LEAFLET.JS : from ZERO to HERO

Special guests:

Lo Stretto Digitale

#ODS16 - Summer Edition - Messina, 03/09/2016

@opendatasicilia - @strettodigitale

WebGL
jQuery
JS
Lo
Leaflet

GIUSEPPE PIZZIMENTI

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https://github.com/gpizzimenti

http://leafletjs.com/

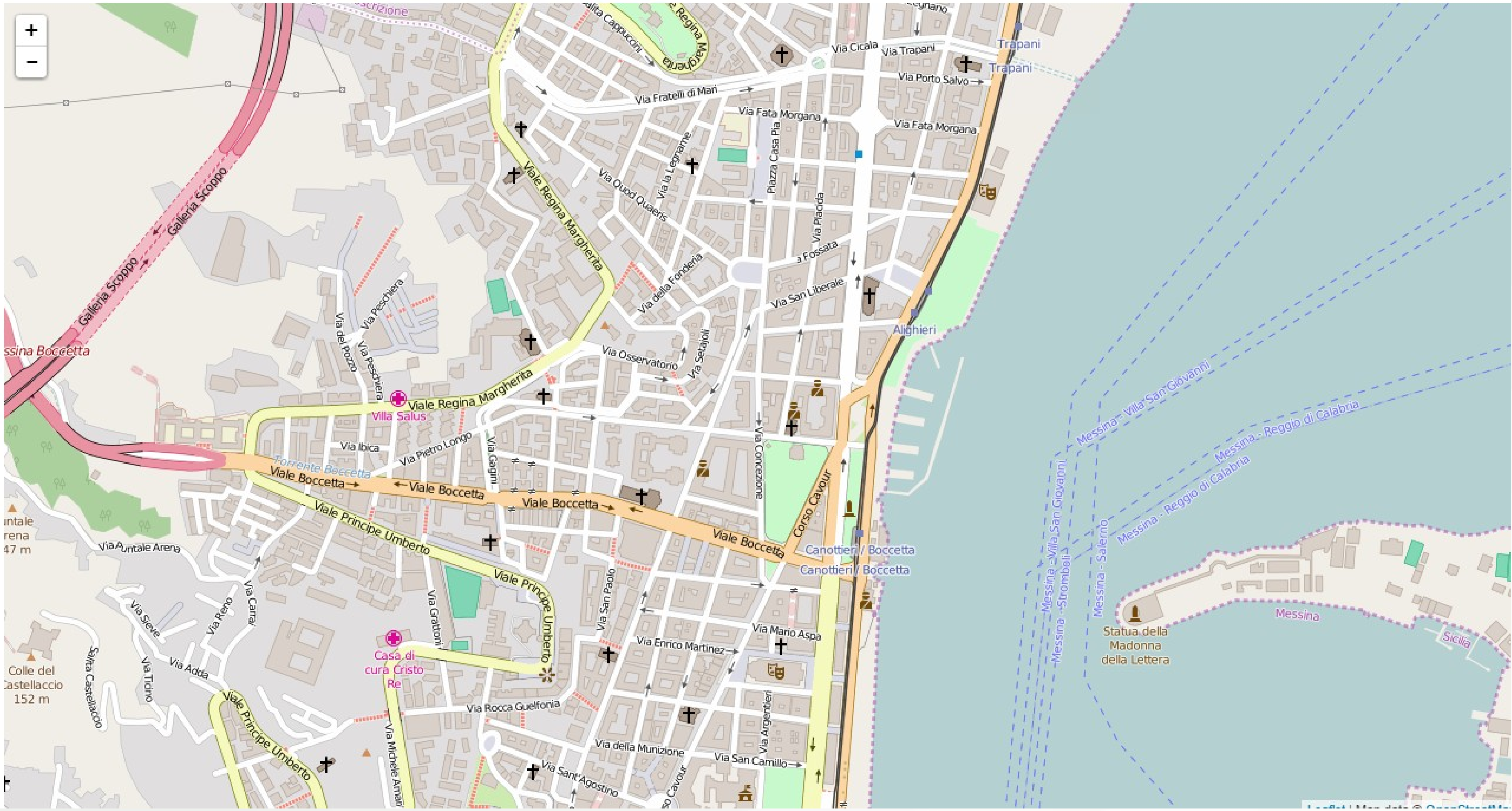
Es. 1 – Le componenti di base

```
<html>

 <head>
     <title>#ODS16 | Leaflet</title>
      <meta charset="utf-8" />

     <link rel="stylesheet" href="https://npmcdn.com/leaflet@0.7.7/dist/leaflet.css" />

     <script src="https://npmcdn.com/leaflet@0.7.7/dist/leaflet.js"></script>

 </head>

 <body>

     <div id="mapContainer" style="width: 100%; height: 100%"></div>

 </body>

</html>
```

Es. 2 – Il Tile Layer

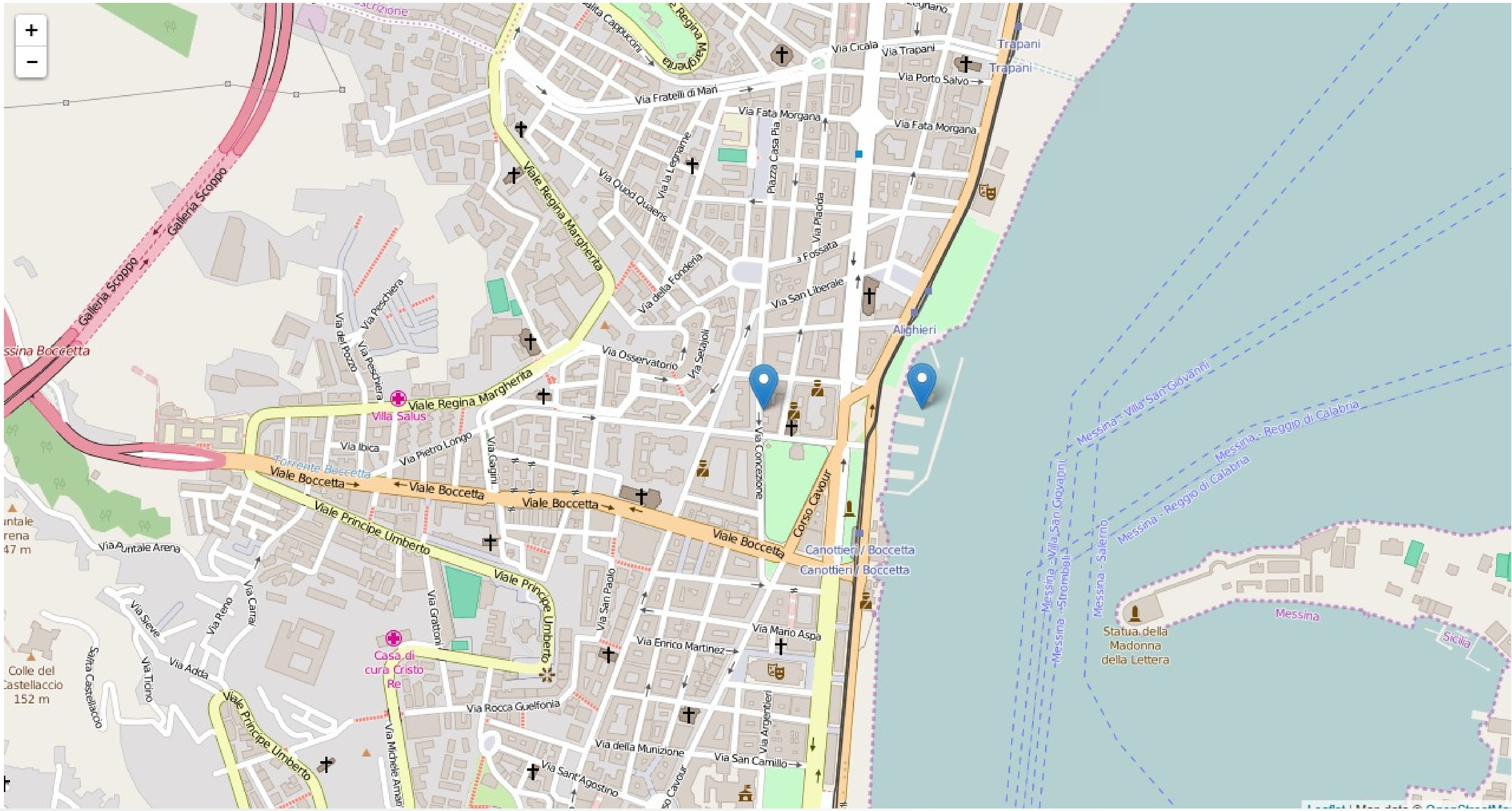
```
<div id="mapContainer" style="width: 100%; height: 100%"></div>
```

```
<script>
var mappa = L
           .map('mapContainer')
           .setView([38.19941,15.55602], 16); // LAT, LONG



          L
           .tileLayer(
               'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
               {
                   attribution: 'Map data &copy; <a
href="http://openstreetmap.org">OpenStreetMap</a>',
                   maxZoom: 20
               }
           )
          .addTo(mappa);

</script>
```


+
−
Trapani
Via Cicala
Via Trapani
Via Porto Salvo
Via Fratelli di Mari
Via Fata Morgana
Via Fata Morgana
Piazza Casa Pia
Via la Legname
Via Placida
Via Quod Quaeris
Viale Regina Margherita
Galleria Scoppo
Galleria Scoppo
Via della Fonderia
Via San Liberale
Alighieri
Via Peschiera
Via del Pozzo
Via Osservatorio
Via Sediaioli
Villa Salus
Viale Regina Margherita
Via Ibica
Via Pietro Longo
Via Cagini
Torrente Boccetta
Viale Boccetta
Viale Boccetta
Viale Boccetta
Viale Boccetta
Via Concezione
Corso Cavour
Canottieri / Boccetta
Canottieri / Boccetta
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Reggio di Calabria
Messina - Villa San Giovanni
Messina - Stromboli
Messina - Salerno
Viale Principe Umberto
Viale Principe Umberto
Via Puntale Arena
Via Reno
Via Canali
Via Sieve
Via Adda
Via Tirino
Salita Castellaccio
Colle del Castellaccio
152 m
Casa di cura Cristo Re
Via Grattoni
Via San Paolo
Via Enrico Martinez
Via Mario Aspa
Via Rocca Guelfonia
Via Michele Amari
Viale Principe Umberto
Via della Munizione
Via San Camillo
Via Argentieri
Via Sant'Agostino
Statua della Madonna della Lettera
Messina
Sicilia

