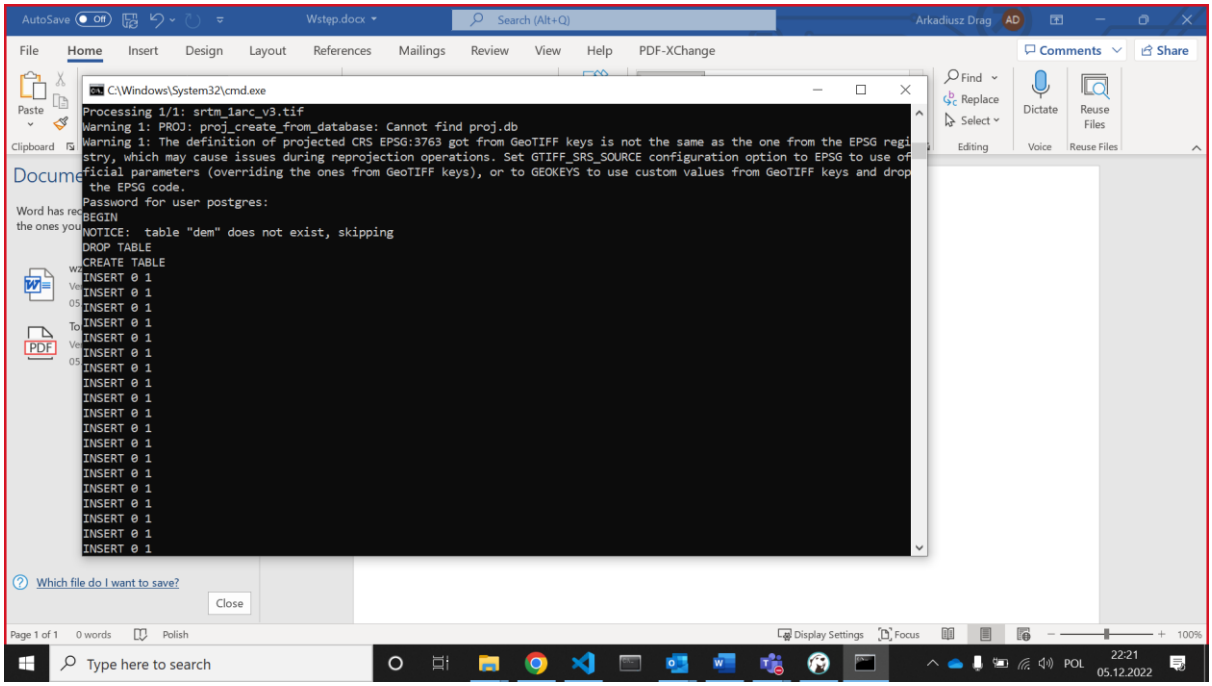
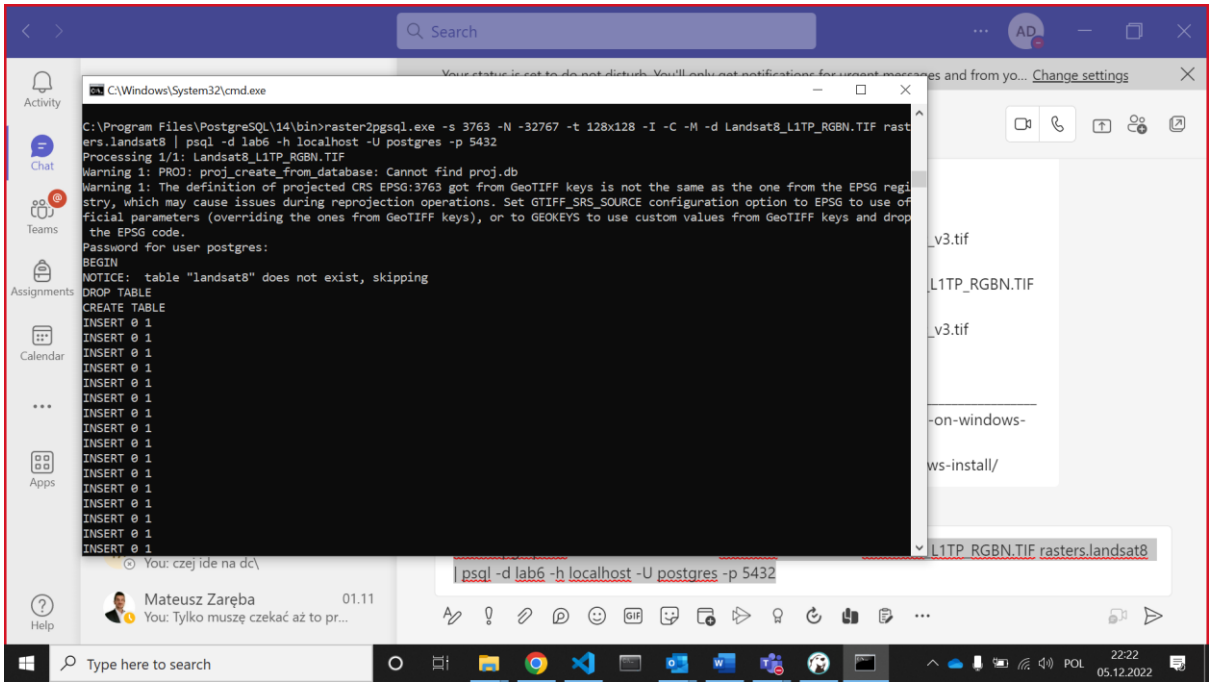
