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## Tile Commands

### Tile Layers

All of the tile commands work with a tile layer.

Supported Tile Layers include:

- MBTiles
- GeoPackage
- TMS
- OSM
- UTFGrid
- Vector Tiles

**Tile layer configuration strings** are similar to layer and map layer configuration strings.

- **pyramid** = Several tile layers can take a pyramid attribute. You can use one of several well known pyramid names:
  - globalmercator
  - mercator
  - globalmercatorbottomleft
  - globalgeodetic
  - geodetic
  - file that contains pyramid metadata in csv, xml, or json format.
- **type** = The type of image layer.
  - mbtiles

- geopackage
- tms
- osm

## mbtiles

- type=mbtiles file=states.mbtiles
- type=mbtiles file=states.mbtiles name=states description='The united states'
- states.mbtiles

## geopackage

- type=geopackage file=states.gpkg name=states pyramid=globalmercator
- states.gpkg

## tms

- type=tms file=/Users/you/tms format=jpeg
- type=tms file=/Users/you/tms format=png name=tms pyramid=geodetic

## osm

- type=osm url=http://a.tile.openstreetmap.org
- type=osm urls=http://a.tile.openstreetmap.org,http://b.tile.openstreetmap.org

## utfgrid

- type=utfgrid file=/Users/me/tiles/states

## vectortiles

- type=vectortiles name=states file=/Users/me/tiles/states format=mvt pyramid=GlobalMercator
- type=vectortiles name=states url=http://vectortiles.org format=pbk pyramid=GlobalGeodetic

# Delete

Delete tiles from a tile layer

| Short Name | Long Name    | Description                |
|------------|--------------|----------------------------|
| -l         | --tile-layer | The tile layer             |
| -i         | --tile       | The Tile Z/X/Y coordinates |
| -b         | --bounds     | The bounds                 |
| -z         | --zoom-level | The tile zoom level        |
| -x         | --minx       | The min x or col           |
| -y         | --miny       | The min y or row           |

| Short Name | Long Name  | Description            |
|------------|------------|------------------------|
| -c         | --maxx     | The max x or col       |
| -u         | --maxy     | The max y or row       |
| -w         | --width    | The raster width       |
| -h         | --height   | The raster height      |
|            | --help     | Print the help message |
|            | --web-help | Open help in a browser |

```
geoc tile delete -l "type=mbtiles file=target/world.mbtiles" -z 2
```

## Generate

Generate tiles.

| Short Name | Long Name      | Description                            |
|------------|----------------|--|
| -l         | --tile-layer   | The tile layer                         |
| -f         | --field        | A field                                |
| -d         | --layer-fields | A List of sub fields for a layer       |
| -m         | --layer        | The map layer                          |
| -s         | --start-zoom   | The start zoom level                   |
| -e         | --end-zoom     | The end zoom level                     |
| -b         | --bounds       | The bounds                             |
| -t         | --metatile     | The metatile width,height              |
| -i         | --missing      | Whether to generate only missing tiles |
| -v         | --verbose      | The verbose flag                       |
|            | --help         | Print the help message                 |
|            | --web-help     | Open help in a browser                 |