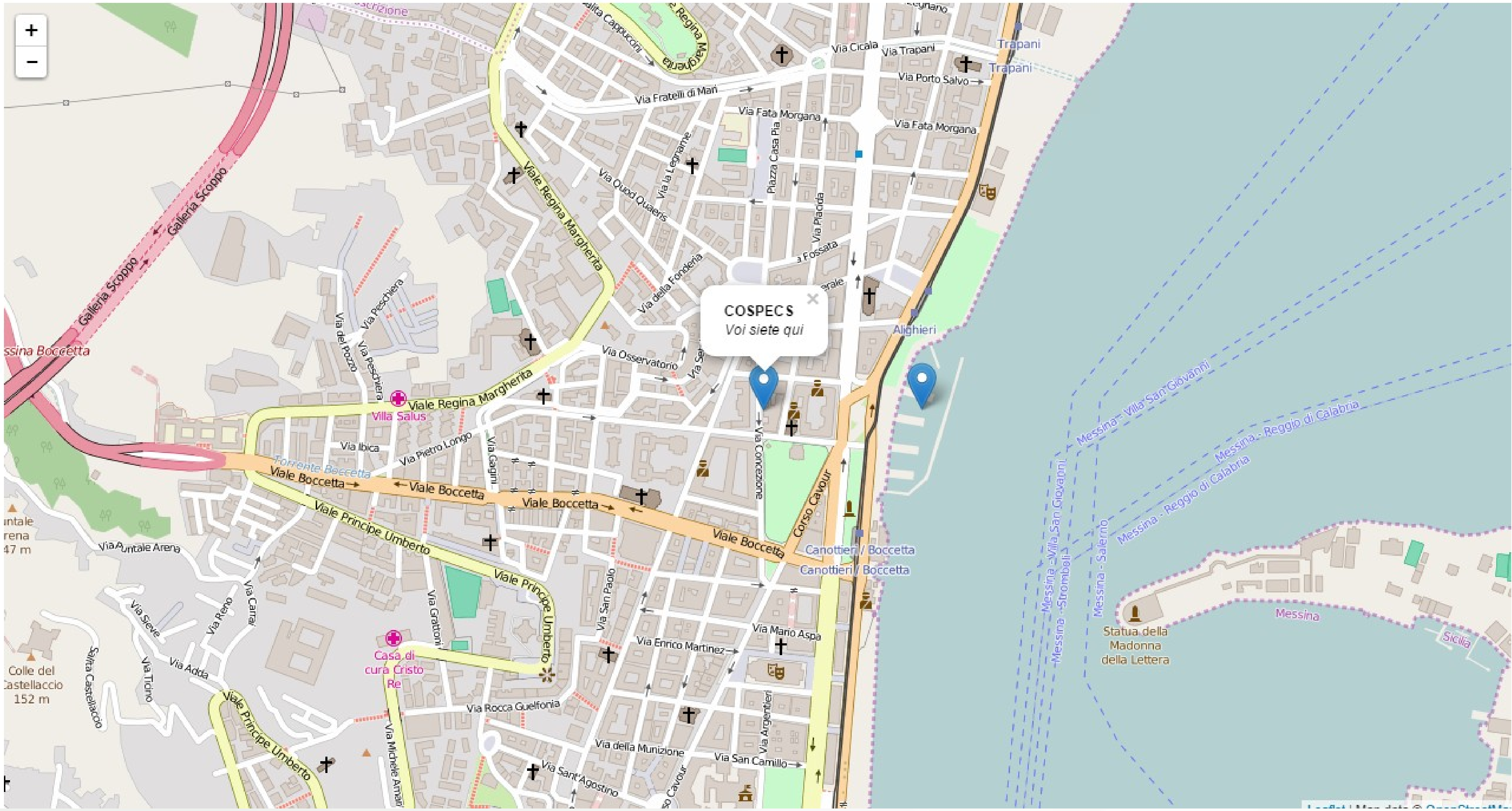
Es. 3 – Markers

```
<script>
var mappa = L
                  .map('mapContainer')
                  .setView([38.19941,15.55602], 16); // LAT, LONG



               L
                  .tileLayer(
                        'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                  {
                              attribution: 'Map data &copy; <a           href="http://openstreetmap.org">OpenStreetMap</a>',
                              maxZoom: 20,
                        }
                  )
               .addTo(mappa);



      var markerCospecs = L.marker([38.19941,15.55602])
                                    .addTo(mappa);

      var markerMarina = L.marker([38.19943,15.55889])
                                    .addTo(mappa);




</script>
```


+
−
Via Cicala
Via Trapani
Trapani
Trapani
Via Porto Salvo
Via Fratelli di Mari
Via Fata Morgana
Via Fata Morgana
Regina Margherita
Galleria Scoppo
Galleria Scoppo
Messina Boccetta
Viale Regina Margherita
Via Quod Quaeris
Via la Legname
Piazza Casa Pia
Via Placida
Fossata
Via San Liberale
Via della Fonderia
Alighieri
Via Peschiera
Via del Pozzo
Via Peschiera
Via Osservatorio
Via Sediaioli
Viale Regina Margherita
Villa Salus
Via Ibica
Via Pietro Longo
Via Cagini
Via Concezione
Torrente Boccetta
Viale Boccetta
Viale Boccetta
Viale Boccetta
Viale Boccetta
Corso Cavour
Viale Principe Umberto
Viale Principe Umberto
Via Puntale Arena
Canottieri / Boccetta
Canottieri / Boccetta
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Reggio di Calabria
Messina - Villa San Giovanni
Messina - Stromboli
Messina - Salerno
Via Sieve
Via Reno
Via Canal
Via Adda
Via Tirino
Salita Castellaccio
Colle del Castellaccio
152 m
Via Grattoni
Casa di cura Cristo Re
Via San Paolo
Via Enrico Martinez
Via Mario Aspa
Statua della Madonna della Lettera
Messina
Sicilia
Via Rocca Guelfonia
Viale Principe Umberto
Via Michele Amari
Via della Munizione
Via San Camillo
Via Argentieri
Via Sant'Agostino
Corso Cavour
Leaflet | Map data ©

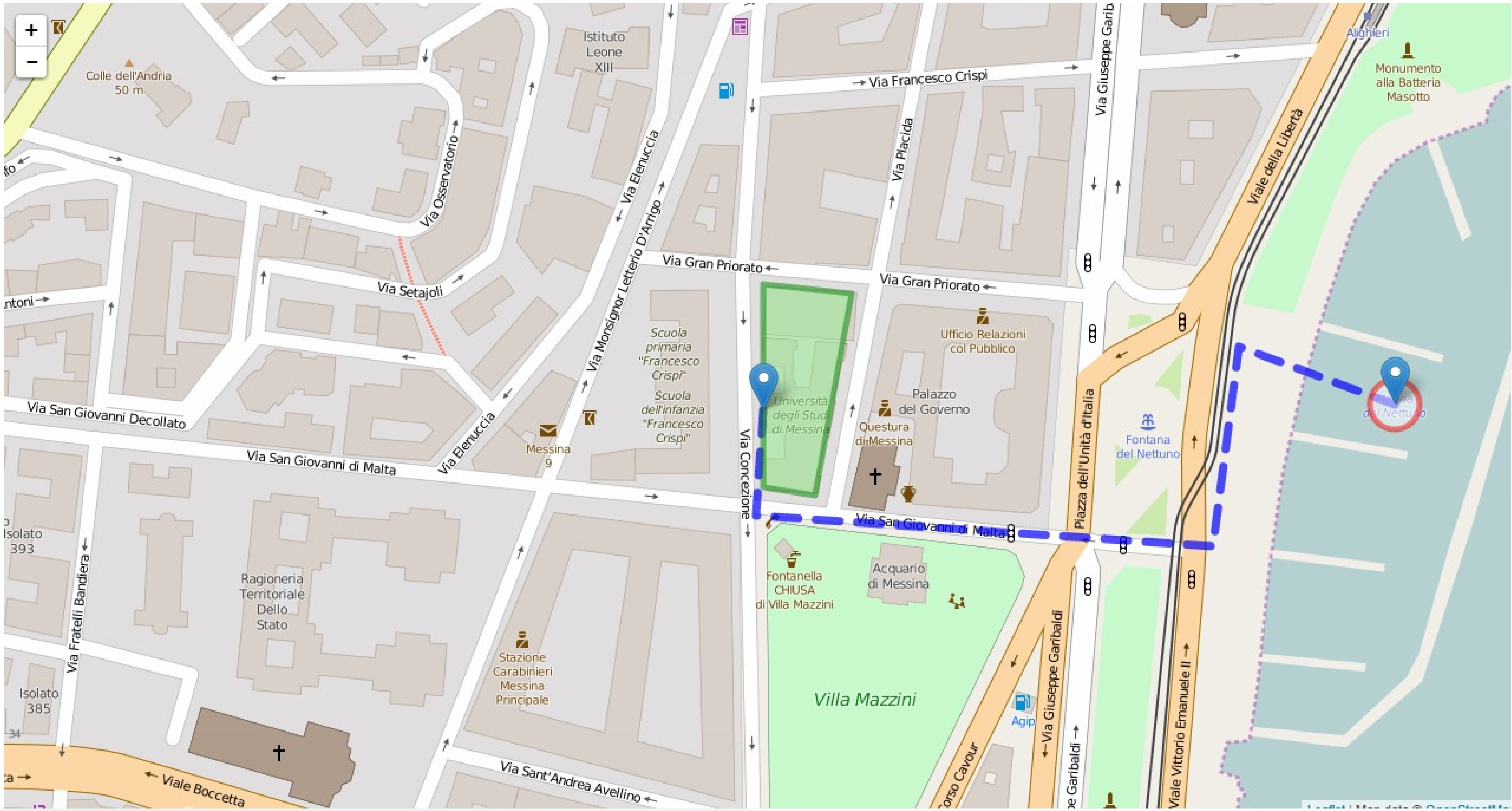
Es. 4 – Popups

```
<script>
var mappa = L
                   .map('mapContainer')
                   .setView([38.19941,15.55602], 16); // LAT, LONG



                L
                   .tileLayer(
                         'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                   {
                               attribution: 'Map data &copy; <a           href="http://openstreetmap.org">OpenStreetMap</a>',
                               maxZoom: 20,
                         }
                   )
                .addTo(mappa);


      var markerCospecs = L.marker([38.19941,15.55602])
                                  .addTo(mappa);

      var markerMarina = L.marker([38.19943,15.55889])
                                  .addTo(mappa);

      markerCospecs
          .bindPopup("<b>COSPECS</b><br><i>Voi siete qui</i>")
          .openPopup();

      markerMarina
          .bindPopup("<b>Marina del Nettuno</b><br><i>Stasera si va
qui</i>");


</script>
```


