

Flight map visualizer - manual

Submitter: Ha Anh Nguyen

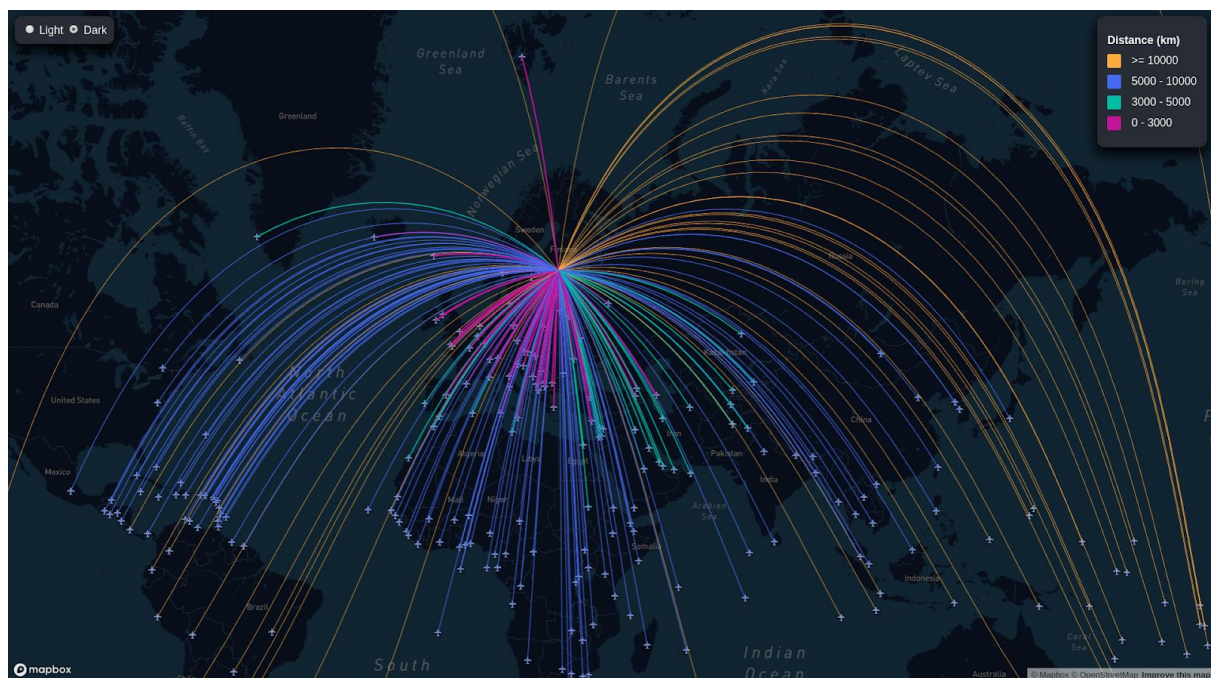
Mail: anhnguyen6281@gmail.com

Demo link: <https://flight-map-visualizer.herokuapp.com/>

1. Initial map:

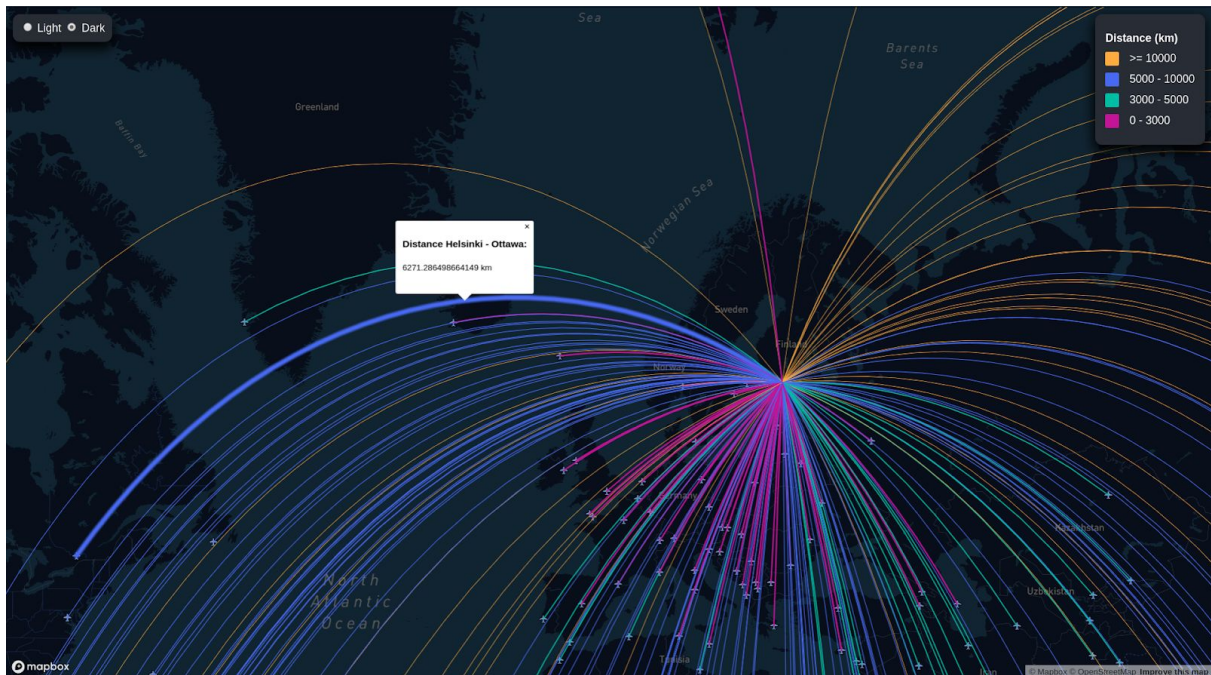
When the demo link is accessed in the browser(preferably using Chrome or Firefox), it takes roughly 30 seconds for Heroku to serve the initial requests if the server is not warmed up recently (This is incredibly slow for the first time but we can't expect much from free cloud hosting service).

Once the request is served, you will see the initial map as shown in the picture below.

