OpenStreetMap

Cartografía libre de acceso, uso y contribución

Associació GNU/Linux València
gnulinuxvalencia.org

30 enero 2026

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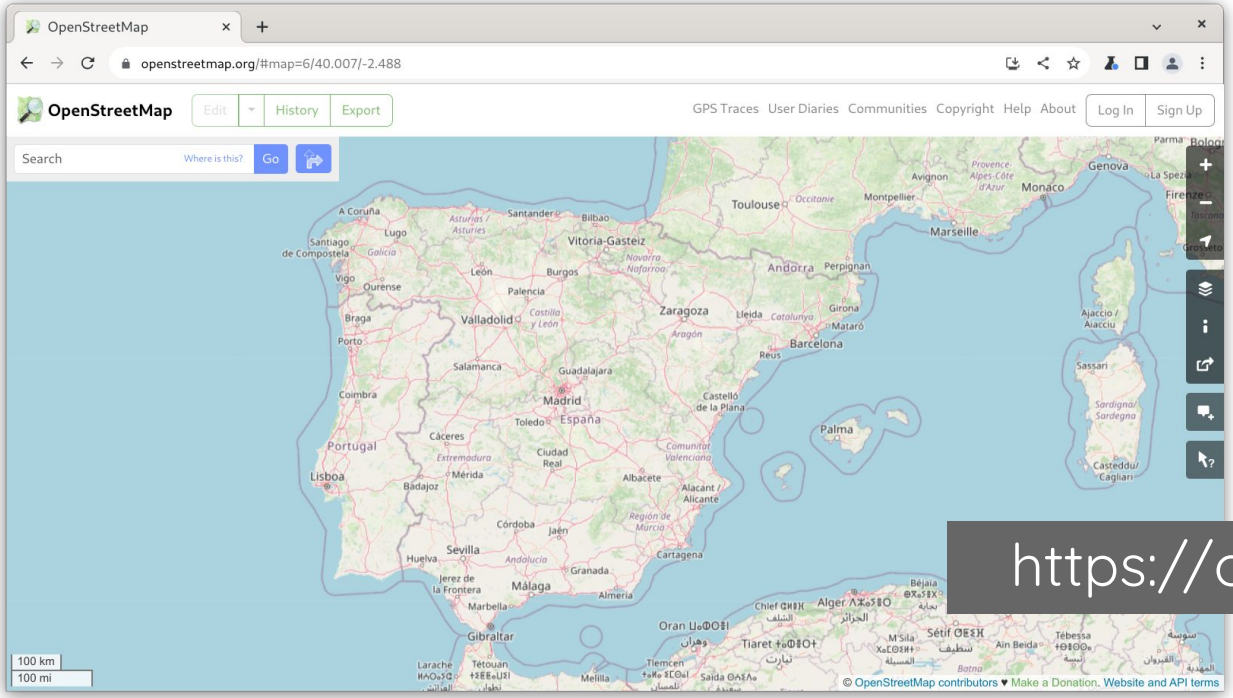
Asociación OpenStreetMap España

Instituto Pirenaico de Ecología CSIC

ESP

OpenStreetMap

La Wikipedia de los mapas



https://openstreetmap.org

OpenStreetMap
La Wikipedia de los mapas

"Crear y distribuir datos geográficos libres de restricciones técnicas o legales de uso, promoviendo su utilización de forma creativa, productiva o inesperada"

... a partir de la contribución voluntaria y colaborativa de la comunidad

¿Qué es OpenStreetMap?

- **Comunidad** de **entusiastas**
  del software y los datos libres
- **Proyecto** para crear
  la **mejor base de datos** geográfica mundial
- ¿Un mapa en la red? ¡No! ¡son **muchos** mapas!
- No solo mapas: ecosistema de **productos** y **servicios**

Fuente Jorge Sanz http://jsanz.github.io/slides-osm/noesunmapa/

OpenStreetMap

La Wikipedia de los mapas

- ~ 10 millones de editores
- ~ 200 activos/día en España
- ~ 9.800 millones de nodos
- > 45.000 creados/día en España
- Base de datos espacial de libre uso y distribución (OdbL)

fuente: osmstats.neis-one.org

Licencia ODBL

OPEN DATA

- *Open Data Commons Open Database License*
- Eres **libre** de: **copiar**, **distribuir**, **usar**, **modificar** y **transformar** la base de datos
- Siempre y cuando **cites** convenientemente la fuente, y el trabajo obtenido **se distribuya** con una **licencia similar** y de forma **abierta** (sin restricciones)

http://opendatacommons.org/licenses/odbl/summary/

Diversos elementos...

- Motorway
- Main road
- Railway
- Light rail
- Airport Runway · Taxiway
- Intermittent waterbody
- Glacier
- Reef
- Wetland
- Forest · Wood
- Orchard · Vineyard
- Grass · Meadow
- Farmland
- Heathland
- Scrubland
- Bare rock
- Built-up area
- Farm
- Brownfield site
- Cemetery
- Allotments
- Sports pitch
- Sports centre
- Nature reserve
- Military area
- Summit · Peak

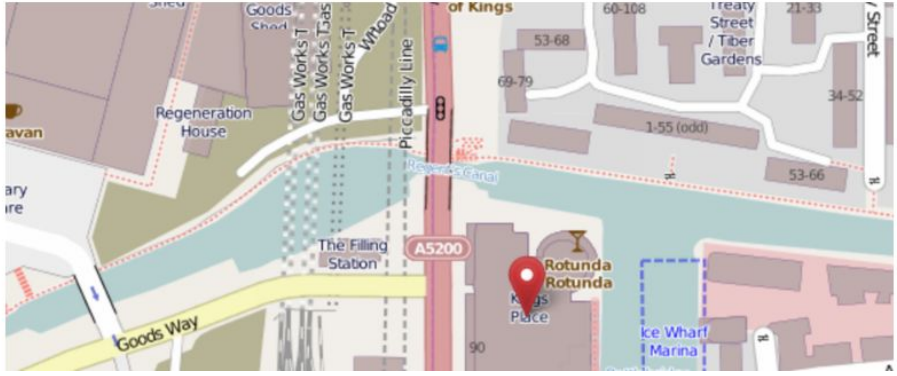
Mapping technologies

Why the world needs OpenStreetMap

As more private companies offer us maps, we need an open-source, editable solution - a cartographical Wikipedia

Serge Wroclawski

Tue 14 Jan 2014 11.52 GMT



Why the world needs OpenS

theguardian.com/technology/2014/jan/14/why-the-world-needs-openstreetmap

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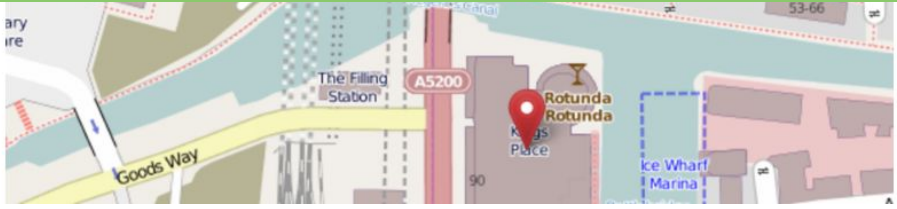
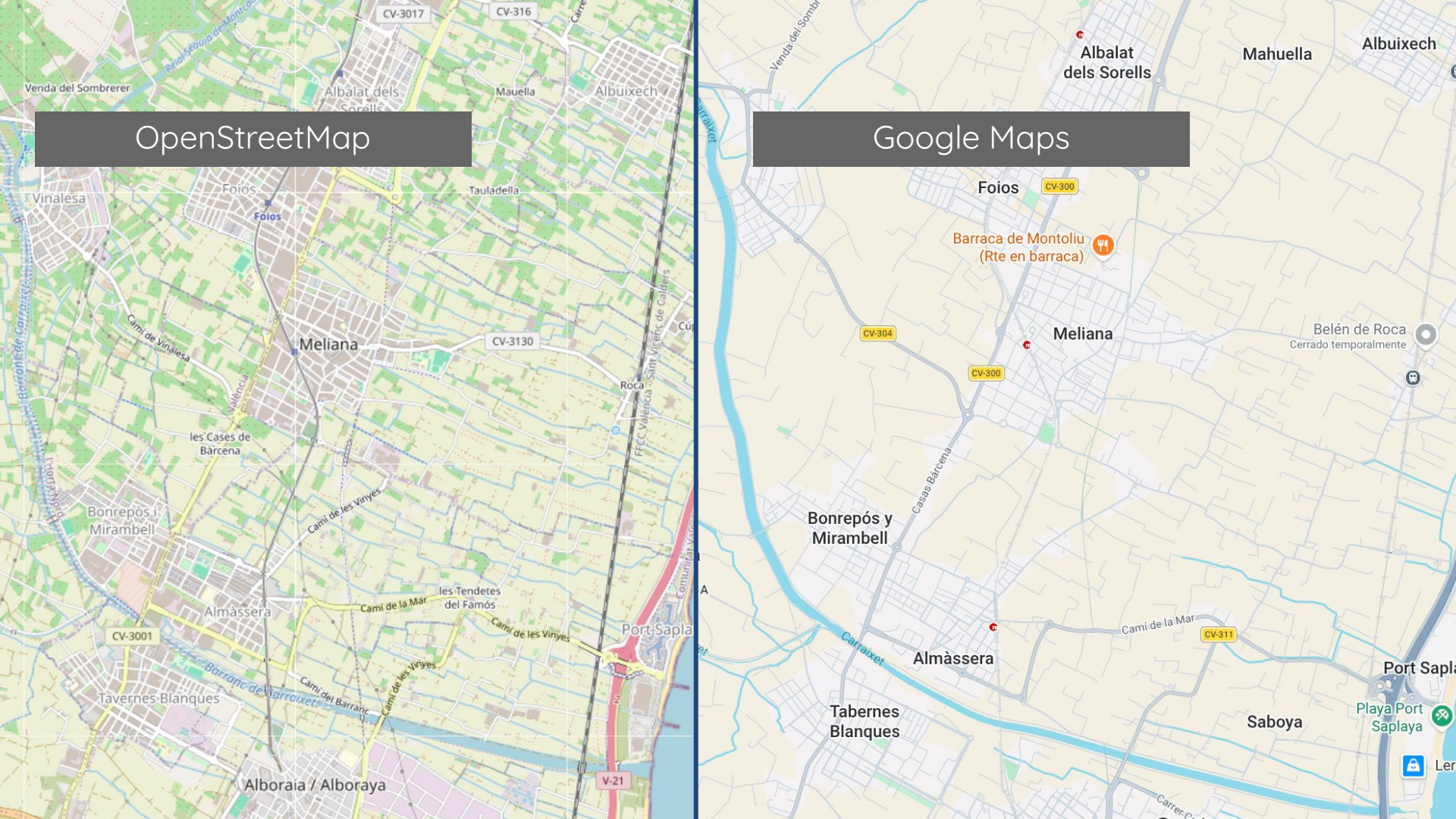
Relevancia de OpenStreetMap

