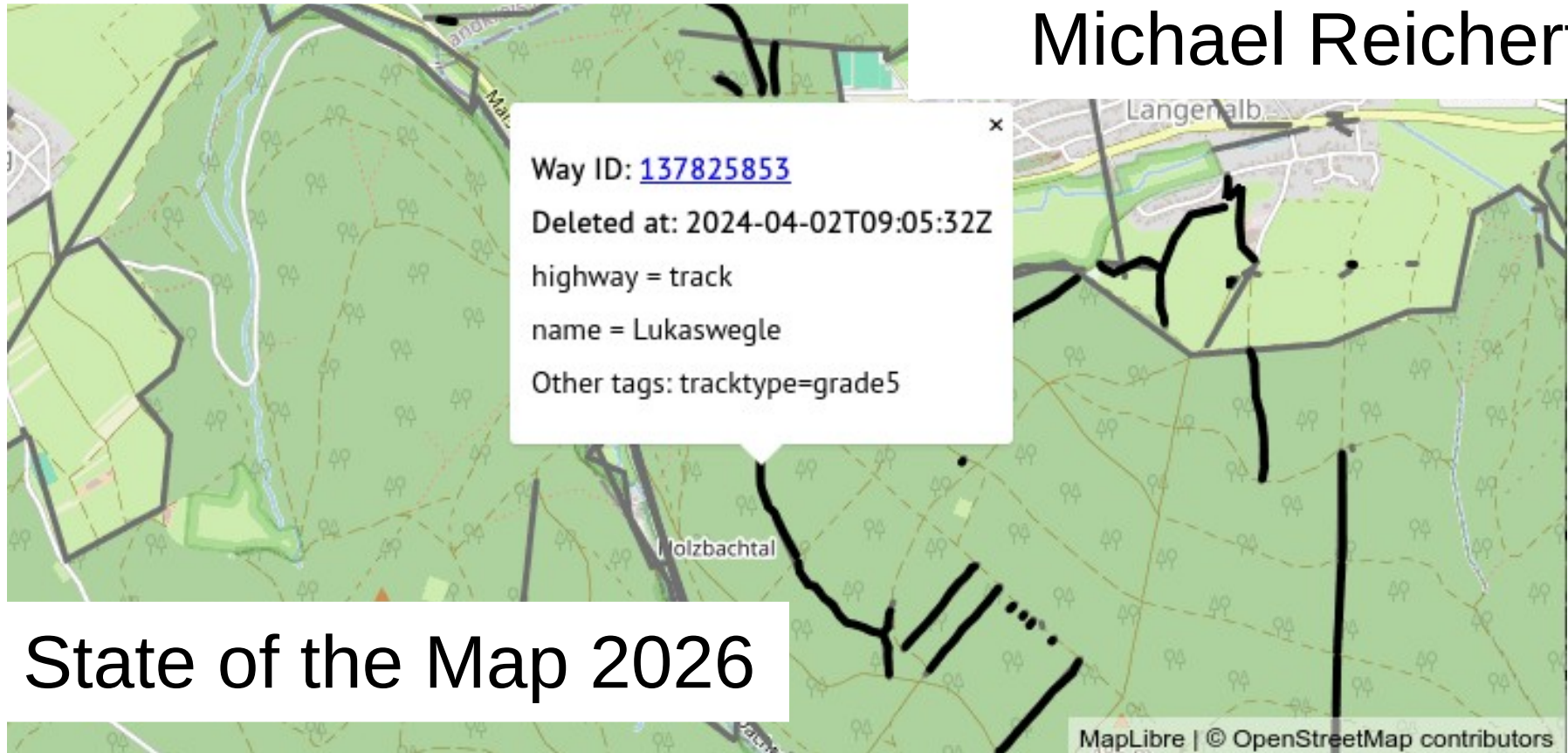


Where are my ways?

