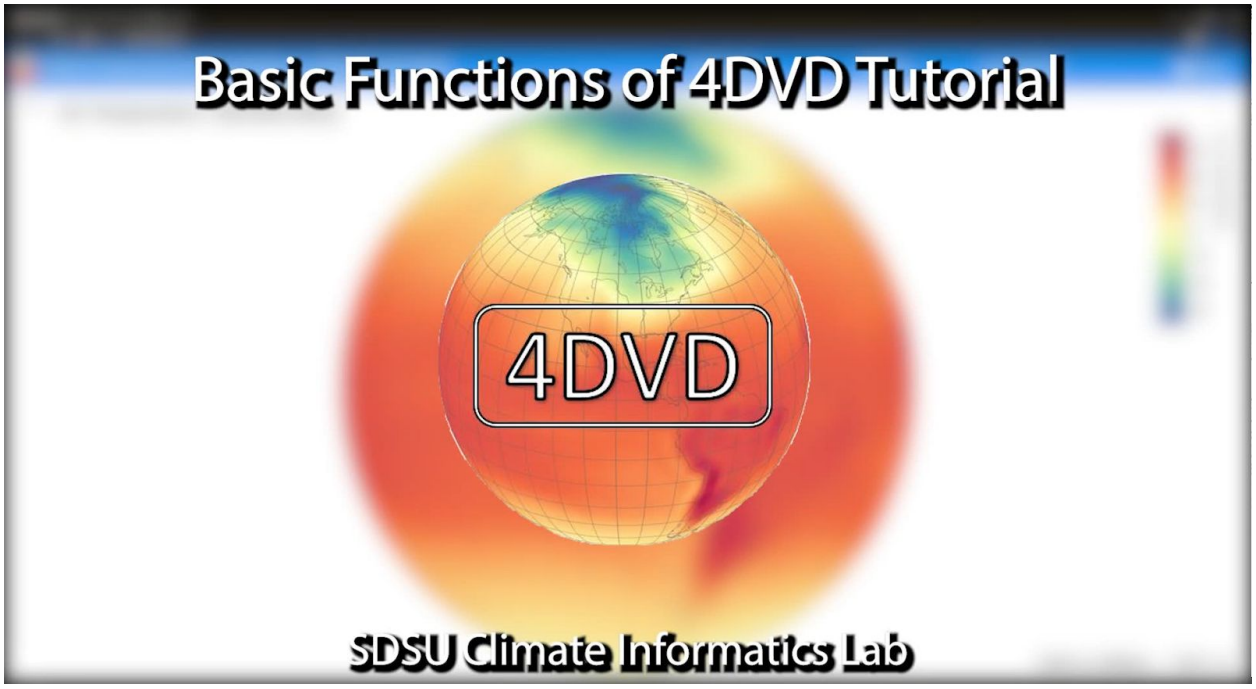
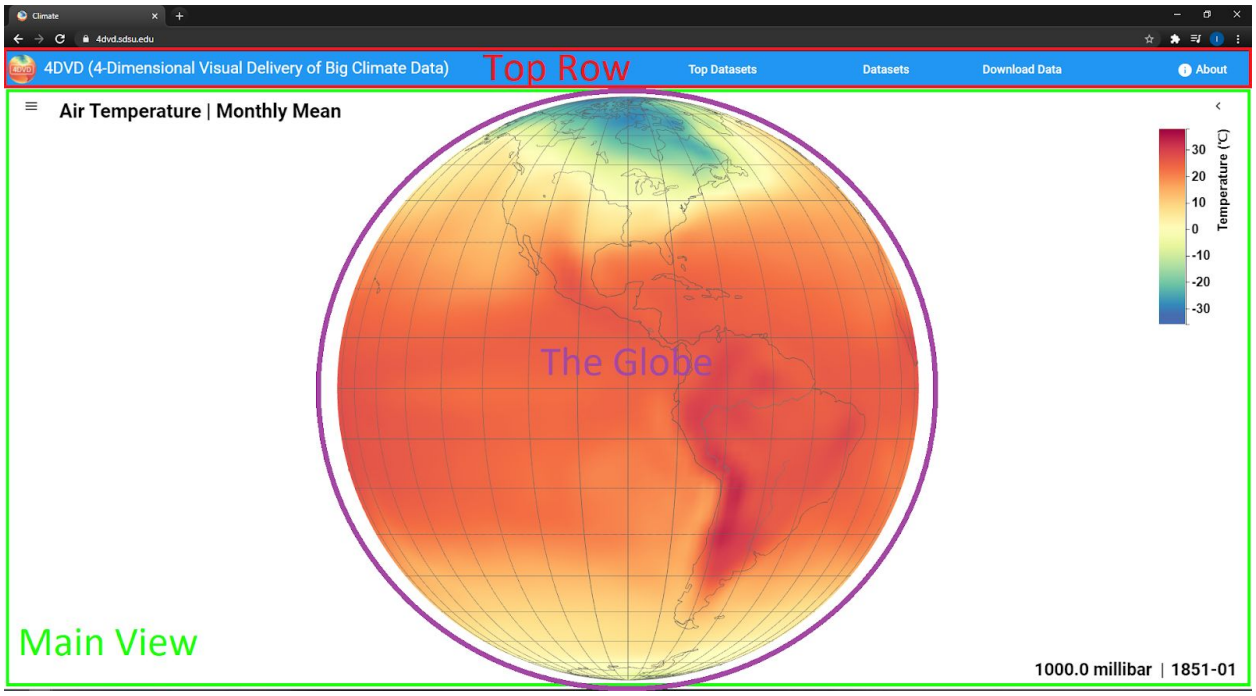
Basic Functions of 4DVD



