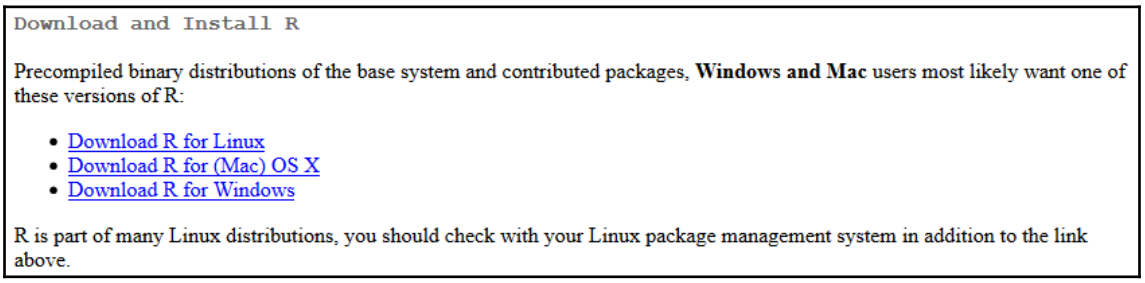
Chapter 1: Setting Up R and QGIS Environments for Geospatial Tasks

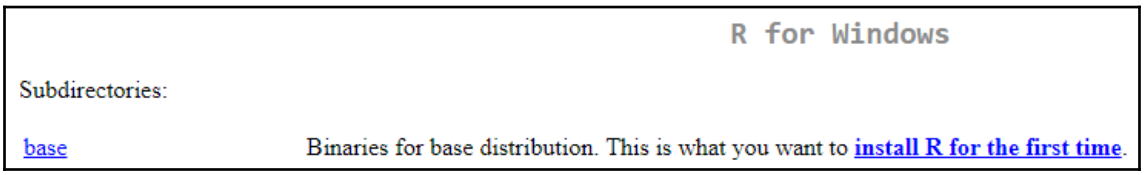


Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- Download R for Linux
- Download R for (Mac) OS X
- Download R for Windows

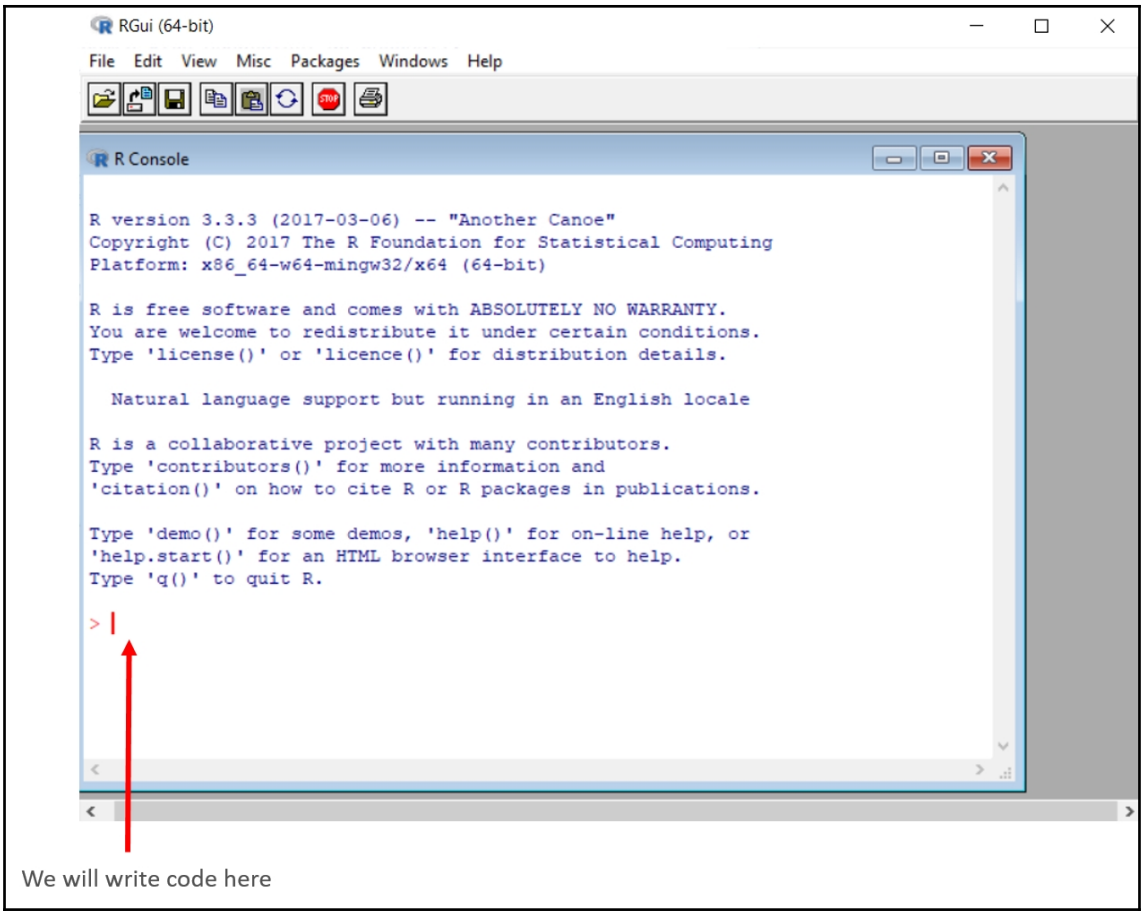
R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.



R for Windows

Subdirectories:

base — Binaries for base distribution. This is what you want to **install R for the first time**.




```
, , 1

     [,1] [,2] [,3]
[1,]   10   20   30
[2,]   11   22   33
[3,]   20   25   33

, , 2

     [,1] [,2] [,3]
[1,]   10   18   25
[2,]   10   23   31
[3,]   17   21   35
```

```
   items jan_price mar_price june_price
1 potato        10        11         20
2   rice        20        22         25
3    oil        30        33         33
```

```
  jan_price mar_price june_price
1        10        11         20
2        20        22         25
3        30        33         33
```

```
  jan_price mar_price june_price
1        10        11       20.0
2        20        22       25.0
3        30        33       33.0
4         3         4        3.5
```

```
  jan_price mar_price june_price aug_price
1        10        11       20.0        22
2        20        22       25.0        24
3        30        33       33.0        31
4         3         4        3.5         5
```

```
[[1]]
[1] "potato" "rice"   "oil"

[[2]]
[1] 10 20 30

[[3]]
[1] 11 22 33

[[4]]
[1] 20 25 33
```

```
[[1]]
[1] 10 20 30 15
```

```
[1] "list"
```

```
[1] 10 20 30 15
```

```
[1] "numeric"
```

```
[1] 100
[1] 400
[1] 900
[1] 9
```

```
[1] 100
[1] 400
[1] 900
[1] 9
```

```
[1] 160000
[1] 390625
[1] 1185921
[1] 150.0625
```

```
     [,1] [,2] [,3]
[1,]   10   11   20
[2,]   20   22   25
[3,]   30   33   33
```

```
[1] 5.507571 2.516611 1.732051
```

```
[1] 60 66 78
```

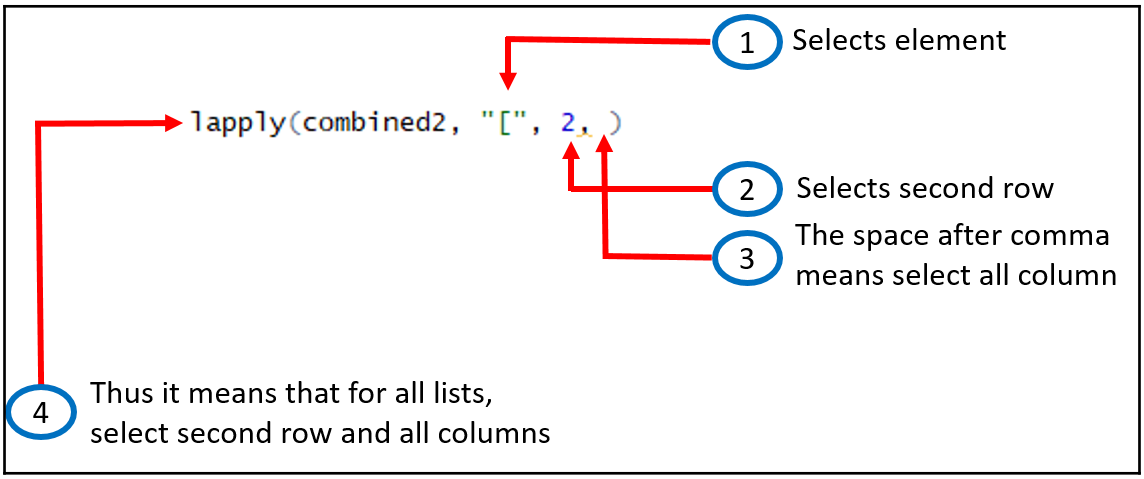
```
[[1]]
[1] 160000

[[2]]
[1] 390625

[[3]]
[1] 1185921

[[4]]
[1] 150.0625
```

```
[1]  160000.0000  390625.0000 1185921.0000     150.0625
```

```
, , 1

     [,1] [,2] [,3]
[1,]   10   20   30
[2,]   11   22   33
[3,]   20   25   33

, , 2

     [,1] [,2] [,3]
[1,]   10   18   25
[2,]   10   23   31
[3,]   17   21   35
```

```
[[1]]
     [,1] [,2] [,3]
[1,]   10   20   30
[2,]   11   22   33
[3,]   20   25   33

[[2]]
     [,1] [,2] [,3]
[1,]   10   18   25
[2,]   10   23   31
[3,]   17   21   35
```

```
[[1]]
[1] 11 22 33

[[2]]
[1] 10 23 31
```

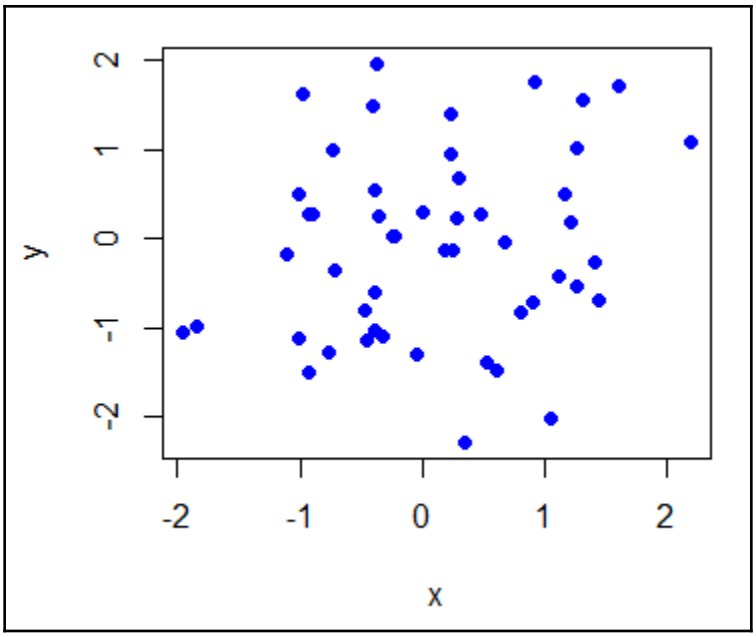



```
[1]  160000.0000  390625.0000 1185921.0000     150.0625
```

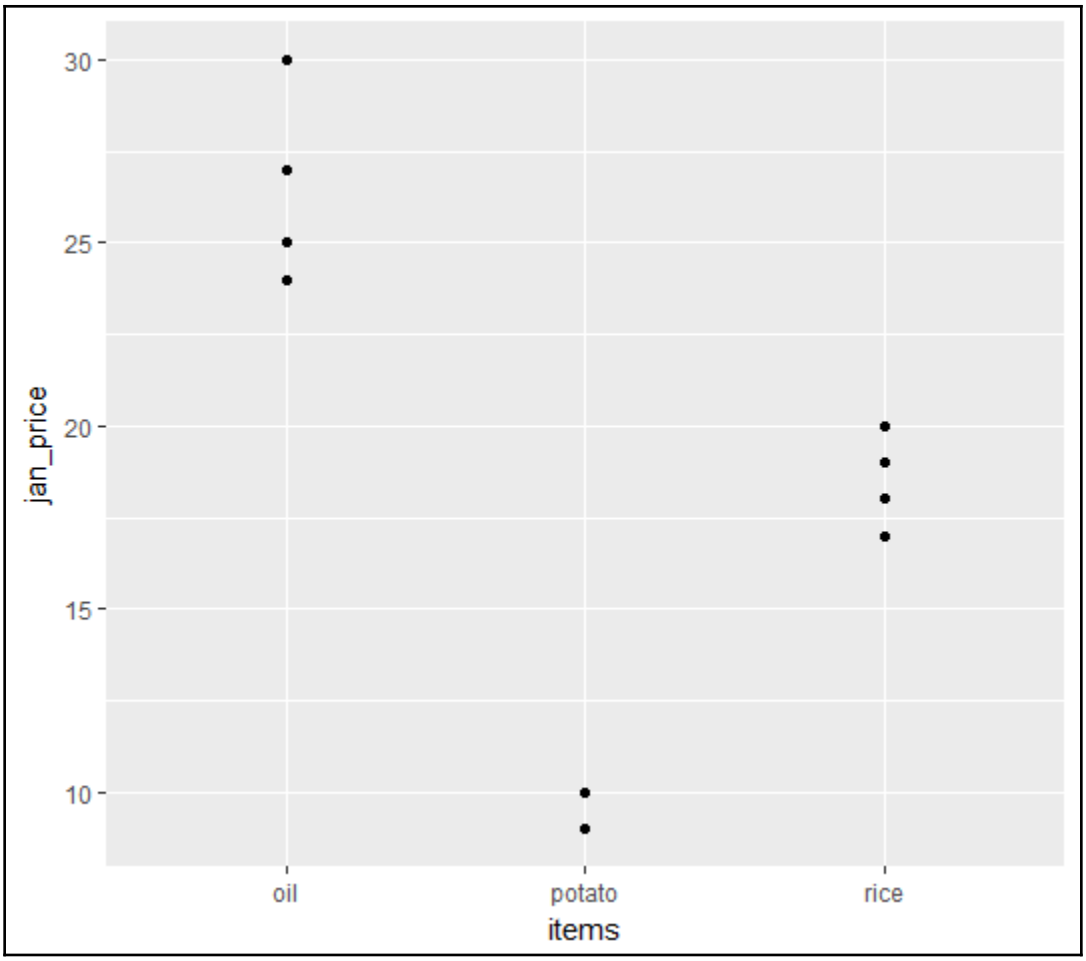
	items	jan_price	mar_price	june_price
1	potato	10	11	20
2	rice	20	22	25
3	oil	30	33	33

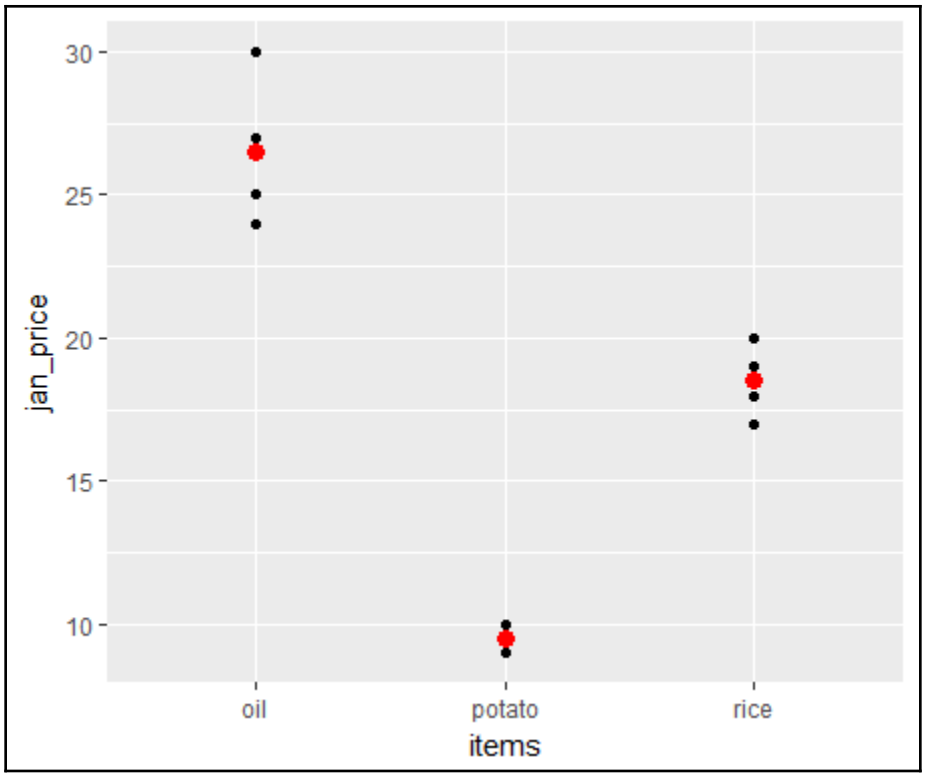
	items	jan_price	mar_price	june_price
1	potato	10	11	20
2	rice	20	22	25
3	oil	30	33	33
4	potato	10	13	21
5	rice	18	25	24
6	oil	25	32	40
7	potato	9	12	17
8	rice	17	21	22
9	oil	24	33	27
10	potato	9	15	13
11	rice	19	27	18
12	oil	27	39	23

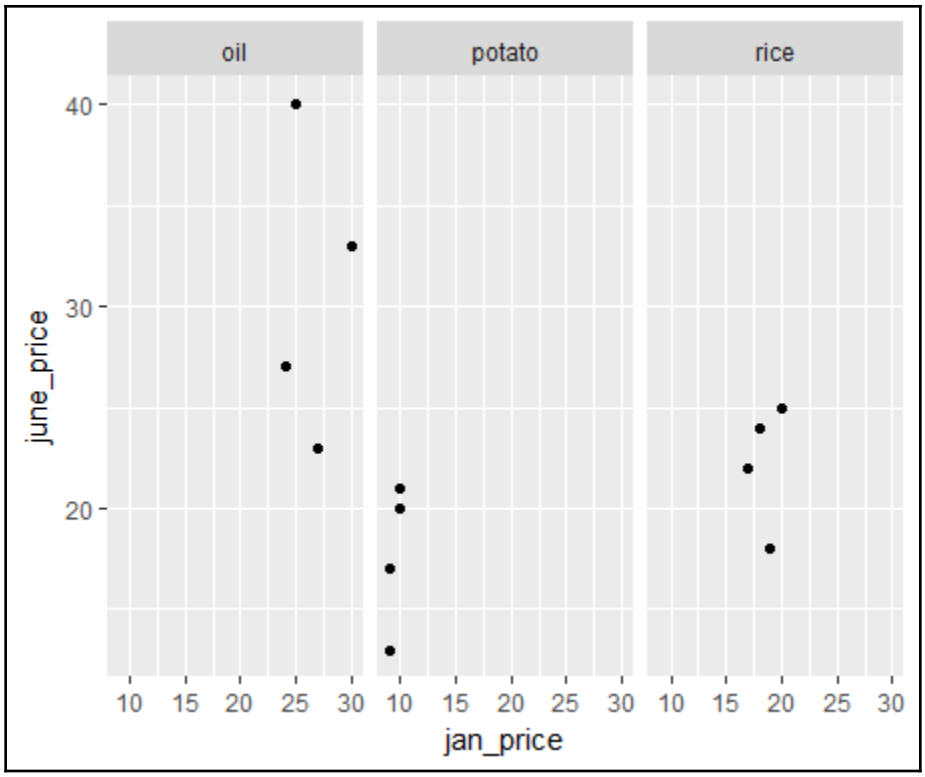
oil	potato	rice
34.25	12.75	23.75

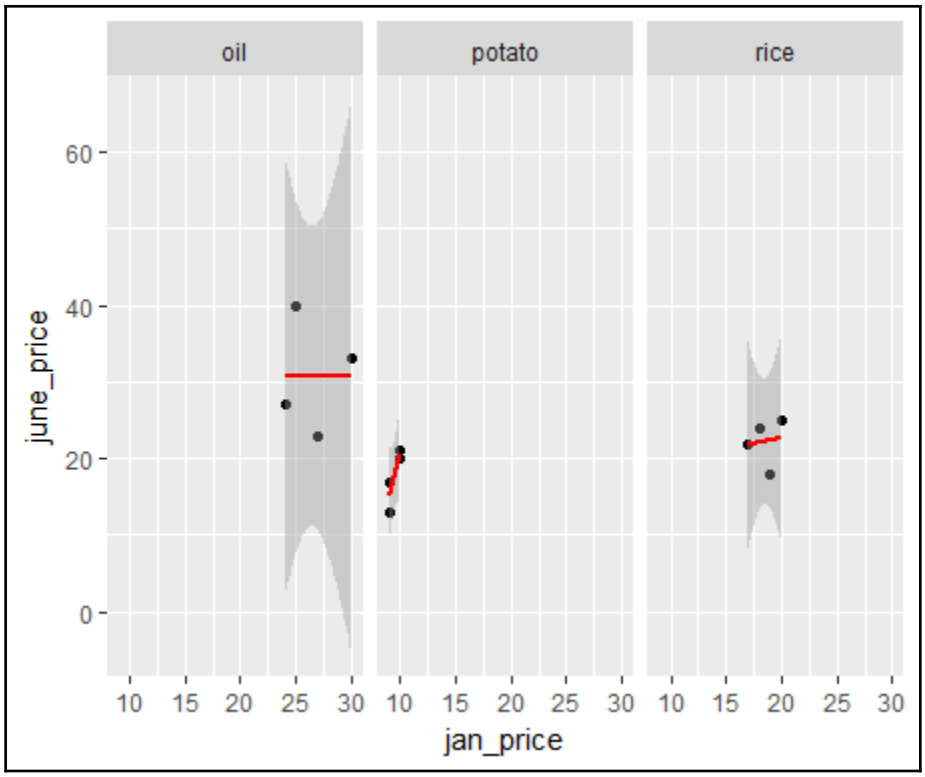



```
data.frame':   12 obs. of  4 variables:
$ items     : Factor w/ 3 levels "oil","potato",..: 2 3 1 2 3 1 2 3 1 2 ...
$ jan_price : num  10 20 30 10 18 25 9 17 24 9 ...
$ mar_price : num  11 22 33 13 25 32 12 21 33 15 ...
$ june_price: num  20 25 33 21 24 40 17 22 27 13 ...
```

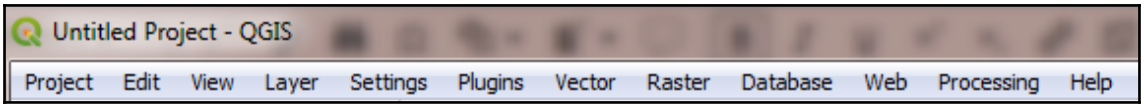

30
25
20
15
10
jan_price
oil
potato
rice
items

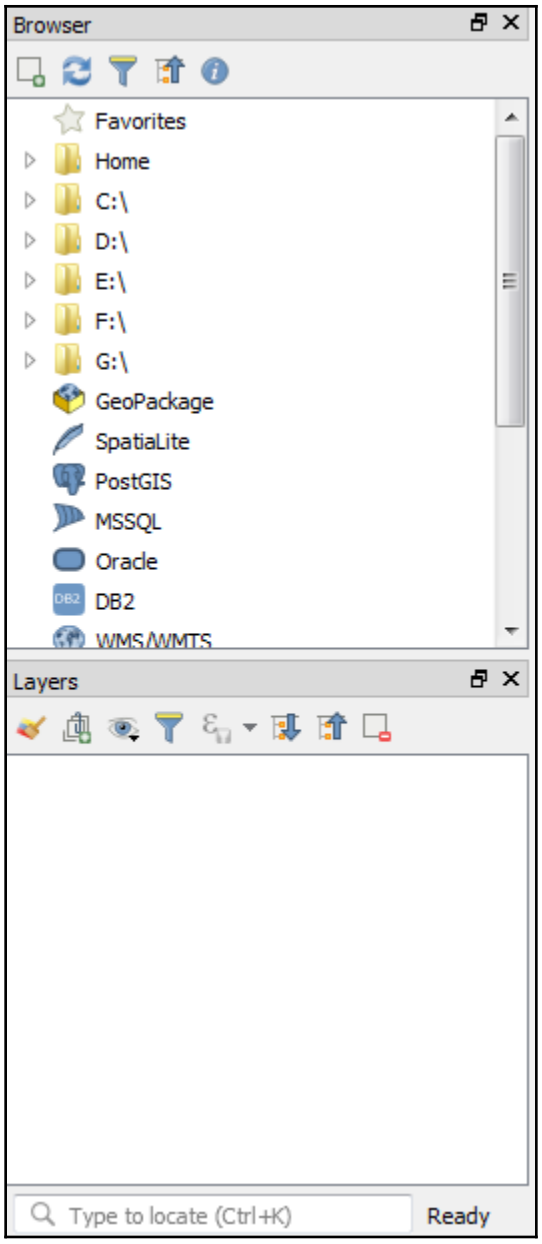

30
25
20
15
10
jan_price
oil
potato
rice
items

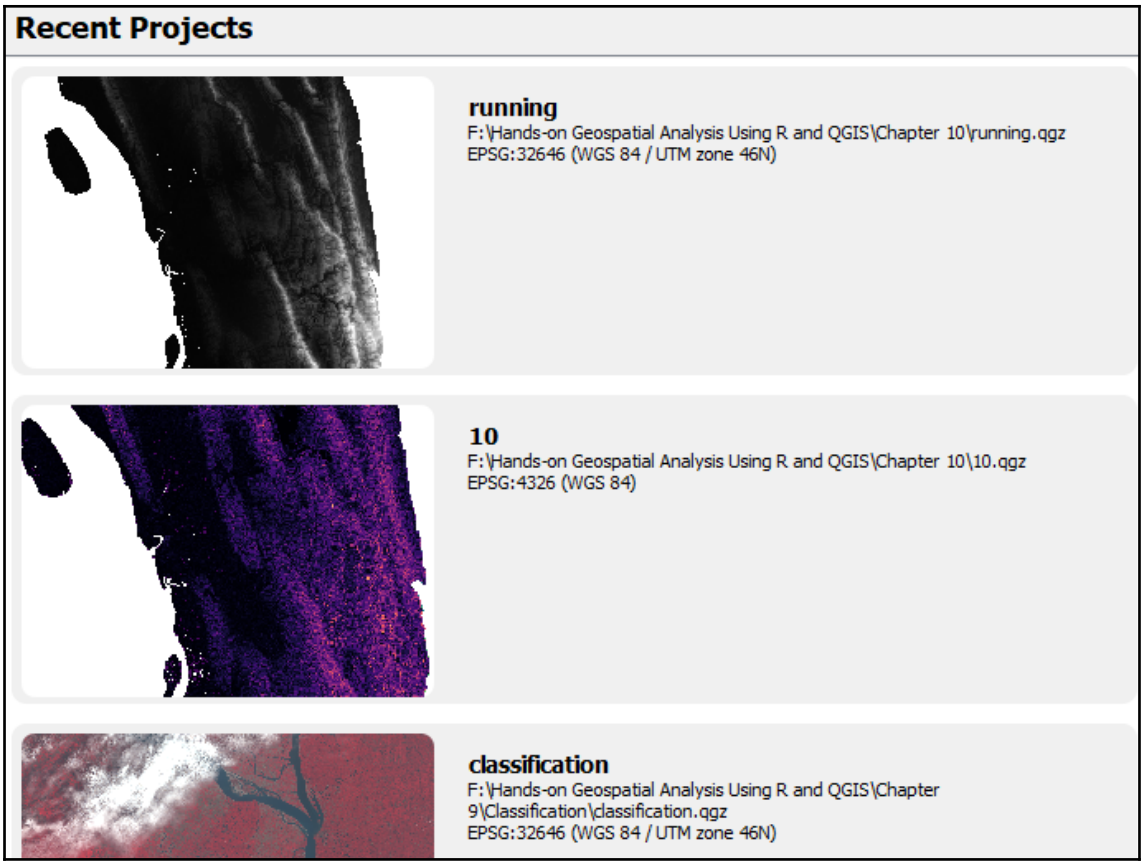

oil
potato
rice
40
30
20
june_price
10
15
20
25
30
jan_price

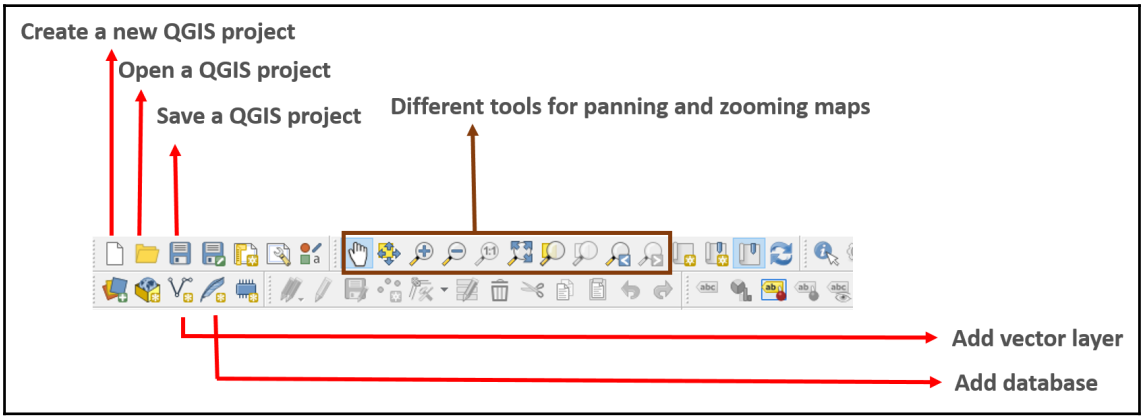


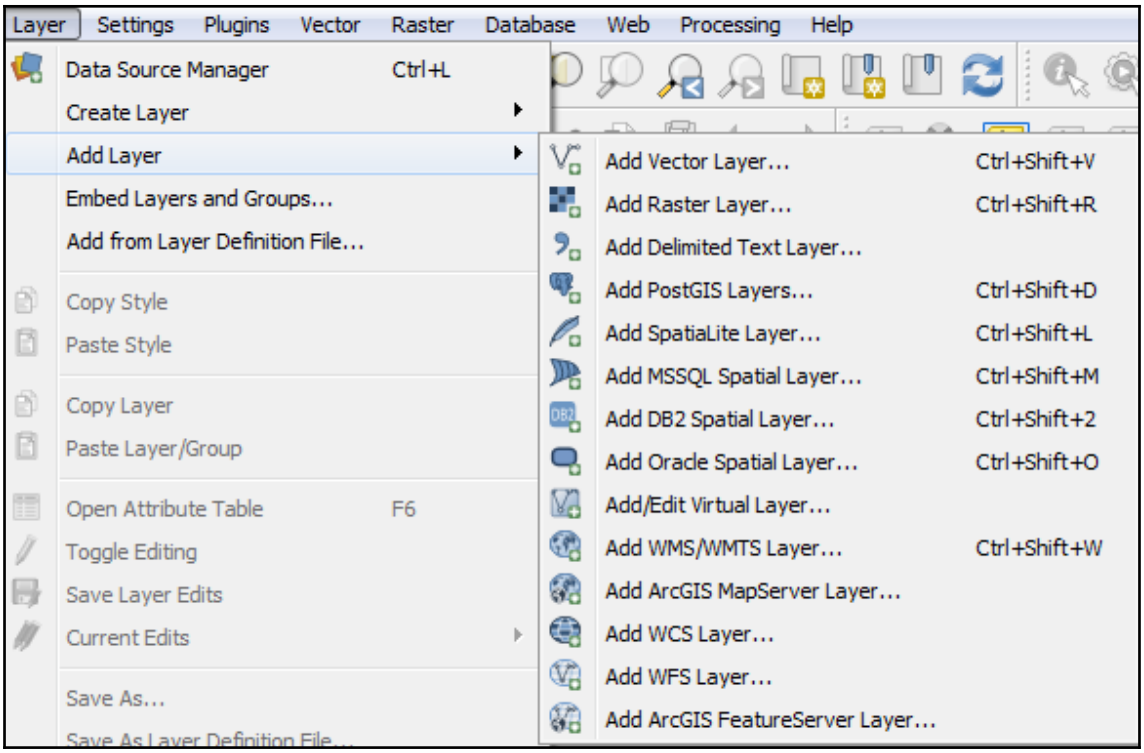
QGIS-OSGeo4W-3.2.2-1-Setup-x86.exe	18-Aug-2018 12:27	413M
QGIS-OSGeo4W-3.2.2-1-Setup-x86.exe.md5sum	18-Aug-2018 11:41	69
QGIS-OSGeo4W-3.2.2-1-Setup-x86_64.exe	18-Aug-2018 12:47	474M
QGIS-OSGeo4W-3.2.2-1-Setup-x86_64.exe.md5sum	18-Aug-2018 12:10	72

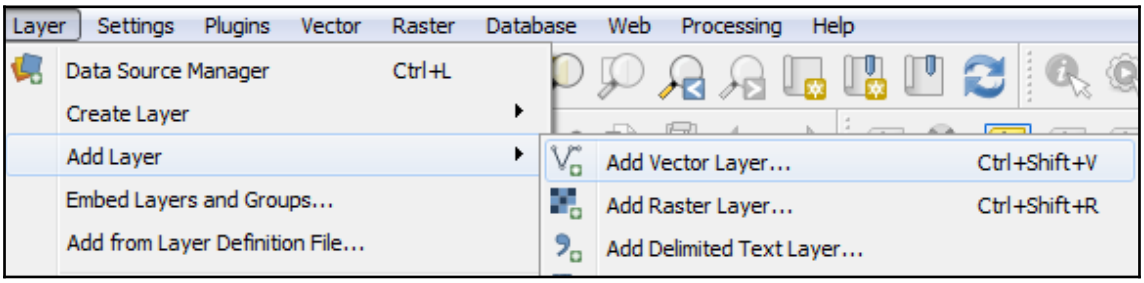


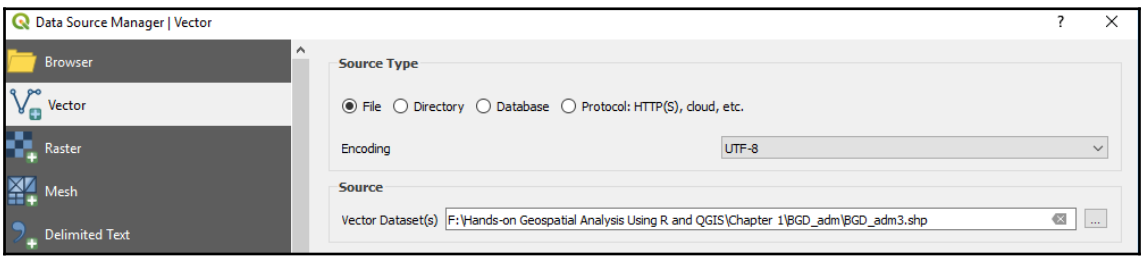

Browser
Favorites
Home
C:\
D:\
E:\
F:\
G:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
Layers
Type to locate (Ctrl+K)
Ready

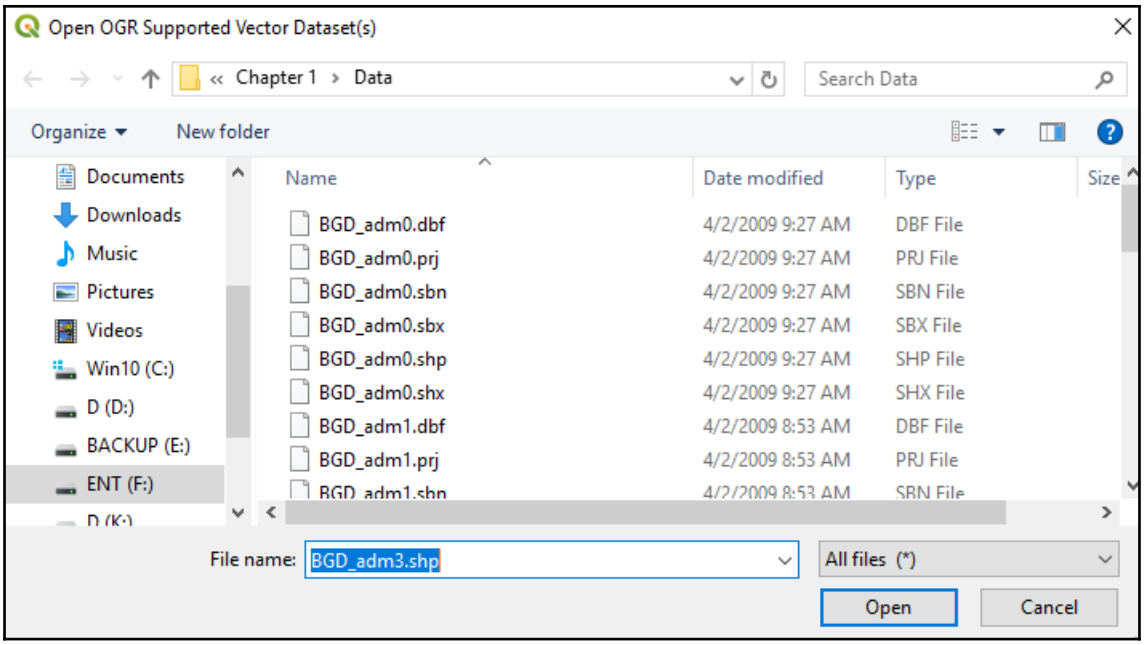

Recent Projects
running
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\running.qgz
EPSG:32646 (WGS 84 / UTM zone 46N)
10
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\10.qgz
EPSG:4326 (WGS 84)
classification
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 9\Classification\classification.qgz
EPSG:32646 (WGS 84 / UTM zone 46N)

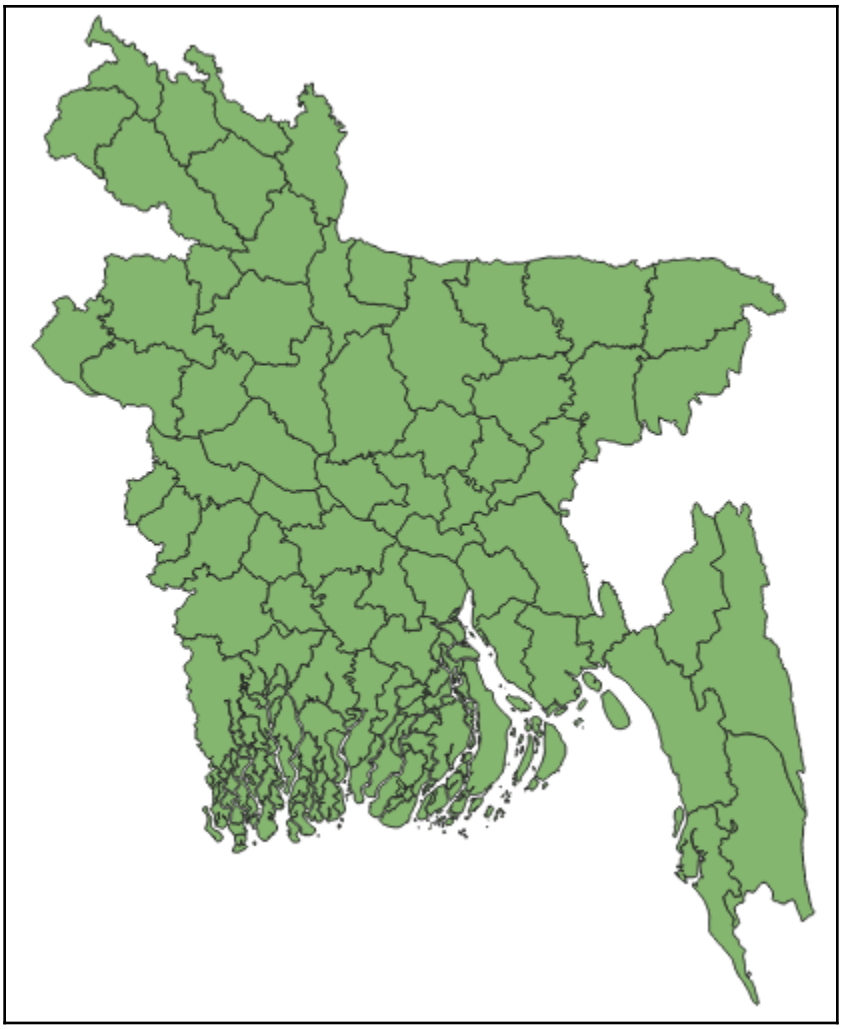

Create a new QGIS project
Open a QGIS project
Save a QGIS project
Different tools for panning and zooming maps
Add vector layer
Add database

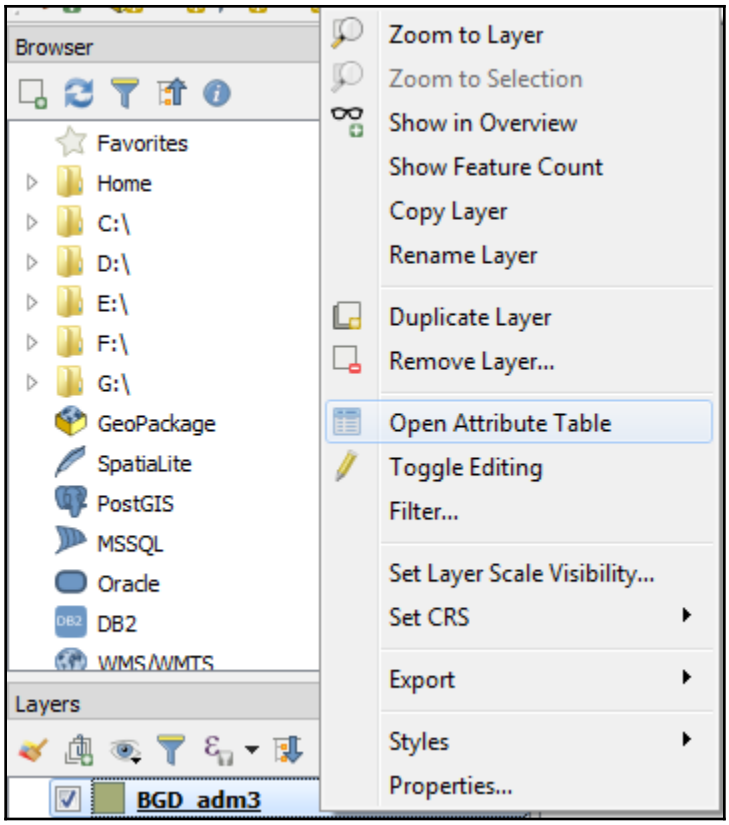

Layer
Settings
Plugins
Vector
Raster
Database
Web
Processing
Help
Data Source Manager Ctrl+L
Create Layer
Add Layer
Embed Layers and Groups...
Add from Layer Definition File...
Copy Style
Paste Style
Copy Layer
Paste Layer/Group
Open Attribute Table F6
Toggle Editing
Save Layer Edits
Current Edits
Save As...
Add Vector Layer... Ctrl+Shift+V
Add Raster Layer... Ctrl+Shift+R
Add Delimited Text Layer...
Add PostGIS Layers... Ctrl+Shift+D
Add SpatiaLite Layer... Ctrl+Shift+L
Add MSSQL Spatial Layer... Ctrl+Shift+M
Add DB2 Spatial Layer... Ctrl+Shift+2
Add Oracle Spatial Layer... Ctrl+Shift+O
Add/Edit Virtual Layer...
Add WMS/WMTS Layer... Ctrl+Shift+W
Add ArcGIS MapServer Layer...
Add WCS Layer...
Add WFS Layer...
Add ArcGIS FeatureServer Layer...


Layer
Settings
Plugins
Vector
Raster
Database
Web
Processing
Help
Data Source Manager Ctrl+L
Create Layer
Add Layer
Embed Layers and Groups...
Add from Layer Definition File...
Add Vector Layer... Ctrl+Shift+V
Add Raster Layer... Ctrl+Shift+R
Add Delimited Text Layer...


Data Source Manager | Vector
Browser
Vector
Raster
Mesh
Delimited Text
Source Type
File
Directory
Database
Protocol: HTTP(S), cloud, etc.
Encoding
UTF-8
Source
Vector Dataset(s)
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 1\BGD_adm\BGD_adm3.shp


Open OGR Supported Vector Dataset(s)
« Chapter 1 › Data
Search Data
Organize
New folder
Documents
Downloads
Music
Pictures
Videos
Win10 (C:)
D (D:)
BACKUP (E:)
ENT (F:)
Name
Date modified
Type
Size
BGD_adm0.dbf 4/2/2009 9:27 AM DBF File
BGD_adm0.prj 4/2/2009 9:27 AM PRJ File
BGD_adm0.sbn 4/2/2009 9:27 AM SBN File
BGD_adm0.sbx 4/2/2009 9:27 AM SBX File
BGD_adm0.shp 4/2/2009 9:27 AM SHP File
BGD_adm0.shx 4/2/2009 9:27 AM SHX File
BGD_adm1.dbf 4/2/2009 8:53 AM DBF File
BGD_adm1.prj 4/2/2009 8:53 AM PRJ File
File name: BGD_adm3.shp
All files (*)
Open
Cancel





BGD_adm3 :: Features Total: 66, Filtered: 66, Selected: 0

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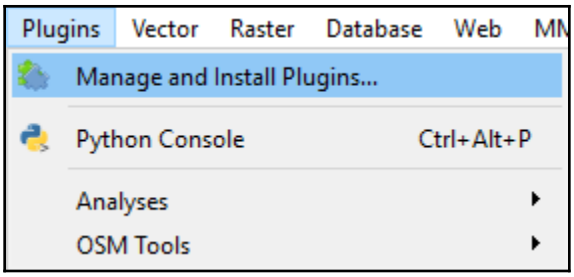
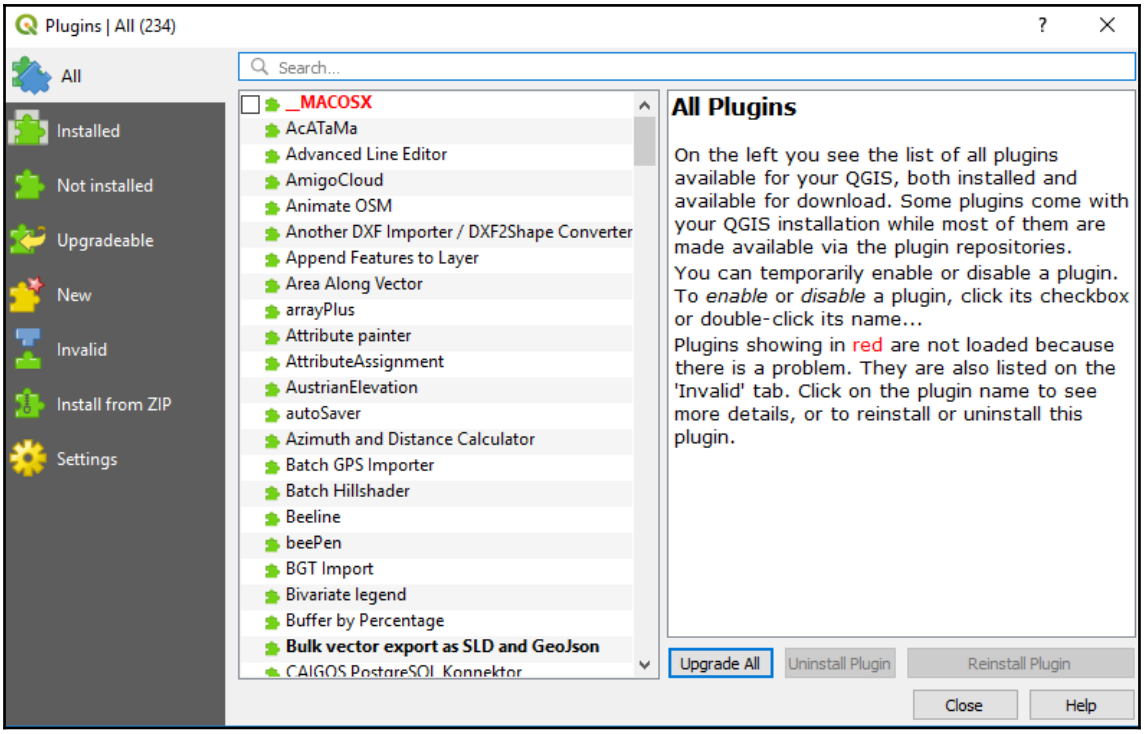
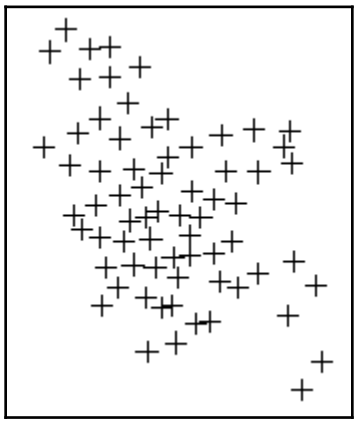
1	23	BGD	Bangladesh	326	Chittagong	3102	Rangamati	3640	Parbattya Chatt...	Parbattya Chatt...		BD.CG.PC	Zila	Dis
2	23	BGD	Bangladesh	327	Dhaka	3103	Dhaka	3641	Dhaka			BD.DA.DH	Zila	Dis
3	23	BGD	Bangladesh	327	Dhaka	3103	Dhaka	3642	Gazipur			BD.DA.GZ	Zila	Dis
4	23	BGD	Bangladesh	327	Dhaka	3103	Dhaka	3643	Manikgonj	Manikganj|Man...		BD.DA.MK	Zila	Dis
5	23	BGD	Bangladesh	326	Chittagong	3100	Khagrachari	3636	Khagrachari	Khagrachari|Kh...		BD.CG.KG	Zila	Dis
6	23	BGD	Bangladesh	326	Chittagong	3101	Noakhali	3637	Feni			BD.CG.FN	Zila	Dis
7	23	BGD	Bangladesh	326	Chittagong	3101	Noakhali	3638	Lakshmipur	Lakshmipur|Lak...		BD.CG.LK	Zila	Dis
8	23	BGD	Bangladesh	326	Chittagong	3101	Noakhali	3639	Noakhali			BD.CG.NO	Zila	Dis
9	23	BGD	Bangladesh	326	Chittagong	3098	Chittagong	3632	Cox's Bazar			BD.CG.CB	Zila	Dis
10	23	BGD	Bangladesh	326	Chittagong	3099	Comilla	3633	Brahmanbaria			BD.CG.BB	Zila	Dis
11	23	BGD	Bangladesh	326	Chittagong	3099	Comilla	3634	Chandpur			BD.CG.CP	Zila	Dis
12	23	BGD	Bangladesh	326	Chittagong	3099	Comilla	3635	Comilla			BD.CG.CM	Zila	Dis
13	23	BGD	Bangladesh	325	Barisal	3096	Patuakhali	3628	Borgona	Barguna|Borgona		BD.BA.BG	Zila	Dis
14	23	BGD	Bangladesh	325	Barisal	3096	Patuakhali	3629	Patuakhali			BD.BA.PT	Zila	Dis
15	23	BGD	Bangladesh	326	Chittagong	3097	Bandarban	3630	Bandarbon	Bandarban|Ban...		BD.CG.BD	Zila	Dis


Plugins
Vector
Raster
Database
Web
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
Analyses
OSM Tools

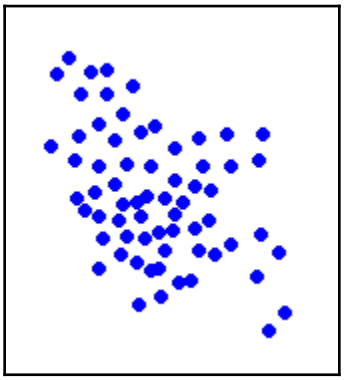

Plugins | All (234)
All
Installed
Not installed
Upgradeable
New
Invalid
Install from ZIP
Settings
Search...
_MACOSX
AcATaMa
Advanced Line Editor
AmigoCloud
Animate OSM
Another DXF Importer / DXF2Shape Converter
Append Features to Layer
Area Along Vector
arrayPlus
Attribute painter
AttributeAssignment
AustrianElevation
autoSaver
Azimuth and Distance Calculator
Batch GPS Importer
Batch Hillshader
Beeline
beePen
BGT Import
Bivariate legend
Buffer by Percentage
Bulk vector export as SLD and GeoJson
All Plugins
On the left you see the list of all plugins available for your QGIS, both installed and available for download. Some plugins come with your QGIS installation while most of them are made available via the plugin repositories.
You can temporarily enable or disable a plugin. To enable or disable a plugin, click its checkbox or double-click its name...
Plugins showing in red are not loaded because there is a problem. They are also listed on the 'Invalid' tab. Click on the plugin name to see more details, or to reinstall or uninstall this plugin.
Upgrade All
Uninstall Plugin
Reinstall Plugin
Close
Help

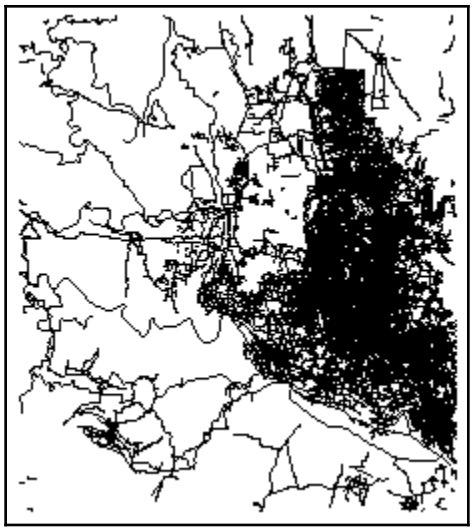
Chapter 2: Fundamentals of GIS Using R and QGIS

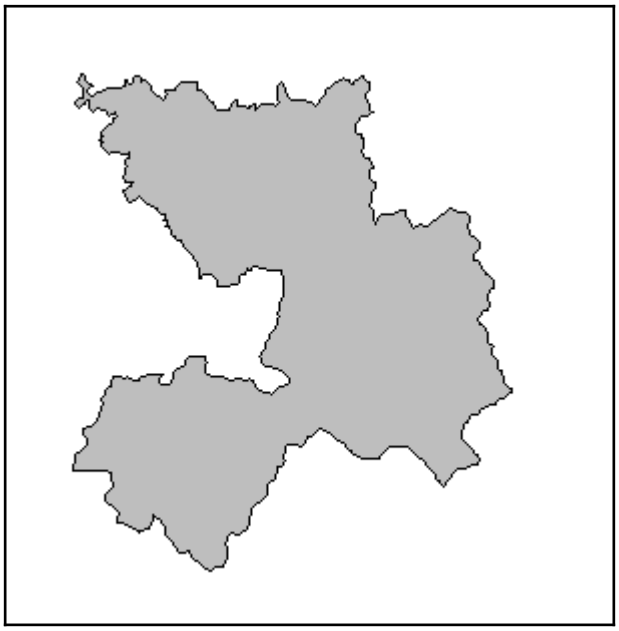


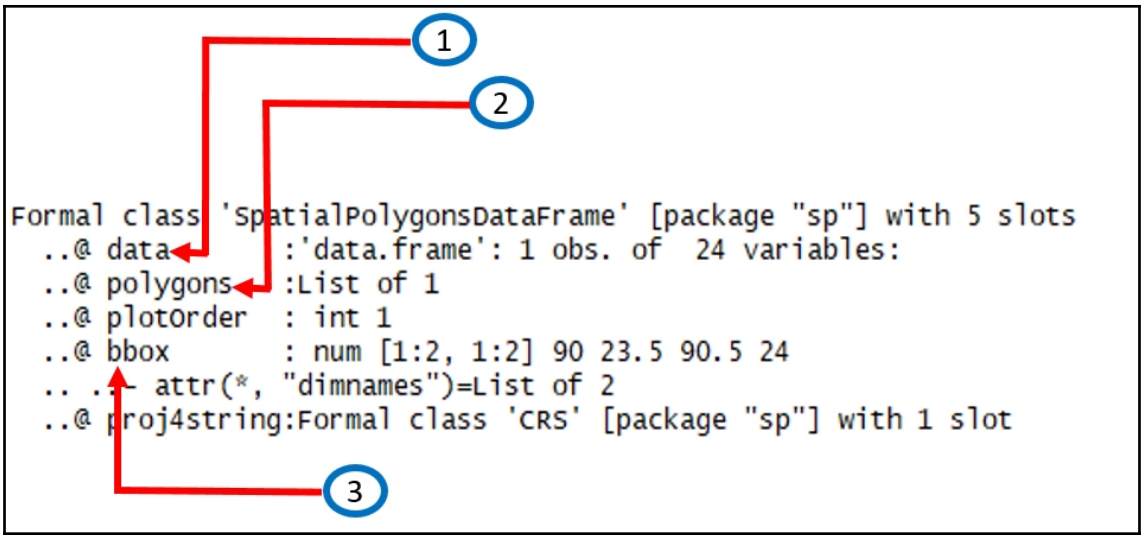
```
'data.frame':   66 obs. of  6 variables:
 $ X    : int  1 2 3 4 5 6 7 8 9 10 ...
 $ lat  : num  22.9 22.6 22.5 22.4 22.1 ...
 $ lon  : num  90.2 90.2 90 90.7 90.2 ...
 $ names: chr  "Barisal" "Jhalakati" "Pirojpur" "Bhola" ...
 $ value: int  23 43 56 34 54 87 19 87 45 73 ...
 $ ind  : chr  "A" "B" "C" "D" ...
```

```
Formal class 'SpatialPointsDataFrame' [package "sp"] with 5 slots
  ..@ data       :'data.frame': 66 obs. of  4 variables:
  .. ..$ X    : int [1:66] 1 2 3 4 5 6 7 8 9 10 ...
  .. ..$ names: chr [1:66] "Barisal" "Jhalakati" "Pirojpur" "Bhola" ...
  .. ..$ value: int [1:66] 23 43 56 34 54 87 19 87 45 73 ...
  .. ..$ ind  : Factor w/ 5 levels "A","B","C","D",..: 1 2 3 4 5 1 2 3 4 5
  ..@ coords.nrs : int [1:2] 3 2
  ..@ coords     : num [1:66, 1:2] 90.2 90.2 90 90.7 90.2 ...
  .. ..- attr(*, "dimnames")=List of 2
  .. .. ..$ : NULL
  .. .. ..$ : chr [1:2] "lon" "lat"
  ..@ bbox       : num [1:2, 1:2] 88.3 21.5 92.4 26.3
  .. ..- attr(*, "dimnames")=List of 2
  .. .. ..$ : chr [1:2] "lon" "lat"
  .. .. ..$ : chr [1:2] "min" "max"
  ..@ proj4string:Formal class 'CRS' [package "sp"] with 1 slot
  .. .. ..@ projargs: chr NA
```









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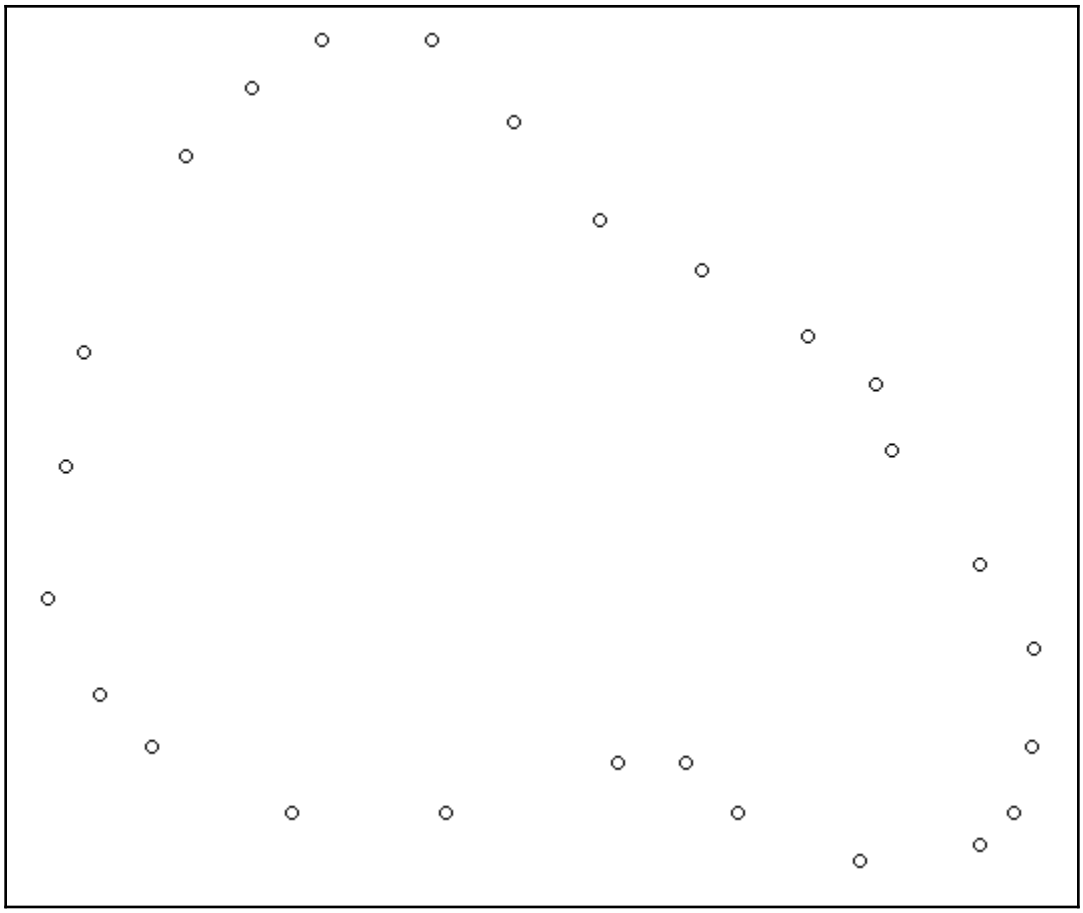
1	23	BGD	Bangladesh	325	Barisal	3095	Barisal	3625	Jhalakati	Jhalakati|Jhalakhati|Jhalkathi	<NA>	BD.BA.JK	Zila
2	23	BGD	Bangladesh	325	Barisal	3095	Barisal	3626	Pirojpur	<NA>	<NA>	BD.BA.PR	Zila
3	23	BGD	Bangladesh	325	Barisal	3096	Patuakhali	3627	Bhola	<NA>	<NA>	BD.BA.BL	Zila
4	23	BGD	Bangladesh	325	Barisal	3096	Patuakhali	3628	Borgona	Barguna|Borgona	<NA>	BD.BA.BG	Zila
5	23	BGD	Bangladesh	325	Barisal	3096	Patuakhali	3629	Patuakhali	<NA>	<NA>	BD.BA.PT	Zila

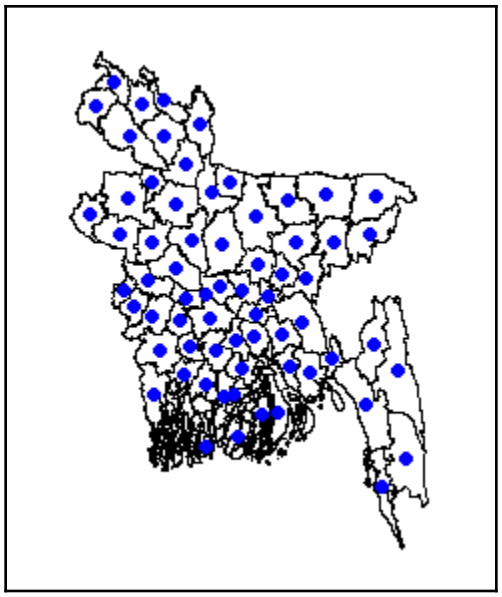
	ENGTYPE_3	VALIDFR_3	VALIDTO_3	REMARKS_3	Shape_Leng	Shape_Area	Value	value1	value2	value3
0	District	Unknown	Present	<NA>	9.978729	0.19656914	90	1234	67	Agree
1	District	Unknown	Present	<NA>	2.677218	0.06195496	NA	3456	45	Strongly Agree
2	District	Unknown	Present	<NA>	3.534049	0.10831397	NA	1349	65	Not Sure
3	District	Unknown	Present	<NA>	8.704750	0.15616449	NA	1200	22	Disagree
4	District	Unknown	Present	<NA>	5.713298	0.11849395	NA	2100	45	Strongly Disagree
5	District	1946	Present	<NA>	13.467342	0.21025806	NA	2090	65	Agree

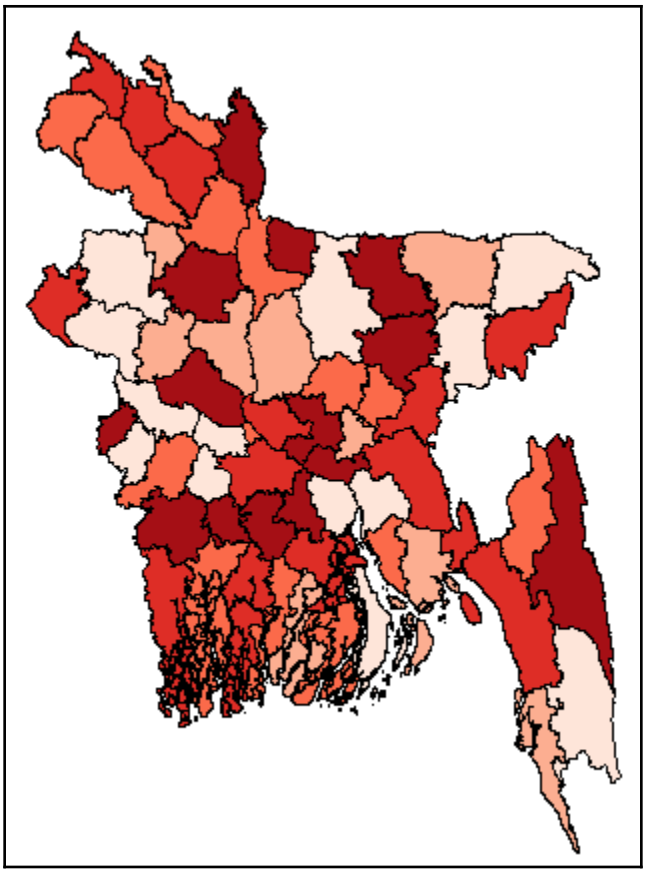
```
List of 66
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
 $ :Formal class 'Polygons' [package "sp"] with 5 slots
```

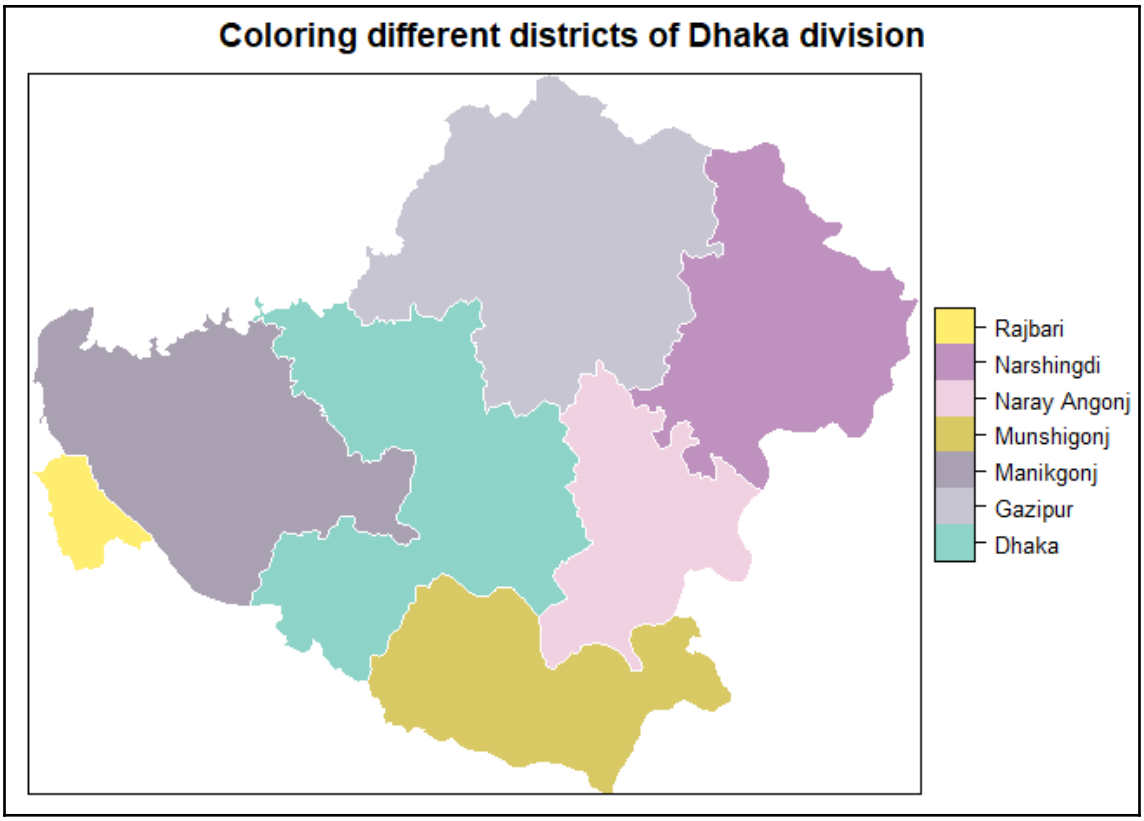
```
Formal class 'Polygons' [package "sp"] with 5 slots
  ..@ Polygons :List of 83
  ..@ plotOrder: int [1:83] 82 74 41 77 79 51 60 65 43 38 ...
  ..@ labpt    : num [1:2] 90.5 22.3
  ..@ ID       : chr "5"
  ..@ area     : num 0.21
```

```
Formal class 'Polygon' [package "sp"] with 5 slots
  ..@ labpt  : num [1:2] 90.3 21.8
  ..@ area   : num 9.08e-06
  ..@ hole   : logi FALSE
  ..@ ringDir: int 1
  ..@ coords : num [1:27, 1:2] 90.3 90.3 90.3 90.3 90.3 ...
```

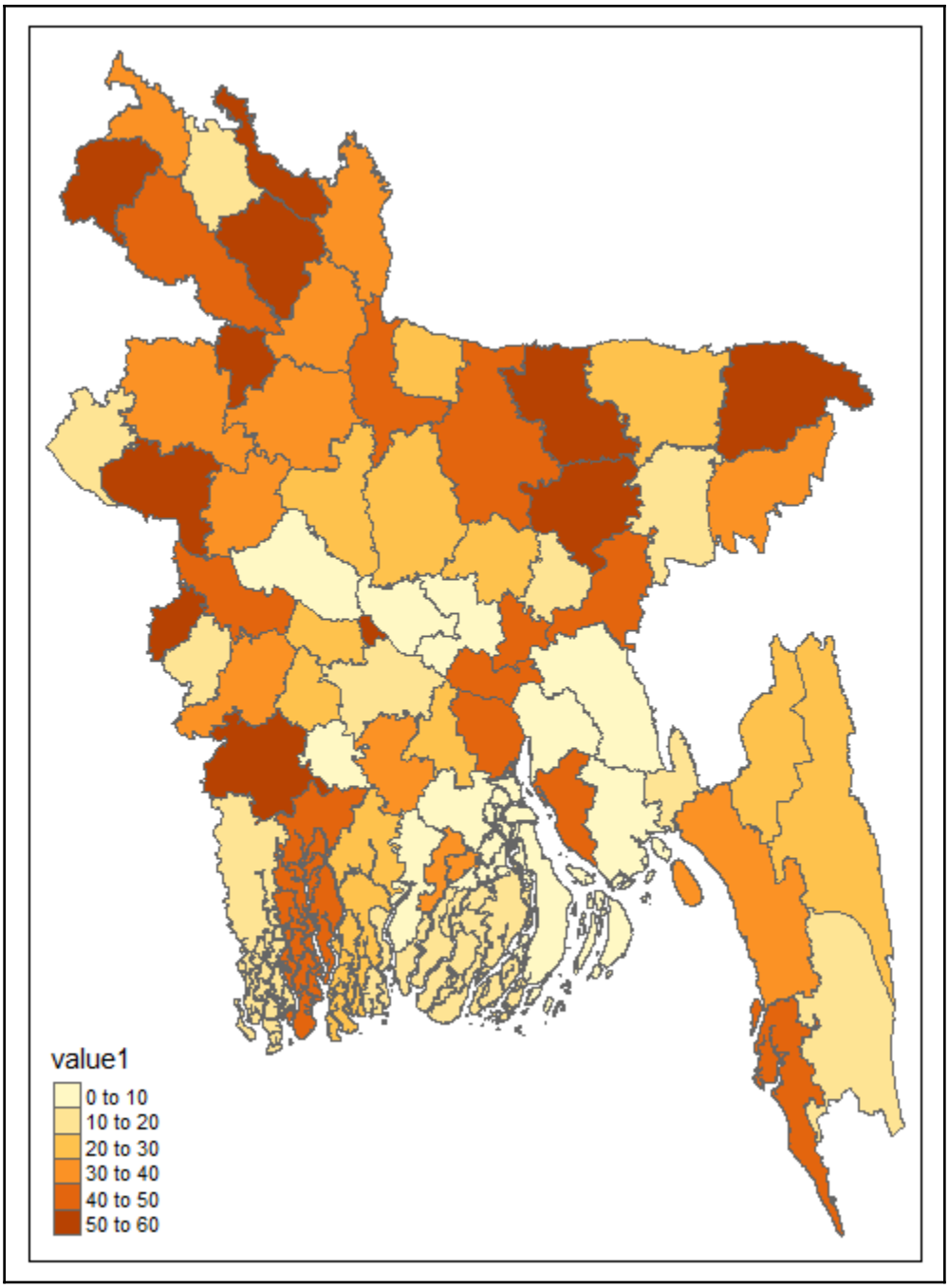


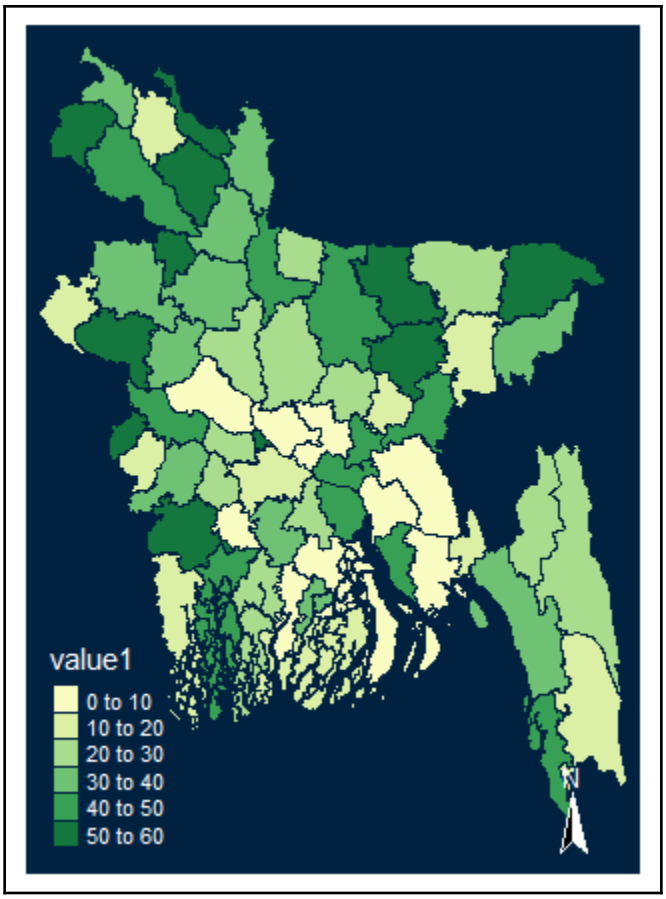


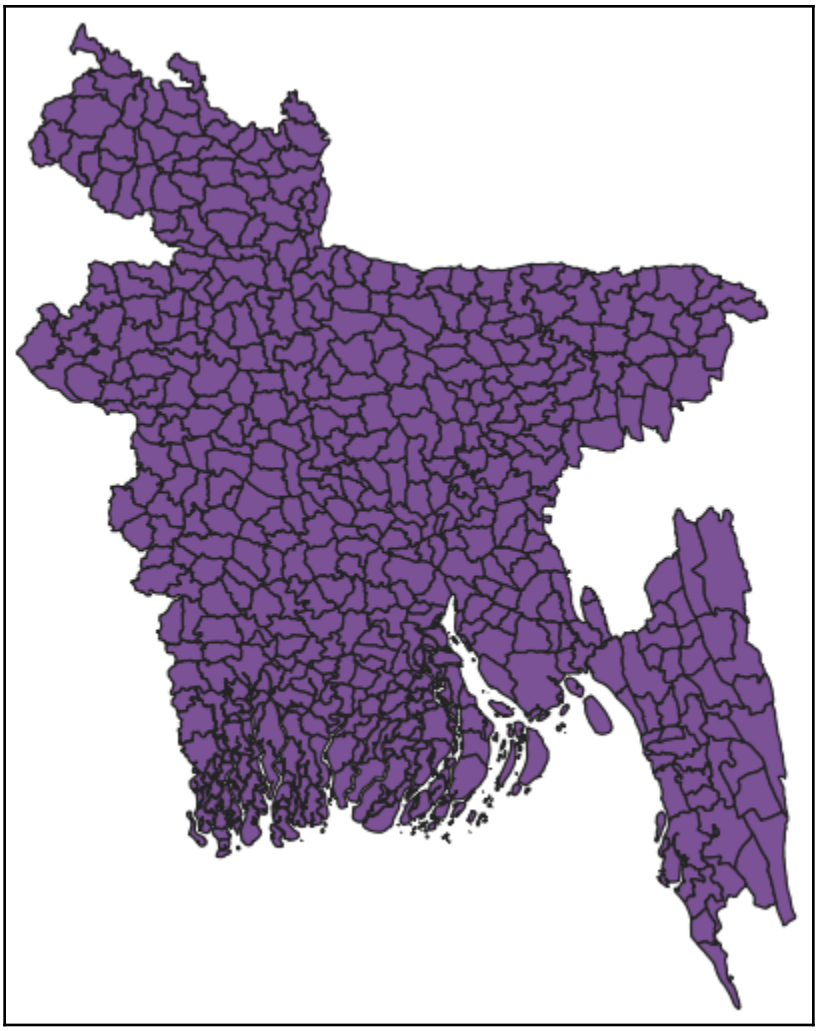


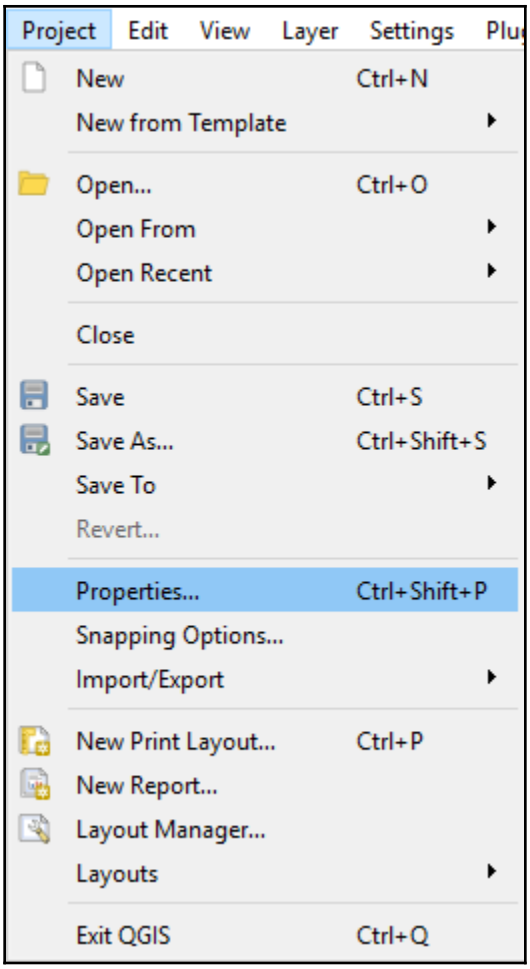

Coloring different districts of Dhaka division
Rajbari
Narshingdi
Naray Angonj
Munshigonj
Manikgonj
Gazipur
Dhaka

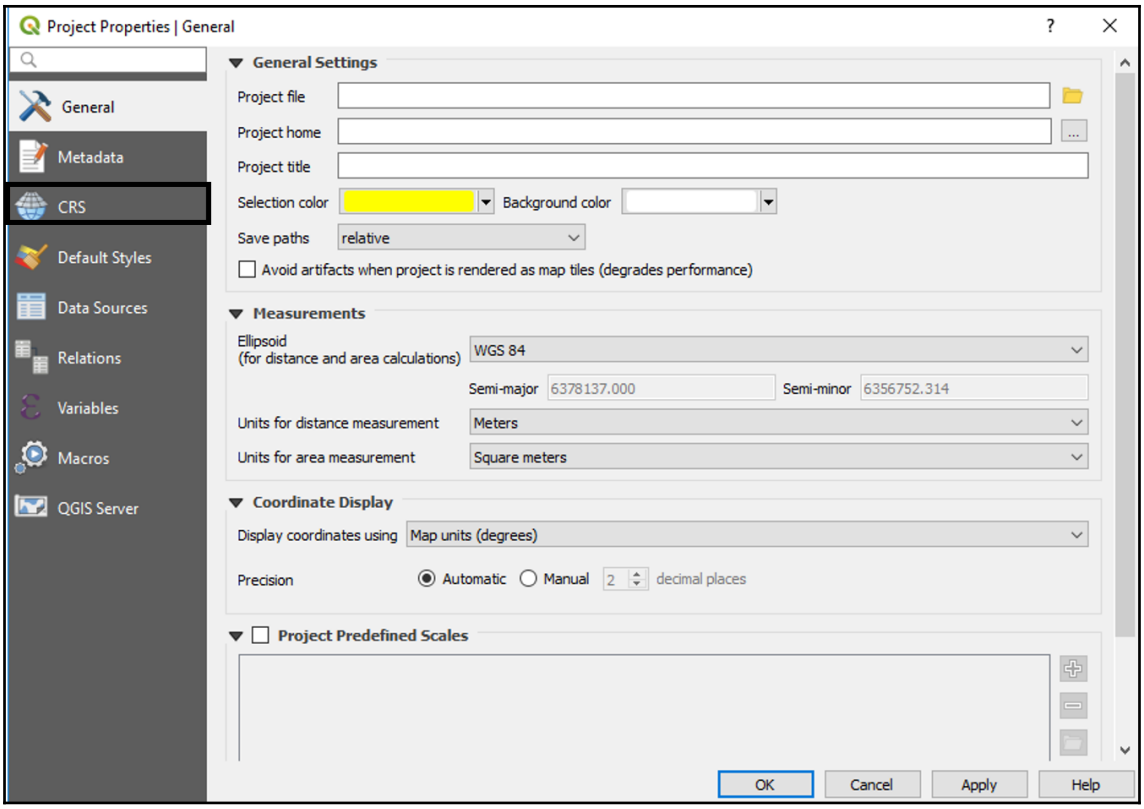
```
 str(map_bd@data)
data.frame':   66 obs. of  23 variables:
$ ID_0      : int  23 23 23 23 23 23 23 23 23 23 ...
$ ISO       : Factor w/ 1 level "BGD": 1 1 1 1 1 1 1 1 1 1 ...
$ NAME_0    : Factor w/ 1 level "Bangladesh": 1 1 1 1 1 1 1 1 1 1 ...
$ ID_1      : int  325 325 325 325 325 325 326 326 326 326 ...
$ NAME_1    : Factor w/ 6 levels "Barisal","Chittagong",..: 1 1 1 1 1 1 2 2 2 2 ...
$ ID_2      : int  3095 3095 3095 3096 3096 3096 3097 3098 3098 3099 ...
$ NAME_2    : Factor w/ 23 levels "Bandarban","Barisal",..: 2 2 2 18 18 18 1 4 4 5 ...
$ ID_3      : int  3624 3625 3626 3627 3628 3629 3630 3631 3632 3633 ...
$ NAME_3    : Factor w/ 64 levels "Bagerhat","Bandarbon",..: 3 24 53 4 6 52 2 9 12 7 ...
$ VARNAME_3 : Factor w/ 30 levels "Bandarban|Bandarbon",..: NA 9 NA NA 2 NA 1 3 NA NA ...
$ NL_NAME_3 : Factor w/ 0 levels: NA NA NA NA NA NA NA NA NA NA ...
$ HASC_3    : Factor w/ 64 levels "BD.BA.BG","BD.BA.BL",..: 3 4 5 2 1 6 8 12 9 7 ...
$ TYPE_3    : Factor w/ 1 level "Zila": 1 1 1 1 1 1 1 1 1 1 ...
$ ENGTYPE_3 : Factor w/ 1 level "District": 1 1 1 1 1 1 1 1 1 1 ...
$ VALIDFR_3 : Factor w/ 5 levels "1946","1974",..: 5 5 5 5 5 1 3 5 5 5 ...
$ VALIDTO_3 : Factor w/ 1 level "Present": 1 1 1 1 1 1 1 1 1 1 ...
$ REMARKS_3 : Factor w/ 0 levels: NA NA NA NA NA NA NA NA NA NA ...
$ Shape_Leng: num  9.98 2.68 3.53 8.7 5.71 ...
$ Shape_Area: num  0.197 0.062 0.108 0.156 0.118 ...
$ Value     : num  90 NA NA NA NA NA 73 40 NA NA ...
$ value1    : Factor w/ 60 levels "1020","1200",..: 3 39 4 2 12 11 16 32 41 49 ...
$ value2    : Factor w/ 38 levels "17","19","21",..: 23 15 22 4 15 22 5 27 15 24 ...
$ value3    : Factor w/ 5 levels "Agree","Disagree",..: 1 4 3 2 5 1 2 5 5 2 ...
```

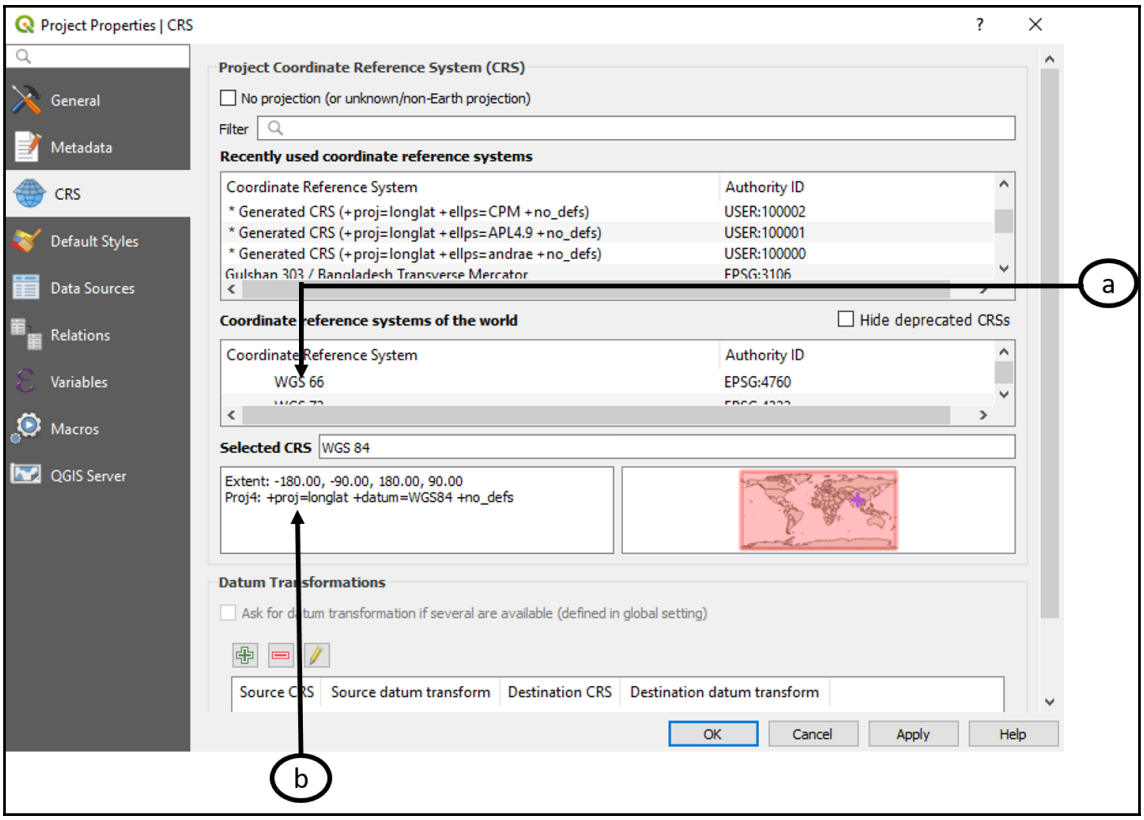

value1
0 to 10
10 to 20
20 to 30
30 to 40
40 to 50
50 to 60

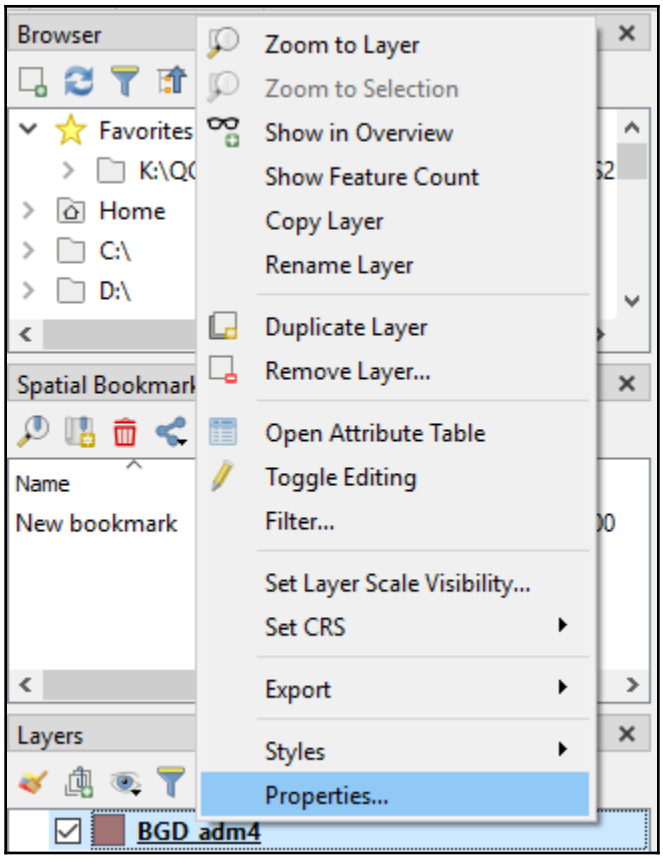

value1
0 to 10
10 to 20
20 to 30
30 to 40
40 to 50
50 to 60
N

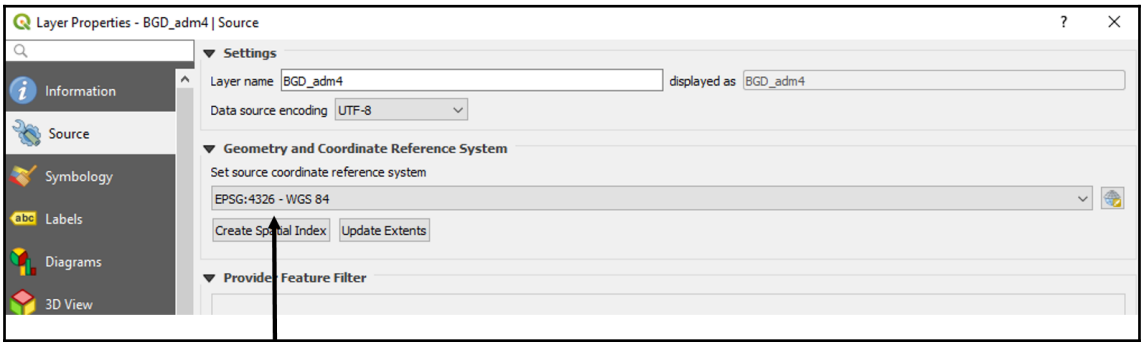


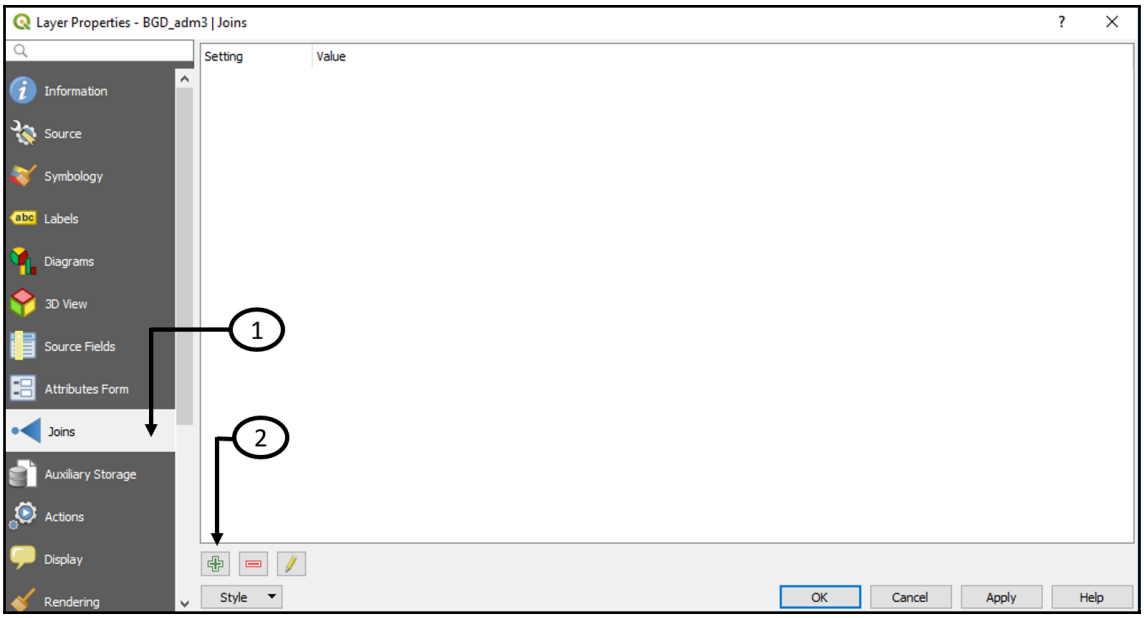

Project
Edit
View
Layer
Settings
Plu
New
Ctrl+N
New from Template
Open...
Ctrl+O
Open From
Open Recent
Close
Save
Ctrl+S
Save As...
Ctrl+Shift+S
Save To
Revert...
Properties...
Ctrl+Shift+P
Snapping Options...
Import/Export
New Print Layout...
Ctrl+P
New Report...
Layout Manager...
Layouts
Exit QGIS
Ctrl+Q

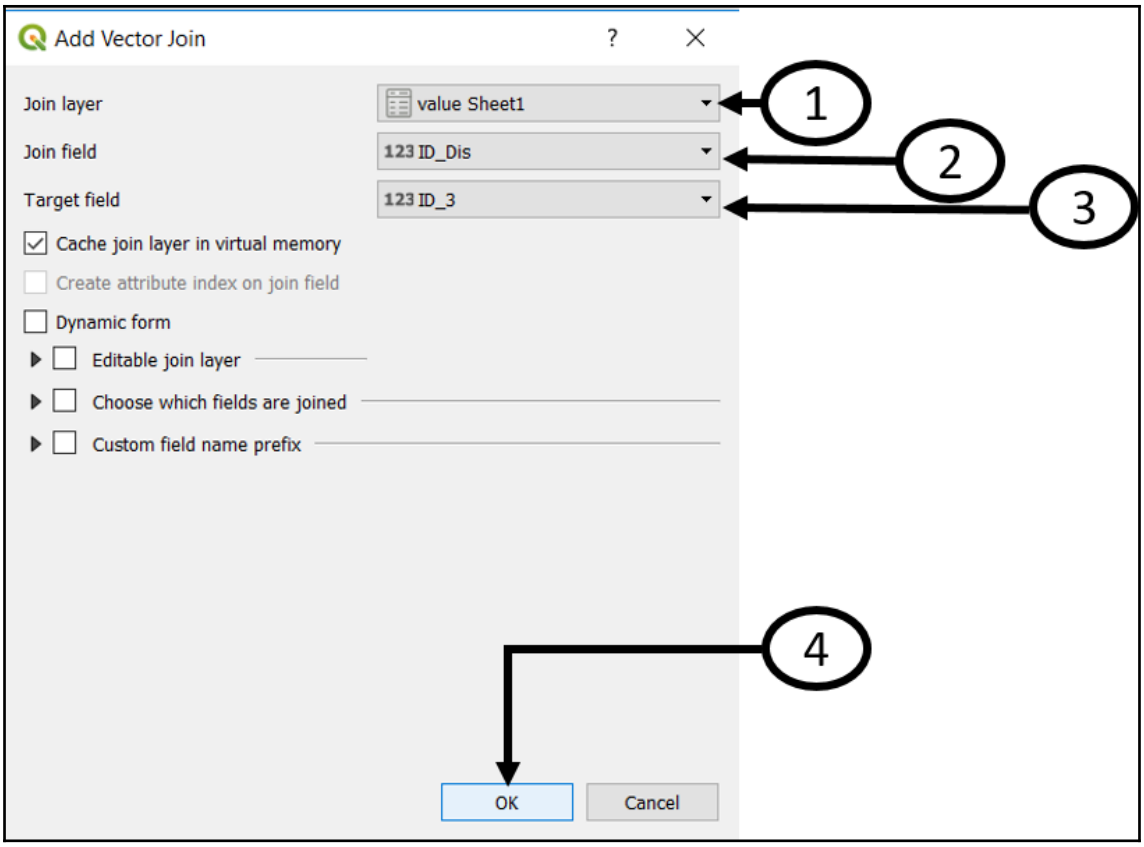

Project Properties | General
General
Metadata
CRS
Default Styles
Data Sources
Relations
Variables
Macros
QGIS Server
General Settings
Project file
Project home
Project title
Selection color
Background color
Save paths
relative
Avoid artifacts when project is rendered as map tiles (degrades performance)
Measurements
Ellipsoid
(for distance and area calculations)
WGS 84
Semi-major
6378137.000
Semi-minor
6356752.314
Units for distance measurement
Meters
Units for area measurement
Square meters
Coordinate Display
Display coordinates using
Map units (degrees)
Precision
Automatic
Manual
2
decimal places
Project Predefined Scales
OK
Cancel
Apply
Help

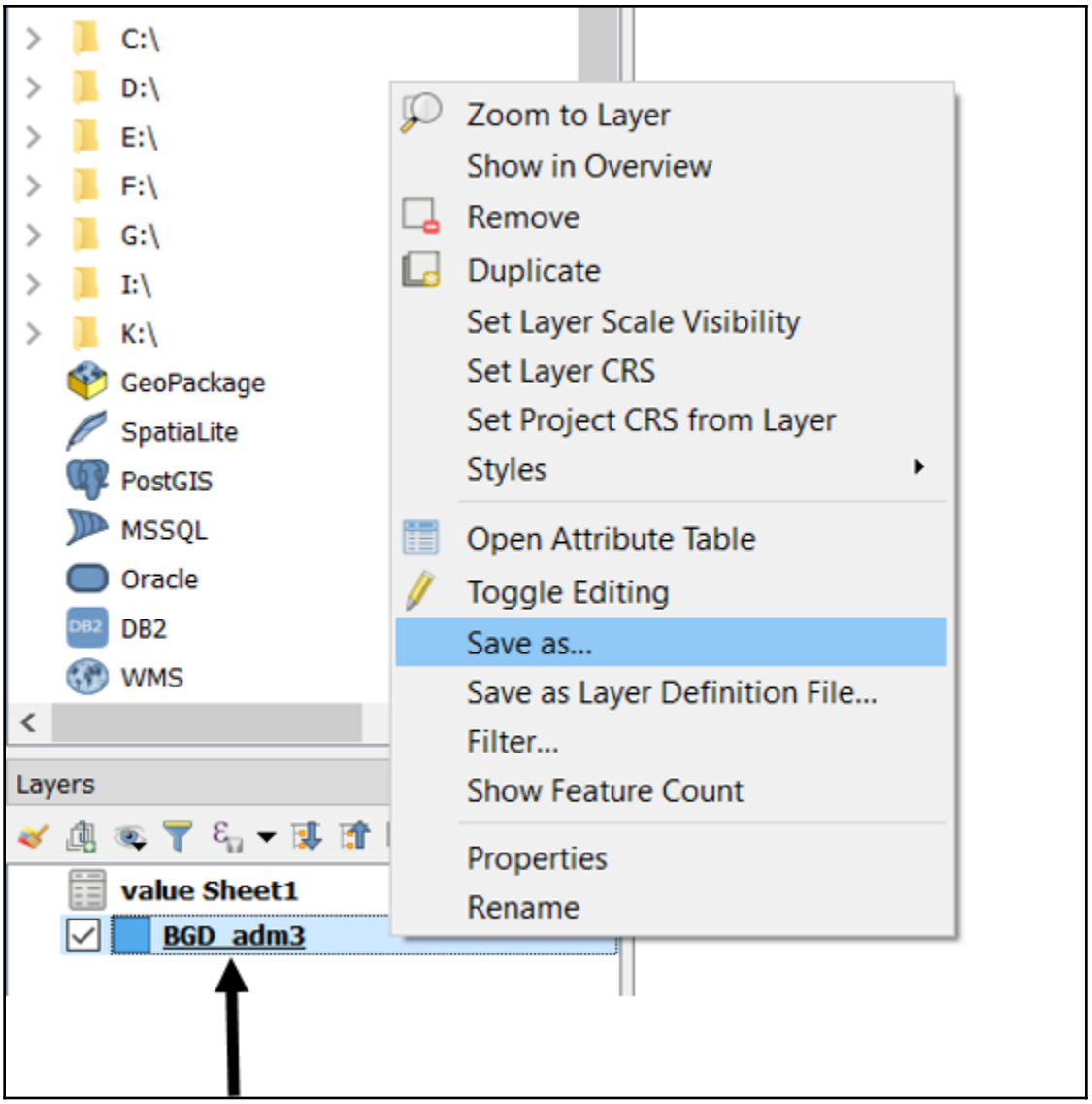

Project Properties | CRS
General
Metadata
CRS
Default Styles
Data Sources
Relations
Variables
Macros
QGIS Server
Project Coordinate Reference System (CRS)
No projection (or unknown/non-Earth projection)
Filter
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
* Generated CRS (+proj=longlat +ellps=CPM +no_defs)
USER:100002
* Generated CRS (+proj=longlat +ellps=APL4.9 +no_defs)
USER:100001
* Generated CRS (+proj=longlat +ellps=andrae +no_defs)
USER:100000
Gulshan 303 / Bangladesh Transverse Mercator
EPSG:3106
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
WGS 66
EPSG:4760
Selected CRS
WGS 84
Extent: -180.00, -90.00, 180.00, 90.00
Proj4: +proj=longlat +datum=WGS84 +no_defs
Datum Transformations
Ask for datum transformation if several are available (defined in global setting)
Source CRS
Source datum transform
Destination CRS
Destination datum transform
OK
Cancel
Apply
Help
a
b

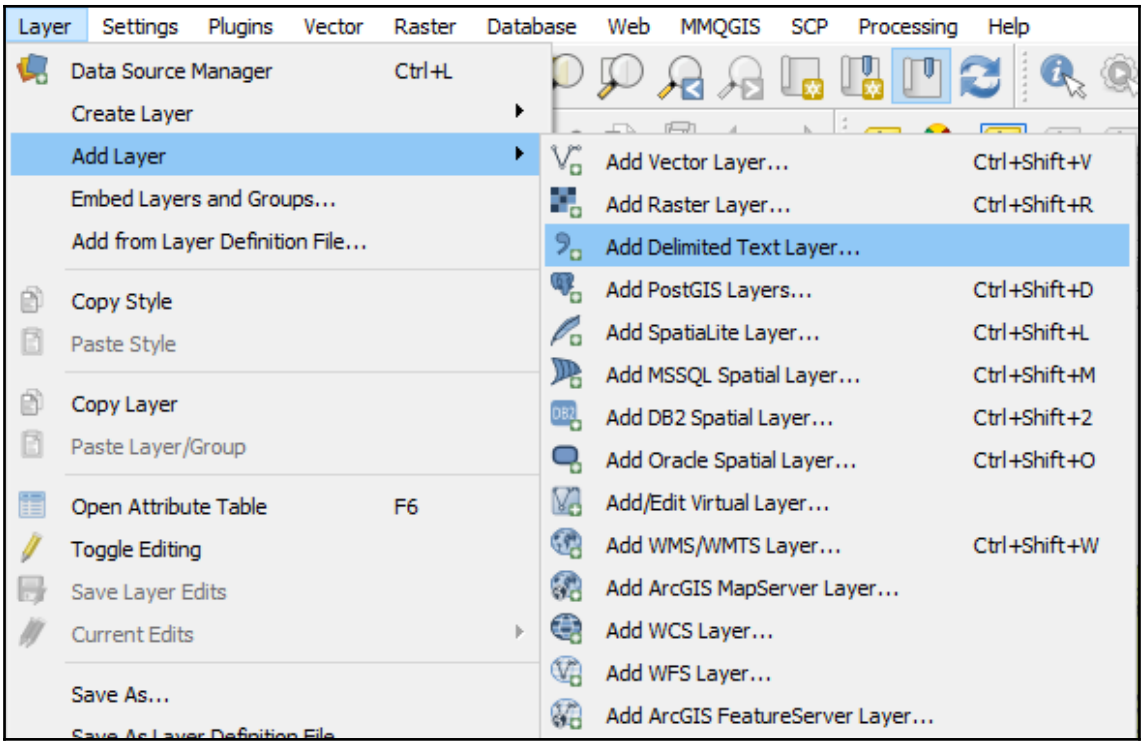

Browser
Favorites
Home
C:\
D:\
Spatial Bookmark
Name
New bookmark
Layers
BGD_adm4
Zoom to Layer
Zoom to Selection
Show in Overview
Show Feature Count
Copy Layer
Rename Layer
Duplicate Layer
Remove Layer...
Open Attribute Table
Toggle Editing
Filter...
Set Layer Scale Visibility...
Set CRS
Export
Styles
Properties...

