Wydział Geodezji i Kartografii
Politechnika Warszawska

Leaflet

WPROWADZENIE

mgr inż. Oskar Graszka

Leaflet

Czym jest *Leaflet*?

- Interaktywne mapy internetowe
- Javascript – język skryptowy
- open source
- biblioteka darmowa

Desktop

Chrome
Firefox
Safari 5+
Opera 12+
IE 7–11
Edge

Mobile

Safari for iOS 7+
Android browser 2.2+, 3.1+, 4+
Chrome for mobile
Firefox for mobile
IE10+ for Win8 devices

Leaflet

Alternatywne rozwiązania

Google Maps API

OpenLayers

Mapnik

mapnik

Składnia HTML

treść nagłówkowa

element służący do umieszczania skryptów

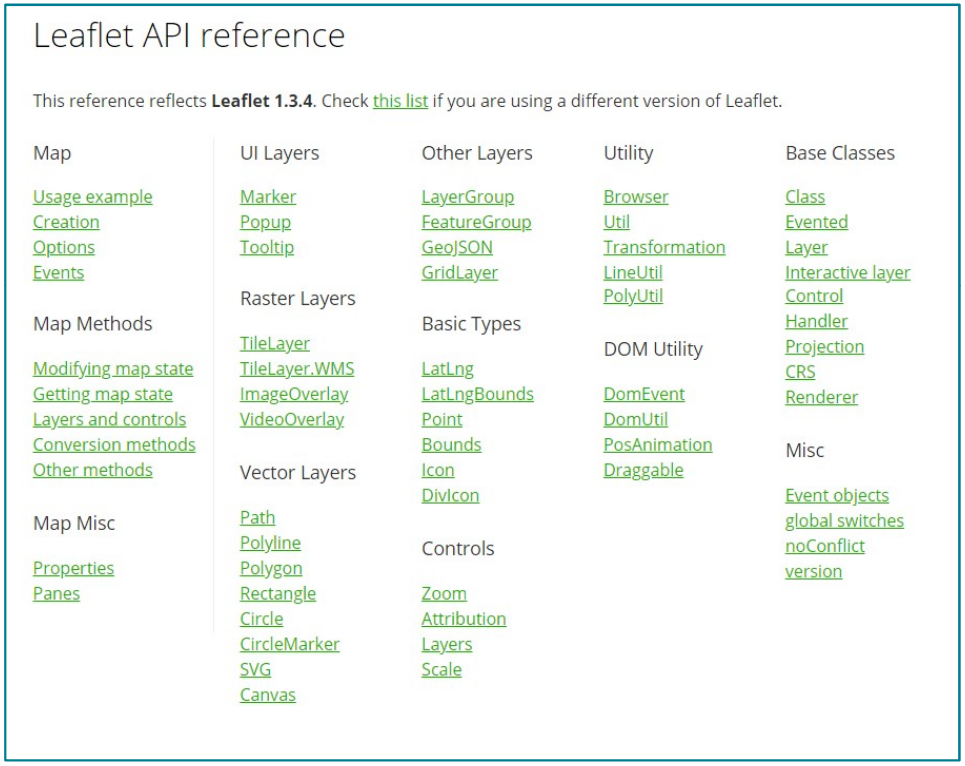
podłączenie CSS

```
<!DOCTYPE html>
<html>

          <head>
          <title>Mój pierwszy geoportal w Leaflet</title>
          <meta charset="UTF-8">
           <link rel="icon" type="image/ico" href="favicon.ico"/>
          </head>

<body>
<div id="map"></div>
<script src="js/leaflet.js"></script>
<link rel="stylesheet" href="css/leaflet.css">

<script>

</script>

</body>
</html>
```

Leaflet

Jak zacząć?

Creation
Options
Events
Methods
Functions



Leaflet API reference

This reference reflects **Leaflet 1.3.4**. Check this list if you are using a different version of Leaflet.

