

Exploring hurricane variables in the 3D scene viewer

ArcGIS Online Scene is an app that can symbolize 3D geospatial content that includes a multiscale basemap, a collection of 3D layers, styles, and configurations that allow you to visualize and analyze geographic information in an intuitive and interactive 3D environment. You can also create web apps with a scene by using a configurable app. Different configurable apps offer various bits of functionality.

You have been given the task of displaying hurricane track data by the two variables of wind speed and pressure. You are to show how atmospheric pressure and wind speed change along the path of the hurricane and show the relationship between the two. The hurricane data that you have been given is for Hurricane Katrina, which was one of the costliest natural disasters to ever hit the United States. It was active August 23–31 and was recorded as a Category 5 Hurricane. It impacted Florida, the Bahamas, and Cuba, but the most devastating damage was in New Orleans, Louisiana.

Build skills in these areas

- Adding layers to Scene in your organizational account
- Displaying hurricane track data in 3D by variables of speed and pressure
- Creating two web apps using configurable app template

What you need

- Account required
- Estimated time: 30 minutes – 1 hour



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1. Open Scene







1. Sign in to your [ArcGIS organizational account](#).
2. Slick Scene on the upper ribbon.

Home Gallery Map **Scene** Groups My Content My Organization


3. In the upper-left corner of your screen are the navigation controls. Take a few minutes to familiarize yourself with the tools. Use all the tools.

Navigate your scene


In the upper left of your screen are the navigation controls.

- Click **Initial view**  to return to the initial camera position.
 - Click **+** to zoom in.
 - Click **-** to zoom out.
 - You can also use your mouse and scroll wheel to zoom in and zoom out or press and hold the middle mouse button and move down or up to zoom in or out.
 - Click **Pan**  to pan. Click and hold the left mouse button and drag the scene in the direction you want to move it. You may also pan by using the arrow keys on the keyboard.
 - Click **Rotate**  to rotate. Click and hold the left mouse button and drag the scene in the direction you want to rotate and tilt it.
- Tip:** The black triangle in the upper right of the tool indicates which tool is selected.
- If you have a two-button mouse, you can use the left mouse button for the primary navigation and the right mouse button for the secondary navigation. For example, if you click **Rotate** , you can use the left mouse button to rotate and the right mouse button to pan.
 - Compass**  gives you the orientation of the scene. Click **Compass**  to set your scene to North orientation.

4. Pay attention to changing the basemaps.



Search and type a location into the search box

View layers 

Choose a basemap

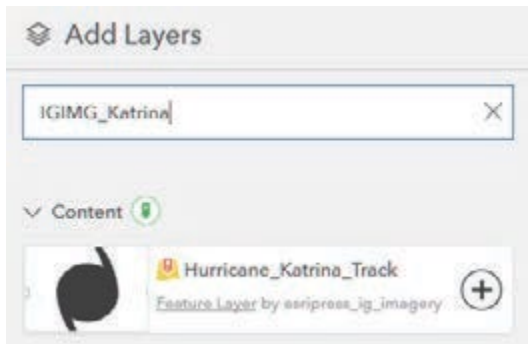
Adjust daylight (This setting can be used to change how sunlight and shadows affect your scene different times of the day and year.)

Share the scene

Change settings

2. Create scene of wind speed

1. Add an additional layer to the scene by clicking ADD LAYER.
2. Search for IGIMG_Katrina.



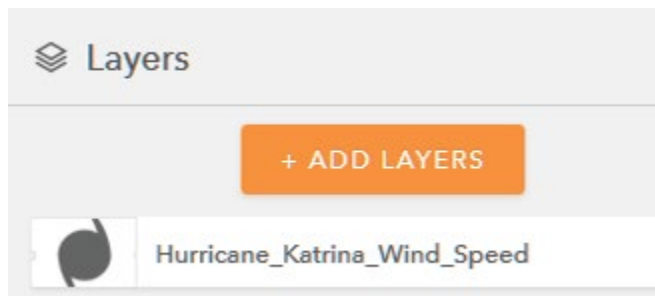
3. Click the plus sign (+) and add the layer to the scene.

Notice that the point data for the hurricane track appears on the scene.

4. Click DONE.

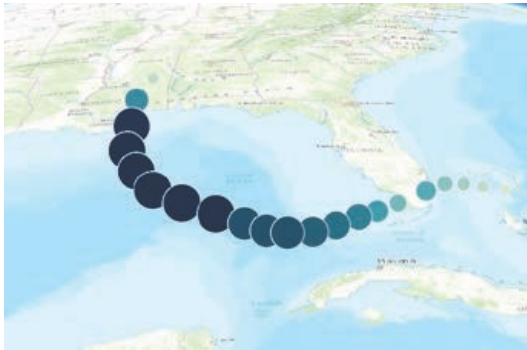
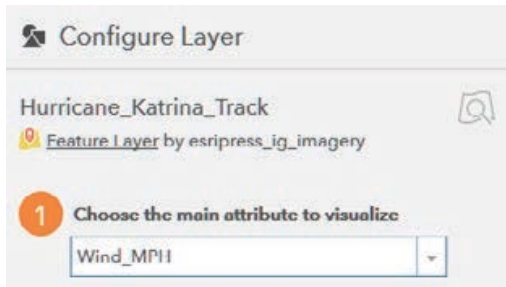
You will now style the layer to show wind speed. The menus involving styling the layer can be accessed from the tab on the side of the feature.