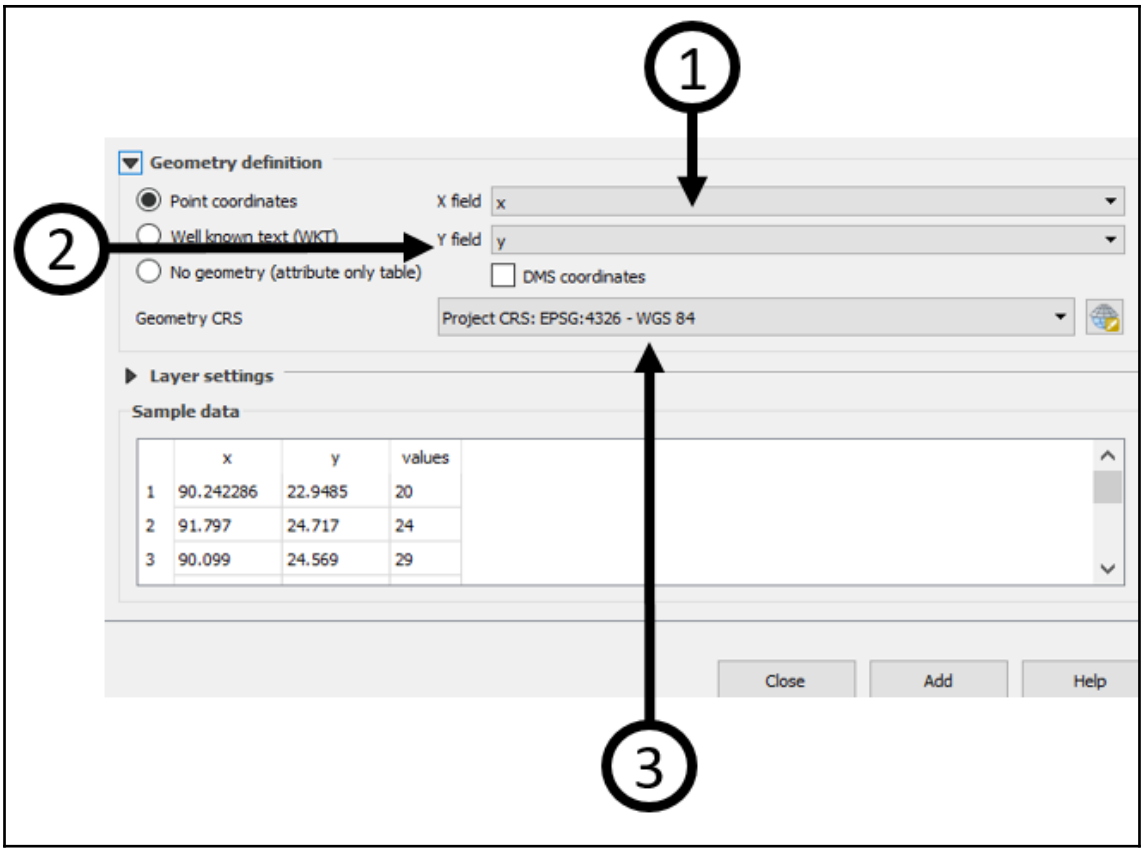

Layer Properties - BGD_adm4 | Source
Information
Source
Symbology
Labels
Diagrams
3D View
Settings
Layer name BGD_adm4
displayed as BGD_adm4
Data source encoding UTF-8
Geometry and Coordinate Reference System
Set source coordinate reference system
EPSG:4326 - WGS 84
Create Spatial Index
Update Extents
Provider Feature Filter

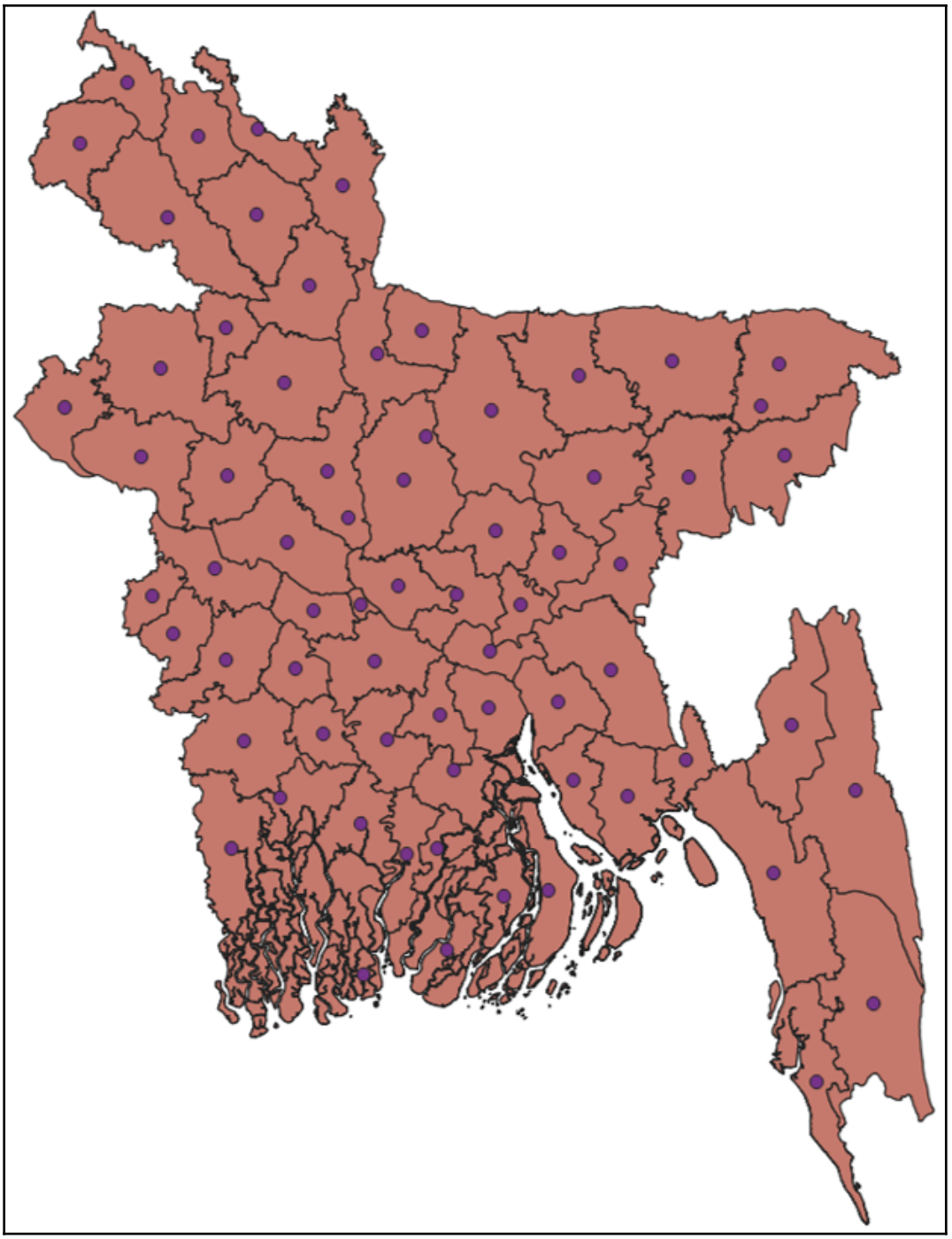

Layer Properties - BGD_adm3 | Joins
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Setting
Value
1
2
Style
OK
Cancel
Apply
Help

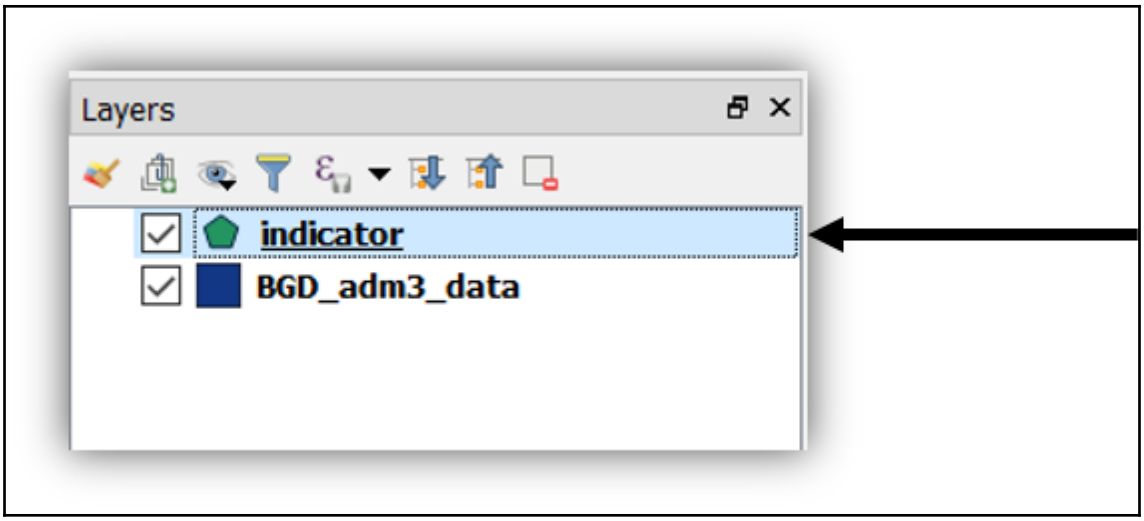

Add Vector Join
Join layer
value Sheet1
Join field
123 ID_Dis
Target field
123 ID_3
Cache join layer in virtual memory
Create attribute index on join field
Dynamic form
Editable join layer
Choose which fields are joined
Custom field name prefix
OK
Cancel
1
2
3
4

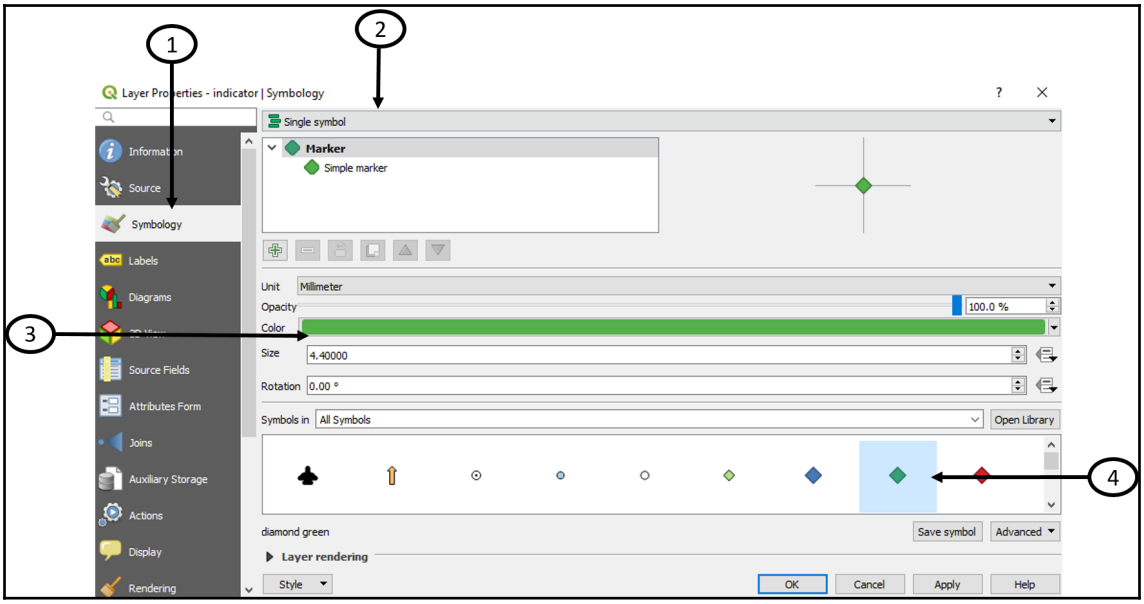

C:\
D:\
E:\
F:\
G:\
I:\
K:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS
Zoom to Layer
Show in Overview
Remove
Duplicate
Set Layer Scale Visibility
Set Layer CRS
Set Project CRS from Layer
Styles
Open Attribute Table
Toggle Editing
Save as...
Save as Layer Definition File...
Filter...
Show Feature Count
Properties
Rename
Layers
value Sheet1
BGD_adm3

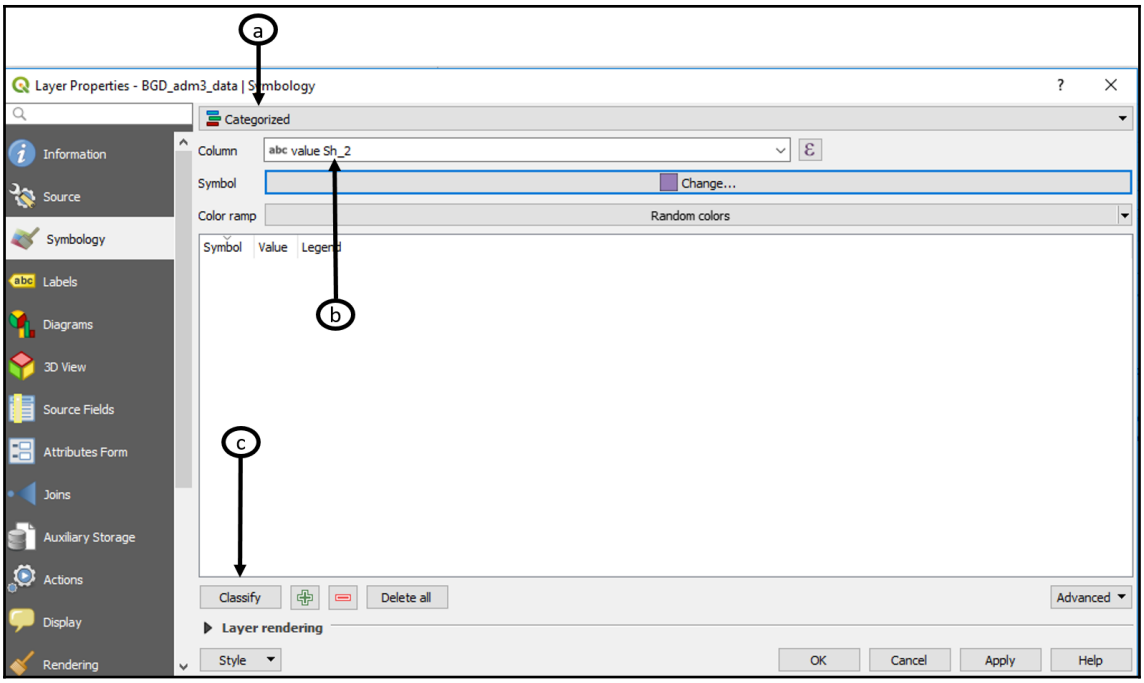

Layer
Settings
Plugins
Vector
Raster
Database
Web
MMQGIS
SCP
Processing
Help
Data Source Manager Ctrl+L
Create Layer
Add Layer
Embed Layers and Groups...
Add from Layer Definition File...
Copy Style
Paste Style
Copy Layer
Paste Layer/Group
Open Attribute Table F6
Toggle Editing
Save Layer Edits
Current Edits
Save As...
Add Vector Layer... Ctrl+Shift+V
Add Raster Layer... Ctrl+Shift+R
Add Delimited Text Layer...
Add PostGIS Layers... Ctrl+Shift+D
Add SpatiaLite Layer... Ctrl+Shift+L
Add MSSQL Spatial Layer... Ctrl+Shift+M
Add DB2 Spatial Layer... Ctrl+Shift+2
Add Oracle Spatial Layer... Ctrl+Shift+O
Add/Edit Virtual Layer...
Add WMS/WMTS Layer... Ctrl+Shift+W
Add ArcGIS MapServer Layer...
Add WCS Layer...
Add WFS Layer...
Add ArcGIS FeatureServer Layer...

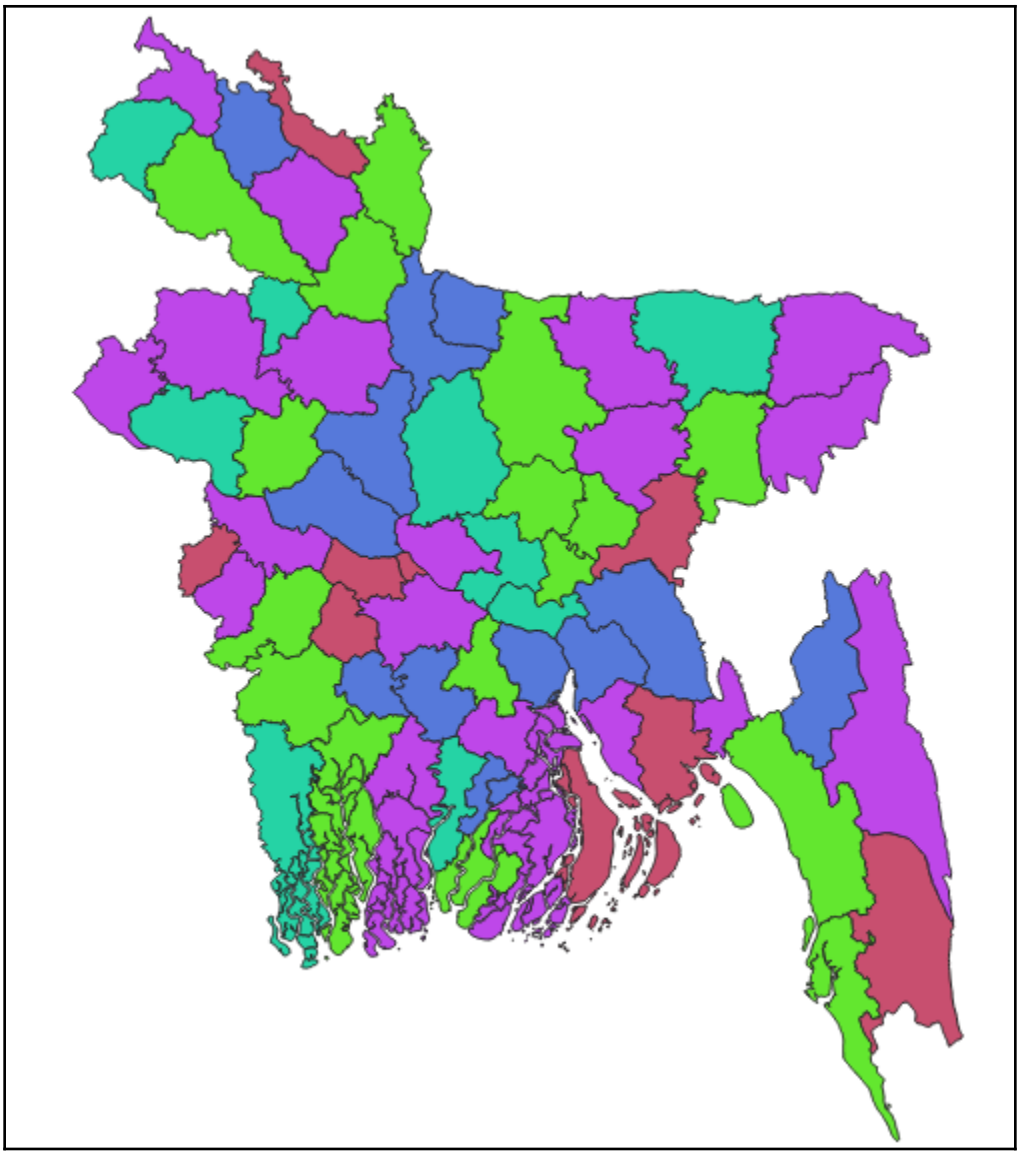

1
Geometry definition
Point coordinates
Well known text (WKT)
No geometry (attribute only table)
2
X field
x
Y field
y
DMS coordinates
Geometry CRS
Project CRS: EPSG:4326 - WGS 84
Layer settings
Sample data
x
y
values
1
90.242286
22.9485
20
2
91.797
24.717
24
3
90.099
24.569
29
Close
Add
Help
3

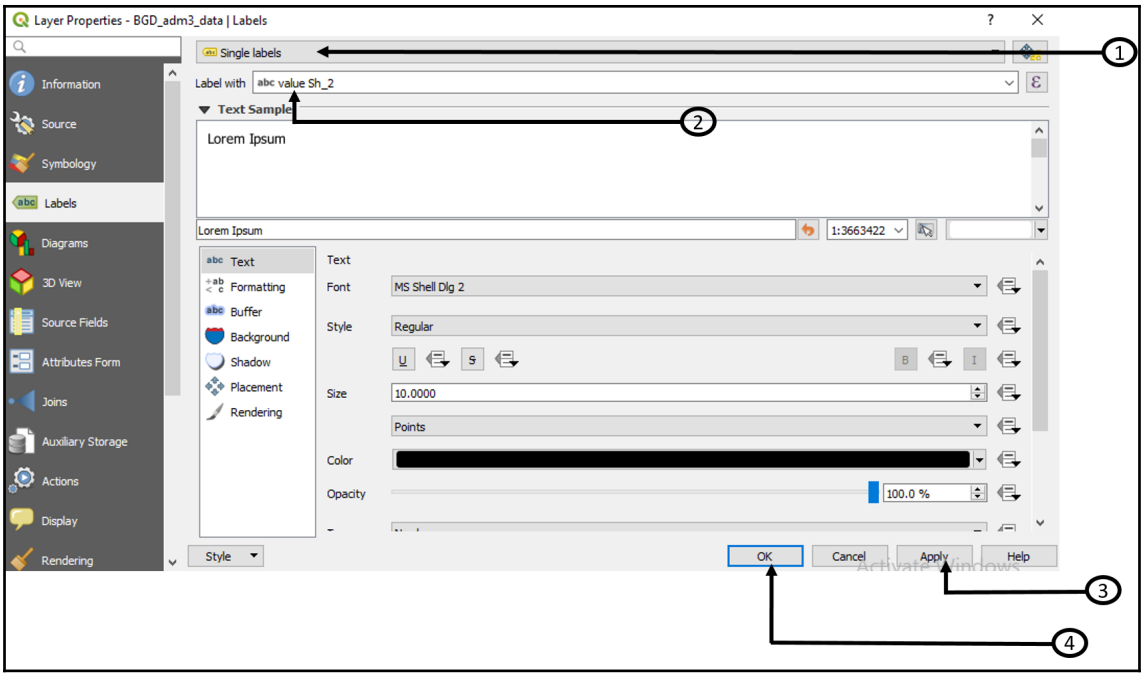


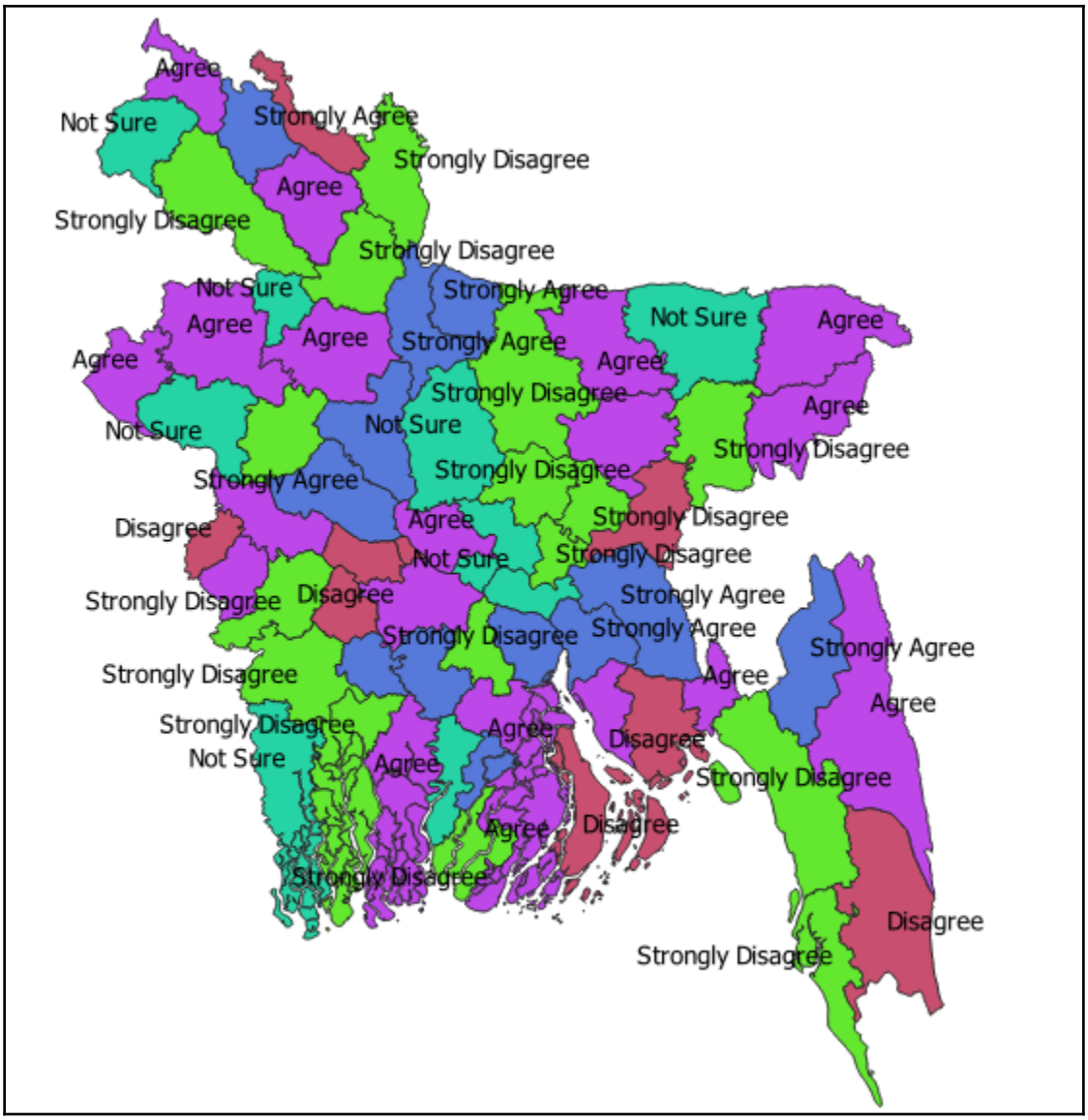

Layers
indicator
BGD_adm3_data

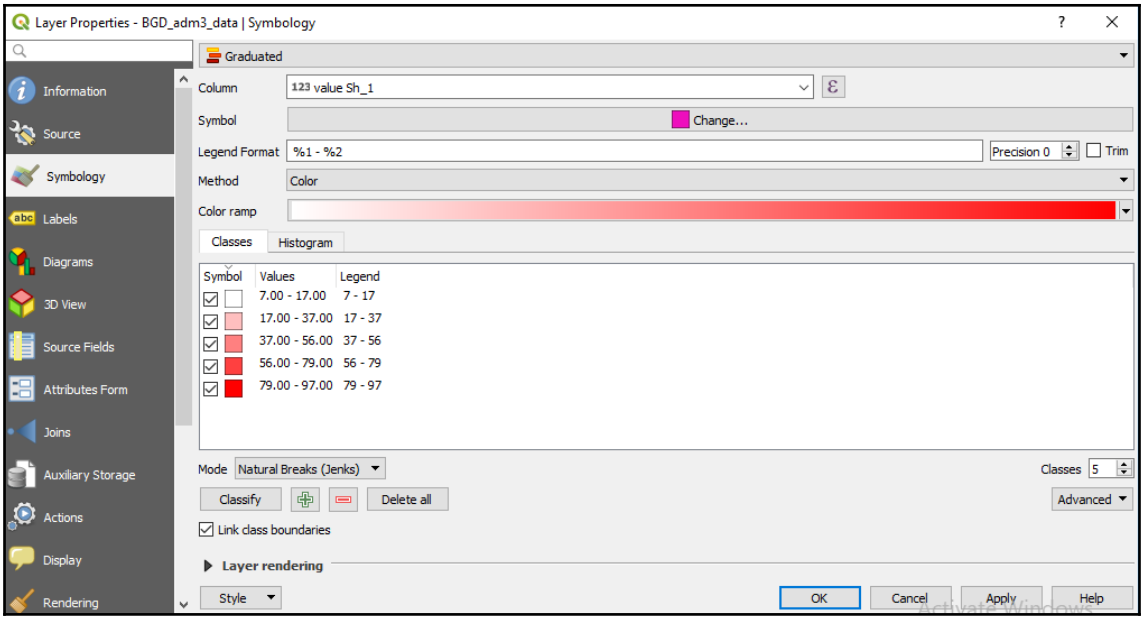

1
2
3
4
Layer Properties - indicator | Symbology
Information
Source
Symbology
Labels
Diagrams
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Single symbol
Marker
Simple marker
Unit
Millimeter
Opacity
100.0 %
Color
Size
4.40000
Rotation
0.00 °
Symbols in
All Symbols
Open Library
diamond green
Save symbol
Advanced
Layer rendering
Style
OK
Cancel
Apply
Help

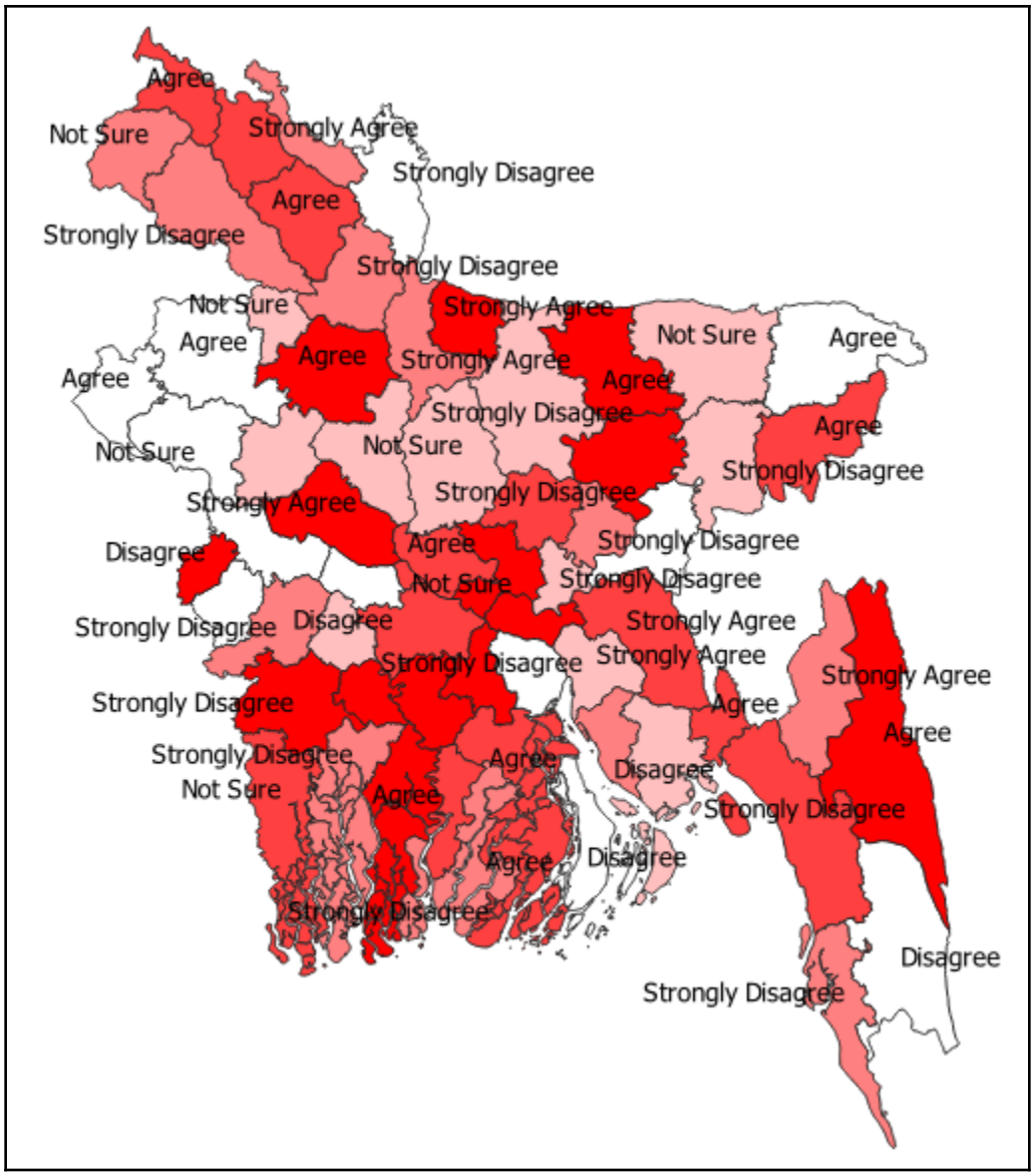

a
Layer Properties - BGD_adm3_data | Symbology
Categorized
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Column
abc value Sh_2
Symbol
Change...
Color ramp
Random colors
Symbol
Value
Legend
b
c
Classify
Delete all
Advanced
Layer rendering
Style
OK
Cancel
Apply
Help

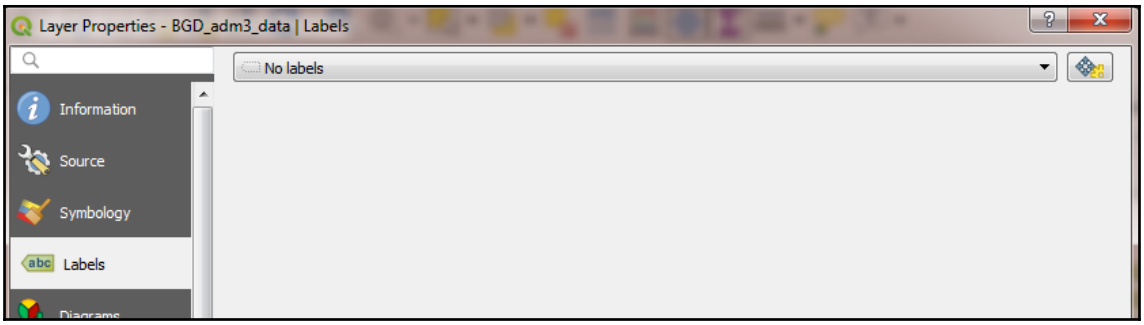


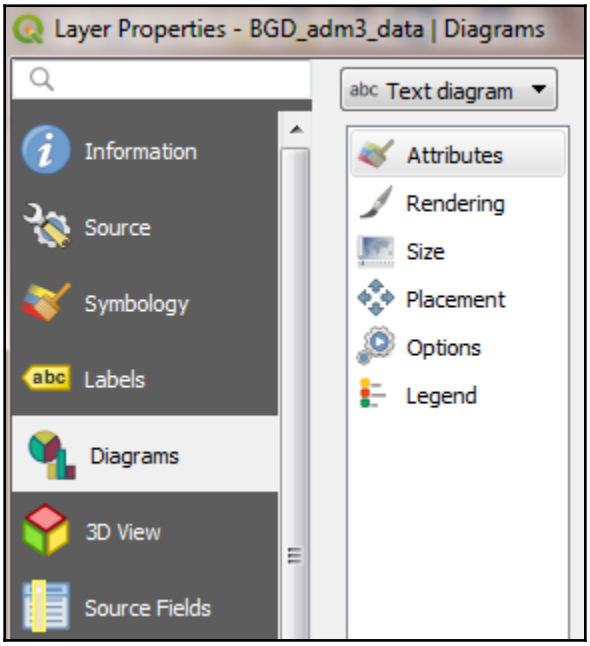

Layer Properties - BGD_adm3_data | Labels
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Single labels
Label with
abc value Sh_2
Text Sample
Lorem Ipsum
Lorem Ipsum
1:3663422
Text
Formatting
Buffer
Background
Shadow
Placement
Rendering
Text
Font
MS Shell Dlg 2
Style
Regular
Size
10.0000
Points
Color
Opacity
100.0 %
Style
OK
Cancel
Apply
Help
1
2
3
4

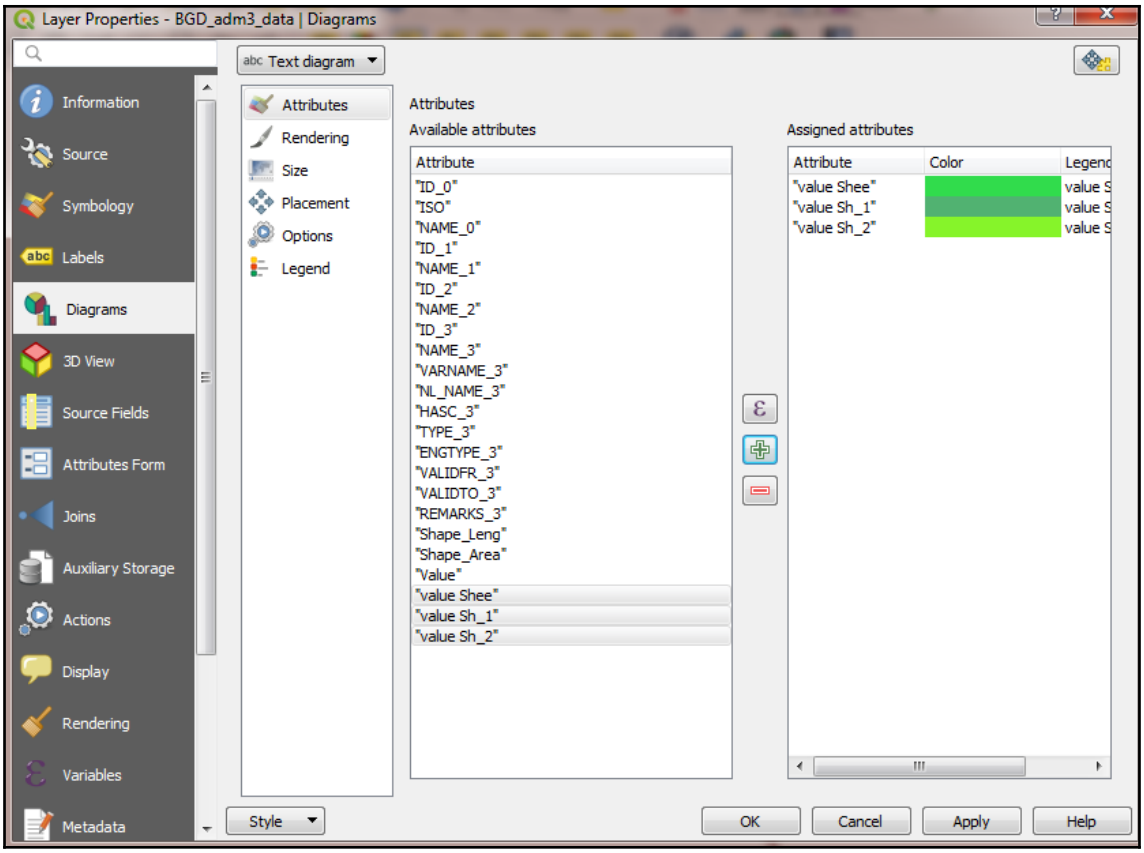

Agree
Not Sure
Strongly Agree
Strongly Disagree
Agree
Strongly Disagree
Strongly Disagree
Not Sure
Strongly Agree
Agree
Agree
Strongly Agree
Not Sure
Agree
Agree
Agree
Strongly Disagree
Agree
Not Sure
Not Sure
Strongly Disagree
Strongly Disagree
Strongly Agree
Strongly Disagree
Disagree
Agree
Strongly Disagree
Not Sure
Strongly Disagree
Strongly Disagree
Disagree
Strongly Agree
Strongly Disagree
Strongly Agree
Strongly Disagree
Agree
Strongly Agree
Agree
Strongly Disagree
Agree
Disagree
Not Sure
Agree
Strongly Disagree
Agree
Disagree
Strongly Disagree
Disagree
Strongly Disagree

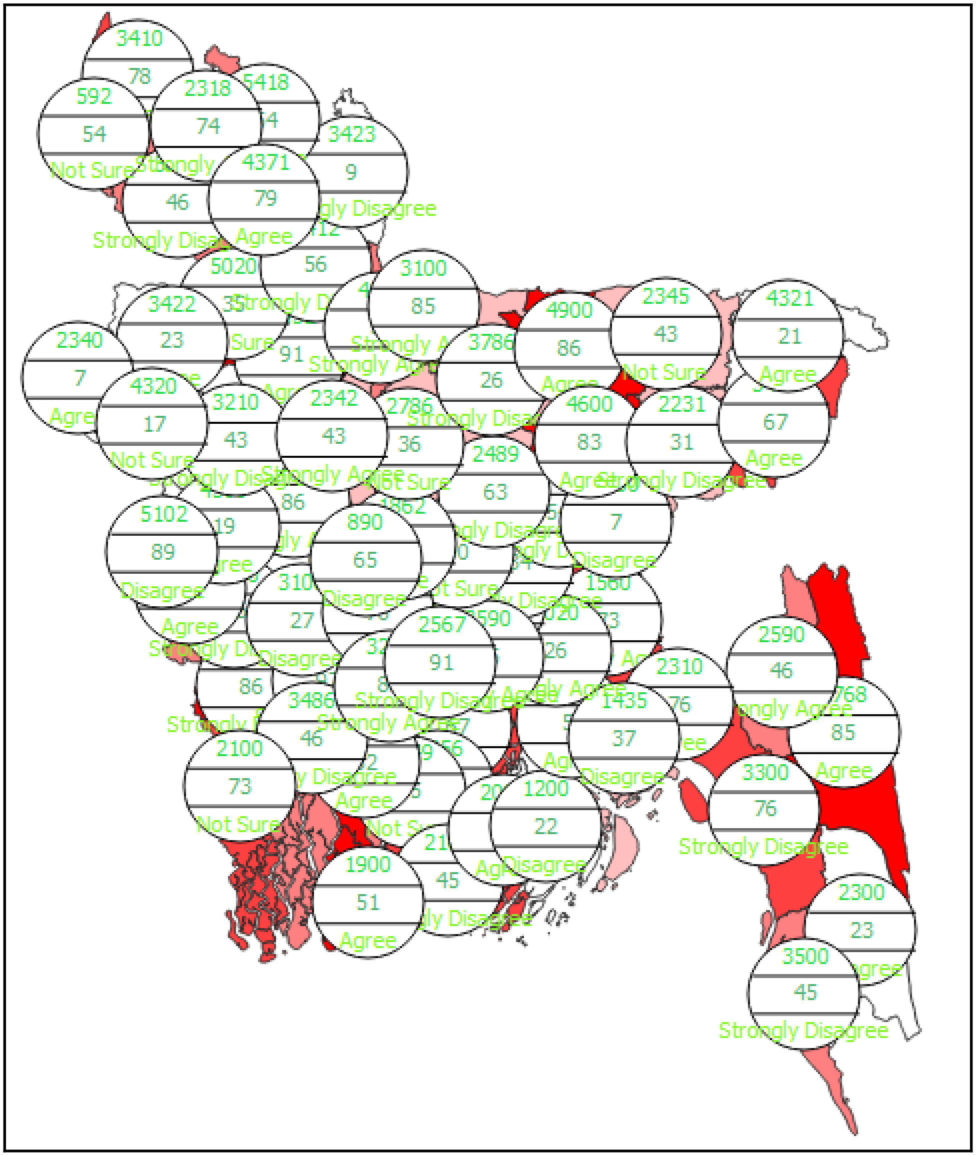

Layer Properties - BGD_adm3_data | Symbology
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Graduated
Column
123 value Sh_1
Symbol
Change...
Legend Format
%1 - %2
Precision 0
Trim
Method
Color
Color ramp
Classes
Histogram
Symbol
Values
Legend
7.00 - 17.00
7 - 17
17.00 - 37.00
17 - 37
37.00 - 56.00
37 - 56
56.00 - 79.00
56 - 79
79.00 - 97.00
79 - 97
Mode
Natural Breaks (Jenks)
Classes
5
Classify
Delete all
Advanced
Link class boundaries
Layer rendering
Style
OK
Cancel
Apply
Help

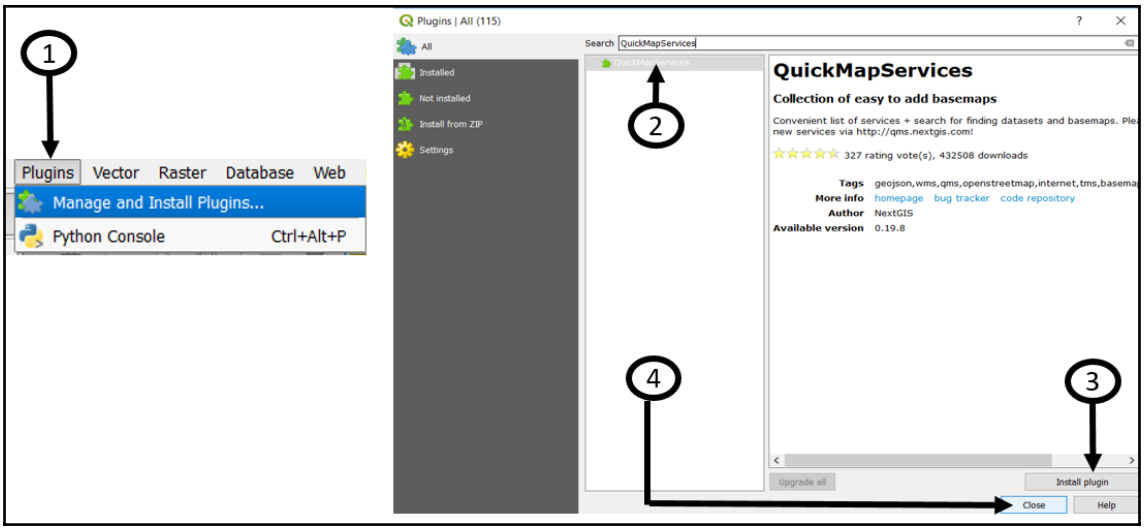

Agree
Not Sure
Strongly Agree
Strongly Disagree
Agree
Strongly Disagree
Strongly Disagree
Not Sure
Strongly Agree
Not Sure
Agree
Agree
Agree
Strongly Agree
Agree
Agree
Strongly Disagree
Not Sure
Not Sure
Agree
Strongly Disagree
Strongly Disagree
Strongly Agree
Strongly Disagree
Disagree
Agree
Strongly Disagree
Not Sure
Strongly Disagree
Strongly Disagree
Disagree
Strongly Agree
Strongly Disagree
Strongly Agree
Strongly Disagree
Agree
Agree
Strongly Disagree
Agree
Disagree
Not Sure
Agree
Strongly Disagree
Agree
Disagree
Strongly Disagree
Disagree
Strongly Disagree

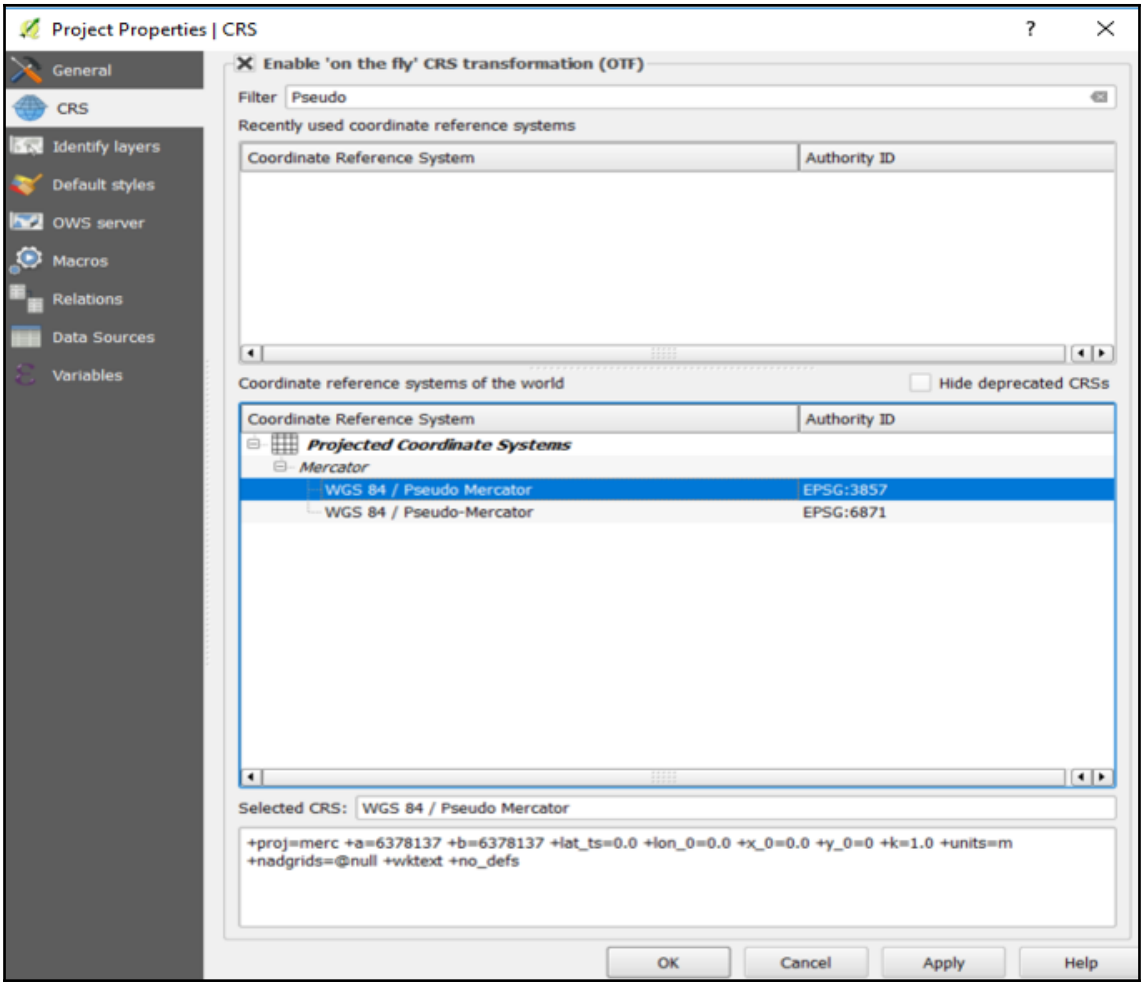

Layer Properties - BGD_adm3_data | Labels
No labels
Information
Source
Symbology
Labels

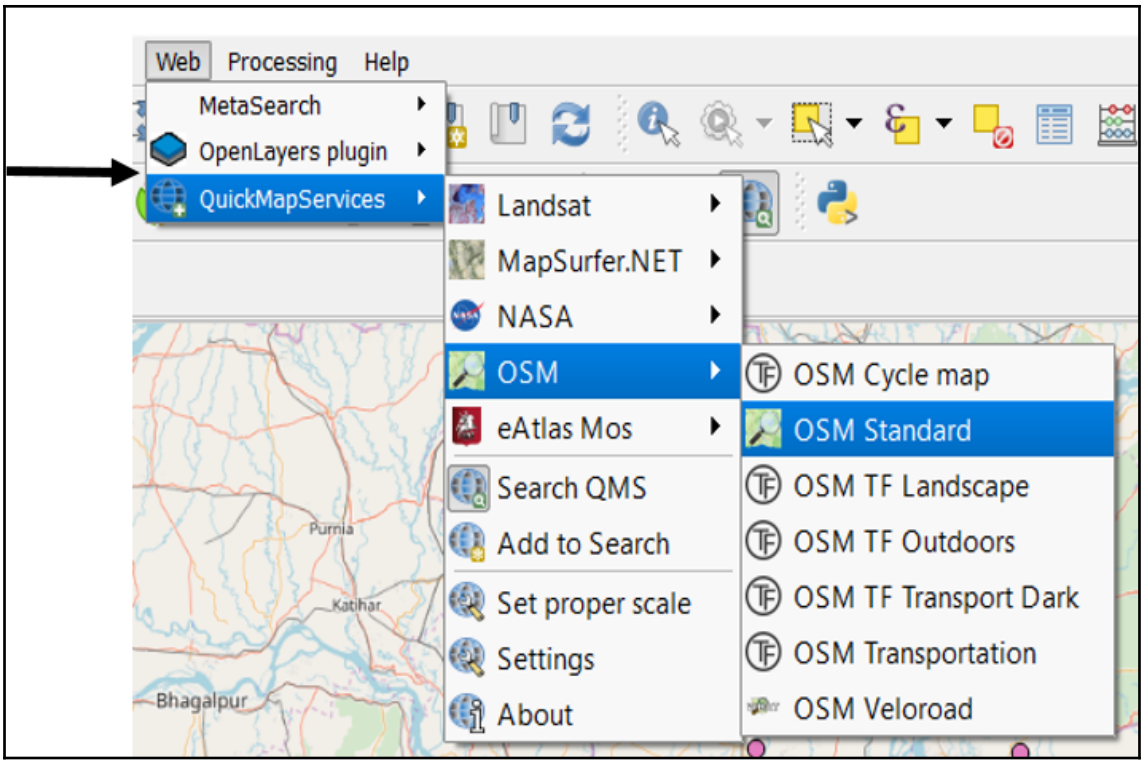

Layer Properties - BGD_adm3_data | Diagrams
abc Text diagram
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes
Rendering
Size
Placement
Options
Legend

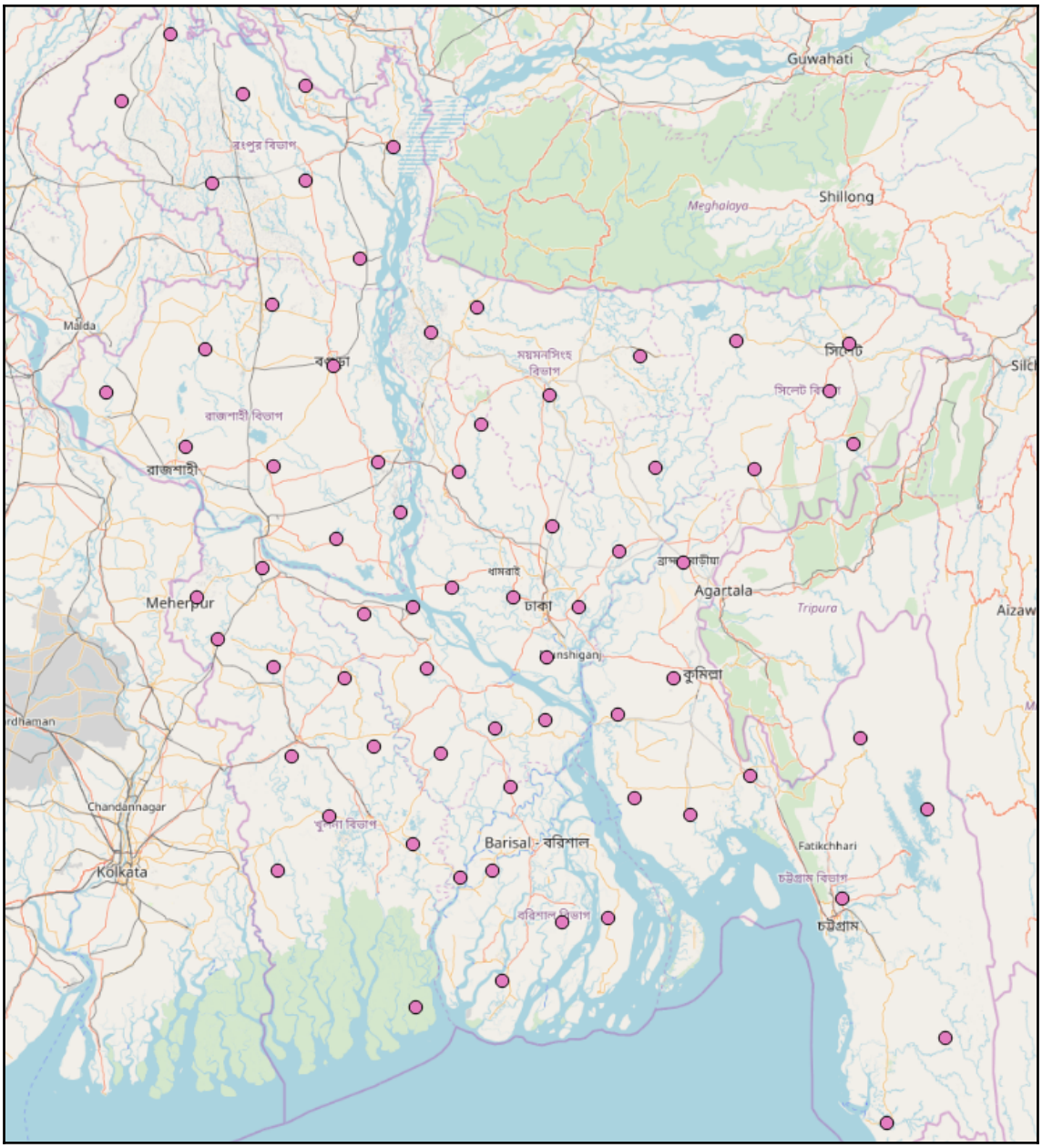

Layer Properties - BGD_adm3_data | Diagrams
Text diagram
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Variables
Metadata
Attributes
Rendering
Size
Placement
Options
Legend
Attributes
Available attributes
Attribute
"ID_0"
"ISO"
"NAME_0"
"ID_1"
"NAME_1"
"ID_2"
"NAME_2"
"ID_3"
"NAME_3"
"VARNAME_3"
"NL_NAME_3"
"HASC_3"
"TYPE_3"
"ENGTYPE_3"
"VALIDFR_3"
"VALIDTO_3"
"REMARKS_3"
"Shape_Leng"
"Shape_Area"
"Value"
"value Shee"
"value Sh_1"
"value Sh_2"
Assigned attributes
Attribute
Color
"value Shee"
"value Sh_1"
"value Sh_2"
Style
OK
Cancel
Apply
Help


3410
78
592
54
Not Sure
2318
74
3423
9
4371
79
Agree
46
5020
56
3100
85
2345
43
Not Sure
4321
21
Agree
4900
86
3422
23
2340
7
4320
17
Not Sure
3210
43
2342
43
2786
36
3786
26
4600
83
2231
31
67
Agree
2489
63
7
5102
89
Disagree
890
65
Disagree
27
2567
91
1580
2590
46
2310
1435
37
Disagree
86
3486
46
2100
73
Not Sure
85
Agree
3300
76
Strongly Disagree
1200
22
Disagree
1900
51
Agree
45
2300
23
3500
45
Strongly Disagree

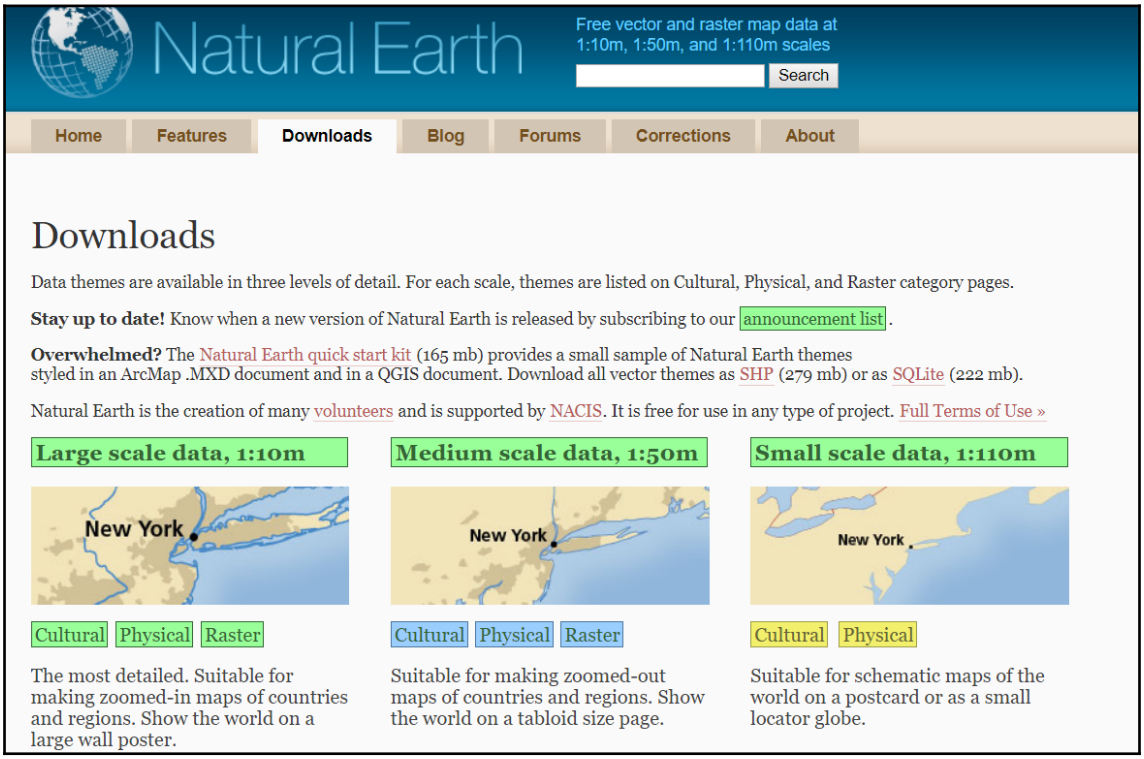

1
Plugins
Vector
Raster
Database
Web
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
Plugins | All (115)
All
Installed
Not installed
Install from ZIP
Settings
Search
QuickMapServices
2
QuickMapServices
Collection of easy to add basemaps
Convenient list of services + search for finding datasets and basemaps. Ple
new services via http://qms.nextgis.com!
327 rating vote(s), 432508 downloads
Tags
geojson,wms,qms,openstreetmap,internet,tms,basema
More info
homepage
bug tracker
code repository
Author
NextGIS
Available version
0.19.8
4
3
Upgrade all
Install plugin
Close
Help

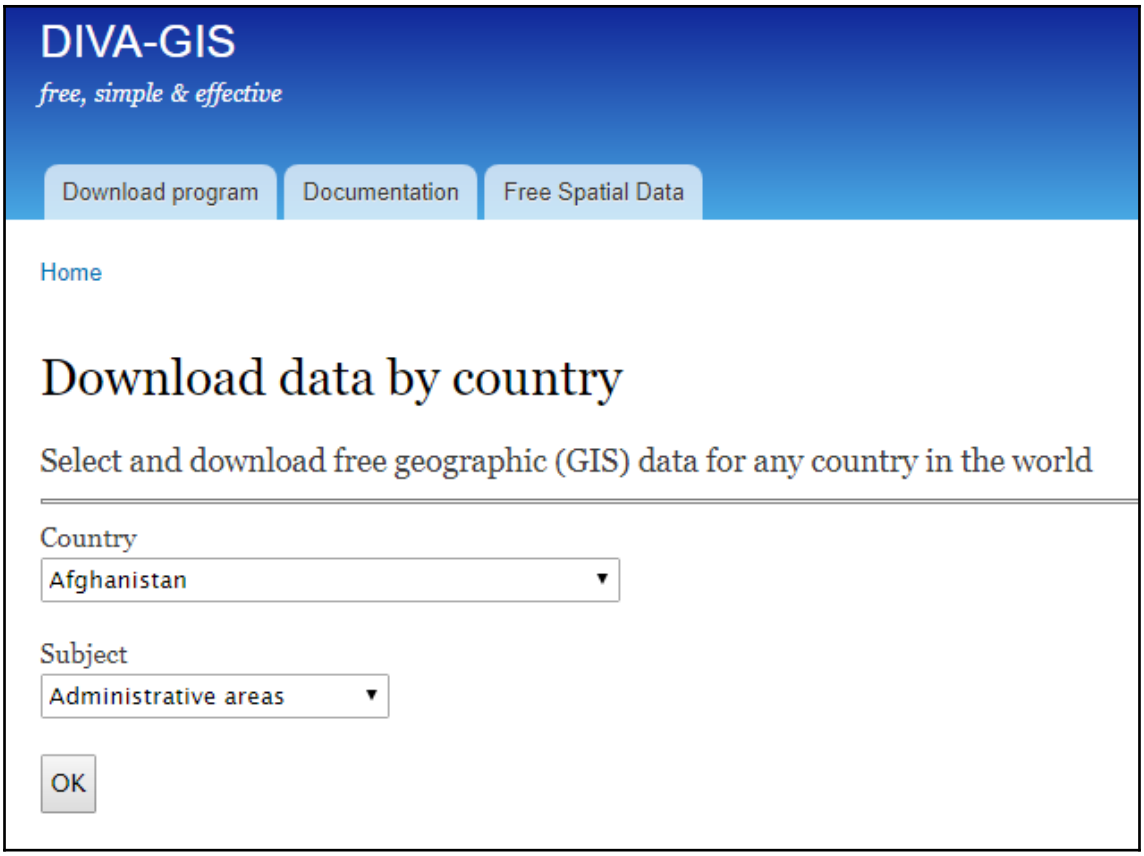

Project Properties | CRS
General
CRS
Identify layers
Default styles
OWS server
Macros
Relations
Data Sources
Variables
Enable 'on the fly' CRS transformation (OTF)
Filter
Pseudo
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
Projected Coordinate Systems
Mercator
WGS 84 / Pseudo Mercator
EPSG:3857
WGS 84 / Pseudo-Mercator
EPSG:6871
Selected CRS:
WGS 84 / Pseudo Mercator
+proj=merc +a=6378137 +b=6378137 +lat_ts=0.0 +lon_0=0.0 +x_0=0.0 +y_0=0 +k=1.0 +units=m
+nadgrids=@null +wktext +no_defs
OK
Cancel
Apply
Help

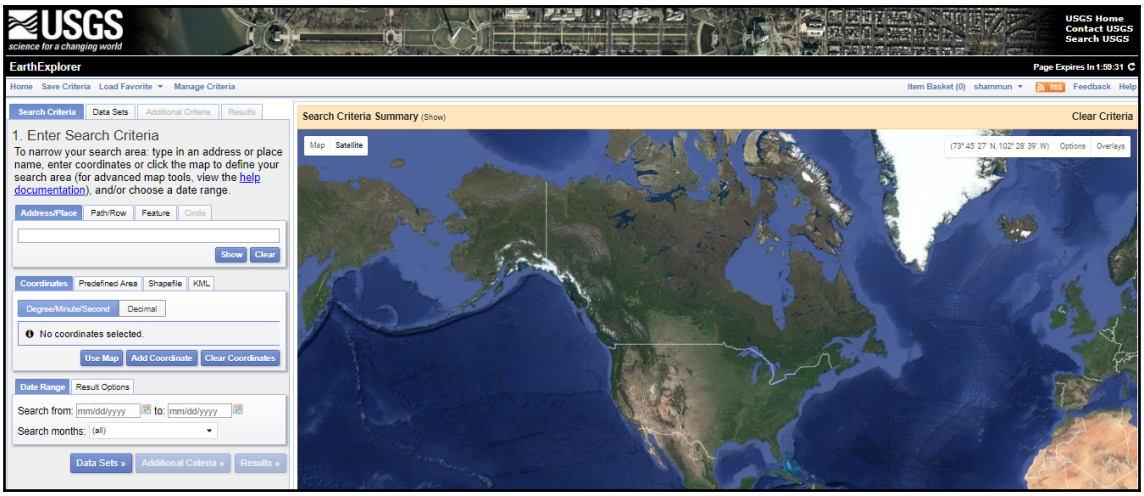

Web
Processing
Help
MetaSearch
OpenLayers plugin
QuickMapServices
Landsat
MapSurfer.NET
NASA
OSM
eAtlas Mos
Search QMS
Add to Search
Set proper scale
Settings
About
OSM Cycle map
OSM Standard
OSM TF Landscape
OSM TF Outdoors
OSM TF Transport Dark
OSM Transportation
OSM Veloroad
Purnia
Katihar
Bhagalpur

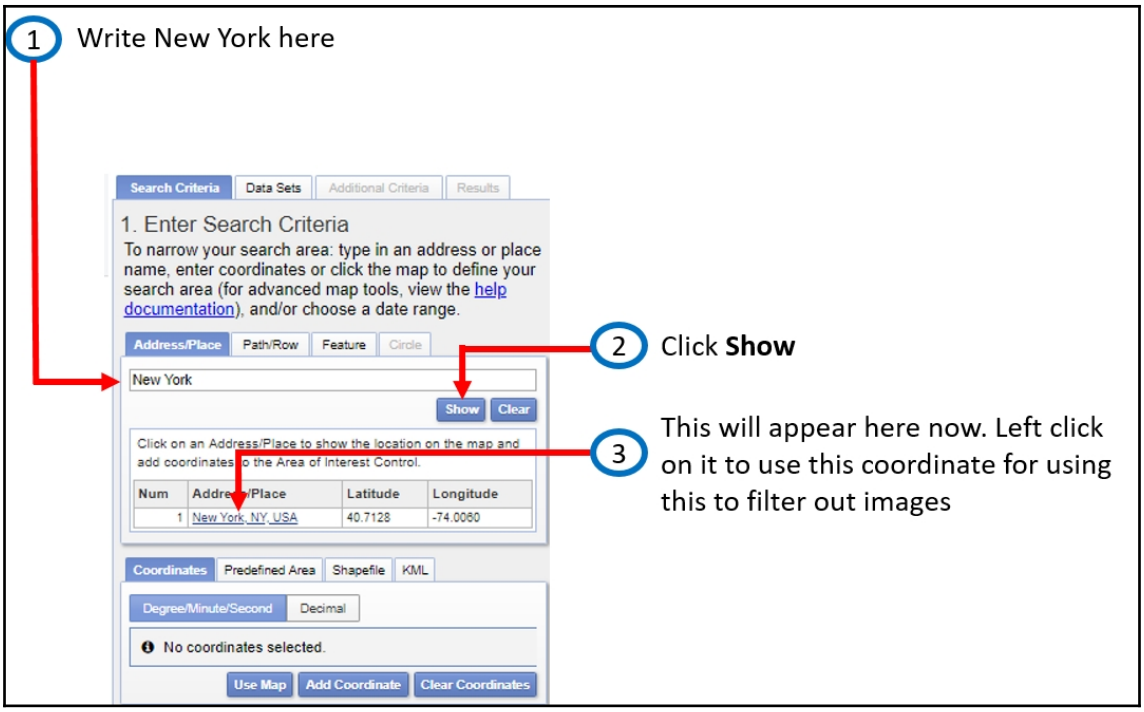

Guwahati
Shillong
Meghalaya
Malda
বগুড়া
রাজশাহী বিভাগ
রাজশাহী
Meherpur
ময়মনসিংহ বিভাগ
সিলেট
সিলেট বিভাগ
ধামরাই
ঢাকা
Agartala
Tripura
Aizaw
Chandannagar
Kolkata
Barisal - বরিশাল
বরিশাল বিভাগ
Fatikchhari
চট্টগ্রাম বিভাগ
চট্টগ্রাম

Chapter 3: Creating Geospatial Data

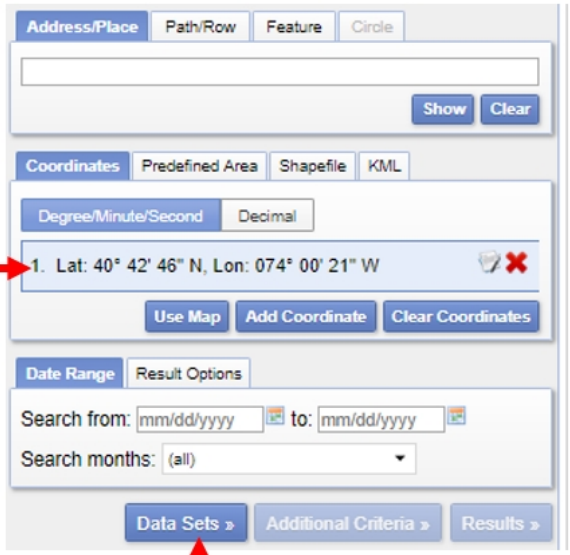



DIVA-GIS
free, simple & effective
Download program
Documentation
Free Spatial Data
Home
Download data by country
Select and download free geographic (GIS) data for any country in the world
Country
Afghanistan
Subject
Administrative areas
OK

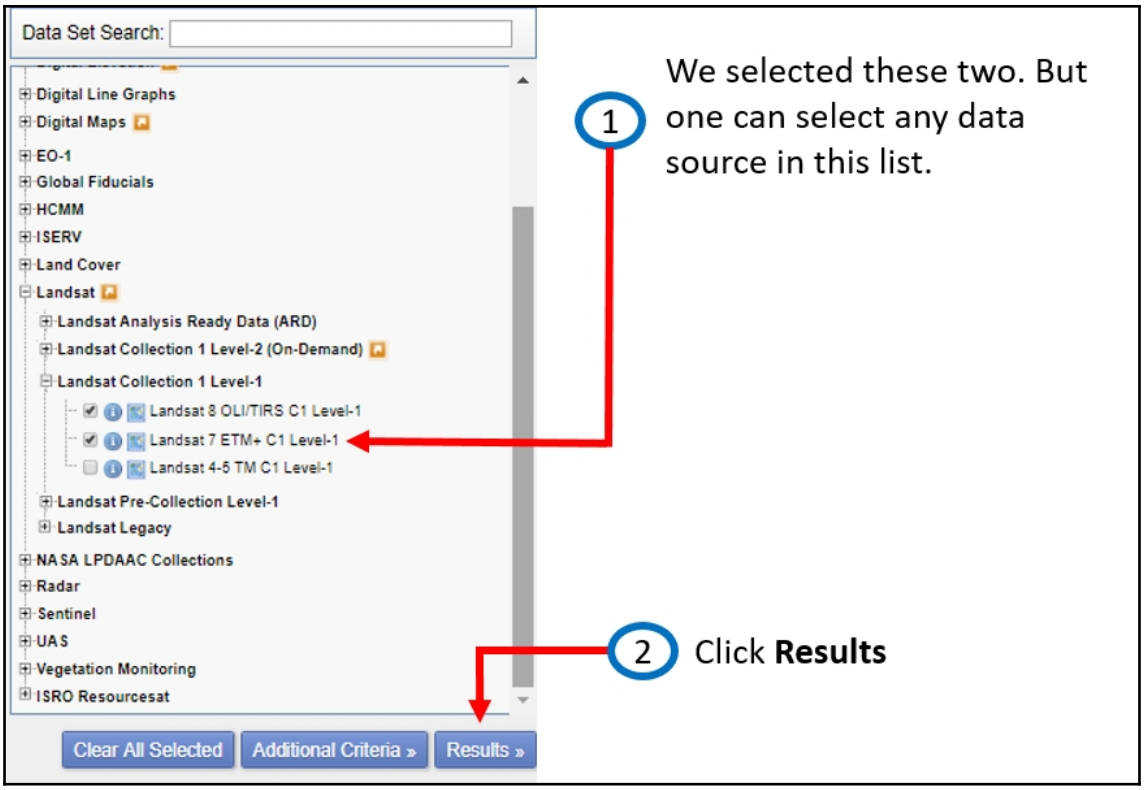

USGS
science for a changing world
USGS Home
Contact USGS
Search USGS
EarthExplorer
Page Expires In 1:59:31
Home
Save Criteria
Load Favorite
Manage Criteria
Item Basket (0)
shammun
Feedback
Help
Search Criteria
Data Sets
Additional Criteria
Results
1. Enter Search Criteria
To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the help documentation), and/or choose a date range.
Address/Place
Path/Row
Feature
Circle
Show
Clear
Coordinates
Predefined Area
Shapefile
KML
Degree/Minute/Second
Decimal
No coordinates selected.
Use Map
Add Coordinate
Clear Coordinates
Date Range
Result Options
Search from:
mm/dd/yyyy
to:
Search months:
(all)
Data Sets »
Additional Criteria »
Results »
Search Criteria Summary (Show)
Clear Criteria
Map
Satellite
Options
Overlays

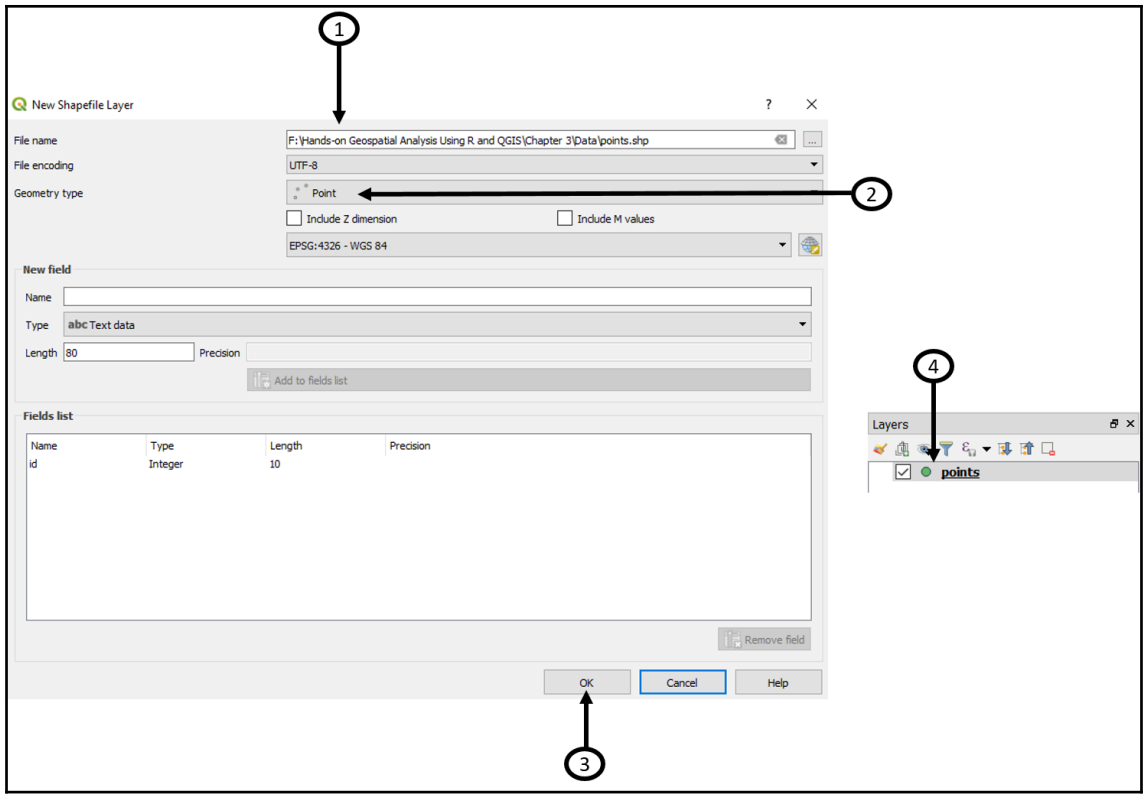

1
Write New York here
Search Criteria
Data Sets
Additional Criteria
Results
1. Enter Search Criteria
To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the help documentation), and/or choose a date range.
Address/Place
Path/Row
Feature
Circle
New York
Show
Clear
2
Click Show
Click on an Address/Place to show the location on the map and add coordinates to the Area of Interest Control.
3
This will appear here now. Left click on it to use this coordinate for using this to filter out images
Num
Address/Place
Latitude
Longitude
1
New York, NY, USA
40.7128
-74.0060
Coordinates
Predefined Area
Shapefile
KML
Degree/Minute/Second
Decimal
No coordinates selected.
Use Map
Add Coordinate
Clear Coordinates

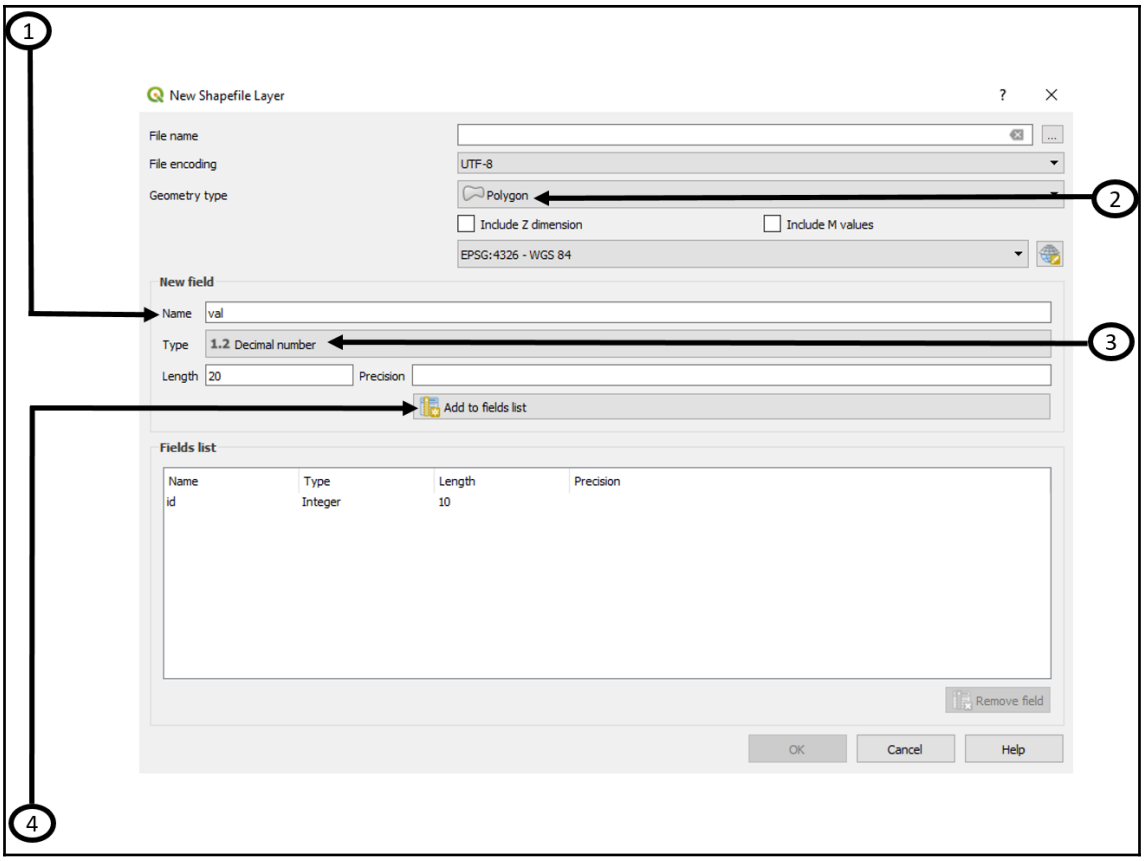
1 Now, longitude and latitude of this area will be shown.

