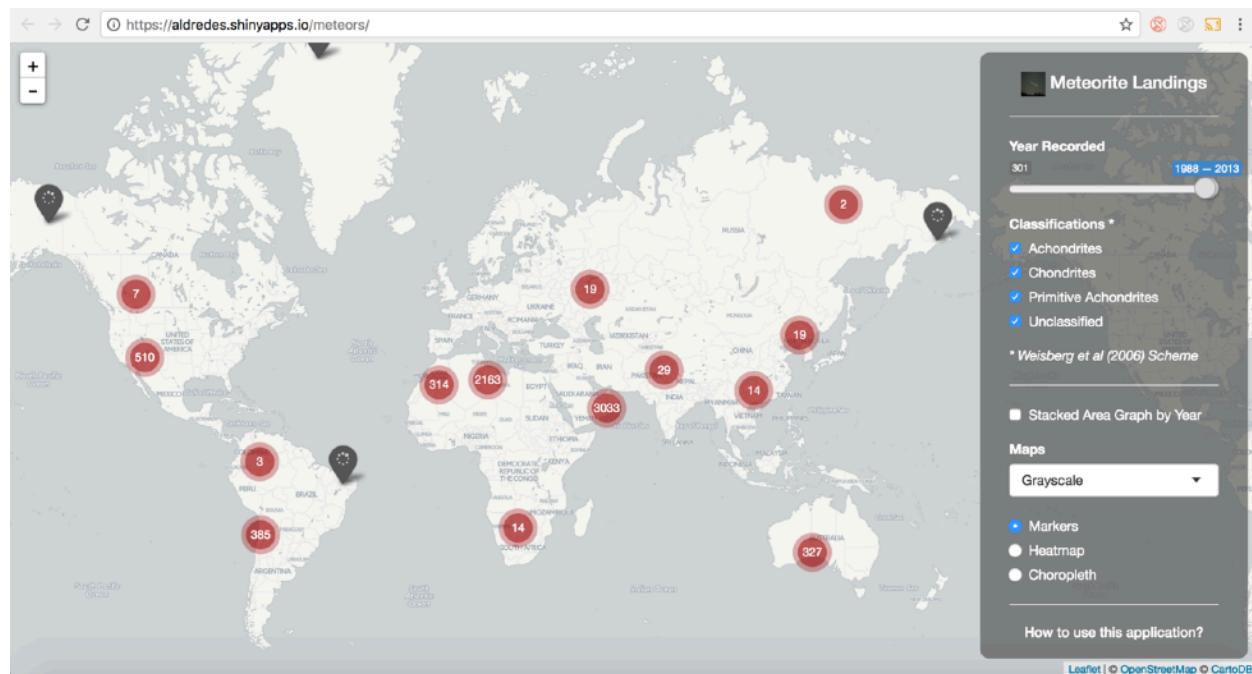


Meteorite Landings

Overview

The **Meteorite Landings** web application basically shows the map of known meteorite landings around the world since year 301 until 2013 A.D., and is based on the comprehensive dataset: [NASA's Open Data Portal: Meteorite Landings](#). The application can be launched via <https://alredes.shinyapps.io/meteors/>.



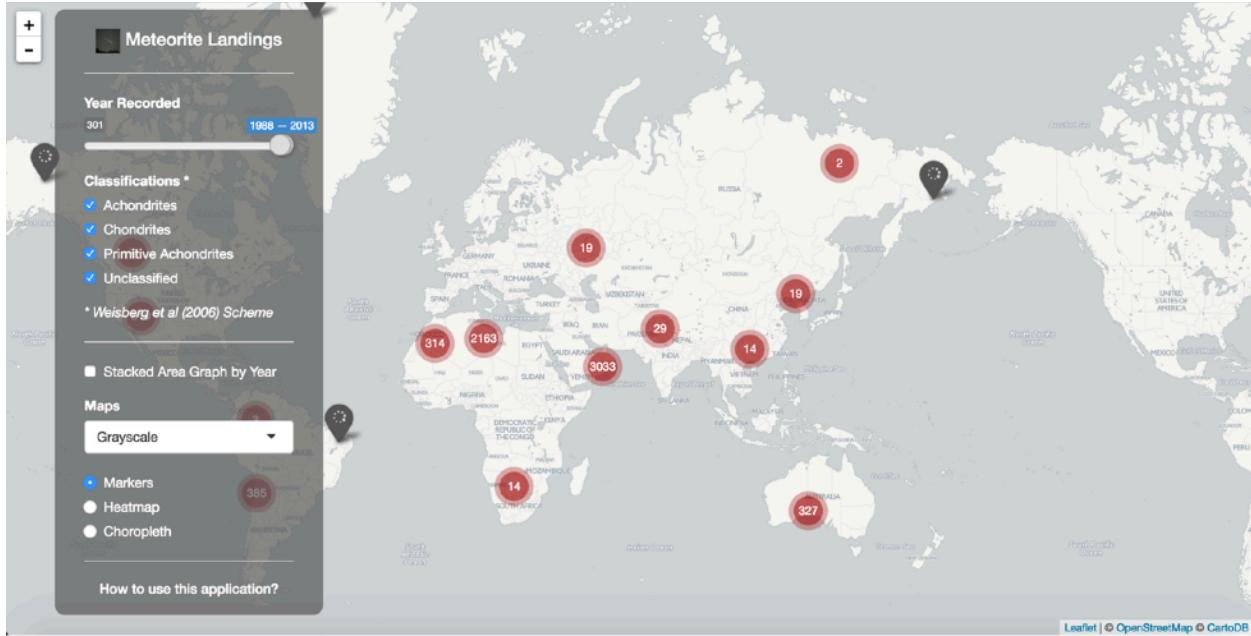
Note: Launching the application for the first time may take a while to load the page. You will see some progress bar at the bottom rightmost section of the page, similar to left, during initialization. Progress bar is also shown when preparing the filtered data and when rendering other elements within the map.

