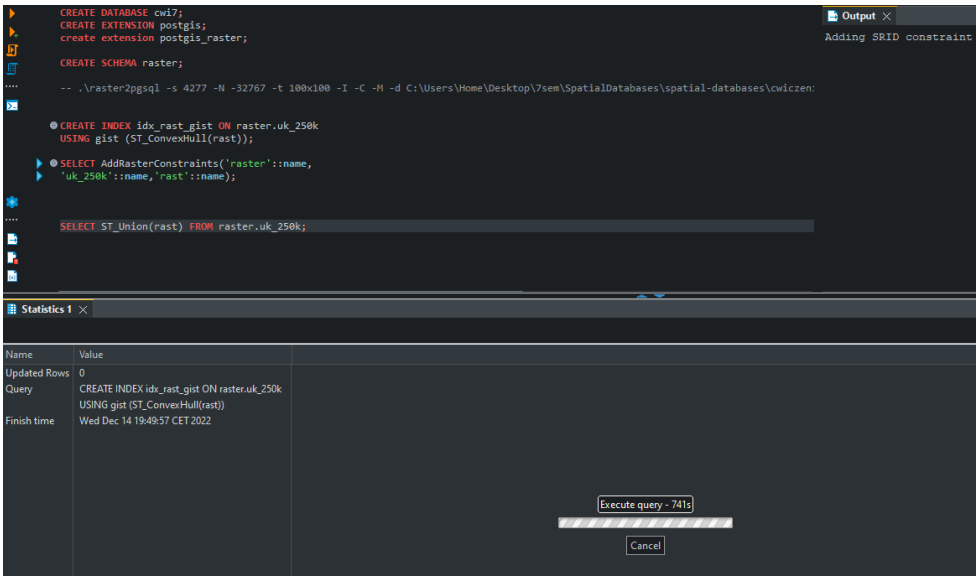
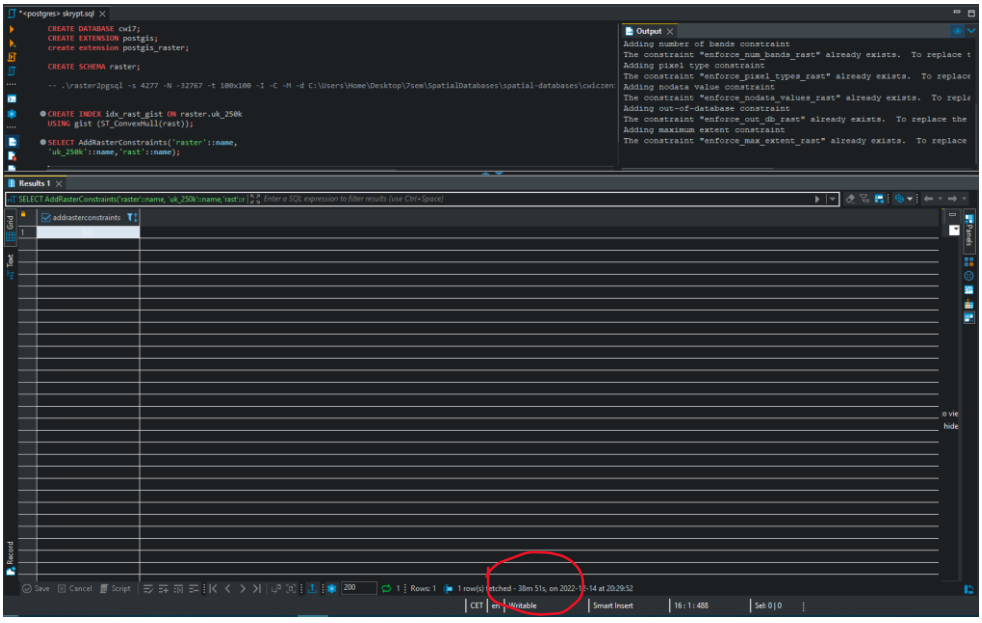
Ćwiczenia 7

