

Ćwiczenia 7- Krzysztof Żarnowski

zadanie 1

```
create database cw7;  
create extension postgis;  
create extension postgis_raster;
```

zadanie 2

```
raster2pgsql.exe -s 3763 -N -32767 -t 100x100 -I -C -M -d C:/Users/krzys/Downloads/ras250_gb/ras250_gb/data/*.tif uk_250k  
| psql -d cw7 -h localhost -U postgres -p 5432
```

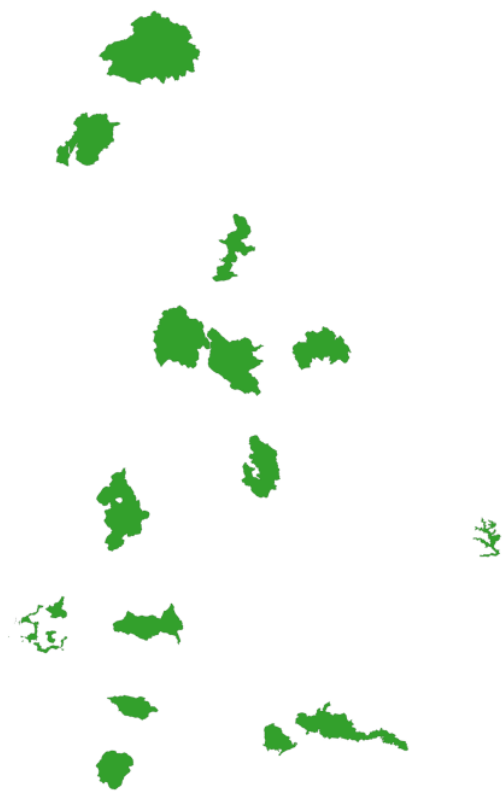
```
create index idx_rast_gist on uk_250k using gist(ST_ConvexHull(rast));  
select AddRasterConstraints('public'::name, 'uk_250k'::name, 'rast'::name);
```

zadanie 3

```
create table uk_250k_union as  
select st_union(rast)  
from uk_250k;  
  
alter table uk_250k_union  
add column rid serial primary key;  
  
create index idx_rast_gist_union on uk_250k_union  
using gist (ST_ConvexHull(rast));  
  
select AddRasterConstraints('public'::name,  
'uk_250k_union'::name, 'rast'::name);  
  
select ST_AsGDALRaster(rast, 'GTiff', array['COMPRESS=DEFLATE',  
'PREDICTOR=2', 'PZLEVEL=9'])  
from uk_250k_union;  
  
create table uk_temp AS  
select lo_from_bytea(0, ST_AsGDALRaster(ST_Union(rast), 'GTiff',  
array['COMPRESS=DEFLATE', 'PREDICTOR=2', 'PZLEVEL=9']))  
as loid  
from uk_250k_union;  
  
select lo_export(loid, 'E:data.tiff')  
from uk_temp;  
  
select lo_unlink(loid)  
from uk_temp;
```



zadanie 5





zadanie 6

```
select UpdateGeometrySRID('national_parks', 'geom', 4277);
select UpdateRasterSRID('uk_250k_union', 'rast', 4277);

create table uk_lake_district as
select
  ST_UNION(ST_Clip(a.rast, b.geom, true))
from
  uk_250k_union a,
  national_parks b
where
  b.id = 1 and
  ST_Intersects(b.geom, a.rast);
```

