

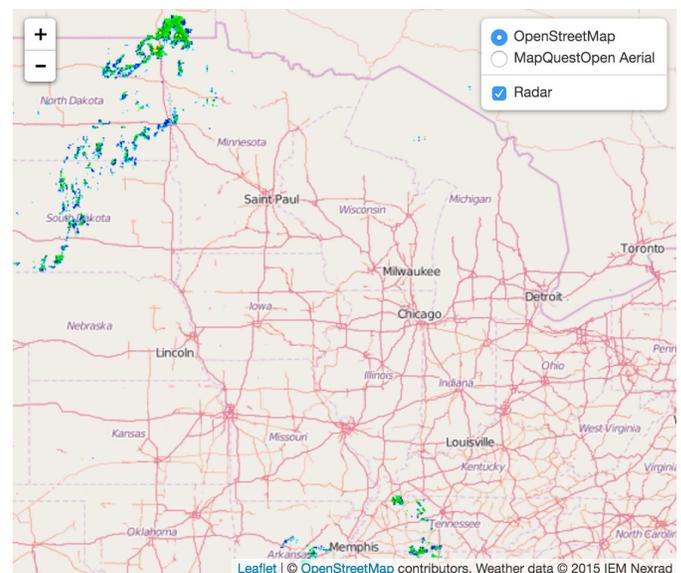
## Mapping API's: Leaflet - Adding Microsoft Bing Basemap Layers

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.

This task sheet builds off of *Mapping API's: Leaflet - Layer Control* **PM2082-15k** that discusses the creation of the layer control for basemaps and overlays. The code for this task sheets (**addLayersLeaflet.html**) and the leaflet layer control task sheet (**layerControlLeaflet.html**) can be found on the ISU Geospatial Technology Program GitHub page at <https://github.com/ISUEOGTP/GISTaskSheets>. This task sheet demonstrates how to add Microsoft Bing basemap layers to applications built using Leaflet.js.

### 1. Introduction and Setup

- First, you will need to start with a basic Leaflet map setup that includes Leaflet's layer control feature that allows users to easily switch different layers on the map. Reference the task sheet: *Mapping API's: Leaflet - Layer Control* **PM2082-15k** to learn how to set this up, or get the starter code (**layerControlLeaflet.html**) from our GitHub page at <https://github.com/ISUEOGTP/GISTaskSheets> within the **Leaflet-Tutorials** repository.



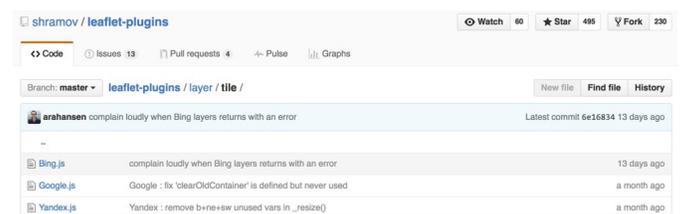
### 2. Adding Microsoft Bing Map Access

- The starter code for this map contains two basemaps (OpenStreetMap and MapquestOpen Aerial) as well as an overlay layer showing the current weather radar.
- To add Bing layers, a Leaflet plugin developed by Pavel Shramov needs to be downloaded to your local directory and a connection to the Microsoft Bing API must be made. The Bing plugin can be accessed from <https://github.com/shramov/leaflet-plugins>. Once on the page navigate into the **layers/tile** directory. Download the **Bing.js** file and place it on your server.
- A link to the plugin can be created by adding the following `<script>` tag directly after the link to the leaflet.js library. Provide your absolute or relative path to the plugin file. *Note: be sure to replace your file path.*

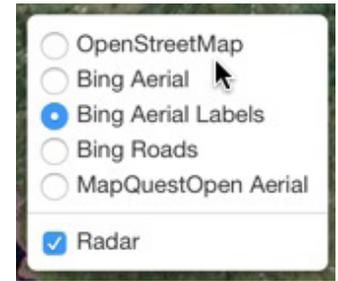
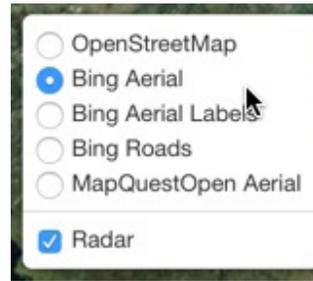
```
<script src="your file path/Bing.js"></script>
```

