

OSM Carto as vector tiles



maptiler

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Vector tiles

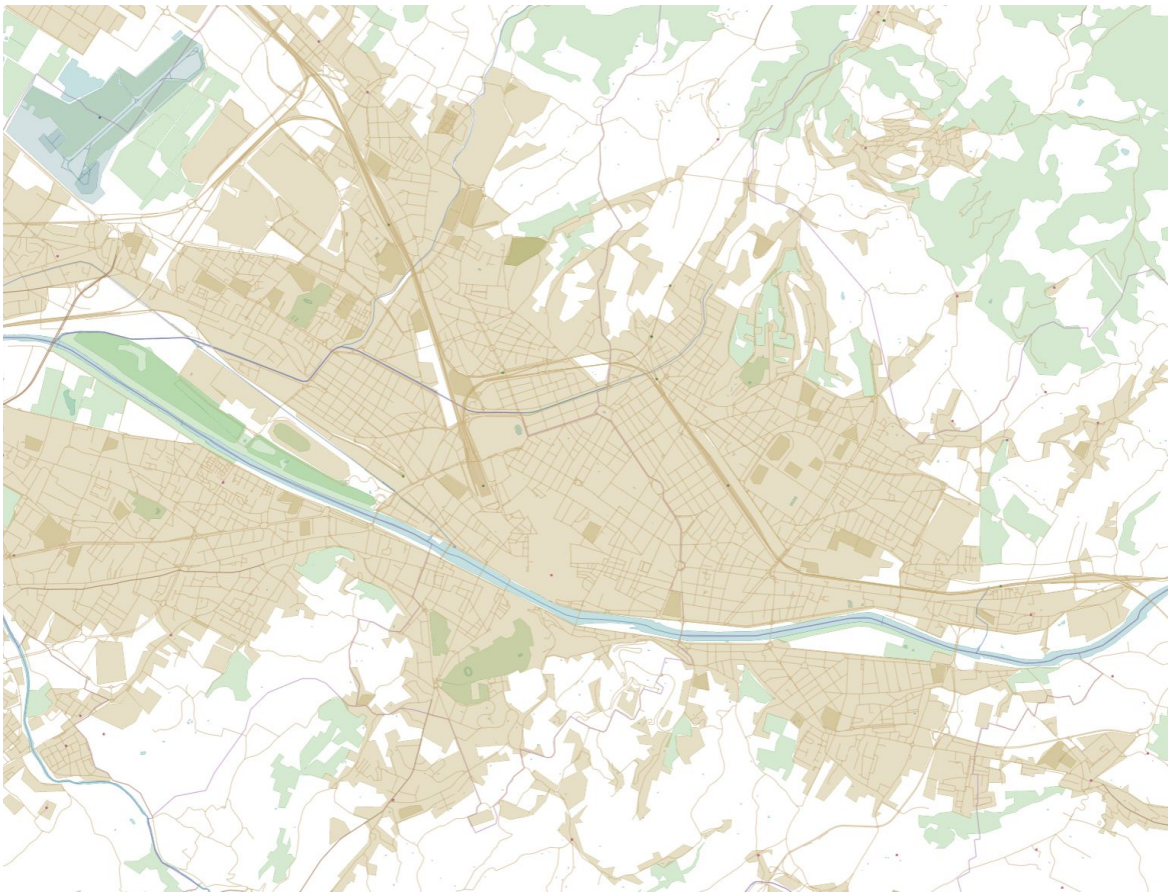
- Pyramid and zoom levels
- Individual tiles are available on Z/X/Y address
- Maps are available in Pseudo-Mercator projection (EPSG:3857)



<https://www.maptiler.com/news/2019/02/what-are-vector-tiles-and-why-you-should-care/>

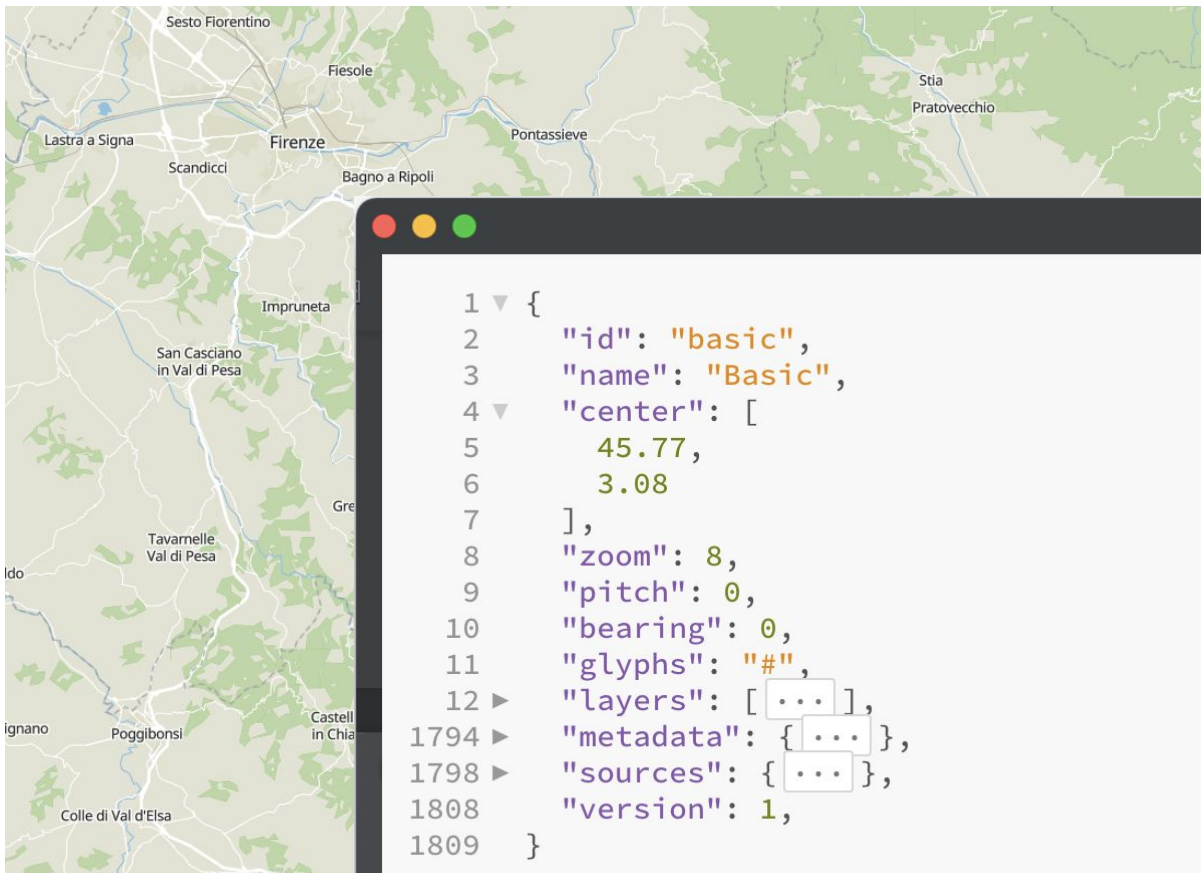
Vector tiles

- Protocolbuffer Binary Format (pbfb)
- Map size
 - [World](#): 93 GB
 - [Italy](#): 2.6 GB
 - [Firenze](#): 40 MB
- Map style is rendered on client side



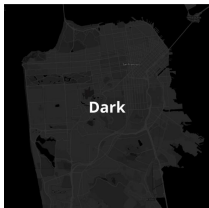
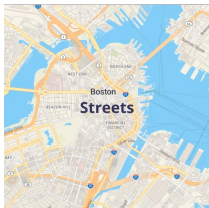
Style for vector tiles

- The look of the map is defined in **style.json** file that is rendered on the client side. (GL Style Specification)
- The style.json file contains
 - *layers*
 - *sources*
 - *glyphs*
 - *sprite*
 - *metadata*
 - ...



Style editor

Create infinite number of styles with the same data!



<https://cloud.maptiler.com/maps/>

Basic

Groups

Landscape

Water

Nature

Roads

Borders

Global settings

Language

Style default

Preferred country borders

Default

Water

Color

205

56%

73%

1

>>

H

S

L

A

RESET

Force selected color

A map of Florence, Italy, showing a street map style with green parks, grey roads, and blue water. The word "Basic" is overlaid on the map.