Map

Usage example
Creation
Options
Events

Map Methods

Modifying map state
Getting map state
Layers and controls
Conversion methods
Other methods

Map Misc

Properties
Panes

UI Layers

Marker
Popup
Tooltip

Raster Layers

TileLayer
TileLayer.WMS
ImageOverlay
VideoOverlay

Vector Layers

Path
Polyline
Polygon
Rectangle
Circle
CircleMarker
SVG
Canvas

Other Layers

LayerGroup
FeatureGroup
GeoJSON
GridLayer

Basic Types

LatLng
LatLngBounds
Point
Bounds
Icon
DivIcon

Controls

Zoom
Attribution
Layers
Scale

Utility

Browser
Util
Transformation
LineUtil
PolyUtil

DOM Utility

DomEvent
DomUtil
PosAnimation
Draggable

Base Classes

Class
Evented
Layer
Interactive layer
Control
Handler
Projection
CRS
Renderer

Misc

Event objects
global switches
noConflict
version

https://leafletjs.com

stackoverflow

https://stackoverflow.com/questions/tagged/leaflet

StackExchange

Geographic Information Systems

https://gis.stackexchange.com/questions/tagged/leaflet

https://github.com/Leaflet/Leaflet/issues

Jak zacząć?

<style> / CSS

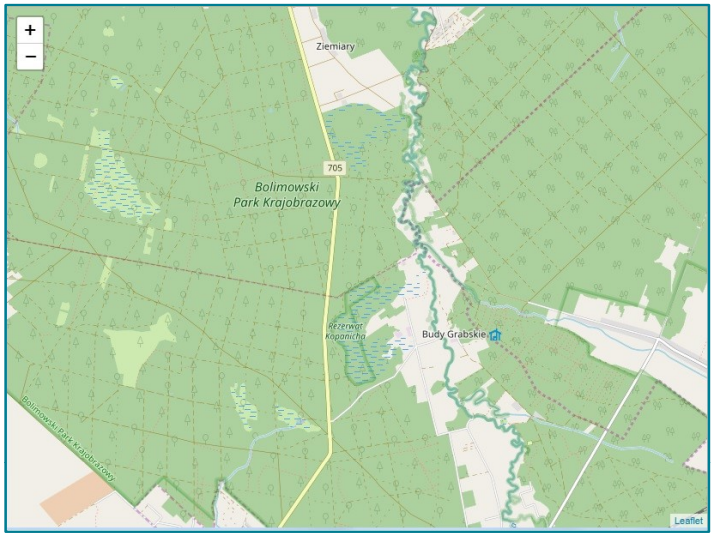
```
<head>
<style>
        html, body, #map {
            width: 100%;
            height: 100%;
            padding: 0;
            margin: 0;
        }
</style>
<title>Mój pierwszy geoportal w Leaflet</title>
<meta charset="UTF-8">
<link rel="icon" type="image/ico" href="favicon.ico"/>
</head>

<body>
<div id="map"></div>
<script src="js/leaflet.js"></script>
<link rel="stylesheet" href="css/leaflet.css">

<script>

var mymap = L.map('map',{maxZoom:20}).setView([52.02, 20.19], 13);

</script>
```

w tym miejscu strony znajdzie się mapa

mapa jest zmienną

L.map(<String> *id*, <Map options>*options?*)

Tile Layer




```
<script>

var mymap = L.map('map',{maxZoom:20}).setView([52.02, 20.19], 13);

var OpenStreetMap = L.tileLayer('https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png?{foo}', {foo: 'bar'});
OpenStreetMap.addTo(mymap);

</script>
```

dodanie nowej zmiennej do widoku mapy

L.tilelayer(<String> *urlTemplate*,<TileLayer options> *options?*)

Marker, Popup, Tooltip

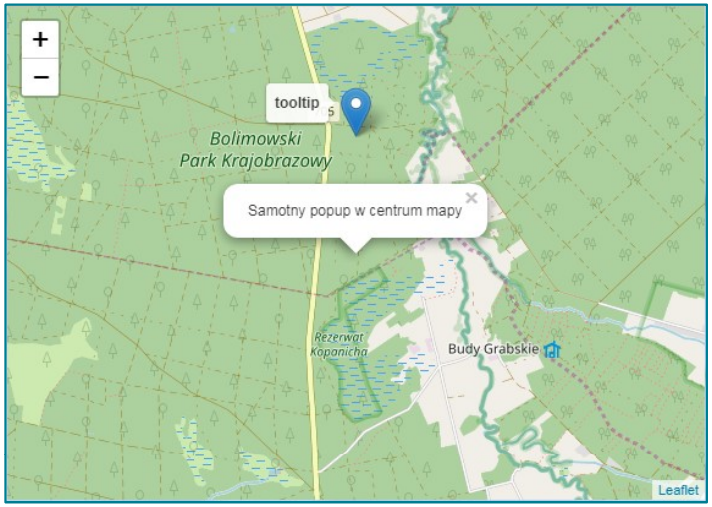
L.popup(<Popup options>*options?*, <Layer>*source?*)