Brief Overview

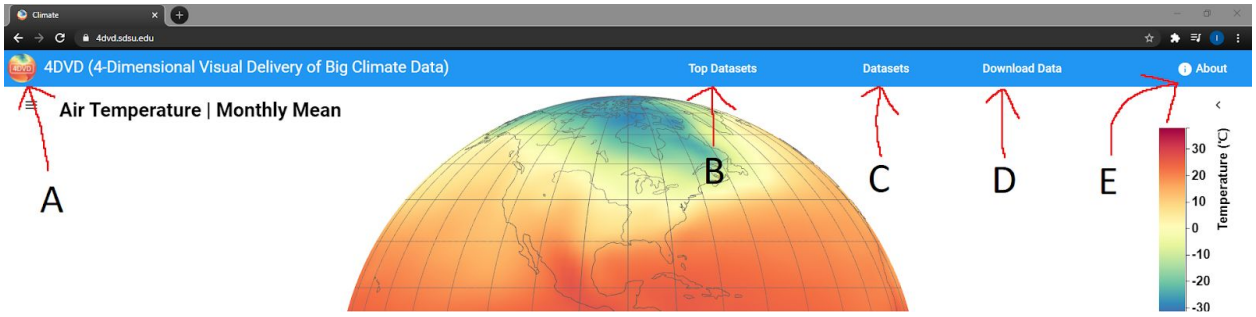
4-Dimensional Visual Delivery of Big Climate Data, or 4DVD, is a digital technology that can quickly and easily visualize and deliver historical climate data. The technology is a software and has a friendly website interface. The 4DVD software can be applied to visualize and deliver any kind of space-time data, ranging from air temperature to precipitation to wind speeds to even humidity. Because of its friendly interface and fast speed, 4DVD can deliver historical climate data to the general public, school students, and seniors, in addition to scientists. This tutorial demonstrates some basic 4DVD functions.

For this tutorial, we will break up the initial 4DVD page into 3 different sections. The top row, the main view, and the globe as shown in the picture below.



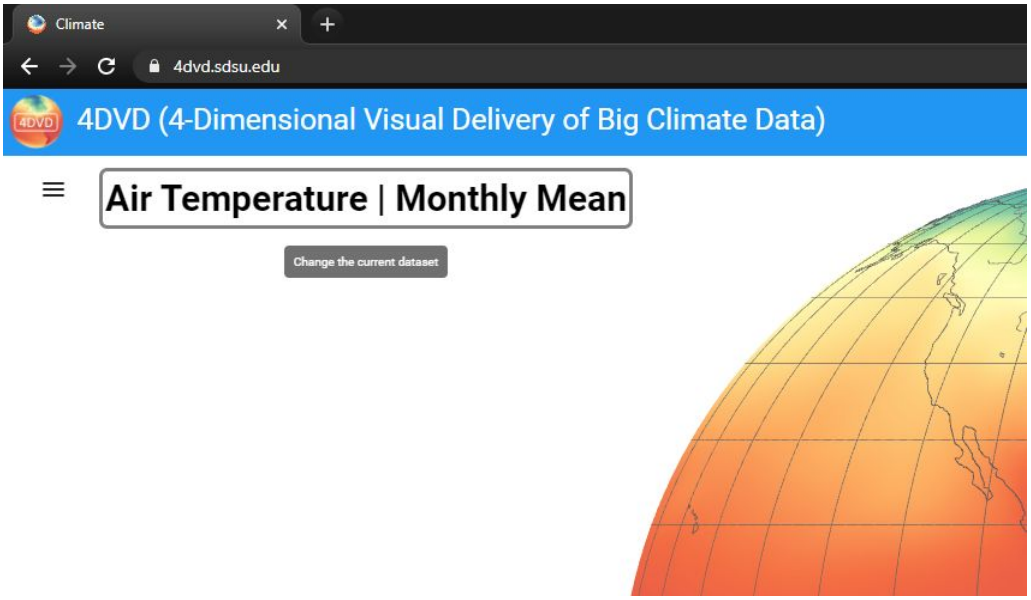
1. Top row

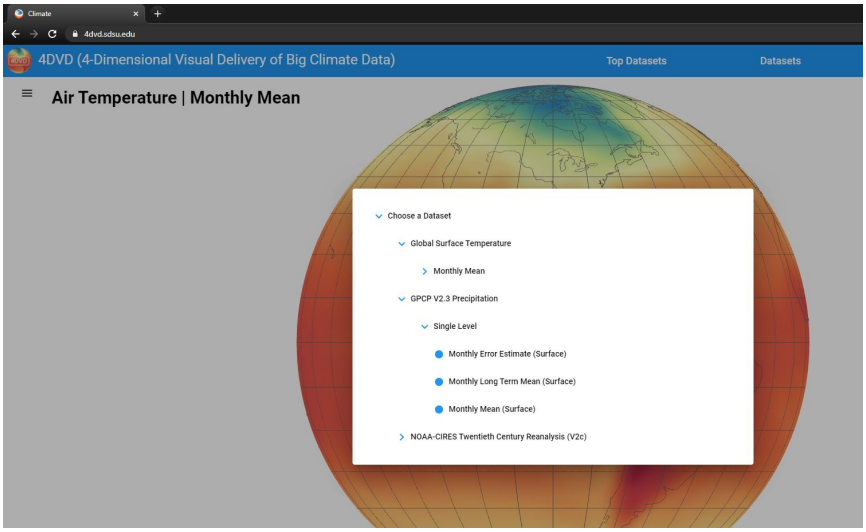
a. Click the 4DVD logo to refresh the page
b. Click “Top Datasets” to quickly choose most popular datasets
c. Click “Datasets” to change the current viewed dataset any dataset that is currently available on 4DVD
d. Click “Download Data” to Download a CSV of the global data you are viewing at the given height level and date
e. Click “About” for more information on 4DVD



