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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=
"http://www.opengis.net/sld" xmlns:sld="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

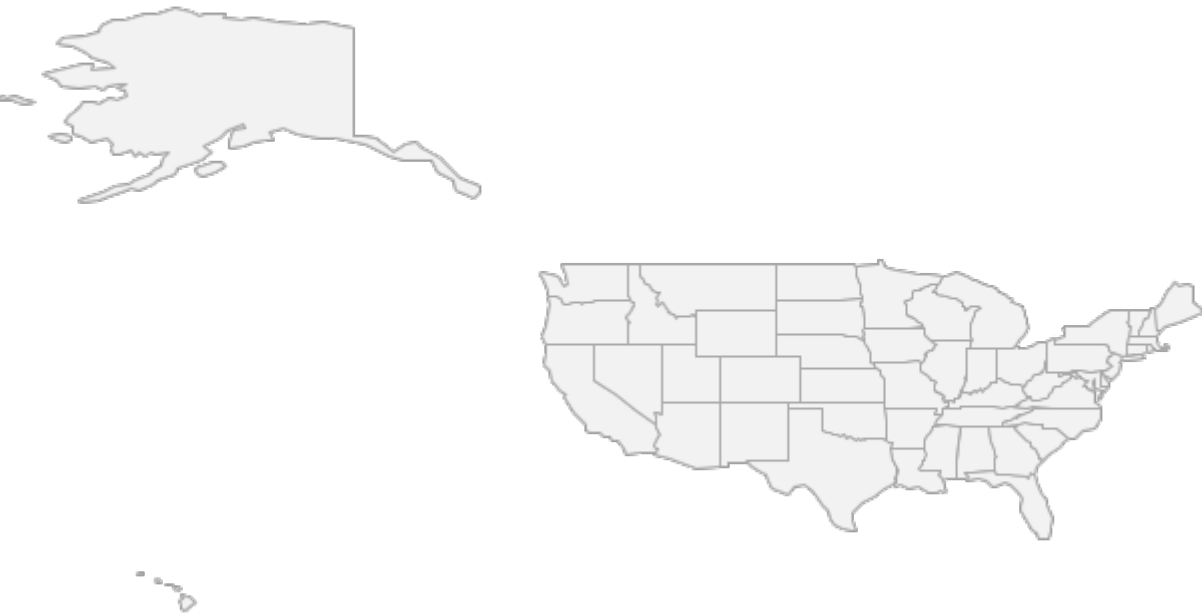
geo-shell> **map open** --name map  
Map map opened!

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
```

## 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-579d8805\_17caf3d54fc\_-6594)

-----  
the\_geom = POINT (-122.333056 47.609722)

fid = 1

name = Seattle

state = WA

Feature (fid-579d8805\_17caf3d54fc\_-6592)

-----  
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-579d8805_17caf3d54fc_-658d)
```

```
-----  
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\_BBXMN Double  
MAX\_BBXMN Double  
MIN\_BBXMN Double  
MAX\_BBXMN 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-579d8805\_17caf3d54fc\_-66d2)

-----

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\_BBXMIM Double  
MAX\_BBXMIM Double  
MIN\_BBXMIM Double  
MAX\_BBXMIM 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  
 X Double  
 Y Double

```
geo-shell> layer features --name places_xy --filter "NAME='Seattle'" --field "NAME,X,Y"
Feature (fid-579d8805_17caf3d54fc_-4d82)
```

```

-----
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-579d8805\_17caf3d54fc\_-6549)

```
the_geom = LINestring (0 0, 1 1)
```

fid = 1

name = Location 1

Feature (fid-579d8805\_17caf3d54fc\_-6548)

```
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
```

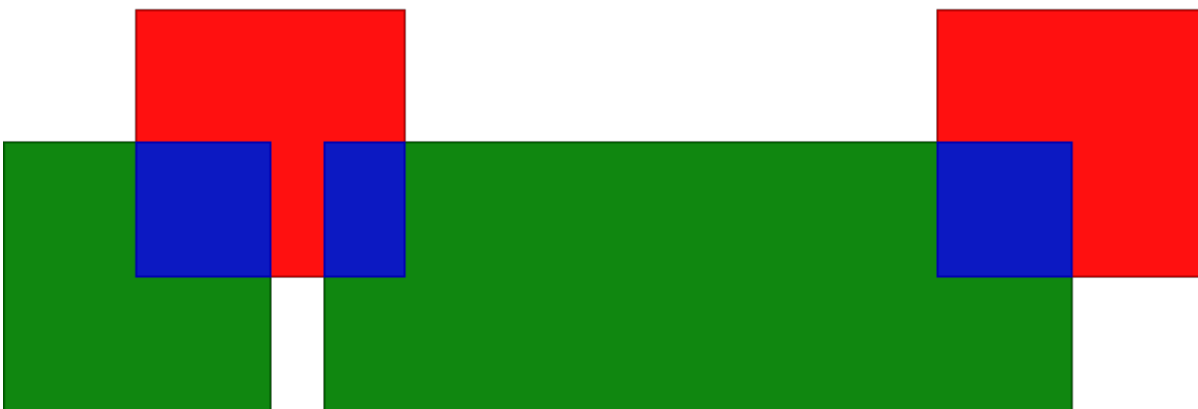
Added results layer to map map

```
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
```

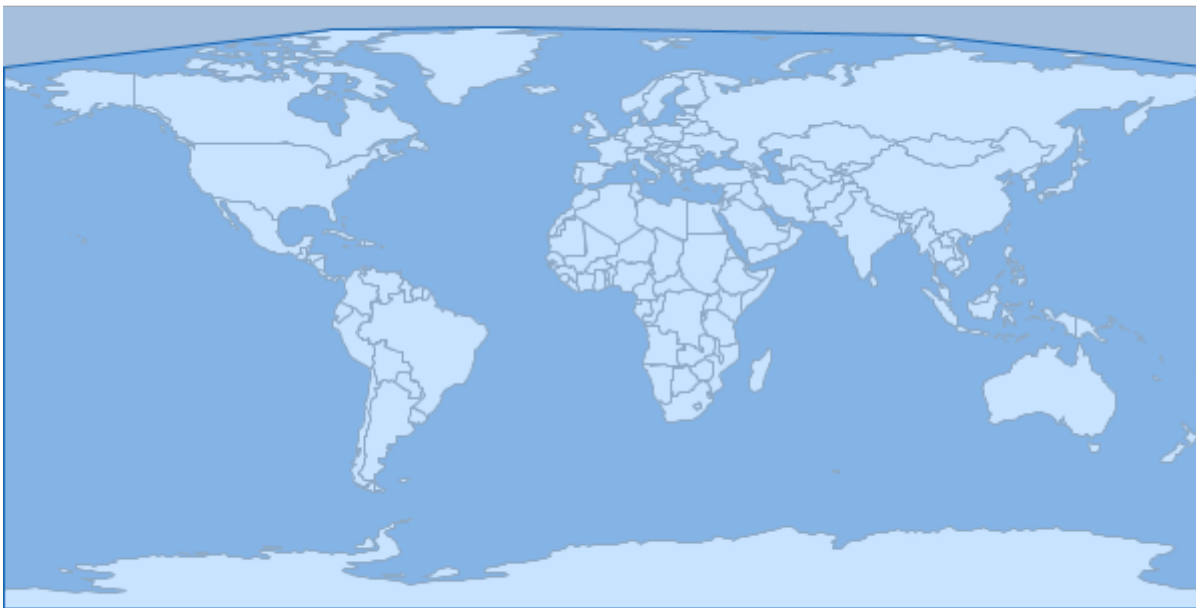
Added convexhull layer to map map

```
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!
```