The meteorite landing information is basically shown on the map, and default map shows the geolocation (or *markers*) of all the meteorite landings from 1988 to 2013. The panel at the right portion of the page includes sections for filtering data and other user control interface.

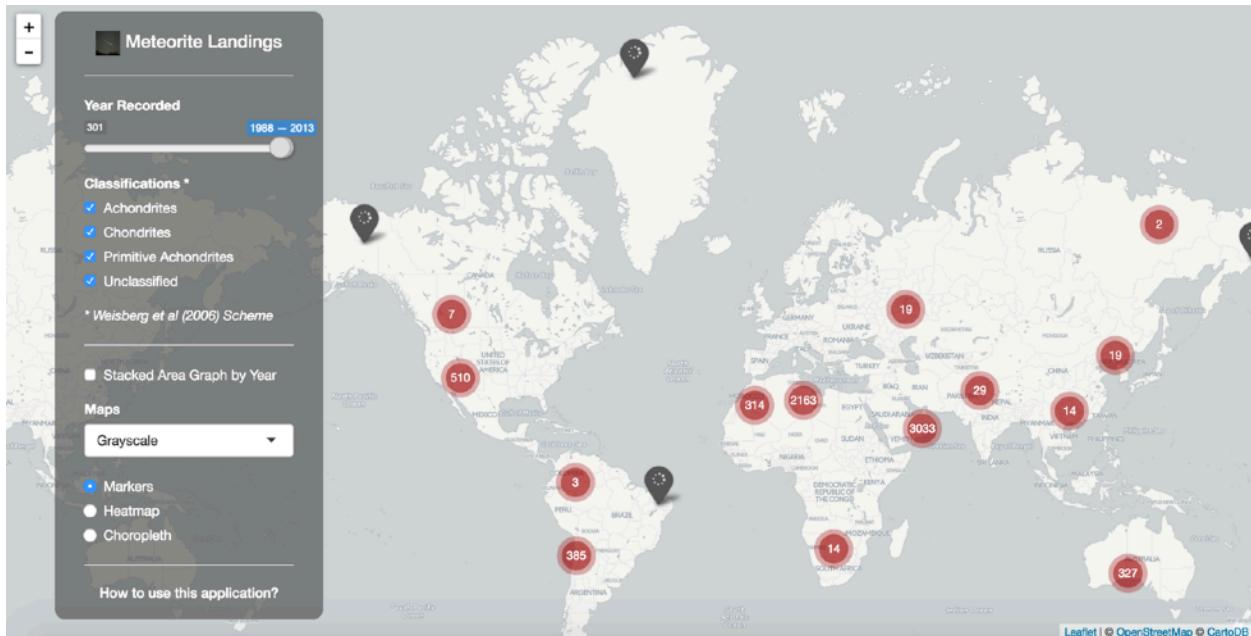
The user can limit the information displayed on the map by changing the range of year the meteorite landings were recorded, and the meteorite major classification according to [Weisberg et al \(2006\) scheme](#). The user can display the plot of total counts per year shown as stacked area graph according to the major classifications. The user may also choose to change the map tile layer, and change the type of map.

The Map and Basic Navigation

1. The panel can be dragged anywhere on the map to get a better view of meteor landings information.



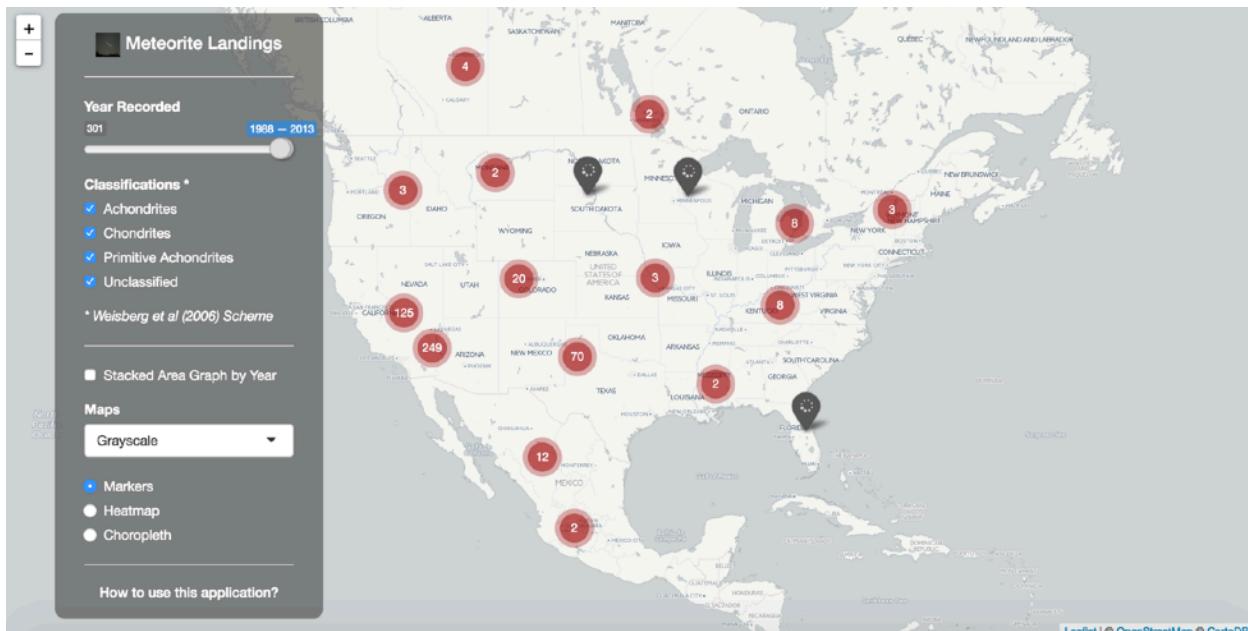
2. The map is draggable, too.