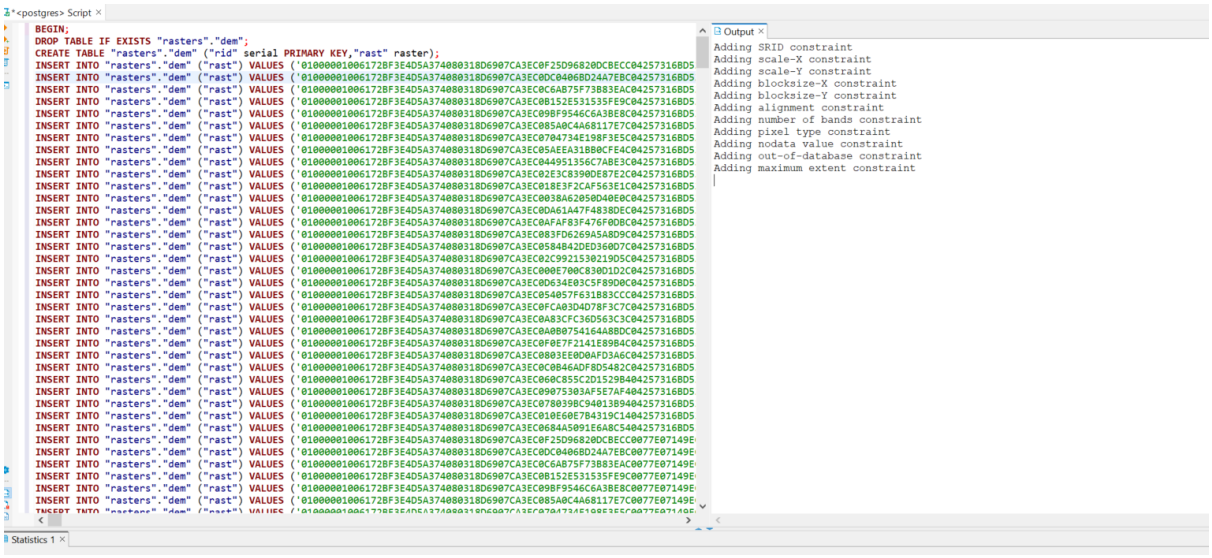

