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## Layer

### Basics

#### Open

Open a Layer.

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
layer	The Layer name	true		
name	The name	false		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg  
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> workspace close --name naturalearth  
Workspace naturalearth closed!
```

#### Close

Close a Layer.

```
geo-shell> layer close --name countries
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg  
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer close --name countries
Layer countries closed!
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

## List

List open Layers.

```
geo-shell> layer list
```



No parameters

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer list
countries = GeoPackage
ocean = GeoPackage
states = GeoPackage
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

## Schema

Inspect a Layer's Schema.

```
geo-shell> layer schema --name countries
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
```

Opened Workspace naturalearth Layer countries as countries

```
geo-shell> layer schema --name countries
```

Name Type

-----  
the\_geom MultiPolygon

ScaleRank Long

FeatureCla String

SOVEREIGNT String

SOVISO String

SOV\_A3 String

LEVEL Double

TYPE String

NAME String

SORTNAME String

ADM0\_A3 String

NAME\_SM String

NAME\_LNG String

TERR\_ String

PARENTHETI String

NAME\_ALT String

LOCAL\_LNG String

LOCAL\_SM String

FORMER String

ABBREV\_ String

MAP\_COLOR Double

PEOPLE Double

GDP\_USDM Double

FIPS\_10 String

ISO\_A2 String

ISO\_A3 String

ISO\_N3 Double

ITU String

IOC String

FIFA String

DS String

WMO String

GAUL Double

MARC String

STANAG1059 String

GW\_ID Double

DIAL Double

INTERNET\_ String

COG String

ACTUAL String

CAPAY String

CRPAY String

ANI String  
LIBENR String  
ANCNOM String  
PAYS\_R\_GIO String  
COMMENT String

```
geo-shell> workspace close --name naturalearth  
Workspace naturalearth closed!
```

## Count

Count the Feature in a Layer.

```
geo-shell> layer count --name countries
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg  
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer count --name countries  
177
```

```
geo-shell> workspace close --name naturalearth  
Workspace naturalearth closed!
```

## Projection

Get the Projection of a Layer.

```
geo-shell> layer projection --name countries
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg  
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer projection --name countries  
EPSG:4326
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

## Features

Display the Features of a Layer.

```
geo-shell> layer features --name states --filter "NAME_1='North Dakota'"
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
filter	The CQL Filter	false		
sort	A Sort parameter (fld dir)	false		
start	The start index	false		-1
max	The maximum number of records	false		-1
field	A subfield to include	false		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer features --name states --filter "NAME_1='North Dakota'"
Feature (states.3)
```

```
-----
the_geom = MULTIPOLYGON
FID_1 = 31
ScaleRank = 2
FeatureCla = 1st Order Admin Polys
OBJECTID = 22
VertexCou = 223.0
ISO = USA
NAME_0 = United States
NAME_1 = North Dakota
VARNAME_1 = ND | N.D.
NL_NAME_1 =
HASC_1 = US.ND
TYPE_1 = State
ENGTYPE_1 = State
VALIDFR_1 = 18891102
VALIDTO_1 = Present
```

```
REMARKS_1 =
Region =
RegionVar =
ProvNumber = 23
NEV_Countr = United States
FIRST_FIPS =
FIRST_HASC =
FIPS_1 = US38
gadm_level = 1.0
CheckMe = 0
Region_Cod =
Region_C_1 =
ScaleRan_1 = 1
Region_C_2 =
Region_C_3 =
Country_Pr =
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

## Get Style

Get the Layer's style.

```
geo-shell> layer style get --name states --style target/states.sld
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
style	The SLD File	false		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> style vector default --layer states --color #1E90FF --file examples/states_simple.sld
Default Vector Style for states written to /home/runner/work/geo-shell/geo-shell/examples/states_simple.sld!
```

```
geo-shell> layer style get --name states --style target/states.sld
states style written to /home/runner/work/geo-shell/geo-shell/target/states.sld
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

```
<?xml version="1.0" encoding="UTF-8"?><sld:StyledLayerDescriptor xmlns:sld=
"http://www.opengis.net/sld" xmlns="http://www.opengis.net/sld" xmlns:gml=
"http://www.opengis.net/gml" xmlns:ogc="http://www.opengis.net/ogc" version="1.0.0">
  <sld:UserLayer>
    <sld:LayerFeatureConstraints>
      <sld:FeatureTypeConstraint/>
    </sld:LayerFeatureConstraints>
    <sld:UserStyle>
      <sld:Name>Default Styler</sld:Name>
      <sld:FeatureTypeStyle>
        <sld:Name>name</sld:Name>
        <sld:Rule>
          <sld:PolygonSymbolizer>
            <sld:Fill>
              <sld:CssParameter name="fill">#f2f2f2</sld:CssParameter>
            </sld:Fill>
          </sld:PolygonSymbolizer>
          <sld:LineSymbolizer>
            <sld:Stroke>
              <sld:CssParameter name="stroke">#a9a9a9</sld:CssParameter>
              <sld:CssParameter name="stroke-width">0.5</sld:CssParameter>
            </sld:Stroke>
          </sld:LineSymbolizer>
        </sld:Rule>
      </sld:FeatureTypeStyle>
    </sld:UserStyle>
  </sld:UserLayer>
</sld:StyledLayerDescriptor>
```

## Set Style

Set a Layer's style

geo-shell> **layer style get** --name states --style target/states\_simple.sld

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
style	The SLD or CSS File	true		

geo-shell> **workspace open** --name naturalearth --params src/test/resources/naturalearth.gpkg  
Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer states --name states  
Opened Workspace naturalearth Layer states as states

geo-shell> **style vector default** --layer states --color #1E90FF --file examples/states\_simple.sld

Default Vector Style for states written to /home/runner/work/geo-shell/geo-shell/examples/states\_simple.sld!

geo-shell> **layer style get** --name states --style target/states\_simple.sld  
states style written to /home/runner/work/geo-shell/geo-shell/target/states\_simple.sld

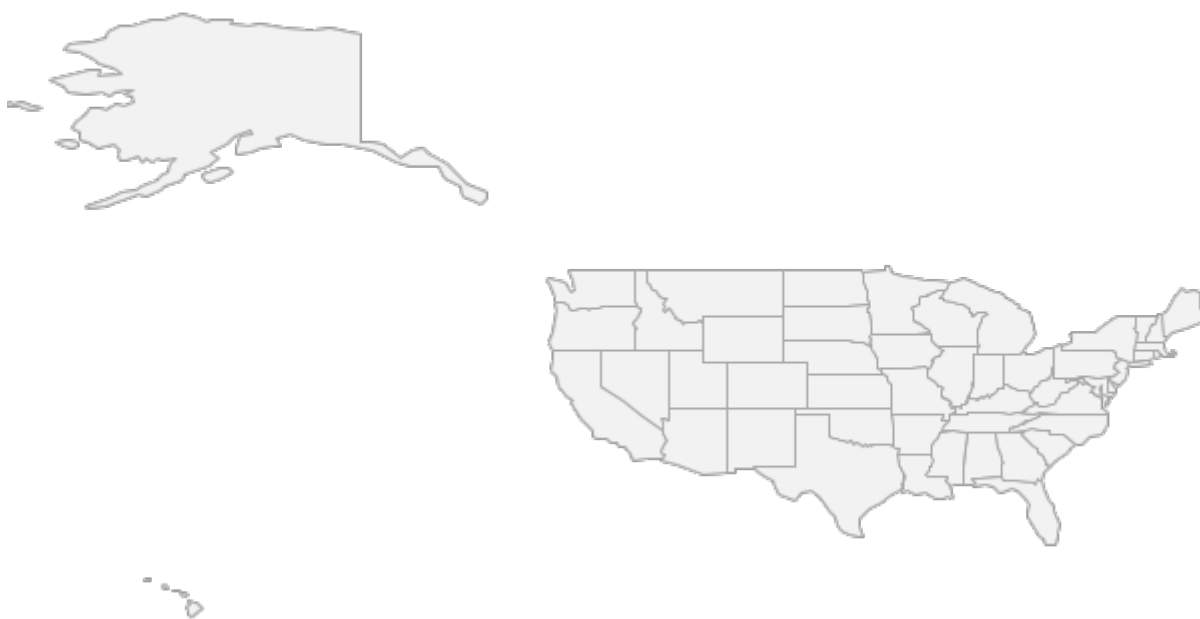
geo-shell> **map open** --name map  
Map map opened!

geo-shell> **map add layer** --name map --layer states  
Added states layer to map map

geo-shell> **map draw** --name map --file examples/layer\_set\_style.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_set\_style.png!

geo-shell> **map close** --name map  
Map map closed!

geo-shell> **workspace close** --name naturalearth  
Workspace naturalearth closed!



## Copy

Copy one Layer to another Workspace.

geo-shell> **layer copy** --input-name states\_gpkg --output-workspace shapefiles --output-name states

Name	Description	Mandatory	Specified Default	Unspecified Default
------	-------------	-----------	-------------------	---------------------



input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
filter	The CQL Filter	false		
sort	A Sort parameter (fld dir)	false		
start	The start index	false		-1
max	The maximum number of records	false		-1
field	A subfield to include	false		

```
geo-shell> workspace open --name naturalearth --params src/test/resources/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states_gpkg
Opened Workspace naturalearth Layer states as states_gpkg
```

```
geo-shell> workspace open --name shapefiles --params target/
Workspace shapefiles opened!
```

```
geo-shell> layer copy --input-name states_gpkg --output-workspace shapefiles --output-name states
Done!
```

```
geo-shell> layer count --name states
52
```

```
geo-shell> workspace close --name shapefiles
Workspace shapefiles closed!
```

```
geo-shell> workspace close --name naturalearth
Workspace naturalearth closed!
```

## Create

Create a new Layer.

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326|fid=Int|name=String"
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		

name	The new Layer name	true		
fields	The pipe delimited list of fields (name=type)	true		

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326 | fid=Int | name=String"
Created Layer points!
```

```
geo-shell> layer schema --name points
Name Type
-----
the_geom Point
fid Integer
name String
```

## Add

Add a new Feature to a Layer.

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.333056
47.609722) | fid=1 | name=Seattle"
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
values	The pipe delimited list of values (field=value)	true		

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326 | fid=Int | name=String"
Created Layer points!
```

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.333056
47.609722) | fid=1 | name=Seattle"
Added Feature to points
```

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.459444
47.241389) | fid=2 | name=Tacoma"
Added Feature to points
```

```
geo-shell> layer count --name points
```

```
2
```

## Delete

Delete features from the Layer

```
geo-shell> layer delete --name points --filter "fid=2"
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
filter	The CQL Filter	true		

```
geo-shell> workspace open --name mem --params memory
```

Workspace mem opened!

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point  
EPSG:4326|fid=Int|name=String"
```

Created Layer points!

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.333056  
47.609722)|fid=1|name=Seattle"
```

Added Feature to points

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.459444  
47.241389)|fid=2|name=Tacoma"
```

Added Feature to points

```
geo-shell> layer count --name points
```

```
2
```

```
geo-shell> layer delete --name points --filter "fid=2"
```

Deleted fid=2 Features from points

```
geo-shell> layer count --name points
```

```
1
```

## Remove

Remove a Layer from a Workspace.

```
geo-shell> layer remove --layer polygons --workspace mem
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		

layer	The Layer name	true		
-------	----------------	------	--	--

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326|fid=Int|name=String"
Created Layer points!
```

```
geo-shell> layer create --workspace mem --name lines --fields "the_geom=LineString
EPSG:4326|fid=Int|name=String"
Created Layer lines!
```

```
geo-shell> layer create --workspace mem --name polygons --fields "the_geom=Polygon
EPSG:4326|fid=Int|name=String"
Created Layer polygons!
```

```
geo-shell> workspace layers --name mem
lines
points
polygons
```

```
geo-shell> layer remove --layer polygons --workspace mem
Layer polygons removed from Workspace mem
```

```
geo-shell> workspace layers --name mem
lines
points
```

## Write

Write a Layer to GeoJSON, CSV, or KML.

```
geo-shell> layer write --name points --format geojson --file src/main/docs/output/points.json
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
format	The format	true		
file	The output file	false		

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326|fid=Int|name=String"
Created Layer points!
```

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.333056
```

```
47.609722)|fid=1|name=Seattle"
```

Added Feature to points

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.459444  
47.241389)|fid=2|name=Tacoma"
```

Added Feature to points

```
geo-shell> layer write --name points --format geojson --file src/main/docs/output/points.json
```

Layer points written to /home/runner/work/geo-shell/geo-shell/src/main/docs/output/points.json as geojson

## Read

Read a Layer from a GeoJSON, KML, or YAML file.

```
geo-shell> layer read --workspace mem --name points --file src/test/resources/points.json
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
name	The name	true		
file	The output file	true		

```
geo-shell> workspace open --name mem --params memory
```

Workspace mem opened!

```
geo-shell> layer read --workspace mem --name points --file src/test/resources/points.json
```

Created Layer points in Workspace mem for /home/runner/work/geo-shell/geo-shell/src/test/resources/points.json!

```
geo-shell> layer features --name points
```

Feature (fid—594ed776\_18b88036027\_-4e4b)

-----  
geometry = POINT (1 1)

id = 1

name = Home

Feature (fid—594ed776\_18b88036027\_-4e4a)

-----  
geometry = POINT (2 2)

id = 2

name = Work

## Update Field

Update the values of a field

```
geo-shell> layer updatefield --name points --field state --value WA
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
field	The field name	true		
value	The value	true		
filter	The CQL Filter	false	INCLUDE	INCLUDE
script	Whether the value is a script or not	false	false	false

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name points --fields "the_geom=Point
EPSG:4326 | fid=Int | name=String | state=String"
Created Layer points!
```

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.333056
47.609722) | fid=1 | name=Seattle"
Added Feature to points
```

```
geo-shell> layer add --name points --values "the_geom=POINT (-122.459444
47.241389) | fid=2 | name=Tacoma"
Added Feature to points
```

```
geo-shell> layer updatefield --name points --field state --value WA
Done updating state with WA!
```

```
geo-shell> layer features --name points
Feature (fid—594ed776_18b88036027_-4ea0)
```

```
-----
the_geom = POINT (-122.333056 47.609722)
fid = 1
name = Seattle
state = WA
```

```
Feature (fid—594ed776_18b88036027_-4e9e)
```

```
-----
the_geom = POINT (-122.459444 47.241389)
fid = 2
name = Tacoma
state = WA
```

## Add Fields

Add Fields to the input Layer and save the result to the output Layer

```
geo-shell> layer addfields --input-name points --output-workspace mem --output-name points2
```

`--fields "name=String,state=String"`

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
fields	The Fields (name=type proj)	true		

geo-shell> **workspace open** --name mem --params memory  
Workspace mem opened!

geo-shell> **layer create** --workspace mem --name points --fields "the\_geom=Point EPSG:4326"  
Created Layer points!

geo-shell> **layer addfields** --input-name points --output-workspace mem --output-name points2  
--fields "name=String,state=String"  
Done!

geo-shell> **layer schema** --name points2  
Name Type

-----  
the\_geom Point  
name String  
state String

## Add Area Field

Add area Field to the input Layer and save the result to the output Layer

geo-shell> **layer addareafield** --input-name states --output-workspace mem --output-name states\_area --area-fieldname AREA

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
area-fieldname	The area field name	true	area	area

```
geo-shell> workspace open --name mem --params memory
```

```
Workspace mem opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
```

```
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
```

```
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer addareafield --input-name states --output-workspace mem --output-name  
states_area --area-fieldname AREA
```

```
Done!
```

```
geo-shell> layer schema --name states_area
```

```
Name Type
```

```
-----  
the_geom MultiPolygon
```

```
FID_1 Long
```

```
ScaleRank Long
```

```
FeatureCla String
```

```
OBJECTID Long
```

```
VertexCou Double
```

```
ISO String
```

```
NAME_0 String
```

```
NAME_1 String
```

```
VARNAME_1 String
```

```
NL_NAME_1 String
```

```
HASC_1 String
```

```
TYPE_1 String
```

```
ENGTYPE_1 String
```

```
VALIDFR_1 String
```

```
VALIDTO_1 String
```

```
REMARKS_1 String
```

```
Region String
```

```
RegionVar String
```

```
ProvNumber Long
```

```
NEV_Countr String
```

```
FIRST_FIPS String
```

```
FIRST_HASC String
```

```
FIPS_1 String
```

```
gadm_level Double
```

```
CheckMe Long
```

```
Region_Cod String
```

```
Region_C_1 String
```

```
ScaleRan_1 Long
```

```
Region_C_2 String
```

```
Region_C_3 String
```

```
Country_Pr String
```

```
AREA Double
```



```
geo-shell> layer features --name states_area --filter "NAME_1='North Dakota'" --field
"NAME_0,AREA"
Feature (fid—594ed776_18b88036027_-4e99)
-----
NAME_0 = United States
AREA = 21.804544852979944
```

## Add ID Field

Add area ID to the input Layer and save the result to the output Layer

