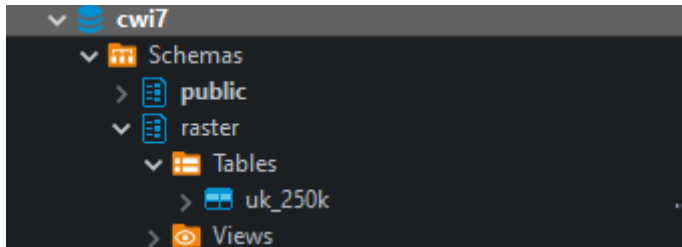


# Ćwiczenia 7

## 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 uk_250k | psql -d cwi7 -h localhost -U  
postgres -p 5433
```



## Zad. 2 i 3

The screenshot shows a PostgreSQL query editor with the following SQL commands:

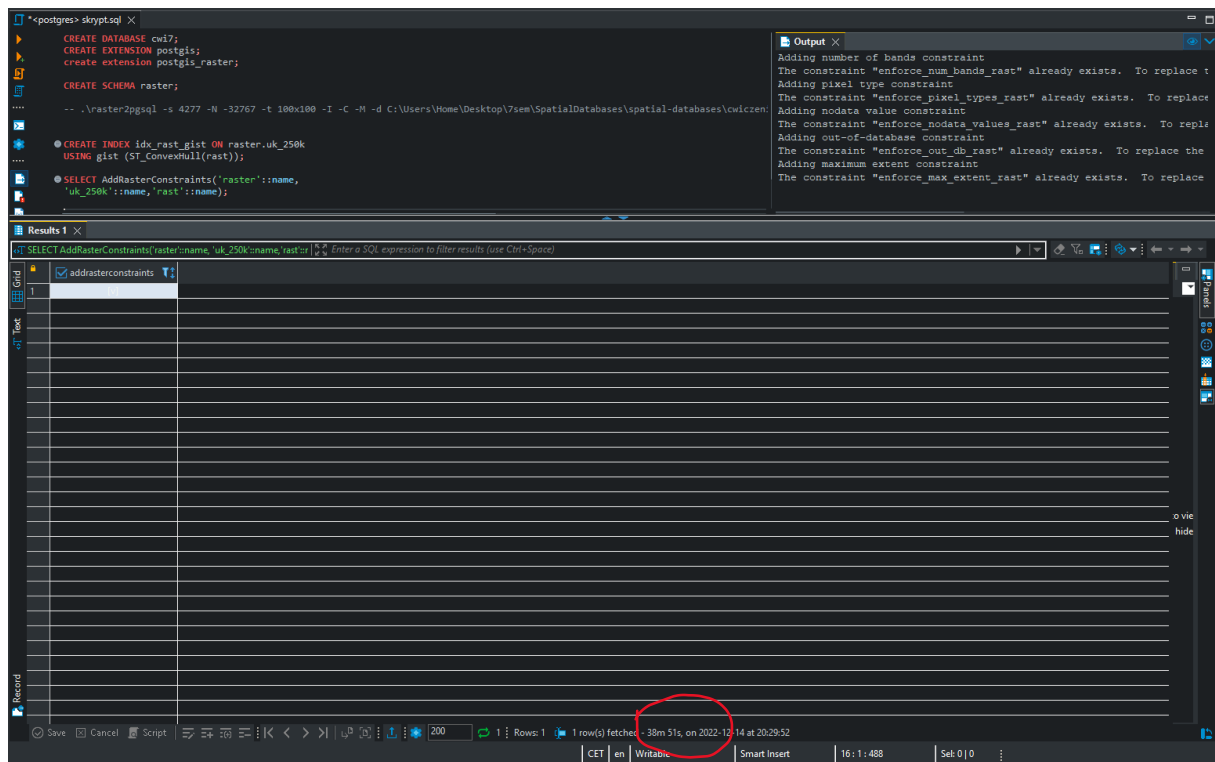
```
CREATE DATABASE cwi7;  
CREATE EXTENSION postgis;  
create extension postgis_raster;  
  
CREATE SCHEMA raster;  
  
-- .\raster2pgsql -s 4277 -N -32767 -t 100x100 -I -C -M -d C:\Users\Home\Desktop\7sem\SpatialDatabases\spatial-databases\cwiczen:  
  
CREATE INDEX idx_rast_gist ON raster.uk_250k  
USING gist (ST_ConvexHull(rast));  
  
SELECT AddRasterConstraints('raster'::name,  
'uk_250k'::name, 'rast'::name);  
  
