Neon Dashboard User Guide

Version 1.1.5

Created by the Next Century Neon Development Team

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Neon Introduction

The **Neon Framework** provides middleware services to visualization developers. The **Neon Dashboard** provides a suite of visualizations built on the **Neon Framework** for big data

analysis. Each visualization allows the user to interact with the data from a collection of specified databases (called a **dataset**). The visualizations themselves are highly customizable and can be added to, removed from, and resized/rearranged within the dashboard to suit the user's own needs. Users can set **filters** through the visualizations to restrict the data that is displayed across all visualizations in the dashboard based on a specified database, table, field, and value (or range of values). This key functionality provides users with enhanced capabilities to explore and evaluate the information contained within their data on-demand without the need for significant data pre-processing.

Getting Started

To try an online demo of the Neon Dashboard, please go to http://neonframework.org/.

To run Neon on your own computer, please read the instructions in the Neon Overview: https://github.com/NextCenturyCorporation/neon.

To build your own Neon visualization, please visit the Neon Dashboard GitHub page: https://github.com/NextCenturyCorporation/neon-gtd.

To configure your Neon Dashboard, please read the Neon Dashboard Configuration Guide: https://github.com/NextCenturyCorporation/neon-gtd/wiki/Neon-Dashboard-Configuration-Guide.

Definitions

Dataset: A dataset represents a group of one or more databases that are accessible through the Neon Dashboard. Multiple datasets may be available through the dashboard but only one dataset may be active (viewed) at a time.

Database: A database corresponds to a single data store connection. Currently supported data stores include Elasticsearch indices, Mongo databases, and SparkSQL databases. Please note that while data stores of different types may use different terminology (for example, Elasticsearch refers to an "index" instead of a "database"), Neon calls all of these databases for simplicity.

Table: A table is a collection of related data within a data store. Please note that while data stores of different types may use different terminology (for example, Elasticsearch refers to a "type" instead of a "table"), Neon calls all of these tables for simplicity.

Record: A record is a single item from a table.

Field: A field is a property of a record. Some data stores may have a specified set of fields for all records in a table; others may allow records in a table to have different sets of fields.

Filter: A filter is an operation that is applied to all data queries on one or more fields. For example, a filter could be set on records from the Person table where the Age field is greater than 18. Filters affect all visualizations in the dashboard viewing data from the same table(s).

Unshared Filter: An unshared filter is a filter that affects only a single visualization. Other visualizations in the dashboard viewing data from the same table(s) are not affected. This can be helpful to compare two different groups of data using different visualizations which is impossible to do with a normal filter (since it would affect data in all of the visualizations).

NC EARTHQUAKES / TYPE	3 GROUPS ⚙ ▾
Type	count
earthquake	7806
quarry	44
quarry_blast	14

CI EARTHQUAKES / TYPE	2 GROUPS ⚙ ▾
Type	count
earthquake	5209
quarry_blast	197

Two Aggregation Tables displaying earthquake data: the one on the left has an unshared filter on Northern California (NC) while the one on the right has an unshared filter on Southern California (CI).

Relations

Relations may be defined in the Neon Dashboard configuration file. Each relation is a set of fields in the dataset which correspond to each other. Setting a filter on one field in the relation causes the Neon Dashboard to set a filter on all fields in the relation simultaneously.

These additional filters keep the same operator and value but substitute the database, table, and field for those specified in the relation. For instructions on how to configure relations, please read the Neon Dashboard Configuration Guide:

https://github.com/NextCenturyCorporation/neon-gtd/wiki/Neon-Dashboard-Configuration-Guide.

For example, the tables in a dataset might have a date field with the same time zone. A user might want to set a filter on the date fields in all tables simultaneously in order to affect visualizations in the dashboard that are viewing different tables. Configuring a relation on the date fields ensures that setting a filter on one date field will automatically set a filter on all date fields.

Neon Dashboard Navigation

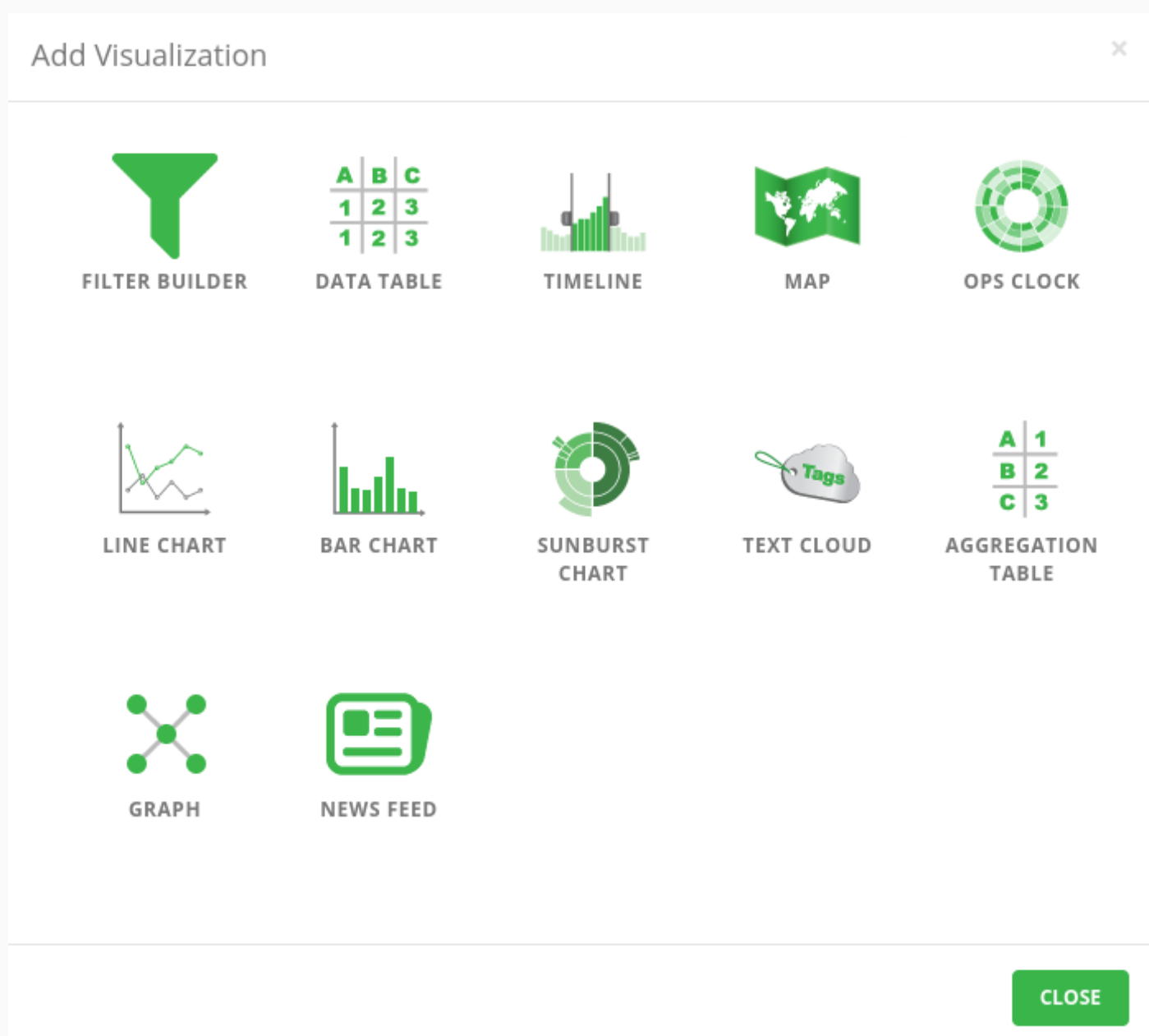The **navigation bar provides** multiple options that affect the entire dashboard.

The **Dataset Configuration** displays the name of the dataset currently active in the dashboard. Click on the Dataset Configuration button to open a dropdown menu containing the list of known datasets. Select a dataset from the menu to replace the current dataset and all existing visualizations with the selected dataset and its visualizations. Select **Custom...** to open a popup with options to create a new dataset using one or more databases accessible to the server running Neon.
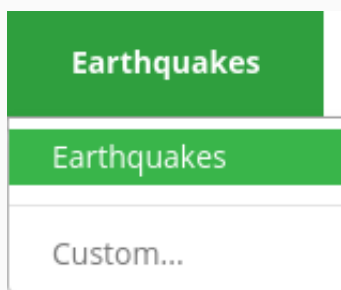

Click on the **Add Visualization** button to open a popup containing a list of all the available visualizations. Select an item from the list to add a new visualization of that type to the dashboard. Please note that this button may be made unavailable through the dashboard configuration.

For more information on how to define the list of visualizations which are available in the Neon Dashboard, please see the Neon Dashboard Configuration Guide on how to configure **Visualizations**: https://github.com/NextCenturyCorporation/neon-gtd/wiki/Neon-Dashboard-Configuration-Guide#visualization-object-options.

Add Visualization ✕

FILTER BUILDER	DATA TABLE	TIMELINE	MAP	OPS CLOCK
LINE CHART	BAR CHART	SUNBURST CHART	TEXT CLOUD	AGGREGATION TABLE
GRAPH	NEWS FEED			

CLOSE

The **Filter Tray** displays the number of filters currently set in visualizations throughout the dashboard. Click on the Filter Tray button to open a dropdown menu containing the list of set filters. Select the trashcan icon next to a filter in order to remove that filter from the dashboard. Please note that this button may be made unavailable through the dashboard configuration.
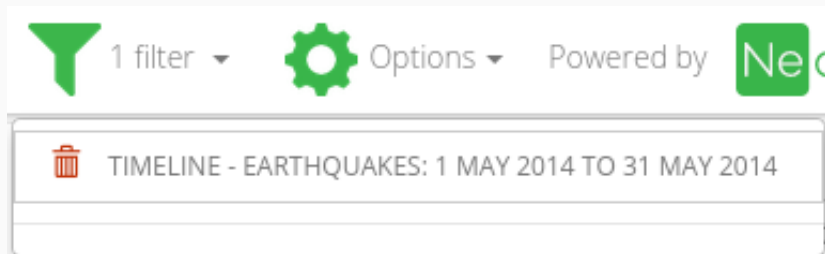
Click on the **Options** button to open a dropdown menu containing the different options available for the dashboard, including changing the color theme. If made available through the dashboard configuration, users can also import or export data.
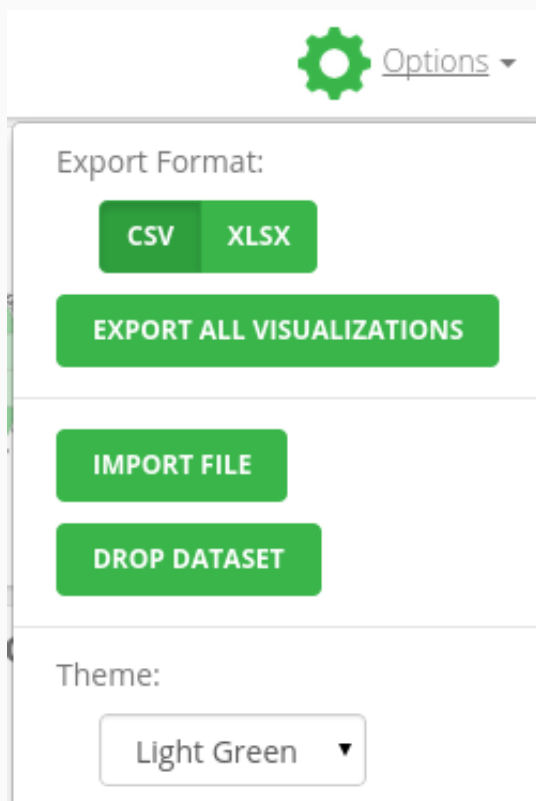
Click on the **Help** button to open a dropdown menu containing the available help resources (like a user guide or tutorial video) that are made available through the dashboard configuration.