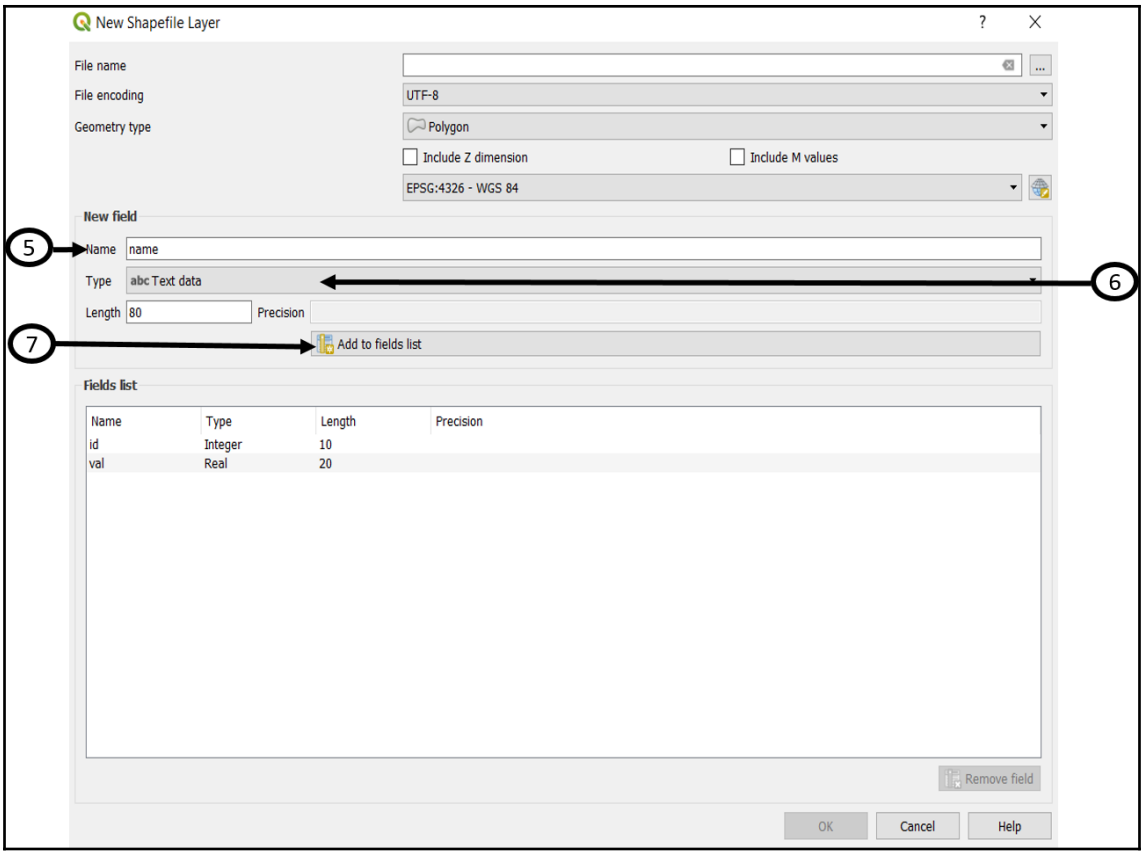


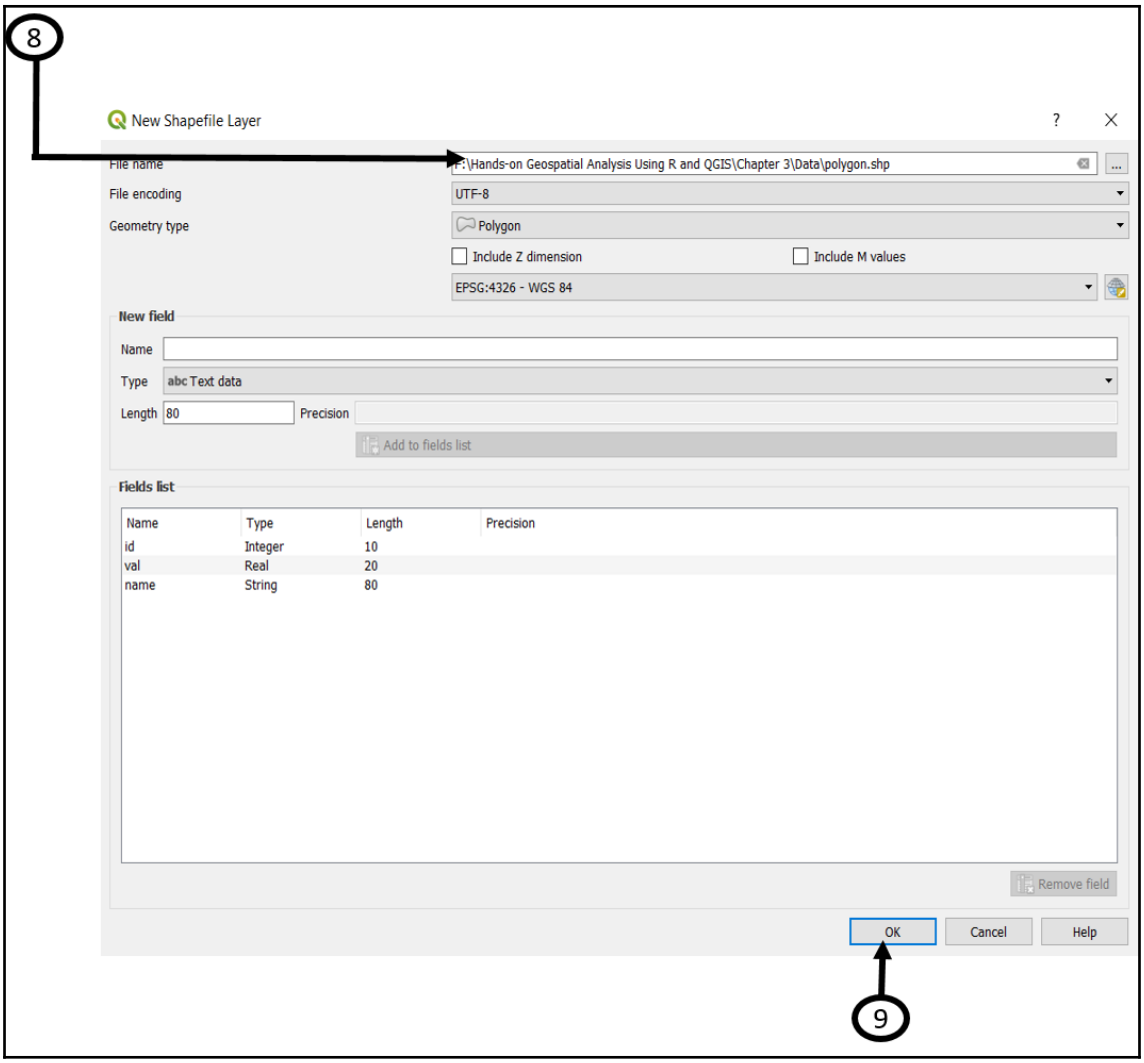
2 Click on Data Sets to define which datasets to be searched for

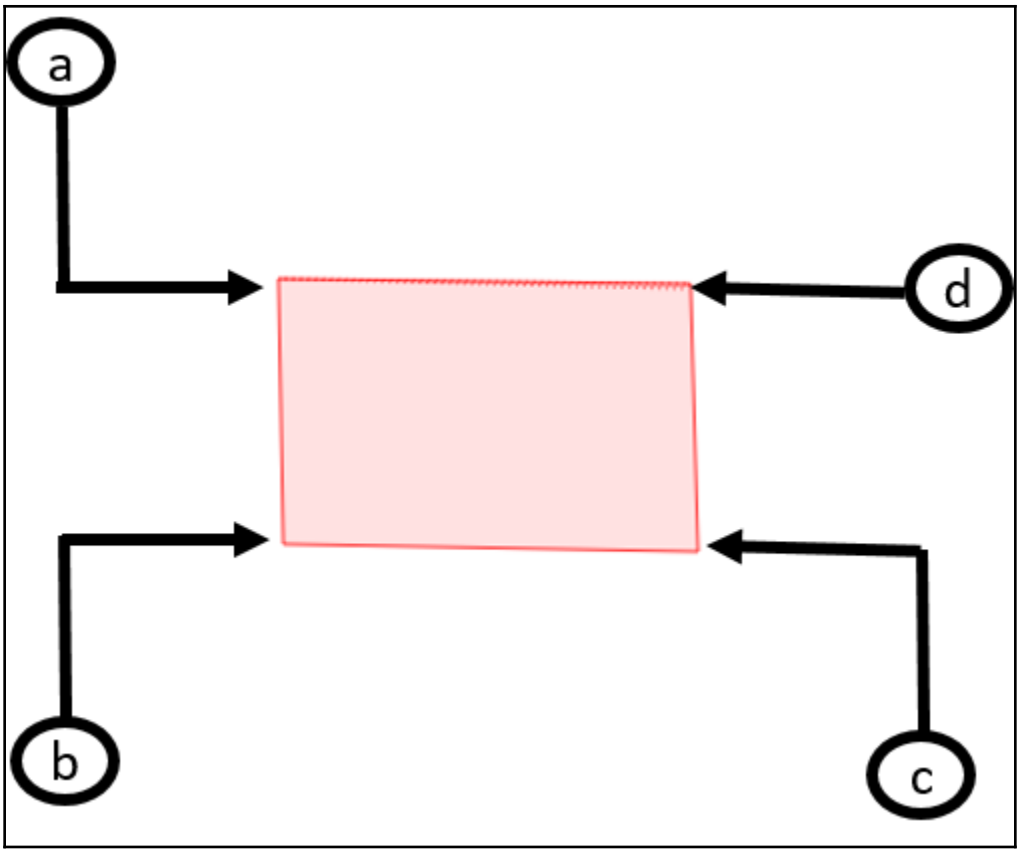

Data Set Search:
Digital Line Graphs
Digital Maps
EO-1
Global Fiducials
HCMM
ISERV
Land Cover
Landsat
Landsat Analysis Ready Data (ARD)
Landsat Collection 1 Level-2 (On-Demand)
Landsat Collection 1 Level-1
Landsat 8 OLI/TIRS C1 Level-1
Landsat 7 ETM+ C1 Level-1
Landsat 4-5 TM C1 Level-1
Landsat Pre-Collection Level-1
Landsat Legacy
NASA LPDAAC Collections
Radar
Sentinel
UAS
Vegetation Monitoring
ISRO Resourcesat
Clear All Selected
Additional Criteria »
Results »
1
We selected these two. But one can select any data source in this list.
2
Click **Results**

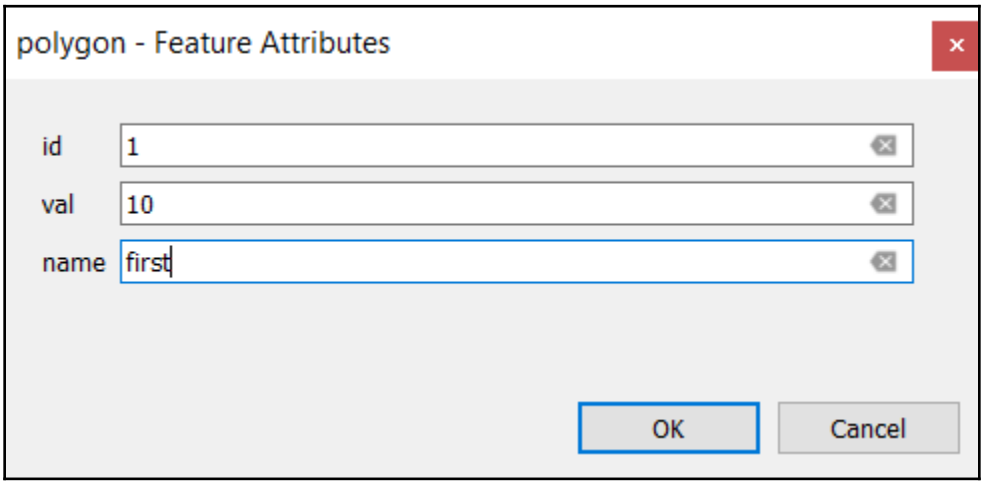

1
New Shapefile Layer
File name
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 3\Data\points.shp
File encoding
UTF-8
Geometry type
Point
2
Include Z dimension
Include M values
EPSG:4326 - WGS 84
New field
Name
Type
abc Text data
Length
80
Precision
Add to fields list
Fields list
Name
Type
Length
Precision
id
Integer
10
Remove field
OK
Cancel
Help
3
4
Layers
points

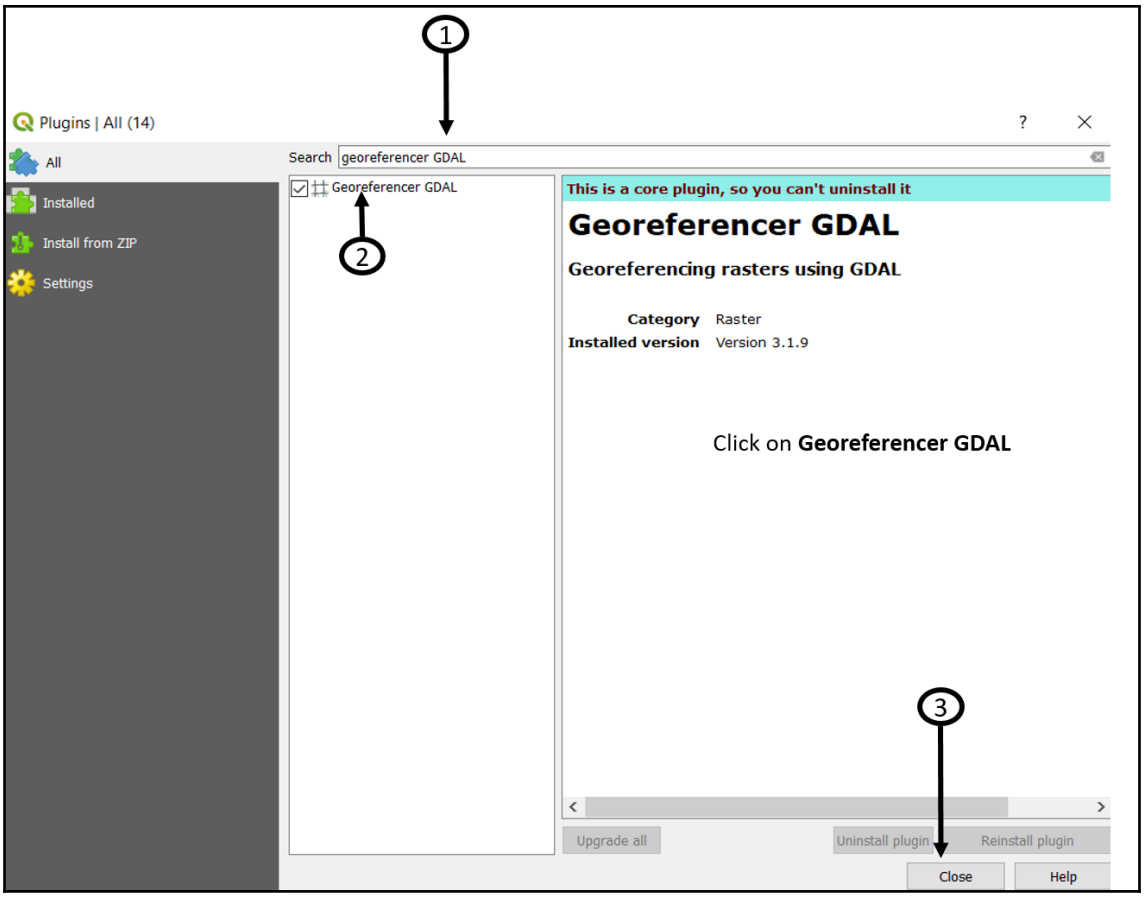

1
New Shapefile Layer
File name
File encoding
UTF-8
Geometry type
Polygon
2
Include Z dimension
Include M values
EPSG:4326 - WGS 84
New field
Name
val
Type
1.2 Decimal number
3
Length
20
Precision
Add to fields list
4
Fields list
Name
Type
Length
Precision
id
Integer
10
Remove field
OK
Cancel
Help

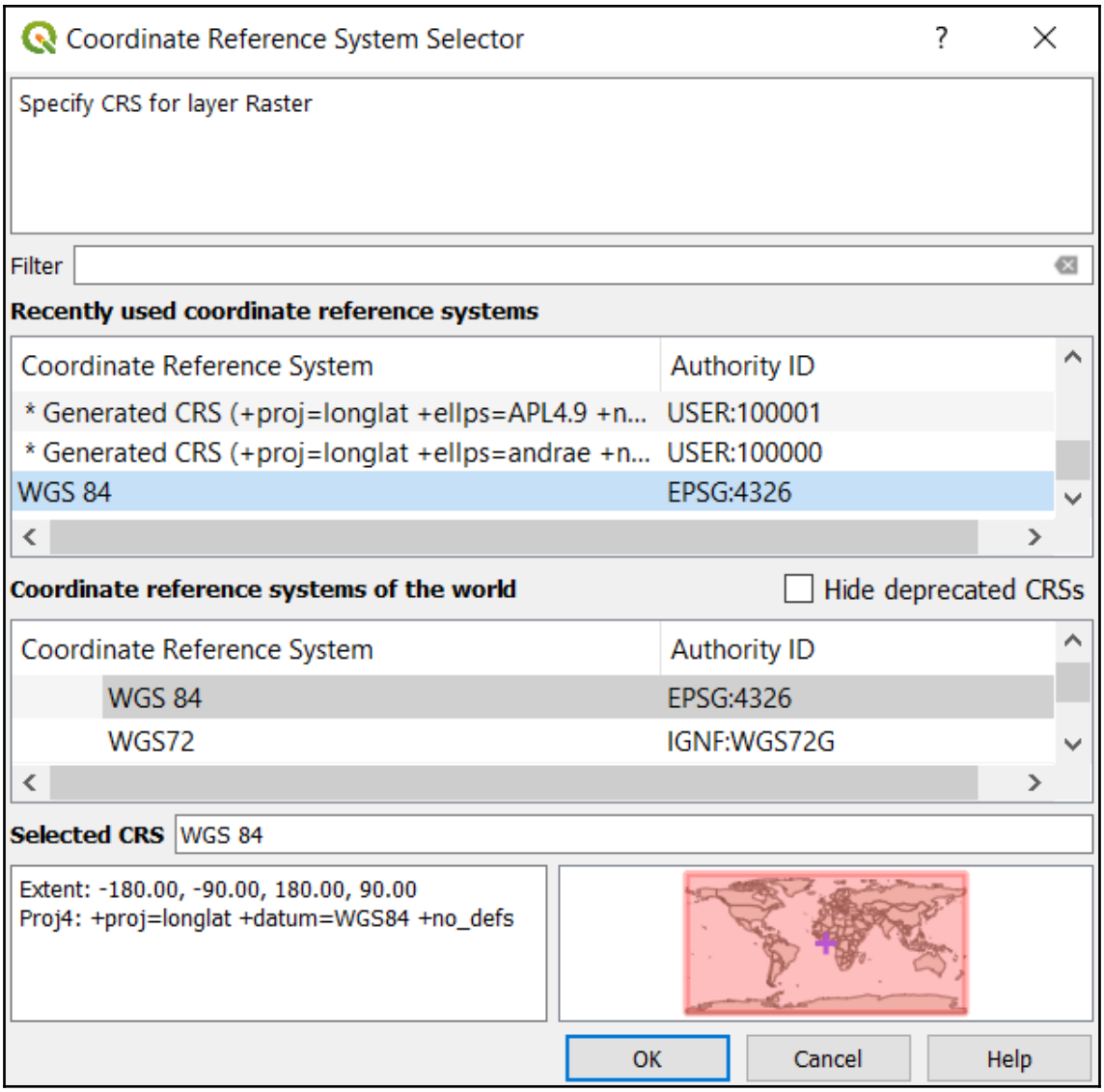

New Shapefile Layer
File name
File encoding
UTF-8
Geometry type
Polygon
Include Z dimension
Include M values
EPSG:4326 - WGS 84
New field
5
Name
name
Type
abc Text data
6
Length
80
Precision
7
Add to fields list
Fields list
Name
Type
Length
Precision
id
Integer
10
val
Real
20
Remove field
OK
Cancel
Help

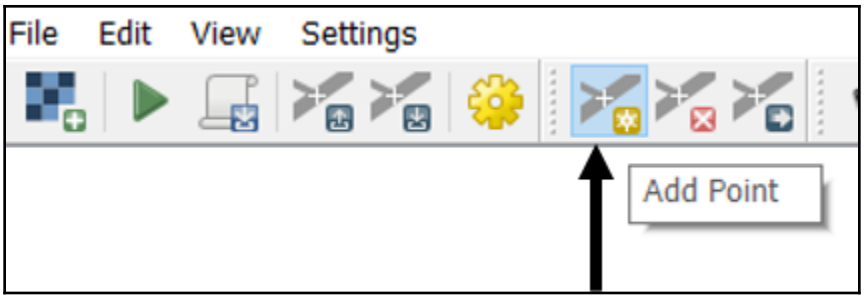

8
New Shapefile Layer
File name
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 3\Data\polygon.shp
File encoding
UTF-8
Geometry type
Polygon
Include Z dimension
Include M values
EPSG:4326 - WGS 84
New field
Name
Type
abc Text data
Length
80
Precision
Add to fields list
Fields list
Name
Type
Length
Precision
id
Integer
10
val
Real
20
name
String
80
Remove field
OK
Cancel
Help
9

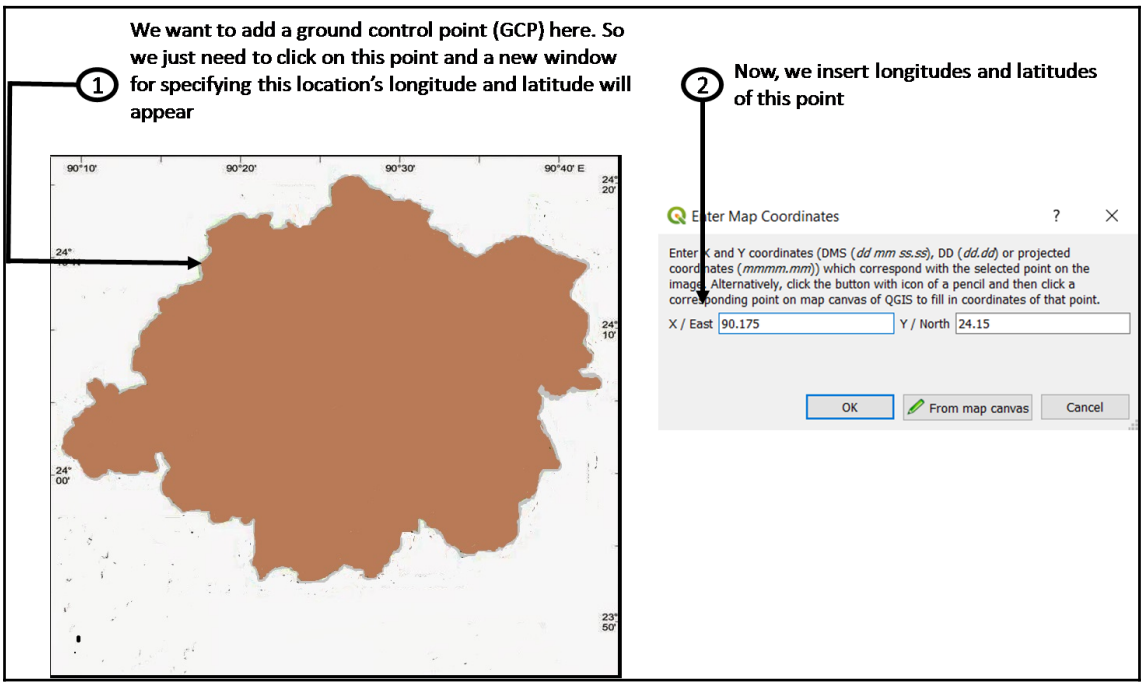

a
d
b
c

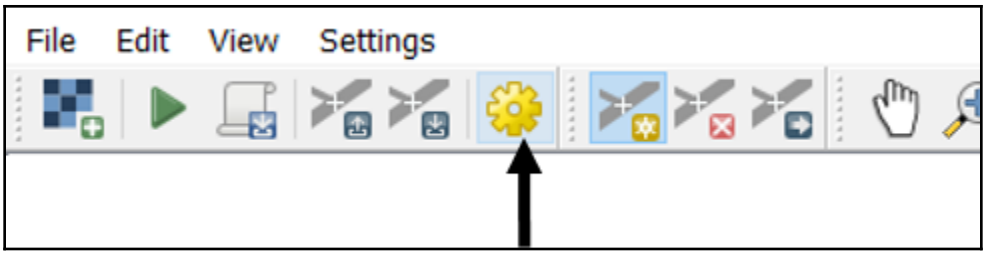

polygon - Feature Attributes
id
1
val
10
name
first
OK
Cancel

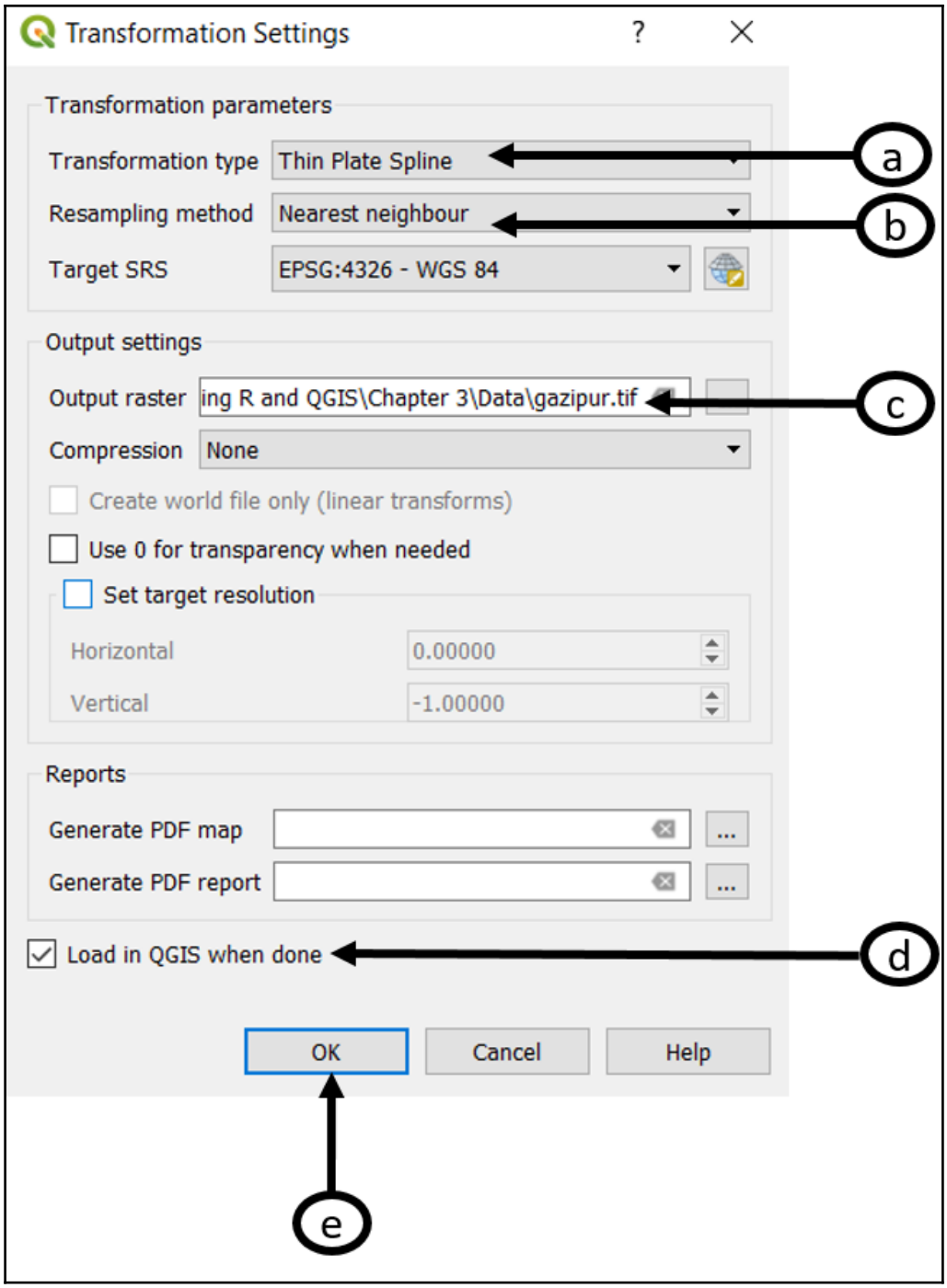

1
Plugins | All (14)
?
All
Installed
Install from ZIP
Settings
Search
georeferencer GDAL
Georeferencer GDAL
2
This is a core plugin, so you can't uninstall it
Georeferencer GDAL
Georeferencing rasters using GDAL
Category
Raster
Installed version
Version 3.1.9
Click on Georeferencer GDAL
3
Upgrade all
Uninstall plugin
Reinstall plugin
Close
Help

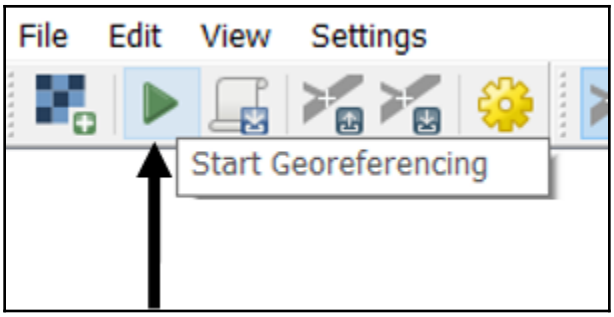

Coordinate Reference System Selector
Specify CRS for layer Raster
Filter
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
* Generated CRS (+proj=longlat +ellps=APL4.9 +n...
USER:100001
* Generated CRS (+proj=longlat +ellps=andrae +n...
USER:100000
WGS 84
EPSG:4326
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
WGS 84
EPSG:4326
WGS72
IGNF:WGS72G
Selected CRS
WGS 84
Extent: -180.00, -90.00, 180.00, 90.00
Proj4: +proj=longlat +datum=WGS84 +no_defs
OK
Cancel
Help

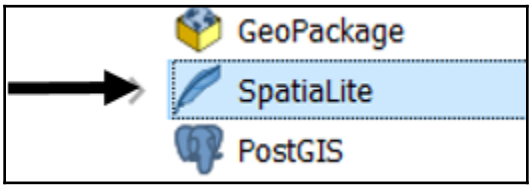

File
Edit
View
Settings
Add Point

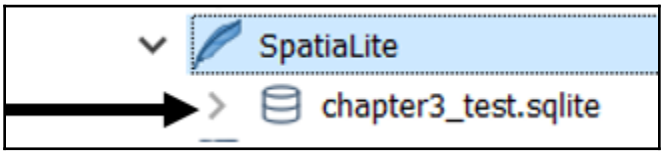

We want to add a ground control point (GCP) here. So we just need to click on this point and a new window for specifying this location's longitude and latitude will appear
1
2
Now, we insert longitudes and latitudes of this point
90°10'
90°20'
90°30'
90°40' E
24° 20'
24° 10'
24° 00'
23° 50'
Enter Map Coordinates
Enter X and Y coordinates (DMS (dd mm ss.ss), DD (dd.dd) or projected coordinates (mmmm.mm)) which correspond with the selected point on the image. Alternatively, click the button with icon of a pencil and then click a corresponding point on map canvas of QGIS to fill in coordinates of that point.
X / East
90.175
Y / North
24.15
OK
From map canvas
Cancel

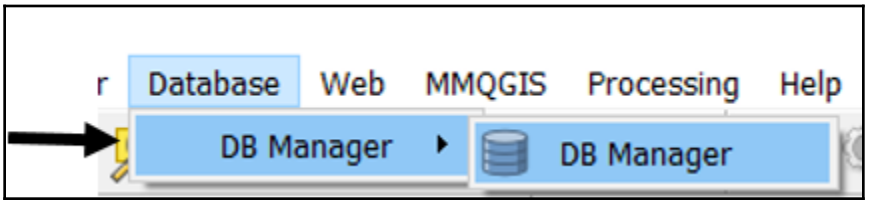

File
Edit
View
Settings

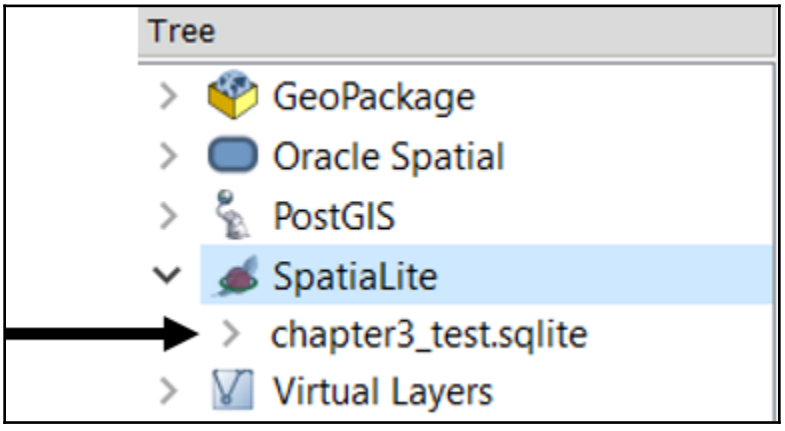

Transformation Settings
Transformation parameters
Transformation type
Thin Plate Spline
Resampling method
Nearest neighbour
Target SRS
EPSG:4326 - WGS 84
Output settings
Output raster
ing R and QGIS\Chapter 3\Data\gazipur.tif
Compression
None
Create world file only (linear transforms)
Use 0 for transparency when needed
Set target resolution
Horizontal
0.00000
Vertical
-1.00000
Reports
Generate PDF map
Generate PDF report
Load in QGIS when done
OK
Cancel
Help
a
b
c
d
e

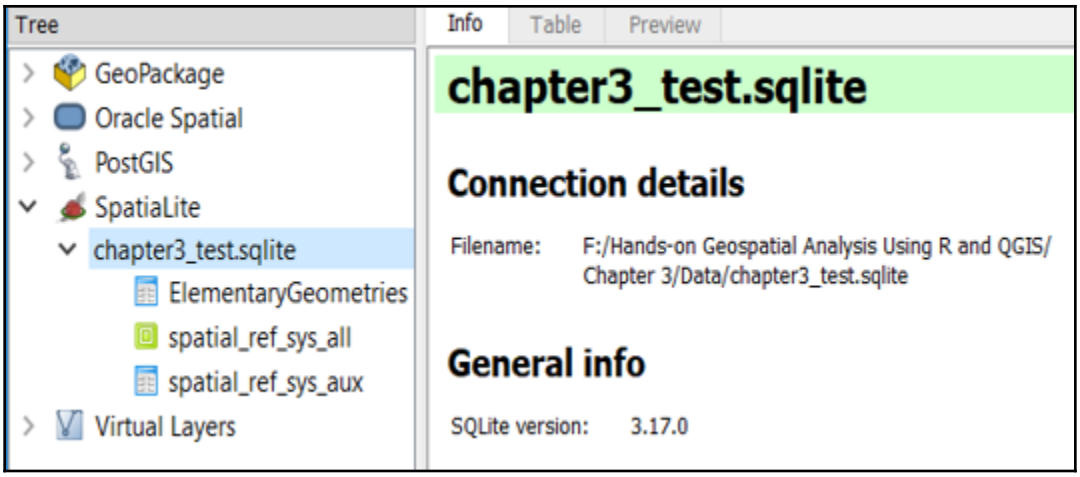

File
Edit
View
Settings
Start Georeferencing

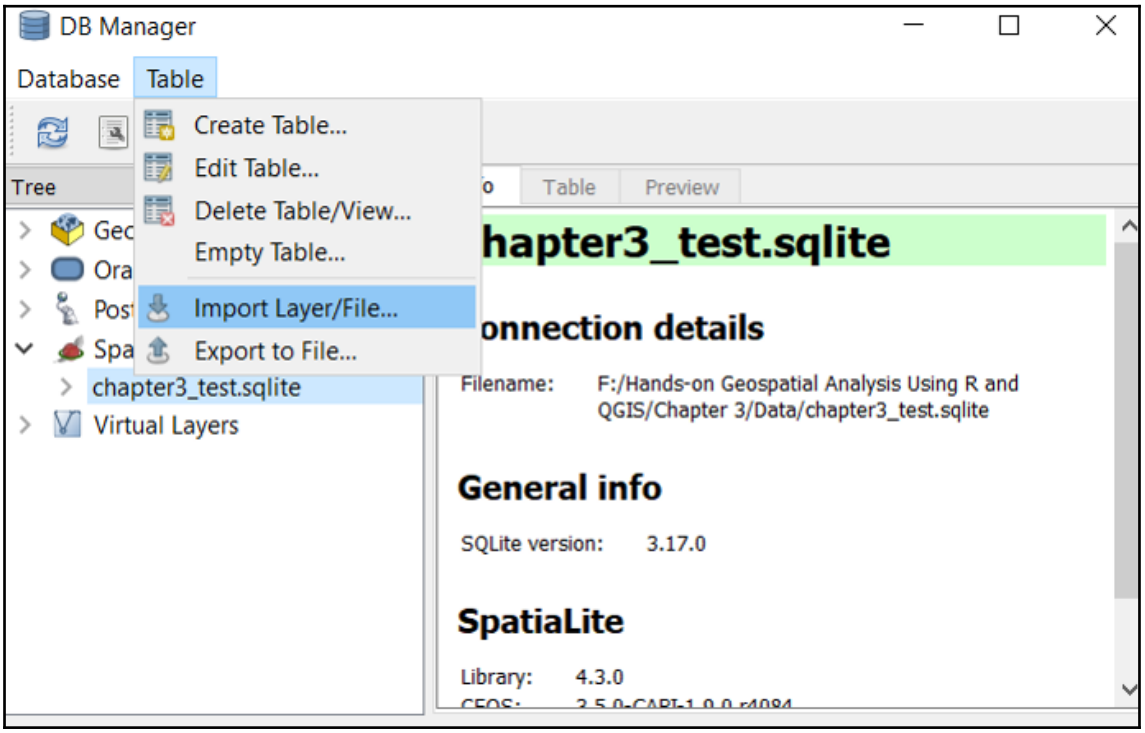

GeoPackage
SpatiaLite
PostGIS

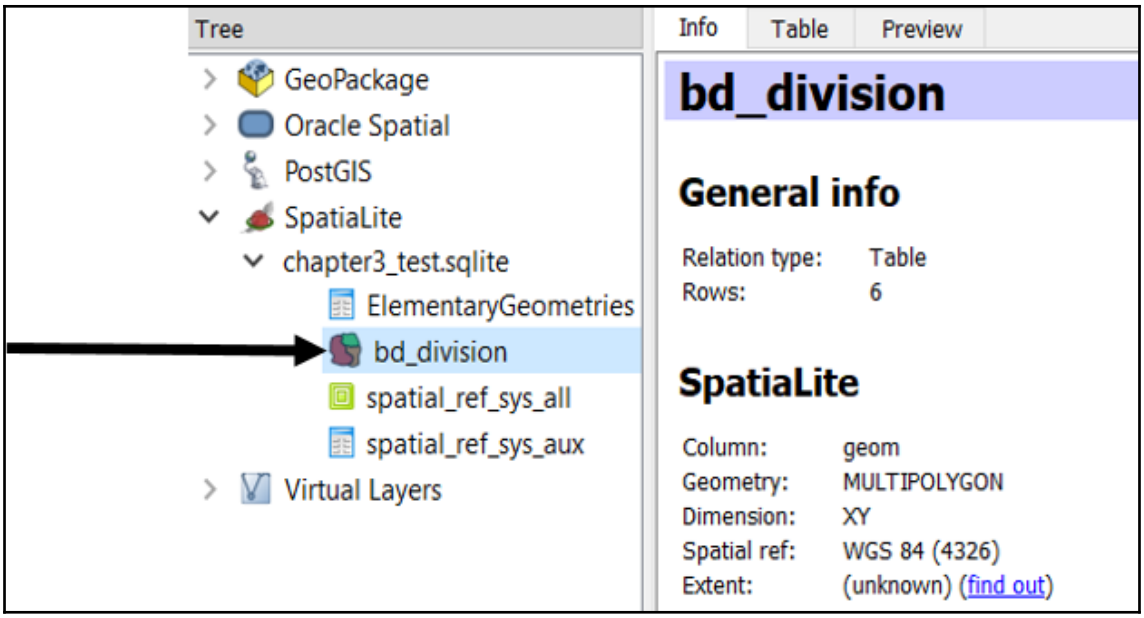

SpatiaLite
chapter3_test.sqlite


r
Database
Web
MMQGIS
Processing
Help
DB Manager
DB Manager

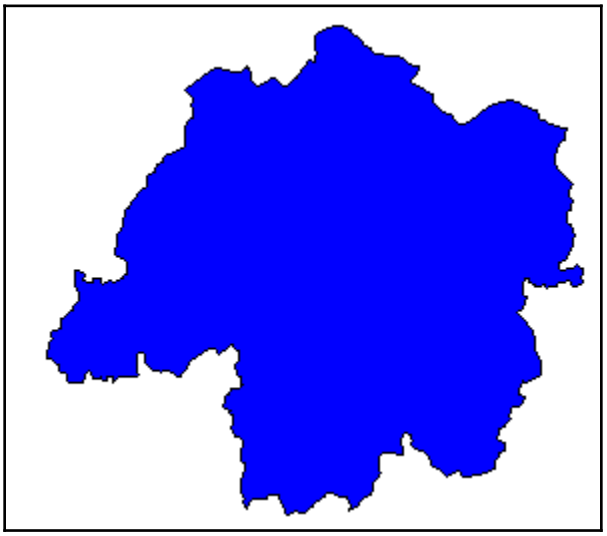

Tree
GeoPackage
Oracle Spatial
PostGIS
SpatiaLite
chapter3_test.sqlite
Virtual Layers

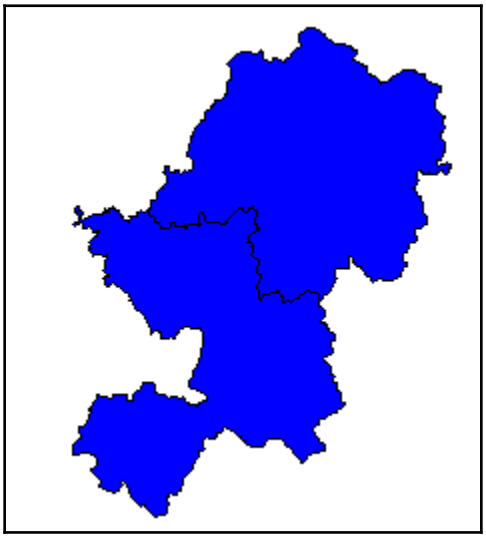

Tree
GeoPackage
Oracle Spatial
PostGIS
SpatiaLite
chapter3_test.sqlite
ElementaryGeometries
spatial_ref_sys_all
spatial_ref_sys_aux
Virtual Layers
Info
Table
Preview
chapter3_test.sqlite
Connection details
Filename: F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 3/Data/chapter3_test.sqlite
General info
SQLite version: 3.17.0


DB Manager
Database
Table
Create Table...
Edit Table...
Delete Table/View...
Empty Table...
Import Layer/File...
Export to File...
Tree
chapter3_test.sqlite
Virtual Layers
Table
Preview
hapter3_test.sqlite
onnection details
Filename: F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 3/Data/chapter3_test.sqlite
General info
SQLite version: 3.17.0
SpatiaLite
Library: 4.3.0

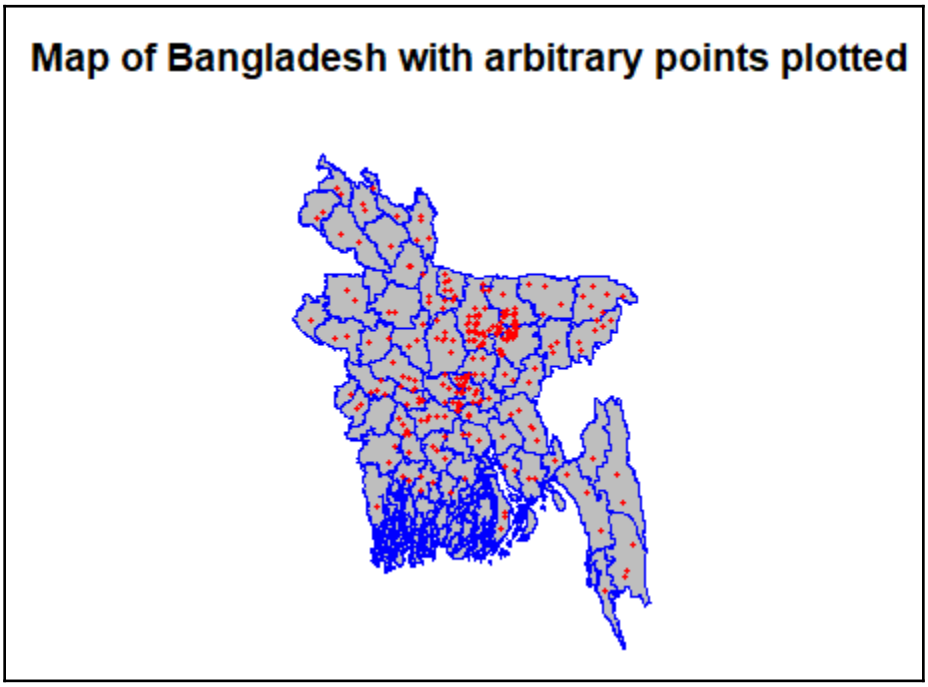

Tree
GeoPackage
Oracle Spatial
PostGIS
SpatiaLite
chapter3_test.sqlite
ElementaryGeometries
bd_division
spatial_ref_sys_all
spatial_ref_sys_aux
Virtual Layers
Info
Table
Preview
bd_division
General info
Relation type: Table
Rows: 6
SpatiaLite
Column: geom
Geometry: MULTIPOLYGON
Dimension: XY
Spatial ref: WGS 84 (4326)
Extent: (unknown) (find out)

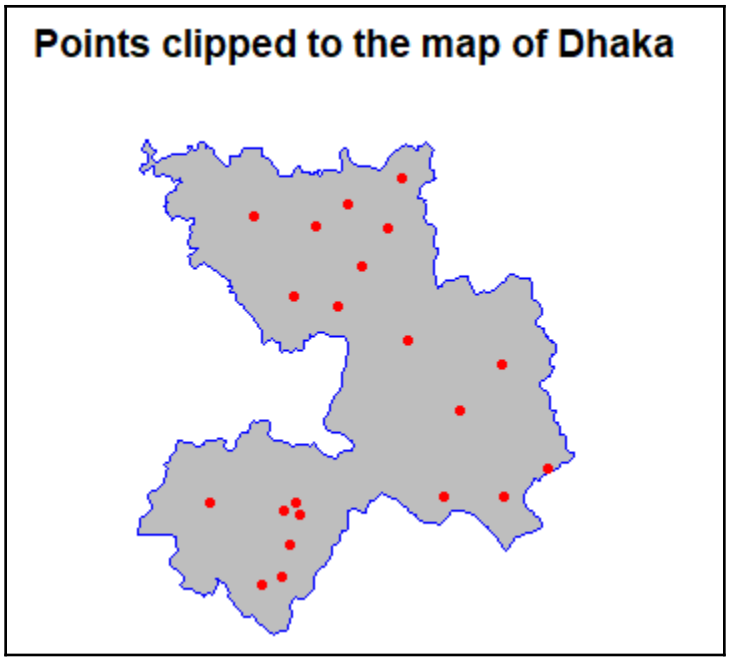
Chapter 4: Working with Geospatial Data

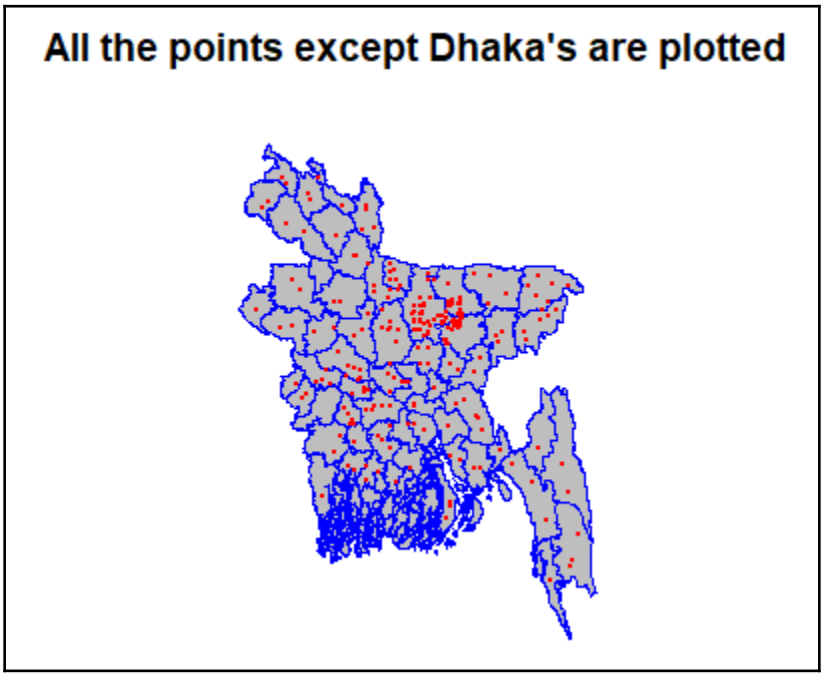


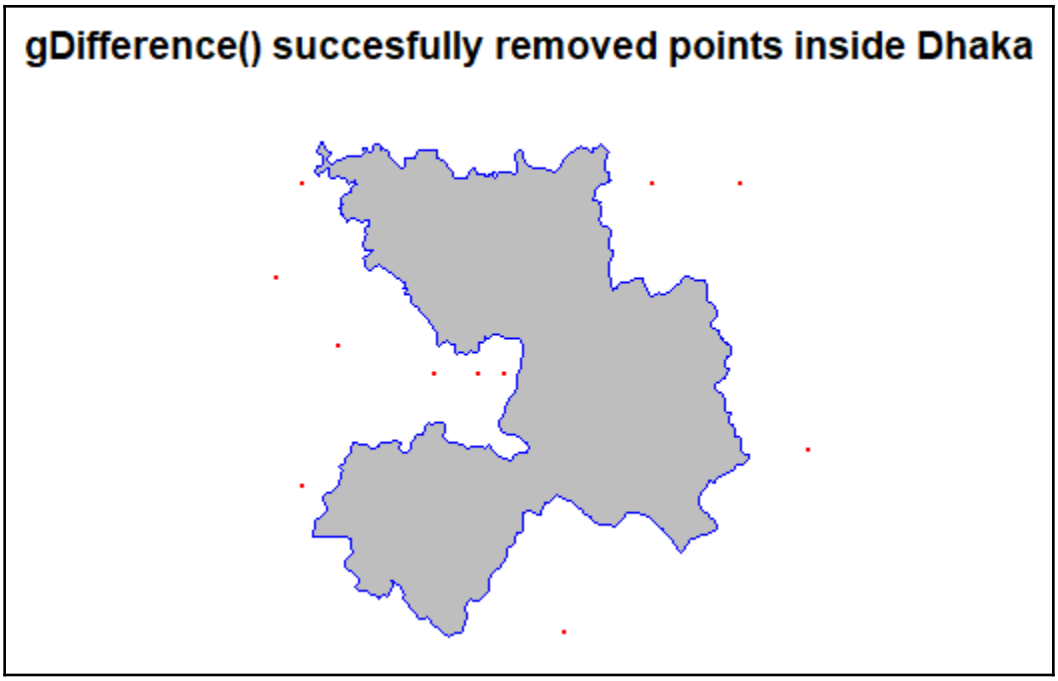


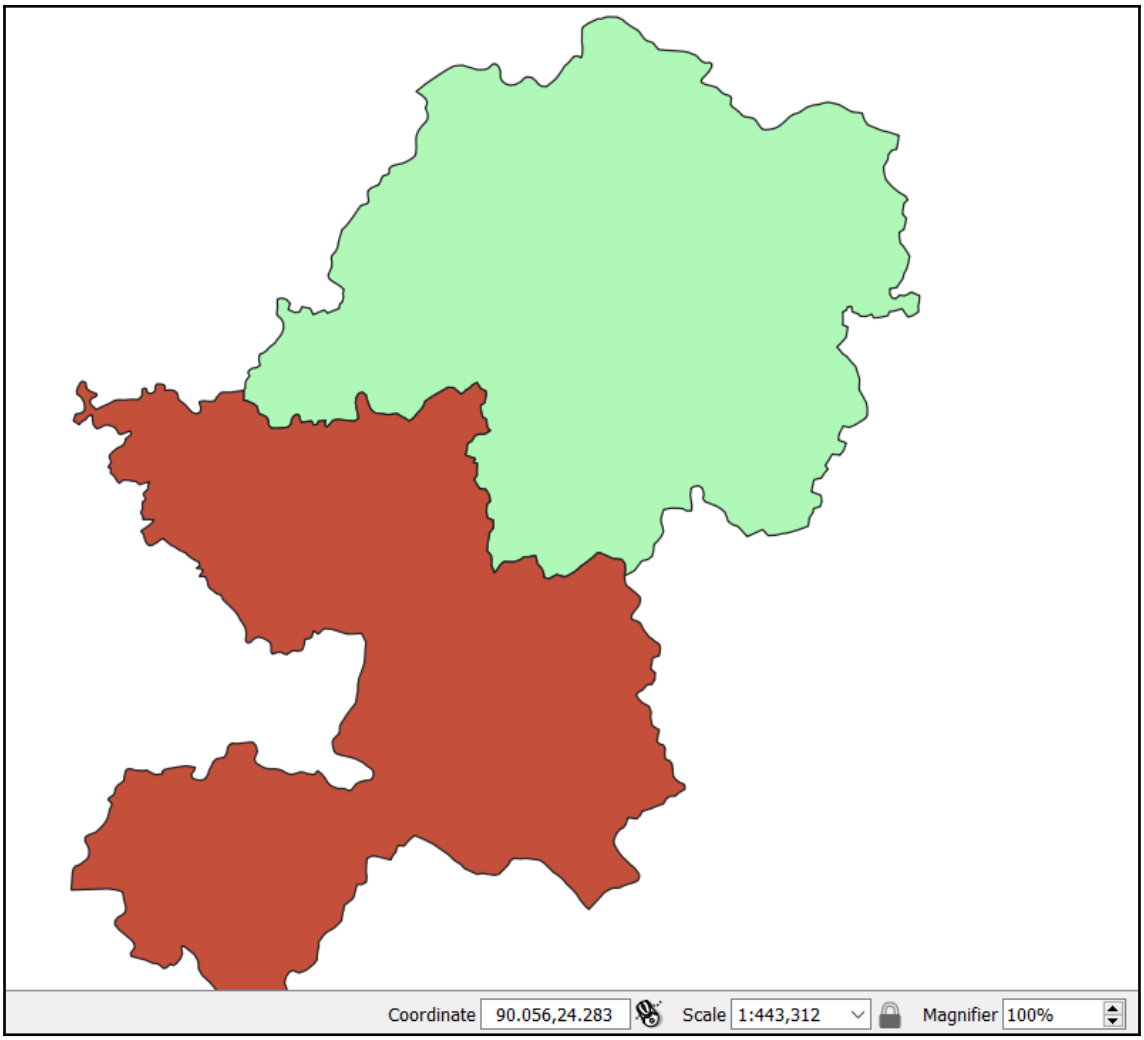
```
Object of class SpatialPoints
Coordinates:
      min    max
lon 88.26 92.449
lat 21.43 26.240
Is projected: NA
proj4string : [NA]
Number of points: 261
```

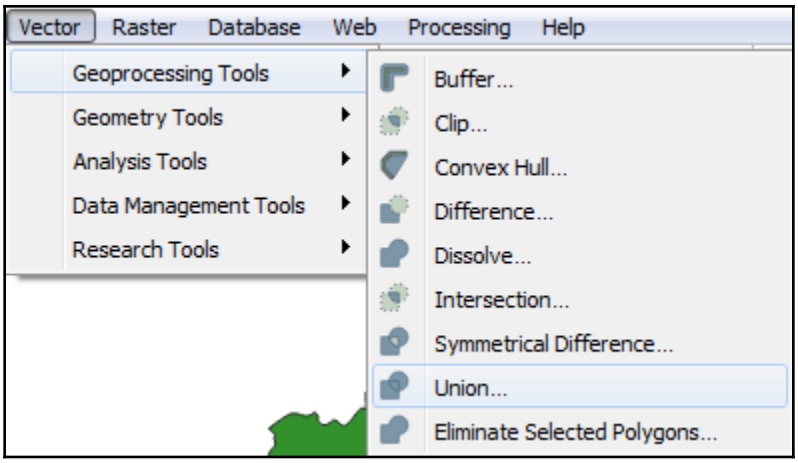


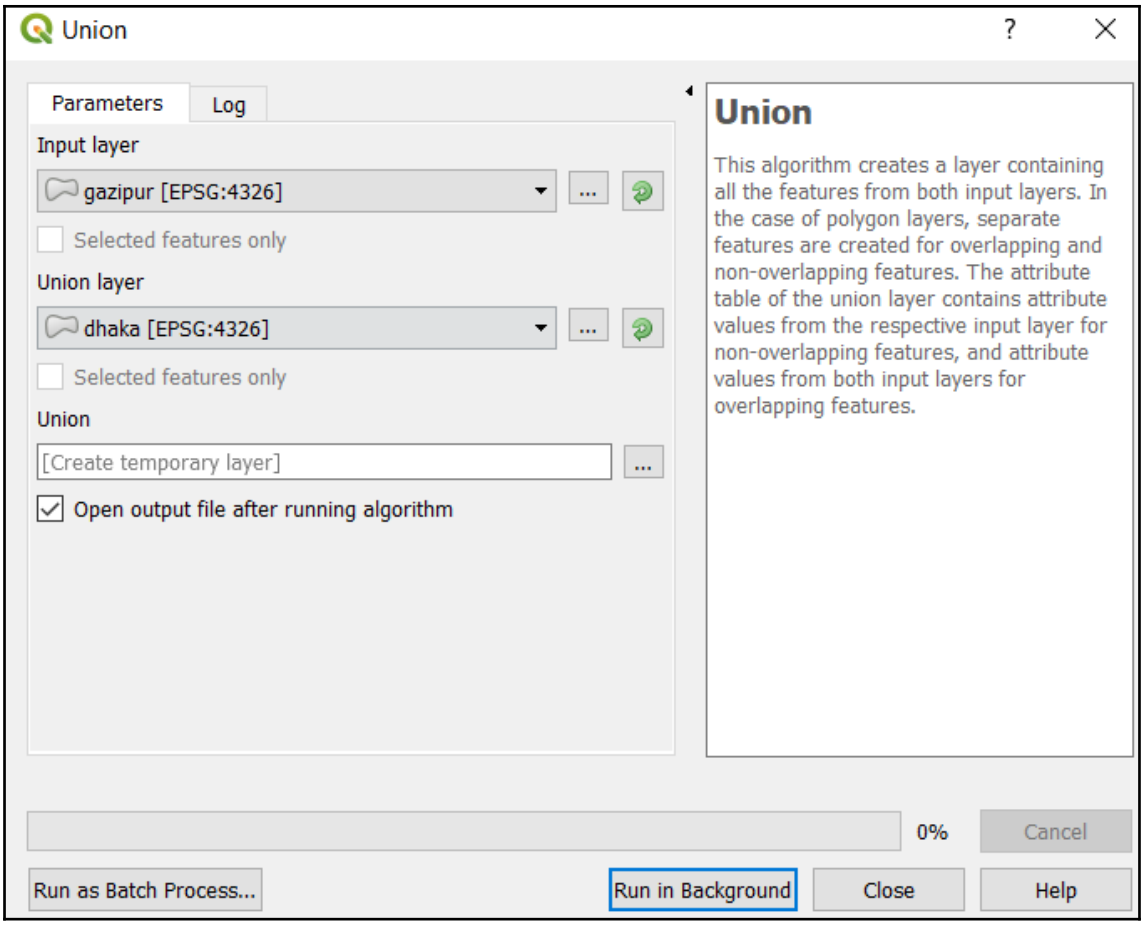

Points clipped to the map of Dhaka

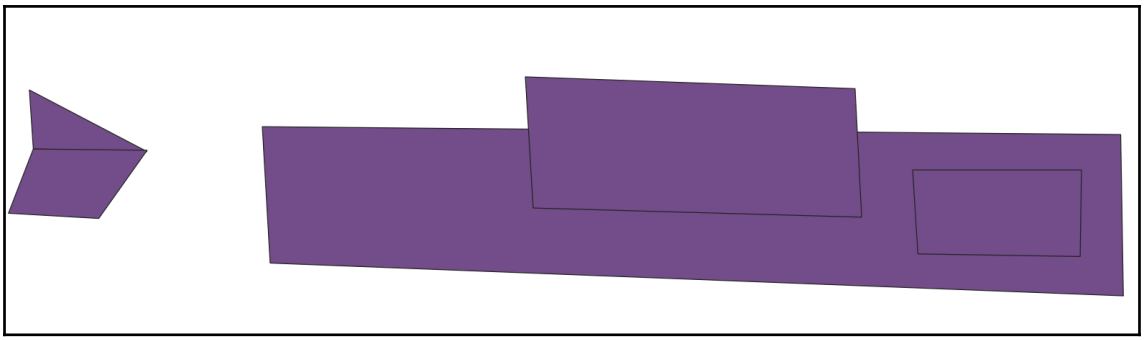

All the points except Dhaka's are plotted

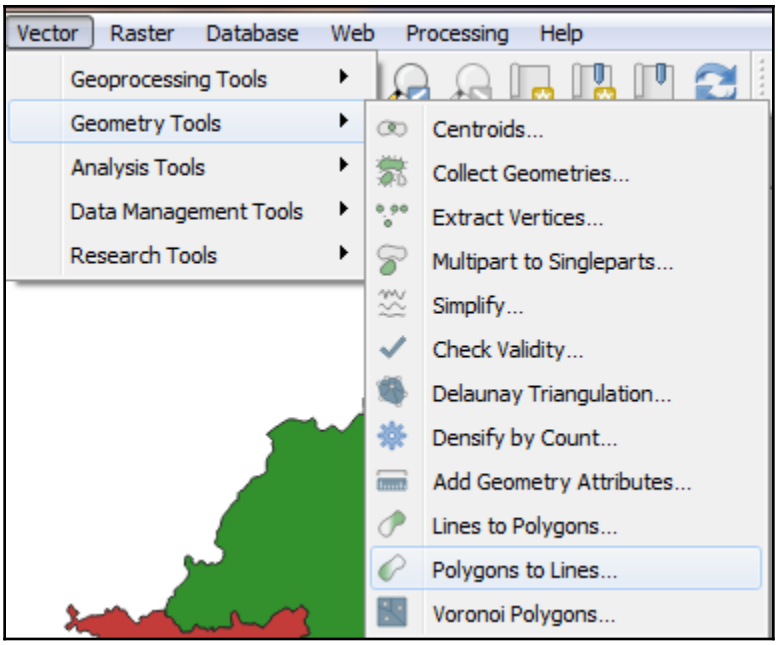

gDifference() succesfully removed points inside Dhaka

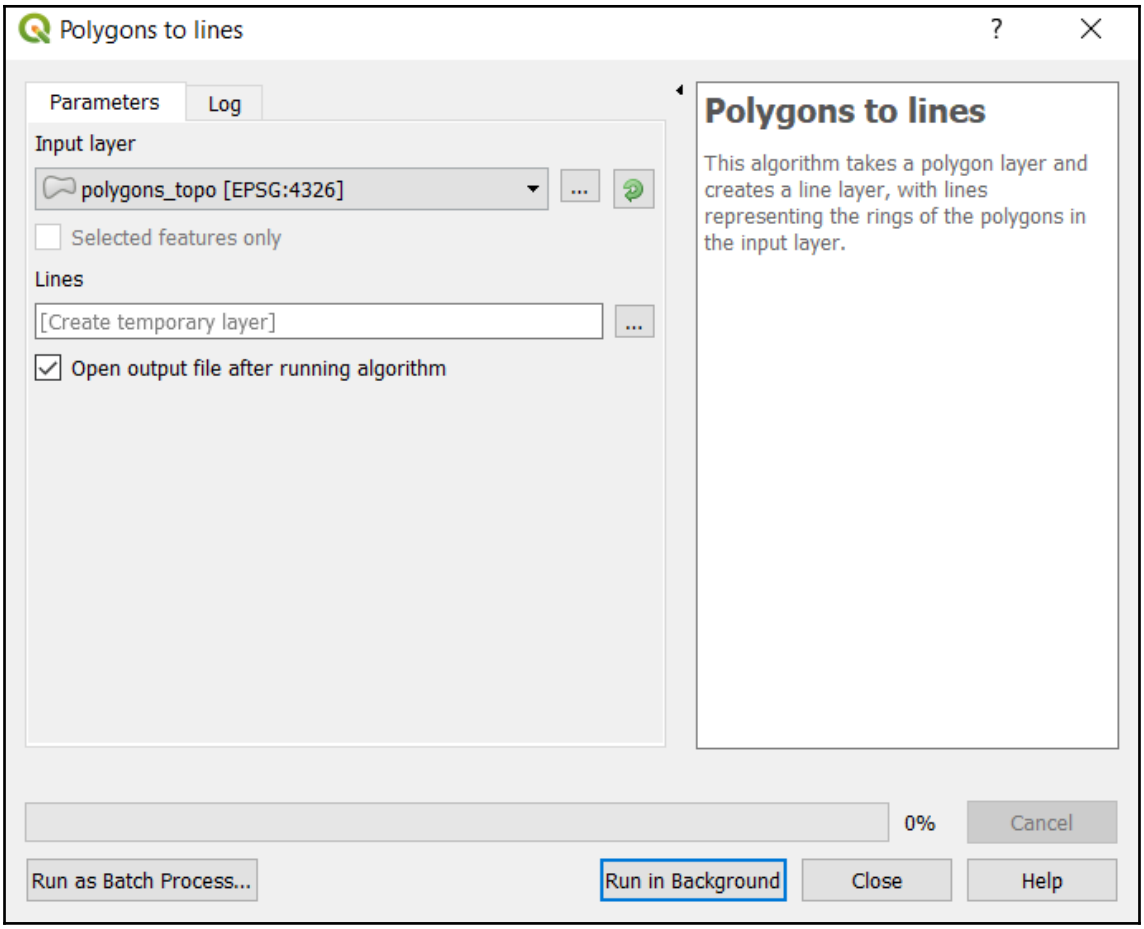

Coordinate
90.056,24.283
Scale
1:443,312
Magnifier
100%

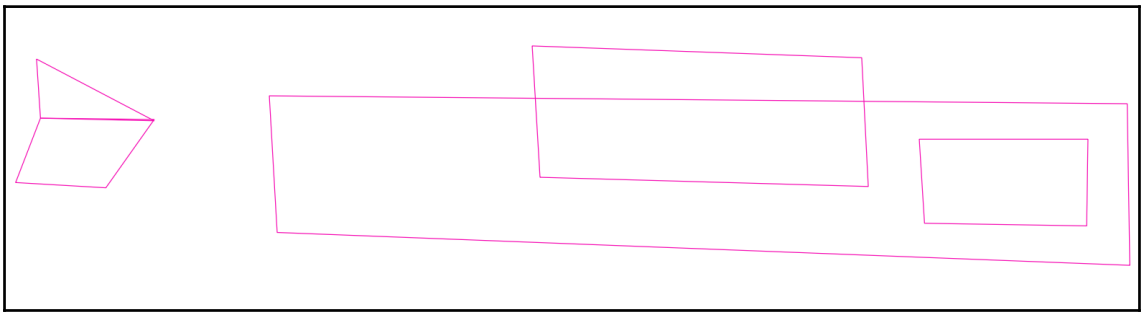

Vector
Raster
Database
Web
Processing
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Buffer...
Clip...
Convex Hull...
Difference...
Dissolve...
Intersection...
Symmetrical Difference...
Union...
Eliminate Selected Polygons...

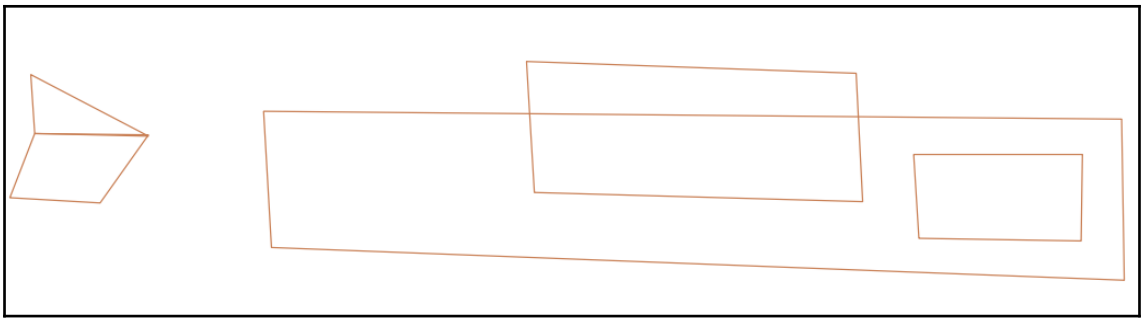

Union
Parameters
Log
Input layer
gazipur [EPSG:4326]
Selected features only
Union layer
dhaka [EPSG:4326]
Selected features only
Union
[Create temporary layer]
Open output file after running algorithm
Union
This algorithm creates a layer containing all the features from both input layers. In the case of polygon layers, separate features are created for overlapping and non-overlapping features. The attribute table of the union layer contains attribute values from the respective input layer for non-overlapping features, and attribute values from both input layers for overlapping features.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

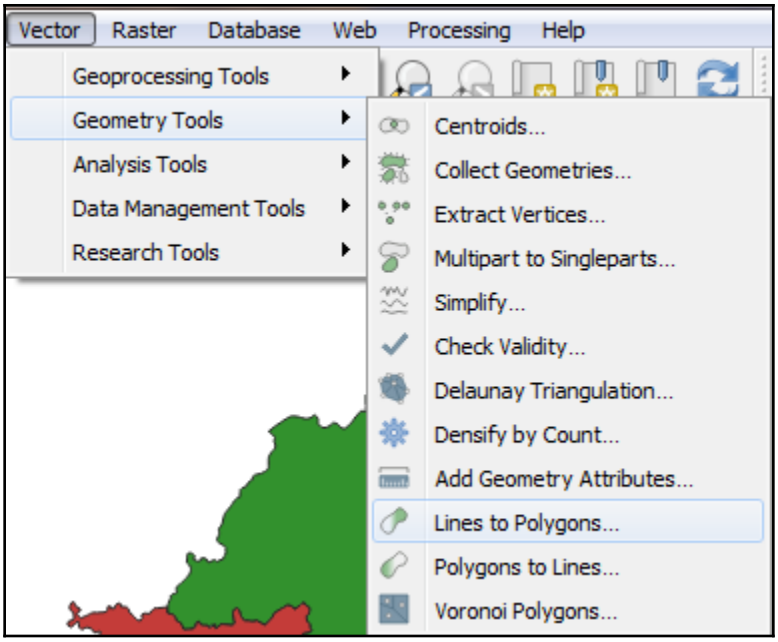


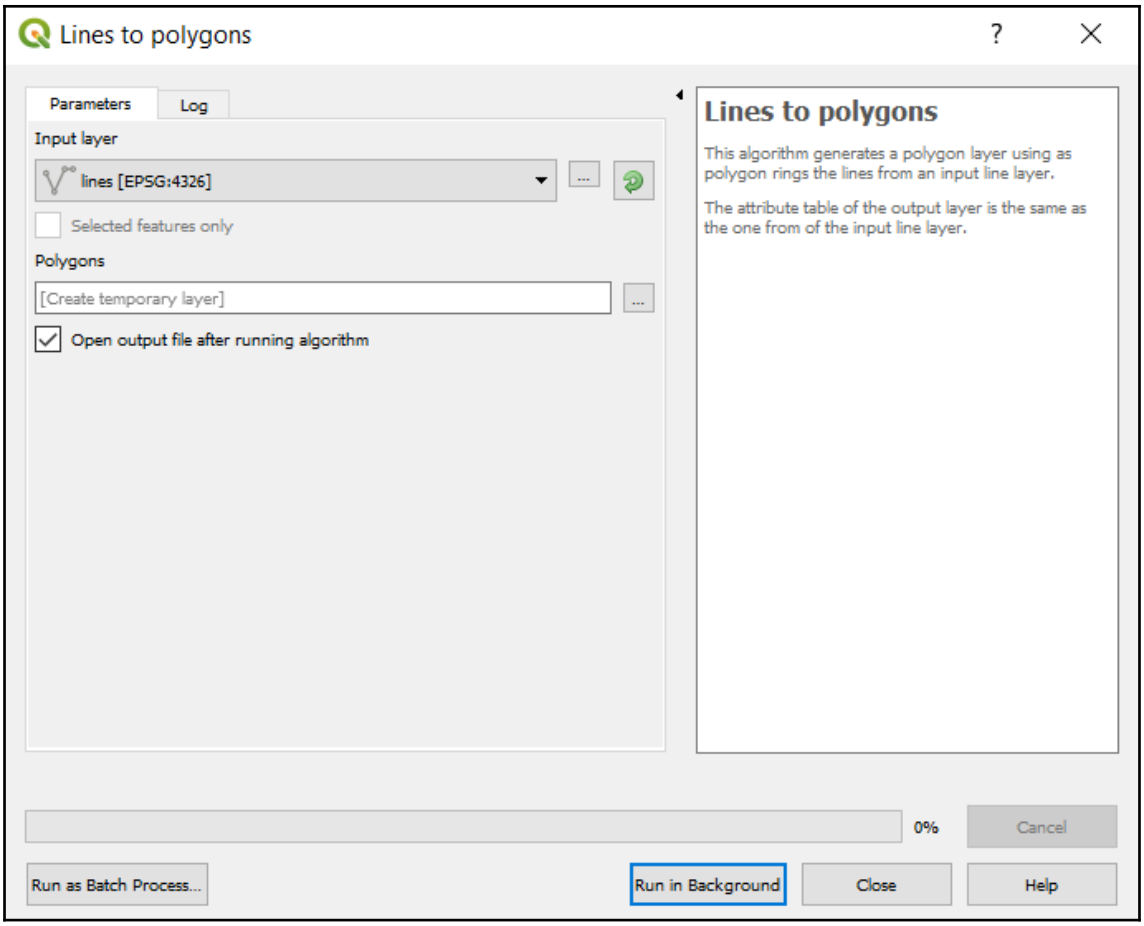

Vector
Raster
Database
Web
Processing
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Centroids...
Collect Geometries...
Extract Vertices...
Multipart to Singleparts...
Simplify...
Check Validity...
Delaunay Triangulation...
Densify by Count...
Add Geometry Attributes...
Lines to Polygons...
Polygons to Lines...
Voronoi Polygons...

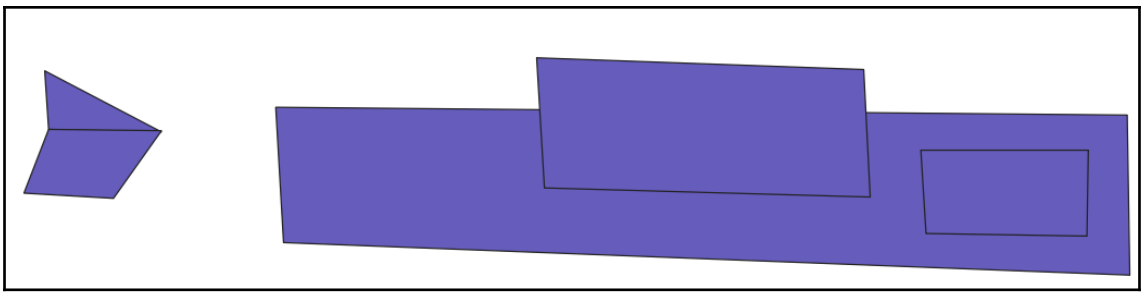

Polygons to lines
Parameters
Log
Input layer
polygons_topo [EPSG:4326]
Selected features only
Lines
[Create temporary layer]
Open output file after running algorithm
Polygons to lines
This algorithm takes a polygon layer and creates a line layer, with lines representing the rings of the polygons in the input layer.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

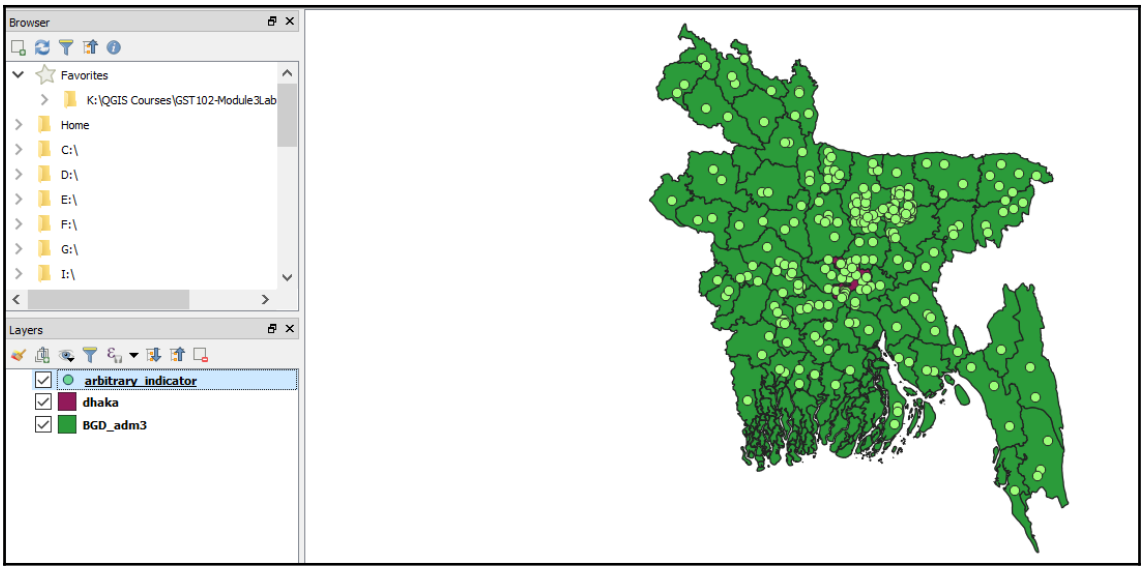


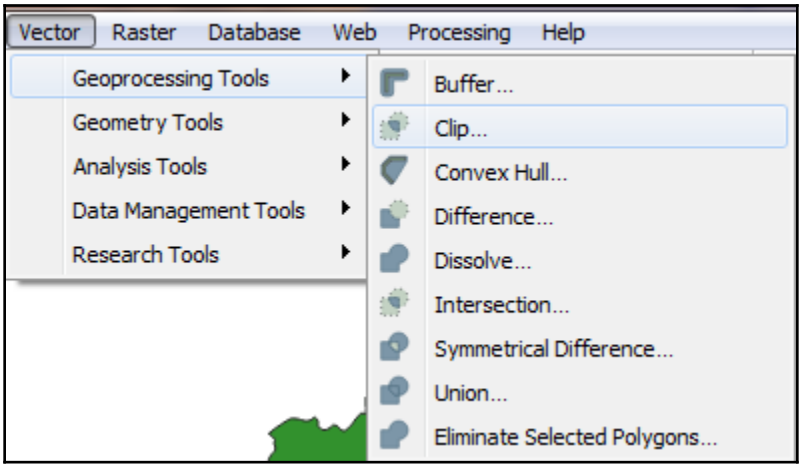


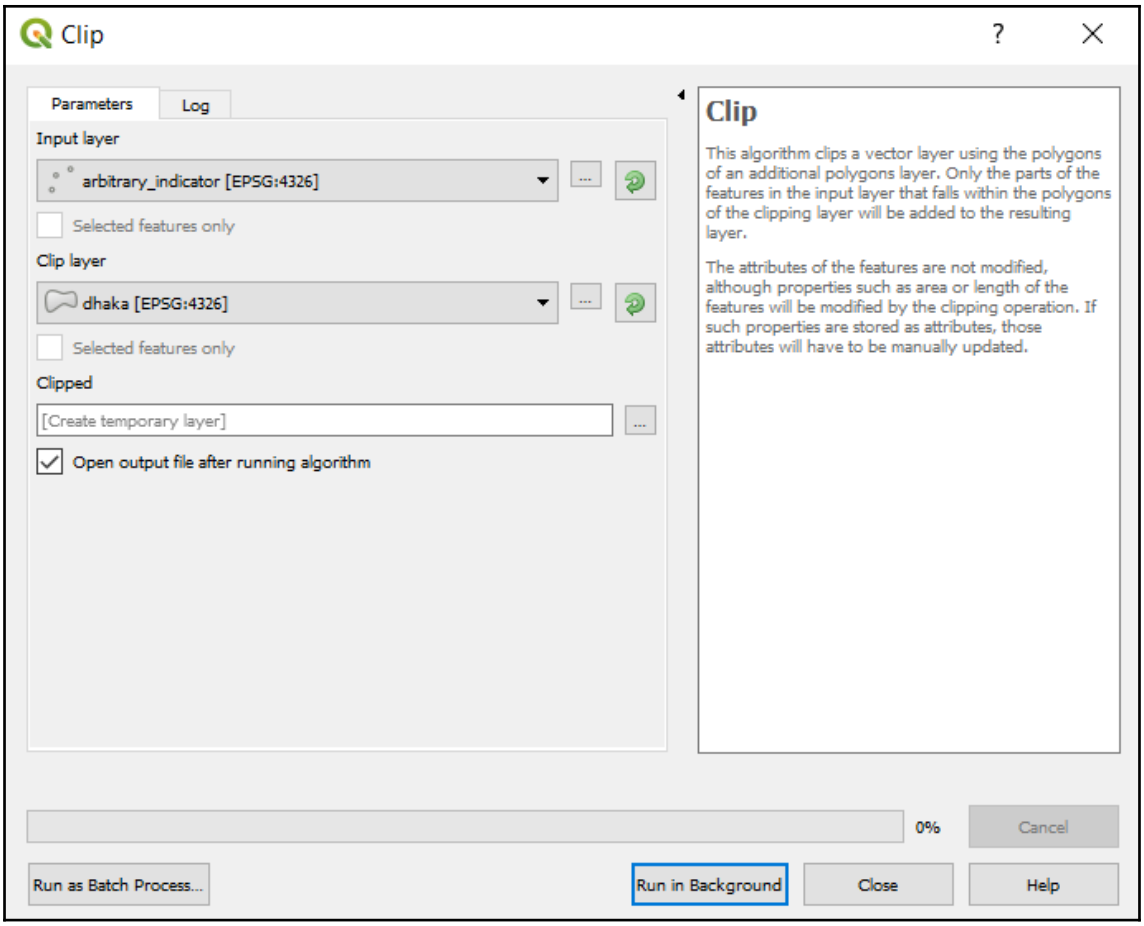

Vector
Raster
Database
Web
Processing
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Centroids...
Collect Geometries...
Extract Vertices...
Multipart to Singleparts...
Simplify...
Check Validity...
Delaunay Triangulation...
Densify by Count...
Add Geometry Attributes...
Lines to Polygons...
Polygons to Lines...
Voronoi Polygons...

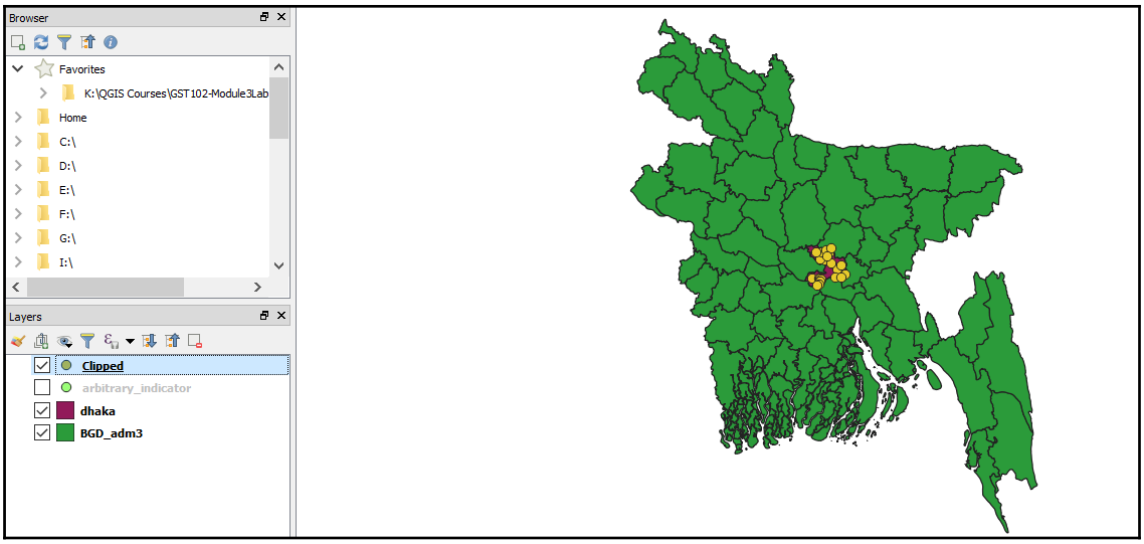

Lines to polygons
Parameters
Log
Input layer
lines [EPSG:4326]
Selected features only
Polygons
[Create temporary layer]
Open output file after running algorithm
Lines to polygons
This algorithm generates a polygon layer using as polygon rings the lines from an input line layer.
The attribute table of the output layer is the same as the one from of the input line layer.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help



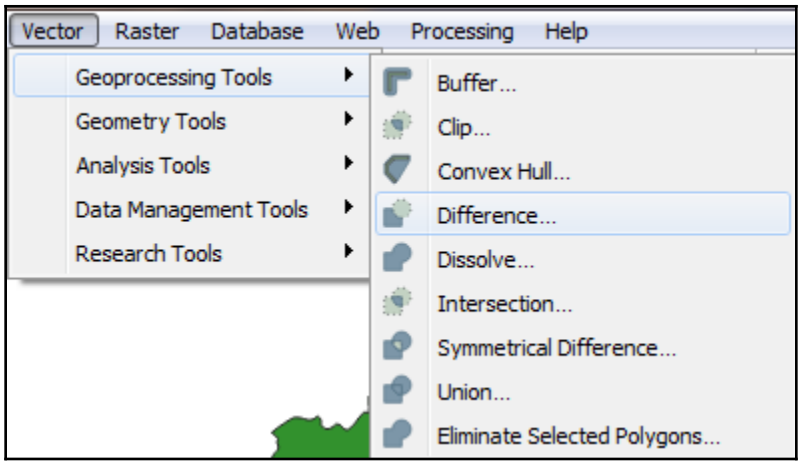

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Home
C:\
D:\
E:\
F:\
G:\
I:\
Layers
arbitrary_indicator
dhaka
BGD_adm3

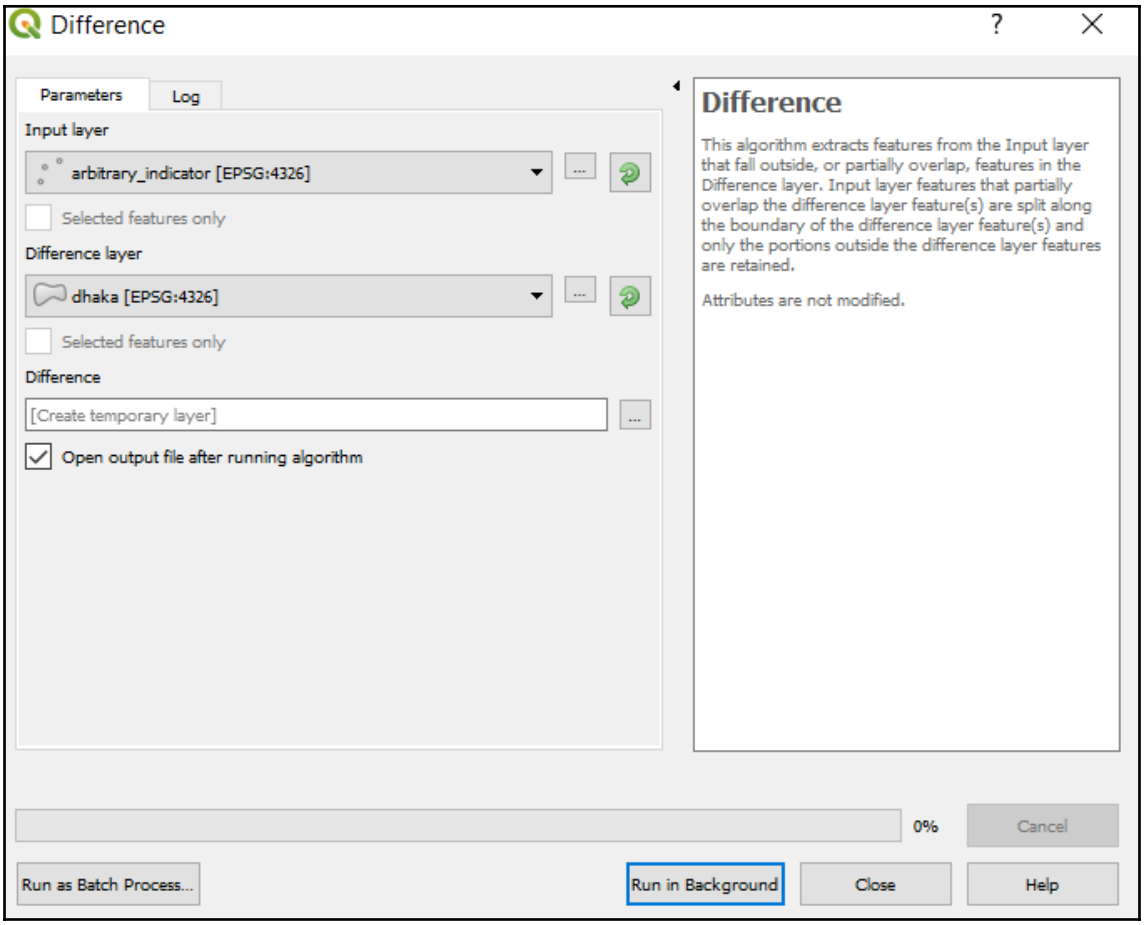

Vector
Raster
Database
Web
Processing
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Buffer...
Clip...
Convex Hull...
Difference...
Dissolve...
Intersection...
Symmetrical Difference...
Union...
Eliminate Selected Polygons...