SELECT ST_Union(rast) FROM raster.uk_250k;
```

The 'Output' tab shows the results of the queries, including the message 'Adding SRID constraint'.

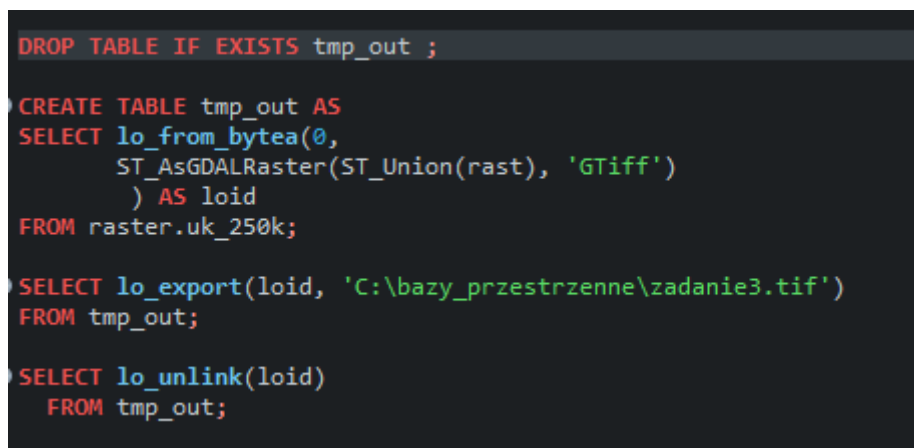
The 'Statistics' tab shows the following information:

Name	Value
Updated Rows	0
Query	CREATE INDEX idx_rast_gist ON raster.uk_250k USING gist (ST_ConvexHull(rast))
Finish time	Wed Dec 14 19:49:57 CET 2022

At the bottom, there is a progress bar and buttons for 'Execute query - 741s' and 'Cancel'.

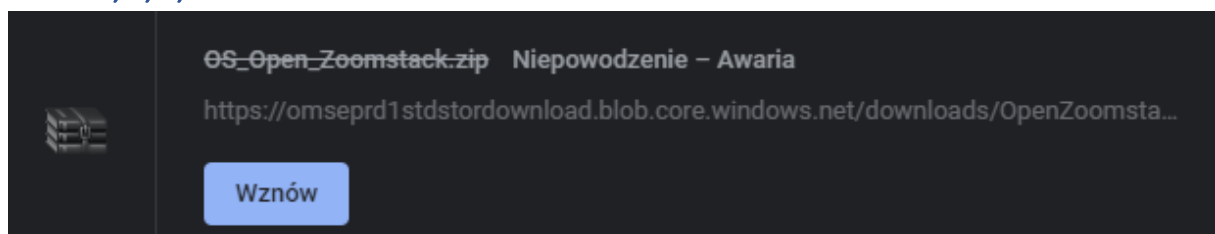


Zapytanie trwało prawie 39 minut.



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

## Zad. 4,5,6,7



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

Po powtórным pobraniu:

ogr2ogr.exe C:\bazy\_przestrzenne\ C:\bazy\_przestrzenne\OS\_Open\_Zoomstack.gpkg

SELECT * FROM national_parks np;	
national_parks 1	
SELECT * FROM national_parks np	Enter a SQL expression to filter results (use Ctrl+Space)
Grid	Text
id	geom
1	MULTIPOLYGON (((356612.412999999 508769.34410000034, 356827.093999999 508804.4690000005, 356900.508780, 357052.7810000004 508862.1559999995, 357279.468999999 508984.03099999, 357400.00000 509080.00000, 357500.00000 509180.00000, 357600.00000 509280.00000, 357700.00000 509380.00000, 357800.00000 509480.00000, 357900.00000 509580.00000, 358000.00000 509680.00000, 358100.00000 509780.00000, 358200.00000 509880.00000, 358300.00000 509980.00000, 358400.00000 510080.00000, 358500.00000 510180.00000, 358600.00000 510280.00000, 358700.00000 510380.00000, 358800.00000 510480.00000, 358900.00000 510580.00000, 359000.00000 510680.00000, 359100.00000 510780.00000, 359200.00000 510880.00000, 359300.00000 510980.00000, 359400.00000 511080.00000, 359500.00000 511180.00000, 359600.00000 511280.00000, 359700.00000 511380.00000, 359800.00000 511480.00000, 359900.00000 511580.00000, 360000.00000 511680.00000, 360100.00000 511780.00000, 360200.00000 511880.00000, 360300.00000 511980.00000, 360400.00000 512080.00000, 360500.00000 512180.00000, 360600.00000 512280.00000, 360700.00000 512380.00000, 360800.00000 512480.00000, 360900.00000 512580.00000, 361000.00000 512680.00000, 361100.00000 512780.00000, 361200.00000 512880.00000, 361300.00000 512980.00000, 361400.00000 513080.00000, 361500.00000 513180.00000, 361600.00000 513280.00000, 361700.00000 513380.00000, 361800.00000 513480.00000, 361900.00000 513580.00000, 362000.00000 513680.00000, 362100.00000 513780.00000, 362200.00000 