

MAPPING WITH GOOGLE

Interactive Map Design | Spring 2018

Google Overview

- Google tools:
 - ▣ Google Fusion Tables
 - ▣ Google My Maps
 - ▣ Google Earth (Engine)
 - ▣ Google APIs
- Free tools that can be used in a wide variety of formats
- Requires some programming
 - ▣ JavaScript, HTML
- Documentation available

Google Fusion Tables

- Data visualization web application to gather, visualize, and share larger data tables
- Instant visualization of your table in maps, charts, graphs, etc.

Documentation:

http://support.google.com/fusiontables/answer/2571232?hl=en&ref_topic=1652595

Fusion Tables Example Gallery:

<https://sites.google.com/site/fusiontablestalks/stories>

Google Fusion Tables

- Create your own table or search the fusion table database
- Merge multiple tables together
- Make data public or private
- Associate data table to points, lines, or polygons
- Can import from excel, csv, kml, and other table formats
- Geocode directly from table
- Can publish & share maps & other data visualizations

Google My Maps

- Create, share, publish, & embed custom maps
- Add points, lines & polygons
- (limited) options for stylizing map data & base maps; ability to add custom icons
- Add directions to map
- Add photos & multimedia

Documentation: <https://support.google.com/mymaps#topic=3188329>

Gallery: <https://maps.google.com/gallery?hl=en>

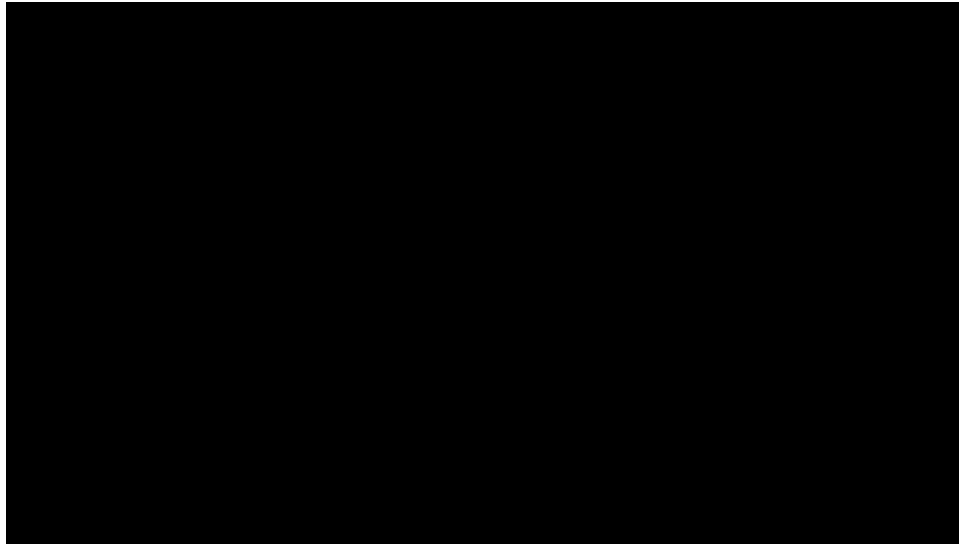
Google Earth (GE)

- Visualization tools to view directly in GE
- Add points, lines, polygons with pop-up windows
- Pop-up can have pictures, video and other multimedia
- Use 'spreadsheet mapper' (table) to create pop-up windows
- Can create *tours* of an area/dataset
- Easily shared with others or embedded into your website

Tutorials: <http://www.google.com/earth/outreach/tutorials/all.html#earth>

Documentation: <https://support.google.com/earth/?hl=en#topic=4363013>

Google Earth Engine



Overview: <https://earthengine.google.com/>

Google API

- Embed interactive Google map on your website
- Create mobile apps
- Embed geographic tools
 - ▣ Directions
 - ▣ Distance matrix
 - ▣ Elevation
 - ▣ Geocoding
 - ▣ Time Zone
 - ▣ Places

Google maps web services API: <https://developers.google.com/maps/web-services/overview>

Google maps Javascript API: <https://developers.google.com/maps/documentation/javascript/examples/>

Creating a map with Google Maps Javascript API

1. Start here and request an API key:
<https://developers.google.com/maps/documentation/javascript/>
2. Once you have a key & a project set-up, go the Guide to copy 'Hello World' code:
<https://developers.google.com/maps/documentation/javascript/tutorial#Audience>
3. Change the generic 'YOUR_API_KEY' to your actual key in the code

```
    }  
  </script>  
  <script src="https://maps.googleapis.com/maps/api/js?key=YOUR_API_KEY&callback=initMap" async defer></script>  
</body>  
</html>
```

4. Save doc as an .htm file (i.e. HelloWorld.htm)

```
!DOCTYPE html> ← Declaring the use of HTML5
```

```
html>
```

```
<head>
```

```
<title>Simple Map</title>
```

```
<meta name="viewport" content="initial-scale=1.0">
```

```
<meta charset="utf-8">
```

```
<style>
```

```
html, body {  
  height: 100%;  
  margin: 0;  
  padding: 0;  
}  
#map {  
  height: 100%;  
}
```

← Style of the webpage, including how much of the page the map should take up.

```
</style>
```

```
</head>
```

```
<body>
```

```
<div id="map"></div>
```

```
<script>
```

```
var map;
```

```
function initMap() {
```

```
  map = new google.maps.Map(document.getElementById('map'), { ← Map type
```

```
    center: {lat: -34.397, lng: 150.644}, ← Starting location of the center of the map
```

```
    zoom: 8 ← Starting zoom level
```

```
  });
```

```
}
```

```
</script>
```

```
<script src="https://maps.googleapis.com/maps/api/js?key=YOUR_API_KEY&callback=ini  
  async defer"></script>
```

```
</body>
```

```
/html>
```

zoom approx. scale

0 1:500m

1 1:250m

2 1:150m

3 1:70m

4 1:35m

5 1:15m

6 1:10m

7 1:4m

8 1:2m

9 1:1m

10 1:500,000

11 1:250,000

12 1:150,000

13 1:70,000

14 1:35,000

15 1:15,000

16 1:8,000

17 1:4,000

18 1:2,000

19 1:1,000

Creating a map with Google Maps Javascript API

- Let's add an 'event' to our map:

<https://developers.google.com/maps/documentation/javascript/examples/event-simple>

- Use the Sample Code to modify or change a few elements of the map:

<https://developers.google.com/maps/documentation/javascript/examples/>

Limitations to Google Maps

- ‘Googlization’ of maps: when people with absolutely no cartographic training create maps
- Promotes inaccuracies
 - ▣ Standardized web Mercator projection so that the full screen could be utilized
 - ▣ If google has incorrect data, so do all maps based on google
- All base maps are created & generalized by google
 - ▣ No ability to remove irrelevant information to your map or add more detail when necessary

Power of Google

- Google has the power to delete things from reality & distort reality
 - ▣ Public accepts google maps as official and legitimate
 - ▣ If something doesn't exist on the google map, then it doesn't exist in reality
- In 2010, Nicaragua invaded Costa Rica after a commander mistakenly thought CR was occupying an island that rightfully belonged to Guatemala; Google had incorrectly represented the border