

OpenStreetMap

Day 2 – OSM motivations and advanced tools

DIGITARCH Summer School

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Course page



Course summary

Day 2

Collaborative mapping tools

Humanitarian mapping (Examples)

OpenStreetMap data usage

Mobile applications for mapping (Examples)



OpenStreetMap & Friends

The OSM environment, its dynamics and its community-based idea inspired the development of many tools and platform in different fields, such as:

- Data quality assurance
- Contribution tracking
 - Indoor mapping
- Environmental monitoring
- Game & Fantasy mapping
 - Historical mapping



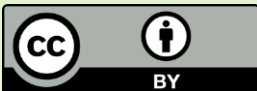
Data quality assurance

taginfo

Dashboard for accessing stats about how specific tags are used and which are the most common tag combinations.

The screenshot shows the taginfo dashboard for the 'wheelchair' tag. At the top left is the taginfo logo. To the right, there is a language dropdown set to 'Italiano' and a search bar. Below the logo is a navigation bar with links: CHIAVI · TAG · RELAZIONI · PROGETTI · RAPPORTI · INFORMAZIONI SU TAGINFO. The main heading is 'wheelchair' with a subtitle: 'Indica se un particolare posto è adatto all'uso della carrozzina.' To the right of the heading are filters: 'Lista dei confronti (0 oggetto/i)' and 'Filtro: Nessun filtro'. Below these are several utility buttons: XAPI, JOSM, Level0 Editor, Overpass turbo, OSM Tag History, and ohsome. A row of tabs includes: Panoramica, Valori, Combinazioni delle chiavi, Simili, Cronologia, Mappa (selected), Wiki, Progetti, and Caratteri. The main content area is titled 'Distribuzione geografica di questa chiave' and contains the text: 'Mostra la distribuzione dei nodi e dei percorsi con questa chiave (le relazioni non compaiono).' Below this is a world map with red dots indicating the geographic distribution of the 'wheelchair' tag. At the bottom left of the map area is the text: '→ OpenStreetMap · Data © OSM contributors (ODbL)'. At the bottom right is the text: 'Fonti · Download · API · Aiuto · → Wiki'.

<https://taginfo.openstreetmap.org/>



Data quality assurance

osmose

Tools for automatically detect issues in OSM data in a specific areas with some suggestions on how to fix them.

Cambia lingua ▼ Problemi per utente Statistiche Esporta ▼ Aiuto ▼ Ritardo: 14h Login

Importanza Elevata ▼
Correggibile ▼
Argomento ▼

Altri filtri ▼
Selezionare: tutti nessuno inverti

Strutture 31/31 tutti nessuno
 edifici sovrapposti
 poligono non valido
 rotatoria inversa
 nodi orfani
 cambio improvviso nel tipo di strada

strada * link errata
 classificazione discontinua
 relazione ampia
 multipoligono
 cliccabile non connessa ad

highway
 geometria duplicata
 quasi connesso

Tag mancanti 14/14 tutti nessuno
 junction=roundabout
 senso unico
 strada
 zone.maxspeed

Tag errati 34/34 tutti nessuno
 source tag sbagliato
 collegamenti tra i tag
 tag non corretto
 chiave non corretta
 errore tipografico nel tag

i Nome in lingua senza quello in lingua predefinita
● Nascondi contrassegni
Non vuoi vedere i contrassegni di Nome in lingua senza quello in lingua predefinita?
Nascondi dalla mappa
Codice sorgente
Name_Local.py#L45
Vuoi migliorare questo controllo o la documentazione?
wiki.osm.org/Osmose#Help

https://osmose.openstreetmap.fr/it/map/#zoom=18&lat=44.493658&lon=11.346082&item=xxxx&level=1&issue_uuid=539bbfc8-9593-45ec-efdd-efaba48eacf0



Collaborative mapping tools



Data quality assurance

ohsome

Interactive dashboard for checking data quality and history of features in OSM.

The screenshot displays the 'ohsome DASHBOARD' interface, which provides 'Easy access to OSM History and Quality Analyses'. The dashboard is divided into several sections:

- OSM History Stats** and **OSM Quality Analyses** tabs are visible at the top.
- Topic**: A dropdown menu is set to 'Building Count'. Below it, a description states: 'All buildings as defined by all objects tagged with 'building=*'. The 'ohsome filter definition of the topic' is shown as: `building=* and building!=no and geometry:polygon`.
- Quality Indicators**: This section includes:
 - Completeness**: A toggle switch for 'Mapping Saturation' is turned on. The description reads: 'Calculate if mapping has saturated. High saturation has been reached if the growth of the fitted curve is minimal.'
 - Currentness**: A toggle switch for 'Currentness' is turned off. The description reads: 'Estimate currentness of features by...'
- Area of interest**: A map of Bologna, Italy, is shown with a blue outline indicating the selected area. The map includes various landmarks and street names.