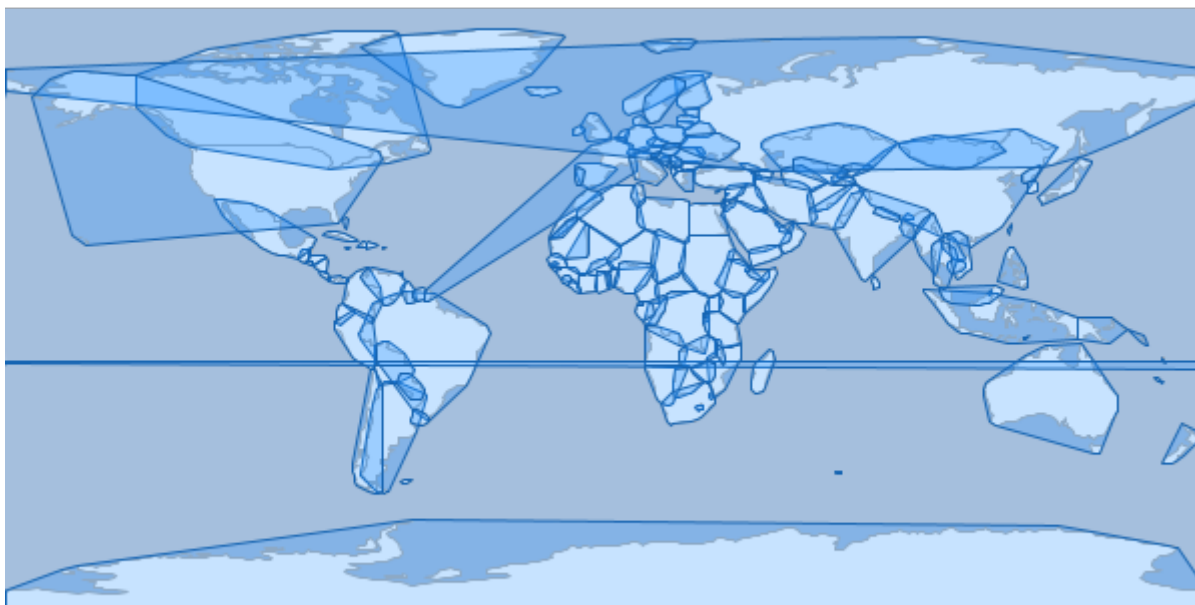
```
geo-shell> map add layer --name map --layer ocean  
Added ocean layer to map map
```

```
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

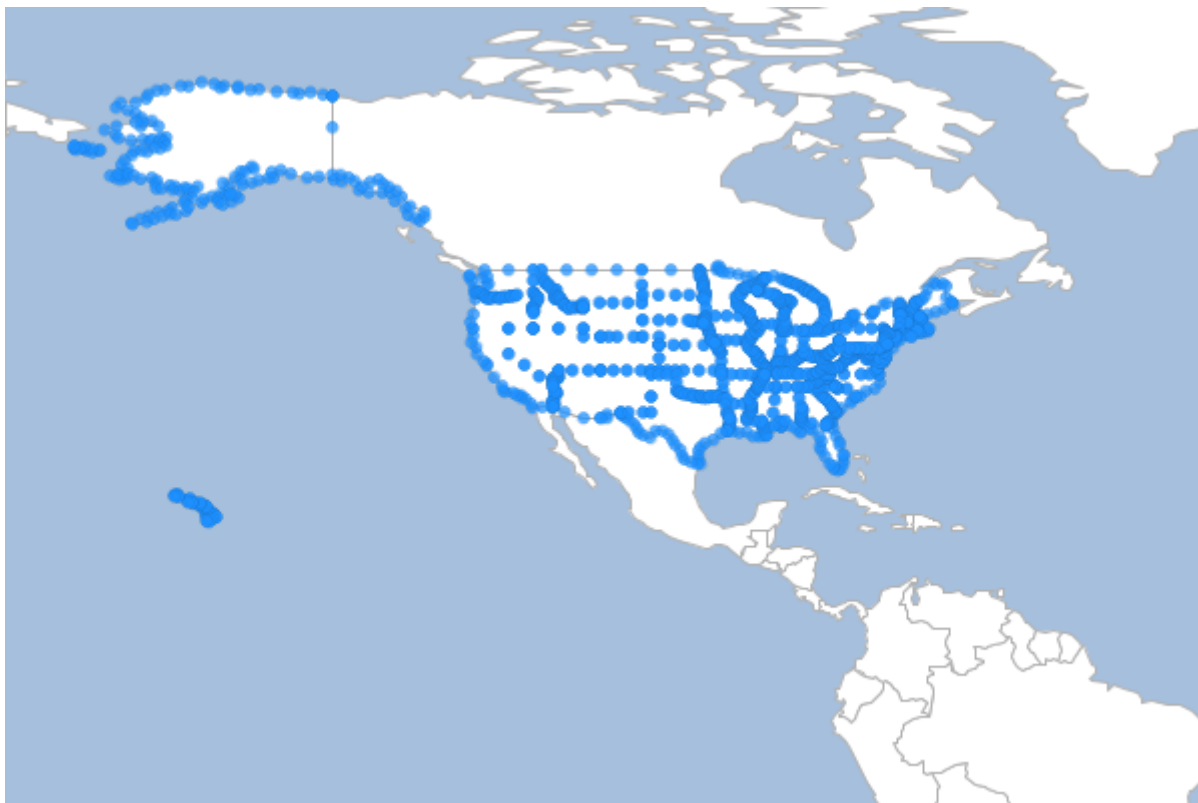
Added coordinates layer to map map

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!

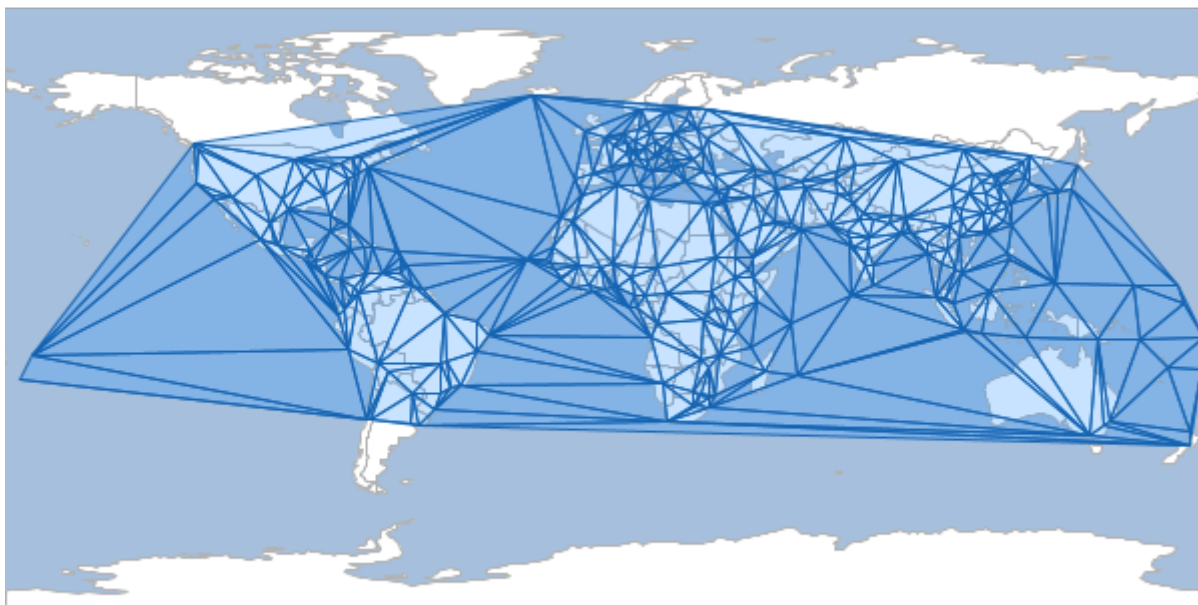
geo-shell> **map add layer** --name map --layer ocean  
Added ocean layer to map map

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

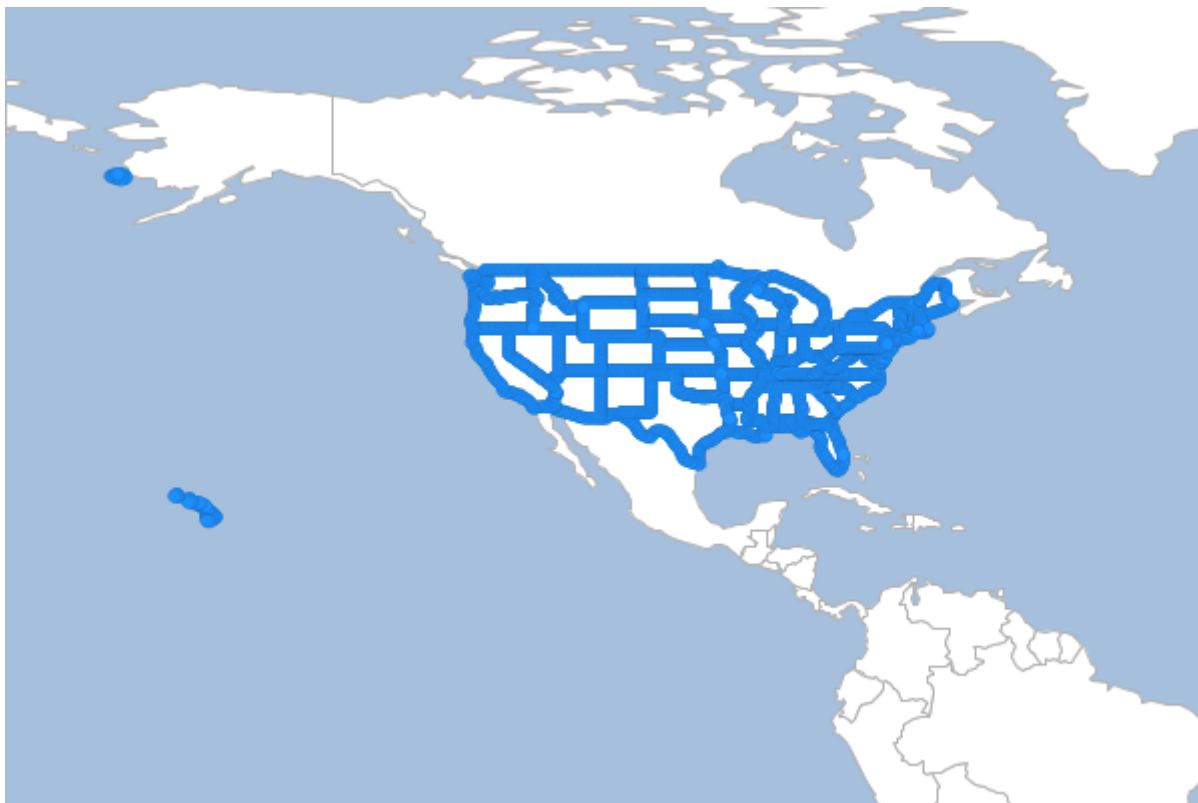
geo-shell> **map add layer** --name map --layer coordinates

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

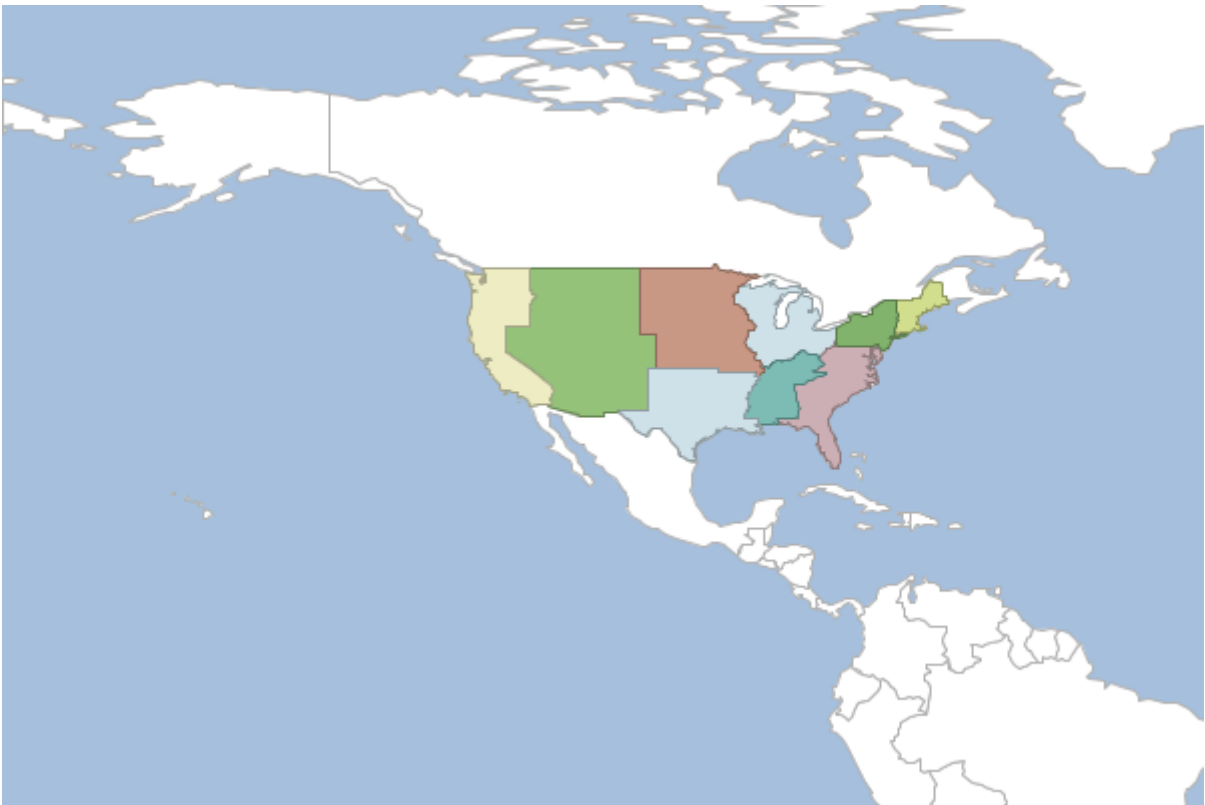
geo-shell> **map add layer** --name map --layer regions

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
```