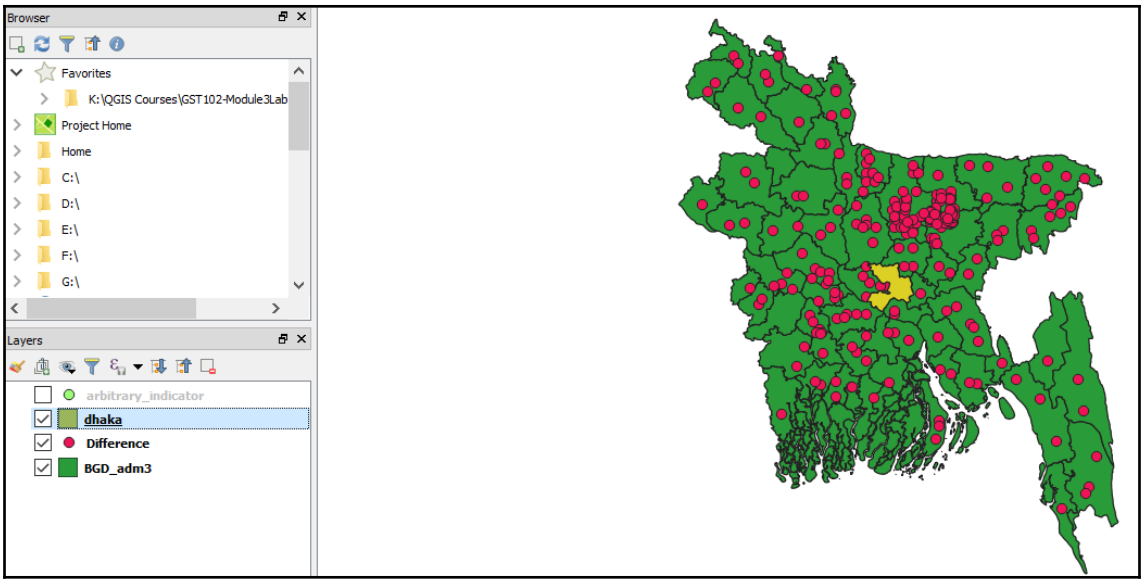

Clip
Parameters
Log
Input layer
arbitrary_indicator [EPSG:4326]
Selected features only
Clip layer
dhaka [EPSG:4326]
Selected features only
Clipped
[Create temporary layer]
Open output file after running algorithm
Clip
This algorithm clips a vector layer using the polygons of an additional polygons layer. Only the parts of the features in the input layer that falls within the polygons of the clipping layer will be added to the resulting layer.
The attributes of the features are not modified, although properties such as area or length of the features will be modified by the clipping operation. If such properties are stored as attributes, those attributes will have to be manually updated.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

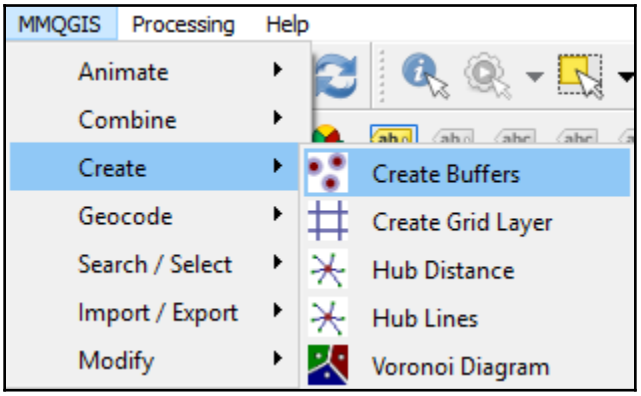

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Home
C:\
D:\
E:\
F:\
G:\
I:\
Layers
Clipped
arbitrary_indicator
dhaka
BGD_adm3

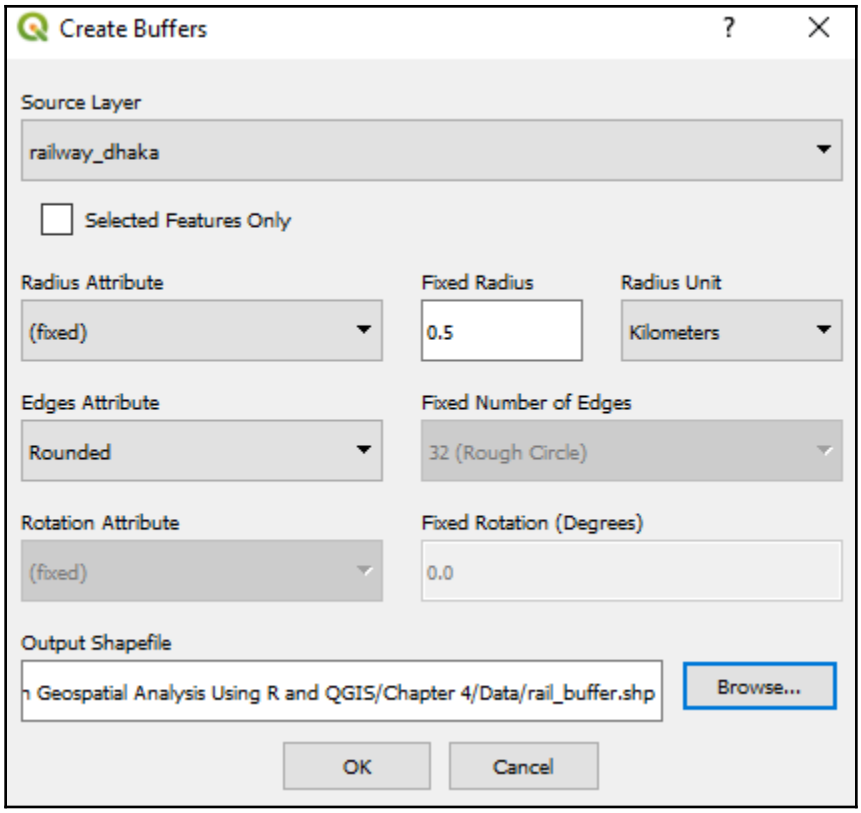

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Home
C:\
D:\
E:\
F:\
G:\
I:\
Layers
Clipped
arbitrary_indicator
dhaka
BGD_adm3

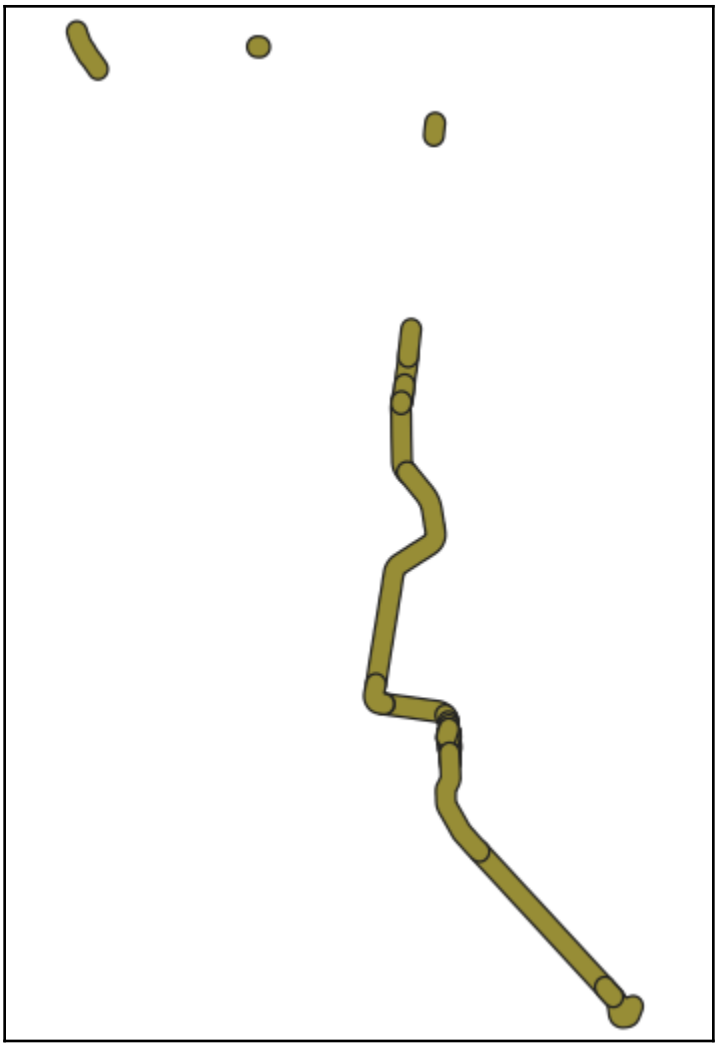

Vector
Raster
Database
Web
Processing
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Buffer...
Clip...
Convex Hull...
Difference...
Dissolve...
Intersection...
Symmetrical Difference...
Union...
Eliminate Selected Polygons...

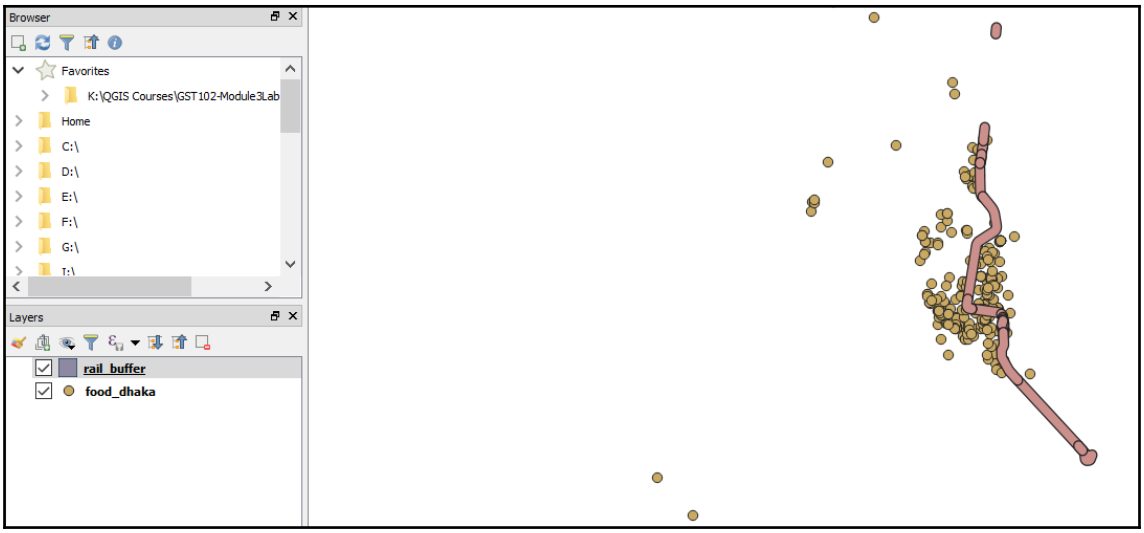

Difference
Parameters
Log
Input layer
arbitrary_indicator [EPSG:4326]
Selected features only
Difference layer
dhaka [EPSG:4326]
Selected features only
Difference
[Create temporary layer]
Open output file after running algorithm
Difference
This algorithm extracts features from the Input layer that fall outside, or partially overlap, features in the Difference layer. Input layer features that partially overlap the difference layer feature(s) are split along the boundary of the difference layer feature(s) and only the portions outside the difference layer features are retained.
Attributes are not modified.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

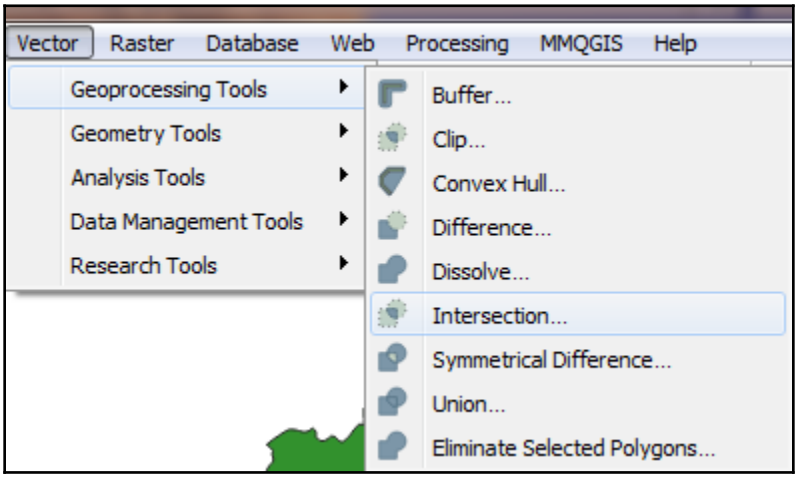

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Project Home
Home
C:\
D:\
E:\
F:\
G:\
Layers
arbitrary_indicator
dhaka
Difference
BGD_adm3

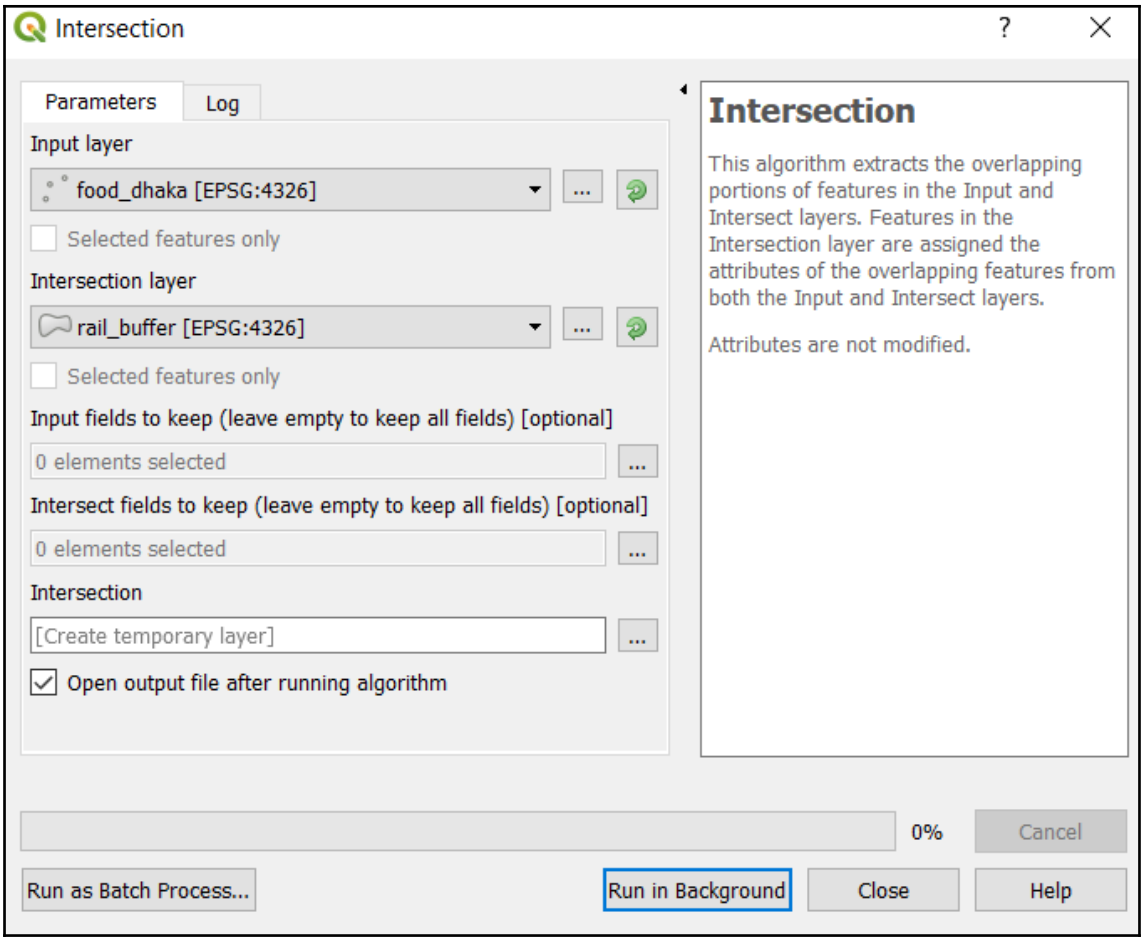

MMQGIS
Processing
Help
Animate
Combine
Create
Geocode
Search / Select
Import / Export
Modify
Create Buffers
Create Grid Layer
Hub Distance
Hub Lines
Voronoi Diagram

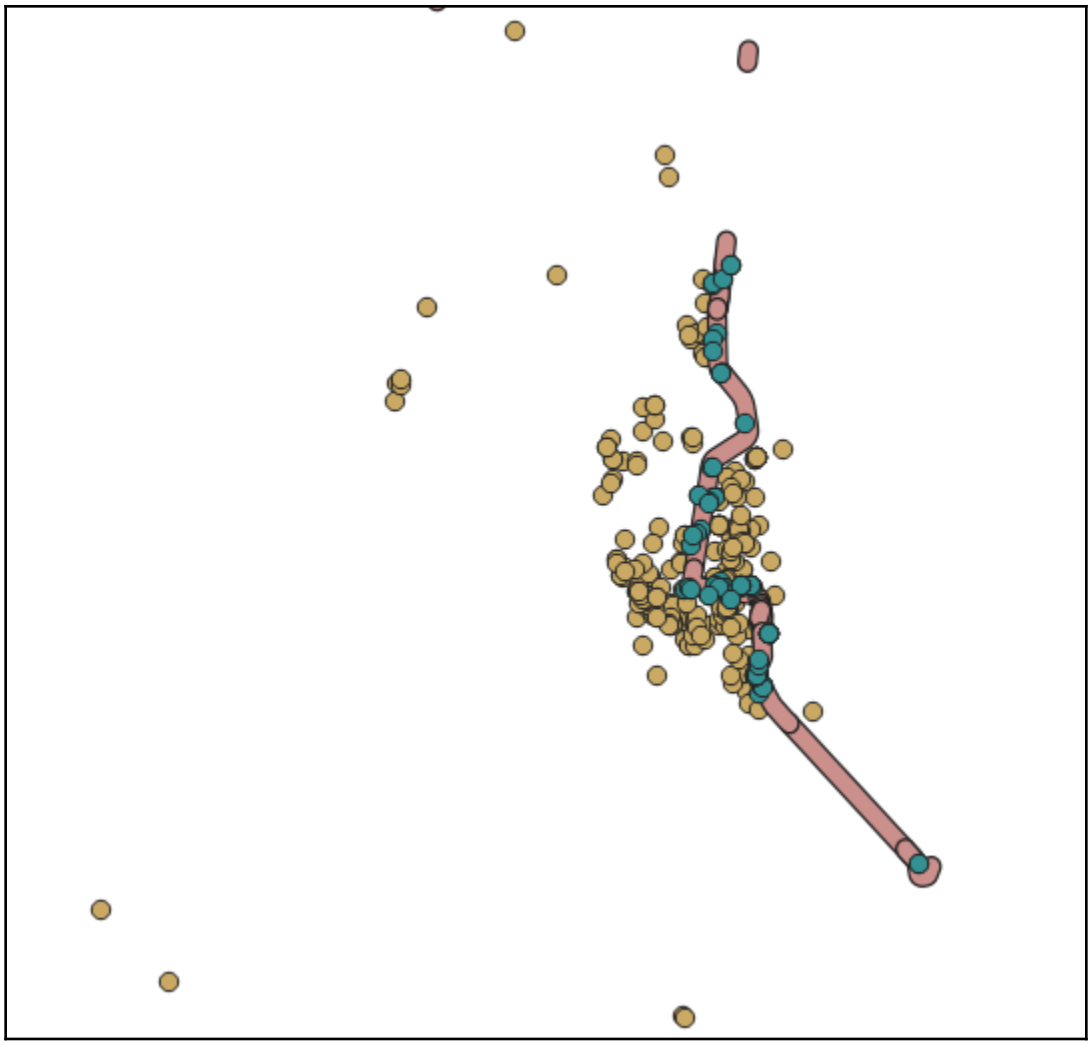

Create Buffers
Source Layer
railway_dhaka
Selected Features Only
Radius Attribute
(fixed)
Fixed Radius
0.5
Radius Unit
Kilometers
Edges Attribute
Rounded
Fixed Number of Edges
32 (Rough Circle)
Rotation Attribute
(fixed)
Fixed Rotation (Degrees)
0.0
Output Shapefile
h Geospatial Analysis Using R and QGIS/Chapter 4/Data/rail_buffer.shp
Browse...
OK
Cancel

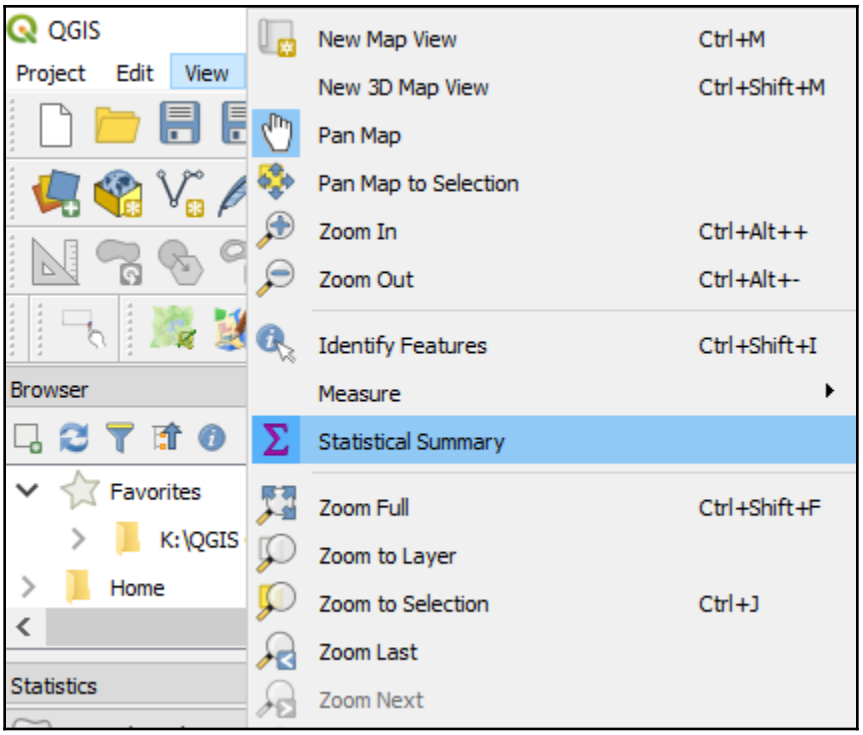


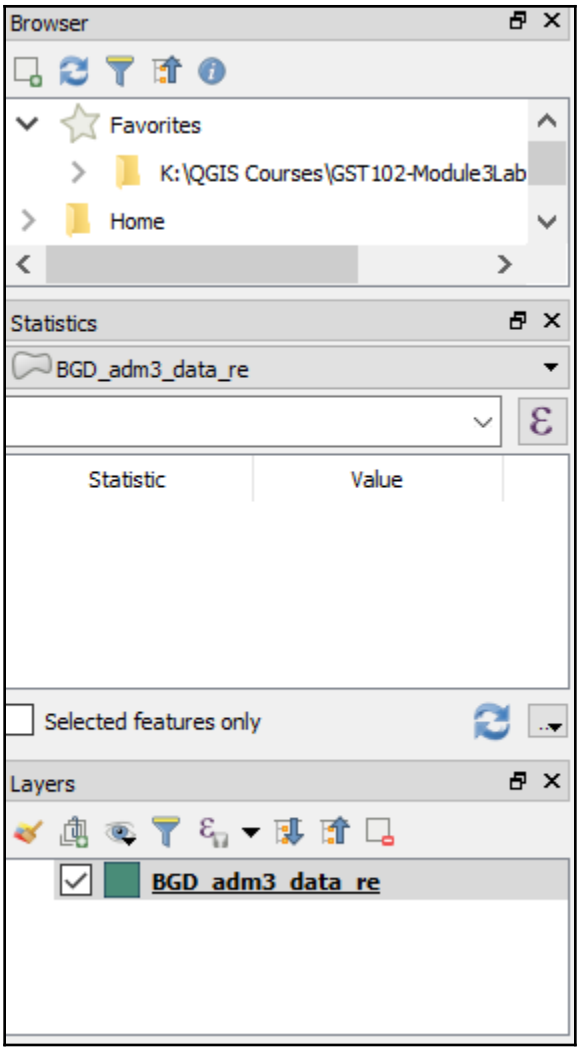

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Home
C:\
D:\
E:\
F:\
G:\
Layers
rail_buffer
food_dhaka

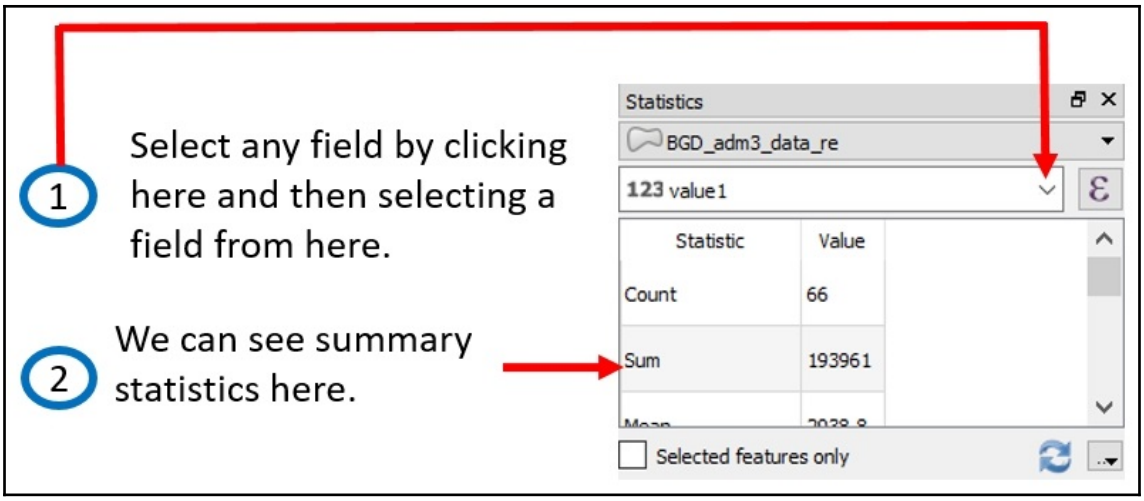

Vector
Raster
Database
Web
Processing
MMQGIS
Help
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Buffer...
Clip...
Convex Hull...
Difference...
Dissolve...
Intersection...
Symmetrical Difference...
Union...
Eliminate Selected Polygons...

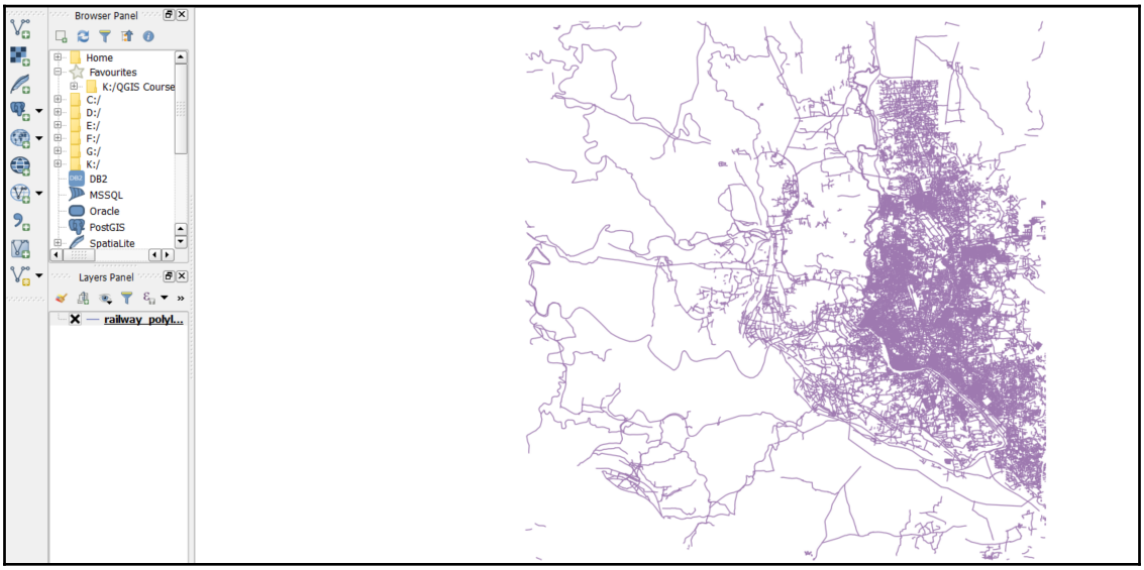

Intersection
Parameters
Log
Input layer
food_dhaka [EPSG:4326]
Selected features only
Intersection layer
rail_buffer [EPSG:4326]
Selected features only
Input fields to keep (leave empty to keep all fields) [optional]
0 elements selected
Intersect fields to keep (leave empty to keep all fields) [optional]
0 elements selected
Intersection
[Create temporary layer]
Open output file after running algorithm
Intersection
This algorithm extracts the overlapping portions of features in the Input and Intersect layers. Features in the Intersection layer are assigned the attributes of the overlapping features from both the Input and Intersect layers.
Attributes are not modified.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

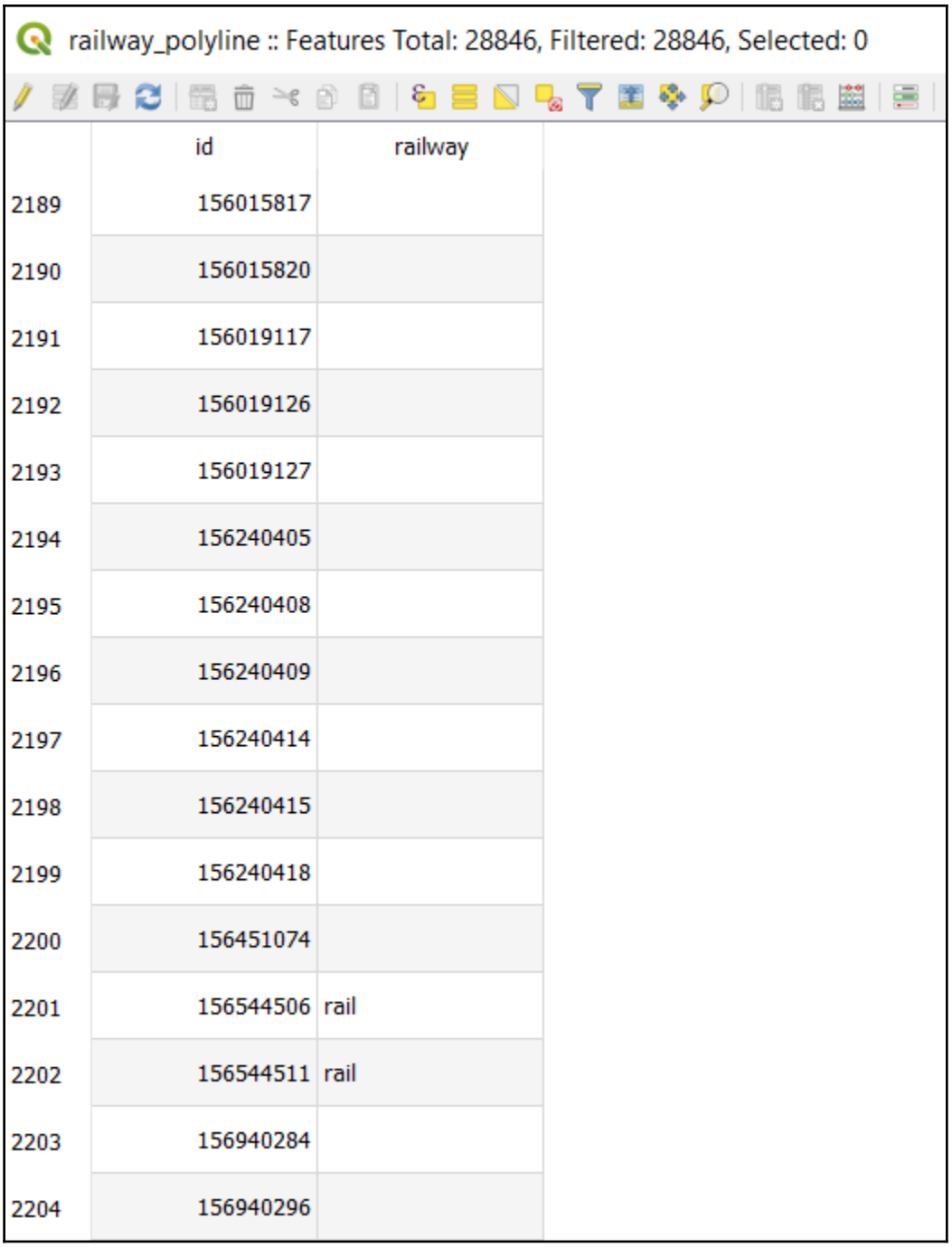



QGIS
Project
Edit
View
Browser
Favorites
K:\QGIS
Home
Statistics
New Map View Ctrl+M
New 3D Map View Ctrl+Shift+M
Pan Map
Pan Map to Selection
Zoom In Ctrl+Alt++
Zoom Out Ctrl+Alt+-
Identify Features Ctrl+Shift+I
Measure
Statistical Summary
Zoom Full Ctrl+Shift+F
Zoom to Layer
Zoom to Selection Ctrl+J
Zoom Last
Zoom Next

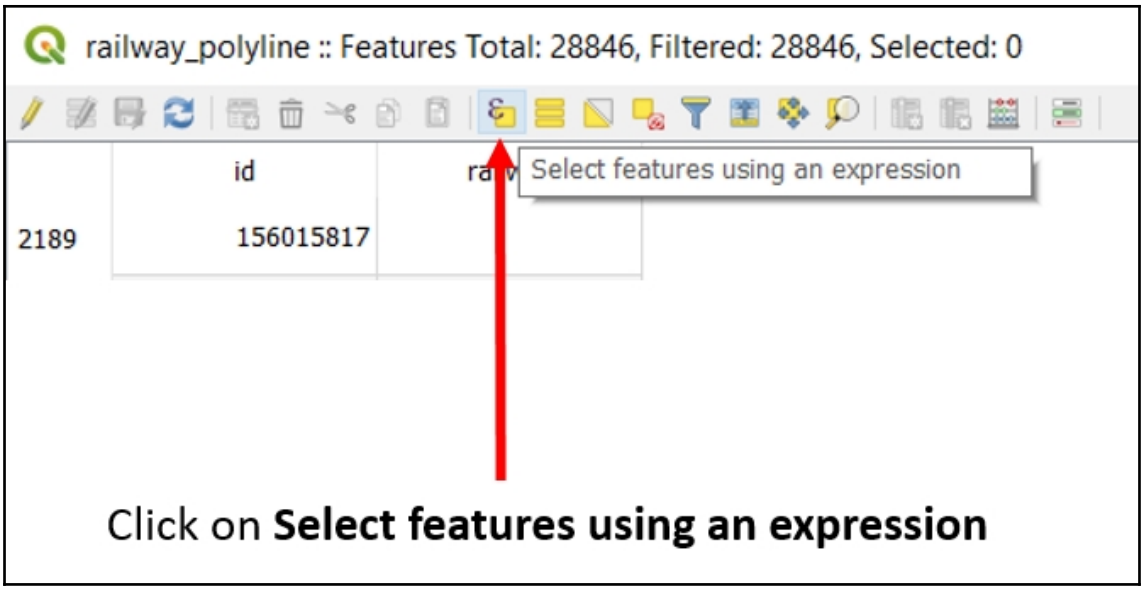

Browser
Favorites
K:\QGIS Courses\GST102-Module3Lab
Home
Statistics
BGD_adm3_data_re
Statistic
Value
Selected features only
Layers
BGD_adm3_data_re

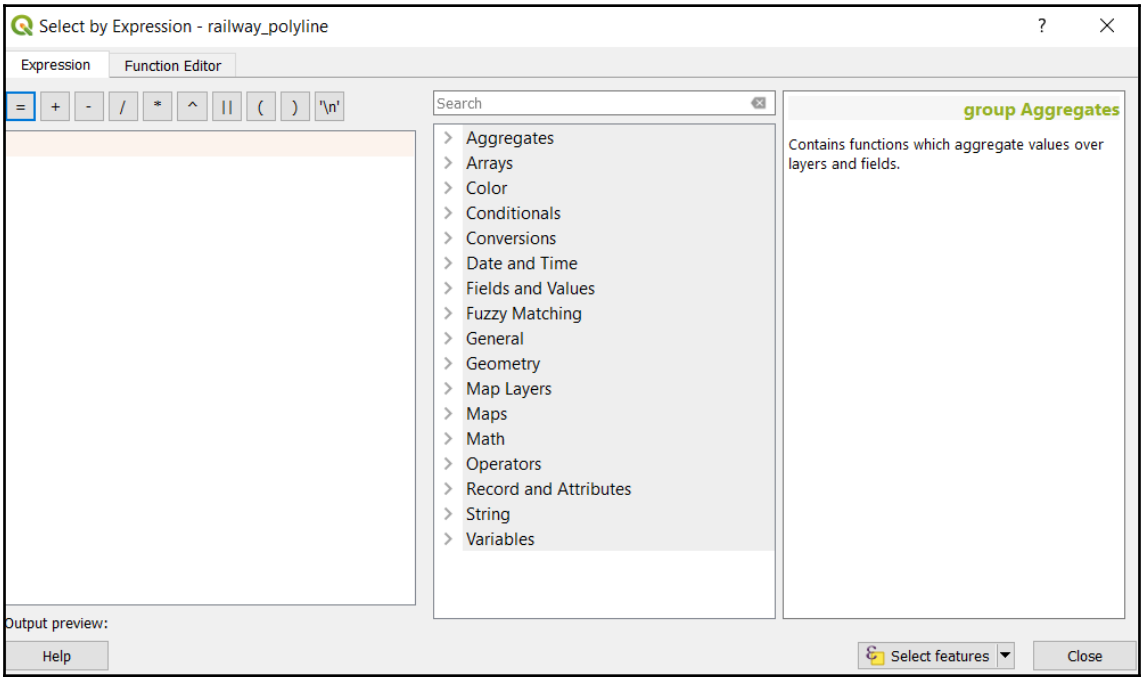

1
Select any field by clicking here and then selecting a field from here.
2
We can see summary statistics here.
Statistics
BGD_adm3_data_re
123 value1
Statistic
Value
Count
66
Sum
193961
Selected features only

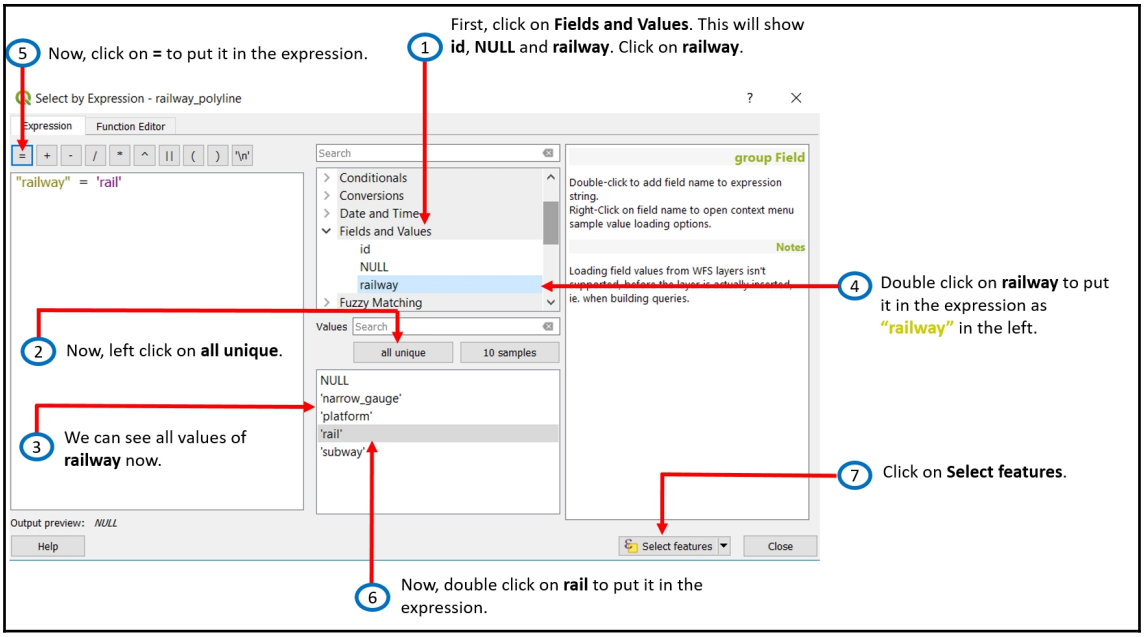

Browser Panel
Home
Favourites
K:/QGIS Course
C:/
D:/
E:/
F:/
G:/
K:/
DB2
MSSQL
Oracle
PostGIS
SpatiaLite
Layers Panel
railway_polyl...

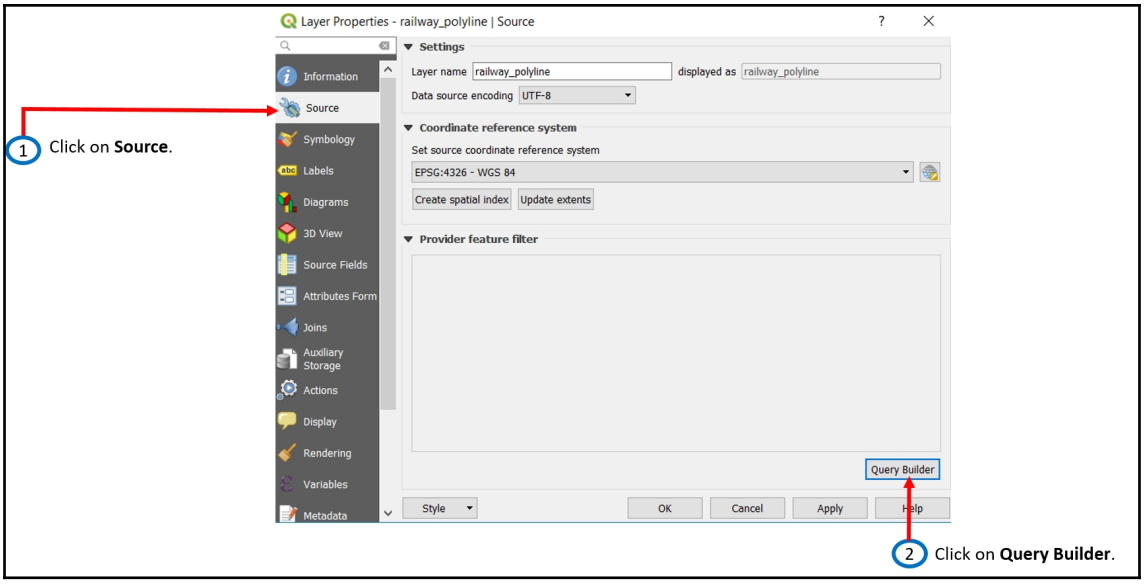

railway_polyline :: Features Total: 28846, Filtered: 28846, Selected: 0

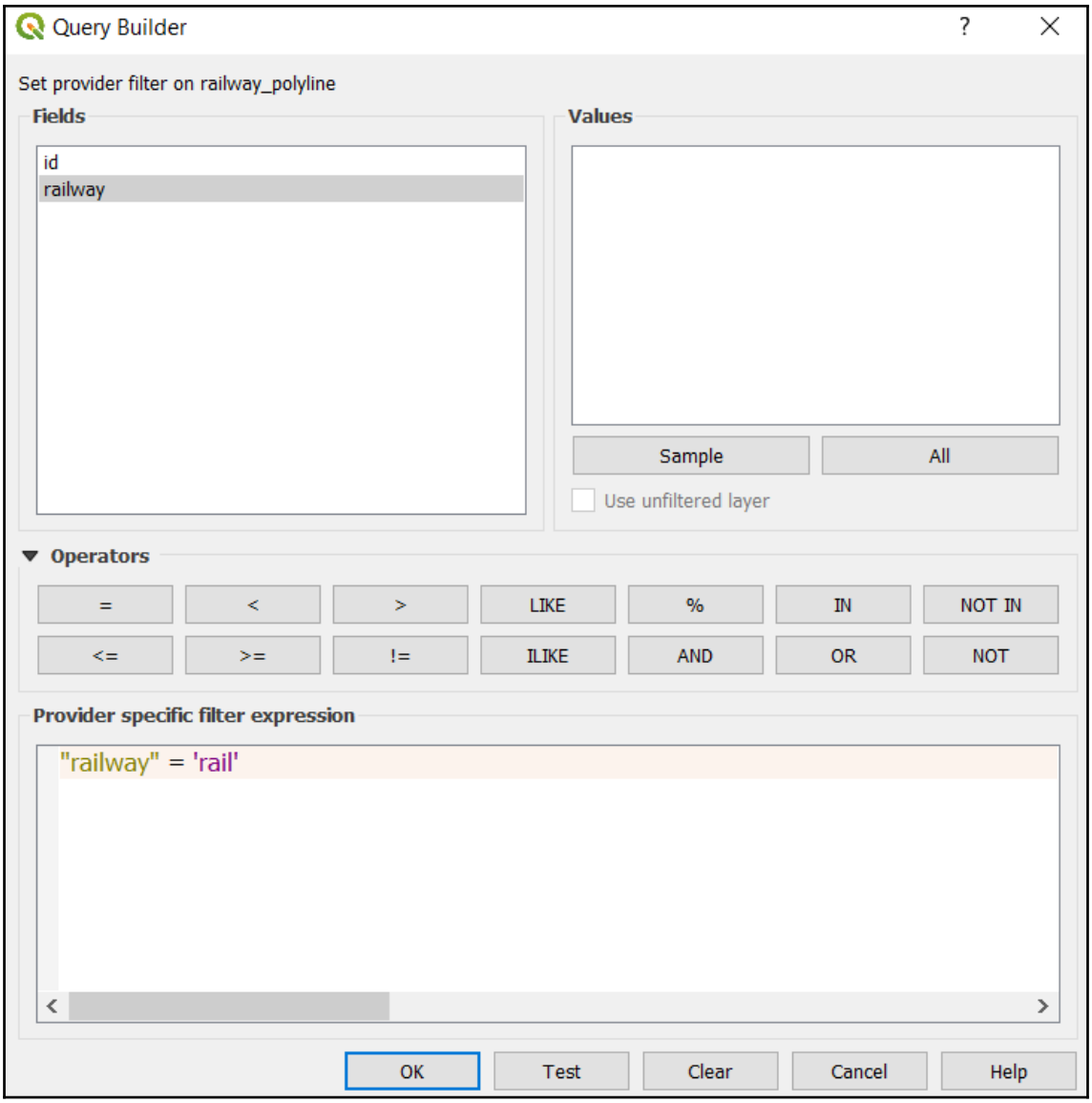
	id	railway
2189	156015817	
2190	156015820	
2191	156019117	
2192	156019126	
2193	156019127	
2194	156240405	
2195	156240408	
2196	156240409	
2197	156240414	
2198	156240415	
2199	156240418	
2200	156451074	
2201	156544506	rail
2202	156544511	rail
2203	156940284	
2204	156940296	

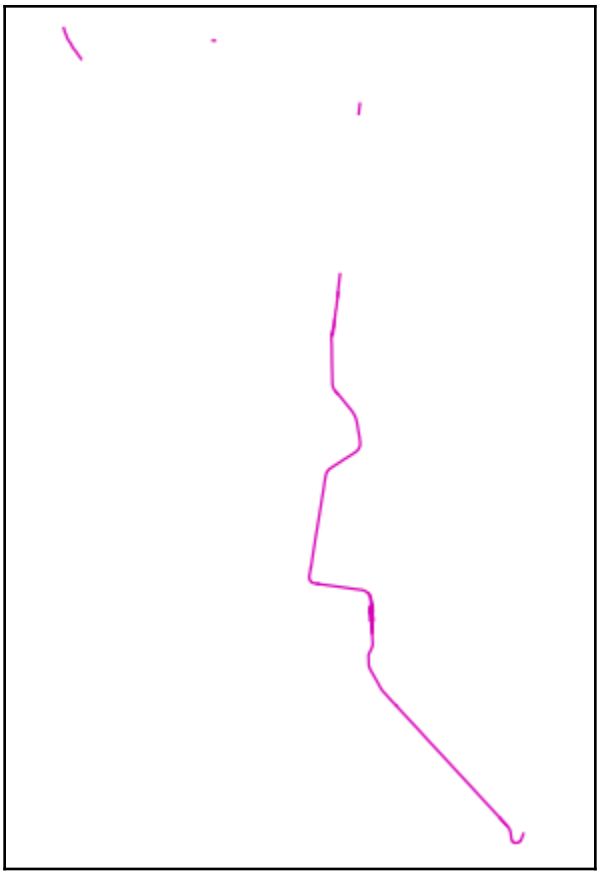

railway_polyline :: Features Total: 28846, Filtered: 28846, Selected: 0
Select features using an expression
id
2189
156015817
Click on **Select features using an expression**


Select by Expression - railway_polyline
Expression
Function Editor
Search
group Aggregates
Contains functions which aggregate values over layers and fields.
Aggregates
Arrays
Color
Conditionals
Conversions
Date and Time
Fields and Values
Fuzzy Matching
General
Geometry
Map Layers
Maps
Math
Operators
Record and Attributes
String
Variables
Output preview:
Help
Select features
Close


5 Now, click on = to put it in the expression.
1 First, click on Fields and Values. This will show id, NULL and railway. Click on railway.
Select by Expression - railway_polyline
Expression
Function Editor
"railway" = 'rail'
Search
Conditionals
Conversions
Date and Time
Fields and Values
id
NULL
railway
Fuzzy Matching
group Field
Double-click to add field name to expression string.
Right-Click on field name to open context menu sample value loading options.
Notes
Loading field values from WFS layers isn't
ie. when building queries.
4 Double click on railway to put it in the expression as "railway" in the left.
2 Now, left click on all unique.
Values
Search
all unique
10 samples
NULL
'narrow_gauge'
'platform'
'rail'
'subway'
3 We can see all values of railway now.
7 Click on Select features.
Output preview: NULL
Help
Select features
Close
6 Now, double click on rail to put it in the expression.

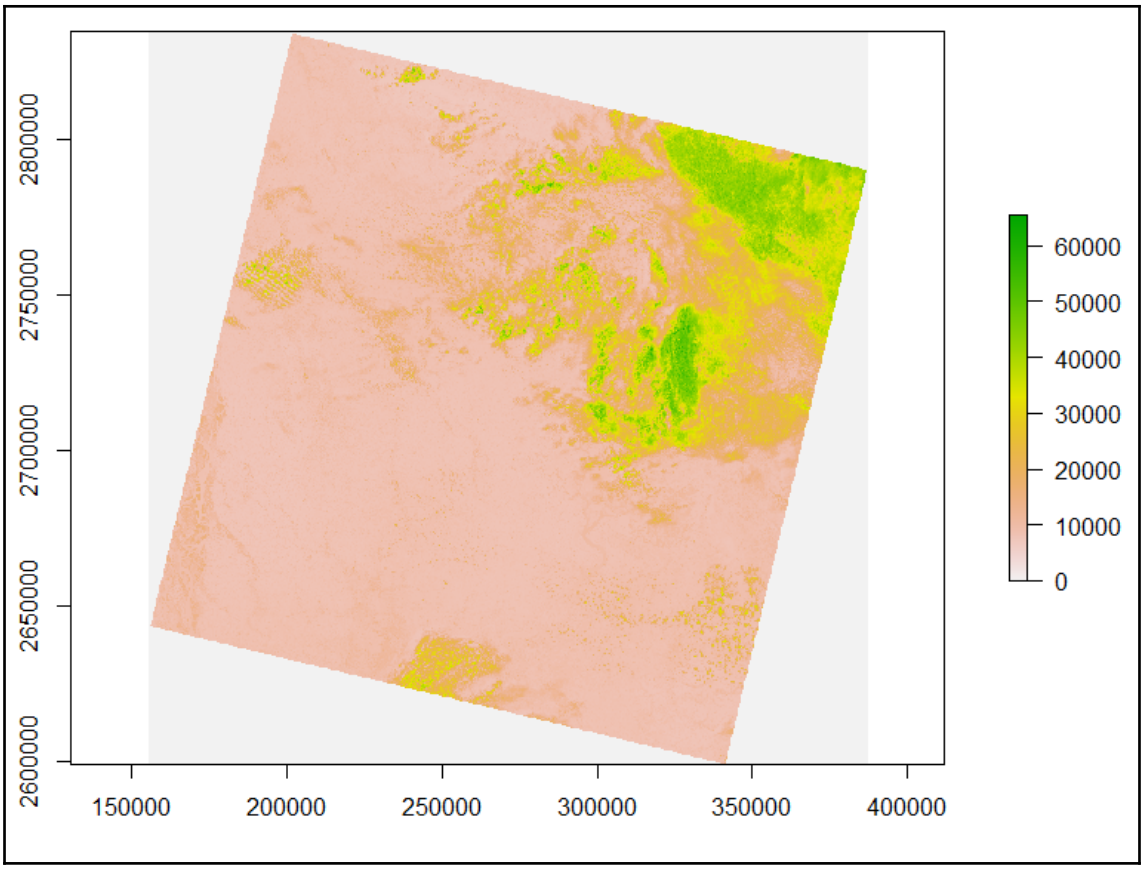

1 Click on Source.
Layer Properties - railway_polyline | Source
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Variables
Metadata
Settings
Layer name railway_polyline
displayed as railway_polyline
Data source encoding UTF-8
Coordinate reference system
Set source coordinate reference system
EPSG:4326 - WGS 84
Create spatial index
Update extents
Provider feature filter
Query Builder
Style
OK
Cancel
Apply
Help
2 Click on Query Builder.

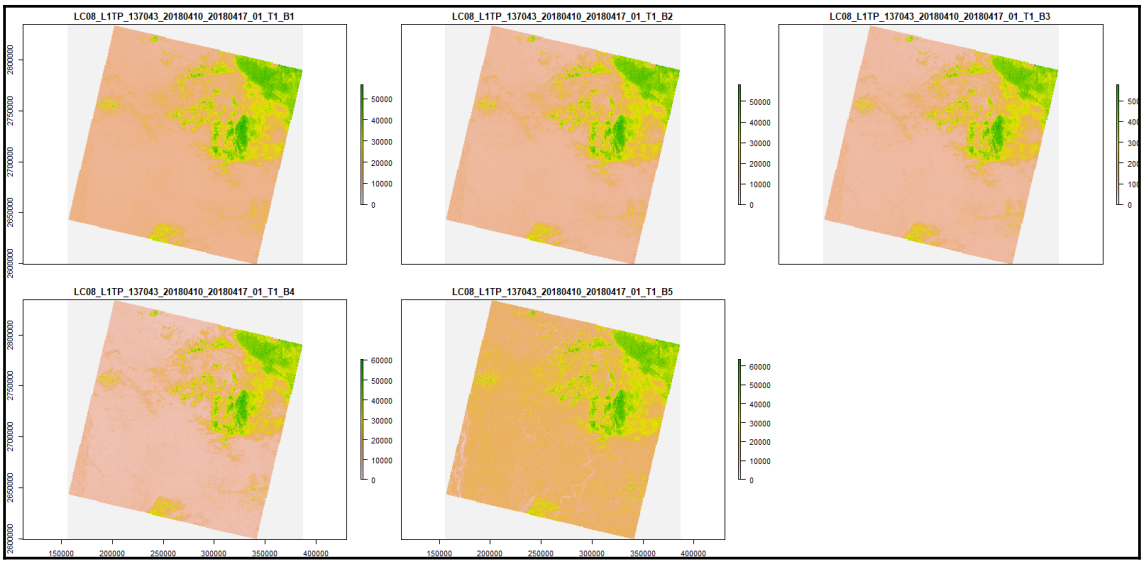

Query Builder
Set provider filter on railway_polyline
Fields
id
railway
Values
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"railway" = 'rail'
OK
Test
Clear
Cancel
Help



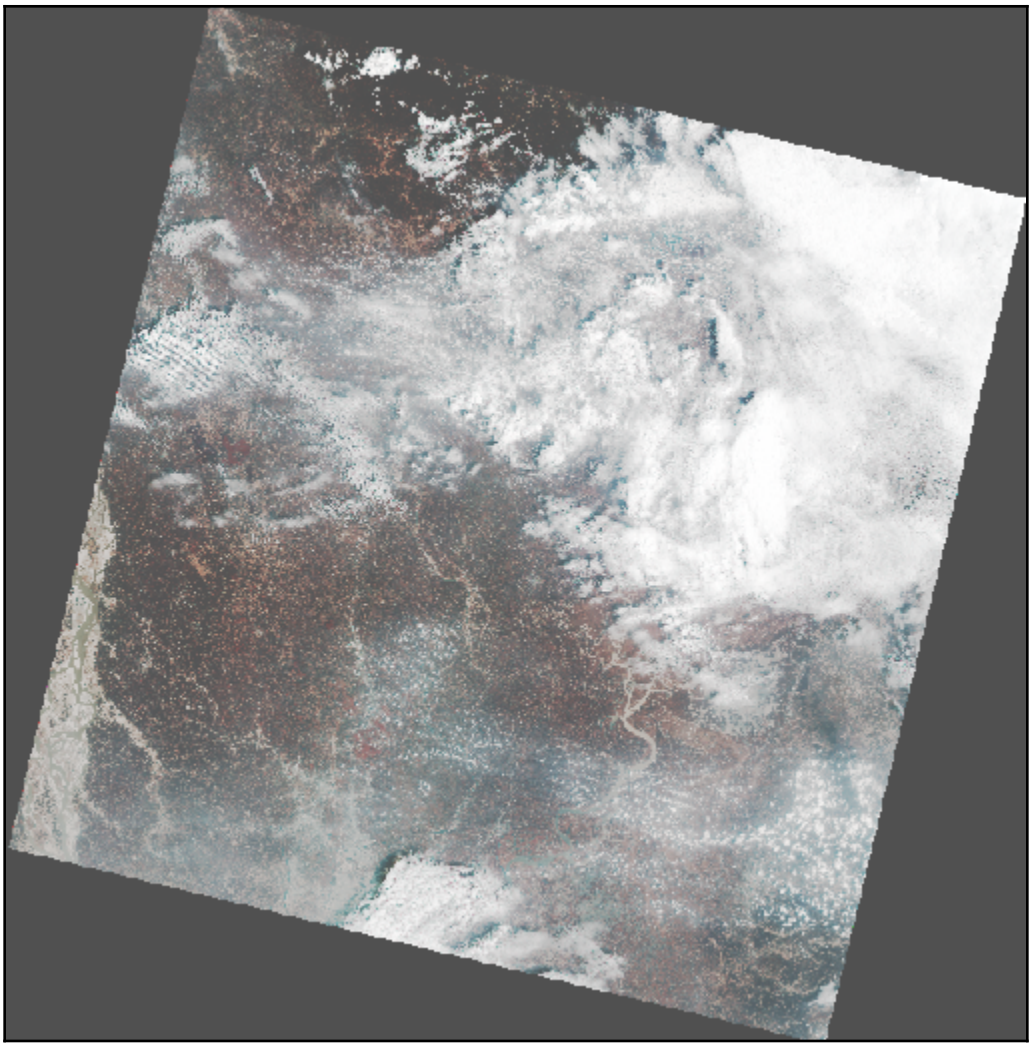
Chapter 5: Remote Sensing Using R and QGIS

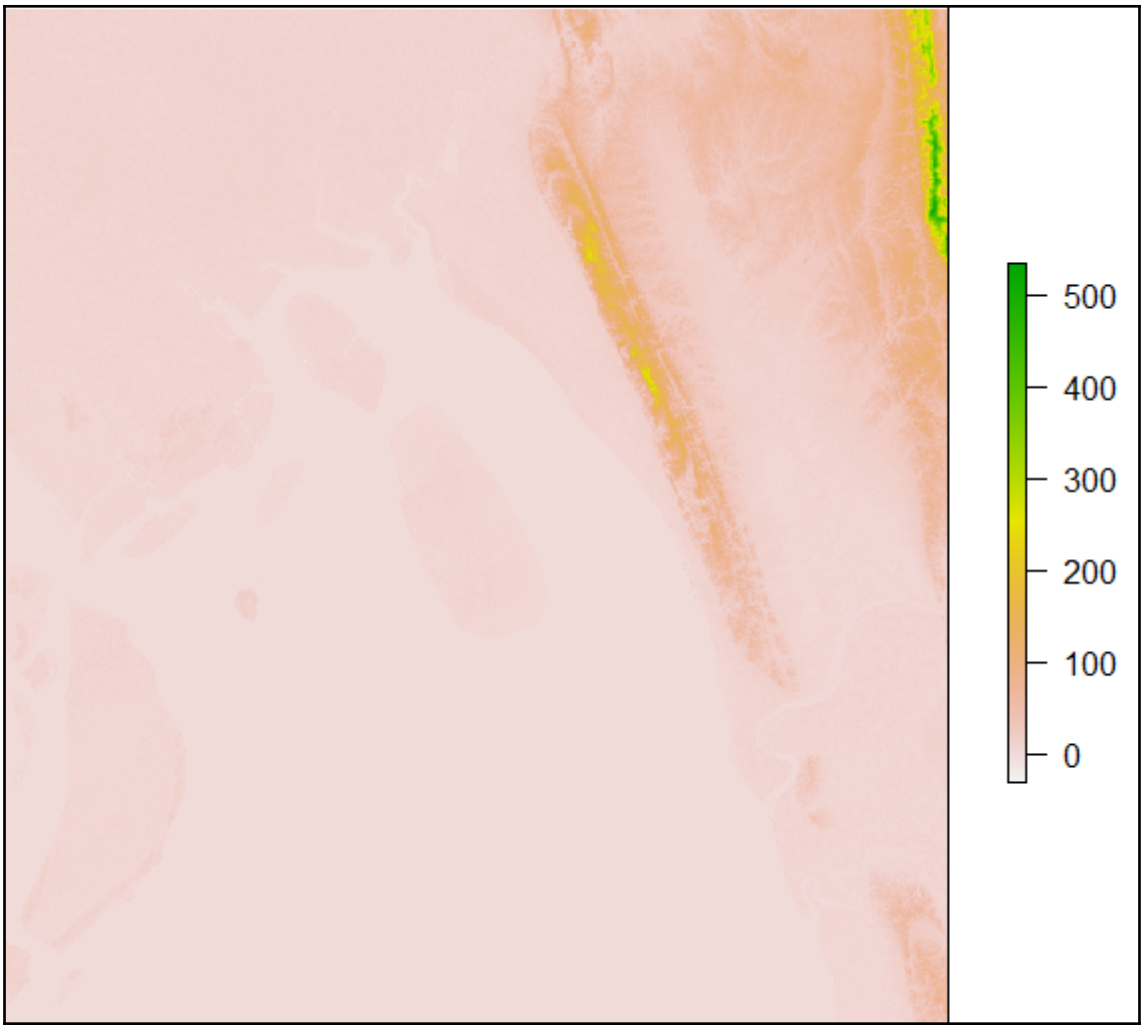
```
Scene:      LC81370432018100LGN00
Satellite:  LANDSAT8
Sensor:     OLI_TIRS
Date:       2018-04-10
Path/Row:   137/43
Projection: +proj=utm +zone=46 +units=m +datum=WGS84 +ellps=WGS84 +towgs84=0,0,0

Data:
                                                    FILES QUANTITY CATEGORY
B1_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B1.TIF       dn    image
B2_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B2.TIF       dn    image
B3_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B3.TIF       dn    image
B4_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B4.TIF       dn    image
B5_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B5.TIF       dn    image
B6_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B6.TIF       dn    image
B7_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B7.TIF       dn    image
B9_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B9.TIF       dn    image
B10_dn LC08_L1TP_137043_20180410_20180417_01_T1_B10.TIF       dn    image
B11_dn LC08_L1TP_137043_20180410_20180417_01_T1_B11.TIF       dn    image
B8_dn   LC08_L1TP_137043_20180410_20180417_01_T1_B8.TIF       dn      pan
QA_dn  LC08_L1TP_137043_20180410_20180417_01_T1_BQA.TIF       dn       qa

Available calibration parameters (gain and offset):
        dn -> radiance (toa)
        dn -> reflectance (toa)
        dn -> brightness temperature (toa)
```

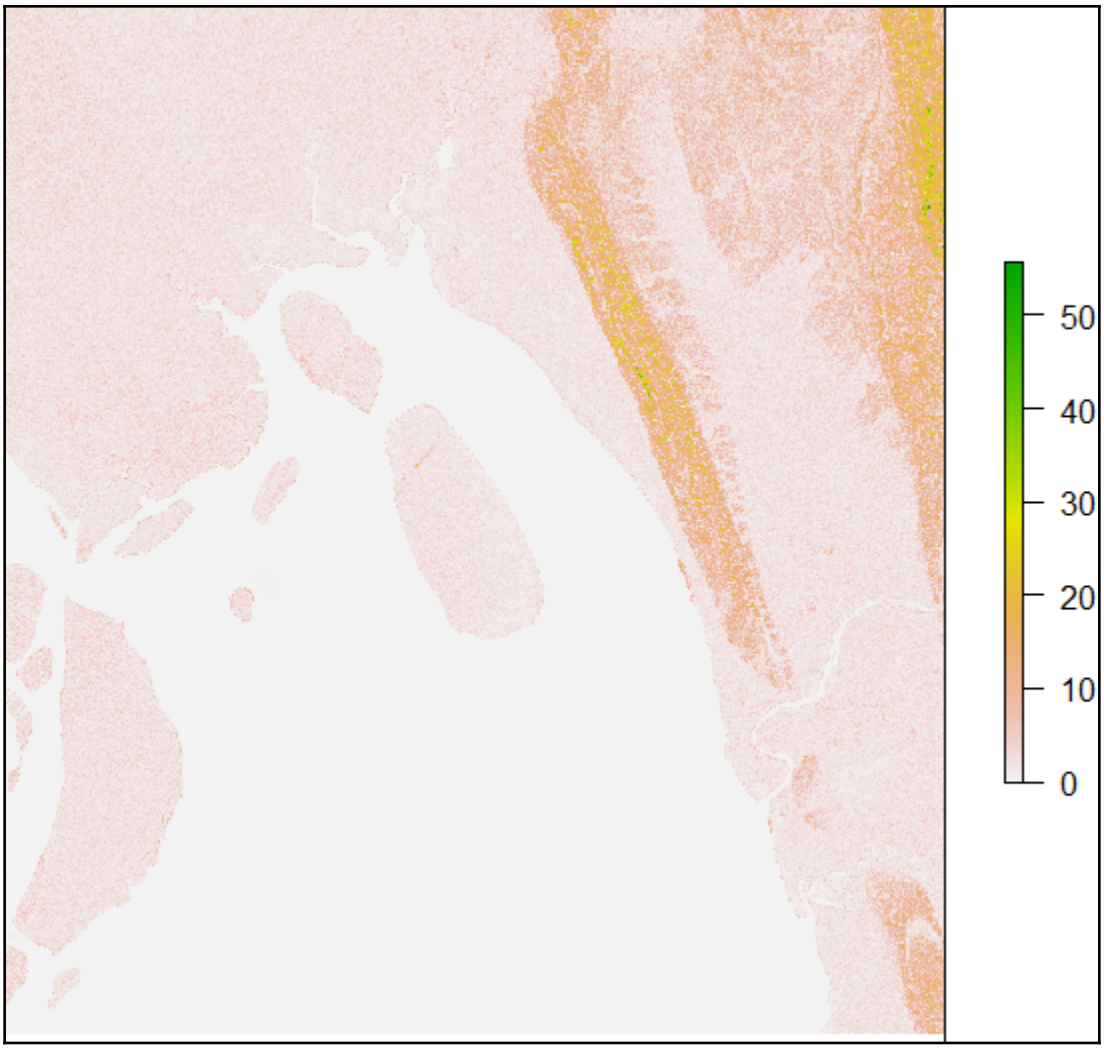

2800000
2750000
2700000
2650000
2600000
150000
200000
250000
300000
350000
400000
60000
50000
40000
30000
20000
10000
0

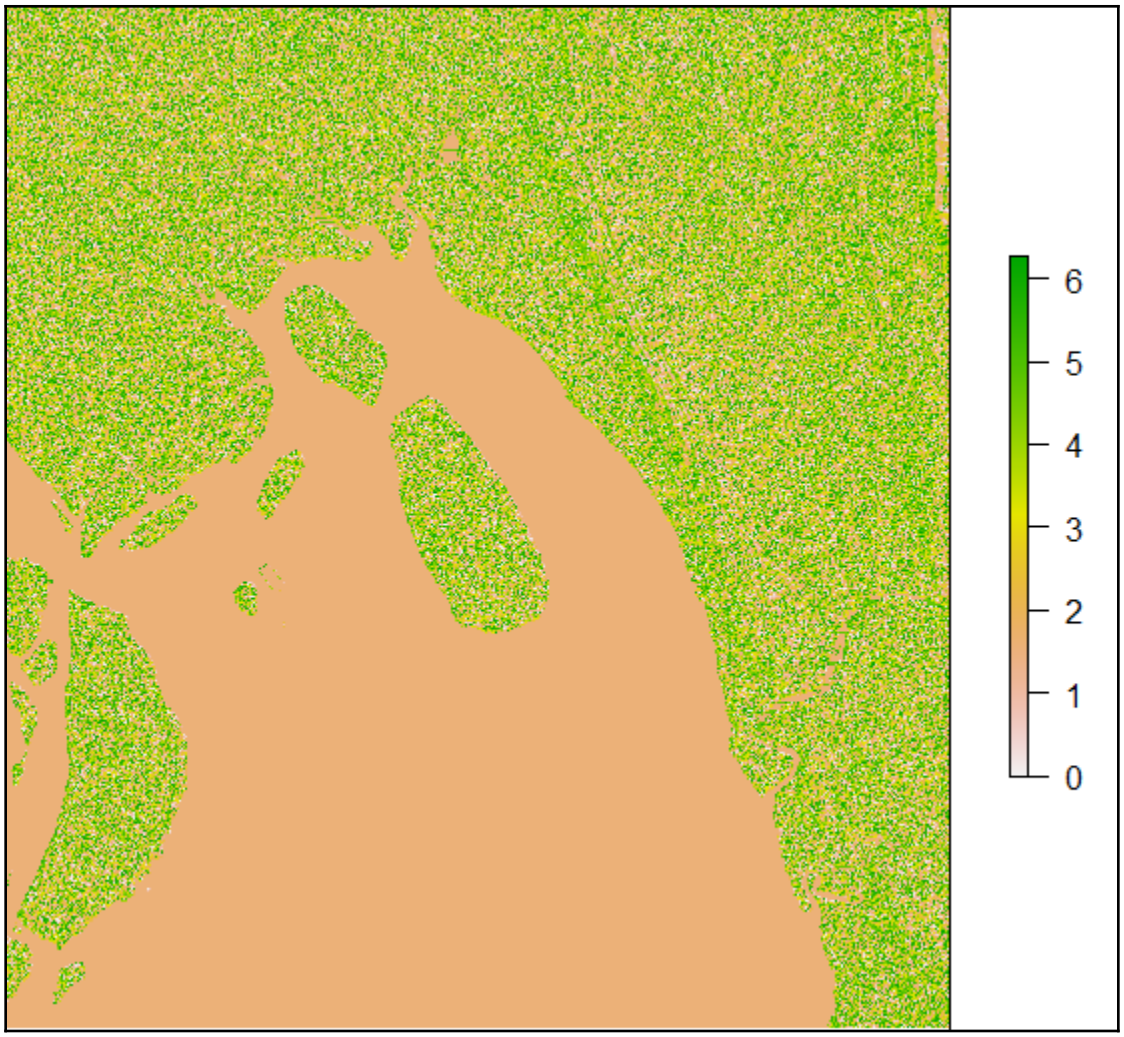


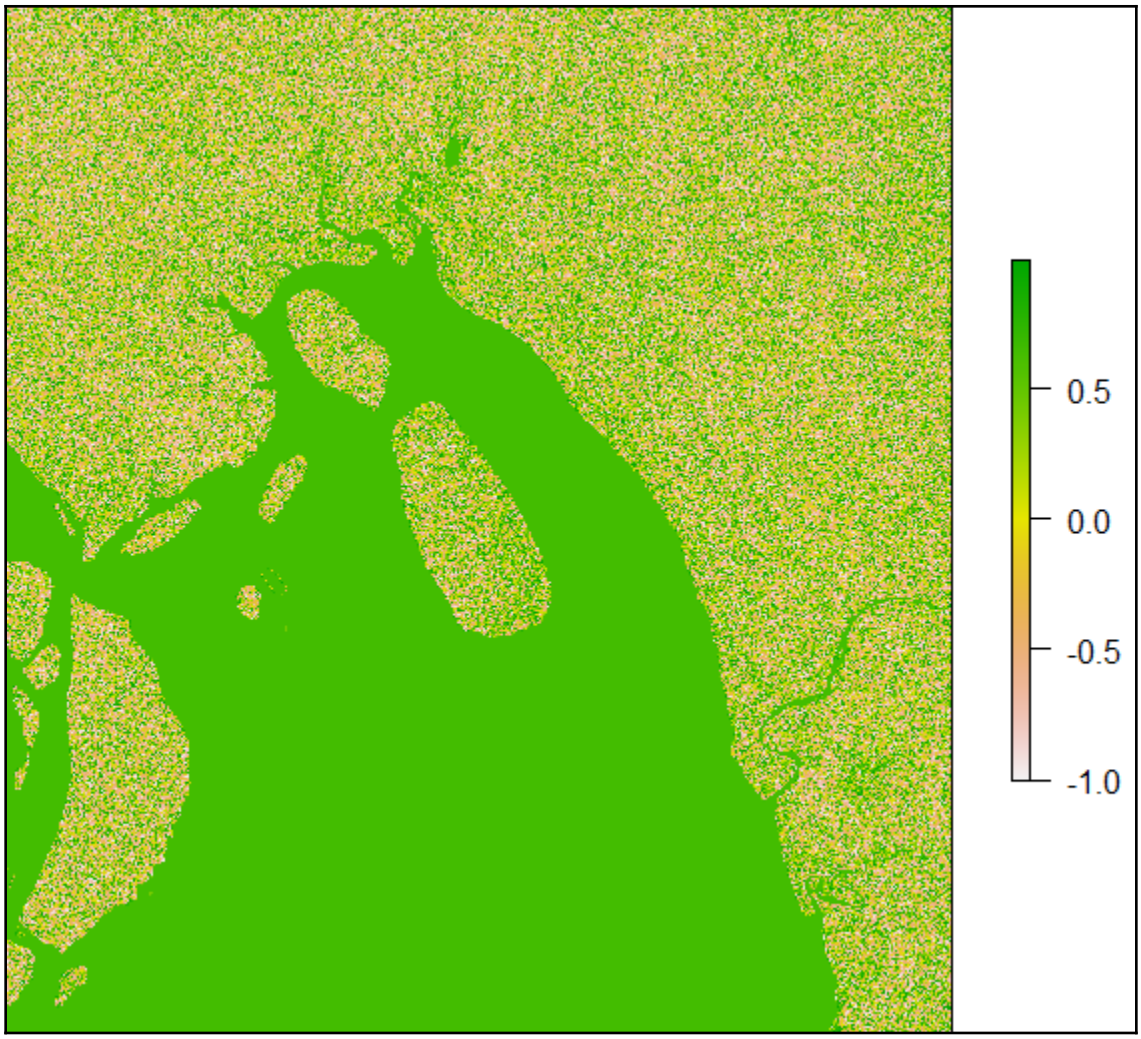

```
[1] "LC08_L1TP_137043_20180410_20180417_01_T1_B1" "LC08_L1TP_137043_20180410_20180417_01_T1_B2"
[3] "LC08_L1TP_137043_20180410_20180417_01_T1_B3" "LC08_L1TP_137043_20180410_20180417_01_T1_B4"
[5] "LC08_L1TP_137043_20180410_20180417_01_T1_B5"
```

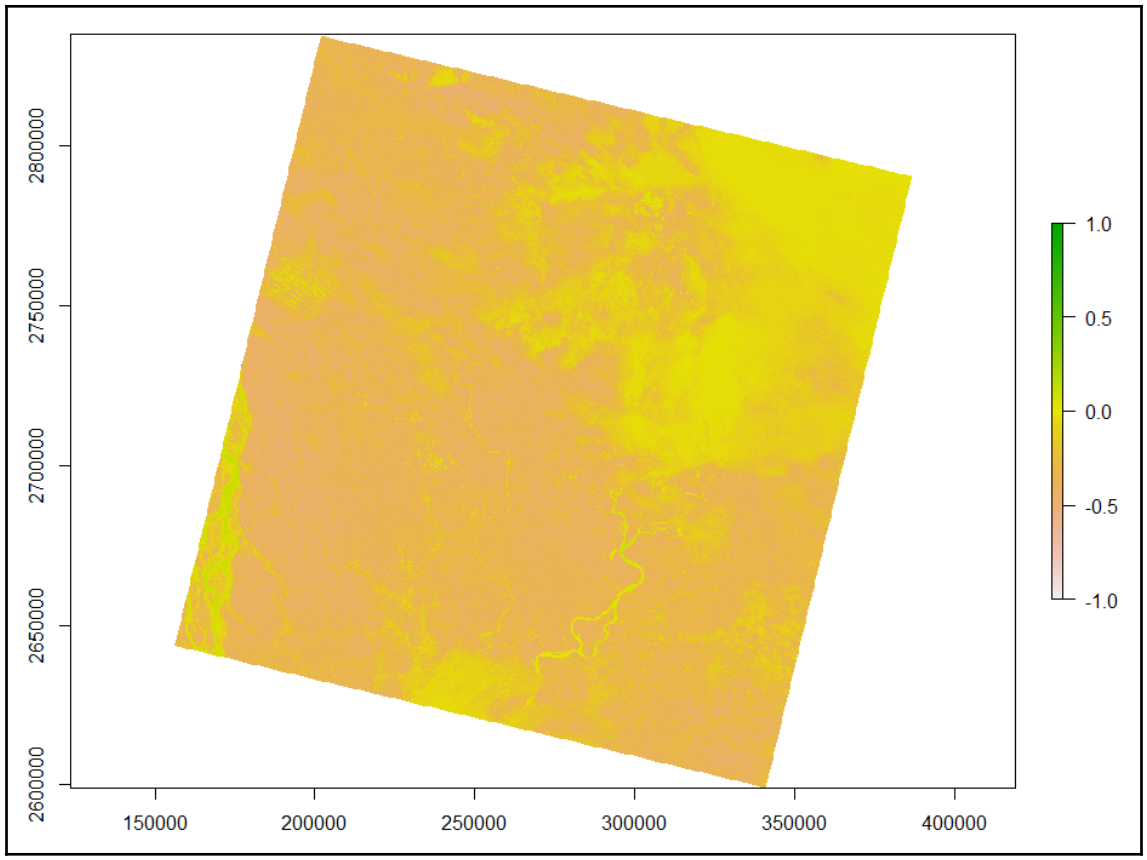



500
400
300
200
100
0


50
40
30
20
10
0


6
5
4
3
2
1
0


0.5
0.0
-0.5
-1.0


2800000
2750000
2700000
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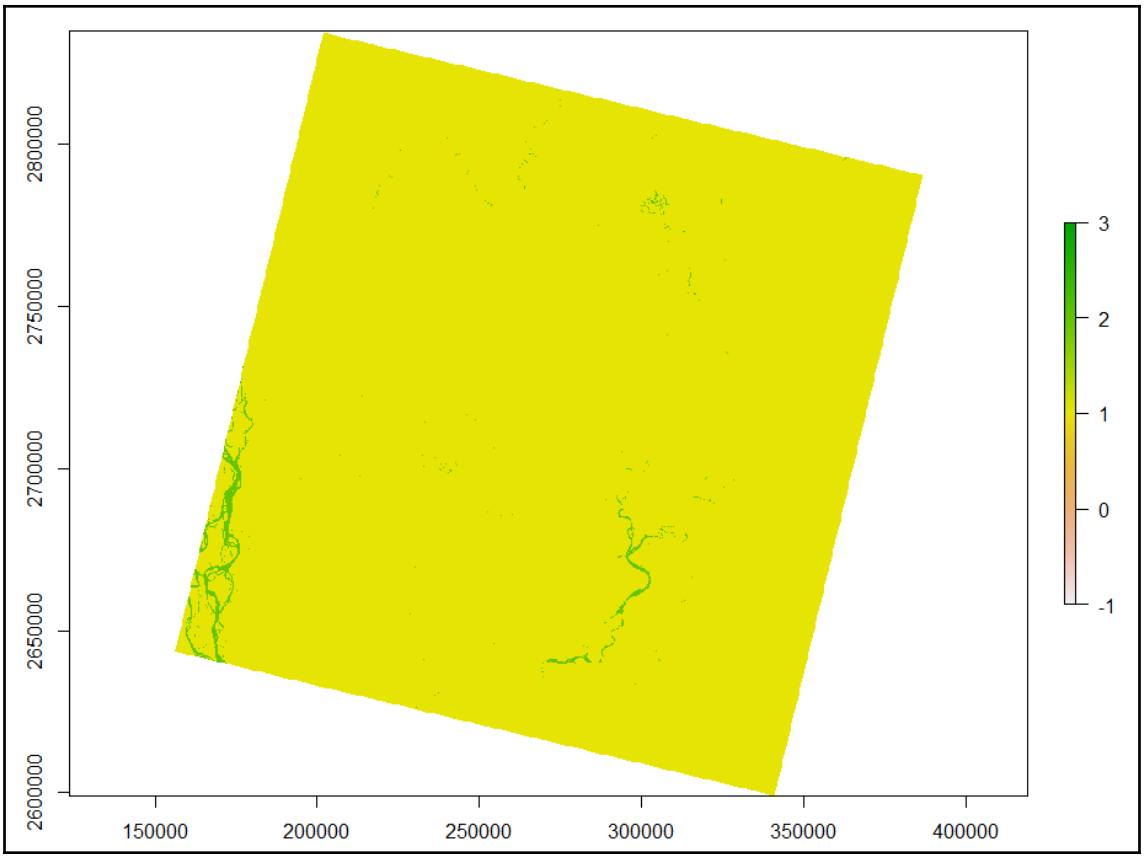
2600000
150000
200000
250000
300000
350000
400000
1.0
0.5
0.0
-0.5
-1.0


2800000
2750000
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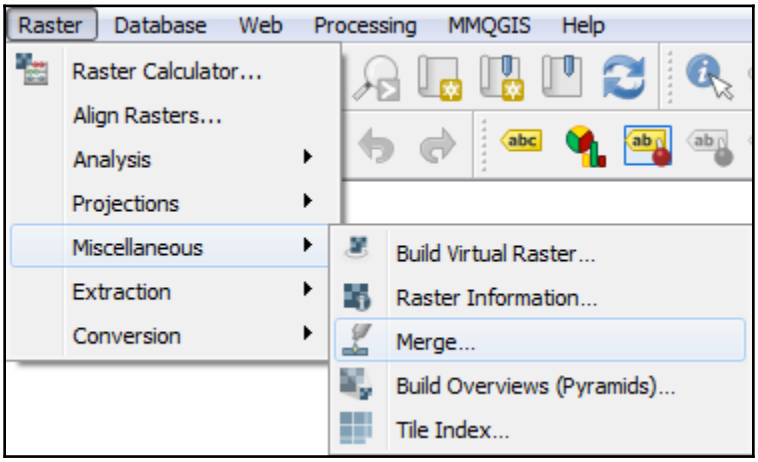
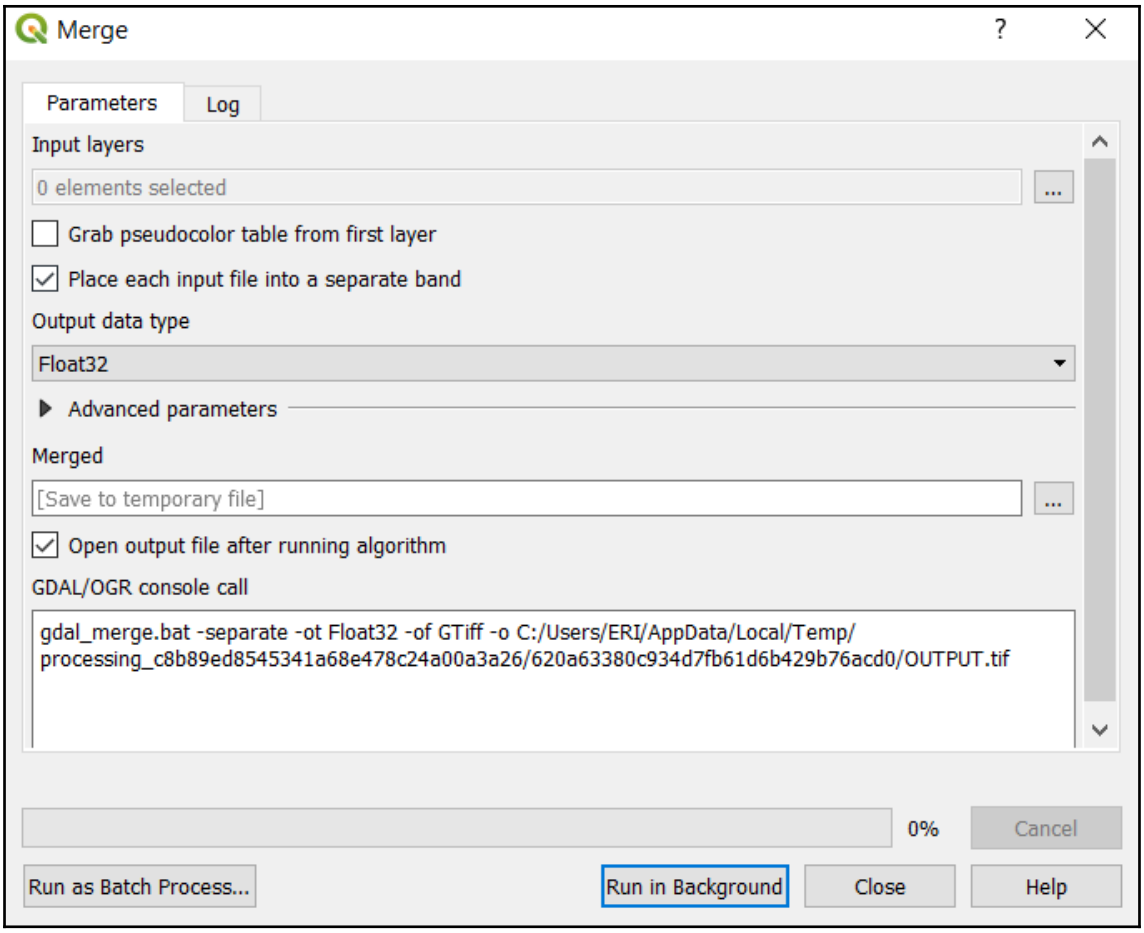
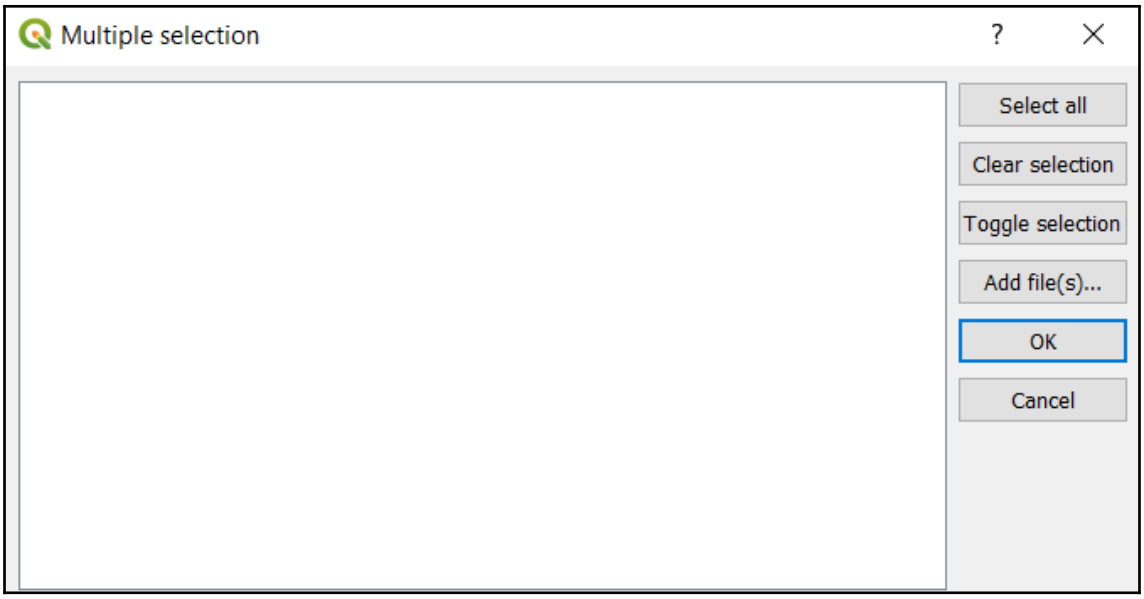
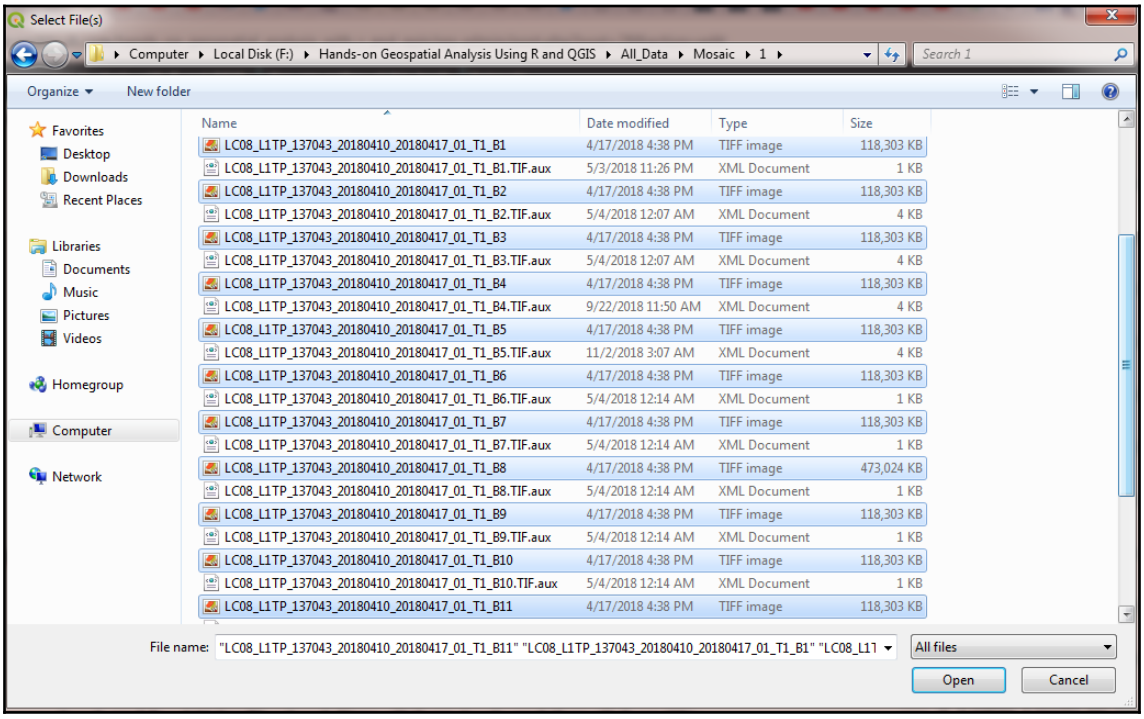
2650000
2600000
150000
200000
250000
300000
350000
400000
3
2
1
0
-1


Raster
Database
Web
Processing
MMQGIS
Help
Raster Calculator...
Align Rasters...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Build Virtual Raster...
Raster Information...
Merge...
Build Overviews (Pyramids)...
Tile Index...