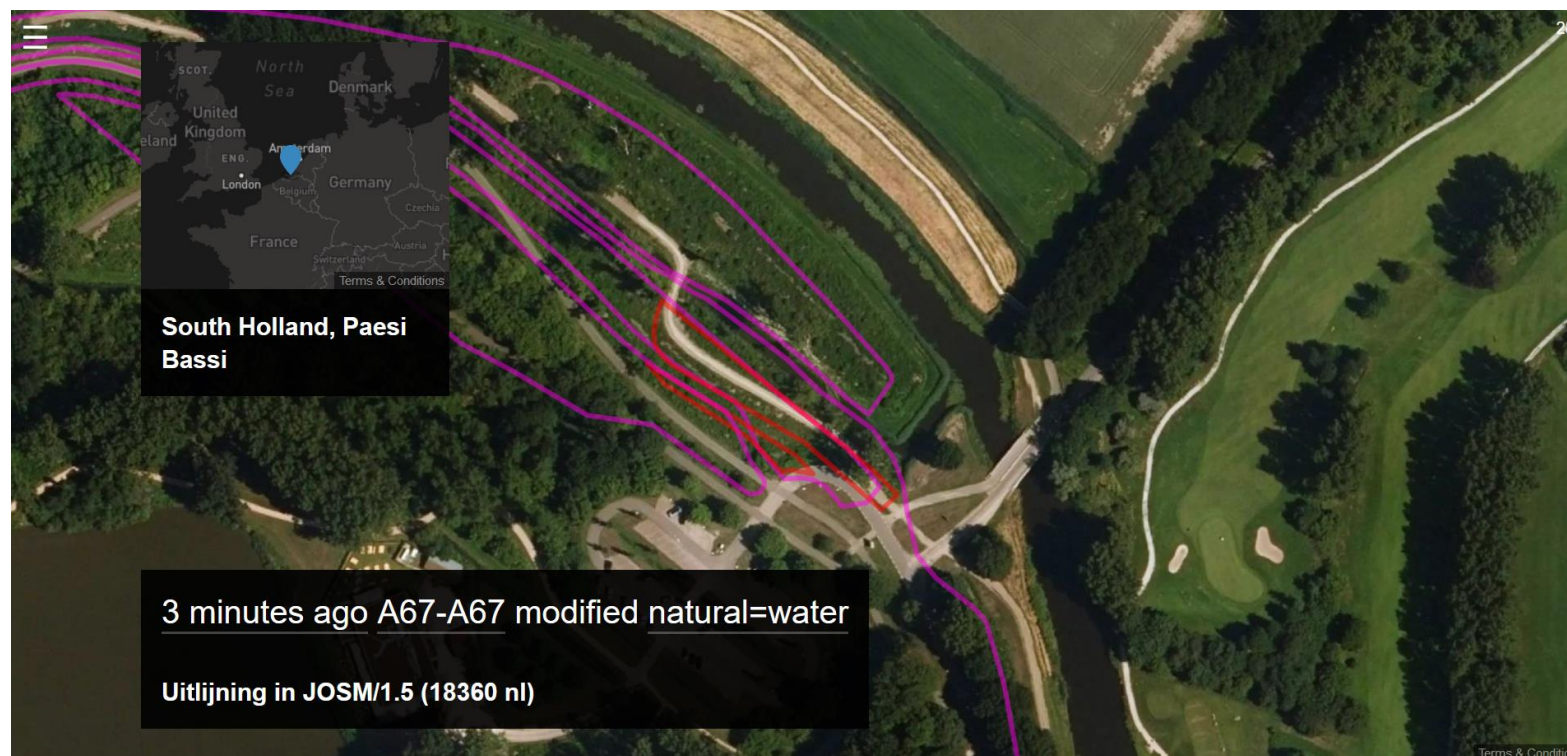
<https://dashboard.ohsome.org/>



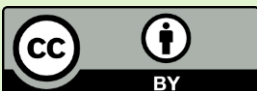
Contributions tracking

Show me the way

Open-source tool that shows in real time edits and changesets successfully completed around the world.