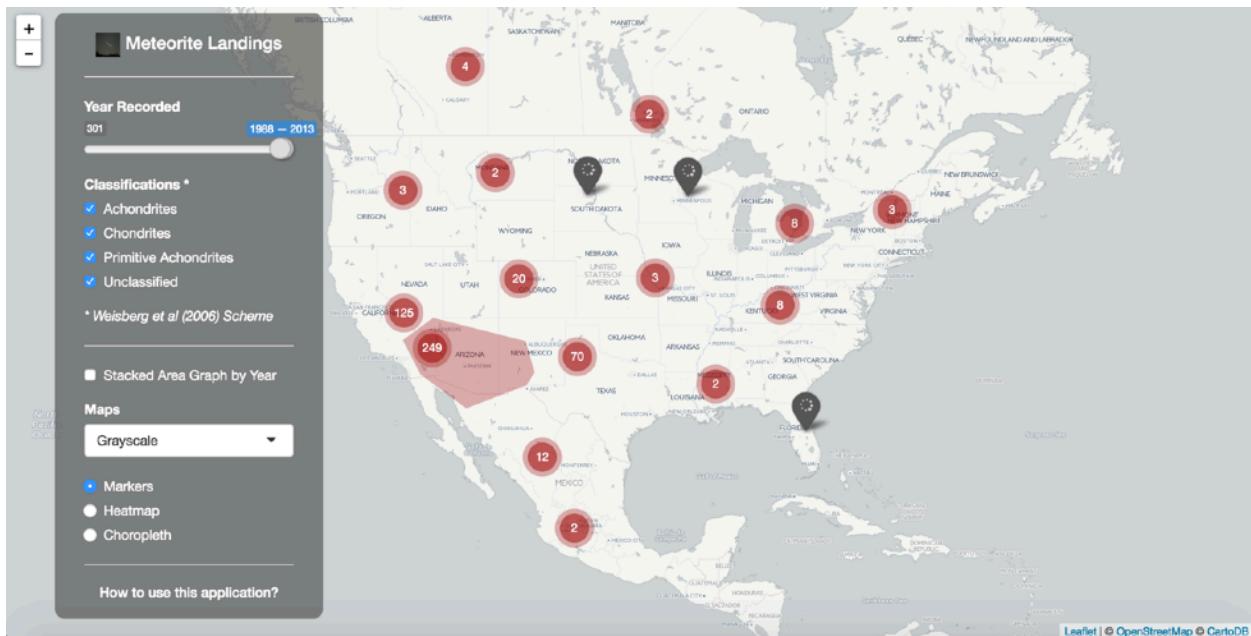
3. The markers are typically clustered within the area. The location markers are shown as gray inverted tear drop. The numbered red circles are called marker clusters. The number on the cluster means the number of individual markers.