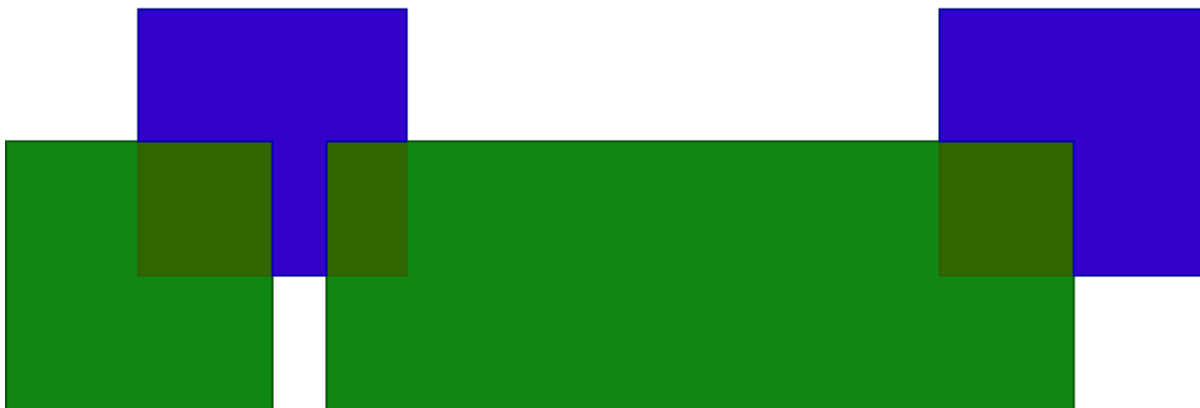
Added results layer to map map

```
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

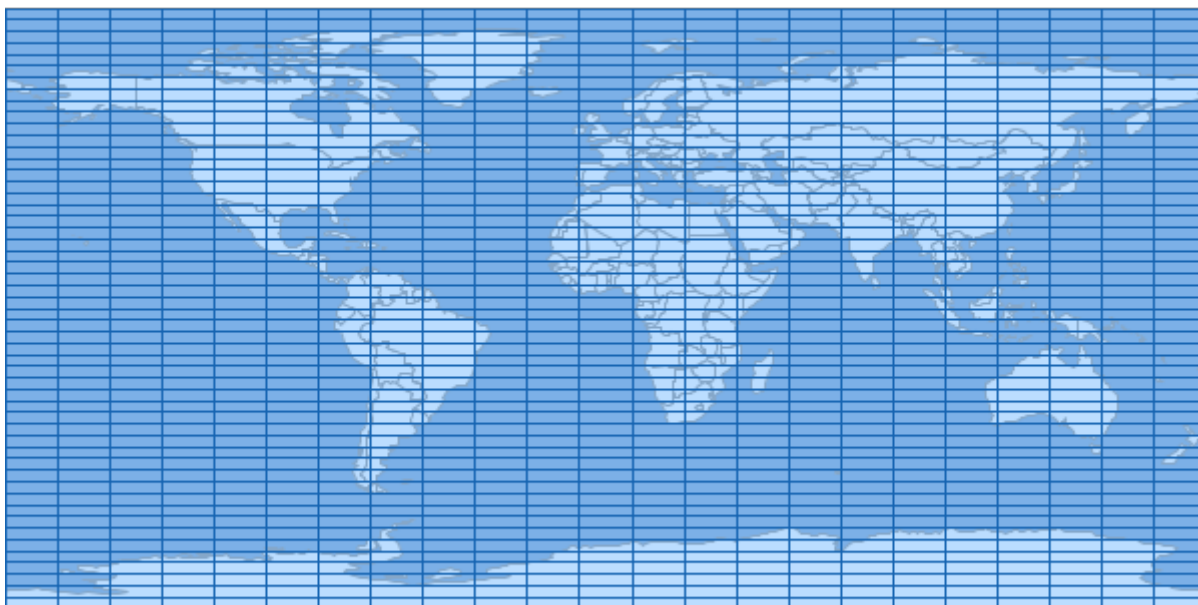
Added widthheight layer to map map

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

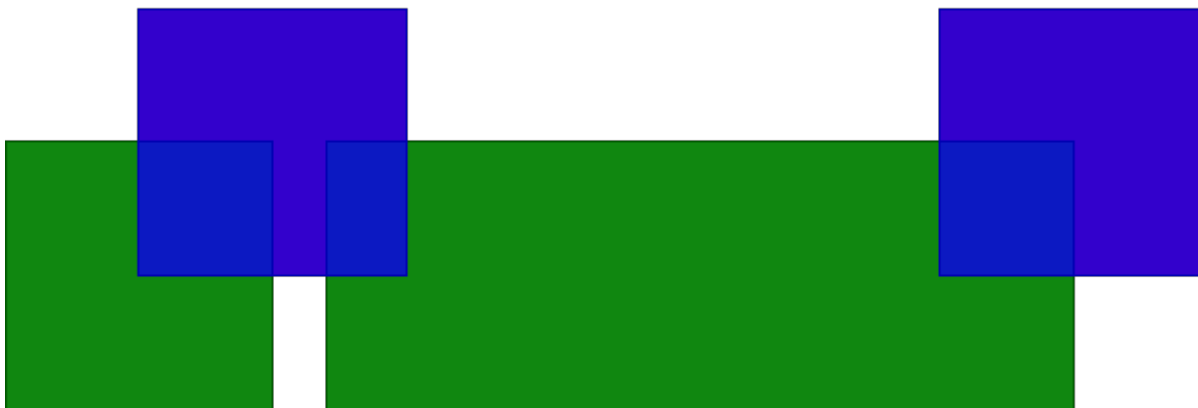
Added results layer to map map

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

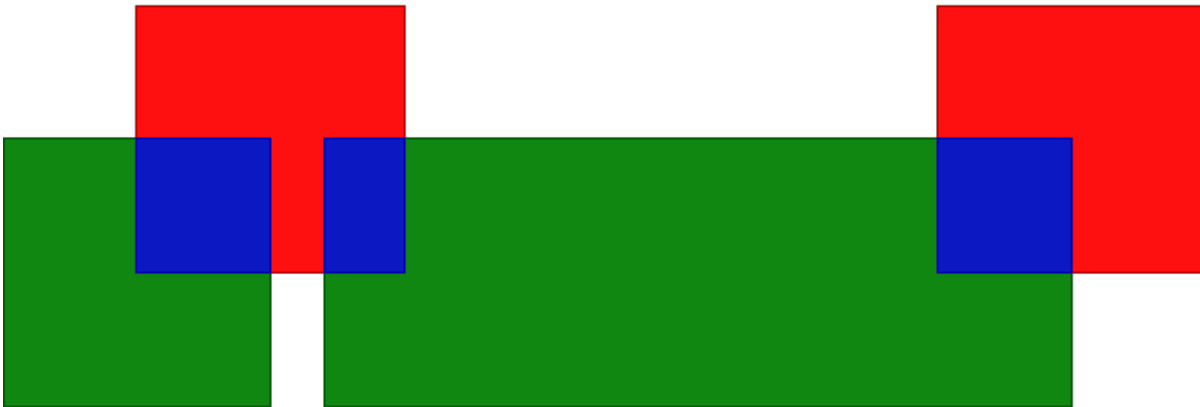
Added results layer to map map

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

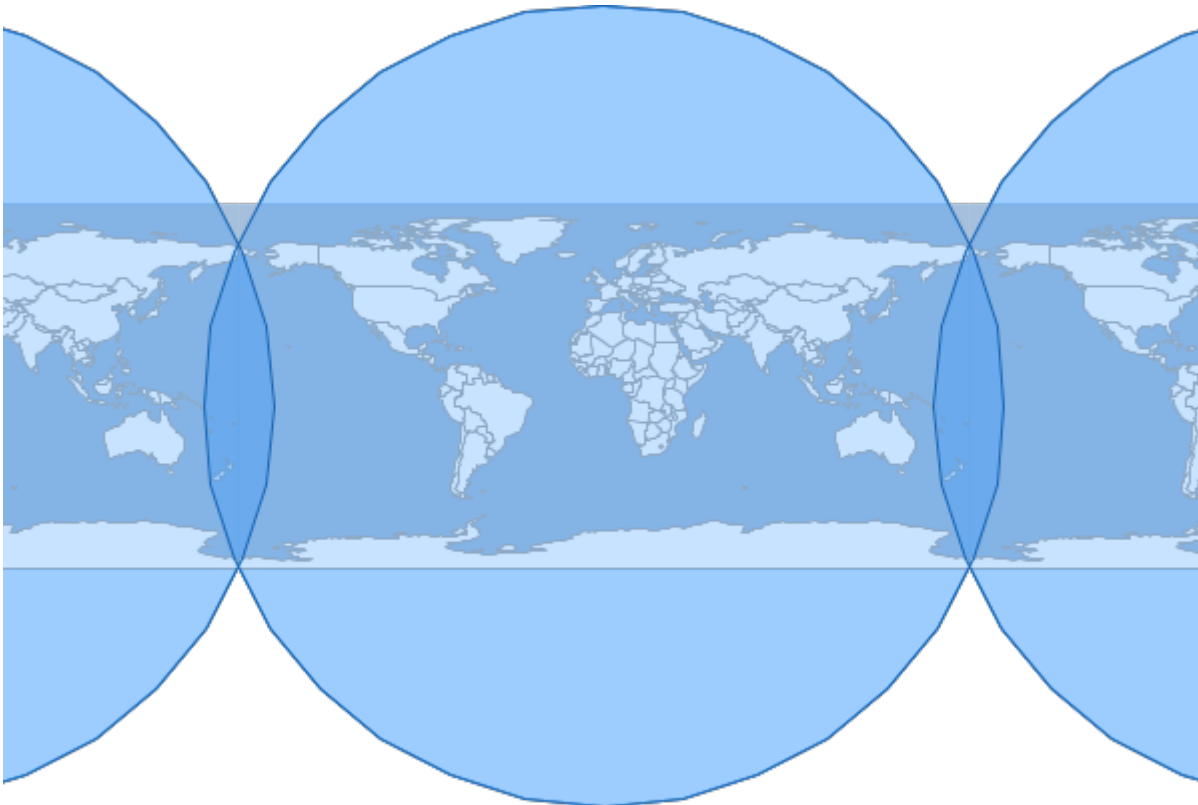
Added mincircle layer to map map

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

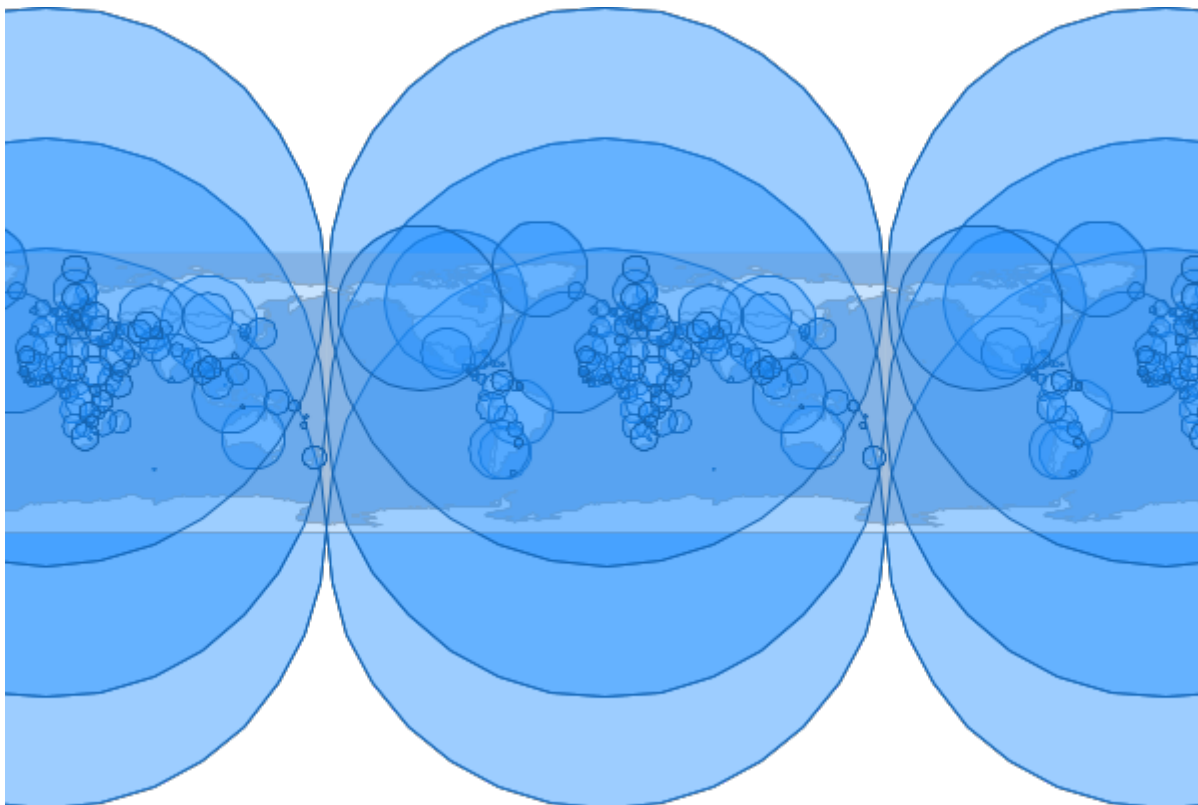
Added mincircles layer to map map

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

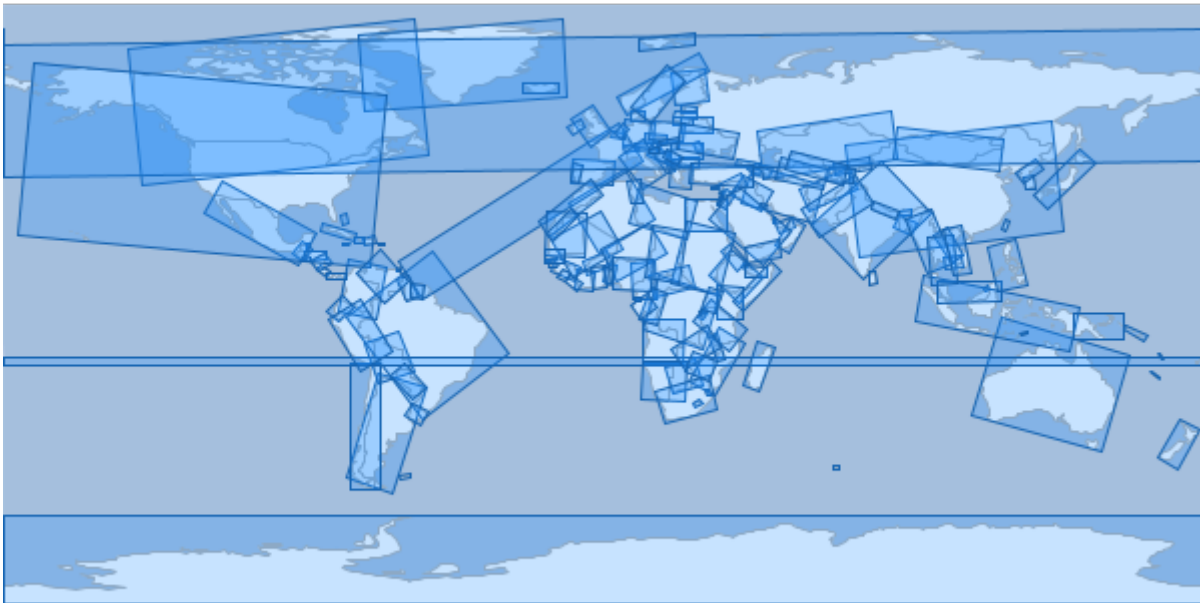
Added minrects layer to map map

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

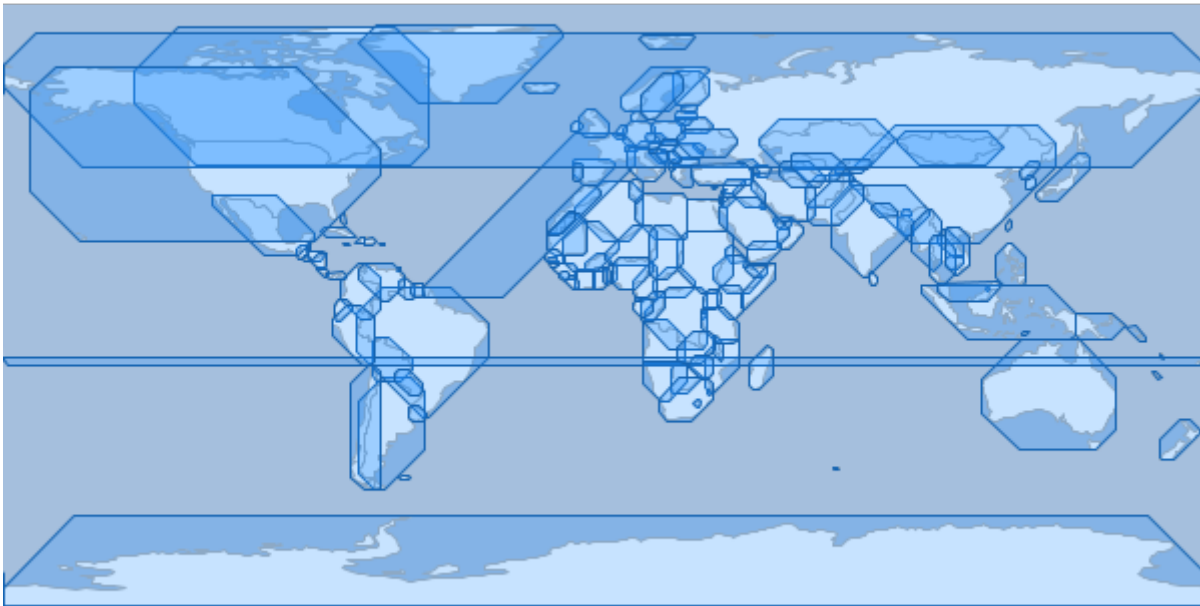
Added octagonalenvelopes layer to map map

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!
```