<https://osmlab.github.io/show-me-the-way/>



Collaborative mapping tools



Indoor mapping

Indoor=

Web map for exploring indoor mapped objects on OpenStreetMap



<https://indoorequal.org/#map=15.75/44.488652/11.331091>



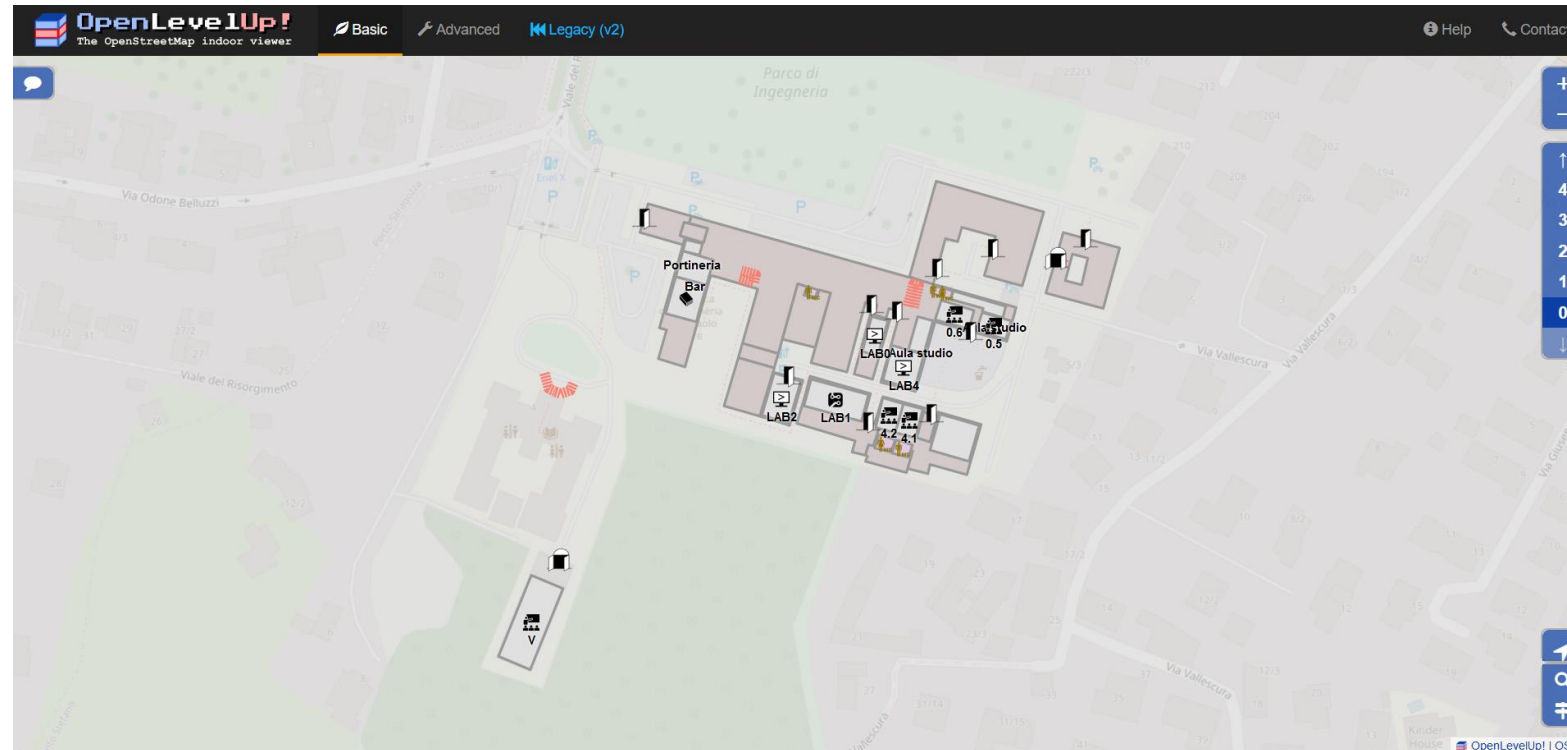
Collaborative mapping tools



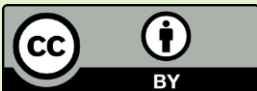
Indoor mapping

OpenLevelUp

Web map for exploring indoor mapped objects on OpenStreetMap



<https://openlevelup.net/?l=0#18/44.48733/11.32945>



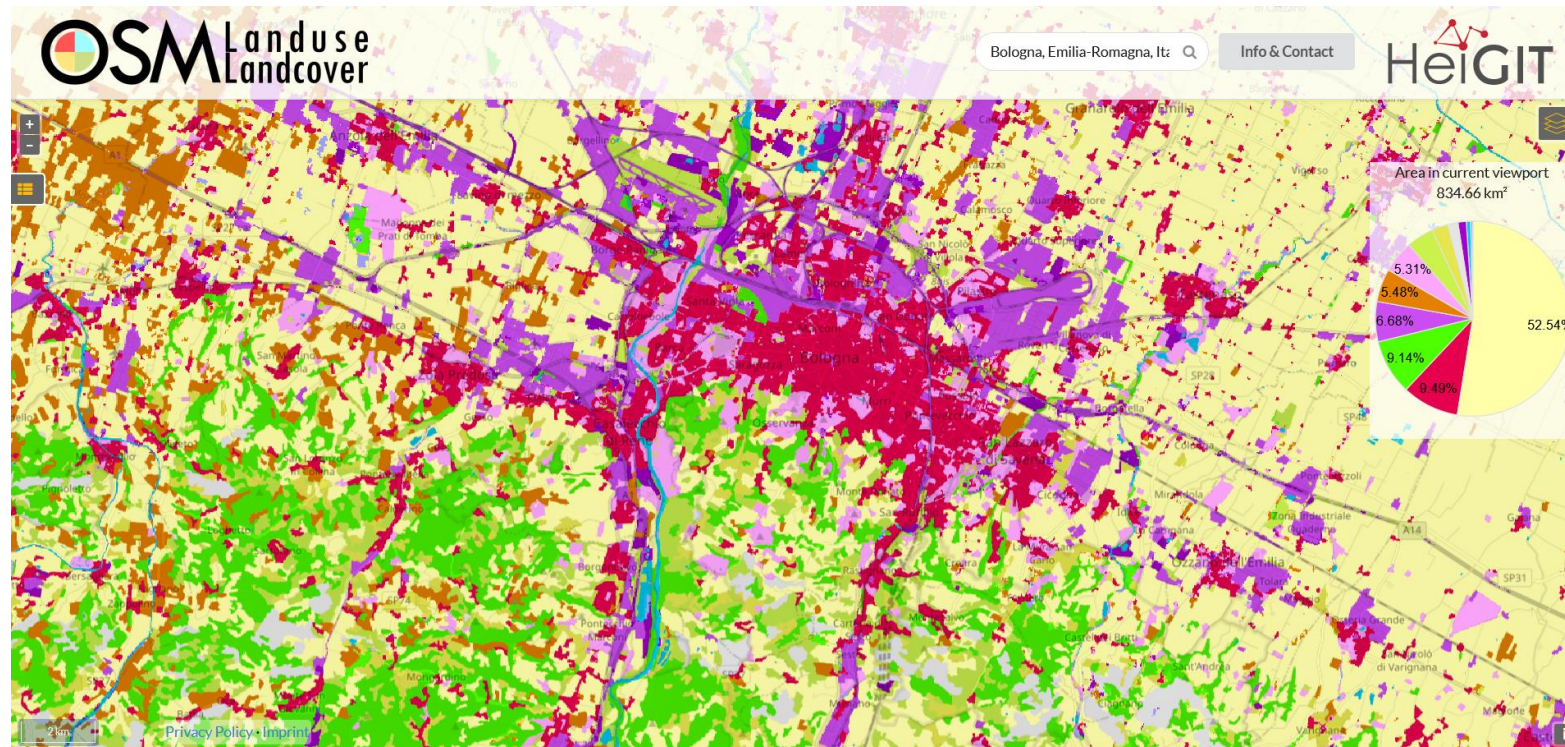
Collaborative mapping tools



Environmental monitoring

OSM Landuse Landcover

Interactive dashboard computing stats on land cover and use around the world as mapped on OSM.



<https://osmlanduse.org/#12/11.33161/44.4886/0/>



Game & Fantasy Mapping

Back of your hand

How well do you know the road network of your hometown?

The screenshot shows the 'BACK OF YOUR HAND' game interface. On the left, a dark purple sidebar contains the game title, progress '3 / 5 Find the following:', a search result 'CORSO DELLA LIBERAZIONE' in a white box, a 'Result' section with 'Distance: 0 metres' and 'Score: 100%', and a 'Next' button. The main area is a map of Arona, Italy, with a large purple circle centered on the town. A green line on the map indicates the location of 'CORSO DELLA LIBERAZIONE'. The map includes labels for various locations like Campagna, Angera, and Mercurago, and features like 'Lago Maggiore'. A zoom control is visible in the top right corner of the map area.

<https://backofyourhand.com/game?difficulty=tourist&lat=44.49474&lng=11.34319&numberOfQuestions=5&radius=2000>



Game & Fantasy Mapping

CityStrides

Let's "conquer" the streets by running and cycling all the roads of your city!

The screenshot displays the CityStrides interface for Vancouver, British Columbia, Canada. The page shows a progress bar for Steve Monteith, who has completed 1065 out of 1105 streets (96.38%). A list of streets to be completed is shown, including Bradley Court, Celista Drive, Centennial Road, Crown Place, Dunkirk Street, East Waterfront Road, Heatley Avenue, Hum-Lu-Sum Drive, and Jack Unnal Street. The map on the right shows the city's street network with a blue outline indicating the area to be completed.

Vancouver
British Columbia, Canada
Last updated from OSM: 2021-03-05

1328 STRIDERS 1105 STREETS

Steve Monteith
1804 STREETS 96.38%

LifeMap Profile

40 INCOMPLETE 1065 COMPLETE STRIDERS

Search...