- **Alternativa** a servicios de mapas online cerrados
- Uso fundamental en áreas de **ayuda humanitaria**
  - o en cualquier otro área
- Incorporación al “open data” espacial




OpenStreetMap
Google Maps
Albalat dels Sorells
Mahuella
Albuixech
Foios
CV-300
Barraca de Montoliu
(Rte en barraca)
Meliana
CV-304
Belén de Roca
Cerrado temporalmente
Bonrepós y
Mirambell
Almàssera
Tabernes
Blanques
Saboya
Port Sapla
Playa Port
Saplaya
CV-311
Camí de la Mar
Carraixet
Casas Bárcena
Venda del Sombrerer
Albalat dels Sorells
Mauella
Albuixech
Vinalesa
Foios
Tauladella
CV-3017
CV-316
CV-3130
Camí de Vinalesa
Meliana
Roca
les Cases de Bàrcena
Bonrepós i Mirambell
Camí de les Vinyes
les Tendetes del Famós
Almàssera
CV-3001
Barranc de Carraixet
Camí del Barranc
Tavernes Blanques
Alboraia / Alboraya
V-21

Y más colaboraciones

Empresas como **Amazon**, **Facebook**, **Microsoft** o **TomTom** están **editando** para mejorar la calidad de los datos espaciales de OSM para **su beneficio**.

https://wiki.osm.org/wiki/Category:Organised_Editing_Teams

OpenStreetMap como fuente de datos espaciales

- Wikimedia
- Facebook
- Apple Maps
- Mapbox / Carto
- Medios de comunicación
- Agencias gubernamentales

Noticia en periódico El País

Lo mejor de OpenStreetMap es su Comunidad llena de entusiastas

Y tú también puedes ser parte de ella

Icono de Freepik / www.flaticon.com

Procedimiento a seguir

- **Unirse** a la comunidad
  - tener usuario en OpenStreetMap
- **Recoger** los datos
- **Subir** los datos a OSM
- **Generar** mapas
  - OSM.org, otras plataformas, hacerlo tú mismo

Crea una cuenta
osm.org/login

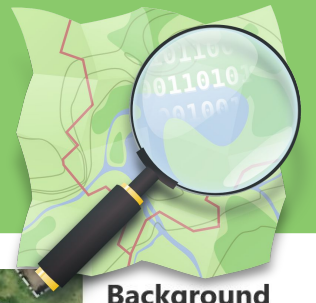
Trabajo sobre el terreno

Mapping parties

Image: Aragón TV

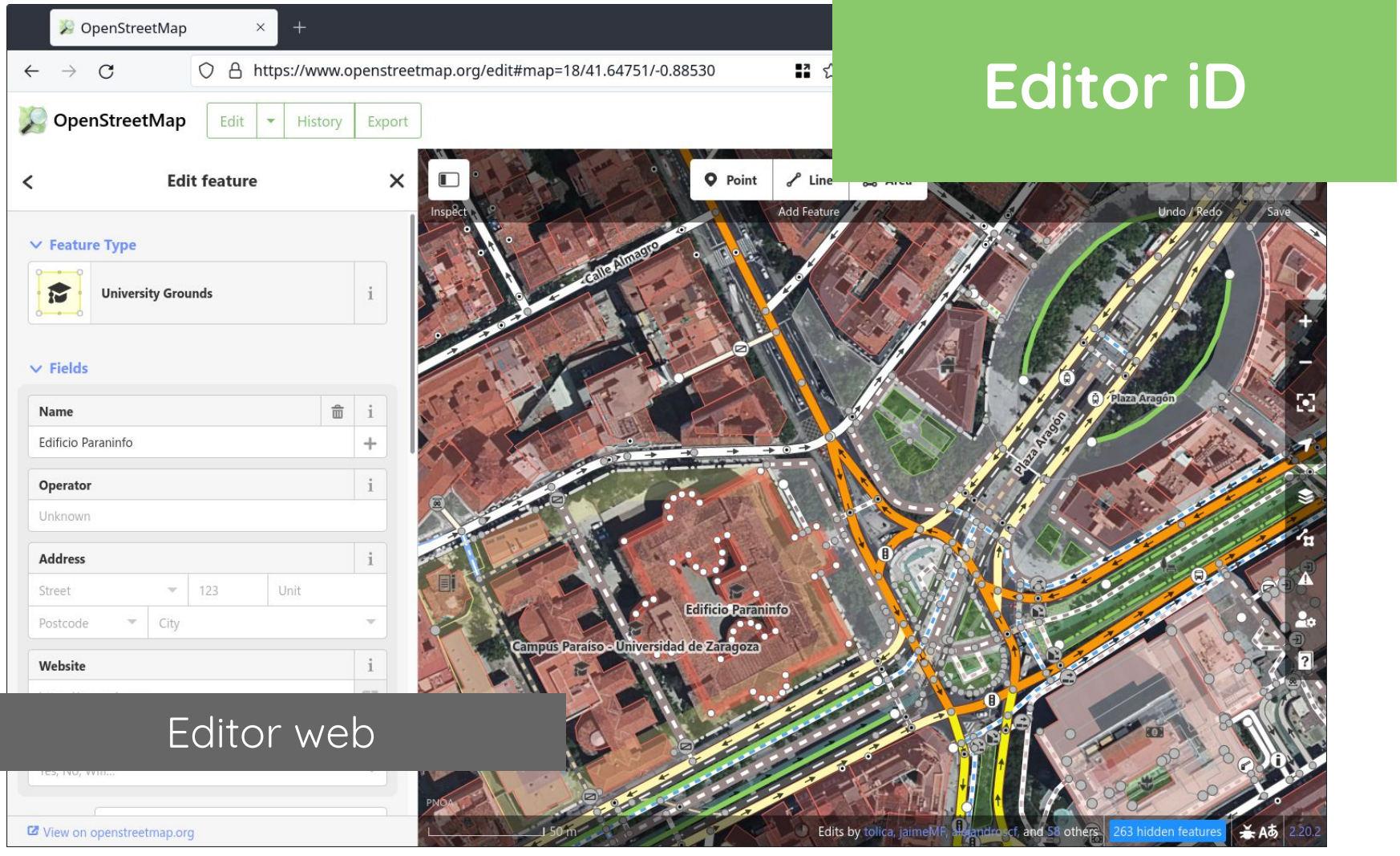
Mapping Party gvSIG - Noviembre 2007
https://youtu.be/YueA1Siyptw