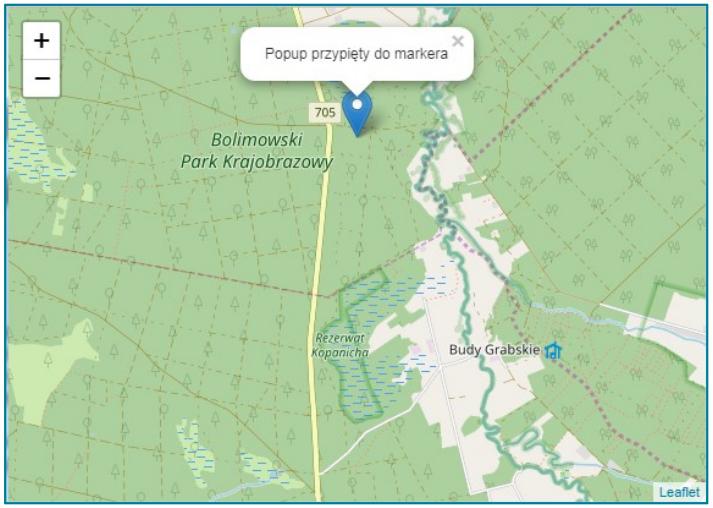
Methods:

setLatLng(<LatLng> *latlng*)
setContent(<String|HTMLElement|Function>*htmlContent*)
openOn(<Map> *map*)

```
var popup = L.popup()
    .setLatLng([52.02, 20.19])
    .setContent("Samotny popup w centrum mapy")
    .openOn(mymap);

var marker = L.marker([52.03, 20.19]).addTo(mymap);
marker.bindPopup("Popup przypięty do markera");
marker.bindTooltip("<b>tooltip</b>").openTooltip();
```

L.marker(<LatLng> *latlng*,<Marker options> *options?*)





Leaflet

JSON, GeoJSON

```
[
{ "type": "LineString", "coordinates": [[-100, 40], [-105, 45], [-110, 55]] },
{ "type": "LineString", "coordinates": [[-105, 40], [-110, 45], [-115, 55]] }
]
```

```
{
"type": "Feature",
"properties":{
            "name": "Coors Field",
            "amenity": "Baseball Stadium",
            "popupContent": "This is where the Rockies play!" },
"geometry":{
            "type": "Point„,
            "coordinates": [-104.99404, 39.75621]
}
}
```

Leaflet

GeoJSON

```
{
"type": "FeatureCollection",
"name": „my_points",
"crs": { "type": "name", "properties": { "name": "urn:ogc:def:crs:OGC:1.3:CRS84" } },
"features":
            [
            { "type": "Feature", "properties": {……}, "geometry": { "type": "Point", "coordinates": [ 20.093423556996505, 51.958289078859138 ] }
},
            .
            .
            .
            ]
}
```

```
var geojson_points = {    }
```