< Prev Page 1 of 4 Next >

Bradley Court Show Go

Celista Drive Show Go

Centennial Road Show Go

Crown Place Show Go

Dunkirk Street Show Go

East Waterfront Road Show Go

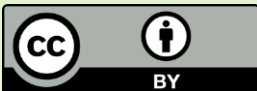
Heatley Avenue Show Go

Hum-Lu-Sum Drive Show Go

Jack Unnal Street Show Go

1 km mapbox © Mapbox © OpenStreetMap Improve this map

<https://citystrides.com/>



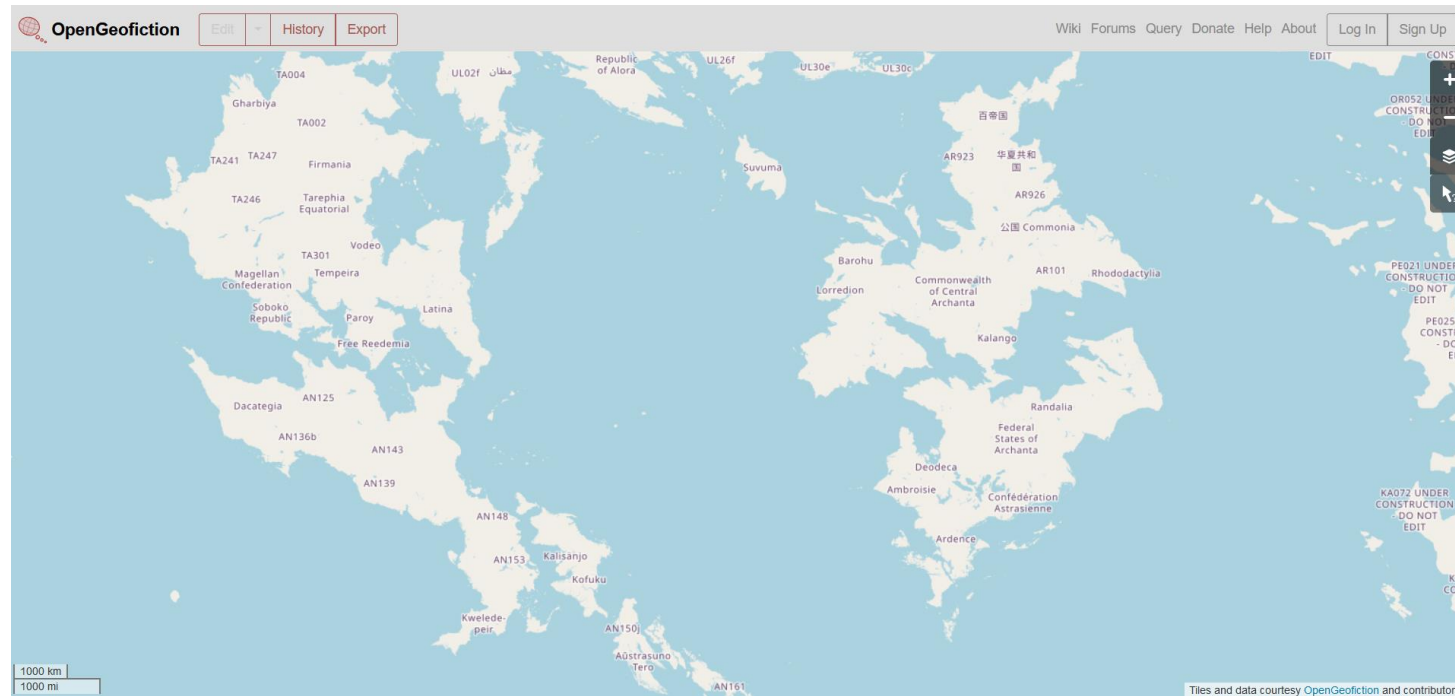
Collaborative mapping tools



Game & Fantasy Mapping

OpenGeoFiction

Digital cartography platform for creating fictional map using the OSM interface.



<https://opengeofiction.net/#map=3/-25.87/99.14&layers=B>



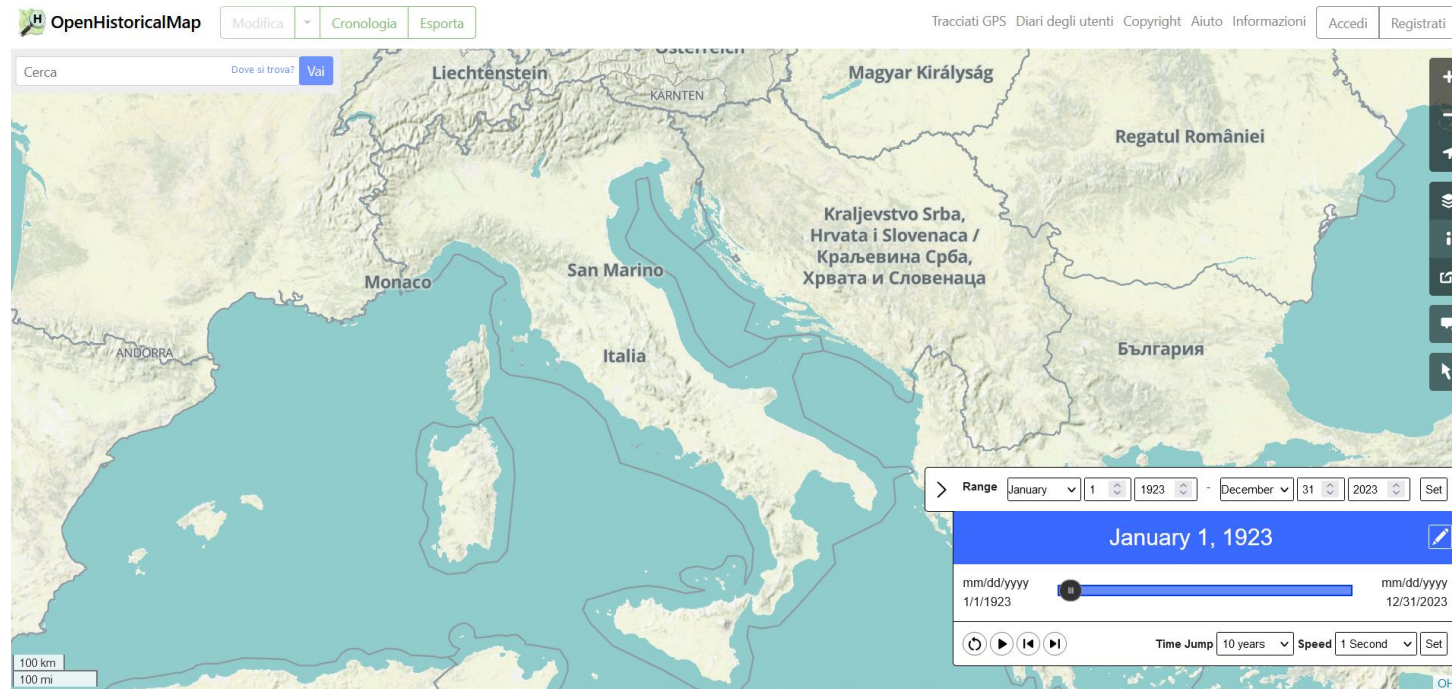
Collaborative mapping tools



Historical mapping

OpenHistoricalMap

Digital cartography platform for documenting historical features using the OSM interface.



<https://www.openhistoricalmap.org/#map=6/42.245/15.293&layers=O&date=1923-01-01&daterange=1923-01-01,2023-12-31>



Querying and downloading OpenStreetMap data

Data added to OpenStreetMap and/or contributions made to a project can be queried and downloaded to become the subject of further applications and analyses. For this purpose, numerous solutions exist, varying in complexity and query possibilities.



