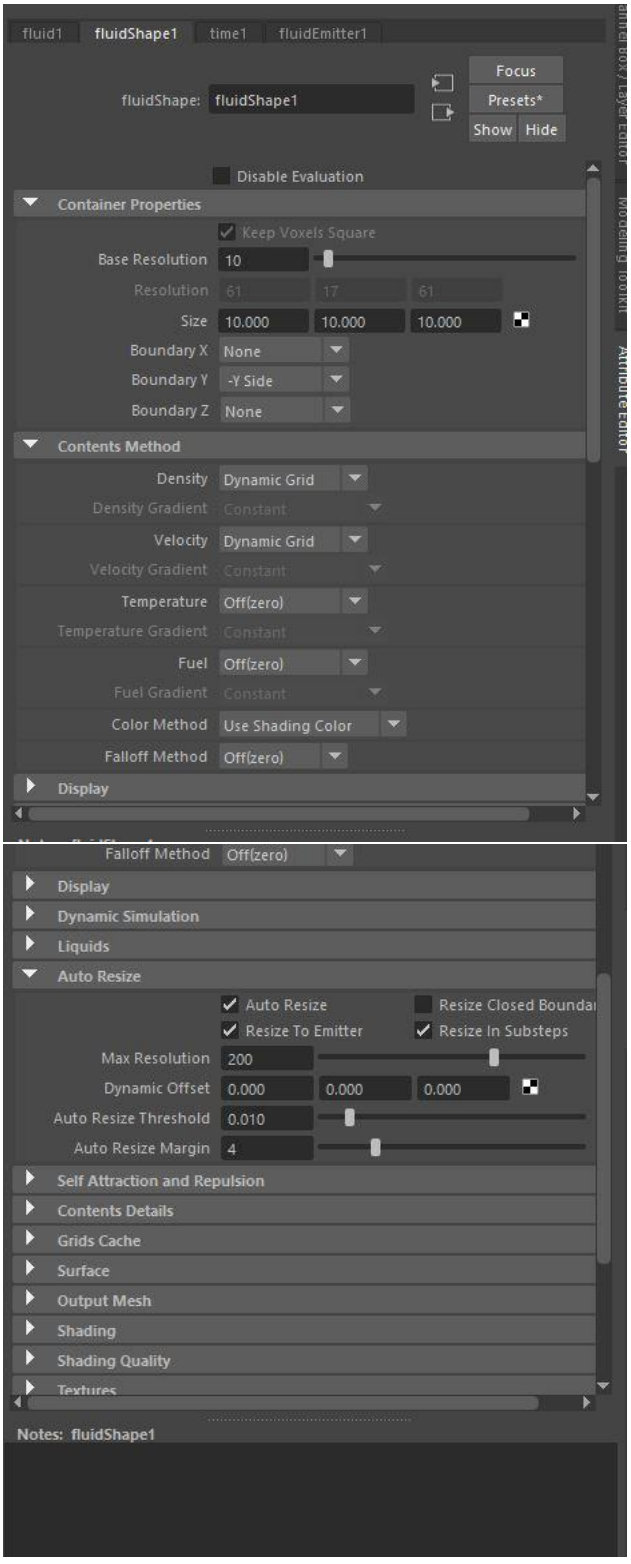
- With the particle system and box selected, go back to Fluids, and select add/edit contents -> emit from object.