C:\Windows\System32\cmd.exe
Processing 1/1: srtm_1arc_v3.tif
Warning 1: PROJ: proj_create_from_database: Cannot find proj.db
Warning 1: The definition of projected CRS EPSG:3763 got from GeoTIFF keys is not the same as the one from the EPSG registry, which may cause issues during reprojection operations. Set GTIFF_SRS_SOURCE configuration option to EPSG to use official parameters (overriding the ones from GeoTIFF keys), or to GEOKEYS to use custom values from GeoTIFF keys and drop the EPSG code.
Password for user postgres:
BEGIN
NOTICE: table "dem" does not exist, skipping
DROP TABLE
CREATE TABLE
INSERT 0 1
Which file do I want to save?
Close
Type here to search
22:21
05.12.2022


C:\Windows\System32\cmd.exe
C:\Program Files\PostgreSQL\14\bin>raster2pgsql.exe -s 3763 -N -32767 -t 128x128 -I -C -M -d Landsat8_L1TP_RGBN.TIF rasters.landsat8 | psql -d lab6 -h localhost -U postgres -p 5432
Processing 1/1: Landsat8_L1TP_RGBN.TIF
Warning 1: PROJ: proj_create_from_database: Cannot find proj.db
Warning 1: The definition of projected CRS EPSG:3763 got from GeoTIFF keys is not the same as the one from the EPSG registry, which may cause issues during reprojection operations. Set GTIFF_SRS_SOURCE configuration option to EPSG to use official parameters (overriding the ones from GeoTIFF keys), or to GEOKEYS to use custom values from GeoTIFF keys and drop the EPSG code.
Password for user postgres:
BEGIN
NOTICE: table "landsat8" does not exist, skipping
DROP TABLE
CREATE TABLE
INSERT 0 1
Change settings
L1TP_RGBN.TIF rasters.landsat8
| psql -d lab6 -h localhost -U postgres -p 5432
Mateusz Zaręba
01.11
You: Tylko muszę czekać aż to pr...
Type here to search
22:22
05.12.2022




```
--1
CREATE TABLE schema_name.intersects AS
SELECT a.rast, b.municipality
FROM rasters.dem AS a, vectors.porto_parishes AS b
WHERE ST_Intersects(a.rast, b.geom) AND b.municipality ilike 'porto';
```

Statistics 1

Name	Value
Updated Rows	25
Query	--1
	CREATE TABLE schema_name.intersects AS
	SELECT a.rast, b.municipality
	FROM rasters.dem AS a, vectors.porto_parishes AS b
	WHERE ST_Intersects(a.rast, b.geom) AND b.municipality ilike 'porto'
Finish time	Mon Dec 05 22:32:46 CET 2022

Name	Value
Updated Rows	0
Query	alter table schema_name.intersects
	add column rid SERIAL PRIMARY KEY
Finish time	Mon Dec 05 22:34:11 CET 2022

Name	Value
Updated Rows	0
Query	CREATE INDEX idx_intersects_rast_gist ON schema_name.intersects
	USING gist (ST_ConvexHull(rast))
Finish time	Mon Dec 05 22:34:53 CET 2022

```
--3
-- schema::name table_name::name raster_column::name
SELECT AddRasterConstraints('schema_name'::name,
'intersects'::name,'rast'::name);
```

esults 1 ×

ELECT AddRasterConstraints('schema_name'::name, 'intersects'::name,'rast'::name Enter a SQL

	addrasterconstraints
1	[v] addrasterconstraints: bool (Read-only: No corresponding table column

```
CREATE TABLE schema_name.clip AS
SELECT ST_Clip(a.rast, b.geom, true), b.municipality
FROM rasters.dem AS a, vectors.porto_parishes AS b
WHERE ST_Intersects(a.rast, b.geom) AND b.municipality like 'PORT
```

Statistics 1 ×

Name	Value
Updated Rows	25
Query	CREATE TABLE schema_name.clip AS
	SELECT ST_Clip(a.rast, b.geom, true), b.municipality
	FROM rasters.dem AS a, vectors.porto_parishes AS b
	WHERE ST_Intersects(a.rast, b.geom) AND b.municipality like 'PORTO'
Finish time	Mon Dec 05 22:36:36 CET 2022

```
--Przyklad3

CREATE TABLE schema_name.union AS
SELECT ST_Union(ST_Clip(a.rast, b.geom, true))
FROM rasters.dem AS a, vectors.porto_parishes AS b
WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast);
```