COSPECS
Voi siete qui
Viale Regina Margherita
Viale Boccetta
Viale Principe Umberto
Corso Cavour
Via Concezione
Villa Salus
Casa di cura Cristo Re
Galleria Scoppo
Canottieri / Boccetta
Alighieri
Trapani
Statua della Madonna della Lettera
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Colle del Castellaccio 152 m

Es. 5 – Linee, Cerchi e Poligoni

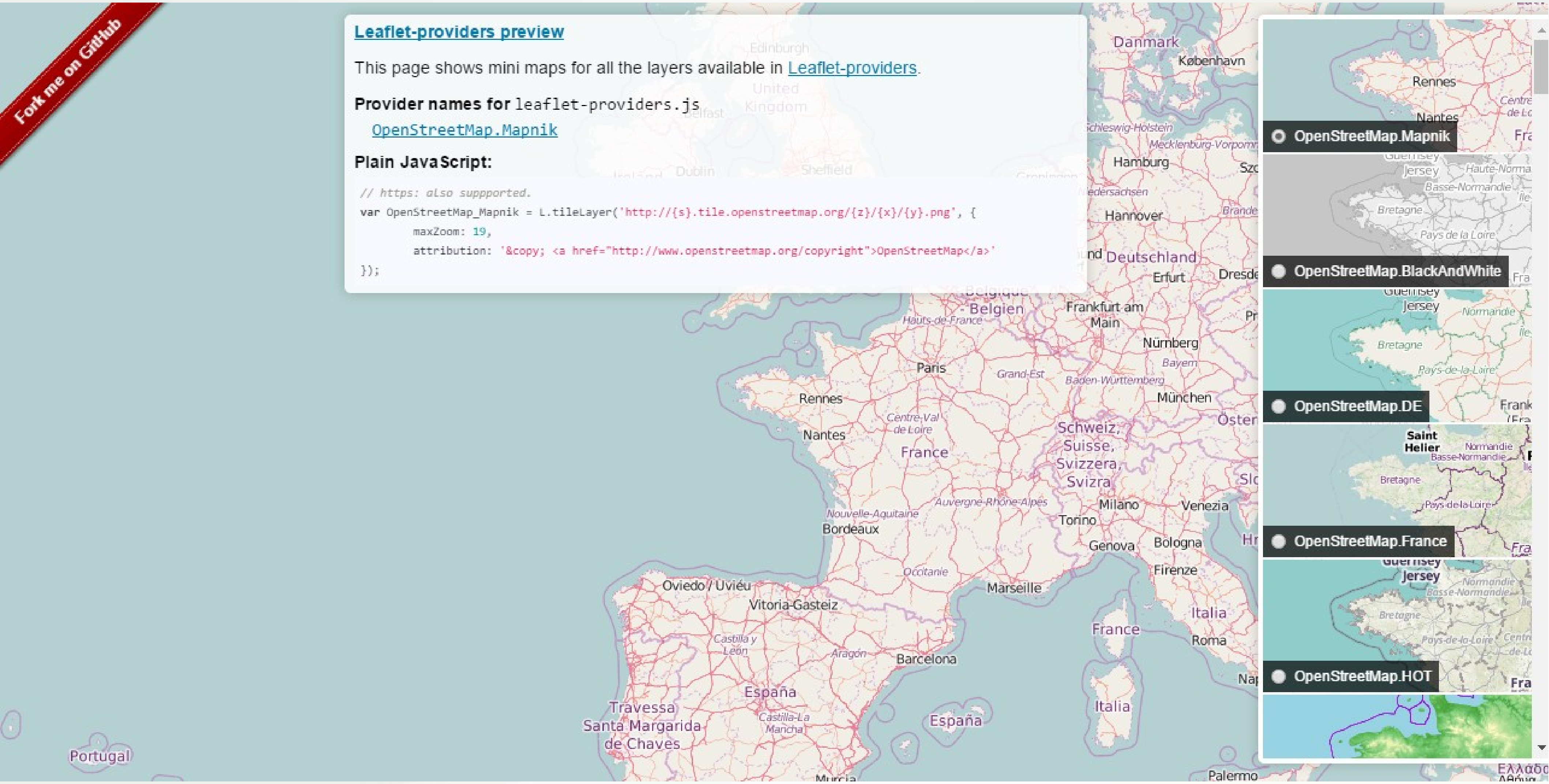
```
var percorso = L.polyline([
                          [38.19941,15.55602],
                          [38.199037,15.555988],
                          [38.198927,15.558060],
                          [38.199636,15.558178],
                          [38.19943,15.55889]
                         ],
                         {
                          color: 'blue',
                          weight: 7,
                          opacity: .7,
                          dashArray: '20,15',
                          lineJoin: 'round'
                         })
               .addTo(mappa);

var polyCospecs = L.polygon([
                            [38.199863 , 15.556016],
                            [38.199827 , 15.556423],
                            [38.199106 , 15.556257],
                            [38.199135 , 15.556021],
                           ],
                          {
                           color: 'green',
                           fillColor: 'lightgreen',
                           fillOpacity: 0.5
                          })
               .addTo(mappa);

var circleMarina = L.circle([38.19943,15.55889], 10, //raggio in mt.
                           {
                            color: 'red',
                            fillColor: '#FFF',
                            fillOpacity: 0.5
                           })
               .addTo(mappa);
```



Via Francesco Crispi
Via Gran Priorato
Via San Giovanni di Malta
Via Concezione
Via Placida
Via Giuseppe Garibaldi
Piazza dell'Unità d'Italia
Viale della Libertà
Viale Vittorio Emanuele II
Via Elenuccia
Via Monsignor Letterio D'Arrigo
Via Setajoli
Via Osservatorio
Via San Giovanni Decollato
Via Fratelli Bandiera
Viale Boccetta
Via Sant'Andrea Avellino
Corso Cavour
Colle dell'Andria 50 m
Istituto Leone XIII
Scuola primaria "Francesco Crispi"
Scuola dell'infanzia "Francesco Crispi"
Università degli Studi di Messina
Ufficio Relazioni col Pubblico
Palazzo del Governo
Questura di Messina
Messina 9
Fontana del Nettuno
Monumento alla Batteria Masotto
Alighieri
Fontanella CHIUSA di Villa Mazzini
Acquario di Messina
Villa Mazzini
Agip
Ragioneria Territoriale Dello Stato
Stazione Carabinieri Messina Principale
Isolato 393
Isolato 385
Marina del Nettuno

Es. 6 – Layer groups

https://leaflet-extras.github.io/leaflet-providers/preview/



Leaflet-providers preview

This page shows mini maps for all the layers available in Leaflet-providers.

Provider names for `leaflet-providers.js`

`OpenStreetMap.Mapnik`

Plain JavaScript:

```
// https: also suppported.
var OpenStreetMap_Mapnik = L.tileLayer('http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png', {
	maxZoom: 19,
	attribution: '&copy; <a href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>'
});
```

Es. 6 – Layer groups

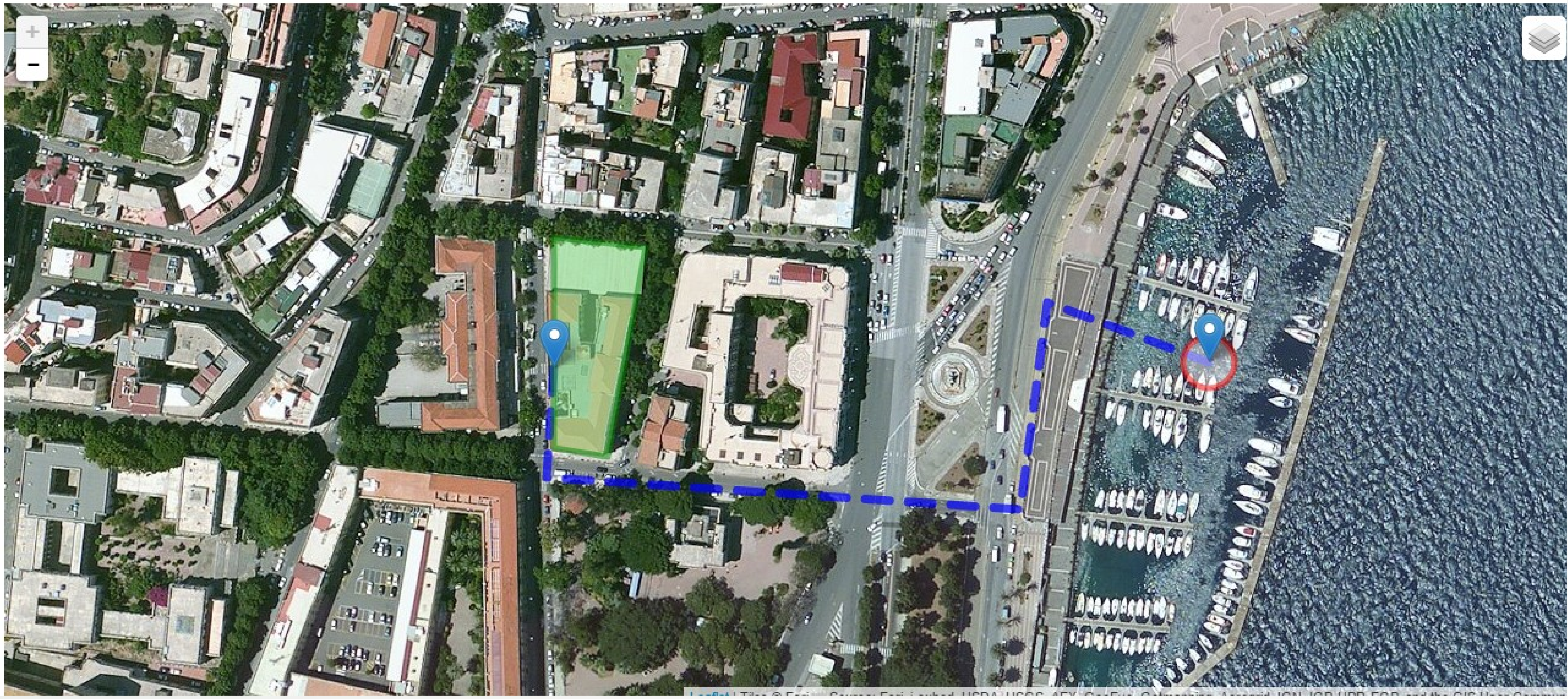
```
var mappa = L.map('mapContainer')
     .setView([38.19941,15.55602], 16); // LAT, LONG


var baseOpenStreetMap = L.tileLayer(
     'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
     {
        attribution: 'Map data &copy; <a href="http://openstreetmap.org">OpenStreetMap</a>',
        maxZoom: 18
     }
   )
   .addTo(mappa);

var baseOpenTopoMap = L.tileLayer(
     'http://{s}.tile.opentopomap.org/{z}/{x}/{y}.png',
     {
     attribution: 'Map data: &copy; <a
href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>, <a
href=”http://viewfinderpanoramas.org">SRTM</a> | Map style: &copy; <a
href="https://opentopomap.org">OpenTopoMap</a> (<a href="https://creativecommons.org/licenses/by-
sa/3.0/">CC-BY-SA</a>)',
     maxZoom: 18
     }
   );

var baseEsriWorldImageryMap = L.tileLayer(
     'http://server.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer/tile/{z}/{y}/{x}',
     {
     attribution: 'Tiles &copy; Esri &mdash; Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye,
Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Communit',
     maxZoom: 18
     }
   );
```