Merge
?
Parameters
Log
Input layers
0 elements selected
...
Grab pseudocolor table from first layer
Place each input file into a separate band
Output data type
Float32
Advanced parameters
Merged
[Save to temporary file]
...
Open output file after running algorithm
GDAL/OGR console call
gdal_merge.bat -separate -ot Float32 -of GTiff -o C:/Users/ERI/AppData/Local/Temp/
processing_c8b89ed8545341a68e478c24a00a3a26/620a63380c934d7fb61d6b429b76acd0/OUTPUT.tif
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help


Multiple selection
Select all
Clear selection
Toggle selection
Add file(s)...
OK
Cancel


Select File(s)
Computer ▸ Local Disk (F:) ▸ Hands-on Geospatial Analysis Using R and QGIS ▸ All_Data ▸ Mosaic ▸ 1 ▸
Search 1
Organize
New folder
Favorites
Desktop
Downloads
Recent Places
Libraries
Documents
Music
Pictures
Videos
Homegroup
Computer
Network
Name
Date modified
Type
Size
LC08_L1TP_137043_20180410_20180417_01_T1_B1 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B1.TIF.aux 5/3/2018 11:26 PM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B2 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B2.TIF.aux 5/4/2018 12:07 AM XML Document 4 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B3 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B3.TIF.aux 5/4/2018 12:07 AM XML Document 4 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B4 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B4.TIF.aux 9/22/2018 11:50 AM XML Document 4 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B5 4/17/2018 4:38 PM TIFF image 118,303 KB
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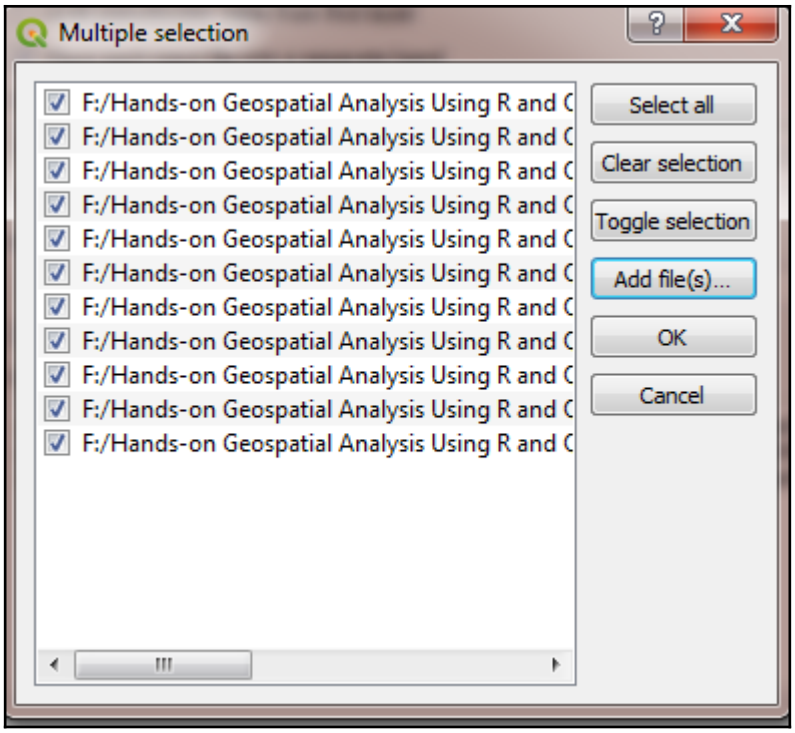
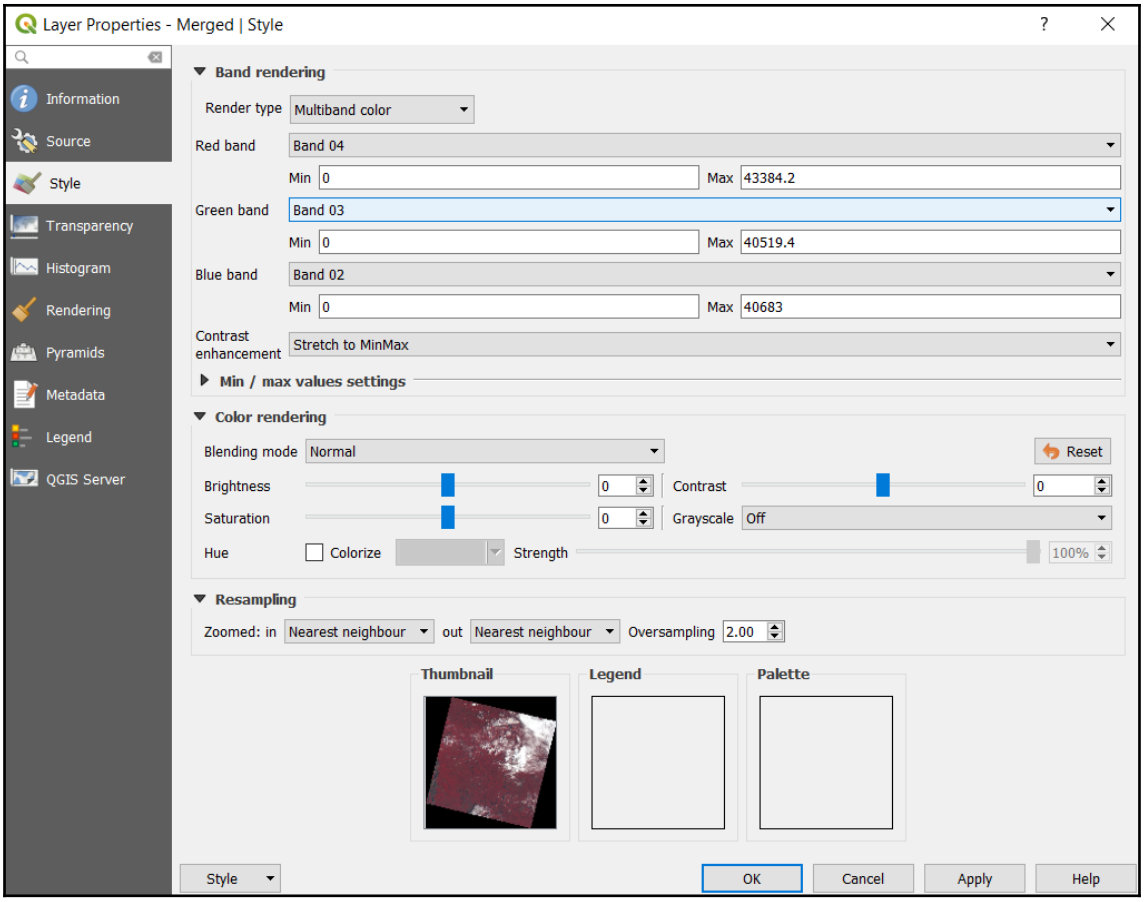
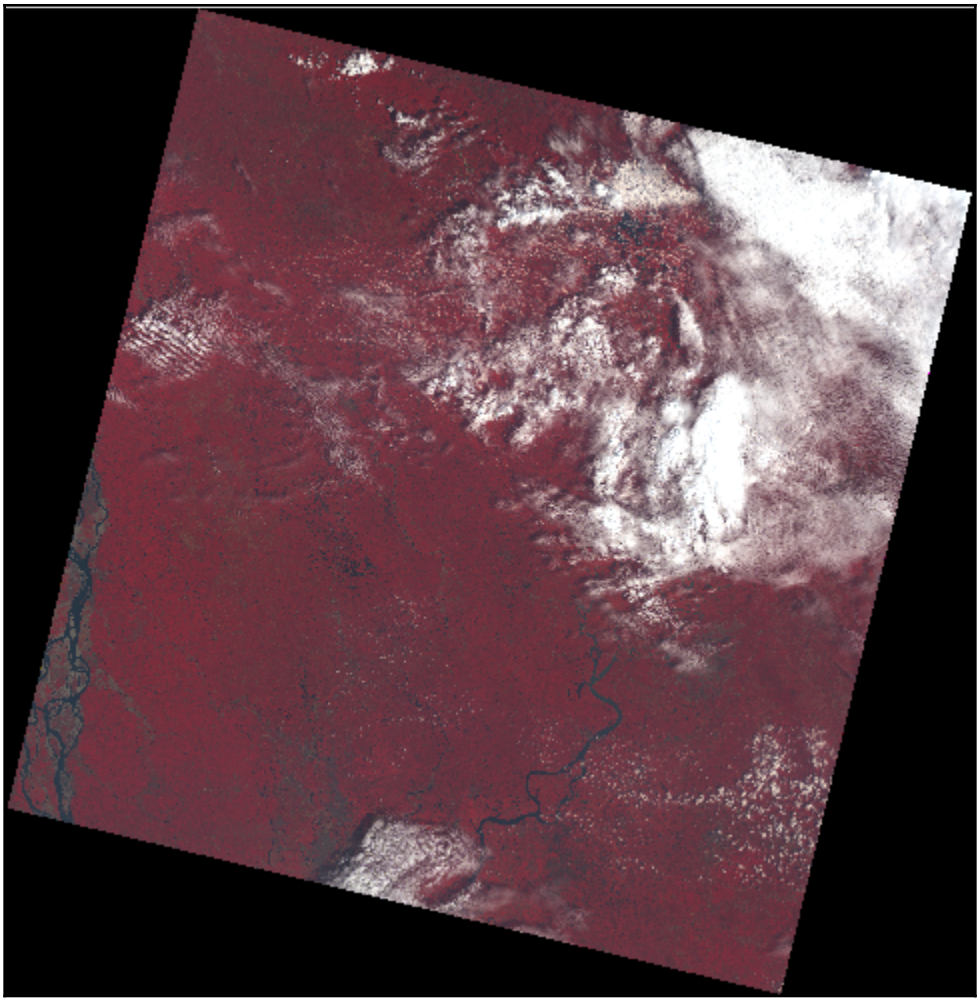
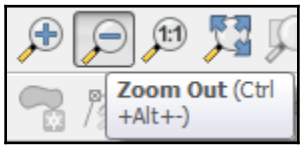
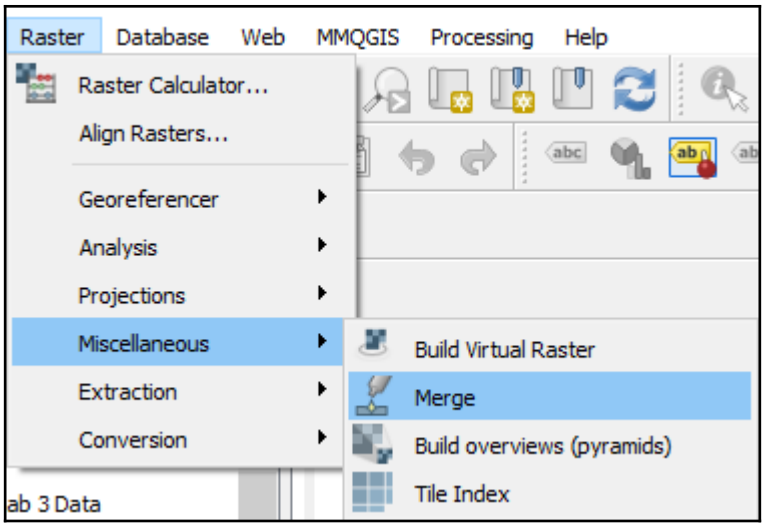
LC08_L1TP_137043_20180410_20180417_01_T1_B6 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B6.TIF.aux 5/4/2018 12:14 AM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B7 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B7.TIF.aux 5/4/2018 12:14 AM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B8 4/17/2018 4:38 PM TIFF image 473,024 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B8.TIF.aux 5/4/2018 12:14 AM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B9 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B9.TIF.aux 5/4/2018 12:14 AM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B10 4/17/2018 4:38 PM TIFF image 118,303 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B10.TIF.aux 5/4/2018 12:14 AM XML Document 1 KB
LC08_L1TP_137043_20180410_20180417_01_T1_B11 4/17/2018 4:38 PM TIFF image 118,303 KB
File name: "LC08_L1TP_137043_20180410_20180417_01_T1_B11" "LC08_L1TP_137043_20180410_20180417_01_T1_B1" "LC08_L1T
All files
Open
Cancel

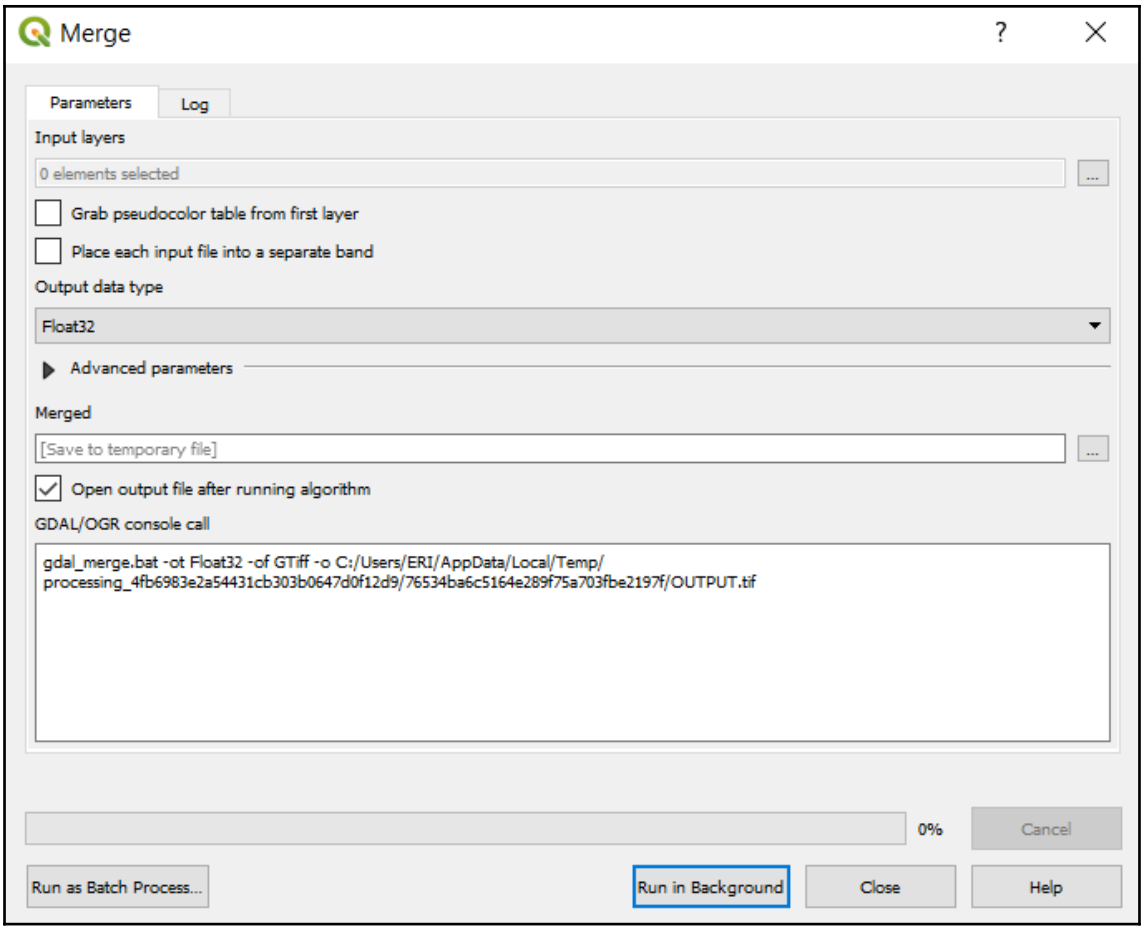

Multiple selection
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
F:/Hands-on Geospatial Analysis Using R and C
Select all
Clear selection
Toggle selection
Add file(s)...
OK
Cancel

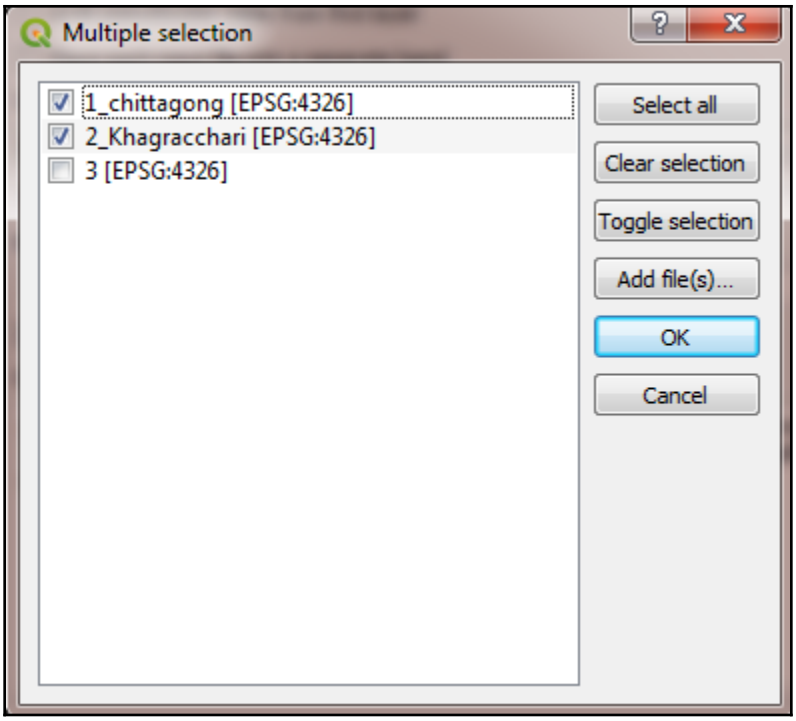

Layer Properties - Merged | Style
Information
Source
Style
Transparency
Histogram
Rendering
Pyramids
Metadata
Legend
QGIS Server
Band rendering
Render type
Multiband color
Red band
Band 04
Min 0
Max 43384.2
Green band
Band 03
Min 0
Max 40519.4
Blue band
Band 02
Min 0
Max 40683
Contrast enhancement
Stretch to MinMax
Min / max values settings
Color rendering
Blending mode
Normal
Reset
Brightness
Contrast
Saturation
Grayscale
Off
Hue
Colorize
Strength
100%
Resampling
Zoomed: in
Nearest neighbour
out
Nearest neighbour
Oversampling
2.00
Thumbnail
Legend
Palette
Style
OK
Cancel
Apply
Help

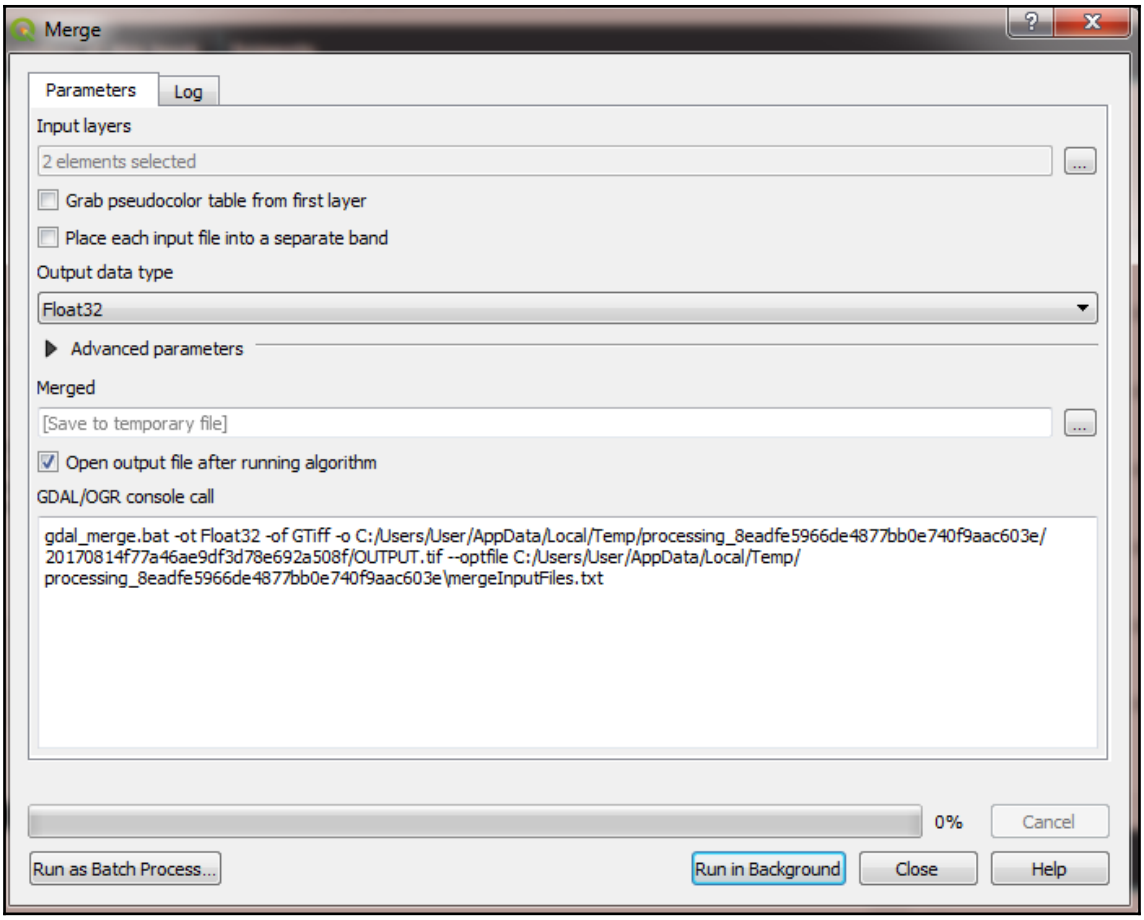


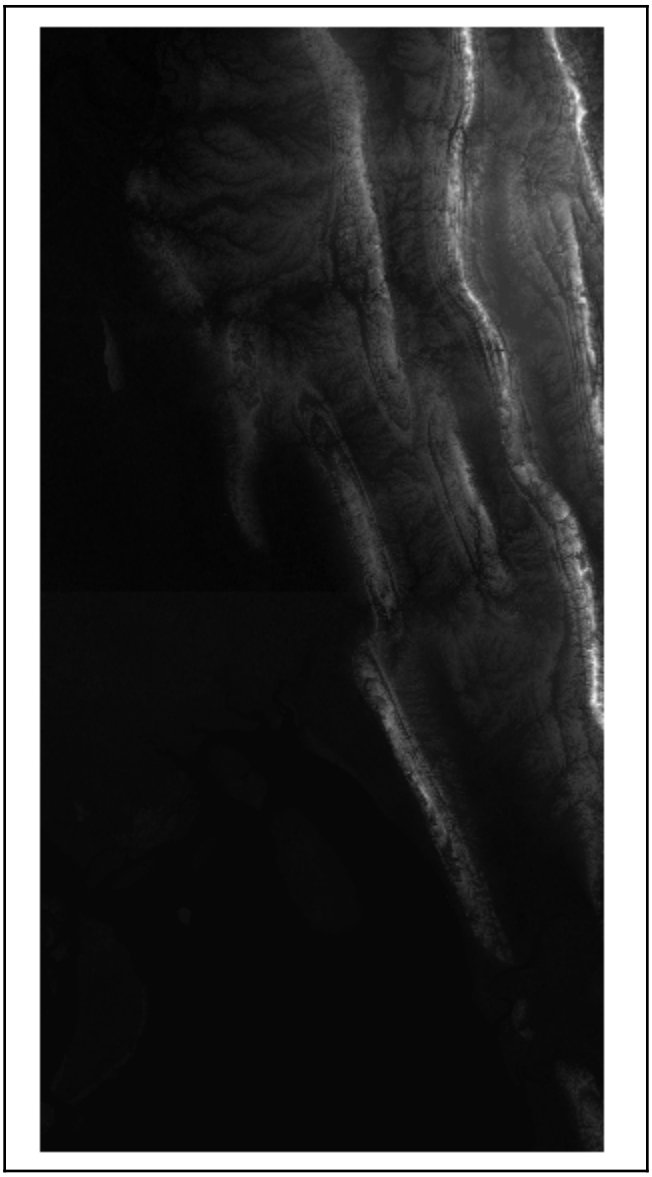

1:1
Zoom Out (Ctrl
+Alt+-)

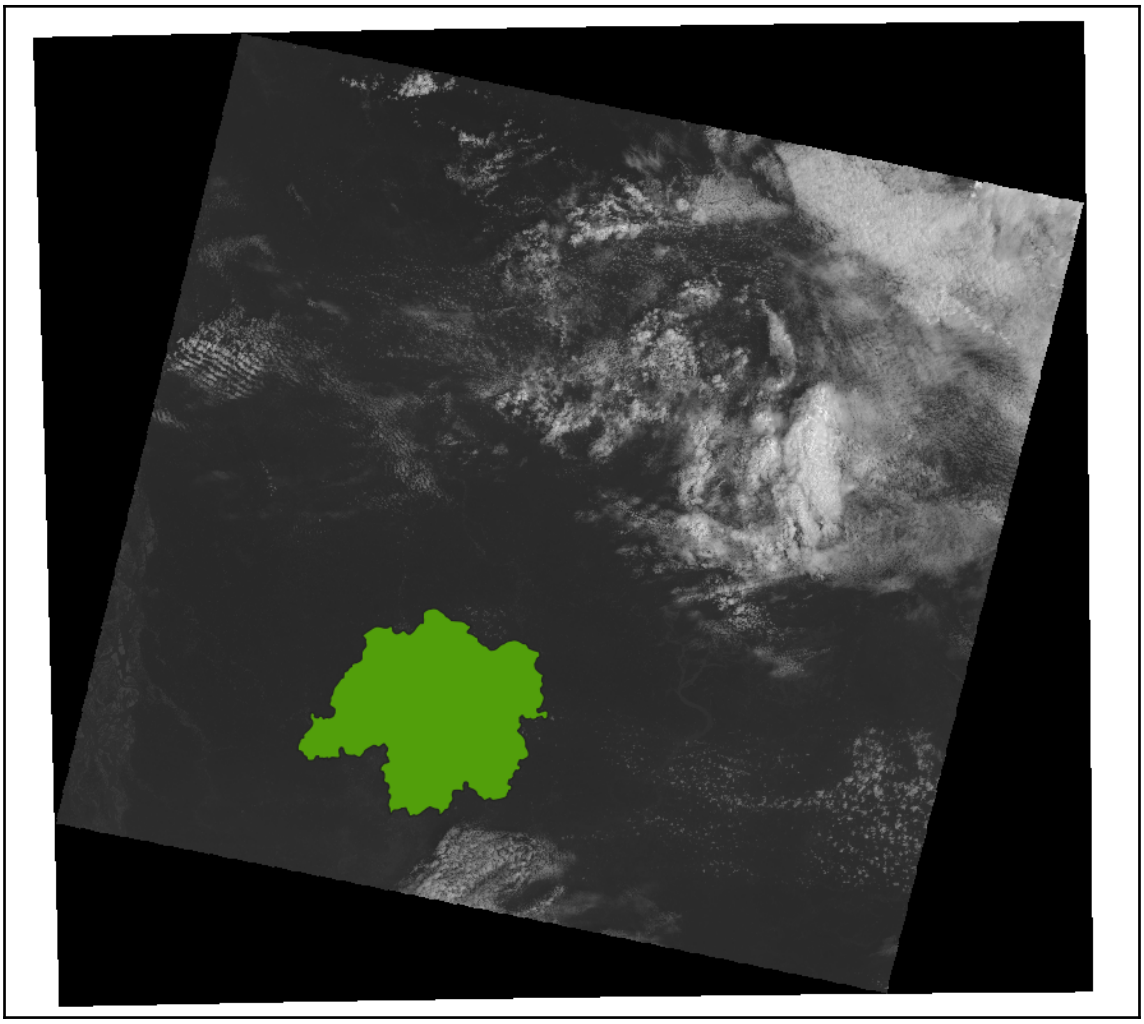

Raster
Database
Web
MMQGIS
Processing
Help
Raster Calculator...
Align Rasters...
Georeferencer
Analysis
Projections
Miscellaneous
Extraction
Conversion
Build Virtual Raster
Merge
Build overviews (pyramids)
Tile Index
ab 3 Data

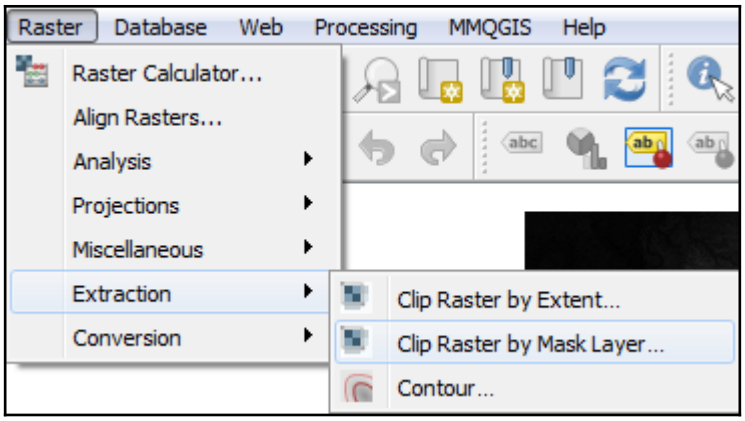

Merge
Parameters
Log
Input layers
0 elements selected
Grab pseudocolor table from first layer
Place each input file into a separate band
Output data type
Float32
Advanced parameters
Merged
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
gdal_merge.bat -ot Float32 -of GTiff -o C:/Users/ERI/AppData/Local/Temp/
processing_4fb6983e2a54431cb303b0647d0f12d9/76534ba6c5164e289f75a703fbe2197f/OUTPUT.tif
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

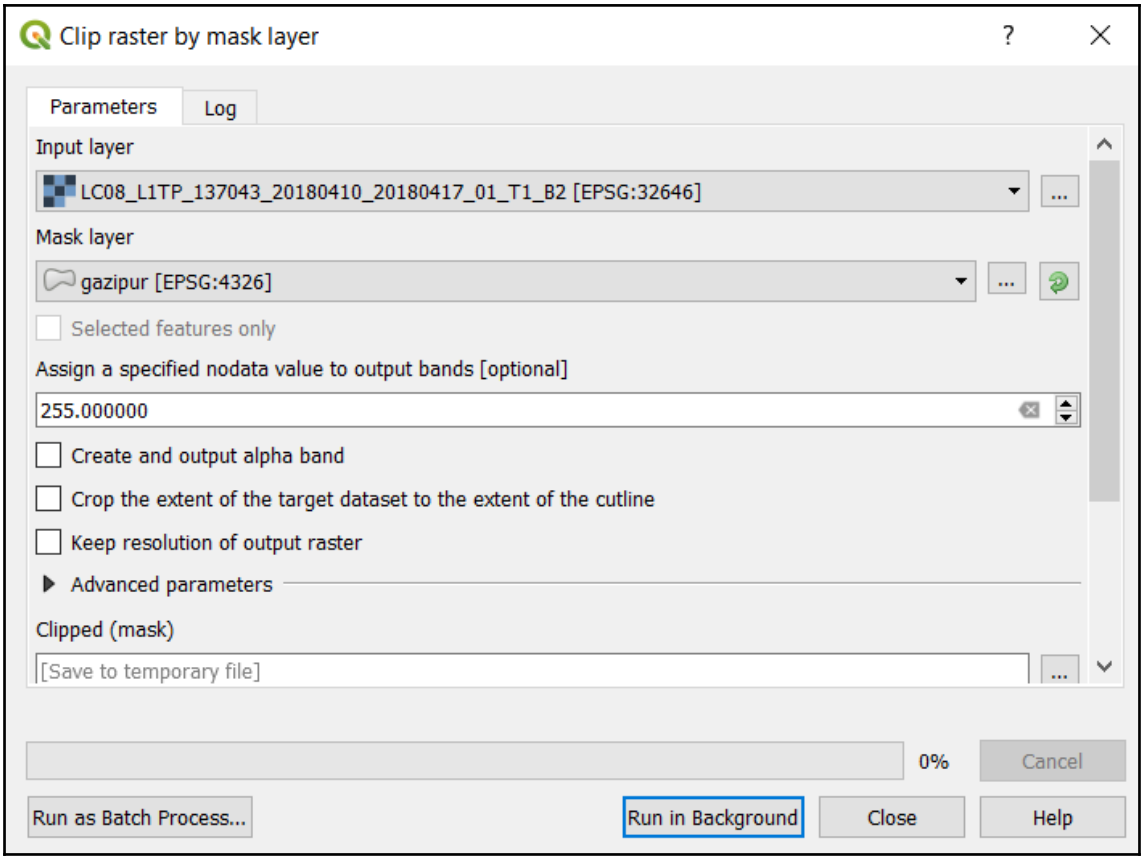

Multiple selection
1_chittagong [EPSG:4326]
2_Khagracchari [EPSG:4326]
3 [EPSG:4326]
Select all
Clear selection
Toggle selection
Add file(s)...
OK
Cancel

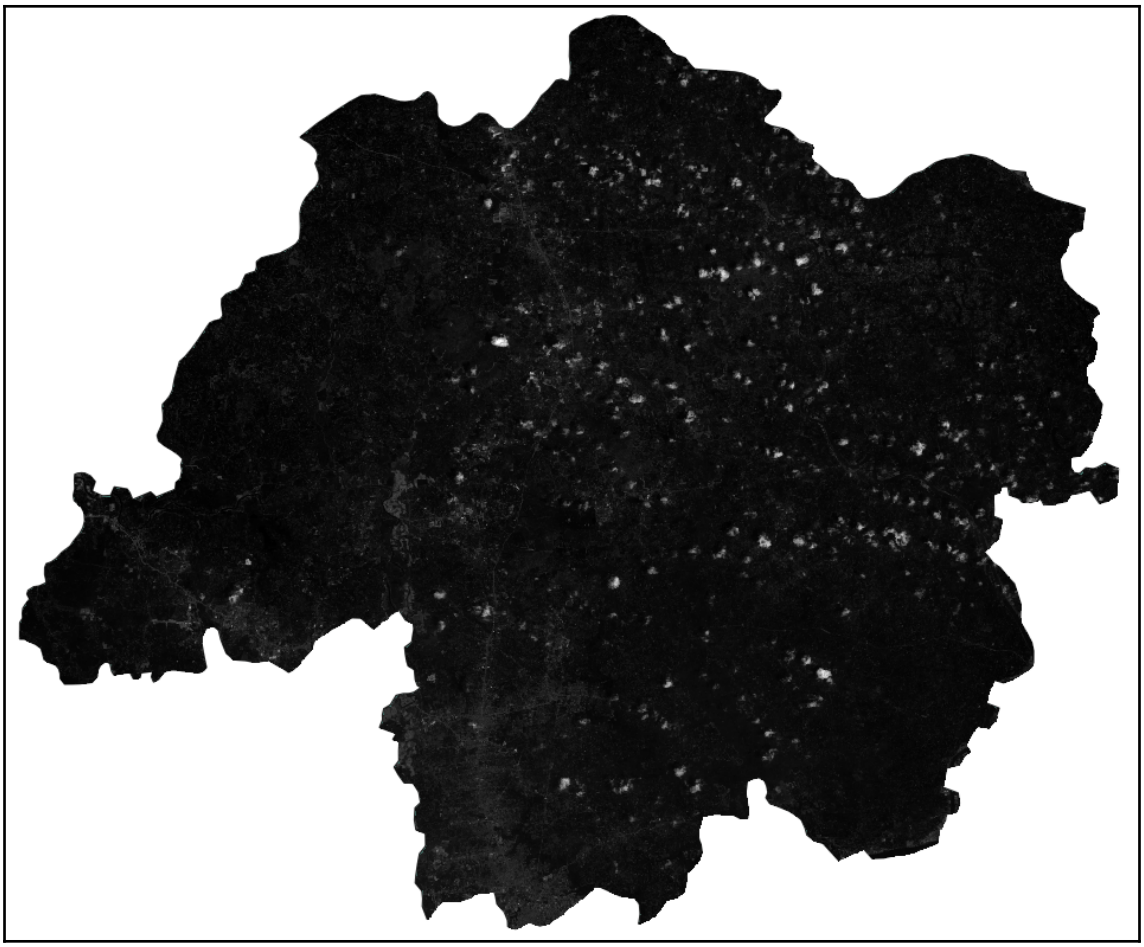

Merge
Parameters
Log
Input layers
2 elements selected
Grab pseudocolor table from first layer
Place each input file into a separate band
Output data type
Float32
Advanced parameters
Merged
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
gdal_merge.bat -ot Float32 -of GTiff -o C:/Users/User/AppData/Local/Temp/processing_8eadfe5966de4877bb0e740f9aac603e/20170814f77a46ae9df3d78e692a508f/OUTPUT.tif --optfile C:/Users/User/AppData/Local/Temp/processing_8eadfe5966de4877bb0e740f9aac603e\mergeInputFiles.txt
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

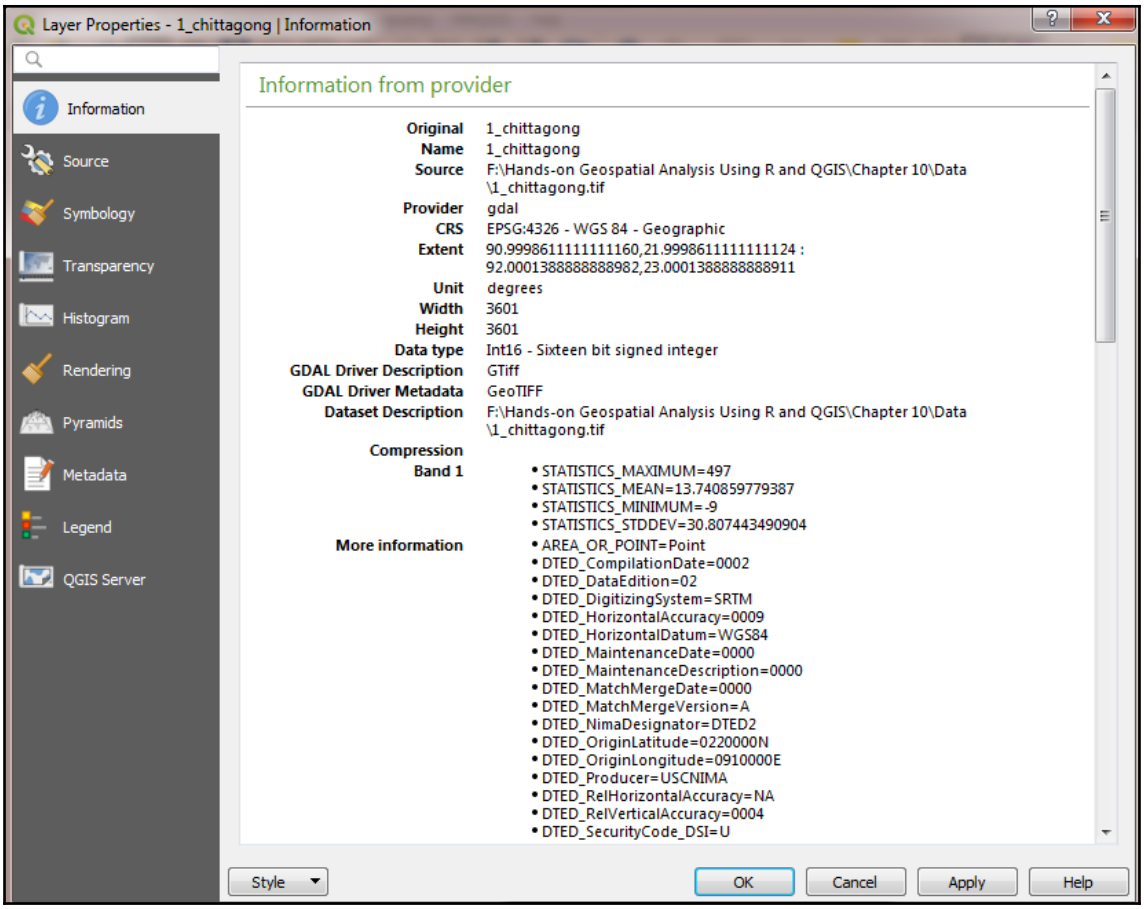


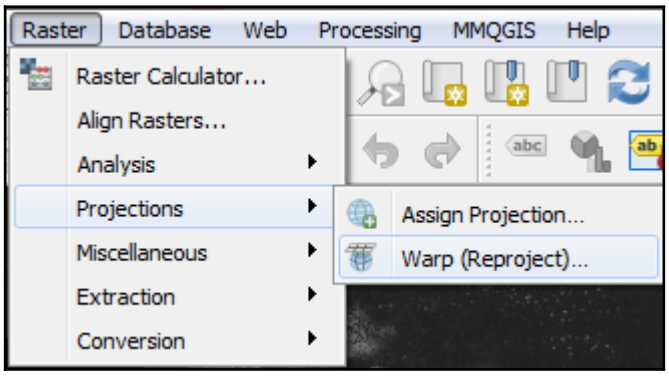


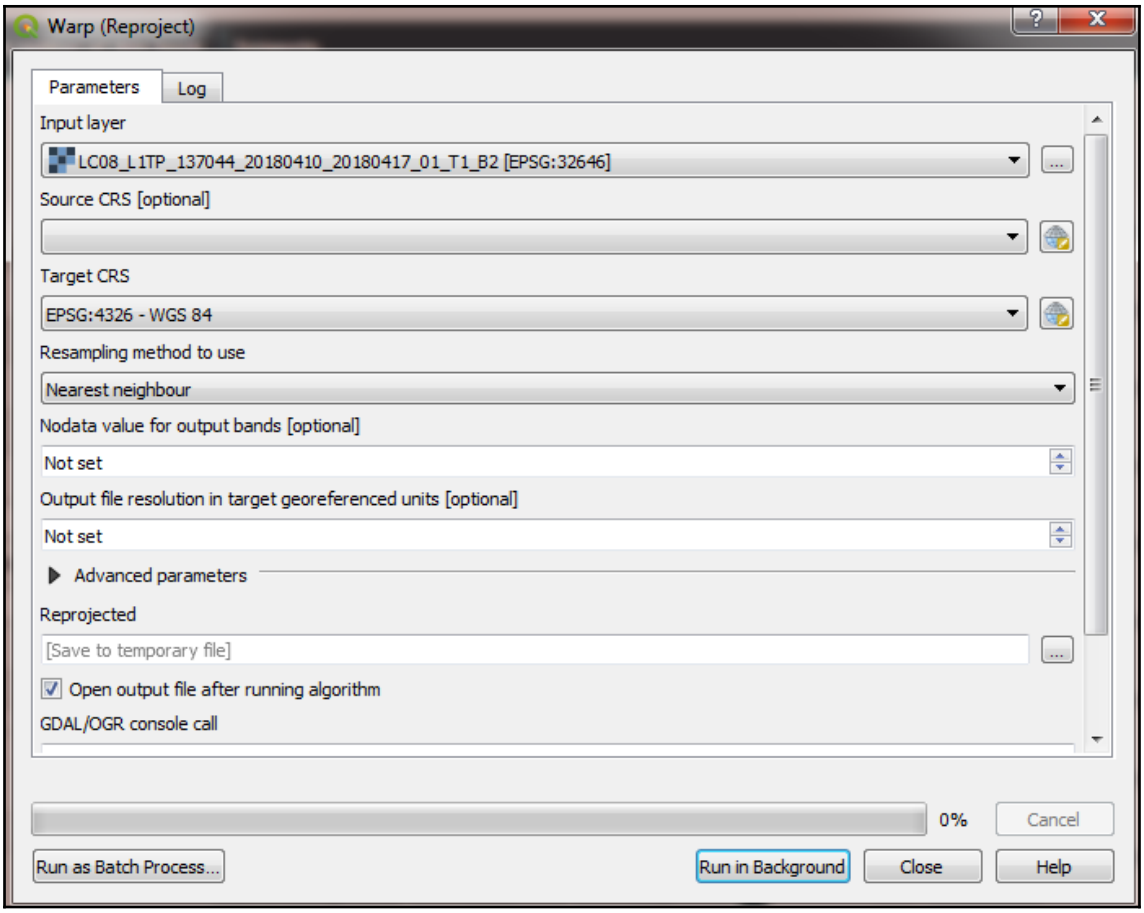

Raster
Database
Web
Processing
MMQGIS
Help
Raster Calculator...
Align Rasters...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Clip Raster by Extent...
Clip Raster by Mask Layer...
Contour...

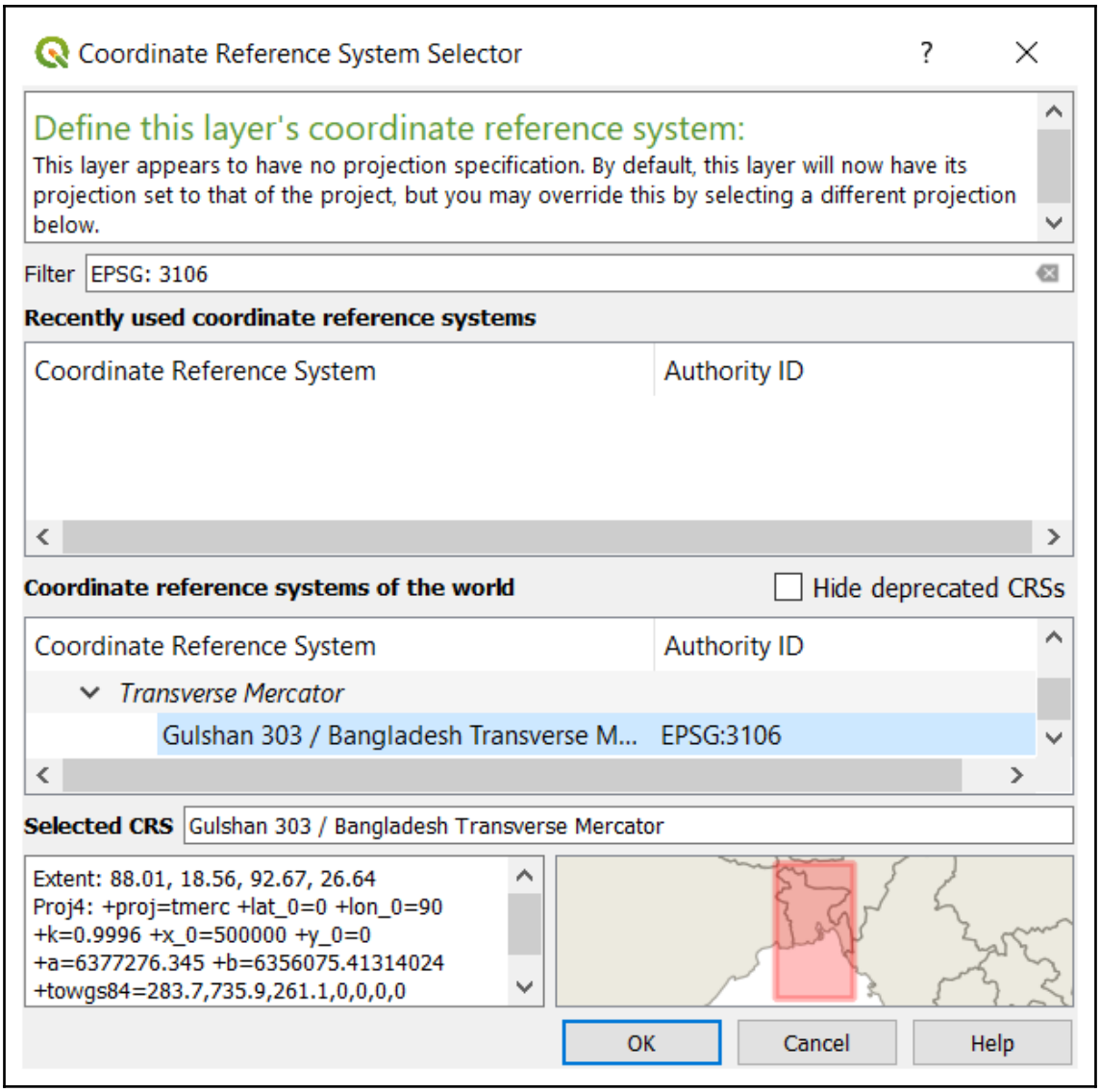

Clip raster by mask layer
Parameters
Log
Input layer
LC08_L1TP_137043_20180410_20180417_01_T1_B2 [EPSG:32646]
Mask layer
gazipur [EPSG:4326]
Selected features only
Assign a specified nodata value to output bands [optional]
255.000000
Create and output alpha band
Crop the extent of the target dataset to the extent of the cutline
Keep resolution of output raster
Advanced parameters
Clipped (mask)
[Save to temporary file]
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

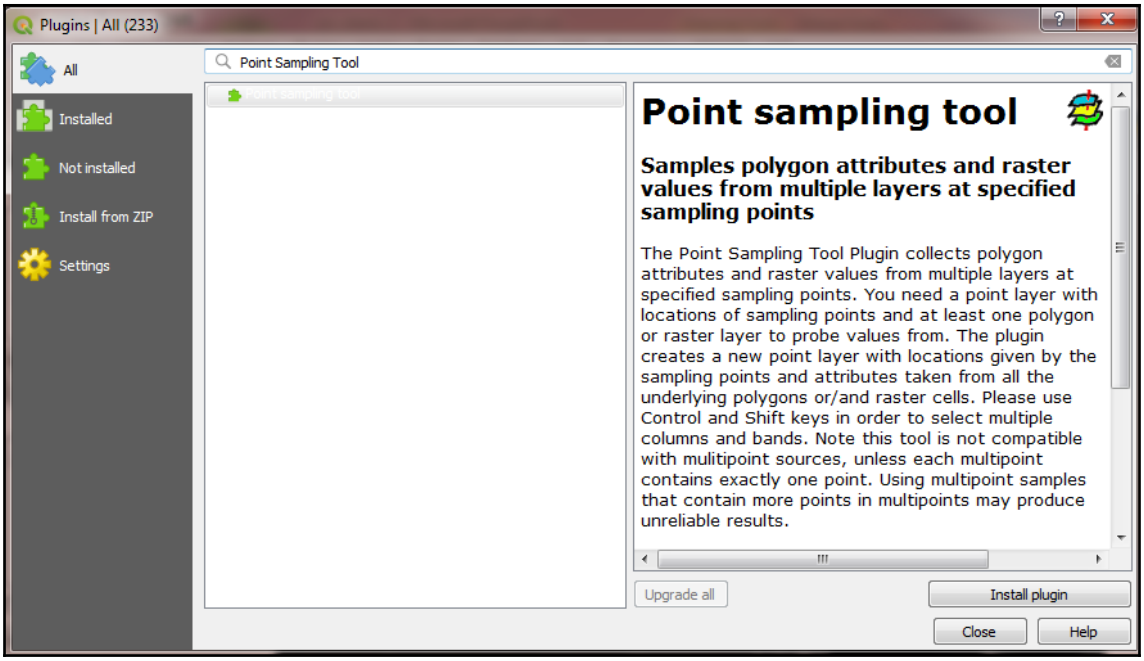


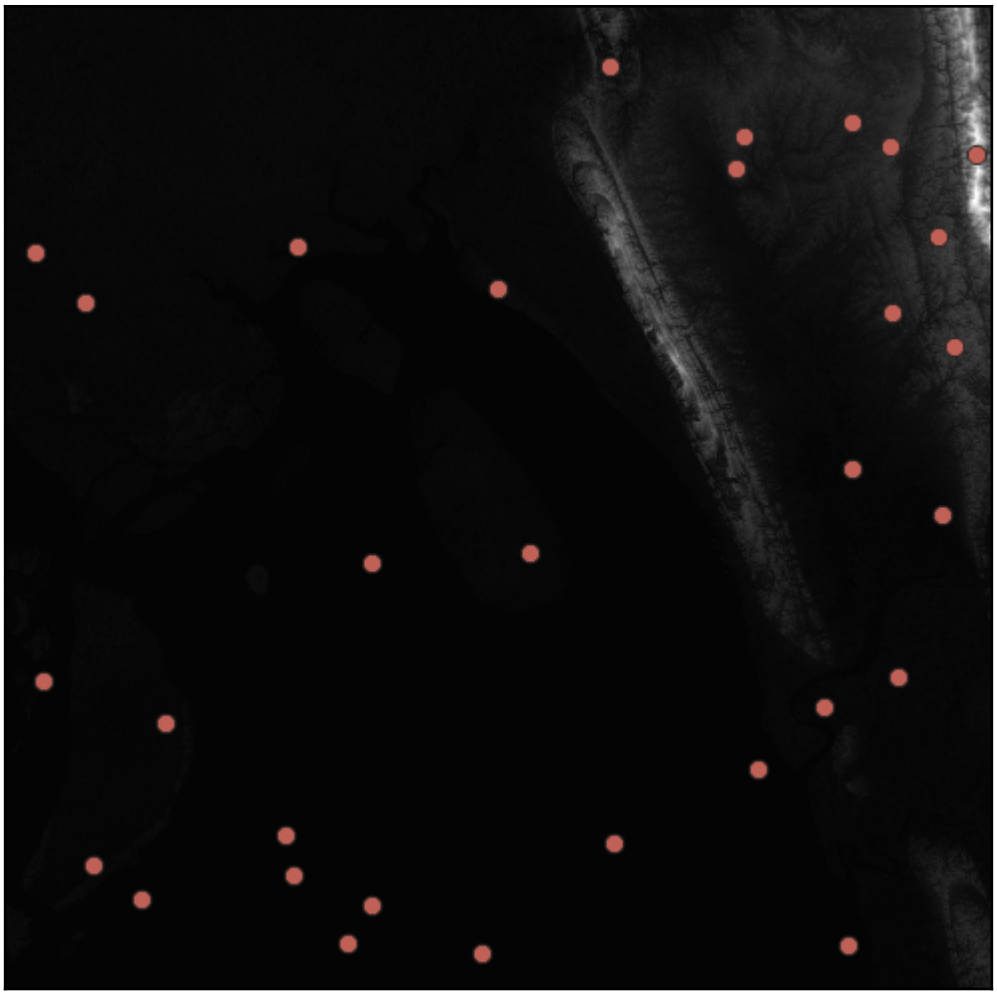

Layer Properties - 1_chittagong | Information
Information
Source
Symbology
Transparency
Histogram
Rendering
Pyramids
Metadata
Legend
QGIS Server
Information from provider
Original 1_chittagong
Name 1_chittagong
Source F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\Data \1_chittagong.tif
Provider gdal
CRS EPSG:4326 - WGS 84 - Geographic
Extent 90.9998611111111160,21.9998611111111124 : 92.0001388888888982,23.0001388888888911
Unit degrees
Width 3601
Height 3601
Data type Int16 - Sixteen bit signed integer
GDAL Driver Description GTiff
GDAL Driver Metadata GeoTIFF
Dataset Description F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\Data \1_chittagong.tif
Compression
Band 1
• STATISTICS_MAXIMUM=497
• STATISTICS_MEAN=13.740859779387
• STATISTICS_MINIMUM=-9
• STATISTICS_STDDEV=30.807443490904
More information
• AREA_OR_POINT=Point
• DTED_CompilationDate=0002
• DTED_DataEdition=02
• DTED_DigitizingSystem=SRTM
• DTED_HorizontalAccuracy=0009
• DTED_HorizontalDatum=WGS84
• DTED_MaintenanceDate=0000
• DTED_MaintenanceDescription=0000
• DTED_MatchMergeDate=0000
• DTED_MatchMergeVersion=A
• DTED_NimaDesignator=DTED2
• DTED_OriginLatitude=0220000N
• DTED_OriginLongitude=0910000E
• DTED_Producer=USCNIMA
• DTED_RelHorizontalAccuracy=NA
• DTED_RelVerticalAccuracy=0004
• DTED_SecurityCode_DSI=U
Style
OK
Cancel
Apply
Help

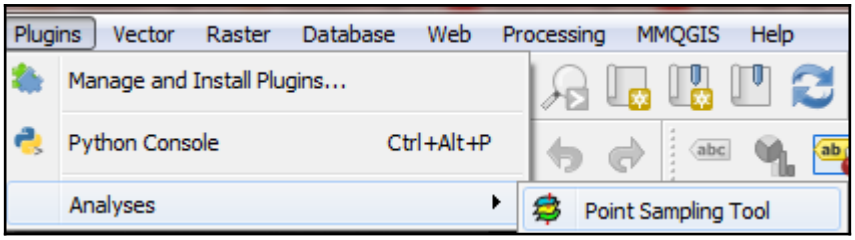

Raster
Database
Web
Processing
MMQGIS
Help
Raster Calculator...
Align Rasters...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Assign Projection...
Warp (Reproject)...

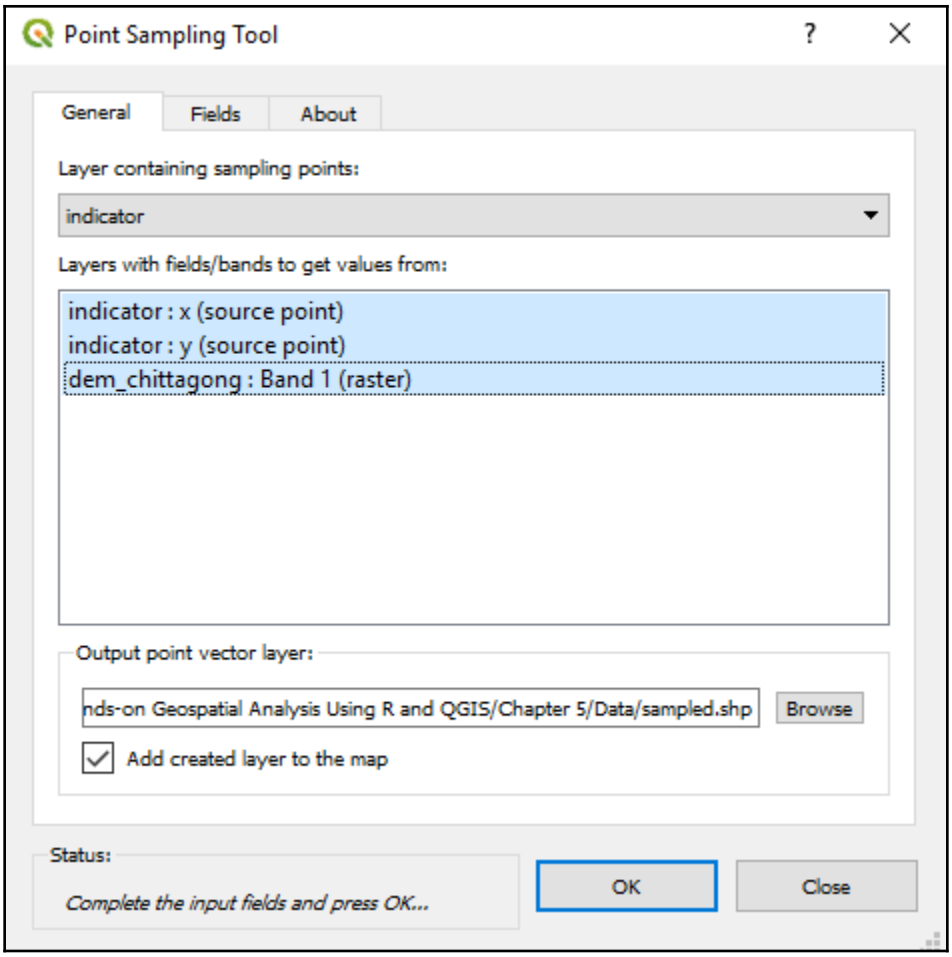

Warp (Reproject)
Parameters
Log
Input layer
LC08_L1TP_137044_20180410_20180417_01_T1_B2 [EPSG:32646]
Source CRS [optional]
Target CRS
EPSG:4326 - WGS 84
Resampling method to use
Nearest neighbour
Nodata value for output bands [optional]
Not set
Output file resolution in target georeferenced units [optional]
Not set
Advanced parameters
Reprojected
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

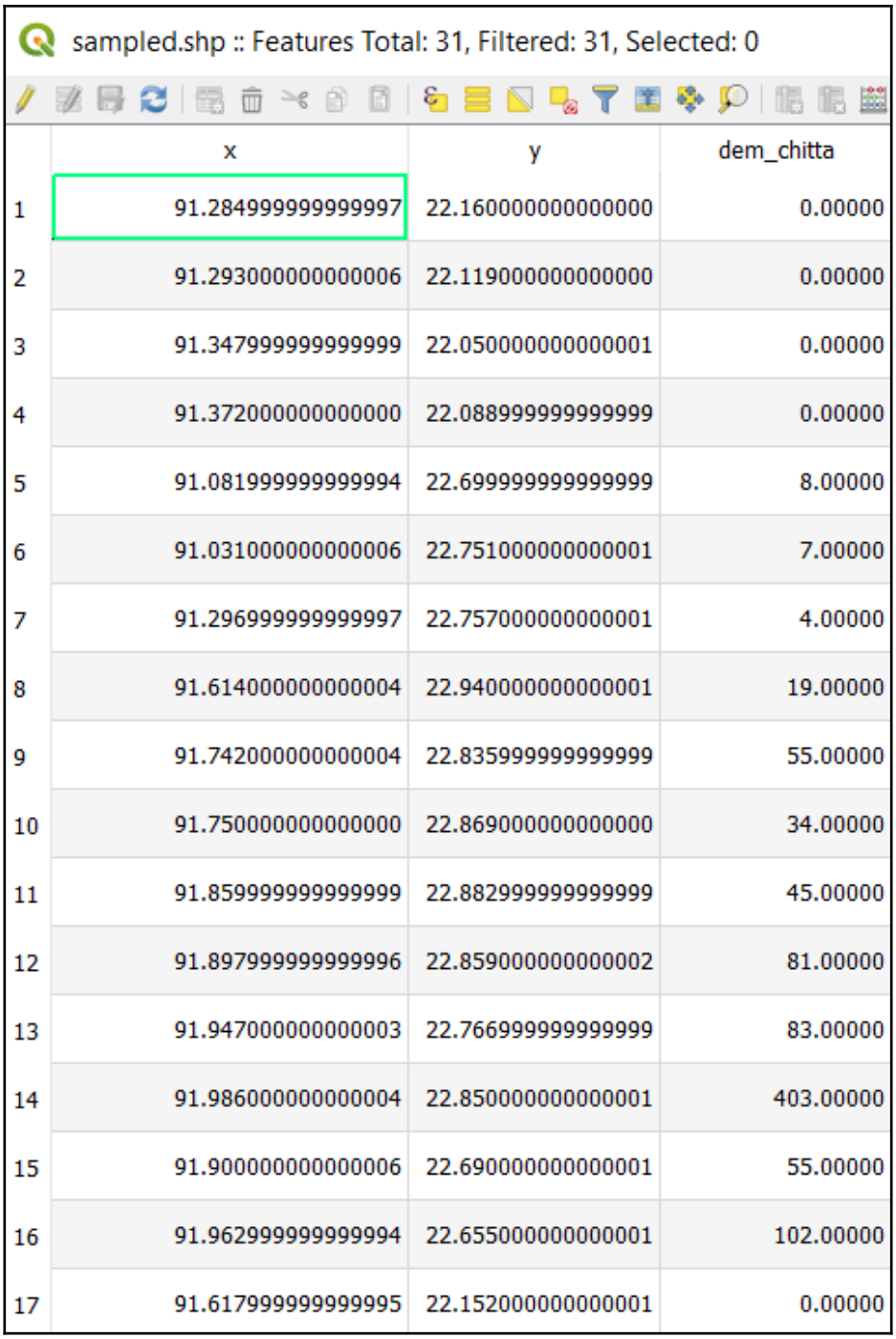

Coordinate Reference System Selector
Define this layer's coordinate reference system:
This layer appears to have no projection specification. By default, this layer will now have its projection set to that of the project, but you may override this by selecting a different projection below.
Filter
EPSG: 3106
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
Transverse Mercator
Gulshan 303 / Bangladesh Transverse M...
EPSG:3106
Selected CRS
Gulshan 303 / Bangladesh Transverse Mercator
Extent: 88.01, 18.56, 92.67, 26.64
Proj4: +proj=tmerc +lat_0=0 +lon_0=90
+k=0.9996 +x_0=500000 +y_0=0
+a=6377276.345 +b=6356075.41314024
+towgs84=283.7,735.9,261.1,0,0,0,0
OK
Cancel
Help


Plugins | All (233)
All
Installed
Not installed
Install from ZIP
Settings
Point Sampling Tool
Point sampling tool
Samples polygon attributes and raster values from multiple layers at specified sampling points
The Point Sampling Tool Plugin collects polygon attributes and raster values from multiple layers at specified sampling points. You need a point layer with locations of sampling points and at least one polygon or raster layer to probe values from. The plugin creates a new point layer with locations given by the sampling points and attributes taken from all the underlying polygons or/and raster cells. Please use Control and Shift keys in order to select multiple columns and bands. Note this tool is not compatible with mulitipoint sources, unless each multipoint contains exactly one point. Using multipoint samples that contain more points in multipoints may produce unreliable results.
Upgrade all
Install plugin
Close
Help



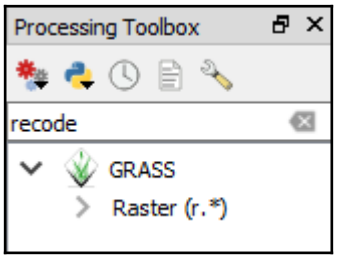

Plugins
Vector
Raster
Database
Web
Processing
MMQGIS
Help
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
Analyses
Point Sampling Tool

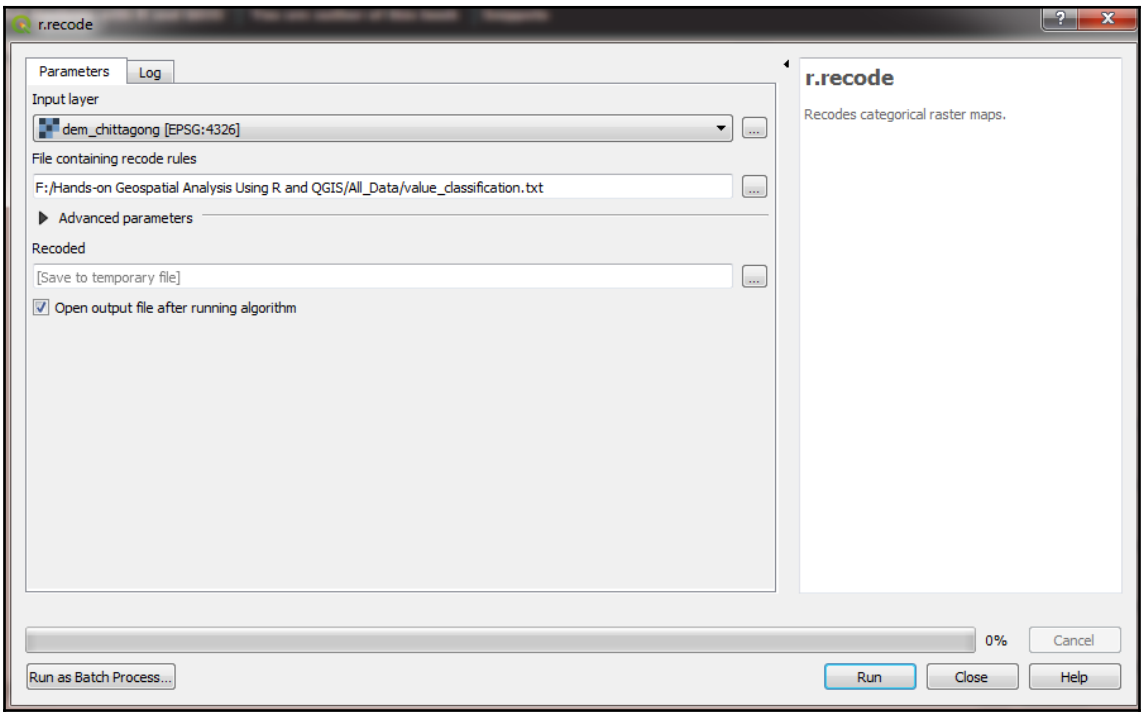

Point Sampling Tool
General
Fields
About
Layer containing sampling points:
indicator
Layers with fields/bands to get values from:
indicator : x (source point)
indicator : y (source point)
dem_chittagong : Band 1 (raster)
Output point vector layer:
nds-on Geospatial Analysis Using R and QGIS/Chapter 5/Data/sampled.shp
Browse
Add created layer to the map
Status:
Complete the input fields and press OK...
OK
Close

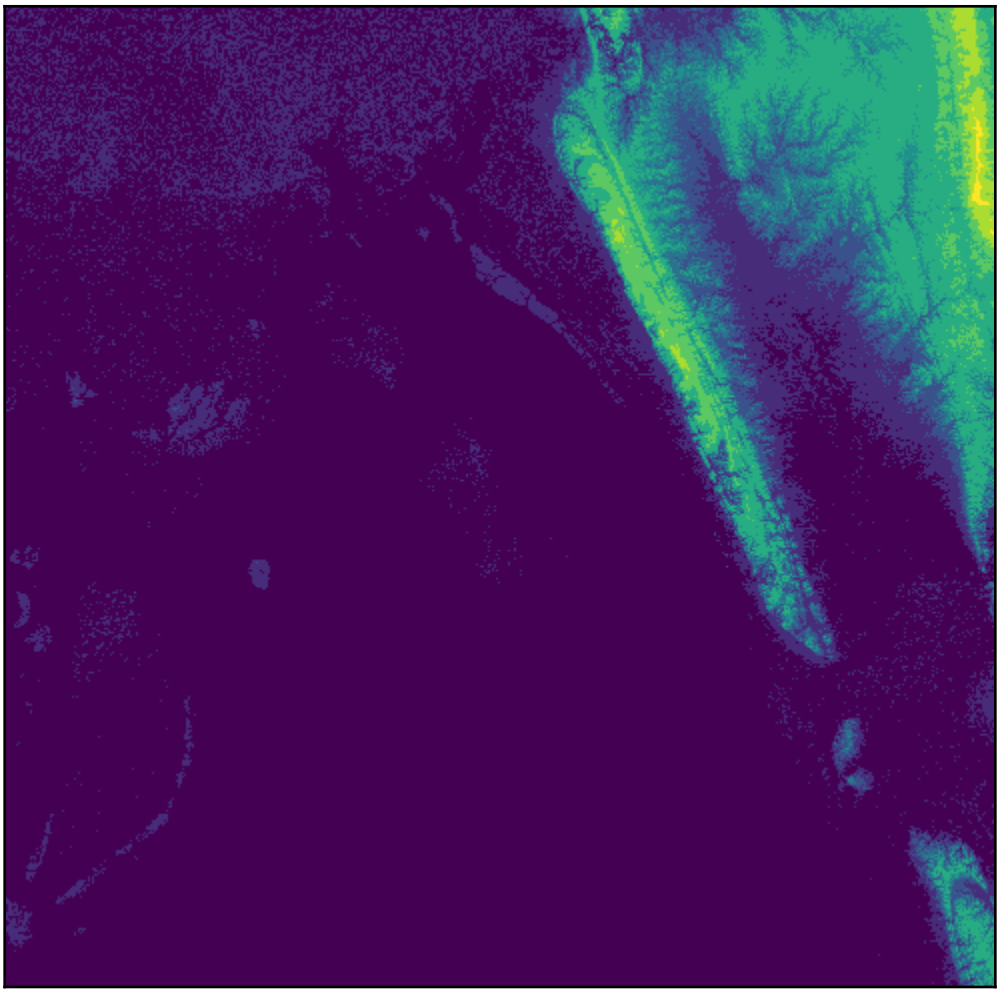

sampled.shp :: Features Total: 31, Filtered: 31, Selected: 0

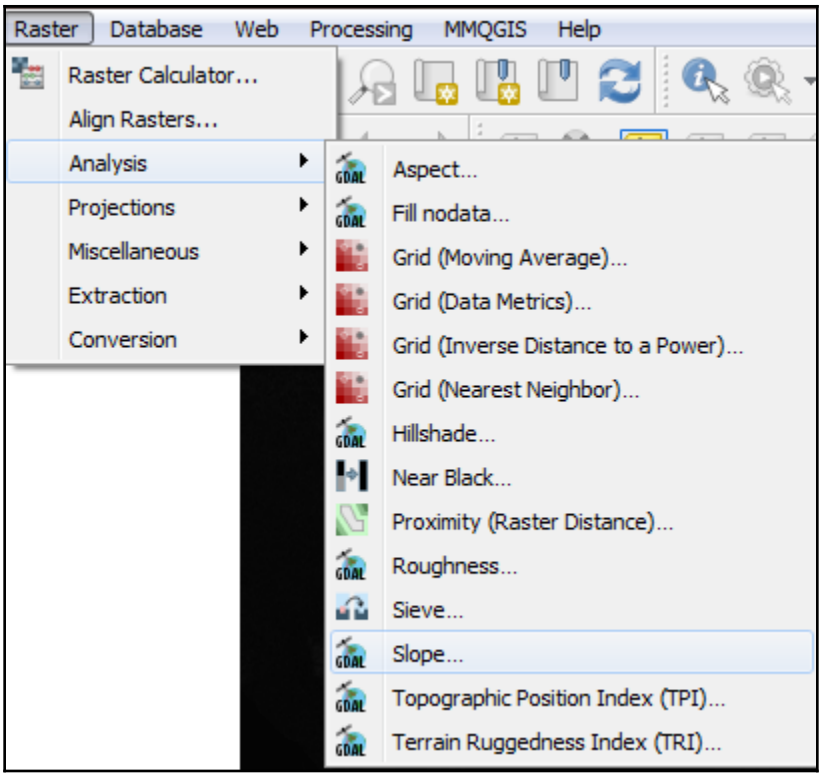
	x	y	dem_chitta
1	91.284999999999997	22.160000000000000	0.00000
2	91.293000000000006	22.119000000000000	0.00000
3	91.347999999999999	22.050000000000001	0.00000
4	91.372000000000000	22.088999999999999	0.00000
5	91.081999999999994	22.699999999999999	8.00000
6	91.031000000000006	22.751000000000001	7.00000
7	91.296999999999997	22.757000000000001	4.00000
8	91.614000000000004	22.940000000000001	19.00000
9	91.742000000000004	22.835999999999999	55.00000
10	91.750000000000000	22.869000000000000	34.00000
11	91.859999999999999	22.882999999999999	45.00000
12	91.897999999999996	22.859000000000002	81.00000
13	91.947000000000003	22.766999999999999	83.00000
14	91.986000000000004	22.850000000000001	403.00000
15	91.900000000000006	22.690000000000001	55.00000
16	91.962999999999994	22.655000000000001	102.00000
17	91.617999999999995	22.152000000000001	0.00000

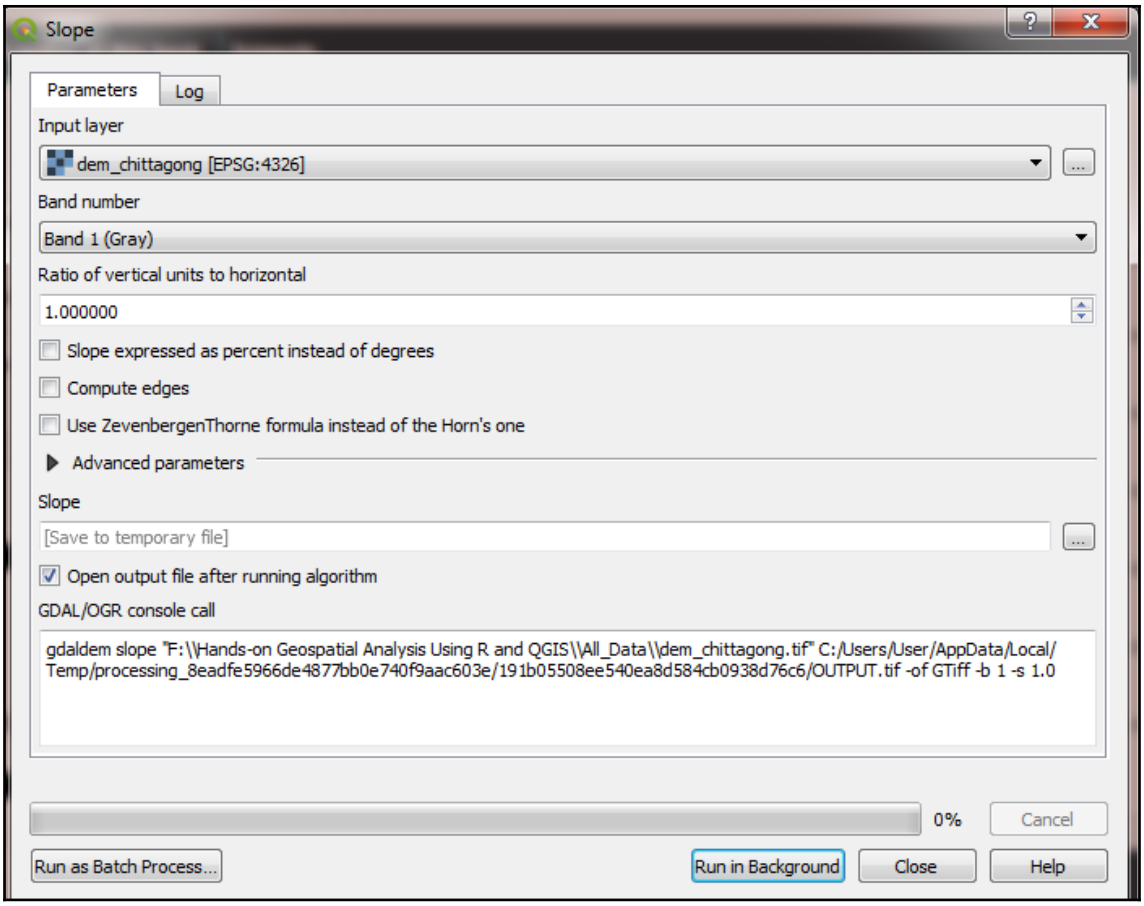
```
*:10:1
10:100:2
100:500:3
500:*:4
```

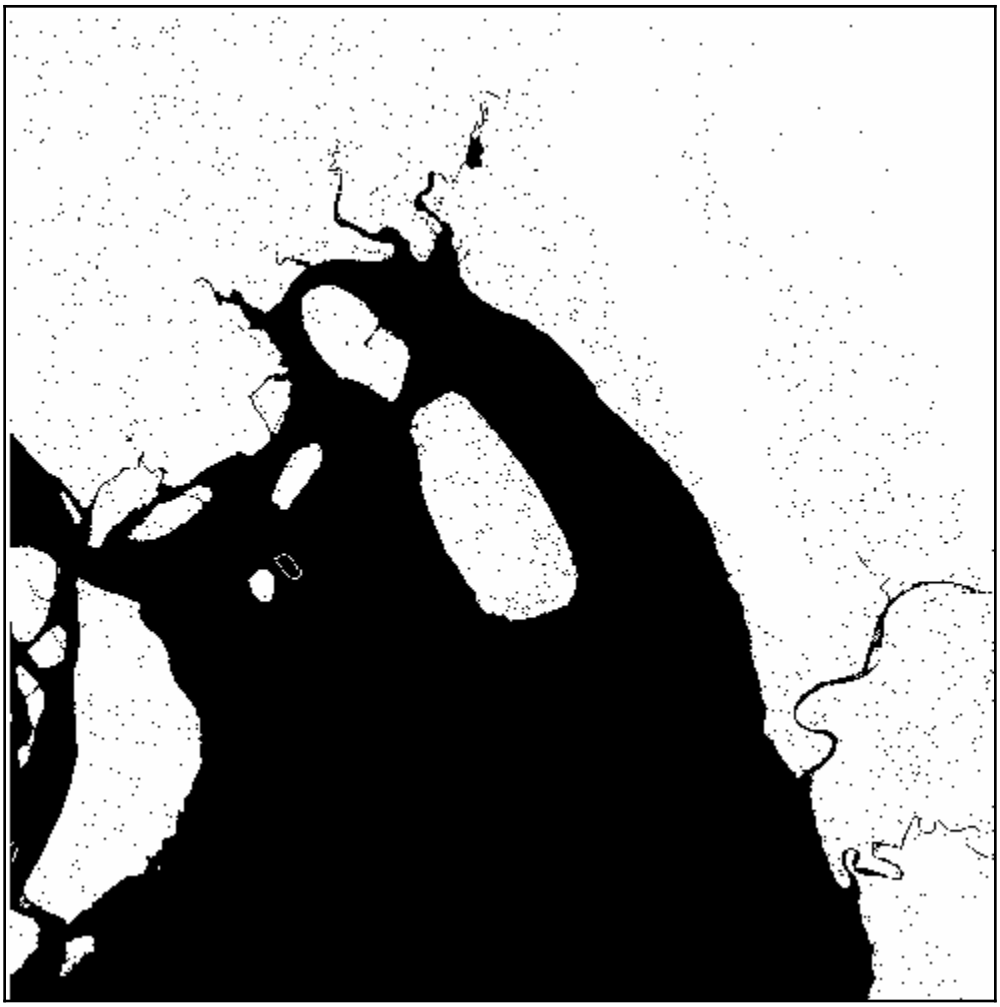


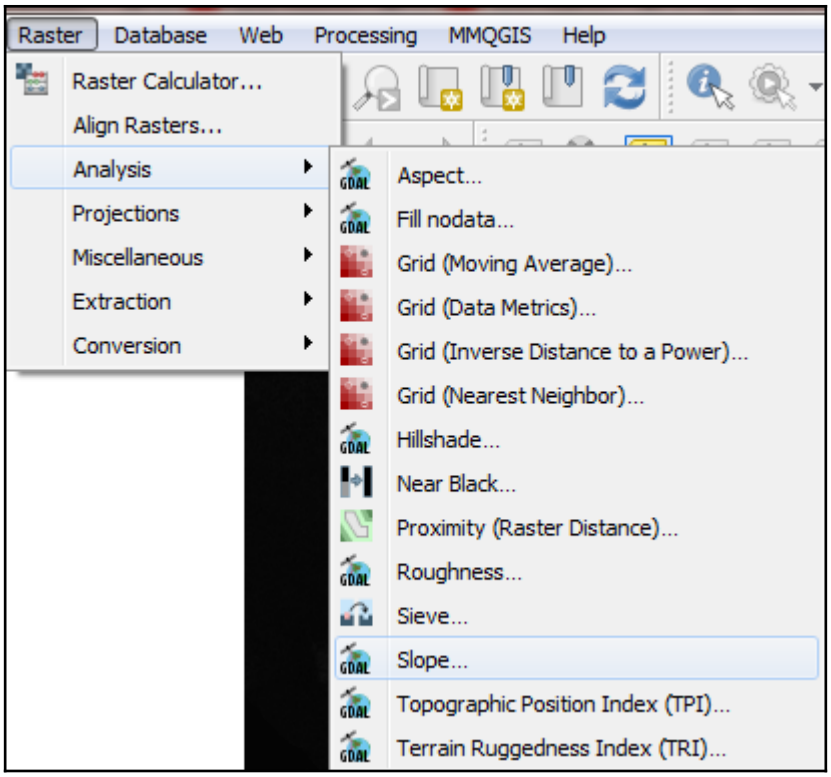


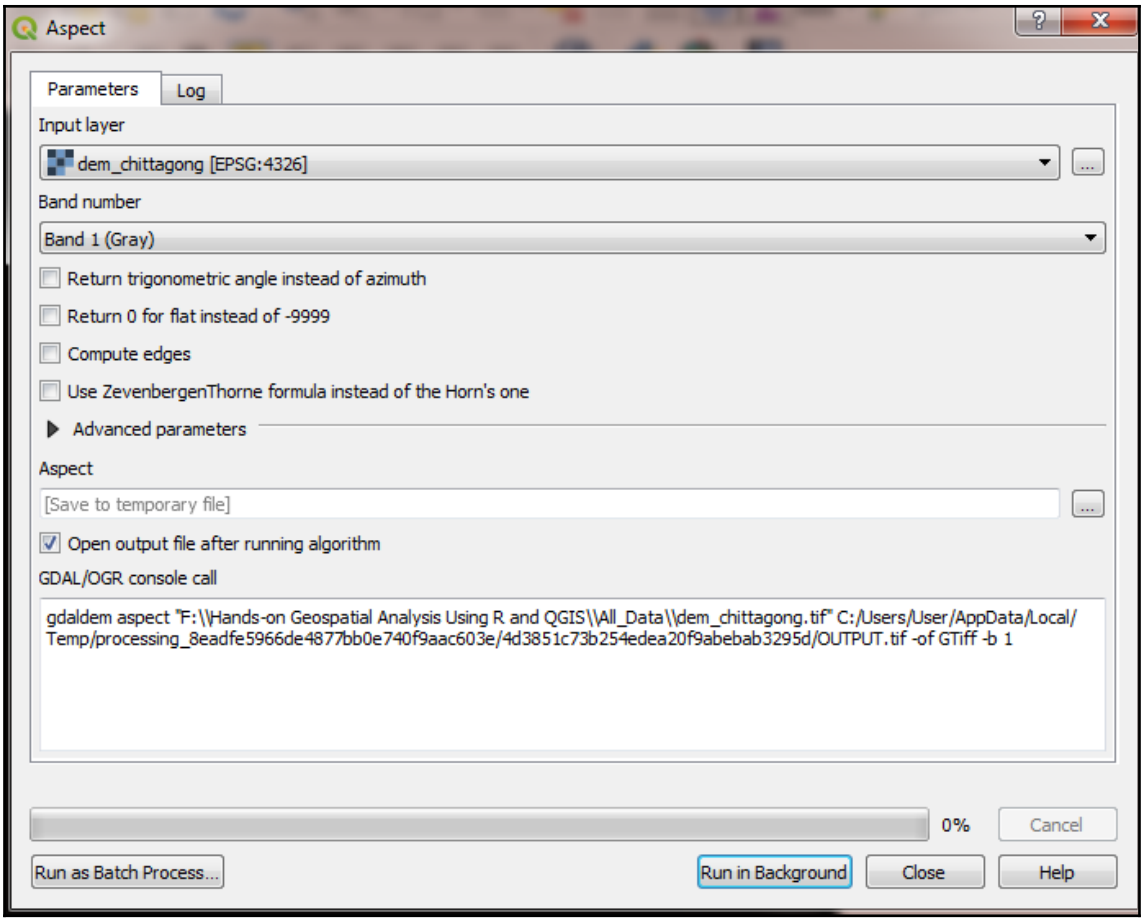


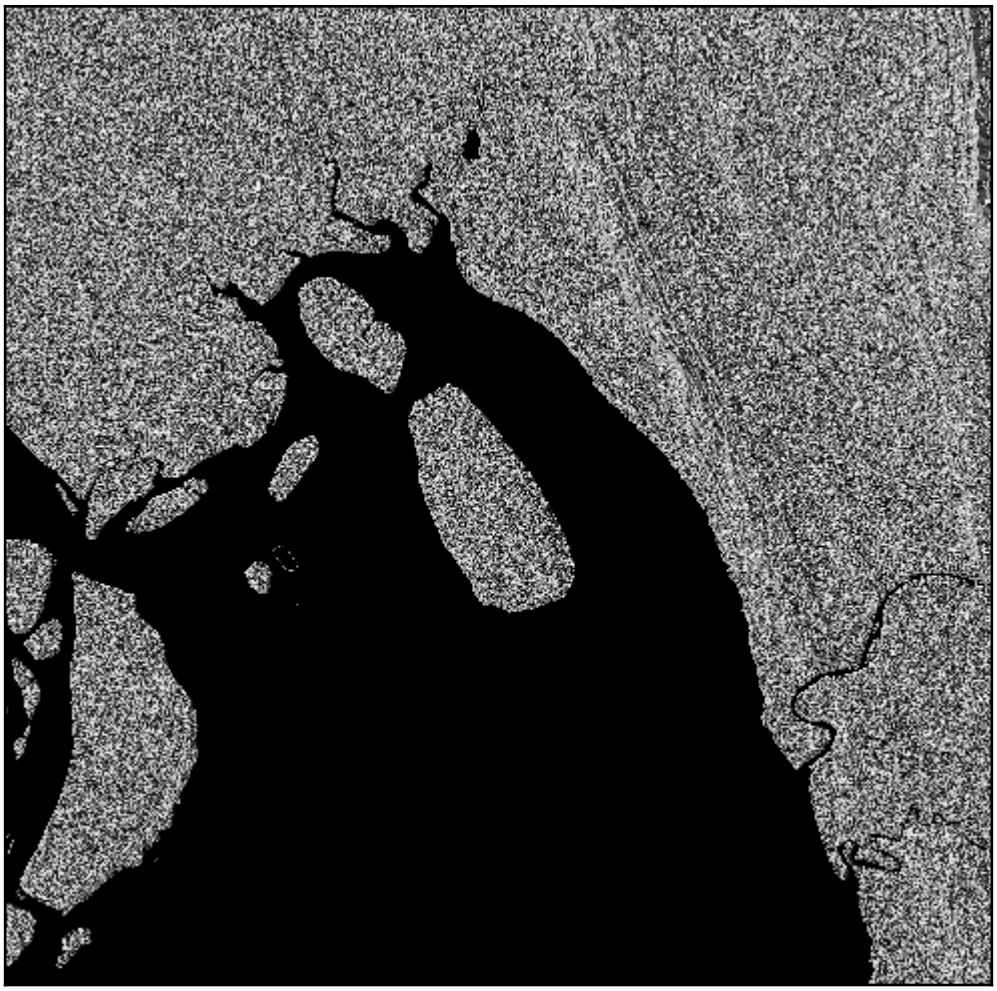

Raster
Database
Web
Processing
MMQGIS
Help
Raster Calculator...
Align Rasters...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Aspect...
Fill nodata...
Grid (Moving Average)...
Grid (Data Metrics)...
Grid (Inverse Distance to a Power)...
Grid (Nearest Neighbor)...
Hillshade...
Near Black...
Proximity (Raster Distance)...
Roughness...
Sieve...
Slope...
Topographic Position Index (TPI)...
Terrain Ruggedness Index (TRI)...


Slope
Parameters
Log
Input layer
dem_chittagong [EPSG:4326]
Band number
Band 1 (Gray)
Ratio of vertical units to horizontal
1.000000
Slope expressed as percent instead of degrees
Compute edges
Use ZevenbergenThorne formula instead of the Horn's one
Advanced parameters
Slope
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
gdaldem slope "F:\\Hands-on Geospatial Analysis Using R and QGIS\\All_Data\\dem_chittagong.tif" C:/Users/User/AppData/Local/Temp/processing_8eadfe5966de4877bb0e740f9aac603e/191b05508ee540ea8d584cb0938d76c6/OUTPUT.tif -of GTiff -b 1 -s 1.0
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help



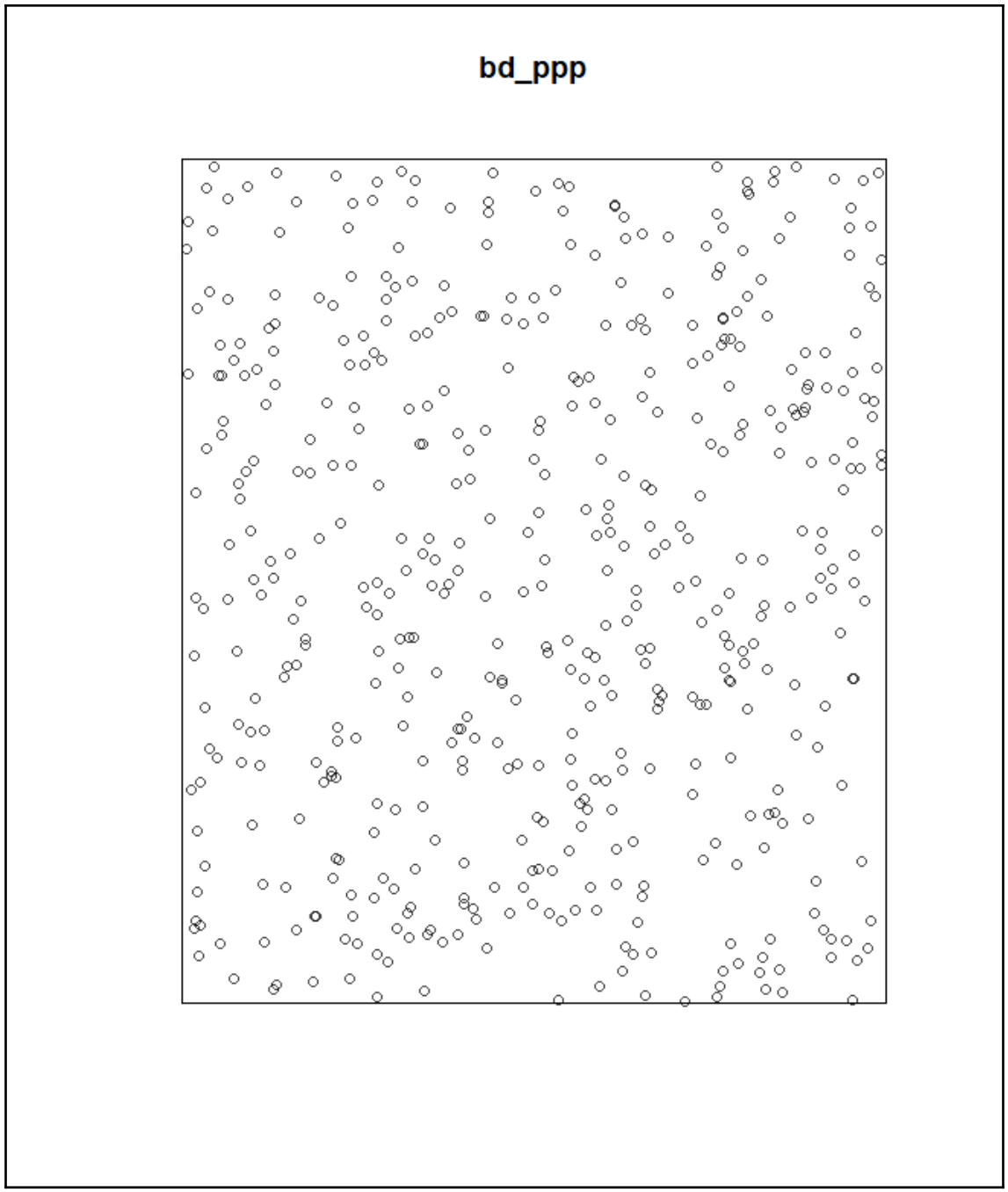

Raster
Database
Web
Processing
MMQGIS
Help
Raster Calculator...
Align Rasters...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Aspect...
Fill nodata...
Grid (Moving Average)...
Grid (Data Metrics)...
Grid (Inverse Distance to a Power)...
Grid (Nearest Neighbor)...
Hillshade...
Near Black...
Proximity (Raster Distance)...
Roughness...
Sieve...
Slope...
Topographic Position Index (TPI)...
Terrain Ruggedness Index (TRI)...