Michael Reichert

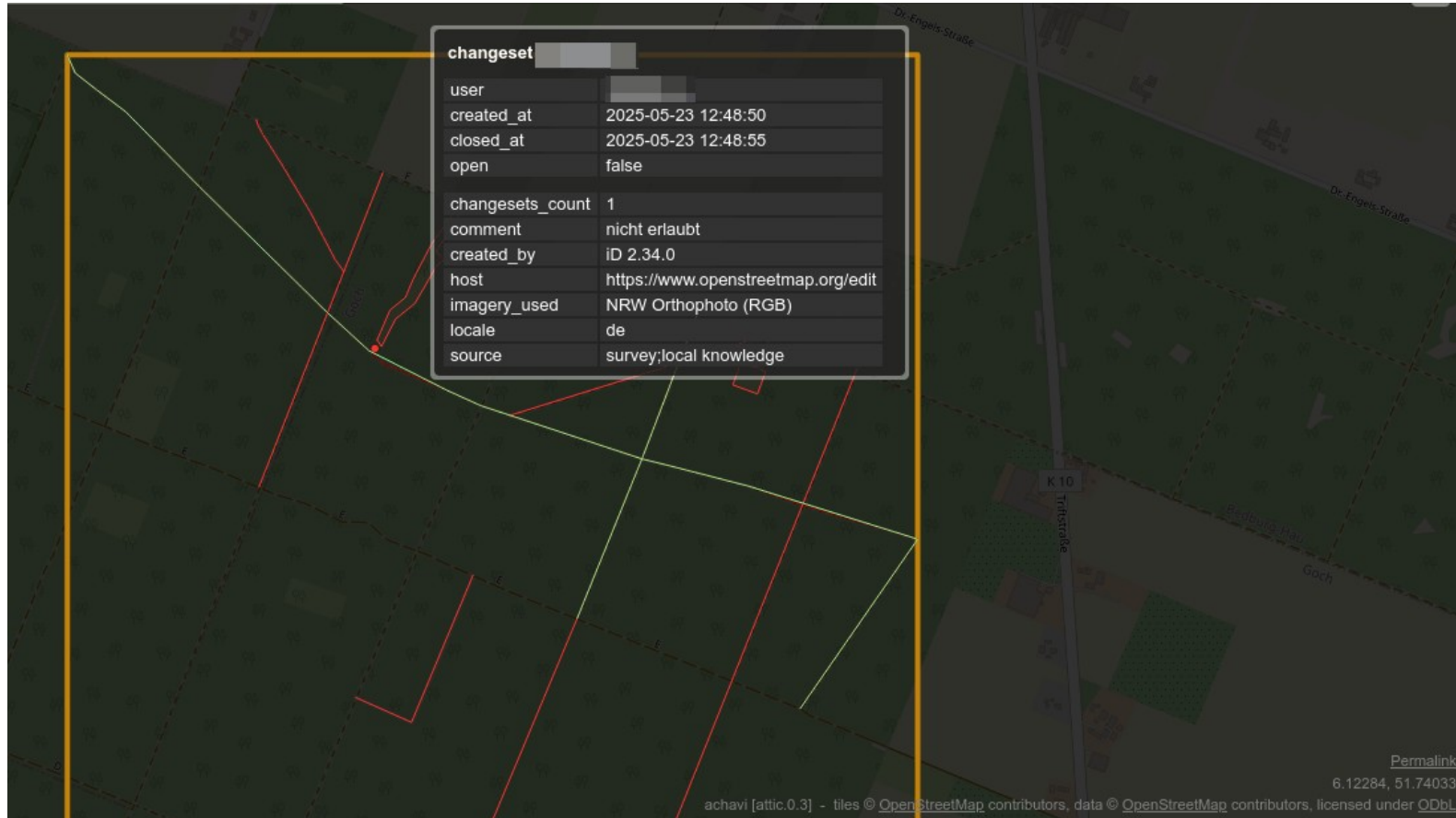


State of the Map 2026

The problem



Achavi



OSMCha

Changeset: 188203341   **Open with** 

Verify 

**DETAILS**

009

**BC60** (92 edits) created about 2 hours ago

# Weg existiert nicht mehr. Jetzt Feldrand.

Translate 



**EDITOR**

iD 2.42.2







IMAGERY

Baden-Württemberg DOP20 



Vordere Sielenwang

way/245793454 was deleted

History  **Open in**  **Add to flagged**

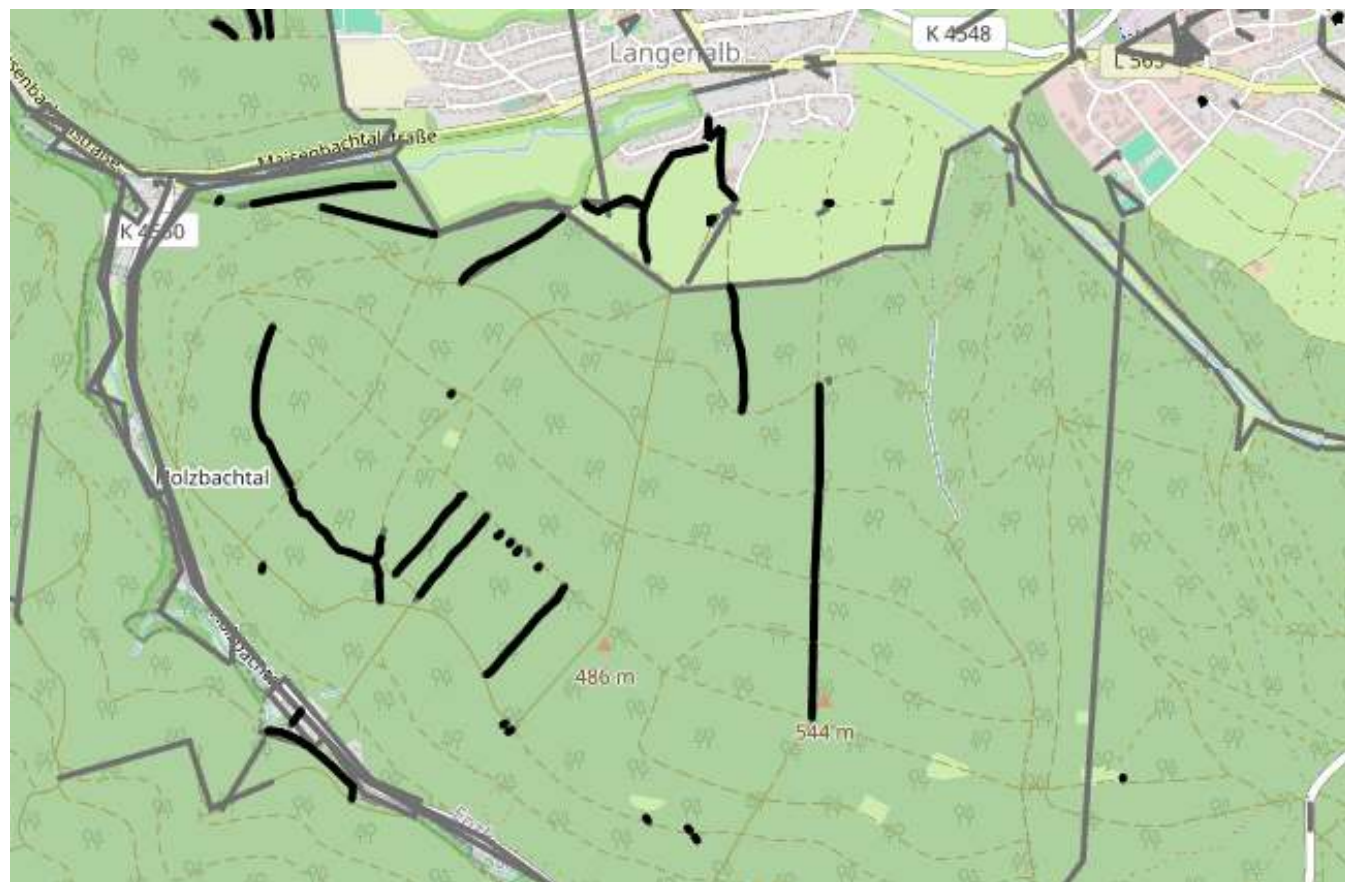
	Previous	Current
version	1	2
timestamp	2013-11-12T12:18:48Z	2026-08-29T15:27:31Z
changeset	<u>18854059</u>	188203341
uid	375541	303581
username	<u>D7n09tb</u>	<u>BC60</u>