MBTiles

```
geoc tile generate -l "type=mbtiles file=target/world.mbtiles" -m "layertype=layer
file=src/test/resources/data.gpkg layertype=ocean style=src/test/resources/ocean.sld"
-m "layertype=layer file=src/test/resources/data.gpkg layertype=countries
style=src/test/resources/countries.sld" -s 0 -e 2 --verbose
```

```
Zoom Level 0
0). Tile(x:0, y:0, z:0)
```

```

    Bounds(-2.003639514788131E7,-
2.0037471205137067E7,2.003639514788131E7,2.0037471205137067E7,EP
SG:3857)
    Generating 1 tile took 0.096894524 seconds
Zoom Level 1
    0). Tile(x:0, y:0, z:1)
        Bounds(-2.003639514788131E7,-2.0037471205137067E7,0.0,-
3.725290298461914E-9,EP
SG:3857)
    1). Tile(x:1, y:0, z:1)
        Bounds(0.0,-2.0037471205137067E7,2.003639514788131E7,-
3.725290298461914E-9,EP
SG:3857)
    2). Tile(x:0, y:1, z:1)
        Bounds(-2.003639514788131E7,-3.725290298461914E-
9,0.0,2.0037471205137067E7,EP
SG:3857)
    3). Tile(x:1, y:1, z:1)
        Bounds(0.0,-3.725290298461914E-
9,2.003639514788131E7,2.0037471205137067E7,EP
SG:3857)
    Generating 4 tiles took 0.335294544 seconds
Zoom Level 2
    0). Tile(x:0, y:0, z:2)
        Bounds(-2.003639514788131E7,-2.0037471205137067E7,-1.0018197573940655E7,-
1.0018735602568535E7,EP
SG:3857)
    1). Tile(x:1, y:0, z:2)
        Bounds(-1.0018197573940655E7,-2.0037471205137067E7,0.0,-
1.0018735602568535E7,EP
SG:3857)
    2). Tile(x:2, y:0, z:2)
        Bounds(0.0,-2.0037471205137067E7,1.0018197573940655E7,-
1.0018735602568535E7,EP
SG:3857)
    3). Tile(x:3, y:0, z:2)
        Bounds(1.0018197573940653E7,-2.0037471205137067E7,2.0036395147881307E7,-
1.0018735602568535E7,EP
SG:3857)
    4). Tile(x:0, y:1, z:2)
        Bounds(-2.003639514788131E7,-1.0018735602568535E7,-1.0018197573940655E7,-
3.725290298461914E-9,EP
SG:3857)
    5). Tile(x:1, y:1, z:2)
        Bounds(-1.0018197573940655E7,-1.0018735602568535E7,0.0,-3.725290298461914E-
9,EP
SG:3857)
    6). Tile(x:2, y:1, z:2)
        Bounds(0.0,-1.0018735602568535E7,1.0018197573940655E7,-3.725290298461914E-
9,EP
SG:3857)
    7). Tile(x:3, y:1, z:2)
        Bounds(1.0018197573940653E7,-1.0018735602568535E7,2.0036395147881307E7,-
3.725290298461914E-9,EP
SG:3857)
    8). Tile(x:0, y:2, z:2)
        Bounds(-2.003639514788131E7,-3.725290298461914E-9,-
1.0018197573940655E7,1.0018735602568528E7,EP
SG:3857)
    9). Tile(x:1, y:2, z:2)
        Bounds(-1.0018197573940655E7,-3.725290298461914E-
9,0.0,1.0018735602568528E7,EP
SG:3857)
    10). Tile(x:2, y:2, z:2)
        Bounds(0.0,-3.725290298461914E-
9,1.0018197573940655E7,1.0018735602568528E7,EP
SG:3857)

```

```

11). Tile(x:3, y:2, z:2)
    Bounds(1.0018197573940653E7,-3.725290298461914E-
9,2.0036395147881307E7,1.0018735602568528E7,EPsg:3857)
12). Tile(x:0, y:3, z:2)
    Bounds(-2.003639514788131E7,1.001873560256853E7,-
1.0018197573940655E7,2.003747120513706E7,EPsg:3857)
13). Tile(x:1, y:3, z:2)
    Bounds(-
1.0018197573940655E7,1.001873560256853E7,0.0,2.003747120513706E7,EPsg:3857)
14). Tile(x:2, y:3, z:2)
    Bounds(0.0,1.001873560256853E7,1.0018197573940655E7,2.003747120513706E7,EPsg:3857)
15). Tile(x:3, y:3, z:2)
    Bounds(1.0018197573940653E7,1.001873560256853E7,2.0036395147881307E7,2.003747120513706
E7,EPsg:3857)
Generating 16 tiles took 1.170846888 seconds

```



GeoPackage

```
geoc tile generate -l "type=geopackage file=target/world.gpkg name=world
pyramid=geodetic" -m "layertype=layer file=src/test/resources/data.gpkg
layername=ocean style=src/test/resources/ocean.sld" -m "layertype=layer
file=src/test/resources/data.gpkg layername=countries
style=src/test/resources/countries.sld" -s 0 -e 2 --verbose
```

#### Zoom Level 0

0). Tile(x:0, y:0, z:0)  
Bounds(-179.99,-89.99,0.0,89.99,EPSG:4326)

1). Tile(x:1, y:0, z:0)  
Bounds(0.0,-89.99,179.99,89.99,EPSG:4326)

Generating 2 tiles took 0.086097001 seconds

#### Zoom Level 1

0). Tile(x:0, y:0, z:1)  
Bounds(-179.99,0.0,-89.995,89.99,EPSG:4326)

1). Tile(x:1, y:0, z:1)  
Bounds(-89.995,0.0,0.0,89.99,EPSG:4326)

2). Tile(x:2, y:0, z:1)  
Bounds(0.0,0.0,89.995,89.99,EPSG:4326)

3). Tile(x:3, y:0, z:1)  
Bounds(89.995,0.0,179.99,89.99,EPSG:4326)

4). Tile(x:0, y:1, z:1)  
Bounds(-179.99,-89.99,-89.995,0.0,EPSG:4326)

5). Tile(x:1, y:1, z:1)  
Bounds(-89.995,-89.99,0.0,0.0,EPSG:4326)

6). Tile(x:2, y:1, z:1)  
Bounds(0.0,-89.99,89.995,0.0,EPSG:4326)