Aspect
Parameters
Log
Input layer
dem_chittagong [EPSG:4326]
Band number
Band 1 (Gray)
Return trigonometric angle instead of azimuth
Return 0 for flat instead of -9999
Compute edges
Use ZevenbergenThorne formula instead of the Horn's one
Advanced parameters
Aspect
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
gdaldem aspect "F:\\Hands-on Geospatial Analysis Using R and QGIS\\All_Data\\dem_chittagong.tif" C:/Users/User/AppData/Local/Temp/processing_8eadfe5966de4877bb0e740f9aac603e/4d3851c73b254edea20f9abebab3295d/OUTPUT.tif -of GTiff -b 1
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

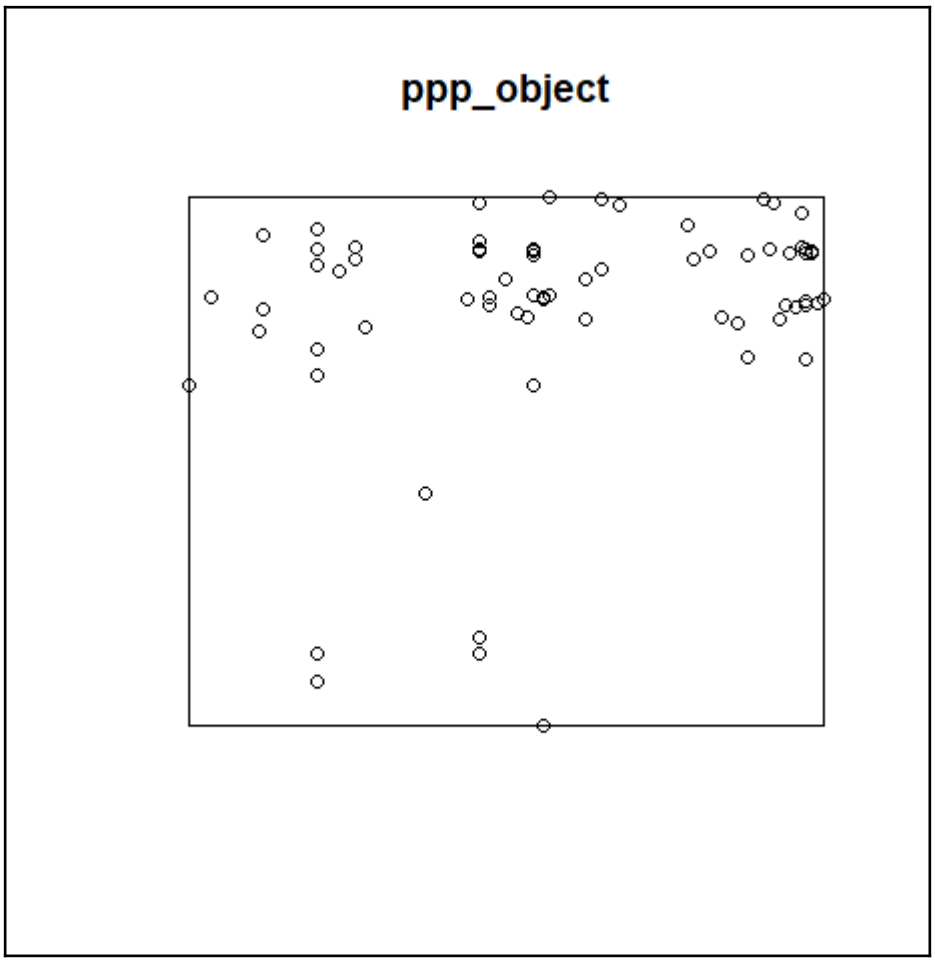


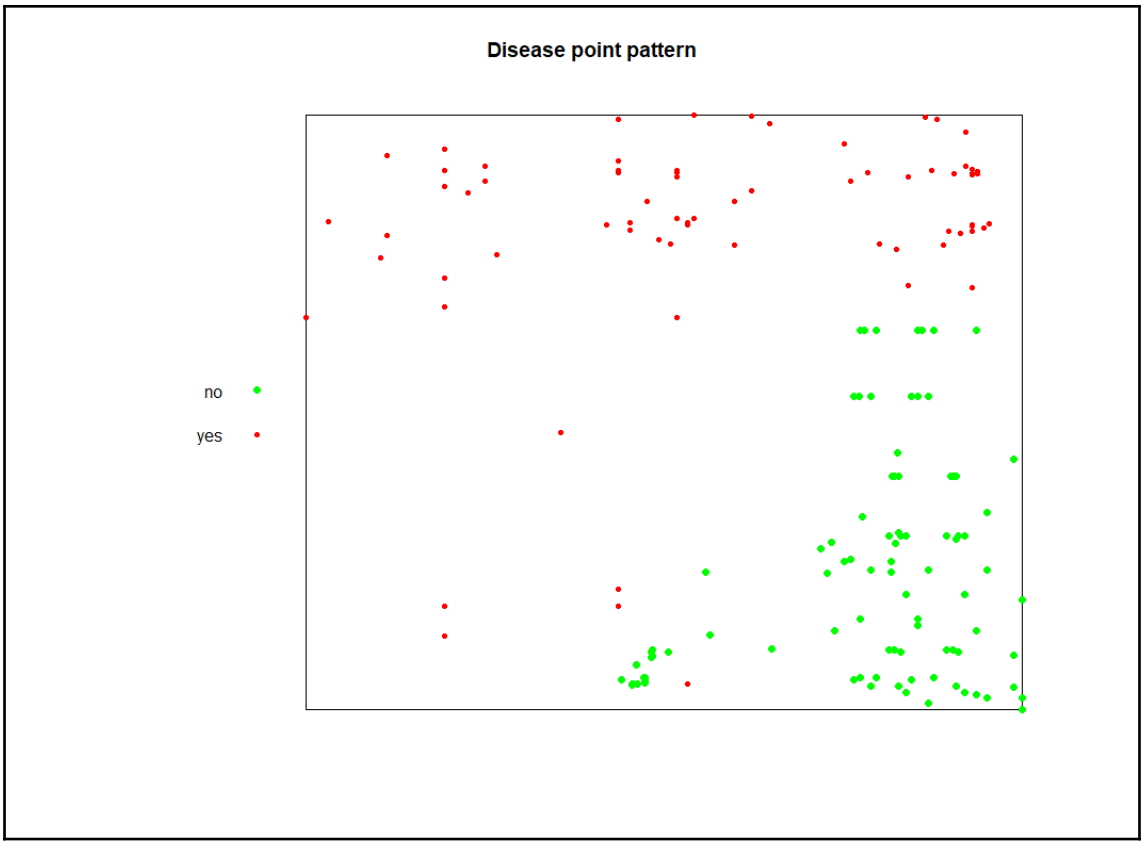
Chapter 6: Point Pattern Analysis

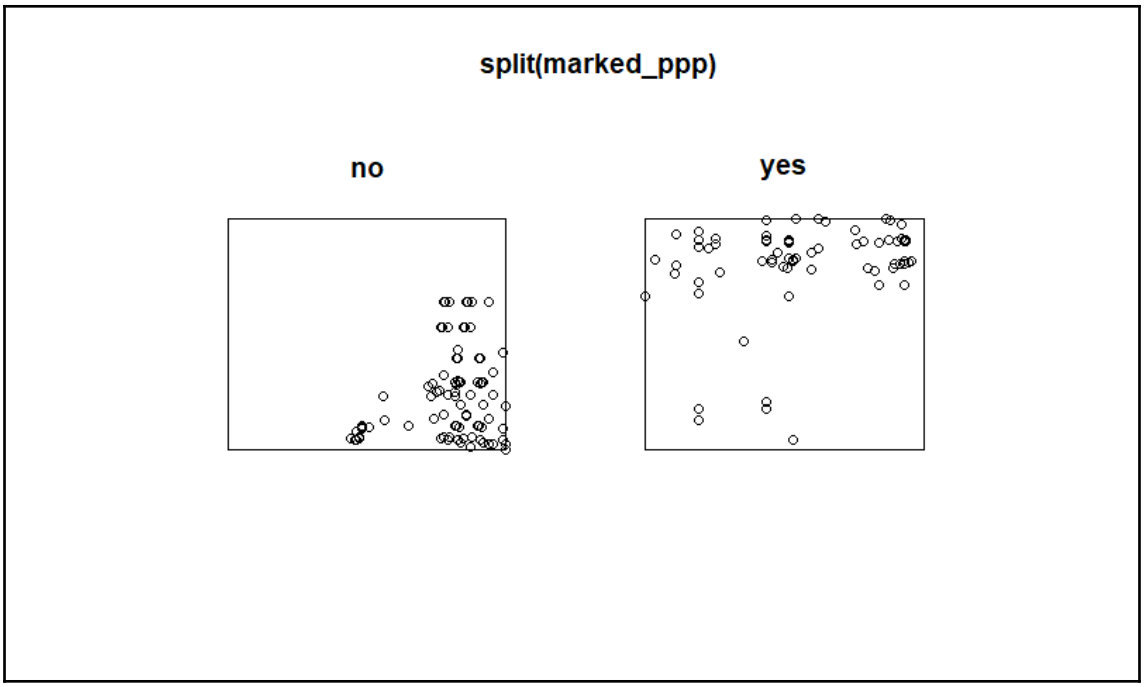
```
Planar point pattern: 500 points
window: rectangle = [87.7, 92.8] x [20.59, 26.71] units
```


bd_ppp

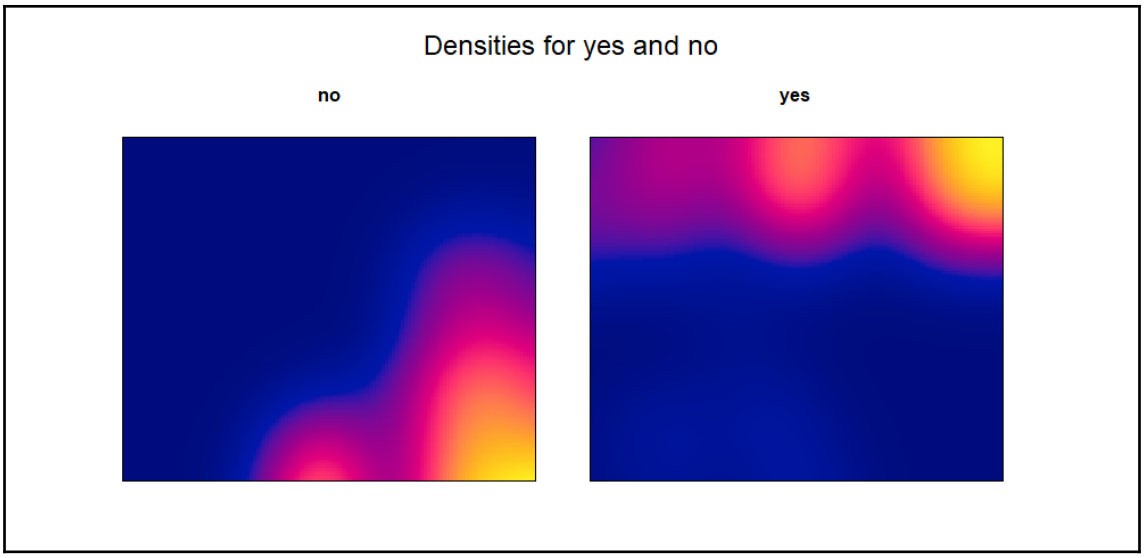
```
Planar point pattern:  500 points
Average intensity 16.01948 points per square unit

Coordinates are given to 6 decimal places

Window: rectangle = [87.7, 92.8] x [20.59, 26.71] units
Window area = 31.212 square units
```

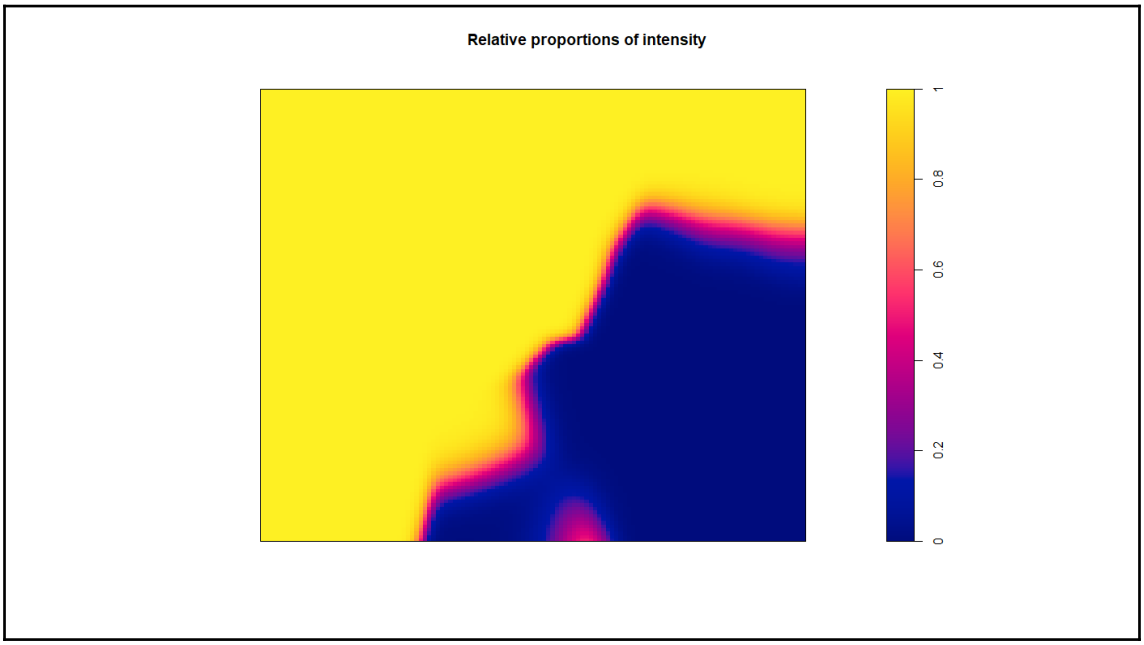



Disease point pattern
no
yes



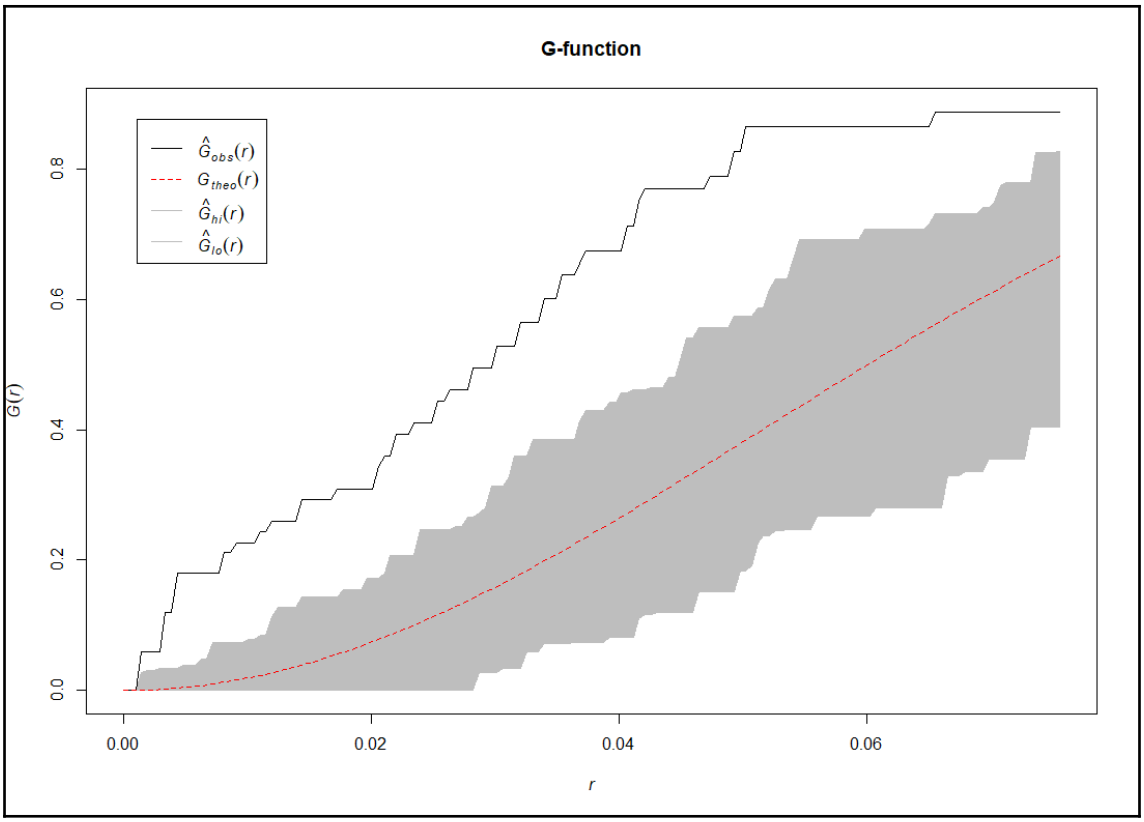

```
Marked planar point pattern:  163 points
Average intensity 128.1813 points per square unit

Coordinates are given to 4 decimal places

Multitype:
    frequency proportion intensity
no         92  0.5644172  72.34775
yes        71  0.4355828  55.83359

Window: rectangle = [89.76, 90.997] x [23.322, 24.35] units
Window area = 1.27164 square units
```

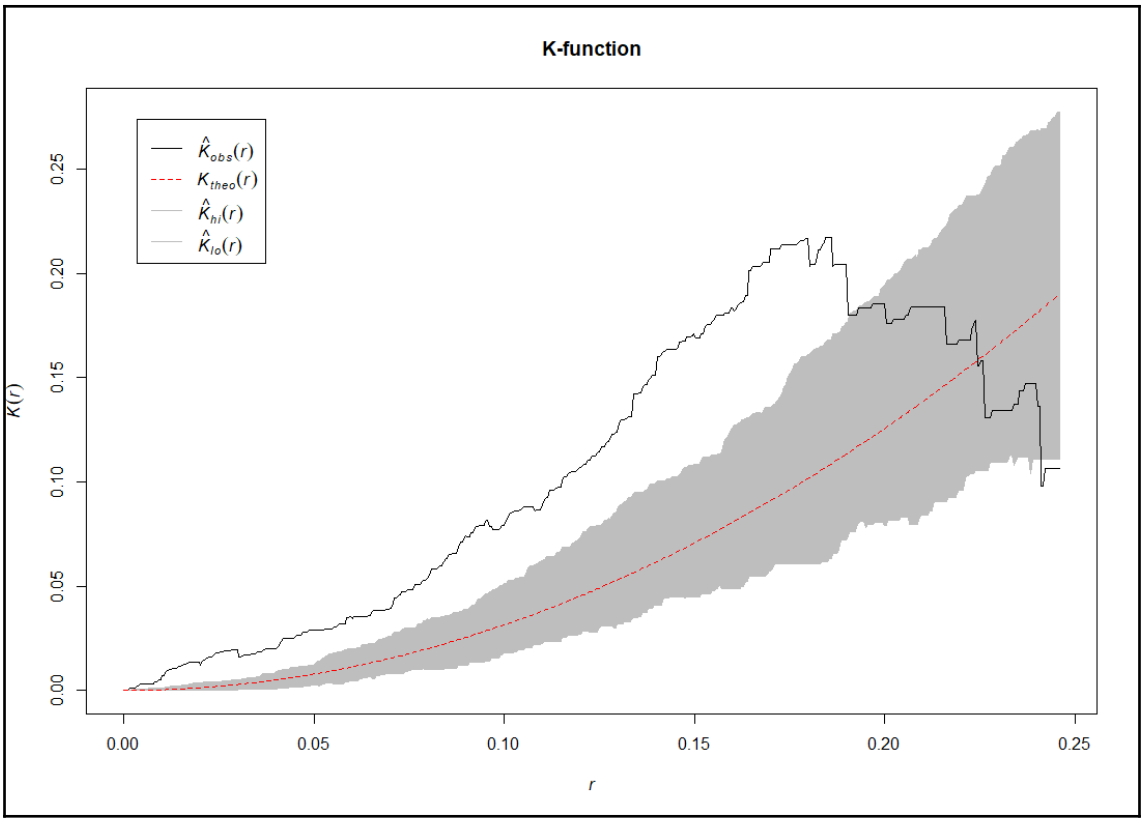

Densities for yes and no
no
yes


Relative proportions of intensity
0
0.2
0.4
0.6
0.8
1

```
        Chi-squared test of CSR using quadrat counts
        Pearson X2 statistic

data:  ppp_object3
X2 = 176.54, df = 24, p-value < 2.2e-16
alternative hypothesis: two.sided

Quadrats: 5 by 5 grid of tiles
Warning message:
Some expected counts are small; chi^2 approximation may be inaccurate
```

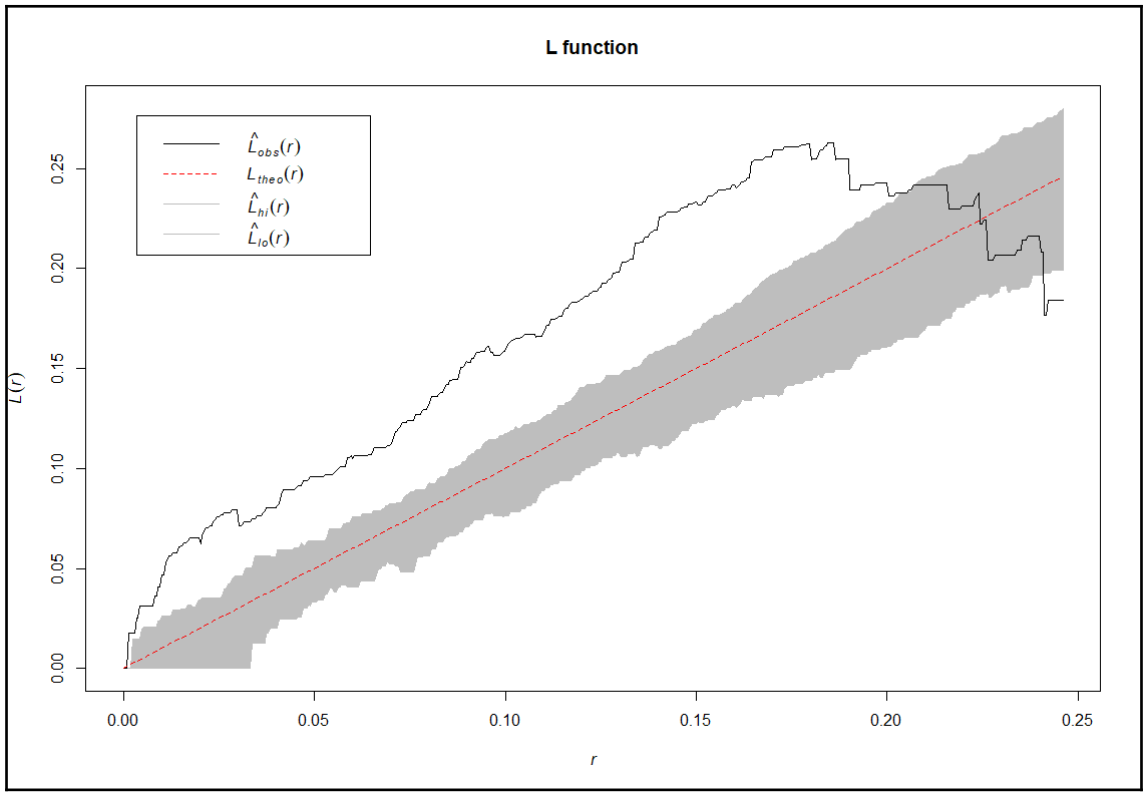
```
        Chi-squared test of CSR using quadrat counts
        Pearson X2 statistic

data:  ppp_object3
X2 = 176.54, df = 24, p-value < 2.2e-16
alternative hypothesis: clustered

Quadrats: 5 by 5 grid of tiles
Warning message:
Some expected counts are small; chi^2 approximation may be inaccurate
```

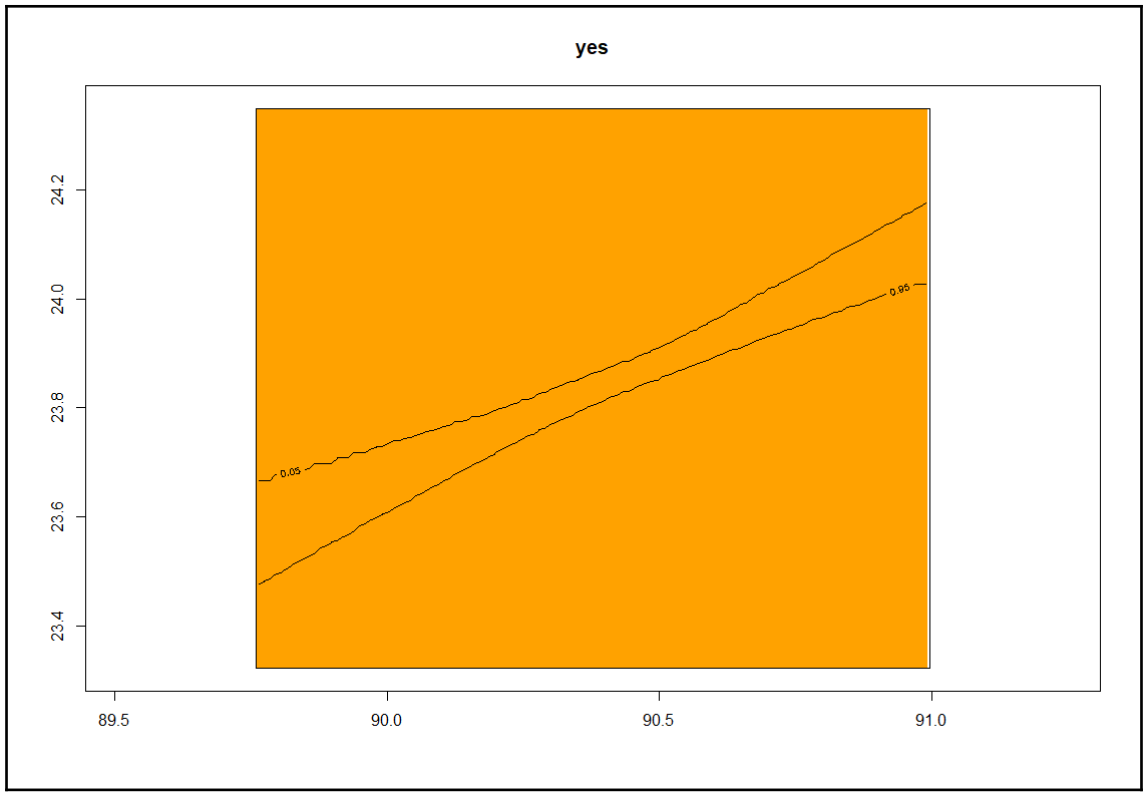

G-function
$\hat{G}_{obs}(r)$
$G_{theo}(r)$
$\hat{G}_{hi}(r)$
$\hat{G}_{lo}(r)$
G(r)
0.0
0.2
0.4
0.6
0.8
0.00
0.02
0.04
0.06
r




```
Generating 99 simulations of CSR  ...
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 4
1, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74,
75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98,  99.

Done.

        Diggle-Cressie-Loosmore-Ford test of CSR
        Monte Carlo test based on 99 simulations
        Summary function: K(r)
        Reference function: theoretical
        Alternative: two.sided
        Interval of distance values: [0, 0.246]
        Test statistic: Integral of squared absolute deviation
        Deviation = observed minus theoretical

data:  ppp_object3
u = 0.0064943, rank = 1, p-value = 0.01
```

```
Generating 99 simulations of CSR  ...
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 4
1, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74,
75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98,  99.

Done.

        Diggle-Cressie-Loosmore-Ford test of CSR
        Monte Carlo test based on 99 simulations
        Summary function: K(r)
        Reference function: theoretical
        Alternative: two.sided
        Interval of distance values: [0, 0.246]
        Test statistic: Integral of squared absolute deviation
        Deviation = observed minus theoretical

data:  ppp_object3
u = 0.0064943, rank = 1, p-value = 0.01
```

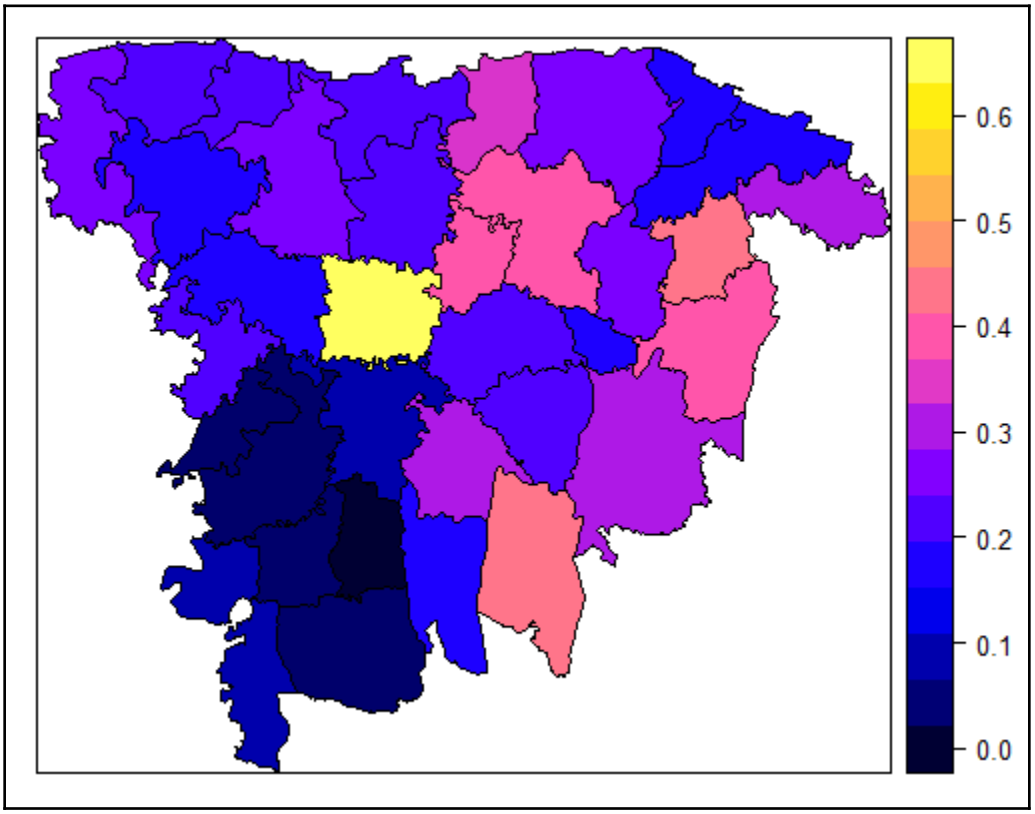


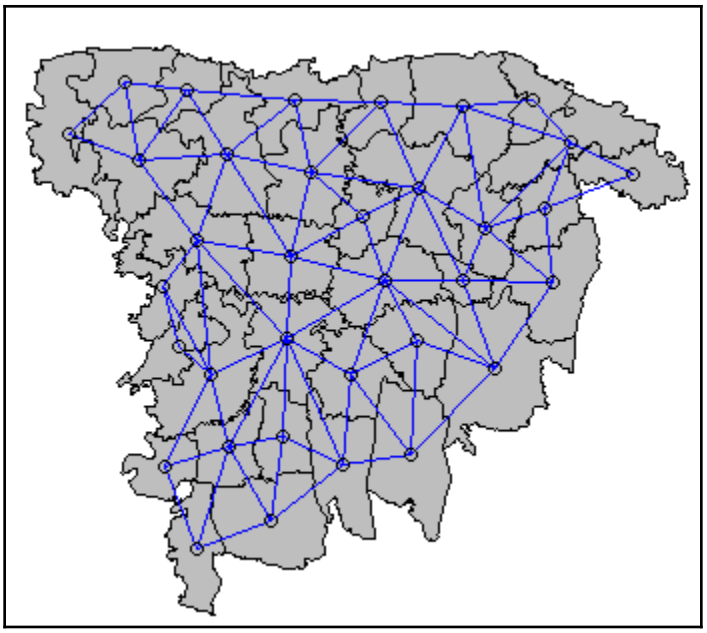

yes
24.2
24.0
23.8
23.6
23.4
0.05
0.95
89.5
90.0
90.5
91.0

Chapter 7: Spatial Analysis

```
     ID   val agri   pop migration density
1 9185 0.040 0.25 0.020       800     400
2 9186 0.020 0.29 0.050      1000     450
3 9187 0.025 0.30 0.060      1500     500
4 9188 0.050 0.26 0.060      3000     700
5 9189 0.060 0.32 0.170     10200    1200
6 9190 0.080 0.34 0.021      1680     850
```

```
[1] "SpatialPolygonsDataFrame"
attr(,"package")
[1] "sp"
```





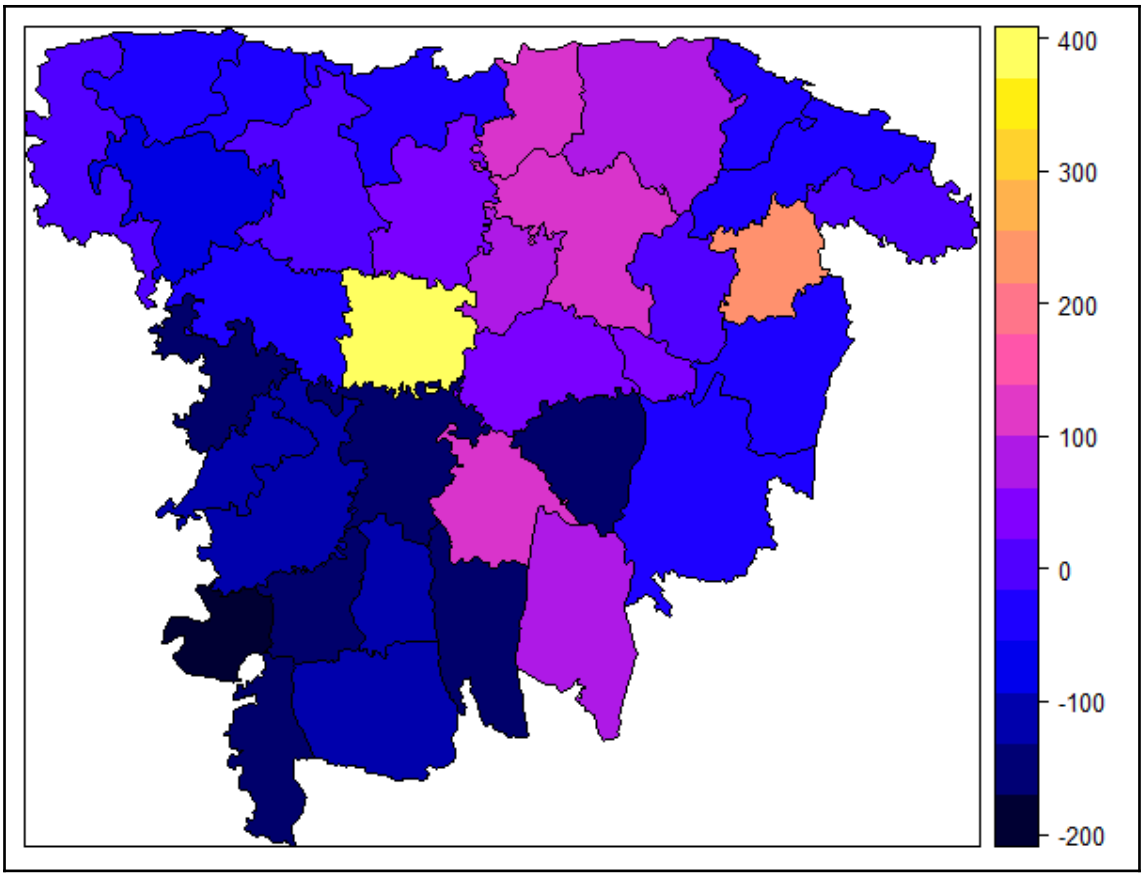
```
        Moran I test under randomisation

data:  migration_spdf$val
weights: nb2listw(neighbor_syl)

Moran I statistic standard deviate = 3.9003, p-value = 4.805e-05
alternative hypothesis: greater
sample estimates:
Moran I statistic       Expectation          Variance
       0.38835134       -0.02941176        0.01147294
```

```
        Monte-Carlo simulation of Moran I

data:  migration_spdf$val
weights: nb2listw(neighbor_syl)
number of simulations + 1: 500

statistic = 0.38835, observed rank = 500, p-value = 0.002
alternative hypothesis: greater
```

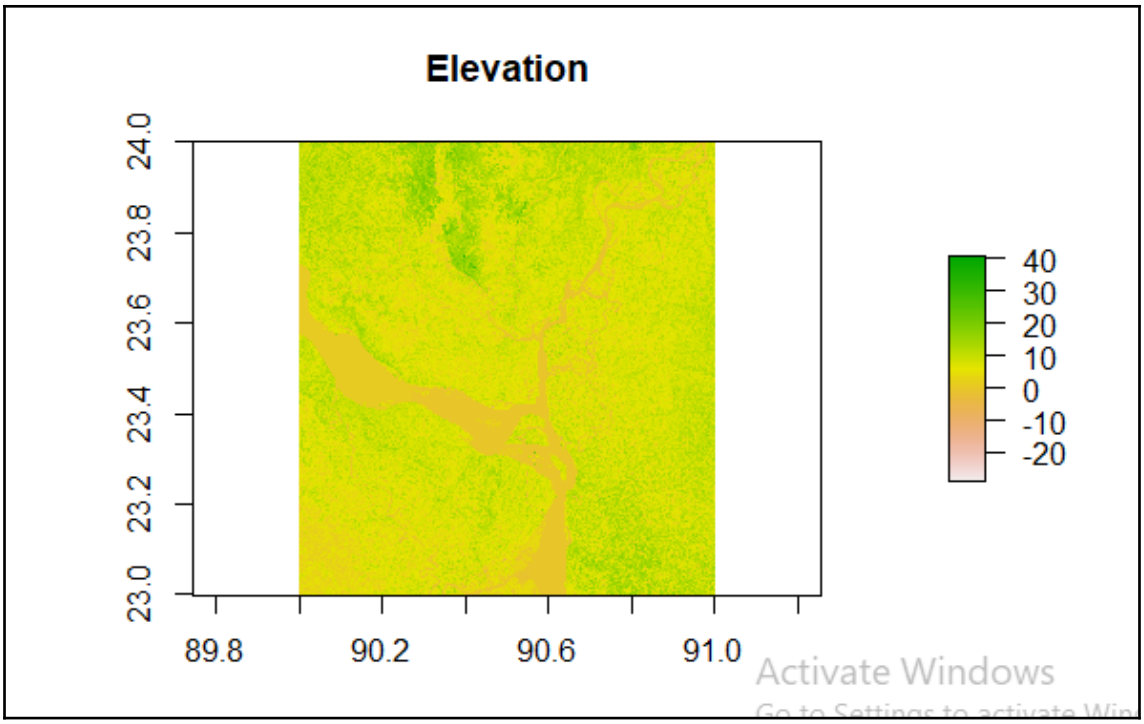
```
Call: spautolm(formula = migration_spdf$val ~ 1, listw = nb2listw(neighbor_syl))

Residuals:
      Min        1Q    Median        3Q       Max
-0.136611 -0.069291 -0.025487  0.064057  0.401192

Coefficients:
            Estimate Std. Error z value  Pr(>|z|)
(Intercept) 0.236783   0.045726  5.1784 2.239e-07

Lambda: 0.59292 LR test value: 9.6294 p-value: 0.0019148
Numerical Hessian standard error of lambda: 0.15822

Log likelihood: 25.81055
ML residual variance (sigma squared): 0.012127, (sigma: 0.11012)
Number of observations: 35
Number of parameters estimated: 3
AIC: -45.621
```

```
Call: spautolm(formula = val ~ agri + density, data = migration_spdf,
    listw = nb2listw(neighbor_syl), weights = pop)

Residuals:
      Min        1Q    Median        3Q       Max
-0.152691 -0.089436 -0.053178  0.031409  0.379258

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept) 2.0674e-01 1.0630e-01  1.9448   0.0518
agri        1.7962e-02 1.4182e-01  0.1267   0.8992
density     6.8531e-05 8.0376e-05  0.8526   0.3939

Lambda: 0.49954 LR test value: 5.2865 p-value: 0.021491
Numerical Hessian standard error of lambda: 0.1885

Log likelihood: 19.36808
ML residual variance (sigma squared): 0.0013605, (sigma: 0.036885)
Number of observations: 35
Number of parameters estimated: 5
AIC: -28.736
```

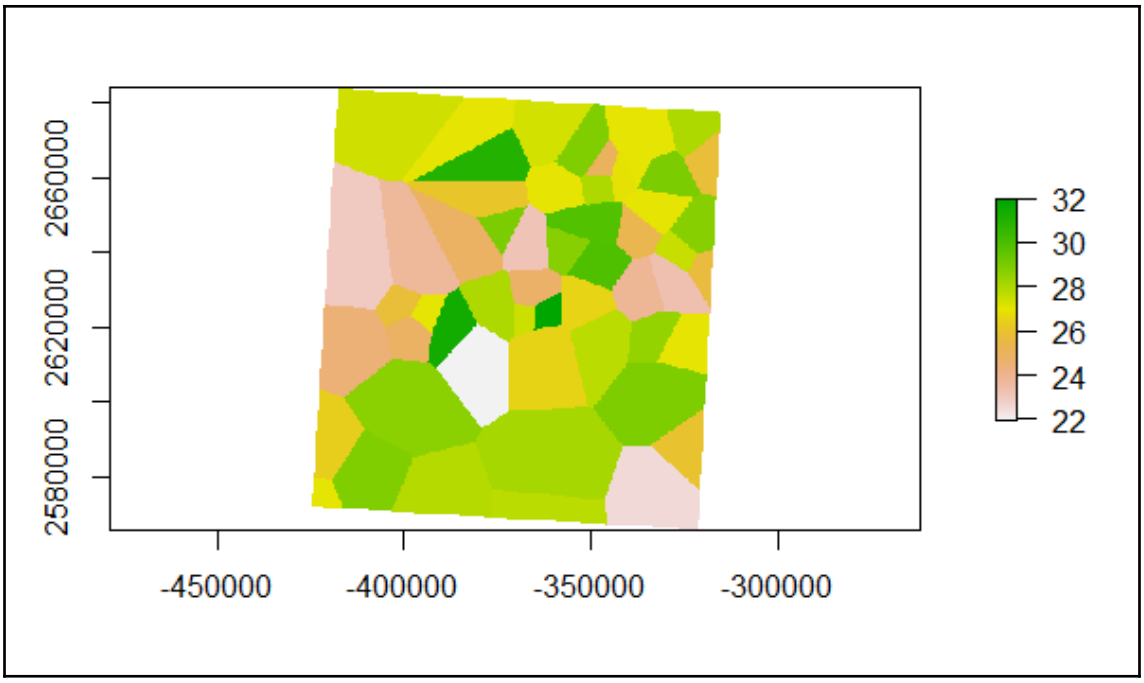
```
Call:
glm(formula = migration ~ agri + density, family = poisson, data = migration_spdf,
    offset = pop)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-171.94  -127.82   -32.87    39.08   370.32

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept) 8.412e+00  6.094e-03  1380.3   <2e-16 ***
agri        1.172e+00  8.479e-03   138.2   <2e-16 ***
density     1.301e-03  4.960e-06   262.2   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 595386  on 34  degrees of freedom
Residual deviance: 516058  on 32  degrees of freedom
AIC: 516461

Number of Fisher Scoring iterations: 5
```

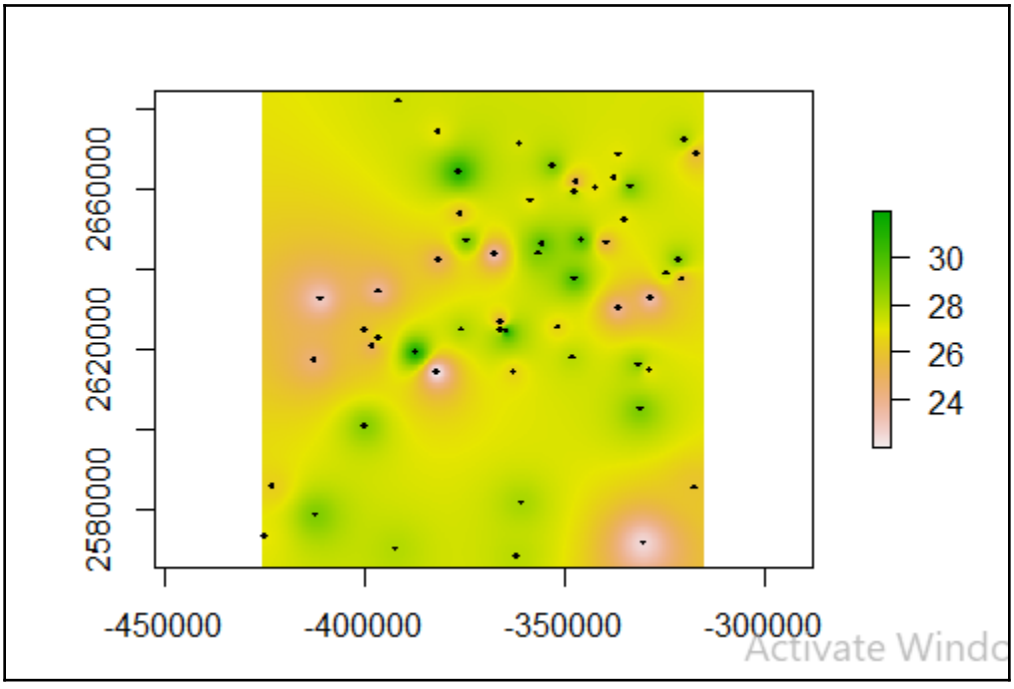



```
        Monte-Carlo simulation of Moran I

data:  migration_spdf$residual
weights: nb2listw(neighbor_syl)
number of simulations + 1: 500

statistic = 0.32296, observed rank = 498, p-value = 0.004
alternative hypothesis: greater
```



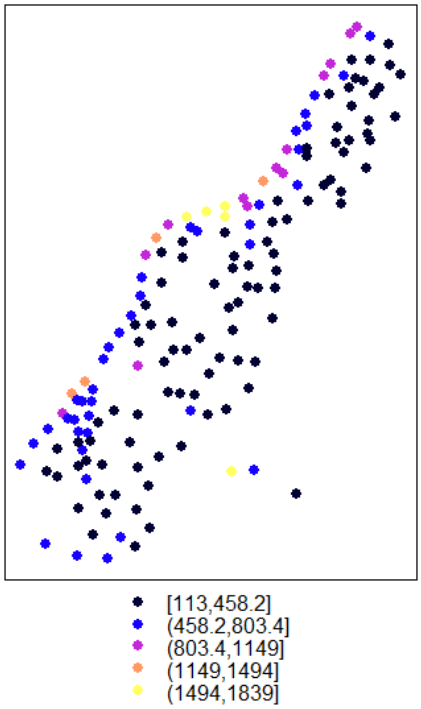

```
CRS arguments:
 +proj=utm +zone=47 +datum=WGS84 +units=m +no_defs
+ellps=WGS84 +towgs84=0,0,0
```

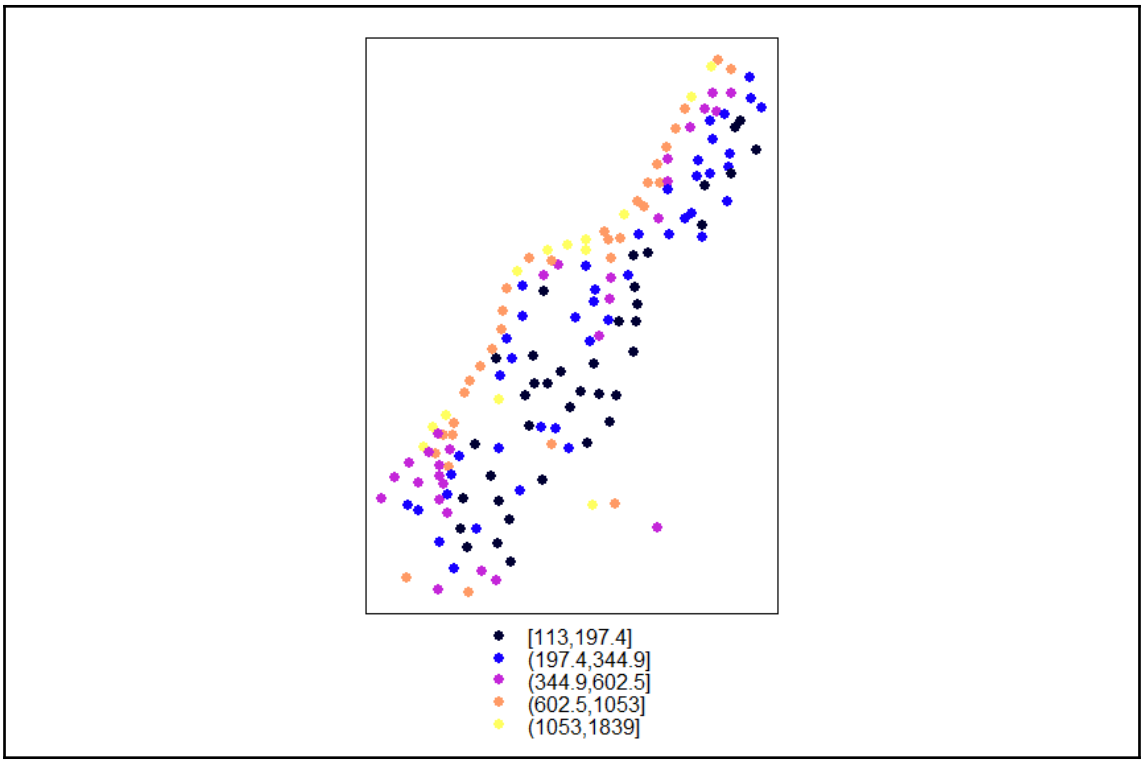

2660000
2620000
2580000
-450000
-400000
-350000
-300000
32
30
28
26
24
22


2660000
2620000
2580000
-450000
-400000
-350000
-300000
30
28
26
24
Activate Windo

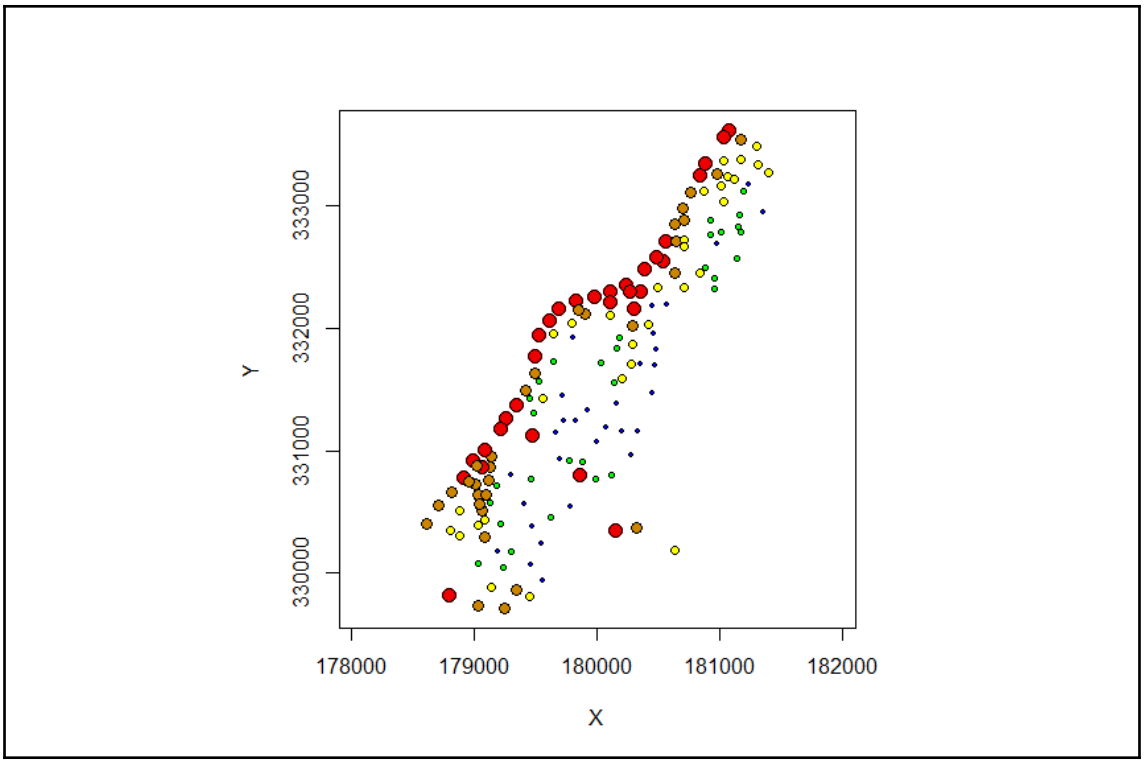
	cadmium	copper	lead	zinc	elev	dist	om	ffreq	soil	lime	landuse	dist.m
1	11.7	85	299	1022	7.909	0.00135803	13.6	1	1	1	Ah	50
2	8.6	81	277	1141	6.983	0.01222430	14.0	1	1	1	Ah	30
3	6.5	68	199	640	7.800	0.10302900	13.0	1	1	1	Ah	150
4	2.6	81	116	257	7.655	0.19009400	8.0	1	2	0	Ga	270
5	2.8	48	117	269	7.480	0.27709000	8.7	1	2	0	Ah	380
6	3.0	61	137	281	7.791	0.36406700	7.8	1	2	0	Ga	470

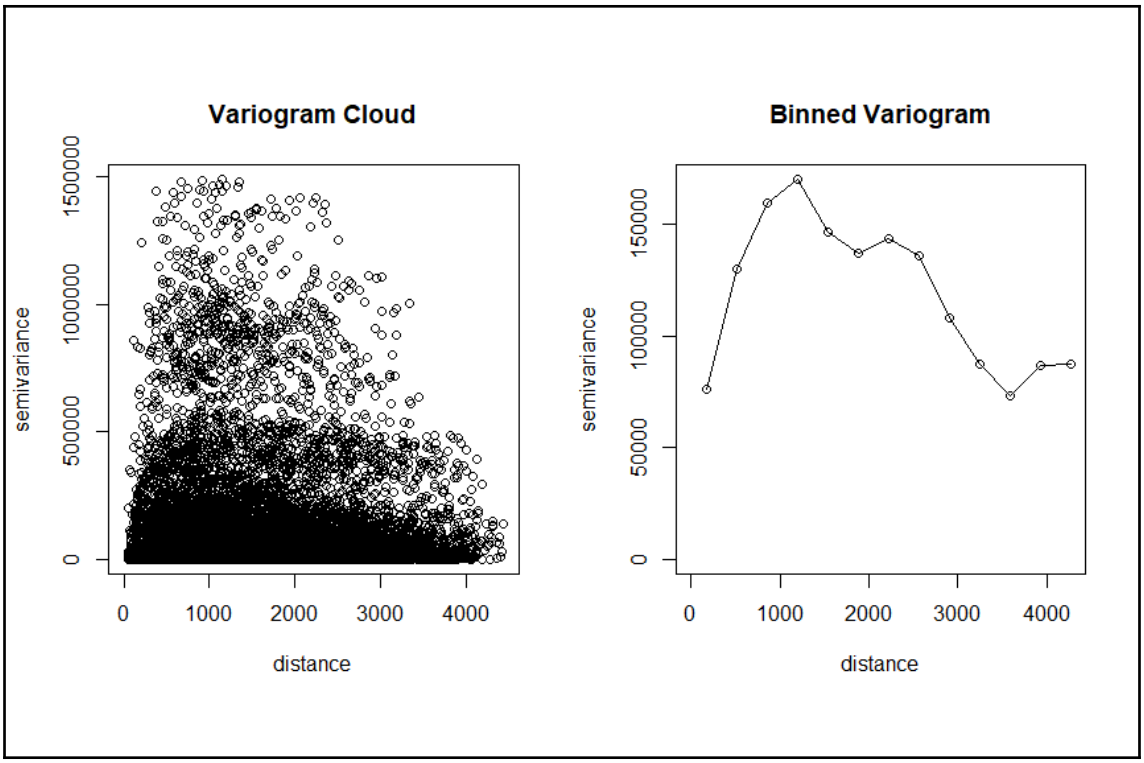
	x	y	zinc
1	181072	333611	1022
2	181025	333558	1141
3	181165	333537	640
4	181298	333484	257
5	181307	333330	269
6	181390	333260	281

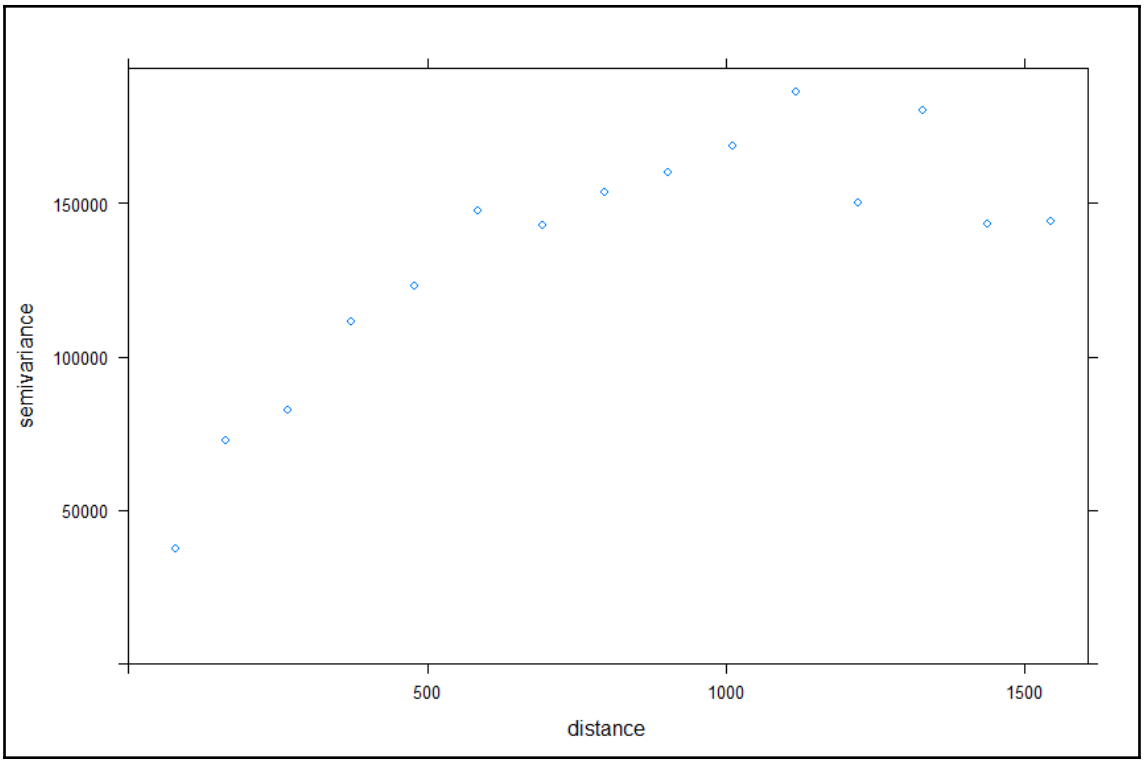




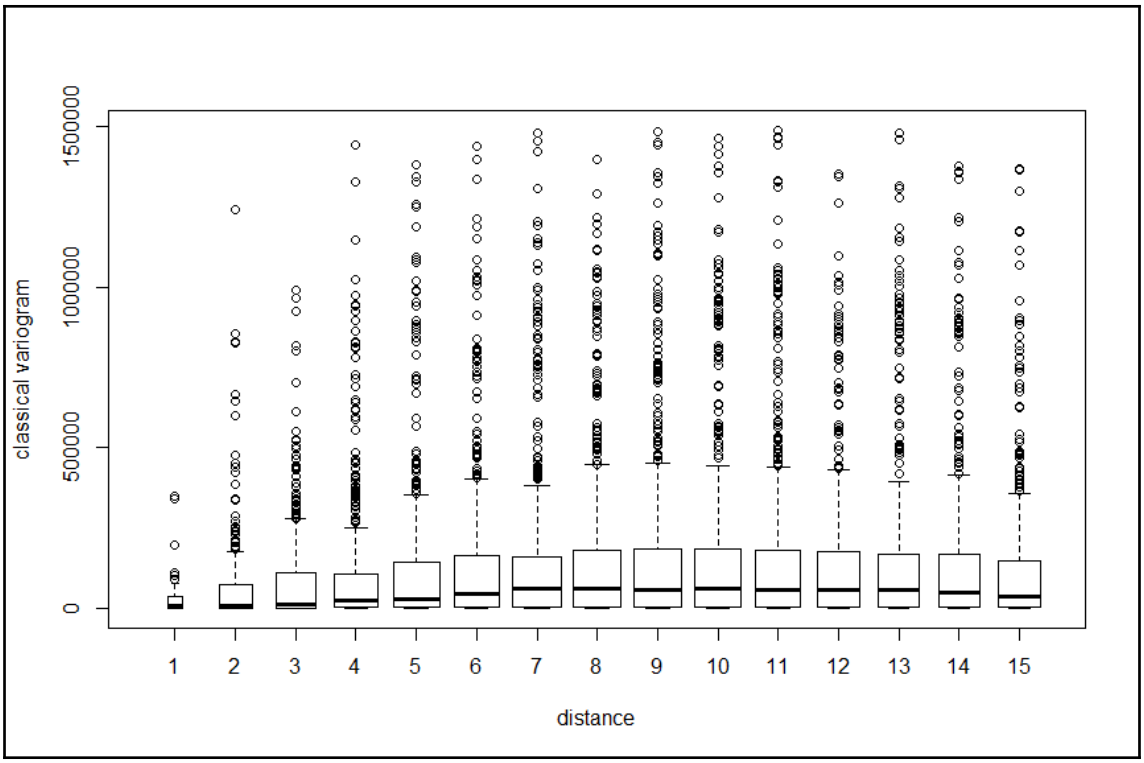

```
[1] "geodata"
```


Y
333000
332000
331000
330000
178000
179000
180000
181000
182000
X


Variogram Cloud
semivariance
0
500000
1000000
1500000
0
1000
2000
3000
4000
distance
Binned Variogram
semivariance
0
50000
100000
150000
0
1000
2000
3000
4000
distance




```
Number of data points: 155

Coordinates summary
         x      y
min 178605 329714
max 181390 333611

Distance summary
       min        max
  43.93177 4440.76435

Data summary
     Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
 113.0000  198.0000  326.0000  469.7161  674.5000 1839.0000
```



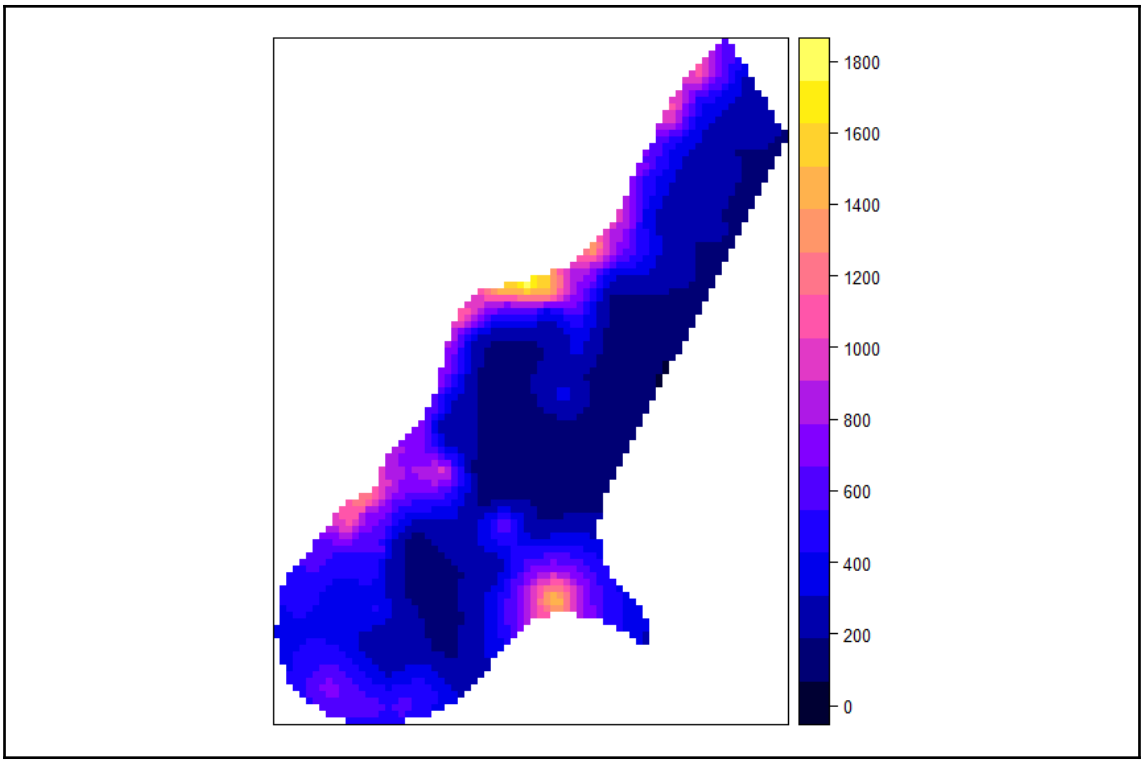

```
variog: computing omnidirectional variogram
variofit: covariance model used is matern
variofit: weights used: npairs
variofit: minimisation function used: optim
initial values not provided - running the default searchvariofit: searching for best initial value ... selected
values:
             sigmasq     phi   tausq kappa
initial.value "127667.62" "0"   "0"   "0.5"
status        "est"       "est" "est" "fix"
loss value: 10312523430301.1
variofit: model parameters estimated by WLS (weighted least squares):
covariance model is: matern with fixed kappa = 0.5 (exponential)
parameter estimates:
     tausq    sigmasq        phi
  3537.623 131205.241      0.000
Practical Range with cor=0.05 for asymptotic range: 0.0001159668

variofit: minimised weighted sum of squares = 9.715118e+12
```

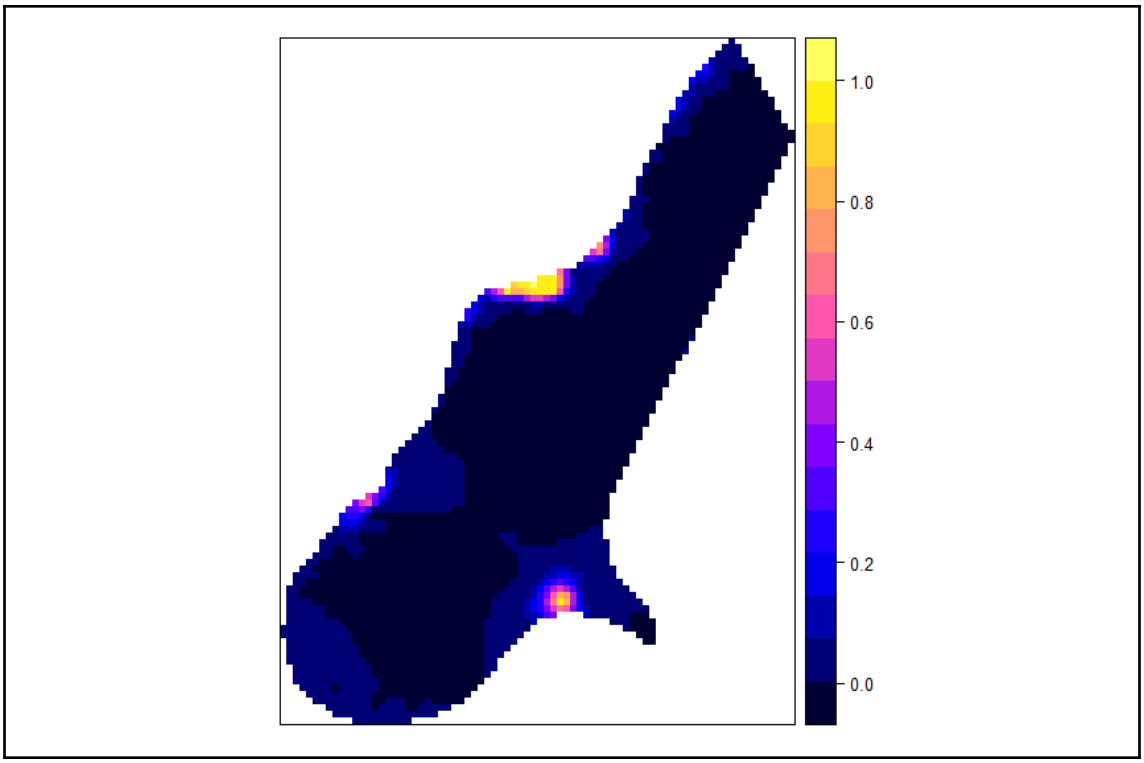
```
   short                                        long
1    Nug                                 Nug (nugget)
2    Exp                            Exp (exponential)
3    Sph                              Sph (spherical)
4    Gau                               Gau (gaussian)
5    Exc        Exclass (Exponential class/stable)
6    Mat                                 Mat (Matern)
7    Ste Mat (Matern, M. Stein's parameterization)
8    Cir                               Cir (circular)
9    Lin                                 Lin (linear)
10   Bes                                 Bes (bessel)
11   Pen                        Pen (pentaspherical)
12   Per                               Per (periodic)
13   Wav                                   Wav (wave)
14   Hol                                   Hol (hole)
15   Log                           Log (logarithmic)
16   Pow                                 Pow (power)
17   Spl                                 Spl (spline)
18   Leg                               Leg (Legendre)
19   Err                    Err (Measurement error)
20   Int                               Int (Intercept)
```

```
  model    psill    range
1   Nug  24802.7   0.0000
2   Sph 134746.5 831.0127
```

```
  model    psill    range kappa
1   Nug   9486.4   0.0000   0.0
2   Mat 163285.3 381.7076   0.5
```

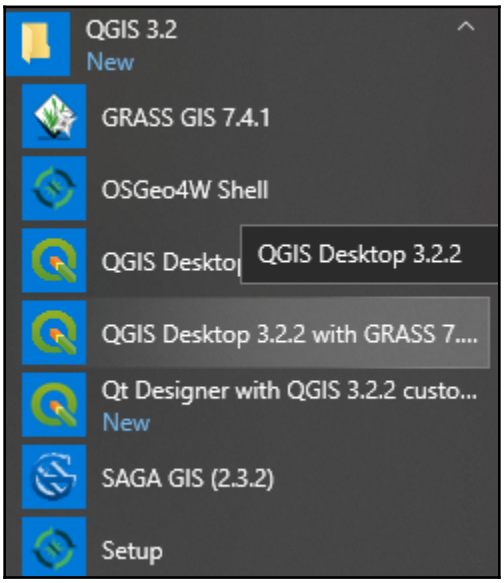
```
[1] "var1.pred" "var1.var"
```

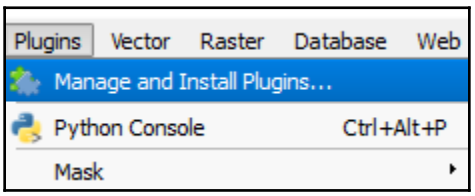

1800
1600
1400
1200
1000
800
600
400
200
0

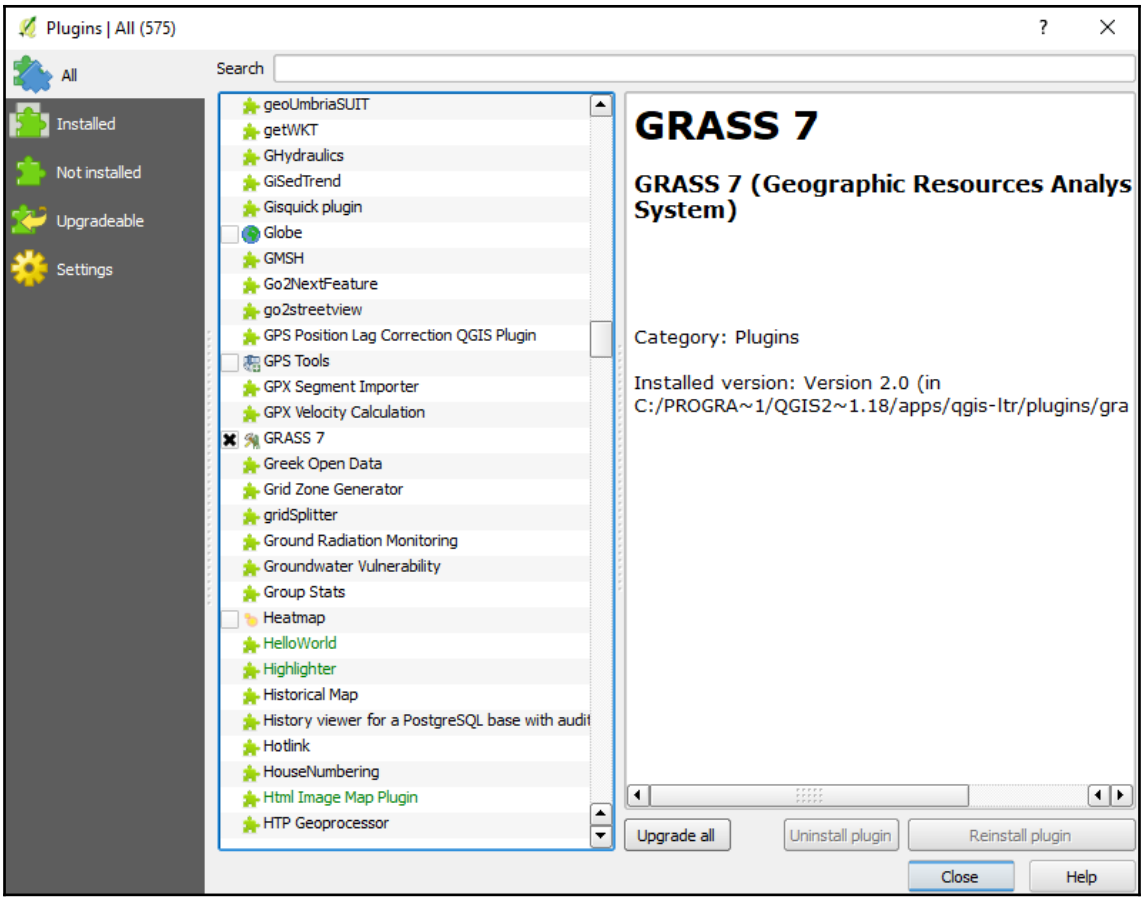


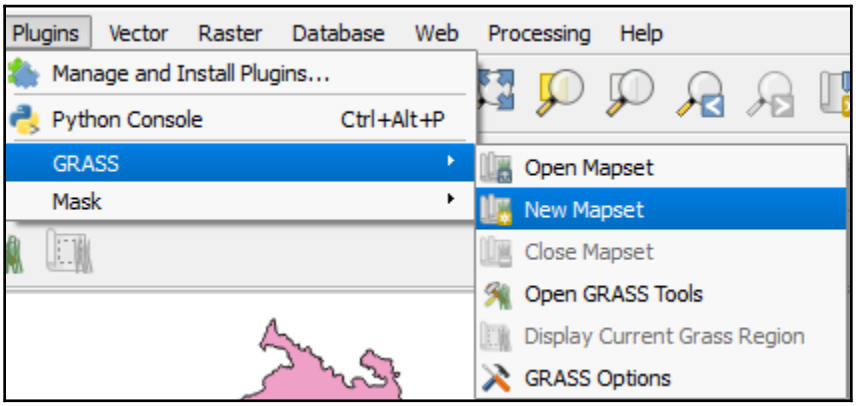

```
[1] 0.4787689
```

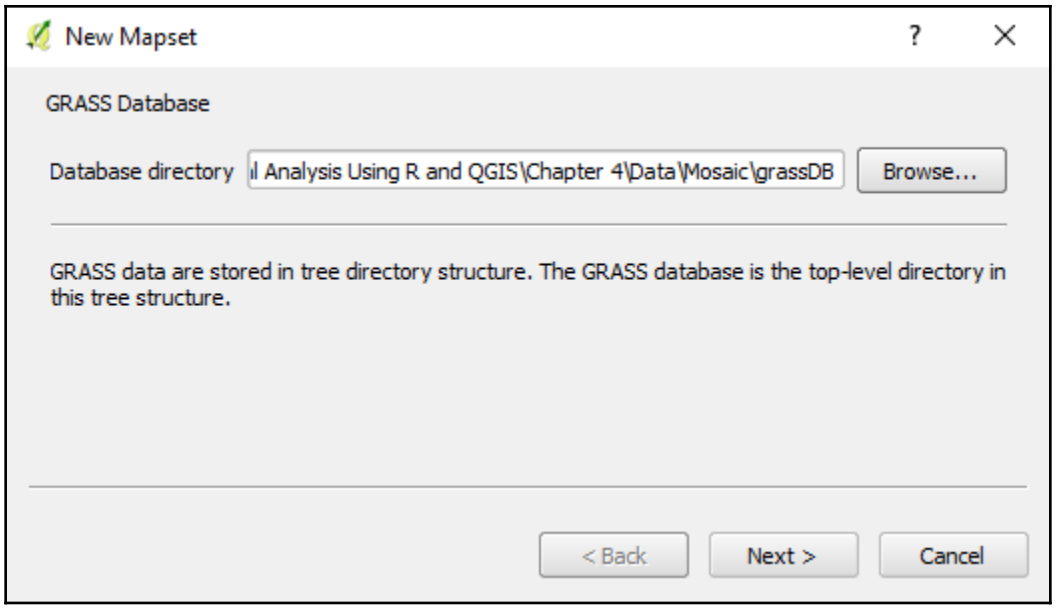
Chapter 8: GRASS, Graphical Modelers, and Web Mapping

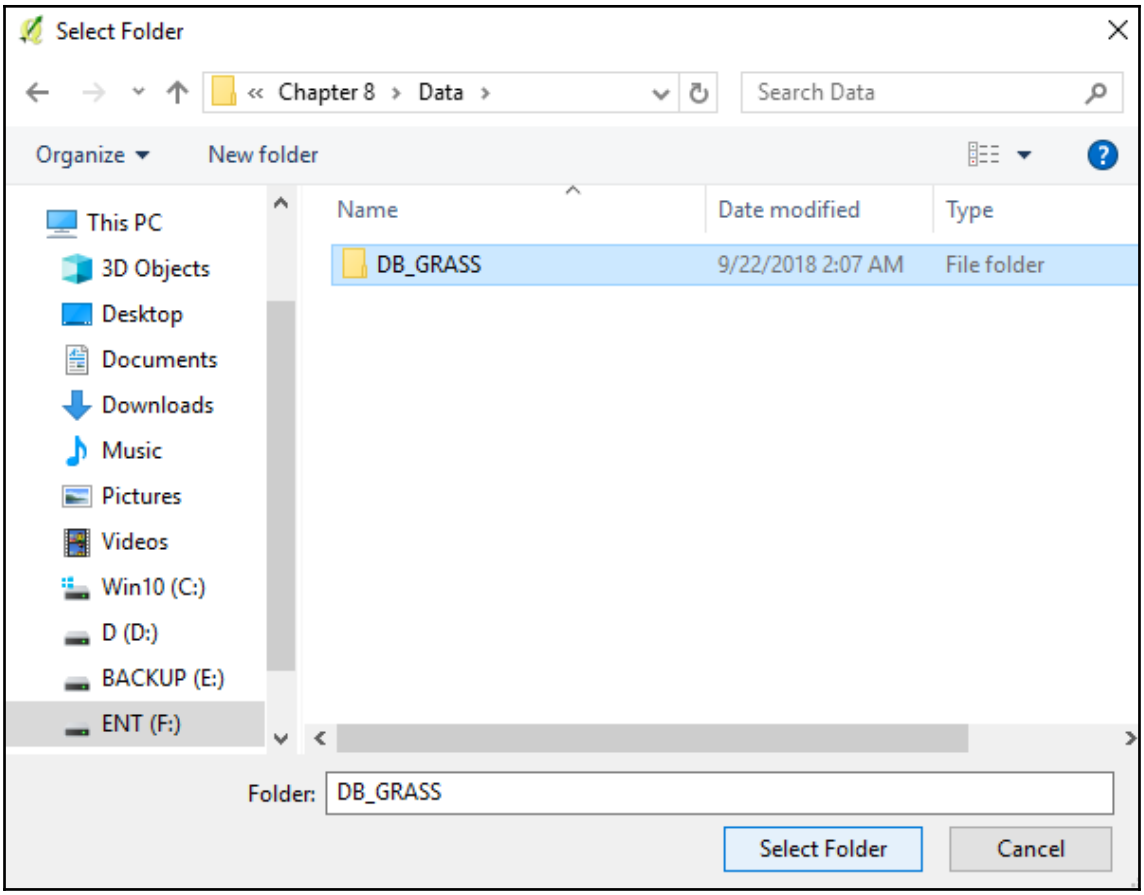


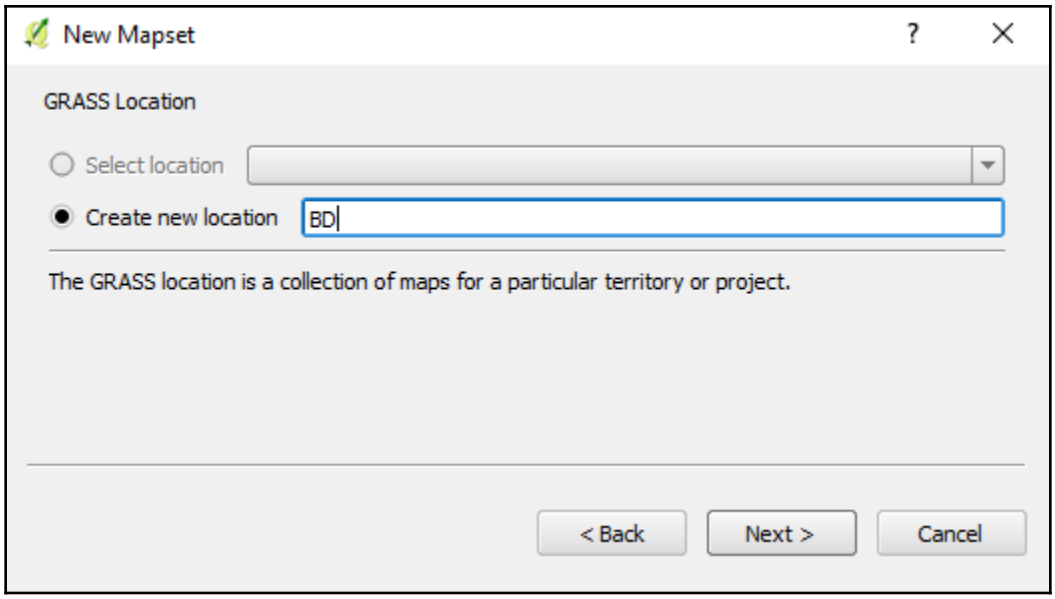


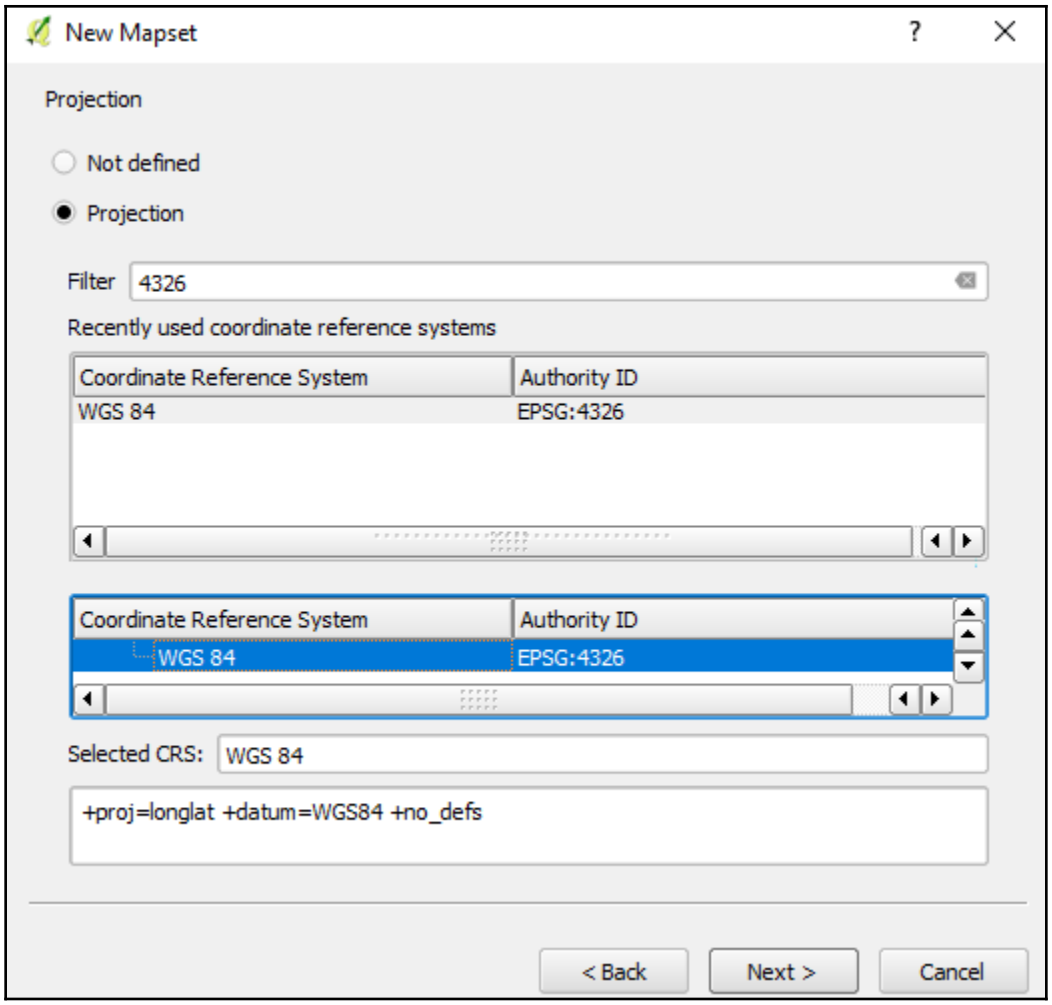

Plugins | All (575)
All
Installed
Not installed
Upgradeable
Settings
Search
geoUmbriaSUIT
getWKT
GHydraulics
GiSedTrend
Gisquick plugin
Globe
GMSH
Go2NextFeature
go2streetview
GPS Position Lag Correction QGIS Plugin
GPS Tools
GPX Segment Importer
GPX Velocity Calculation
GRASS 7
Greek Open Data
Grid Zone Generator
gridSplitter
Ground Radiation Monitoring
Groundwater Vulnerability
Group Stats
Heatmap
HelloWorld
Highlighter
Historical Map
History viewer for a PostgreSQL base with audit
Hotlink
HouseNumbering
Html Image Map Plugin
HTP Geoprocessor
GRASS 7
GRASS 7 (Geographic Resources Analys System)
Category: Plugins
Installed version: Version 2.0 (in C:/PROGRA~1/QGIS2~1.18/apps/qgis-ltr/plugins/gra
Upgrade all
Uninstall plugin
Reinstall plugin
Close
Help

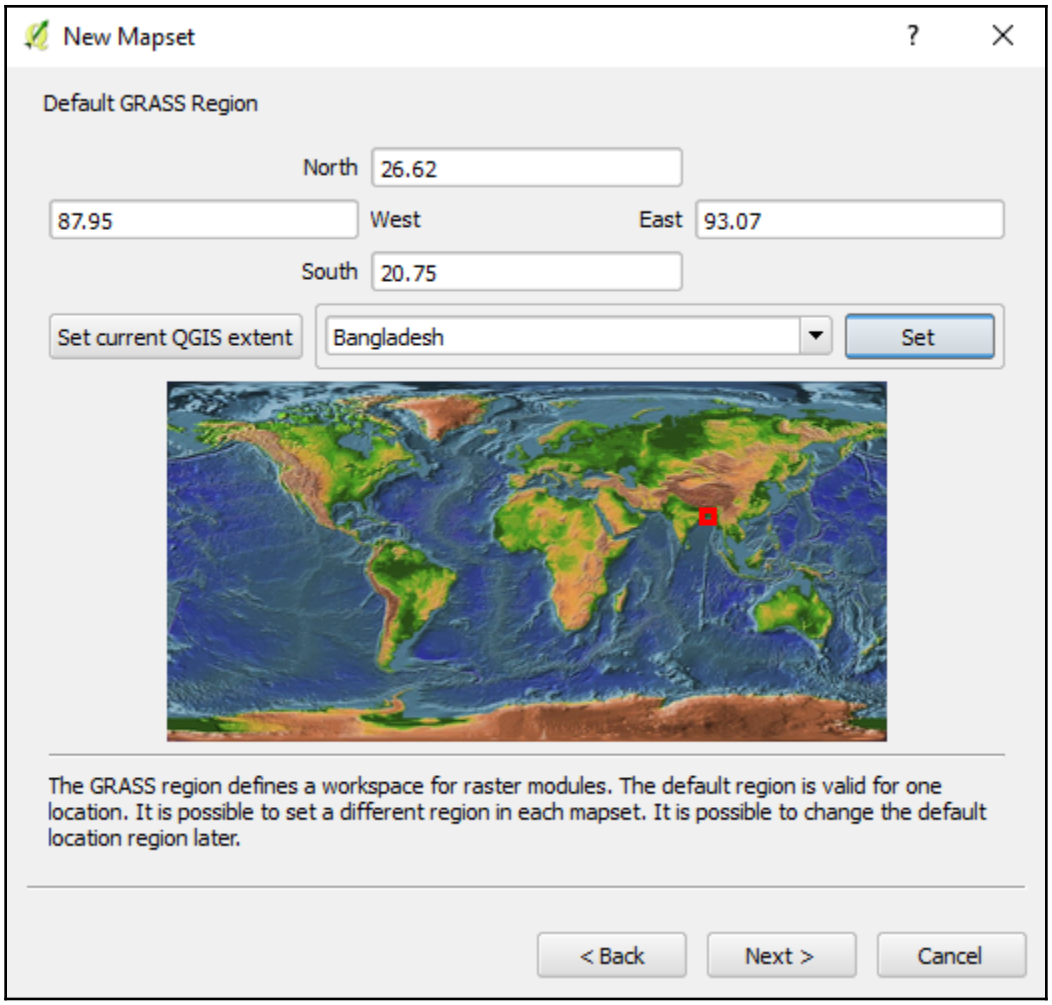

Plugins
Vector
Raster
Database
Web
Processing
Help
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
GRASS
Mask
Open Mapset
New Mapset
Close Mapset
Open GRASS Tools
Display Current Grass Region
GRASS Options

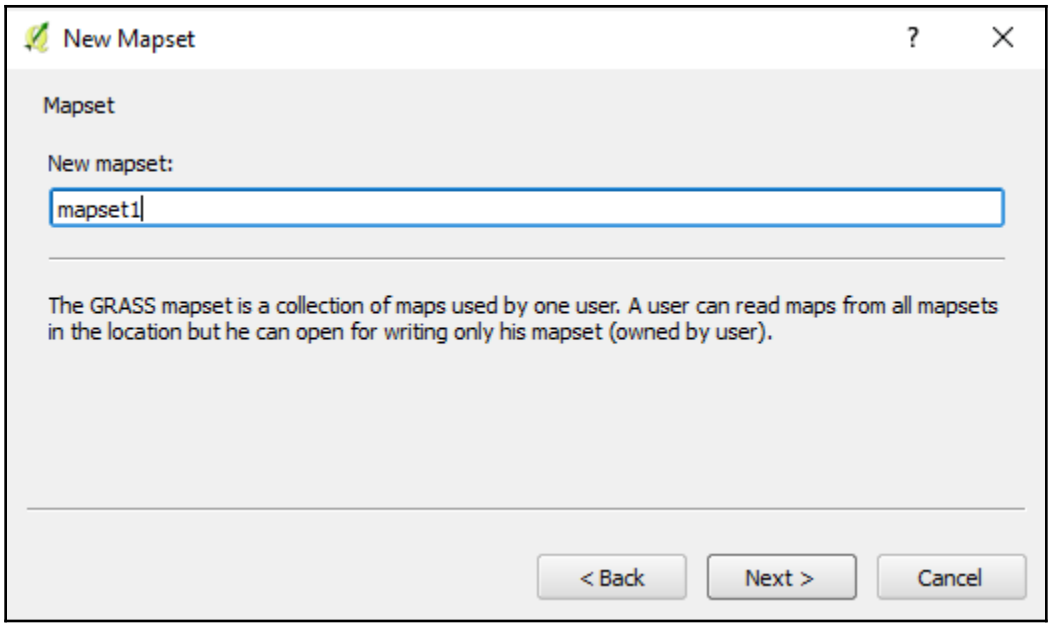

New Mapset
GRASS Database
Database directory
l Analysis Using R and QGIS\Chapter 4\Data\Mosaic\grassDB
Browse...
GRASS data are stored in tree directory structure. The GRASS database is the top-level directory in this tree structure.
< Back
Next >
Cancel

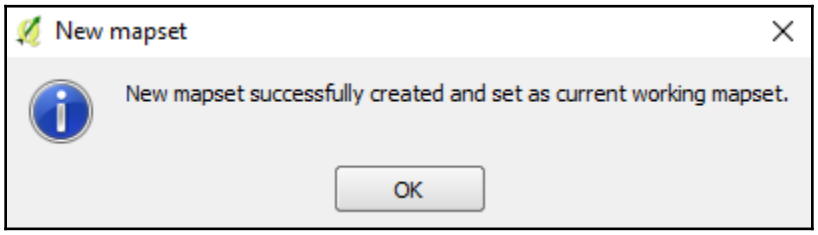

Select Folder
« Chapter 8 › Data ›
Search Data
Organize
New folder
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Win10 (C:)
D (D:)
BACKUP (E:)
ENT (F:)
Name
Date modified
Type
DB_GRASS
9/22/2018 2:07 AM
File folder
Folder:
DB_GRASS
Select Folder
Cancel

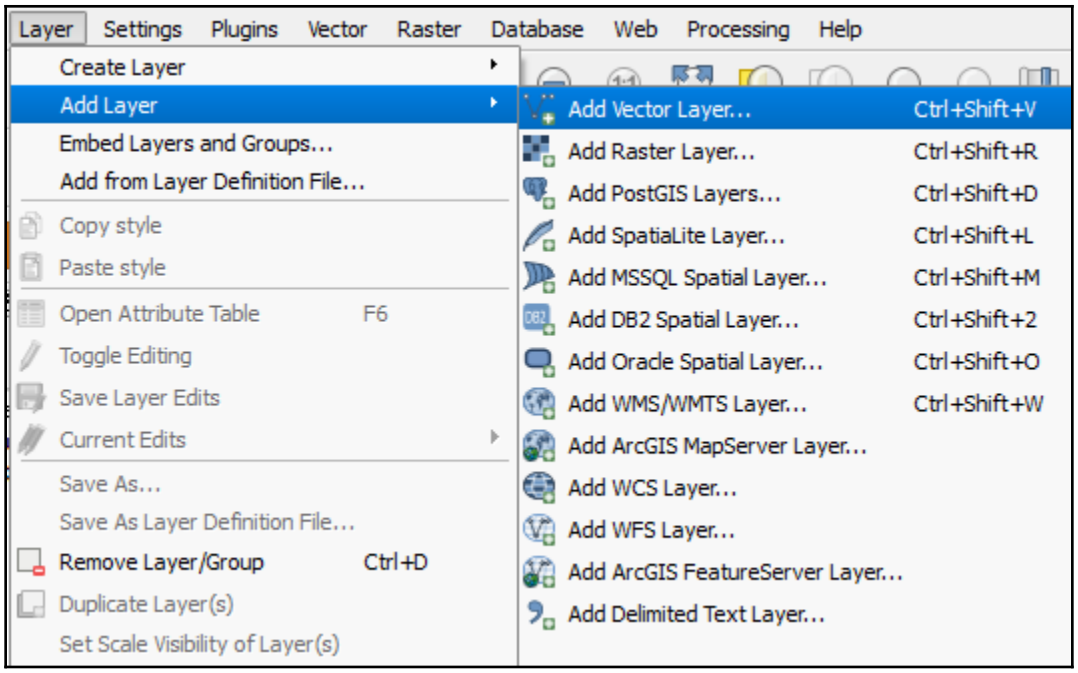

New Mapset
GRASS Location
Select location
Create new location
BD
The GRASS location is a collection of maps for a particular territory or project.
< Back
Next >
Cancel

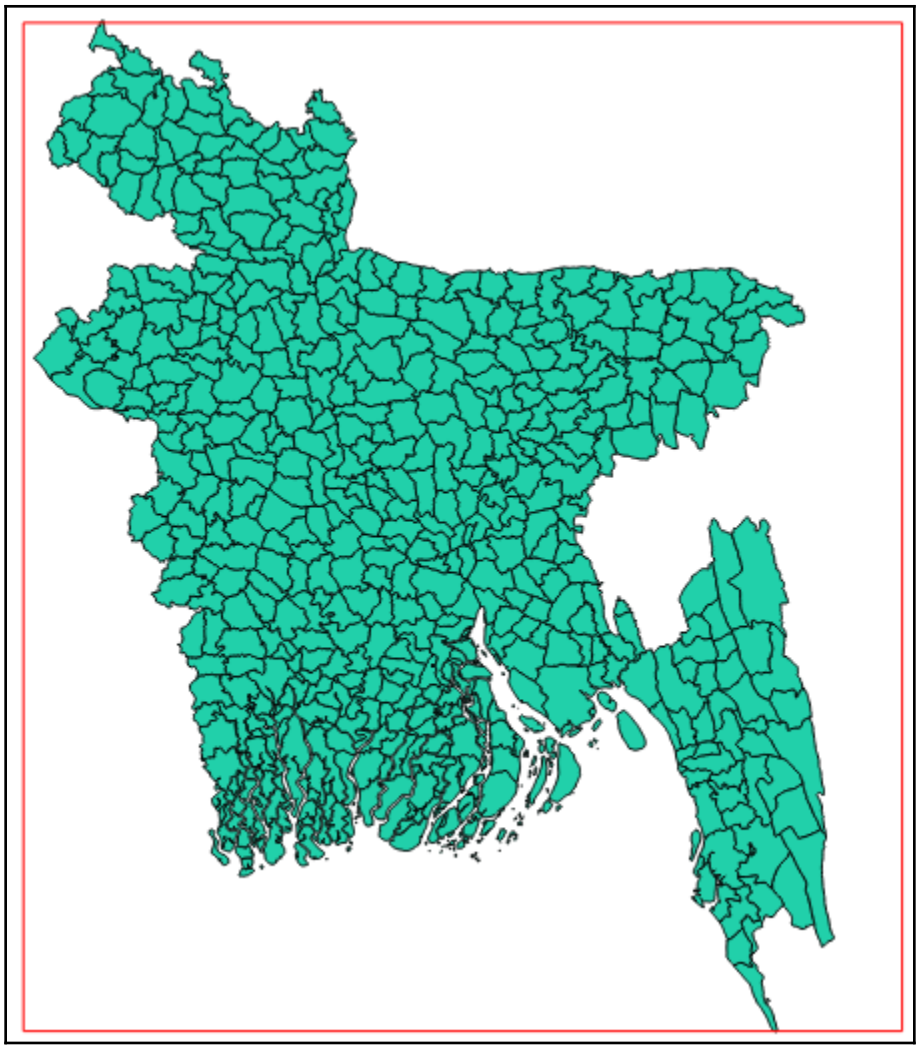

New Mapset
Projection
Not defined
Projection
Filter
4326
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
WGS 84
EPSG:4326
Coordinate Reference System
Authority ID
WGS 84
EPSG:4326
Selected CRS:
WGS 84
+proj=longlat +datum=WGS84 +no_defs
< Back
Next >
Cancel

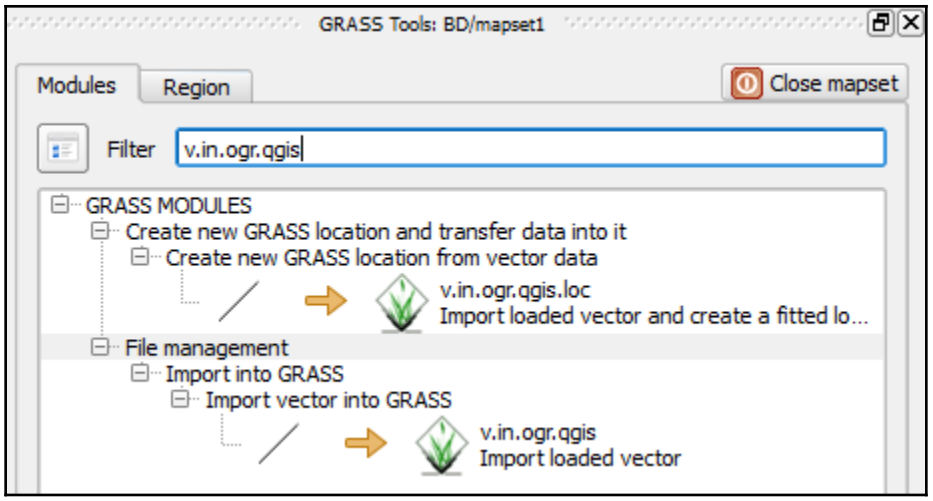

New Mapset
Default GRASS Region
North
26.62
87.95
West
East
93.07
South
20.75
Set current QGIS extent
Bangladesh
Set
The GRASS region defines a workspace for raster modules. The default region is valid for one location. It is possible to set a different region in each mapset. It is possible to change the default location region later.
< Back
Next >
Cancel

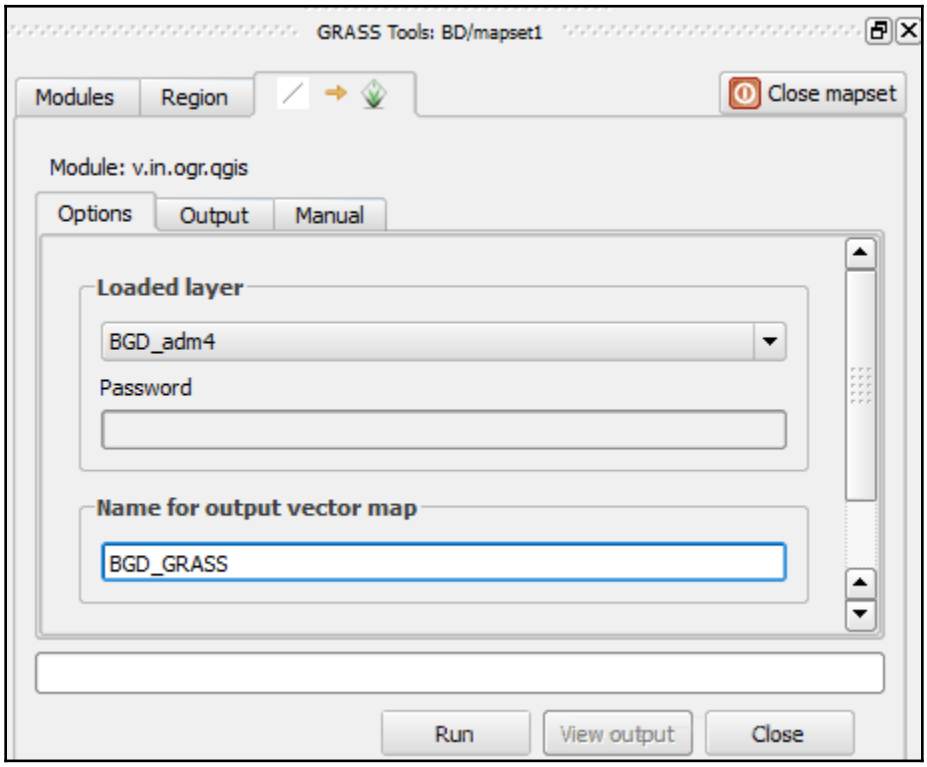

New Mapset
Mapset
New mapset:
mapset1
The GRASS mapset is a collection of maps used by one user. A user can read maps from all mapsets in the location but he can open for writing only his mapset (owned by user).
< Back
Next >
Cancel

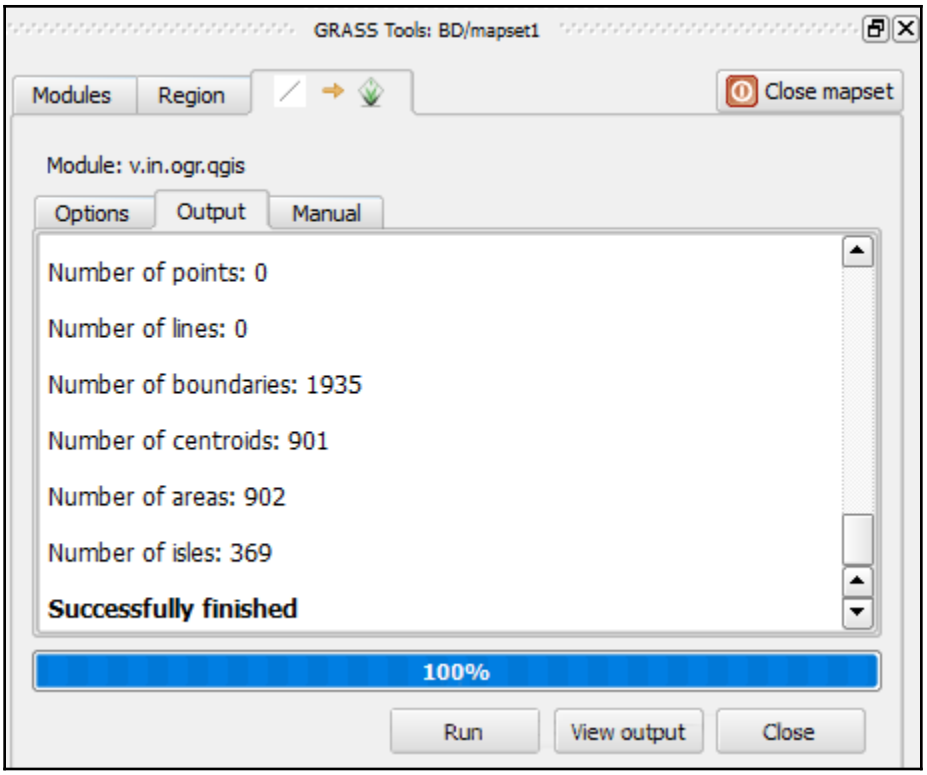

New mapset
New mapset successfully created and set as current working mapset.
OK

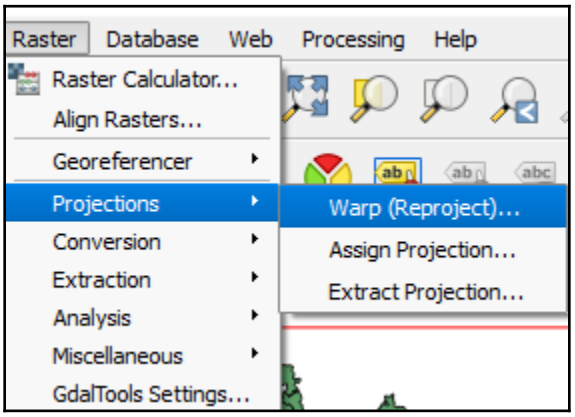

Layer
Settings
Plugins
Vector
Raster
Database
Web
Processing
Help
Create Layer
Add Layer
Embed Layers and Groups...
Add from Layer Definition File...
Copy style
Paste style
Open Attribute Table F6
Toggle Editing
Save Layer Edits
Current Edits
Save As...
Save As Layer Definition File...
Remove Layer/Group Ctrl+D
Duplicate Layer(s)
Set Scale Visibility of Layer(s)
Add Vector Layer... Ctrl+Shift+V
Add Raster Layer... Ctrl+Shift+R
Add PostGIS Layers... Ctrl+Shift+D
Add SpatiaLite Layer... Ctrl+Shift+L
Add MSSQL Spatial Layer... Ctrl+Shift+M
Add DB2 Spatial Layer... Ctrl+Shift+2
Add Oracle Spatial Layer... Ctrl+Shift+O
Add WMS/WMTS Layer... Ctrl+Shift+W
Add ArcGIS MapServer Layer...
Add WCS Layer...
Add WFS Layer...
Add ArcGIS FeatureServer Layer...
Add Delimited Text Layer...