Es. 6 – Layer groups

```
var markerCospecs = L.marker([38.19941,15.55602]);


var markerMarina = L.marker([38.19943,15.55889]);


var percorso = L.polyline([
[38.19941,15.55602],
[38.199037,15.555988],
[38.198927,15.558060],
[38.199636,15.558178],
[38.19943,15.55889]
  ],
  {
color: 'blue',
weight: 7,
opacity: .7,
dashArray: '20,15',
lineJoin: 'round'
  });


var polyCospecs = L.polygon([
[38.199863 , 15.556016],
[38.199827 , 15.556423],
[38.199106 , 15.556257],
[38.199135 , 15.556021],
],
{
color: 'green',
fillColor: 'lightgreen',
fillOpacity: 0.5
});


var circleMarina = L.circle([38.19943,15.55889], 10, //raggio in mt.
{
color: 'red',
fillColor: '#FFF',
fillOpacity: 0.5
});
```

Es. 6 – Layer groups

```
var shapes = L.layerGroup([percorso, polyCospecs, circleMarina]);

var markers = L.layerGroup([markerCospecs, markerMarina]);

var baseLayers = {
    "Strade": baseOpenStreetMap,
    "Topografia": baseOpenTopoMap,
    "Fotografica" : baseEsriWorldImageryMap
    };

var overlays = {
    "Edifici & Percorsi": shapes,
    "Entrate": markers
    };

L.control
 .layers(baseLayers,overlays)
 .addTo(mappa);
```



JSON

è un semplice formato per lo scambio di dati basato su un sottoinsieme del Linguaggio di Programmazione JavaScript

```
var markers = [
     {
     "point":new GLatLng(40.266044,-74.718479),
     "homeTeam":"Lawrence Library",
     "awayTeam":"LUGip",
     "markerImage":"images/red.png",
     "information": "Linux users group meets second Wednesday of each month.",
     "fixture":"Wednesday 7pm",
     "capacity":"",
     "previousScore":""
     },
     {
     "point":new GLatLng(40.211600,-74.695702),
     "homeTeam":"Hamilton Library",
     "awayTeam":"LUGip HW SIG",
     "markerImage":"images/white.png",
     "information": "Linux users can meet the first Tuesday of the month to work out harward and
     configuration issues.",
     "fixture":"Tuesday 7pm",
     "capacity":"",
     "tv":""
     }
]
```

GeoJSON

è un formato aperto utilizzato per archiviare una collezione di geometrie spaziali i cui attributi sono descritti attraverso JSON.

```
var someFeatures = [{
    "type": "Feature",
    "properties": {
        "name": "Coors Field",
        "show_on_map": true
    },
    "geometry": {
        "type": "Point",
        "coordinates": [-104.99404, 39.75621]
    }
}, {
    "type": "Feature",
    "properties": {
        "name": "Busch Field",
        "show_on_map": false
    },
    "geometry": {
        "type": "Point",
        "coordinates": [-104.98404, 39.74621]
    }
}];
```

TopoJSON

è un'estensione di GeoJSON che codifica topologie invece di geometrie. (!)

GPX

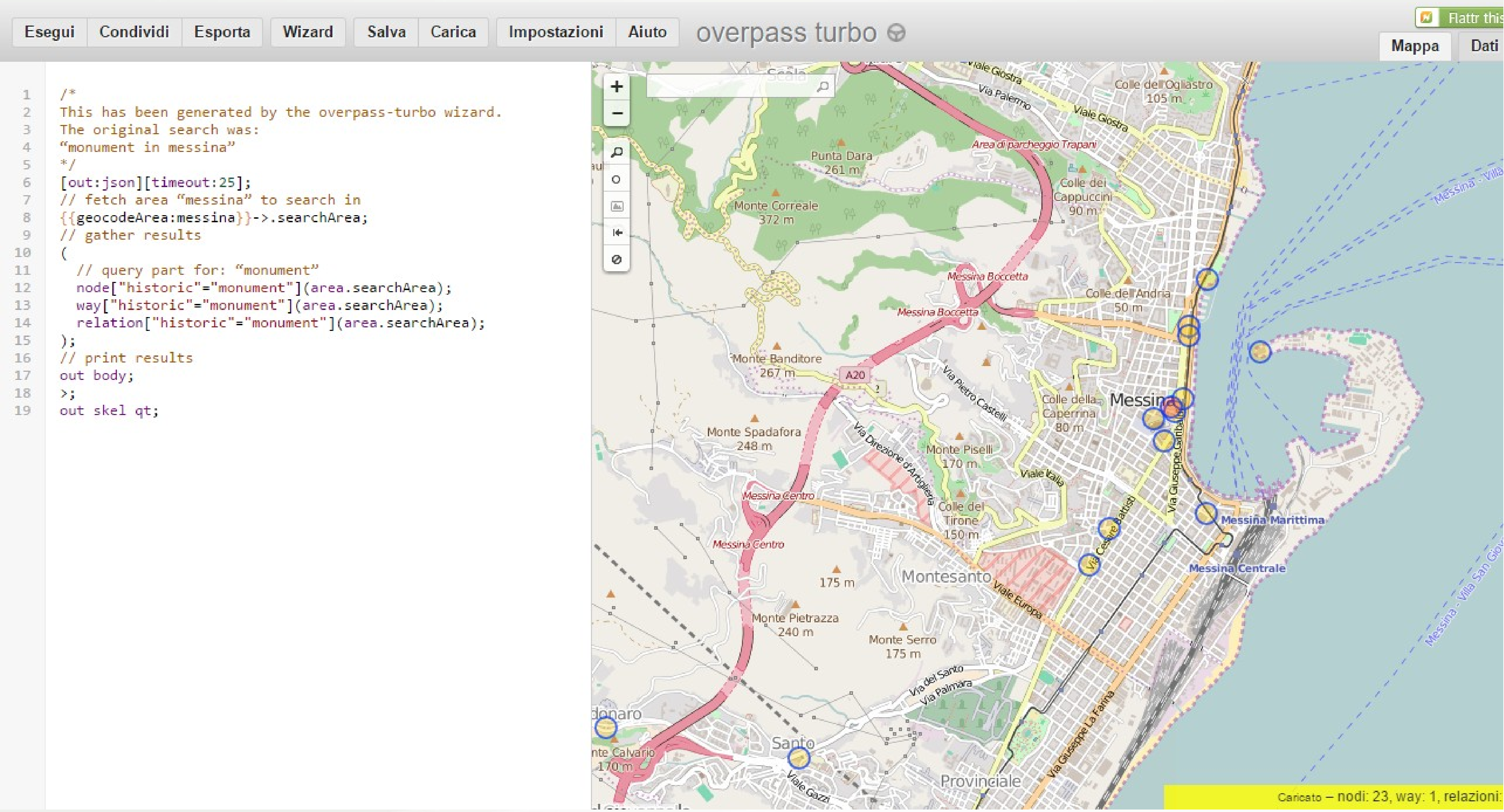
è uno schema XML progettato per il trasferimento di dati GPS tra applicazioni software.

KML

è un linguaggio basato su XML creato per gestire dati geospaziali in tre dimensioni nei programmi Google.