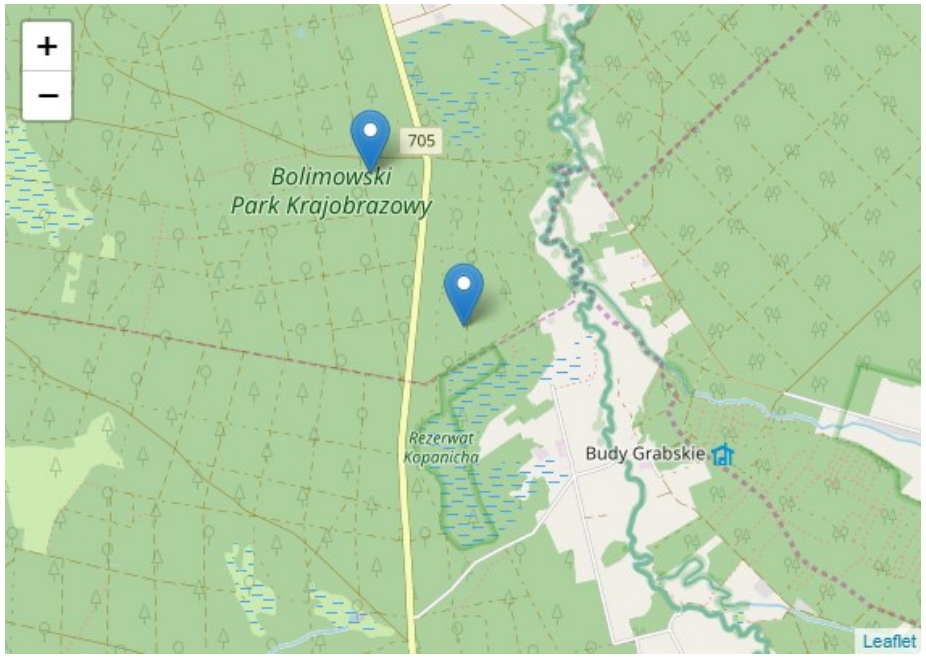
.gjson ⇨ .js

```
<script src="data/my_points.js"></script>
```

Leaflet

GeoJSON

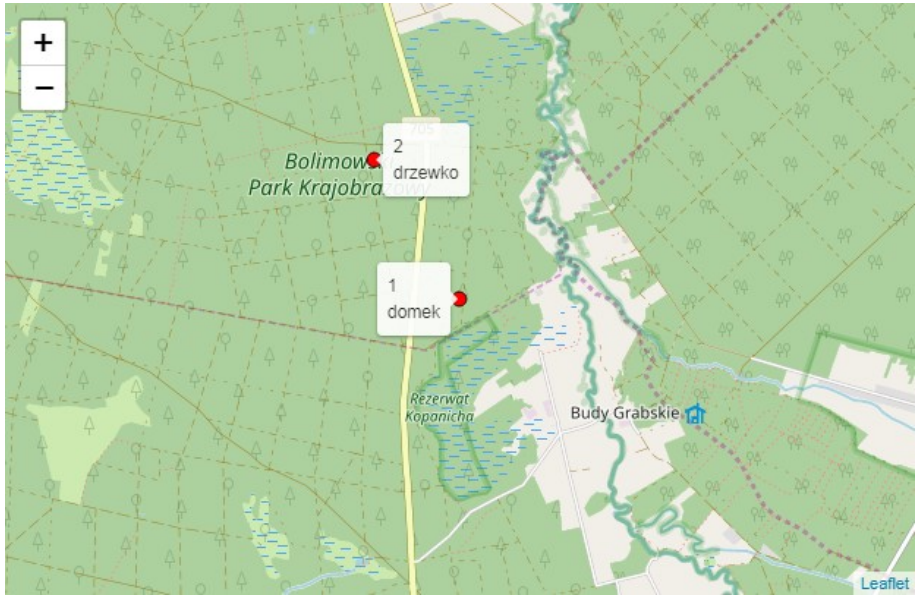
```
var geojson_points = {
            "type": "FeatureCollection",
            "name": "my_points",
            "crs": { "type": "name", "properties": { "name": "urn:ogc:def:crs:OGC:1.3:CRS84" } },
            "features":
            [
            { "type": "Feature", "properties": {"nazwa": "domek", "liczba": 1}, "geometry": { "type": "Point", "coordinates": [ 20.19, 52.02 ] } },
            { "type": "Feature", "properties": {"nazwa": "drzewko", "liczba": 2}, "geometry": { "type": "Point", "coordinates": [ 20.18, 52.03 ] } }
            ]
}

var points_layer = L.geoJSON(geojson_points).addTo(mymap);
```