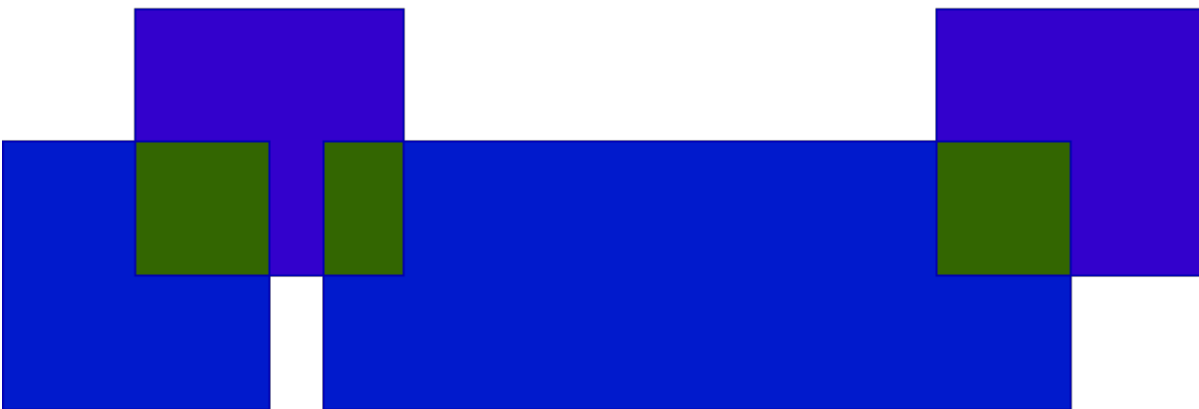
```
geo-shell> map add layer --name map --layer a
Added a layer to map map
```

```
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
```