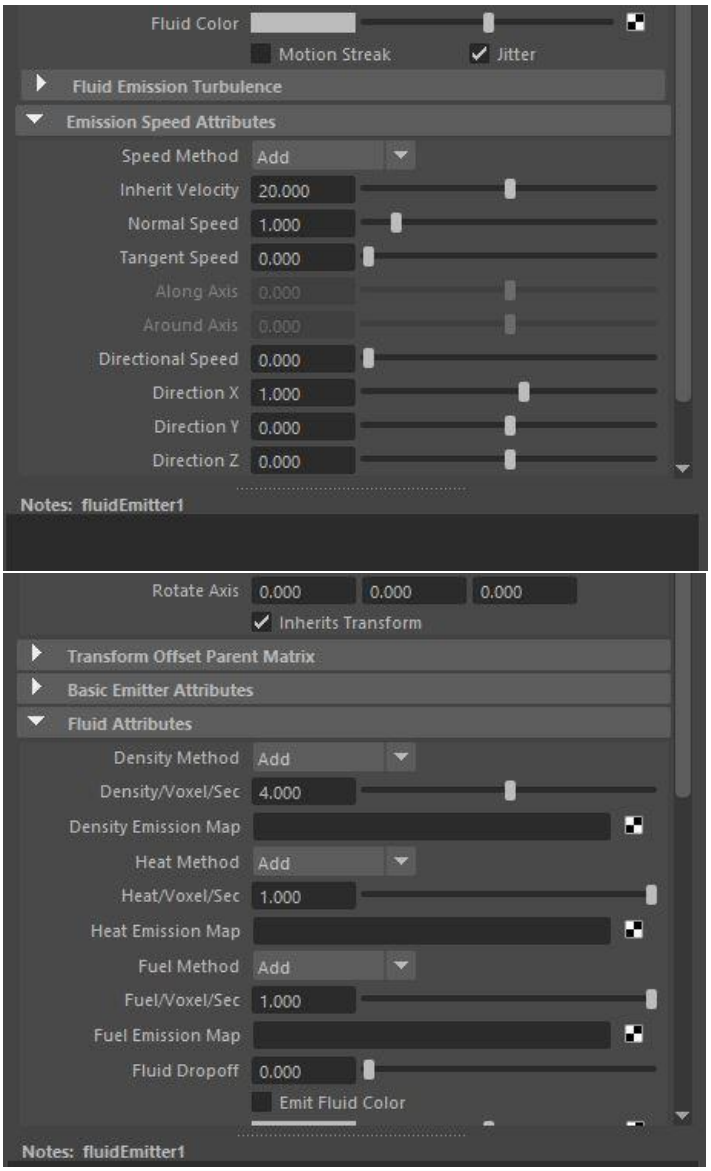


- Make sure your options match the image above. Hit apply and close.

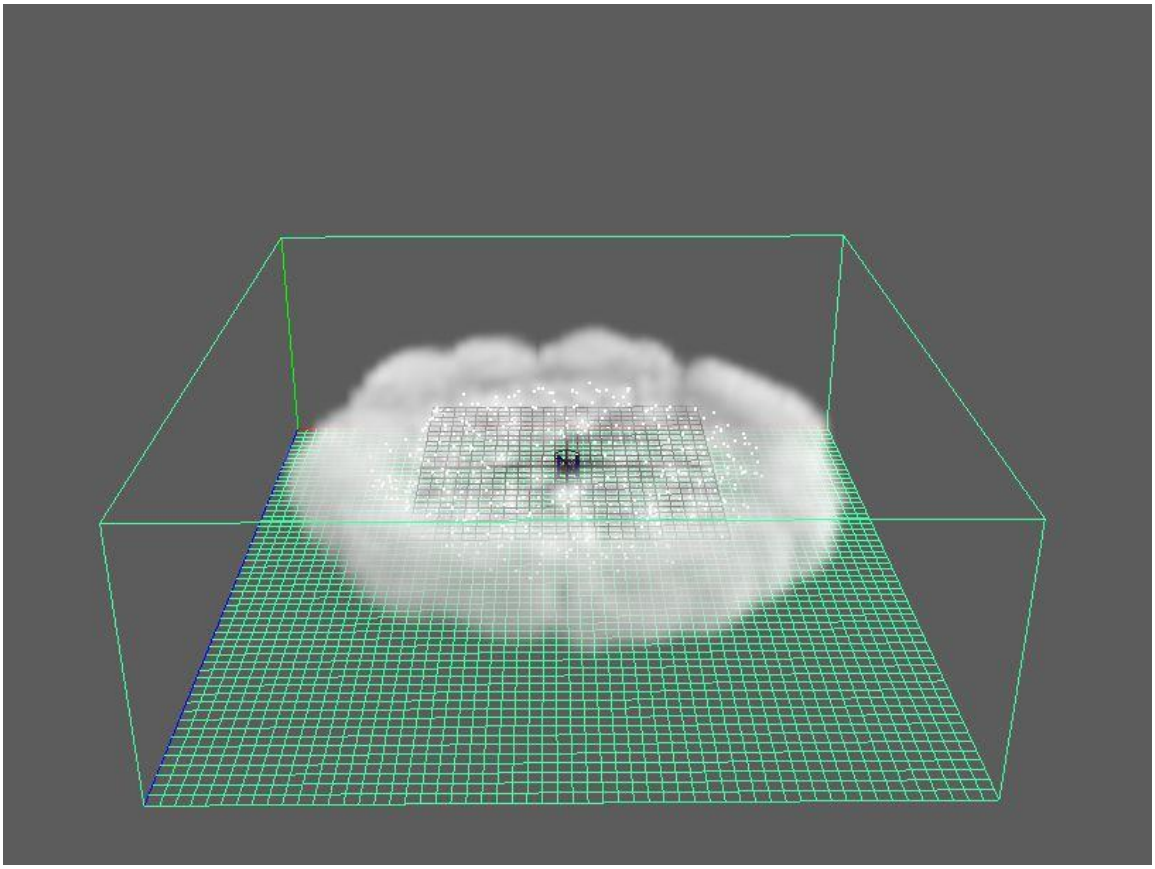
Step 6:

- Select fluid1.
- Go into the attribute editor and select fluidEmitter1.
- Change the options as shown in the images below.


fluid1
fluidShape1
time1
fluidEmitter1
fluidShape: fluidShape1
Focus
Presets*
Show
Hide
Disable Evaluation
Container Properties
Keep Voxels Square
Base Resolution 10
Resolution 61 17 61
Size 10.000 10.000 10.000
Boundary X None
Boundary Y -Y Side
Boundary Z None
Contents Method
Density Dynamic Grid
Density Gradient Constant
Velocity Dynamic Grid
Velocity Gradient Constant
Temperature Off(zero)
Temperature Gradient Constant
Fuel Off(zero)
Fuel Gradient Constant
Color Method Use Shading Color
Falloff Method Off(zero)
Display
Falloff Method Off(zero)
Display
Dynamic Simulation
Liquids
Auto Resize
Auto Resize
Resize Closed Boundar
Resize To Emitter
Resize In Substeps
Max Resolution 200
Dynamic Offset 0.000 0.000 0.000
Auto Resize Threshold 0.010
Auto Resize Margin 4
Self Attraction and Repulsion
Contents Details
Grids Cache
Surface
Output Mesh
Shading
Shading Quality
Textures
Notes: fluidShape1



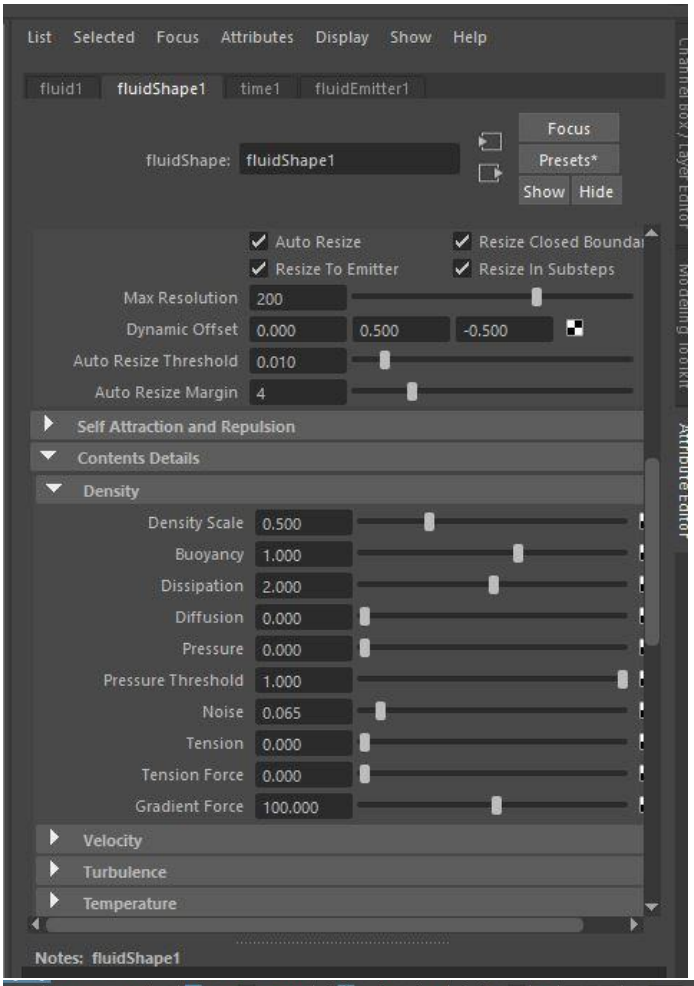
- Go into fluidShape1 and go into the lighting tab. Then turn on self-shadow and turn shadow opacity to 1.
- It should look like the image below.