7). Tile(x:3, y:1, z:1)  
Bounds(89.995,-89.99,179.99,0.0,EPSG:4326)

Generating 8 tiles took 0.249484948 seconds

#### Zoom Level 2

0). Tile(x:0, y:0, z:2)  
Bounds(-179.99,44.995,-134.9925,89.99,EPSG:4326)

1). Tile(x:1, y:0, z:2)  
Bounds(-134.9925,44.995,-89.995,89.99,EPSG:4326)

2). Tile(x:2, y:0, z:2)  
Bounds(-89.995,44.995,-44.9975,89.99,EPSG:4326)

3). Tile(x:3, y:0, z:2)  
Bounds(-44.9975,44.995,0.0,89.99,EPSG:4326)

4). Tile(x:4, y:0, z:2)  
Bounds(0.0,44.995,44.9975,89.99,EPSG:4326)

5). Tile(x:5, y:0, z:2)  
Bounds(44.9975,44.995,89.995,89.99,EPSG:4326)

6). Tile(x:6, y:0, z:2)  
Bounds(89.995,44.995,134.9925,89.99,EPSG:4326)

7). Tile(x:7, y:0, z:2)  
Bounds(134.9925,44.995,179.99,89.99,EPSG:4326)

8). Tile(x:0, y:1, z:2)  
Bounds(-179.99,-7.105427357601002E-15,-134.9925,44.99499999999999,EPSG:4326)

```

9). Tile(x:1, y:1, z:2)
   Bounds(-134.9925,-7.105427357601002E-15,-89.995,44.99499999999999,EPSG:4326)
10). Tile(x:2, y:1, z:2)
   Bounds(-89.995,-7.105427357601002E-15,-44.9975,44.99499999999999,EPSG:4326)
11). Tile(x:3, y:1, z:2)
   Bounds(-44.9975,-7.105427357601002E-15,0.0,44.99499999999999,EPSG:4326)
12). Tile(x:4, y:1, z:2)
   Bounds(0.0,-7.105427357601002E-15,44.9975,44.99499999999999,EPSG:4326)
13). Tile(x:5, y:1, z:2)
   Bounds(44.9975,-7.105427357601002E-15,89.995,44.99499999999999,EPSG:4326)
14). Tile(x:6, y:1, z:2)
   Bounds(89.995,-7.105427357601002E-15,134.9925,44.99499999999999,EPSG:4326)
15). Tile(x:7, y:1, z:2)
   Bounds(134.9925,-7.105427357601002E-15,179.99,44.99499999999999,EPSG:4326)
16). Tile(x:0, y:2, z:2)
   Bounds(-179.99,-44.995,-134.9925,0.0,EPSG:4326)
17). Tile(x:1, y:2, z:2)
   Bounds(-134.9925,-44.995,-89.995,0.0,EPSG:4326)
18). Tile(x:2, y:2, z:2)
   Bounds(-89.995,-44.995,-44.9975,0.0,EPSG:4326)
19). Tile(x:3, y:2, z:2)
   Bounds(-44.9975,-44.995,0.0,0.0,EPSG:4326)
20). Tile(x:4, y:2, z:2)
   Bounds(0.0,-44.995,44.9975,0.0,EPSG:4326)
21). Tile(x:5, y:2, z:2)
   Bounds(44.9975,-44.995,89.995,0.0,EPSG:4326)
22). Tile(x:6, y:2, z:2)
   Bounds(89.995,-44.995,134.9925,0.0,EPSG:4326)
23). Tile(x:7, y:2, z:2)
   Bounds(134.9925,-44.995,179.99,0.0,EPSG:4326)
24). Tile(x:0, y:3, z:2)
   Bounds(-179.99,-89.99,-134.9925,-44.995,EPSG:4326)
25). Tile(x:1, y:3, z:2)
   Bounds(-134.9925,-89.99,-89.995,-44.995,EPSG:4326)
26). Tile(x:2, y:3, z:2)
   Bounds(-89.995,-89.99,-44.9975,-44.995,EPSG:4326)
27). Tile(x:3, y:3, z:2)
   Bounds(-44.9975,-89.99,0.0,-44.995,EPSG:4326)
28). Tile(x:4, y:3, z:2)
   Bounds(0.0,-89.99,44.9975,-44.995,EPSG:4326)
29). Tile(x:5, y:3, z:2)
   Bounds(44.9975,-89.99,89.995,-44.995,EPSG:4326)
30). Tile(x:6, y:3, z:2)
   Bounds(89.995,-89.99,134.9925,-44.995,EPSG:4326)
31). Tile(x:7, y:3, z:2)
   Bounds(134.9925,-89.99,179.99,-44.995,EPSG:4326)
Generating 32 tiles took 0.852776058 seconds