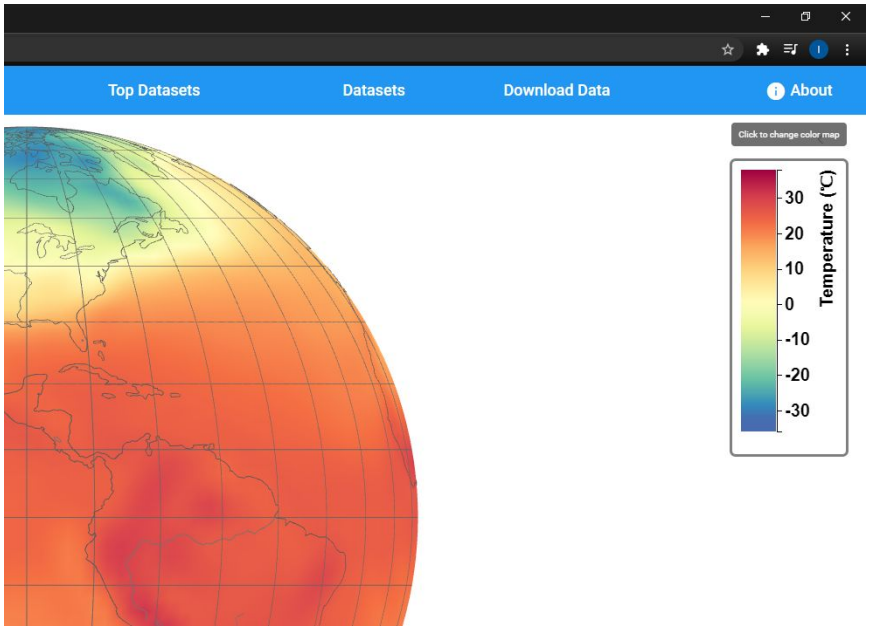
2. Main view

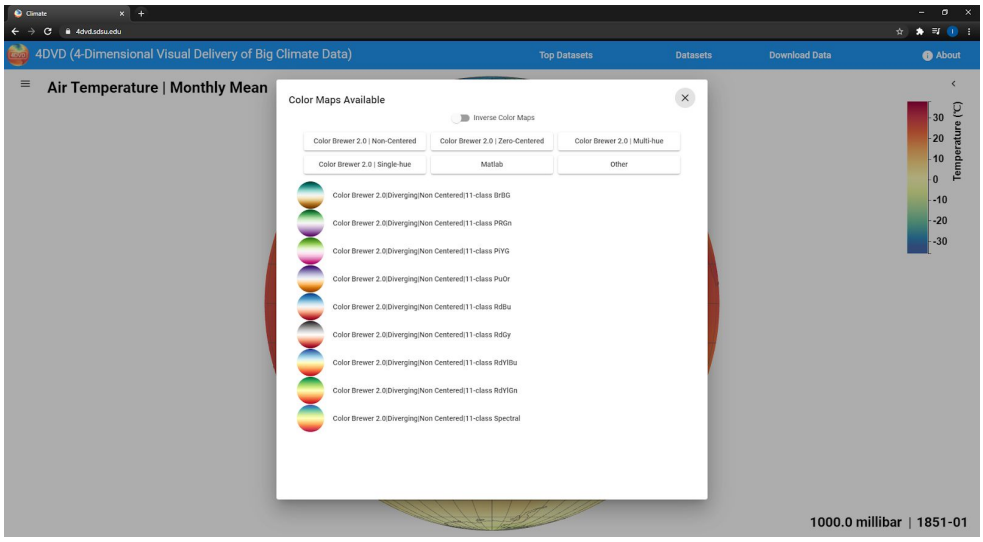
a. Hover over the dataset's title and click to change the currently viewed dataset to another dataset. A second way to find another dataset is to use the "Datasets" button.



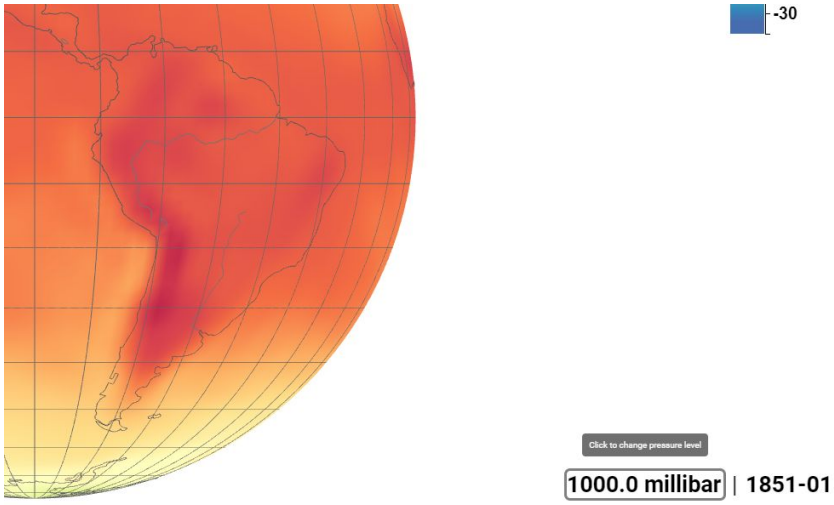


b. Hover over the Legend and click to open the color maps menu (there you can change the look of your globe)