Tag	Value
- highway	= path

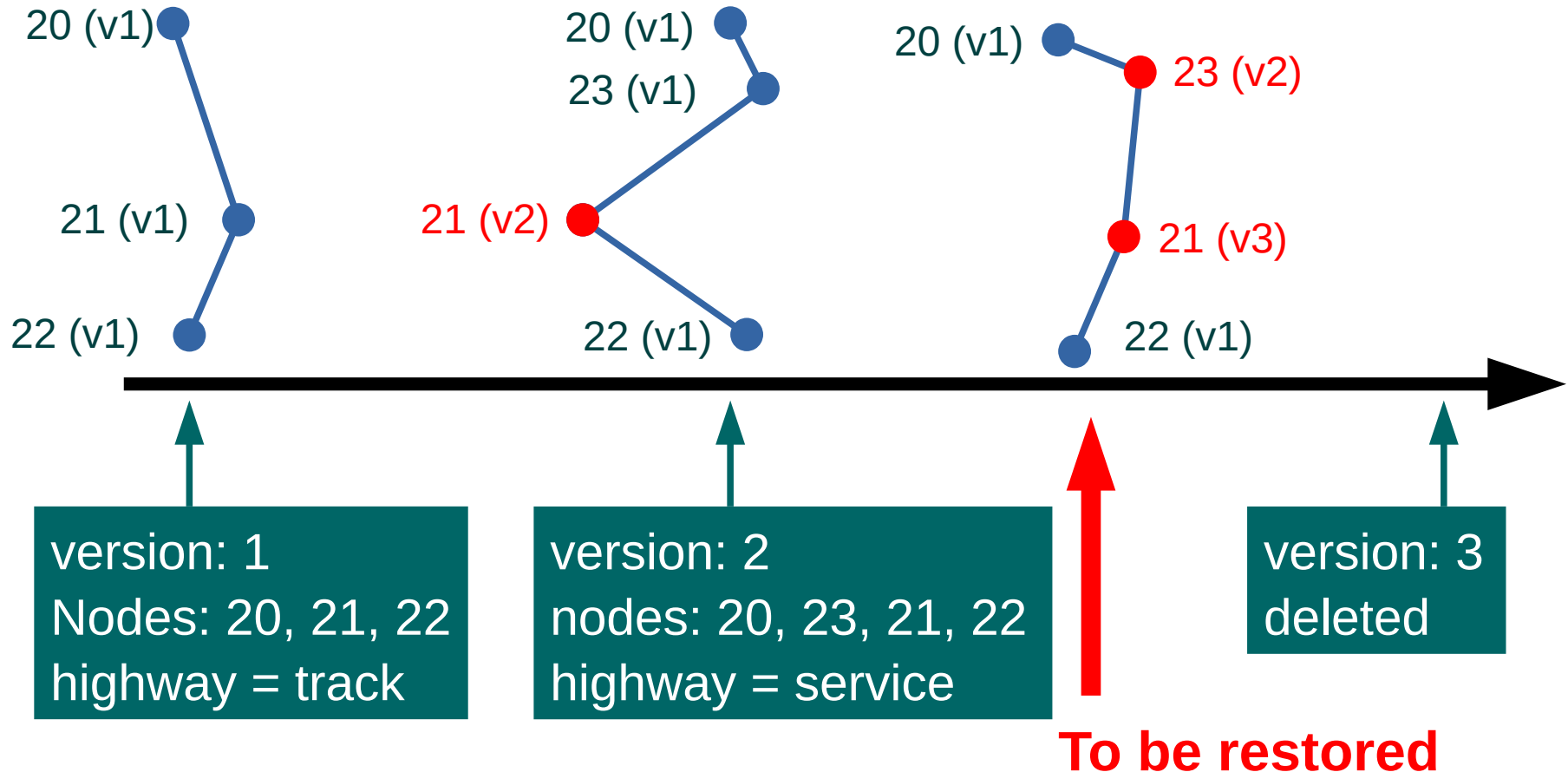
Overpass Attic

```
[date:"2024-04-01T00:00:00Z"];  
way[highway]({{bbox}});  
out geom;
```





Version History of Ways and Nodes



OSM Full History Files

- All objects, all versions (except redacted ones)
- Ordered by object type, ID and version
 - All nodes first
 - All ways afterwards

OSM Full History Files

...

n490706 v1 dV t2006-08-18T14:42:43Z T x9.1594505 y48.7650561

n490706 v2 dV t2008-05-22T16:05:21Z T x9.1593191 y48.7651733

n490706 v3 dV t2008-12-27T19:49:54Z T x9.1593885 y48.7651245

n490706 v4 dV t2011-05-15T14:43:00Z T x9.1595404 y48.7652066

n490706 v5 dV t2020-01-04T20:56:39Z T x9.1594991 y48.7651799

...

w1769978 v1 dV t2007-08-15T21:50:39Z highway=primary,name=Schickhardtstrasse
Nn490706,n490692,n490690,n490691