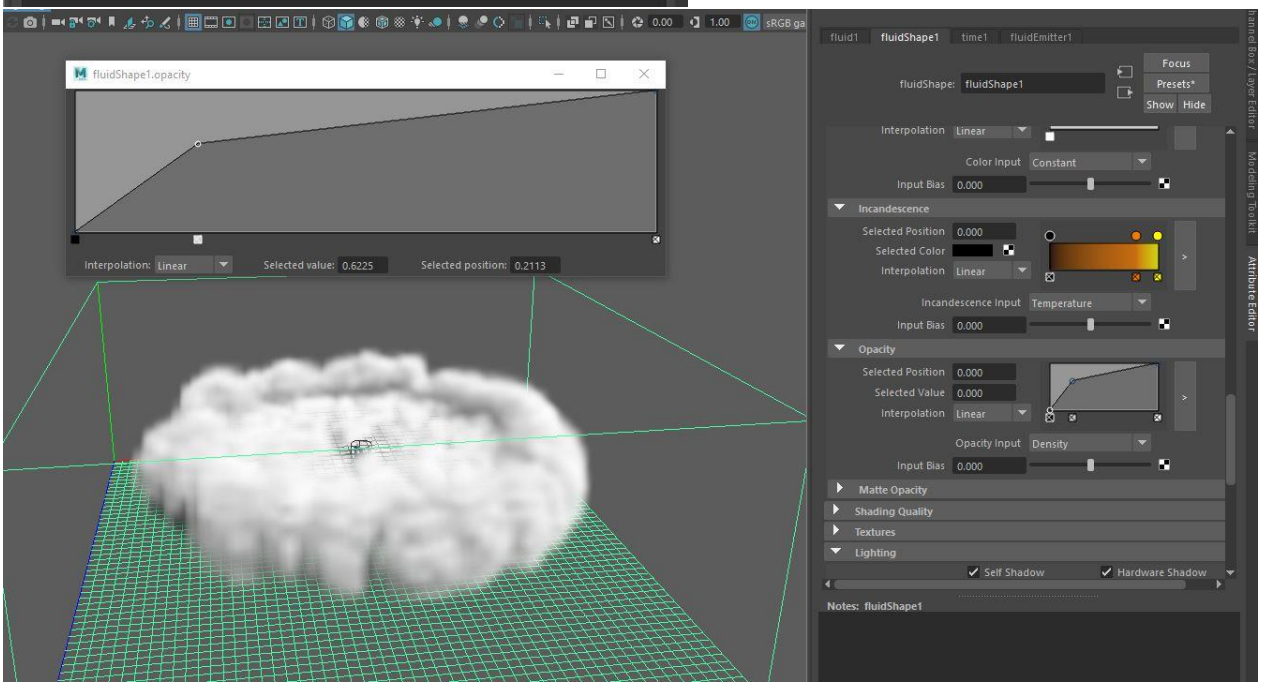


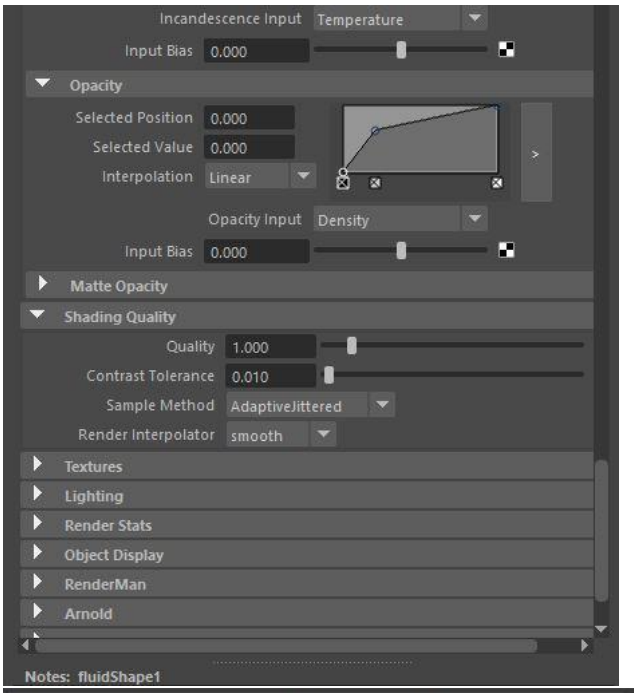
Step 7:

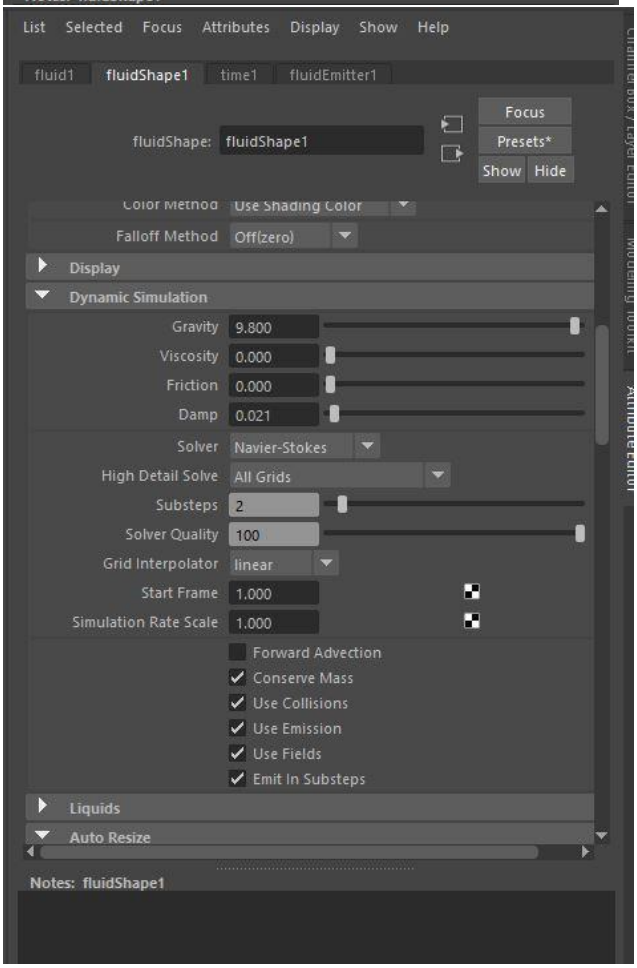
- Go into the outliner and hide the nParticle1.

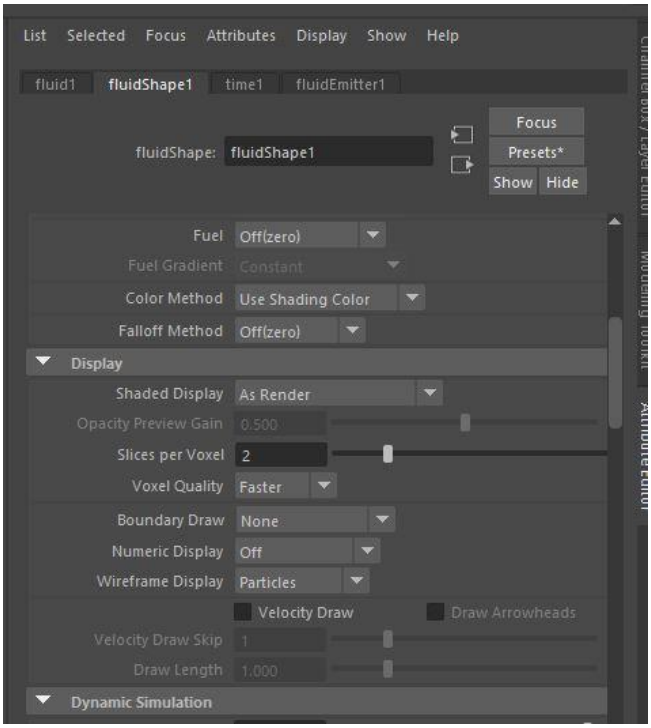
- Change the attributes to match below.