Zad. 1

.\raster2pgsql -s 4277 -N -32767 -t 100x100 -I -C -M -d C:\Users\Home\Desktop\7sem\SpatialDatabases\spatial-databases\cwiczenia7\ras250_gb\data*.tif raster.uk_250k | psql -d cwi7 -h localhost -U postgres -p 5433

Zad. 2 i 3





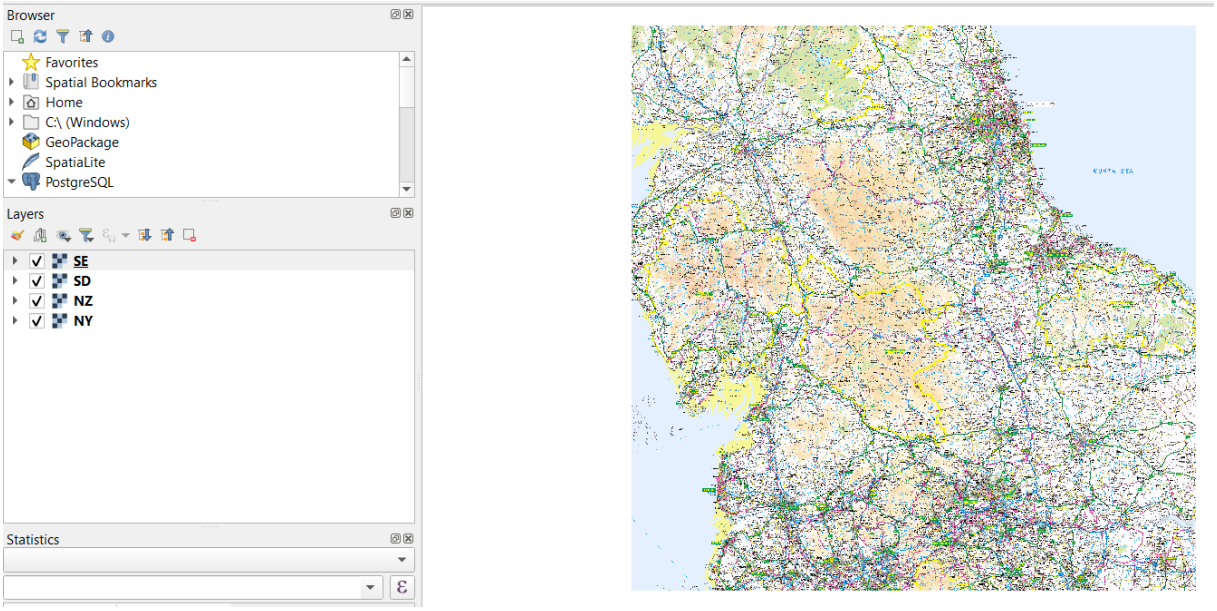
Zapytanie trwało prawie 39 minut.

```sql
DROP TABLE IF EXISTS tmp_out ;

CREATE TABLE tmp_out AS
SELECT lo_from_bytea(0,
       ST_AsGDALRaster(ST_Union(rast), 'GTiff')
        ) AS loid
FROM raster.uk_250k;

SELECT lo_export(loid, 'C:\bazy_przestrzenne\zadanie3.tif')
FROM tmp_out;

SELECT lo_unlink(loid)
  FROM tmp_out;
```

Kwerenda również działała bardzo długo. Niestety nie udało mi się zapisać do pliku.