```



## TMS

```
geoc tile generate -l "type=tms file=target/tiles" -m "layertype=layer
file=src/test/resources/data.gpkg layertype=ocean style=src/test/resources/ocean.sld"
-m "layertype=layer file=src/test/resources/data.gpkg layertype=countries
style=src/test/resources/countries.sld" -s 0 -e 2 --verbose
```

Zoom Level 0

```
0). Tile(x:0, y:0, z:0)
```

Bounds(-2.003639514788131E7,-

2.0037471205137067E7,2.003639514788131E7,2.003747120513706E7,EPsg:3857)

Generating 1 tile took 0.077836767 seconds

Zoom Level 1

```
0). Tile(x:0, y:0, z:1)
```

Bounds(-2.003639514788131E7,-2.0037471205137067E7,0.0,-3.725290298461914E-

9, EPSG:3857)

```
1). Tile(x:1, y:0, z:1)
```

Bounds(0.0,-2.0037471205137067E7,2.003639514788131E7,-3.725290298461914E-

9, EPSG:3857)

```
2). Tile(x:0, y:1, z:1)
```

```
Bounds(-2.003639514788131E7,-3.725290298461914E-
```

9,0.0,2.003747120513706E7,EPsg:3857)

3). Tile(x:1, y:1, z:1)

Bounds(0.0,-3.725290298461914E-

9,2.003639514788131E7,2.003747120513706E7,EPG:3857)

Generating 4 tiles took 0.315919978 seconds

Zoom Level 2

```
0). Tile(x:0, y:0, z:2)
```

Bounds(-2.003639514788131E7,-2.0037471205137067E7,-1.0018197573940655E7,-

1.0018735602568535E7, EPSG:3857)

```
1). Tile(x:1, y:0, z:2)
```



```

    Bounds(-1.0018197573940655E7,-2.0037471205137067E7,0.0,-
1.0018735602568535E7,EPsg:3857)
    2). Tile(x:2, y:0, z:2)
        Bounds(0.0,-2.0037471205137067E7,1.0018197573940655E7,-
1.0018735602568535E7,EPsg:3857)
    3). Tile(x:3, y:0, z:2)
        Bounds(1.0018197573940653E7,-2.0037471205137067E7,2.0036395147881307E7,-
1.0018735602568535E7,EPsg:3857)
    4). Tile(x:0, y:1, z:2)
        Bounds(-2.003639514788131E7,-1.0018735602568535E7,-1.0018197573940655E7,-
3.725290298461914E-9,EPsg:3857)
    5). Tile(x:1, y:1, z:2)
        Bounds(-1.0018197573940655E7,-1.0018735602568535E7,0.0,-3.725290298461914E-
9,EPsg:3857)
    6). Tile(x:2, y:1, z:2)
        Bounds(0.0,-1.0018735602568535E7,1.0018197573940655E7,-3.725290298461914E-
9,EPsg:3857)
    7). Tile(x:3, y:1, z:2)
        Bounds(1.0018197573940653E7,-1.0018735602568535E7,2.0036395147881307E7,-
3.725290298461914E-9,EPsg:3857)
    8). Tile(x:0, y:2, z:2)
        Bounds(-2.003639514788131E7,-3.725290298461914E-9,-
1.0018197573940655E7,1.0018735602568528E7,EPsg:3857)
    9). Tile(x:1, y:2, z:2)
        Bounds(-1.0018197573940655E7,-3.725290298461914E-
9,0.0,1.0018735602568528E7,EPsg:3857)
    10). Tile(x:2, y:2, z:2)
        Bounds(0.0,-3.725290298461914E-
9,1.0018197573940655E7,1.0018735602568528E7,EPsg:3857)
    11). Tile(x:3, y:2, z:2)
        Bounds(1.0018197573940653E7,-3.725290298461914E-
9,2.0036395147881307E7,1.0018735602568528E7,EPsg:3857)
    12). Tile(x:0, y:3, z:2)
        Bounds(-2.003639514788131E7,1.001873560256853E7,-
1.0018197573940655E7,2.003747120513706E7,EPsg:3857)
    13). Tile(x:1, y:3, z:2)
        Bounds(-
1.0018197573940655E7,1.001873560256853E7,0.0,2.003747120513706E7,EPsg:3857)
    14). Tile(x:2, y:3, z:2)
        Bounds(0.0,1.001873560256853E7,1.0018197573940655E7,2.003747120513706E7,EPsg:3857)
    15). Tile(x:3, y:3, z:2)
        Bounds(1.0018197573940653E7,1.001873560256853E7,2.0036395147881307E7,2.003747120513706
E7,EPsg:3857)
    Generating 16 tiles took 1.083151184 seconds

