

# geo-shell

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# Introduction

geo-shell is an interactive shell for geospatial analysis.

geo-shell has modules for dealing with **vectors**, **rasters**, **tiles**, **maps**, and **styles**.

For **vector** layers, you can use **workspace** commands access layers of spatial data in datasets like shapefiles, geopackages, or postgis databases. With **layer** commands you can perform geoprocessing functions like calculating centroids or buffer features.

For **raster** layers, you can use **format** commands access individual rasters from geotifs or world images. With **raster** commands you can perform mosaic, raster algebra, or crop functions.

The **tile** commands let you create tile layers, get tiles, and get rasters from tiles.

The **style** commands let you create styles for vector layers and raster.

The **map** commands allow you to visualize vector, raster, and tile layers.

## Workspace

Workspaces hold vector layers. A Workspace can be a GeoPackage database, a directory of Shapefiles, or a PostGIS database.

## Basics

You can open, close, and list Workspaces. The earliest Workspace to open is an in memory Workspace.

*Open a Workspace*

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

You can open a Workspace with --params or connection parameters. You can give it a name with --name flag.

*List open Workspaces*

```
geo-shell> workspace list  
mem = Memory
```

Listing open Workspaces give you the name and the type Workspace.

*Close a Workspace*

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

Once you close a Workspace by name it will no longer appear with the list command.

# Layers

In this example, we will open a GeoPackage database filled with data from Natural Earth.

*Open a Workspace*

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

*List open Workspaces*

```
geo-shell> workspace layers --name naturalearth  
countries  
ocean  
places  
states
```

*Close a Workspace*

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

# Layer

## Geoprocessing

### Random Points

```
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/travis/build/jericks/geo-shell/examples/points.sld!
```

```
geo-shell> layer style set --name points --style examples/points.sld  
Style /home/travis/build/jericks/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/travis/build/jericks/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/travis/build/jericks/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
```

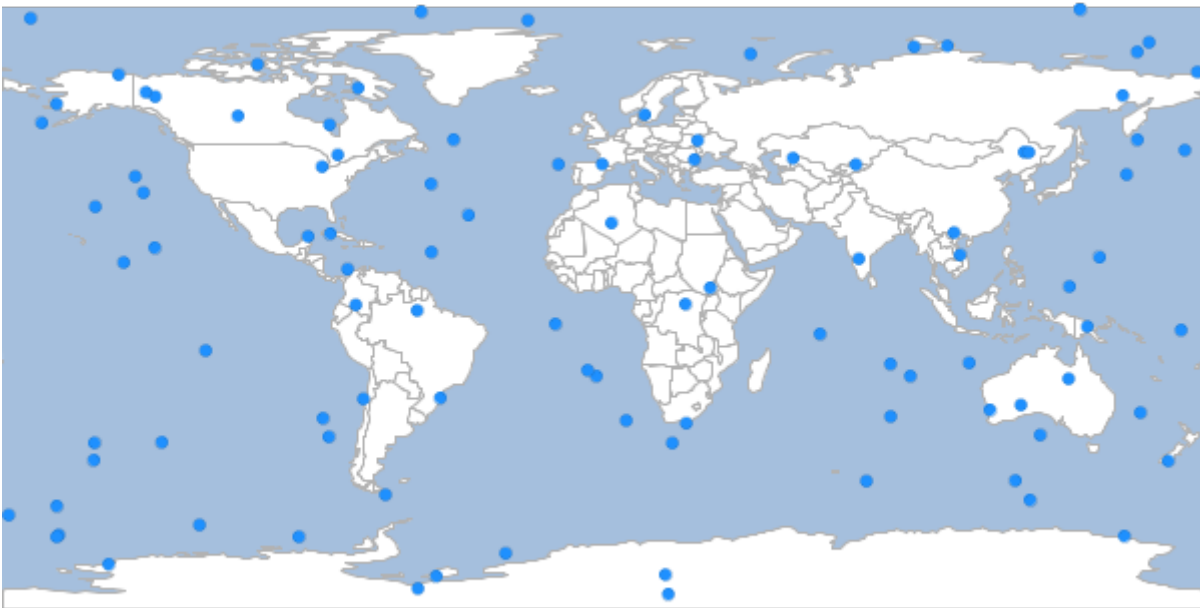
Added points layer to map randomMap

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

Done drawing /home/travis/build/jericks/geo-shell/examples/random\_points.png!

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

Map randomMap closed!



## Buffer

```
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/travis/build/jericks/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/travis/build/jericks/geo-shell/examples/buffers.sld!
```

```
geo-shell> layer style set --name points --style examples/points.sld  
Style /home/travis/build/jericks/geo-shell/examples/points.sld set on points
```

```
geo-shell> layer style set --name buffers --style examples/buffers.sld  
Style /home/travis/build/jericks/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/travis/build/jericks/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/travis/build/jericks/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
```