Sposób z mniejszą ilością rastrów:

Spróbowałam wyciągnąć tylko zdjęcia, które zawierały w sobie obszar lake district. Były to 4 rastry:



Na tych 4 rastrach próbowałam zrobić poprzednie operacje:

```
.\raster2pgsql -s 4277 -N -32767 -t 100x100 -I -C -M -d
C:\Users\Home\Desktop\7sem\SpatialDatabases\spatial-databases\cwiczenia7\data\*.tif
uk_250k_4raster | psql -d cwi7 -h localhost -U postgres -p 5433
```

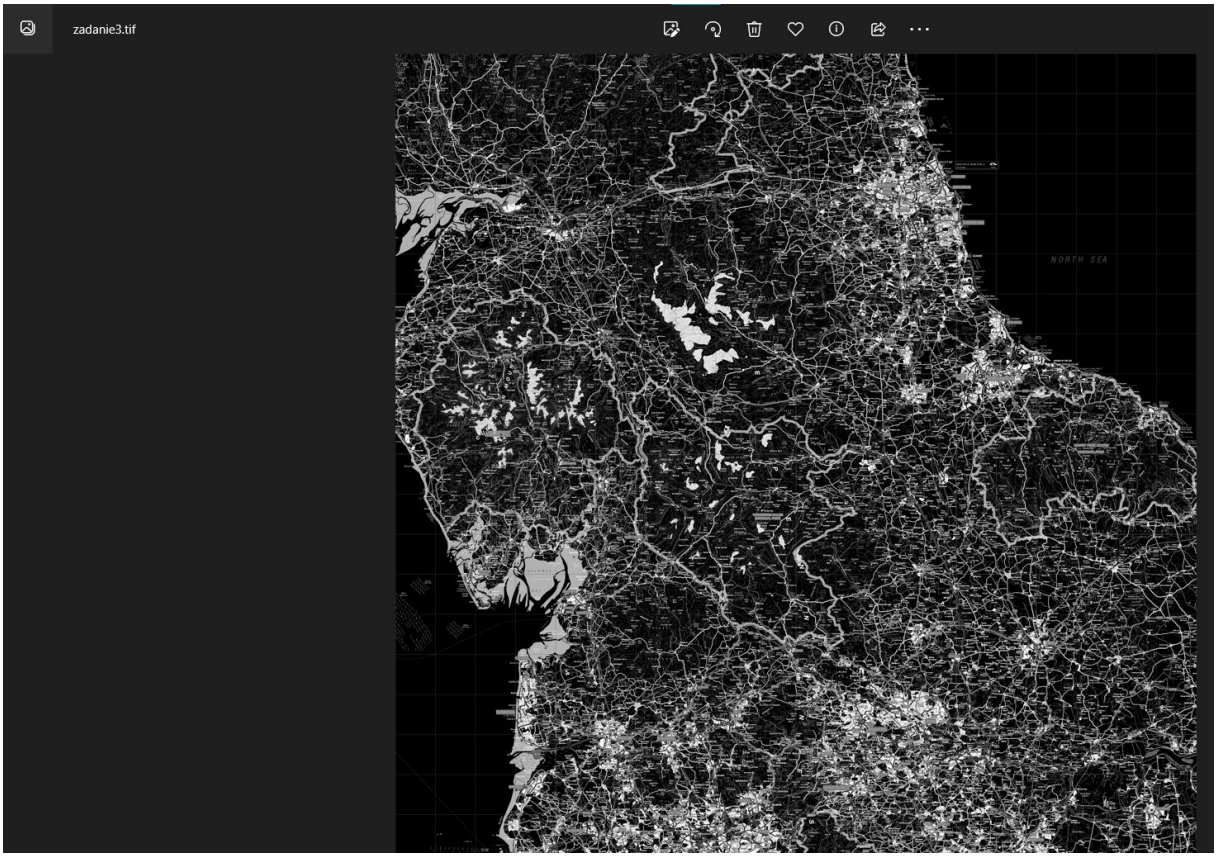
```sql
-- ZAD 1-3 WITH smaller amount OF rasters
 SELECT * FROM uk_250k_4raster;



CREATE INDEX idx_2_rast_gist ON uk_250k_4raster
USING gist(ST_ConvexHull(rast));

SELECT AddRasterConstraints('public'::name,
'uk_250k_4raster'::name,'rast'::name);


CREATE TABLE tmp_out4r AS
SELECT lo_from_bytea(0,
       ST_AsGDALRaster(ST_Union(rast), 'GTiff')
        ) AS loid
FROM uk_250k_4raster;

SELECT lo_export(loid, 'C:\bazy_przestrzenne\zadanie3.tif')
FROM tmp_out4r;

SELECT lo_unlink(loid)
   FROM tmp_out4r;
```