```



### Vector Tiles (PBF)

```
geoc tile generate -l "type=vectortiles format=pbk file=target/vectortiles" -m  
"layertype=layer file=src/test/resources/data.gpkg layertype=countries" -d  
countries=NAME,TYPE,LEVEL -s 0 -e 2 --verbose
```

#### Zoom Level 0

0). Tile(x:0, y:0, z:0)

Bounds(-2.003639514788131E7,-

2.0037471205137067E7,2.003639514788131E7,2.0037471205137067E7,EPG:3857)

Generating 1 tile took 0.981972018 seconds

#### Zoom Level 1

0). Tile(x:0, y:0, z:1)

Bounds(-2.003639514788131E7,-2.0037471205137067E7,0.0,-3.725290298461914E-

9,EPG:3857)

1). Tile(x:1, y:0, z:1)

Bounds(0.0,-2.0037471205137067E7,2.003639514788131E7,-3.725290298461914E-

9,EPG:3857)

2). Tile(x:0, y:1, z:1)

Bounds(-2.003639514788131E7,-3.725290298461914E-

9,0.0,2.0037471205137067E7,EPG:3857)

3). Tile(x:1, y:1, z:1)

```

    Bounds(0.0,-3.725290298461914E-
9,2.003639514788131E7,2.003747120513706E7,EPSG:3857)
    Generating 4 tiles took 1.07738855 seconds
Zoom Level 2
    0). Tile(x:0, y:0, z:2)
        Bounds(-2.003639514788131E7,-2.003747120513706E7,-1.0018197573940655E7,-
1.0018735602568535E7,EPSG:3857)
    1). Tile(x:1, y:0, z:2)
        Bounds(-1.0018197573940655E7,-2.003747120513706E7,0.0,-
1.0018735602568535E7,EPSG:3857)
    2). Tile(x:2, y:0, z:2)
        Bounds(0.0,-2.003747120513706E7,1.0018197573940655E7,-
1.0018735602568535E7,EPSG:3857)
    3). Tile(x:3, y:0, z:2)
        Bounds(1.0018197573940653E7,-2.003747120513706E7,2.0036395147881307E7,-
1.0018735602568535E7,EPSG:3857)
    4). Tile(x:0, y:1, z:2)
        Bounds(-2.003639514788131E7,-1.0018735602568535E7,-1.0018197573940655E7,-
3.725290298461914E-9,EPSG:3857)
    5). Tile(x:1, y:1, z:2)
        Bounds(-1.0018197573940655E7,-1.0018735602568535E7,0.0,-3.725290298461914E-
9,EPSG:3857)
    6). Tile(x:2, y:1, z:2)
        Bounds(0.0,-1.0018735602568535E7,1.0018197573940655E7,-3.725290298461914E-
9,EPSG:3857)
    7). Tile(x:3, y:1, z:2)
        Bounds(1.0018197573940653E7,-1.0018735602568535E7,2.0036395147881307E7,-
3.725290298461914E-9,EPSG:3857)
    8). Tile(x:0, y:2, z:2)
        Bounds(-2.003639514788131E7,-3.725290298461914E-9,-
1.0018197573940655E7,1.0018735602568528E7,EPSG:3857)
    9). Tile(x:1, y:2, z:2)
        Bounds(-1.0018197573940655E7,-3.725290298461914E-
9,0.0,1.0018735602568528E7,EPSG:3857)
    10). Tile(x:2, y:2, z:2)
        Bounds(0.0,-3.725290298461914E-
9,1.0018197573940655E7,1.0018735602568528E7,EPSG:3857)
    11). Tile(x:3, y:2, z:2)
        Bounds(1.0018197573940653E7,-3.725290298461914E-
9,2.0036395147881307E7,1.0018735602568528E7,EPSG:3857)
    12). Tile(x:0, y:3, z:2)
        Bounds(-2.003639514788131E7,1.001873560256853E7,-
1.0018197573940655E7,2.003747120513706E7,EPSG:3857)
    13). Tile(x:1, y:3, z:2)
        Bounds(-
1.0018197573940655E7,1.001873560256853E7,0.0,2.003747120513706E7,EPSG:3857)
    14). Tile(x:2, y:3, z:2)
        Bounds(0.0,1.001873560256853E7,1.0018197573940655E7,2.003747120513706E7,EPSG:3857)
    15). Tile(x:3, y:3, z:2)

```

```
Bounds(1.0018197573940653E7,1.001873560256853E7,2.0036395147881307E7,2.003747120513706E7,EPSG:3857)
```

```
Generating 16 tiles took 1.004697602 seconds
```

## Tile Bounds

Get the Bounds of a tile.

