



CLOUDS

This tutorial will teach you how to use Mirai's particle system to create a basic cloud.



ESTIMATED TIME REQUIRED

20 Minutes

LEARNING GOALS

In this tutorial you will learn how to:

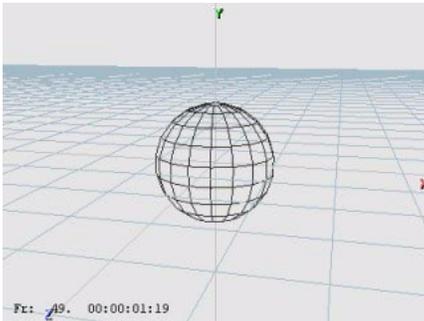
- Create a basic particle group and assign it to an emitter
- Edit the particle properties and particle attributes for the particle group to make it look like a cloud

SETTING UP

- 1 If you're using Mirai's default configurations, [L] on the Animating configuration tab. Otherwise, make sure open following editors:
 - An Animation Viewer & Timeline
 - A Scene Graph
- 2 Make sure the Animation Viewer is in the Mirai domain. Use the options menu (the inverted triangle at the far left side of the title bar) to select the render domain.

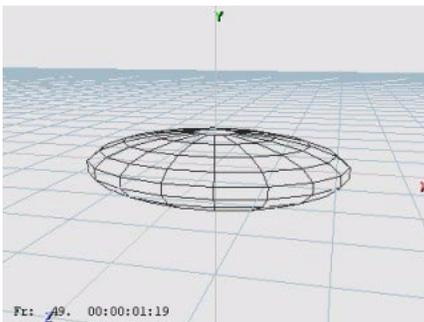
CREATING THE EMITTER

- 3 Move the pointer over the Animation Viewer and press the F5 hot key to open the New Element dialog. Select "Sphere" and add a sphere with default parameters to the scene. (It will appear in your animation viewer since you invoked the New Element dialog while over that editor.) This sphere will be your emitter.

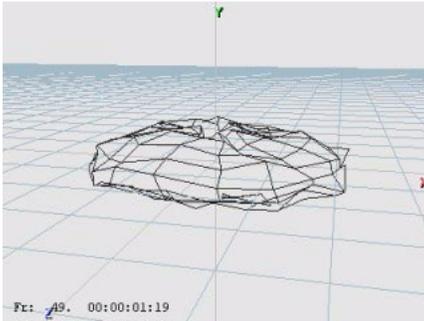


- 4 To squash and stretch the sphere into a more oblong shape, [R] on the sphere and *Free Scale* [L].

NOTE: *When asked if you want to save the initial position for the cloud, [L] on No.*

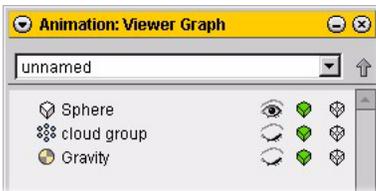


- 5 To randomize the surface of the cloud, [R] on the sphere and *Randomize* [L]. Move the mouse left and right, up and down, and while you hold [M] to randomize the position of the vertices along all three axes.



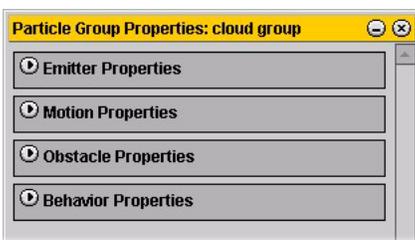
CREATING THE PARTICLE GROUP

- 6 Press the F5 hot key to open the New Element dialog. Select “Particle” and add a particle group to the scene. Name the particle group “cloud group”. It’ll appear in your Scene Graph.