Languages

- Labels can be dynamically changed
- More than 70 languages supported in OpenMapTiles



Groups



Landscape



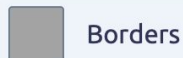
Water



Nature



Roads



Borders

Global settings

Language

Korean



Include alternative names



Preferred country borders

Default



아이슬란드
Iceland

노르웨이
Norway
스웨덴
Sweden

핀란드
Finland

영국
United Kingdom

덴마크
Denmark

독일
Germany

벨라루스
Belarus

프랑스
France

오스트리아
Austria

우크라이나
Ukraine

포르투갈
Portugal

이탈리아
Italy

불가리아
Bulgaria

튀니지
Tunisia

모로코
Morocco

알제리
Algeria

리비아
Libya

이집트
Egypt

모리타니
Mauritania

말리
Mali

니제르
Niger

차드
Chad

수단
Sudan

세네갈
Senegal

코트디부아르
Côte d'Ivoire

나이지리아
Nigeria

적도 기니
Eq. Guinea



Disputed borders

Black Sea Biosphere
Reserve Чорноморський
біосферний
заповідник

sfernij zapovidnik
iâ-Nova" Біосферний
заповідник
Асканія-Нова"

Kyrylivka
Кирилівка

Henichesk
Генічеськ

Krasnoperekopsk
Красноперекопск

Rozdol'noe
Раздольное

Dzhankoy
Джанкой

Chornomorskoe
Черноморское

Yevpatoriya
Евпатория

Oktiabrskoe
Октябрьское

Gvardeiskoe
Гвардейское

Simferopol
Симферополь

Kacha
Кача

Bakhchysarai
Бахчисарай

Alushta
Алушта

Sevastopol
Севастополь

Yalta
Ялта

Shchyolkino
Шчёлкино

Lenino
Ленино

Kerch
Керчь

```
"filter": [  
  "all",  
  ["==", "admin_level", 2],  
  ["==", "disputed", 1],  
  ["==", "maritime", 1]  
]
```

OpenMapTiles

- **Cartographic schema** for vector tiles
- Community-driven **open-source project**
- Applicable to any data source
 - OpenStreetMap
 - Wikidata
 - Natural Earth
- OpenMapTiles v3.13 (05-01-2022)
 - Tomas Pohanka and other contributors
- OpenMapTiles v3.14 (this fall)