GEOFABRIK

- Allows downloading of data packages on a national and continental level
- For large countries also at sub-national level. Does not allow filtering by criteria for OSM data
 - Formats: .pbf/.shp



Overpass Turbo

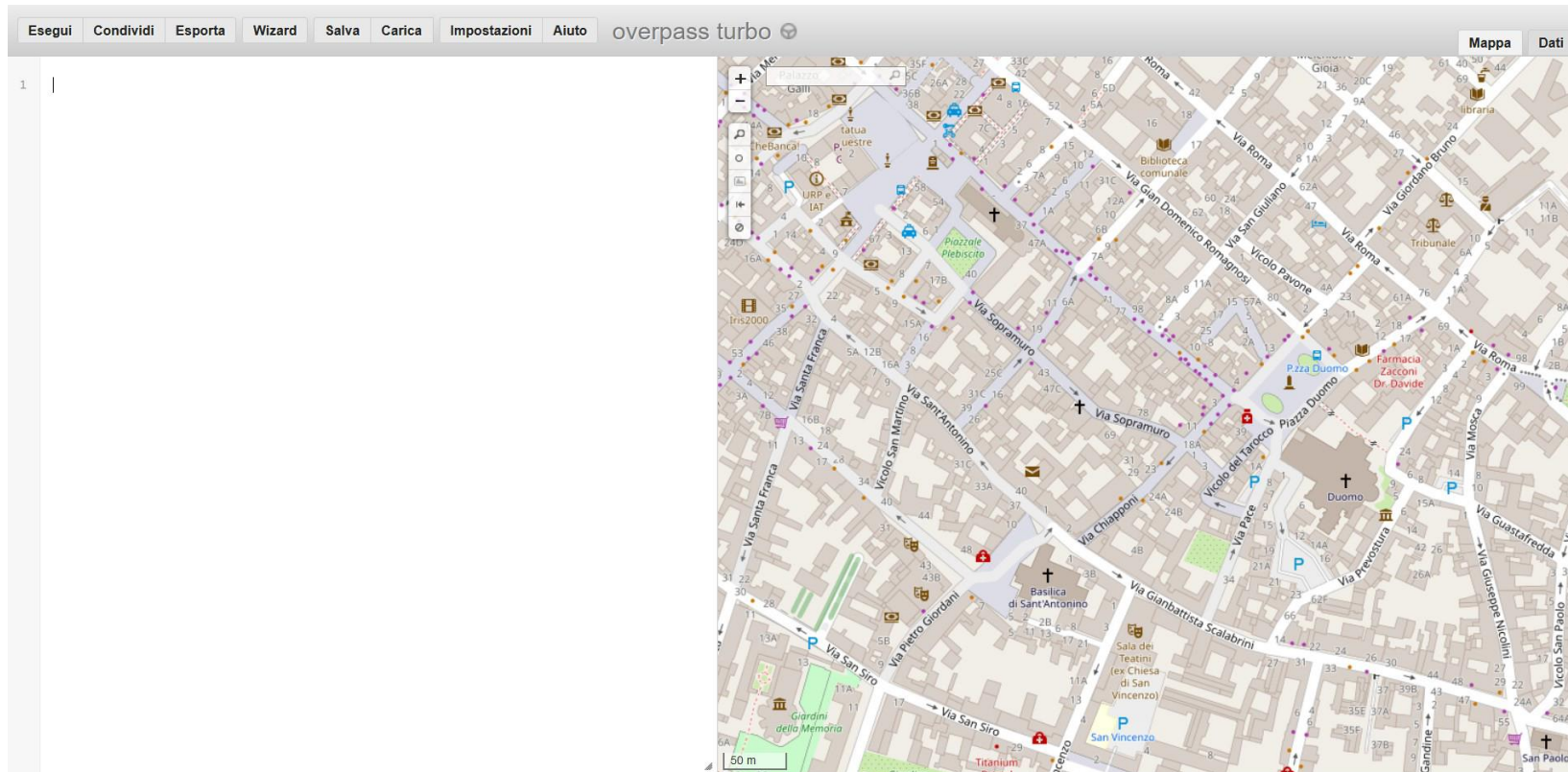
- Powerful and flexible tool to extract exactly what you want, at the place and time of interest
- Rich but complex language
- Possibility of exploiting 'shortcuts' for simple queries
 - Formats:
GeoJSON/.gpx/.kml/.osm-json

- **OpenStreetMap Export Tool:**
<https://www.openstreetmap.org/export>
- **HOTOSM Export Tool:**
<https://export.hotosm.org/en/v3/>
- **PlanetOSM:**
<https://planet.openstreetmap.org/>
- **Estratti OpenStreetMap Italia:**
<https://osmit-estratti.wmcloud.org/>



OverpassTurbo

This tool makes it possible to query the OpenStreetMap database via Overpass API requests. This makes it possible to locate and save data of interest through specific, even very detailed queries.