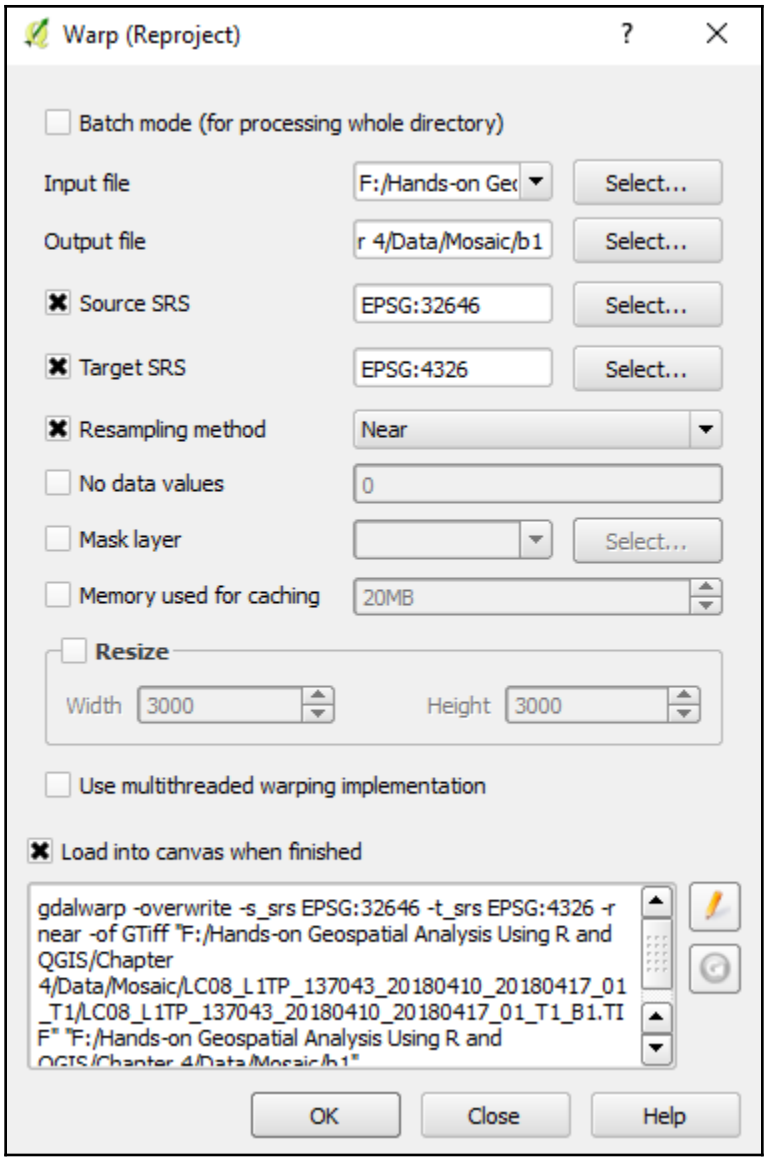


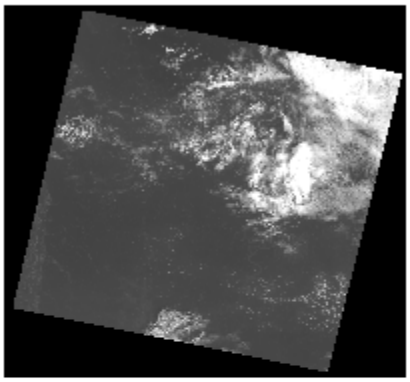

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Filter
v.in.ogr.qgis
GRASS MODULES
Create new GRASS location and transfer data into it
Create new GRASS location from vector data
v.in.ogr.qgis.loc
Import loaded vector and create a fitted lo...
File management
Import into GRASS
Import vector into GRASS
v.in.ogr.qgis
Import loaded vector

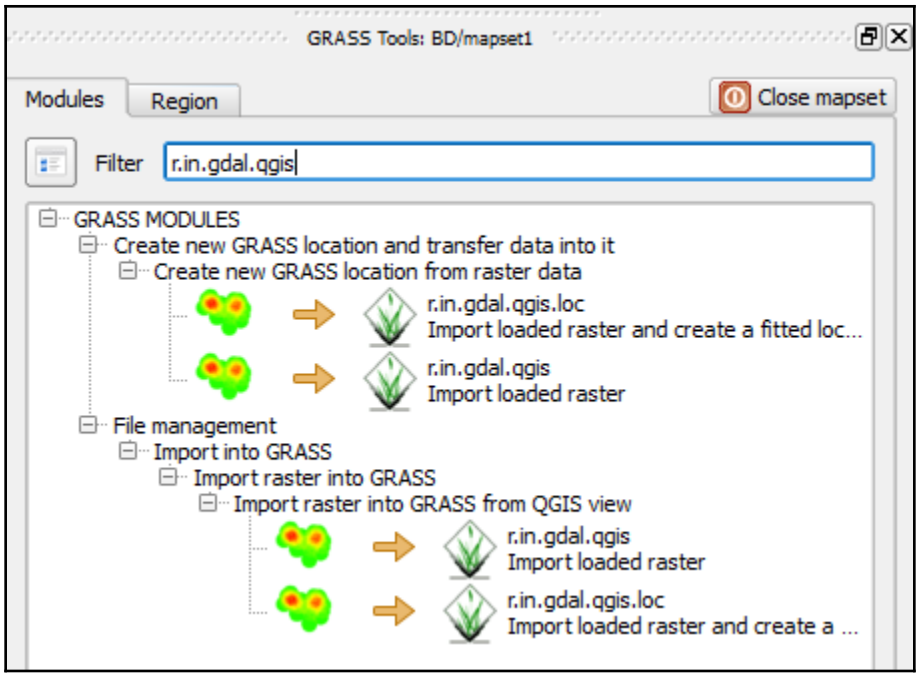

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Module: v.in.ogr.qgis
Options
Output
Manual
Loaded layer
BGD_adm4
Password
Name for output vector map
BGD_GRASS
Run
View output
Close

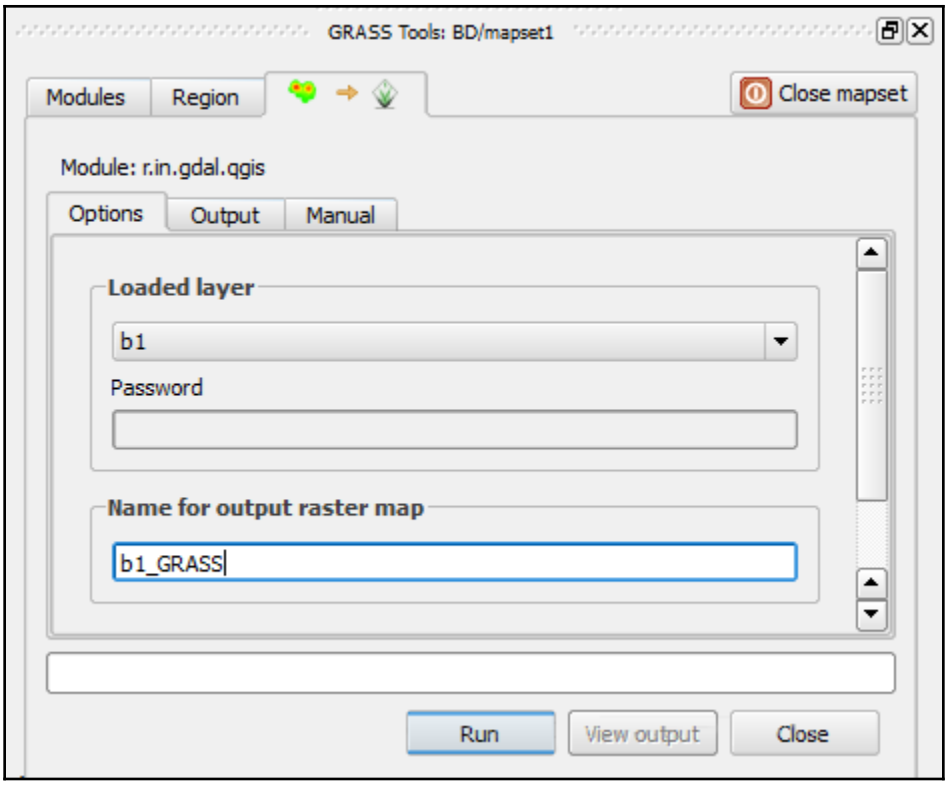

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Module: v.in.ogr.qgis
Options
Output
Manual
Number of points: 0
Number of lines: 0
Number of boundaries: 1935
Number of centroids: 901
Number of areas: 902
Number of isles: 369
Successfully finished
100%
Run
View output
Close

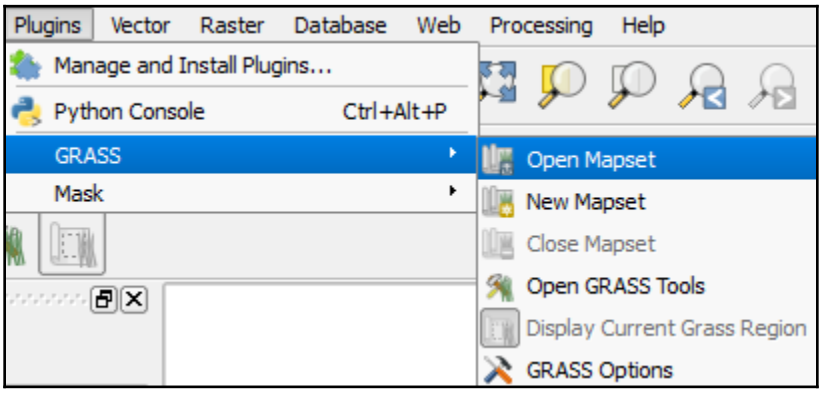

Raster
Database
Web
Processing
Help
Raster Calculator...
Align Rasters...
Georeferencer
Projections
Conversion
Extraction
Analysis
Miscellaneous
GdalTools Settings...
Warp (Reproject)...
Assign Projection...
Extract Projection...

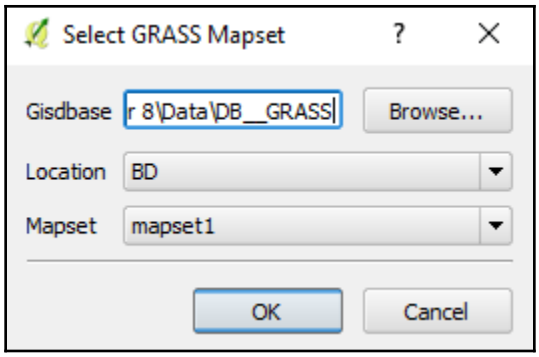

Warp (Reproject)
Batch mode (for processing whole directory)
Input file
F:/Hands-on Ge
Select...
Output file
r 4/Data/Mosaic/b1
Select...
Source SRS
EPSG:32646
Select...
Target SRS
EPSG:4326
Select...
Resampling method
Near
No data values
0
Mask layer
Select...
Memory used for caching
20MB
Resize
Width
3000
Height
3000
Use multithreaded warping implementation
Load into canvas when finished
gdalwarp -overwrite -s_srs EPSG:32646 -t_srs EPSG:4326 -r near -of GTiff "F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 4/Data/Mosaic/LC08_L1TP_137043_20180410_20180417_01_T1/LC08_L1TP_137043_20180410_20180417_01_T1_B1.TIF" "F:/Hands-on Geospatial Analysis Using R and
OK
Close
Help

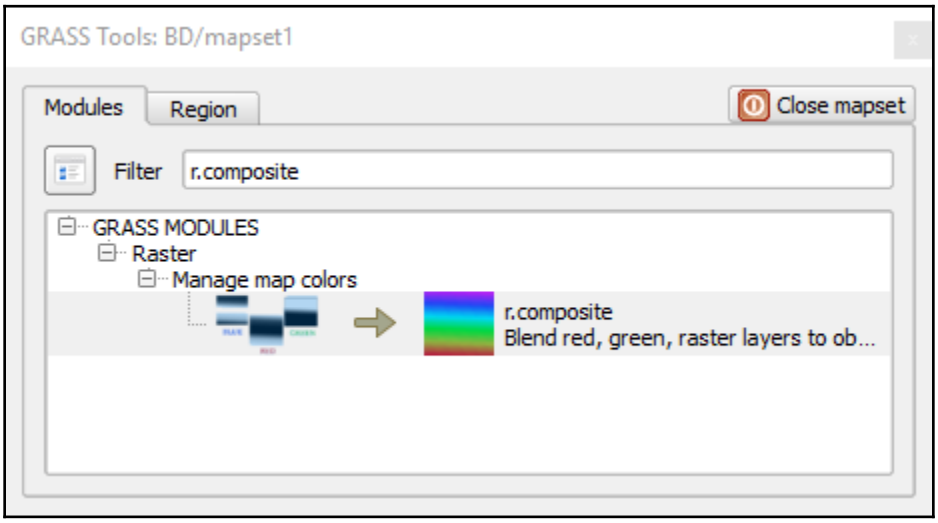


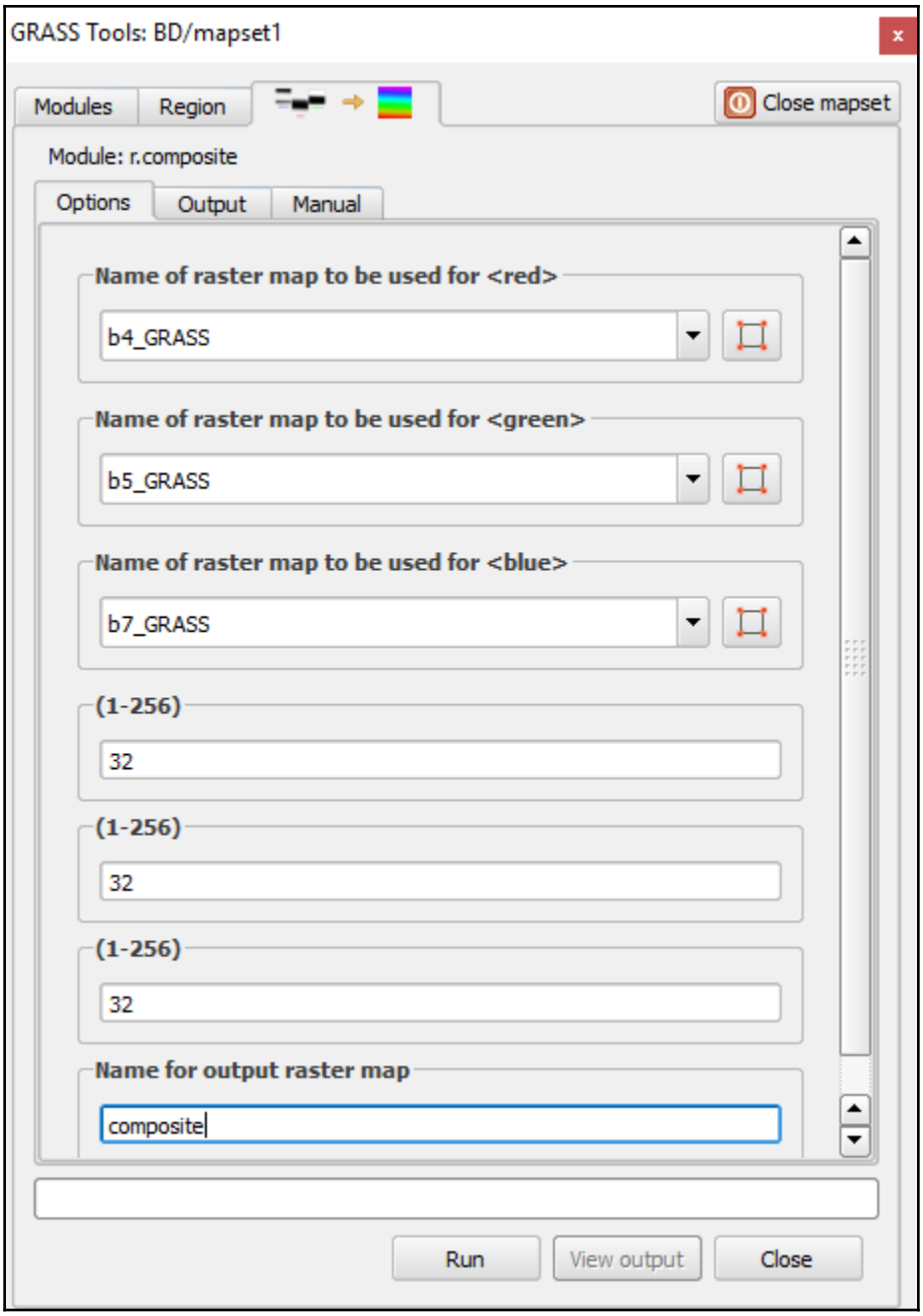

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Filter
r.in.gdal.qgis
GRASS MODULES
Create new GRASS location and transfer data into it
Create new GRASS location from raster data
r.in.gdal.qgis.loc
Import loaded raster and create a fitted loc...
r.in.gdal.qgis
Import loaded raster
File management
Import into GRASS
Import raster into GRASS
Import raster into GRASS from QGIS view
r.in.gdal.qgis
Import loaded raster
r.in.gdal.qgis.loc
Import loaded raster and create a ...

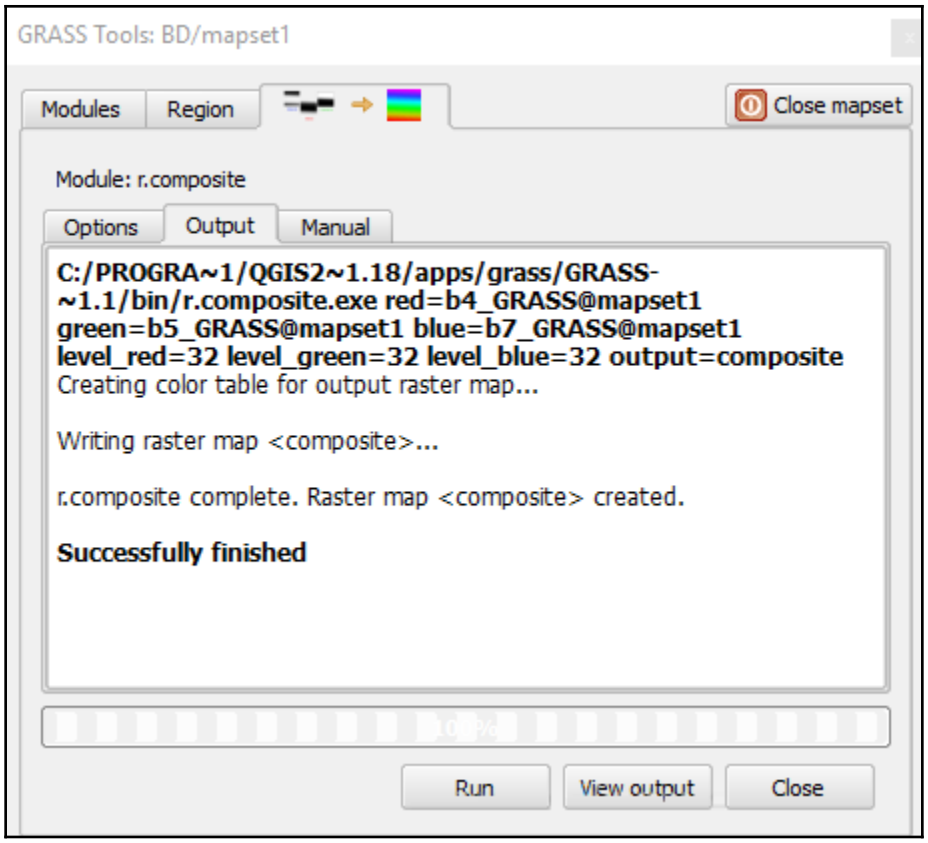

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Module: r.in.gdal.qgis
Options
Output
Manual
Loaded layer
b1
Password
Name for output raster map
b1_GRASS
Run
View output
Close

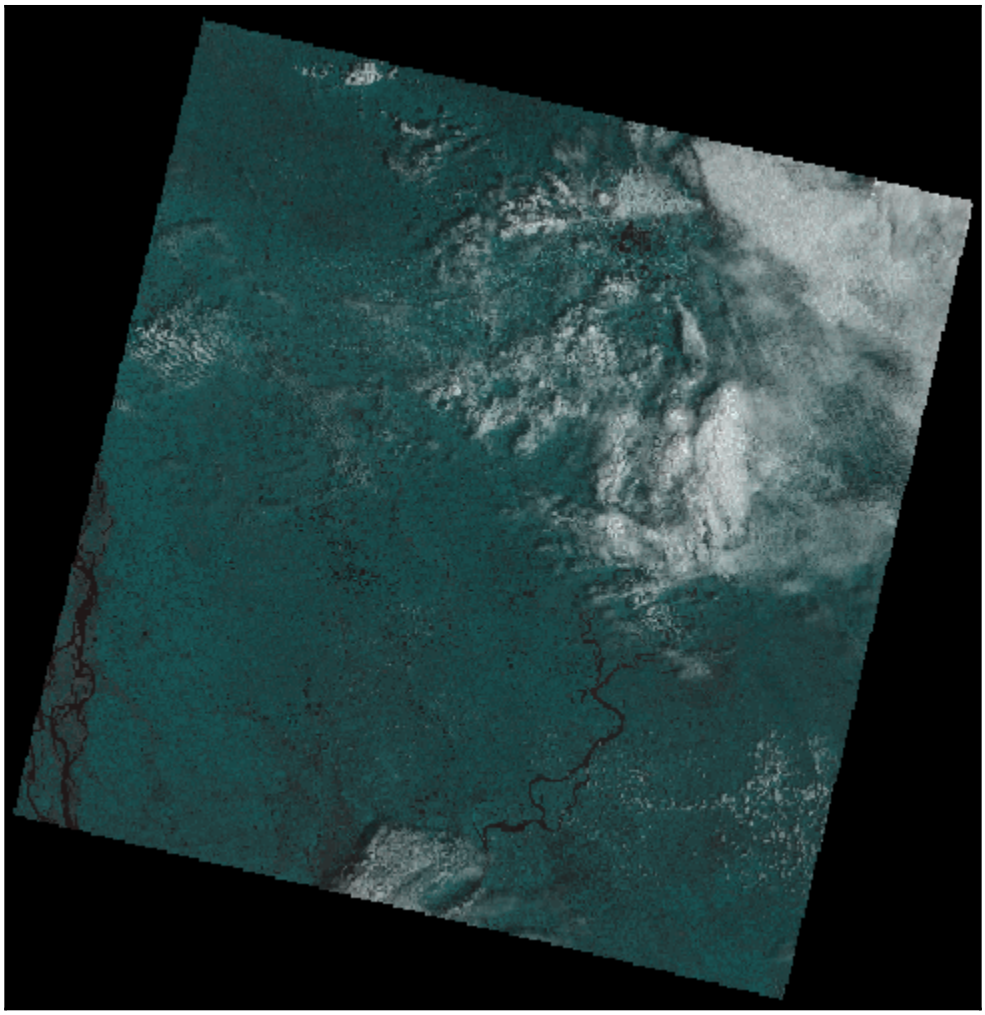

Plugins
Vector
Raster
Database
Web
Processing
Help
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
GRASS
Mask
Open Mapset
New Mapset
Close Mapset
Open GRASS Tools
Display Current Grass Region
GRASS Options

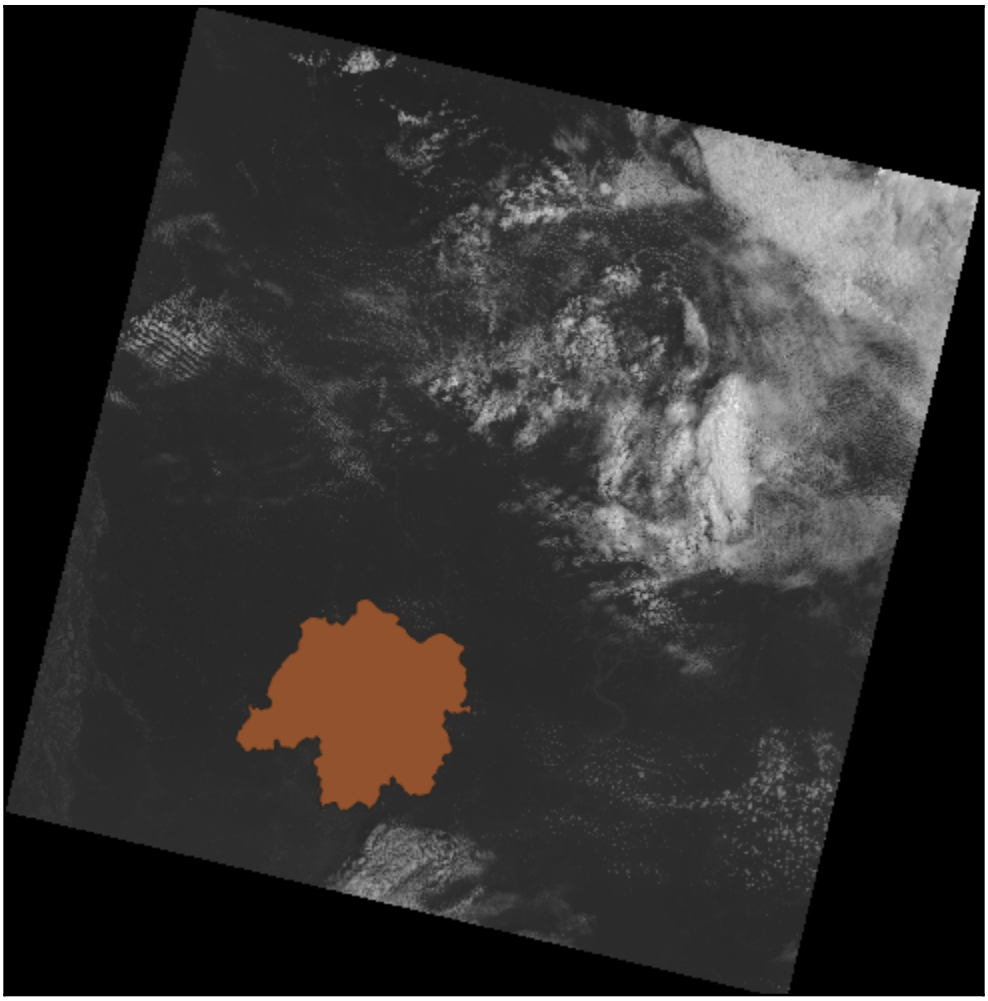

Select GRASS Mapset
Gisdbase
r 8\Data\DB__GRASS
Browse...
Location
BD
Mapset
mapset1
OK
Cancel

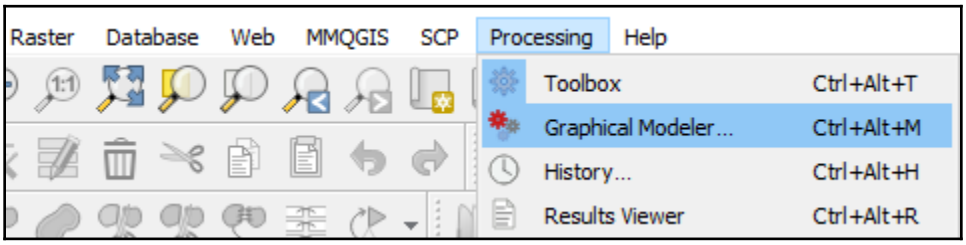

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Filter
r.composite
GRASS MODULES
Raster
Manage map colors
r.composite
Blend red, green, raster layers to ob...

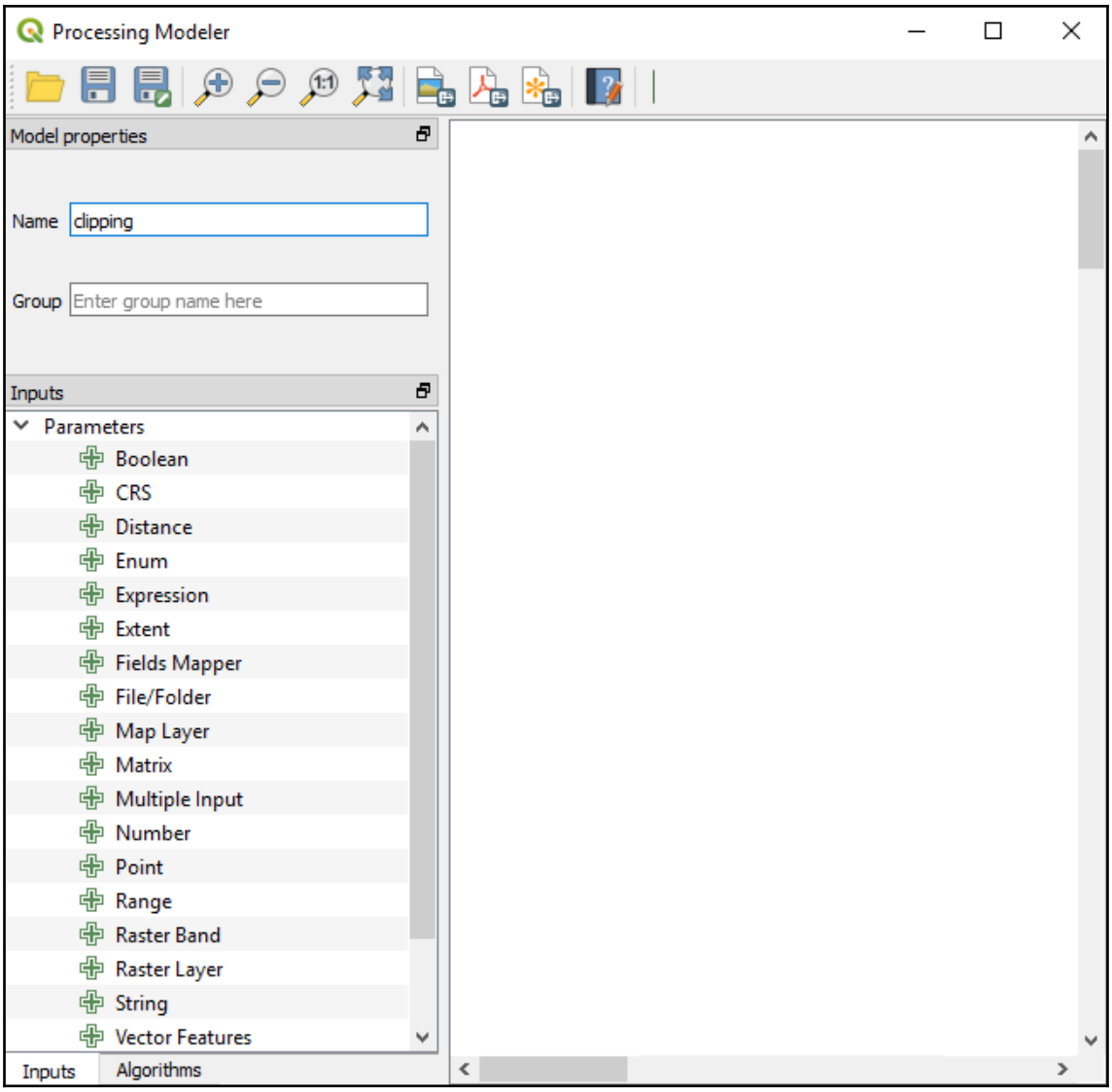

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Module: r.composite
Options
Output
Manual
Name of raster map to be used for <red>
b4_GRASS
Name of raster map to be used for <green>
b5_GRASS
Name of raster map to be used for <blue>
b7_GRASS
(1-256)
32
(1-256)
32
(1-256)
32
Name for output raster map
composite
Run
View output
Close

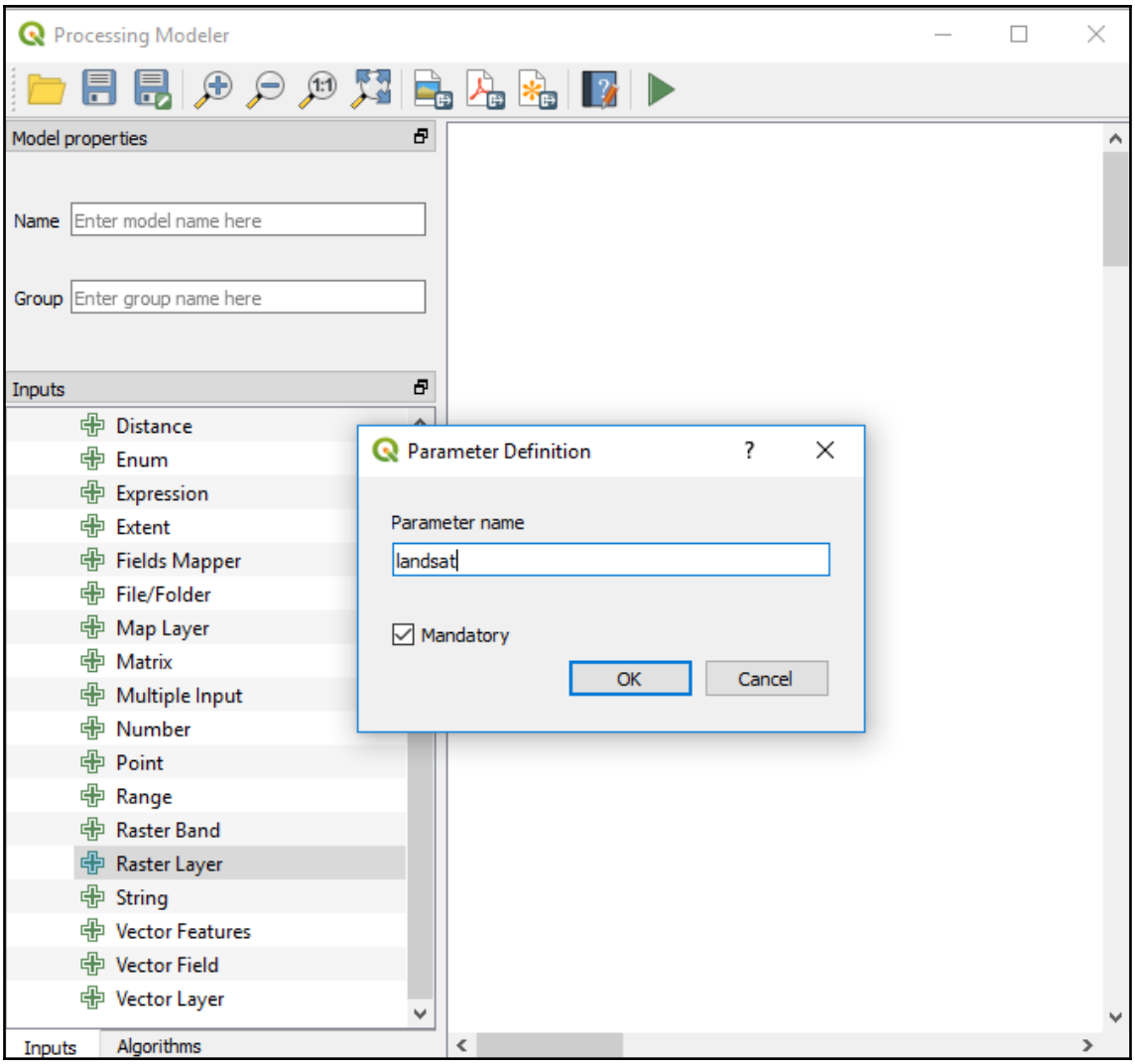

GRASS Tools: BD/mapset1
Modules
Region
Close mapset
Module: r.composite
Options
Output
Manual
C:/PROGRA~1/QGIS2~1.18/apps/grass/GRASS-~1.1/bin/r.composite.exe red=b4_GRASS@mapset1 green=b5_GRASS@mapset1 blue=b7_GRASS@mapset1 level_red=32 level_green=32 level_blue=32 output=composite
Creating color table for output raster map...
Writing raster map <composite>...
r.composite complete. Raster map <composite> created.
Successfully finished
Run
View output
Close

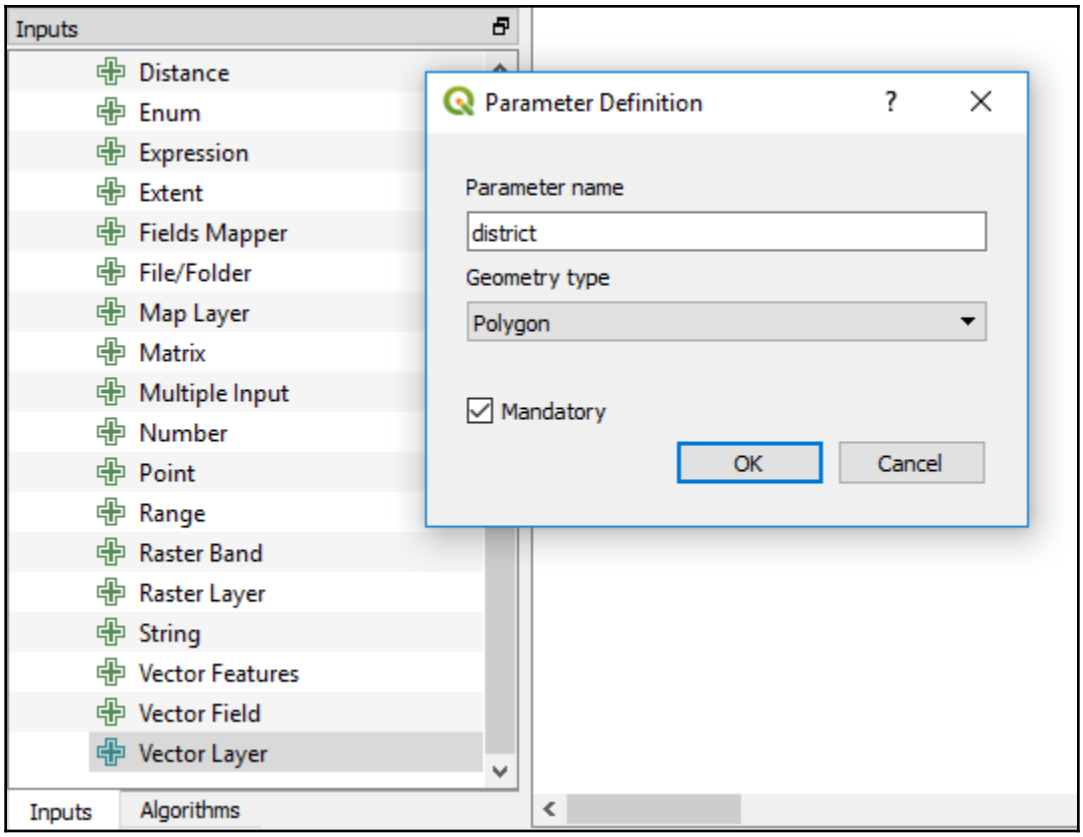


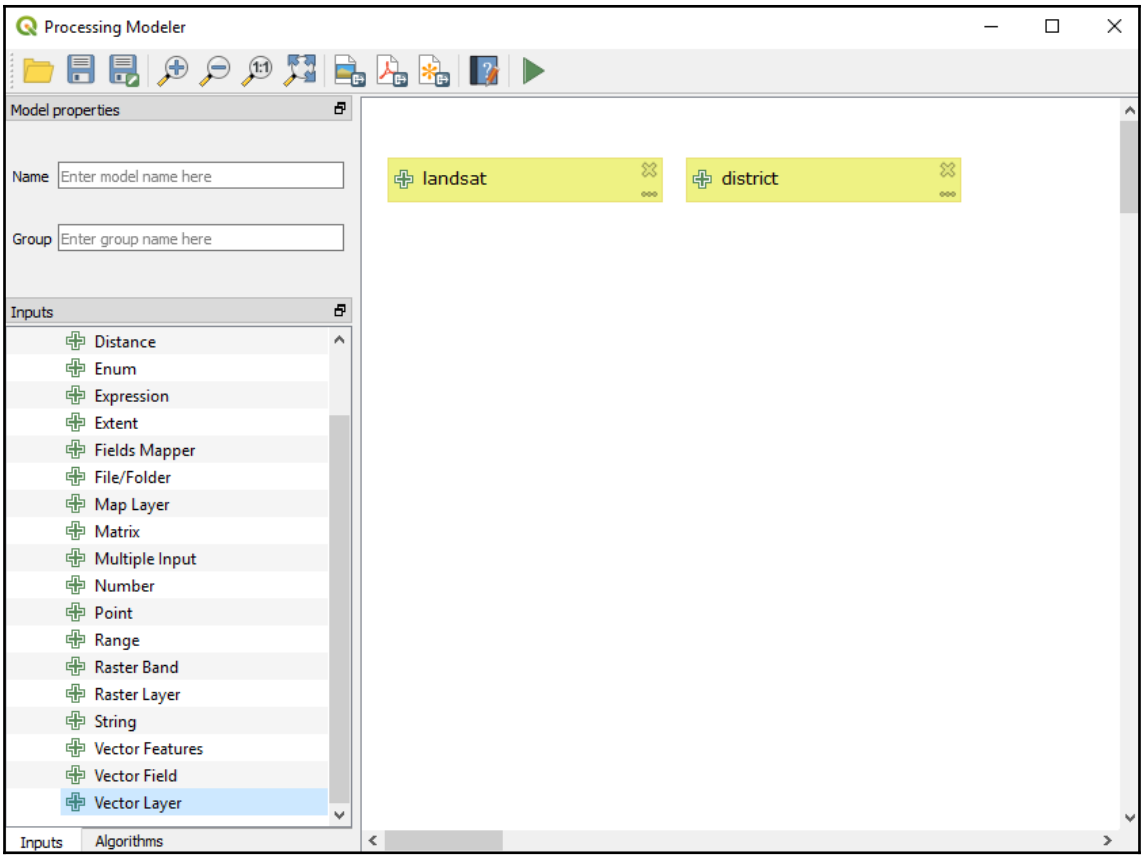


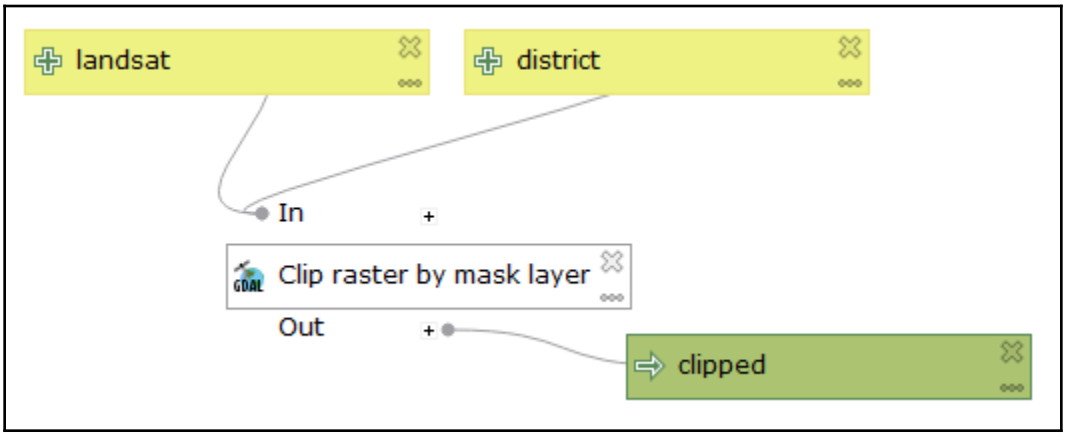

Raster
Database
Web
MMQGIS
SCP
Processing
Help
Toolbox
Ctrl+Alt+T
Graphical Modeler...
Ctrl+Alt+M
History...
Ctrl+Alt+H
Results Viewer
Ctrl+Alt+R

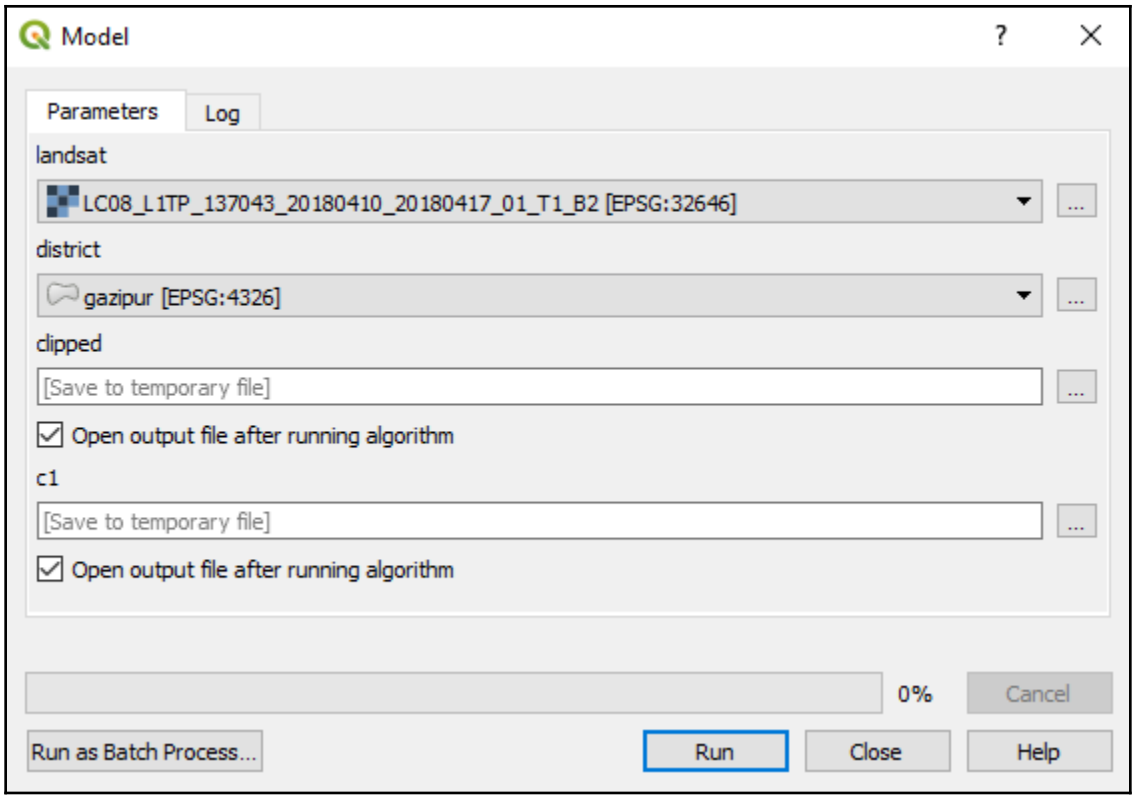

Processing Modeler
Model properties
Name
clipping
Group
Enter group name here
Inputs
Parameters
Boolean
CRS
Distance
Enum
Expression
Extent
Fields Mapper
File/Folder
Map Layer
Matrix
Multiple Input
Number
Point
Range
Raster Band
Raster Layer
String
Vector Features
Inputs
Algorithms

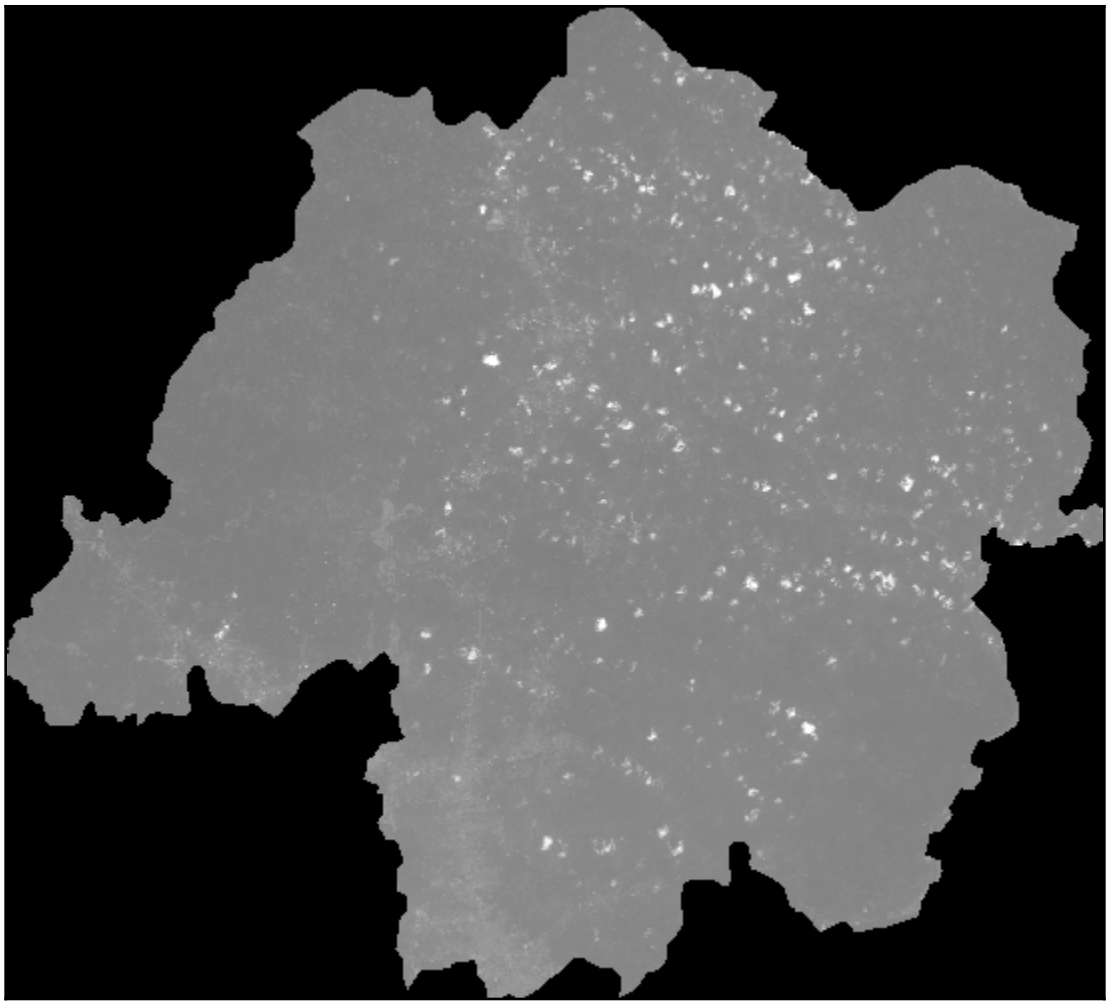

Processing Modeler
Model properties
Name
Enter model name here
Group
Enter group name here
Inputs
Distance
Enum
Expression
Extent
Fields Mapper
File/Folder
Map Layer
Matrix
Multiple Input
Number
Point
Range
Raster Band
Raster Layer
String
Vector Features
Vector Field
Vector Layer
Inputs
Algorithms
Parameter Definition
Parameter name
landsat
Mandatory
OK
Cancel

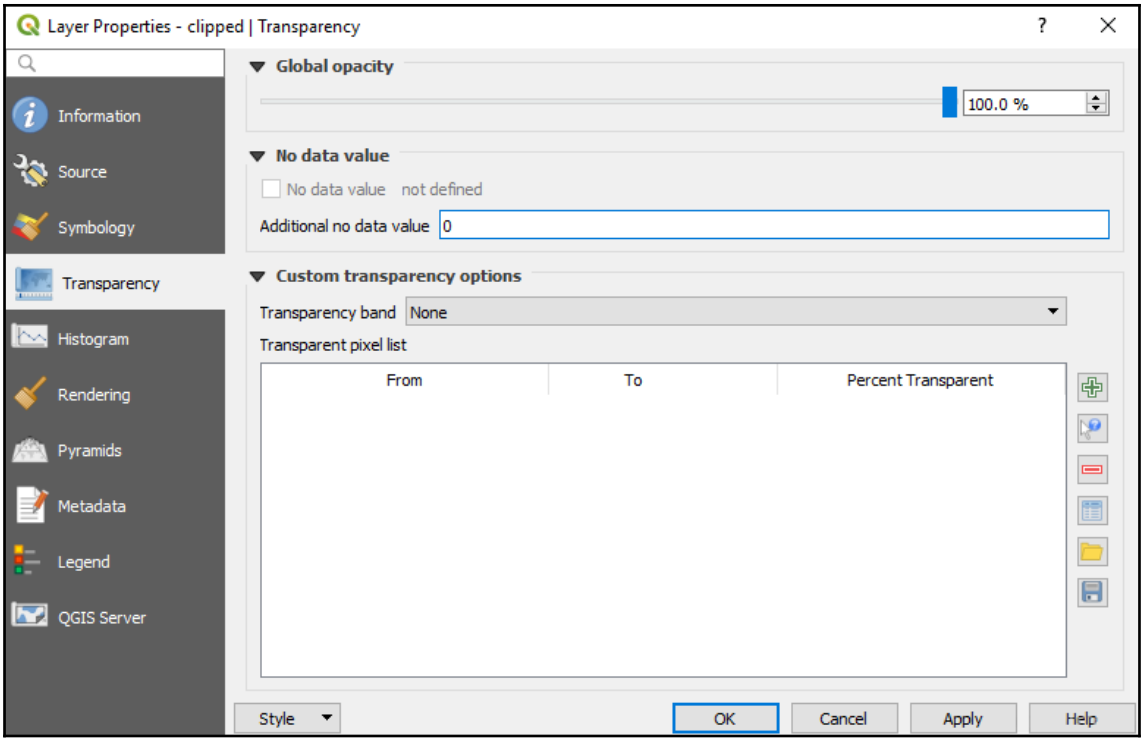

Inputs
Distance
Enum
Expression
Extent
Fields Mapper
File/Folder
Map Layer
Matrix
Multiple Input
Number
Point
Range
Raster Band
Raster Layer
String
Vector Features
Vector Field
Vector Layer
Inputs
Algorithms
Parameter Definition
Parameter name
district
Geometry type
Polygon
Mandatory
OK
Cancel

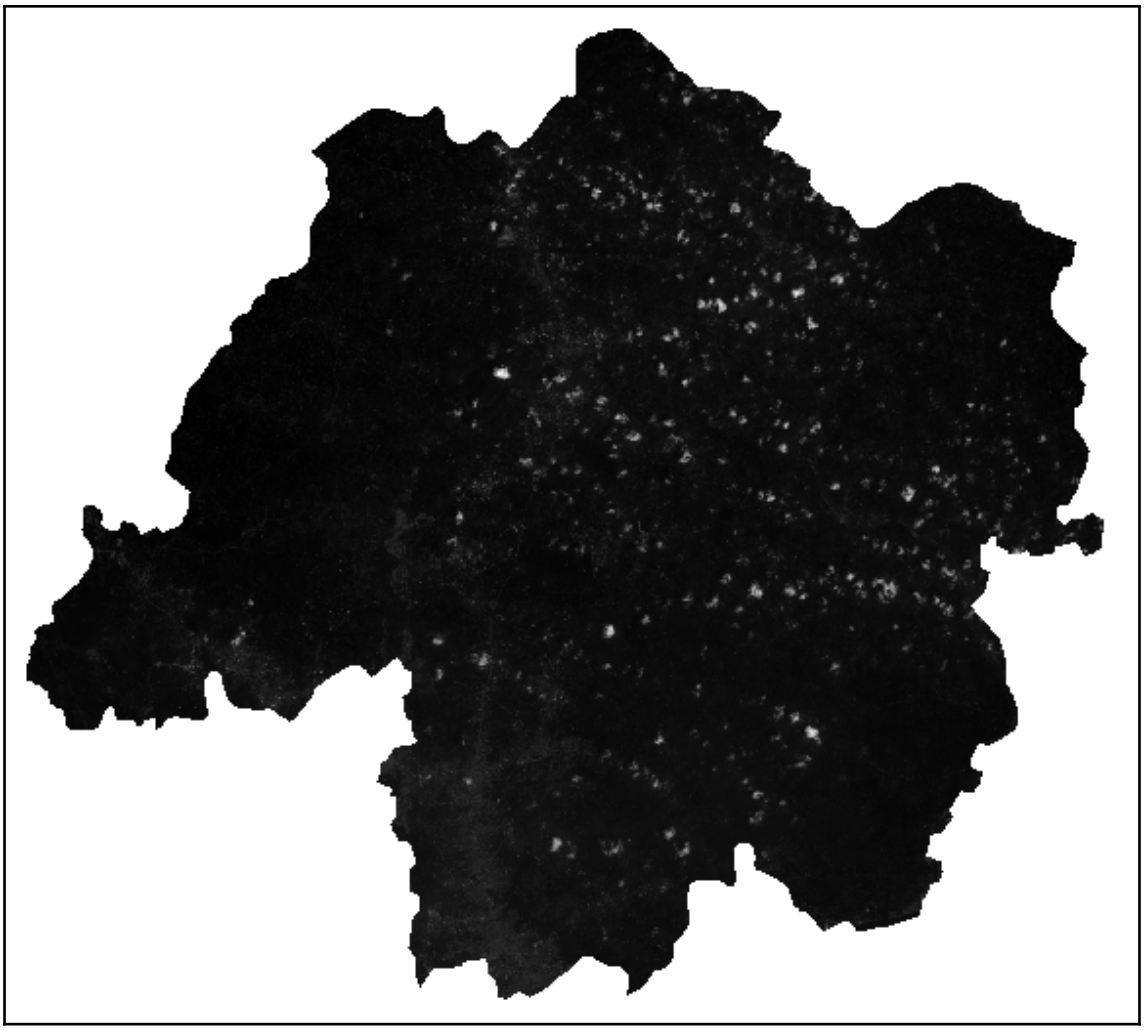

Processing Modeler
Model properties
Name
Enter model name here
Group
Enter group name here
Inputs
Distance
Enum
Expression
Extent
Fields Mapper
File/Folder
Map Layer
Matrix
Multiple Input
Number
Point
Range
Raster Band
Raster Layer
String
Vector Features
Vector Field
Vector Layer
Inputs
Algorithms
landsat
district

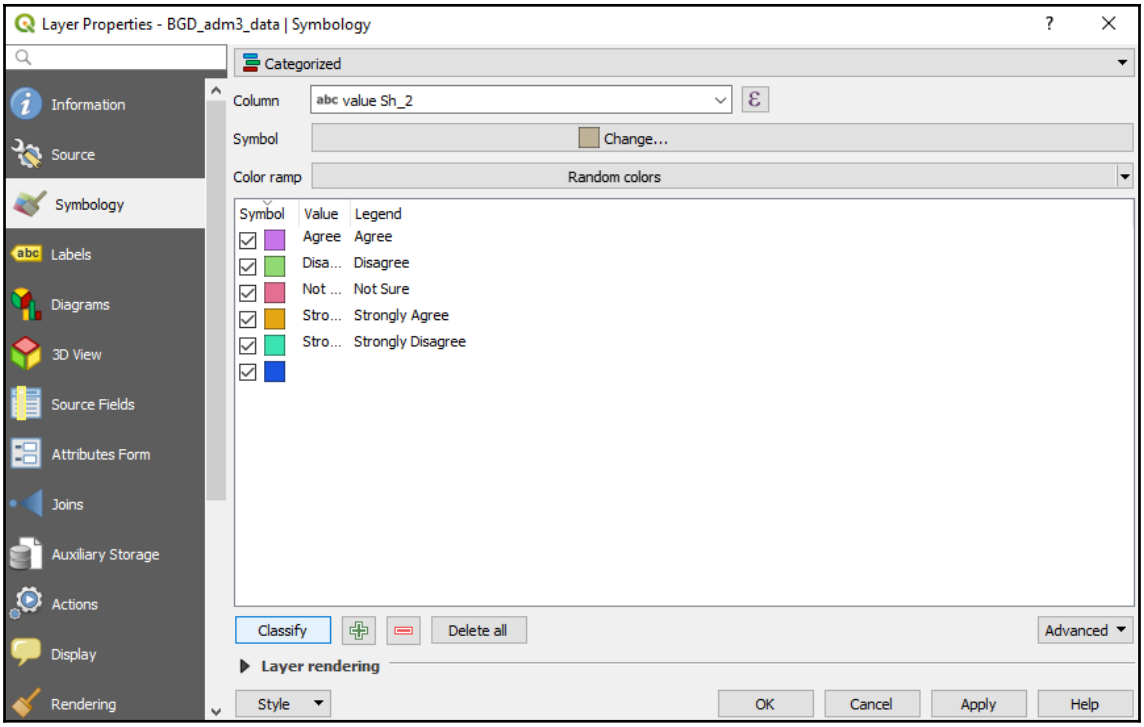

landsat
district
In
Clip raster by mask layer
Out
clipped

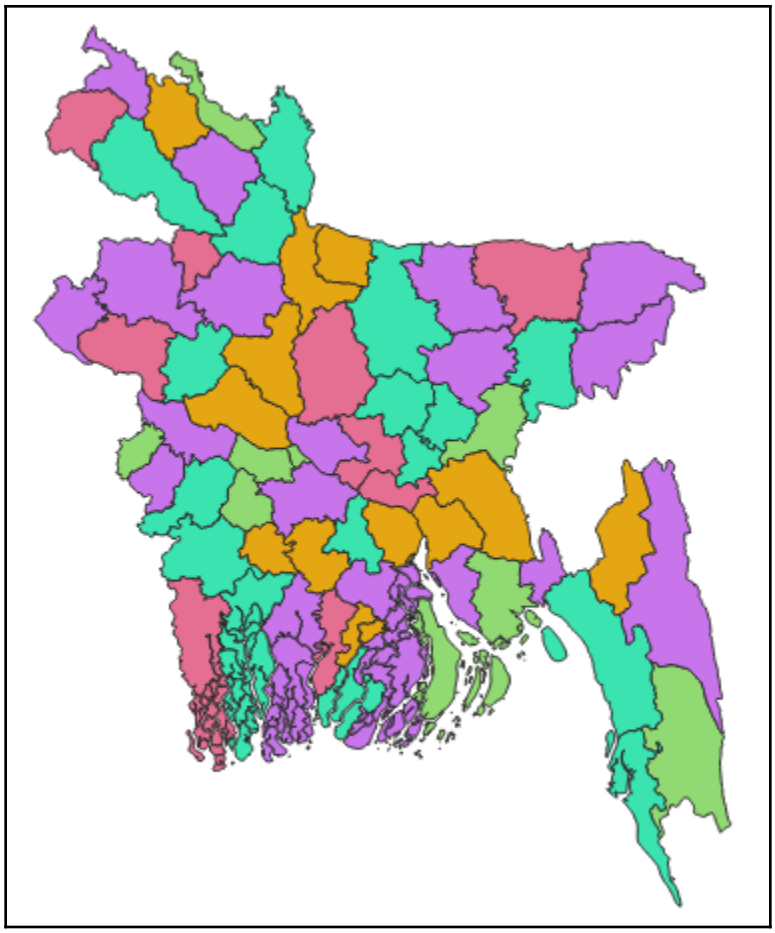

Model
Parameters
Log
landsat
LC08_L1TP_137043_20180410_20180417_01_T1_B2 [EPSG:32646]
district
gazipur [EPSG:4326]
clipped
[Save to temporary file]
Open output file after running algorithm
c1
[Save to temporary file]
Open output file after running algorithm
0%
Cancel
Run as Batch Process...
Run
Close
Help

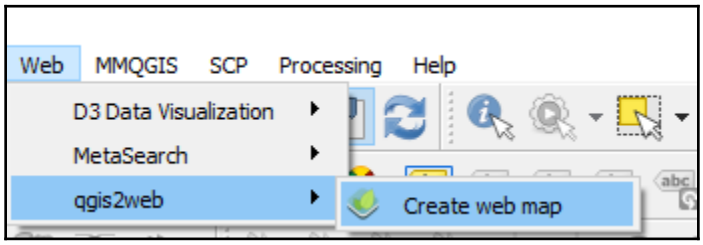


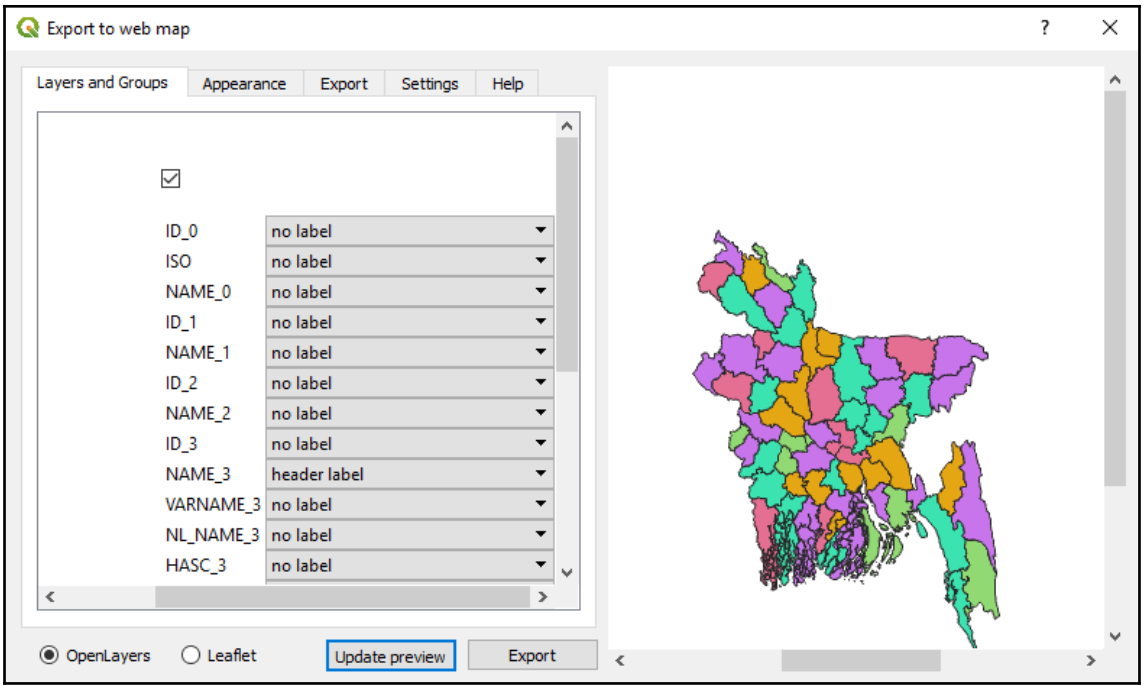

Layer Properties - clipped | Transparency
Information
Source
Symbology
Transparency
Histogram
Rendering
Pyramids
Metadata
Legend
QGIS Server
Global opacity
100.0 %
No data value
No data value not defined
Additional no data value
0
Custom transparency options
Transparency band
None
Transparent pixel list
From
To
Percent Transparent
Style
OK
Cancel
Apply
Help

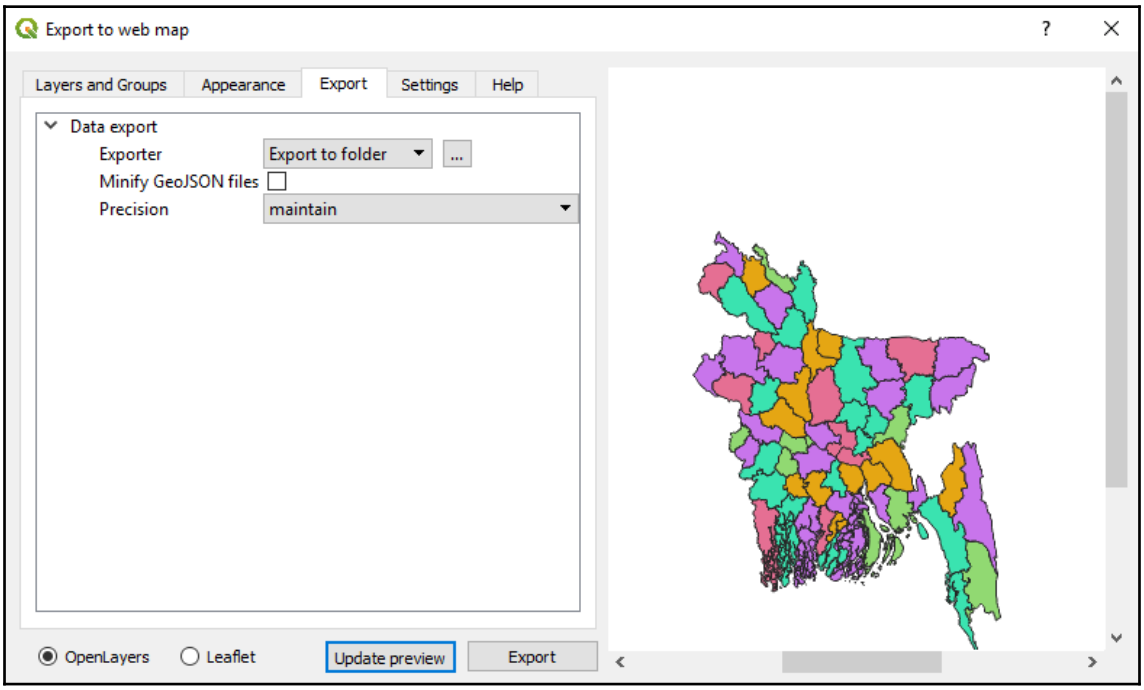



Layer Properties - BGD_adm3_data | Symbology
Information
Source
Symbology
Labels
Diagrams
3D View
Source Fields
Attributes Form
Joins
Auxiliary Storage
Actions
Display
Rendering
Categorized
Column
abc value Sh_2
Symbol
Change...
Color ramp
Random colors
Symbol
Value
Legend
Agree
Agree
Disa...
Disagree
Not ...
Not Sure
Stro...
Strongly Agree
Stro...
Strongly Disagree
Classify
Delete all
Advanced
Layer rendering
Style
OK
Cancel
Apply
Help

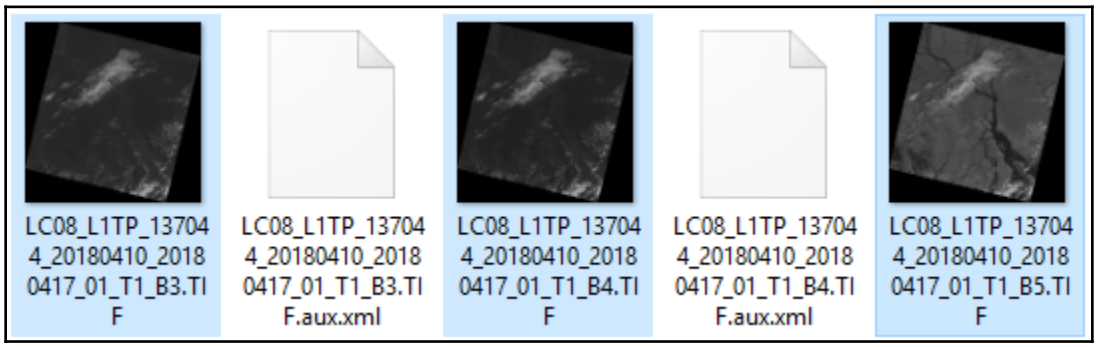


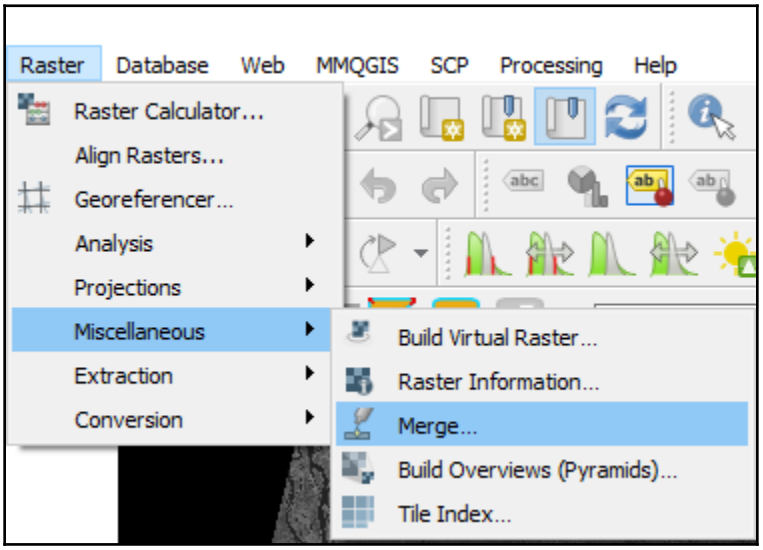

Web
MMQGIS
SCP
Processing
Help
D3 Data Visualization
MetaSearch
qgis2web
Create web map

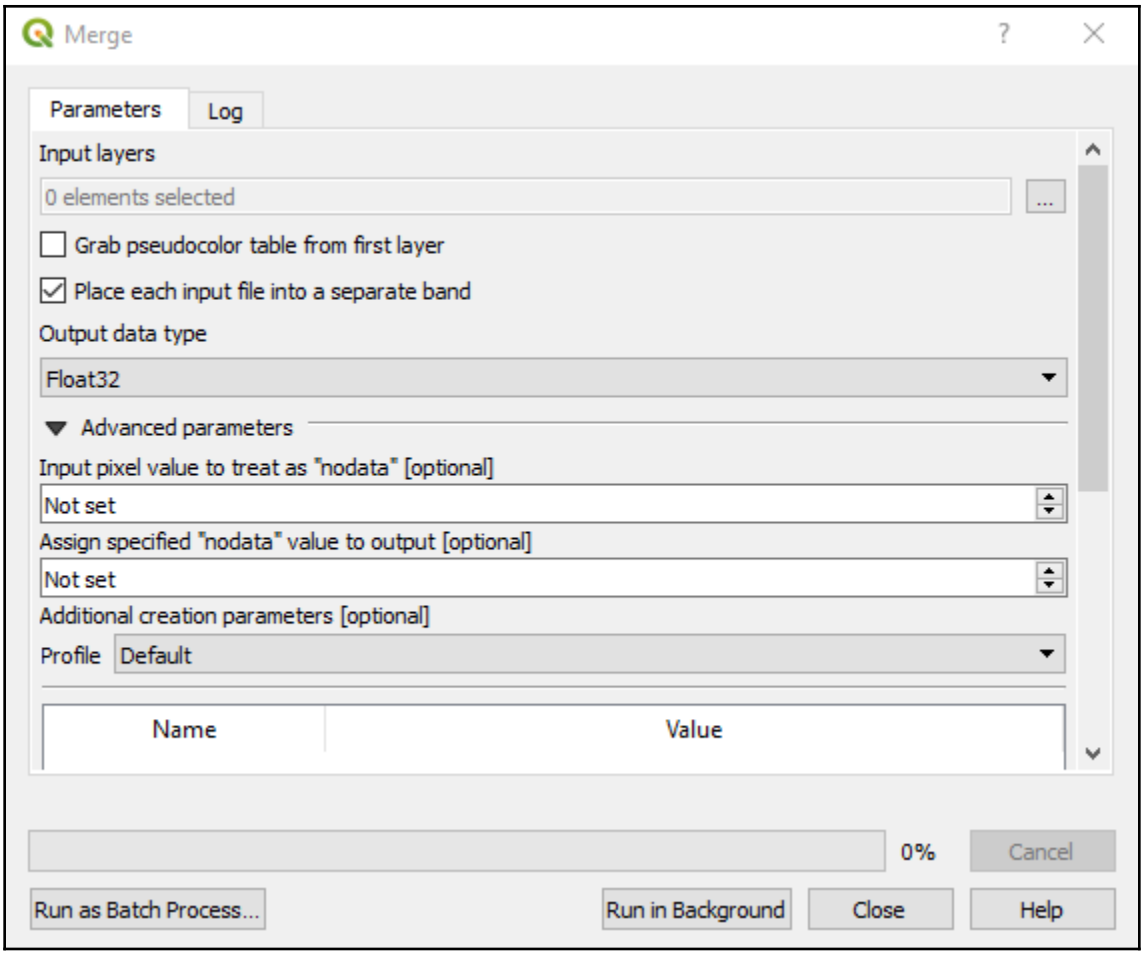

Export to web map
Layers and Groups
Appearance
Export
Settings
Help
ID_0 no label
ISO no label
NAME_0 no label
ID_1 no label
NAME_1 no label
ID_2 no label
NAME_2 no label
ID_3 no label
NAME_3 header label
VARNAME_3 no label
NL_NAME_3 no label
HASC_3 no label
OpenLayers
Leaflet
Update preview
Export

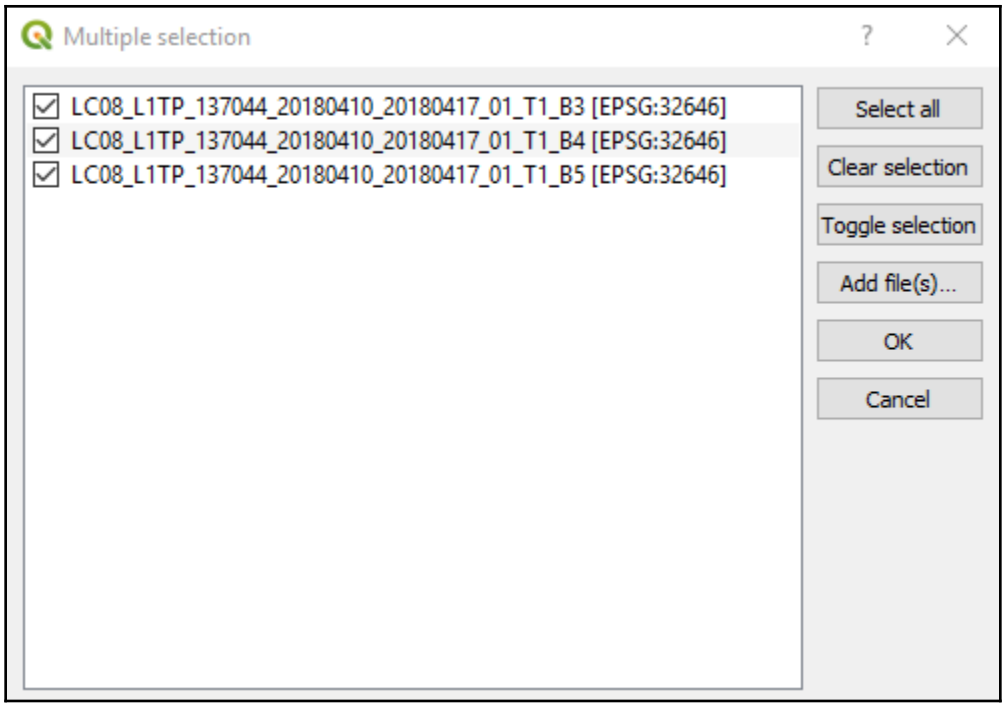

Export to web map
Layers and Groups
Appearance
Export
Settings
Help
Data export
Exporter
Export to folder
...
Minify GeoJSON files
Precision
maintain
OpenLayers
Leaflet
Update preview
Export

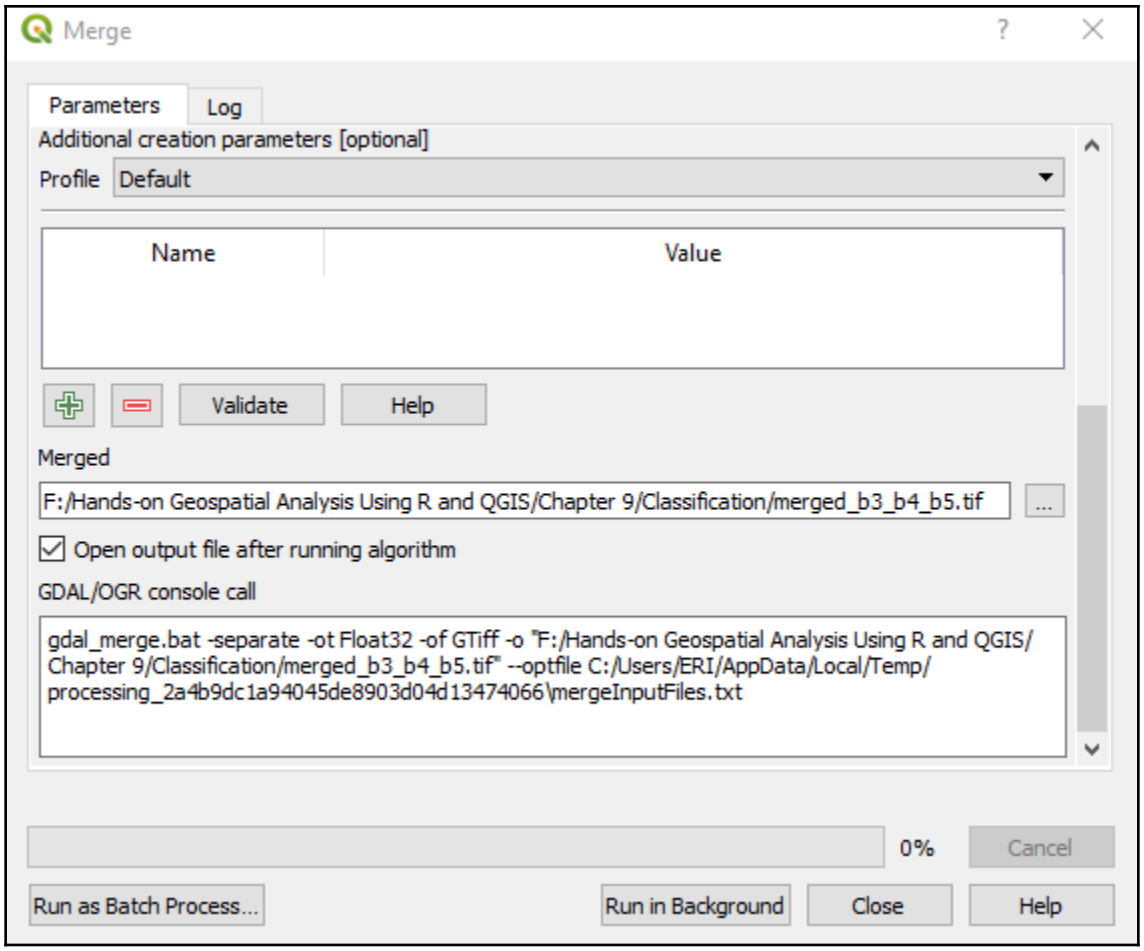
Chapter 9: Classification of Remote Sensing Images