<https://openmaptiles.org/>

<https://github.com/openmaptiles>



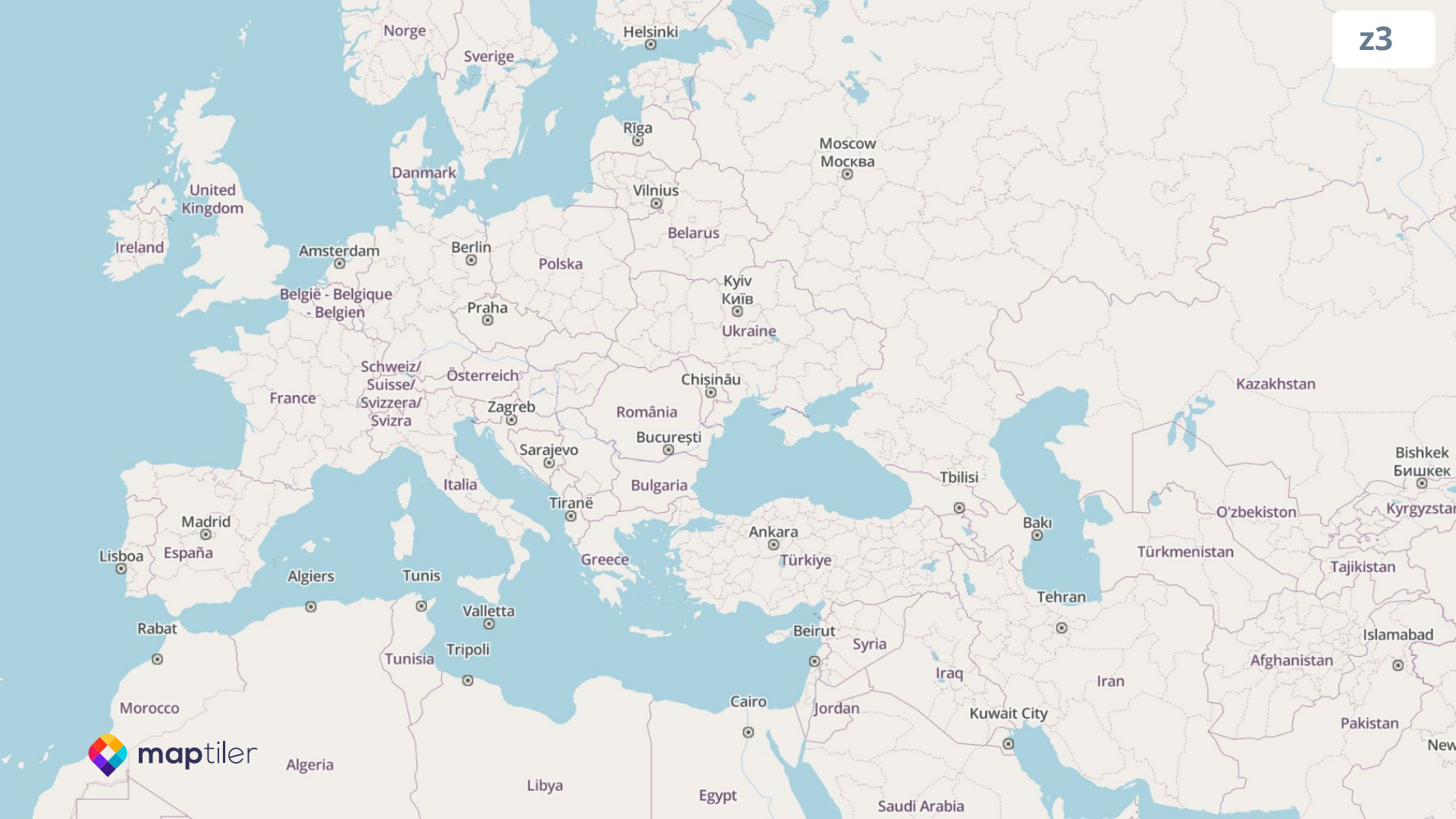
OpenStreetMap Carto style

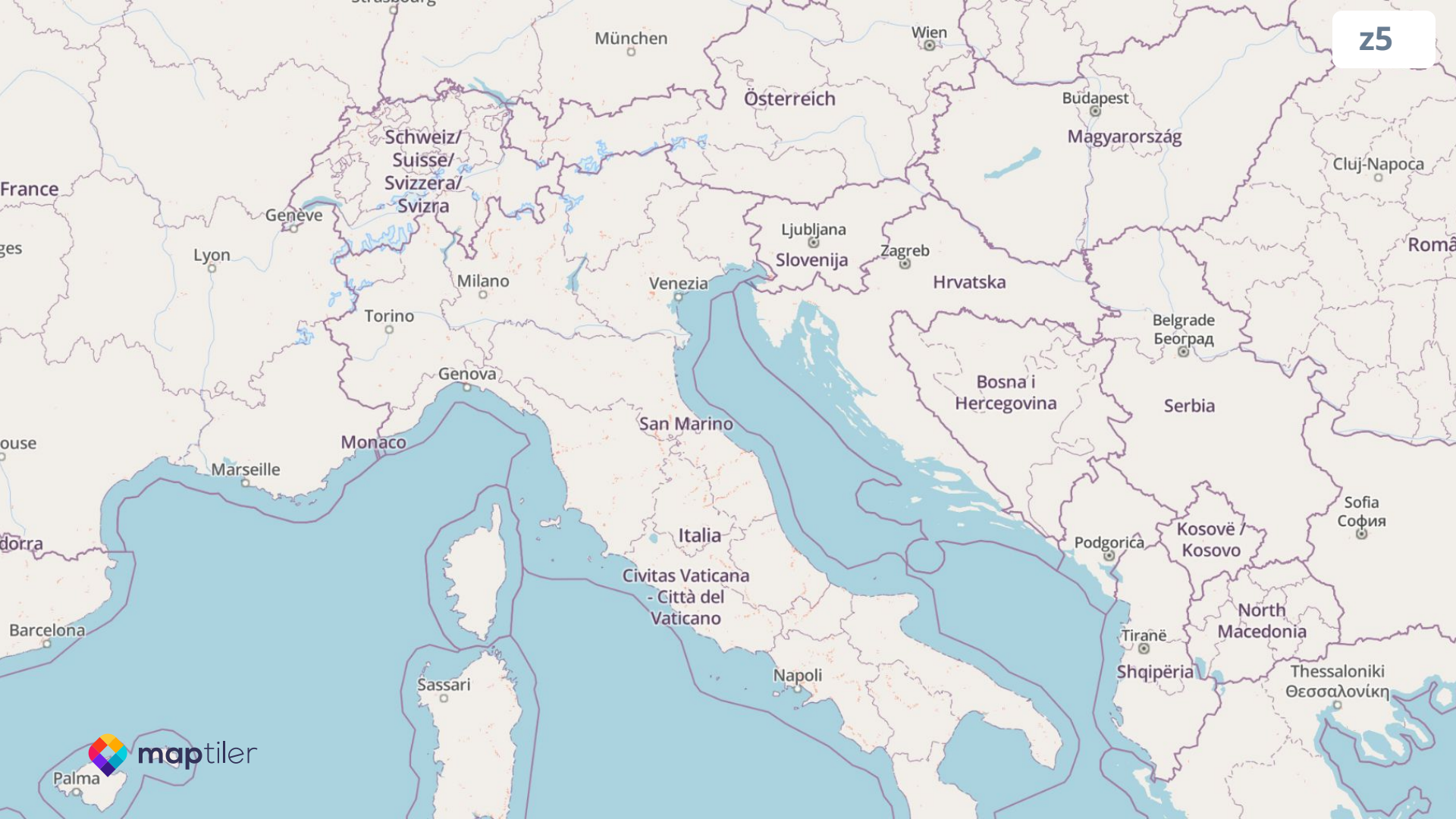