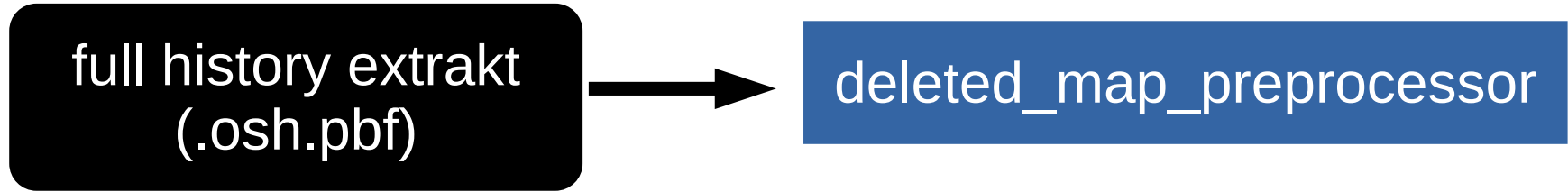
w1769978 v2 dV t2007-10-17T21:46:08Z highway=primary,name=Schickhardtstrasse
Nn490706,n490692,n490690,n76820640,n490691

w1769978 v3 dD t2007-11-06T18:24:17Z T N

...

osmium cat -f opl input.osh.pbf

Data Processing



deleted_map_preprocessor

Step 1: Iterate over ways

node_id	timestamp
490706	2007-11-06T18:24:17Z
490692	2007-11-06T18:24:17Z
...	...

way_id	version, timestamp
1769978	v: 3, t: 2007-11-06T18:24:17Z
...	...

Implemented as
std::vector

1. writing
2. sorting
3. binary search

deleted_map_preprocessor

Step 2: Iterate over nodes and create a time-aware node location cache

For each:

node_id	timestamp
490706	2007-11-06T18:24:17Z
...	...

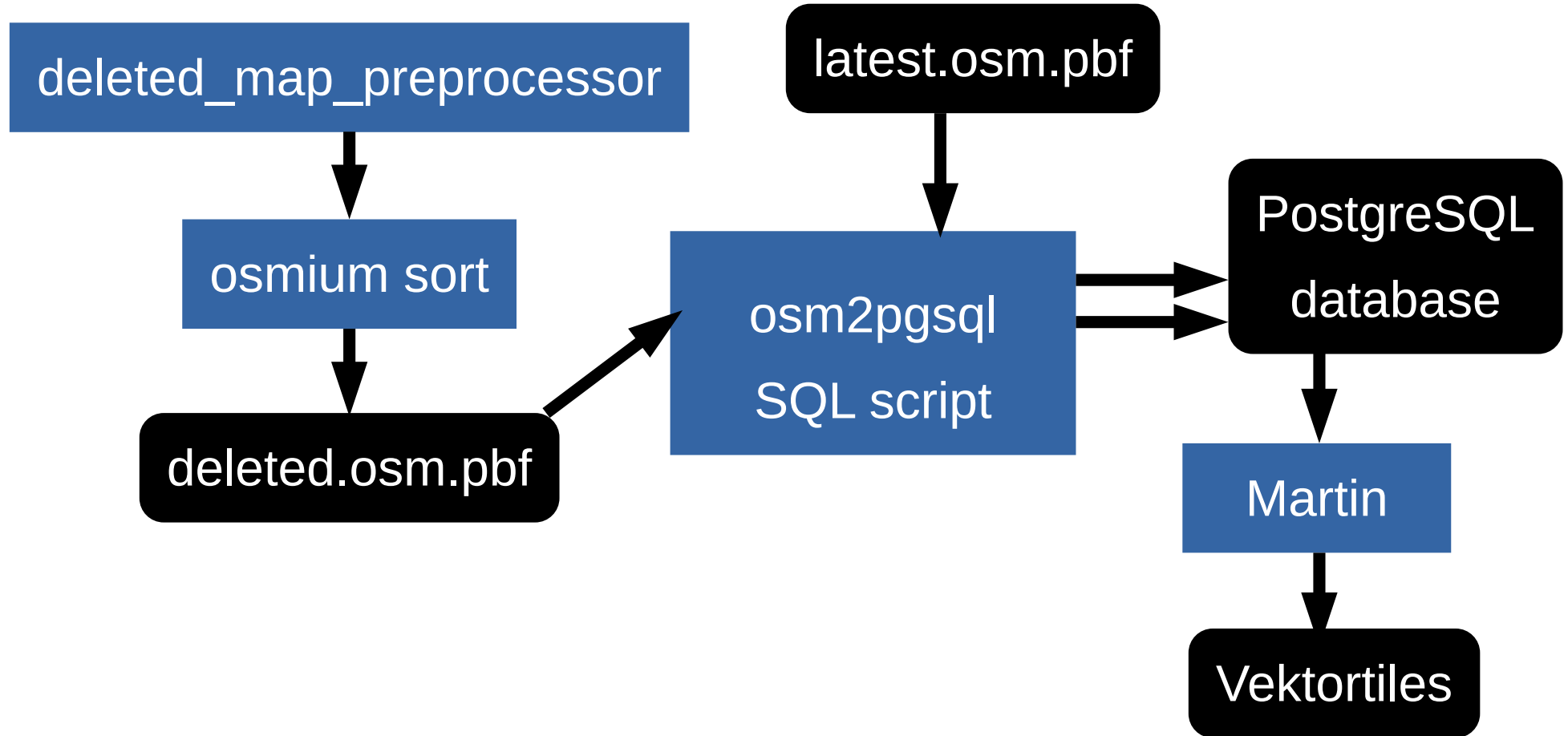
node_id	version, timestamp, new_id
490706	v: 1, t: 2006-02-02T20:48:16Z, new_id: 0

deleted_map_preprocessor

Step 3: Write output file

- Iterate again over nodes and ways
- Deleted ways: write latest visible version
- Their nodes:
 - assign new ID if node has been modified since
 - reuse old ID if node has been delete or not been edited since then.