Click on the **Powered by Neon** button to open a popup containing a Neon description, weblinks and version.

Neon Dashboard Visualizations

The following **visualizations** are available through the Neon Dashboard:

- **Aggregation Table**
- **Bar Chart**
- **Data Table**
- **Filter Builder**
- **Line Chart**
- **Map**
- **Network Graph**
- **News Feed**
- **Ops Clock**
- **Scatter Plot**
- **Sunburst Chart**
- **Text Cloud**
- **Timeline**

Each visualization is described in detail below. The configurations for the visualizations available through the dashboard are listed in the following section.

To **resize** a visualization, click and drag on its side or bottom edge or one of its corners. To **move** a visualization, hover over its top edge and click and drag on the **gray drag handle** that appears. The drag handle for each visualization also contains the Grow, Delete, Move to Top, and Move to Bottom buttons. Click the **green Grow** button to make the visualization expand or contract to fill more or less of the dashboard. Click the **red Delete (X)** button to remove the visualization from the dashboard. Click the **green Move to Top** or **green Move to Bottom** button to make the visualization move to the top or bottom of the dashboard as if it was moved by clicking and dragging.

Aggregation Table

| EARTHQUAKES / ... | 13 GROUPS ⚙▾ | |
|---|---|
| Net | count |
| ak | 11565 |
| nc | 7864 |
| us | 6677 |
| ci | 5406 |
| nn | 1401 |
| uw | 1228 |
| uu | 1208 |
| pr | 1062 |
| hv | 881 |
| mb | 382 |
| nm | 131 |
| se | 23 |
| ld | 15 |

The **Aggregation Table** visualization displays **aggregations of grouped data** in a **tabular view**. Each row represents a unique value (**group**) from the selected **group field** and its corresponding **aggregated value**. The aggregated value can be either the **count** of the occurrences of the group or the **minimum** or **maximum** item from the selected **aggregation field**. Click on a column header to **sort** the column toggling between ascending and descending. By default, the Aggregation Table has a **group limit** of **5000**, restricting the data it displays to the **largest 5000 groups**.

Click on a row to set a **filter** on the group for that row. A **filter notification** will appear in the visualization and the other rows in the Aggregation Table will be grayed out. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the filter and cause other visualizations to update again. Click on a different row to change the filter to the group for that row.

Click on the gear icon in the upper-right corner to open the **Aggregation Table's options menu**. Change the **database**, **table**, **group field**, **aggregation**, and (if aggregation is set

to minimum or maximum) **aggregation field** to recreate the Aggregation Table with data from the selected source. Under **Unshared Filter**, select a **field** and **value** and click on the Refresh button to add an **unshared filter** and recreate the Aggregation Table with data using that filter. Change the **group limit** and click on the **Refresh** button to recreate the Aggregation Table using the new limit. If enabled through the dashboard configuration, click on the **Export to File** button to download the Aggregation Table data.

Bar Chart
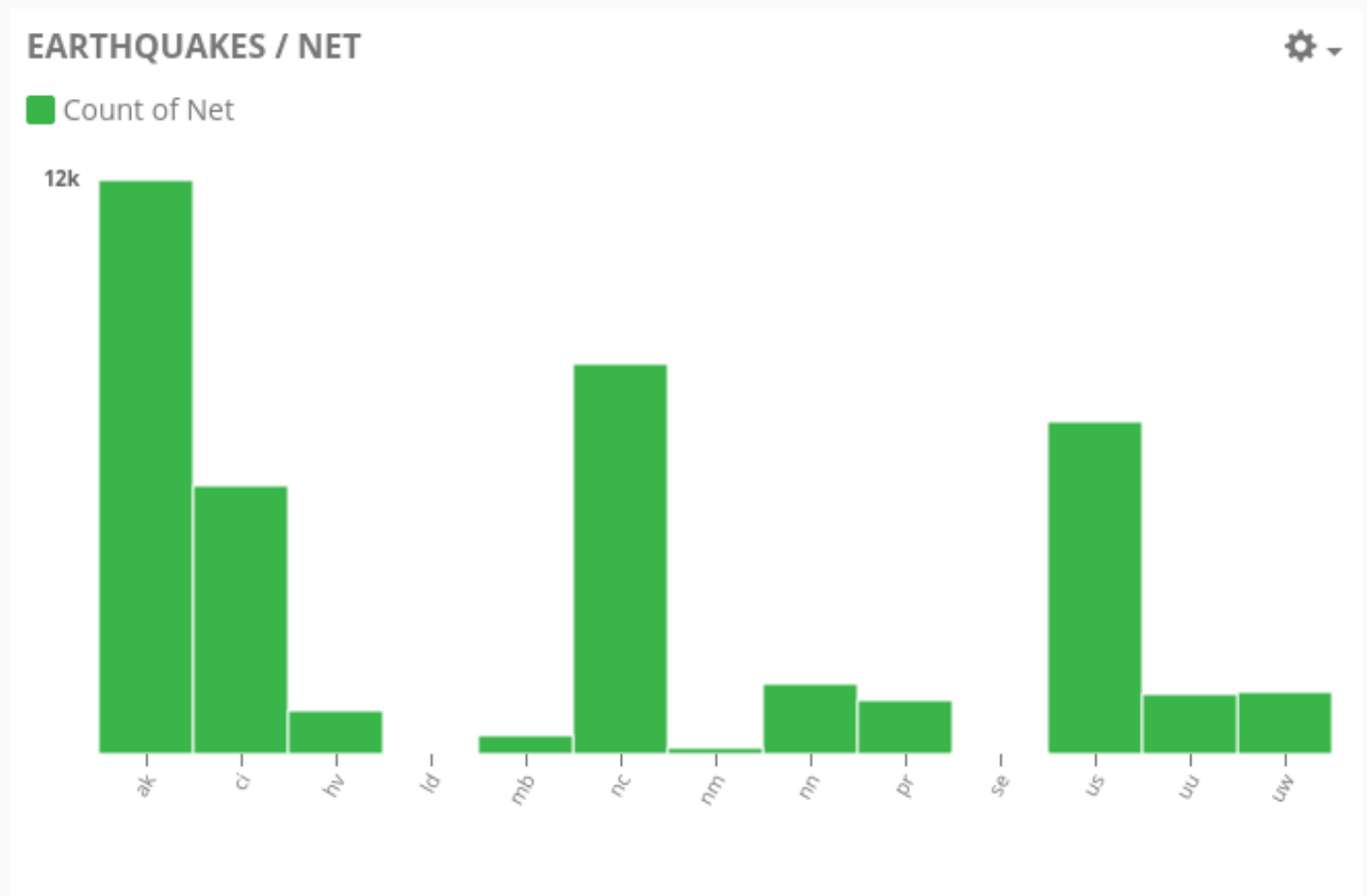
The **Bar Chart** visualization plots **aggregations of grouped data** as scaled **bars**. Each bar represents a unique value (**group**) from the selected **group field** and its corresponding **aggregated value**. The aggregated value can be either the __count __of the occurrences of the group or the **sum** or **average** value from the selected **aggregation field**. By default, the Bar Chart has a **group limit** of **100**, restricting the data it displays to the **largest 100 groups**. Hover over a bar to show a **tooltip** containing the group and aggregated value represented by that bar.

Click on a bar to set a **filter** on the group for that bar. A **filter notification** will appear in

the visualization and the other bars in the Bar Chart will be grayed out. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the filter and cause other visualizations to update again. Click on a different bar to change the filter to the group for that bar.

Click on the **gear icon** in the upper-right corner to open the **Bar Chart's options menu**. Change the **database**, **table**, **group field**, **aggregation**, and (if aggregation is set to sum or average) **aggregation field** to recreate the Bar Chart with data from the selected source. Change the **group limit** and click on the **Refresh** button to recreate the Bar Chart using the new limit. If enabled through the dashboard configuration, click on the **Export to File** button to download the Bar Chart data.

Data Table

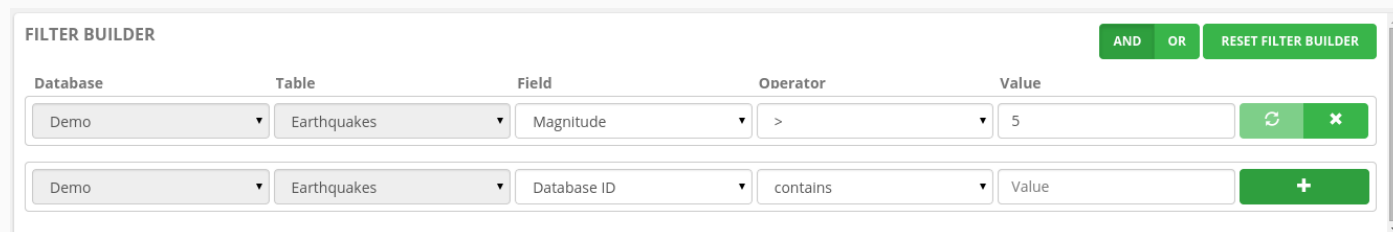| EARTHQUAKES						5000 OF 37843 RECORDS ⚙ ▾
Time	Latitude	Longitude	Depth	Magnitude	Magnitude Type	NS
2014-03-31T00:09:19Z	60.0632	-152.909	101.4	1.5	ml	
2014-03-31T00:12:24Z	37.6313	-118.8377	9.9	0.8	Md	
2014-03-31T00:15:32Z	62.8897	-151.8702	4.2	0.8	ml	
2014-03-31T00:18:18Z	60.3546	-141.2943	38	1.6	ml	
2014-03-31T00:25:09Z	37.5347	-118.8308	2.4	0.5	Md	
2014-03-31T00:35:30Z	60.0161	-140.7958	1.4	0.8	ml	
2014-03-31T00:36:26Z	60.3175	-152.6276	89	1.1	ml	
2014-03-31T00:42:03Z	63.4203	-151.1742	14.5	0.7	ml	
2014-03-31T00:44:59Z	60.8391	-150.5944	29.5	1.2	ml	
2014-03-31T00:47:45Z	36.1335	-118.0681667	2.32	1.28	ml	18
2014-03-31T00:48:51Z	60.5361	-143.2572	0.4	1.6	ml	
2014-03-31T00:54:02Z	36.8394	-97.6072	5	2.7	ml	
2014-03-31T00:58:01Z	33.901	-117.9578333	4.24	2.27	ml	66
2014-03-31T00:59:50Z	33.9	-117.9583333	3.67	2.27	ml	68

The **Data Table** visualization displays **raw data** in a **tabular view**. Each **row** is a **record** in the data and each **column** is a **field**. By default, the Data Table has a **record limit** of **5000**, restricting the data it displays to the **first 5000 records** based on the selected **sort order** and **sort field**. Any **URLs** in the records will be **hyperlinked** and, when clicked, open in a new browser tab.

Click on the **Toolbox** button to open the **Toolbox Panel** listing all of the columns available for the Data Table. In the Toolbox Panel, click on the checkbox next to a column to remove that column from (or add a removed column back to) the Data Table, or click and drag a column to reorder that column in the Data Table. Click on the Toolbox button again to close the Toolbox Panel.

If enabled through the dashboard configuration, a Data Table showing records that contain a **latitude field** and **longitude field** can **highlight** records as points in a Map visualization. To do so, click on a row in the Data Table to show a **star** in the Map corresponding to the latitude and longitude for that record. Click on the record again to remove the star from the Map.