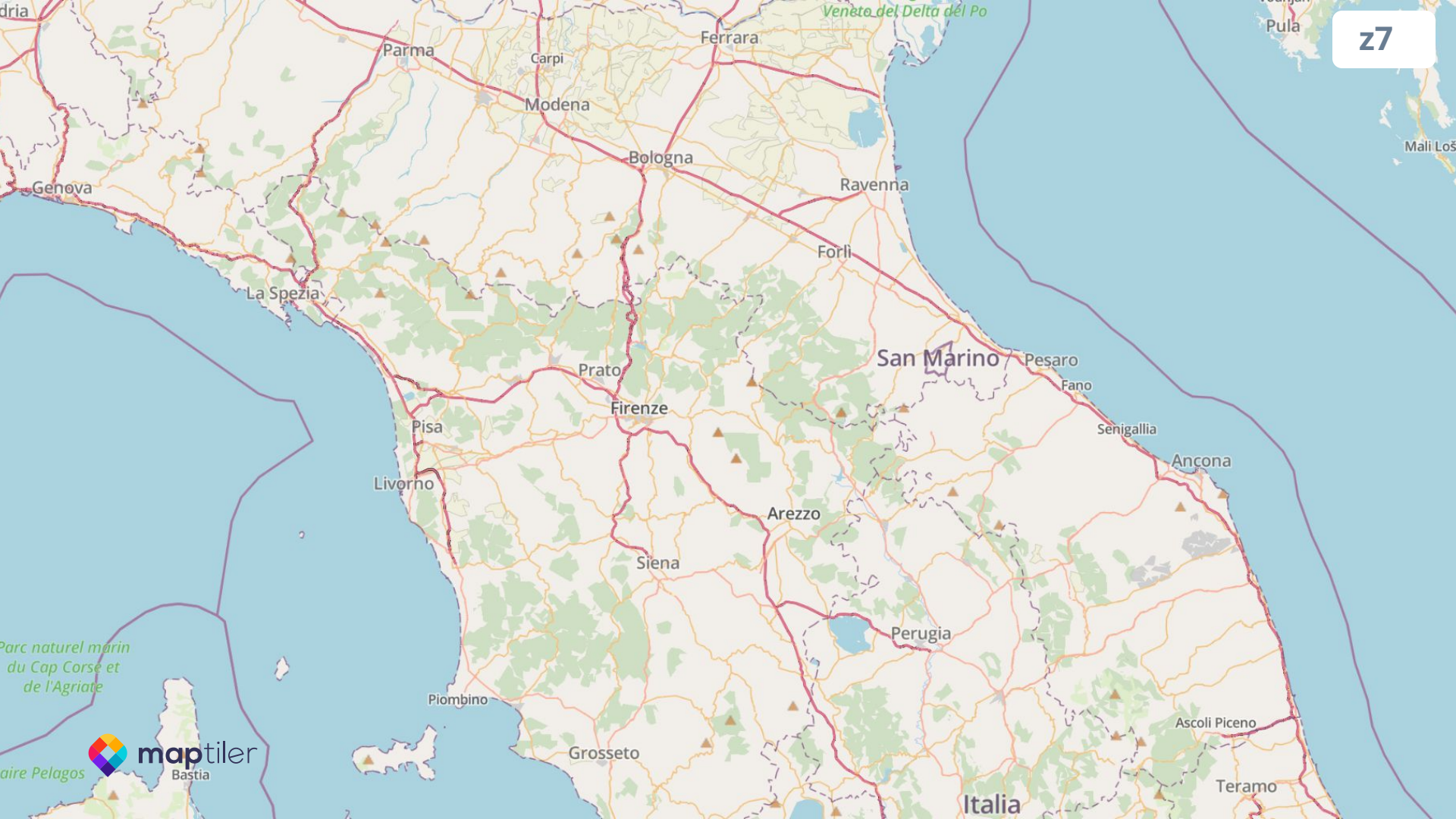
MapTiler Cloud

API for developers

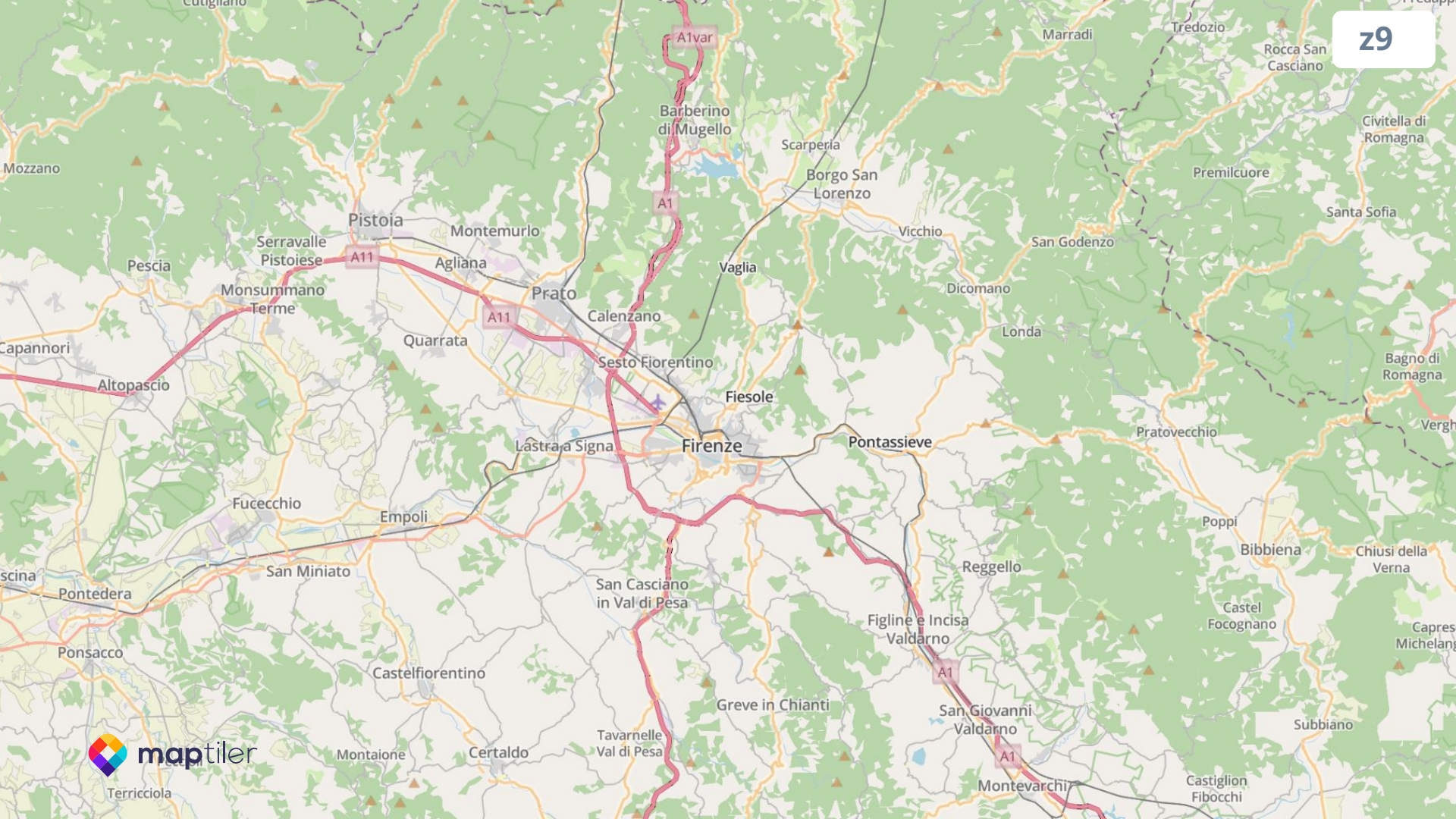
maptiler.com/maps/openstreetmap/

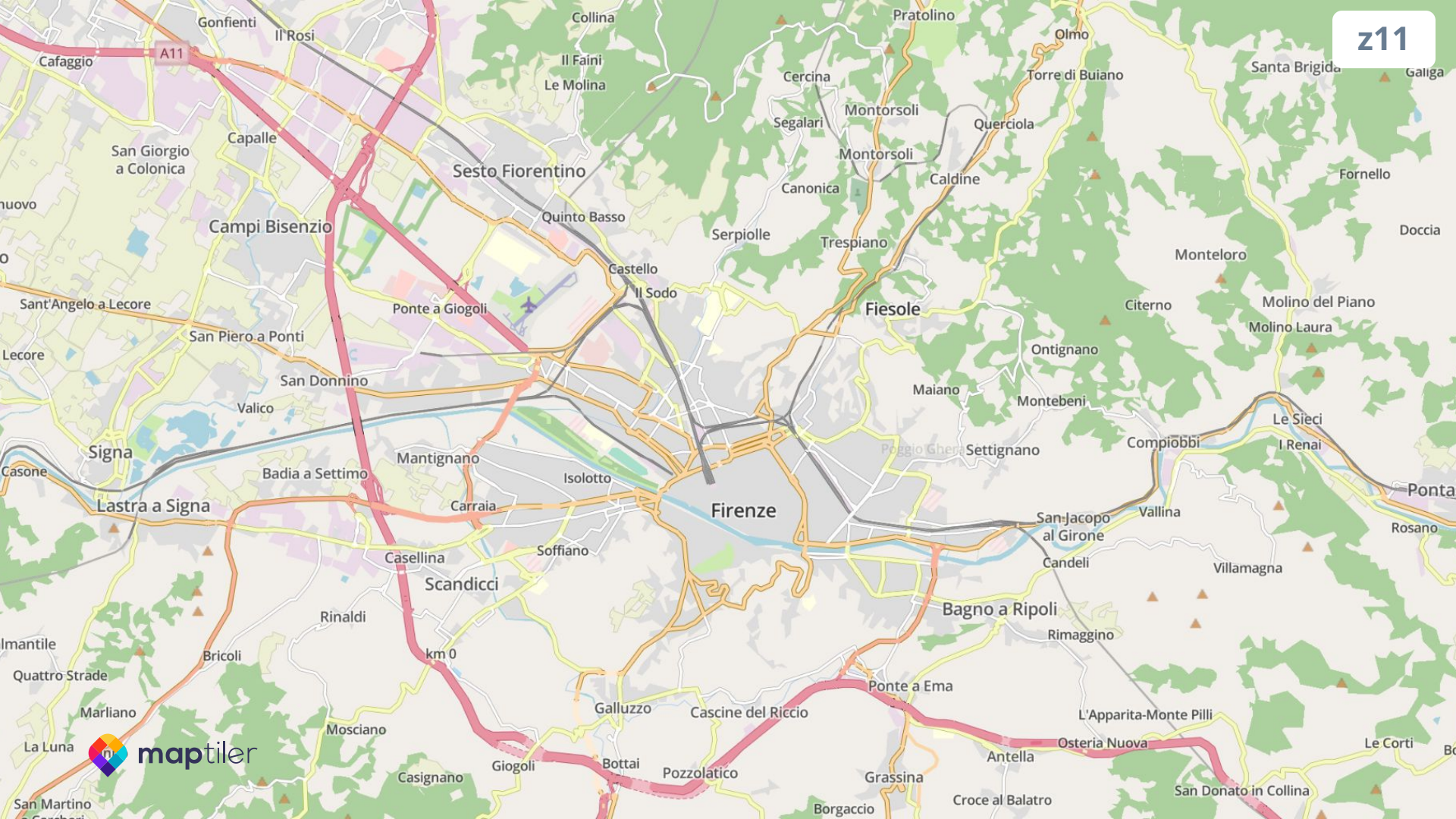