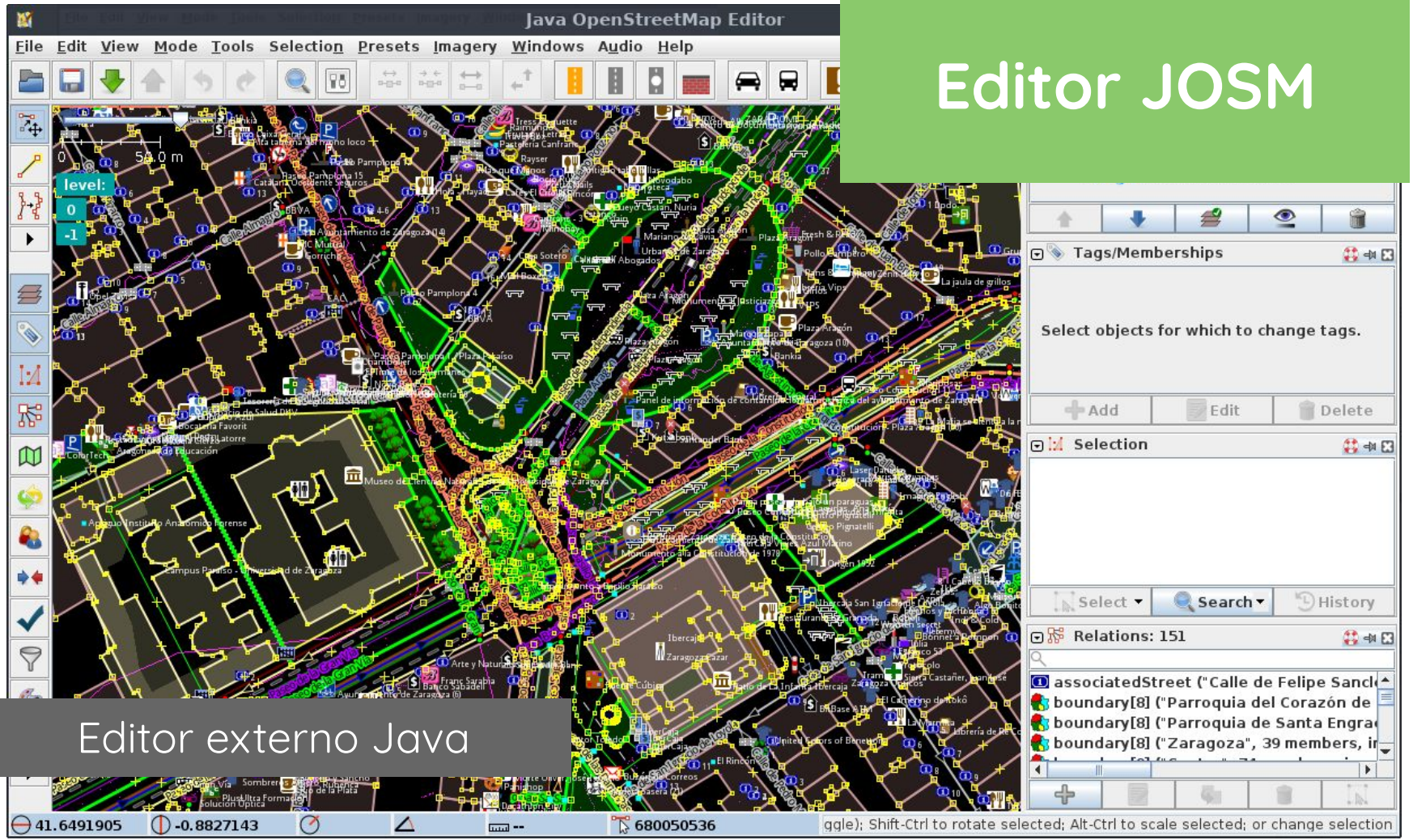
Recursos online



- Recursos IGN/CNIG
  - Ortofotografía
  - Mapas topográficos
- Catastro
- Imágenes de satélite
  - Maxtar, BING y otras

SOLO USAR FUENTES CON PERMISO DE USO


OpenStreetMap
https://www.openstreetmap.org/edit#map=18/41.64751/-0.88530
OpenStreetMap
Edit
History
Export
Edit feature
Feature Type
University Grounds
Fields
Name
Edificio Paraninfo
Operator
Unknown
Address
Street
123
Unit
Postcode
City
Website
View on openstreetmap.org
Point
Line
Inspect
Add Feature
Undo / Redo
Save
Calle Almagro
Plaza Aragón
Edificio Paraninfo
Campus Paraíso - Universidad de Zaragoza
PNOA
50 m
Edits by tolica, jaimeMF, alejandrocf, and 58 others
263 hidden features
2.20.2
Editor iD
Editor web



Editor JOSM

Editor externo Java

Modelo datos geográficos

Componente espacial: tipologías básicas

- nodos / nodes
- líneas / ways

Componente temático: etiquetas y valores

- `shop=bakery`
- `name=Panadería Alonso`

Relaciones y conjuntos

¿dónde?

¿qué forma?

¿qué es?

¿cómo se relaciona?

Wiki de OpenStreetMap
wiki.osm.org

OpenStreetMap Wiki

wiki.openstreetmap.org/wiki/Main_Page

Main Page | Discussion

Main Page · In other languages Help

Afrikaans asturianu azərbaycanca Bahasa Indonesia Bahasa Melayu bosanski brezhoneg català čeština dansk Deutsch eesti **English** español Esperanto euskara français Frysk galego hrvatski interlingua íslenska italiano kréyòl gwadloupéyen kurdî latviešu Lëtzebuergesch lietuvių magyar Nederlands norsk occitan polski português română shqip slovenčina slovenščina srpski (latinica) suomi svenska Tiếng Việt Türkçe Zazaki Ελληνικά български македонски русский српски / srpski українська հայերեն עברית العربية سرائیکی فارسی پنجابی پښتو नेपाली मराठी বাংলা සිංහල ไทย မြန်မာဘာသာ 한국어 中文（简体） 中文（繁體） 日本語

Other languages...

- Main Page
- The map
- Map Features
- Contributors
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- Donations
- Wiki discussion
- Recent changes

Tools

- What links here
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***Welcome to OpenStreetMap**, the project that creates and distributes free geographic data for the world. We started it because most maps you think of as free actually have legal or technical restrictions on their use, holding back people from using them in creative, productive, or unexpected ways.*

More about OpenStreetMap** | **How to contribute** | **Where to get help

Use OpenStreetMap	Contribute free map data	Software Development
Using OpenStreetMap	Beginners' Guide	Develop and use the Platform
• Browse our world map • Check the ready-to-use products for your mobile device, your desktop computer or the web services	• Browse the map feature documentation • Browse the Mapping projects • ...**more on contributing map data**	• Use OpenStreetMap for your software • Contribute to the OpenStreetMap software

Map features - OpenStre

wiki.openstreetmap.org/wiki/Map_features

Map Features
elementos del mapa

Page | Discussion

Map features

tagging | tagging

***Map Features* · In other languages** Help

asturianu azərbaycanca Bahasa Indonesia bosanski català čeština Crnogorski dansk Deutsch eesti **English** español Esperanto français galego hrvatski íslenska italiano latviešu lietuvių magyar Nederlands norsk occitan polski português română shqip slovenčina slovenščina suomi svenska Tiếng Việt Türkçe Ελληνικά български македонски русский српски / srpski українська עברית العربية فارسی پنجابی नेपाली தமிழ் ไทย မြန်မာဘာသာ 한국어 ქართული 中文（简体） 中文（繁體） 日本語

Other languages...

OpenStreetMap represents physical features on the ground (e.g., roads or buildings) using tags attached to its basic data structures (its nodes, ways, and relations). Each tag describes a geographic attribute of the feature being shown by that specific node, way or relation.

OpenStreetMap's free tagging system allows the map to include an unlimited number of attributes describing each feature. The community agrees on certain key and value combinations for the most commonly used feature tags, which act as informal standards. However, users can create new tags to improve the style of the map or to support analyses that rely on previously unmapped attributes of the features. Short descriptions of tags that relate to particular topics or interests can be found using the feature pages.

Most features can be described using only a small number of tags, such as a path with a classification tag such as `highway=footway`, and perhaps also a name using `name=*`. But, since this is a worldwide, inclusive map, there can be many different feature types in OpenStreetMap, almost all of them described by tags.

There are proposed changes to existing tags, inactive features and deprecated features. If you do not find a suitable tag in this list then feel free to make something suitable up as long as the tag values will be verifiable. Over time, you may find that the tag name is changed to fit with some wider consensus. However, many good tags were used first and documented later. For the latest updates of tagging schemes see *Changelog*.

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Cubiertas del terreno (1)
etiqueta `natural`

Map features - OpenStre

wiki.openstreetmap.org/wiki/Map_features#Natural

Natural

This is used to describe natural and physical land features. These a

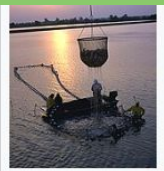
Vegetation

Key	Value	Element	Description	Map rendering	Image
natural	fell		Habitat above tree line covered with grass, dwarf shrubs and mosses.		
natural	grassland		An area where the vegetation is dominated by grasses and other herbaceous (non-woody) plants.		
natural	heath		A dwarf-shrub habitat, characterised by open, low growing woody vegetation, often dominated by plants of the Ericaceae.		
natural	moor		Don't use, see wikipage		
natural	scrub		Uncultivated land covered with shrubs, bushes or stunted trees		

Cubiertas del terreno (2) etiqueta `landuse`

Map features - OpenStre

wiki.openstreetmap.org/wiki/Map_features#Common_landuse_key_values_-_rural_

Common landus					
landuse	aquaculture		Aqu organis plants. Warning: currently, there is no convention on the exact meaning of this tag. Therefore, it makes sense to treat it like "boundary of aquaculture" (without implication of water body), which means, water body should be tagged by its own, using `natural=water` etc.		
landuse	allotments		A piece of land given over to local residents for growing vegetables and flowers.		
landuse	farmland		An area of farmland used for tillage (cereals, vegetables, oil plants, flowers).		
landuse	farmyard		An area of land with farm buildings like farmhouse, dwellings, farmsteads, sheds, stables, barns, equipment sheds, feed bunkers, etc. plus the open space in between them and the shrubbery/trees around them.		
			An area of land that is used to keep animals, particularly horses		

Map features - OpenStre

wiki.openstreetmap.org/wiki/Map_features#Waterway

Ríos, lagos y cuerpos de agua
etiquetas `water` y `waterway`

Waterway

This is used to described different types of waterways. When mapp
the water flow. See the page titled **Waterways** for an introduction o