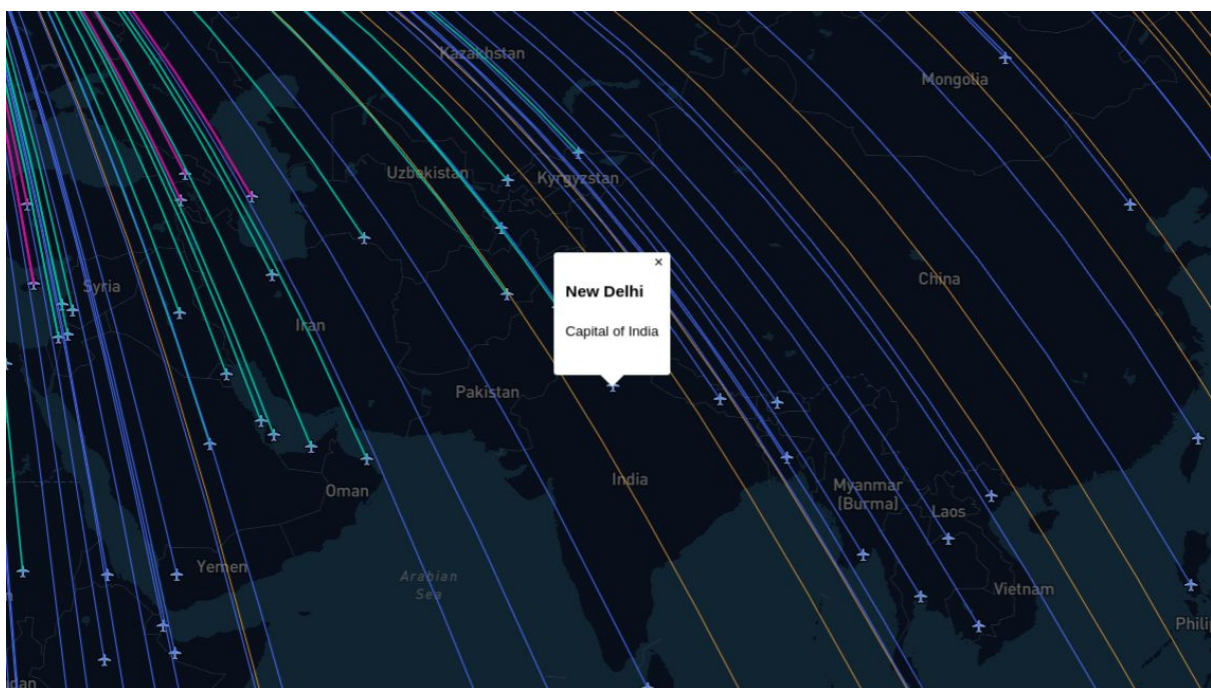


In which, the default selected capital is Helsinki, which means that all the arcs coming from Helsinki to other destinations represents the flight route calculated using [Great-circle distance](#). When an arc is hovered on, its width is increased to highlight the hovered route. At the same time, the popup containing the corresponding flight information such as source, destination, and distance between them is shown. The popup is used to display flight distance instead of displaying distance along each individual line for 2 reasons. Firstly, the graph is quite dense which means that showing extra details does not bring good user experience. Secondly, it's hard to see