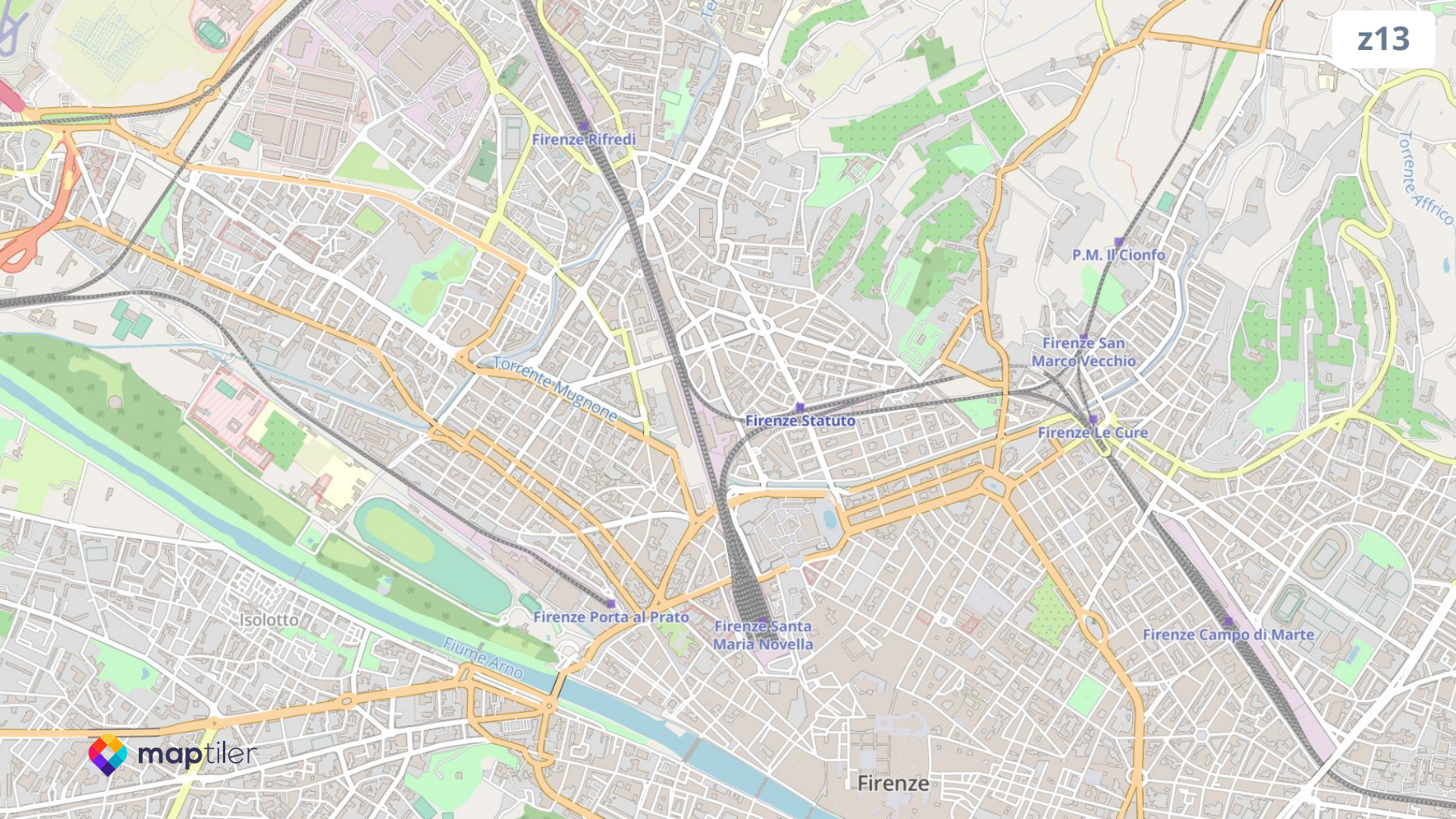


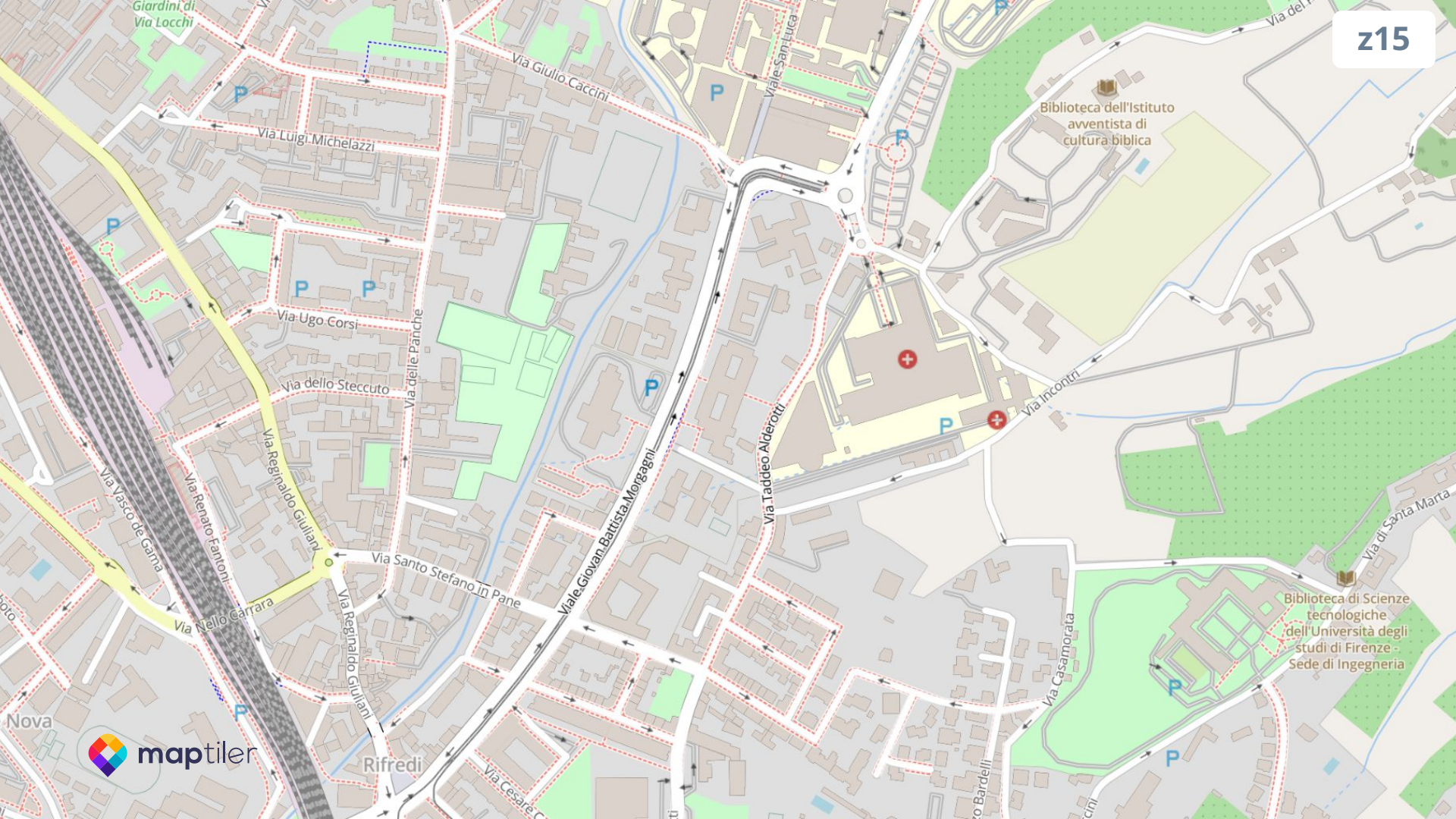


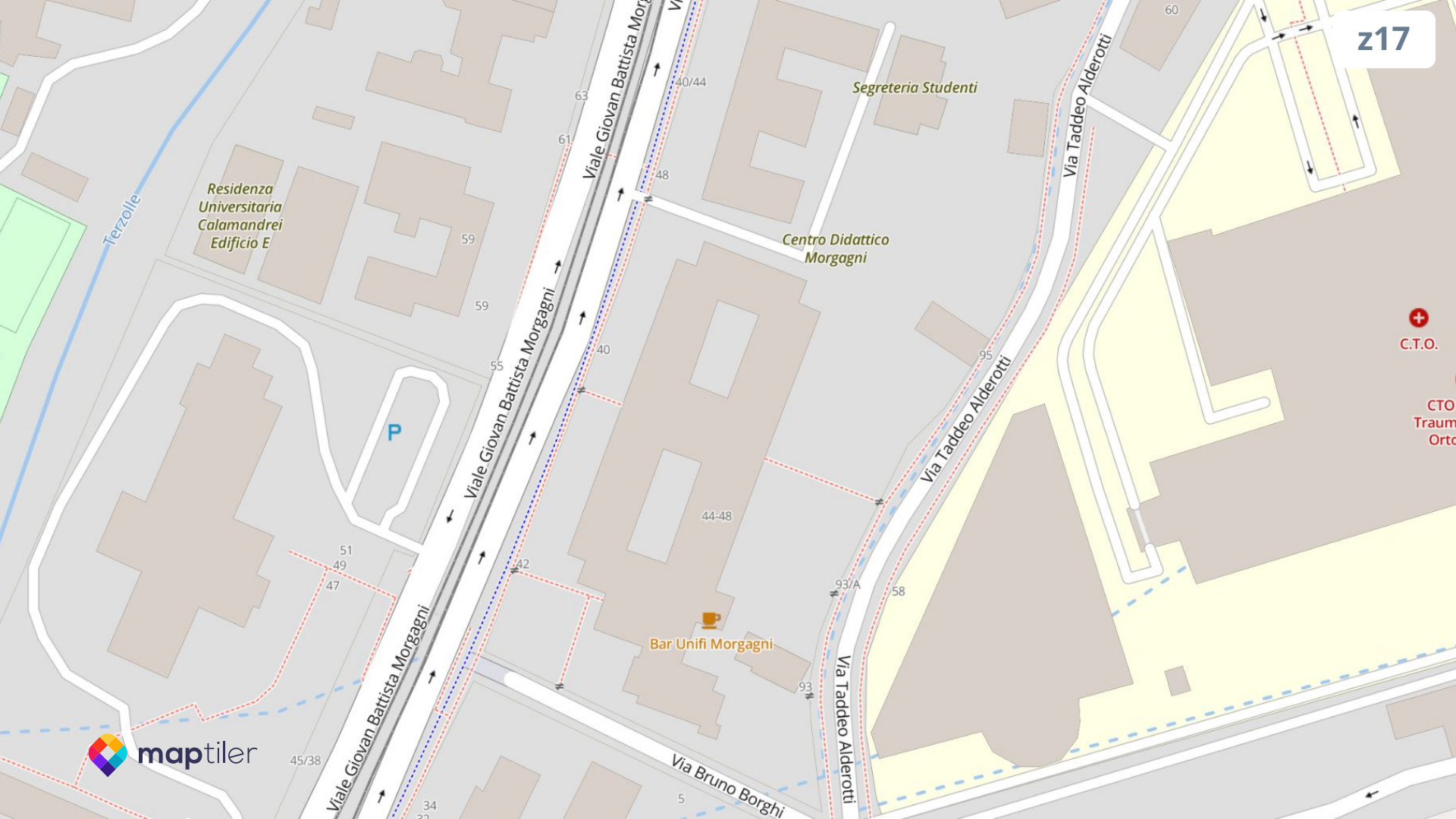
Parc naturel marin
du Cap Corse et
de l'Agriate