```
geo-shell> layer addidfield --input-name places --output-workspace mem --output-name places_id
--id-fieldname ID --start-value 1
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
id-fieldname	The id field name	true	id	id
start-value	The value to start at	true	1	1

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer places --name places
Opened Workspace naturalearth Layer places as places
```

```
geo-shell> layer addidfield --input-name places --output-workspace mem --output-name places_id
--id-fieldname ID --start-value 1
Done!
```

```
geo-shell> layer schema --name places_id
Name Type
-----
```

```
the_geom Point
SCALERANK Long
NATSCALE Long
LABELRANK Long
FEATURECLA String
NAME String
```

NAMEPAR String  
NAMEALT String  
DIFFASCII Long  
NAMEASCII String  
ADM0CAP Double  
CAPALT Double  
CAPIN String  
WORLDCITY Double  
MEGACITY Long  
SOV0NAME String  
SOV\_A3 String  
ADM0NAME String  
ADM0\_A3 String  
ADM1NAME String  
ISO\_A2 String  
NOTE String  
LATITUDE Double  
LONGITUDE Double  
CHANGED Double  
NAMEDIFF Long  
DIFFNOTE String  
POP\_MAX Long  
POP\_MIN Long  
POP\_OTHER Long  
GEONAMEID Double  
MEGANAME String  
LS\_NAME String  
LS\_MATCH Long  
CHECKME Long  
MAX\_POP10 Long  
MAX\_POP20 Long  
MAX\_POP50 Long  
MAX\_POP300 Long  
MAX\_POP310 Long  
MAX\_NATSCA Long  
MIN\_AREAKM Long  
MAX\_AREAKM Double  
MIN\_AREAMI Double  
MAX\_AREAMI Double  
MIN\_PERKM Double  
MAX\_PERKM Double  
MIN\_PERMI Double  
MAX\_PERMI Double  
MIN\_BBXMEN Double  
MAX\_BBXMEN Double  
MIN\_BBXMAX Double  
MAX\_BBXMAX Double  
MIN\_BBYMIN Double

MAX\_BBYMIN Double  
MIN\_BBYMAX Double  
MAX\_BBYMAX Double  
MEAN\_BBXC Double  
MEAN\_BBYC Double  
COMPARE Long  
GN\_ASCII String  
FEATURE\_CL String  
FEATURE\_CO String  
ADMIN1\_COD Double  
GN\_POP Long  
ELEVATION Double  
GTOPO30 Double  
TIMEZONE String  
GEONAMESNO String  
UN\_FID Long  
UN\_ADM0 String  
UN\_LAT Double  
UN\_LONG Double  
POP1950 Double  
POP1955 Double  
POP1960 Double  
POP1965 Double  
POP1970 Double  
POP1975 Double  
POP1980 Double  
POP1985 Double  
POP1990 Double  
POP1995 Double  
POP2000 Double  
POP2005 Double  
POP2010 Double  
POP2015 Double  
POP2020 Double  
POP2025 Double  
POP2050 Double  
CITYALT String  
popDiff Long  
popPerc Double  
ls\_gross Long  
ID Integer

```
geo-shell> layer features --name places_id --filter "NAME='Seattle'" --field "NAME,ID"  
Feature (fid—594ed776_18b88036027_-4fde)
```

```
-----  
NAME = Seattle  
ID = 10
```

## Add XY Fields

Add x and y coordinate Fields to the input Layer and save the result to the output Layer

```
geo-shell> layer addxyfields --input-name places --output-workspace mem --output-name places_xy --x-fieldname X --y-fieldname Y
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
x-fieldname	The x field name	true	x	x
y-fieldname	The y field name	true	y	y

```
geo-shell> workspace open --name mem --params memory  
Workspace mem opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg  
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer places --name places  
Opened Workspace naturalearth Layer places as places
```

```
geo-shell> layer addxyfields --input-name places --output-workspace mem --output-name places_xy --x-fieldname X --y-fieldname Y  
Done!
```

```
geo-shell> layer schema --name places_xy  
Name Type
```

-----

```
the_geom Point  
SCALERANK Long  
NATSCALE Long  
LABELRANK Long  
FEATURECLA String  
NAME String  
NAMEPAR String  
NAMEALT String  
DIFFASCII Long  
NAMEASCII String  
ADM0CAP Double  
CAPALT Double  
CAPIN String  
WORLDCITY Double
```

MEGACITY Long  
SOV0NAME String  
SOV\_A3 String  
ADM0NAME String  
ADM0\_A3 String  
ADM1NAME String  
ISO\_A2 String  
NOTE String  
LATITUDE Double  
LONGITUDE Double  
CHANGED Double  
NAMEDIFF Long  
DIFFNOTE String  
POP\_MAX Long  
POP\_MIN Long  
POP\_OTHER Long  
GEONAMEID Double  
MEGANAME String  
LS\_NAME String  
LS\_MATCH Long  
CHECKME Long  
MAX\_POP10 Long  
MAX\_POP20 Long  
MAX\_POP50 Long  
MAX\_POP300 Long  
MAX\_POP310 Long  
MAX\_NATSCA Long  
MIN\_AREAKM Long  
MAX\_AREAKM Double  
MIN\_AREAMI Double  
MAX\_AREAMI Double  
MIN\_PERKM Double  
MAX\_PERKM Double  
MIN\_PERMI Double  
MAX\_PERMI Double  
MIN\_BBXMINDouble  
MAX\_BBXMINDouble  
MIN\_BBXMINDouble  
MAX\_BBXMINDouble  
MIN\_BBYMINDouble  
MAX\_BBYMINDouble  
MIN\_BBYMINDouble  
MAX\_BBYMINDouble  
MEAN\_BBXC Double  
MEAN\_BBYC Double  
COMPARE Long  
GN\_ASCII String  
FEATURE\_CL String

FEATURE\_CO String  
ADMIN1\_COD Double  
GN\_POP Long  
ELEVATION Double  
GTOPO30 Double  
TIMEZONE String  
GEONAMESNO String  
UN\_FID Long  
UN\_ADM0 String  
UN\_LAT Double  
UN\_LONG Double  
POP1950 Double  
POP1955 Double  
POP1960 Double  
POP1965 Double  
POP1970 Double  
POP1975 Double  
POP1980 Double  
POP1985 Double  
POP1990 Double  
POP1995 Double  
POP2000 Double  
POP2005 Double  
POP2010 Double  
POP2015 Double  
POP2020 Double  
POP2025 Double  
POP2050 Double  
CITYALT String  
popDiff Long  
popPerc Double  
ls\_gross Long  
X Double  
Y Double

```
geo-shell> layer features --name places_xy --filter "NAME='Seattle'" --field "NAME,X,Y"  
Feature (fid—594ed776_18b88036027_-3684)
```

```
-----  
NAME = Seattle  
X = -122.34193084586849  
Y = 47.57194791253073
```

## Validity

Check for invalid geometries in the Layer.

```
geo-shell> layer validity --name areas
```

Name	Description	Mandatory	Specified Default	Unspecified Default
name	The Layer name	true		
fields	A comma delimited list of Fields to include	false		

```
geo-shell> workspace open --name areas --params src/test/resources/invalid.properties
Workspace areas opened!
```

```
geo-shell> layer open --workspace areas --layer invalid --name areas
Opened Workspace areas Layer invalid as areas
```

```
geo-shell> layer validity --name areas
Values Reason
```

```
-----
invalid.1360815594529 Self-intersection
```

## Fix

Fix the geometries of the features of the input Layer and save them to the output Layer

```
geo-shell> layer fix --input-name lines --output-workspace mem --output-name lines_fixed
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name mem --params memory
Workspace mem opened!
```

```
geo-shell> layer create --workspace mem --name lines --fields "the_geom=LineString
EPSG:4326|fid=Int|name=String"
Created Layer lines!
```

```
geo-shell> layer add --name lines --values "the_geom=LINestring (0 0, 0 0, 0 0, 1
1)|fid=1|name=Location 1"
Added Feature to lines
```

```
geo-shell> layer add --name lines --values "the_geom=LINestring (1 1, 2 2, 2 2, 2 2, 3
3)|fid=2|name=Location 2"
Added Feature to lines
```

```
geo-shell> layer fix --input-name lines --output-workspace mem --output-name lines_fixed
Done!
```

```
geo-shell> layer features --name lines_fixed
Feature (fid—594ed776_18b88036027_-4e55)
```

```
-----
the_geom = LINESTRING (0 0, 1 1)
```

```
fid = 1
```

```
name = Location 1
```

```
Feature (fid—594ed776_18b88036027_-4e54)
```

```
-----
the_geom = LINESTRING (1 1, 2 2, 3 3)
```

```
fid = 2
```

```
name = Location 2
```

## Geoprocessing

### Clip

Clip the input Layer by the other Layer to produce the output Layer

```
geo-shell> layer clip --input-name a --clip-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
clip-name	The clip Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

```
geo-shell> workspace open --name results --params memory
Workspace results opened!
```

```
geo-shell> layer open --workspace layers --layer a --name a
Opened Workspace layers Layer a as a
```

```
geo-shell> layer open --workspace layers --layer b --name b
Opened Workspace layers Layer b as b
```

```
geo-shell> layer clip --input-name a --clip-name b --output-workspace results --output-name results
```



Done clipping a to b to create results!

```
geo-shell> style vector default --layer a --color red --opacity 0.75 --file examples/red.sld  
Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!
```

```
geo-shell> style vector default --layer b --color green --opacity 0.75 --file examples/green.sld  
Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!
```

```
geo-shell> style vector default --layer results --color blue --opacity 0.75 --file examples/blue.sld  
Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!
```

```
geo-shell> layer style set --name a --style examples/red.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a
```

```
geo-shell> layer style set --name b --style examples/green.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b
```

```
geo-shell> layer style set --name results --style examples/blue.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results
```

```
geo-shell> map open --name map  
Map map opened!
```

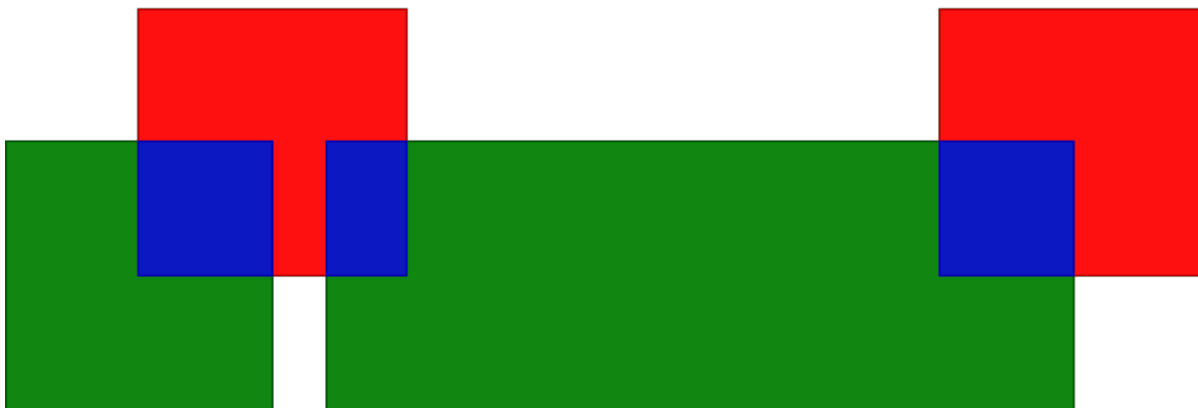
```
geo-shell> map add layer --name map --layer a  
Added a layer to map map
```

```
geo-shell> map add layer --name map --layer b  
Added b layer to map map
```

```
geo-shell> map add layer --name map --layer results  
Added results layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_clip.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_clip.png!
```

```
geo-shell> map close --name map  
Map map closed!
```



## Convex Hull

Calculate the convexhull of the input Layer and save it to the output Layer.

```
geo-shell> layer convexhull --input-name countries --output-workspace layers --output-name convexhull
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer convexhull** --input-name countries --output-workspace layers --output-name convexhull

Done!

geo-shell> **style vector default** --layer convexhull --color #1E90FF --opacity 0.25 --file examples/convexhull.sld

Default Vector Style for convexhull written to /home/runner/work/geo-shell/geo-shell/examples/convexhull.sld!

geo-shell> **layer style set** --name convexhull --style examples/convexhull.sld

Style /home/runner/work/geo-shell/geo-shell/examples/convexhull.sld set on convexhull

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer convexhull

Added convexhull layer to map map

geo-shell> **map draw** --name map --file examples/layer\_convexhull.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_convexhull.png!

geo-shell> **map close** --name map

Map map closed!



## Convex Hulls

Calculate the convexhull of each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer convexhulls --input-name countries --output-workspace layers --output-name convexhulls
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
```

Opened Workspace naturalearth Layer ocean as ocean

```
geo-shell> layer style set --name ocean --style examples/ocean.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

```
geo-shell> layer convexhulls --input-name countries --output-workspace layers --output-name convexhulls
```

Done!

```
geo-shell> style vector default --layer convexhulls --color #1E90FF --opacity 0.25 --file examples/convexhulls.sld
```

Default Vector Style for convexhulls written to /home/runner/work/geo-shell/geo-shell/examples/convexhulls.sld!

```
geo-shell> layer style set --name convexhulls --style examples/convexhulls.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/convexhulls.sld set on convexhulls

```
geo-shell> map open --name map
```

Map map opened!

```
geo-shell> map add layer --name map --layer ocean
```

Added ocean layer to map map

```
geo-shell> map add layer --name map --layer countries
```

Added countries layer to map map

```
geo-shell> map add layer --name map --layer convexhulls
```

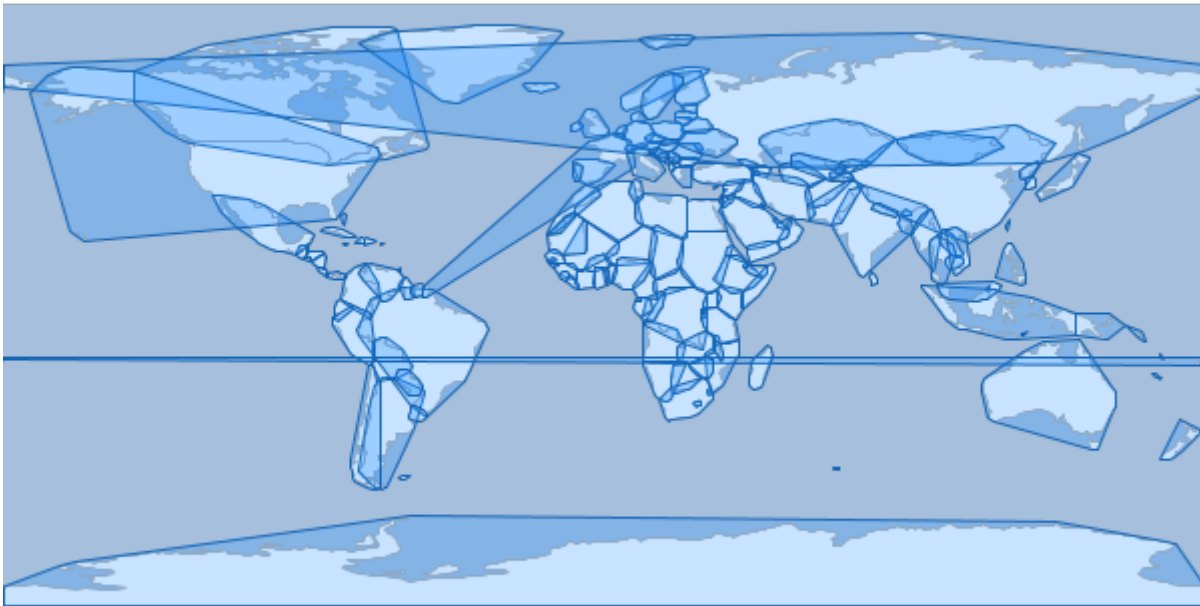
Added convexhulls layer to map map

```
geo-shell> map draw --name map --file examples/layer_convexhulls.png
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_convexhulls.png!

```
geo-shell> map close --name map
```

Map map closed!



