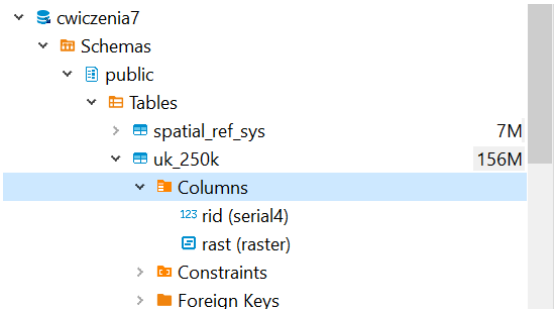
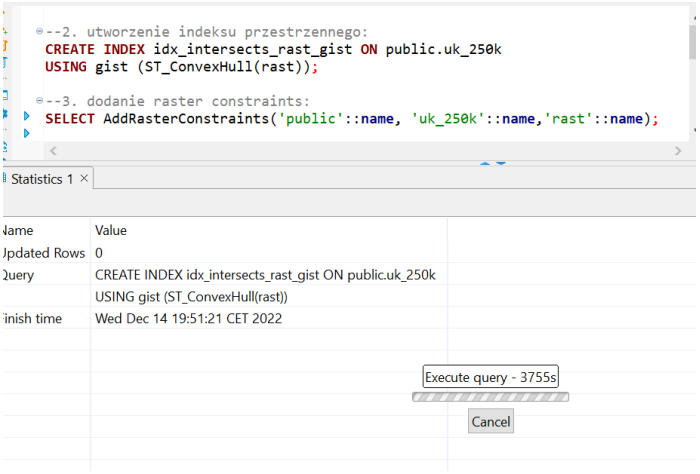
2. ZAŁADUJ DANE DO TABELI O NAZWIE UK_250K.

.\raster2pgsql -s 4277 -N -32767 -t 100x100 -I -C -M -d C:\Users\Ewelina\Desktop\BD_7\ras250_gb\data*.tif uk_250k | psql -d cwiczenia7 -h localhost -U postgres -p 5432



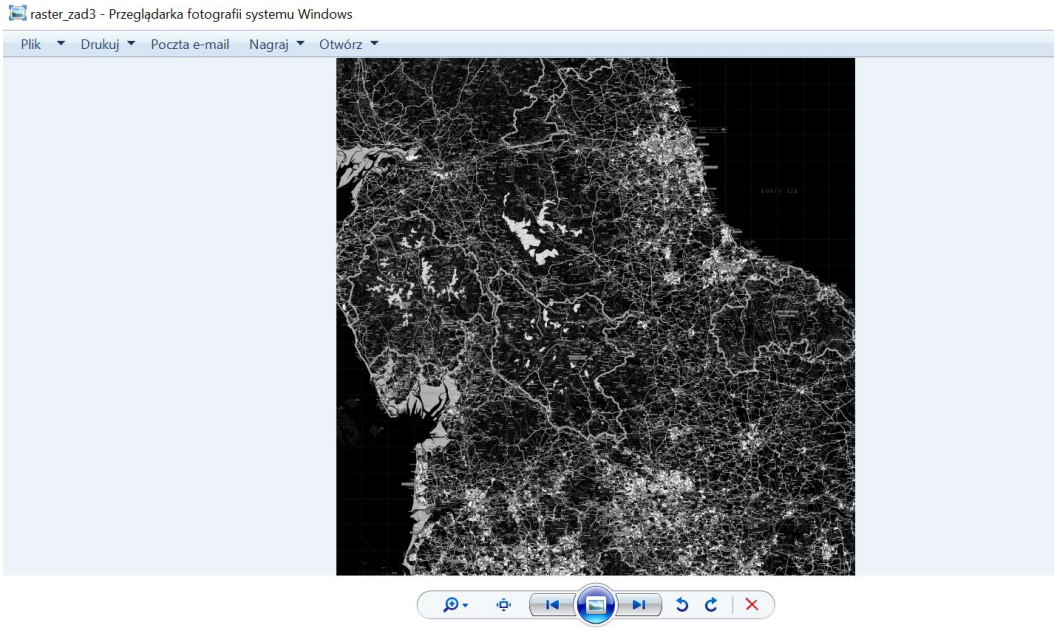
3. POŁĄCZ DANE (WSZYSTKIE KAFLE) W MOZAIKĘ, A NASTĘPNIE WYEKSPORTUJ JAKO GEOTIFF