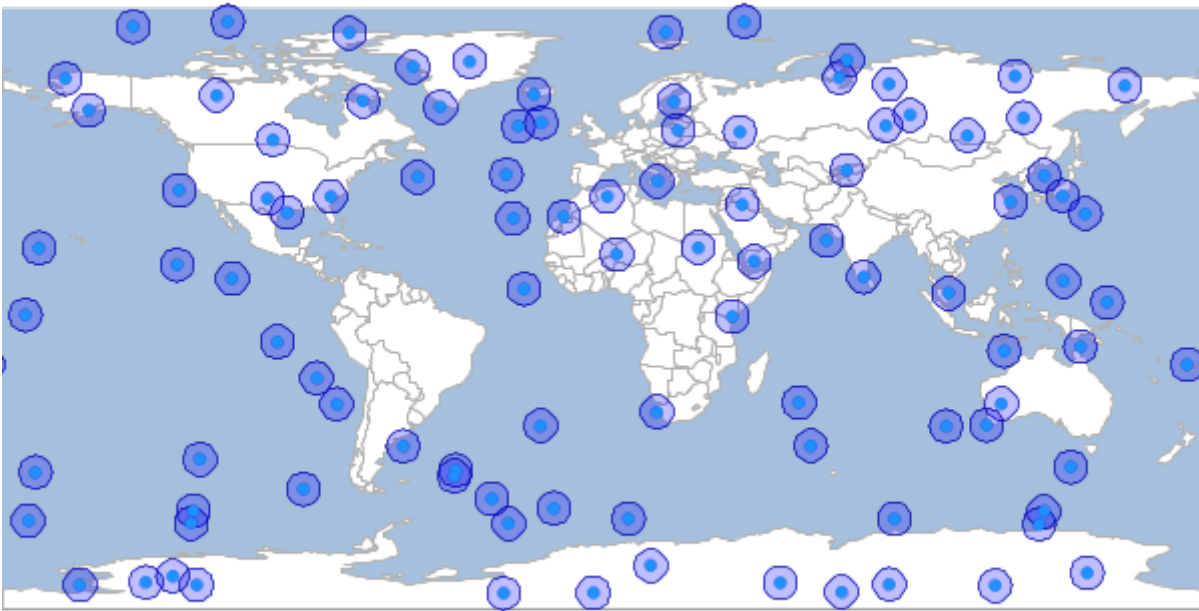
```
geo-shell> map add layer --name map --layer countries  
Added countries layer to map map
```

```
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!
```