Es. 7 – GeoJSON e altri formati di dati

https://overpass-turbo.eu/

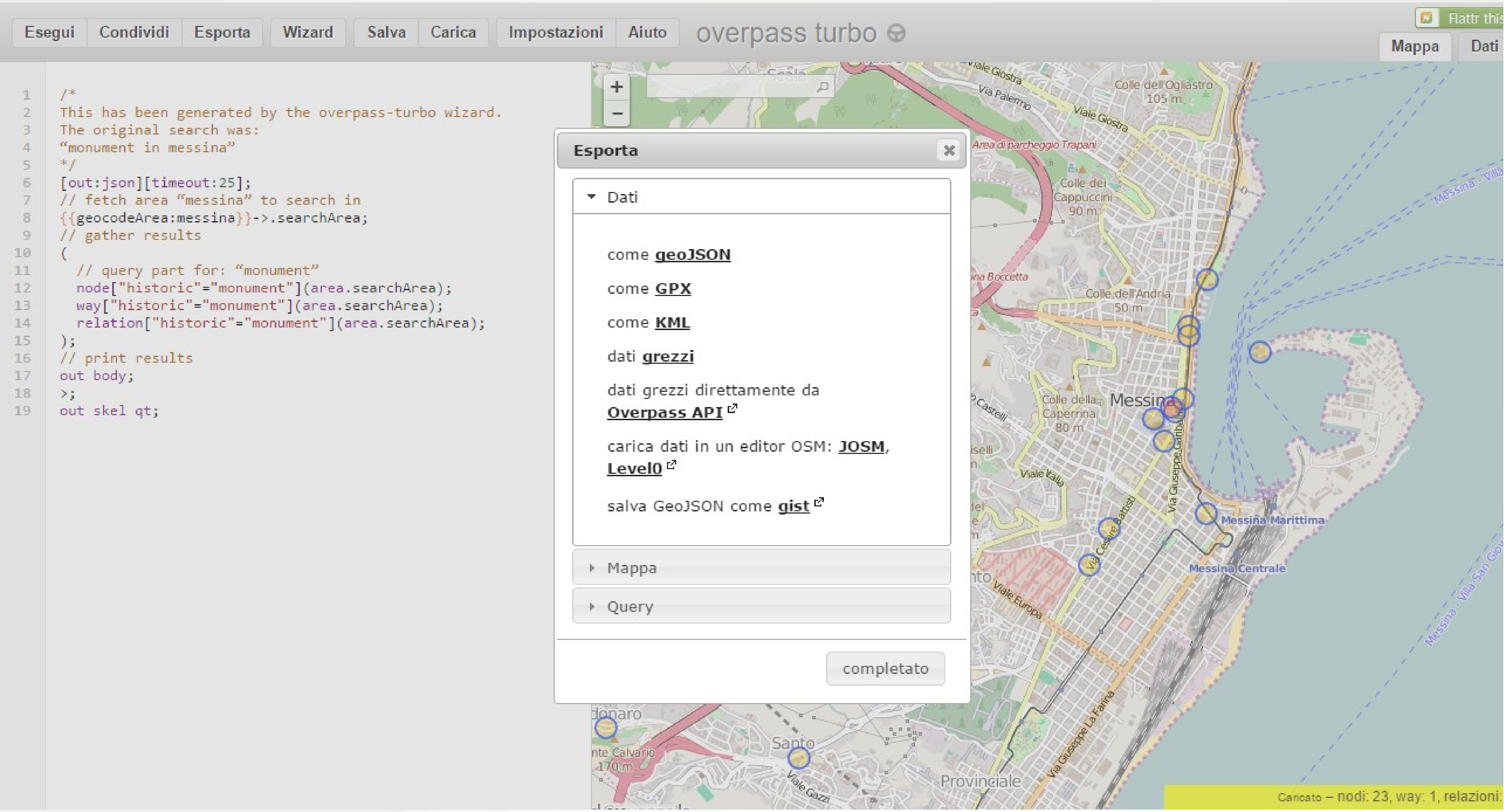


```
/*
This has been generated by the overpass-turbo wizard.
The original search was:
“monument in messina”
*/
[out:json][timeout:25];
// fetch area “messina” to search in
{{geocodeArea:messina}}->.searchArea;
// gather results
(
  // query part for: “monument”
  node["historic"="monument"](area.searchArea);
  way["historic"="monument"](area.searchArea);
  relation["historic"="monument"](area.searchArea);
);
// print results
out body;
>;
out skel qt;
```

Caricato – nodi: 23, way: 1, relazioni:

Es. 7 – GeoJSON e altri formati di dati

https://overpass-turbo.eu/



```
/*
This has been generated by the overpass-turbo wizard.
The original search was:
“monument in messina”
*/
[out:json][timeout:25];
// fetch area “messina” to search in
{{geocodeArea:messina}}->.searchArea;
// gather results
(
  // query part for: “monument”
  node["historic"="monument"](area.searchArea);
  way["historic"="monument"](area.searchArea);
  relation["historic"="monument"](area.searchArea);
);
// print results
out body;
>;
out skel qt;
```

Esporta

Dati

come **geoJSON**

come **GPX**

come **KML**

dati **grezzi**

dati grezzi direttamente da **Overpass API**

carica dati in un editor OSM: **JOSM**, **Level0**

salva GeoJSON come **gist**

Mappa

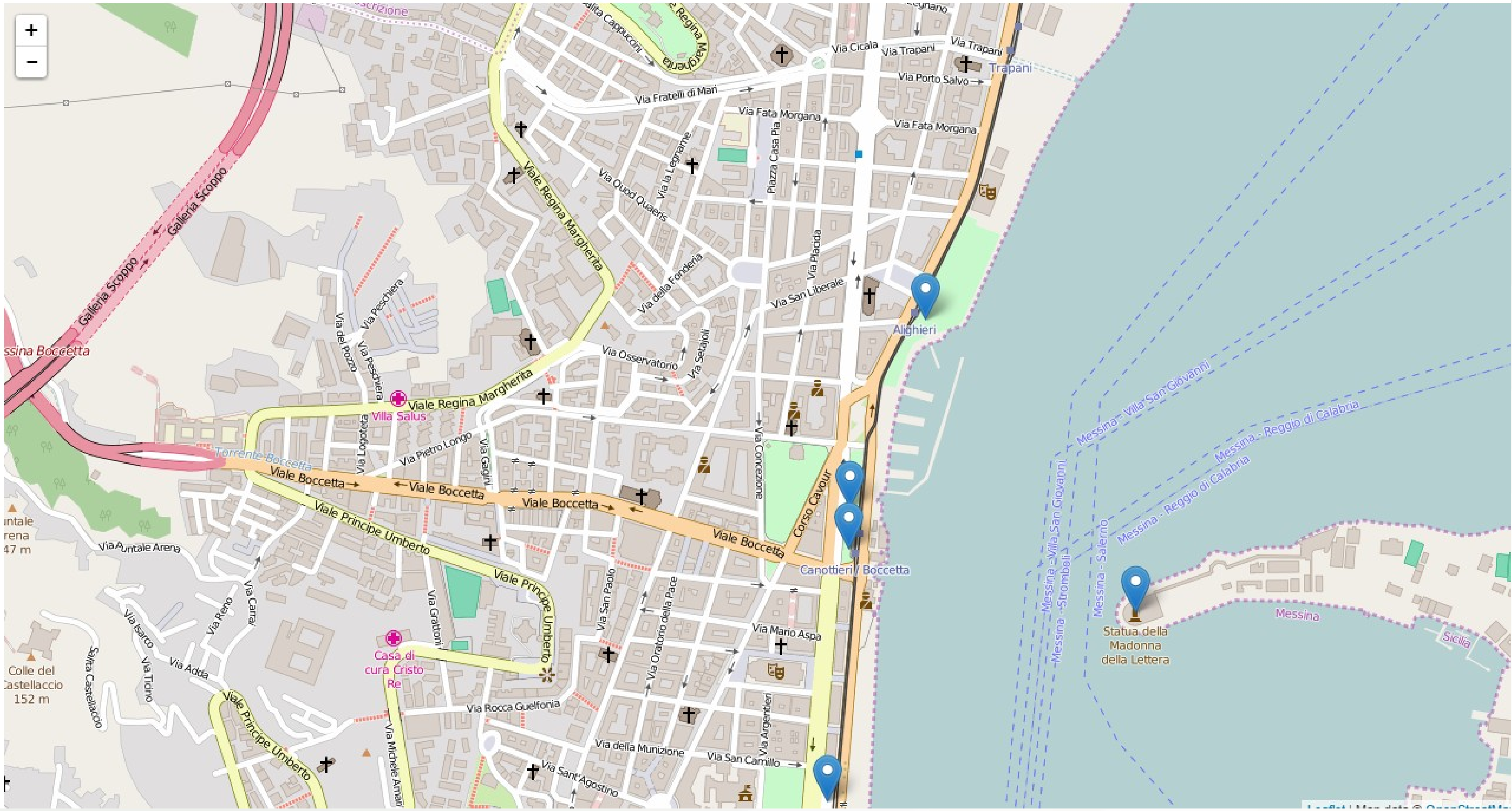
Query

completato

Caricato – nodi: 23, way: 1, relazioni:

Es. 7 – GeoJSON e altri formati di dati

```
<script src="../lib/jquery-3.1.0.min.js"></script>
<script>
var mappa = L.map('mapContainer')
    .setView([38.19941,15.55602], 16); // LAT, LONG


L.tileLayer(
        'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
        {
        attribution: 'Map data &copy; <a href="http://openstreetmap.org">OpenStreetMap</a>',
        maxZoom: 18,
        }
    )
 .addTo(mappa);


var $req = $.ajax({
     dataType: "json",
     url:
'https://gist.githubusercontent.com/gpizzimenti/e0bdc49ae9511a8e55b0a52a696c65fe/raw/d3b0f0aef521cd28c69bce52e089f71787d5f5ab/monumentsinmessina.overpass.geojson'
     });

$.when($req)
     .then(elaboraDati, gestisciErrore);


function elaboraDati(data) {
     var layerMonumenti = L.geoJson().addTo(mappa);
     layerMonumenti.addData(data);
};

function gestisciErrore() {
     alert("Si è verificato un errore!");
};

</script>
```


+
−
Trapani
Alighieri
Canottieri / Boccetta
Statua della Madonna della Lettera
Messina
Viale Regina Margherita
Viale Boccetta
Viale Principe Umberto
Corso Cavour
Galleria Scoppo
Villa Salus
Casa di cura Cristo Re
Torrente Boccetta
Colle del Castellaccio 152 m
Via Fata Morgana
Via San Liberale
Via Osservatorio
Via Concezione
Via Mario Aspa
Via Rocca Guelfonia
Via della Munizione
Via San Camillo
Via Sant'Agostino
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Sicilia
Leaflet | Map data ©