-- ładowanie komend trwało ponad 50 min, przy czym nie były w stanie się skończyć-musiałam je zatrzymać



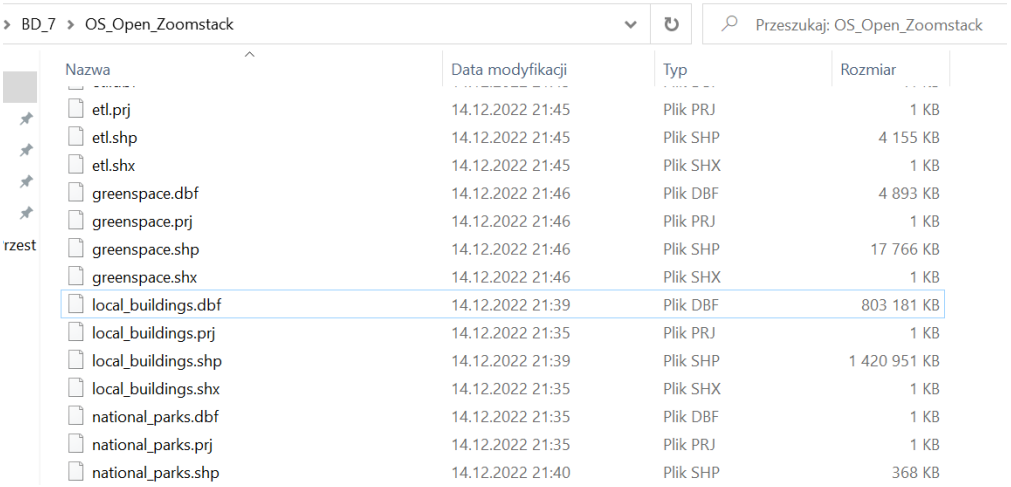
---- NIE UDAŁO MI SIĘ ZAŁADOWAĆ WSZYSTKICH KAFELKÓW I POŁĄCZYĆ W MOZAIKĘ, DLATEGO WYBIERAM TYLKO 4 : NY, NZ, SD i SE (ROBIE TO W NOWEJ TABELI uk_250k_w2)

```
--2. utworzenie indeksu przestrzennego:
CREATE INDEX idx_intersects_rast_gist ON public.uk_250k_w2
USING gist (ST_ConvexHull(rast));

--3. dodanie raster constraints:
SELECT AddRasterConstraints('public'::name, 'uk_250k_w2'::name,'rast'::name);



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 public.uk_250k_w2;

SELECT lo_export(loid, 'C:\cw6_bd\raster_zad3.tiff')
FROM tmp_out2;

SELECT lo_unlink(loid)
  FROM tmp_out;
```