tatistics 1 ×

ne	Value
dated Rows	1
ery	CREATE TABLE schema_name.union AS
	SELECT ST_Union(ST_Clip(a.rast, b.geom, true))
	FROM rasters.dem AS a, vectors.porto_parishes AS b
	WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast)
sh time	Mon Dec 05 22:38:20 CET 2022

```
CREATE TABLE schema_name.porto_parishes AS
WITH r AS (
SELECT rast FROM rasters.dem
LIMIT 1
)
SELECT ST_AsRaster(a.geom,r.rast,'8BUI',a.id,-32767) AS rast
FROM vectors.porto_parishes AS a, r
WHERE a.municipality ilike 'porto';
```

istics 1 ×

	Value
ed Rows	7
	CREATE TABLE schema_name.porto_parishes AS
	WITH r AS (
	SELECT rast FROM rasters.dem
	LIMIT 1
	)
	SELECT ST_AsRaster(a.geom,r.rast,'8BUI',a.id,-32767) AS rast
	FROM vectors.porto_parishes AS a, r
	WHERE a.municipality ilike 'porto'
time	Mon Dec 05 22:39:38 CET 2022

```
CREATE TABLE schema_name.landsat_nir AS
SELECT rid, ST_Band(rast,4) AS rast
FROM rasters.landsat8;
```

tatistics 1 ×

ne	Value
dated Rows	384
	CREATE TABLE schema_name.landsat_nir AS
	SELECT rid, ST_Band(rast,4) AS rast
	FROM rasters.landsat8
sh time	Mon Dec 05 22:45:18 CET 2022

```
CREATE TABLE schema_name.paranhos_dem AS
SELECT a.rid,ST_Clip(a.rast, b.geom,true) as rast
FROM rasters.dem AS a, vectors.porto_parishes AS b
WHERE b.parish ilike 'paranhos' and ST_Intersects(b.geom
```

Statistics 1 ×

lame	Value
pdated Rows	4
	CREATE TABLE schema_name.paranhos_dem AS
	SELECT a.rid,ST_Clip(a.rast, b.geom,true) as rast
	FROM rasters.dem AS a, vectors.porto_parishes AS b
	WHERE b.parish ilike 'paranhos' and ST_Intersects(b.geom,a.rast)
inish time	Mon Dec 05 22:46:07 CET 2022

```
CREATE TABLE schema_name.paranhos_slope_reclass AS
SELECT a.rid,ST_Reclass(a.rast,1,']0-15]:1, (15-30]:2, (30-9999:3',
'32BF',0)
FROM schema_name.paranhos_slope AS a;
```

Statistics 1 ×

lame	Value
pdated Rows	4
uery	CREATE TABLE schema_name.paranhos_slope_reclass AS
	SELECT a.rid,ST_Reclass(a.rast,1,']0-15]:1, (15-30]:2, (30-9999:3',
	'32BF',0)
	FROM schema_name.paranhos_slope AS a
inish time	Mon Dec 05 22:46:59 CET 2022

```
SELECT st_summarystats(a.rast) AS stats
FROM schema_name.paranhos_dem AS a;
```

Results 1 ×

SELECT st_summarystats(a.rast) AS stats FROM schema_name.paranhos_dem AS a

Enter a SQ

Grid

Text

	stats					
	count	sum	mean	stddev	min	max
1	2,616	278,385	106.4162844037	11.6226287622	87	143
2	6,463	816,615	126.3523131673	14.0438229209	94	158
3	682	95,581	140.1480938416	12.0780721866	103	158
4	216	31,874	147.5648148148	4.2628306283	137	158

```
SELECT st_summarystats(ST_Union(a.rast))
FROM schema_name.paranhos_dem AS a;
```

Results 1

SELECT st_summarystats(ST_Union(a.rast)) FROM schema_name.paranhos_dem A

	st_summarystats					
	count	sum	mean	stddev	min	max
1	9,977	1,222,455	122.5273128195	16.9080042027	87	158

```
WITH t AS (
SELECT st_summarystats(ST_Union(a.rast)) AS stats
FROM schema_name.paranhos_dem AS a
)
SELECT (stats).min,(stats).max,(stats).mean FROM t;
```

Results 1

WITH t AS (SELECT st_summarystats(ST_Union(a.rast)) AS stats FROM schema_na

	min	max	mean
1	87	158	122.5273128195

```
create table schema_name.tpi30 as
select ST_TPI(a.rast,1) as rast
from rasters.dem a;
```