Click on the **gear icon** in the upper-right corner to open the **Data Table's options menu**. Change the **database** or **table** to recreate the Data Table with data from the selected source. Under **Sort By Field**, change the **field** and **order** in which to sort the data. Change the **record limit** and click on the **Refresh** button to recreate the Data Table using the new limit. If enabled through the dashboard configuration, click on the **Export to File** button to download the Data Table data.

Filter Builder

The **Filter Builder** visualization allows users to set **custom filters** on their data. Unlike other visualizations, the Filter Builder does not connect to a single database or table; users specify the database and table each filter affects. The Filter Builder lists all filters it creates as individual **filter rows**; the last row in the list is an empty filter row for new filters.

To add a new **filter**, select the **database**, **table**, **field**, **operator**, and **value** for the filter in the empty filter row and click on the **Add (+)** button. For a **date field**, a button will be shown for the value instead of a text field; click on this button to display a **calendar** and select the value for the date. Once a filter is added, the Filter Builder will display a new filter row for another filter. To **replace** an existing filter, change the values in the filter row and click on the **Refresh** button in that filter row. To **delete** an existing filter, click on the **Delete (X)** button in that filter row.

By default, data affected by multiple filters from the Filter Builder must fulfill the conditions

of **all filters**. To change this setting so that data must only fulfill the conditions of **one or more filters**, click on the **OR** button in the top-right corner of the visualization. To change this setting back, click on the **AND** button. To remove all filters from the Filter Builder simultaneously, click on the **Reset Filter Builder** button.

Please note that filters other visualizations have set will be displayed in those visualizations and not in the Filter Builder. The Filter Builder only manages the filters it creates.
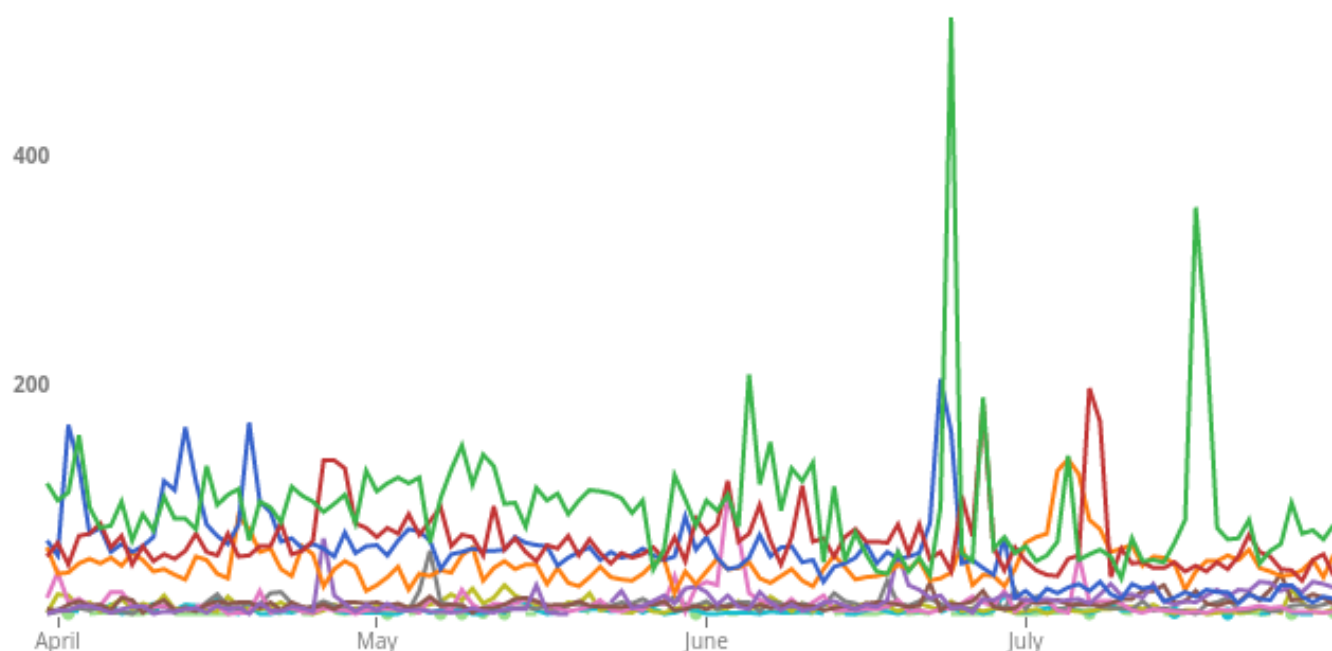
Line Chart

LINE CHART

LEGEND

400

200

April   May   June   July
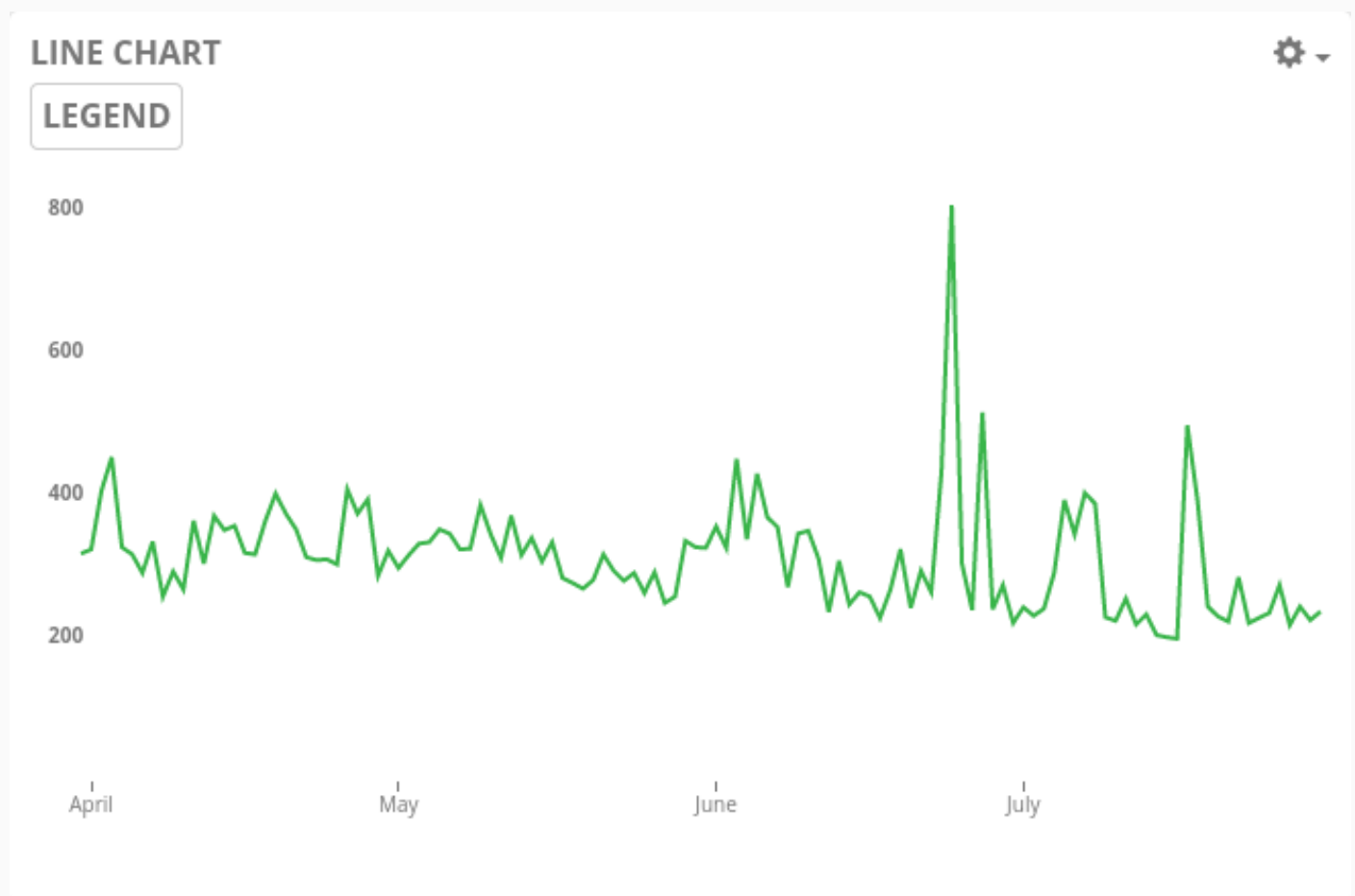
*Top: A Line Chart containing a chart with a line for a single (combined) group. **Bottom**: A Line Chart containing a chart with multiple colored lines for different groups.*

The **Line Chart** visualization plots **aggregations of grouped data over time** as **lines**. The Line Chart can have one or more **charts** each containing data from a single **table**. Each chart can be configured to show either **multiple lines** which each represent a unique value (**group**) from the selected **group field** or a **single line** which represents the combined data from the table (a single **group**). Each line contains one or more **points** that correspond to a specific **date** along the **x-axis** and a specific **aggregated value** along the **y-axis**. The aggregated values can either be the **count** of the occurrences of the group or the **sum**, **average**, **minimum**, or **maximum** value from the selected **aggregation field**.

Hover over a point to show a **tooltip** containing the group, date, and aggregated value represented by that point as well as trigger a **gold highlight** on that date in all Line Charts and Timelines. Highlighting a date may cause other Map or Network Graph visualizations to recreate themselves to display only data that occurred on that date. Click on the **Legend** button to open the legend and view the list of charts. Click on a chart in the list to show the

groups for that chart. Click on a group in the list to **hide or show** that group which recreates the chart with new axes. Click on the Legend button again to close the legend.

Click and drag on the Line Chart to set a **date filter** on the selected **date range** (between where you click and release). A **filter notification** will appear in the visualization and the Line Chart will recreate each chart to only show data within the date filter. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the filter and cause other visualizations to update again.