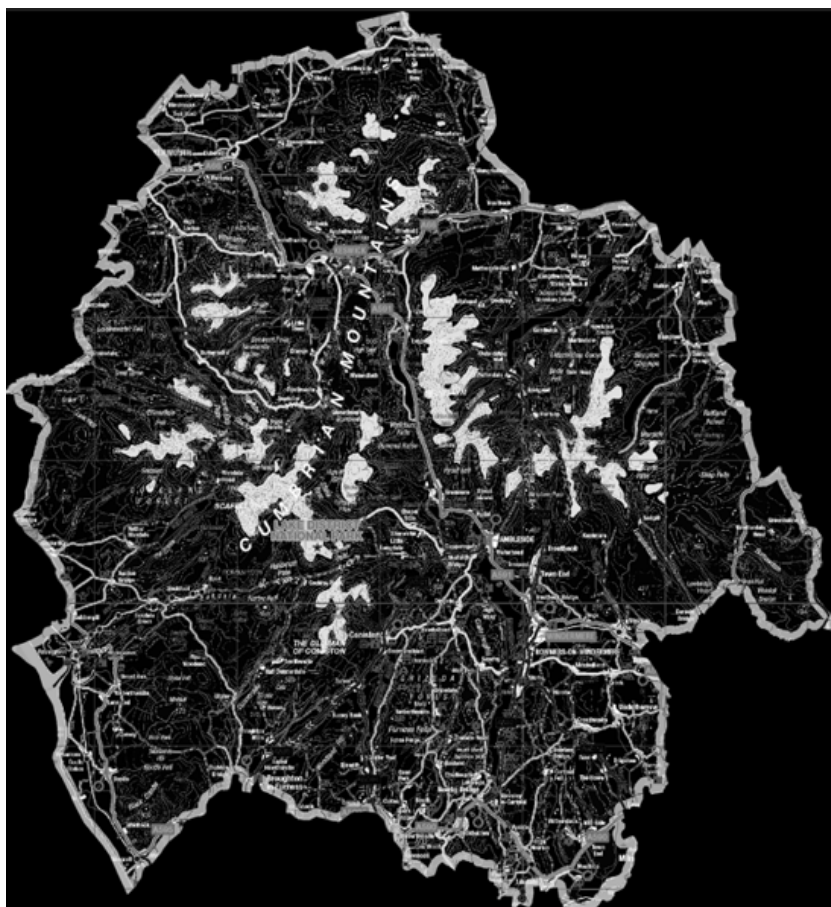


zadanie 7

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

select lo_export(loid, 'E:uk_lake_district.tiff')
from uk_lake_temp;

select lo_unlink(loid)
from uk_lake_temp;
```



zadanie 8

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 footprint: "Intersects(POLYGON((-5.376235592687543

 52.65510604148088,-1.365253597338946

 52.65510604148088,-1.365253597338946))"

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 Download URL: [https://scihub.copernicus.eu/dhus/odata/v1/Products\('S2A_MSIL2A_20221215T112501_N0509_R037_T30UXE_2...'\)/\\$value](https://scihub.copernicus.eu/dhus/odata/v1/Products('S2A_MSIL2A_20221215T112501_N0509_R037_T30UXE_2...')/$value)

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zadanie 9

```
raster2pgsql.exe -s 4277 -N -32767 -t 100x100 -I -C -M -d C:/Users/krzys/Downloads/data/*.jp2 sentinel  
| psql -d cw7 -h localhost -U postgres -p 5432
```

zadanie 10

```
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 as  
with r as(  
select * from 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;  
  
select updaterrastersrid('sentinel', 'rast', 4277);  
select st_srid(rast) from sentinel;  
  
create table uk_ld_sentinel as  
select a.rid, st_clip(a.rast, b.geom, true) as rast  
from ndvi as a, national_parks as b  
where b.id=1 and st_intersects(b.geom, a.rast);
```

zadanie 11

```
create table uk_sentinel_temp as  
select lo_from_bytea(0, ST_AsGDALRaster(ST_Union(rast), 'GTiff',  
ARRAY['COMPRESS=DEFLATE', 'PREDICTOR=2', 'PZLEVEL=9']))  
as loid  
from uk_ld_sentinel;  
  
select lo_export(lo_id, 'E:ndvi.tiff')  
from uk_sentinel_temp;  
  
select lo_unlink(lo_id)  
from uk_sentinel_temp;
```