the distance of the route when users zoom deep into a certain part of the map and still he/she still wants to see the distance of the route.

However, there is a drawback when displaying route distance in the popup. It is because the line is quite thin, meaning that it is often tricky to hover on the exact line. One trick is to move your cursor really slowly over the line until the line is highlighted as shown in the picture below.

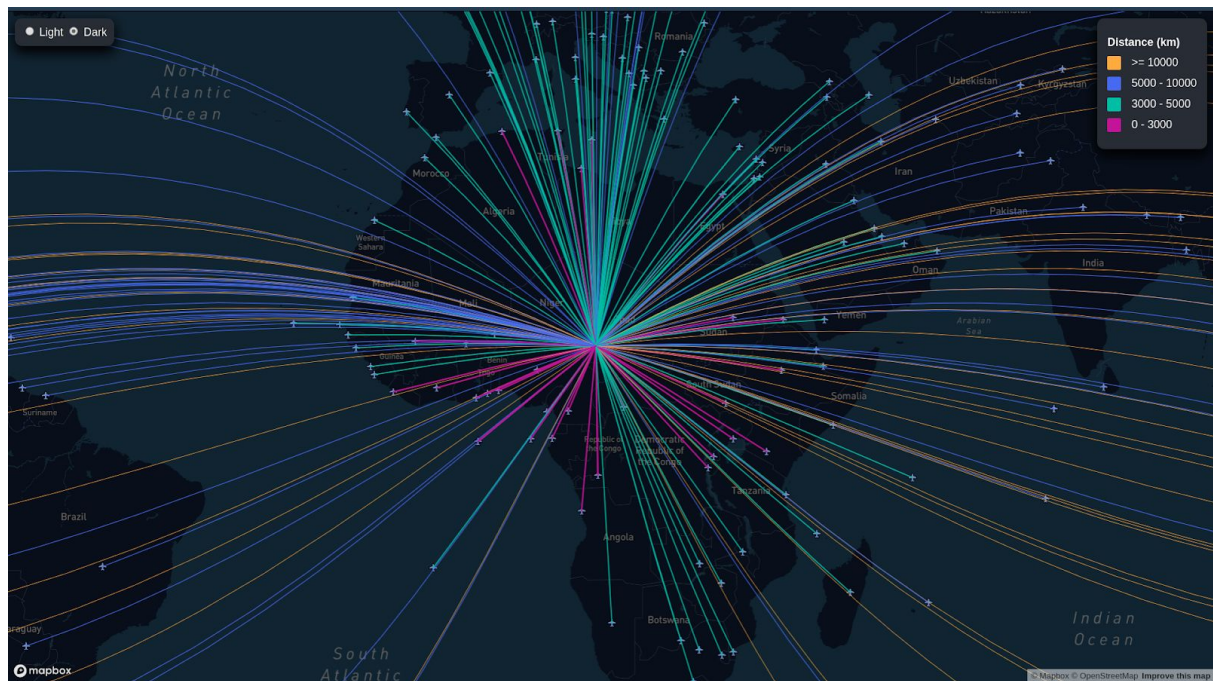


The airplanes' markers on the map represents capital cities of all countries in the world. When an airplane symbol is hovered over, the popup containing information related to that capital city is displayed as shown in the picture below:



2. Display flight routes from different capital city:

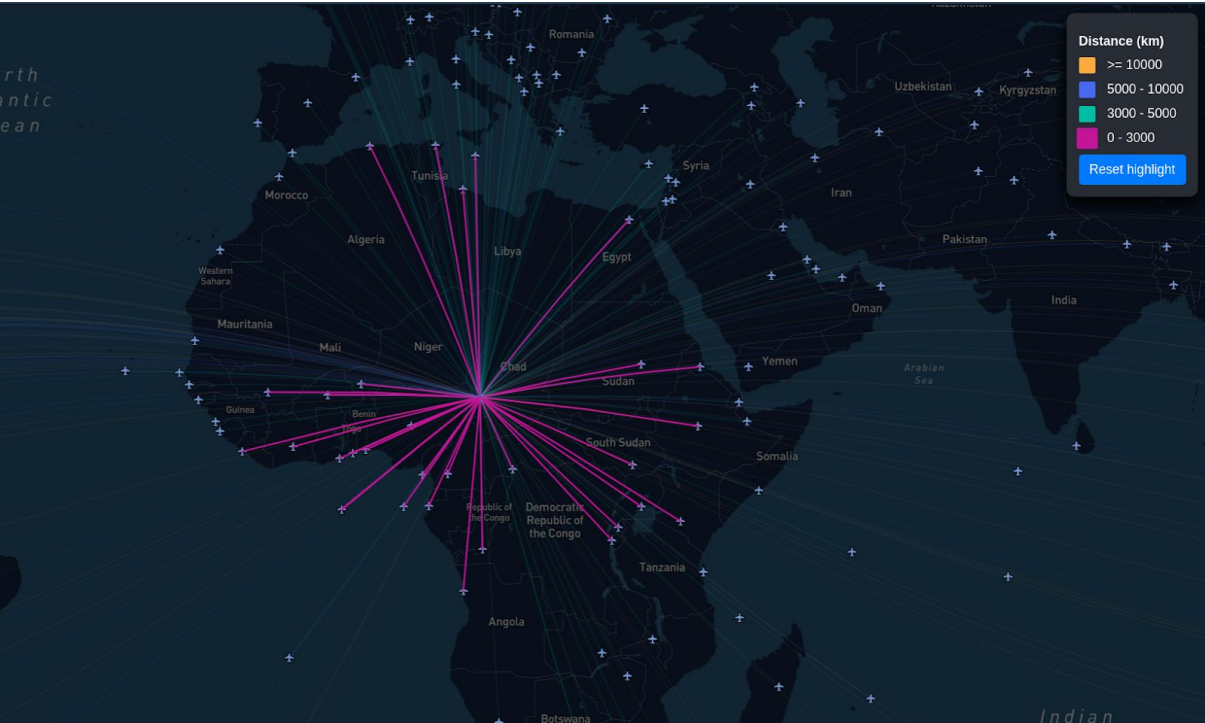
The source capital can be changed by clicking into another capital marker. Once the source capital is changed, it becomes the new center of the map and all the arcs are rerendered to show the flights that start from the newly chosen capital city.