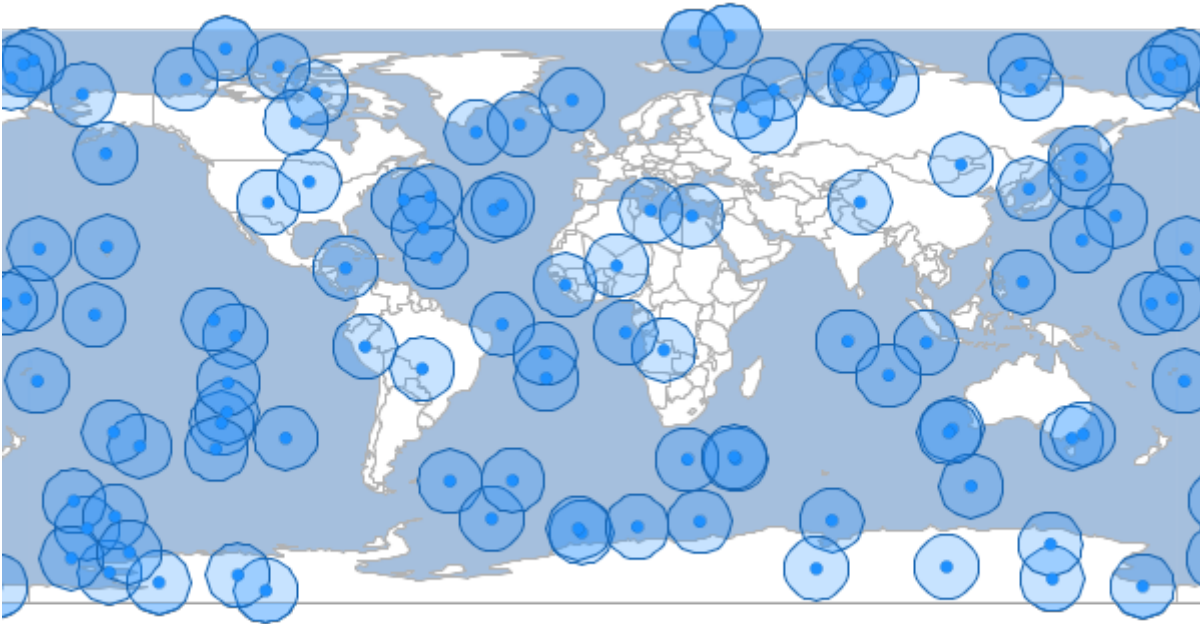
```
geo-shell> map add layer --name map --layer countries  
Added countries layer to map map
```

```
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/travis/build/jericks/geo-shell/examples/layer_buffer.png!
```

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



## Graticule

### Square

```
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/travis/build/jericks/geo-
shell/examples/squares.sld!
```

```
geo-shell> layer style set --name squares --style examples/squares.sld
Style /home/travis/build/jericks/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/travis/build/jericks/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/travis/build/jericks/geo-shell/examples/ocean.sld set on ocean

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

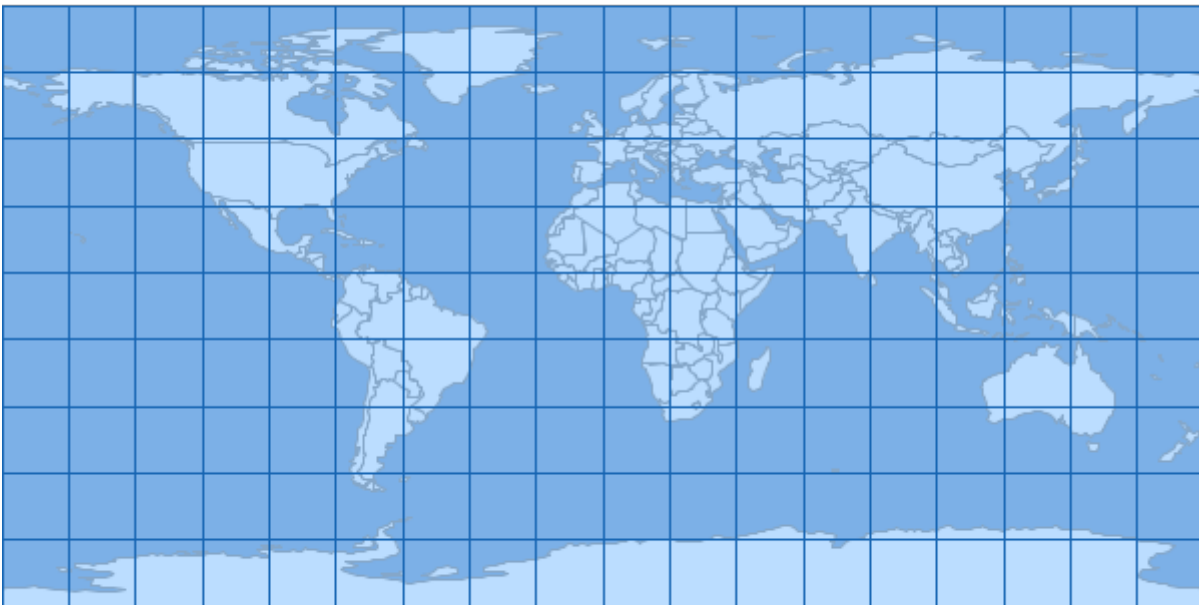
geo-shell> **map add layer** --name graticule --layer ocean  
Added ocean layer to map graticule

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/travis/build/jericks/geo-shell/examples/square\_graticules.png!

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



## Oval

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/travis/build/jericks/geo-shell/examples/ovals.sld!

geo-shell> **layer style set** --name ovals --style examples/ovals.sld  
Style /home/travis/build/jericks/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/travis/build/jericks/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/travis/build/jericks/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/travis/build/jericks/geo-shell/examples/oval\_graticules.png!

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