Results 1

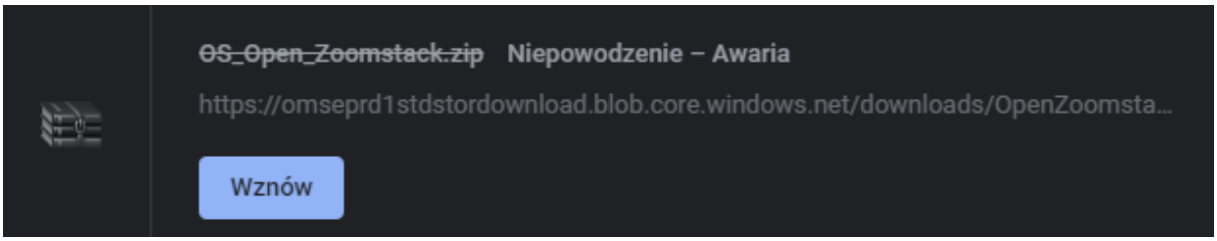
SELECT lo_unlink(loid) FROM tmp_out4r | Enter a SQL expression to filter results (use Ctrl+S

Grid

	lo_unlink
1	1



Zad. 4,5,6,7

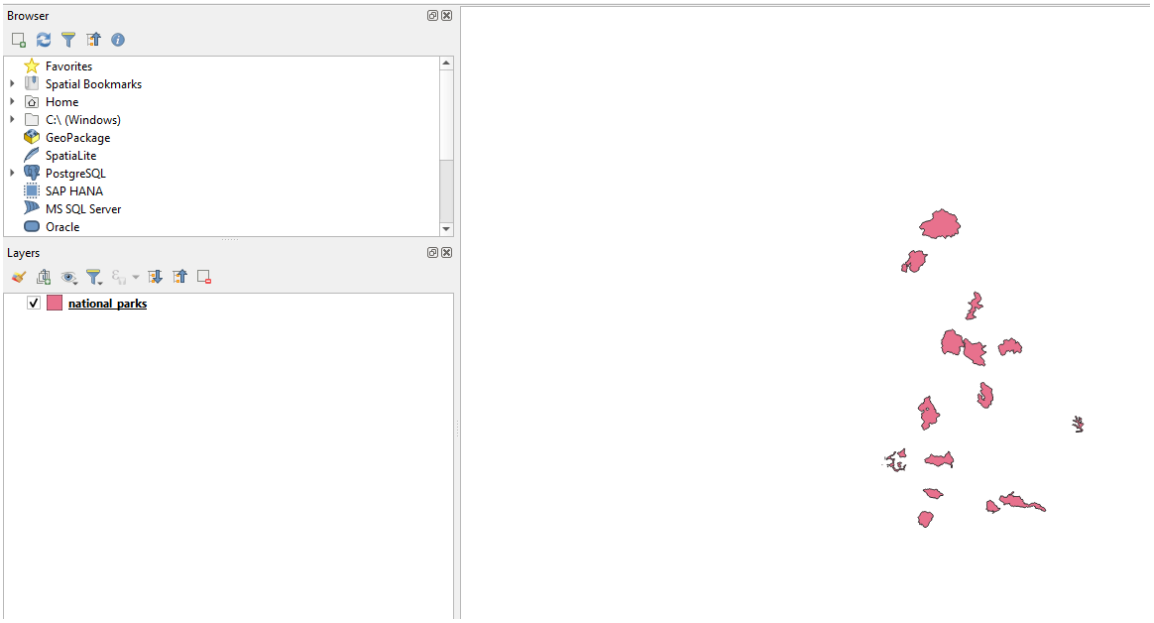


Plik pobierał się około godziny i pojawił się problem dotyczący awarii pliku…

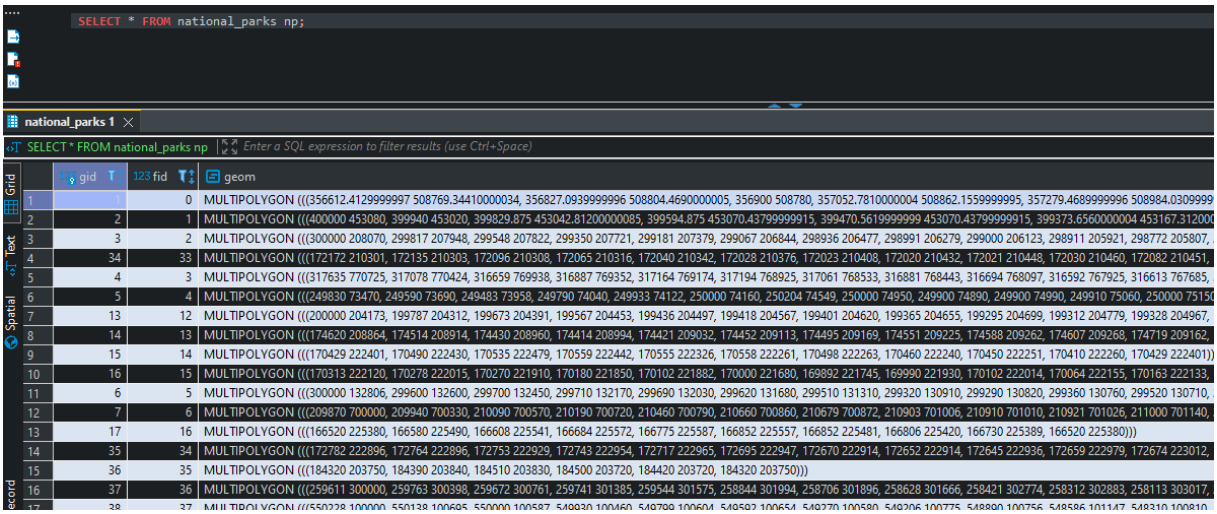