<https://overpass-turbo.eu/>

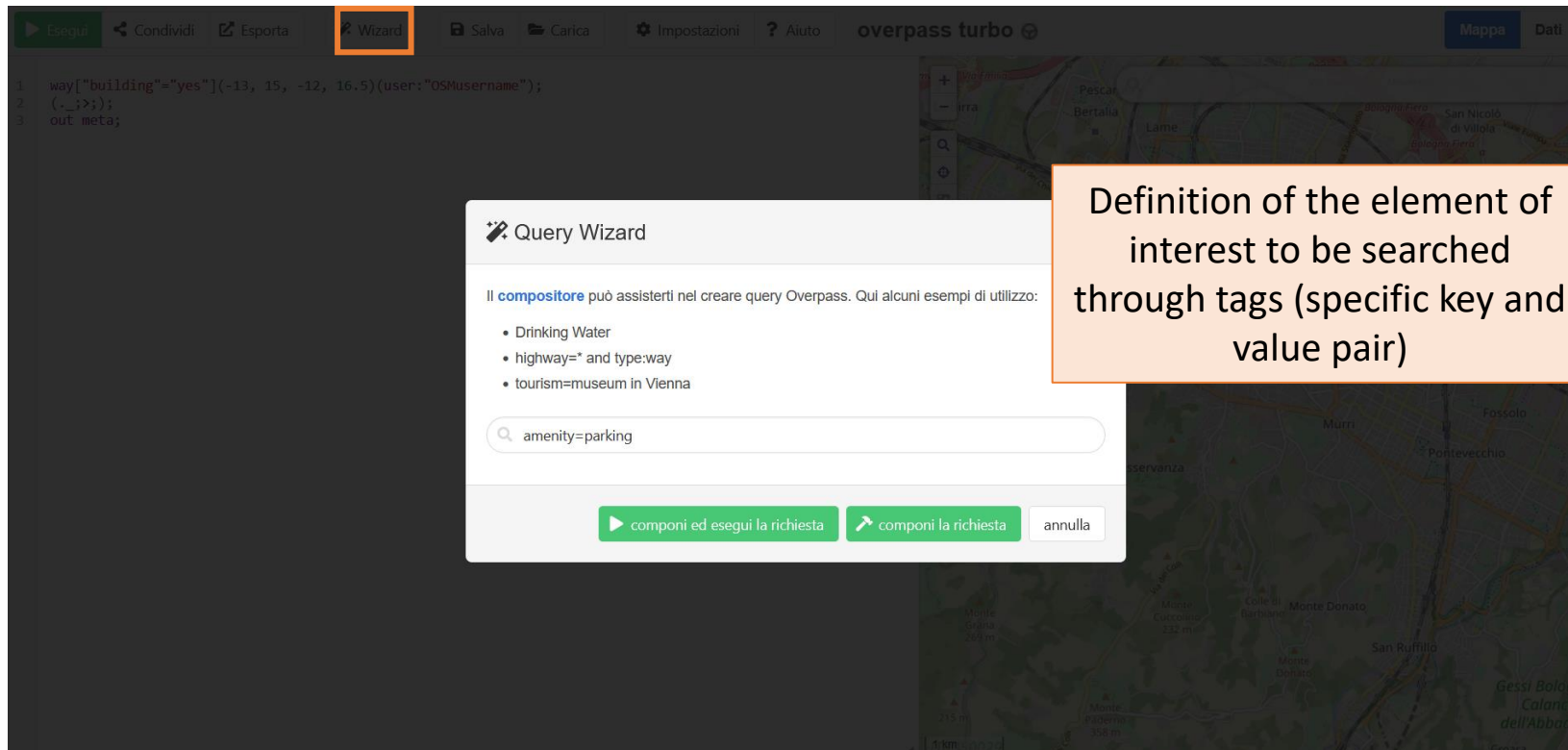


OpenStreetMap data usage



OverpassTurbo

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Definition of the element of interest to be searched through tags (specific key and value pair)

<https://overpass-turbo.eu/>

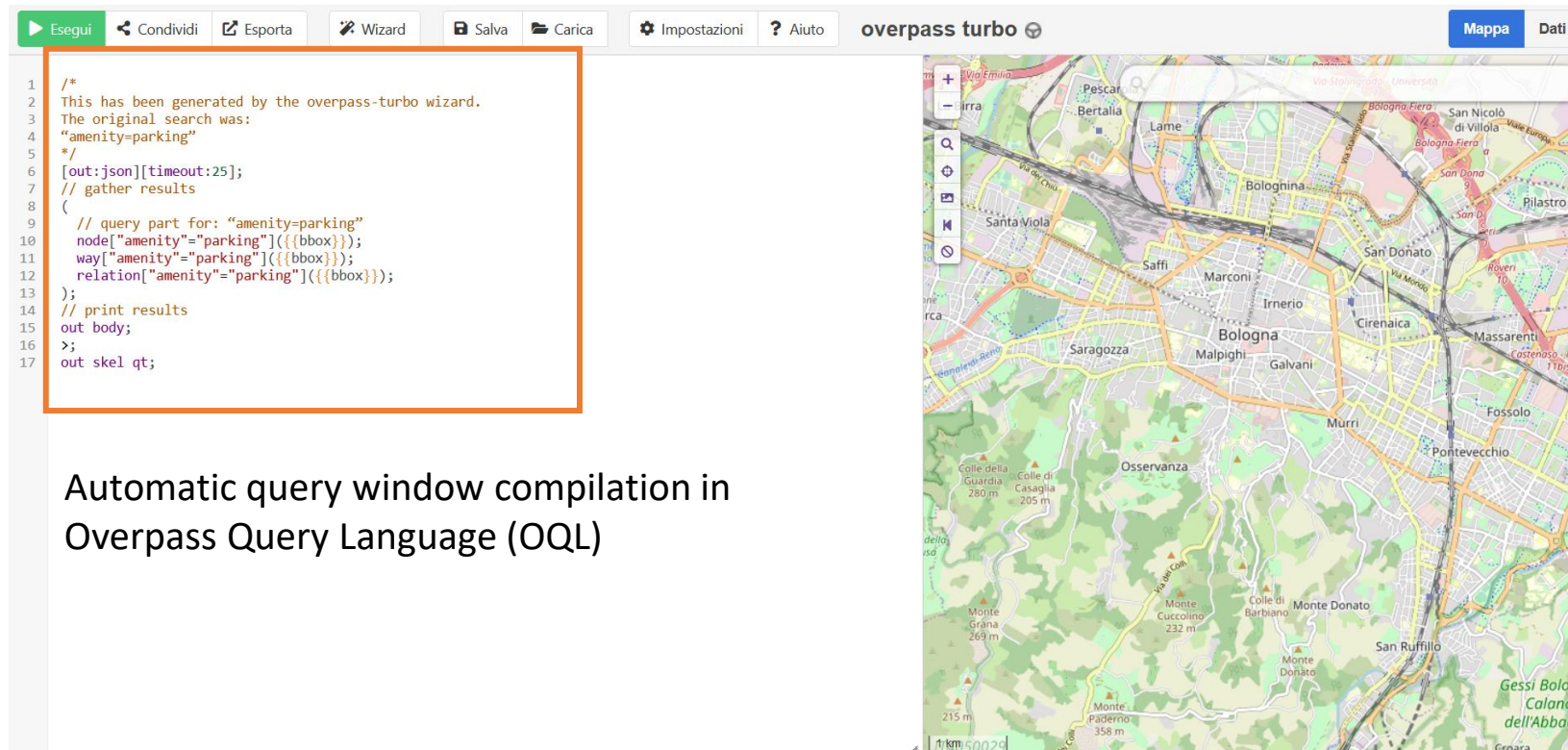


OpenStreetMap data usage



OverpassTurbo

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The screenshot shows the Overpass Turbo web interface. On the left, a code editor displays an OQL query for parking amenities. The query is as follows:

```
1 /*
2 This has been generated by the overpass-turbo wizard.
3 The original search was:
4 "amenity=parking"
5 */
6 [out:json][timeout:25];
7 // gather results
8 (
9 // query part for: "amenity=parking"
10 node["amenity"="parking"]({{bbox}});
11 way["amenity"="parking"]({{bbox}});
12 relation["amenity"="parking"]({{bbox}});
13 );
14 // print results
15 out body;
16 >;
17 out skel qt;
```

On the right, a map of Bologna, Italy, is displayed, showing the city's layout and surrounding areas. The map includes labels for various districts and landmarks, such as Bologna Fiera, San Donato, and the Gessi Bolognesi.