Natural watercourses

Key	Value	Element	Description	Map rendering	Image
waterway	river		The linear flow of a river, in flow direction.		
waterway	riverbank		Using this tag is discouraged, use tag:natural=water + tag:water=river instead.		
waterway	stream		A naturally-forming waterway that is too narrow to be classed as a river.		
waterway	tidal_channel		A natural intertidal waterway in mangroves, salt marshes, and tidal flats with water flow in the direction of the tide		

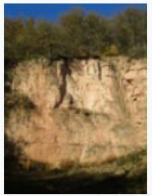
Map features - OpenStre

wiki.openstreetmap.org/wiki/Map_features#Geological

Elementos geológicos
etiqueta `geological`

Geological

This is used to describe the geological makeup of an area. See the p

Key	Value	Element		
geological	moraine	○ ⠇ ⠇	Any accumulation of unconsolidated rock debris previously carried by a glacier.	
geological	outcrop	○ ⠇ ⠇	A place where the bedrock or superficial deposits previously covered under the soil have become locally exposed	
geological	volcanic_caldera_rim	⠇ ⠇	The crater (caldera) of a volcano.	
geological	fault	⠇	A geological fault is a planar fracture or discontinuity in a volume of rock.	
geological	fold	○ ⠇	Planar surfaces, such as sedimentary strata, that are bent or curved ("folded")	
geological	palaeontological_site	○ ⠇	A place with fossils.	

Tag:natural=spring - Ope

wiki.openstreetmap.org/wiki/Tag:natural%3Dspring

Etiqueta específica sobre manantiales

Page Discussion

Tag:natural=spring

Tag:natural=spring · In other languages Help

čeština Deutsch **English** español français italiano magyar polski português русский українська 한국어 日本語

Other languages...

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A **spring** is a locally limited area where groundwater discharges at the surface from an underground aquifer.

Springs are features located mostly in hilly or mountainous environments, where the discharge may have a wide range from millilitres to several cubic metres per second. Karst springs in particular are impressive due to their seasonally high discharge, like the Fontaine de Vaucluse. Some have major importance as the headwaters of streams and rivers. Especially in dry areas, springs are traditionally prominently marked on topographic maps.

Some springs may have a man-made water basin or fountain to provide drinking water. In this case `drinking_water=yes` and `refitted=yes` may be added.

For a structural installation which is designed and built for catching groundwater from a natural spring for water supply see `man_made=spring_box`.

Contents [hide]