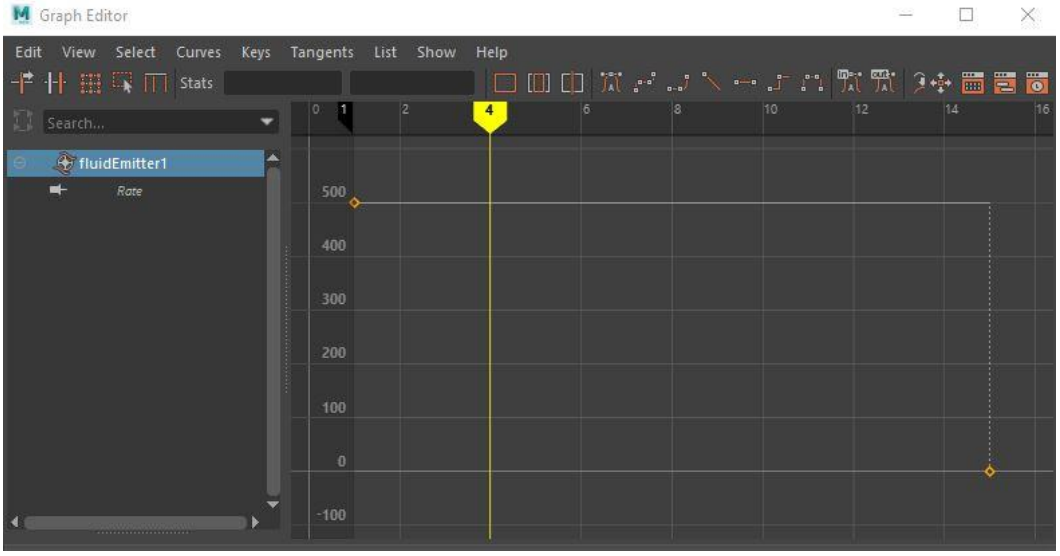

Incandescence Input
Temperature
Input Bias
0.000
Opacity
Selected Position
0.000
Selected Value
0.000
Interpolation
Linear
Opacity Input
Density
Input Bias
0.000
Matte Opacity
Shading Quality
Quality
1.000
Contrast Tolerance
0.010
Sample Method
AdaptiveJittered
Render Interpolator
smooth
Textures
Lighting
Render Stats
Object Display
RenderMan
Arnold
Notes: fluidShape1


List
Selected
Focus
Attributes
Display
Show
Help
fluid1
fluidShape1
time1
fluidEmitter1
fluidShape:
fluidShape1
Focus
Presets*
Show
Hide
Falloff Method
Off(zero)
Display
Dynamic Simulation
Gravity
9.800
Viscosity
0.000
Friction
0.000
Damp
0.021
Solver
Navier-Stokes
High Detail Solve
All Grids
Substeps
2
Solver Quality
100
Grid Interpolator
linear
Start Frame
1.000
Simulation Rate Scale
1.000
Forward Advection
Conserve Mass
Use Collisions
Use Emission
Use Fields
Emit In Substeps
Liquids
Auto Resize
Notes: fluidShape1