## Coordinates

Extract the coordinates each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer coordinates --input-name states --output-workspace layers --output-name
coordinates
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer coordinates --input-name states --output-workspace layers --output-name
coordinates
Done!
```

geo-shell> **style vector default** --layer coordinates --color #1E90FF --opacity 0.75 --file examples/coordinates.sld

Default Vector Style for coordinates written to /home/runner/work/geo-shell/geo-shell/examples/coordinates.sld!

geo-shell> **layer style set** --name coordinates --style examples/coordinates.sld

Style /home/runner/work/geo-shell/geo-shell/examples/coordinates.sld set on coordinates

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer coordinates

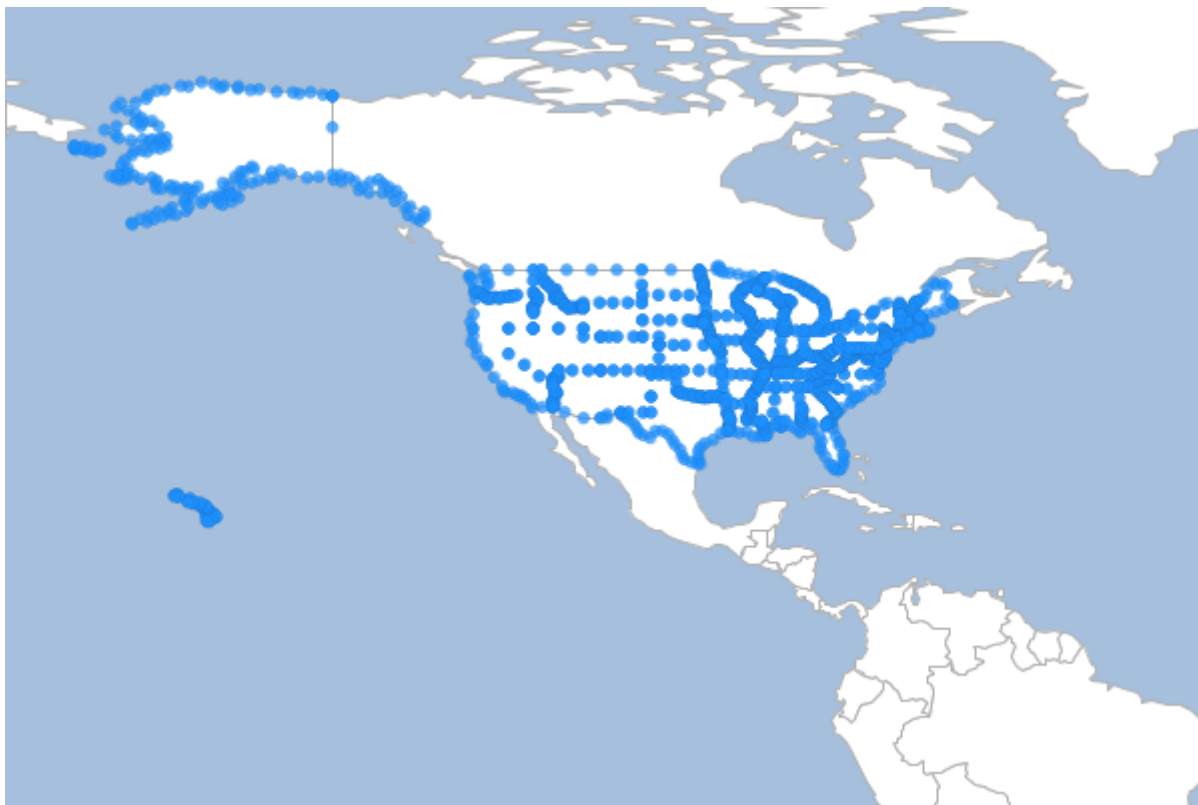
Added coordinates layer to map map

geo-shell> **map draw** --name map --file examples/layer\_coordinates.png --bounds "-180,-8.233,-36.738,73.378"

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_coordinates.png!

geo-shell> **map close** --name map

Map map closed!



## Delaunay

Calculate a delaunay diagram of the input Layer and save it to the output Layer.

```
geo-shell> layer delaunay --input-name places --output-workspace layers --output-name delaunay
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer places --name places
Opened Workspace naturalearth Layer places as places
```

```
geo-shell> layer delaunay --input-name places --output-workspace layers --output-name delaunay
Done!
```



```
geo-shell> style vector default --layer delaunay --color #1E90FF --opacity 0.25 --file
examples/delaunay.sld
Default Vector Style for delaunay written to /home/runner/work/geo-shell/geo-
shell/examples/delaunay.sld!
```

```
geo-shell> layer style set --name delaunay --style examples/delaunay.sld
Style /home/runner/work/geo-shell/geo-shell/examples/delaunay.sld set on delaunay
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean
```

```
geo-shell> layer style set --name ocean --style examples/ocean.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean
```

```
geo-shell> map open --name map
Map map opened!
```

```
geo-shell> map add layer --name map --layer ocean
Added ocean layer to map map
```

```
geo-shell> map add layer --name map --layer countries
Added countries layer to map map
```

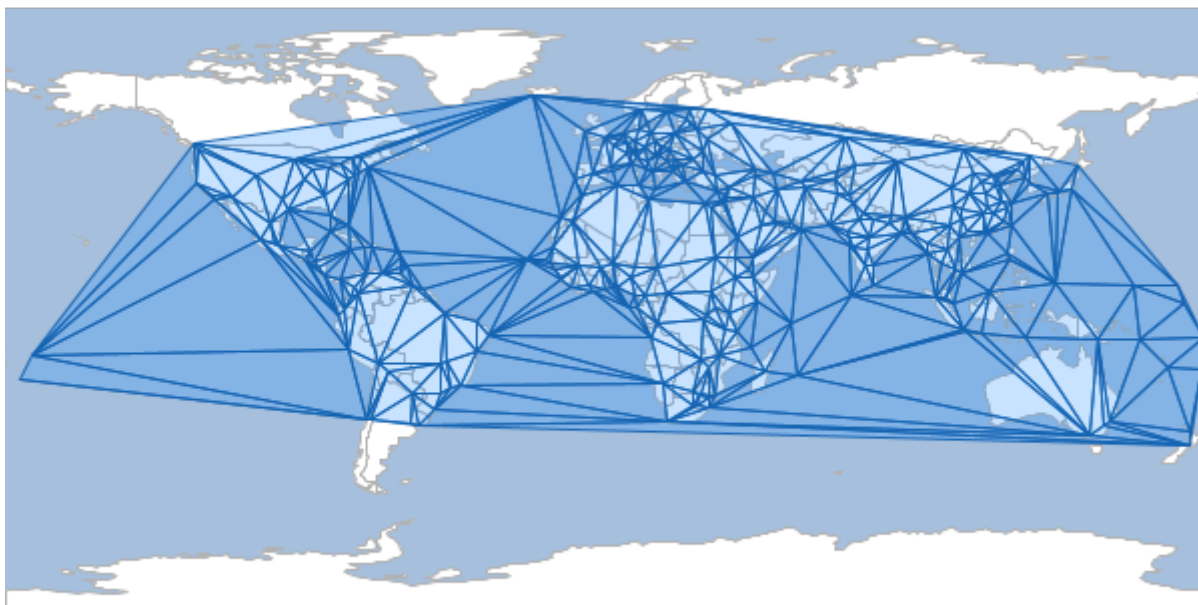
```
geo-shell> map add layer --name map --layer delaunay
Added delaunay layer to map map
```

```
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_delaunay.png!
```

```
geo-shell> map draw --name map --file examples/layer_delaunay.png
```

```
Map map closed!
```

```
geo-shell> map close --name map
```



## Densify

Densify the features of the input Layer and save them to the output Layer

```
geo-shell> layer densify --input-name states --output-workspace layers --output-name
states_densified --distance 0.1
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
distance	The distance tolerance	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer densify --input-name states --output-workspace layers --output-name
```

states\_densified --distance 0.1

Done!

geo-shell> **layer coordinates** --input-name states\_densified --output-workspace layers --output  
-name coordinates

Done!

geo-shell> **style vector default** --layer coordinates --color #1E90FF --opacity 0.75 --file  
examples/coordinates.sld

Default Vector Style for coordinates written to /home/runner/work/geo-shell/geo-shell/examples/coordinates.sld!

geo-shell> **layer style set** --name coordinates --style examples/coordinates.sld

Style /home/runner/work/geo-shell/geo-shell/examples/coordinates.sld set on coordinates

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

Added coordinates layer to map map

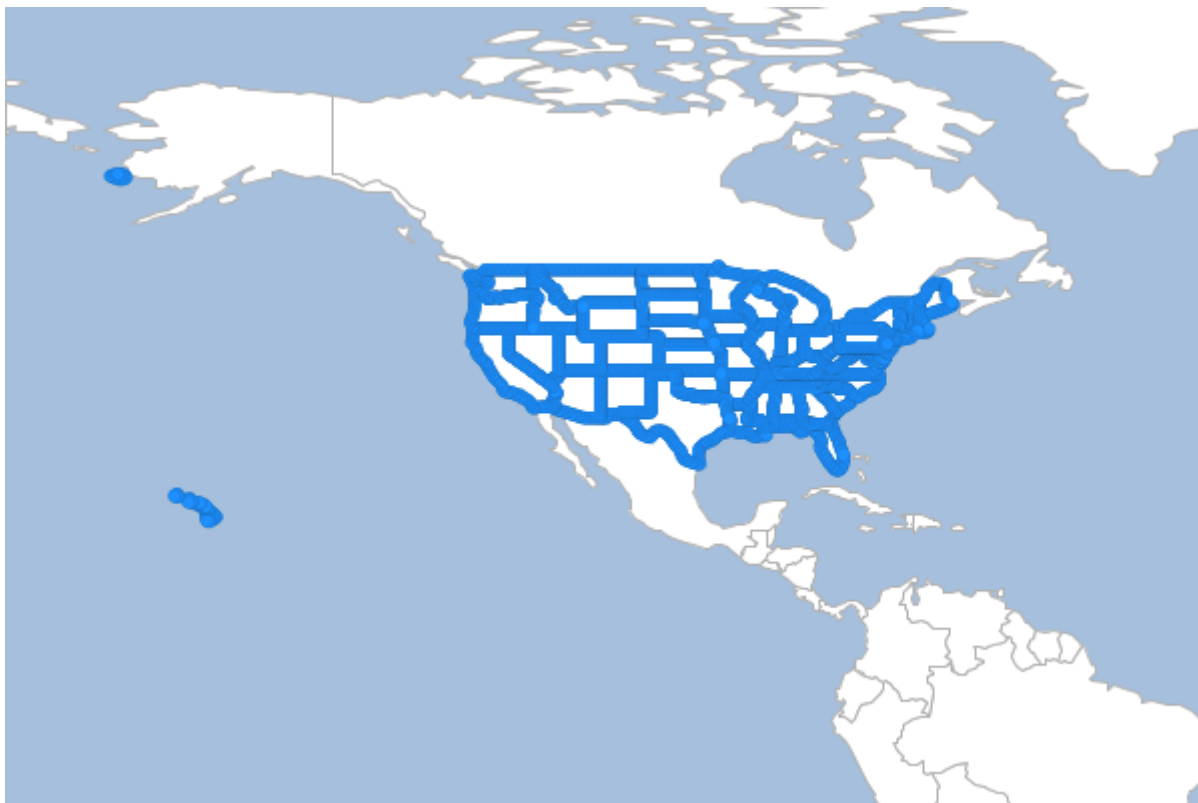
geo-shell> **map add layer** --name map --layer coordinates

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_densify.png!

geo-shell> **map draw** --name map --file examples/layer\_densify.png --bounds "-180,-8.233,-  
36.738,73.378"

Map map closed!

geo-shell> **map close** --name map



## Dissolve

Dissolve the Features of a Layer by a Field.

```
geo-shell> layer dissolve --input-name states --output-workspace layers --output-name regions
--field SUB_REGION
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
field	The field to use to dissolve features	true		
idField	The name of the id field	false	id	id
countField	The name of the count field	false	count	count

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name shapefiles --params examples/states/states.shp
Workspace shapefiles opened!
```

geo-shell> **layer open** --workspace shapefiles --layer states --name states

Opened Workspace shapefiles Layer states as states

geo-shell> **layer dissolve** --input-name states --output-workspace layers --output-name regions  
--field SUB\_REGION

Done dissolving states to regions by SUB\_REGION!

geo-shell> **style vector uniquevalues** --layer regions --field SUB\_REGION --colors MutedTerrain  
--file [silver] examples/regions.sld

Unique Values Vector Style for regions's SUB\_REGION Field written to /home/runner/work/geo-shell/geo-shell/examples/regions.sld!

geo-shell> **layer style set** --name regions --style examples/regions.sld

Style /home/runner/work/geo-shell/geo-shell/examples/regions.sld set on regions

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

Added regions layer to map map

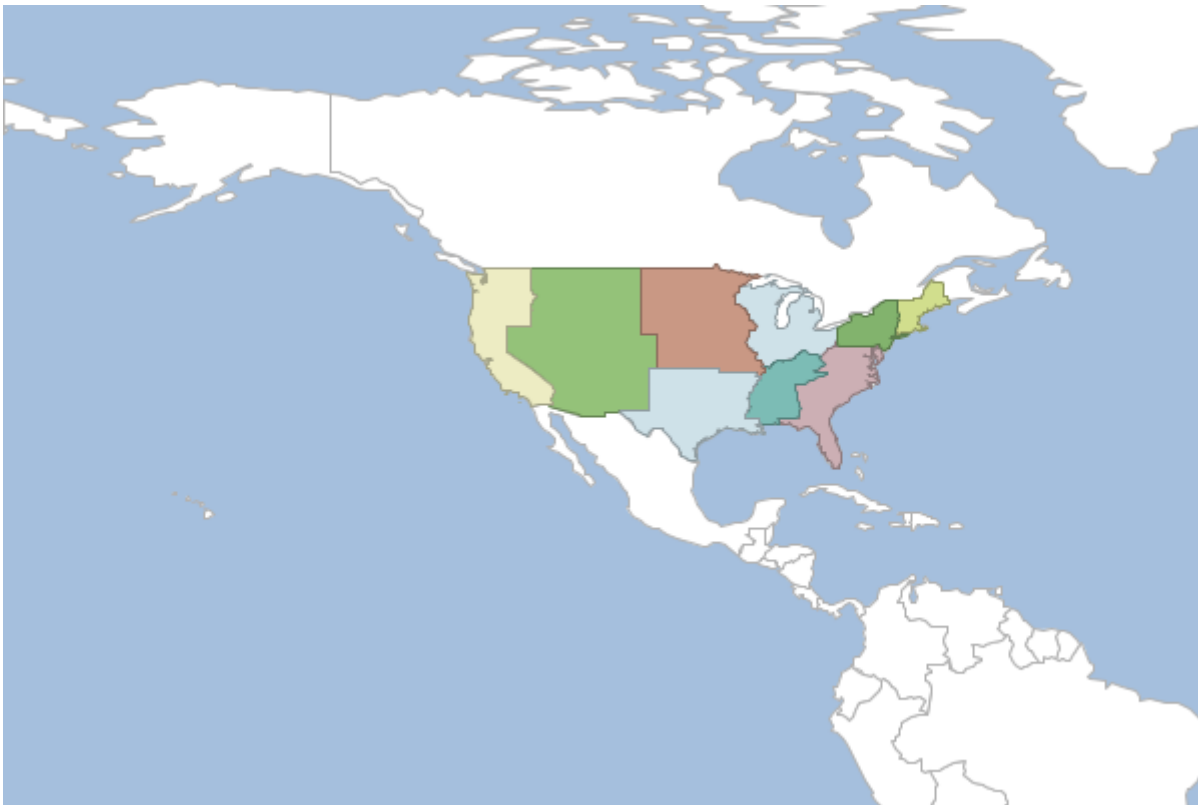
geo-shell> **map add layer** --name map --layer regions

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_dissolve.png!

geo-shell> **map draw** --name map --file examples/layer\_dissolve.png --bounds "-180,-8.233,-  
36.738,73.378"

Map map closed!

geo-shell> **map close** --name map



## Erase

Erase one Layer from another Layer

```
geo-shell> layer erase --input-name a --other-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

```
geo-shell> workspace open --name results --params memory
Workspace results opened!
```

```
geo-shell> layer open --workspace layers --layer a --name a
Opened Workspace layers Layer a as a
```

```
geo-shell> layer open --workspace layers --layer b --name b
```

Opened Workspace layers Layer b as b

```
geo-shell> layer erase --input-name a --other-name b --output-workspace results --output-name results
```

Done erasing a from b to create results!

```
geo-shell> style vector default --layer a --color red --opacity 0.75 --file examples/red.sld
```

Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!

```
geo-shell> style vector default --layer b --color green --opacity 0.75 --file examples/green.sld
```

Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!

```
geo-shell> style vector default --layer results --color blue --opacity 0.75 --file examples/blue.sld
```

Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!

```
geo-shell> layer style set --name a --style examples/red.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a

```
geo-shell> layer style set --name b --style examples/green.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b

```
geo-shell> layer style set --name results --style examples/blue.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results

```
geo-shell> map open --name map
```

Map map opened!