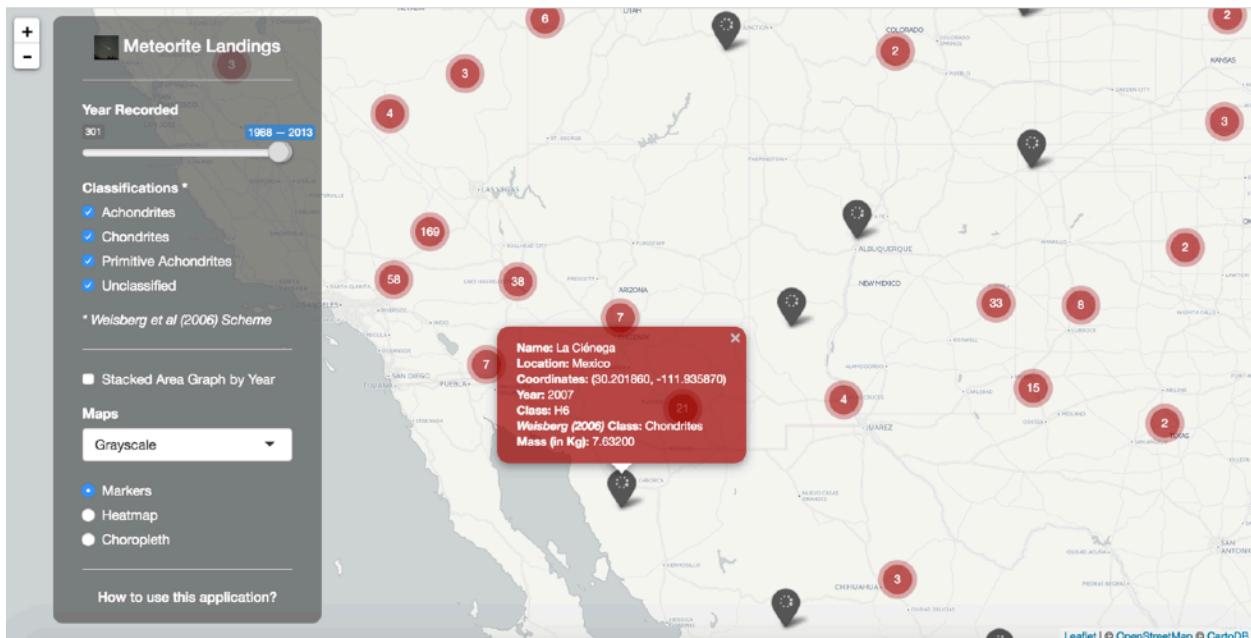
Clicking on a cluster will zoom in the map, and expand, or uncollapse, the cluster into many sub-clusters and individual markers.



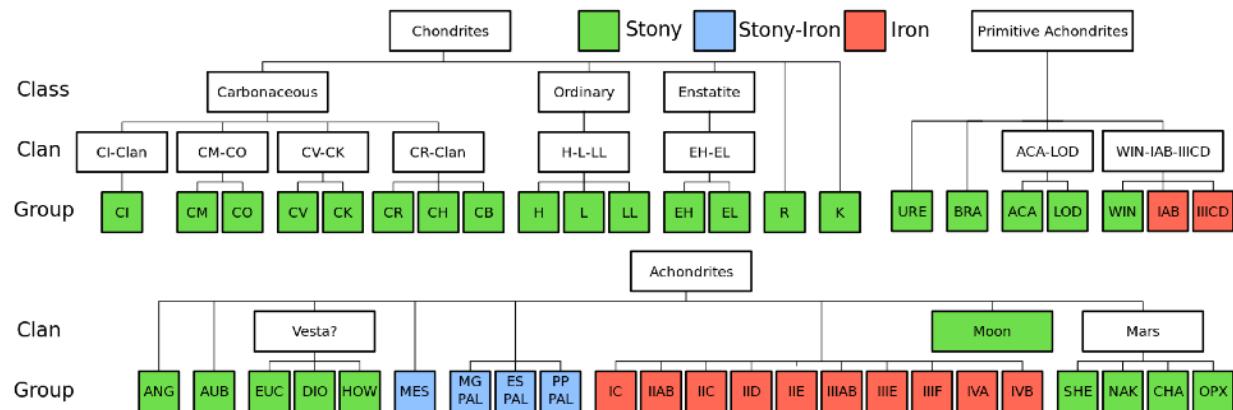
The user can redo this until the target marker is displayed.



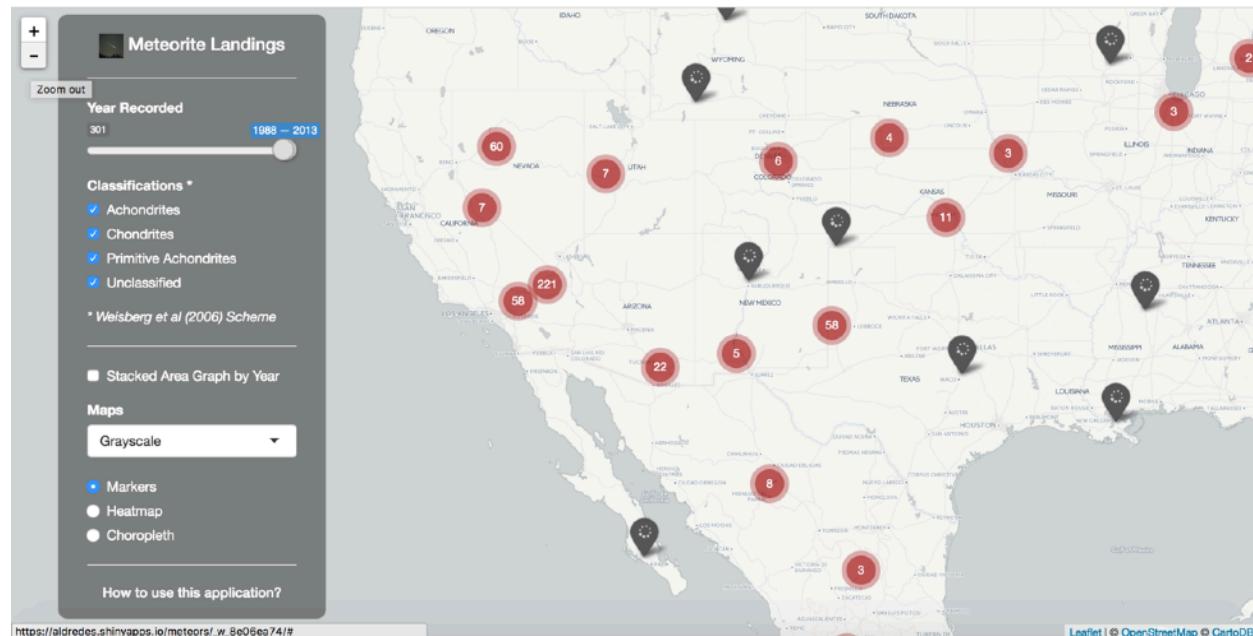
- Clicking on the individual marker will display the data about the meteorite landing, including its name, country, coordinates (latitude, longitude), year recorded, recorded class, major class based on Weisberg et al (2006) scheme, and mass in Kg.