Po powtórnym pobraniu:

```
ogr2ogr.exe C:\bazy_przestrzenne\ C:\bazy_przestrzenne\OS_Open_Zoomstack.gpkg
```

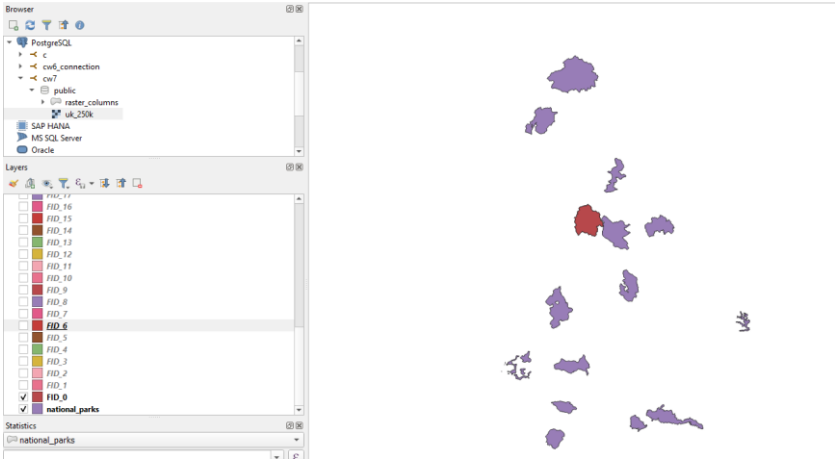
Po wczytaniu do qgis:




```
shp2pgsql -s 27700 C:\bazy_przestrzenne\national_parks.shp national_parks | psql -U postgres -h localhost -p 5433 -d cwi7
```



Fid dla lake_district znalazłam na podstawie:



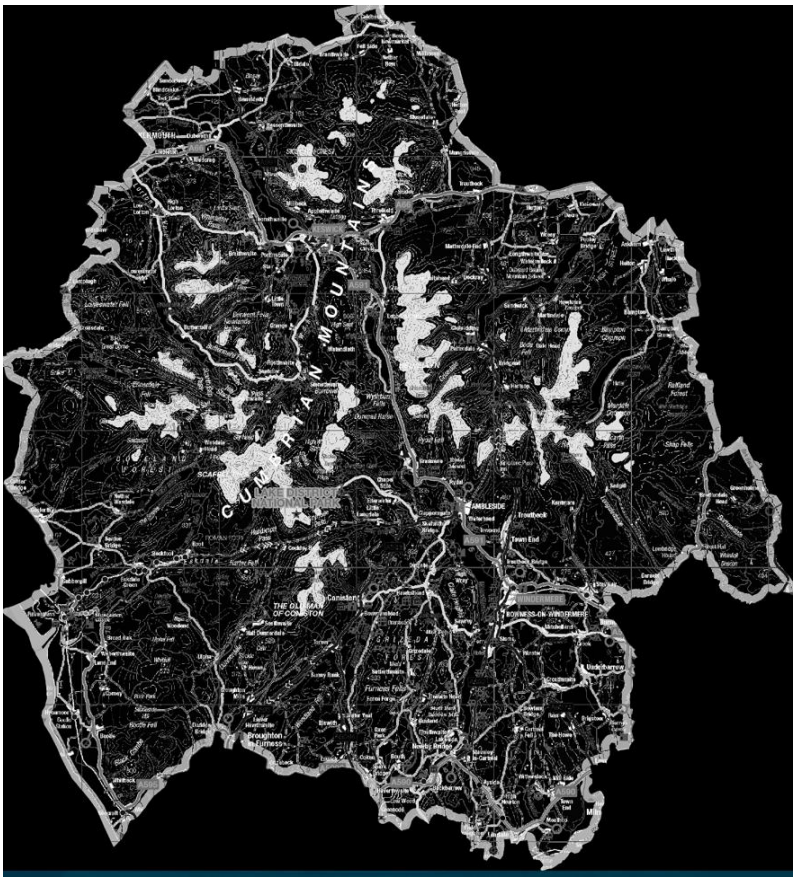
```sql
SELECT * FROM national_parks np;

SELECT UpdateGeometrySRID('national_parks','geom',4277);

CREATE TABLE uk_lake_district AS
SELECT a.rid,ST_Clip(a.rast, b.geom,true) as rast
FROM raster.uk_250k AS a, national_parks AS b
where b.gid = 1 and ST_Intersects(b.geom,a.rast);
```

```sql
CREATE TABLE tmp_out 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;

SELECT lo_export(loid, 'C:\bazy_przestrzenne\zadanie7.tif')
  FROM tmp_out;

  SELECT lo_unlink(loid)
  FROM tmp_out; --> Delete the large object.
```