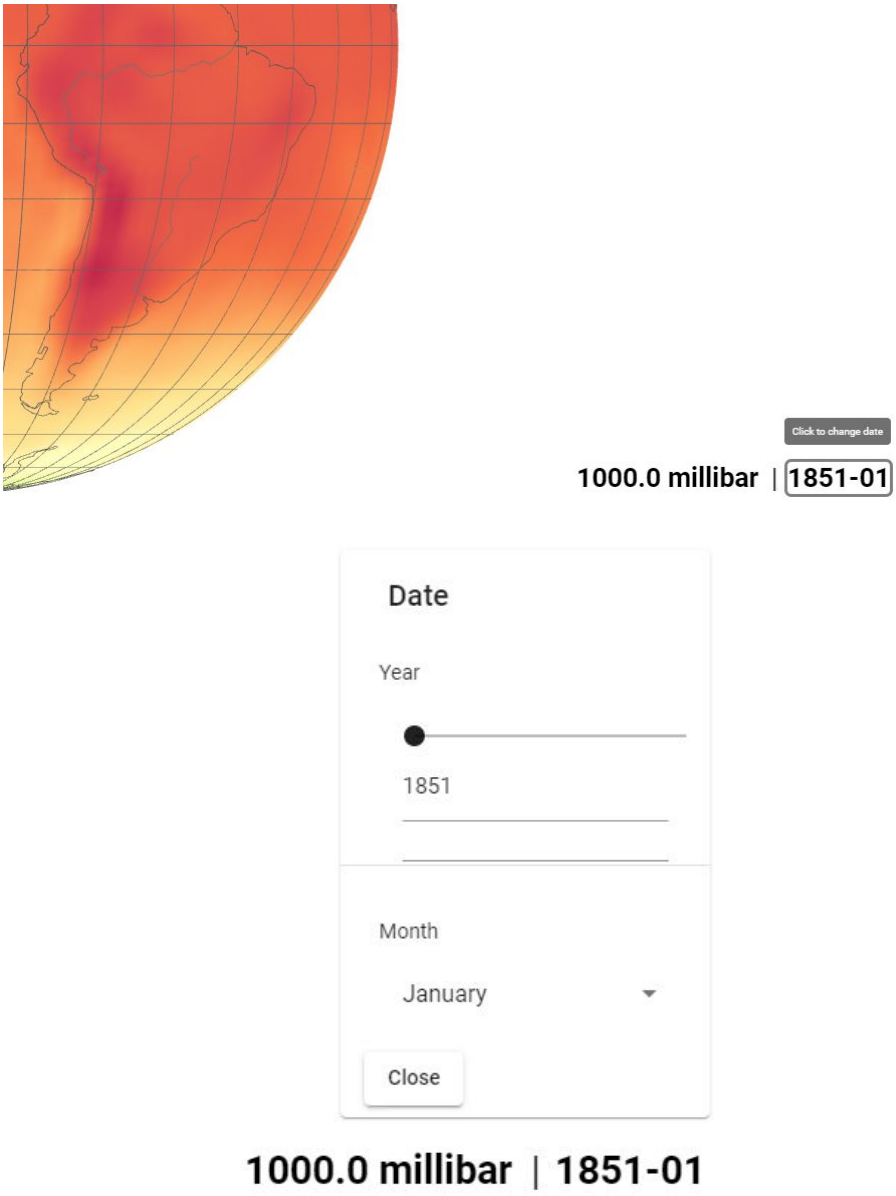


c. Hover over the pressure level and click to open the Pressure Levels menu (there you can change what pressure level you are viewing on the globe)

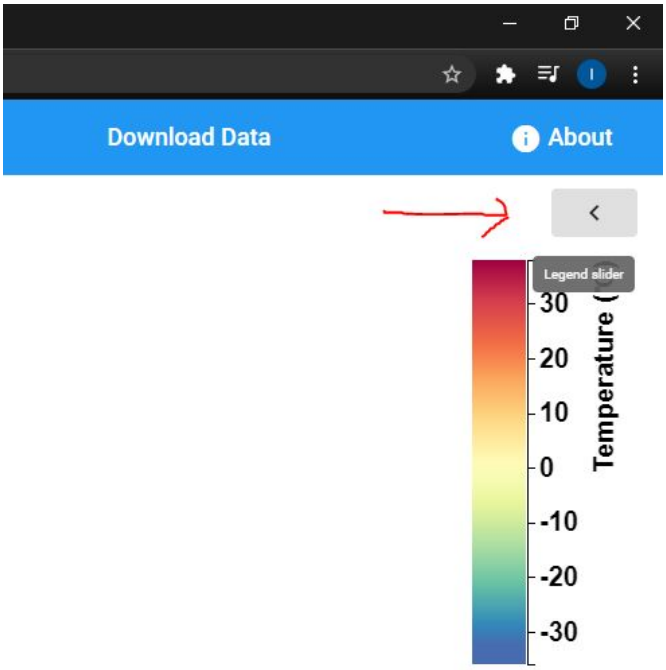


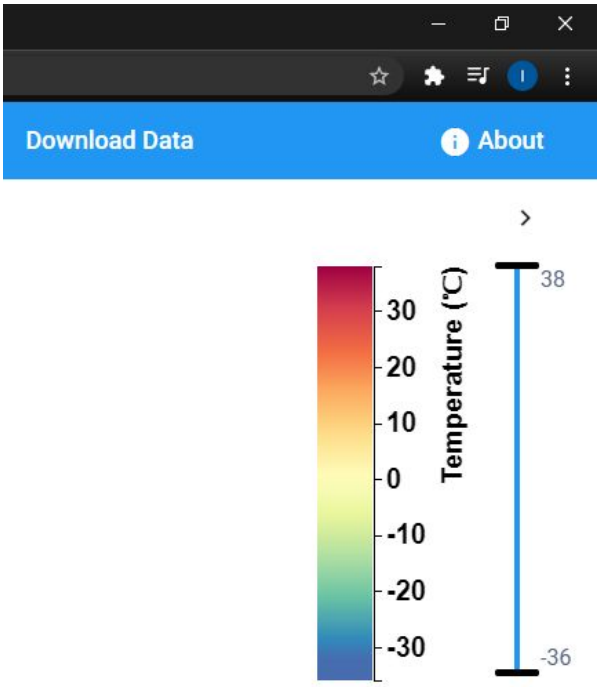
1000.0 millibar | 1851-01

d. Hover over the date and click to open the Date menu (there you can change the date you)