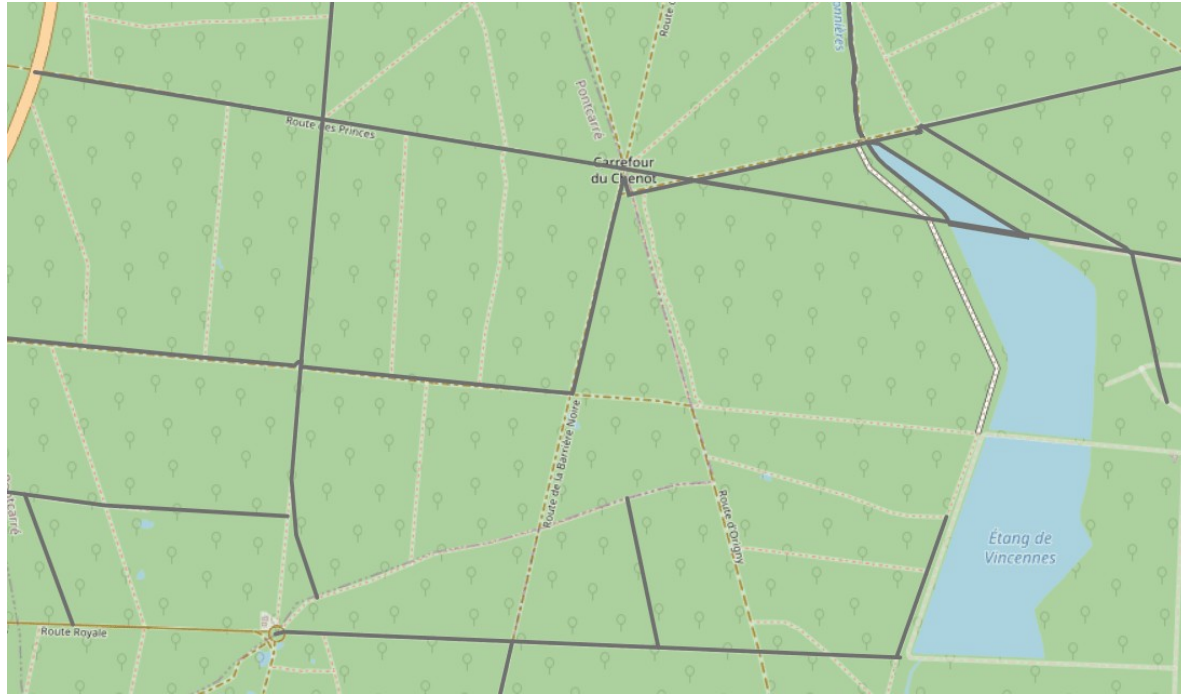
Data Processing



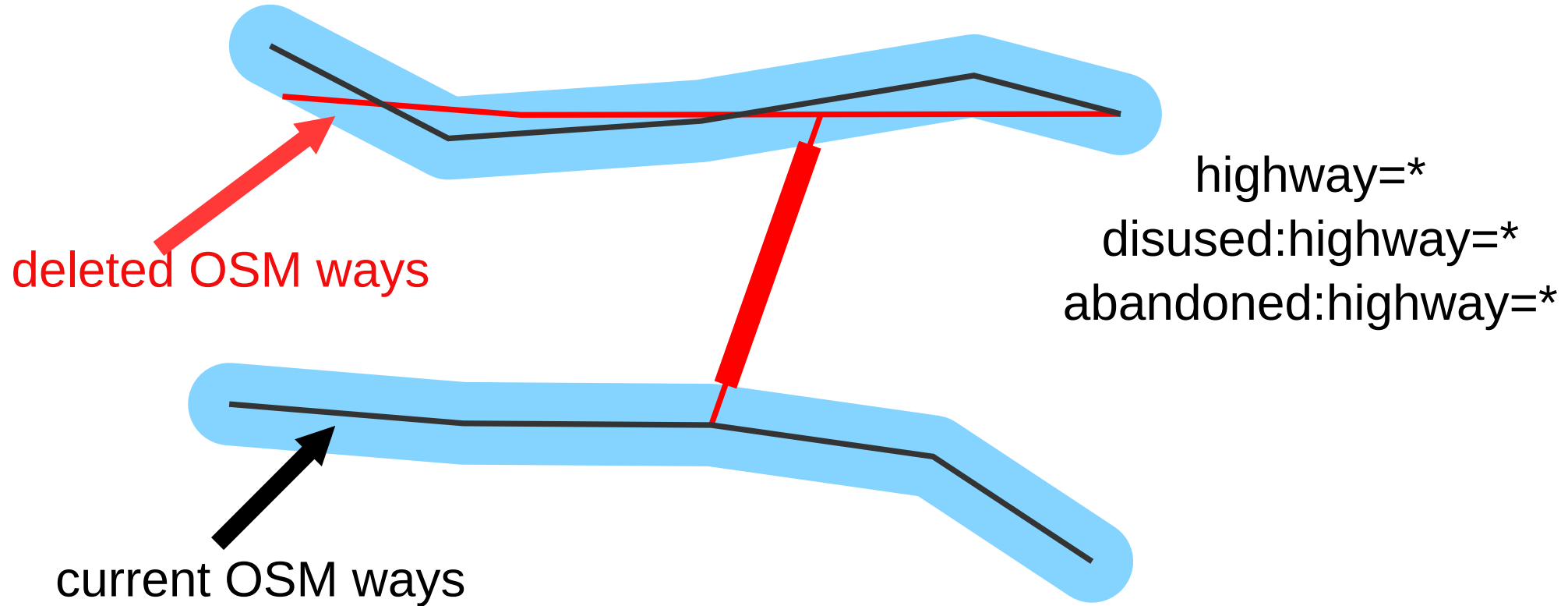
Osm2pgsql database import

- 2 imports into the same database
 - restored ways and their nodes
 - current OSM data
- 2 separate schemas for middle tables
- Further processing with an SQL script