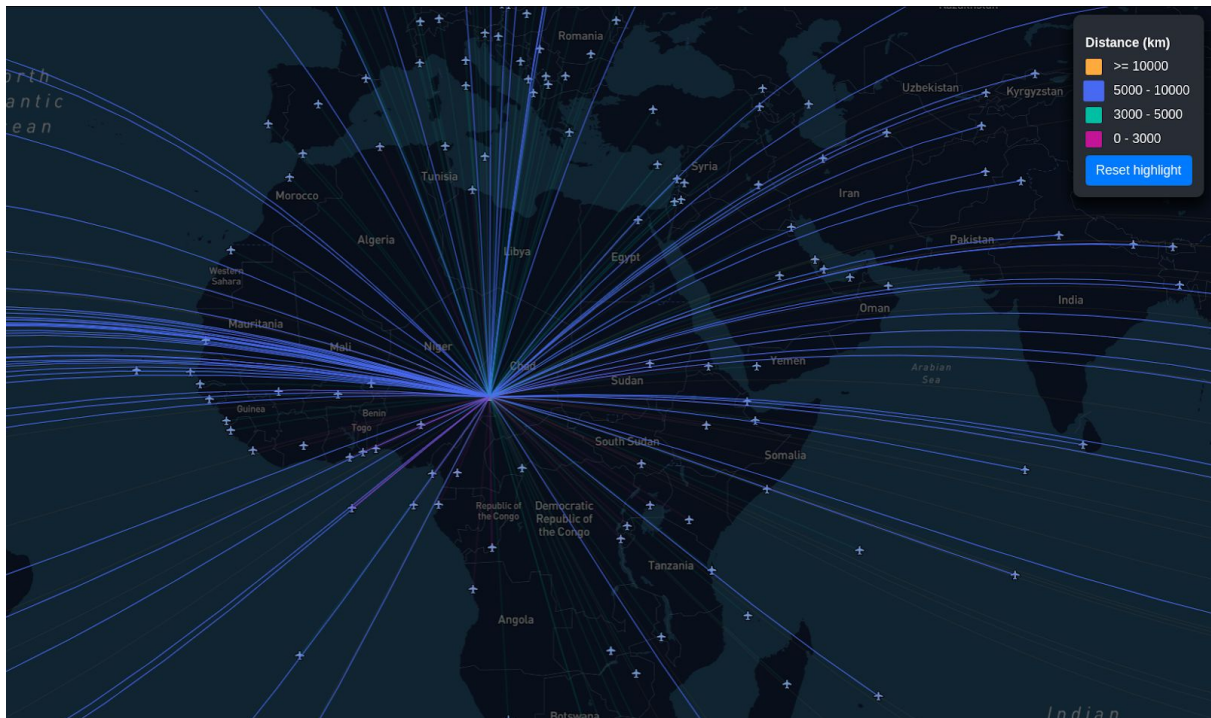


3. Highlight lines from a specific distance range:

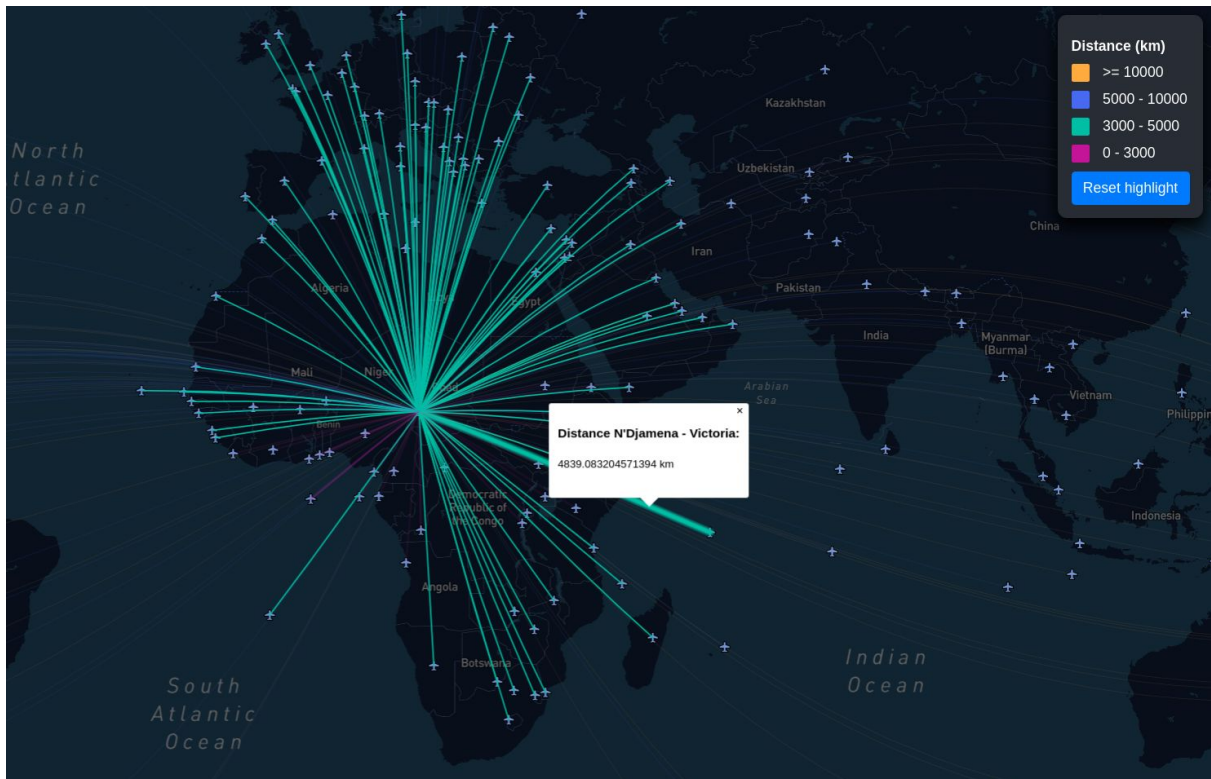
The arcs are colored based on the distance of that route. The mapping between colors and distance is depicted on the description section on the upper right corner.