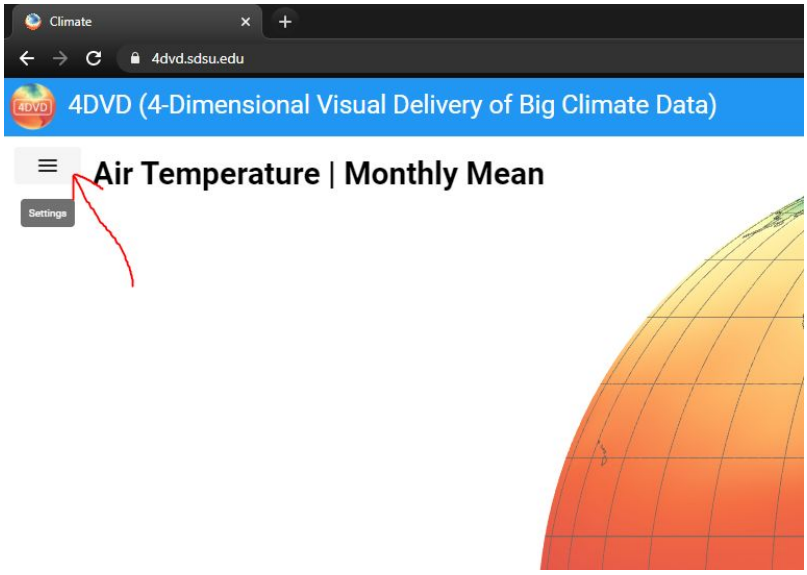


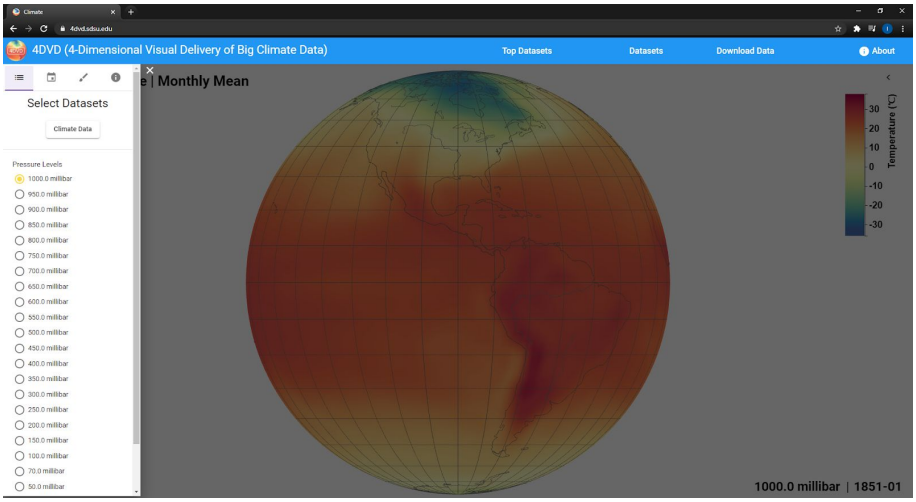
e. Click the arrow on the top right to toggle the legend slider (there you can change the minimum and maximum of how the globe is colored)





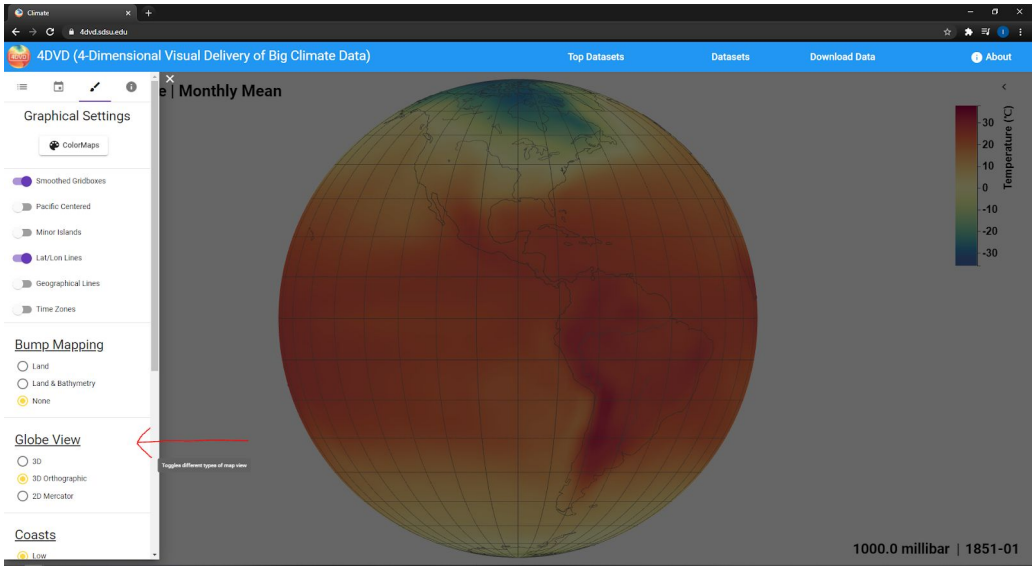
f. Click the hamburger on the top left for a more conventional settings menu to change the current dataset, pressure level, date, graphical settings, and general information about the dataset you are viewing


Climate
4dvd.sdsu.edu
4DVD (4-Dimensional Visual Delivery of Big Climate Data)
Air Temperature | Monthly Mean
Settings


4DVD (4-Dimensional Visual Delivery of Big Climate Data)
Top Datasets
Datasets
Download Data
About
Select Datasets
Climate Data
Pressure Levels
1000.0 millibar
950.0 millibar
900.0 millibar
850.0 millibar
800.0 millibar
750.0 millibar
700.0 millibar
650.0 millibar
600.0 millibar
550.0 millibar
500.0 millibar
450.0 millibar
400.0 millibar
350.0 millibar
300.0 millibar
250.0 millibar
200.0 millibar
150.0 millibar
100.0 millibar
70.0 millibar
50.0 millibar
Monthly Mean
30
20
10
0
-10
-20
-30
Temperature (°C)
1000.0 millibar | 1851-01