Click on the **gear icon** in the upper-right corner to open the **Line Chart's options menu**. Change the **Date Granularity** setting of the charts (**day** or **hour**) and whether to **Show Trendlines** in the charts. The menu also lists each chart by name and its set of action buttons. Click on the **Visibility** button to **hide or show** a chart. Click on the **Filtering** button to **enable or disable filtering** for the chart: when filtering is disabled, the chart will ignore the date range restriction of the date filter. Click on the **Edit** button to show the list of options needed to create the chart, including the **chart name**, **database**, **table**, **date field**, **group field**, **aggregation**, and **aggregation field**. Click on the **Save** button to hide the list of options and recreate the chart using the new options. Click on the **Delete** button to remove the chart from the Line Chart. If enabled through the dashboard configuration, click on the **Export to File** button to download the Line Chart data.
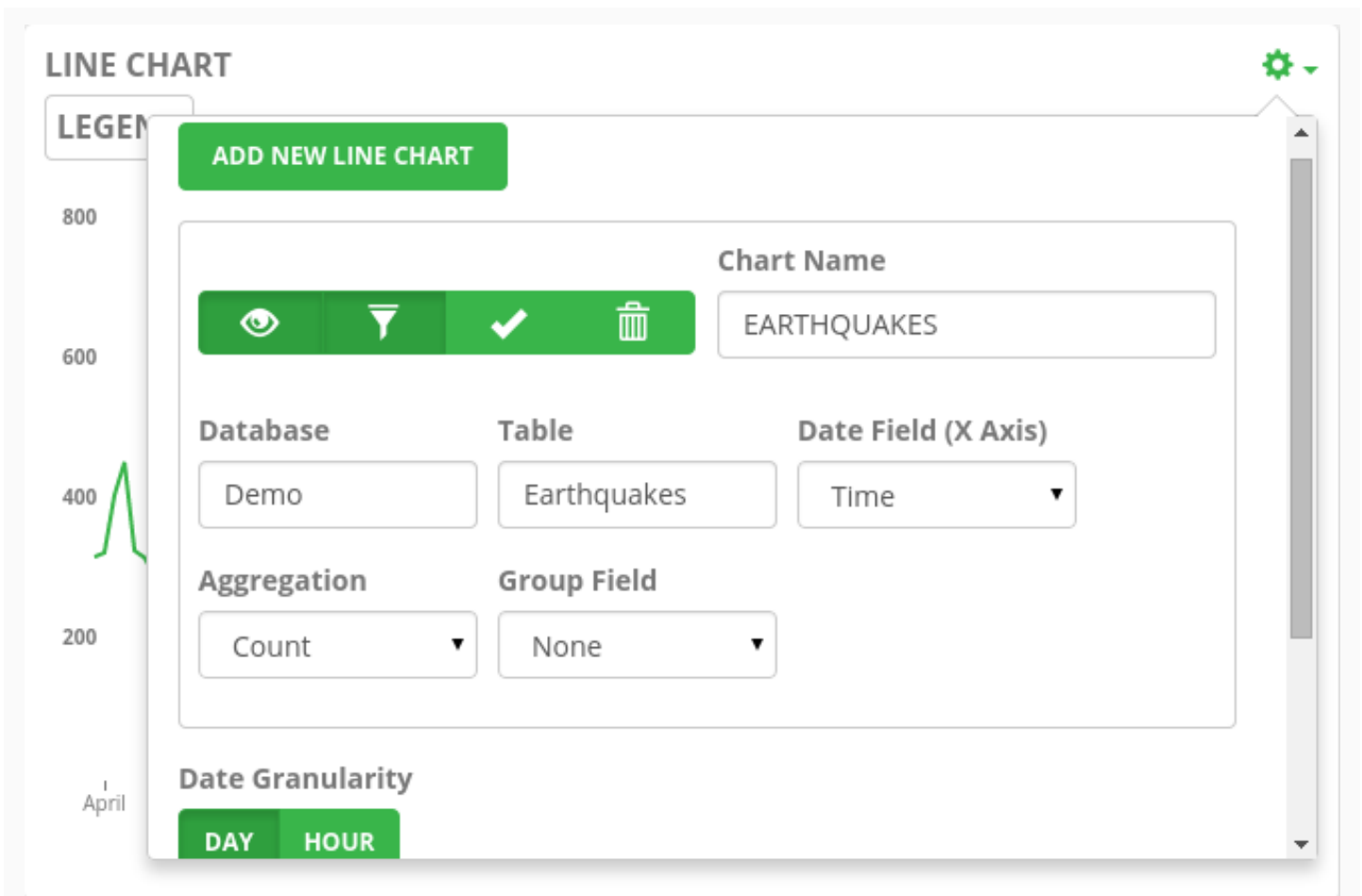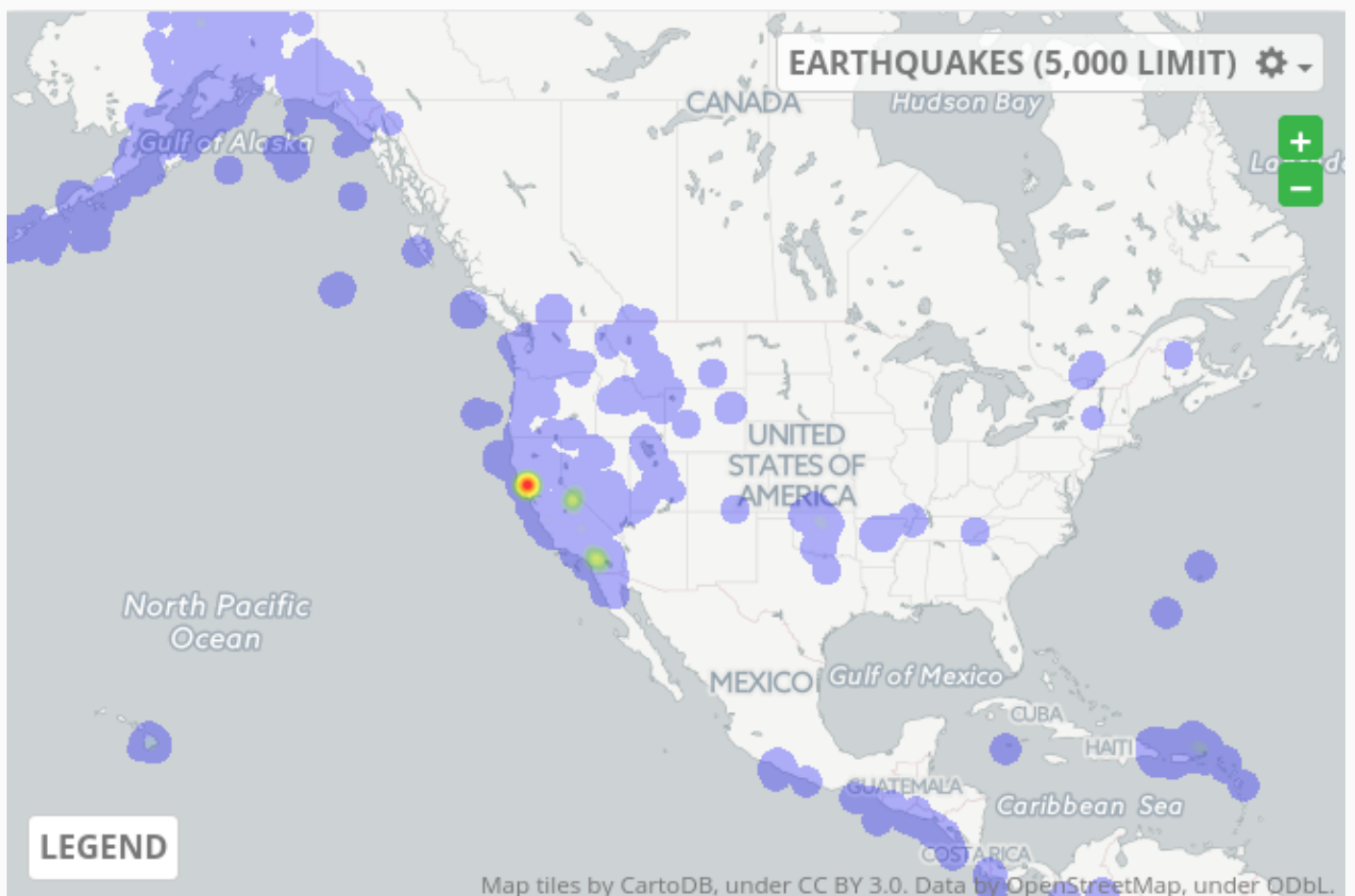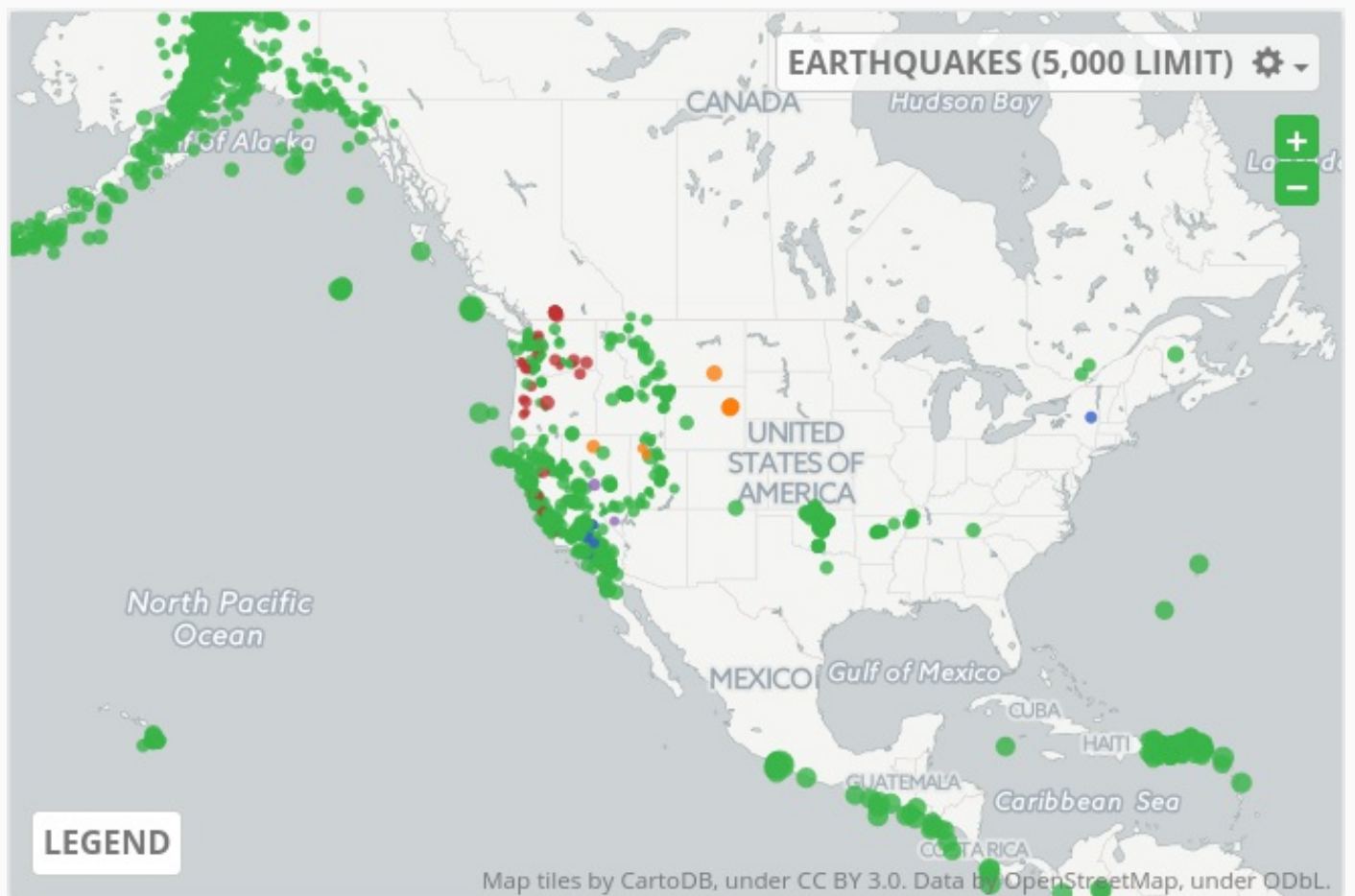
Example of editing a chart in the options menu.

Options menu buttons from left to right: Visibility, Filtering, Edit/Save, Delete.

Map

Top: A Map containing a points layer. **Bottom**: A Map containing a heatmap layer.