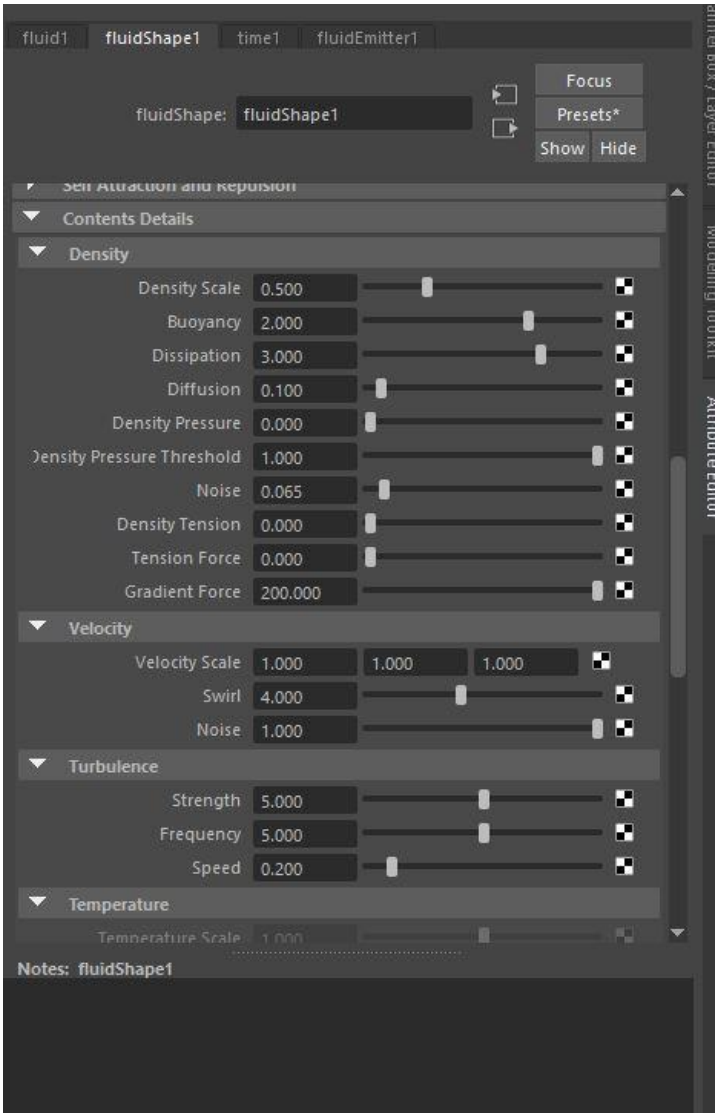
Step 8:

- In the fluidEmitter1 under fluid attributes, check motion streak on.
- Go up to basic emitter attributes and key rate(percent) at 500 at frame 1.
- Then set the key to 0 at frame 15.
- Go to windows -> animation editors -> Graph editor
- In the outliner, under nParticle1, click fluidEmitter1.
- Make your graph look like the one below.



- Click fluid1 in the outliner, open contents details under fluidshape1, then open density. Change dissipation to 3.

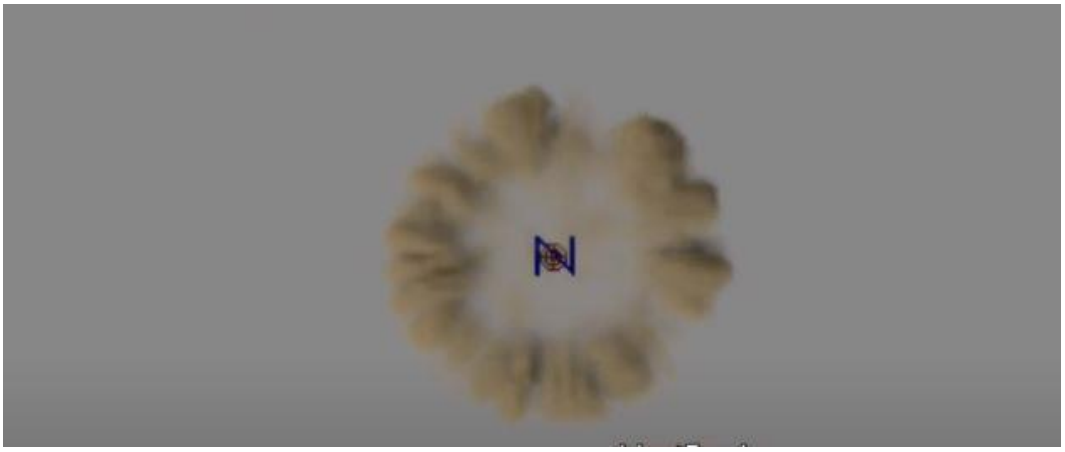
- Copy the values below.



Step 9:

- Create a plane and place it under the cloud.
- With the plane and cloud selected, go to fluids -> make collide.

- You can add lights to the scene as needed and change the color of the fluid/cloud.



Link to referenced video:
https://www.youtube.com/watch?v=BpMQvaUUHYg&feature=emb_logo

Note: If we want magic particles, unhide the nParticle1 in the outliner.

- This could be used in combination with 2D effects.