3. The globe

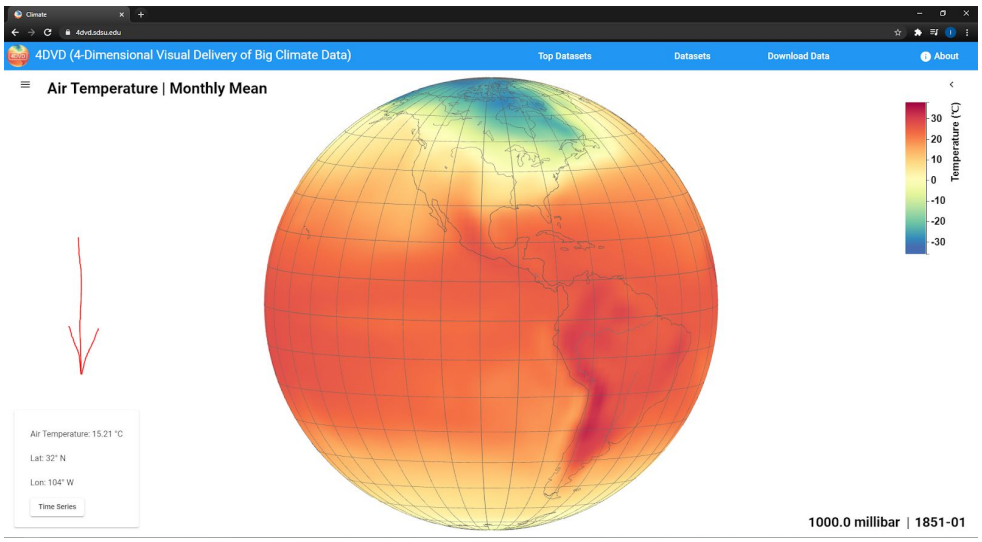
a. The default “view” of the Earth is a globe. You can change the view to a 2D map via the hamburger button at the top left.



b. You can drag to manipulate the globe as well as zoom in and out using the scroll wheel

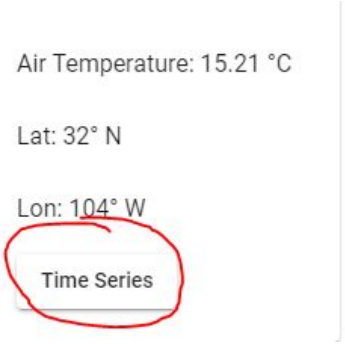
c. Click anywhere on the globe to view the data at that certain location at the chosen pressure level at the chosen date.

   i. A box in the lower left corner will pop up showing the data value as well as the latitude and longitude of the area you clicked at. There is also a “Time Series” button you can press

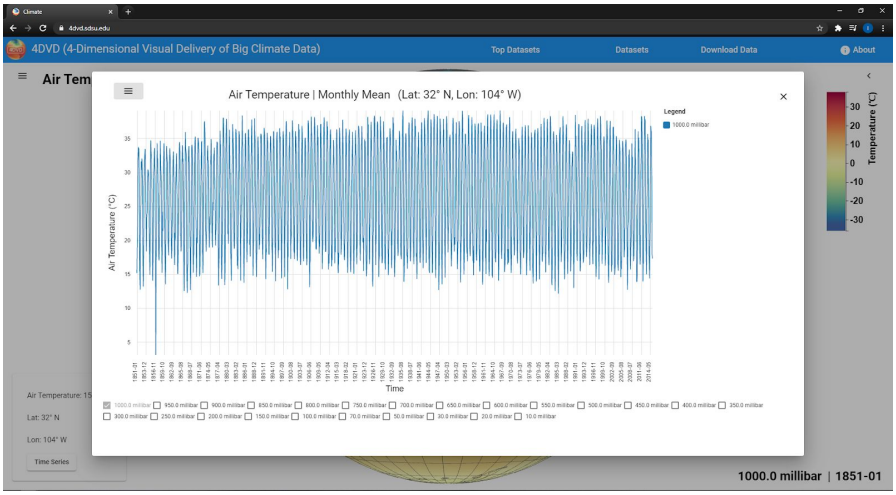


4. Time series menu

a. After clicking anywhere on the globe and clicking the “Time Series” button from the bottom left popup, you will be brought to the Time Series Menu.



b. The Time Series Menu shows the historical data at that chosen location with options to view/compare the other pressure levels

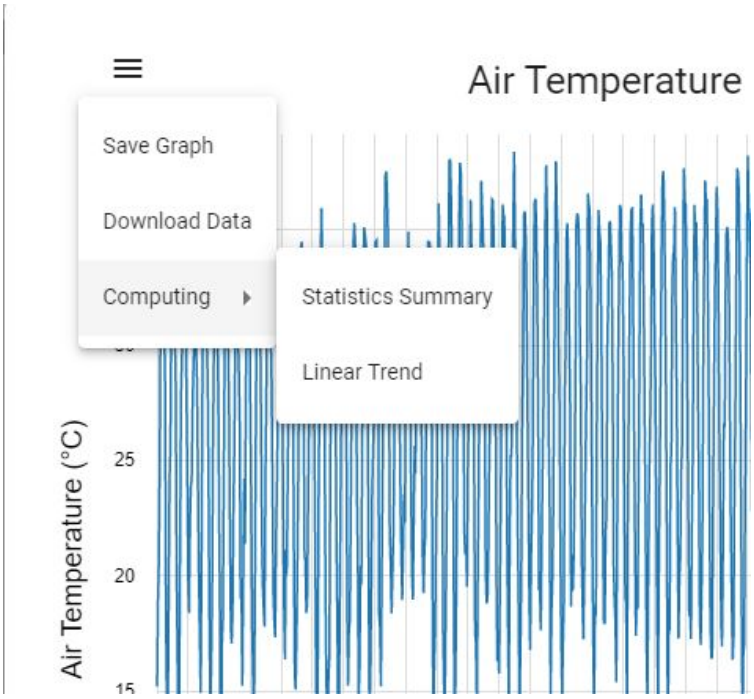


c. Clicking the hamburger at the top left of the Time Series Menu will give you the options to “Save Graph” or “Download Data”

   i. Clicking “Save Graph” prompts you to save/print the current Time Series graph.

   ii. Clicking “Download Data” downloads a CSV file filled with all the data for the Time Series Graph. This button will only download the data that you have selected in the checklist on the bottom of the Time Series Menu