| Short Name | Long Name    | Description            |
|------------|--------------|------------------------|
| -p         | --pyramid    | The tile pyramid       |
| -z         | --zoom-level | The tile zoom level    |
| -x         | --column     | The tile x or column   |
| -y         | --row        | The tile y or row      |
|            | --help       | Print the help message |
|            | --web-help   | Open help in a browser |

```
geoc tile get bounds -p mercator -z 3 -x 2 -y 1
```

```
POLYGON ((-10018197.573940655 -15028103.403852802, -10018197.573940655  
-10018735.602568537, -5009098.786970328 -10018735.602568537, -5009098.786970328  
-15028103.403852802, -10018197.573940655 -15028103.403852802))
```

## List Tiles

Get a list of tiles for a given geometry

| Short Name | Long Name    | Description            |
|------------|--------------|------------------------|
| -p         | --pyramid    | The tile pyramid       |
| -b         | --bounds     | The bounds             |
| -z         | --zoom-level | The tile zoom level    |
|            | --help       | Print the help message |
|            | --web-help   | Open help in a browser |

```
geoc tile list tiles -p mercator -z 10 -b  
2315277.538707974,4356146.199006655,2534193.2172859586,4470343.227121928
```

```
10/571/623
10/572/623
10/573/623
10/574/623
10/575/623
10/576/623
10/571/624
10/572/624
10/573/624
10/574/624
10/575/624
10/576/624
10/571/625
10/572/625
10/573/625
10/574/625
10/575/625
10/576/625
10/571/626
10/572/626
10/573/626
10/574/626
10/575/626
10/576/626
```

## Pyramid

Get a Pyramid from a TileLayer.

| Short Name | Long Name     | Description                       |
|------------|---------------|-----------------------------------|
| -l         | --tile-layer  | The tile layer                    |
| -o         | --output-type | The output type (text, xml, json) |
|            | --help        | Print the help message            |
|            | --web-help    | Open help in a browser            |

Text

```
geoc tile pyramid -l "type=geopackage file=src/test/resources/data.gpkg name=world" -o
text
```

```

EPSG:4326
-179.99,-89.99,179.99,89.99,EPSG:4326
TOP_LEFT
256,256
0,2,1,0.703125,0.703125
1,4,2,0.3515625,0.3515625
2,8,4,0.17578125,0.17578125
3,16,8,0.087890625,0.087890625
4,32,16,0.0439453125,0.0439453125
5,64,32,0.02197265625,0.02197265625
6,128,64,0.010986328125,0.010986328125
7,256,128,0.0054931640625,0.0054931640625
8,512,256,0.00274658203125,0.00274658203125
9,1024,512,0.001373291015625,0.001373291015625
10,2048,1024,6.866455078125E-4,6.866455078125E-4
11,4096,2048,3.4332275390625E-4,3.4332275390625E-4
12,8192,4096,1.71661376953125E-4,1.71661376953125E-4
13,16384,8192,8.58306884765625E-5,8.58306884765625E-5
14,32768,16384,4.291534423828125E-5,4.291534423828125E-5
15,65536,32768,2.1457672119140625E-5,2.1457672119140625E-5
16,131072,65536,1.0728836059570312E-5,1.0728836059570312E-5
17,262144,131072,5.364418029785156E-6,5.364418029785156E-6
18,524288,262144,2.682209014892578E-6,2.682209014892578E-6
19,1048576,524288,1.341104507446289E-6,1.341104507446289E-6

```

## JSON

```

geoc tile pyramid -l "type=geopackage file=src/test/resources/data.gpkg name=world" -o
json

```

```

{
  "proj": "EPSG:4326",
  "bounds": {
    "minX": -179.99,
    "minY": -89.99,
    "maxX": 179.99,
    "maxY": 89.99
  },
  "origin": "TOP_LEFT",
  "tileSize": {
    "width": 256,
    "height": 256
  },
  "grids": [
    {
      "z": 0,
      "width": 2,
      "height": 1,

```

```

        "xres": 0.703125,
        "yres": 0.703125
    },
    {
        "z": 1,
        "width": 4,
        "height": 2,
        "xres": 0.3515625,
        "yres": 0.3515625
    },
    {
        "z": 2,
        "width": 8,
        "height": 4,
        "xres": 0.17578125,
        "yres": 0.17578125
    },
    {
        "z": 3,
        "width": 16,
        "height": 8,
        "xres": 0.087890625,
        "yres": 0.087890625
    },
    {
        "z": 4,
        "width": 32,
        "height": 16,
        "xres": 0.0439453125,
        "yres": 0.0439453125
    },
    {
        "z": 5,
        "width": 64,
        "height": 32,
        "xres": 0.02197265625,
        "yres": 0.02197265625
    },
    {
        "z": 6,
        "width": 128,
        "height": 64,
        "xres": 0.010986328125,
        "yres": 0.010986328125
    },
    {
        "z": 7,
        "width": 256,
        "height": 128,
        "xres": 0.0054931640625,
        "yres": 0.0054931640625
    }