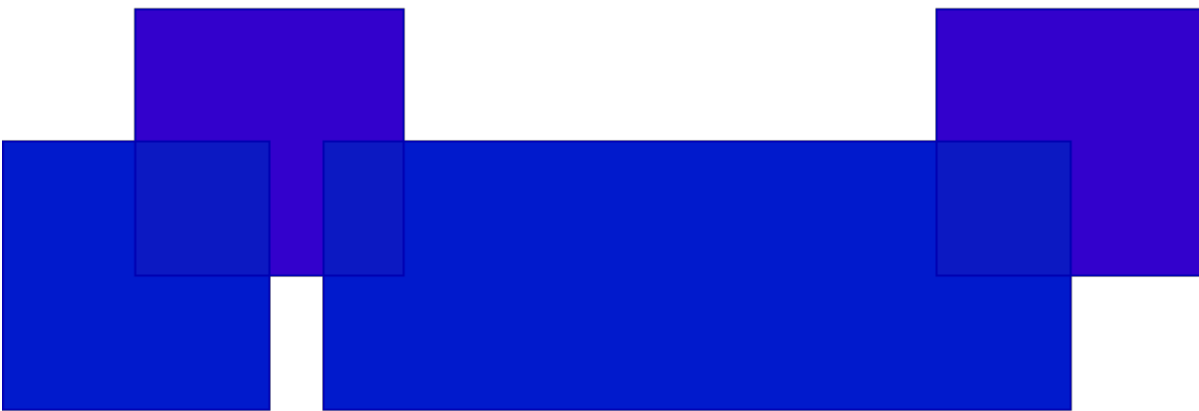
```
geo-shell> map add layer --name map --layer a
Added a layer to map map
```

```
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
```

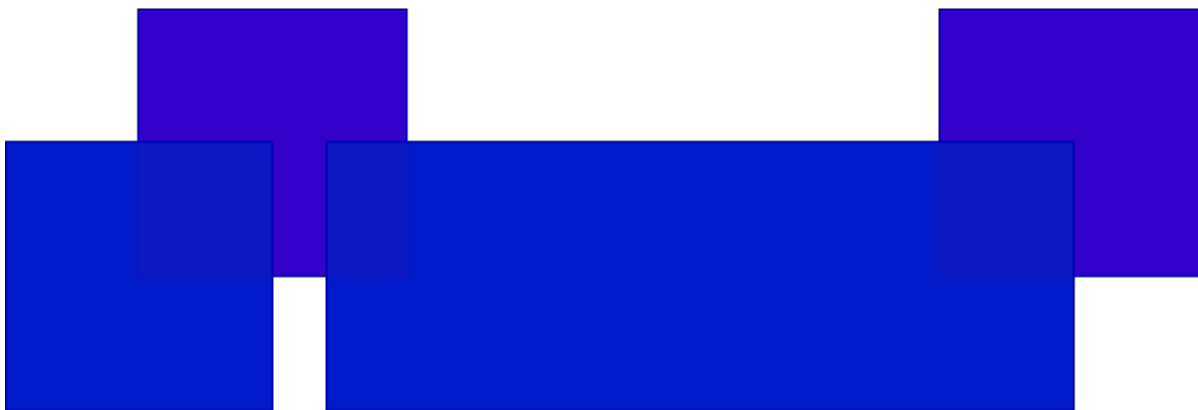
Added results layer to map map

```
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!
```

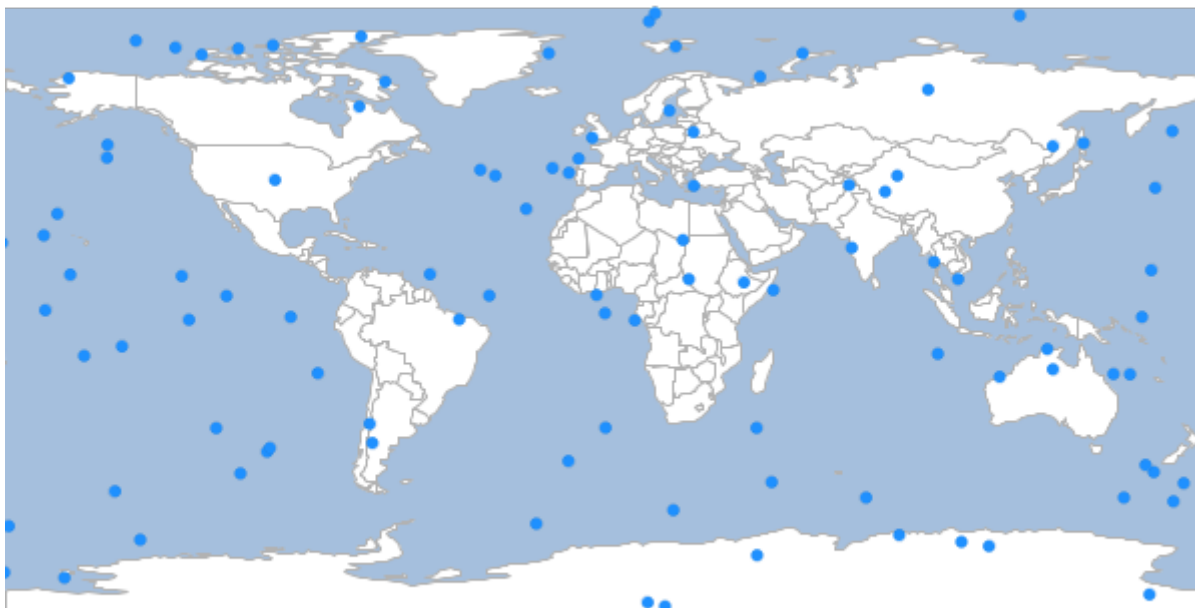
```
geo-shell> map add layer --name randomMap --layer ocean
Added ocean layer to map randomMap
```

```
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

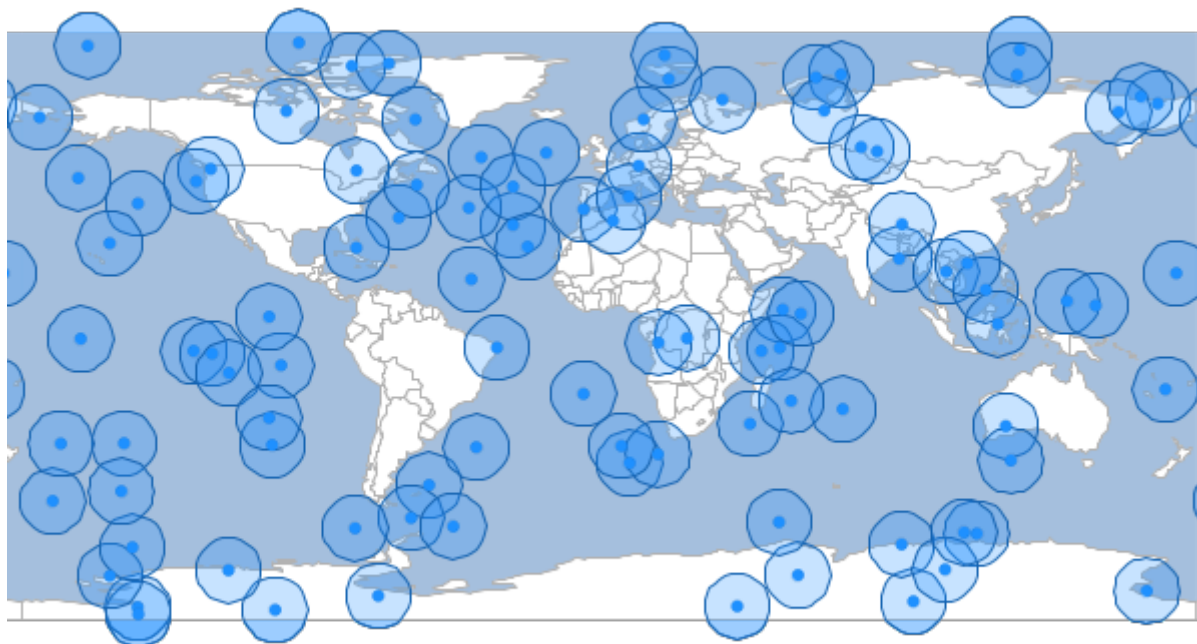
geo-shell> map add layer --name map --layer countries
Added countries layer to map map

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!
```