natural = spring v · d · e

Description

A place where ground water flows naturally from the ground

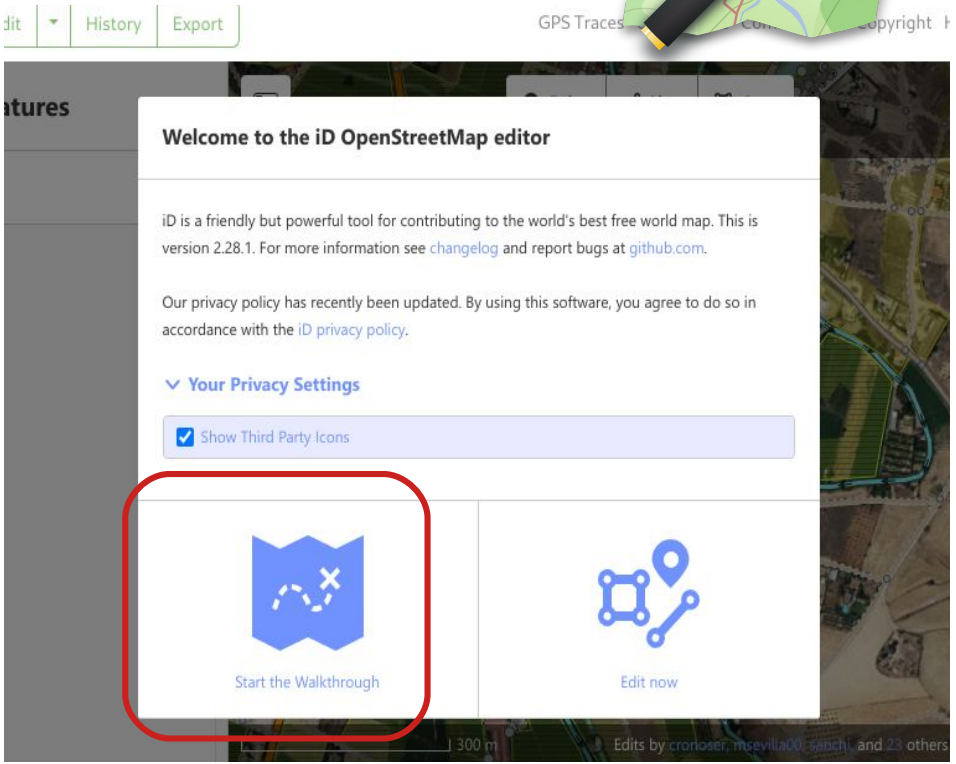
Rendering in OSM Carto

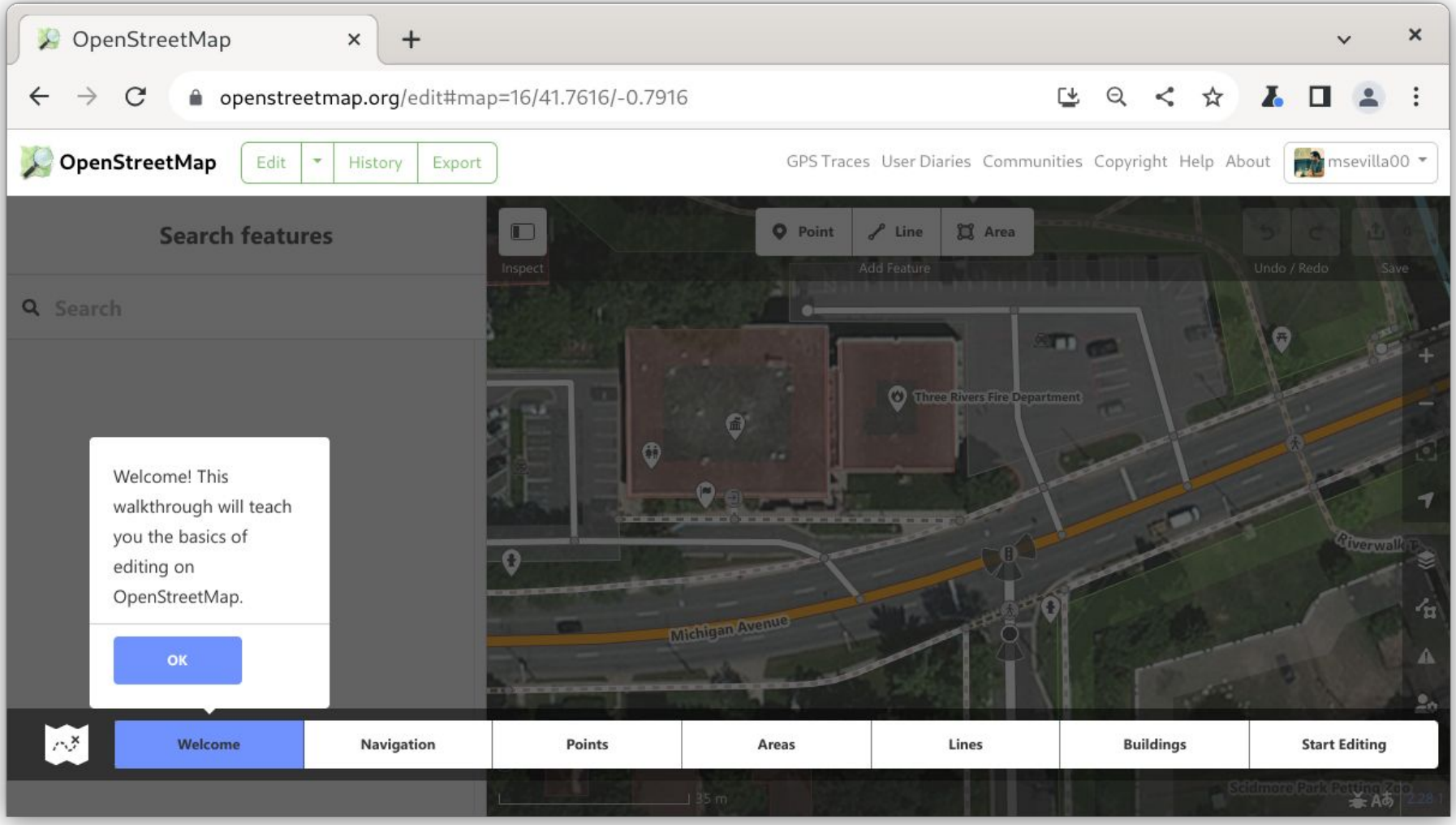
RECUERDA

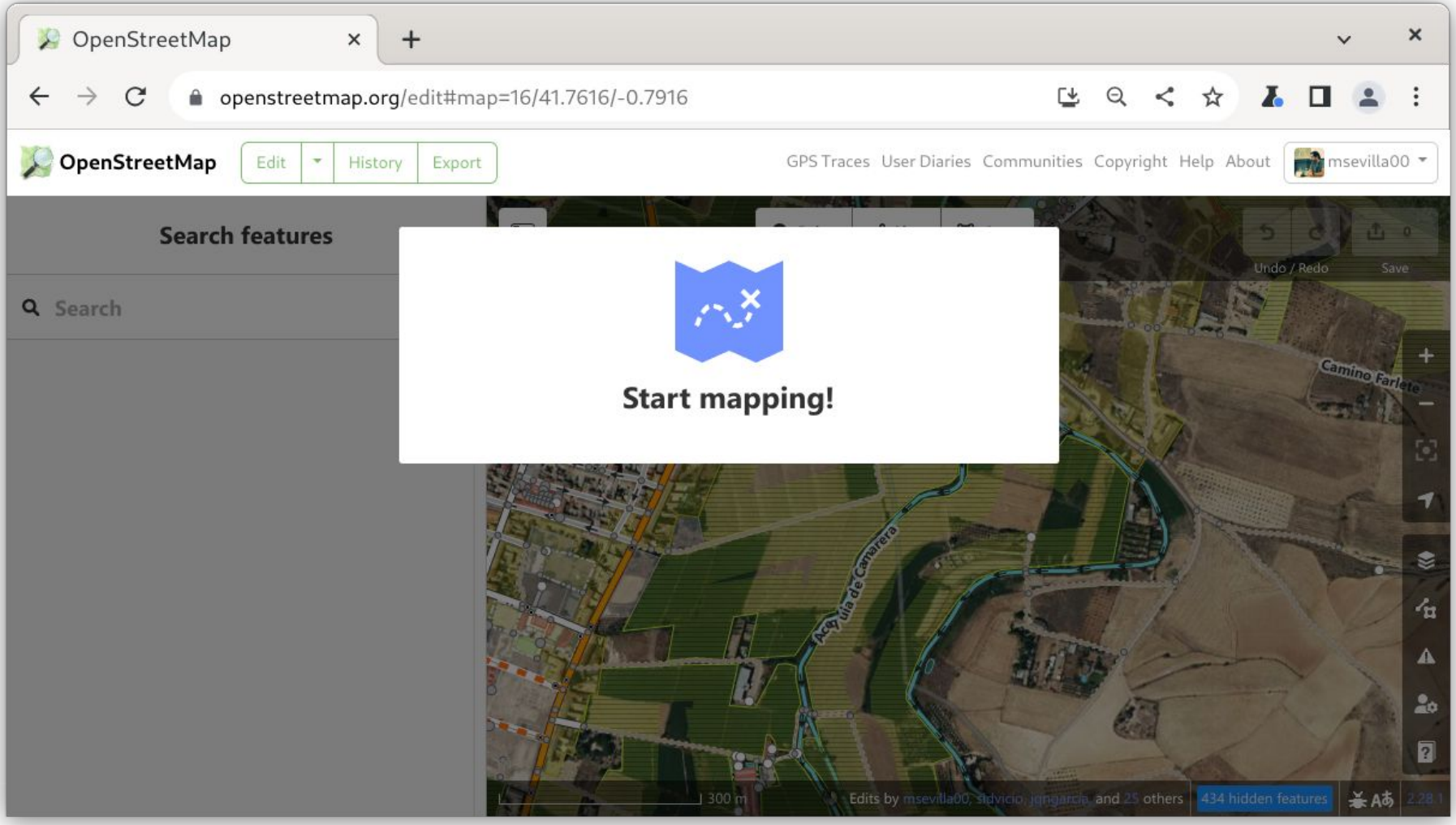
No copies de otros mapas

Editando en iD

Seguir el tutorial




OpenStreetMap
openstreetmap.org/edit#map=16/41.7616/-0.7916
OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Copyright
Help
About
msevilla00
Search features
Search
Inspect
Point
Line
Area
Add Feature
Undo / Redo
Save
Three Rivers Fire Department
Michigan Avenue
Riverwalk
Welcome! This walkthrough will teach you the basics of editing on OpenStreetMap.
OK
Welcome
Navigation
Points
Areas
Lines
Buildings
Start Editing
35 m
Scidmore Park Petting Zoo


OpenStreetMap
openstreetmap.org/edit#map=16/41.7616/-0.7916
OpenStreetMap
Edit
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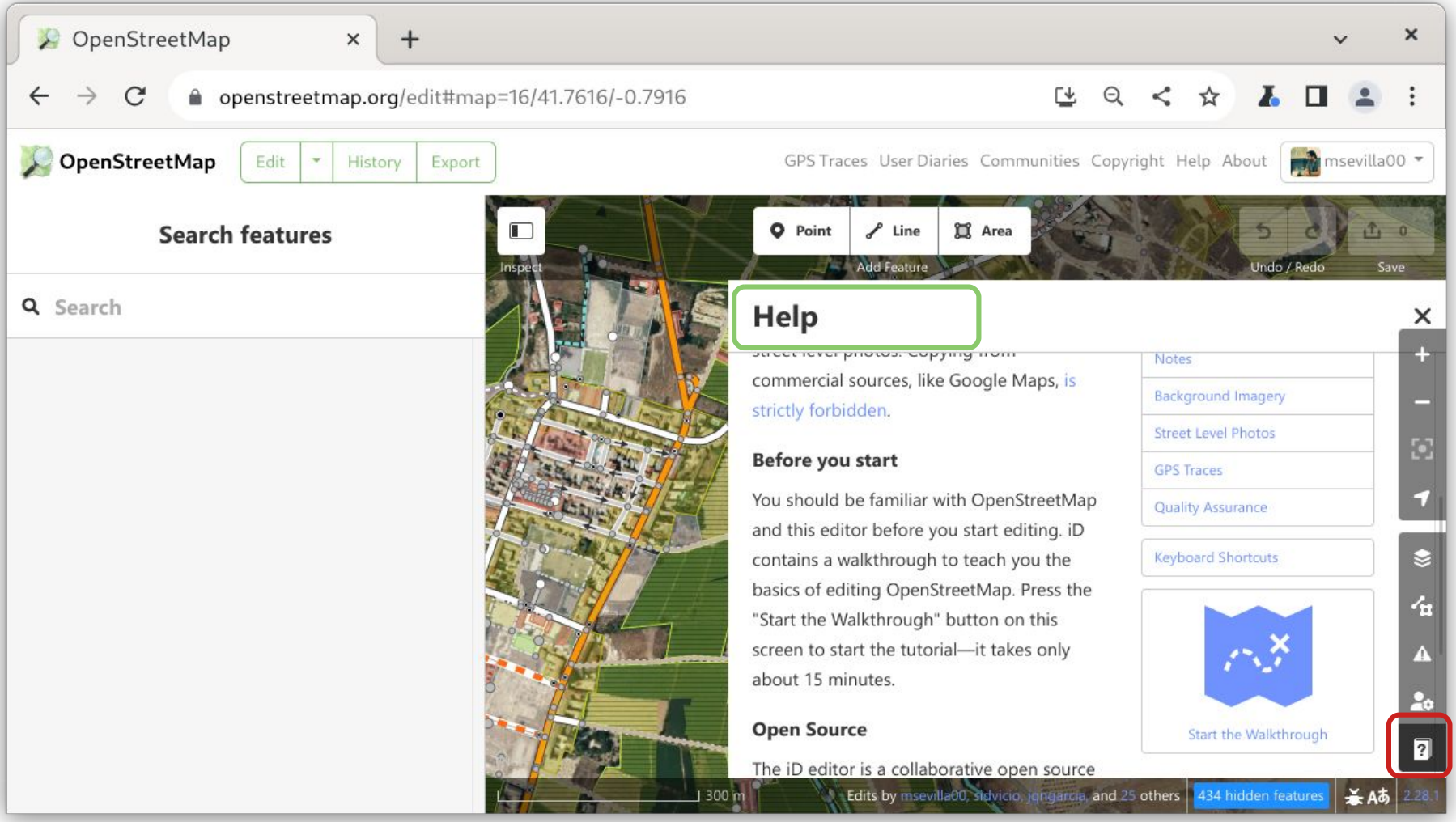
Communities
Copyright
Help
About
msevilla00
Search features
Search
Start mapping!
Undo / Redo
Save
Camino Farlete
Acequia de Camarera
300 m
Edits by msevilla00, sidvicio, jongarcia, and 25 others
434 hidden features
2.28.1


OpenStreetMap
openstreetmap.org/edit#map=16/41.7616/-0.7916
OpenStreetMap
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Help
About
msevilla00
Search features
Search
Inspect
Point
Line
Area
Add Feature
Undo / Redo
Save
Help
commercial sources, like Google Maps, is strictly forbidden.
Before you start
You should be familiar with OpenStreetMap and this editor before you start editing. iD contains a walkthrough to teach you the basics of editing OpenStreetMap. Press the "Start the Walkthrough" button on this screen to start the tutorial—it takes only about 15 minutes.
Open Source
The iD editor is a collaborative open source
Notes
Background Imagery
Street Level Photos
GPS Traces
Quality Assurance
Keyboard Shortcuts
Start the Walkthrough
300 m
Edits by msevilla00, sidvicio, jgngarcia, and 25 others
434 hidden features
2.28.1

