Lippuvyöhykeaineiston valmistelu GeoJSON-muotoon

Tarkoitus

Tämä ohje kuvaa, miten lippuvyöhykeaineistosta tuotetaan oikeanmuotoinen GeoJSON-tiedosto QGIS-ohjelmistolla. Ohje on tarkoitettu vyöhykeaineiston tuottajalle ja se on luettavissa itsenäisesti ilman muuta taustamateriaalia.

Ohje päättyy valmiiseen GeoJSON-tiedostoon. Aineiston jatkokäsittely ja julkaisu kuvataan erikseen.

Lopputulos: yksi GeoJSON-tiedosto, jossa jokainen vyöhyke on oma featurensa, vyöhykkeet eivät ole päällekkäisiä ja tiedosto täyttää alla luetellut vaatimukset.

Vaatimukset GeoJSON-tiedostolle

Vaatimus	Arvo
Koordinaattijärjestelmä	EPSG:4326 (WGS84)
Geometriatyyppi	`MultiPolygon`
Pakollinen attribuutti	`Zone` (text) — vyöhykkeen nimi, esim. `A`
Vyöhykkeiden päällekkäisyys	Ei sallittu
Vyöhykkeen esiintymien määrä	Jokainen vyöhyke esiintyy täsmälleen kerran

Esimerkki rakenteesta:

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{
  "type": "FeatureCollection",
  "name": "Example-Zones",
  "crs": {
    "type": "name",
    "properties": { "name": "urn:ogc:def:crs:OGC:1.3:CRS84" }
  },
  "features": [
    {
      "type": "Feature",
      "properties": { "Zone": "A" },
      "geometry": { "type": "MultiPolygon", "coordinates": [[]] }
    }
  ]
}
```

> **Tärkeää:** aineistolle ei tällä hetkellä tehdä automaattista validointia missään vaiheessa ketjua. Virheellinen GeoJSON etenee jatkokäsittelyyn sellaisenaan, joten tämän ohjeen tarkistukset on tehtävä huolellisesti.

Työvaiheet QGIS:llä

1. Asenna QGIS

Asenna QGIS-ohjelmisto (suositus: LTR-versio) osoitteesta https://qgis.org/.

2. Lisää taustakartta (valinnainen)

`Layer > Add Layer > Add XYZ Layer > OpenStreetMap`

Taustakartta helpottaa vyöhykerajojen visuaalista tarkistamista.

3. Avaa vyöhykeaineisto

`Layer > Add Layer > Add Vector Layer` ja valitse GeoJSON-tiedosto.

4. Tarkista päällekkäisyydet

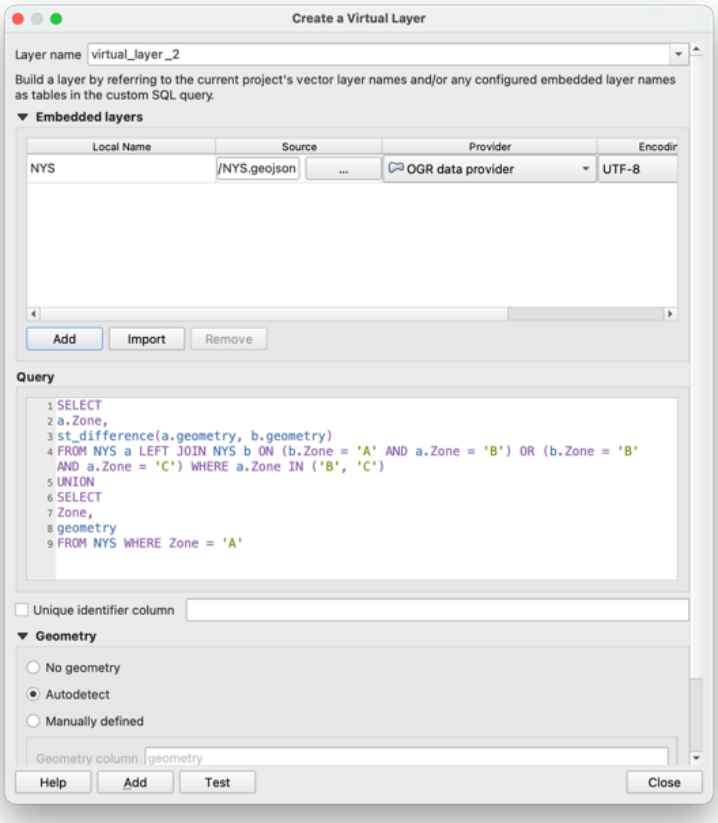
Tarkista visuaalisesti, ovatko vyöhykealueet päällekkäisiä. Tyypillisesti vyöhykeaineisto on piirretty sisäkkäisinä alueina (A sisältyy B:hen, B sisältyy C:hen), jolloin päällekkäisyydet on poistettava.

5. Leikkaa päällekkäiset alueet pois

`Layer > Add Layer > Add/Edit Virtual Layer`, valitse taso ja käytä kyselyä:

```sql
SELECT a.Zone,
    st_difference(a.geometry, b.geometry)
FROM zones a
LEFT JOIN zones b ON (b.Zone = 'A' AND a.Zone = 'B')
            OR (b.Zone = 'B' AND a.Zone = 'C')
WHERE a.Zone IN ('B', 'C')
UNION
SELECT Zone, geometry
FROM zones
WHERE Zone = 'A'
```

Esimerkissä on kolme vyöhykettä (A, B ja C) ja tason nimi on `zones`. Muokkaa kyselyä oman käyttötapauksesi mukaan: vyöhykkeiden määrä, nimet ja sisäkkäisyysjärjestys vaihtelevat toimijoittain.

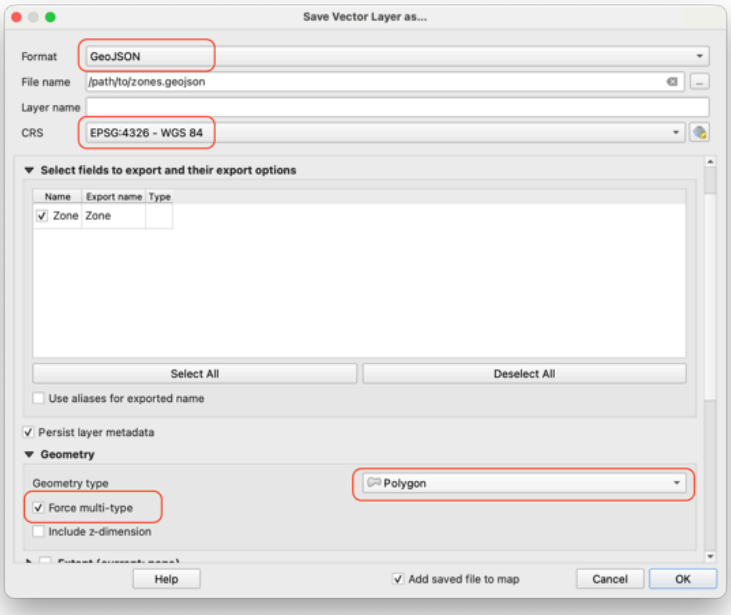


Kuva 1. Virtuaalitason luonti. Kuvassa lähdetason nimi on NYS, joten sitä käytetään kyselyssä taulun nimenä.

6. Tallenna tulos GeoJSON-muodossa

Klikkaa virtuaalitasoa > `Export > Save Feature As`

- **Format:** GeoJSON
- **CRS:** EPSG:4326 – WGS 84
- **Geometry type:** Polygon
- **Force multi-type:** valittuna — tämä tuottaa vaaditun `MultiPolygon` -geometrian
- Varmista, että `Zone` -kenttä on valittuna vietävien kenttien listassa



Kuva 2. Tallennusasetukset. Punaisella korostetut kohdat ovat pakollisia.

Tarkistuslista ennen aineiston luovuttamista

1. Tiedosto avautuu QGIS:ssä ilman virheitä.
2. Vyöhykkeitä on oikea määrä ja jokainen esiintyy vain kerran.
3. Jokaisella featurella on `Zone` -attribuutti ja arvo on oikea vyöhykkeen nimi.
4. Vyöhykkeet eivät ole päällekkäisiä (tarkista visuaalisesti taustakarttaa vasten).
5. Vyöhykkeiden välillä ei ole tahattomia rakoja.
6. Geometriatyyppi on `MultiPolygon` ja koordinaattijärjestelmä EPSG:4326.
7. Vyöhykerajat vastaavat toimijan virallista vyöhykejakoa.

Seuraava vaihe

Kun GeoJSON on valmis ja tarkistettu, aineisto luovutetaan jatkokäsittelyyn.

Kirjaa samalla ylös, mitkä vyöhykkeet rajautuvat toisiinsa. Tätä naapuruustietoa ei voida päätellä automaattisesti aineiston jatkokäsittelyssä, joten se on toimitettava erikseen — esimerkiksi listana muodossa "A rajautuu B:hen, B rajautuu A:han ja C:hen".

Liite: Nysse-esimerkkiaineisto

Alla on kokonaisuudessaan Nyssen vyöhykeaineisto (`nysse.geojson`) esimerkkinä oikein muodostetusta tiedostosta.

Aineisto täyttää tämän ohjeen vaatimukset:

- Kolme vyöhykettä: `A` , `B` ja `C` , kukin omana featurenaan
- Jokaisella featurella on `Zone` -attribuutti

- Geometriatyyppi on `MultiPolygon`
- Koordinaattijärjestelmä on `urn:ogc:def:crs:OGC:1.3:CRS84` (= EPSG:4326)
- Vyöhykkeet eivät ole päällekkäisiä — B:stä on leikattu A pois ja C:stä B

Huomaa, että QGIS kirjoittaa jokaisen featuren yhdelle riville, joten rivit ovat pitkiä. Tiedostoa ei ole tarkoitettu käsin muokattavaksi.


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Lisätietoja

- QGIS — https://qgis.org/
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