EDITING PARTICLE PROPERTIES

- 7 [R] on the “cloud group” entity in the Scene Graph and choose *Particle Properties*. A Particle Properties editor opens showing the current attributes for the “cloud group” particle group:



- 8 [L] on the *Emitter* channel and set the values as follows:

- Birth Rate: 9
- Initial Speed: .10
- Life Span: 3
- Deviation: 2
- Emitter: Sphere
- Source Type: Face

NOTE: *Any settings that are not mentioned should remain at their defaults.*

9 [L] on the *Motion* channel and set the values as follows:

- *Inherit Velocity*: 0
- *Mass*: .05
- *Precomputed Frames*: 60
- *Damping*: 0.2

NOTE: *Any settings that are not mentioned should remain at their defaults.*

EDITING PARTICLE ATTRIBUTES

The basic work is done in creating the particle group's behavior; next you need to edit its attributes.

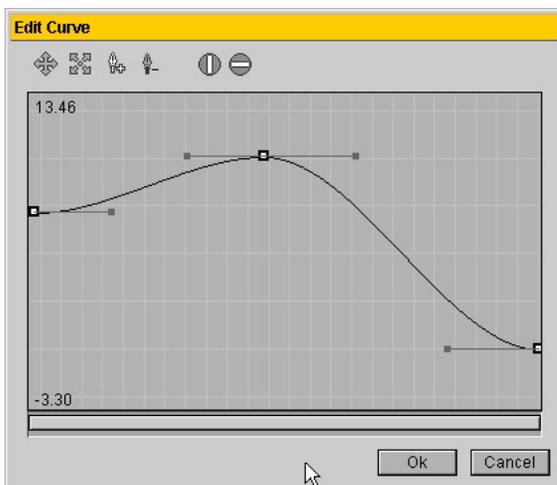
10 [R] on "cloud group" in the Scene Graph and choose Edit Attributes.

11 Use the options menu to make sure the Attributes Editor is in the Mirai domain.

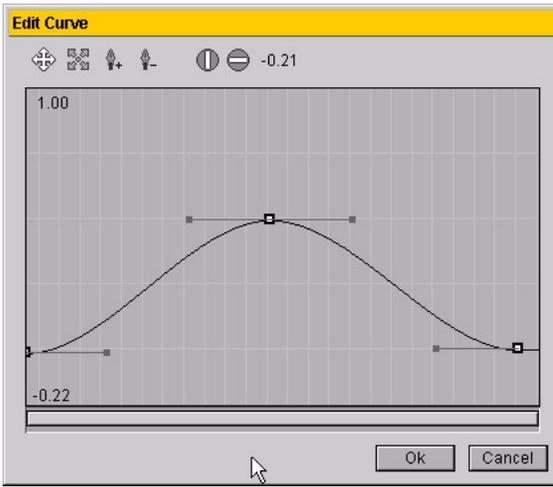
12 For a nice cloud, you need to edit the color wave that will control the color of the particle over its lifetime. The color wave should begin as light blue, fade into white, and die off as a light grey color. (This part is a little subjective—you can refine the color wave later if you choose to create storm clouds, or a sunset, for example.) [L] on the *Color* wave, then use the mouse doc to create a color wave that looks something like this:



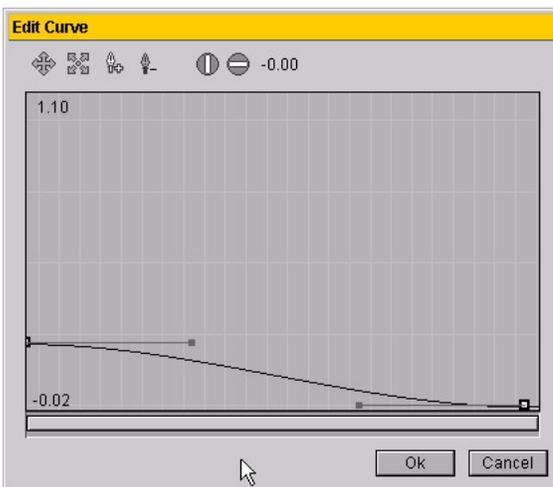
13 [L] on the *Size* curve. The particle size should be a curve, starting at 5 growing to 10 and ending at 0. This creates particles that grow to a large size, then shrink as they die. Click *Ok* when you're done.



