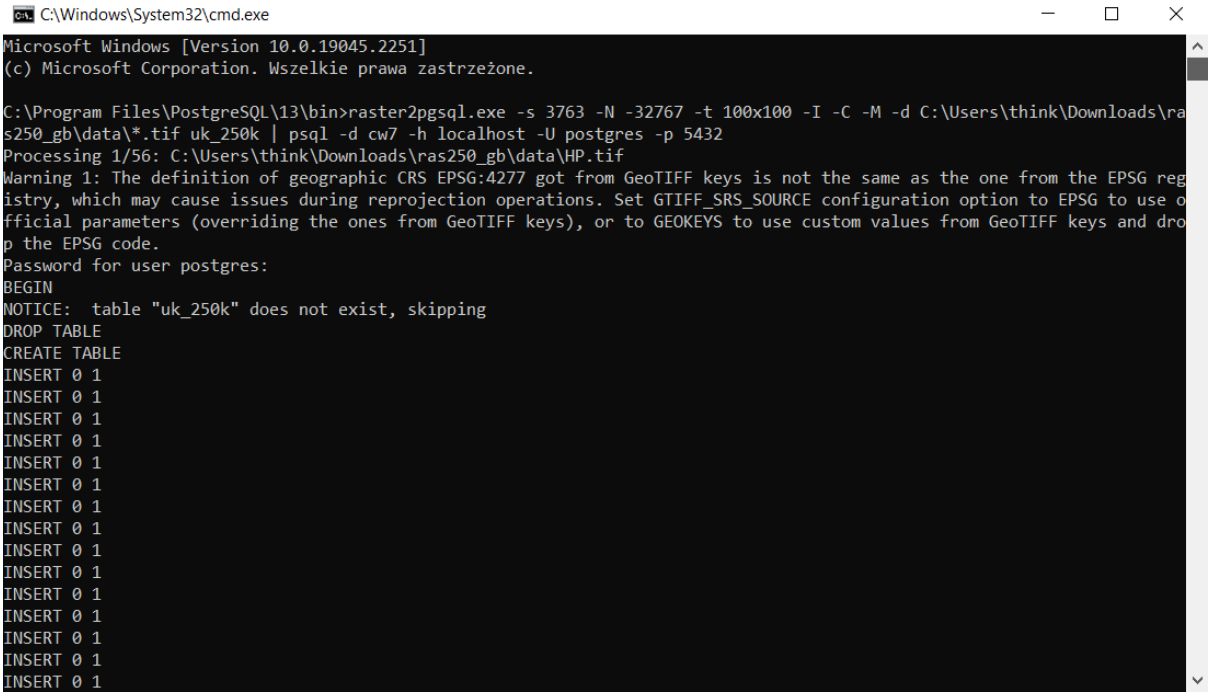
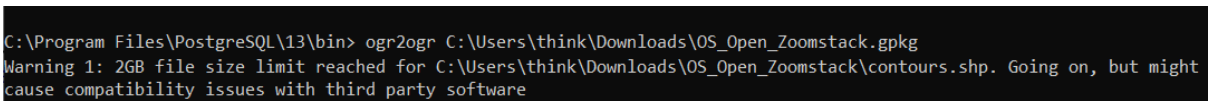
zadanie 2:



zadanie 3:

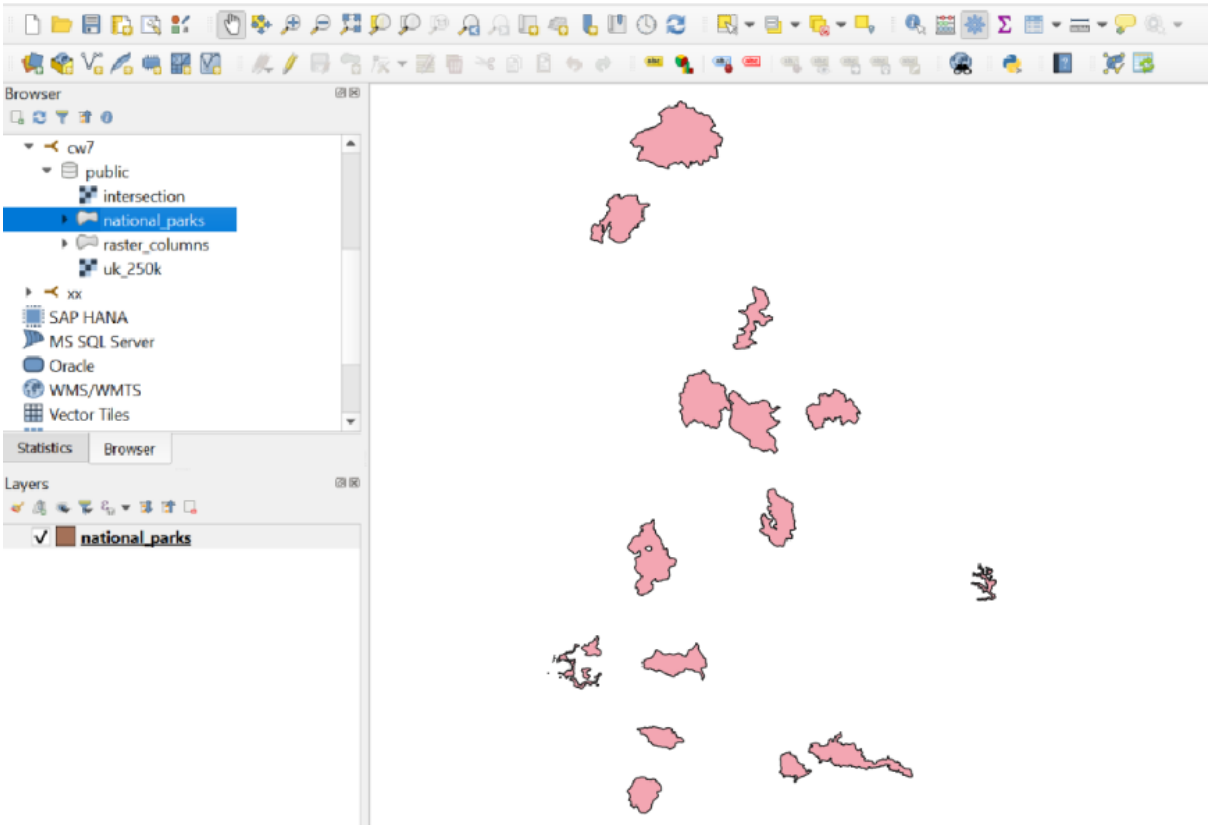
niestety wykonywanie funkcji st_union trwało bardzo długo i nie przyniosło efektów

zadanie 5:



shp2pgsql -s 27700 C:\Users\think\Downloads\OS_Open_Zoomstack\national_parks.shp national_parks | psql -U postgres -h localhost -p 5432 -d cw7

Nazwa	Data modyfikacji	Typ	Rozmiar
local_buildings.dbf	14.12.2022 21:21	Plik DBF	1 168 132 KB
local_buildings.prj	14.12.2022 19:53	Plik PRJ	1 KB
local_buildings.shp	14.12.2022 21:21	Plik SHP	2 069 783 KB
local_buildings.shx	14.12.2022 21:21	Plik SHX	115 372 KB
names.dbf	14.12.2022 21:21	Plik DBF	285 800 KB
names.prj	14.12.2022 21:20	Plik PRJ	1 KB
names.shp	14.12.2022 21:21	Plik SHP	18 147 KB
names.shx	14.12.2022 21:21	Plik SHX	5 185 KB
national_parks.dbf	14.12.2022 21:21	Plik DBF	1 KB
national_parks.prj	14.12.2022 19:53	Plik PRJ	1 KB
national_parks.shp	14.12.2022 21:21	Plik SHP	368 KB
national_parks.shx	14.12.2022 21:21	Plik SHX	1 KB
rail.dbf	14.12.2022 21:21	Plik DBF	8 352 KB
rail.prj	14.12.2022 21:18	Plik PRJ	1 KB
rail.shp	14.12.2022 21:21	Plik SHP	9 703 KB
rail.shx	14.12.2022 21:21	Plik SHX	825 KB
railway_stations.dbf	14.12.2022 21:21	Plik DBF	547 KB
railway_stations.prj	14.12.2022 21:18	Plik PRJ	1 KB
railway_stations.shp	14.12.2022 21:21	Plik SHP	96 KB