513880.00000, 362300.00000 513980.00000, 362400.00000 514080.00000, 362500.00000 514180.00000, 362600.00000 514280.00000, 362700.00000 514380.00000, 362800.00000 514480.00000, 362900.00000 514580.00000, 363000.00000 514680.00000, 363100.00000 514780.00000, 363200.00000 514880.00000, 363300.00000 514980.00000, 363400.00000 515080.00000, 363500.00000 515180.00000, 363600.00000 515280.00000, 363700.00000 515380.00000, 363800.00000 515480.00000, 363900.00000 515580.00000, 364000.00000 515680.00000, 364100.00000 515780.00000, 364200.00000 515880.00000, 364300.00000 515980.00000, 364400.00000 516080.00000, 364500.00000 516180.00000, 364600.00000 516280.00000, 364700.00000 516380.00000, 364800.00000 516480.00000, 364900.00000 516580.00000, 365000.00000 516680.00000, 365100.00000 516780.00000, 365200.00000 516880.00000, 365300.00000 516980.00000, 365400.00000 517080.00000, 365500.00000 517180.00000, 365600.00000 517280.00000, 365700.00000 517380.00000, 365800.00000 517480.00000, 365900.00000 517580.00000, 366000.00000 517680.00000, 366100.00000 517780.00000, 366200.00000 517880.00000, 366300.00000 517980.00000, 366400.00000 518080.00000, 366500.00000 518180.00000, 366600.00000 518280.00000, 366700.00000 518380.00000, 366800.00000 518480.00000, 366900.00000 518580.00000, 367000.00000 518680.00000, 367100.00000 518780.00000, 367200.00000 518880.00000, 367300.00000 518980.00000, 367400.00000 519080.00000, 367500.00000 519180.00000, 367600.00000 519280.00000, 367700.00000 519380.00000, 367800.00000 519480.00000, 367900.00000 519580.00000, 368000.00000 519680.00000, 368100.00000 519780.00000, 368200.00000 519880.00000, 368300.00000 519980.00000, 368400.00000 520080.00000, 368500.00000 520180.00000, 368600.00000 520280.00000, 368700.00000 520380.00000, 368800.00000 520480.00000, 368900.00000 520580.00000, 369000.00000 520680.00000, 369100.00000 520780.00000, 369200.00000 520880.00000, 369300.00000 520980.00000, 369400.00000 521080.00000, 369500.00000 521180.00000, 369600.00000 521280.00000, 369700.00000 521380.00000, 369800.00000 521480.00000, 369900.00000 521580.00000, 370000.00000 521680.00000, 370100.00000 521780.00000, 370200.00000 521880.00000, 370300.00000 521980.00000, 370400.00000 522080.00000, 370500.00000 522180.00000, 370600.00000 522280.00000, 370700.00000 522380.00000, 370800.00000 522480.00000, 370900.00000 522580.00000, 371000.00000 522680.00000, 371100.00000 522780.00000, 371200.00000 522880.0000