The **Map** visualization charts **geographic data** on a **world map**. The Map has a **base layer** illustrating the geography of the world. The Map can have one or more **data layers** which each contain data from a single **table**. The appearance of each data layer changes based on the Map's current **zoom level**. Each data layer has a **data limit** specified in its configuration that restricts the amount of data from its table that it can display in the Map. The **name** of each data layer and whether that layer has reached its data limit are displayed in the upper-right corner of the visualization.
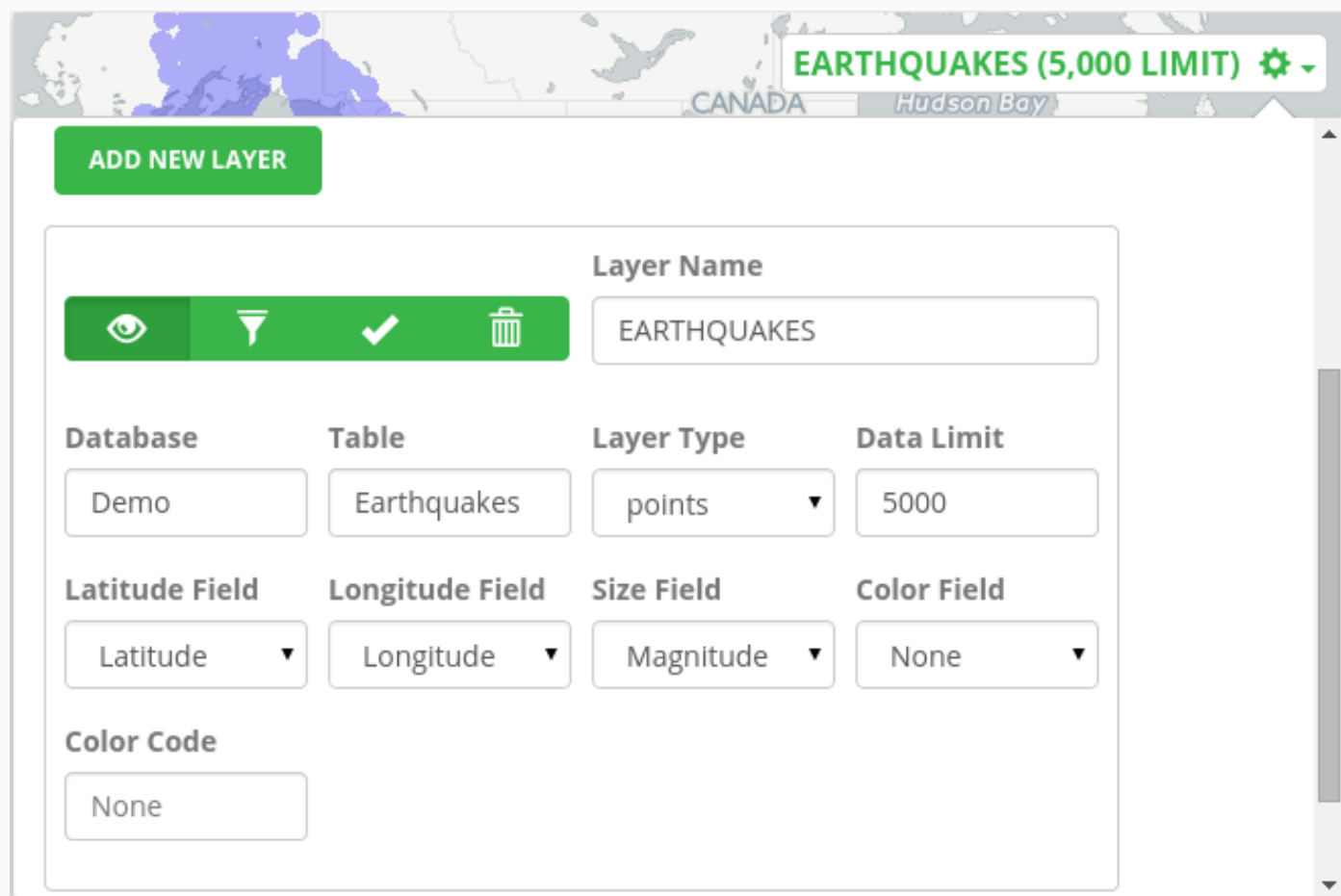
The Map supports four different types of data layers:

- A **points layer** displays each of its data records as an individual point on the map. Points can be colored based on their value in a specified field in the table. Click on a point to show a **popup** containing the **raw data** for the record represented by that point.

- A **cluster layer** displays **cluster points** on the map that each represent one or more data records near the cluster's location. Each cluster is labelled with the number of records it represents. Click on a cluster to show a **popup** containing the fields specified in the layer's configuration.

- A **heatmap layer** displays a **colored gradient** across the map symbolizing the quantity of data records over the geographic region. By default, the gradient goes from blue to red: areas that are shown in red or orange contain many data records while areas that are shown in green or blue contain very few data records. Areas that are not colored contain no data records.

- A **nodes and arrows layer** displays each of its data records as two points on the map connected by an arrow. Each record must contain two sets of latitude fields and longitude fields representing the **source** and **target** points.

Click and drag the Map to move (**pan**) the Map. Use the mouse wheel or click on the **green Zoom (+) / (-)** buttons to change the **zoom level** of the Map. Click on the **Legend** button to open the legend and view the list of point and cluster layers. Click on a layer in the list to open the legend for that layer. Click on the Legend button again to close the legend.

While holding the **SHIFT** key, click and drag a **bounding box** over the area of the Map to set a **map filter** on that area. A **filter notification** will appear in the visualization and each

data layer will automatically update itself based on the coordinates of the map filter. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the filter and cause other visualizations to update again.

*Example of editing a map layer in the options menu.*

Click on the **gear icon** in the upper-right corner to open the **Map's options menu**. Click on the **Reset Map View** button to the move the Map to its **default position and zoom level**, the **Light** and **Dark** buttons to change the color of the **Base Layer**, or the **Add a New Layer** button to **add a new data layer**. The menu also lists each data layer by name and its set of action buttons. Click on the **Visibility** button to **hide or show** a data layer. Click on the **Filtering** button to **enable or disable filtering** for the data layer: when filtering is disabled, the data layer will ignore the bounding box restriction of the map filter. Click on the **Edit** button to show the list of options needed to create the data layer, including the **layer name**, **layer type**, **data limit**, **database**, **table**, **latitude field**, **longitude field**, and other options specific to the layer type such as **size** or **color**. Click on the **Save** button to hide the list of options and recreate the data layer using the new options. Click on the **Delete** button

to remove the data layer from the Map. If enabled through the dashboard configuration, click on the **Export to File** button to download the Map data.

Options menu buttons from left to right: Visibility, Filtering, Edit/Save, Delete.

Network Graph
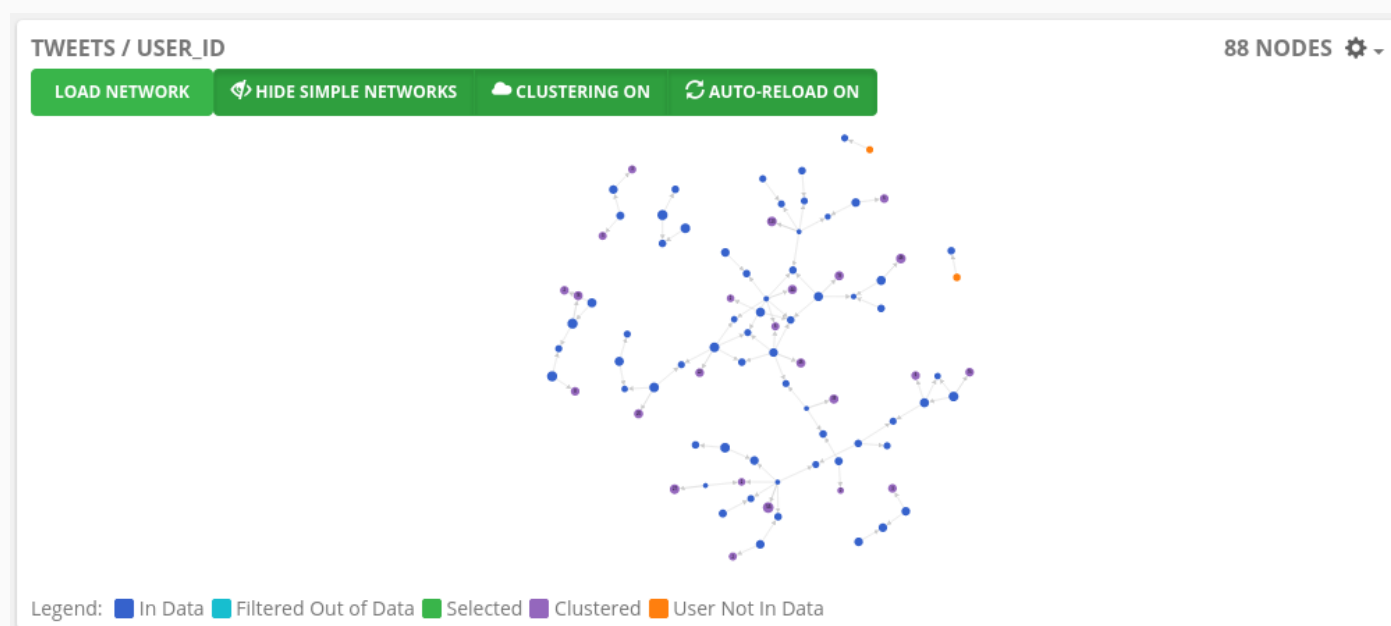
The **Network Graph** visualization displays **networks of connected data** as a **directed graph**. Each **record** from a single **table** is represented as a circle (**node**) and lines (**links**) connecting the record's node to other nodes; a set of nodes that is linked together is called a **network**. By default, the Network Graph has a **data limit** of **500,000**, restricting the data it displays to the **first 500,000 records** from the table.

The **node field** determines the node that is created while the **linked node(s) field** (which can be either a **single value** or a **list of values**) determines the links that are created connecting the new node with nodes from other records. If the **linked node(s) field** lists one or more nodes that **do not exist** in the data, **additional nodes** will be created as necessary. A **name field**, **size field**, **date field**, **flag field**, and/or **text field** can be specified for the nodes to change their color, size, and tooltip information.

For example, the Network Graph could show the following data table:

<table> <tr><th>Name</th><th>Friends</th></tr> <tr><td>Alice</td><td>Bob, Carol</td></tr> <tr><td>Bob</td><td>Alice, Carol</td></tr> <tr><td>Carol</td> <td>Alice, Bob</td></tr> <tr><td>Eve</td></td><td></td></tr> <tr> <td>Matthew</td><td>Thomas</td></tr> </table>

The **node field** is **Name** and the **linked node(s) field** is **Friends**. The graph would display three networks: one containing nodes for Alice, Bob, and Carol with two-directional links to each other, one containing a node for Eve with no links, and one containing nodes for Matthew and Thomas with a one-directional link to each other. The node for Thomas will be colored in **orange** because the record for Thomas is not present in the data (the node was created because the record for Matthew is connected to Thomas through its **linked node(s) field**).

Click on the **Load Network** button to load the network graph using the current set of filters. Please note that this may take a long time and is not suggested on large datasets until one or more filters have been set to reduce the amount of data.

The following options are available through toggle buttons at the top of the visualization:

The **Hide/Show Simple Networks** option determines whether **simple networks** are displayed in the graph. A simple network is a network containing a single node (with no links), a single cluster (see clustering below), two nodes with a single link, or two clusters with a single link. Such networks may improve data exploration by reducing clutter in the graph. The **Clustering** option determines whether **clustering** is enabled in the graph. While clustering, multiple nodes that have only one or two links which connect to the same set of nodes will be combined into a single **purple** node (**cluster**). Clusters are sized and labelled based on the number of nodes they represent. Clustering may improve data exploration by reducing clutter in the graph as well as improving visualization performance. The **Auto-Reload** option determines whether the graph is automatically recreated whenever a filter is set in another visualization. If this option is disabled, the user must click on the Load Network button to manually load the graph as desired.