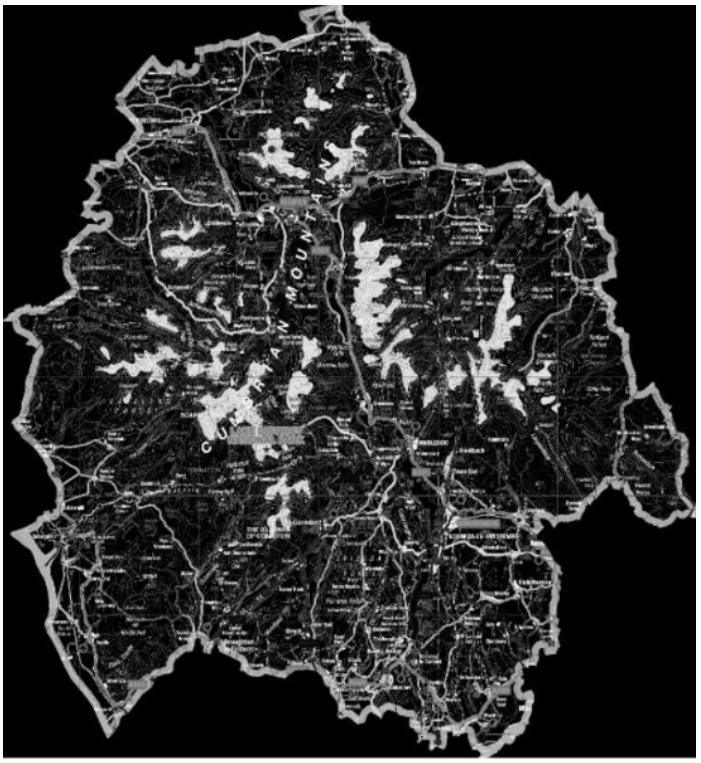


zadanie 6:

```
3
4  create table data_lakes_district as
5      select ST_Union(ST_Clip(a.rast, b.geom))
6  from uk_250k as u
7  inner join national_parks as n
8      on ST_Intersects(n.geom, u.rast)
9  where n.id = 1;
10
```

zadanie 7:

```
4  create table tmp_out as
5  select lo_from_bytea(
6      0,
7      ST_AsGDALRaster(
8          ST_Union(rast),
9          'GTiff',
10         ARRAY['COMPRESS=DEFLATE', 'PREDICTOR=2', 'PZLEVEL=9']
11     )
12 ) as loid
13 from data_lakes_district;
14
15 select lo_export(loid, 'C:\Users\think\Desktop\lake_district_clip.tiff')
16 from tmp_out;
17
18 select lo_unlink(loid)
19 from tmp_out;
```



zadanie 10:

Query Editor | Query History

```
create index idx_rast_gist on sentinel
using gist (ST_ConvexHull(rast));

create or replace function ndvi(
    value double precision [] [] [],
    pos integer [][],
    VARIADIC userargs text []
)
returns double precision as
$$
begin
    return (value [2][1][1] - value [1][1][1])/(value [2][1][1]+value [1][1][1]);
$$
language 'plpgsql' immutable cost 1000;

create table ndvi as
with r as (
    select * from sentinel as s, national_parks n
    where n.id = 1 and ST_Intersects(n.geom,s.rast)
)

select r.rid, ST_MapAlgebra(
    r.rast,
    ARRAY[1,4],
        'ndvi(double precision[], integer[],text[])'::regprocedure,
        '32BF'::text
) as rast
from r;
```

w wyniku została otrzymana pusta tabela

zadanie 11:

```
create table tmp_out_3 as
select lo_from_bytea(
    0,
    ST_AsGDALRaster(
        ST_Union(rast),
        'GTiff',
        ARRAY['COMPRESS=DEFLATE', 'PREDICTOR=2', 'PZLEVEL=9']
    )
as loid
from uk_lake_district_sentinel;

select lo_export(loid, 'C:\Users\think\Desktop\res1.tiff'
from tmp_out_3;

select lo_unlink(loid)
from tmp_out_3;
```