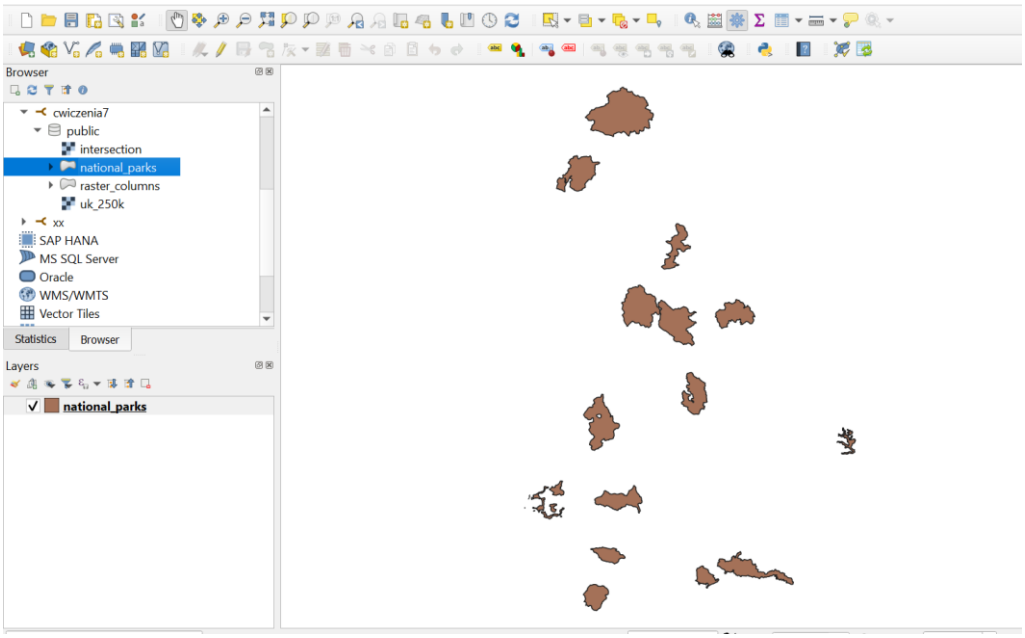
6. UTWÓRZ NOWĄ TABELĘ O NAZWIE UK_LAKE_DISTRICT, DO KTÓREJ ZAIMPORTUJESZ MAPY RASTROWE Z PUNKTU 1., KTÓRE ZOSTANĄ PRZYCIĘTE DO GRANIC PARKU NARODOWEGO LAKE DISTRICT.

```
C:\Program Files\PostgreSQL\14\bin>ogr2ogr.exe C:\Users\Ewelina\Desktop\BD_7\OS_Open_Zoomstack C:\Users\Ewelina\Desktop\
BD_7\OS_Open_Zoomstack\OS_Open_Zoomstack.gpkg
Warning 1: 2GB file size limit reached for C:\Users\Ewelina\Desktop\BD_7\OS_Open_Zoomstack\contours.shp. Going on, but m
ight cause compatibility issues with third party software
```



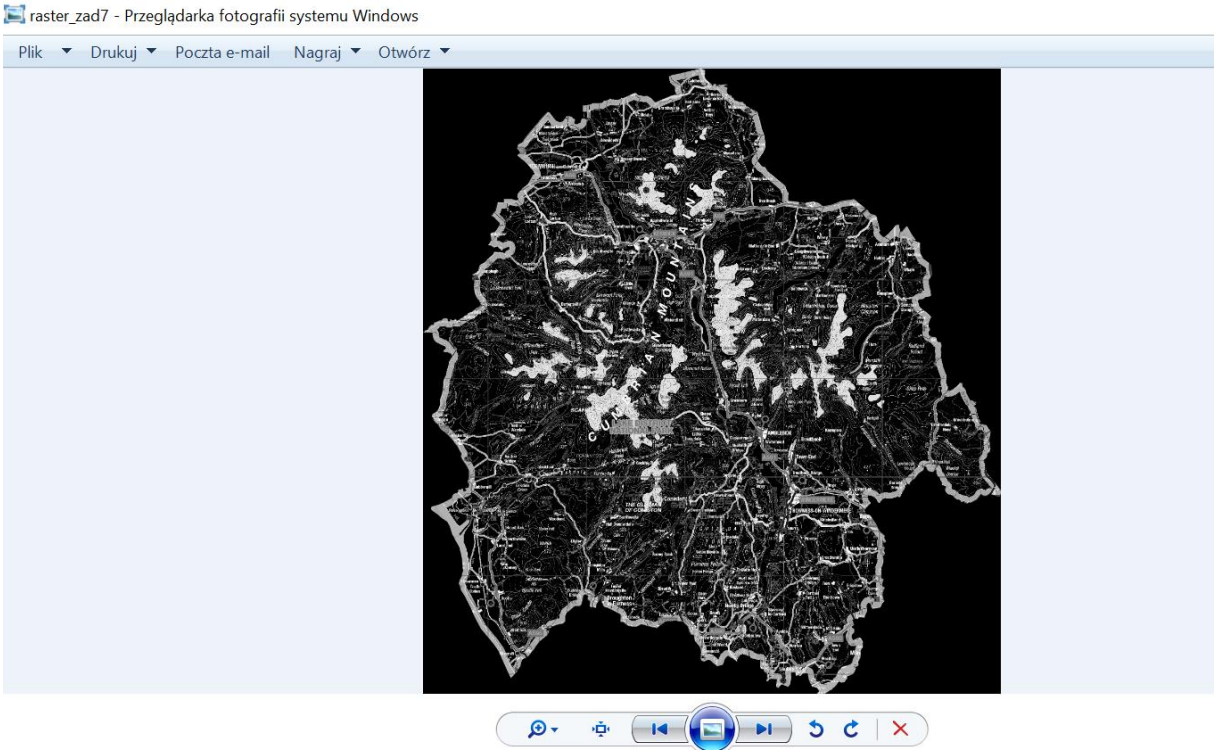
shp2pgsql -s 27700 C:\Users\Ewelina\Desktop\BD_7\OS_Open_Zoomstack\national_parks.shp national_parks | psql -U postgres -h localhost -p 5432 -d cwiczenia7

```
C:\Program Files\PostgreSQL\14\bin>shp2pgsql -s 27700 C:\Users\Ewelina\Desktop\BD_7\OS_Open_Zoomstack\national_parks.shp
 national_parks | psql -U postgres -h localhost -p 5432 -d cwiczenia7
Field fid is an FTDouble with width 11 and precision 0
Shapefile type: Polygon
Postgis type: MULTIPOLYGON[2]
Password for user postgres:
SET
SET
BEGIN
CREATE TABLE
ALTER TABLE
                        addgeometrycolumn
------------------------------------------------------------------
 public.national_parks.geom SRID:27700 TYPE:MULTIPOLYGON DIMS:2
(1 row)

COMMIT
ANALYZE

C:\Program Files\PostgreSQL\14\bin>
```