Statistics 1

Name	Value
Updated Rows	589
Query	create table schema_name.tpi30 as
	select ST_TPI(a.rast,1) as rast
	from rasters.dem a
Finish time	Mon Dec 05 22:52:09 CET 2022

```
CREATE INDEX idx_tpi30_rast_gist ON schema_name.tpi30
USING gist (ST_ConvexHull(rast));
```

Statistics 1

Name	Value
Updated Rows	0
Query	CREATE INDEX idx_tpi30_rast_gist ON schema_name.tpi30 USING gist (ST_ConvexHull(rast))
Finish time	Mon Dec 05 22:52:49 CET 2022

```
SELECT AddRasterConstraints('schema_name'::name, 'tpi30'::name,'rast'::name);
```

Results 1

SELECT AddRasterConstraints('schema_name'::name, 'tpi30'::name,'rast'::name) Enter a SQL expression to filter

	addrasterconstraints
1	[v]

```
CREATE TABLE schema_name.porto_ndvi AS
WITH r AS (
SELECT a.rid,ST_Clip(a.rast, b.geom,true) AS rast
FROM rasters.landsat8 AS a, vectors.porto_parishes AS b
WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast)
)
SELECT
r.rid,ST_MapAlgebra(
r.rast, 1,
r.rast, 4,
'([rast2.val] - [rast1.val]) / ([rast2.val] +
[rast1.val])::float','32BF'
) AS rast
FROM r;
```

tistics 1 ×

e	Value
ated Rows	23
y	CREATE TABLE schema_name.porto_ndvi AS
	WITH r AS (
	SELECT a.rid,ST_Clip(a.rast, b.geom,true) AS rast
	FROM rasters.landsat8 AS a, vectors.porto_parishes AS b
	WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast)
	)
	SELECT
	r.rid,ST_MapAlgebra(
	r.rast, 1,
	r.rast, 4,
	'([rast2.val] - [rast1.val]) / ([rast2.val] +
	[rast1.val])::float','32BF'
	) AS rast
	FROM r
h time	Mon Dec 05 23:11:48 CET 2022

```
CREATE INDEX idx_porto_ndvi_rast_gist ON schema_name.porto_ndvi
USING gist (ST_ConvexHull(rast));
```

Statistics 1

Name	Value
Updated Rows	0
Query	CREATE INDEX idx_porto_ndvi_rast_gist ON schema_name.porto_ndvi
	USING gist (ST_ConvexHull(rast))
Finish time	Mon Dec 05 23:12:22 CET 2022

```
SELECT AddRasterConstraints('schema_name'::name,'porto_ndvi'::name,'rast'::name);
```

Results 1

SELECT AddRasterConstraints('schema_name'::name,'porto_ndvi'::name,'rast'::nam

Enter a SQL expression to filter results (use

Grid

	addrasterconstraints
1	[v]

```
create or replace function schema_name.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;
```

Statistics 1

Name	Value
Updated Rows	0
Query	create or replace function schema_name.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
Finish time	Mon Dec 05 23:14:10 CET 2022

```
CREATE TABLE schema_name.porto_ndvi2 AS
WITH r AS (
SELECT a.rid,ST_Clip(a.rast, b.geom,true) AS rast
FROM rasters.landsat8 AS a, vectors.porto_parishes AS b
WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast)
)
SELECT
r.rid,ST_MapAlgebra(
r.rast, ARRAY[1,4],
'schema_name.ndvi(double precision[],
integer[],text[])'::regprocedure, --> This is the function!
'32BF'::text
) AS rast
FROM r;
```