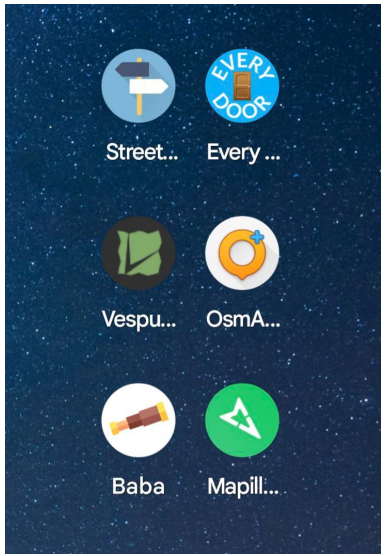
Consejos

- Ante la duda **no lo toques**
- No edites para el **render** (mapa de la web)
- **Comenta** tus ediciones
- Algunas líneas **comparten nodos**, otras NO
- Consulta la **documentación**
- Pregunta a la **comunidad**

OpenStreetMap en el móvil

Icono de Freepik / www.flaticon.com

Apps de OSM en el móvil



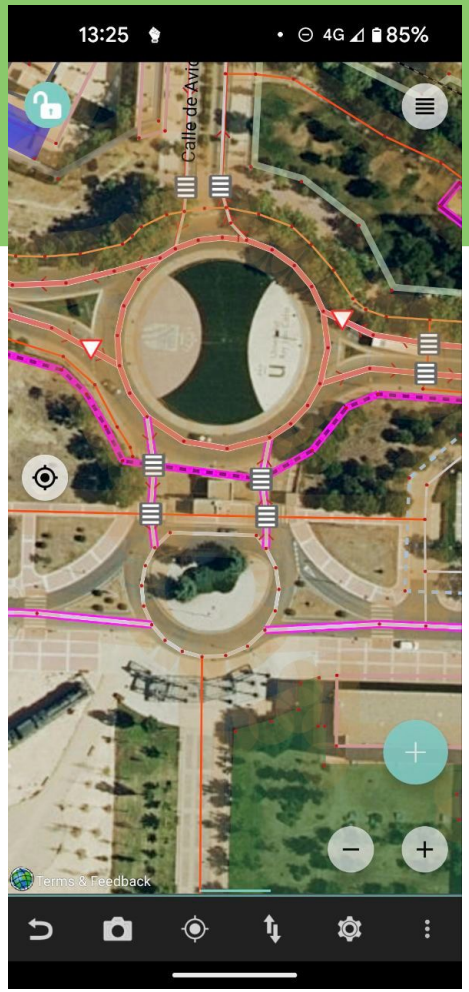
Editores:
StreetComplete | EveryDoor | Vespucci

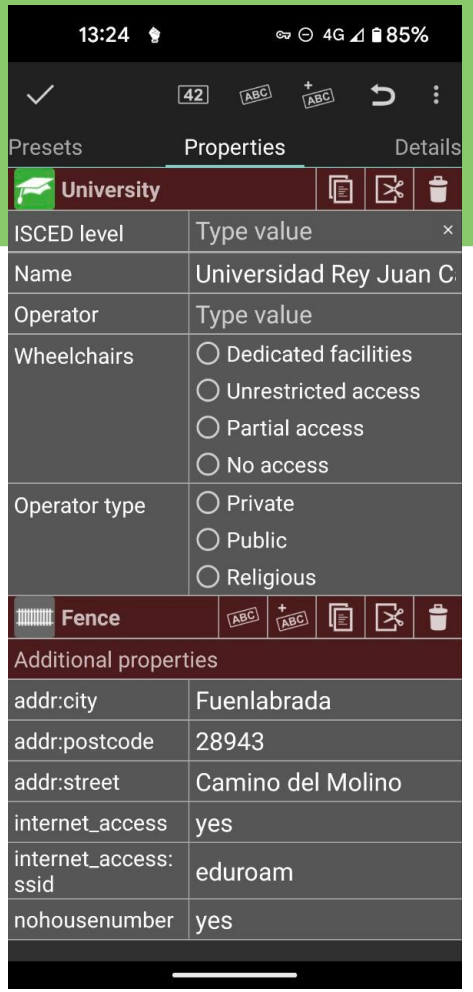
Visores, fotografías:
OSMAnd | Panoramax (Baba) | Mapillary

Vespucci

- Editor avanzado para Android
- Puntos, vías y relaciones

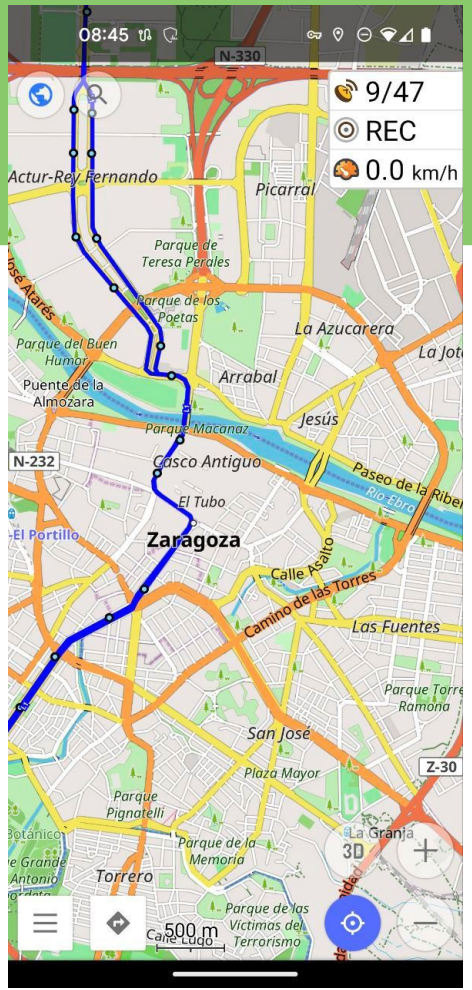
Alternativa iOS: Go Map

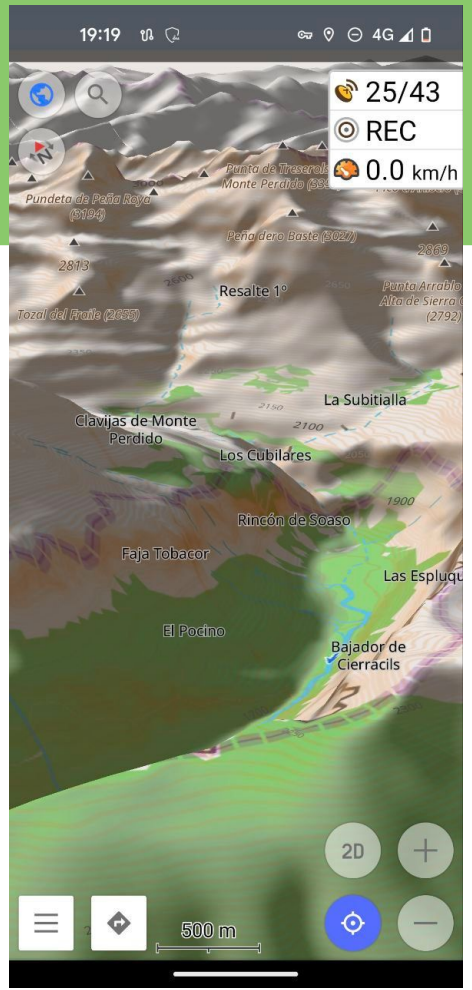




OsmAnd

- Aplicación imprescindible para **trabajo sobre el terreno:**
  - Visor offline
  - Mapas configurables
  - Puntos y rutas
- [Intro a OSMAnd]



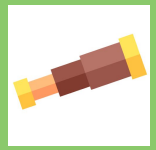


Fotos sobre el terreno

Mapillary | Panoramax (Baba) | Wiki Commons

- Compartir fotos georeferenciadas
- Accesible desde los editores de OSM
- Mejorar los datos de los elementos de OSM

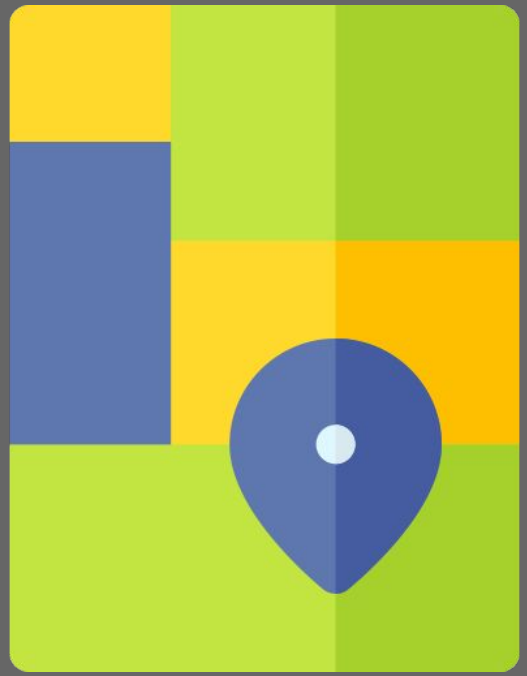
Baba



- Panoramax
  - fotos libres a nivel de calle
- Colaboración de IGN Francia y OSM Francia
- Baba como app