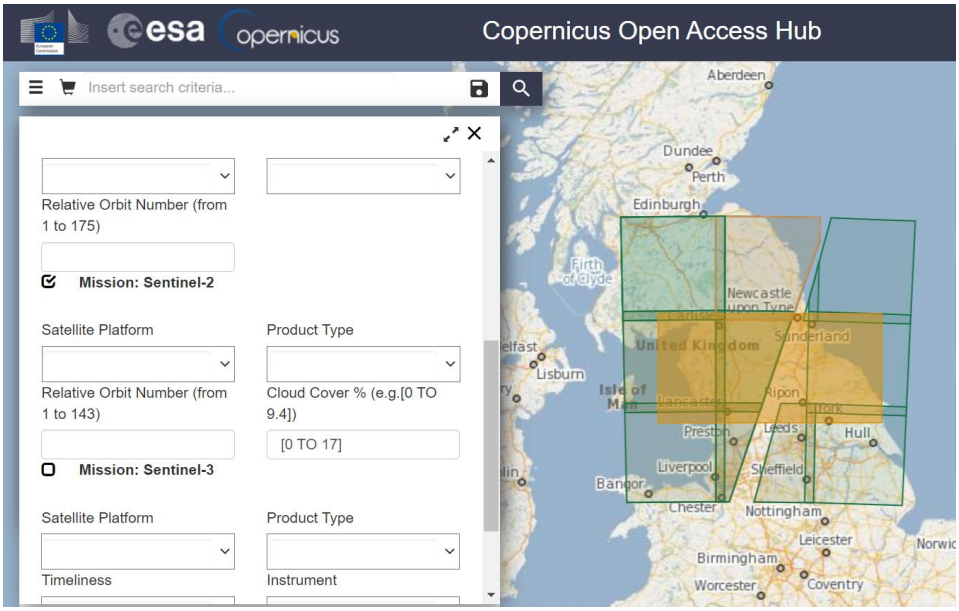



```sql
SELECT UpdateGeometrySRID('national_parks','geom',4277);

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

select * from uk_lake_district;

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;
```