```
geo-shell> map add layer --name map --layer a
```

Added a layer to map map

```
geo-shell> map add layer --name map --layer b
```

Added b layer to map map

```
geo-shell> map add layer --name map --layer results
```

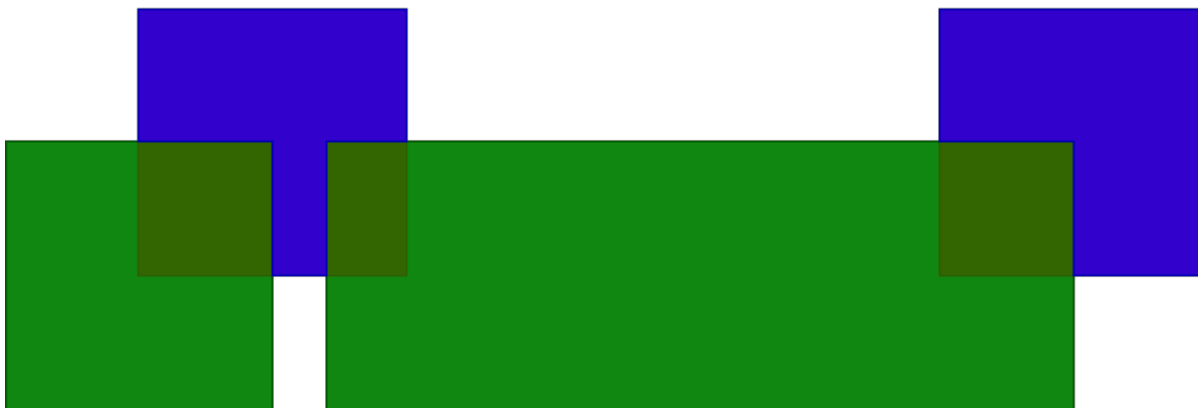
Added results layer to map map

```
geo-shell> map draw --name map --file examples/layer_erase.png
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_erase.png!

```
geo-shell> map close --name map
```

Map map closed!



## Grid Row / Column

Create a grid Layer with rows and columns

```
geo-shell> layer grid rowcol --output-workspace layers --output-name rowcol --geometry -180,-90,180,90 --rows 10 --columns 8
```

Name	Description	Mandatory	Specified Default	Unspecified Default
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
rows	The number of rows	true		
columns	The number of columns	true		
geometry	The constraining geometry	true		
type	The geometry type (point or polygon)	false	polygon	polygon
projection	The projection	false	EPSG:4326	EPSG:4326
geometry-field	The geometry field name	false	the_geom	the_geom



geo-shell> **workspace open** --name layers --params memory

Workspace layers opened!

geo-shell> **layer grid rowcol** --output-workspace layers --output-name rowcol --geometry -180,-90,180,90 --rows 10 --columns 8

Done!

geo-shell> **style vector default** --layer rowcol --color #1E90FF --opacity 0.30 --file examples/rowcol.sld

Default Vector Style for rowcol written to /home/runner/work/geo-shell/geo-shell/examples/rowcol.sld!

geo-shell> **layer style set** --name rowcol --style examples/rowcol.sld

Style /home/runner/work/geo-shell/geo-shell/examples/rowcol.sld set on rowcol

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer rowcol

Added rowcol layer to map map

geo-shell> **map draw** --name map --file examples/layer\_grid\_rowcol.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_grid\_rowcol.png!

geo-shell> **map close** --name map

Map map closed!



## Grid Width / Height

Create a grid Layer with cell width and height

```
geo-shell> layer grid widthheight --output-workspace layers --output-name widthheight --geometry
-180,-90,180,90 --cell-width 8 --cell-height 7
```

Name	Description	Mandatory	Specified Default	Unspecified Default
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
cell-width	The width of each cell	true		
cell-height	The height of each cell	true		
geometry	The constraining geometry	true		
type	The geometry type (point or polygon)	false	polygon	polygon
projection	The projection	false	EPSG:4326	EPSG:4326
geometry-field	The geometry field name	false	the_geom	the_geom

geo-shell> **workspace open** --name layers --params memory

Workspace layers opened!

geo-shell> **layer grid widthheight** --output-workspace layers --output-name widthheight --geometry -180,-90,180,90 --cell-width 8 --cell-height 7

Done!

geo-shell> **style vector default** --layer widthheight --color #1E90FF --opacity 0.30 --file examples/widthheight.sld

Default Vector Style for widthheight written to /home/runner/work/geo-shell/geo-shell/examples/widthheight.sld!

geo-shell> **layer style set** --name widthheight --style examples/widthheight.sld

Style /home/runner/work/geo-shell/geo-shell/examples/widthheight.sld set on widthheight

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer widthheight

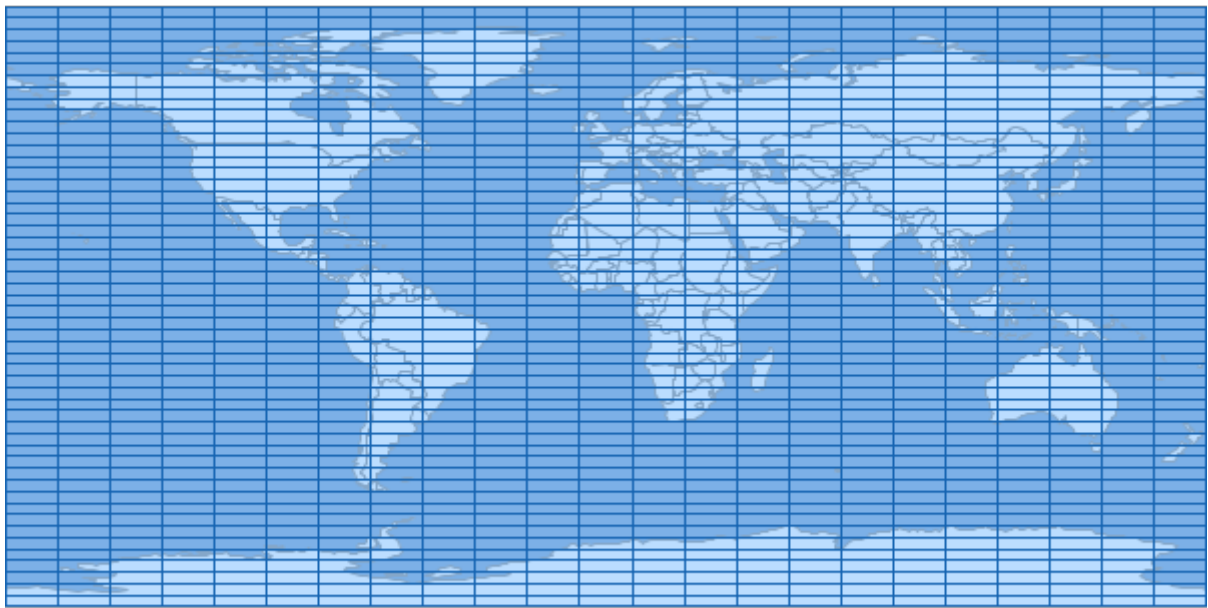
Added widthheight layer to map map

geo-shell> **map draw** --name map --file examples/layer\_grid\_widthheight.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_grid\_widthheight.png!

geo-shell> **map close** --name map

Map map closed!



## Identity

Calculate the intersection between a Layer with another Layer

```
geo-shell> layer identity --input-name a --other-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
postfix-all	Whether to postfix all field names when combining schemas	false	false	false
include-duplicates	Whether to include duplicate field names	false	true	true

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg  
Workspace layers opened!
```

geo-shell> **workspace open** --name results --params memory

Workspace results opened!

geo-shell> **layer open** --workspace layers --layer a --name a

Opened Workspace layers Layer a as a

geo-shell> **layer open** --workspace layers --layer b --name b

Opened Workspace layers Layer b as b

geo-shell> **layer identity** --input-name a --other-name b --output-workspace results --output-name results

Done calculating the identity between a and b to create results!

geo-shell> **style vector default** --layer a --color red --opacity 0.75 --file examples/red.sld

Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!

geo-shell> **style vector default** --layer b --color green --opacity 0.75 --file examples/green.sld

Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!

geo-shell> **style vector default** --layer results --color blue --opacity 0.75 --file examples/blue.sld

Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!

geo-shell> **layer style set** --name a --style examples/red.sld

Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a

geo-shell> **layer style set** --name b --style examples/green.sld

Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b

geo-shell> **layer style set** --name results --style examples/blue.sld

Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer a

Added a layer to map map

geo-shell> **map add layer** --name map --layer b

Added b layer to map map

geo-shell> **map add layer** --name map --layer results

Added results layer to map map

geo-shell> **map draw** --name map --file examples/layer\_identity.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_identity.png!

geo-shell> **map close** --name map

Map map closed!



## Intersection

Calculate the intersection between a Layer with another Layer

```
geo-shell> layer intersection --input-name a --other-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
postfix-all	Whether to postfix all field names when combining schemas	false	false	false
include-duplicates	Whether to include duplicate field names	false	true	true

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

geo-shell> **workspace open** --name results --params memory

Workspace results opened!

geo-shell> **layer open** --workspace layers --layer a --name a

Opened Workspace layers Layer a as a

geo-shell> **layer open** --workspace layers --layer b --name b

Opened Workspace layers Layer b as b

geo-shell> **layer intersection** --input-name a --other-name b --output-workspace results --output-name results

Done calculating the intersection between a and b to create results!

geo-shell> **style vector default** --layer a --color red --opacity 0.75 --file examples/red.sld

Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!

geo-shell> **style vector default** --layer b --color green --opacity 0.75 --file examples/green.sld

Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!

geo-shell> **style vector default** --layer results --color blue --opacity 0.75 --file examples/blue.sld

Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!

geo-shell> **layer style set** --name a --style examples/red.sld

Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a

geo-shell> **layer style set** --name b --style examples/green.sld

Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b

geo-shell> **layer style set** --name results --style examples/blue.sld

Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer a

Added a layer to map map

geo-shell> **map add layer** --name map --layer b

Added b layer to map map

geo-shell> **map add layer** --name map --layer results

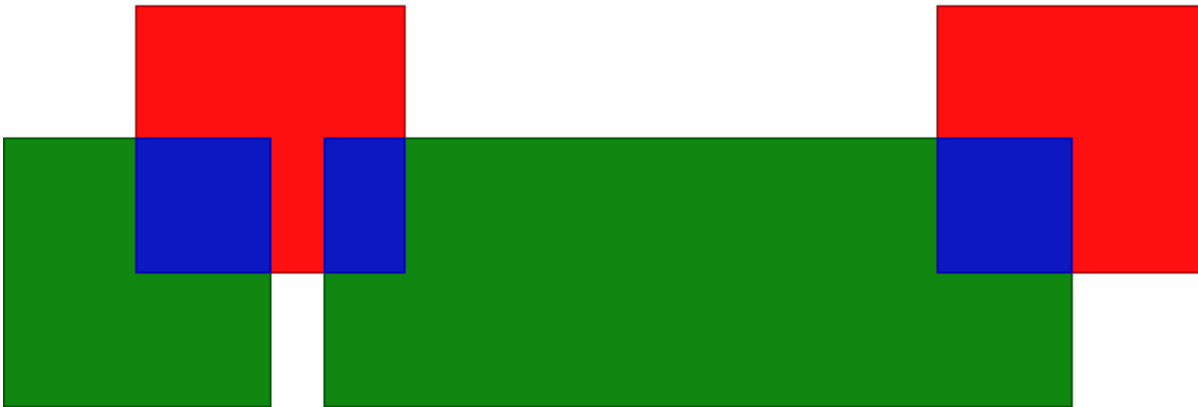
Added results layer to map map

geo-shell> **map draw** --name map --file examples/layer\_intersection.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_intersection.png!

geo-shell> **map close** --name map

Map map closed!



## Minimum Circle

Calculate the minimum bounding circle of the input Layer and save it to the output Layer.

```
geo-shell> layer mincircle --input-name countries --output-workspace layers --output-name mincircle
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
```



Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer mincircle** --input-name countries --output-workspace layers --output-name mincircle

Done!

geo-shell> **style vector default** --layer mincircle --color #1E90FF --opacity 0.25 --file examples/mincircle.sld

Default Vector Style for mincircle written to /home/runner/work/geo-shell/geo-shell/examples/mincircle.sld!

geo-shell> **layer style set** --name mincircle --style examples/mincircle.sld

Style /home/runner/work/geo-shell/geo-shell/examples/mincircle.sld set on mincircle

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer mincircle

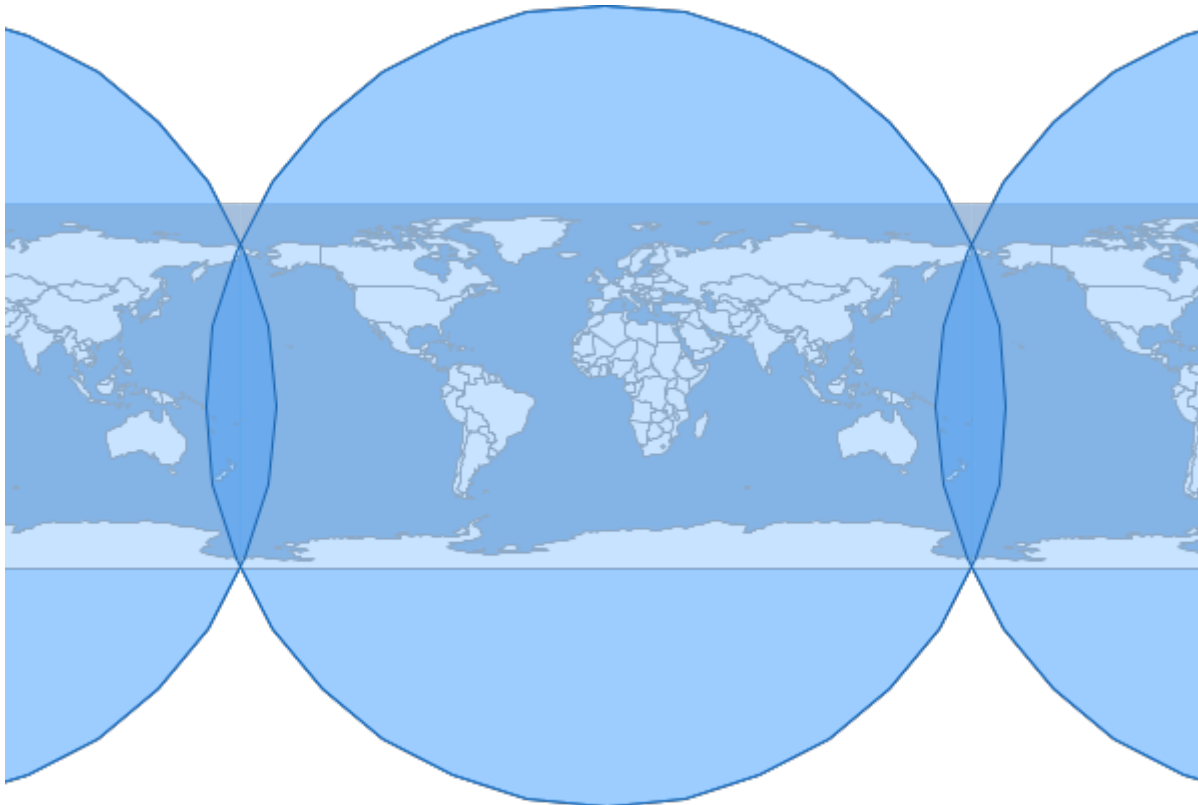
Added mincircle layer to map map

geo-shell> **map draw** --name map --file examples/layer\_mincircle.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_mincircle.png!

geo-shell> **map close** --name map

Map map closed!



## Minimum Circles

Calculate the minimum bounding circle of each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer mincircles --input-name countries --output-workspace layers --output-name mincircles
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer mincircles** --input-name countries --output-workspace layers --output-name mincircles

Done!

geo-shell> **style vector default** --layer mincircles --color #1E90FF --opacity 0.25 --file examples/mincircles.sld

Default Vector Style for mincircles written to /home/runner/work/geo-shell/geo-shell/examples/mincircles.sld!

geo-shell> **layer style set** --name mincircles --style examples/mincircles.sld

Style /home/runner/work/geo-shell/geo-shell/examples/mincircles.sld set on mincircles

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer mincircles

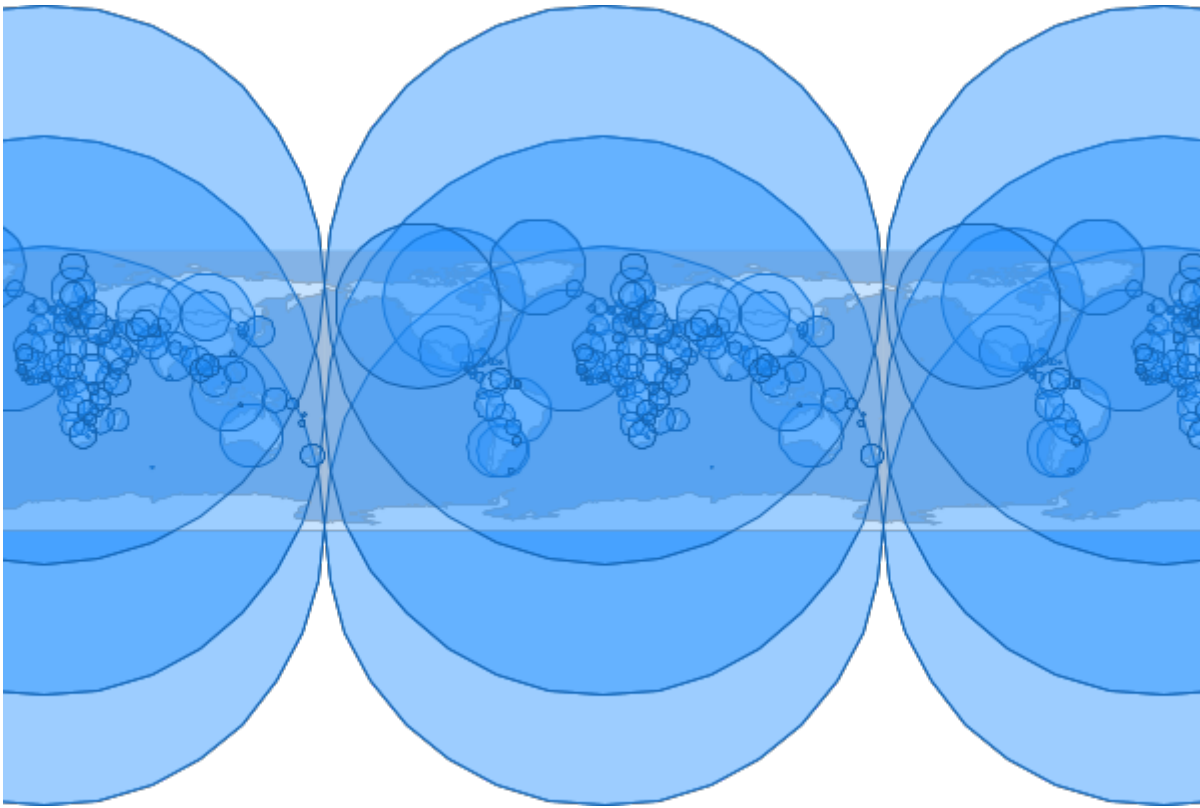
Added mincircles layer to map map

geo-shell> **map draw** --name map --file examples/layer\_mincircles.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_mincircles.png!

geo-shell> **map close** --name map

Map map closed!



## Minimum Rectangle

Calculate the minimum rectangle of the input Layer and save it to the output Layer.