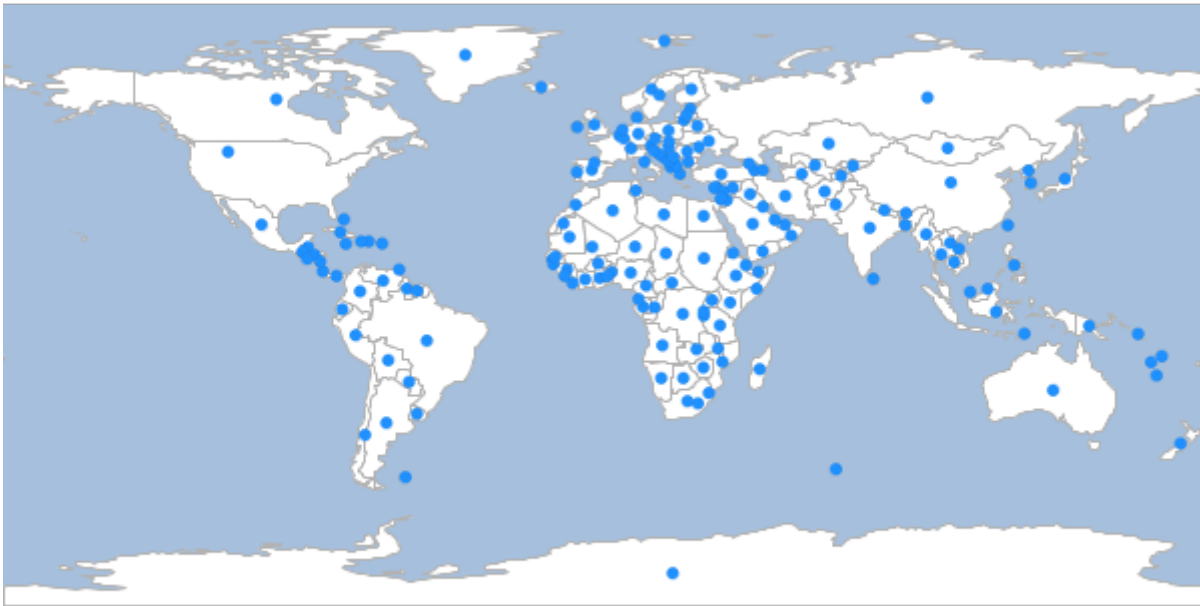
```
geo-shell> map add layer --name map --layer ocean  
Added ocean layer to map map
```

```
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
```