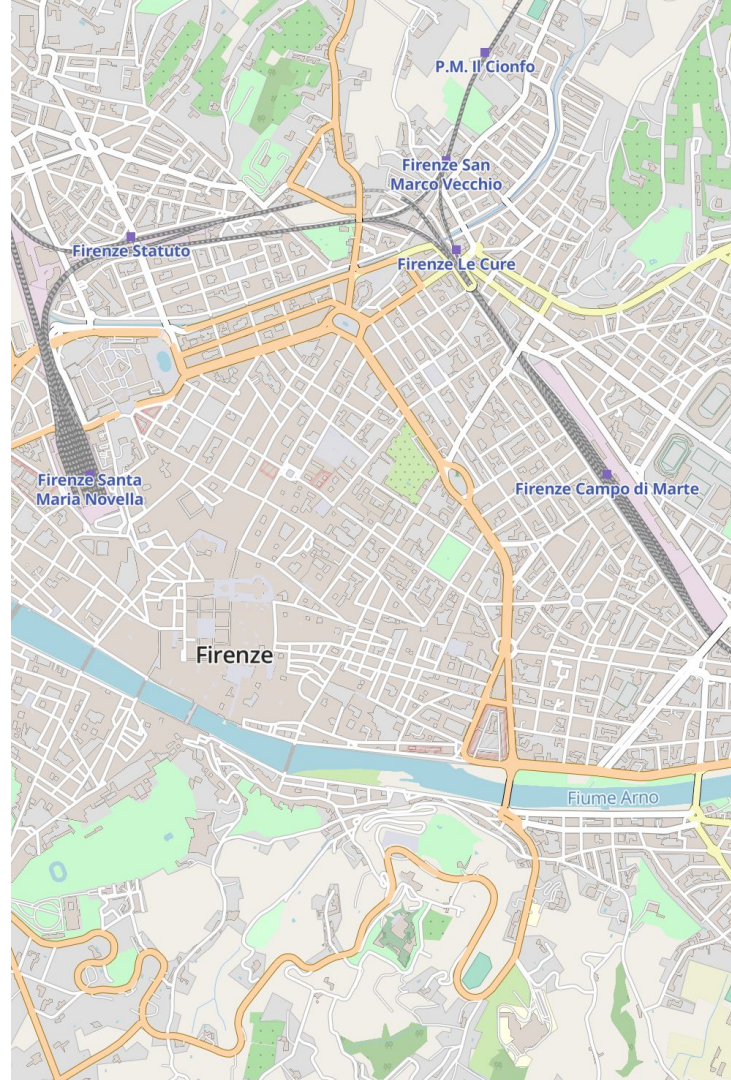
Preparation

Adaptation of OSM Carto style to the **OpenMapTiles schema**

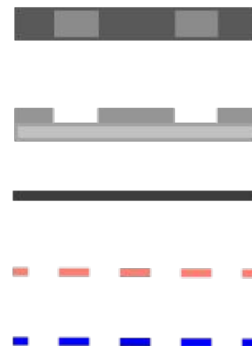
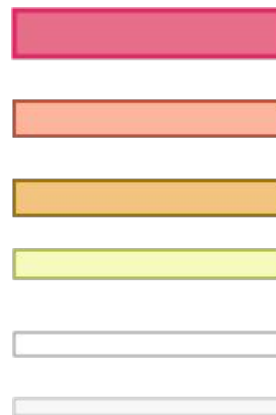
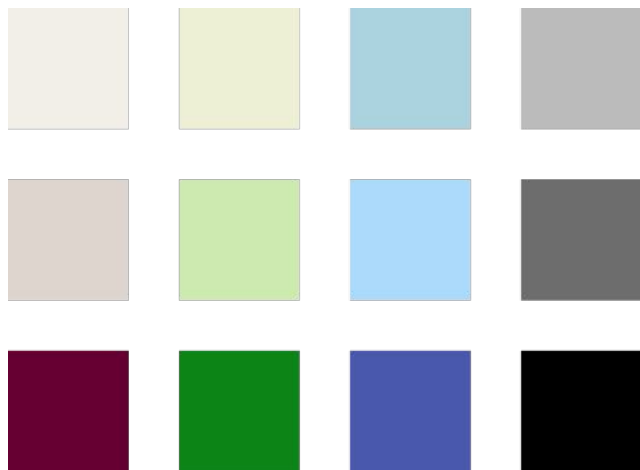
Collection of map properties
(colors, textures, sizes, icons)

Preparing cartography on MapTiler Cloud

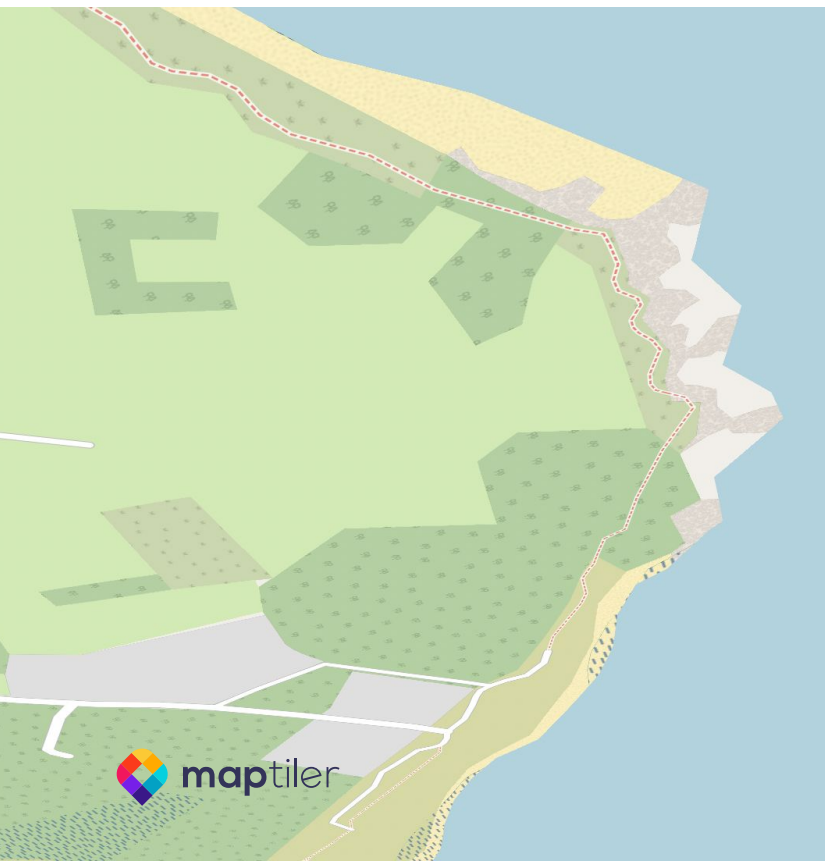
Collaborative work on Github in thematic branches



Colors (fill-color line-color icon-color)