```
geo-shell> layer minrect --input-name countries --output-workspace layers --output-name minrect
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer minrect** --input-name countries --output-workspace layers --output-name minrect  
Done!

geo-shell> **style vector default** --layer minrect --color #1E90FF --opacity 0.25 --file  
examples/minrect.sld  
Default Vector Style for minrect written to /home/runner/work/geo-shell/geo-shell/examples/minrect.sld!

geo-shell> **layer style set** --name minrect --style examples/minrect.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/minrect.sld set on minrect

geo-shell> **map open** --name map  
Map map opened!

geo-shell> **map add layer** --name map --layer ocean  
Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries  
Added countries layer to map map

geo-shell> **map add layer** --name map --layer minrect  
Added minrect layer to map map

geo-shell> **map draw** --name map --file examples/layer\_minrect.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_minrect.png!

geo-shell> **map close** --name map  
Map map closed!



## Minimum Rectangles

Calculate the minimum rectangle of each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer minrects --input-name countries --output-workspace layers --output-name minrects
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer minrects** --input-name countries --output-workspace layers --output-name minrects

Done!

geo-shell> **style vector default** --layer minrects --color #1E90FF --opacity 0.25 --file examples/minrects.sld

Default Vector Style for minrects written to /home/runner/work/geo-shell/geo-shell/examples/minrects.sld!

geo-shell> **layer style set** --name minrects --style examples/minrects.sld

Style /home/runner/work/geo-shell/geo-shell/examples/minrects.sld set on minrects

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer minrects

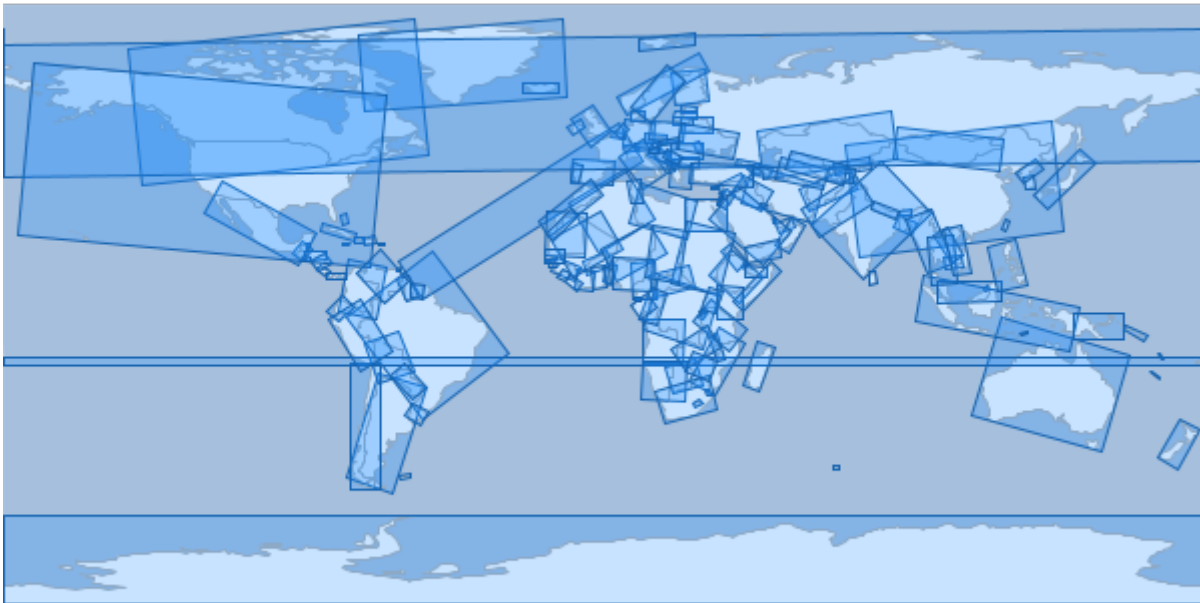
Added minrects layer to map map

geo-shell> **map draw** --name map --file examples/layer\_minrects.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_minrects.png!

geo-shell> **map close** --name map

Map map closed!



## Octangle Envelope

Calculate the octagonal envelope of the input Layer and save it to the output Layer.

```
geo-shell> layer octagonalenvelope --input-name countries --output-workspace layers --output
-name octagonalenvelope
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
```



Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer octagonalenvelope** --input-name countries --output-workspace layers --output  
-name octagonalenvelope

Done!

geo-shell> **style vector default** --layer octagonalenvelope --color #1E90FF --opacity 0.25 --file  
examples/octagonalenvelope.sld

Default Vector Style for octagonalenvelope written to /home/runner/work/geo-shell/geo-  
shell/examples/octagonalenvelope.sld!

geo-shell> **layer style set** --name octagonalenvelope --style examples/octagonalenvelope.sld

Style /home/runner/work/geo-shell/geo-shell/examples/octagonalenvelope.sld set on  
octagonalenvelope

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer octagonalenvelope

Added octagonalenvelope layer to map map

geo-shell> **map draw** --name map --file examples/layer\_octagonalenvelope.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_octagonalenvelope.png!

geo-shell> **map close** --name map

Map map closed!



## Octangle Envelopes

Calculate the octagonal envelope of each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer octagonalenvelopes --input-name countries --output-workspace layers --output
-name octagonalenvelopes
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **layer octagonalenvelopes** --input-name countries --output-workspace layers --output  
-name octagonalenvelopes

Done!

geo-shell> **style vector default** --layer octagonalenvelopes --color #1E90FF --opacity 0.25 --file  
examples/octagonalenvelopes.sld

Default Vector Style for octagonalenvelopes written to /home/runner/work/geo-shell/geo-  
shell/examples/octagonalenvelopes.sld!

geo-shell> **layer style set** --name octagonalenvelopes --style examples/octagonalenvelopes.sld

Style /home/runner/work/geo-shell/geo-shell/examples/octagonalenvelopes.sld set on  
octagonalenvelopes

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer octagonalenvelopes

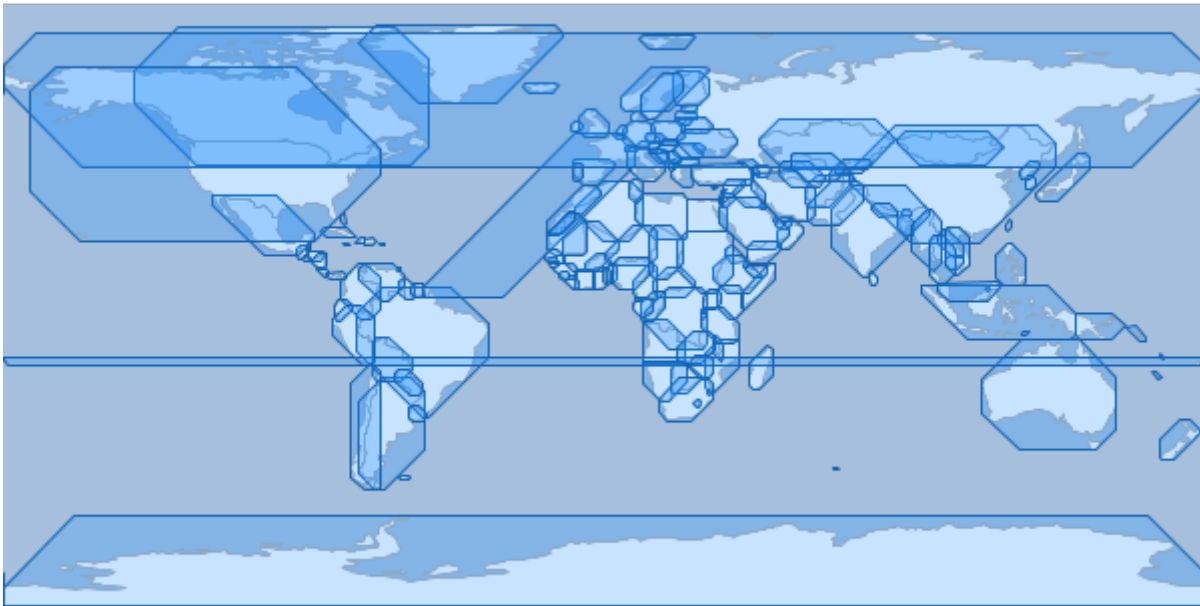
Added octagonalenvelopes layer to map map

geo-shell> **map draw** --name map --file examples/layer\_octagonalenvelopes.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_octagonalenvelopes.png!

geo-shell> **map close** --name map

Map map closed!



## Points Along Lines

Create points along lines

```
geo-shell> layer points along lines --input-name mississippi --output-workspace layers --output
-name points --distance 2.0
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
distance	The distance between points	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name rivers --params
src/test/resources/rivers/ne_110m_rivers_lake_centerlines.shp
Workspace rivers opened!
```

```
geo-shell> layer open --workspace rivers --layer ne_110m_rivers_lake_centerlines --name rivers
Opened Workspace rivers Layer ne_110m_rivers_lake_centerlines as rivers
```

```
geo-shell> layer copy --input-name rivers --output-workspace layers --output-name mississippi #
[gray]--filter# "name='Mississippi'"
Done!

geo-shell> style vector default --layer mississippi --color blue --file examples/river.sld
Default Vector Style for mississippi written to /home/runner/work/geo-shell/geo-
shell/examples/river.sld!

geo-shell> layer style set --name mississippi --style examples/river.sld
Style /home/runner/work/geo-shell/geo-shell/examples/river.sld set on mississippi

geo-shell> layer points along lines --input-name mississippi --output-workspace layers --output
-name points --distance 2.0
Done placing points along mississippi every 2.0 to create points!

geo-shell> style vector default --layer points --color green --file examples/points.sld
Default Vector Style for points written to /home/runner/work/geo-shell/geo-
shell/examples/points.sld!

geo-shell> layer style set --name points --style examples/points.sld
Style /home/runner/work/geo-shell/geo-shell/examples/points.sld set on points

geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!

geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries

geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> layer style set --name ocean --style examples/ocean.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> map open --name map
Map map opened!

geo-shell> map add layer --name map --layer ocean
Added ocean layer to map map

geo-shell> map add layer --name map --layer countries
Added countries layer to map map

geo-shell> map add layer --name map --layer mississippi
Added mississippi layer to map map

geo-shell> map add layer --name map --layer points
Added points layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_points_along_lines.png --bounds "-180,-8.233,-36.738,73.378"
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_points\_along\_lines.png!



## Simplify

Simplify the features of the input Layer and save them to the output Layer

```
geo-shell> layer simplify --input-name mississippi --output-workspace layers --output-name simplified --distance 1.0
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
algorithm	The simplify algorithm (DouglasPeucker - dp or TopologyPreserving - tp)	false	tp	tp
distance	The distance tolerance	true		

geo-shell> **workspace open** --name layers --params memory

Workspace layers opened!

geo-shell> **workspace open** --name rivers --params  
src/test/resources/rivers/ne\_110m\_rivers\_lake\_centerlines.shp

Workspace rivers opened!

geo-shell> **layer open** --workspace rivers --layer ne\_110m\_rivers\_lake\_centerlines --name rivers

Opened Workspace rivers Layer ne\_110m\_rivers\_lake\_centerlines as rivers

geo-shell> **layer copy** --input-name rivers --output-workspace layers --output-name mississippi #  
[gray]--filter# "name='Mississippi'"

Done!

geo-shell> **layer simplify** --input-name mississippi --output-workspace layers --output-name  
simplified --distance 1.0

Done!

geo-shell> **style vector default** --layer simplified --color blue --file examples/river.sld

Default Vector Style for simplified written to /home/runner/work/geo-shell/geo-shell/examples/river.sld!

geo-shell> **layer style set** --name simplified --style examples/river.sld

Style /home/runner/work/geo-shell/geo-shell/examples/river.sld set on simplified

geo-shell> **layer coordinates** --input-name simplified --output-workspace layers --output-name  
points

Done!

geo-shell> **style vector default** --layer points --color green --file examples/points.sld

Default Vector Style for points written to /home/runner/work/geo-shell/geo-shell/examples/points.sld!

geo-shell> **layer style set** --name points --style examples/points.sld

Style /home/runner/work/geo-shell/geo-shell/examples/points.sld set on points

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

```
geo-shell> map open --name map
```

Map map opened!

```
geo-shell> map add layer --name map --layer ocean
```

Added ocean layer to map map

```
geo-shell> map add layer --name map --layer countries
```

Added countries layer to map map

```
geo-shell> map add layer --name map --layer simplified
```

Added simplified layer to map map

```
geo-shell> map add layer --name map --layer points
```

Added points layer to map map

```
geo-shell> map draw --name map --file examples/layer_simplify.png --bounds "-180,-8.233,-36.738,73.378"
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_simplify.png!

```
geo-shell> map close --name map
```

Map map closed!



## Symmetric Difference

Calculate the symmetric difference between a Layer and another Layer.