Hover over a node or link to show a **tooltip** containing the information about that node as well as **highlight** that node's or link's network by making the other networks more transparent. The **labels** used in the tooltip can be configured through the dashboard configuration.
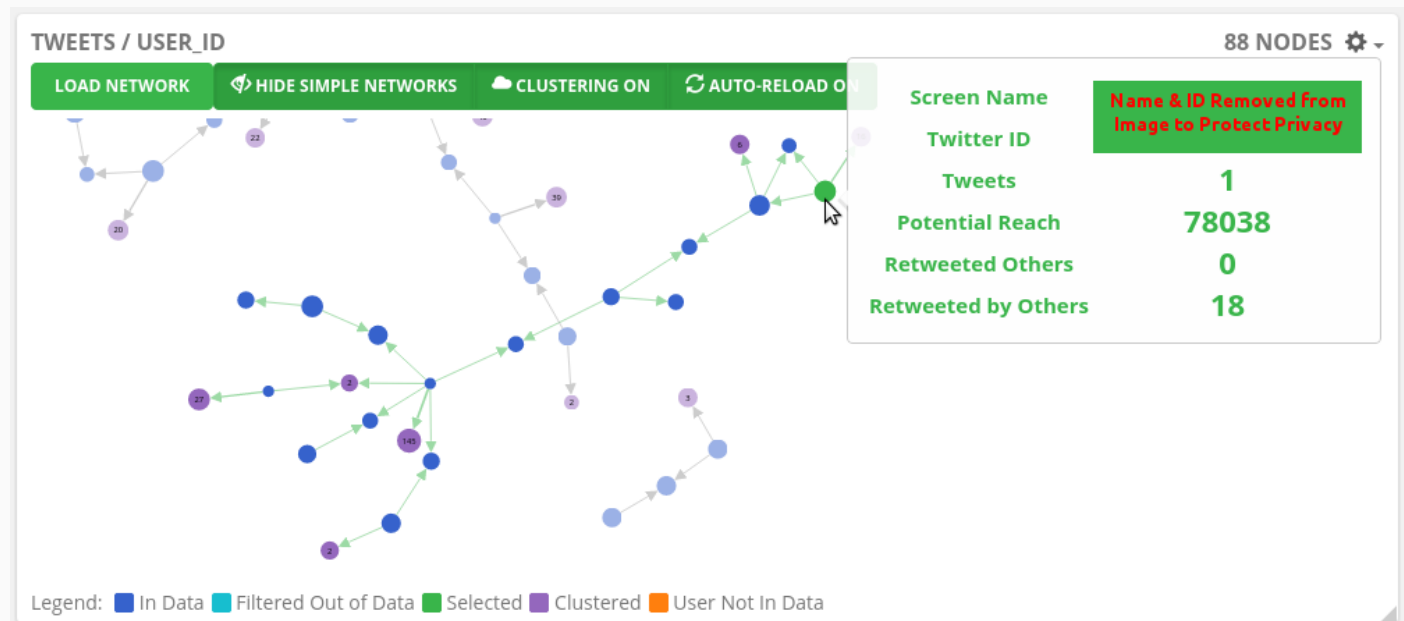
An example of hovering over the green node.

Click on a node to **select** that node or click on a link to **select** the nodes connected by the link. Clicking on a cluster selects all the nodes represented by the cluster. Nodes that are selected (or hovered over) are colored **green**. Selecting one or more nodes causes a **notification** to appear and the Load Network button to change to the **Load Selected Network** button. Click on the Load Selected Network button to recreate the graph displaying only the selected nodes and the nodes to which they are connected by a single link. Click on the **Deselect (X)** button in the notification to deselect all nodes. If enabled through the dashboard configuration, selecting one or more nodes can cause a News Feed visualization to display only data corresponding to the selected node(s).

Click on the **gear icon** in the upper-right corner to open the **Network Graph's options menu**. Change the **database**, **table**, **node field**, **name field**, **size field**, **linked node(s) field**, **linked node(s) name field**, **linked node(s) size field**, **date field**, **flag field**, or **text field** to recreate the Network Graph with data from the selected source. Change the **data limit** and click on the **Refresh** button to recreate the Network Graph using the new

limit. If enabled through the dashboard configuration, click on the **Export to File** button to download the Network Graph data.

News Feed

The **News Feed** visualization lists **summarized information** from **chronological data**. Each **news item** in the News Feed represents a **record** from a single **table** and contains the values of selected fields from that record. News items are **sorted** by the **date field** and contain a **content field** as well as (optionally) a **primary title field** and a **secondary title field**. By default, the News Feed has a **news limit** of **50**, restricting the data it displays to the **first 50 records** in the table based on the **sort order** and **date field**. Scroll down on the News Feed to load the next set of news items.

Click on the **gear icon** in the upper-right corner to open the **News Feed's options menu**. Change the **database**, **table**, **primary title field**, **secondary title field**, **date field**, or **content field** to recreate the News Feed with data from the selected source. Under **Unshared Filter**, select a **field** and **value** and click on the **Refresh** button to add an **unshared filter** and recreate the News Feed with data using that filter. Change the **news**

limit and click on the **Refresh** button to recreate the News Feed using the new limit. If either are enabled through the dashboard configuration, click on the **Show Translation** button to translate the items in the News Feed or the **Export to File** button to download the News Feed data.

Ops Clock
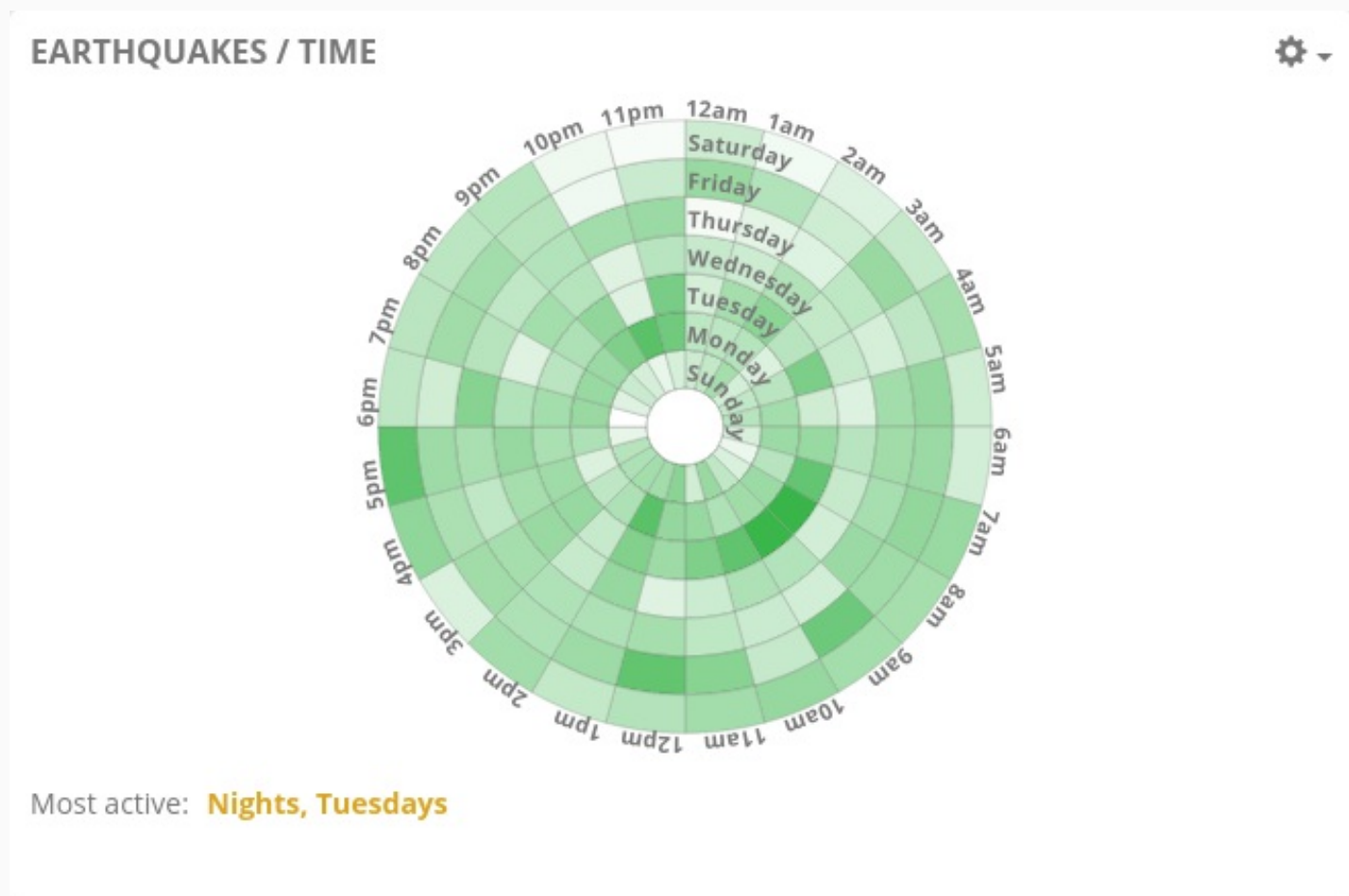
The **Ops Clock** visualization displays **time data grouped by hour and day-of-week** in a **circular chart**. Each section of the chart (**bucket**) represents a specific **hour** and **day-of-week**. Buckets are colored with a **gradient** based on the number of **records** from a single **table** that occur at that time: the background color (white or dark gray) symbolizes few or no records while the main theme color (green) symbolizes a plurality of records compared to other buckets.

Click on the **gear icon** in the upper-right corner to open the **Ops Clock's options menu**. Change the **database**, **table**, or **date field** to recreate the Ops Clock with data from the selected source. If enabled through the dashboard configuration, click on the **Export to File** button to download the Ops Clock data.

