

# Geography 485L/585L - Internet Mapping

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Spring 2018

## Week 10 - Module 2b - OpenLayers 4 Javascript Framework

### Overview

- Capabilities
- OpenLayers = Javascript (by example)

### OpenLayers Capabilities

- Support for Multiple basemaps: *BingMaps*, *OpenStreetMap*, *Stamen*
- Model for interaction with multiple map server platforms: *ArcGIS* (REST), *MapServer*, *GeoServer*
- Support for key OGC standards: *WMS*, *WMTS*, *WFS*, *GML*, *KML*
- Multiple control types: *Attribution*, *Zoom*, *Overview*, *Scale*, *FullScreen*, *Graticule*
- Custom styled features with associated attributes: *Curve*, *LinearRing*, *LineString*, *MultiLineString*, *MultiPoint*, *MultiPolygon*, *Point*, *Polygon*
- Support for many formats for data read and write: *ATOM*, *GML* (1, 2, 3), *GeoJSON*, *GPX*, *KML*, *WKT*, any many others
- Open Source, enabling modification and integration into other systems (e.g. [GeoExt](#))

### Distinguishing Characteristics Between OpenLayers and Google Maps

- Greater emphasis on client-side processing - Client access and rendering of data files that Google's servers otherwise take care of (pros & cons to this approach)
- Integrated support for OGC services and their products
- Support for different projections (adds complexity)
- API more rich in options ==> more complexity

### Resources

[OpenLayers Home Page](#)

[Application Programming Interface \(API\) Reference](#)

[Examples](#)

## Demonstrations and Examples

OpenLayers\_01.html

```
1 <html>
2
3 <head>
4   <link rel="stylesheet" href="css/OpenLayers_01.css" type="text/css">
5
6   <!-- these two files are imported from a host that provides a hosted full
7   build of the OpenLayers package for development as documented here:
8   https://openlayers.org/download/ -->
9   <link
10     rel="stylesheet"
11     href="https://cdnjs.cloudflare.com/ajax/libs/openlayers/4.6.4/ol.css"
12     type="text/css">
13   <script
14     src="https://cdnjs.cloudflare.com/ajax/libs/openlayers/4.6.4/ol.js"
15     type="text/javascript">
16   </script>
17 </head>
18
19 <body>
20   <h1>This is a very simple OpenLayers 4 sample map page</h1>
21
22   <div id='map'><!-- This is where the map will be displayed --></div>
23
24   <!-- import the external Javascript file with the map configuration code -->
25   <script src="js/OpenLayers_01.js" type="text/javascript"></script>
26 </body>
27
28 </html>
```

OpenLayers\_01.js

```
1 // OpenLayers_01.js
2
3 var myMap = new ol.Map({
4   target: 'map',
5   layers: [
6     new ol.layer.Tile({
7       source: new ol.source.OSM()
8     })
9   ],
10  view: new ol.View({
11    center: ol.proj.fromLonLat([-106.624083,35.08427]),
12    zoom: 18
13  })
14 });
```

OpenLayers\_01.css

```
1 /* OpenLayers_01.css */
2
```

```

3  body {
4      width:100%;
5      height:100%
6  }
7
8  #map,.map {
9      width:600px;
10     height:400px;
11 }
12
13 #map_selector li {
14     cursor:pointer;
15     width:350px;
16 }
17
18 #map_selector li:hover {
19     background-color: yellow;
20 }
21
22
23
24 #map div.ol-viewport div.ol-overlaycontainer-stopevent
25 div.ol-overviewmap.ol-unselectable.ol-control.ol-uncollapsible {
26     top: 200px;
27     bottom: 300px;
28 }

```

## Demonstration and Examples - Online Resources

- [Basic Mapper](#) (with Open Street Map base map ([source](#)))
- [Mapper](#) ([source](#)) with a variety of base maps (Bing, Stamen, OSM) and basic layer selection
- Basic Mapper with Controls: [No Controls](#) ([source](#)), [Customized Controls](#) ([source](#))

## Next Week - Custom Features and WMS Layers

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