```

```

},
{
  "z": 8,
  "width": 512,
  "height": 256,
  "xres": 0.00274658203125,
  "yres": 0.00274658203125
},
{
  "z": 9,
  "width": 1024,
  "height": 512,
  "xres": 0.001373291015625,
  "yres": 0.001373291015625
},
{
  "z": 10,
  "width": 2048,
  "height": 1024,
  "xres": 6.866455078125E-4,
  "yres": 6.866455078125E-4
},
{
  "z": 11,
  "width": 4096,
  "height": 2048,
  "xres": 3.4332275390625E-4,
  "yres": 3.4332275390625E-4
},
{
  "z": 12,
  "width": 8192,
  "height": 4096,
  "xres": 1.71661376953125E-4,
  "yres": 1.71661376953125E-4
},
{
  "z": 13,
  "width": 16384,
  "height": 8192,
  "xres": 8.58306884765625E-5,
  "yres": 8.58306884765625E-5
},
{
  "z": 14,
  "width": 32768,
  "height": 16384,
  "xres": 4.291534423828125E-5,
  "yres": 4.291534423828125E-5
},
{

```



```

        "z": 15,
        "width": 65536,
        "height": 32768,
        "xres": 2.1457672119140625E-5,
        "yres": 2.1457672119140625E-5
    },
    {
        "z": 16,
        "width": 131072,
        "height": 65536,
        "xres": 1.0728836059570312E-5,
        "yres": 1.0728836059570312E-5
    },
    {
        "z": 17,
        "width": 262144,
        "height": 131072,
        "xres": 5.364418029785156E-6,
        "yres": 5.364418029785156E-6
    },
    {
        "z": 18,
        "width": 524288,
        "height": 262144,
        "xres": 2.682209014892578E-6,
        "yres": 2.682209014892578E-6
    },
    {
        "z": 19,
        "width": 1048576,
        "height": 524288,
        "xres": 1.341104507446289E-6,
        "yres": 1.341104507446289E-6
    }
}
]
}

```

## XML

```
geoc tile pyramid -l "type=geopackage file=src/test/resources/data.gpkg name=world" -o
xml
```

```

<pyramid>
  <proj>EPSG:4326</proj>
  <bounds>
    <minX>-179.99</minX>
    <minY>-89.99</minY>
    <maxX>179.99</maxX>
    <maxY>89.99</maxY>
  
```

```

</bounds>
<origin>TOP_LEFT</origin>
<tileSize>
  <width>256</width>
  <height>256</height>
</tileSize>
<grids>
  <grid>
    <z>0</z>
    <width>2</width>
    <height>1</height>
    <xres>0.703125</xres>
    <yres>0.703125</yres>
  </grid>
  <grid>
    <z>1</z>
    <width>4</width>
    <height>2</height>
    <xres>0.3515625</xres>
    <yres>0.3515625</yres>
  </grid>
  <grid>
    <z>2</z>
    <width>8</width>
    <height>4</height>
    <xres>0.17578125</xres>
    <yres>0.17578125</yres>
  </grid>
  <grid>
    <z>3</z>
    <width>16</width>
    <height>8</height>
    <xres>0.087890625</xres>
    <yres>0.087890625</yres>
  </grid>
  <grid>
    <z>4</z>
    <width>32</width>
    <height>16</height>
    <xres>0.0439453125</xres>
    <yres>0.0439453125</yres>
  </grid>
  <grid>
    <z>5</z>
    <width>64</width>
    <height>32</height>
    <xres>0.02197265625</xres>
    <yres>0.02197265625</yres>
  </grid>
  <grid>
    <z>6</z>

```

```

<width>128</width>
<height>64</height>
<xres>0.010986328125</xres>
<yres>0.010986328125</yres>
</grid>
<grid>
  <z>7</z>
  <width>256</width>
  <height>128</height>
  <xres>0.0054931640625</xres>
  <yres>0.0054931640625</yres>
</grid>
<grid>
  <z>8</z>
  <width>512</width>
  <height>256</height>
  <xres>0.00274658203125</xres>
  <yres>0.00274658203125</yres>
</grid>
<grid>
  <z>9</z>
  <width>1024</width>
  <height>512</height>
  <xres>0.001373291015625</xres>
  <yres>0.001373291015625</yres>
</grid>
<grid>
  <z>10</z>
  <width>2048</width>
  <height>1024</height>
  <xres>6.866455078125E-4</xres>
  <yres>6.866455078125E-4</yres>
</grid>
<grid>
  <z>11</z>
  <width>4096</width>
  <height>2048</height>
  <xres>3.4332275390625E-4</xres>
  <yres>3.4332275390625E-4</yres>
</grid>
<grid>
  <z>12</z>
  <width>8192</width>
  <height>4096</height>
  <xres>1.71661376953125E-4</xres>
  <yres>1.71661376953125E-4</yres>
</grid>
<grid>
  <z>13</z>
  <width>16384</width>
  <height>8192</height>