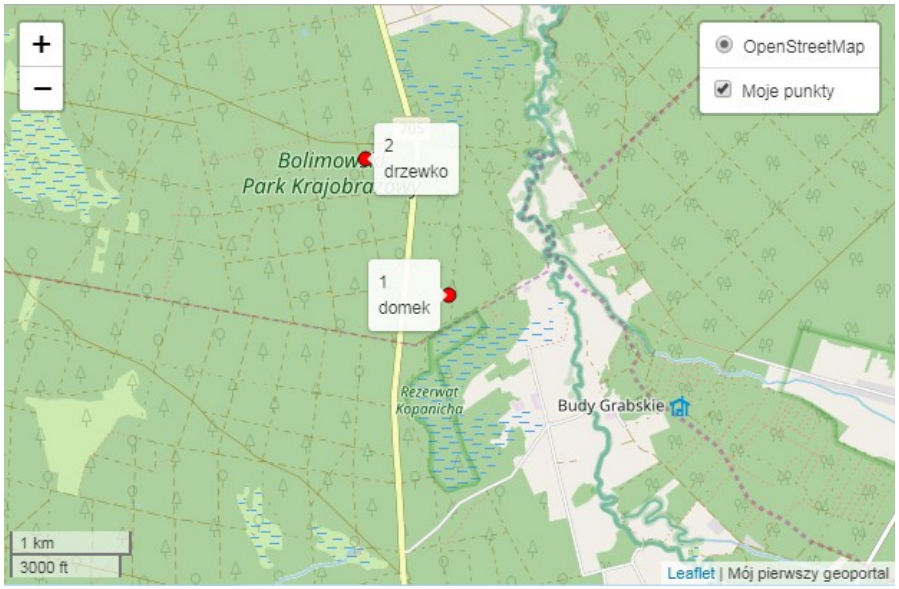
Leaflet

GeoJSON

```
var points_layer = L.geoJson(geojson_points,{
                                    onEachFeature: oEF,
                                    pointToLayer: PToL
                        }).addTo(mymap);

                        function PToL(feature,latlng) {
                                    style = {radius: 5, opacity: 1, color: 'rgba(0,0,0,1.0)', weight: 0.8, fill: true, fillOpacity: 1, fillColor: 'red'}
                                    return L.circleMarker(latlng,style);
                                    }

                        function oEF (feature, layer) {
                                    var props = feature.properties;
                                    layer.bindTooltip(props.liczba+'<br>'+props.nazwa,
                                    {permanent:true}
                                    );
                        }
```



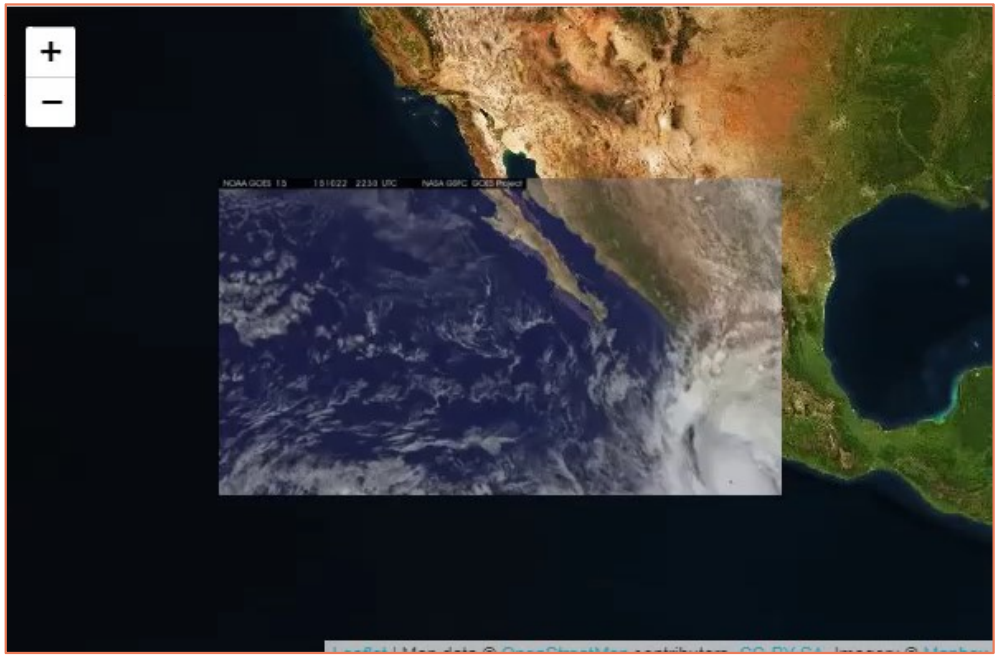
Controls




```
var baseLayers = {
    "OpenStreetMap": OpenStreetMap
};
var overlays = {
    "Moje punkty": points_layer
};
L.control.layers(baseLayers, overlays).addTo(mymap);

L.control.scale().addTo(mymap);

mymap.attributionControl.setPrefix(
            '<a href="http://leafletjs.com">Leaflet</a> | Mój pierwszy geoportal'
);
```