5. Click Rename and rename the layer Hurricane_Katrina_Wind_Speed.



6. Click the tab again and select Layer Style

7. Choose the main attribute to visualize as Wind_MPH.



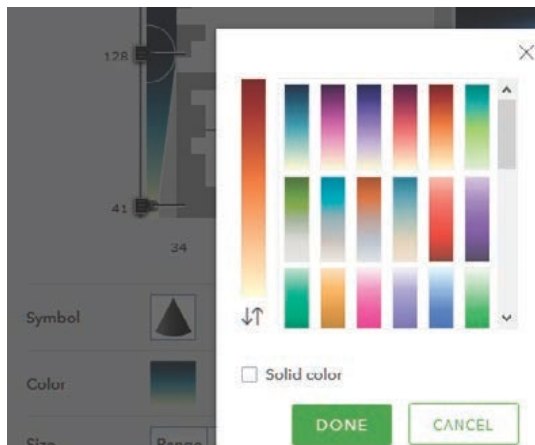
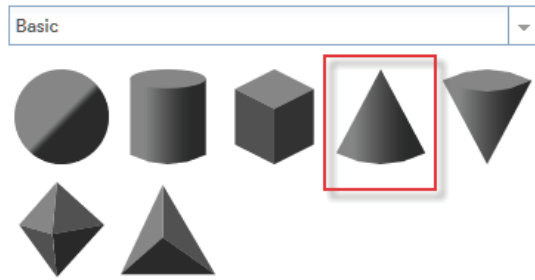
Notice that the wind speed is now represented on the map both as graduated symbols and using a color ramp. The symbols are spheres, and the larger the sphere, the stronger the wind. The wind speed is also shown as a graduated color ramp, with the darkest blue indicating the strongest wind.

You will next choose a drawing style. You want to choose the Counts & Amounts 3D>>OPTIONS.

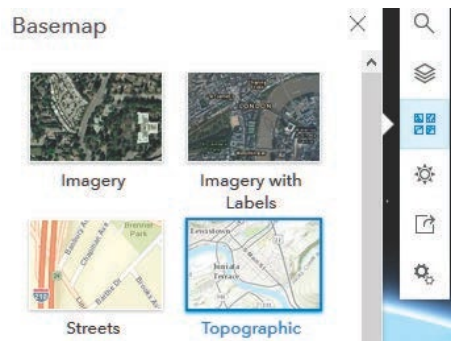
8. Click OPTIONS.



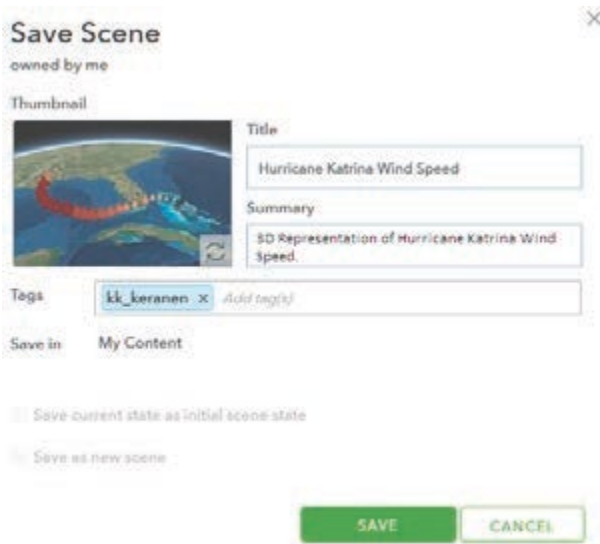
- Click Symbol and change to cone.
- Change the color to the graduated red ramp.



- On the upper-right toolbar, change the basemap to Imagery with Labels to see the landscape better.



12. Before clicking DONE, use the Toggle to pan or rotate in 3D to see the cone shape.
13. Click DONE.
14. Click DONE again.
15. Click SAVE SCENE, and enter the following metadata:
 - Title is Hurricane Katrina Wind Speed (and your initials).
 - Summary: 3D Representation of Hurricane Katrina Wind Speed
 - Tags: individual tags



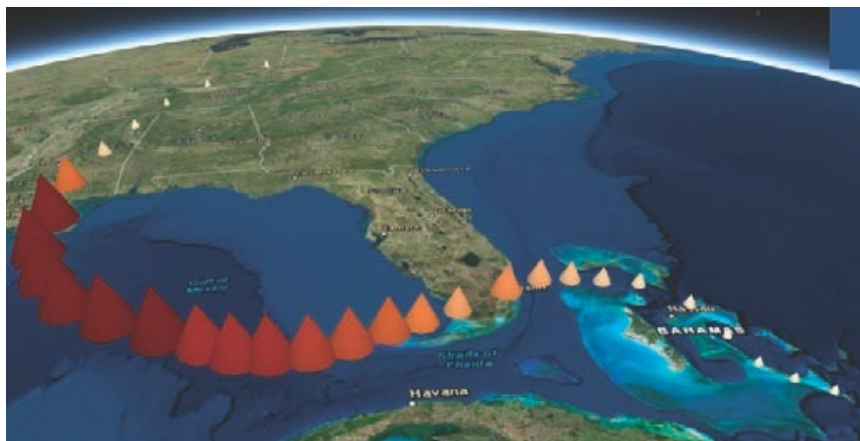
16. Click SAVE.