```
geo-shell> layer symdifference --input-name a --other-name b --output-workspace results --output-name results
```



Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
postfix-all	Whether to postfix all field names when combining schemas	false	false	false
include-duplicates	Whether to include duplicate field names	false	true	true

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

```
geo-shell> workspace open --name results --params memory
Workspace results opened!
```

```
geo-shell> layer open --workspace layers --layer a --name a
Opened Workspace layers Layer a as a
```

```
geo-shell> layer open --workspace layers --layer b --name b
Opened Workspace layers Layer b as b
```

```
geo-shell> layer symdifference --input-name a --other-name b --output-workspace results --output
-name results
Done calculating the symmetric difference between a and b to create results!
```

```
geo-shell> style vector default --layer a --color red --opacity 0.75 --file examples/red.sld
Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!
```

```
geo-shell> style vector default --layer b --color green --opacity 0.75 --file examples/green.sld
Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!
```

```
geo-shell> style vector default --layer results --color blue --opacity 0.75 --file examples/blue.sld
Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!
```

```
geo-shell> layer style set --name a --style examples/red.sld
Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a
```

```
geo-shell> layer style set --name b --style examples/green.sld
Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b
```

```
geo-shell> layer style set --name results --style examples/blue.sld
Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results
```

```
geo-shell> map open --name map
Map map opened!
```

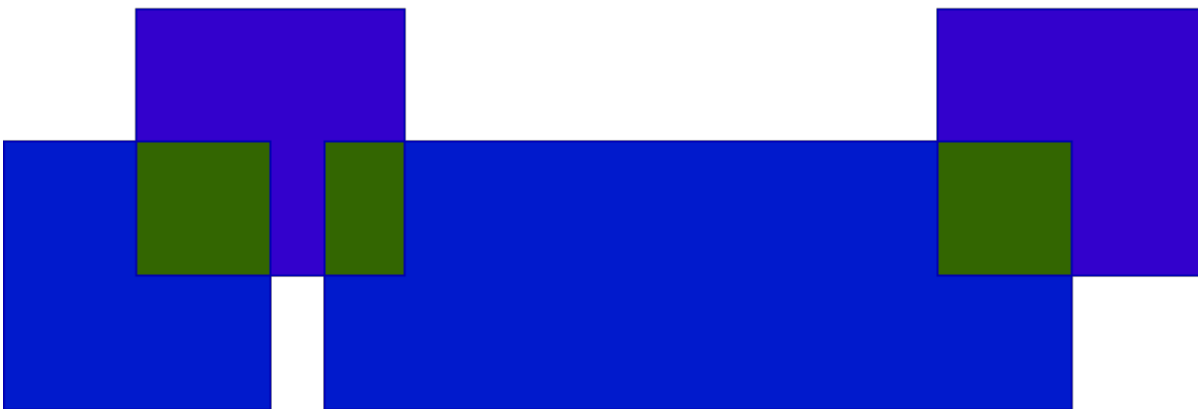
```
geo-shell> map add layer --name map --layer a
Added a layer to map map
```

```
geo-shell> map add layer --name map --layer b
Added b layer to map map
```

```
geo-shell> map add layer --name map --layer results
Added results layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_symdifference.png
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_symdifference.png!
```

```
geo-shell> map close --name map
Map map closed!
```



## Transform

Transform the features of the input Layer and save them to the output Layer

```
geo-shell> layer transform --input-name points --output-workspace layers --output-name polys
--transforms "the_geom=buffer(the_geom, 5)|id=id*10"
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
transforms	The pipe delimited list of transforms (field=expression or function)	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer random --output-workspace layers --output-name points --geometry -180,-90,180,90
--number 100 --projection EPSG:4326
Done!
```

```
geo-shell> style vector default --layer points --color #1E90FF --file examples/points.sld
Default Vector Style for points written to /home/runner/work/geo-shell/geo-shell/examples/points.sld!
```

```
geo-shell> layer style set --name points --style examples/points.sld
Style /home/runner/work/geo-shell/geo-shell/examples/points.sld set on points
```

```
geo-shell> layer transform --input-name points --output-workspace layers --output-name polys
--transforms "the_geom=buffer(the_geom, 5)|id=id*10"
Done transforming points to polys with the_geom=buffer(the_geom, 5)|id=id*10!
```

```
geo-shell> style vector default --layer polys --color blue --opacity 0.25 --file examples/polys.sld
Default Vector Style for polys written to /home/runner/work/geo-shell/geo-shell/examples/polys.sld!
```

```
geo-shell> layer style set --name polys --style examples/polys.sld
Style /home/runner/work/geo-shell/geo-shell/examples/polys.sld set on polys
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean
```

```
geo-shell> layer style set --name ocean --style examples/ocean.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

```
geo-shell> map open --name map  
Map map opened!
```

```
geo-shell> map add layer --name map --layer ocean  
Added ocean layer to map map
```

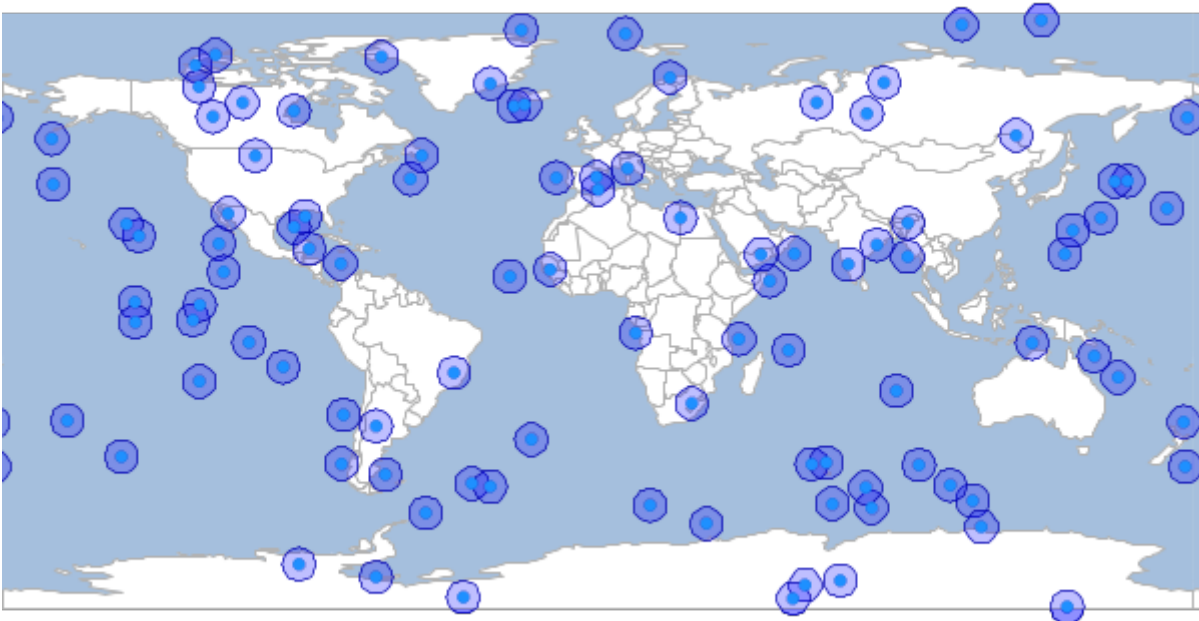
```
geo-shell> map add layer --name map --layer countries  
Added countries layer to map map
```

```
geo-shell> map add layer --name map --layer polys  
Added polys layer to map map
```

```
geo-shell> map add layer --name map --layer points  
Added points layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_transform.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_transform.png!
```

```
geo-shell> map close --name map  
Map map closed!
```



## Union

Union a Layer with another Layer

```
geo-shell> layer union --input-name a --other-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
postfix-all	Whether to postfix all field names when combining schemas	false	false	false
include-duplicates	Whether to include duplicate field names	false	true	true

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

```
geo-shell> workspace open --name results --params memory
Workspace results opened!
```

```
geo-shell> layer open --workspace layers --layer a --name a
Opened Workspace layers Layer a as a
```

```
geo-shell> layer open --workspace layers --layer b --name b
Opened Workspace layers Layer b as b
```

```
geo-shell> layer union --input-name a --other-name b --output-workspace results --output-name results
Done unioning a and b to create results!
```

```
geo-shell> style vector default --layer a --color red --opacity 0.75 --file examples/red.sld
Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!
```

```
geo-shell> style vector default --layer b --color green --opacity 0.75 --file examples/green.sld
Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!
```

```
geo-shell> style vector default --layer results --color blue --opacity 0.75 --file examples/blue.sld
Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!
```

```
geo-shell> layer style set --name a --style examples/red.sld
Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a
```

```
geo-shell> layer style set --name b --style examples/green.sld
Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b
```

```
geo-shell> layer style set --name results --style examples/blue.sld
Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results
```

```
geo-shell> map open --name map
Map map opened!
```

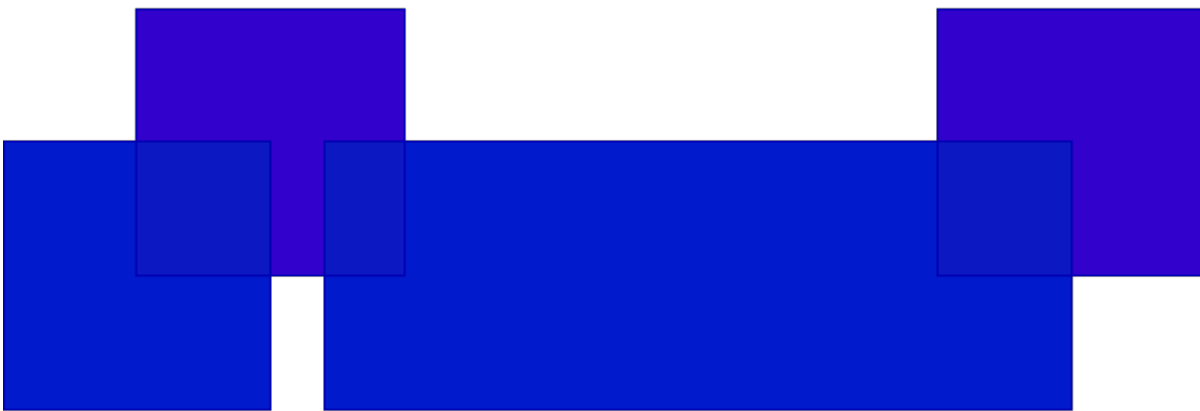
```
geo-shell> map add layer --name map --layer a
Added a layer to map map
```

```
geo-shell> map add layer --name map --layer b
Added b layer to map map
```

```
geo-shell> map add layer --name map --layer results
Added results layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_union.png
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_union.png!
```

```
geo-shell> map close --name map
Map map closed!
```



## Update

Calculate the update between a Layer with another Layer

```
geo-shell> layer update --input-name a --other-name b --output-workspace results --output-name results
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
other-name	The other Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params src/test/resources/layeralgebra.gpkg
Workspace layers opened!
```

```
geo-shell> workspace open --name results --params memory
Workspace results opened!
```

```
geo-shell> layer open --workspace layers --layer a --name a
Opened Workspace layers Layer a as a
```

```
geo-shell> layer open --workspace layers --layer b --name b
Opened Workspace layers Layer b as b
```

```
geo-shell> layer update --input-name a --other-name b --output-workspace results --output-name results
Done calculating the update between a and b to create results!
```

```
geo-shell> style vector default --layer a --color red --opacity 0.75 --file examples/red.sld
Default Vector Style for a written to /home/runner/work/geo-shell/geo-shell/examples/red.sld!
```

```
geo-shell> style vector default --layer b --color green --opacity 0.75 --file examples/green.sld
Default Vector Style for b written to /home/runner/work/geo-shell/geo-shell/examples/green.sld!
```

```
geo-shell> style vector default --layer results --color blue --opacity 0.75 --file examples/blue.sld
Default Vector Style for results written to /home/runner/work/geo-shell/geo-shell/examples/blue.sld!
```

```
geo-shell> layer style set --name a --style examples/red.sld
Style /home/runner/work/geo-shell/geo-shell/examples/red.sld set on a
```

```
geo-shell> layer style set --name b --style examples/green.sld
Style /home/runner/work/geo-shell/geo-shell/examples/green.sld set on b
```

```
geo-shell> layer style set --name results --style examples/blue.sld
Style /home/runner/work/geo-shell/geo-shell/examples/blue.sld set on results
```

```
geo-shell> map open --name map
Map map opened!
```

```
geo-shell> map add layer --name map --layer a
Added a layer to map map
```

```
geo-shell> map add layer --name map --layer b
```

Added b layer to map map

```
geo-shell> map add layer --name map --layer results
```

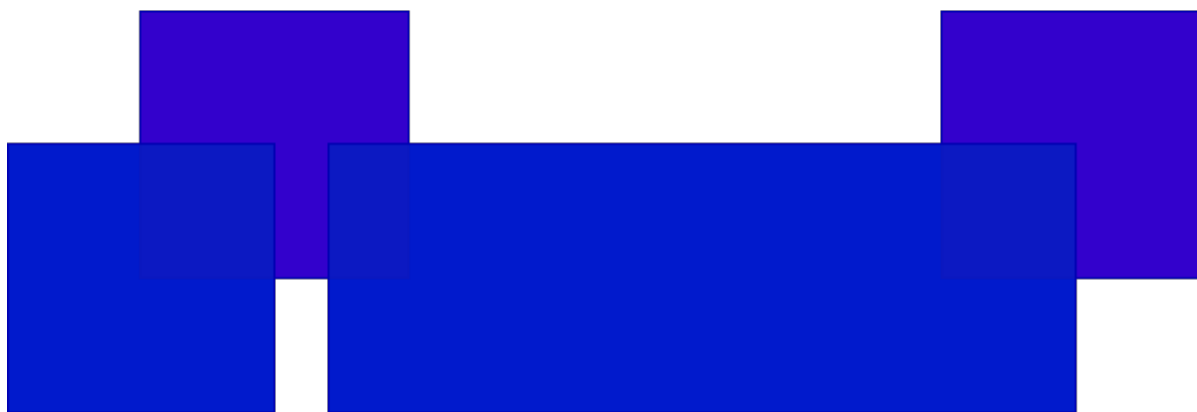
Added results layer to map map

```
geo-shell> map draw --name map --file examples/layer_update.png
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_update.png!

```
geo-shell> map close --name map
```

Map map closed!



## Voronoi

Calculate a voronoi diagram of the input Layer and save it to the output Layer.

```
geo-shell> layer voronoi --input-name places --output-workspace layers --output-name voronoi
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom



geo-shell> **workspace open** --name layers --params memory

Workspace layers opened!

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer places --name places

Opened Workspace naturalearth Layer places as places

geo-shell> **layer voronoi** --input-name places --output-workspace layers --output-name voronoi

Done!

geo-shell> **style vector default** --layer voronoi --color #1E90FF --opacity 0.25 --file examples/voronoi.sld

Default Vector Style for voronoi written to /home/runner/work/geo-shell/geo-shell/examples/voronoi.sld!

geo-shell> **layer style set** --name voronoi --style examples/voronoi.sld

Style /home/runner/work/geo-shell/geo-shell/examples/voronoi.sld set on voronoi

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map

Map map opened!

geo-shell> **map add layer** --name map --layer ocean

Added ocean layer to map map

geo-shell> **map add layer** --name map --layer countries

Added countries layer to map map

geo-shell> **map add layer** --name map --layer voronoi

Added voronoi layer to map map

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_voronoi.png!

geo-shell> **map draw** --name map --file examples/layer\_voronoi.png --bounds -180,-90,180,90

Map map closed!

geo-shell> **map close** --name map



## Random Points

Create a Layer with a number of randomly located points

```
geo-shell> layer random --output-workspace layers --output-name points --geometry -180,-90,180,90
--number 100 --projection EPSG:4326
```

Name	Description	Mandatory	Specified Default	Unspecified Default
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
number	The number of points	true		
geometry	The geometry or bounds in which to create the points	true		
projection	The projection	true		
id-field	The id field name	false	id	id
geometry-field	The geometry field name	false	the_geom	the_geom
grid	Whether to create points in a grid	false	false	false

constrained-to-circle	Whether points should be constrained to a circle	false	false	false
gutter-fraction	The size of gutter between cells	false	0	0

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer random --output-workspace layers --output-name points --geometry -180,-90,180,90
--number 100 --projection EPSG:4326
Done!
```

```
geo-shell> style vector default --layer points --color #1E90FF --file examples/points.sld
Default Vector Style for points written to /home/runner/work/geo-shell/geo-shell/examples/points.sld!
```

```
geo-shell> layer style set --name points --style examples/points.sld
Style /home/runner/work/geo-shell/geo-shell/examples/points.sld set on points
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean
```

```
geo-shell> layer style set --name ocean --style examples/ocean.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean
```

```
geo-shell> map open --name randomMap
Map randomMap opened!
```

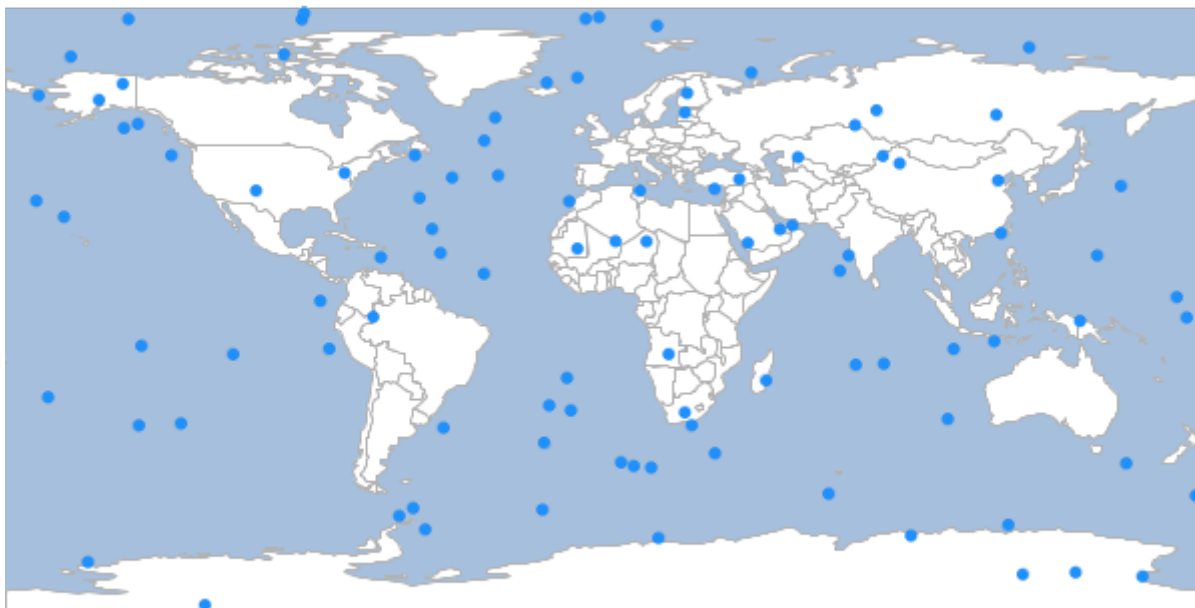
```
geo-shell> map add layer --name randomMap --layer ocean
Added ocean layer to map randomMap
```

```
geo-shell> map add layer --name randomMap --layer countries
Added countries layer to map randomMap
```

```
geo-shell> map add layer --name randomMap --layer points
Added points layer to map randomMap
```

```
geo-shell> map draw --name randomMap --file examples/random_points.png
Done drawing /home/runner/work/geo-shell/geo-shell/examples/random_points.png!
```

```
geo-shell> map close --name randomMap
Map randomMap closed!
```