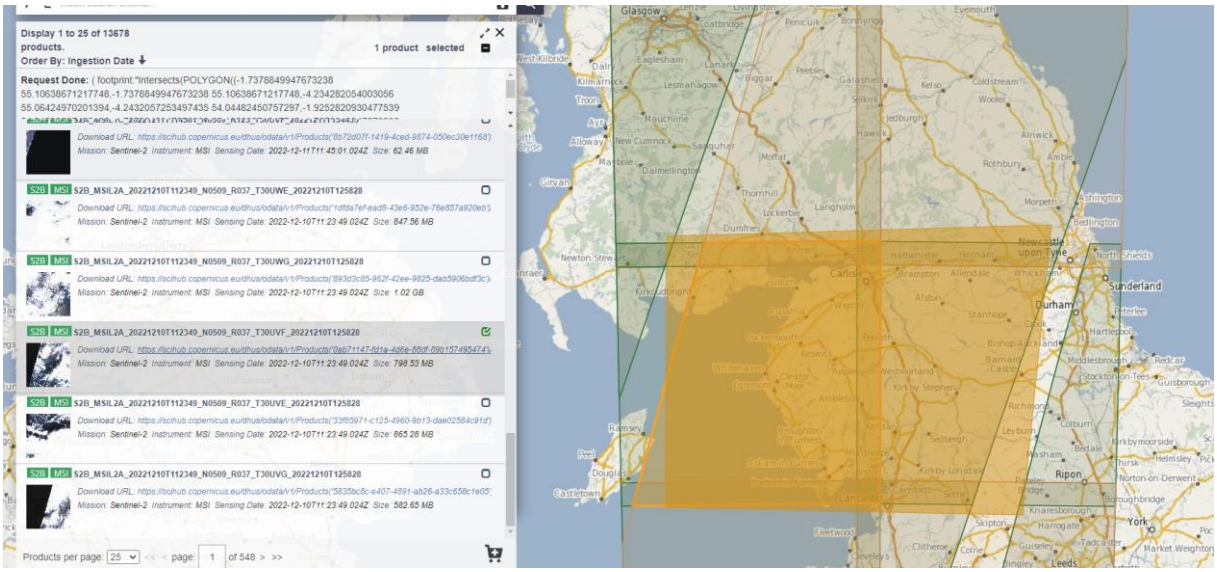
Results 1

SELECT lo_unlink(loid) FROM tmp_out; Enter a SQL expression to filter results (use Ctrl+Space)

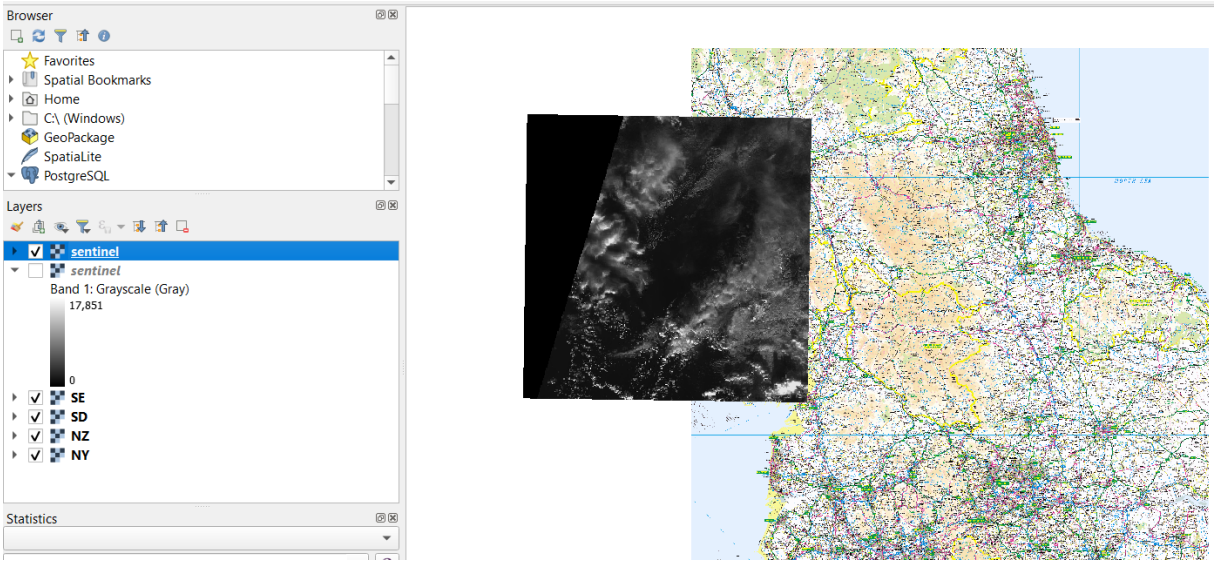
	lo_unlink
1	1



Zad. 8,9,10,11




```
raster2pgsql.exe -s 4277 -N -32767 -t 100x100 -I -C -M -d C:\bazy_przestrzenne\sentinel.jp2 raster.sentinel | psql -d cwi7 -h localhost -U postgres -p 5433
```




```
SELECT * FROM raster.sentinel;
```