```

```

    <xres>8.58306884765625E-5</xres>
    <yres>8.58306884765625E-5</yres>
  </grid>
  <grid>
    <z>14</z>
    <width>32768</width>
    <height>16384</height>
    <xres>4.291534423828125E-5</xres>
    <yres>4.291534423828125E-5</yres>
  </grid>
  <grid>
    <z>15</z>
    <width>65536</width>
    <height>32768</height>
    <xres>2.1457672119140625E-5</xres>
    <yres>2.1457672119140625E-5</yres>
  </grid>
  <grid>
    <z>16</z>
    <width>131072</width>
    <height>65536</height>
    <xres>1.0728836059570312E-5</xres>
    <yres>1.0728836059570312E-5</yres>
  </grid>
  <grid>
    <z>17</z>
    <width>262144</width>
    <height>131072</height>
    <xres>5.364418029785156E-6</xres>
    <yres>5.364418029785156E-6</yres>
  </grid>
  <grid>
    <z>18</z>
    <width>524288</width>
    <height>262144</height>
    <xres>2.682209014892578E-6</xres>
    <yres>2.682209014892578E-6</yres>
  </grid>
  <grid>
    <z>19</z>
    <width>1048576</width>
    <height>524288</height>
    <xres>1.341104507446289E-6</xres>
    <yres>1.341104507446289E-6</yres>
  </grid>
</grids>
</pyramid>

```

# Stitch Raster

Stitch image tiles together to create a Raster.

| Short Name | Long Name              | Description              |
|------------|------------------------|--------------------------|
| -l         | --tile-layer           | The tile layer           |
| -b         | --bounds               | The bounds               |
| -w         | --width                | The raster width         |
| -h         | --height               | The raster height        |
| -z         | --zoom-level           | The tile zoom level      |
| -x         | --minx                 | The min x or col         |
| -y         | --miny                 | The min y or row         |
| -c         | --maxx                 | The max x or col         |
| -u         | --maxy                 | The max y or row         |
| -o         | --output-raster        | The output raster        |
| -f         | --output-raster-format | The output raster format |
|            | --help                 | Print the help message   |
|            | --web-help             | Open help in a browser   |

## Zoom Level

```
geoc tile stitch raster -l "type=geopackage file=src/test/resources/data.gpkg  
name=world" -o target/world_1.png -z 1
```



# Stitch Vector

Stitch vector tiles together to create a one or more Layers.

| Short Name | Long Name          | Description            |
|------------|--------------------|------------------------|
| -l         | --tile-layer       | The tile layer         |
| -b         | --bounds           | The bounds             |
| -w         | --width            | The raster width       |
| -h         | --height           | The raster height      |
| -z         | --zoom-level       | The tile zoom level    |
| -x         | --minx             | The min x or col       |
| -y         | --miny             | The min y or row       |
| -c         | --maxx             | The max x or col       |
| -u         | --maxy             | The max y or row       |
| -o         | --output-workspace | The output workspace   |
|            | --help             | Print the help message |
|            | --web-help         | Open help in a browser |

Zoom Level

```
geoc tile stitch vector -l "type=vectortiles format=pbfs file=target/vectortiles" -o  
"type=geopackage file=target/world.gpkg name=world" -z 1
```

*Layers*

countries

*Schema*

| Name     | Type    |
|----------|---------|
| geometry | Polygon |
| TYPE     | String  |
| LEVEL    | Long    |
| NAME     | String  |

## Vector Grid

Create a vector grid of a tile layers cells.

| Short Name | Long Name          | Description            |
|------------|--------------------|------------------------|
| -l         | --tile-layer       | The tile layer         |
| -b         | --bounds           | The bounds             |
| -z         | --zoom-level       | The tile zoom level    |
| -x         | --minx             | The min x or col       |
| -y         | --miny             | The min y or row       |
| -c         | --maxx             | The max x or col       |
| -u         | --maxy             | The max y or row       |
| -w         | --width            | The raster width       |
| -h         | --height           | The raster height      |
| -o         | --output-workspace | The output workspace   |
| -r         | --output-layer     | The output layer       |
|            | --help             | Print the help message |
|            | --web-help         | Open help in a browser |

```
geoc tile vector grid -l "type=geopackage file=src/main/resources/data.gpkg
name=world" -o target/world_grid_1.shp -z 2
```