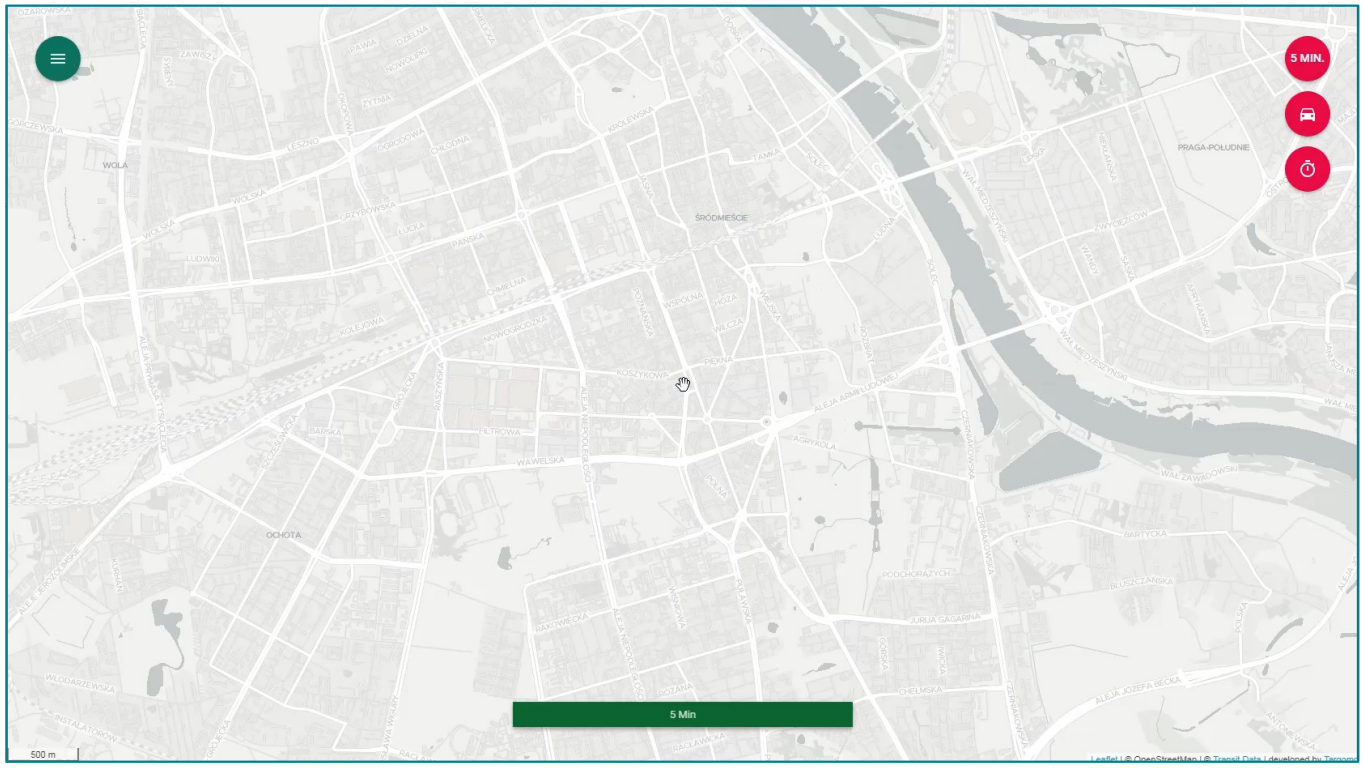
ImageOverlay, VideoOverlay

```
var videoUrls = [ 'https://www.mapbox.com/bites/00188/patricia_nasa.webm','https://www.mapbox.com/bites/00188/patricia_nasa.mp4' ];
var bounds = L.latLngBounds([[ 32, -130], [ 13, -100]]);
var videoOverlay = L.videoOverlay( videoUrls, bounds, { opacity: 0.8 }).addTo(mymap);
```