Note: Below is the meteorite classification after Weissberg-McCoy-Krot (2006) and this is the basis of the meteorite classification used for this application.



5. Navigating within the map may be speeded up by dragging it, or by zooming in or zooming out.



Note: Zooming in can be achieved by clicking on the "+", while zooming out through clicking on the "-" within the control bar on the upper leftmost section of the page. "Zoom in" will display a more specific view of the map, showing the world as if the user is getting closer to the earth; "zoom out" is the opposite, i.e. as if the user is going away from the earth.

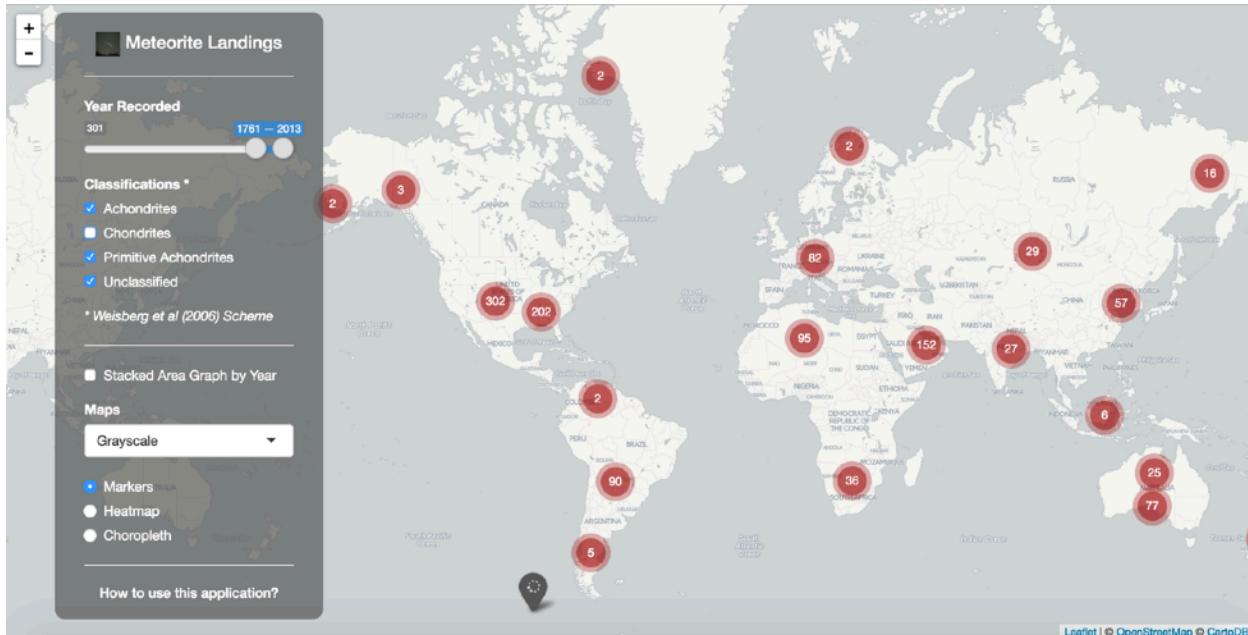


Using Control and Other Features

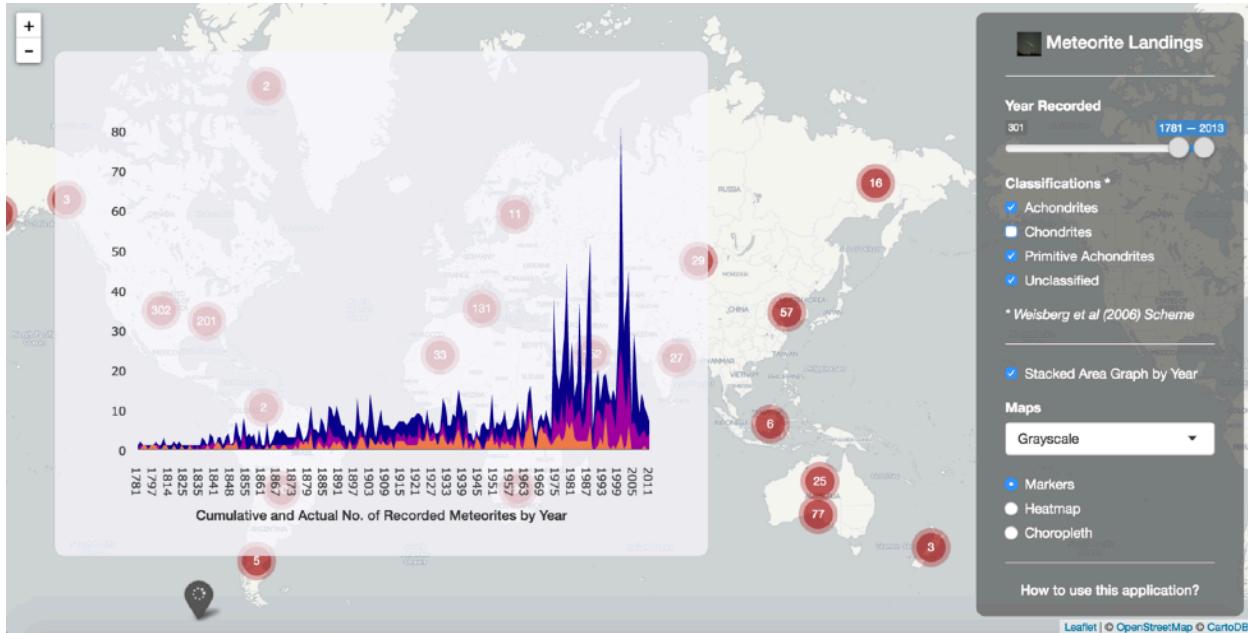
1. One way to filter data is by adjusting the range of year recorded. Doing so may increase or decrease the information on the map.