Statistics 1

Name	Value
Updated Rows	23
Query	CREATE TABLE schema_name.porto_ndvi2 AS
	WITH r AS (
	SELECT a.rid,ST_Clip(a.rast, b.geom,true) AS rast
	FROM rasters.landsat8 AS a, vectors.porto_parishes AS b
	WHERE b.municipality ilike 'porto' and ST_Intersects(b.geom,a.rast)
	)
	SELECT
	r.rid,ST_MapAlgebra(
	r.rast, ARRAY[1,4],
	'schema_name.ndvi(double precision[],
	integer[],text[])'::regprocedure, --> This is the function!
	'32BF'::text
	) AS rast
	FROM r
Finish time	Mon Dec 05 23:14:37 CET 2022

```
FROM r;

CREATE INDEX idx_porto_ndvi2_rast_gist ON schema_name.porto_ndvi2
USING gist (ST_ConvexHull(rast));
```

Statistics 1

Name	Value
Updated Rows	0
Query	CREATE INDEX idx_porto_ndvi2_rast_gist ON schema_name.porto_ndvi2
	USING gist (ST_ConvexHull(rast))
Finish time	Mon Dec 05 23:15:07 CET 2022

```
SELECT AddRasterConstraints('schema_name'::name,
'porto_ndvi2'::name,'rast'::name);
```

Results 1

SELECT AddRasterConstraints('schema_name'::name, 'porto_ndvi2'::name,'rast'::na

Grid

	addrasterconstraints
1	[v]

- schema_name
  - Tables
    - clip
    - dumppolygons
    - intersection
    - intersects
    - landsat_nir
    - paranhos_dem
    - paranhos_slope
    - paranhos_slope_reclass
    - porto_ndvi
    - porto_ndvi2
    - porto_parishes
    - tpi30
    - union
  - Views
  - Materialized Views
  - Indexes
  - Functions
    - ndvi(in _float8, in _int4, variadic _text)

```
SELECT ST_AsTiff(ST_Union(rast))
FROM schema_name.porto_ndvi;


SELECT ST_AsGDALRaster(ST_Union(rast), 'GTiff', ARRAY['COMPRESS=DEFLATE',
'PREDICTOR=2', 'PZLEVEL=9'])
FROM schema_name.porto_ndvi;
```

```
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 schema_name.porto_ndvi;
----------------------------------------------
SELECT lo_export(loid, 'G:\myraster.tiff') --> Save the file in a place
where the user postgres have access. In windows a flash drive usualy works
fine.
 FROM tmp_out;
----------------------------------------------
SELECT lo_unlink(loid)
 FROM tmp_out; --> Delete the large object.
```

sults 1 ×

EATE TABLE tmp_out AS SELECT lo_from_bytea(0, ST_AsGDALRaster(ST_Union(r Enter a SQL expression

SQL Error [XX000]: ERROR: rt_raster_to_gdal: Could not load the output GDAL driver

```
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 schema_name.porto_ndvi;
----------------------------------------------
SELECT lo_export(loid, 'G:\myraster.tiff') --> Save the file in a place
--where the user postgres have access. In windows a flash drive usualy works
--fine.
 FROM tmp_out;
----------------------------------------------
SELECT lo_unlink(loid)
 FROM tmp_out; --> Delete the large object.
```

Results 1 ×

CREATE TABLE tmp_out AS SELECT lo_from_bytea(0, ST_AsGDALRaster(ST_Union(r Enter a SQL expression to filte

SQL Error [XX000]: ERROR: rt_raster_to_gdal: Could not load the output GDAL driver

Rozwiązano problem

```sql
SET postgis.gdal_enabled_drivers = 'ENABLE_ALL';
```

```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 schema_name.porto_ndvi;
----------------------------------------------
SELECT lo_export(loid, 'C:\Documents and Settings\All Users\Documents') --> Save the file i
--where the user postgres have access. In windows a flash drive usualy works
--fine.
 FROM tmp_out;
----------------------------------------------
SELECT lo_unlink(loid)
 FROM tmp_out; --> Delete the large object.


SELECT ST_AsTiff(ST_Union(rast)) FROM schema_name.porto_ndvi;
```

Results 1 ×

CREATE TABLE tmp_out AS SELECT lo_from_bytea(0, ST_AsGDALRaster(ST_Union(r | Enter a SQL expression to filter results (use Ctrl+

SQL Error [42501]: ERROR: could not create server file "C:\Documents and Settings\All Users\Documents": Permission denied

