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Mapping API's: Leaflet - Adding Google Basemap Layers

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Mapping API's: Leaflet - Adding Google 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 Google basemap layers to applications built using Leaflet.js.
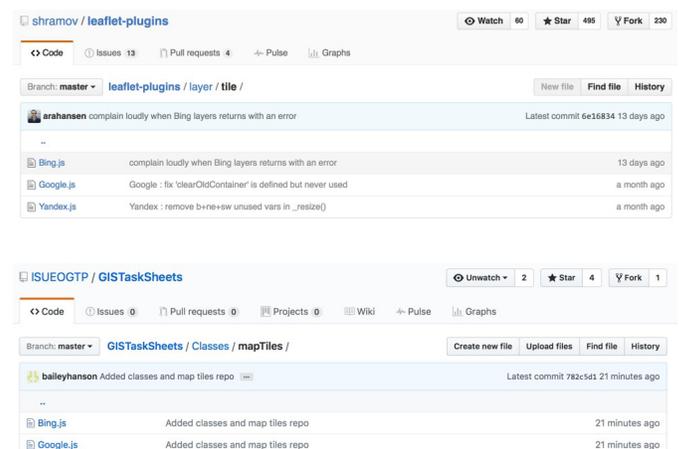
1. Introduction and Setup

a. First, you will need to start with a basic Leaflet map setup that includes Leaflet's layer control 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.
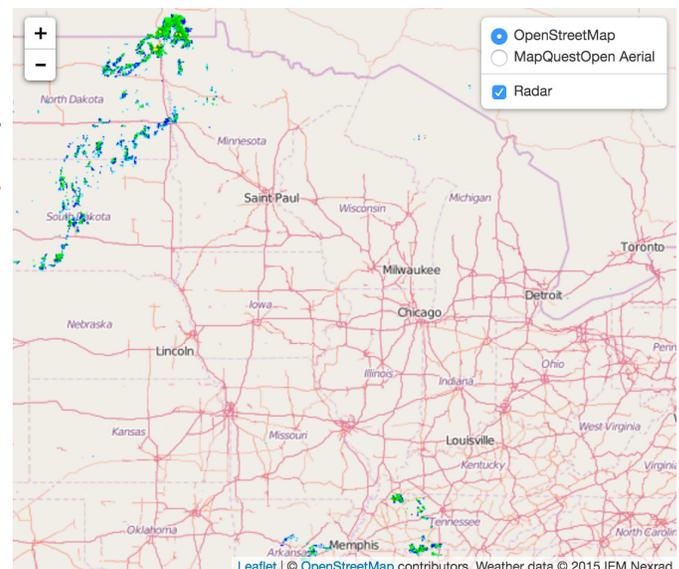
2. Adding Google Map Access

a. The starter code for this map contains two basemaps (OpenStreetMap and MapquestOpen Aerial) as well as an overlay layer showing the current weather radar.

b. To add the Google layers, a leaflet plugin developed by Pavel Shramov needs to be downloaded to your local directory and then a connection to the Google API must be made. The Google Maps Plugin can be accessed from https://github.com/shramov/leaflet-plugins Once on the page navigate into the **layers/tile** directory. Download the **Google.js** file and place it on your server. *Update: the leaflet plugin is no longer available in this directory. You can find it at* https://github.com/ISUEOGTP/GISTaskSheets *> Classes > mapTiles > Google.js.*

c. A link to Google Maps API and the plugin can be created by adding the following directly after the link to the leaflet.js script file. Provide your absolute or relative path to the plugin file, or use the link below to the script hosted from our GitHub page.

```
<script src="http://cdn.leafletjs.com/leaflet/v0.7.7/leaflet.js"></script>

<script src="http://maps.google.com/maps/api/js?v=3"></script>

<script src="http://isueogtp.github.io/GISTaskSheets/Classes/mapTiles/Google.js"></script>
```

d. The link to the Google Maps API file makes it very easy to create a variable that links to the desired layer map type. In the <script> area after the <div id="map"></div> add the following five lines, which will create a variable and define each of the available map types.

```
//Google Maps
var GoogleAerial = new L.Google('SATELLITE');
var GoogleRoad = new L.Google('ROADMAP');
var GoogleTerrain = new L.Google('TERRAIN');
var GoogleHybrid = new L.Google('HYBRID');
```
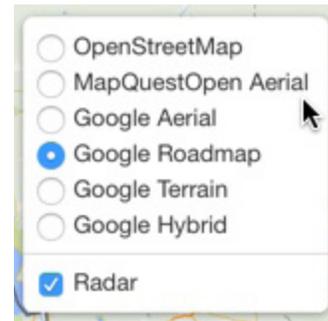
e. Now that the variables have been defined, they need to be added to the Layer control. Currently the layer control holds only three layers.

```
//layer control
var baseMaps = {
    "OpenStreetMap": OSM,
    "MapQuestOpen Aerial": MapQuestOpen_Aerial
};
var overlayMaps = {
    "Radar": nexrad
};
L.control.layers(baseMaps, overlayMaps).addTo(map);
```
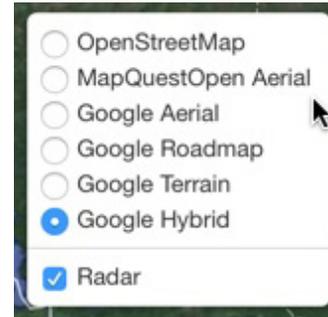
f. Add the following Google Code items to the list below the MapQuestOpen Aerial to display the options for the Google Map layers in the layer Control Menu.

```
//layer control
var baseMaps = {
    "OpenStreetMap": OSM,
    "MapQuestOpen Aerial": MapQuestOpen_Aerial,
    "Google Aerial":GoogleAerial,
    "Google Roadmap":GoogleRoad,
    "Google Terrain":GoogleTerrain,
    "Google Hybrid":GoogleHybrid,
};
var overlayMaps = {
    "Radar": nexrad
};
L.control.layers(baseMaps, overlayMaps).addTo(map);
```
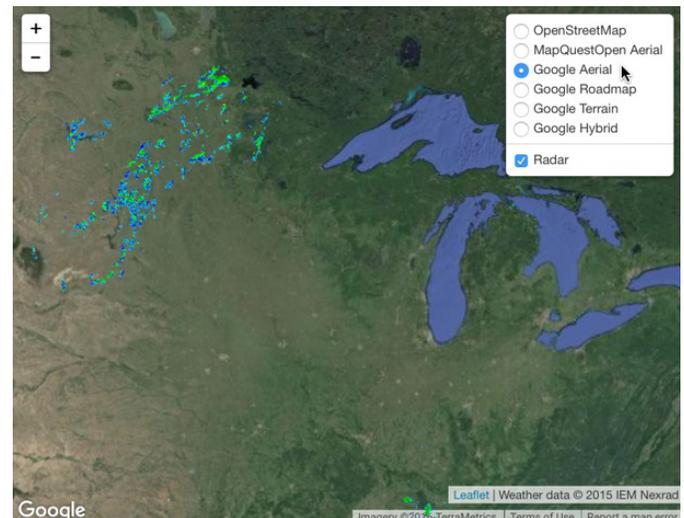
Contact:

Bailey Hanson bahanson@iastate.edu, 515-520-1436 or Professor Christopher J. Seeger, ASLA, GISP cjseeger@iastate.edu, 515-509-0651 for more information about the Geospatial Technology Program. This task sheet and more are available at www.extension.iastate.edu/communities/gis