sentinel 1

SELECT * FROM raster.sentinel | Enter a SQL expression to filter results (use Ctrl+Space)

	rid	rast
1	1	0100000100000000000000244000000000000024C000000000E09B1A41000000000D4557410000000000000000000000000000000B5100000640064004600000
2	2	0100000100000000000000244000000000000024C00000000080AB1A41000000000D4557410000000000000000000000000000000B5100000640064004600000
3	3	0100000100000000000000244000000000000024C00000000020BB1A41000000000D4557410000000000000000000000000000000B5100000640064004600000E
4	4	0100000100000000000000244000000000000024C000000000C0CA1A41000000000D4557410000000000000000000000000000000B5100000640064004600005
5	5	0100000100000000000000244000000000000024C00000000060DA1A41000000000D4557410000000000000000000000000000000B5100000640064004600000B
6	6	0100000100000000000000244000000000000024C000000000000EA1A41000000000D4557410000000000000000000000000000000B5100000640064004600000B
7	7	0100000100000000000000244000000000000024C000000000A0F91A41000000000D4557410000000000000000000000000000000B5100000640064004600002
8	8	0100000100000000000000244000000000000024C00000000040091B41000000000D4557410000000000000000000000000000000B5100000640064004600000EC
9	9	0100000100000000000000244000000000000024C000000000E0181B41000000000D4557410000000000000000000000000000000B5100000640064004600000FE
10	10	0100000100000000000000244000000000000024C00000000080281B41000000000D4557410000000000000000000000000000000B5100000640064004600002
11	11	0100000100000000000000244000000000000024C00000000020381B41000000000D4557410000000000000000000000000000000B5100000640064004600004
12	12	0100000100000000000000244000000000000024C000000000C0471B41000000000D4557410000000000000000000000000000000B5100000640064004600001

```sql
SELECT * FROM raster.sentinel;


CREATE INDEX idx_rast_sentinel_gist ON raster.sentinel
USING gist (ST_ConvexHull(rast));

SELECT AddRasterConstraints('raster'::name,
'sentinel'::name,'rast'::name);


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]); --> NDVI calculation!
END;
$$
LANGUAGE 'plpgsql' IMMUTABLE COST 1000;

CREATE TABLE NDVI_2 AS
WITH r AS (
SELECT * FROM raster.sentinel
)
SELECT
r.rid,ST_MapAlgebra(
r.rast, ARRAY[1,4],
'NDVI(double precision[],
integer[],text[])'::regprocedure, --> This is the function!
'32BF'::text
) AS rast
FROM r;

SELECT * FROM NDVI_2;
```

```sql
SELECT * FROM NDVI_2;


CREATE TABLE uk_lake_district_sentinel AS
SELECT a.rid, ST_Clip(a.rast,b.geom,true) AS rast
FROM NDVI_2 AS a, national_parks AS b
WHERE b.gid=1 AND ST_Intersects(b.geom,a.rast);

SELECT * FROM uk_lake_district_sentinel;

DROP TABLE tmp_out2;

CREATE TABLE tmp_out2 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:\bazy_przestrzenne\zadanie11.tiff')
FROM tmp_out2;

SELECT lo_unlink(loid)
FROM tmp_out2; --> Delete the large object.
```

Po przycięciu brak wyników, mimo że mam te same układy współrzędnych.

```sql
SELECT DISTINCT ST_SRID(rast) FROM ndvi_2;
```

Results 1

SELECT DISTINCT ST_SRID(rast) FROM ndvi_2 | Enter a SQL expres

	st_srid
1	4,277

```sql
SELECT FIND_SRID('public','national_parks','geom');
```

Results 1

SELECT FIND_SRID('public','national_parks','geom') | Enter a SQL expression to filter

	find_srid
1	4,277