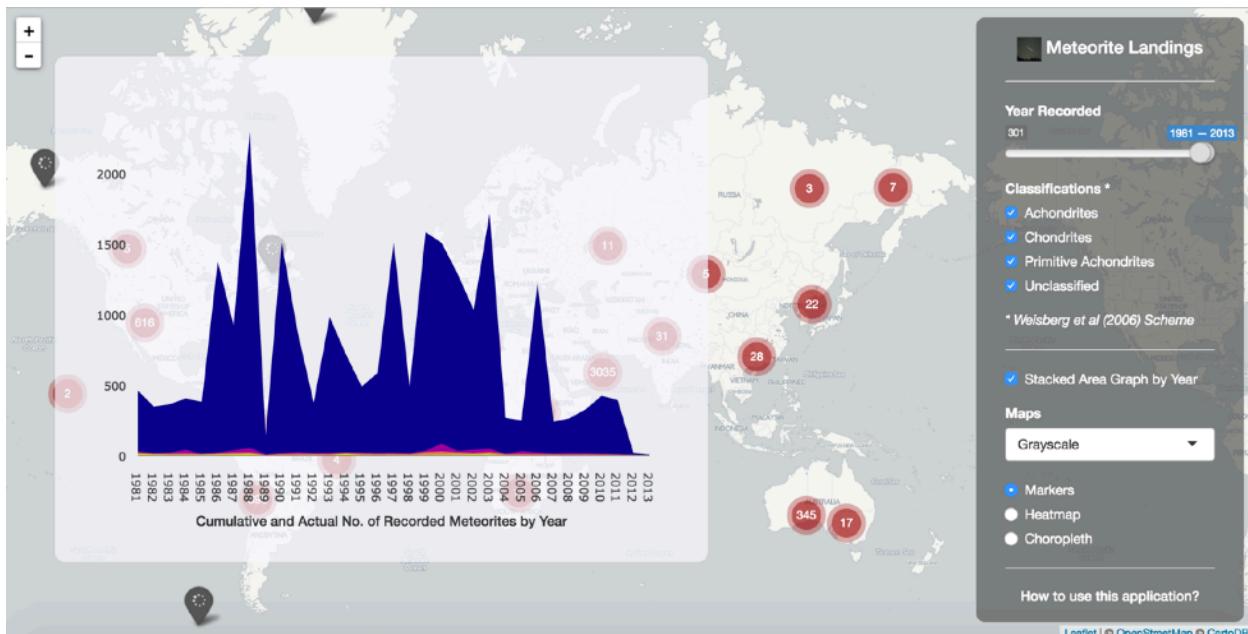
2. Another way to filter data is by selecting which of the major classifications should be displayed on the map. They are all chosen by default.