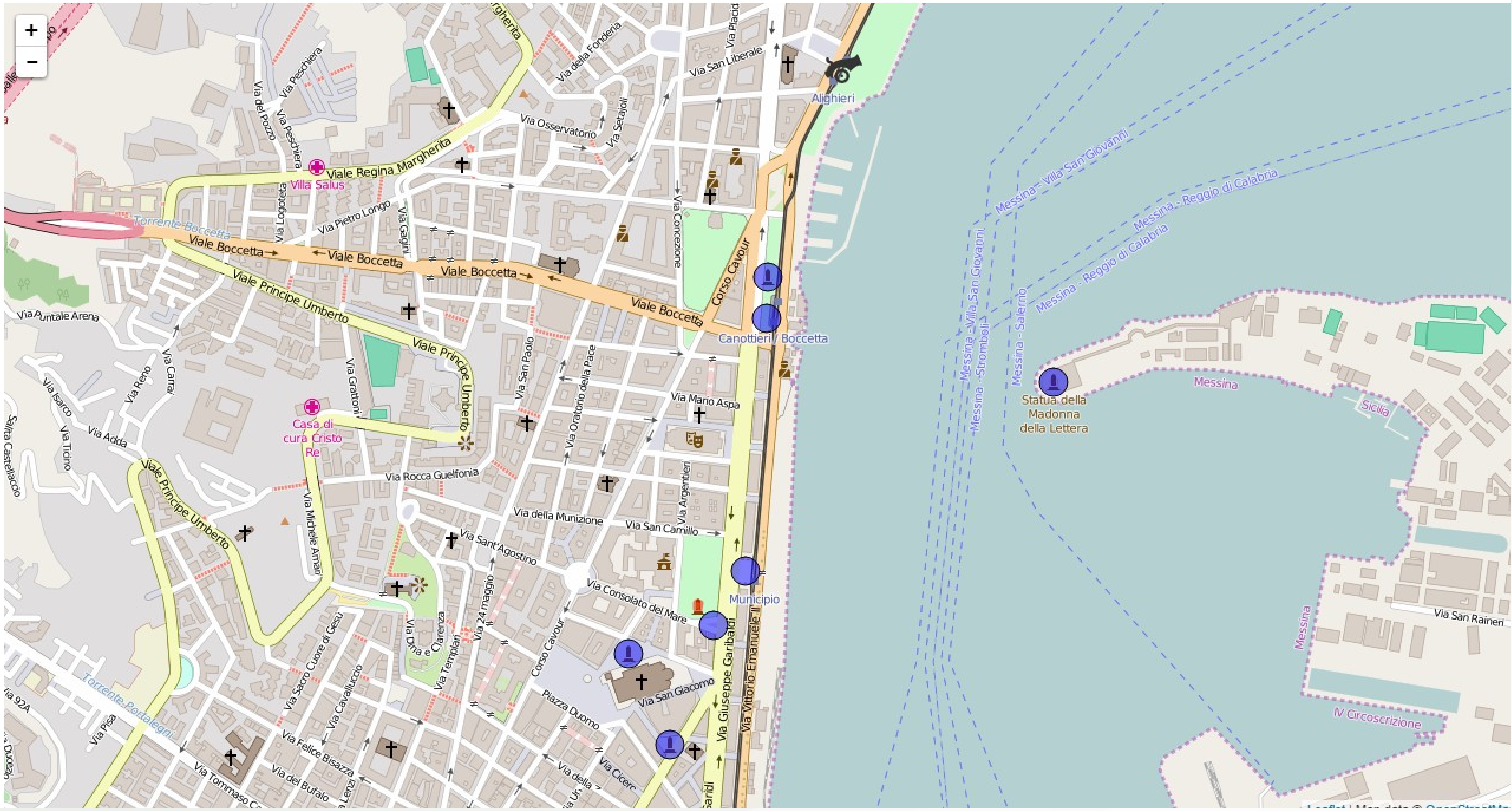
Es. 7 – GeoJSON e altri formati di dati

```
var geojsonMarkerStyle = {
    radius: 12,
    fillColor: "blue",
    color: "#000",
    weight: 1,
    opacity: 1,
    fillOpacity: 0.5
};
```

```
var cannonIcon = L.icon({
    iconUrl: 'cannon.png',
    iconSize: [32, 32],
    iconAnchor: [16, 37],
    popupAnchor: [0, -28]
});
```

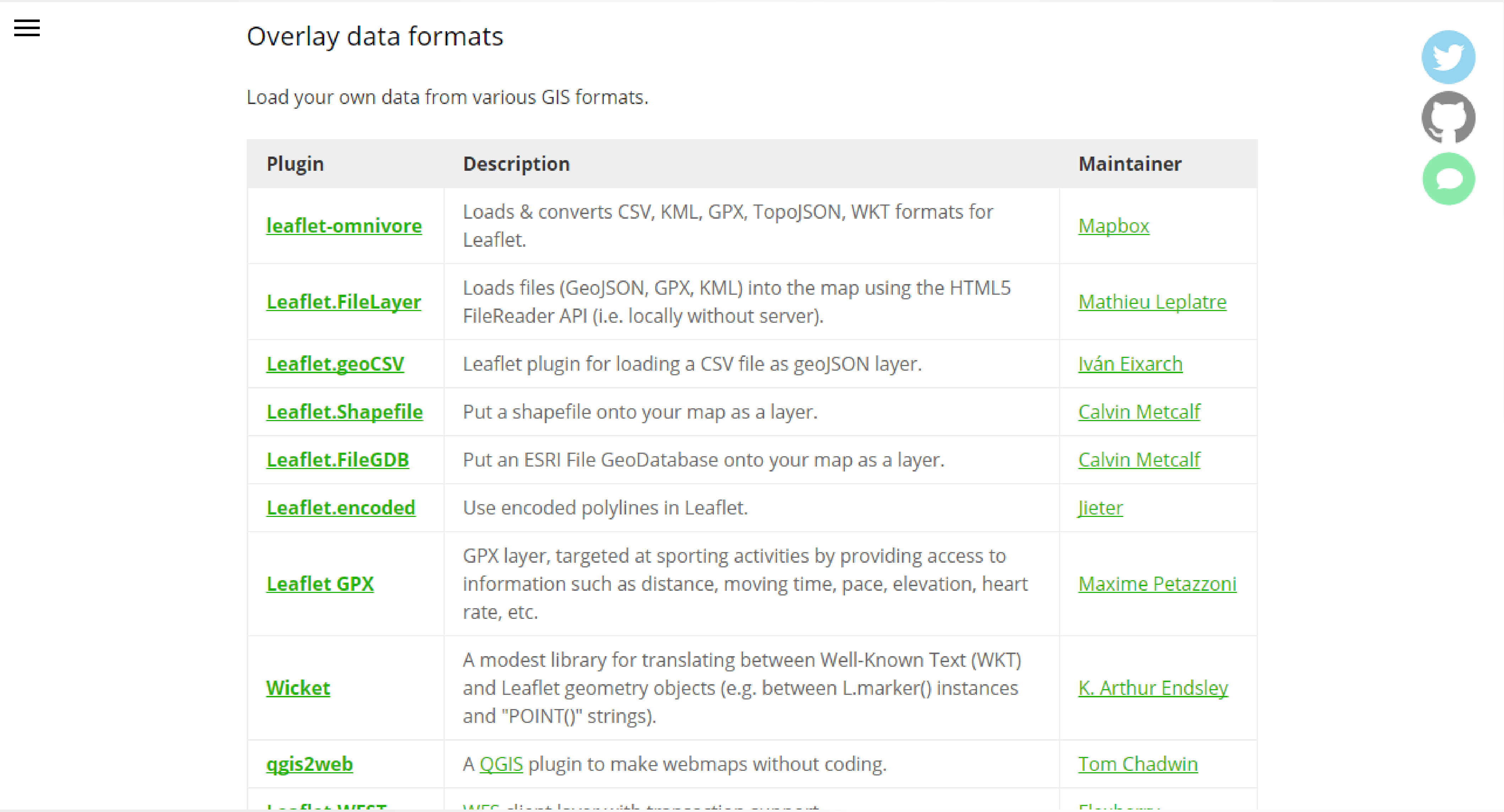
Es. 7 – GeoJSON e altri formati di dati

```
function elaboraDati(data) {
     var layerMonumenti = L.geoJson(data, {
        style: function(feature) {
               if (feature.geometry.type == "Polygon") {
                         return {
                                   color: "red",
                                   fillColor: "gold",
                                   fillOpacity: 0.5
                                 }
               }
          },
        pointToLayer: function (feature, latlng) {
               if (feature.properties && feature.properties.name && feature.properties.name ==
"Monumento alla Batteria Masotto") {
                         return L.marker(latlng, {icon: cannonIcon});
               } else {
                         return L.circleMarker(latlng, geojsonMarkerStyle);
          },
        onEachFeature: function (feature, layer) {
               if (feature.properties && feature.properties.name) {
                         layer.bindPopup(feature.properties.name);
               }

          },

        filter: function(feature, layer) {
               return (feature.geometry.type == "Polygon" || feature.geometry.coordinates[0] > 15.50);
          }
   }).addTo(mappa);

};
```


+
−
Alighieri
Canottieri / Boccetta
Statua della Madonna della Lettera
Municipio
Villa Salus
Casa di cura Cristo Re
Viale Regina Margherita
Viale Boccetta
Viale Principe Umberto
Corso Cavour
Via Giuseppe Garibaldi
Via Vittorio Emanuele II
Via Consolato del Mare
Piazza Duomo
Torrente Boccetta
Torrente Portalegni
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Messina
Sicilia
IV Circoscrizione
Via San Raineri
Leaflet | Map data © OpenStreetMap