- Three different image sets are available for use with Leaflet (Aerial, AerialWithLabels, and Road). Select the image set of interest and add the following code right after the JavaScript `<script>` tag starts. *Note: replace Aerial with AerialWithLabels or Road for the other maps.*

```
// Aerial | AerialWithLabels | Road  
var imagerySet = "Aerial";
```



- e. Once the imagery set has been selected, create a variable to contain the map tile information. To create this layer you will need to provide a Bing Key. To create a key, visit <https://www.bingmapsportal.com/>. Once you have a key enter it in the code below and place this code directly after the code added in **step 2d**. *Note: when creating a key you will need to provide the URL to the site that will use the key.*

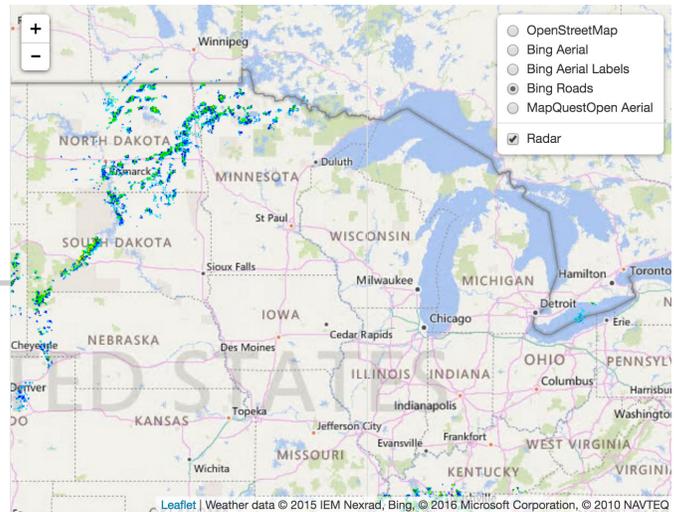


```
// Aerial | AerialWithLabels | Road
var imagerySet = "Aerial";

var bingAerial = new L.BingLayer("Your Key",{type: imagerySet});
```

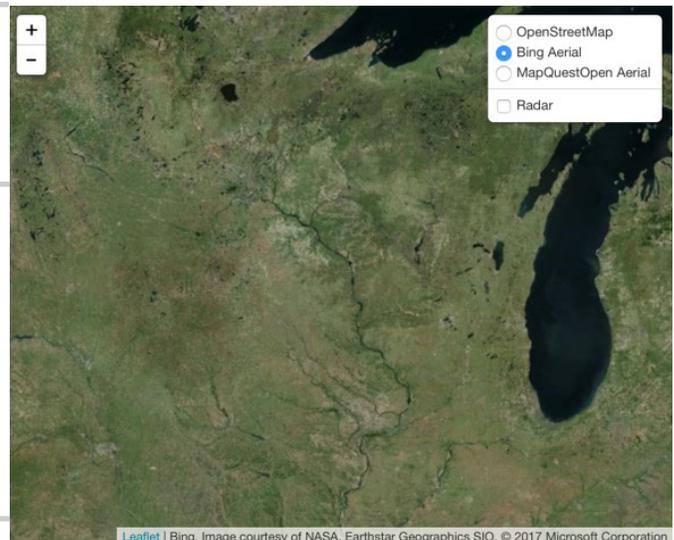
- f. If you want to provide options to show any of the three Bing layers, simply copy the previous two lines, modify the image set, and create a new variable name such as bingRoad or bingAerialLabel.
- g. Now that the variables have been defined, they need to be added to the layer control. Currently the layer control holds only three layers and looks like the following:

```
//layer control
var baseMaps = {
  "OpenStreetMap": OSM
  "MapQuestOpen Aerial": MapQuestOpen_Aerial
};
var overlayMaps = {
  "Radar": nexrad
};
```



- h. Add the Bing items to the layer control list for each of the layers you defined in **step 2d** and **step 2e**. *Note: make sure that the variable names following the colon match the variable name used in step 2e.*

```
//layer control
var baseMaps = {
  "Bing Aerial":bingAerial,
  "Bing Aerial Labels":bingAerialLabel,
  "Bing Roads":bingRoad,
  "OpenStreetMap": OSM,
  "MapQuestOpen Aerial": MapQuestOpen_Aerial,
};
var overlayMaps = {
  "Radar": nexrad
};
```



## Contact:

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