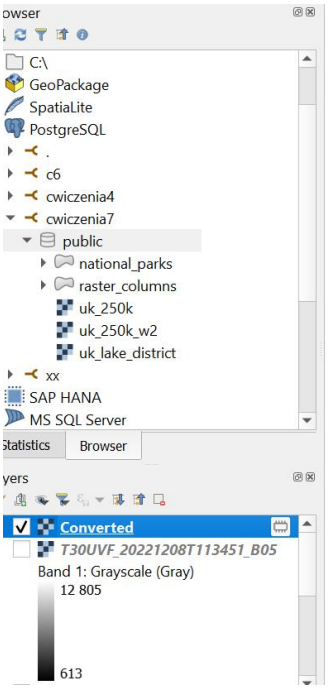
```sql
SELECT lo_export(loid, 'C:\cw6_bd\raster_zad7.tiff')
FROM tmp_out;


SELECT lo_unlink(loid)
FROM tmp_out;
```

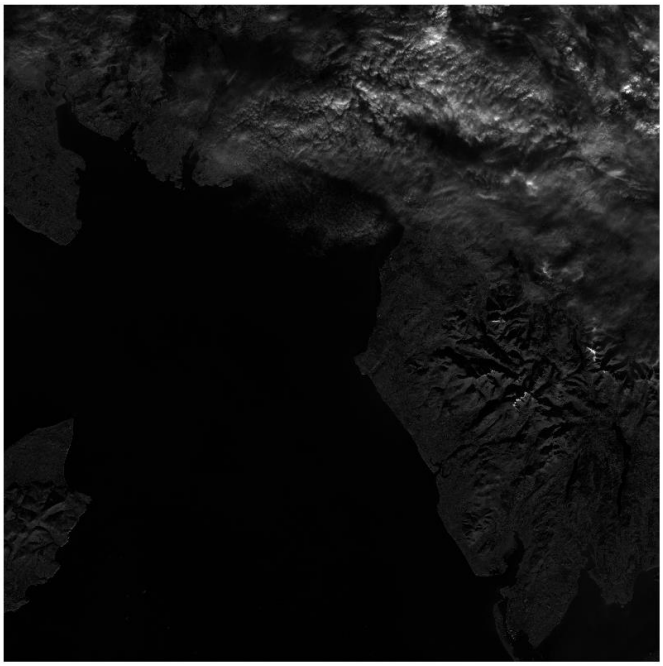


8. POBIERZ DANE Z SATELITY SENTINEL-2 WYKORZYSTUJĄC PORTAL: HTTPS://SCIHUB.COPERNICUS.EU

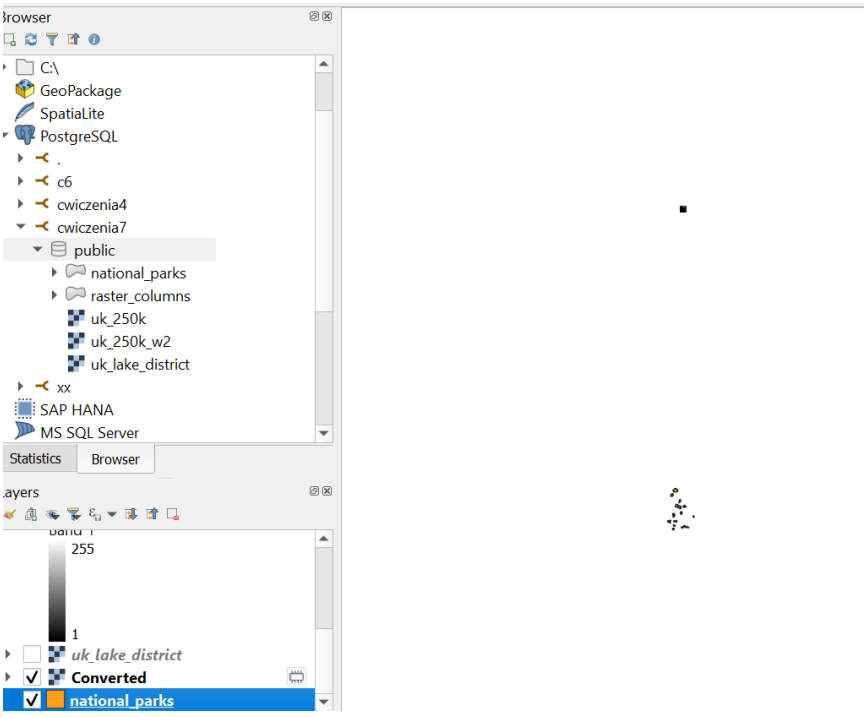


PO WCZYTANIU DO QGIS:





ZMIANA UKŁADU WSPÓŁRZĘDNYCH NIE POMOGŁA- RASTER NIE POKRYWA SIĘ Z MAPĄ PARKÓW PRZEZ CO KOLEJNE CZĘŚCI ZADANIA NIE WYJDĄ POPRAWNIE



9. ZAŁADUJ DANE Z SENTINELA-2 DO BAZY DANYCH.

raster2pgsql.exe -s 3763 -N -32767 -t 100x100 -I -C -M -d C:\Users\Ewelina\Desktop\BD_7\Sentiment\zdj*.jp2 sentinel | psql -d cwiczenia7 -h localhost -U postgres -p 5432

```
---------------------------------- ZADANIE 9
SELECT * FROM public.sentinel;
```

entinel 1 ×

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

	rid	rast
1	1	0100000100000000000000004E400000000000004EC0000000006069184100000000D455741000000000
2	2	0100000100000000000000004E400000000000004EC00000000020C7184100000000D455741000000000
3	3	0100000100000000000000004E400000000000004EC000000000E0241941000000000D455741000000000
4	4	0100000100000000000000004E400000000000004EC000000000A0821941000000000D455741000000000
5	5	0100000100000000000000004E400000000000004EC00000000060E0194100000000D455741000000000
6	6	0100000100000000000000004E400000000000004EC000000000203E1A4100000000D455741000000000

10. POLICZ INDEKS NDWI ORAZ PRZYTNIJ WYNIKI DO GRANIC LAKE DISTRICT.

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

SELECT AddRasterConstraints('public'::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 public.sentinel
)
SELECT
r.rid,ST_MapAlgebra(
r.rast, ARRAY[1,4],
'NDVI(double precision[],
integer[],text[])'::regprocedure,
'32BF'::text
) AS rast
FROM r;

SELECT * FROM NDVI_2;
```

dvi_2 1 ×

ELECT * FROM NDVI_2 | Enter a SQL expression to filter results (use Ctrl+Space)

	rid	rast
1	1	0100000100000000000000004E400000000000004EC0000000006069184100000000D455741000000000
2	2	0100000100000000000000004E400000000000004EC00000000020C7184100000000D455741000000000
3	3	0100000100000000000000004E400000000000004EC000000000E0241941000000000D455741000000000
4	4	0100000100000000000000004E400000000000004EC000000000A0821941000000000D455741000000000
5	5	0100000100000000000000004E400000000000004EC00000000060E0194100000000D455741000000000
6	6	0100000100000000000000004E400000000000004EC000000000203E1A4100000000D455741000000000
7	7	0100000100000000000000004E400000000000004EC000000000E09B1A4100000000D455741000000000

```sql
CREATE TABLE intersect_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 intersect_sentinel;
```

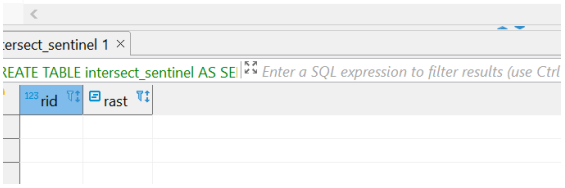


Tabela jest pusta nie ma wspólnej części dwóch obiektów (jak widać w QGIS obiekty się rozjechały i nie nachodzą na siebie)

11. WYEKSPORTUJ OBLICZONY I PRZYCIĘTY WSKAŹNIK NDWI DO GEOTIFF

```sql
CREATE TABLE tmp_out3 AS
SELECT lo_from_bytea(0,
ST_AsGDALRaster(ST_Union(rast), 'GTiff', ARRAY['COMPRESS=DEFLATE',
'PREDICTOR=2', 'PZLEVEL=9'])
) AS loid
FROM intersect_sentinel;


SELECT lo_export(loid, 'C:\cw6_bd\raster_zad7.tiff')
FROM tmp_out3;

SELECT lo_unlink(loid)
FROM tmp_out3;
```