

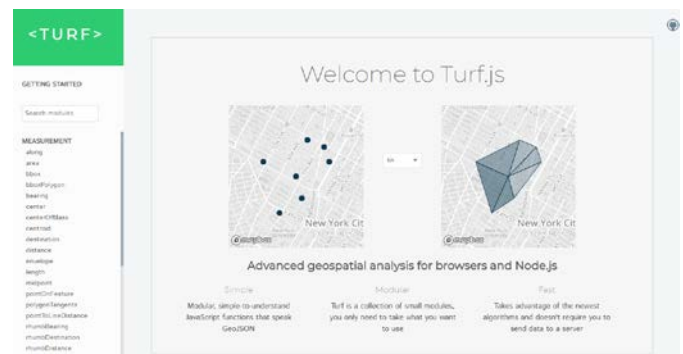
Mapping API's: Leaflet - Getting Started with Turf.js

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

Turf.js is an open source JavaScript library for advanced geospatial analysis that allows for spatial operations to be preformed in the browser. Turf will help you analyze, aggregate, and transform data in order to visualize it in new ways and answer spatial questions. This task sheet will get you getting started with Turf.js and demonstrate the midpoint measurement and linestring helper functions. You can find the completed code for this task sheet at <https://github.com/ISUEOGTP/GISTaskSheets/tree/master/Leaflet-Tutorials/turf-midpoints.html>.

1. Introduction

- Start with the basic leaflet map setup from <https://github.com/ISUEOGTP/GISTaskSheets/blob/master/Leaflet-Tutorials/turf-gettingStarted.html>.
- In order to share the Web map you create on the Internet, you will need to host the files on a Web server. For the purposes for this task sheet you can just create the file on your local hard drive and open it with your Web browser or use an Online editor such as jsbin.com or jsfiddle.net. These Online editors are easy to use and include colored code syntax and other helpful features. *Hint: this would be the preferred method for beginners.*



2. Add the Turf.js Library and Setup

- Within the HTML **<head>** tag add a **script src** link to the Turf JavaScript library. If you are using the basic leaflet map setup file from **step 1a**, then you will not need to do this step as it is already provided.

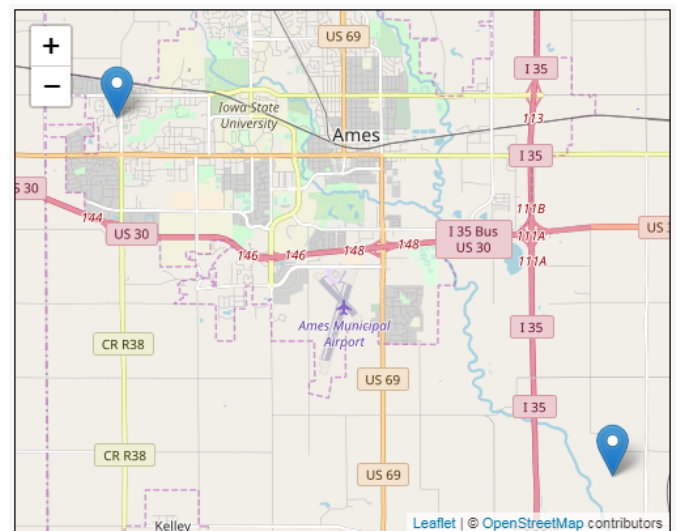
```
<script src='https://npmcdn.com/@turf/turf/turf.min.js'></script>
```

- In the HTML **<script>** tag define the latitude and longitude for two different marker points using the variables **lat1**, **lng1**, **lat2** and **lng2**.

```
//define two points
lat1 = 42.03;
lng1 = -93.68;

lat2 = 41.96;
lng2 = -93.55;
```

- Add **marker1** and **marker 2** to the map based on the latitude and longitude variables defined in **step 2b** using the L.marker constructor.



```
//display points as markers
var marker1 = L.marker([lat1, lng1]).
addTo(map);

var marker2 = L.marker([lat2, lng2]).
addTo(map);
```

4. Turf.js Midpoint Measurement

- The Turf.js midpoint measurement takes two points and returns a point midway between them. The midpoint is calculated geodesically, meaning the curvature of the earth is taken into account. The coordinates for point1 and point2 are the only required arguments for the midpoint measurement. A feature point, midway between point1 and point 2 is returned.
- Define variables **point1** and **point2** as Turf point features. Create the variable **midpoint** to be assigned to the resulting midpoint that is returned by Turf.

```
//note the order of longitude and latitude  
is switched in turf.  
var point1 = turf.point([lng1, lat1]);  
var point2 = turf.point([lng2, lat2]);  
  
var midpoint = turf.midpoint(point1,  
point2);
```

- In order to add the midpoint to the map, a leaflet marker for the location **myMidpoint** needs to be created. Be sure to include **.addTo(map)** method.

```
//Add Turf result to map  
var myMidpoint = L.geoJSON(midpoint).  
addTo(map);
```

5. Turf.js LineString Helper

- The Turf.js lineString helper creates a LineString Feature from an array of positions. An array of points, and an object of key-value pairs added as properties are the only required arguments for the lineString helper function.
- Create a **linestring1** variable and provide an array of the variables **lat1**, **lng1**, **lat2** and **lng2** as well as a key-value pair for the feature property.
- In order to add the linestring feature to the **L.geoJSON** and map, use the **addTo(map)** method.

```
var linestring1 = turf.lineString([[lng1,  
lat1], [lng2, lat2]], {name: 'line 1'});  
  
L.geoJSON(linestring1).addTo(map);
```

Contact:

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