Scatter Plot
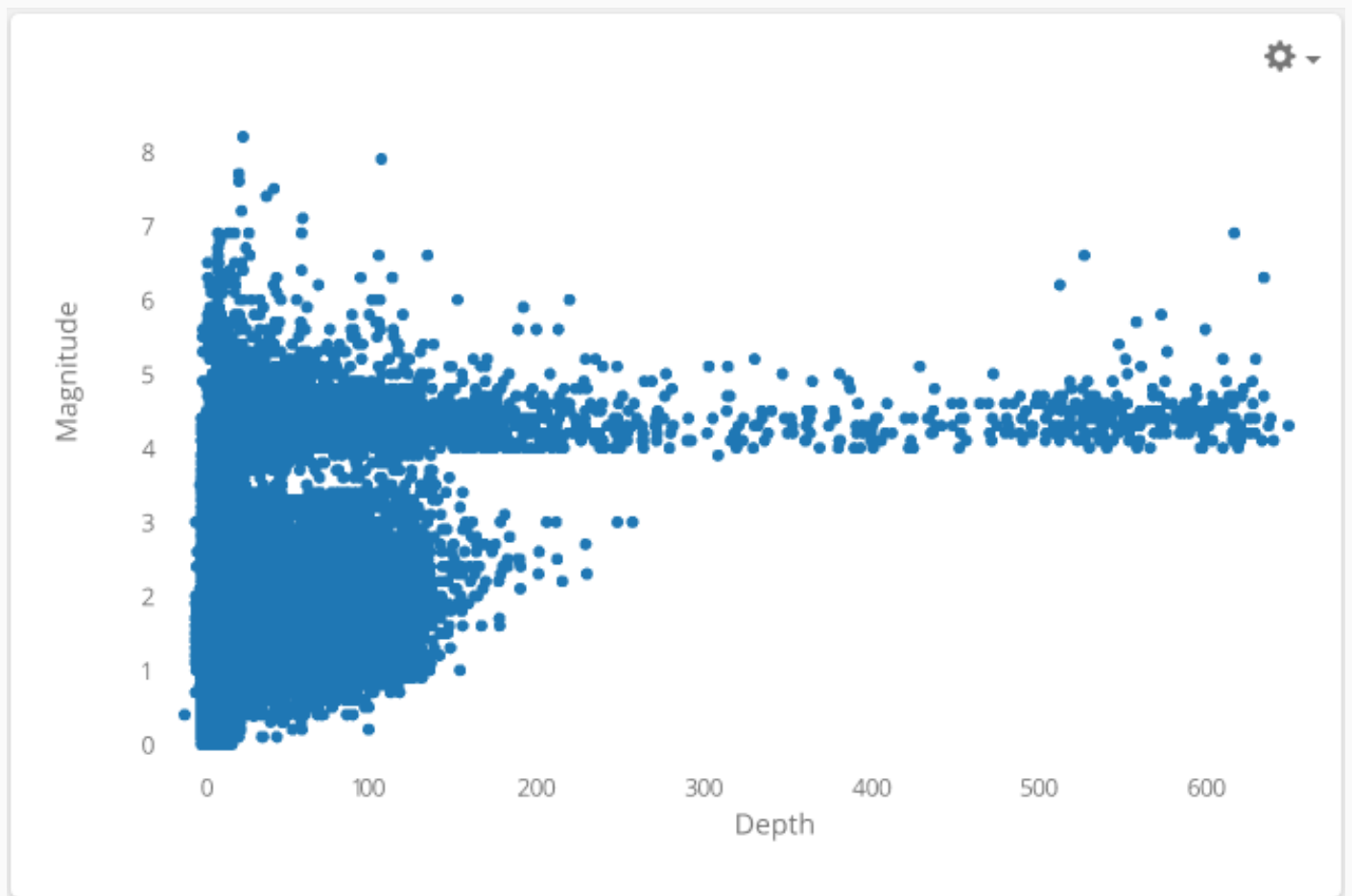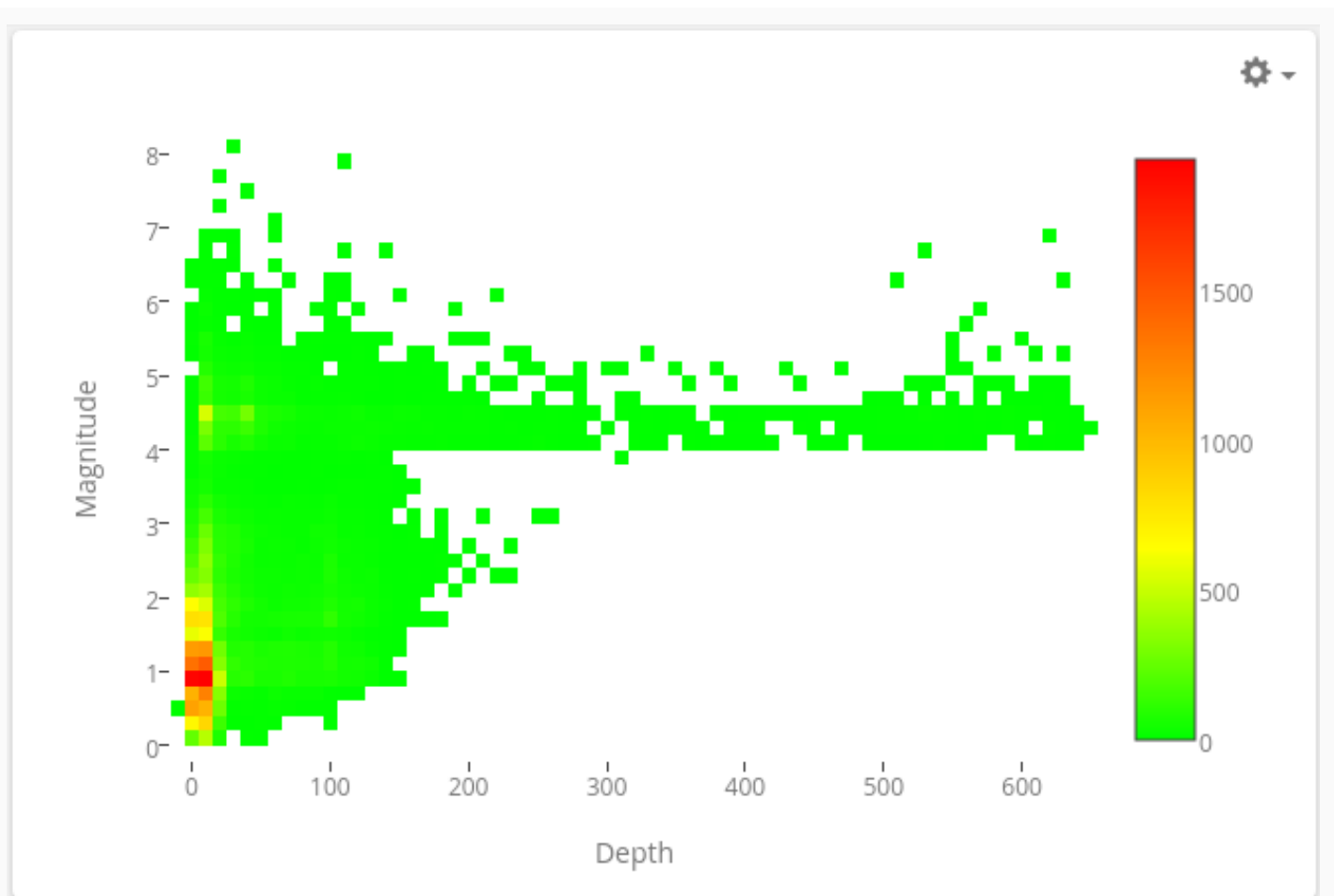
Top*: A traditional scatter plot.* ***Bottom****: A histogram scatter plot.*

The **Scatter Plot** draws data as **points** in a **two-dimensional plot**. Each **record** from a single **table** is plotted as an individual point based on the selected **x-axis field** and **y-axis field**. Hover over a point to show **lines** that identify the values corresponding to the point along each axis.

Click and drag a **bounding box** over the plot to **zoom-in** on that area and reduce the **x-axis range** and **y-axis range** to the values selected in the bounding box. This will recreate the plot to display only points within the new x-axis range and y-axis range. Alternatively, click on the **Zoom In** button in the upper-right corner of the plot to **zoom-in** on the center of the plot. The **zoom-in** action will also set a **filter** on the x-axis range and y-axis range in the data. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Zoom Out** button in the upper-right corner of the plot to to remove the filter, recreate the original plot and cause other visualizations to update again.

Three types of Scatter Plot are available:

- A traditional **scatter plot** draws each data record as an individual point.
- A **heatmap scatter plot** draws a **colored gradient** over the plot symbolizing the quantity of data records in a continuous area. The gradient goes from green to red: areas that are shown in red contain many data records while areas that are shown in green contain very few data records. Areas that are not colored contain no data records.
- A **histogram scatter plot** draws a **colored grid** of squares (**buckets**) across the plot symbolizing the quantity of data records over the plot in each bucket. The color of the buckets goes from green to red: buckets that are shown in red contain many data records while buckets that are shown in green contain very few data records. Buckets that are not colored contain no data records.

Click on the **gear icon** in the upper-right corner to open the **Scatter Plot's options menu**. Change the **database**, **table**, **x-axis field**, or **y-axis field** to recreate the Scatter Plot with data from the selected source. Change the **type** of the Scatter Plot to recreate the Scatter Plot using the selected type. Change the **points limit** and click on the **Refresh** button to recreate the Scatter Plot with the new limit. The points limit will restrict the amount of data that the Scatter Plot can show from its table. The points limit is optional; clear the points limit and click on the Refresh button to remove the limit and allow the Scatter Plot to show all of the data from its table.
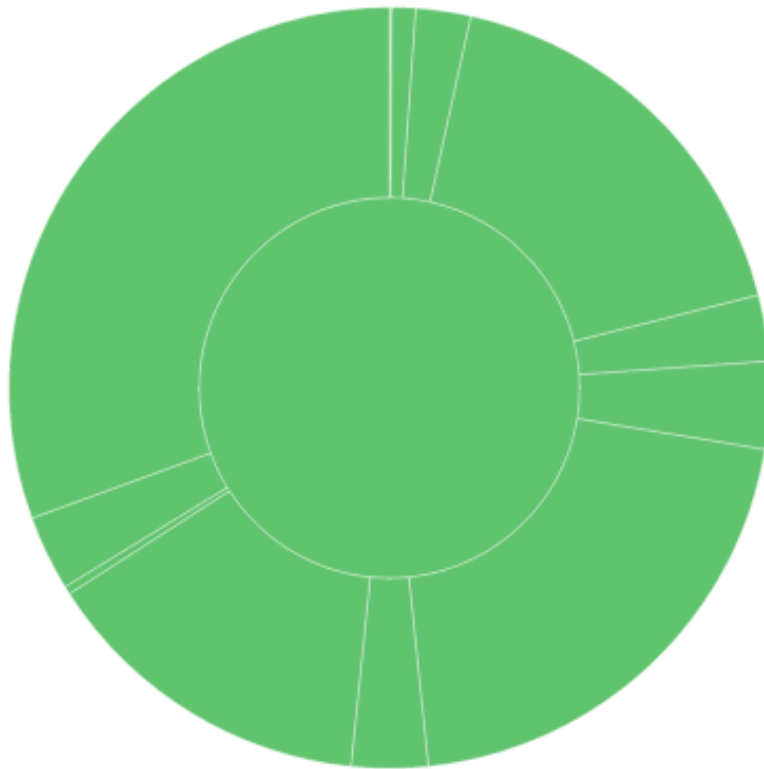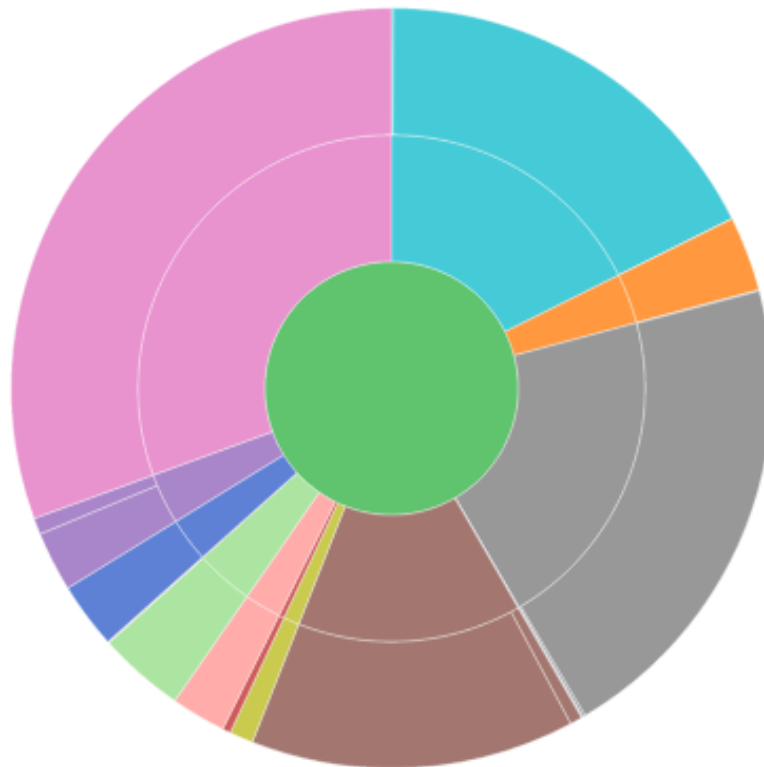
Sunburst Chart

Top: *A Sunburst Chart showing the networks (Net) of earthquake activity.* **Bottom**: *A*

Sunburst Chart showing the type (Type) of earthquake activity for each network (Net).