Data Processing



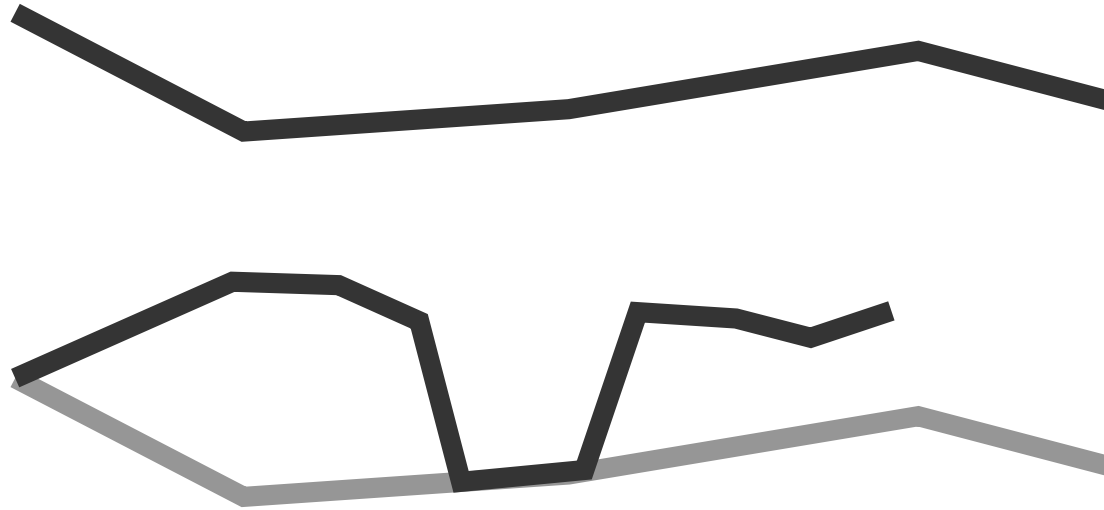
Data Processing



What will not be found

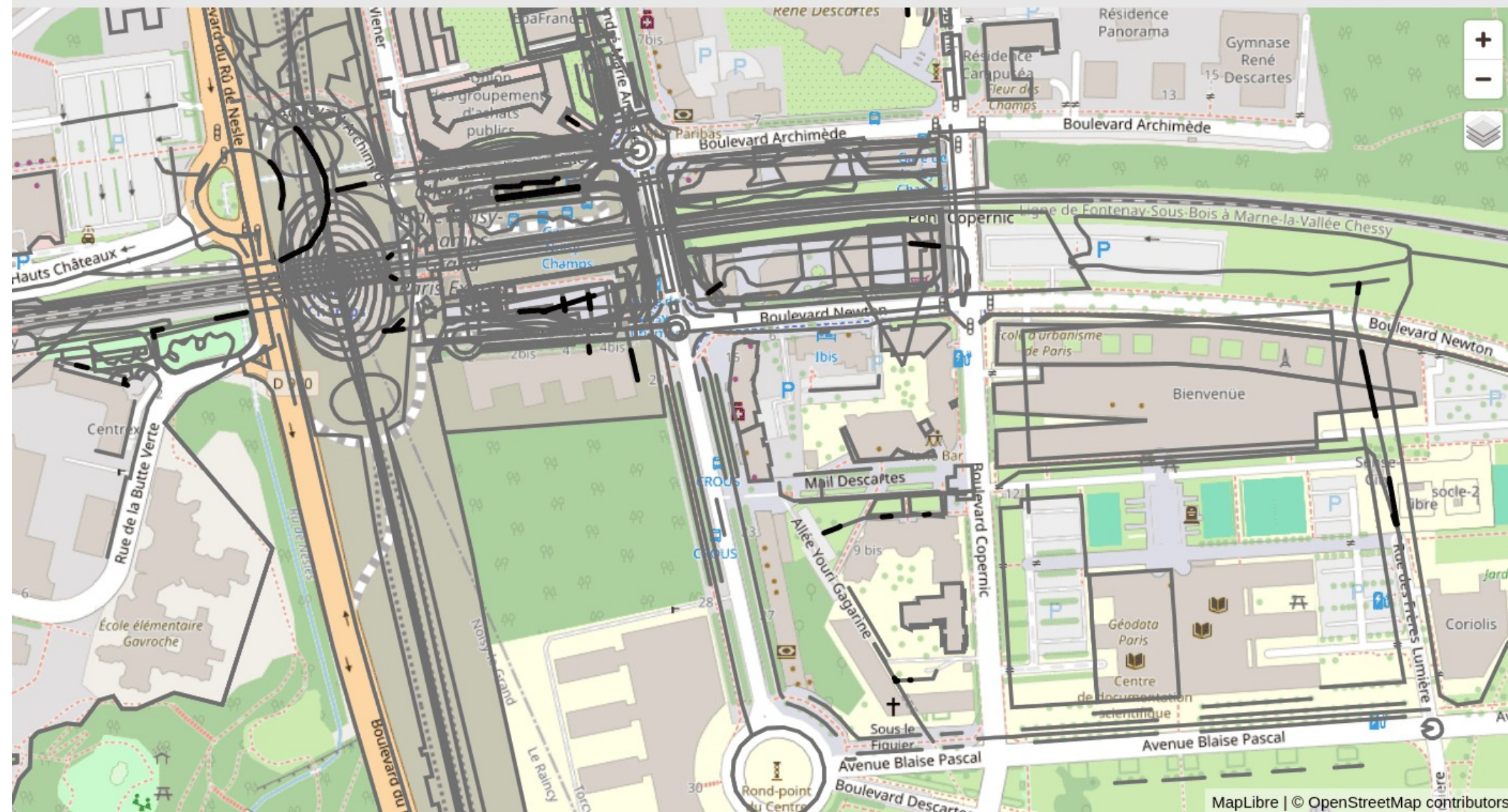


What will not be found

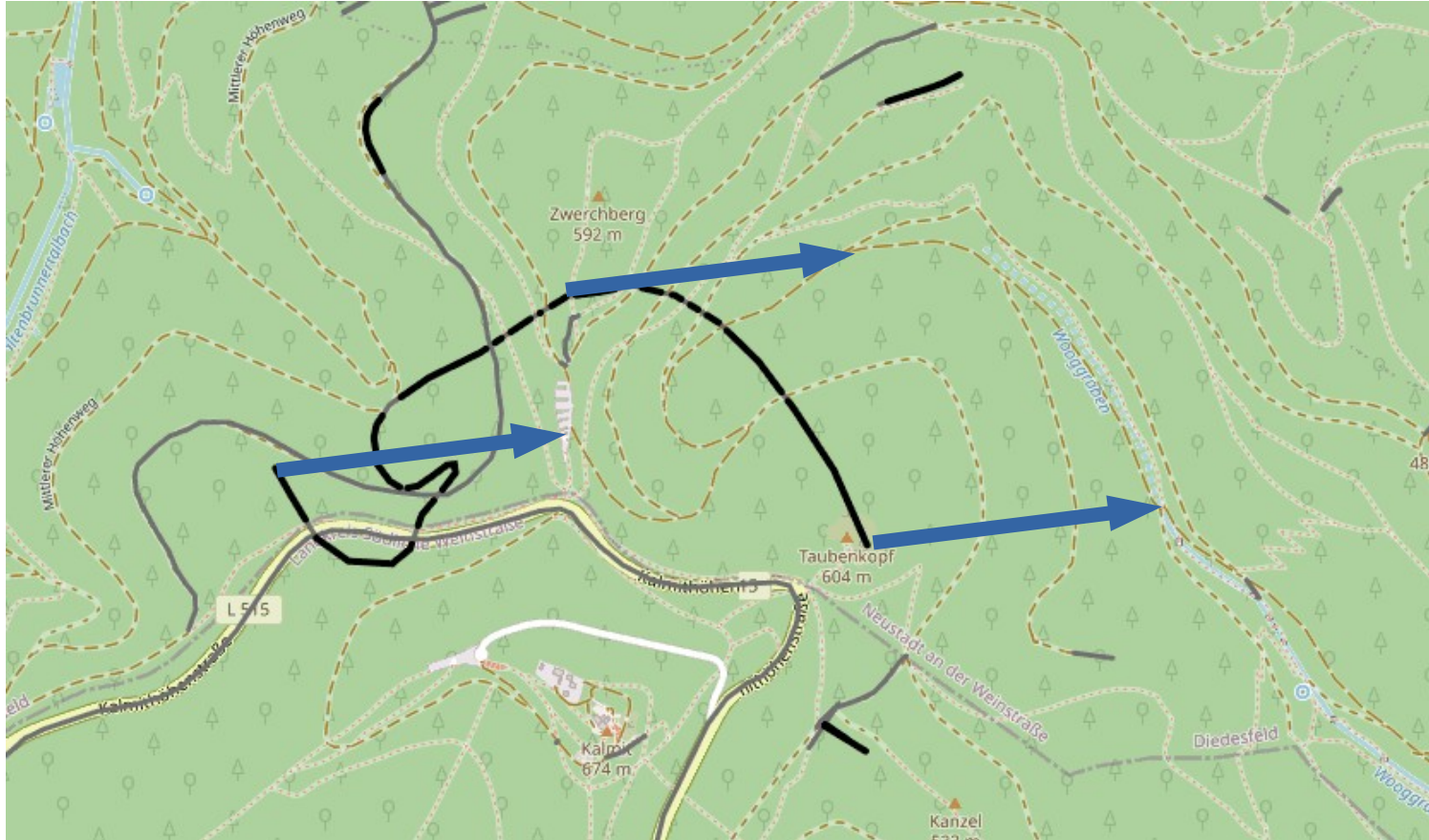


Performance

- Full-history extract of Europe: 69 GB .osh.pbf