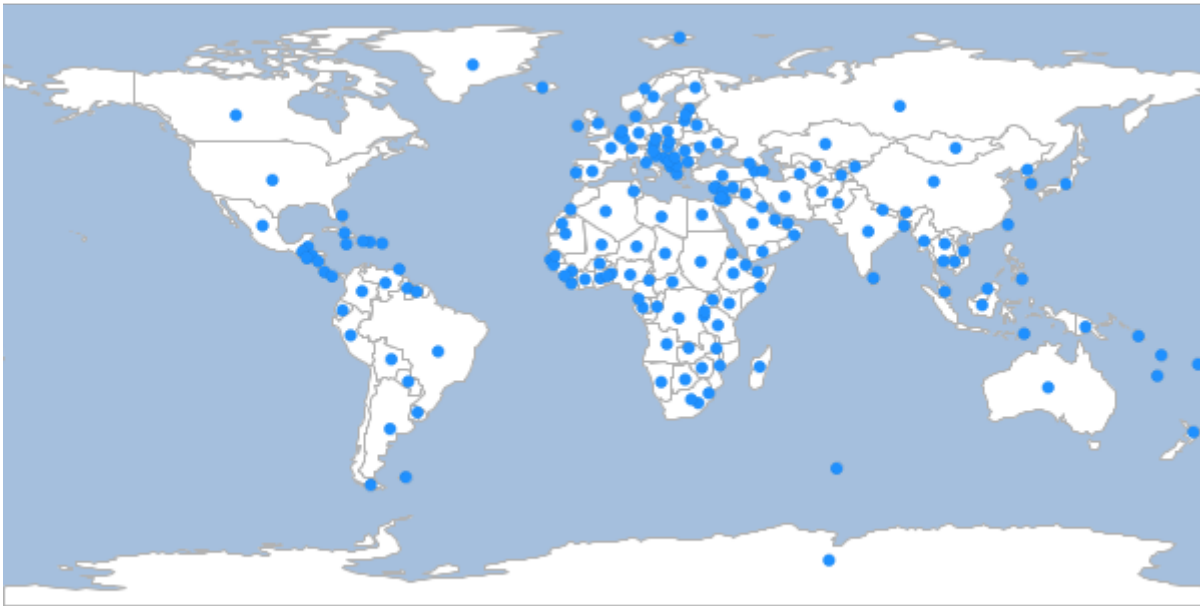
Added interiorpoints layer to map map

```
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

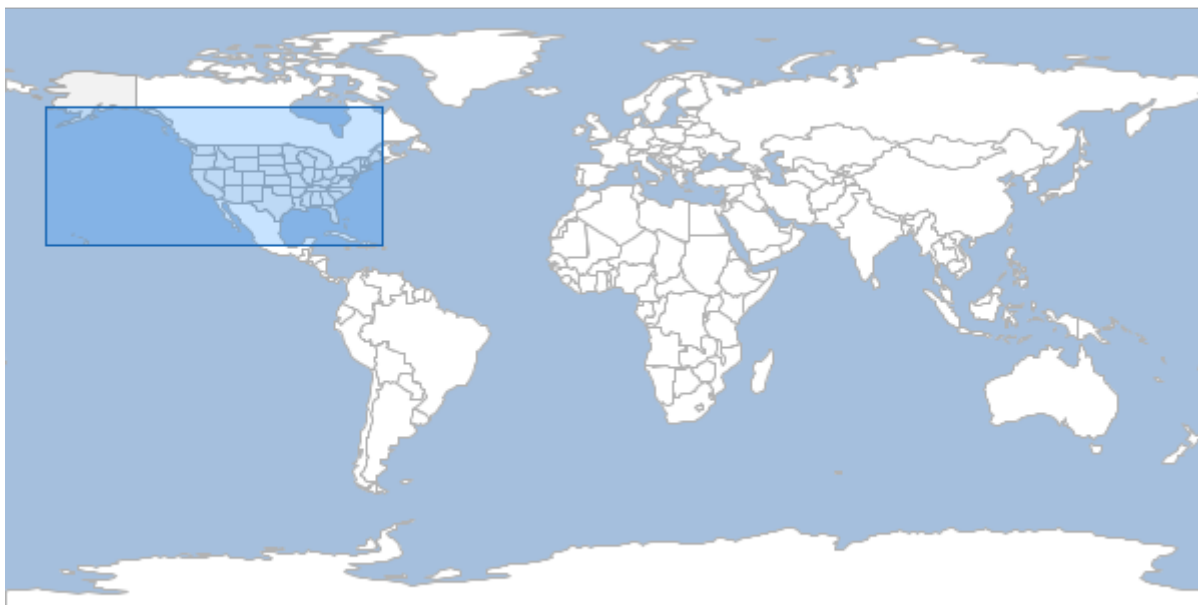
geo-shell> **map add layer** --name map --layer countries  
Added countries layer to map map

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

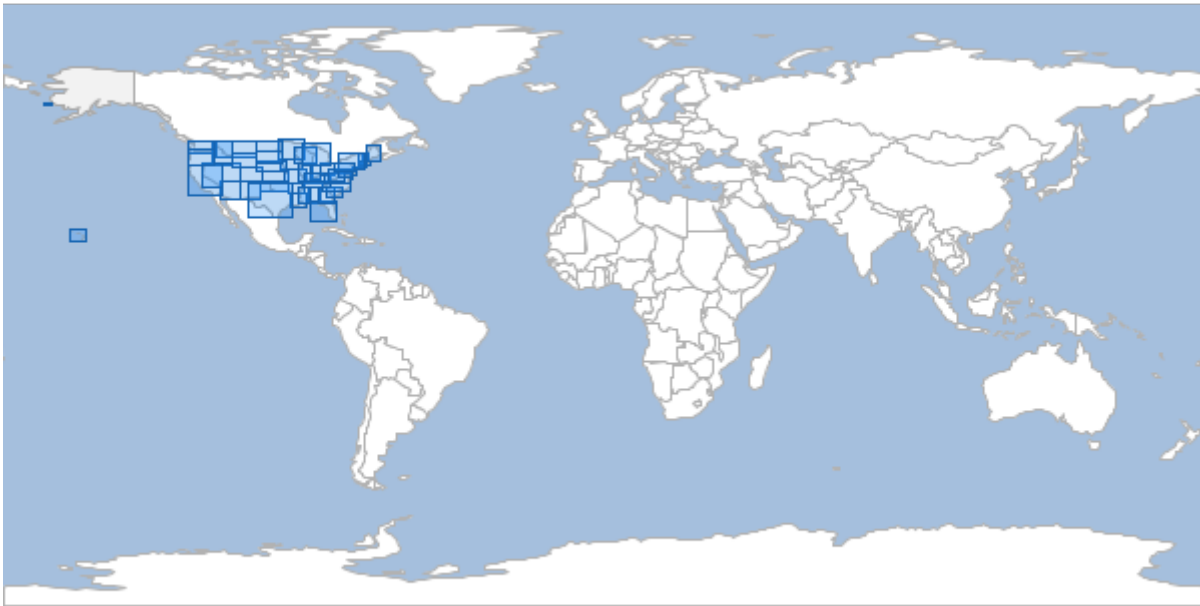
geo-shell> map add layer --name map --layer countries
Added countries layer to map map

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!

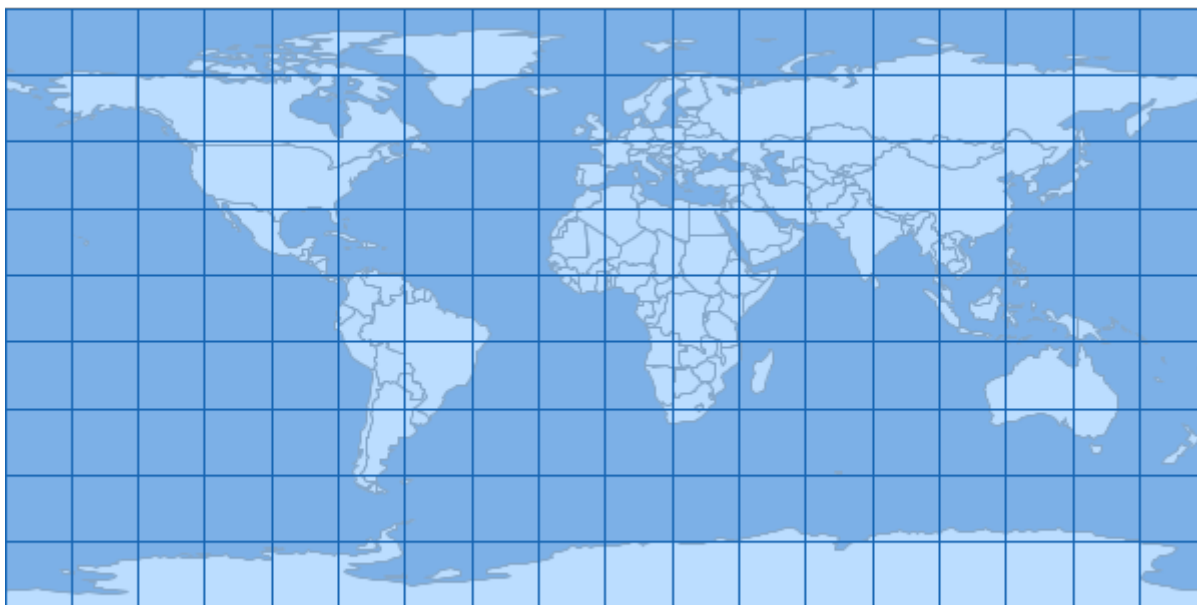
geo-shell> map add layer --name graticule --layer ocean
Added ocean layer to map graticule

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

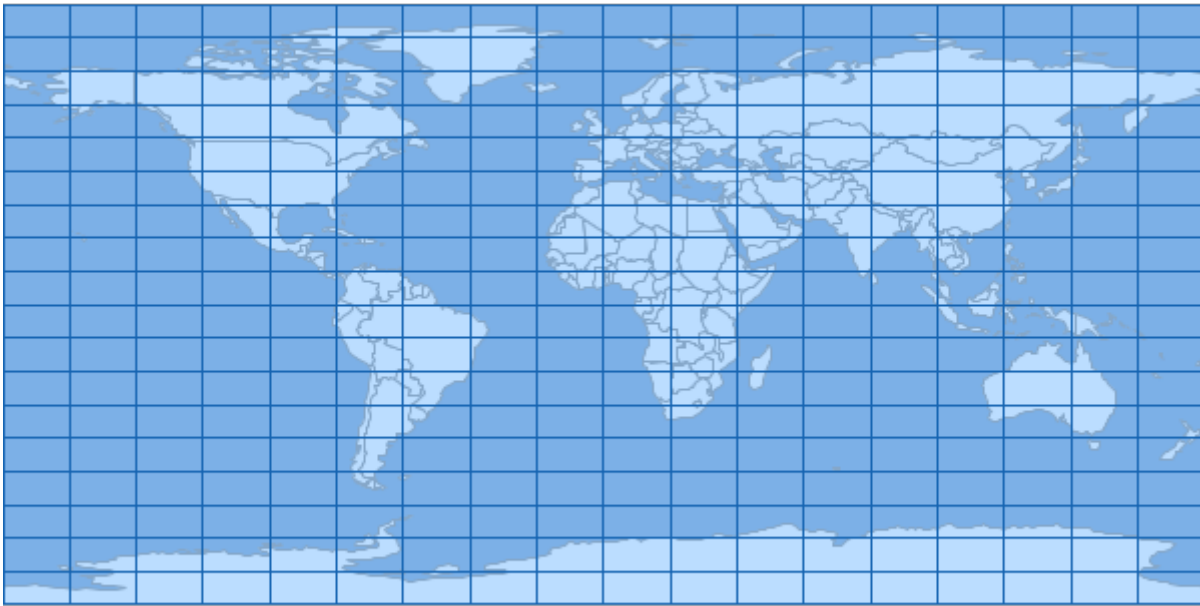
Added rectangles layer to map graticule

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!

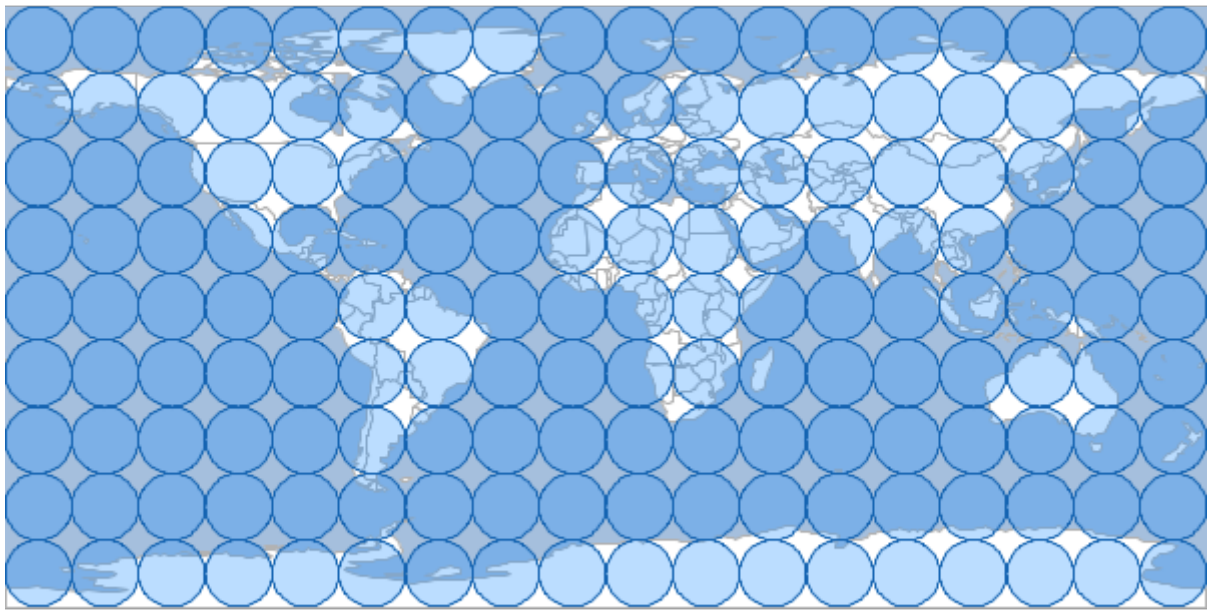
geo-shell> **map add layer** --name graticule --layer ocean  
Added ocean layer to map graticule

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!
```