- 14 [L] on the *Opacity* curve. The opacity curve should begin at 0 opacity, grow to about .5 and then drop back down to 0. This makes the maximum opacity for the particles 50%, which they'll reach about halfway through their lifespan. Click *Ok* when you're done.



- 15 [R] on the *Falloff* curve. The particle size should be a curve, starting at about .2 and dropping to 0. This makes the point particles more transparent at the edges and more opaque at their center. Click *Ok* when you're done.



Now, both the basic properties and attributes of your cloud group should be set.

CREATING A SCRIPT

To animate the particle group, you need to create a script.

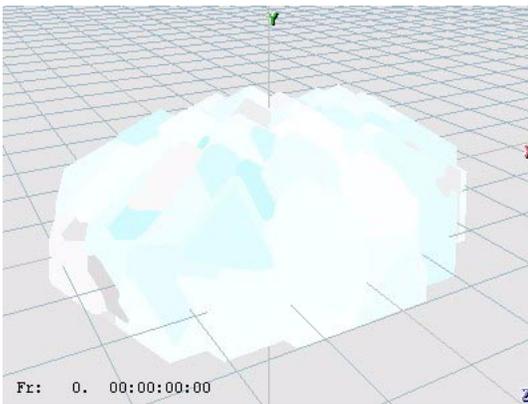
- 16 Move the pointer over the Timeline, and press F5. Choose "Script" in the New Element dialog and set its length to 200.
- 17 [M] on the channel button on the Timeline (the "egg") and choose *Simulation>Activate Simulation Group*.

18 Specify “cloud group” as the object for the *Activate Simulation* operation:



19 Rewind the script. This will precompute the cloud 60 frames.

NOTE: *You may need to reposition your camera if you're too close to the cloud. If you're inside the cloud, everything may look white; make the cloud group invisible, adjust the camera, then make it visible again.*

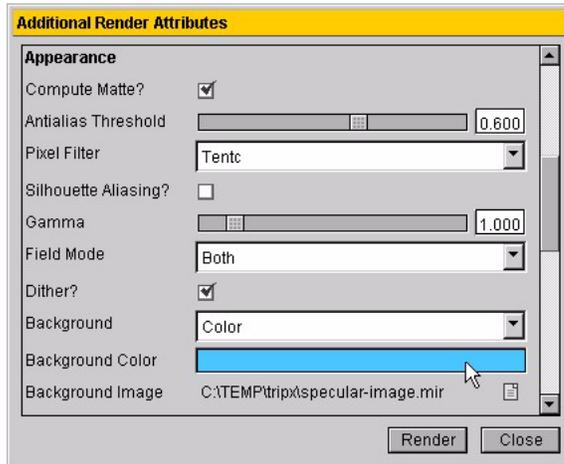


20 To render a test frame, Ctrl [R] on the Animation Viewer and choose the *Render* command.



SETTING THE BACKGROUND RENDER COLOR

If you want to change the background color for the *Render* command, use *Render* [R]. You can set the background color for subsequent renders in the dialog box that appears:



- Set *Background* to *Color*
- Set *Background Color* to the color you want ([L] to pop up the color editor, select the color, then [M] on the color bar to select the color). Try setting the start of the color wave for the particle group and the background color to the same value.

ANIMATING THE SCRIPT

When you animate the script, you'll see the cloud begin to billow and change over its lifetime.

OTHER CHANGES

Once you've built the basic cloud, you can try the following:

- Try adding a translate operation to transform the "cloud group" around.
- Change the cloud group's particle properties. Change the *Birth Rate* or *Initial Speed* for a different look.
- Change the cloud group's attributes. Change the *Color* wave or the *Size* parameters to generate clouds with different looks. (Note that you may also need to change the particle size depending on the size of your emitter.)