Automatic query window compilation in
Overpass Query Language (OQL)

<https://overpass-turbo.eu/>

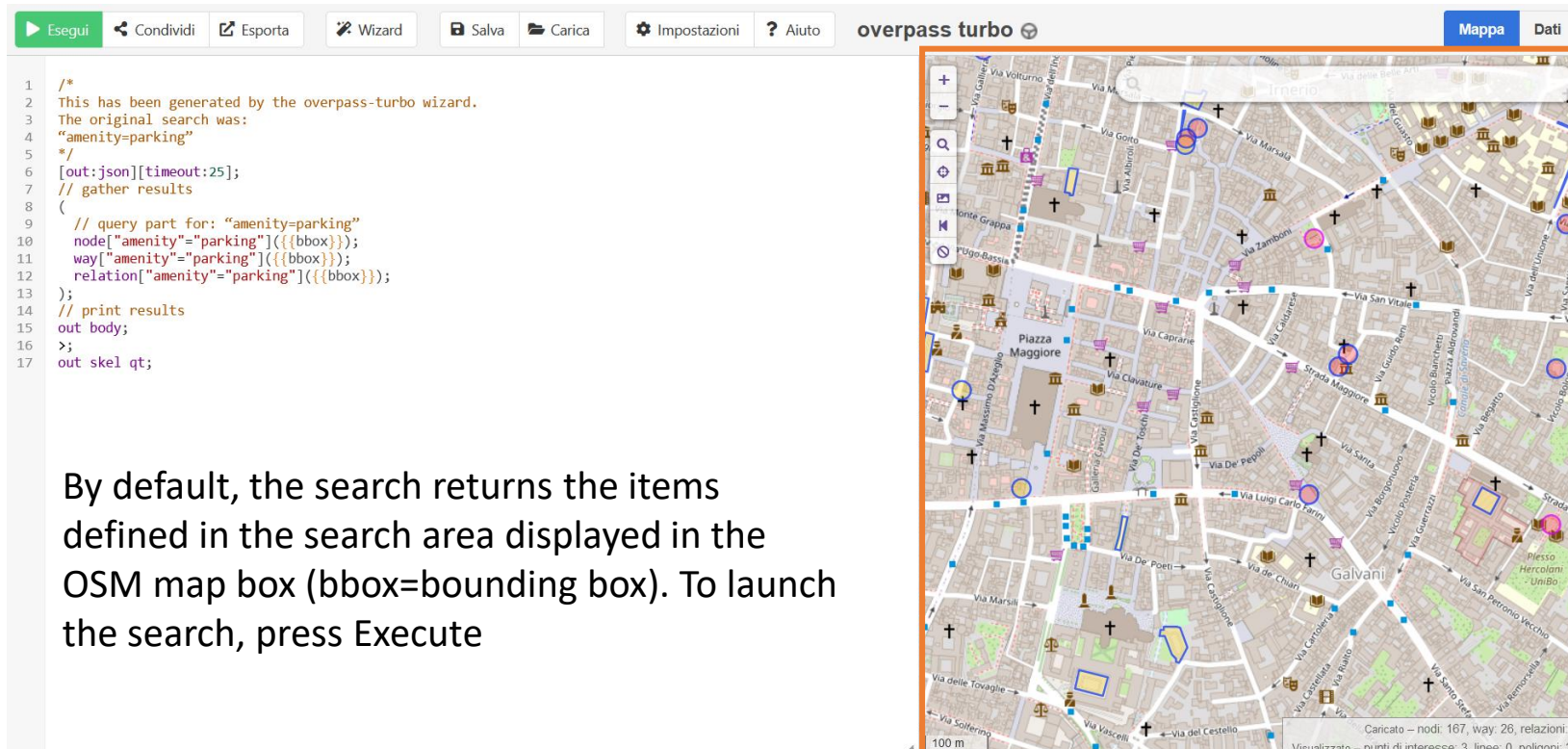


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13 );
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17 out skel qt;
```

Below the code editor, there is a text box explaining the search process:

By default, the search returns the items defined in the search area displayed in the OSM map box (bbox=bounding box). To launch the search, press Execute

On the right, there is a map of Milan, Italy, with a search area highlighted in blue. The map shows various streets and landmarks, including Piazza Maggiore and Galvani. The interface includes navigation controls and a search bar at the top.

<https://overpass-turbo.eu/>

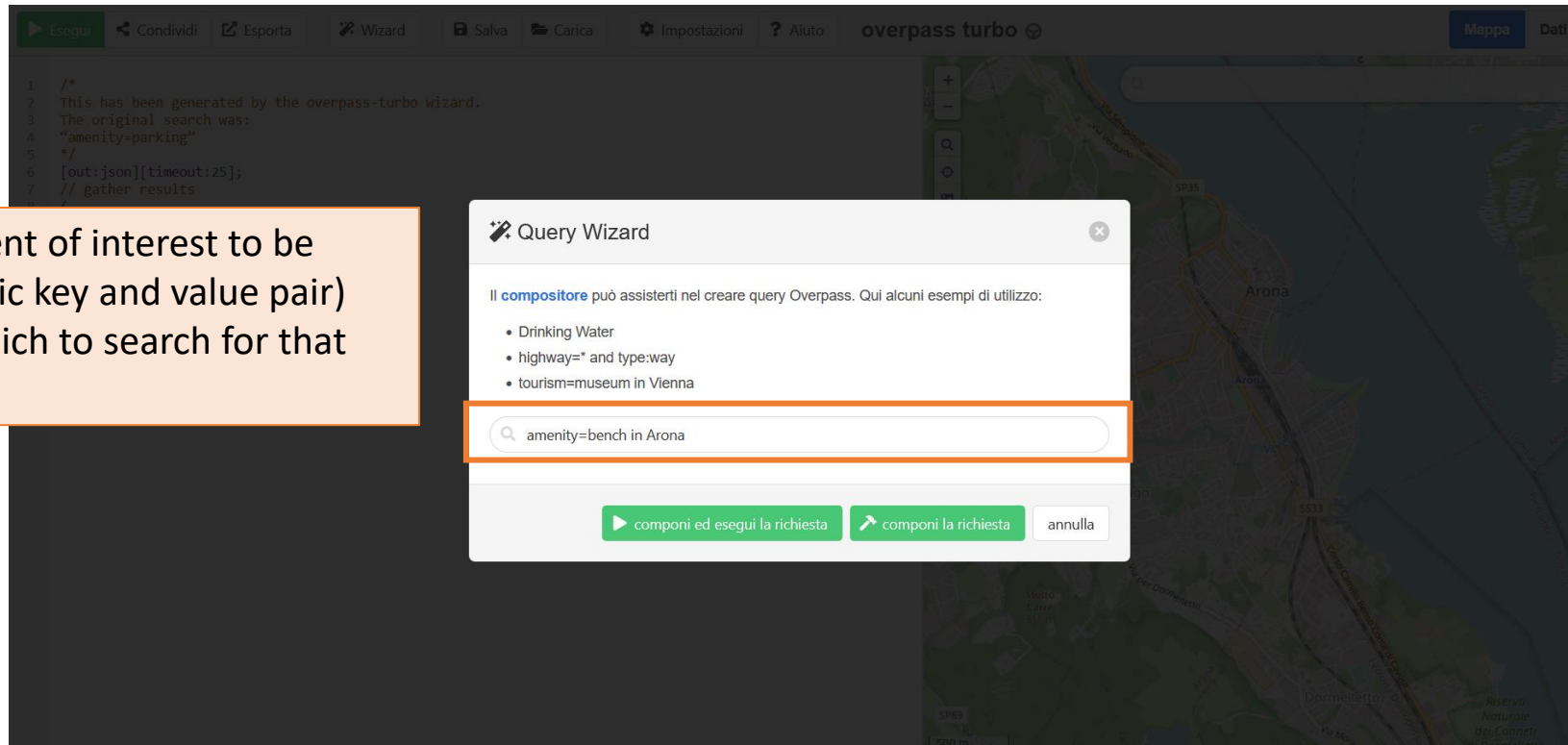


OpenStreetMap data usage



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3 The original search was:  
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5 */  
6 [out:json][timeout:25];  
7 // gather results
```