Usa los datos de OpenStreetMap

y recuerda citar la fuente



Icono de Freepik / www.flaticon.com

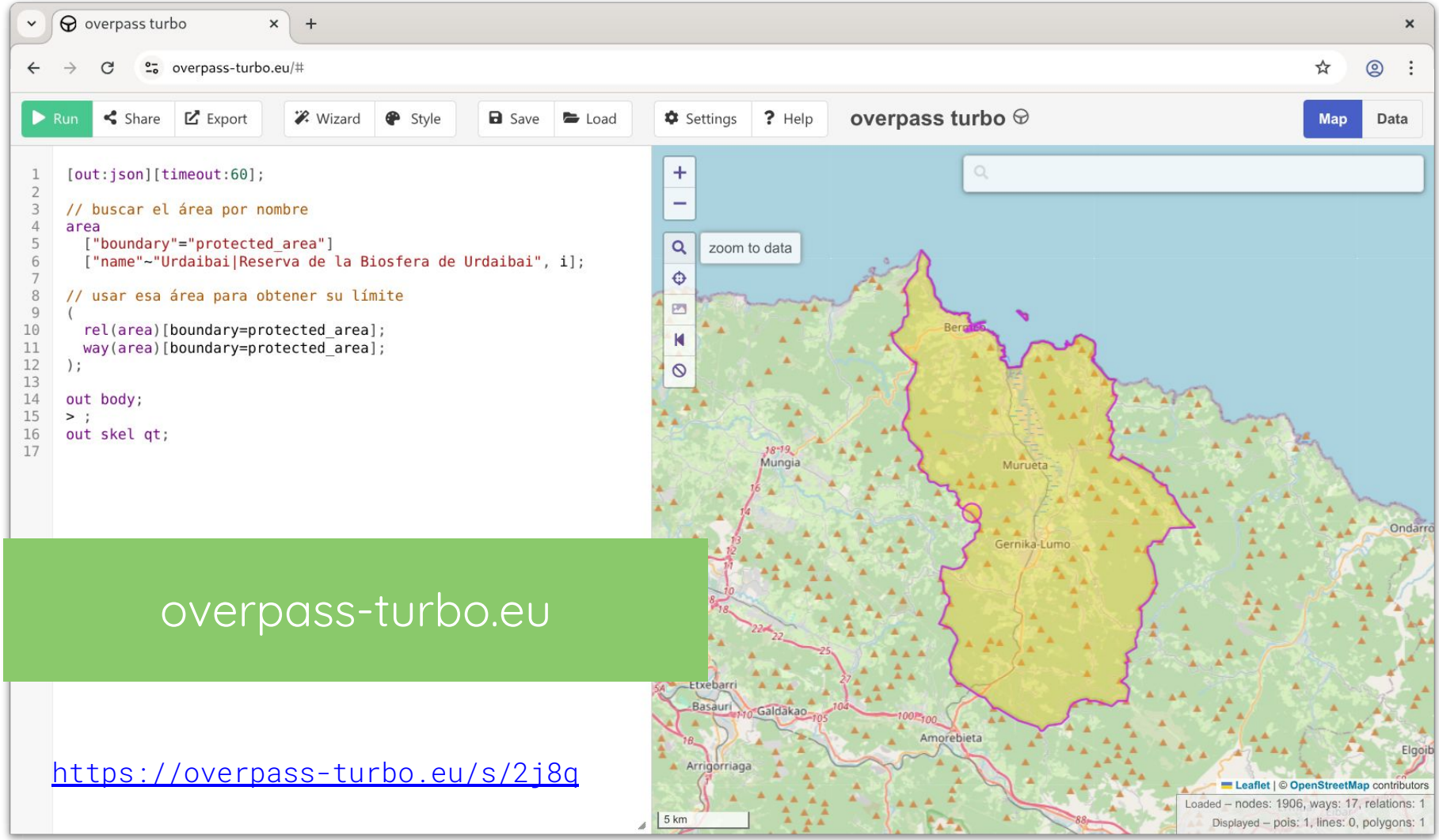
Overpass API

- API para consultas de los datos de OSM
- Solo de lectura
- Lenguaje propio
- Accesible desde web, programas de SIG, y más

→

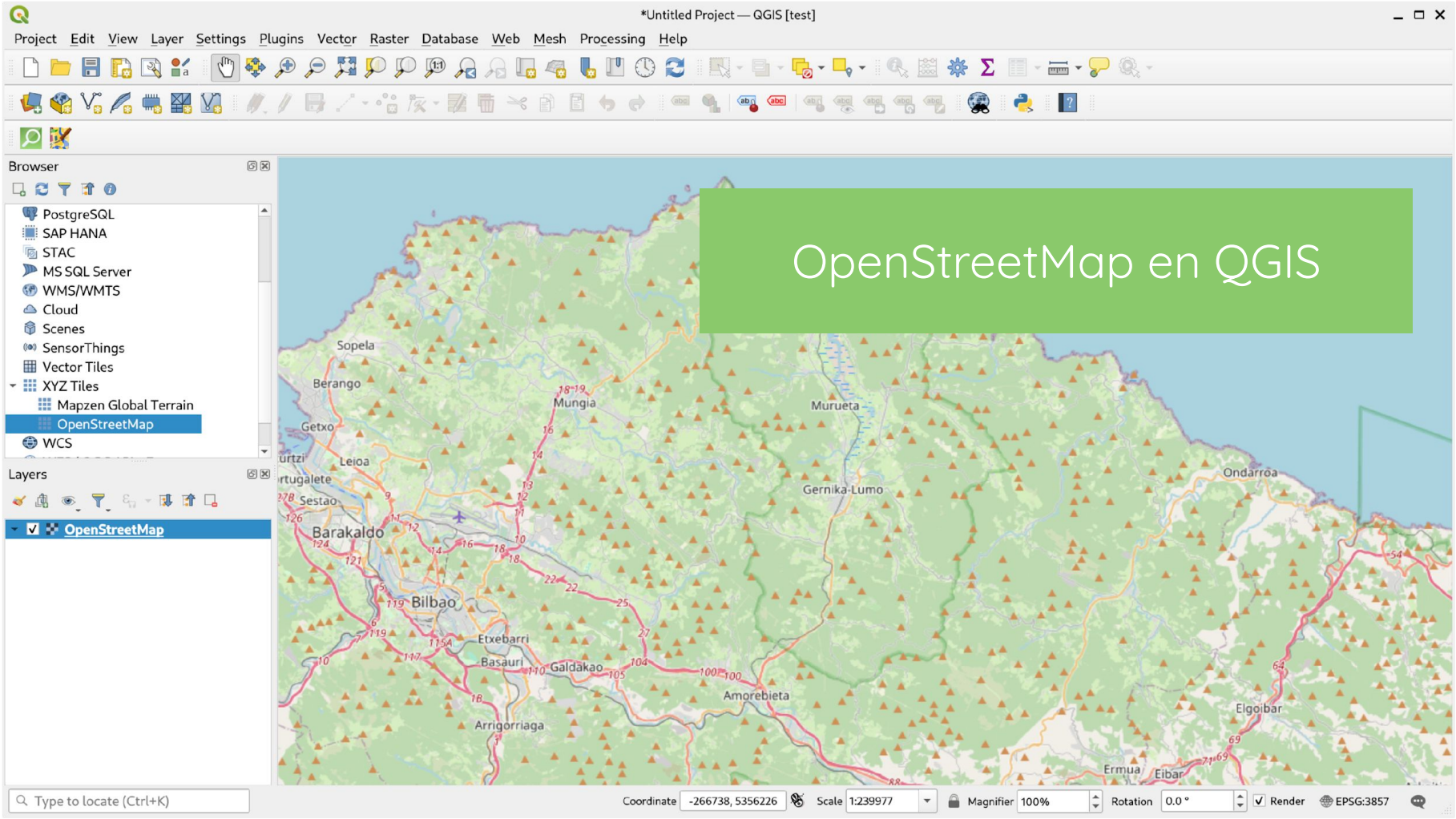
- OverpassTurbo
- QuickOSM en QGIS
- R, Python
- Pregunta a la IA

