lab 7

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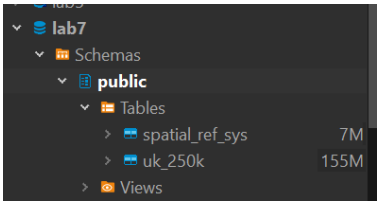
```
create database lab7;

create extension postgis;
create extension postgis_raster;
```

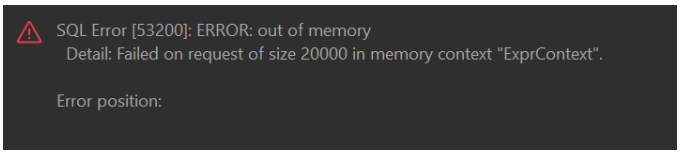
```
raster2pgsql.exe -s 3763 -N -32767 -t 100x100 -I -C -M -d
C:\Users\Olga\Downloads\ras250_gb\ras250_gb\data\*.tif uk_250k | psql -d lab7
-h localhost -U postgres -p 5432
```

```
INSERT 0 1
INSERT 0 1
CREATE INDEX
ANALYZE
NOTICE:  Adding SRID constraint
NOTICE:  Adding scale-X constraint
NOTICE:  Adding scale-Y constraint
NOTICE:  Adding blocksize-X constraint
NOTICE:  Adding blocksize-Y constraint
NOTICE:  Adding alignment constraint
NOTICE:  Adding number of bands constraint
NOTICE:  Adding pixel type constraint
NOTICE:  Adding nodata value constraint
NOTICE:  Adding out-of-database constraint
NOTICE:  Adding maximum extent constraint
 addrasterconstraints
----------------------
 t
(1 row)

COMMIT
VACUUM
```




```
create index idx_intersects_rast_gist on public.uk_250k
using gist (ST_ConvexHull(rast));

select AddRasterConstraints('public'::name,
'uk_250k'::name,'rast'::name);
```

Przy próbie utworzenia tabeli uk_250k_connected wystąpił błąd:



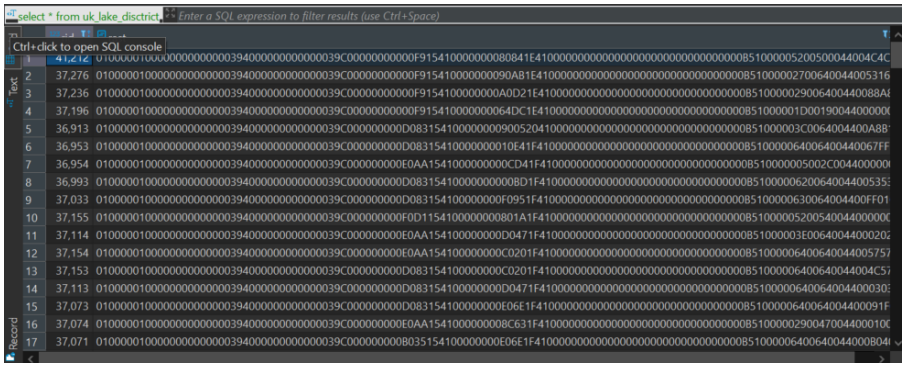
Należy użyć następujących kwerend w celu wyeksportowania danych do pliku .tiff:

```
create table uk_250k_connected as
select ST_UNION(rast)
from uk_250k

alter table uk_250k_connected
add column rid SERIAL primary key;

create index idx_intersects_rast_gist_connected on uk_250k_connected
using gist (ST_ConvexHull(rast));

select AddRasterConstraints('public'::name,
'uk_250k_connected'::name,'rast'::name);

select ST_AsGDALRaster(rast,'GTiff',ARRAY['COMPRESS=DEFLATE','PREDICTOR=2', 'PZLEVEL=9'])
from uk_250k_connected;

create table result_out as
select lo_from_bytea(0,ST_AsGDALRaster(ST_Union(rast),'GTiff',ARRAY['COMPRESS=DEFLATE',
'PREDICTOR=2', 'PZLEVEL=9'])) as loid
from uk_250k_connected;

select lo_export(loid, 'D:\uk_250k_connected.tiff')
from result_out;

select lo_unlink(loid)
from result_out;
```

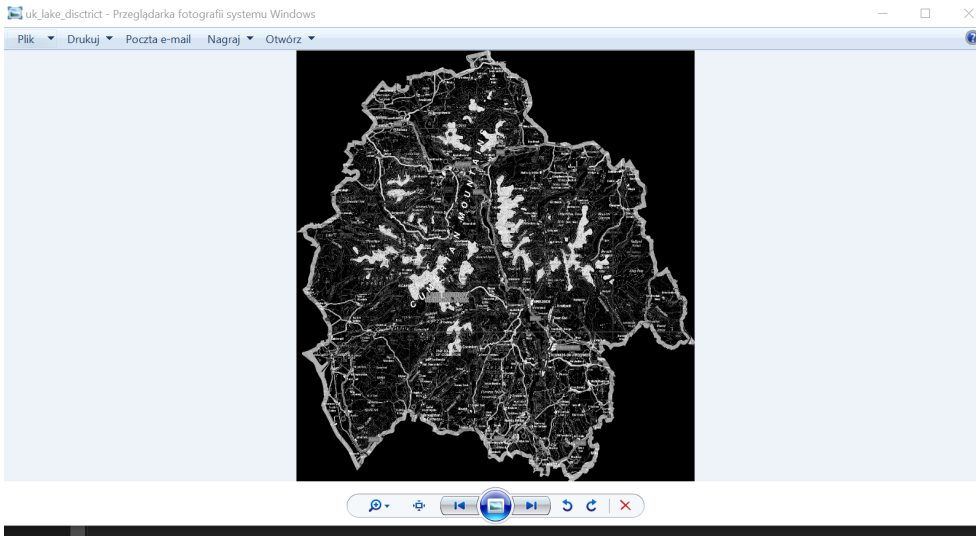
```
C:\Program Files\PostgreSQL\15\bin>shp2pgsql.exe -s 27700 C:\Users\Olga\Downloads\data\national_parks.shp national_parks |
 psql -d lab7 -U postgres -h localhost -p 5432
```

```
 psql -d lab7 -U postgres -h localhost -p 5432
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)

INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
```

```
select updategeometrysrid('national_parks', 'geom', 4277);

create table uk_lake_disctrict 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_disctrict;
```




```
create table result_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_disctrict;

select lo_export(loid, 'D:\uk_lake_disctrict.tiff')
from result_out;

SELECT lo_unlink(loid)
FROM result_out;
```




```
raster2pgsql.exe -s 3763 -N -32767 -t 100x100 -I -C -M -d
C:\Users\Olga\Downloads\S2B_MSIL1C_20221130T112329_N0400_R037_T30UWF_20221130T120448\
S2B_MSIL1C_20221130T112329_N0400_R037_T30UWF_20221130T120448.SAFE\GRANULE\
L1C_T30UWF_A029950_20221130T112331\IMG_DATA\*.jp2 sentinel| psql -d lab7
-h localhost -U postgres -p 5432
```

```
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]);
end;
$$
language 'plpgsql' immutable cost 1000;

create table ndvi_2 as
with s as (select * from public.sentinel)
select
s.rid,
ST_MapAlgebra(s.rast, array[1,4],
'NDVI(double precision[], integer[], text[])'::regprocedure, '32BF'::text) as rast
from s;

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);
```

```
create table result_out 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, 'D:\intersect_sentinel.tiff')
from result_out;

SELECT lo_unlink(loid)
FROM result_out;
```