Niestety po długiej próbie rozwiązania poniższego błędu nie udało mi się go rozwiązać

```
—(drq⊠ PL-L-7444767)-[~/docker-mapserver]
-$ sudo docker build -t kartoza/mapserver_kartoza .
+] Building 1.3s (25/26)
=> [internal] load build definition from Dockerfile                                                                    0.0s
=> => transferring dockerfile: 38B                                                                                      0.0s
=> [internal] load .dockerignore                                                                                        0.0s
=> => transferring context: 2B                                                                                          0.0s
=> [internal] load metadata for docker.io/library/ubuntu:focal                                                          0.7s
=> [ 1/22] FROM docker.io/library/ubuntu:focal@sha256:450e066588f42ebe1551f3b1a535034b6aa46cd936fe7f2c6b0d72997ec61dbd  0.0s
=> [internal] load build context                                                                                        0.0s
=> => transferring context: 148B                                                                                        0.0s
=> CACHED [ 2/22] RUN apt-get -qq update --fix-missing && apt-get -qq --yes upgrade                                     0.0s
=> CACHED [ 3/22] RUN DEBIAN_FRONTEND=noninteractive apt-get install -y software-properties-common g++ make cmake wget git  bzip2 apache2 curl apache2-dev buil  0.0s
=> CACHED [ 4/22] RUN apt-get install -y --fix-missing --no-install-recommends     libxml2-dev     libxslt1-dev     libfribidi-dev     libcairo2-dev     librsv  0.0s
=> CACHED [ 5/22] RUN apt-get install -y libgdal-dev                                                                    0.0s
=> CACHED [ 6/22] RUN  apt-get install -y php7.4-fpm libapache2-mod-php7.4 php7.4-common php7.4-cli  php7.4 php7.4  php7.4-opcache  php7.4-gd php7.4-curl php7.  0.0s
=> CACHED [ 7/22] ADD resources /tmp/resources                                                                          0.0s
=> CACHED [ 8/22] ADD setup.sh /setup.sh                                                                                0.0s
=> CACHED [ 9/22] RUN chmod 0755 /setup.sh                                                                              0.0s
=> CACHED [10/22] RUN /setup.sh                                                                                         0.0s
=> CACHED [11/22] RUN cp  /tmp/resources/000-default.conf /etc/apache2/sites-available/                                 0.0s
=> CACHED [12/22] RUN wget http://mirrors.kernel.org/ubuntu/pool/multiverse/liba/libapache-mod-fastcgi/libapache2-mod-fastcgi_2.4.7~0910052141-1.2_amd64.deb -O  0.0s
=> CACHED [13/22] RUN cp /tmp/resources/php7-fpm.conf /etc/apache2/conf-available/                                      0.0s
=> CACHED [14/22] RUN a2enmod actions  cgi alias proxy_fcgi  fastcgi headers                                            0.0s
=> CACHED [15/22] RUN a2enconf php7.4-fpm                                                                               0.0s
=> CACHED [16/22] RUN chmod o+x /usr/local/bin/mapserv                                                                  0.0s
=> CACHED [17/22] RUN ln -s /usr/local/bin/mapserv /usr/lib/cgi-bin/mapserv                                             0.0s
=> CACHED [18/22] RUN chmod 755 /usr/lib/cgi-bin                                                                        0.0s
=> CACHED [19/22] RUN wget https://github.com/jwilder/dockerize/releases/download/v0.6.1/dockerize-linux-amd64-v0.6.1.tar.gz     && tar -C /usr/local/bin -xzvf  0.0s
=> CACHED [20/22] RUN apt-get install -y net-tools                                                                      0.0s
=> ERROR [21/22] RUN mv /usr/local/lib/libcurl.so.4.4.0 /usr/local/lib/libcurl.so.4.4.0.backup                          0.5s
-----
> [21/22] RUN mv /usr/local/lib/libcurl.so.4.4.0 /usr/local/lib/libcurl.so.4.4.0.backup:
25 0.431 mv: cannot stat '/usr/local/lib/libcurl.so.4.4.0': No such file or directory
-----
xecutor failed running [/bin/sh -c mv /usr/local/lib/libcurl.so.4.4.0 /usr/local/lib/libcurl.so.4.4.0.backup]: exit code: 1
```