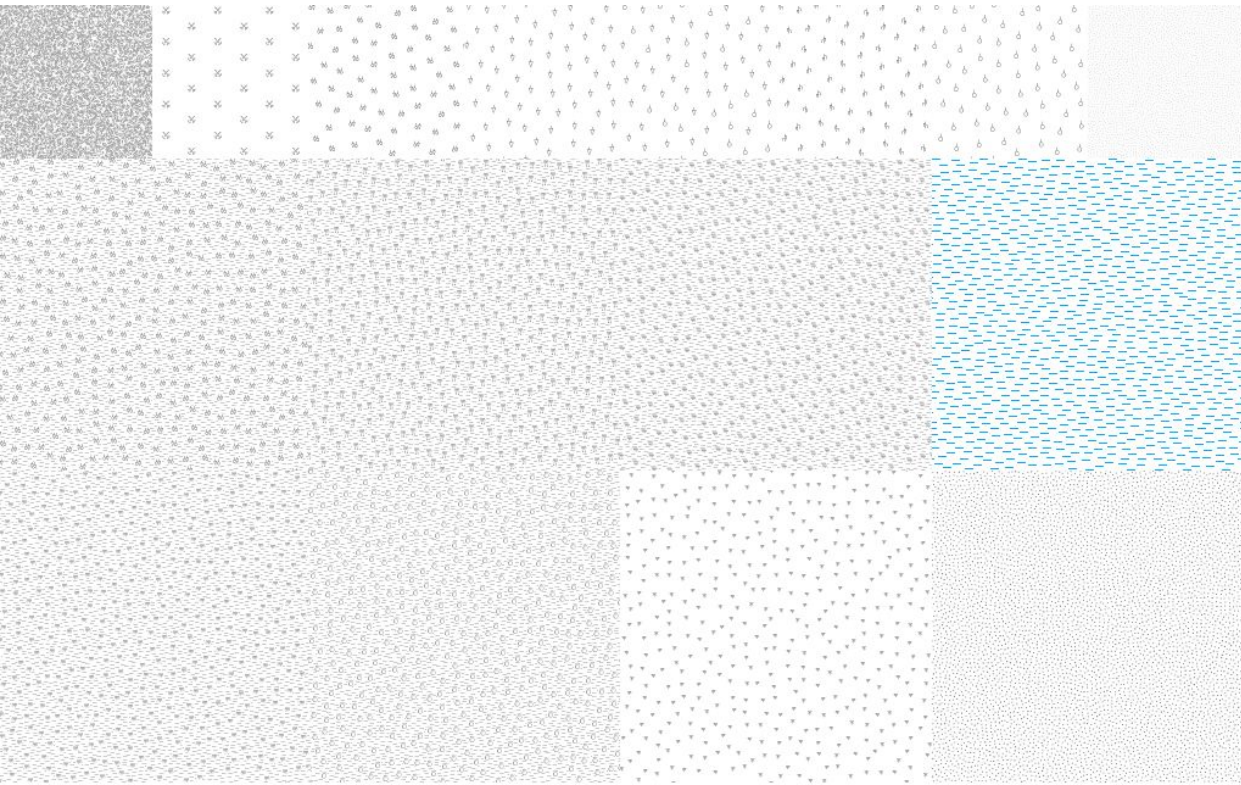
Landcover



```
[  
  "match",  
  ["get", "class"],  
  "farmland",  
  "#eef0d5",  
  "wood",  
  "#add19e",  
  "rock",  
  "#eee5dc",  
  "grass",  
  "#cdebb0",  
  "sand",  
  "#f5e9c6",  
  "wetland",  
  "#add19e",  
  "#000"  
]
```

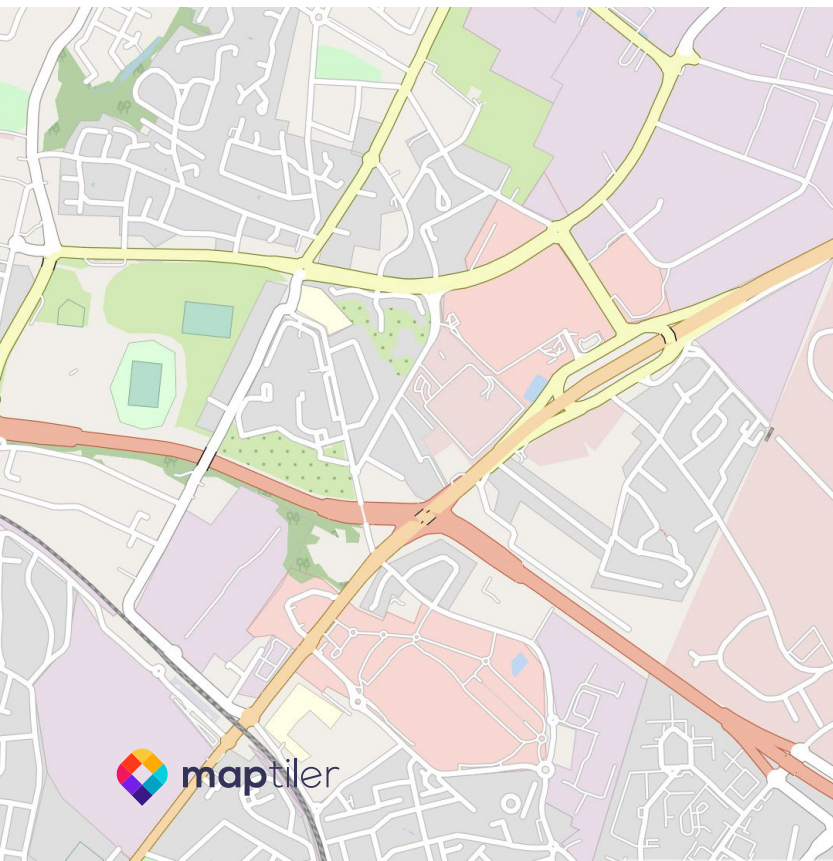
```
[  
  "match",  
  ["get", "subclass"],  
  "allotments",  
  "#c9e1bf",  
  "bare_rock",  
  "#eee5dc",  
  "beach",  
  "#fff1ba",  
  ...  
  ...  
  ...  
  "vineyard",  
  "#aedfa3",  
  "wet_meadow",  
  "#cdebb0",  
  "#ffffff"  
]
```

Textures (fill-pattern)



```
[  
  "match",  
  ["get", "subclass"],  
    "allotments",  
    "bare_rock",  
    "rock_overlay",  
    "beach",  
    "bog",  
    "wetland_bog",  
    "scrub",  
    "forest",  
    "leftype_unknown",  
    "garden",  
    "plant_nursery",  
    "mangrove",  
    "wetland_mangrove",  
    "marsh",  
    "wetland_marsh",  
    "orchard",  
    "plant_nursery",  
    "reedbed",  
    "wetland_reed",  
  ...  
]
```


Landuse



```
[  
  "match",  
  ["get", "class"],  
  "railway",  
  "#ebdbe8",  
  "residential",  
  "#e0dfdf",  
  "cemetery",  
  "#aacbaf",  
  "military",  
  "#fceaee",  
  "commercial",  
  "#f2dad9",  
  "industrial",  
  "#ebdbe8",  
  "garages",  
  "#dfddce",  
  "retail",  
  ...  
]
```

```
[  
  "match",  
  ["get", "class"],  
  "military",  
  "military_red_hatch",  
  "cemetery",  
  "grave_yard_generic",  
  "",  
  ]
```

Icons (icon-image)

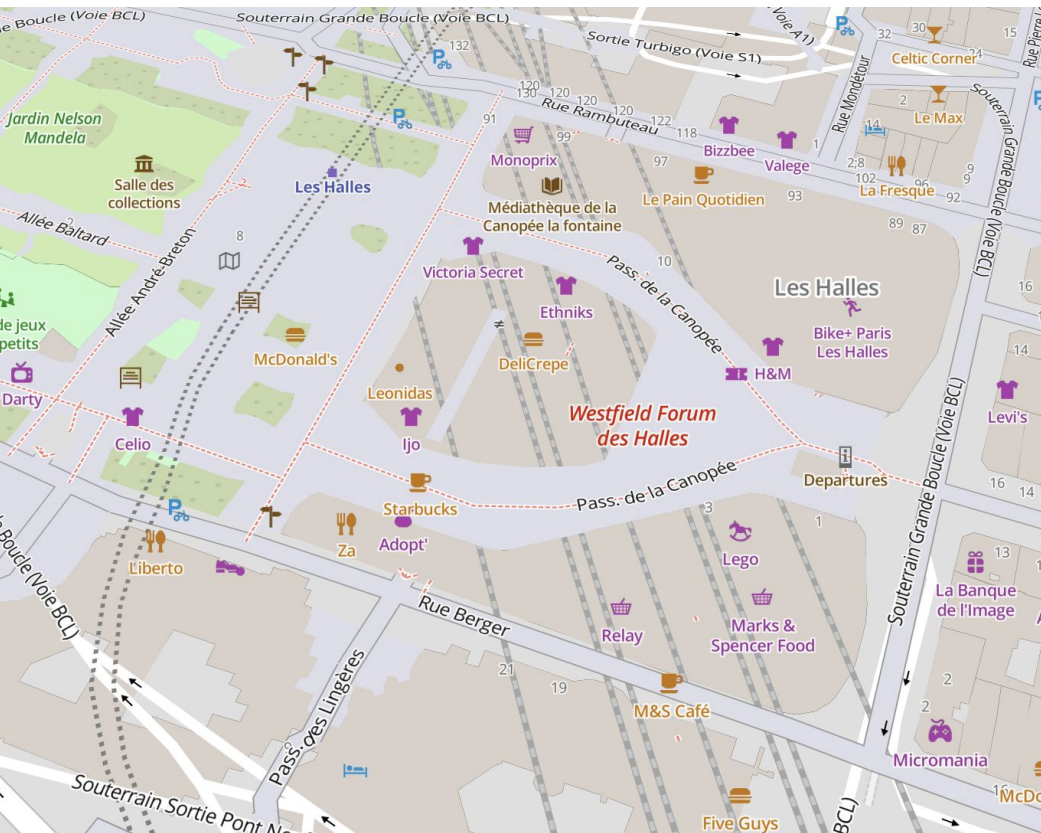


`"icon-image": "{subclass}"`

305 SVG icons

1 image sprite

Labels (text-font)