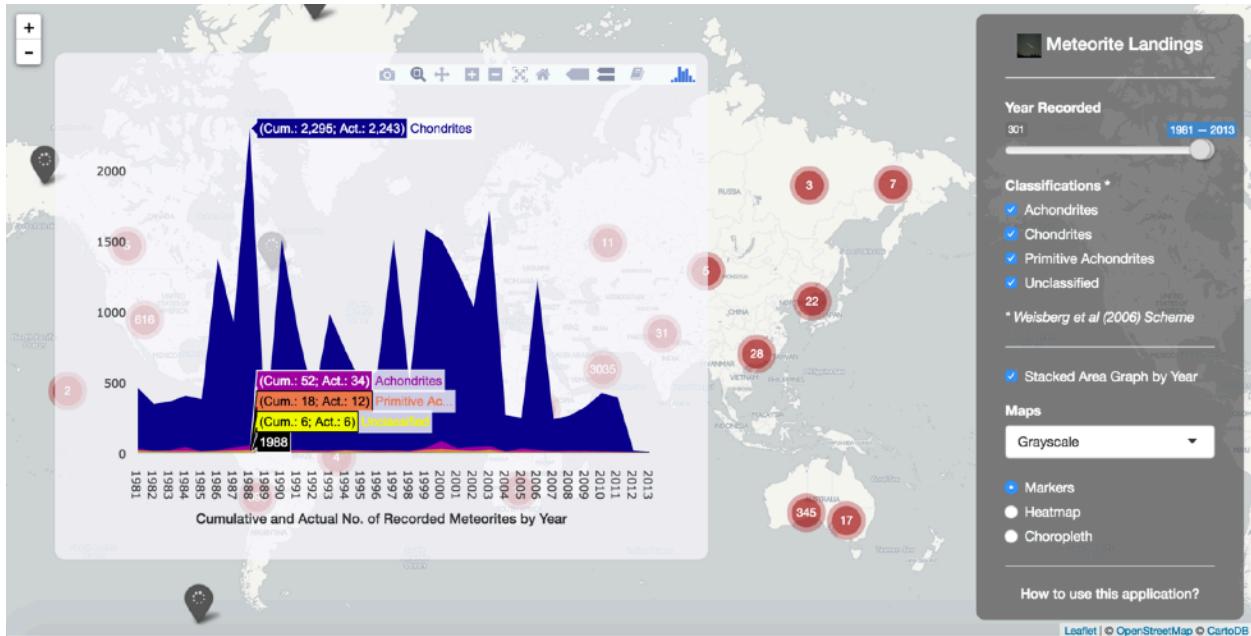
3. Clicking on the “Stacked Area Graph by Year” checkbox will display another panel with a stacked area graph of total counts per year.



The said graph, or plot, shows the cumulative and actual number of recorded meteorites as grouped by the major classifications per year. The plot depends on the filtered data. Filtering the data will recompute its summary, and then will update the plot.



4. Hovering the mouse pointer on the plot will provide labels of information for the stacked area graph.



5. Unticking the the “Stacked Area Graph by Year” checkbox will close the plot panel.



6. The user may select the map tile layer according to preference. The default tile layer is "Grayscale."



Below is the "Basic" tile layer:



Below is the “Satellite” tile layer:

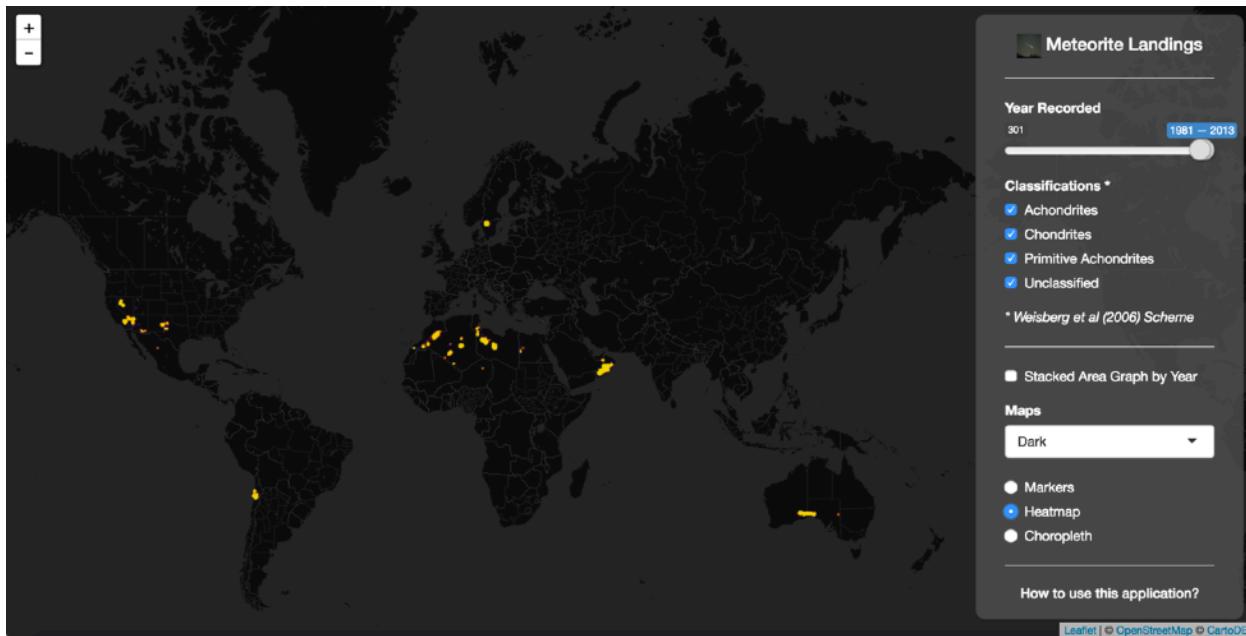


And below is the “Dark” tile layer:

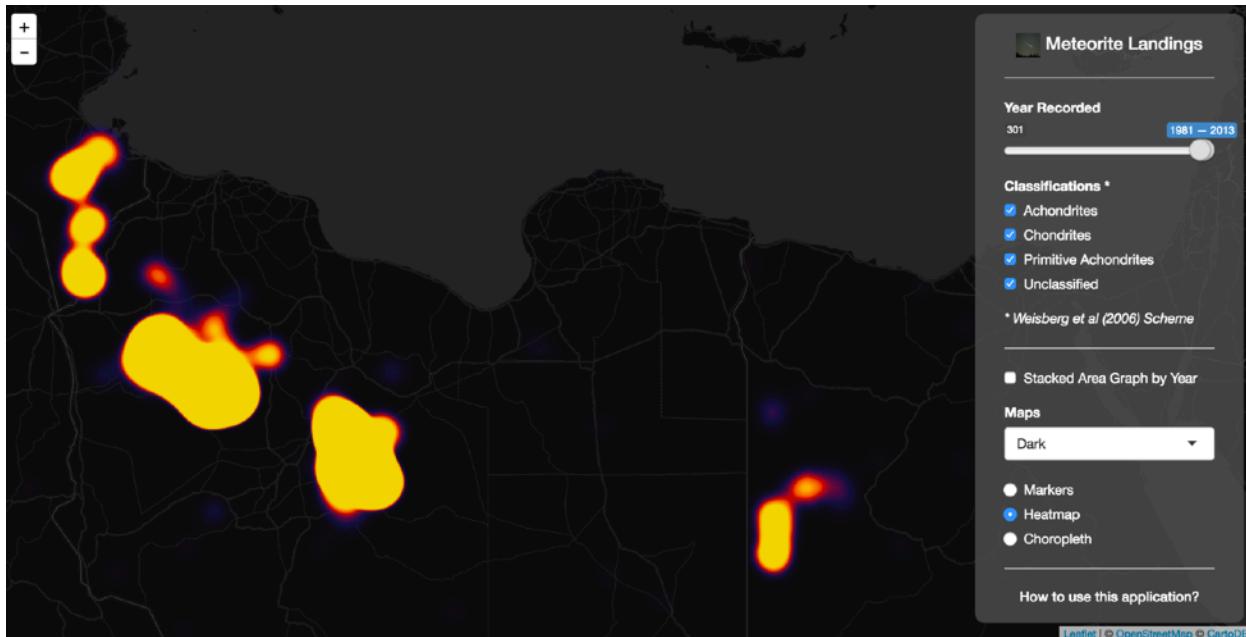


7. The user may also choose how the information is displayed on the map by selecting its type: either “Markers”, “Heatmap”, or “Choropleth.” The default information displayed on the map is by showing markers.

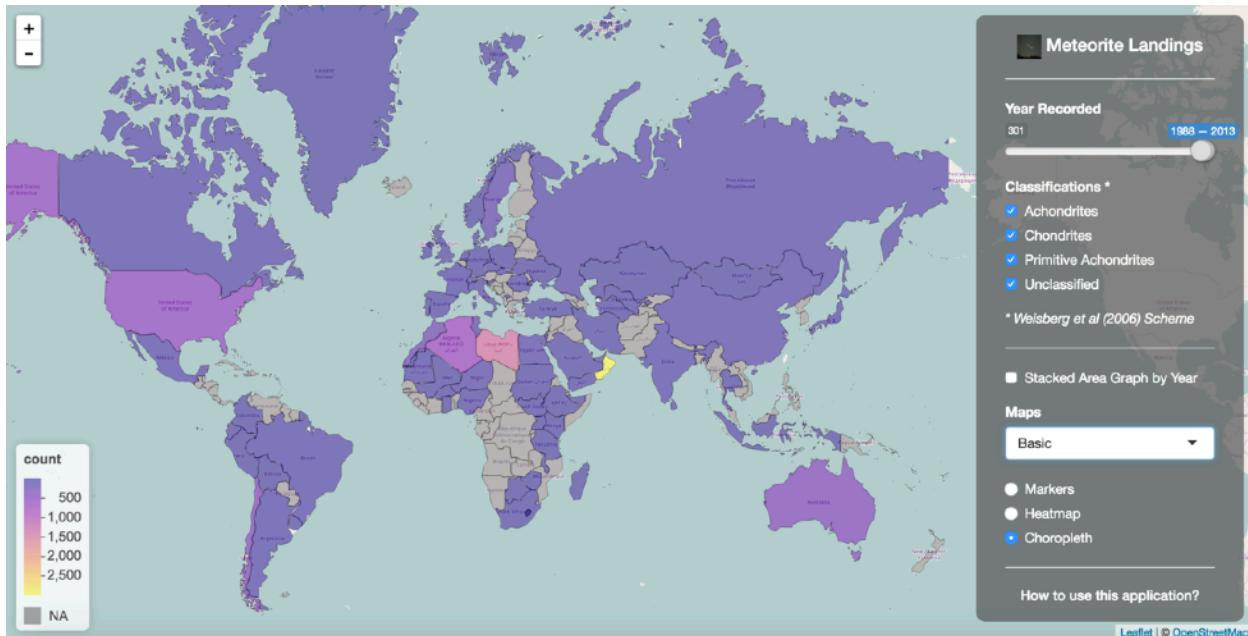
Heatmap shows the intensity of the recorded landings within the area, still depending on the filtered data. It's best viewed with “Dark” map tile layer.



Below is the zoomed in information showing the heatmap, the more data is concentrated within the area will project a more solid round yellow glowing objects, while a less data will project from orange and red down to purple and blue.



The **choropleth map** displays colored countries in relation to number of total counts of meteorite landings according to filtered data, and is best viewed with “Basic” map tile layer. Colors are ranging from purple blue, red, orange, yellow being the highest. Gray means no data available for a particular country. These colors and the range will be updated when applying different set of data.



Clicking on a colored country will display the name of the country and its number of records.