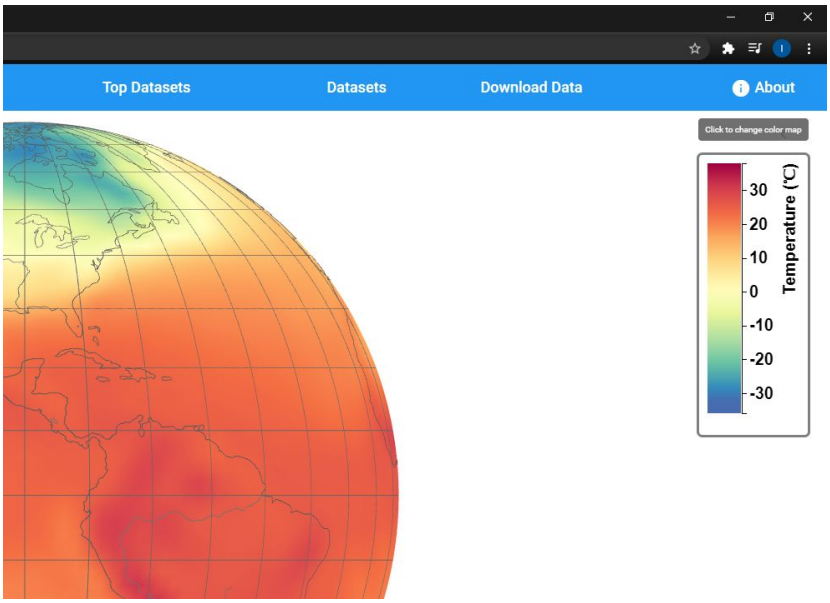
   iii. Hovering over “Computing” opens a submenu showing more in-depth information about the area you clicked at.



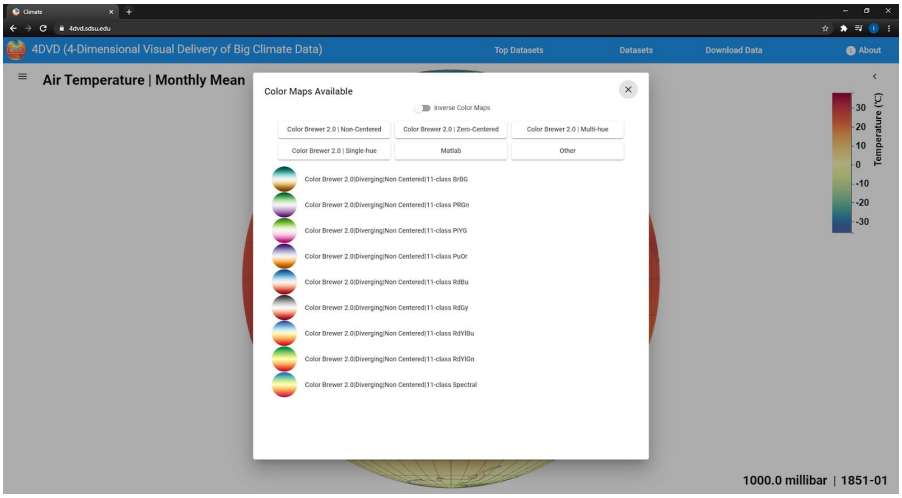
d. Below the graph is the different pressure levels. Clicking a pressure level adds a time series to the graph. This allows to show many time series at different pressure levels.