```
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);
```

```
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;

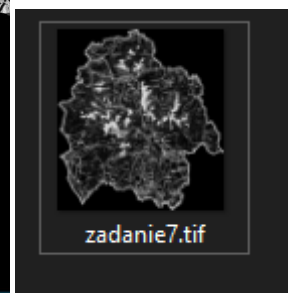
SELECT lo_export(loid, 'C:\bazy_przestrzenne\zadanie7.tif')
FROM tmp_out;

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)

1	loid
1	122



Zad. 8,9,10,11

Display 1 to 25 of 13678 products.

Order By: Ingestion Date

1 product selected

Request Done: { footprint } intersects POLYGON((-1.7378649947673238

50.10636671217748,-1.7378649947673238,50.10636712177748,-1.2342826504003056

50.06429702017394,-1.2425057253497435,54.0448455975297,-1.925262695047539

-1.925262695047539,54.0448455975297,54.0448455975297,-1.925262695047539,50.06429702017394,-1.2425057253497435,50.10636671217748,-1.7378649947673238,50.10636671217748,-1.7378649947673238

Download URL: <https://sci-hub.copernicus.eu/uthub/data/v1/products/367207f1419-4cd4-9d74-05dc3de1f68>

Mission: Sentinel-2 Instrument: MSI Sensing Date: 2022-12-17T11:45:01.024Z Size: 62.46 MB

52B MS2

52B\_MSIL2A\_202210112349\_N0509\_R103\_T30UWE\_2022101212528

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52B MS2

52B\_MSIL2A\_202210112349\_N0509\_R103\_T30UWG\_2022101212528

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52B MS2

52B\_MSIL2A\_202210112349\_N0509\_R103\_T30UVF\_2022101212528

Download URL: <https://sci-hub.copernicus.eu/uthub/data/v1/products/7f6071147-5d1a-d4de-b00f-69a157495d74>

Mission: Sentinel-2 Instrument: MSI Sensing Date: 2022-12-12T10:11:23:49.024Z Size: 799.53 MB

52B MS2

52B\_MSIL2A\_202210112349\_N0509\_R103\_T30UVE\_2022101212528

Download URL: <https://sci-hub.copernicus.eu/uthub/data/v1/products/3795971c-125-4960-ae13-dae02584cd1d>

Mission: Sentinel-2 Instrument: MSI Sensing Date: 2022-12-10T11:23:49.024Z Size: 865.26 MB

52B MS2

52B\_MSIL2A\_202210112349\_N0509\_R103\_T30UVG\_2022101212528

Download URL: <https://sci-hub.copernicus.eu/uthub/data/v1/products/56330cb0-e407-4891-a026-a33c555c1e05>

Mission: Sentinel-2 Instrument: MSI Sensing Date: 2022-12-10T11:23:49.024Z Size: 582.65 MB

Products per page: 25 << < page: 1 of 548 >>

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

[illegible]

```

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;

```

```

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;

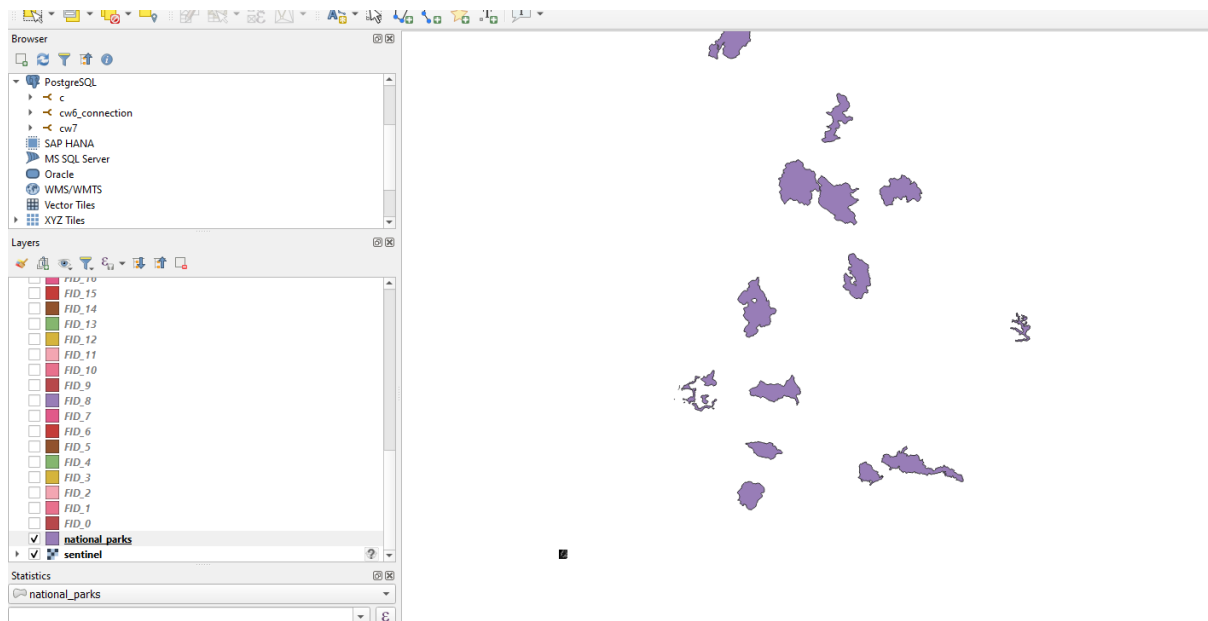
DROP TABLE tmp_out2;

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. W lewym dolnym rogu – warstwa sentinel.