## Buffer

Buffer the input Layer to the output Layer.

```
geo-shell> layer buffer --input-name points --output-workspace layers --output-name buffers
--distance 10
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
distance	The buffer distance	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer random --output-workspace layers --output-name points --geometry -180,-90,180,90
--number 100 --projection EPSG:4326
Done!
```

```
geo-shell> layer buffer --input-name points --output-workspace layers --output-name buffers
--distance 10
Done!

geo-shell> style vector default --layer points --color #1E90FF --file examples/points.sld
Default Vector Style for points written to /home/runner/work/geo-shell/geo-shell/examples/points.sld!

geo-shell> style vector default --layer buffers --color #1E90FF --opacity 0.25 --file
examples/buffers.sld
Default Vector Style for buffers written to /home/runner/work/geo-shell/geo-shell/examples/buffers.sld!

geo-shell> layer style set --name points --style examples/points.sld
Style /home/runner/work/geo-shell/geo-shell/examples/points.sld set on points

geo-shell> layer style set --name buffers --style examples/buffers.sld
Style /home/runner/work/geo-shell/geo-shell/examples/buffers.sld set on buffers

geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!

geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries

geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> layer style set --name ocean --style examples/ocean.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> map open --name map
Map map opened!

geo-shell> map add layer --name map --layer ocean
Added ocean layer to map map

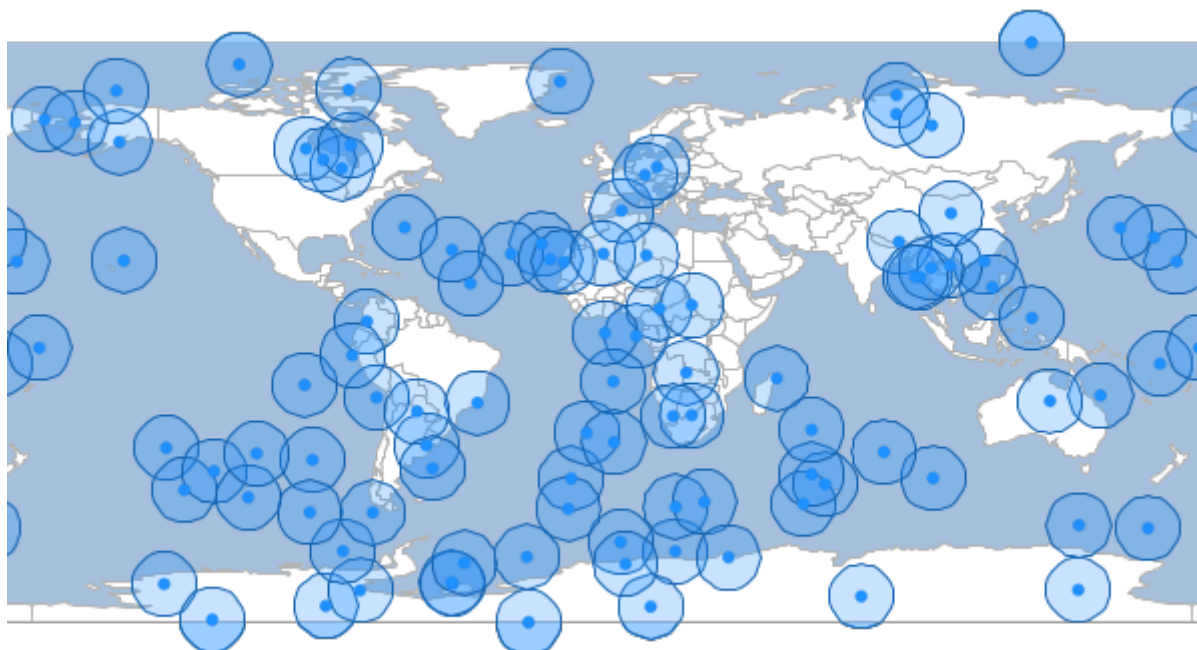
geo-shell> map add layer --name map --layer countries
Added countries layer to map map

geo-shell> map add layer --name map --layer buffers
Added buffers layer to map map

geo-shell> map add layer --name map --layer points
Added points layer to map map

geo-shell> map draw --name map --file examples/layer_buffer.png
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_buffer.png!
```

```
geo-shell> map close --name map
Map map closed!
```



## Centroid

Calculate the centroids of the input Layer to the output Layer.

```
geo-shell> layer centroid --input-name countries --output-name centroids --output-workspace
layers
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

```
geo-shell> layer centroid --input-name countries --output-name centroids --output-workspace  
layers  
Done!
```

```
geo-shell> style vector default --layer centroids --color #1E90FF --file examples/centroids.sld  
Default Vector Style for centroids written to /home/runner/work/geo-shell/geo-  
shell/examples/centroids.sld!
```

```
geo-shell> layer style set --name centroids --style examples/centroids.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/centroids.sld set on centroids
```

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean
```

```
geo-shell> layer style set --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean
```

```
geo-shell> map open --name map  
Map map opened!
```

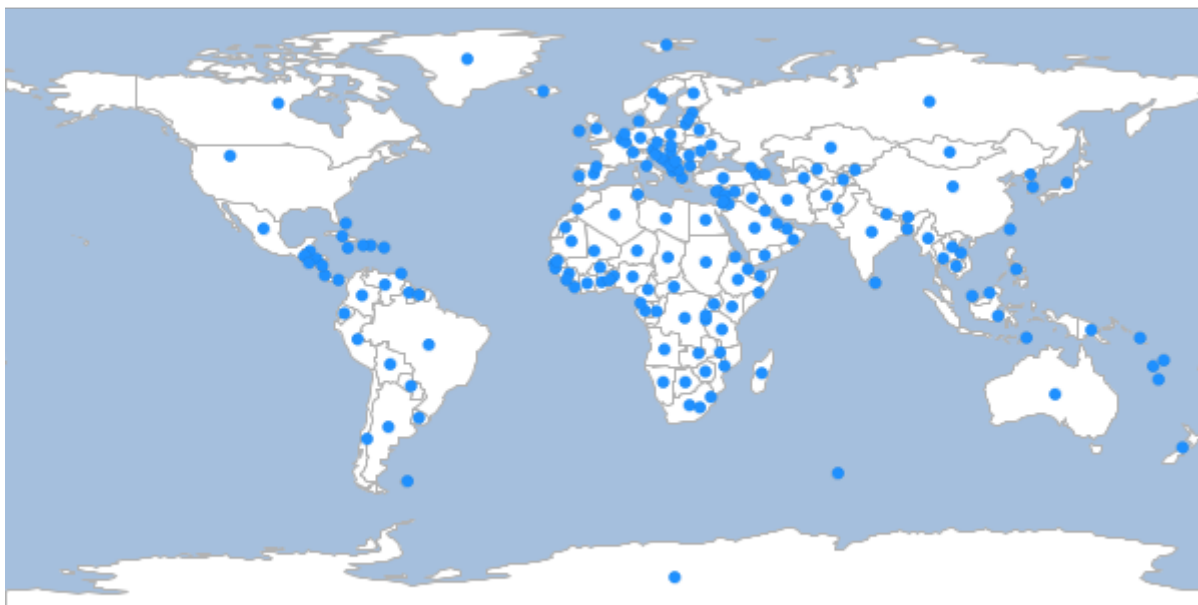
```
geo-shell> map add layer --name map --layer ocean  
Added ocean layer to map map
```

```
geo-shell> map add layer --name map --layer countries  
Added countries layer to map map
```

```
geo-shell> map add layer --name map --layer centroids  
Added centroids layer to map map
```

```
geo-shell> map draw --name map --file examples/layer_centroid.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_centroid.png!
```

```
geo-shell> map close --name map  
Map map closed!
```



## Interior Point

Calculate the interior points of the input Layer to the output Layer.

```
geo-shell> layer interiorpoint --input-name countries --output-name interiorpoints --output
-workspace layers
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries
```

```
geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries
```

```
geo-shell> layer interiorpoint --input-name countries --output-name interiorpoints --output
```



-workspace layers

Done!

```
geo-shell> style vector default --layer interiorpoints --color #1E90FF --file  
examples/interiorpoints.sld
```

Default Vector Style for interiorpoints written to /home/runner/work/geo-shell/geo-shell/examples/interiorpoints.sld!

```
geo-shell> layer style set --name interiorpoints --style examples/interiorpoints.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/interiorpoints.sld set on interiorpoints

```
geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
```

Opened Workspace naturalearth Layer ocean as ocean

```
geo-shell> layer style set --name ocean --style examples/ocean.sld
```

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

```
geo-shell> map open --name map
```

Map map opened!

```
geo-shell> map add layer --name map --layer ocean
```

Added ocean layer to map map

```
geo-shell> map add layer --name map --layer countries
```

Added countries layer to map map

```
geo-shell> map add layer --name map --layer interiorpoints
```

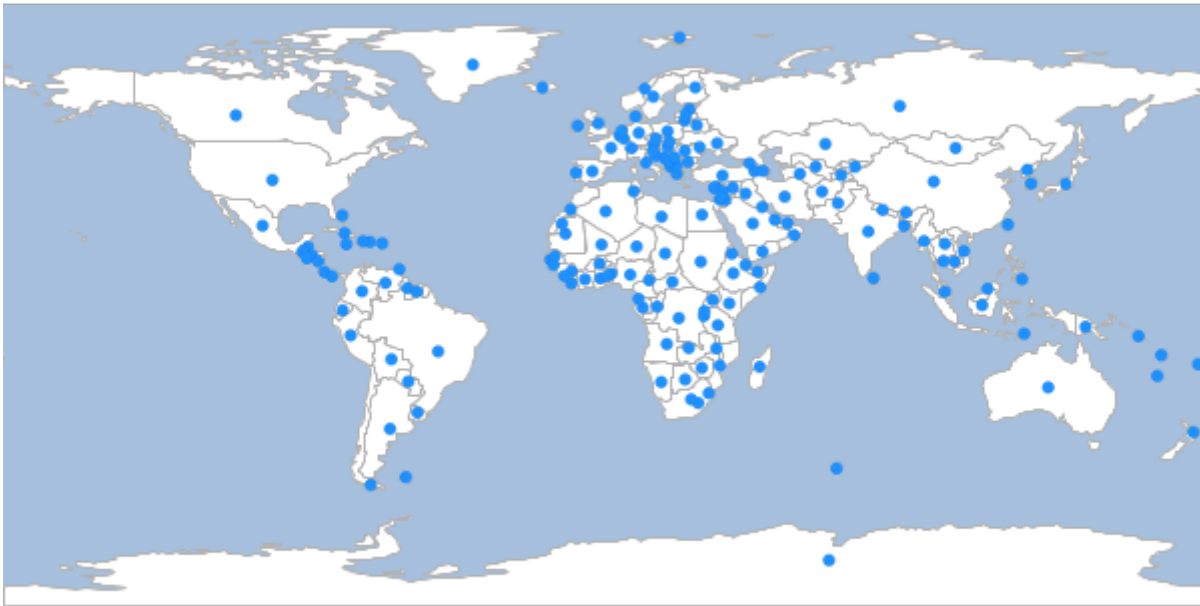
Added interiorpoints layer to map map

```
geo-shell> map draw --name map --file examples/layer_interiorpoint.png
```

Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_interiorpoint.png!

```
geo-shell> map close --name map
```

Map map closed!



## Extent

Calculate the extent of the input Layer and save it to the output Layer.

```
geo-shell> layer extent --input-name states --output-workspace layers --output-name usa
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		
geometry-field	The geometry field name	false	the_geom	the_geom

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer style set --name states --style examples/states.sld
Unable to find Layer states
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

geo-shell> **layer extent** --input-name states --output-workspace layers --output-name usa  
Done!

geo-shell> **style vector default** --layer usa --color #1E90FF --opacity 0.25 --file examples/extent.sld  
Default Vector Style for usa written to /home/runner/work/geo-shell/geo-shell/examples/extent.sld!

geo-shell> **layer style set** --name usa --style examples/extent.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/extent.sld set on usa

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name map  
Map map opened!

geo-shell> **map add layer** --name map --layer ocean  
Added ocean layer to map map

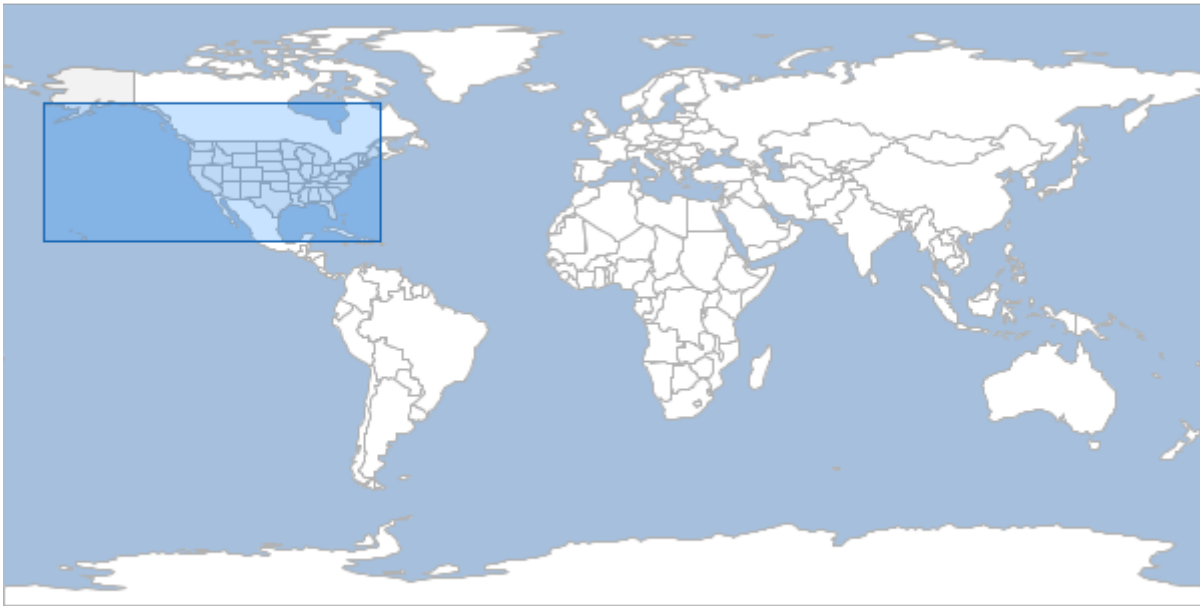
geo-shell> **map add layer** --name map --layer countries  
Added countries layer to map map

geo-shell> **map add layer** --name map --layer states  
Added states layer to map map

geo-shell> **map add layer** --name map --layer usa  
Added usa layer to map map

geo-shell> **map draw** --name map --file examples/layer\_extent.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer\_extent.png!

geo-shell> **map close** --name map  
Map map closed!