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#overlay-data-formats



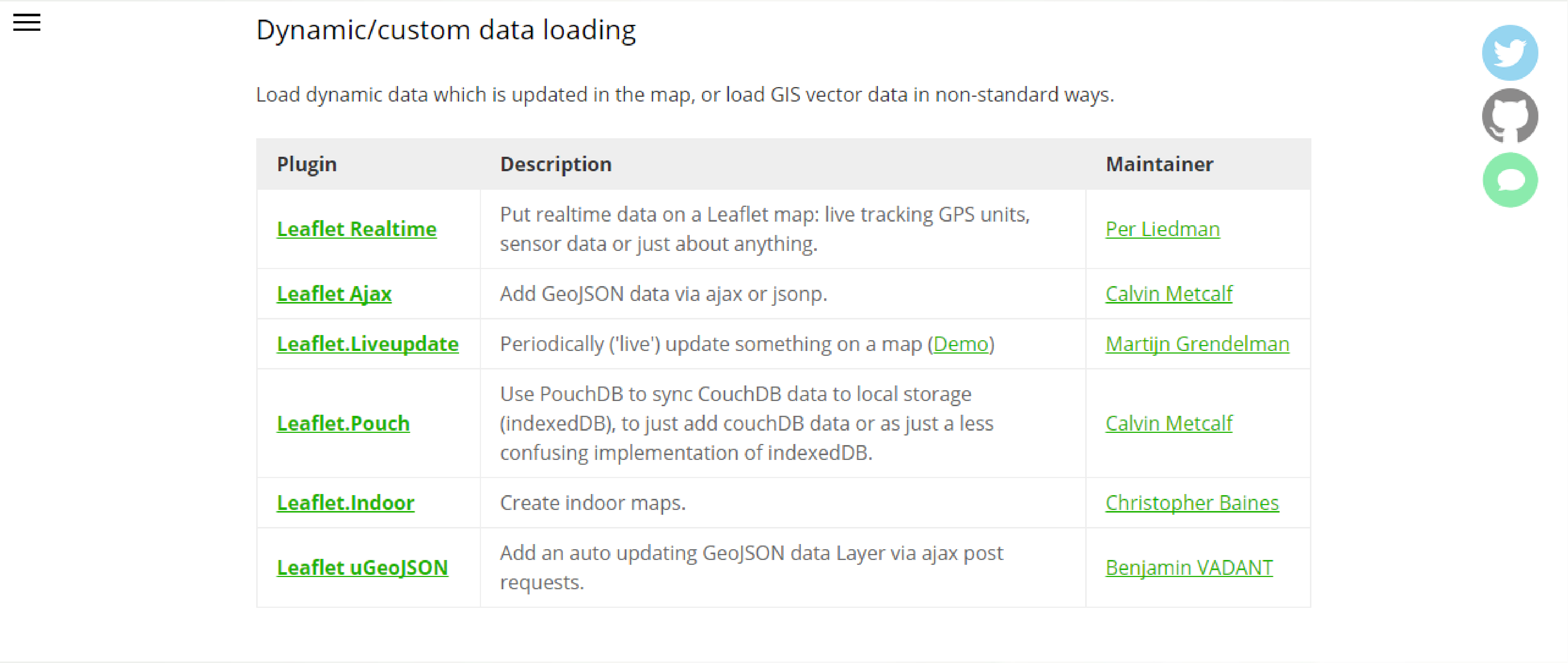
Overlay data formats

Load your own data from various GIS formats.

Plugin	Description	Maintainer
leaflet-omnivore	Loads & converts CSV, KML, GPX, TopoJSON, WKT formats for Leaflet.	Mapbox
Leaflet.FileLayer	Loads files (GeoJSON, GPX, KML) into the map using the HTML5 FileReader API (i.e. locally without server).	Mathieu Leplatre
Leaflet.geoCSV	Leaflet plugin for loading a CSV file as geoJSON layer.	Iván Eixarch
Leaflet.Shapefile	Put a shapefile onto your map as a layer.	Calvin Metcalf
Leaflet.FileGDB	Put an ESRI File GeoDatabase onto your map as a layer.	Calvin Metcalf
Leaflet.encoded	Use encoded polylines in Leaflet.	Jieter
Leaflet GPX	GPX layer, targeted at sporting activities by providing access to information such as distance, moving time, pace, elevation, heart rate, etc.	Maxime Petazzoni
Wicket	A modest library for translating between Well-Known Text (WKT) and Leaflet geometry objects (e.g. between L.marker() instances and "POINT()" strings).	K. Arthur Endsley
qgis2web	A QGIS plugin to make webmaps without coding.	Tom Chadwin

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#dynamiccustom-data-loading



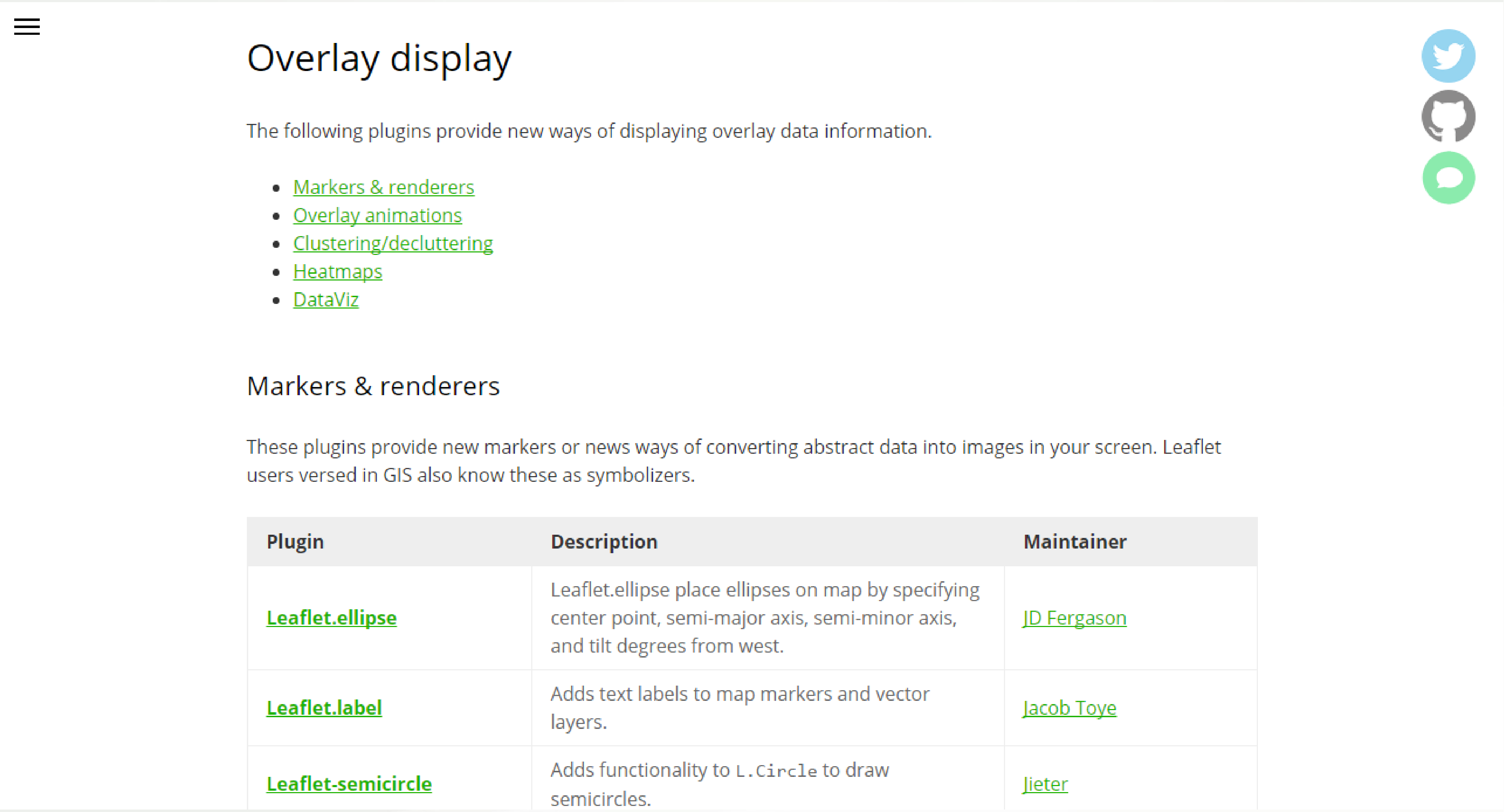
Dynamic/custom data loading

Load dynamic data which is updated in the map, or load GIS vector data in non-standard ways.

Plugin	Description	Maintainer
Leaflet Realtime	Put realtime data on a Leaflet map: live tracking GPS units, sensor data or just about anything.	Per Liedman
Leaflet Ajax	Add GeoJSON data via ajax or jsonp.	Calvin Metcalf
Leaflet.Liveupdate	Periodically ('live') update something on a map (Demo)	Martijn Grendelman
Leaflet.Pouch	Use PouchDB to sync CouchDB data to local storage (indexedDB), to just add couchDB data or as just a less confusing implementation of indexedDB.	Calvin Metcalf
Leaflet.Indoor	Create indoor maps.	Christopher Baines
Leaflet uGeoJSON	Add an auto updating GeoJSON data Layer via ajax post requests.	Benjamin VADANT

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#markers--renderers



Overlay display

The following plugins provide new ways of displaying overlay data information.

- Markers & renderers
- Overlay animations
- Clustering/decluttering
- Heatmaps
- DataViz

Markers & renderers

These plugins provide new markers or news ways of converting abstract data into images in your screen. Leaflet users versed in GIS also know these as symbolizers.