5. Color map menu

a. Clicking the legend in the main view will bring you to the color map menu

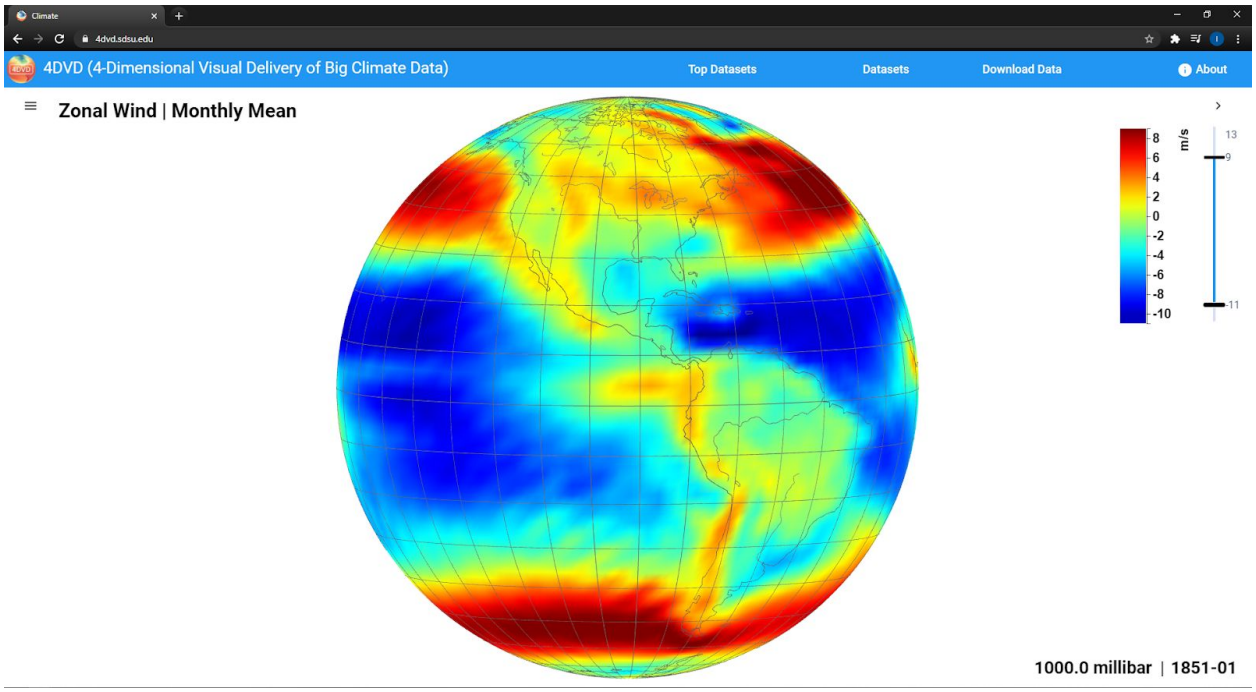


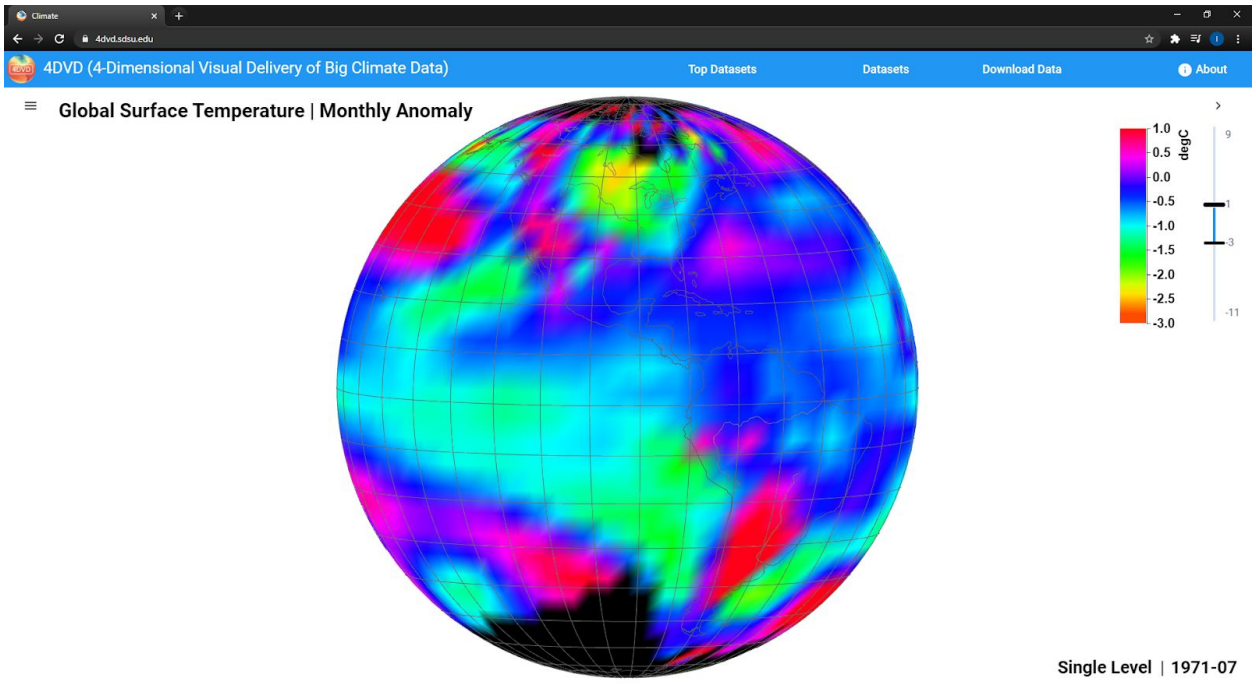
b. Here are all of the available color maps that will change the look of the globe

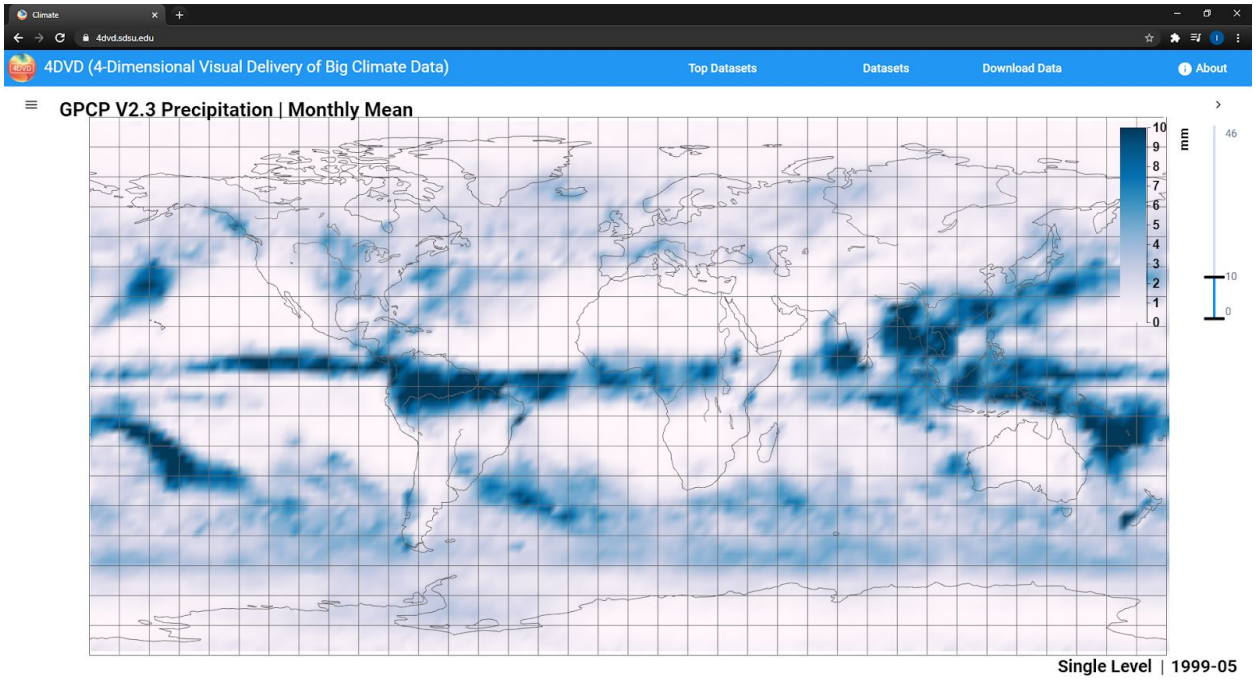


c. The color maps are organized into 6 options, Color Brewer 2.0 (CB2.0) Non-Centered, CB2.0 Zero-Centered, CB2.0 Single-Hue, CB2.0 Multi-Hue, Matlab, and Other. There is also a toggle to use the inverse versions of these color maps

Below are examples of what you can visualize using 4DVD:







Hope that you are enjoying the 4DVD technology. Please share this convenient tool with your family and friends.