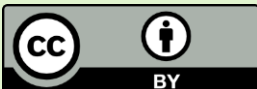
In the center, a "Query Wizard" dialog box is open. It contains the text: "Il [compositore](#) può assisterti nel creare query Overpass. Qui alcuni esempi di utilizzo:" followed by a list of examples:

- Drinking Water
- highway=* and type:way
- tourism=museum in Vienna

Below the list, a search input field contains the query: "amenity=bench in Arona". At the bottom of the dialog, there are three buttons: "componi ed esegui la richiesta" (highlighted in green), "componi la richiesta" (highlighted in green), and "annulla".

Definition of the element of interest to be searched by tag (specific key and value pair) AND the location in which to search for that element

<https://overpass-turbo.eu/>

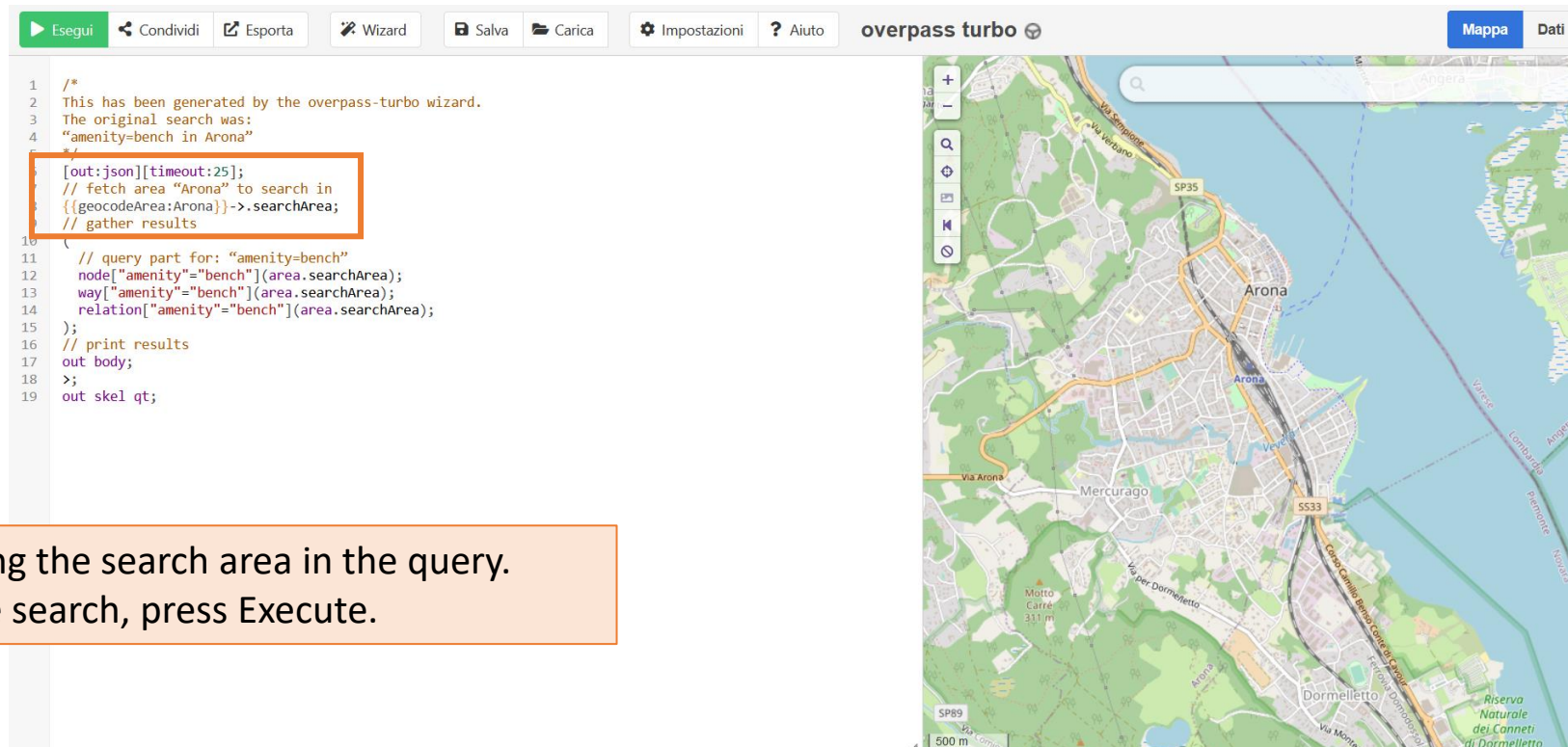


OpenStreetMap data usage



OverpassTurbo

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The screenshot shows the Overpass Turbo web interface. On the left is a code editor with a query. A red box highlights the following lines:

```
1 /*  
2 This has been generated by the overpass-turbo wizard.  
3 The original search was:  
4 "amenity=bench in Arona"  
5 */  
6 [out:json][timeout:25];  
7 // fetch area "Arona" to search in  
8 {{geocodeArea:Arona}}->.searchArea;  
9 // gather results  
10  
11 // query part for: "amenity=bench"  
12 node["amenity"="bench"](area.searchArea);  
13 way["amenity"="bench"](area.searchArea);  
14 relation["amenity"="bench"](area.searchArea);  
15 );  
16 // print results  
17 out body;  
18 >;  
19 out skel qt;
```

On the right is a map of Arona, Italy, with a search bar at the top. The map shows the town of Arona, the Arona river, and surrounding areas like Mercurago and Dormelletto. A red box highlights the search bar containing the text "Arona".

Line defining the search area in the query.
To start the search, press Execute.

<https://overpass-turbo.eu/>



OpenStreetMap data usage