 - osm-internal.download.geofabrik.de
- Intel Core i7-8700, 64 GB RAM, NVMe
 - Processing: 21 minutes, 25 GB RAM
 - Sorting: 5 minutes, 43 GB RAM
- Result: 6.3 GB .osm.pbf



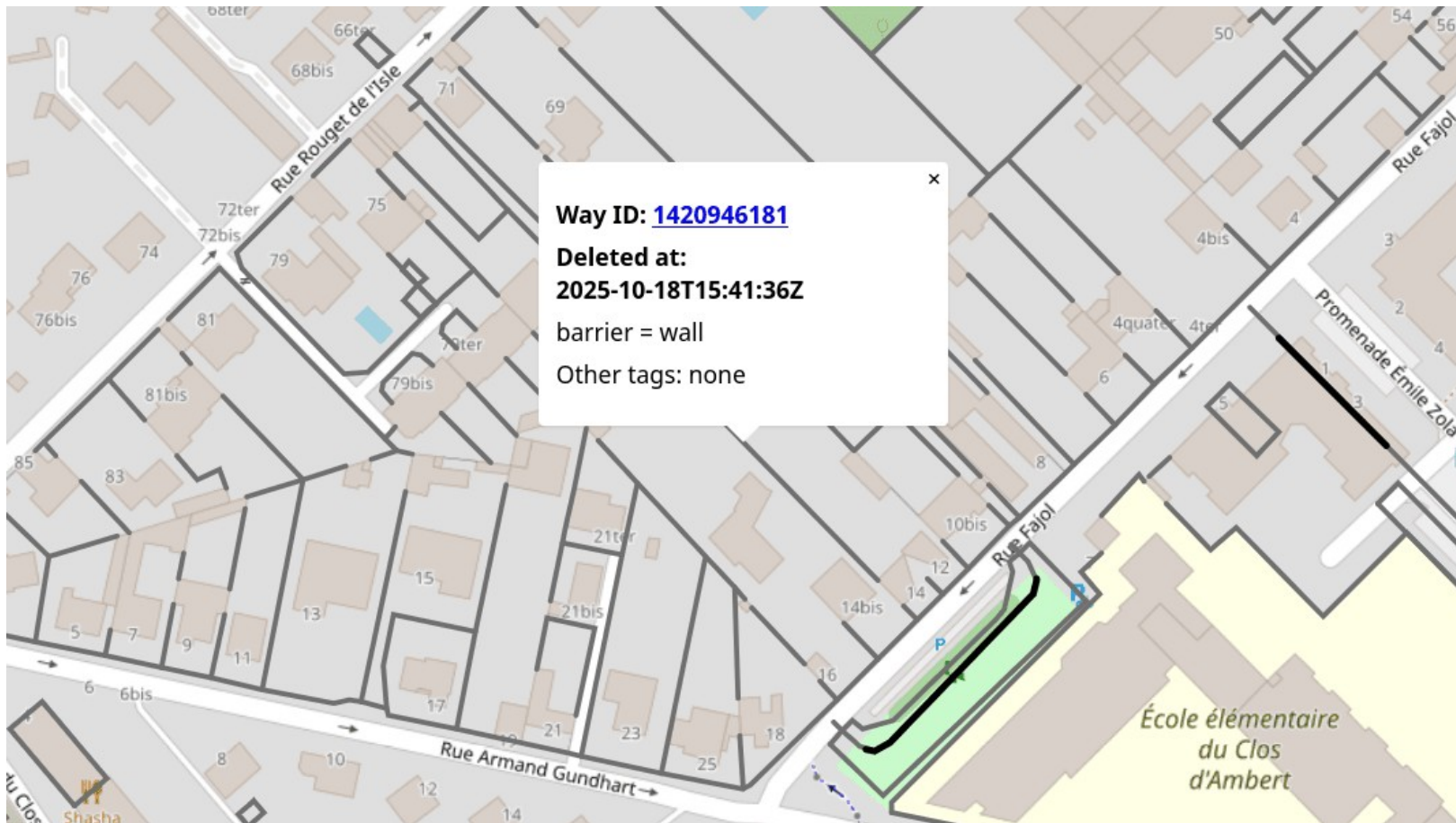
What has been deleted?