Plugin	Description	Maintainer
Leaflet.ellipse	Leaflet.ellipse place ellipses on map by specifying center point, semi-major axis, semi-minor axis, and tilt degrees from west.	JD Fergason
Leaflet.label	Adds text labels to map markers and vector layers.	Jacob Toye
Leaflet-semicircle	Adds functionality to `L.Circle` to draw semicircles.	Jieter

Es. 8 – Eventi

```
var layerProvince  = L.geoJson(pData,
               {
               style: styleProvincia,
               onEachFeature: featureEvents
               })


,

layerRegioni = L.geoJson(rData,
               {
                  style: styleDensity,
                  onEachFeature: featureEvents
               });
```

Es. 8 – Eventi

```
var styleDensity = function styleDensity(feature) {
 return {
   fillColor: getColor(feature.properties.density),
   weight: 2,
   opacity: 1,
   color: 'white',
   dashArray: '3',
   fillOpacity: 0.7
  };
}


var getColor = function getColor(d) {
return d > 1000 ? '#800026'  :
   d > 500  ? '#BD0026' :
   d > 200  ? '#E31A1C' :
   d > 100  ? '#FC4E2A' :
   d > 50   ? '#FD8D3C' :
   d > 20   ? '#FEB24C' :
   d > 10   ? '#FED976' :
  '#FFEDA0';
}
```

Es. 8 – Eventi

```
var featureEvents = function featureEvents(feature, layer) {
 layer
    .bindPopup("<b>" + (feature.id ||  feature.properties.name ) +
"</b>")
    .on({
        mouseover: highlightFeature,
        mouseout: resetHighlight,
        click: zoomToFeature
    });
}
```

Es. 8 – Eventi

```
var highlightFeature = function highlightFeature(e) {
  var layer = e.target;

  layer.setStyle({
    weight: 5,
    color: '#666',
    dashArray: '',
    fillOpacity: 0.7
    });

  if (!L.Browser.ie && !L.Browser.opera) {
    layer.bringToFront();
    }

    layer.openPopup();
}
```

Es. 8 – Eventi

```
var resetHighlight = function resetHighlight(e) {
    var layer = e.target;

    layerProvince.resetStyle(layer);
    layerRegioni.resetStyle(layer);
}



var zoomToFeature = function zoomToFeature(e) {
    var layer = e.target;

    mappa.fitBounds(layer.getBounds());
}
```

Es. 8 – Eventi

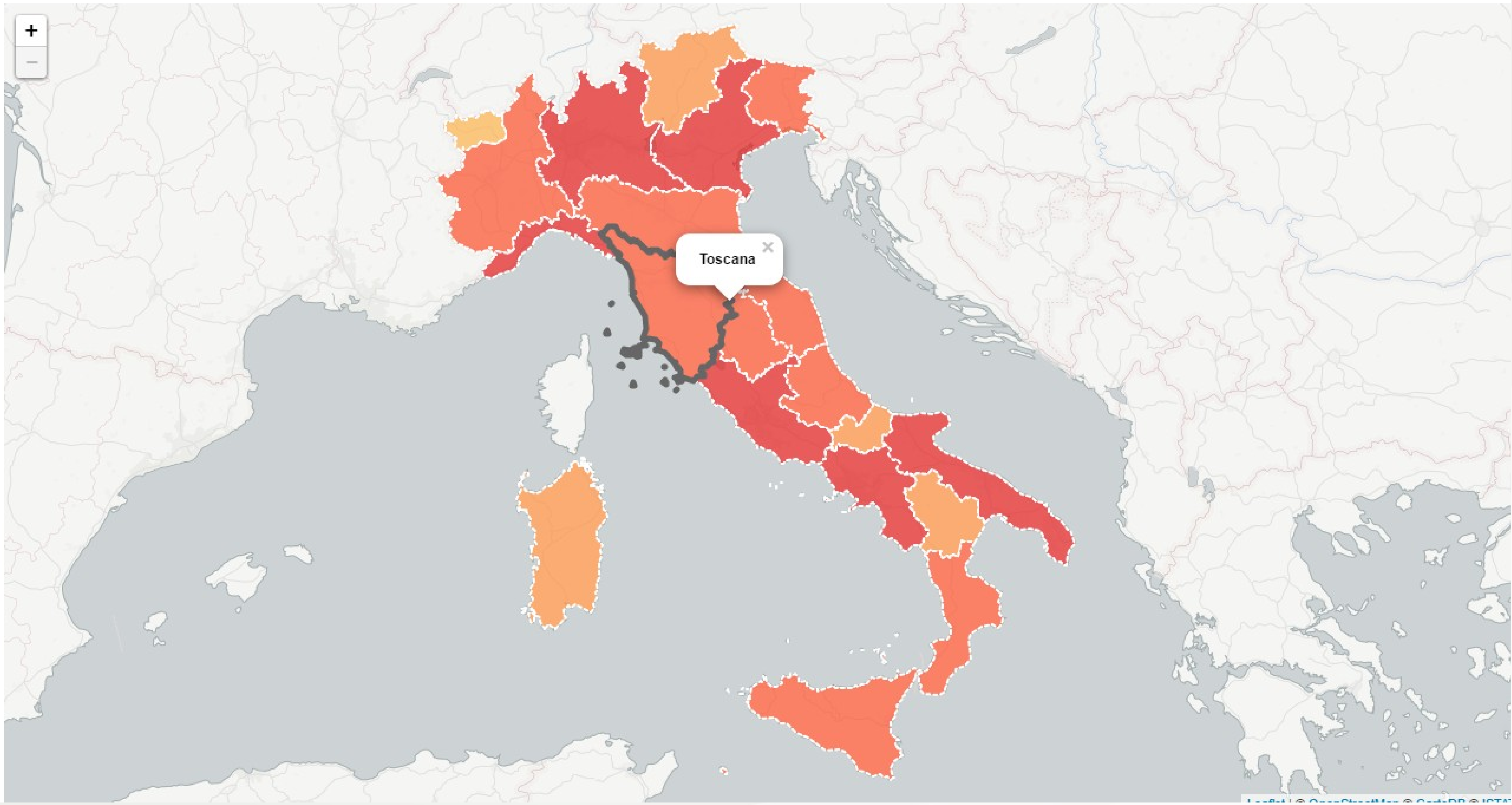
```
layerRegioni.addTo(mappa);
```

```
mappa.on('zoomend', function() {
    if (mappa.getZoom() > 7 && mappa.hasLayer(layerRegioni)) {
        mappa
            .removeLayer(layerRegioni)
            .addLayer(layerProvince);
    }
    if (mappa.getZoom() < 8 && !mappa.hasLayer(layerRegioni)) {
        mappa
              .addLayer(layerRegioni)
              .removeLayer(layerProvince)
              .fitBounds(layerRegioni.getBounds())
              .panTo(new L.LatLng(42.0,12.71216));
    }
});
```

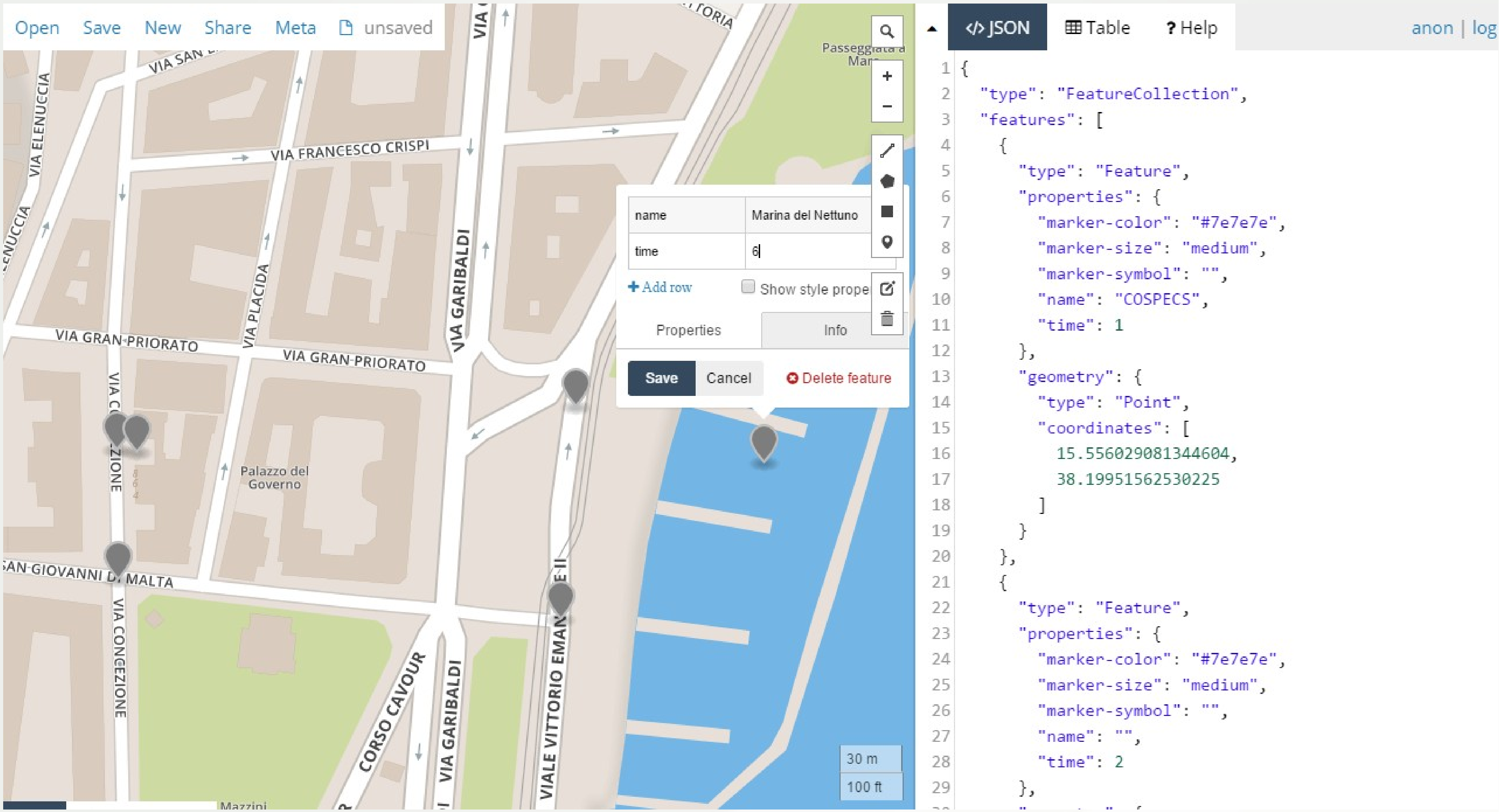
Es. 8 – Eventi

```
var resetHighlight = function resetHighlight(e) {
    var layer = e.target;

    layerProvince.resetStyle(layer);
    layerRegioni.resetStyle(layer);
}



var zoomToFeature = function zoomToFeature(e) {
    var layer = e.target;

    mappa.fitBounds(layer.getBounds());
}
```

Es. 8 – Eventi



http://geojson.io/#map=18/38.19904/15.55730



name	Marina del Nettuno
time	6

```
{
  "type": "FeatureCollection",
  "features": [
    {
      "type": "Feature",
      "properties": {
        "marker-color": "#7e7e7e",
        "marker-size": "medium",
        "marker-symbol": "",
        "name": "COSPECS",
        "time": 1
      },
      "geometry": {
        "type": "Point",
        "coordinates": [
          15.556029081344604,
          38.19951562530225
        ]
      }
    },
    {
      "type": "Feature",
      "properties": {
        "marker-color": "#7e7e7e",
        "marker-size": "medium",
        "marker-symbol": "",
        "name": "",
        "time": 2
      },
```