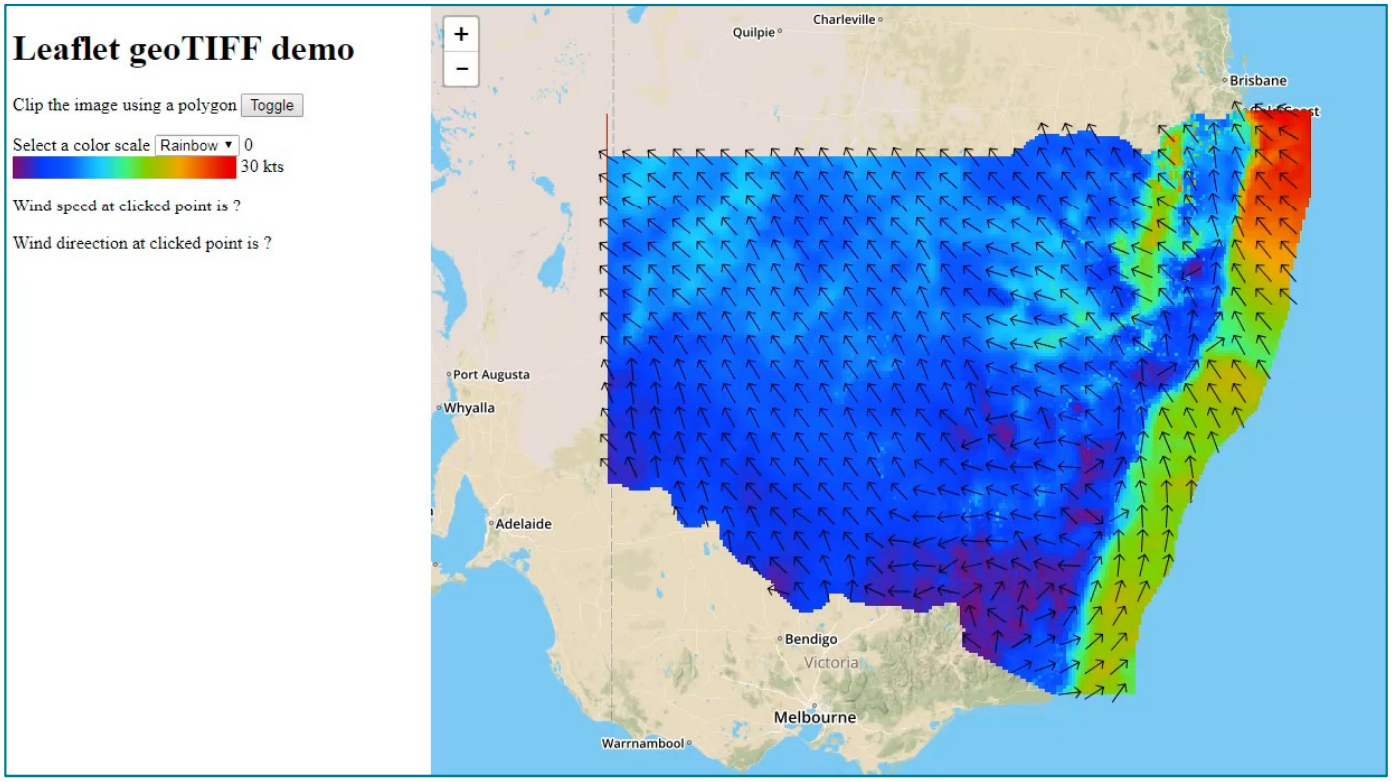
Plugin Route360°

Dynamiczna mapa dostępności z wykorzystaniem danych OSM



Plugin leaflet-geotiff

Wizualizacja danych z formatu TIFF



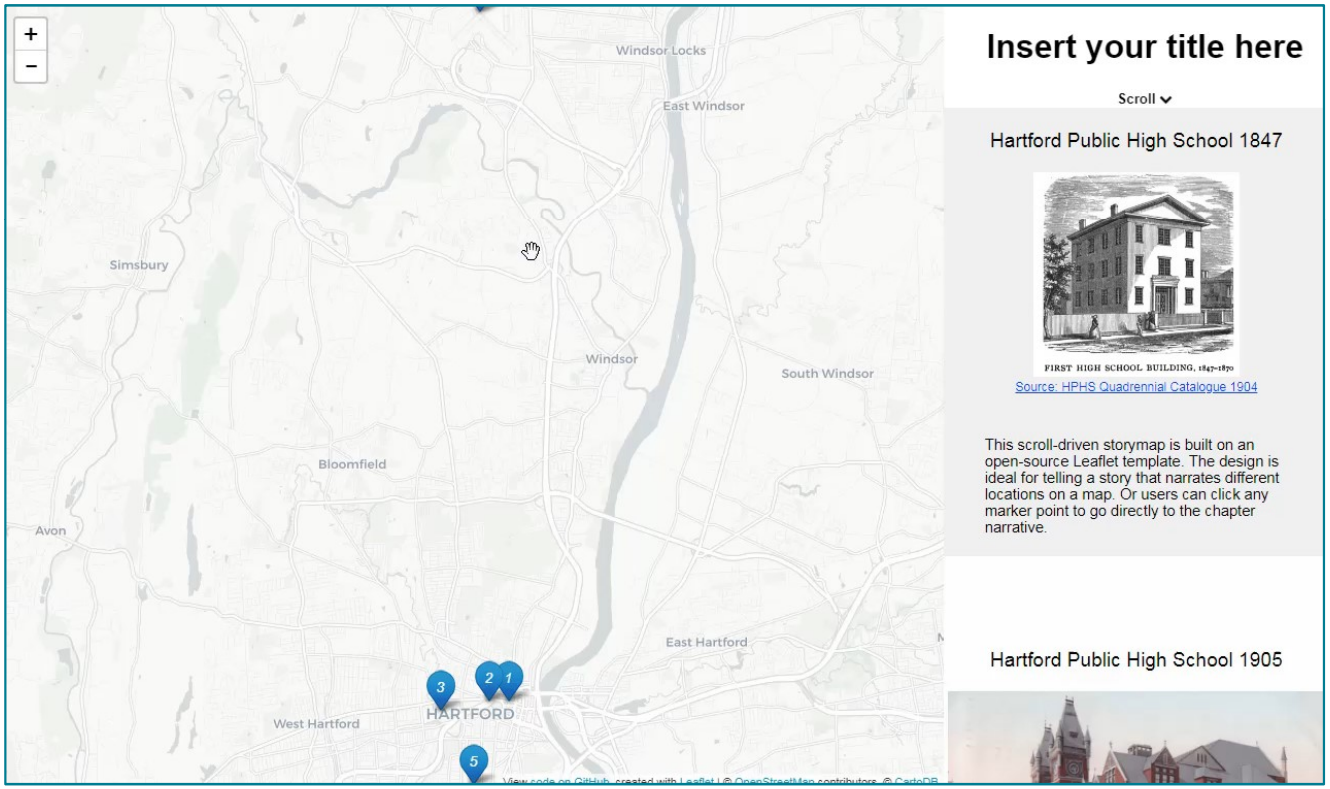
Kolory z palety lub strzałki kierunkowe
Maska przycinająca
Możliwość odczytywania danych z mapy

Plugin wikipedia

Warstwa z geotagowanymi rekordami z Wikipedii

Plugin Storymap

„Mapa podążająca za treścią tekstu”



http://jackdougherty.github.io/leaflet-storymap/

Leaflet

Źródła:

https://leafletjs.com/
https://mapnik.org/
https://developers.google.com/maps/documentation

Dziękuję za uwagę