## Extents

Calculate the extents of each Feature in the input Layer and save them to the output Layer.

```
geo-shell> layer extents --input-name states --output-workspace layers --output-name state_extents
```

Name	Description	Mandatory	Specified Default	Unspecified Default
input-name	The Layer name	true		
output-workspace	The output Layer Workspace	true		
output-name	The output Layer name	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> workspace open --name naturalearth --params examples/naturalearth.gpkg
Workspace naturalearth opened!
```

```
geo-shell> layer style set --name states --style examples/states.sld
Unable to find Layer states
```

```
geo-shell> layer open --workspace naturalearth --layer states --name states
Opened Workspace naturalearth Layer states as states
```

```
geo-shell> layer extents --input-name states --output-workspace layers --output-name state_extents
Done!
```

```
geo-shell> style vector default --layer state_extents --color #1E90FF --opacity 0.25 --file
examples/extent.sld
Default Vector Style for state_extents written to /home/runner/work/geo-shell/geo-
shell/examples/extent.sld!

geo-shell> layer style set --name state_extents --style examples/extent.sld
Style /home/runner/work/geo-shell/geo-shell/examples/extent.sld set on state_extents

geo-shell> layer open --workspace naturalearth --layer countries --name countries
Opened Workspace naturalearth Layer countries as countries

geo-shell> layer style set --name countries --style examples/countries.sld
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> layer open --workspace naturalearth --layer ocean --name ocean
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> layer style set --name ocean --style examples/ocean.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> map open --name map
Map map opened!

geo-shell> map add layer --name map --layer ocean
Added ocean layer to map map

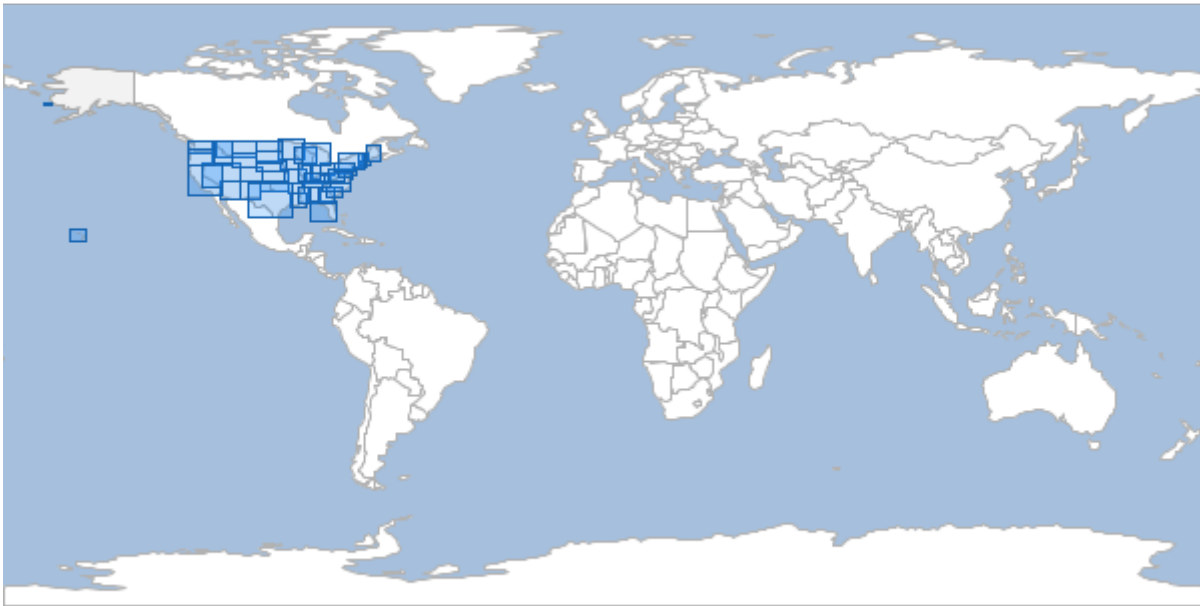
geo-shell> map add layer --name map --layer countries
Added countries layer to map map

geo-shell> map add layer --name map --layer states
Added states layer to map map

geo-shell> map add layer --name map --layer state_extents
Added state_extents layer to map map

geo-shell> map draw --name map --file examples/layer_extents.png
Done drawing /home/runner/work/geo-shell/geo-shell/examples/layer_extents.png!

geo-shell> map close --name map
Map map closed!
```



## Graticule

### Square

Create a square graticule.

```
geo-shell> layer graticule square --workspace layers --name squares --bounds -180,-90,180,90
--length 20
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
name	The new Layer name	true		
bounds	The bounds	true		
length	The length	true		
spacing	The spacing	false	-1	-1

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer graticule square --workspace layers --name squares --bounds -180,-90,180,90
--length 20
Created Square Graticule Layer squares!
```

geo-shell> **style vector default** --layer squares --color #1E90FF --opacity 0.30 --file examples/squares.sld  
Default Vector Style for squares written to /home/runner/work/geo-shell/geo-shell/examples/squares.sld!

geo-shell> **layer style set** --name squares --style examples/squares.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/squares.sld set on squares

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg  
Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name graticule  
Map graticule opened!

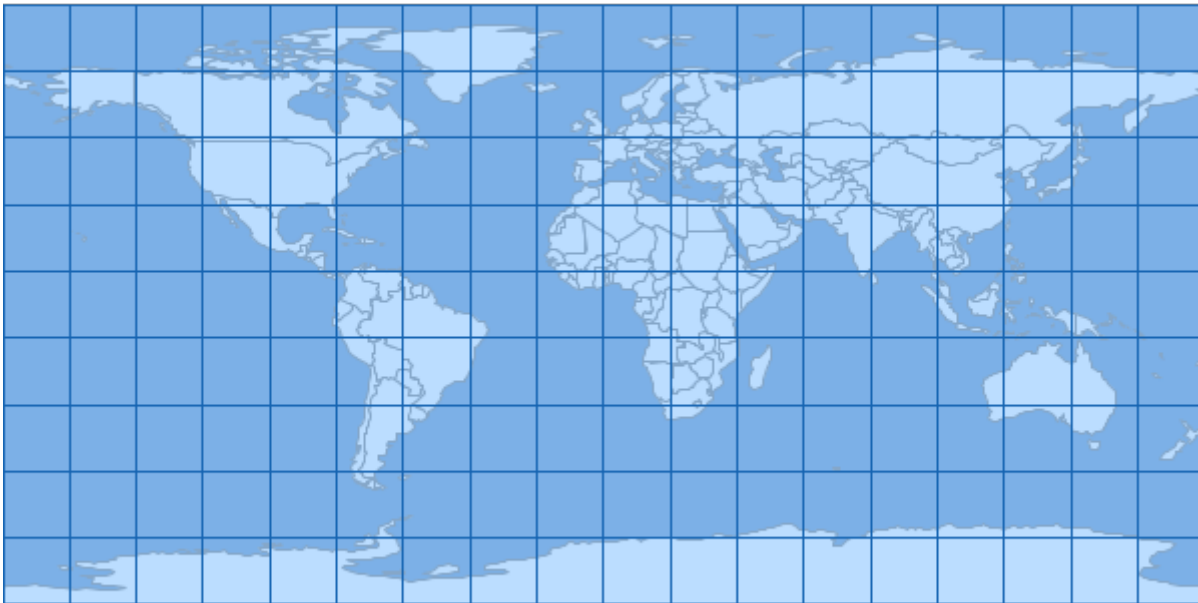
geo-shell> **map add layer** --name graticule --layer ocean  
Added ocean layer to map graticule

geo-shell> **map add layer** --name graticule --layer countries  
Added countries layer to map graticule

geo-shell> **map add layer** --name graticule --layer squares  
Added squares layer to map graticule

geo-shell> **map draw** --name graticule --file examples/square\_graticules.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/square\_graticules.png!

geo-shell> **map close** --name graticule  
Map graticule closed!



## Rectangle

Create a rectangle graticule.

```
geo-shell> layer graticule rectangle --workspace layers --name rectangles --bounds -180,-90,180,90
--width 20 --height 10
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
name	The new Layer name	true		
bounds	The bounds	true		
width	The width	true		
height	The height	true		
spacing	The spacing	false	-1	-1

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer graticule rectangle --workspace layers --name rectangles --bounds -180,-90,180,90
--width 20 --height 10
Created Rectangle Graticule Layer rectangles!
```

```
geo-shell> style vector default --layer rectangles --color #1E90FF --opacity 0.30 --file
```



examples/rectangles.sld

Default Vector Style for rectangles written to /home/runner/work/geo-shell/geo-shell/examples/rectangles.sld!

geo-shell> **layer style set** --name rectangles --style examples/rectangles.sld

Style /home/runner/work/geo-shell/geo-shell/examples/rectangles.sld set on rectangles

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg

Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries

Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld

Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean

Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld

Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name graticule

Map graticule opened!

geo-shell> **map add layer** --name graticule --layer ocean

Added ocean layer to map graticule

geo-shell> **map add layer** --name graticule --layer countries

Added countries layer to map graticule

geo-shell> **map add layer** --name graticule --layer rectangles

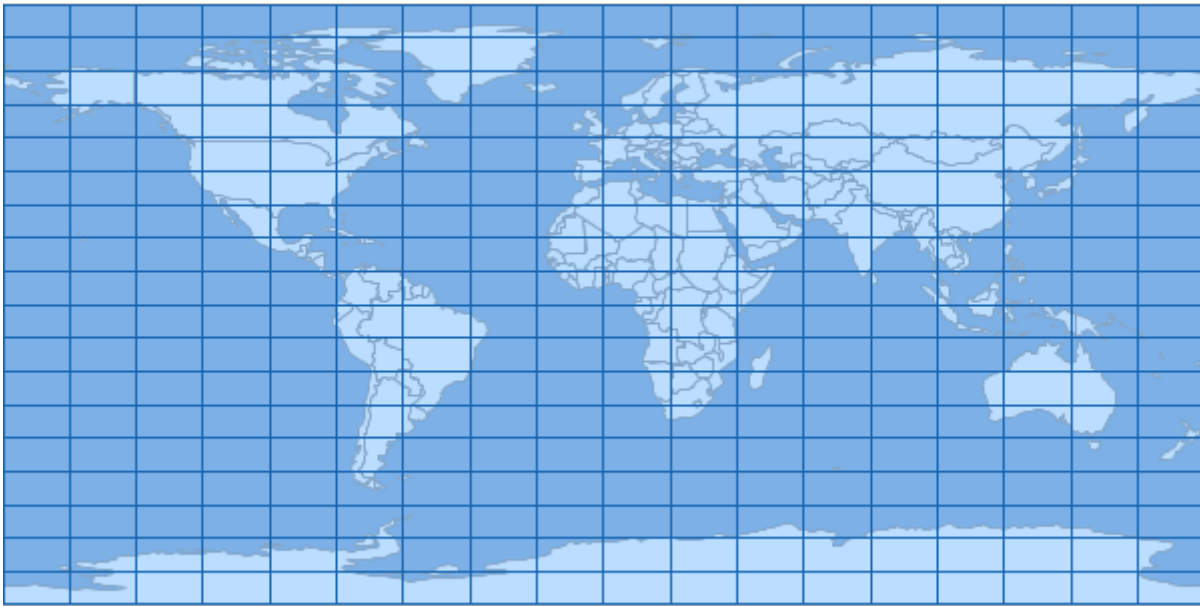
Added rectangles layer to map graticule

geo-shell> **map draw** --name graticule --file examples/rectangle\_graticules.png

Done drawing /home/runner/work/geo-shell/geo-shell/examples/rectangle\_graticules.png!

geo-shell> **map close** --name graticule

Map graticule closed!



## Oval

Create a oval graticule.

```
geo-shell> layer graticule oval --workspace layers --name ovals --bounds -180,-90,180,90 --size 20
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
name	The new Layer name	true		
bounds	The bounds	true		
size	The size	true		

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer graticule oval --workspace layers --name ovals --bounds -180,-90,180,90 --size 20
Created Oval Graticule Layer ovals!
```

```
geo-shell> style vector default --layer ovals --color #1E90FF --opacity 0.30 --file examples/ovals.sld
Default Vector Style for ovals written to /home/runner/work/geo-shell/geo-shell/examples/ovals.sld!
```

```
geo-shell> layer style set --name ovals --style examples/ovals.sld
Style /home/runner/work/geo-shell/geo-shell/examples/ovals.sld set on ovals
```

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg  
Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name graticule  
Map graticule opened!

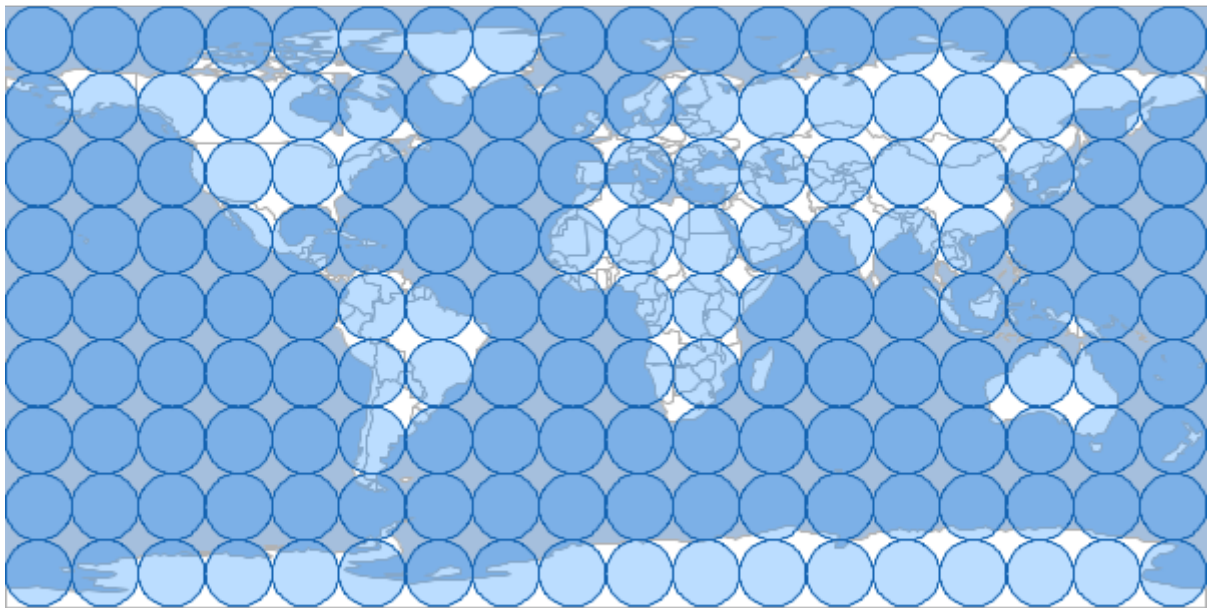
geo-shell> **map add layer** --name graticule --layer ocean  
Added ocean layer to map graticule

geo-shell> **map add layer** --name graticule --layer countries  
Added countries layer to map graticule

geo-shell> **map add layer** --name graticule --layer ovals  
Added ovals layer to map graticule

geo-shell> **map draw** --name graticule --file examples/oval\_graticules.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/oval\_graticules.png!

geo-shell> **map close** --name graticule  
Map graticule closed!



## Hexagon

Create a hexagon graticule.

```
geo-shell> layer graticule hexagon --workspace layers --name hexagons --bounds -180,-90,180,90
--length 10
```

Name	Description	Mandatory	Specified Default	Unspecified Default
workspace	The Workspace name	true		
name	The new Layer name	true		
bounds	The bounds	true		
length	The length	true		
spacing	The spacing	false	5	5
orientation	The orientation (flat or angled)	false	flat	flat

```
geo-shell> workspace open --name layers --params memory
Workspace layers opened!
```

```
geo-shell> layer graticule hexagon --workspace layers --name hexagons --bounds -180,-90,180,90
--length 10
Created Hexagon Graticule Layer hexagons!
```

geo-shell> **style vector default** --layer hexagons --color #1E90FF --opacity 0.30 --file examples/hexagons.sld  
Default Vector Style for hexagons written to /home/runner/work/geo-shell/geo-shell/examples/hexagons.sld!

geo-shell> **layer style set** --name hexagons --style examples/hexagons.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/hexagons.sld set on hexagons

geo-shell> **workspace open** --name naturalearth --params examples/naturalearth.gpkg  
Workspace naturalearth opened!

geo-shell> **layer open** --workspace naturalearth --layer countries --name countries  
Opened Workspace naturalearth Layer countries as countries

geo-shell> **layer style set** --name countries --style examples/countries.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/countries.sld set on countries

geo-shell> **layer open** --workspace naturalearth --layer ocean --name ocean  
Opened Workspace naturalearth Layer ocean as ocean

geo-shell> **layer style set** --name ocean --style examples/ocean.sld  
Style /home/runner/work/geo-shell/geo-shell/examples/ocean.sld set on ocean

geo-shell> **map open** --name graticule  
Map graticule opened!

geo-shell> **map add layer** --name graticule --layer ocean  
Added ocean layer to map graticule

geo-shell> **map add layer** --name graticule --layer countries  
Added countries layer to map graticule

geo-shell> **map add layer** --name graticule --layer hexagons  
Added hexagons layer to map graticule

geo-shell> **map draw** --name graticule --file examples/hexagon\_graticules.png  
Done drawing /home/runner/work/geo-shell/geo-shell/examples/hexagon\_graticules.png!

geo-shell> **map close** --name graticule  
Map graticule closed!