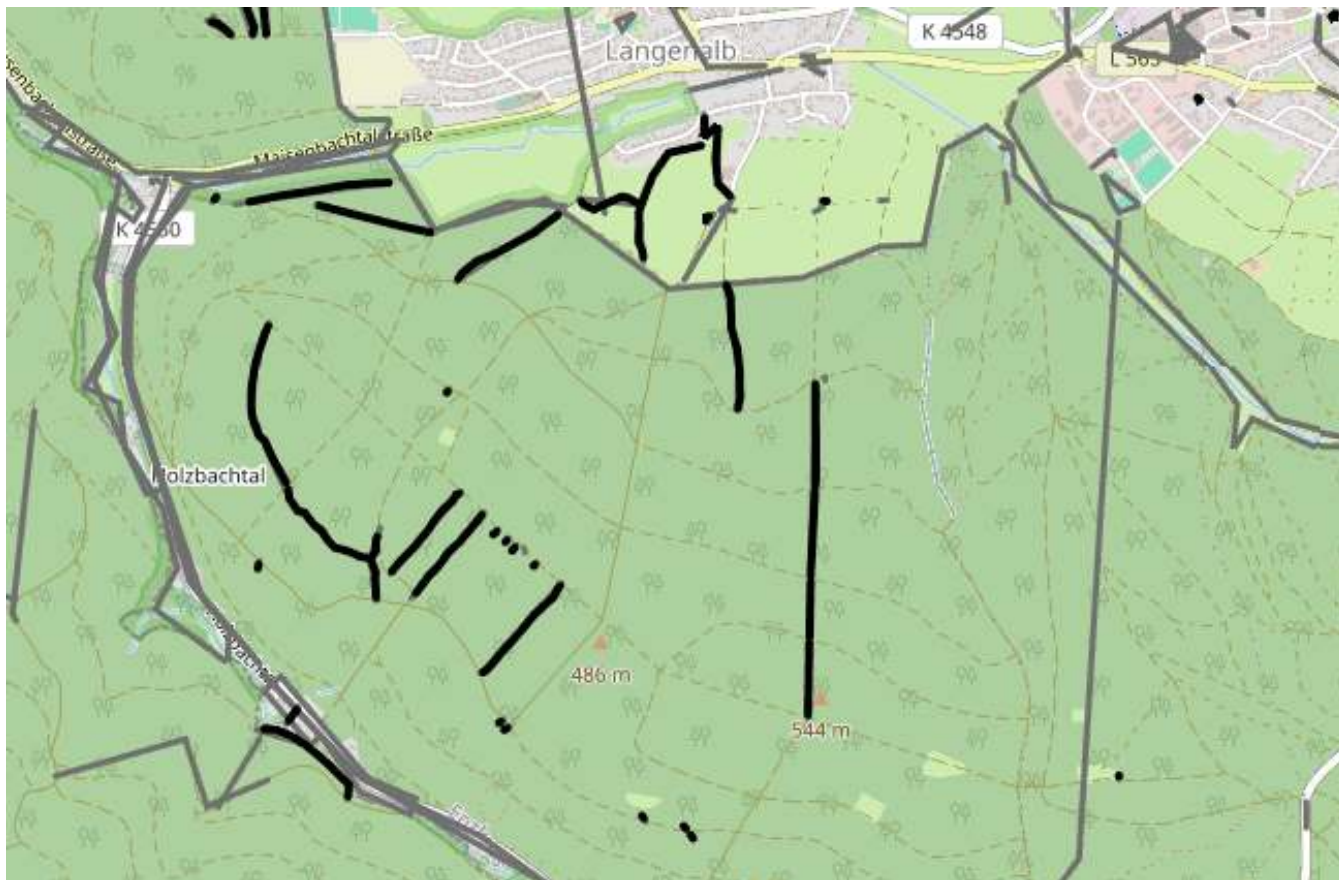
What has been deleted?



What has been deleted?



Example: Deleted Tracks



Example: Deleted Tracks



Example: Deleted Tracks



Example: Deleted Tracks



Example: Deleted Tracks



Future

- Deleted nodes with Tags
- Undelete for JOSM users
- Time filter on the frontend
- Coming soon: weekly updates