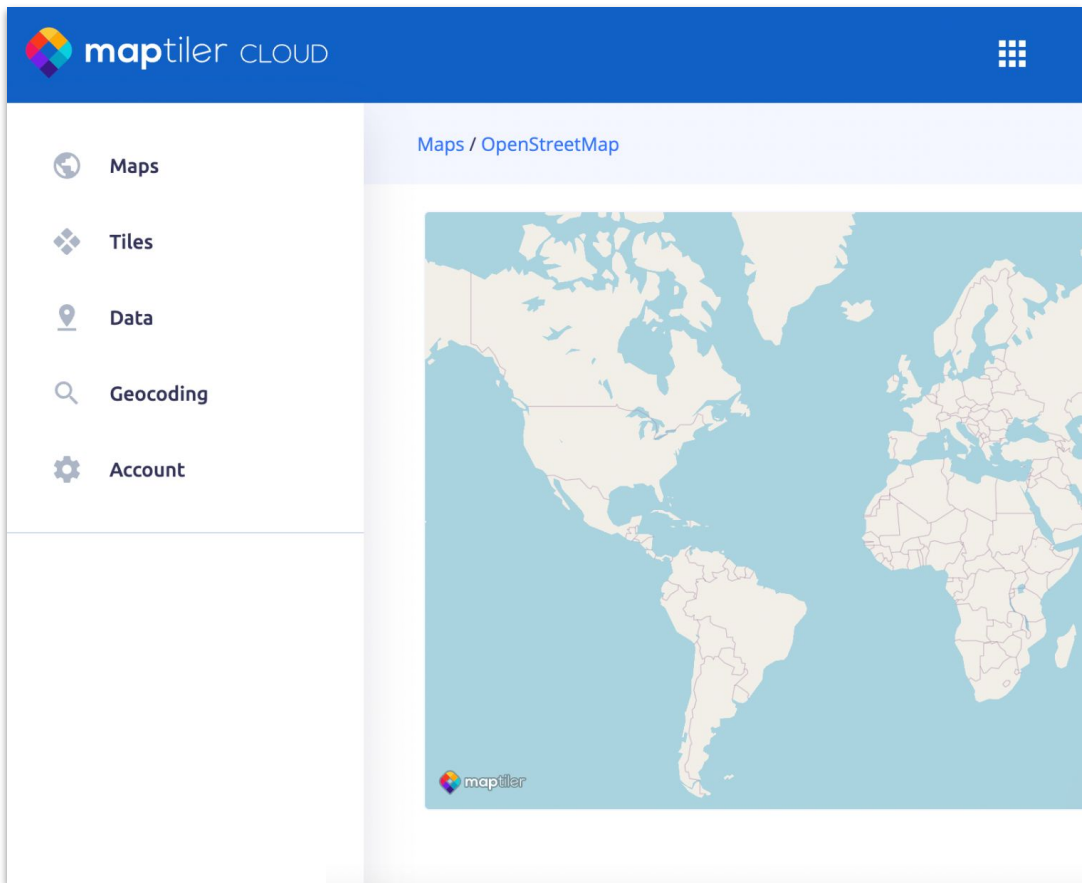


```
"layout": {  
  "text-font": [  
    "Open Sans Semibold",  
    "Open Sans Regular"  
  ],  
  "text-size": {  
    "base": 1.2,  
    "stops": [  
      [11, 10],  
      [14, 14],  
      [18, 16]  
    ]  
  },  
  "text-field": "{name:latin}\n                {name:nonlatin}",  
  "visibility": "visible",  
  "symbol-spacing": 150,  
  "text-max-width": 10,  
  "text-transform": "none"  
}
```

...

Map usage

- **Vector tiles** (style.json)
- Raster tiles (xyz)
- WMTS service
- Static maps API (PNG)



3D map via MapLibre!

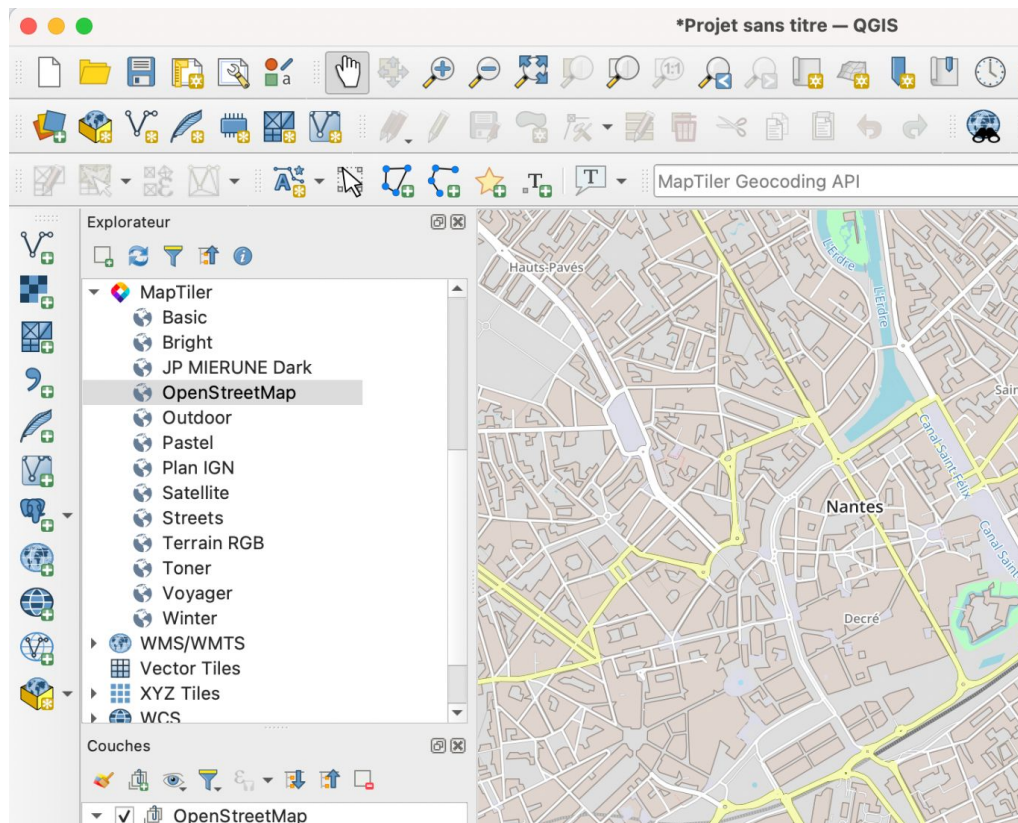


Vector tiles in QGIS

- MapTiler plugin for QGIS
- Change symbology
- Use the map as a basemap for your project in QGIS
- Print OpenStreetMap in high resolution!



<https://github.com/maptiler/qgis-maptiler-plugin>

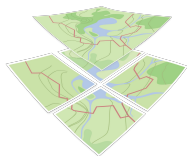


Open-source



MapLibre

<https://maplibre.org/>



OpenMapTiles

<https://openmaptiles.org/>



QGIS (tuiles vectorielles)

<https://github.com/maptiler/qgis-maptiler-plugin>



OpenMapTiles vector tiles on OpenStreetMap.org?

- Ongoing discussion with the OpenStreetMap Foundation
- OpenMapTiles schema for maps on openstreetmap.org
- Carto style as open-source



Thanks!



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[@MapTiler](https://twitter.com/MapTiler)