The **Sunburst Chart** visualization displays **grouped hierarchical data** in **concentric circles**. Each **ring** represents a **field** from a single **table** separated into **segments** by unique values (**groups**). Segments of a ring have a **hierarchical relationship** to their **parent segments** in the **inner rings**. Hover over a ring in the chart to show a **tooltip** containing the group represented by that segment and the **count** of the value of the selected **count field** in the data. Click on a segment to **hide** the other segments in that ring; click on the center (**root**) of the chart to **show** the hidden segments of the inner ring. Hover over the name of a ring field above the chart to show a **Remove (X)** button; click on this button to remove the ring.

Click on the **gear icon** in the upper-right corner to open the **Sunburst Chart's options menu**. Change the **database**, **table**, or **count field** to recreate the Sunburst Chart with data from the selected source. Under **Add a Ring**, select a **field** to add it as a **new ring** to the chart. If enabled through the dashboard configuration, click on the **Export to File** button to download the Sunburst Chart data.

Text Cloud
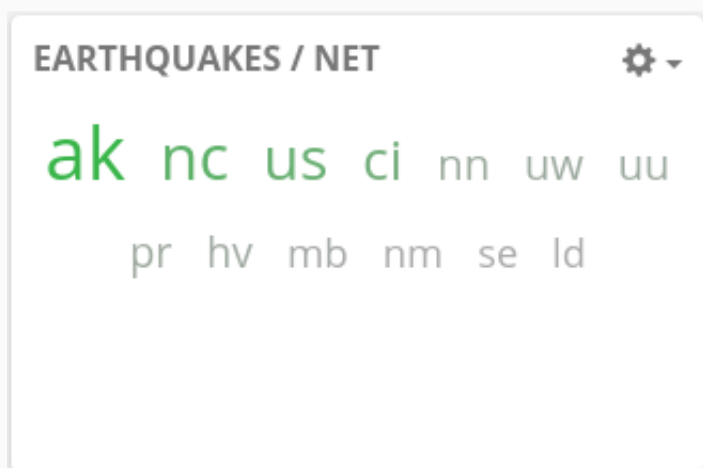
The **Text Cloud** visualization lists **text data aggregated and ordered by frequency**. The **text items** are extracted from a single **table** based on the selected **data field** (which can be either a **single value** or a **list of values**). The visualization displays the **top 40 text items** in descending frequency; items that are the most frequent appear first and in larger font. Hover over an item to show a **tooltip** containing that item's **frequency**.

Click on a text item to set a **filter** on that item. A **filter notification** will appear in the visualization and the Text Cloud will automatically update its data based on the filter. While a filter is set, the Text Cloud will only display text items that appear in the data record alongside the filtered item. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the filter and cause other visualizations to update again. Click on **additional text items** to set filters on those items.

Click on the **gear icon** in the upper-right corner to open the **Text Cloud's options menu**. Change the **database**, **table**, or **data field** to recreate the Text Cloud with data from the selected source. Under **Unshared Filter**, select a **field** and **value** and click on the **Refresh** button to add an **unshared filter** and recreate the Text Cloud with data using that filter. If filtering on **multiple text items**, change whether the data must contain items from **All Filters** or from **Any Filters** through the **Show Records With** option. If either are enabled through the dashboard configuration, click on the **Show Translation** button to translate the items in the Text Cloud or the **Export to File** button to download the Text Cloud data.

Timeline

EARTHQUAKES / TIME **37,843** valid records **0** invalid records ⚙▾
31 Mar 2014 - 30 Jul 2014 📅

Total

Apr 06   Apr 13   Apr 20   Apr 27   May 04   May 11   May 18   May 25   June   Jun 08   Jun 15   Jun 22   Jun 29   Jul 06   Jul 13   Jul 20   Jul 27

EARTHQUAKES / TIME **9,620** valid records   **0** invalid records

1 May 2014 - 31 May 2014 📅
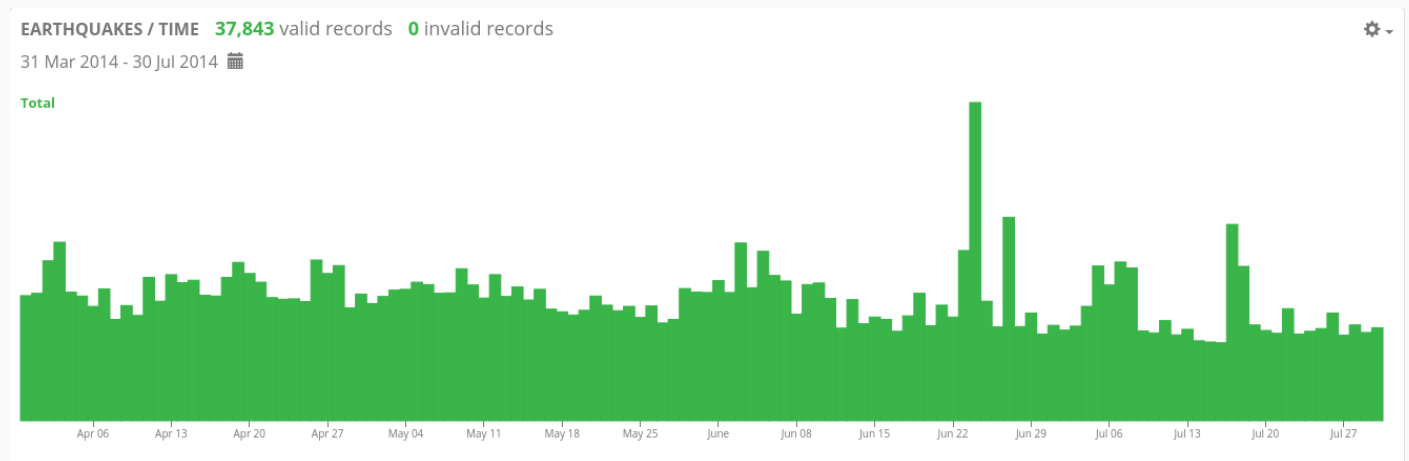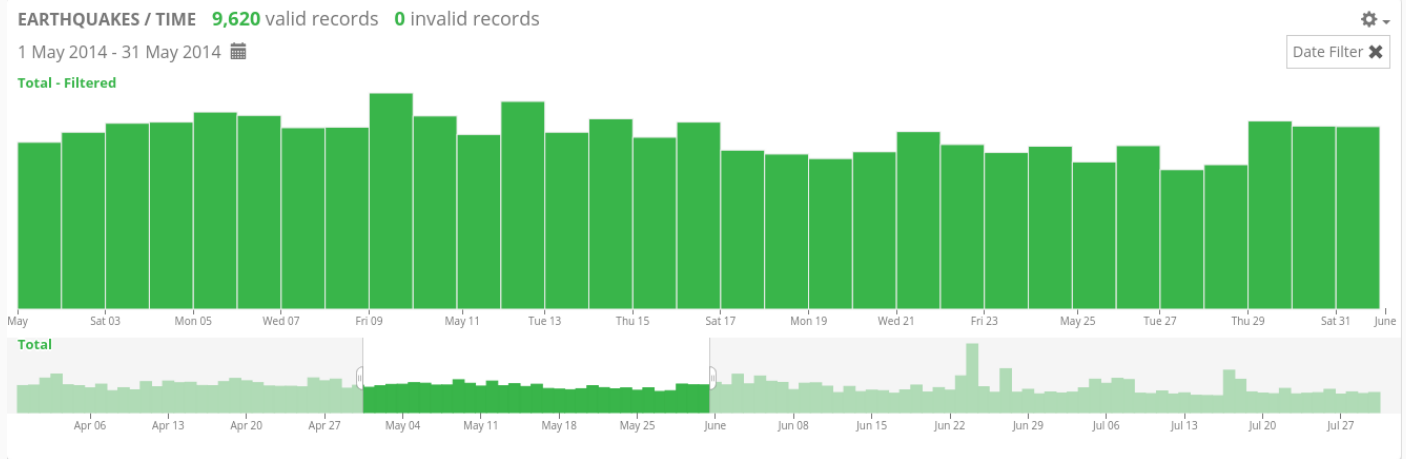
Date Filter ✖

Top: *A Timeline.* ***Bottom***: *A Timeline with a date filter displaying a Focus Timeline.*

The **Timeline** visualization plots **time data** as a **histogram**. The time data is extracted from a single **table** and is aggregated in **chronological order** as **bars** based on the selected **date granularity**. The numbers of **valid and invalid records** are shown at the top and the **date range** is shown in the **Date Filter** button. Hover over a bar to show a **tooltip** containing the **count** of data on that date as well as trigger a **gold highlight** on that date in all Timelines and Line Charts. Highlighting a date may cause other Map or Network Graph visualizations to recreate themselves to display only data that occurred on that date.

Click on the **Date Filter** button to display a **dropdown** containing two **calendars**. Select the **start date** for the **date range** of the **date filter** in the left calendar and the **end date** in the right calendar. Click on the **Save** button to close the dropdown and set the requested date filter. Click on the **Cancel** button to close the dropdown without setting or changing the filter.

Alternatively, click and drag on the Timeline to set a **date filter** on the selected **date range** (between where you click and release).

Either way, a **filter notification** will appear in the visualization and the **number of records** and **date range** will update based on the date filter. The parts of the Timeline that are outside the date range will be grayed out. The Timeline itself will shrink and the **Focus Timeline** will appear in place above the Timeline displaying only the data within the date filter. Setting a filter causes other visualizations in the dashboard to update based on the filter's parameters. Click on the **Delete (X)** button in the filter notification to remove the

filter and cause other visualizations to update again.

Click on the **gear icon** in the upper-right corner to open the **Timeline's options menu**. Change the **database**, **table**, or **date field**, to recreate the Timeline with data from the selected source. Change the settings for the **Date Granularity** of the Timeline data (**hours**, **days**, **months**, or **years**), when to **Show the Focus Timeline** (**on filter**, **always**, or **never**), and whether to **show** the **Animation Controls**. If it is enabled through the dashboard configuration, click on the **Export to File** button to download the Timeline data.

If enabled through the settings in the Timeline's options menu, the **Animation Controls** allow the user to **animate the data over time**. Click on the **Play** button to start the animation: a **gold highlight** will appear on the first date in the Timeline (as if you hovered over that date), then move to the second, then the third, and so on. When the animation reaches the end of the Timeline it will **loop** back to the start. Click on the **Pause** button to pause the animation, the **Resume** button to resume playing the animation, and the **Stop** button to stop the animation. Click on the **Step** button to pause the animation and advance the highlight to the next date. If a **date filter** is set, the animation will only play through the **date range** of the filter, ignoring dates outside the range.

External Applications

🔗

A link icon for opening external applications and services.

The Neon Dashboard can be configured to link from its visualizations to one or more **external applications** accessible through the browser. Each link is generated based on the types of data available in the dataset: for example, a user could open Google Maps using the coordinates from a point in a Map or Twitter using a Twitter username from an Aggregation Table or News Feed. If this feature is enabled through the dashboard configuration, look for the **link icon** (see image above) throughout the dashboard in **filter notifications**, **tabular views**, and the News Feed. Click on a link icon to open a **popup** containing a list of the available external applications. Click on an application in the list to open it in a new browser tab.

For more information on how to enable external applications available in the Neon Dashboard, please see the Neon Dashboard Configuration Guide on how to configure **External Services**: https://github.com/NextCenturyCorporation/neon-gtd/wiki/Neon-Dashboard-Configuration-Guide#external-services-options.

Limitations

Many visualizations have data limits that restrict the amount of data they display. This improves performance both server-side (the database queries) and client-side (drawing the visualizations in the browser). The data limits may be detrimental while exploring datasets with lots of data since you might miss something in the data that has been hidden due to the data limits. Therefore we recommend that you set one or more filters before analyzing your datasets so the visualizations don't reach their data limits. We're constantly working to improve our performance in order to loosen the data limits and we're making progress with each new version of Neon and the Neon Dashboard.