One interesting functionality to enhance the data visualization is highlighting only lines within one distance range group. When the color boxes in the description section is hovered on, the lines with that color are displayed as usual when other lines are unhighlighted. For example, purple, green, blue, orange routes are respectively highlighted in 4 pictures below:





It is possible to keep the highlighted categories when moving the cursor out of the description section to examine the map. For example, it is possible to examine the arcs when only green arcs are highlighted.

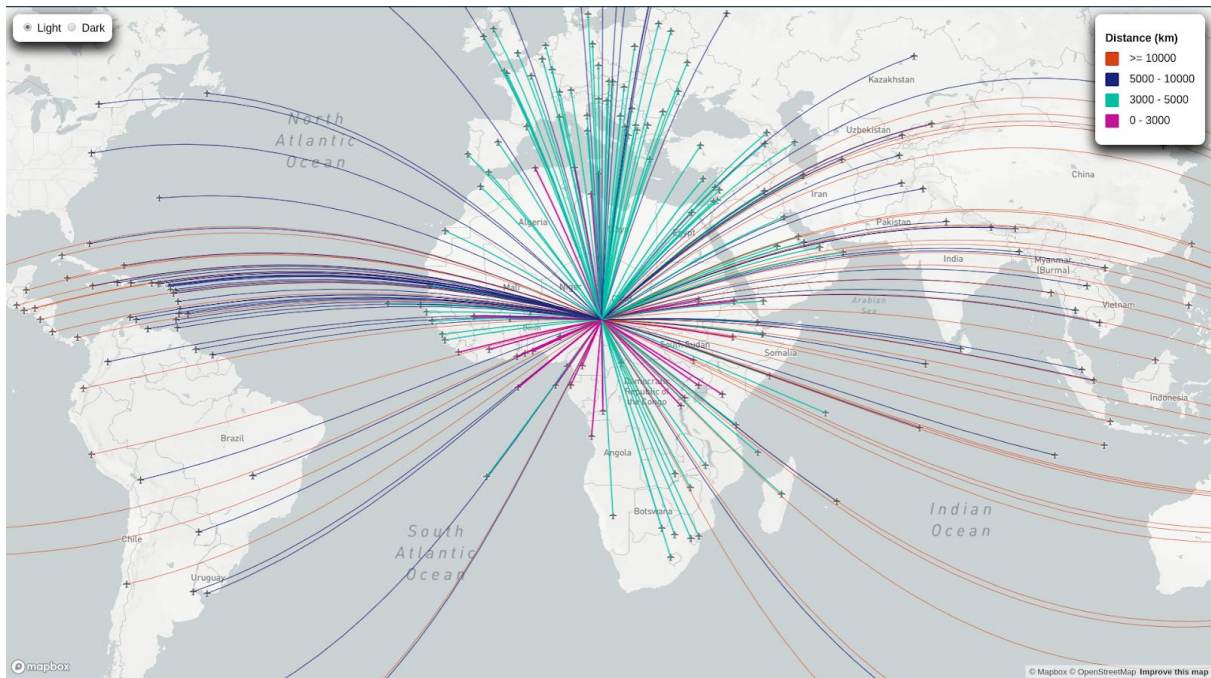


Highlighted functionality can be turned off by clicking into the "Reset highlight" button in the description section.

3. Change theme:

To support data visualisation further, the theme of the map can be changed to light theme(default theme by mapbox). This action can be done by changing the theme selection in the upper left corner as shown in the picture below.

Notice that the theme is stored in localStorage of the browser, which means that the selected theme is kept the next time that the user accesses the page.



Notice that the theme is stored in localStorage of the browser, which means that the selected theme is kept next time that the user accesses the page.