Reserva de la Biosfera de Urdaibai

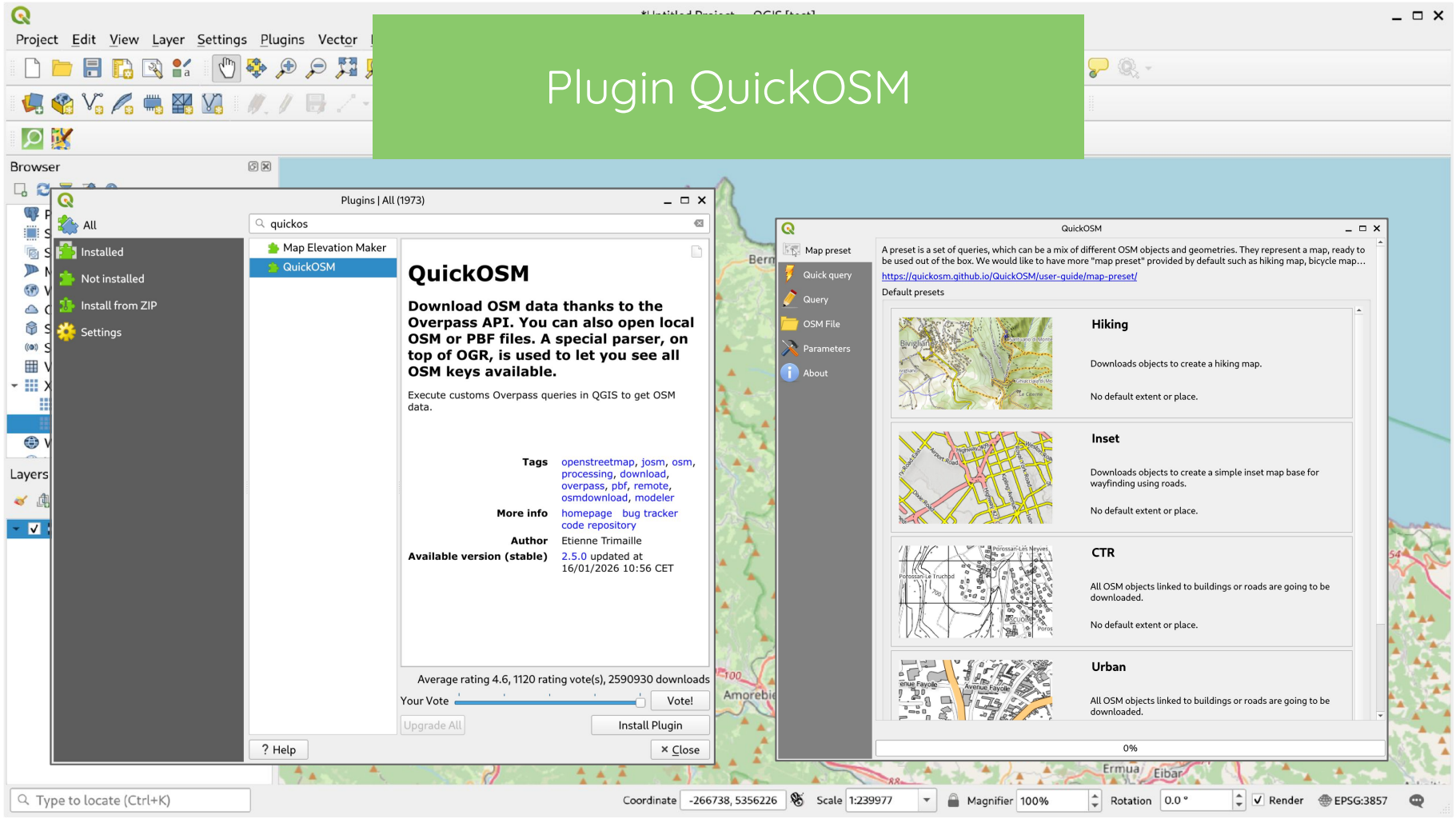


overpass-turbo.eu

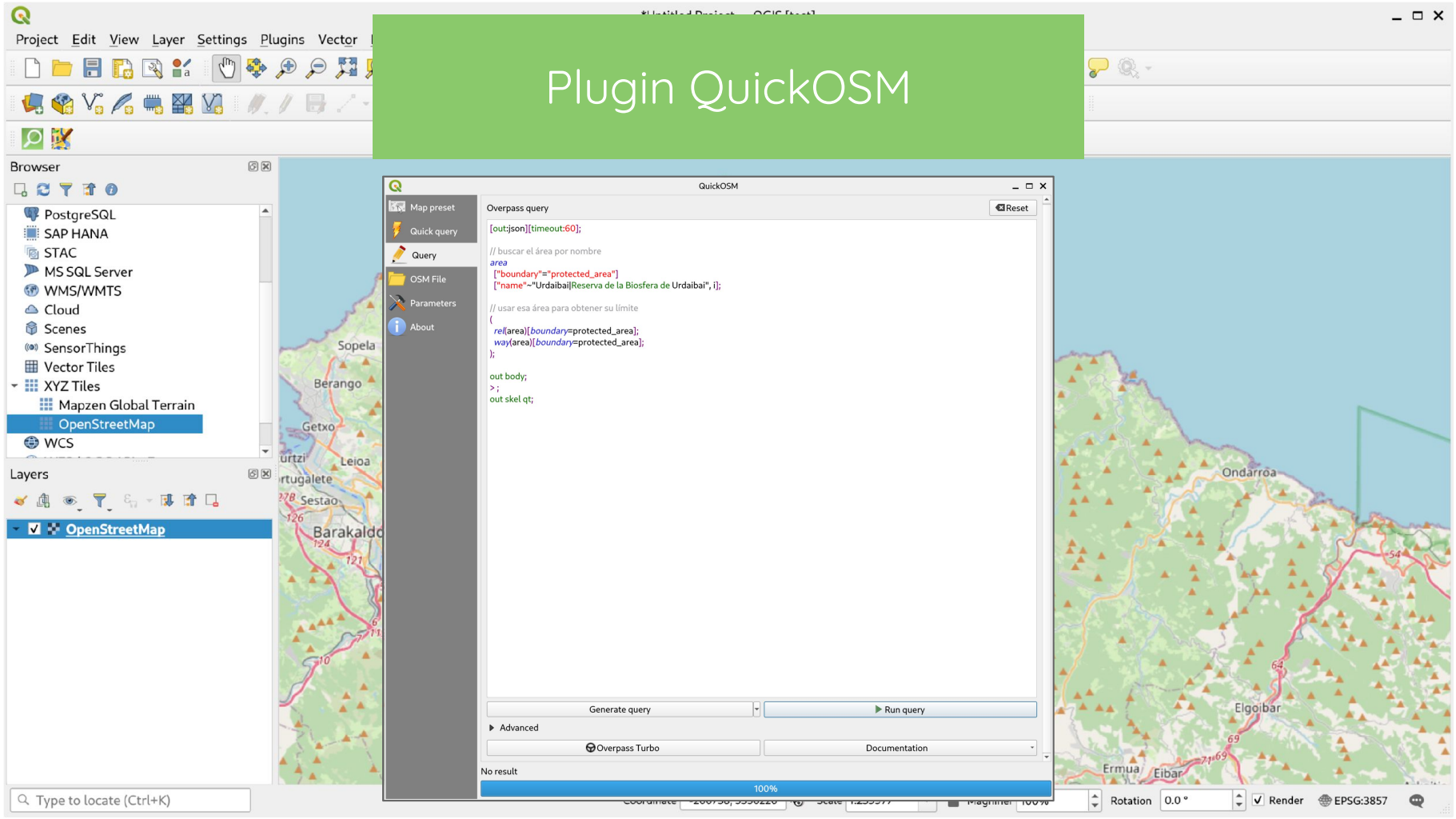
https://overpass-turbo.eu/s/2j8q


*Untitled Project — QGIS [test]
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
PostgreSQL
SAP HANA
STAC
MS SQL Server
WMS/WMTS
Cloud
Scenes
SensorThings
Vector Tiles
XYZ Tiles
Mapzen Global Terrain
OpenStreetMap
WCS
Layers
OpenStreetMap
OpenStreetMap en QGIS
Sopela
Berango
Getxo
Leioa
Sestao
Barakaldo
Bilbao
Etxebarri
Basauri
Galdakao
Arrigorriaga
Mungia
Murueta
Gernika-Lumo
Ondarroa
Amorebieta
Elgoibar
Ermua
Eibar
Type to locate (Ctrl+K)
Coordinate -266738, 5356226
Scale 1:239977
Magnifier 100%
Rotation 0.0 °
Render
EPSG:3857

Plugin QuickOSM



Plugin QuickOSM



Descarga datos desde R

```r
# Obtener datos espaciales de OpenStreetMap
#install.packages(c("osmdata", "sf", "ggplot2"))
library(osmdata);library(sf);library(ggplot2)

# Devuelve el bounding box para un lugar / Ejemplo: Reserva de la Biosfera de Urdaibai
bb <- getbb("Reserva de la Biosfera de Urdaibai")

# Crear una consulta de Overpass / Ejemplo: coberturas de agua y humedales
landcover1 <- opq(bbox = bb) |>
  add_osm_feature(
    key   = "natural",
    value = c("wetland", "water")
  ) |>
  osmdata_sf()

# Extraer elementos poligonales
landcover1_poly <- landcover1$osm_polygons  # polígonos sf

# Crear un mapa simple
ggplot() +
  geom_sf(data = landcover1_poly, fill = "grey50", color = "grey80") +
  theme_minimal()
```

```
> ggplot() +
+   geom_sf(data = landcover1_poly, fill = "grey50", color = "grey80") +
+   theme_minimal()
>
```

Script R de ejemplo

```r
# Obtener datos espaciales de OpenStreetMap


library(osmdata);library(sf);library(ggplot2);


# Devuelve el bounding box para un lugar / Ejemplo: Reserva de la Biosfera de Urdaibai
bb <- getbb("Reserva de la Biosfera de Urdaibai")


# Crear una consulta de Overpass / Ejemplo: cuberturas de agua y humedales
landcover1 <- opq(bbox = bb) |>
  add_osm_feature(
    key   = "natural",
    value = c("wetland", "water")
  ) |>
  osmdata_sf()


# Extraer elementos poligonales
landcover1_poly <- landcover1$osm_polygons  # polígonos sf


# Crear un mapa simple 0
ggplot() +
  geom_sf(data = landcover1_poly, fill = "grey50", color = "grey80") +
  theme_minimal()
```

Recuerda preguntar a la comunidad

Icono de Freepik / www.flaticon.com

Enlaces y recursos

- Guía de inicio en OpenStreetMap
- Resumen de objetos del mapa en OSM
- Herramientas:
  - OSMAnd; Baba, Overpass API; QuickOSM; osmdata
- Comunidad OpenStreetMap España
  - Contacto con la comunidad | Asociación OSM España
- Comunidad OpenStreetMap Comunitat Valenciana
  - Página en el wiki | https://t.me/OSMvalencia

Gracias

https://jsanz.url.lol/2026-linux-osm