You have successfully made a 3D Scene showing Hurricane Katrina wind speed.

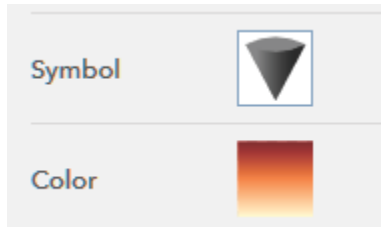
3. Create scene of barometric pressure

You will now make another map showing barometric pressure.

1. In the upper-right corner, click New Scene>>New Global Scene.



- Repeat steps 1-16 from “Create scene of wind speed” to create the wind speed map with the following exceptions:
 - Rename the layer Hurricane_Katrina_Pressure.
 - For color, choose red.
 - For symbol, choose an inverted cone.



- Click SAVE SCENE, and enter the following metadata:
 - Title: Hurricane Katrina Pressure (and your initials)
 - Summary: 3D representation of Hurricane Katrina barometri_pressure
 - Tags: individual tags
- Click SAVE.

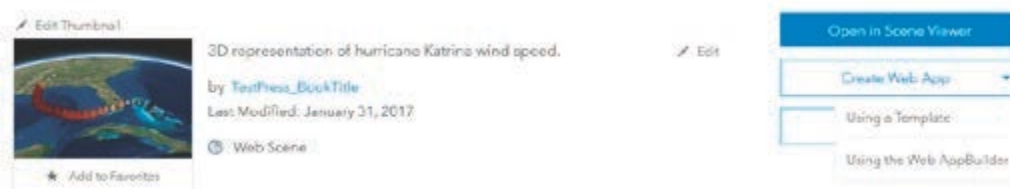
4. Configure a web app scene

Configuring a Web App Scene will let you view both 3D visualization. Wind speed and Pressure.

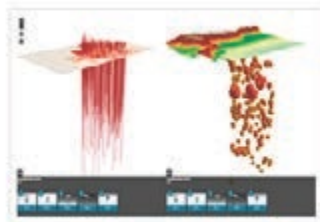
- Go Home and choose My Content.



2. Click Hurricane Katrina Wind Speed and click Open.
3. Click Create Web App>>Using a Template.



4. Select Compare Scenes and click Open.

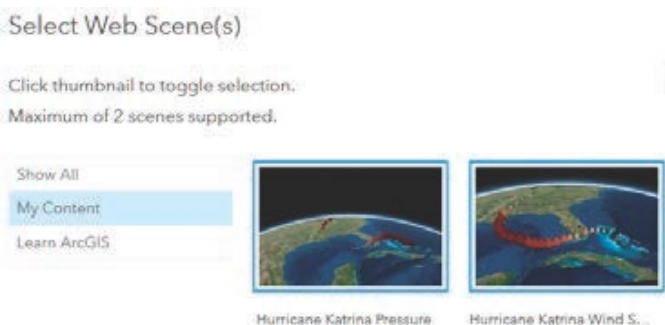


Compare Scenes

5. Click CREATE WEB APP, and enter the following metadata:
 - Title: Comparison of Wind Speed and Barometric Pressure
 - Summary: Using Hurricane Katrina to compare wind speed and barometric pressure
 - Tags: individualized tags
6. Click DONE.

You can now select the two web scenes to be visualized in your app.

7. Click Select Web Scene(s).
8. Select Hurricane Katrina Pressure and Hurricane Katrina Wind Speed.



9. Click OK.
10. Click Options on the top ribbon.
 - Be sure that Link Views is checked.
 - Do not select Open info panels at start.
11. Click SAVE.
12. Click Launch.

When you launch the Comparison of Wind Speed and Barometric Pressure app, you will be able to visualize the relationship between the two variables as well as compare the variables to their relationship of land and water.

5. Analysis

In this exercise, you have visualized how atmospheric pressure and wind speed change across the path of a hurricane.

Q1 Using the visualization, write an analysis listing all the variables and their relationships. Specifically include the relationship of wind speed to location on land versus water, wind speed to depth of water, and wind speed to atmospheric pressure.

Q2 Looking at the variables, where would the hurricane be the strongest?

6. Additional activity

Hurricane Matthew lasted from September 28 to October 20, 2016. It produced damage from Haiti to the southeastern United States and caused severe food damage. Use this hurricane track to solidify your ability to display the pressure and wind speed of a hurricane in 3D to show their inverse relationship.

1. Open a new scene.
2. Search for IGIMG_Matthew.
3. Use the Hurricane Matthew Track to produce and analyze another set of hurricane data.