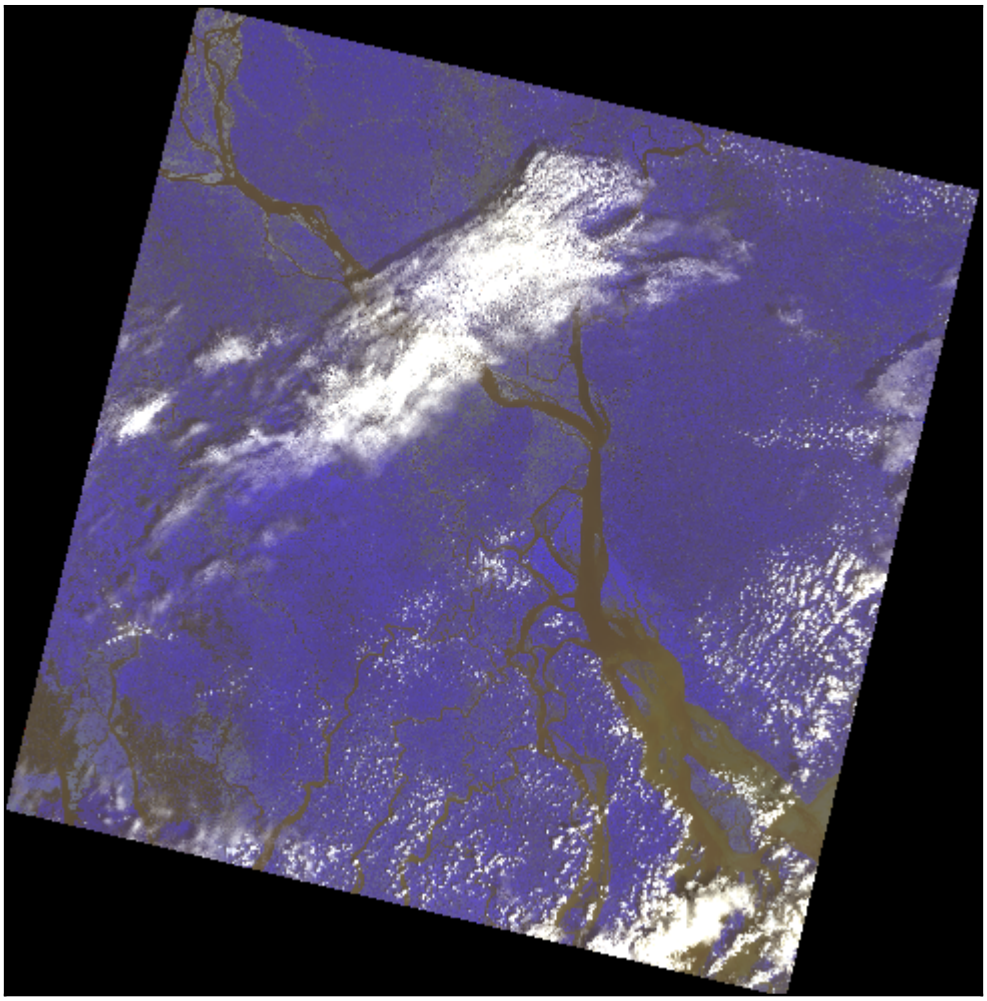


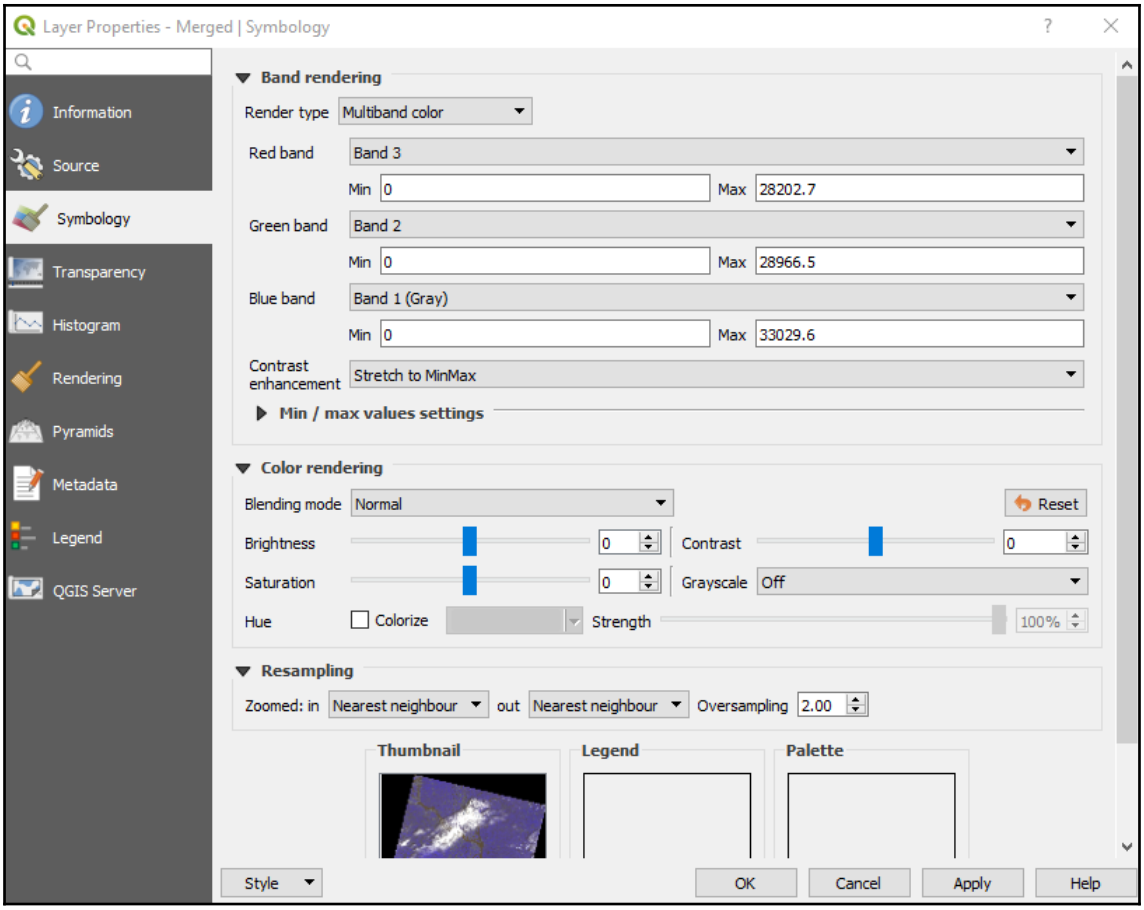


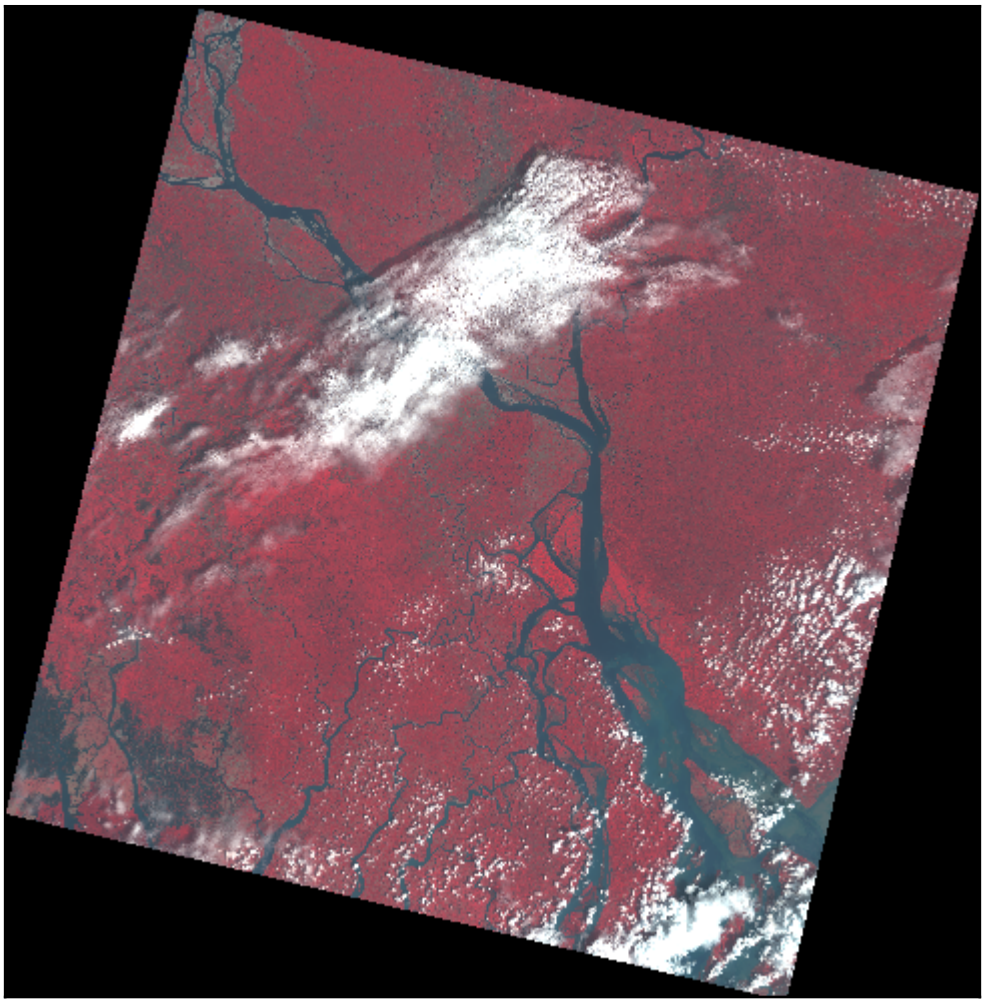

Merge
Parameters
Log
Input layers
0 elements selected
...
Grab pseudocolor table from first layer
Place each input file into a separate band
Output data type
Float32
Advanced parameters
Input pixel value to treat as "nodata" [optional]
Not set
Assign specified "nodata" value to output [optional]
Not set
Additional creation parameters [optional]
Profile
Default
Name
Value
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

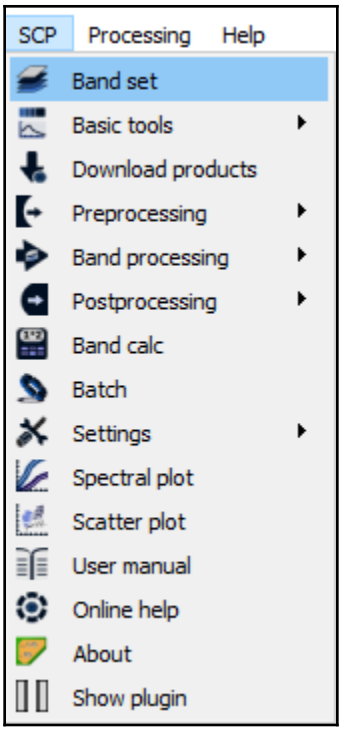

Multiple selection
LC08_L1TP_137044_20180410_20180417_01_T1_B3 [EPSG:32646]
LC08_L1TP_137044_20180410_20180417_01_T1_B4 [EPSG:32646]
LC08_L1TP_137044_20180410_20180417_01_T1_B5 [EPSG:32646]
Select all
Clear selection
Toggle selection
Add file(s)...
OK
Cancel

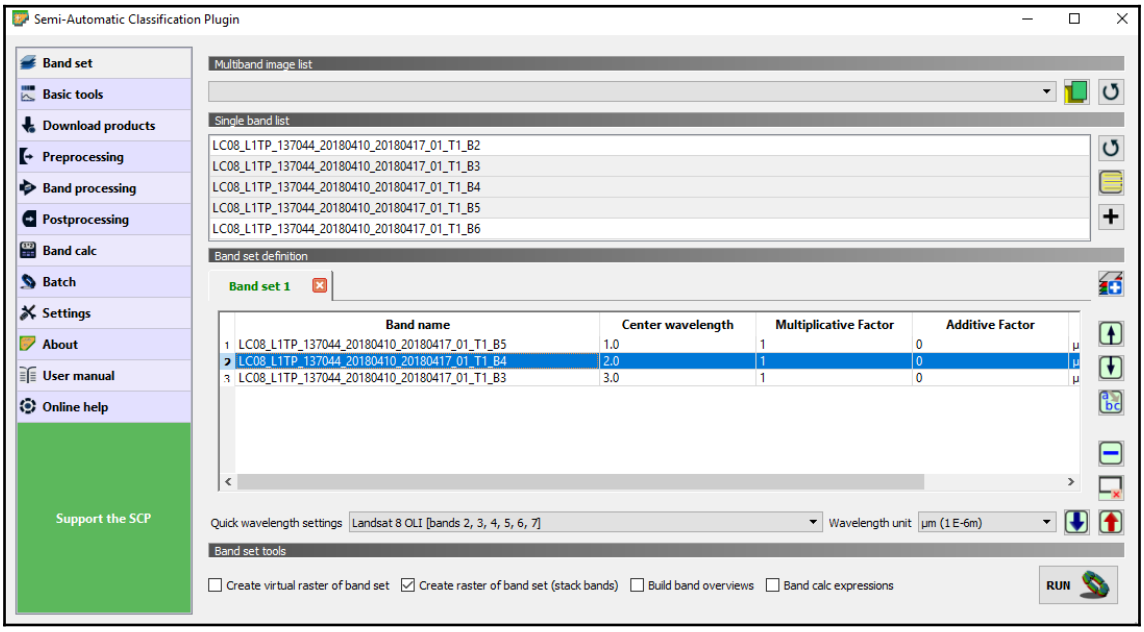

Merge
Parameters
Log
Additional creation parameters [optional]
Profile
Default
Name
Value
Validate
Help
Merged
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/merged_b3_b4_b5.tif
Open output file after running algorithm
GDAL/OGR console call
gdal_merge.bat -separate -ot Float32 -of GTiff -o "F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/merged_b3_b4_b5.tif" --optfile C:/Users/ERI/AppData/Local/Temp/processing_2a4b9dc1a94045de8903d04d13474066\mergeInputFiles.txt
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

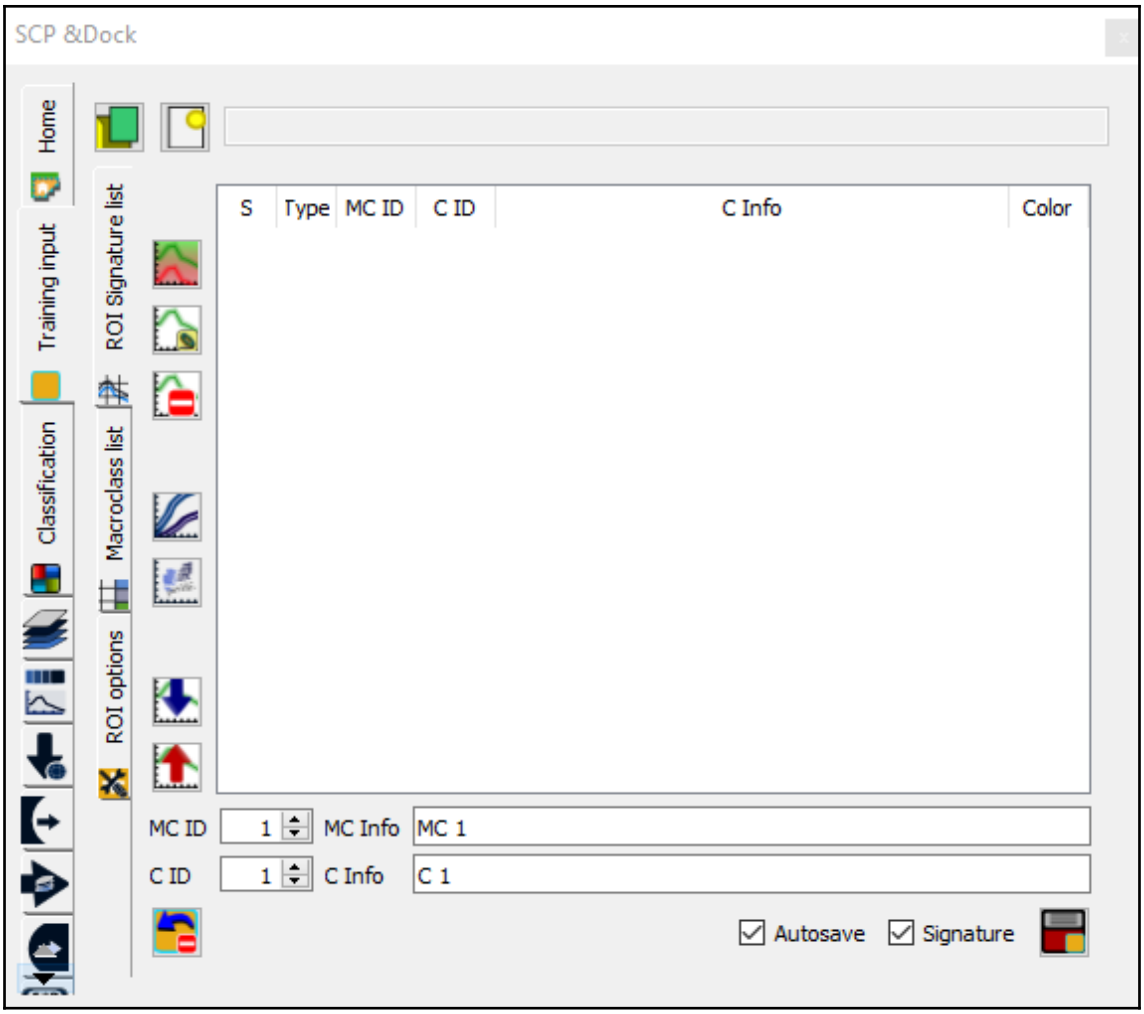


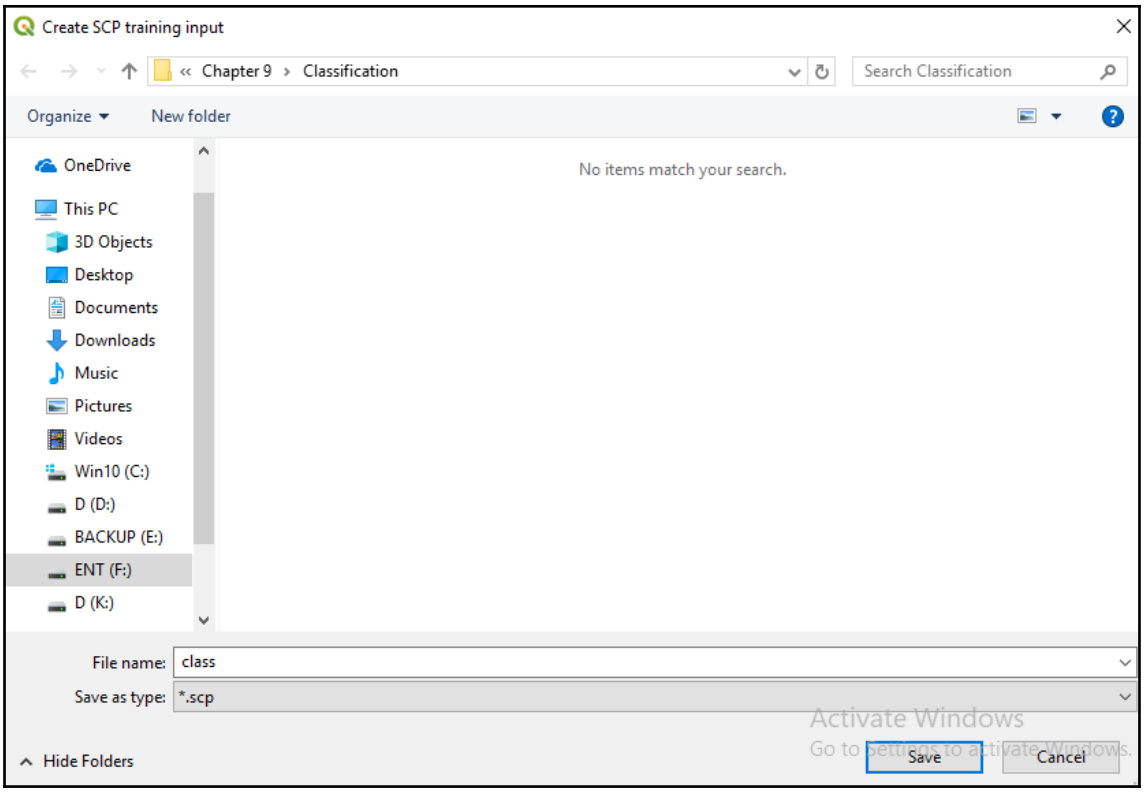

Layer Properties - Merged | Symbology
Information
Source
Symbology
Transparency
Histogram
Rendering
Pyramids
Metadata
Legend
QGIS Server
Band rendering
Render type
Multiband color
Red band
Band 3
Min
0
Max
28202.7
Green band
Band 2
Min
0
Max
28966.5
Blue band
Band 1 (Gray)
Min
0
Max
33029.6
Contrast enhancement
Stretch to MinMax
Min / max values settings
Color rendering
Blending mode
Normal
Reset
Brightness
0
Contrast
0
Saturation
0
Grayscale
Off
Hue
Colorize
Strength
100%
Resampling
Zoomed: in
Nearest neighbour
out
Nearest neighbour
Oversampling
2.00
Thumbnail
Legend
Palette
Style
OK
Cancel
Apply
Help



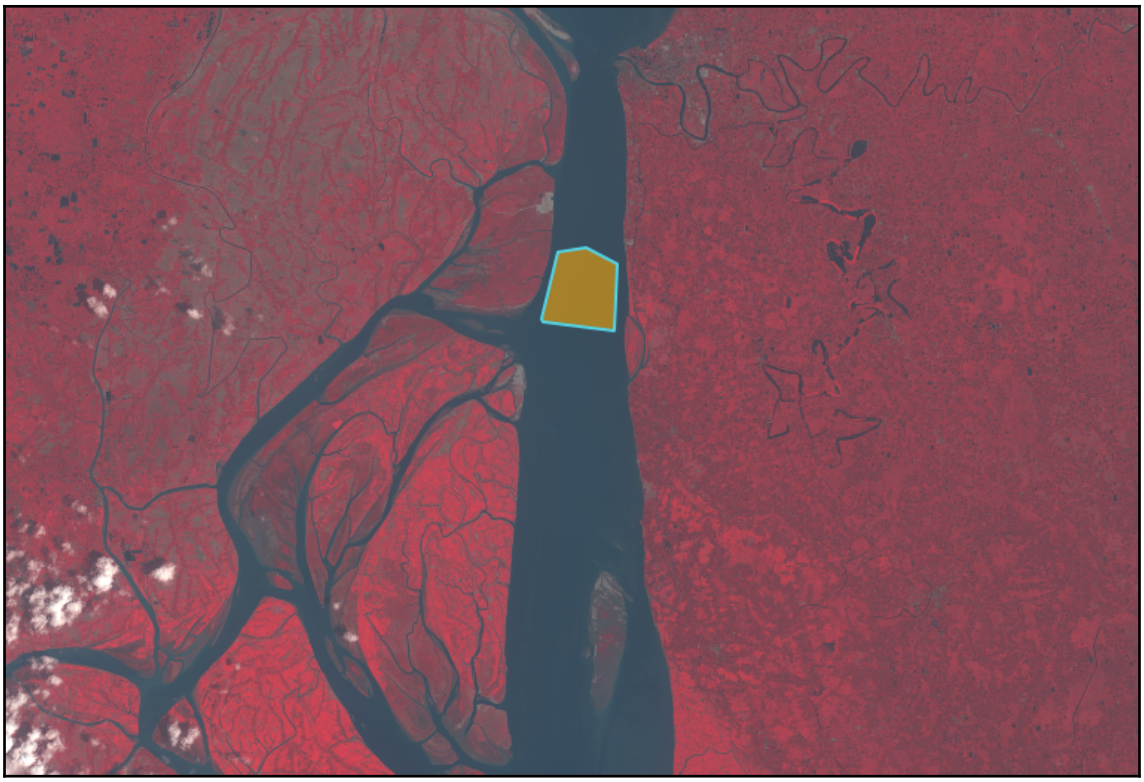

SCP
Processing
Help
Band set
Basic tools
Download products
Preprocessing
Band processing
Postprocessing
Band calc
Batch
Settings
Spectral plot
Scatter plot
User manual
Online help
About
Show plugin

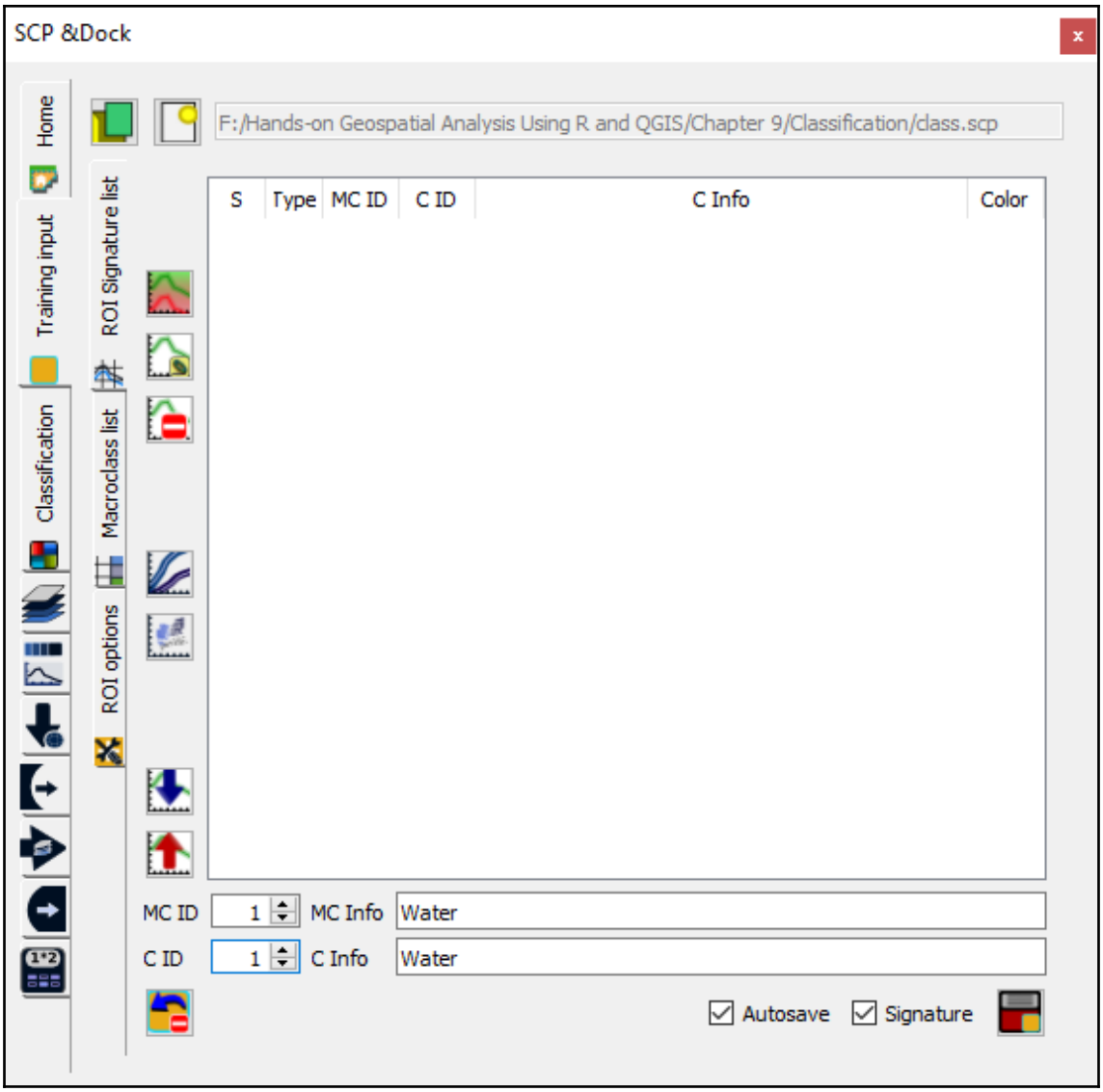

Semi-Automatic Classification Plugin
Band set
Basic tools
Download products
Preprocessing
Band processing
Postprocessing
Band calc
Batch
Settings
About
User manual
Online help
Support the SCP
Multiband image list
Single band list
LC08_L1TP_137044_20180410_20180417_01_T1_B2
LC08_L1TP_137044_20180410_20180417_01_T1_B3
LC08_L1TP_137044_20180410_20180417_01_T1_B4
LC08_L1TP_137044_20180410_20180417_01_T1_B5
LC08_L1TP_137044_20180410_20180417_01_T1_B6
Band set definition
Band set 1
Band name
Center wavelength
Multiplicative Factor
Additive Factor
1 LC08_L1TP_137044_20180410_20180417_01_T1_B5 1.0 1 0
2 LC08_L1TP_137044_20180410_20180417_01_T1_B4 2.0 1 0
3 LC08_L1TP_137044_20180410_20180417_01_T1_B3 3.0 1 0
Quick wavelength settings
Landsat 8 OLI [bands 2, 3, 4, 5, 6, 7]
Wavelength unit
µm (1 E-6m)
Band set tools
Create virtual raster of band set
Create raster of band set (stack bands)
Build band overviews
Band calc expressions
RUN

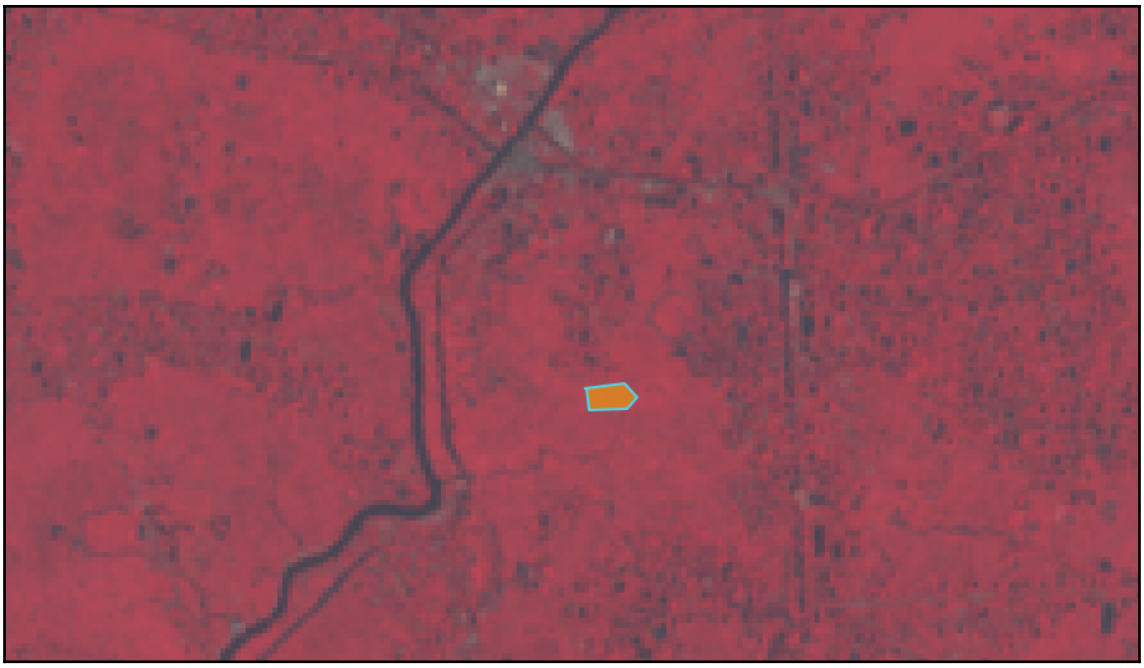

SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
S
Type
MC ID
C ID
C Info
Color
MC ID
1
MC Info
MC 1
C ID
1
C Info
C 1
Autosave
Signature

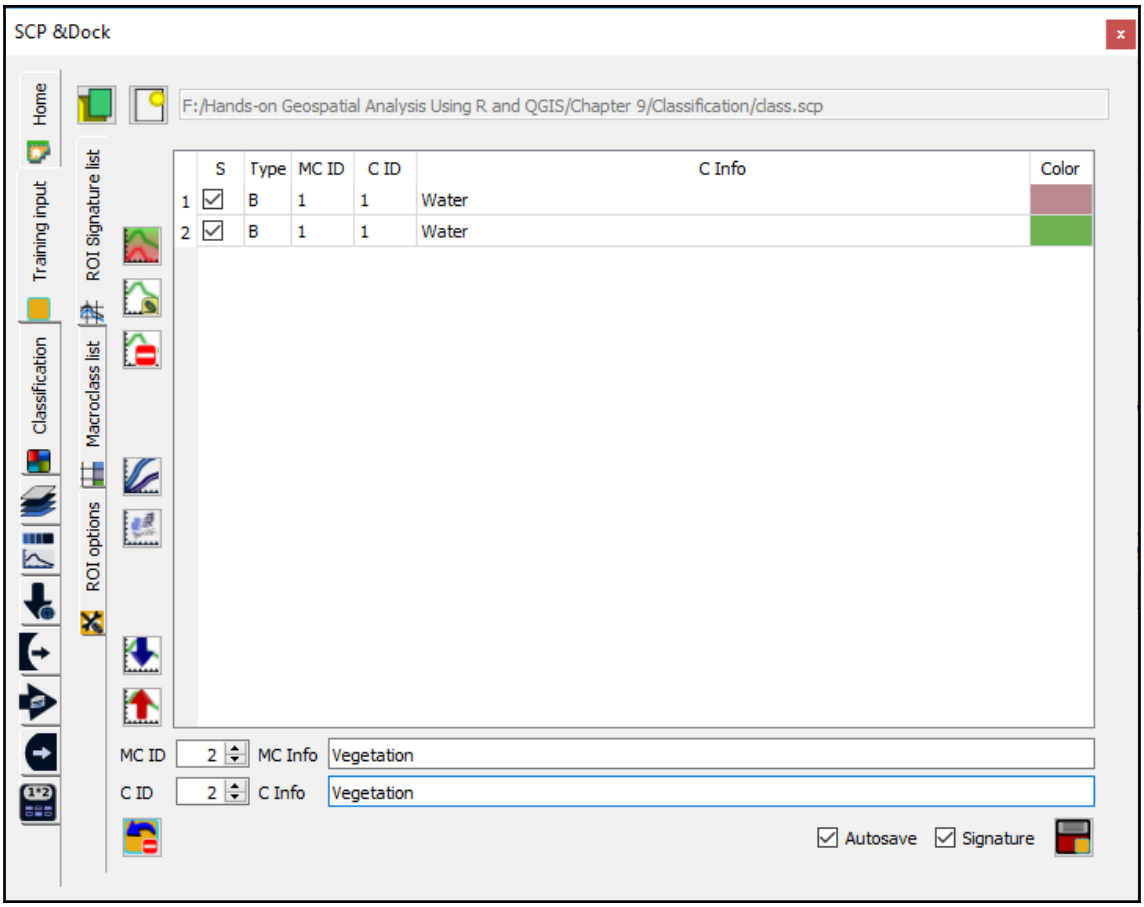

Create SCP training input
Chapter 9 › Classification
Search Classification
Organize
New folder
OneDrive
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Win10 (C:)
D (D:)
BACKUP (E:)
ENT (F:)
D (K:)
No items match your search.
File name: class
Save as type: *.scp
Hide Folders
Save
Cancel
Activate Windows
Go to Settings to activate Windows.

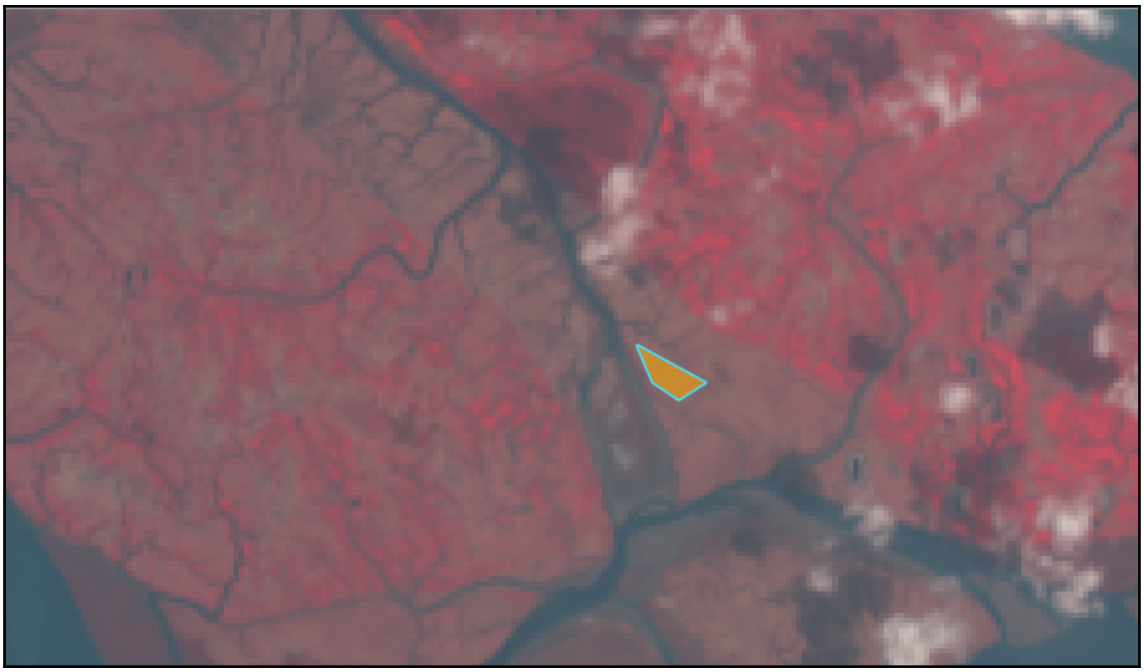

ROI

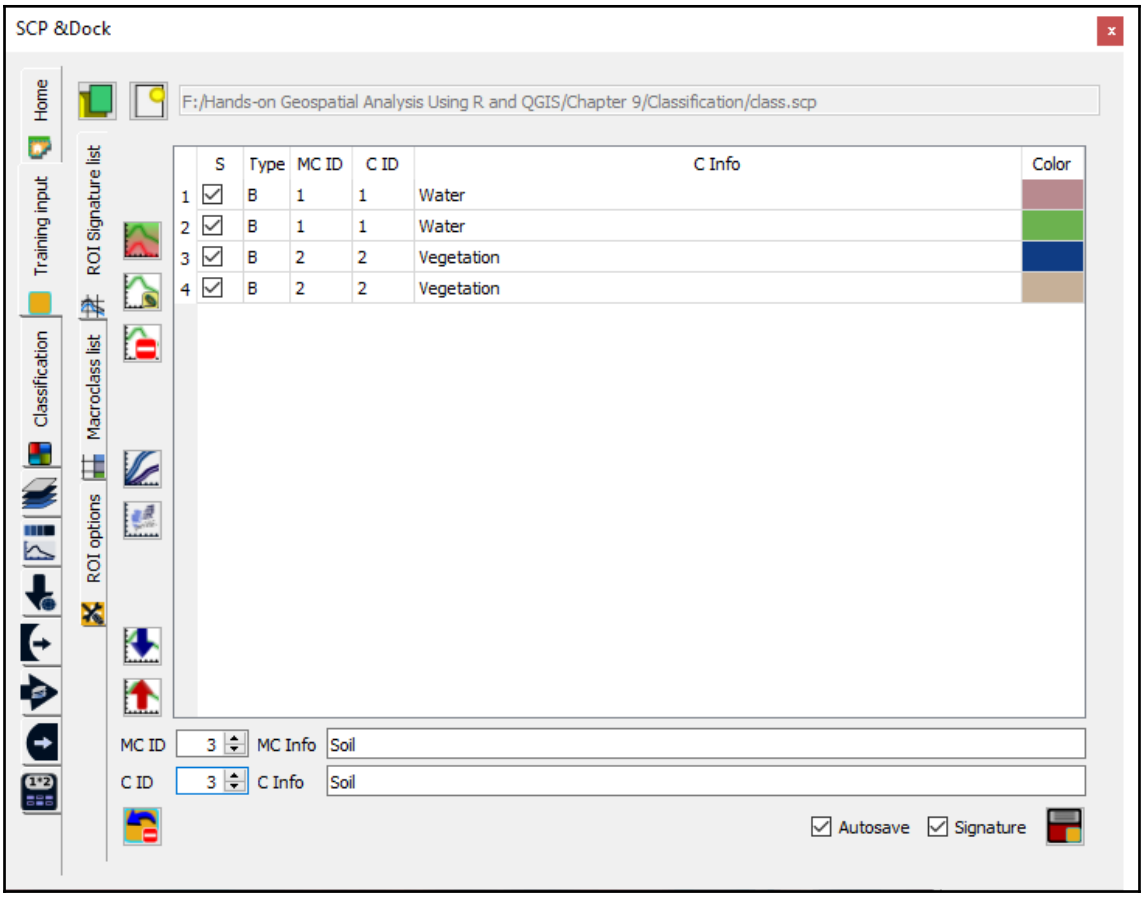


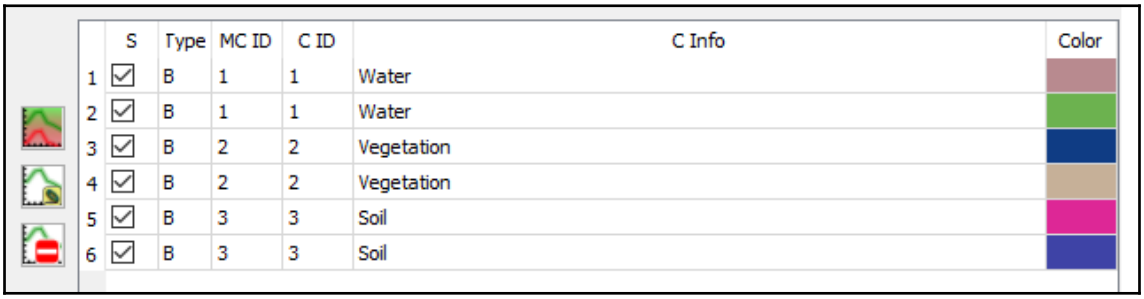

SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/class.scp
S
Type
MC ID
C ID
C Info
Color
MC ID
1
MC Info
Water
C ID
1
C Info
Water
Autosave
Signature

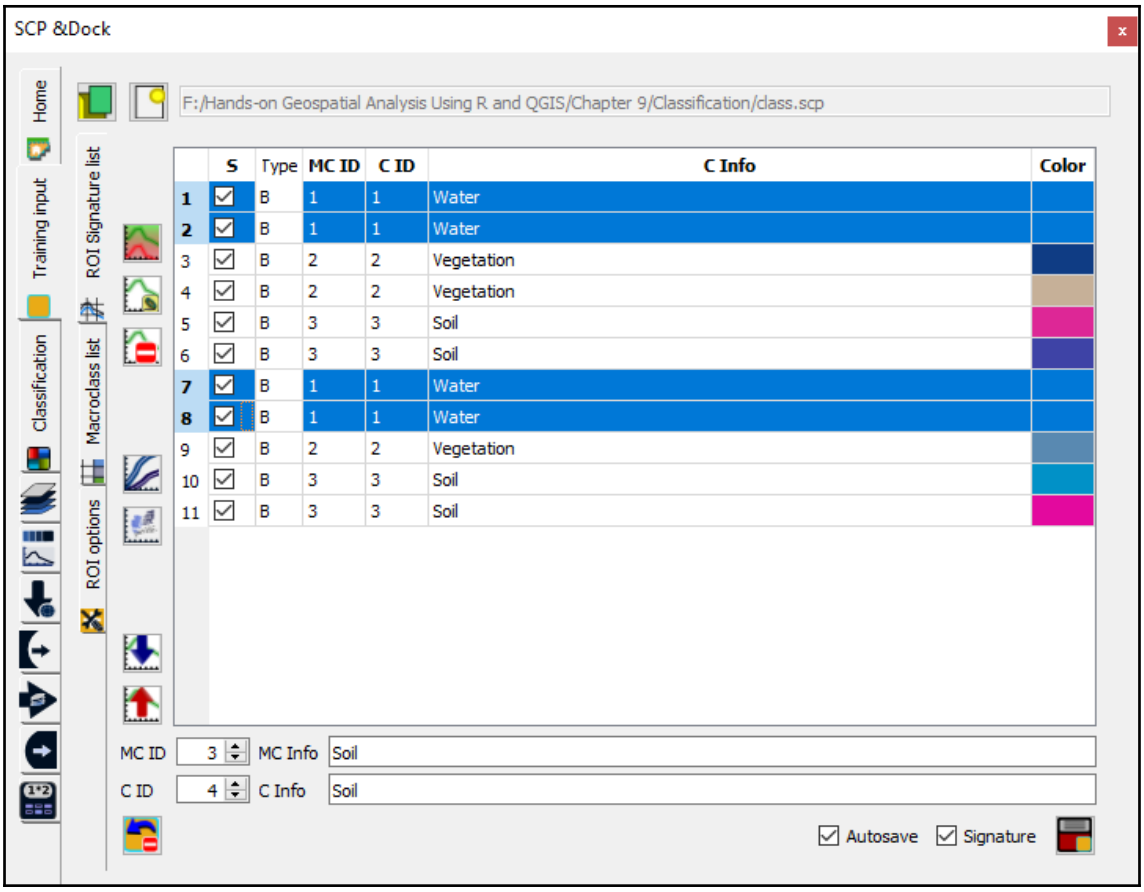


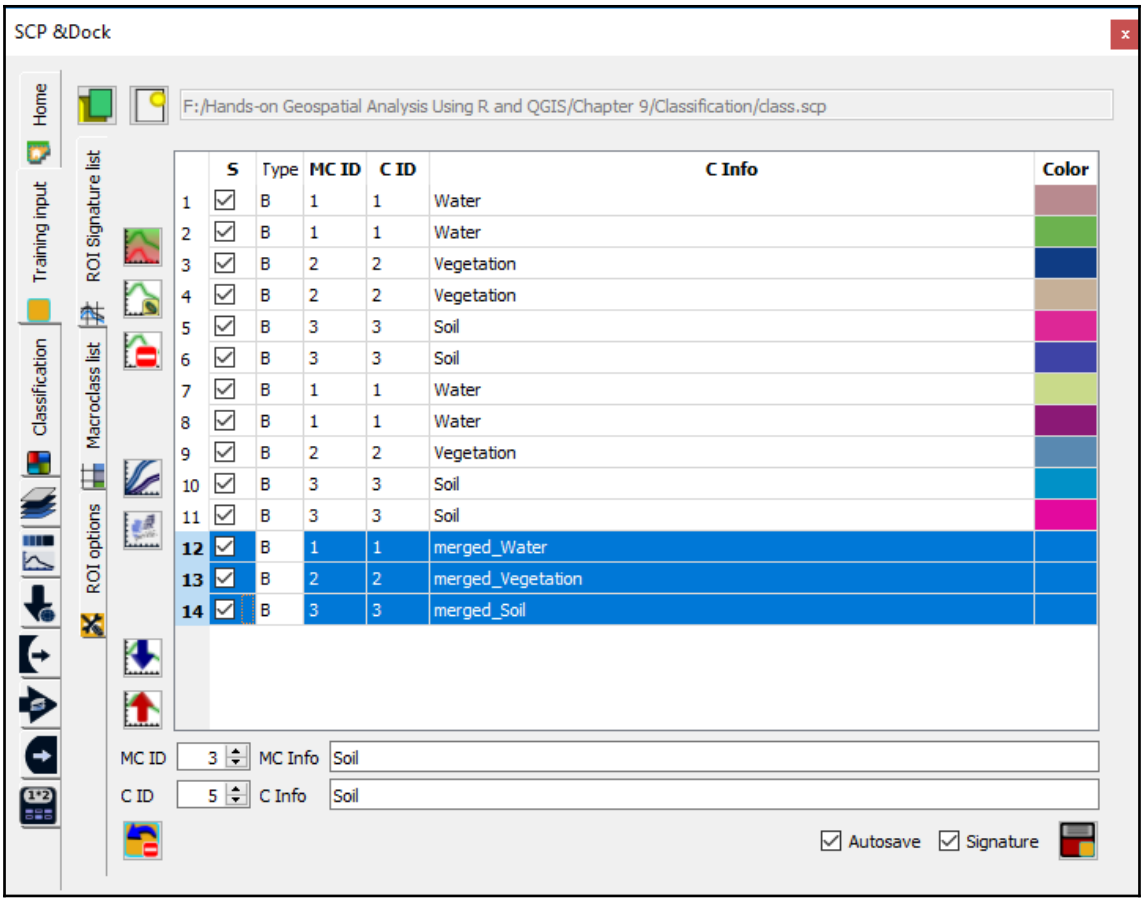

SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/class.scp
S
Type
MC ID
C ID
C Info
Color
1
B
1
1
Water
2
B
1
1
Water
MC ID
2
MC Info
Vegetation
C ID
2
C Info
Vegetation
Autosave
Signature

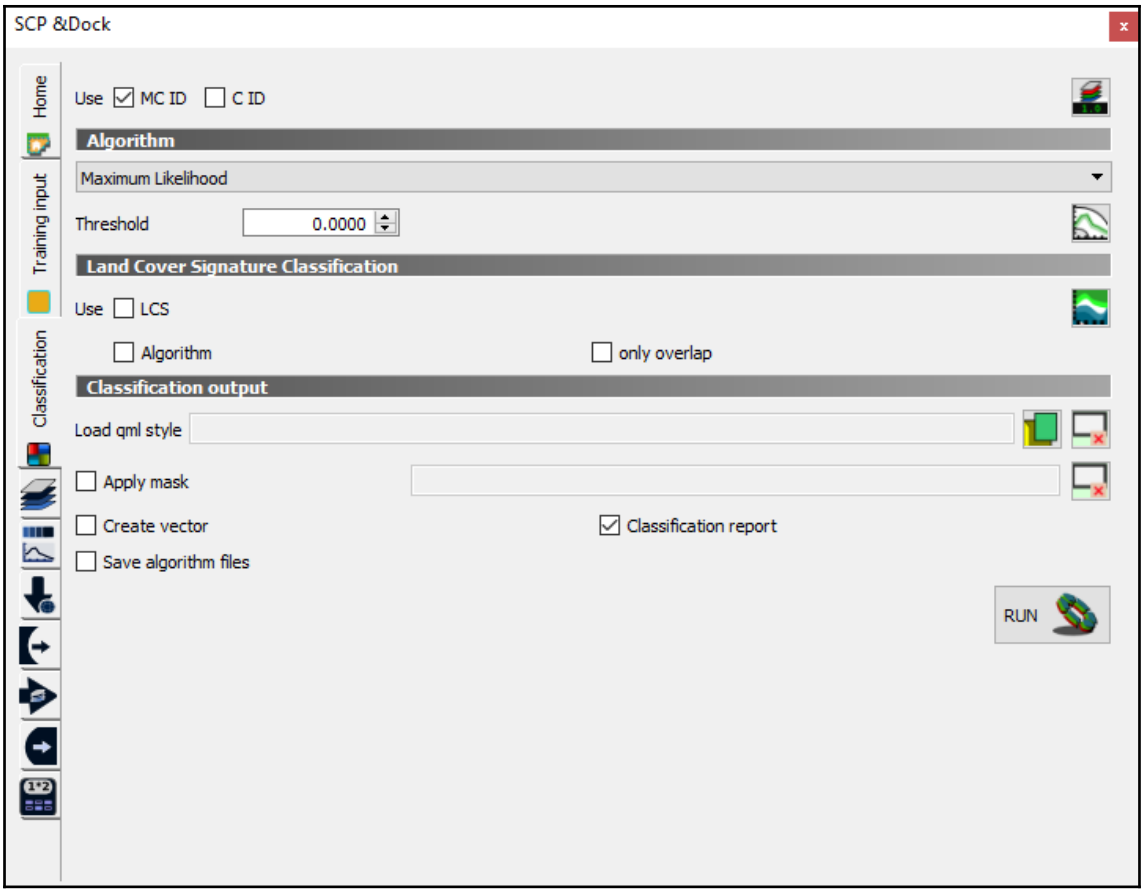


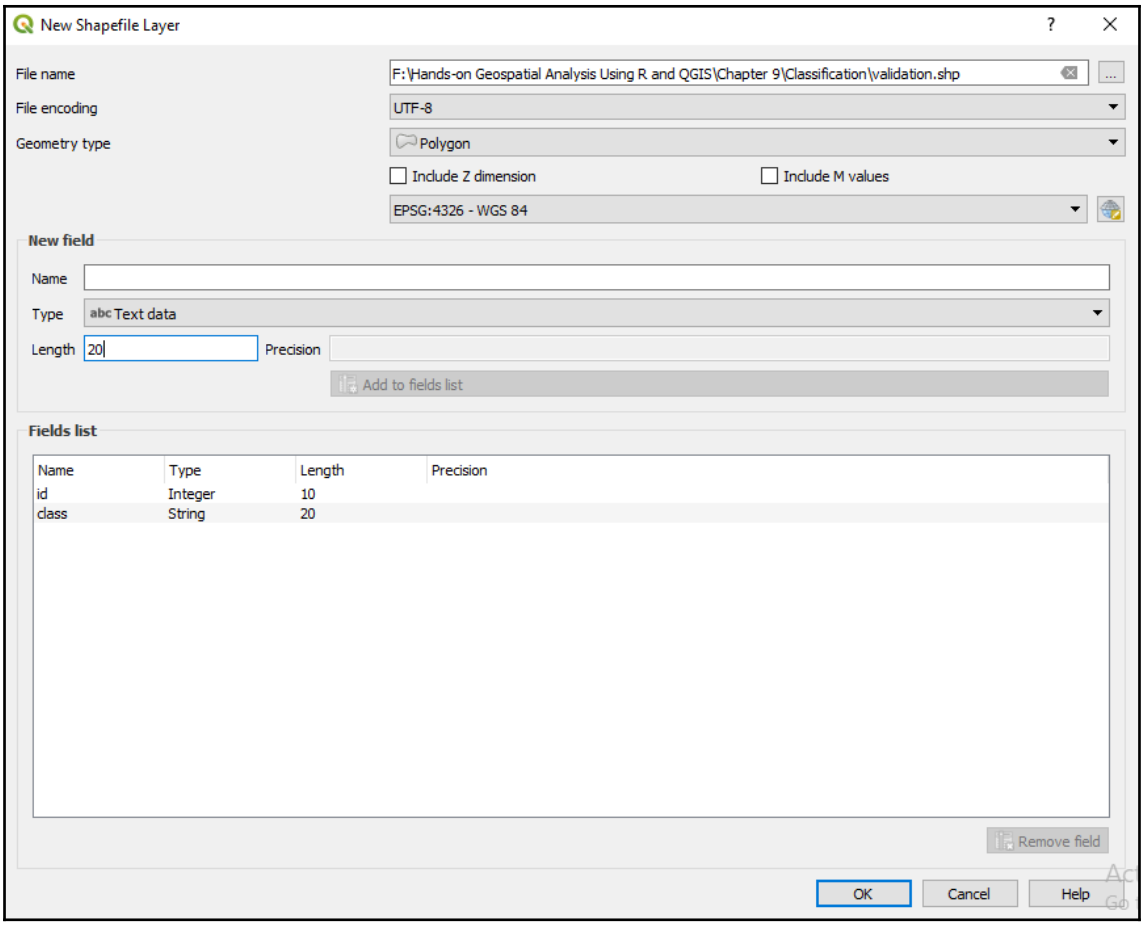

SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/class.scp
S Type MC ID C ID C Info Color
1 B 1 1 Water
2 B 1 1 Water
3 B 2 2 Vegetation
4 B 2 2 Vegetation
MC ID 3 MC Info Soil
C ID 3 C Info Soil
Autosave Signature

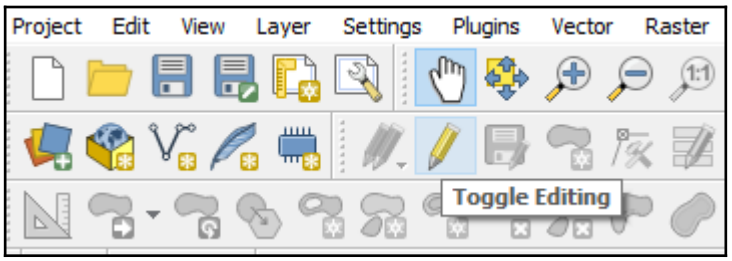

S Type MC ID C ID C Info Color
1 B 1 1 Water
2 B 1 1 Water
3 B 2 2 Vegetation
4 B 2 2 Vegetation
5 B 3 3 Soil
6 B 3 3 Soil

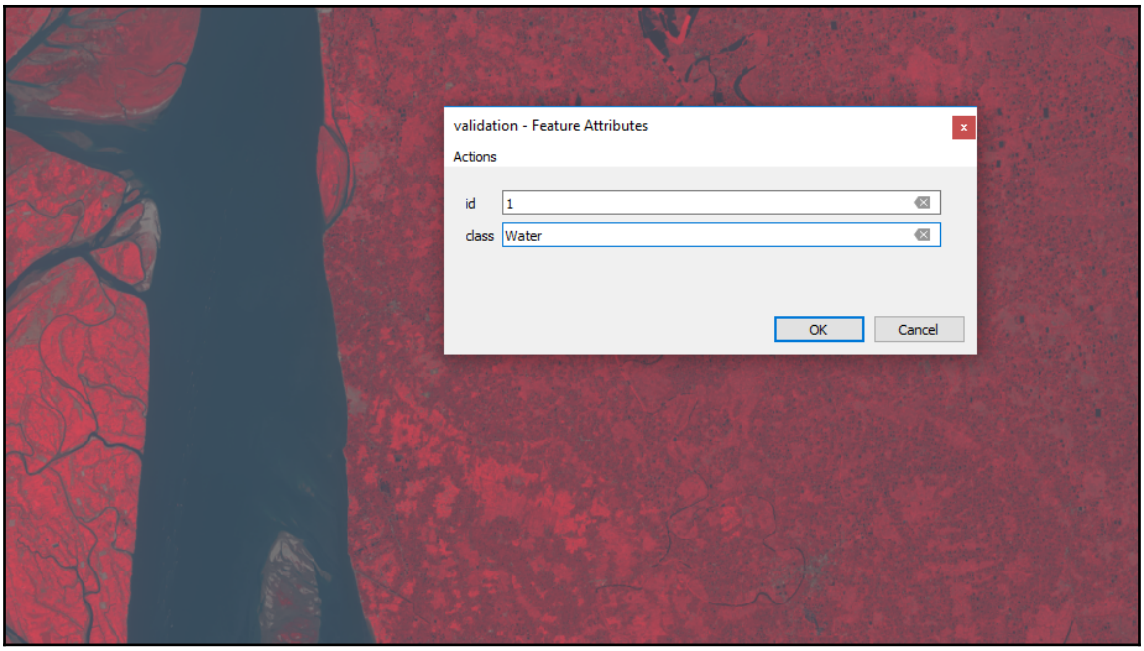

SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/class.scp
S
Type
MC ID
C ID
C Info
Color
1 B 1 1 Water
2 B 1 1 Water
3 B 2 2 Vegetation
4 B 2 2 Vegetation
5 B 3 3 Soil
6 B 3 3 Soil
7 B 1 1 Water
8 B 1 1 Water
9 B 2 2 Vegetation
10 B 3 3 Soil
11 B 3 3 Soil
MC ID 3
MC Info Soil
C ID 4
C Info Soil
Autosave
Signature


SCP &Dock
Home
Training input
Classification
ROI Signature list
Macroclass list
ROI options
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 9/Classification/class.scp
S
Type
MC ID
C ID
C Info
Color
1 B 1 1 Water
2 B 1 1 Water
3 B 2 2 Vegetation
4 B 2 2 Vegetation
5 B 3 3 Soil
6 B 3 3 Soil
7 B 1 1 Water
8 B 1 1 Water
9 B 2 2 Vegetation
10 B 3 3 Soil
11 B 3 3 Soil
12 B 1 1 merged_Water
13 B 2 2 merged_Vegetation
14 B 3 3 merged_Soil
MC ID 3
MC Info Soil
C ID 5
C Info Soil
Autosave
Signature


SCP &Dock
Home
Training input
Classification
Use
MC ID
C ID
Algorithm
Maximum Likelihood
Threshold
0.0000
Land Cover Signature Classification
Use
LCS
Algorithm
only overlap
Classification output
Load qml style
Apply mask
Create vector
Classification report
Save algorithm files
RUN

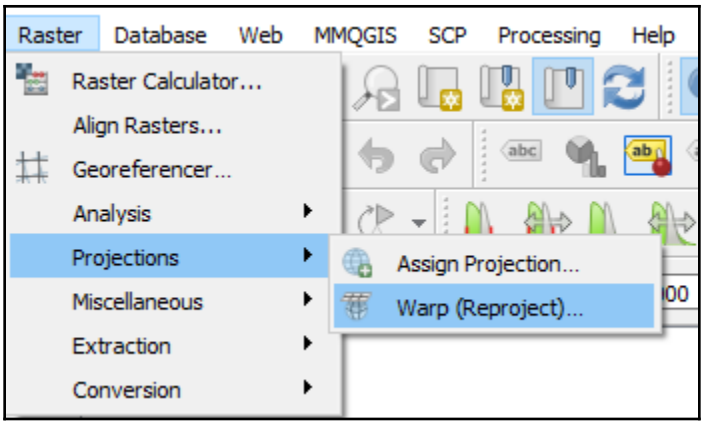

New Shapefile Layer
File name
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 9\Classification\validation.shp
File encoding
UTF-8
Geometry type
Polygon
Include Z dimension
Include M values
EPSG:4326 - WGS 84
New field
Name
Type
Text data
Length
20
Precision
Add to fields list
Fields list
Name
Type
Length
Precision
id
Integer
10
class
String
20
Remove field
OK
Cancel
Help

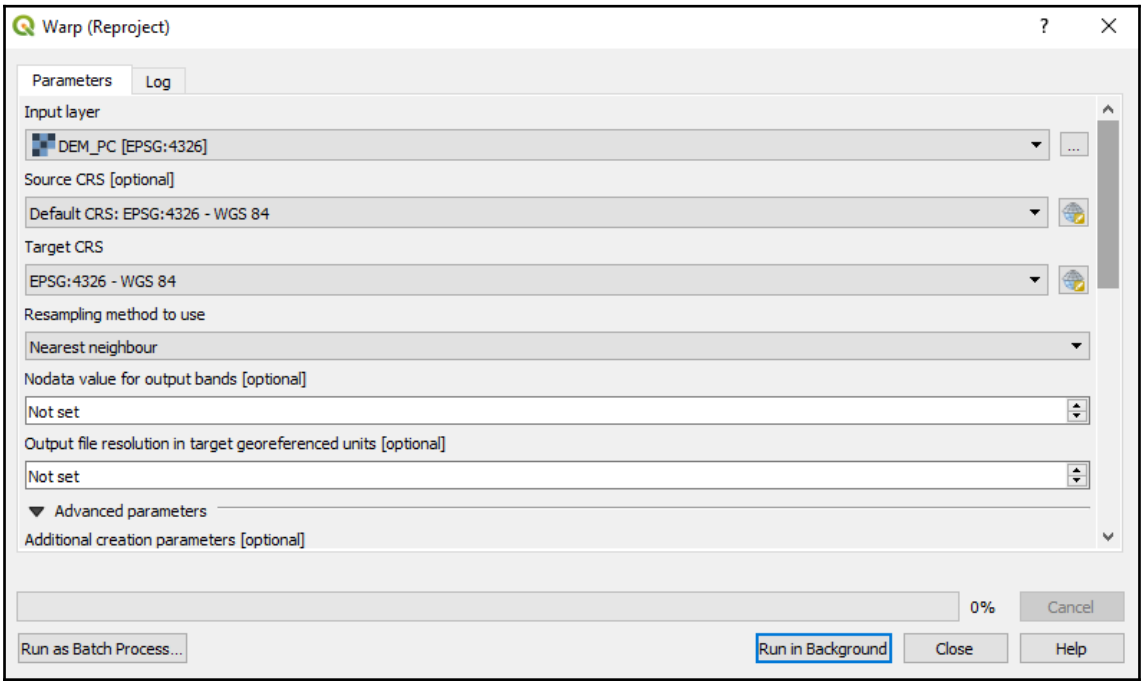

Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Toggle Editing

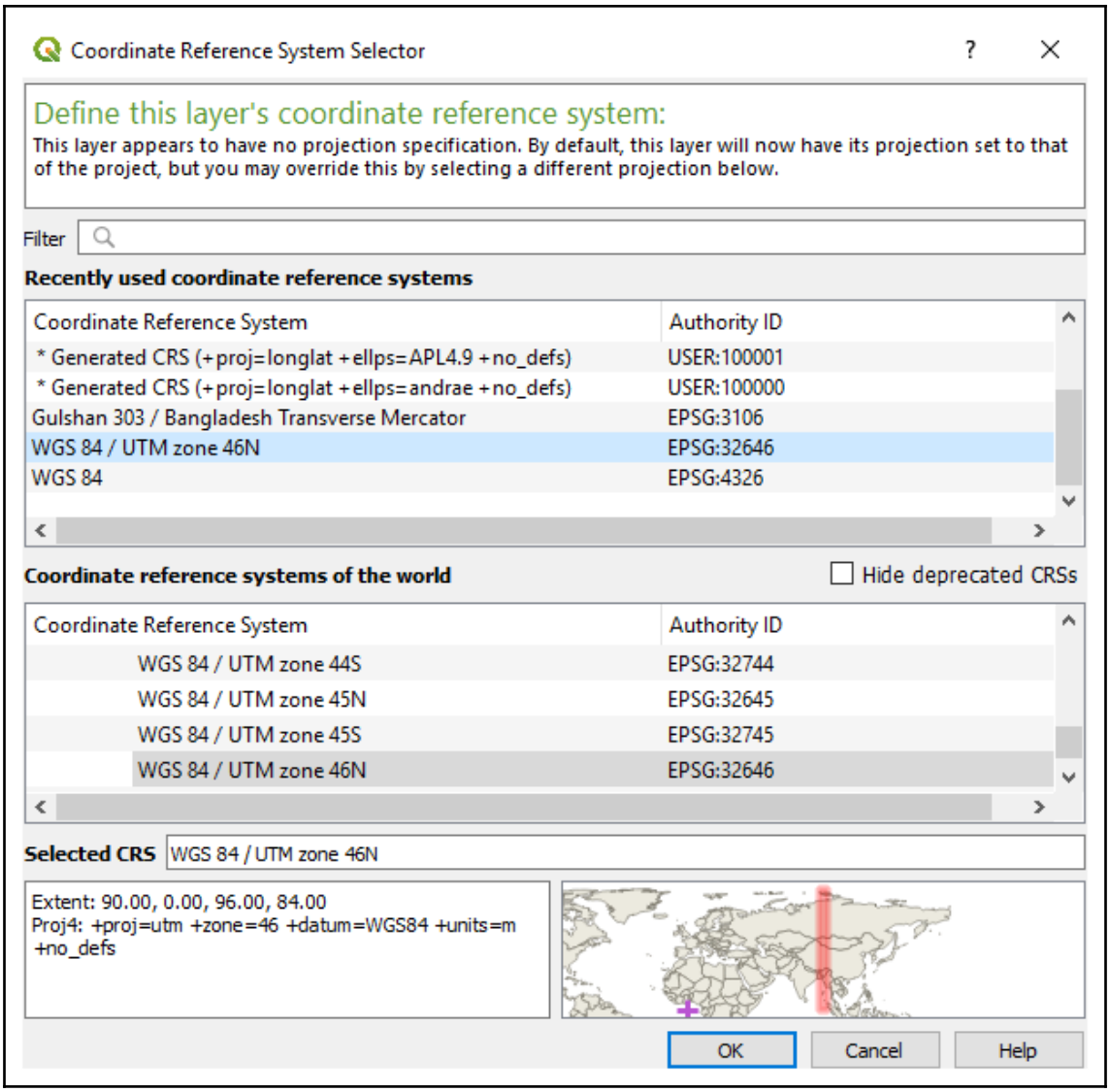


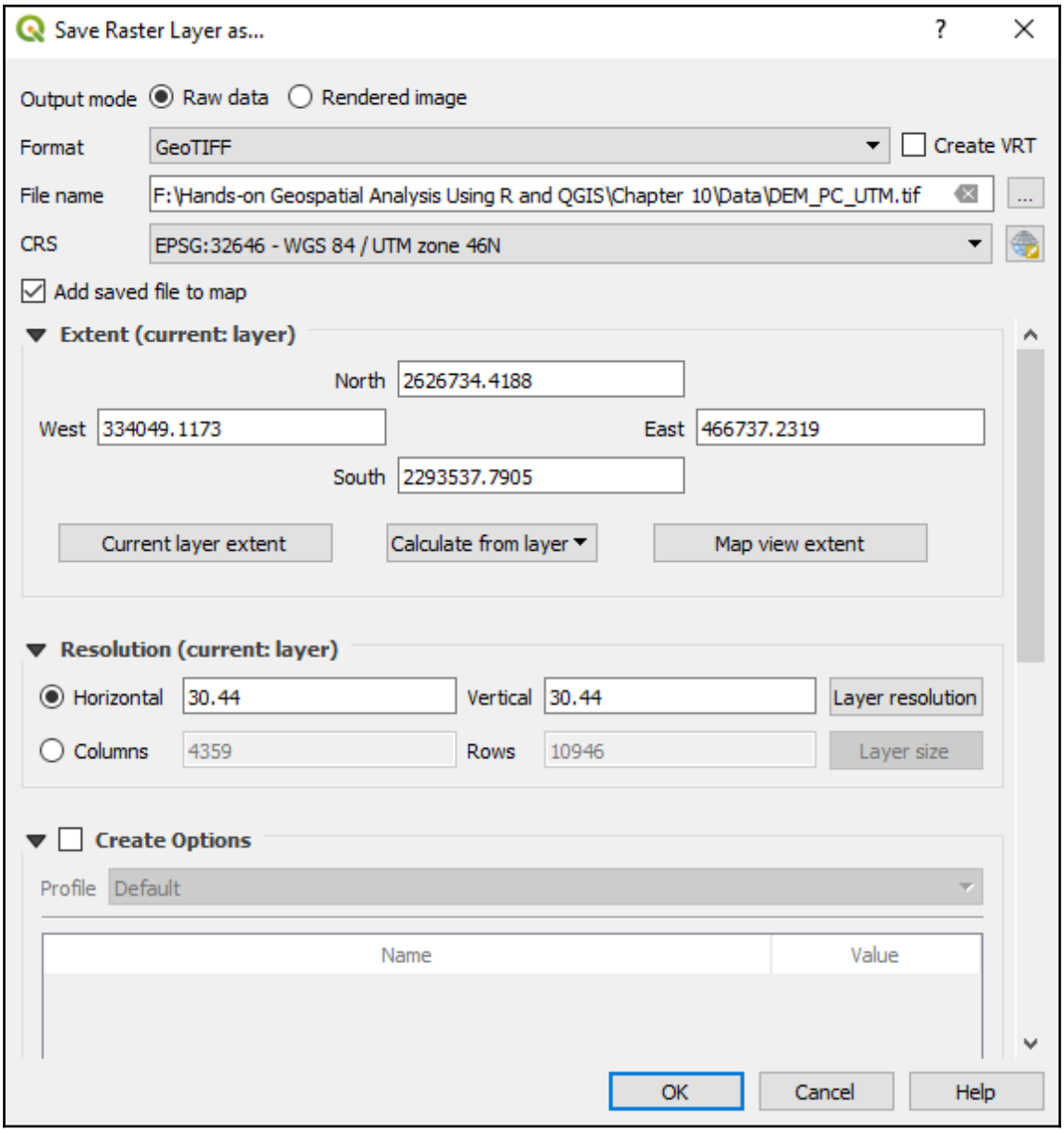
	id	class
1	3	Soil
2	2	Vegetation
3	1	Water
4	1	Water

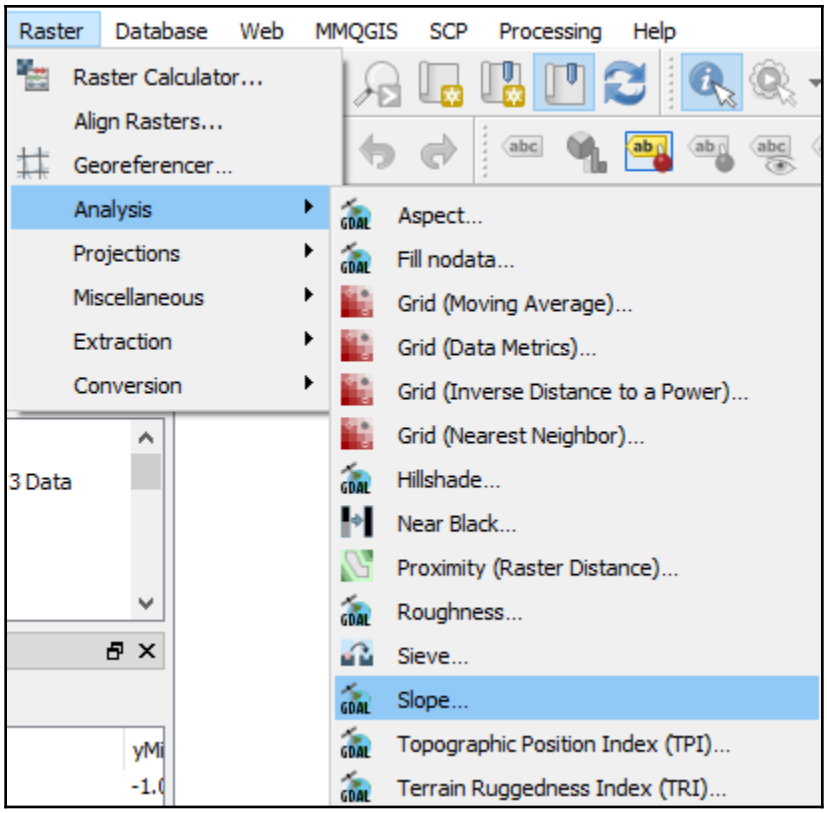
Chapter 10: Landslide Susceptibility Mapping

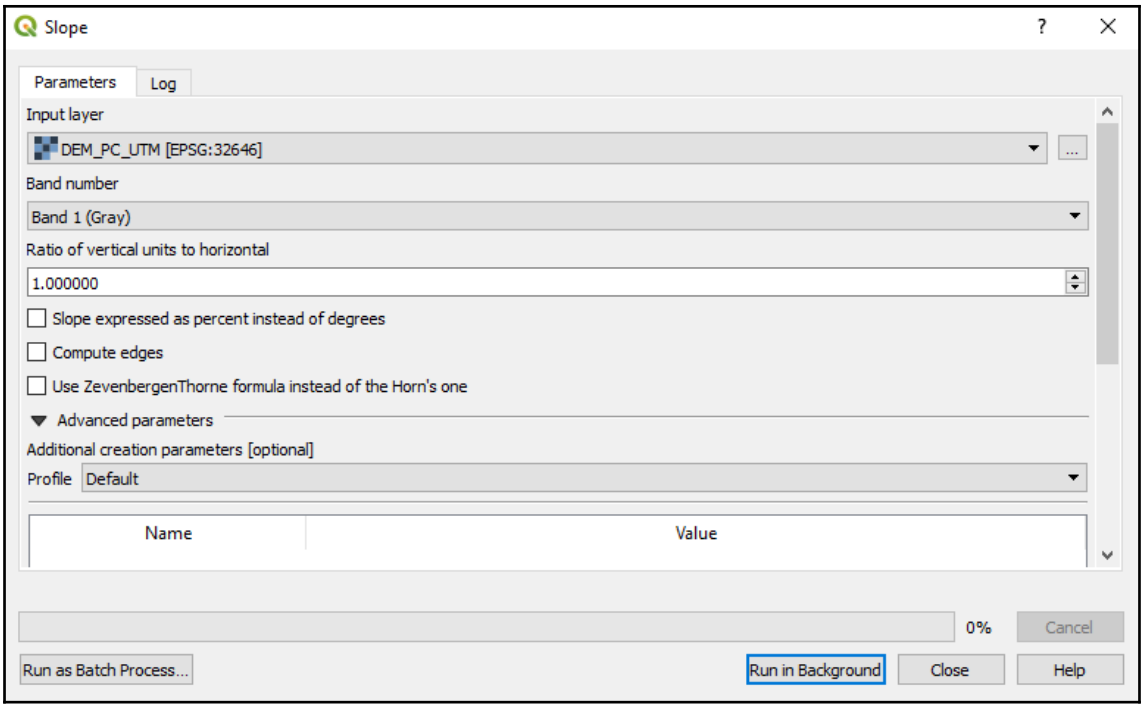

Raster
Database
Web
MMQGIS
SCP
Processing
Help
Raster Calculator...
Align Rasters...
Georeferencer...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Assign Projection...
Warp (Reproject)...

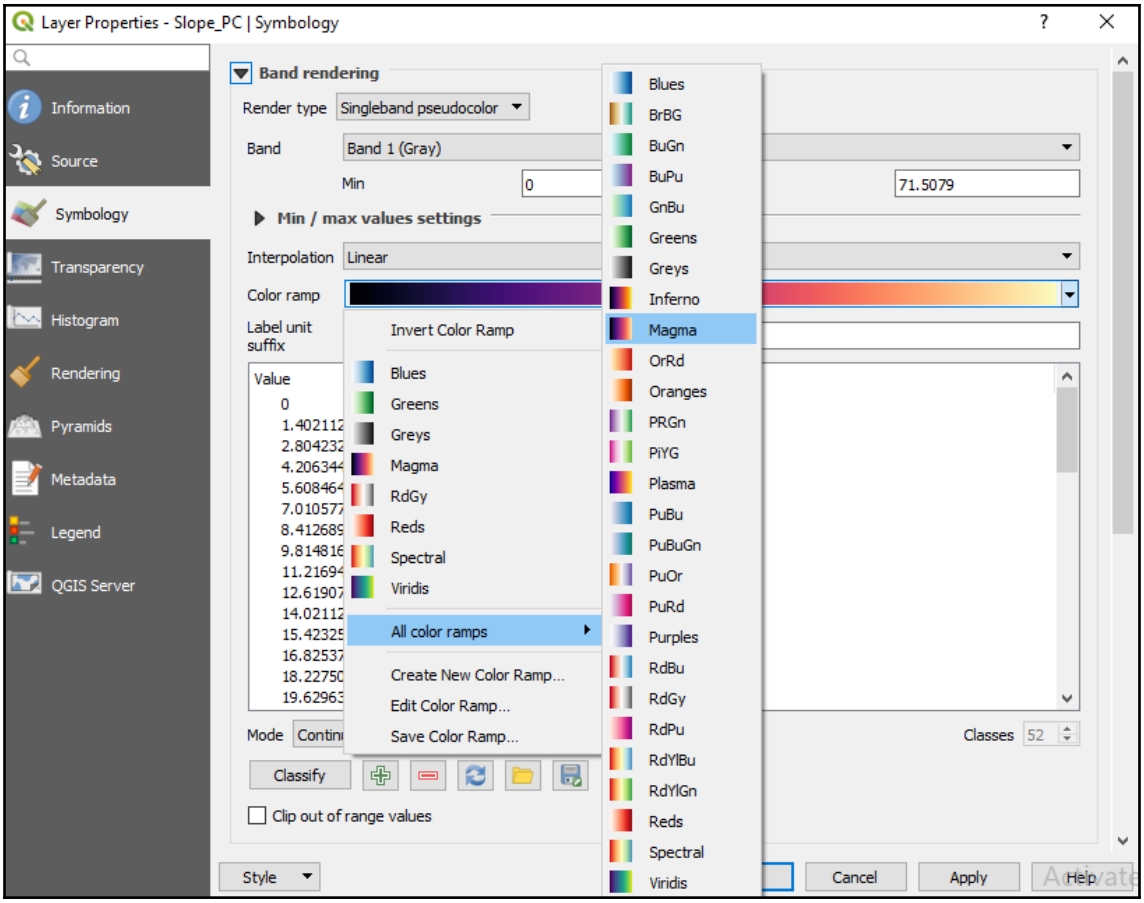

Warp (Reproject)
Parameters
Log
Input layer
DEM_PC [EPSG:4326]
Source CRS [optional]
Default CRS: EPSG:4326 - WGS 84
Target CRS
EPSG:4326 - WGS 84
Resampling method to use
Nearest neighbour
Nodata value for output bands [optional]
Not set
Output file resolution in target georeferenced units [optional]
Not set
Advanced parameters
Additional creation parameters [optional]
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

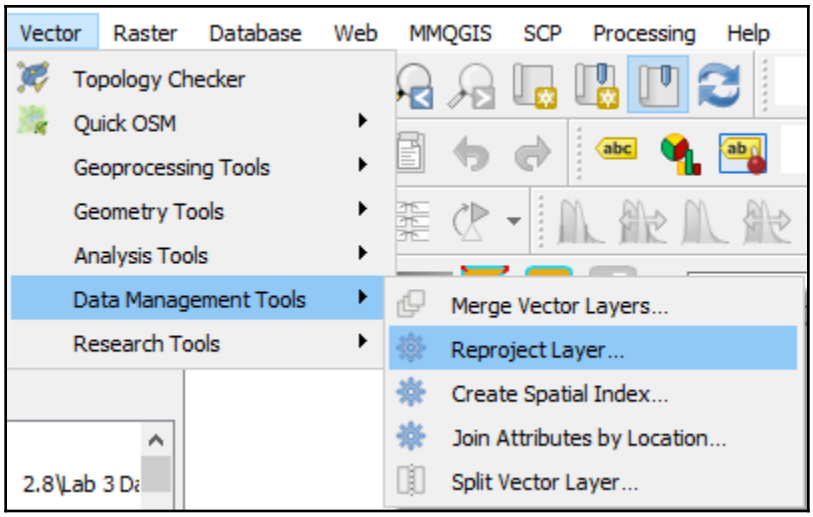

Coordinate Reference System Selector
Define this layer's coordinate reference system:
This layer appears to have no projection specification. By default, this layer will now have its projection set to that of the project, but you may override this by selecting a different projection below.
Filter
Recently used coordinate reference systems
Coordinate Reference System
Authority ID
* Generated CRS (+proj=longlat +ellps=APL4.9 +no_defs)
USER:100001
* Generated CRS (+proj=longlat +ellps=andrae +no_defs)
USER:100000
Gulshan 303 / Bangladesh Transverse Mercator
EPSG:3106
WGS 84 / UTM zone 46N
EPSG:32646
WGS 84
EPSG:4326
Coordinate reference systems of the world
Hide deprecated CRSs
Coordinate Reference System
Authority ID
WGS 84 / UTM zone 44S
EPSG:32744
WGS 84 / UTM zone 45N
EPSG:32645
WGS 84 / UTM zone 45S
EPSG:32745
WGS 84 / UTM zone 46N
EPSG:32646
Selected CRS
WGS 84 / UTM zone 46N
Extent: 90.00, 0.00, 96.00, 84.00
Proj4: +proj=utm +zone=46 +datum=WGS84 +units=m +no_defs
OK
Cancel
Help

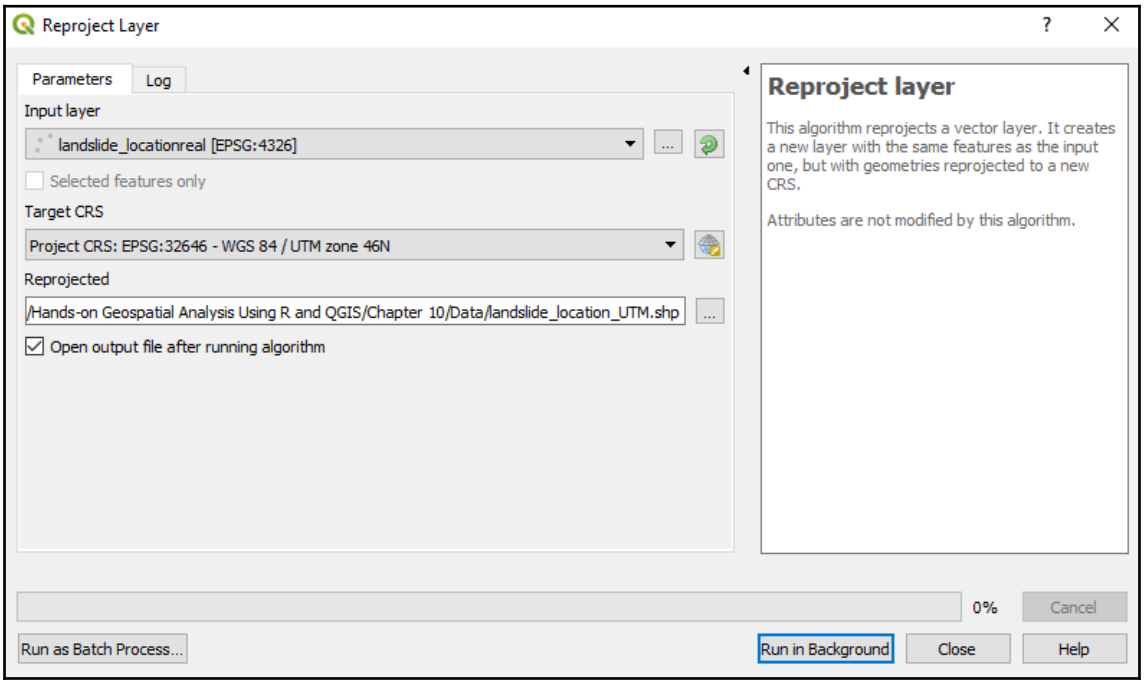

Save Raster Layer as...
Output mode
Raw data
Rendered image
Format
GeoTIFF
Create VRT
File name
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\Data\DEM_PC_UTM.tif
CRS
EPSG:32646 - WGS 84 / UTM zone 46N
Add saved file to map
Extent (current: layer)
North
2626734.4188
West
334049.1173
East
466737.2319
South
2293537.7905
Current layer extent
Calculate from layer
Map view extent
Resolution (current: layer)
Horizontal
30.44
Vertical
30.44
Layer resolution
Columns
4359
Rows
10946
Layer size
Create Options
Profile
Default
Name
Value
OK
Cancel
Help

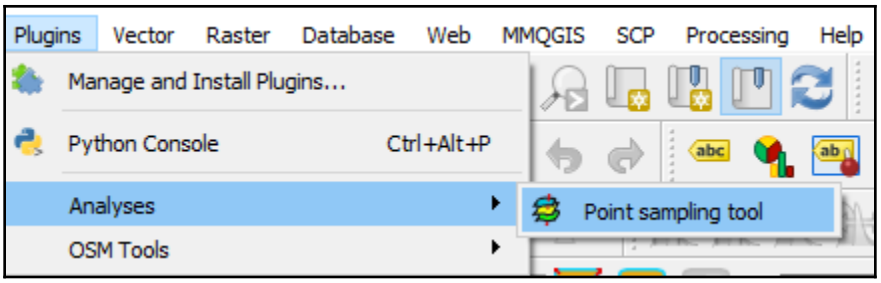

Raster
Database
Web
MMQGIS
SCP
Processing
Help
Raster Calculator...
Align Rasters...
Georeferencer...
Analysis
Projections
Miscellaneous
Extraction
Conversion
3 Data
Aspect...
Fill nodata...
Grid (Moving Average)...
Grid (Data Metrics)...
Grid (Inverse Distance to a Power)...
Grid (Nearest Neighbor)...
Hillshade...
Near Black...
Proximity (Raster Distance)...
Roughness...
Sieve...
Slope...
Topographic Position Index (TPI)...
Terrain Ruggedness Index (TRI)...

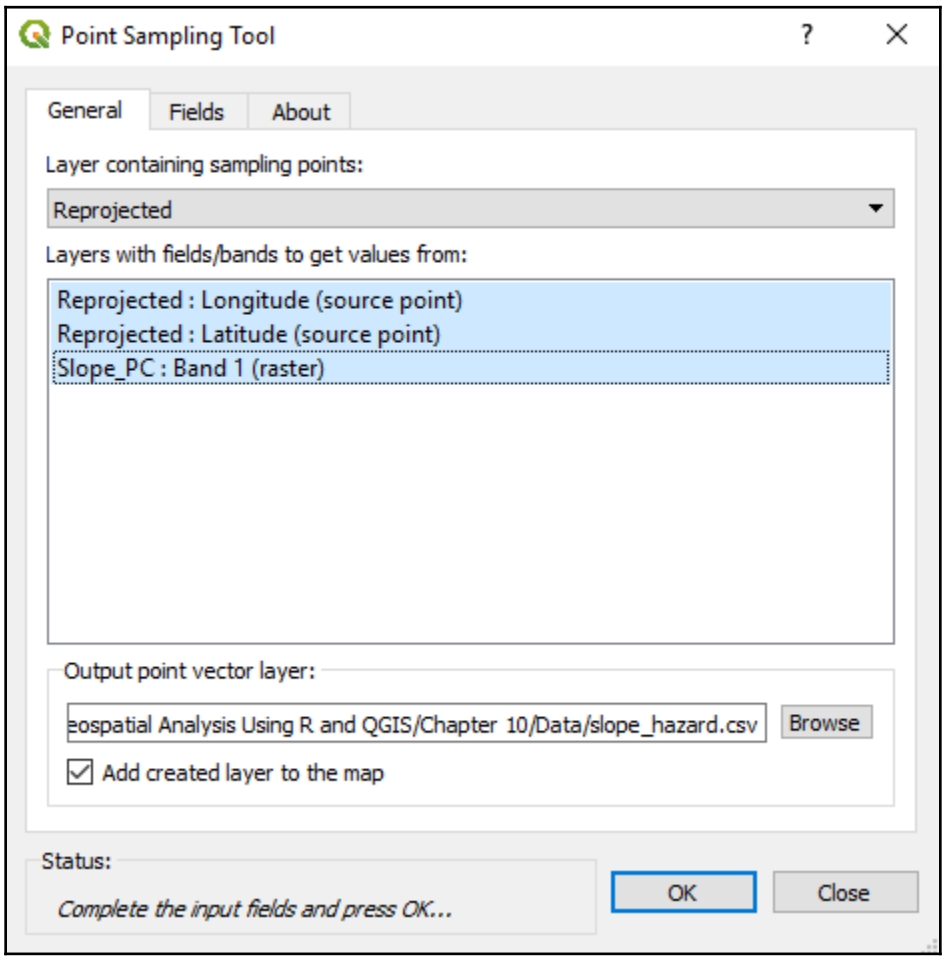

Slope
Parameters
Log
Input layer
DEM_PC_UTM [EPSG:32646]
Band number
Band 1 (Gray)
Ratio of vertical units to horizontal
1.000000
Slope expressed as percent instead of degrees
Compute edges
Use ZevenbergenThorne formula instead of the Horn's one
Advanced parameters
Additional creation parameters [optional]
Profile
Default
Name
Value
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help


Layer Properties - Slope_PC | Symbology
Information
Source
Symbology
Transparency
Histogram
Rendering
Pyramids
Metadata
Legend
QGIS Server
Band rendering
Render type
Singleband pseudocolor
Band
Band 1 (Gray)
Min
0
71.5079
Min / max values settings
Interpolation
Linear
Color ramp
Label unit suffix
Value
Invert Color Ramp
Blues
Greens
Greys
Magma
RdGy
Reds
Spectral
Viridis
All color ramps
Create New Color Ramp...
Edit Color Ramp...
Save Color Ramp...
Mode
Classify
Classes
52
Clip out of range values
Style
Cancel
Apply
Help
BrBG
BuGn
BuPu
GnBu
Inferno
OrRd
Oranges
PRGn
PiYG
Plasma
PuBu
PuBuGn
PuOr
PuRd
Purples
RdBu
RdPu
RdYlBu
RdYlGn


Vector
Raster
Database
Web
MMQGIS
SCP
Processing
Help
Topology Checker
Quick OSM
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Merge Vector Layers...
Reproject Layer...
Create Spatial Index...
Join Attributes by Location...
Split Vector Layer...
2.8\Lab 3 Da


Reproject Layer
Parameters
Log
Input layer
landslide_locationreal [EPSG:4326]
Selected features only
Target CRS
Project CRS: EPSG:32646 - WGS 84 / UTM zone 46N
Reprojected
/Hands-on Geospatial Analysis Using R and QGIS/Chapter 10/Data/landslide_location_UTM.shp
Open output file after running algorithm
Reproject layer
This algorithm reprojects a vector layer. It creates a new layer with the same features as the input one, but with geometries reprojected to a new CRS.
Attributes are not modified by this algorithm.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

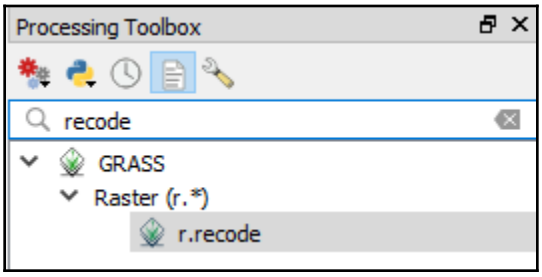

Plugins
Vector
Raster
Database
Web
MMQGIS
SCP
Processing
Help
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
Analyses
OSM Tools
Point sampling tool

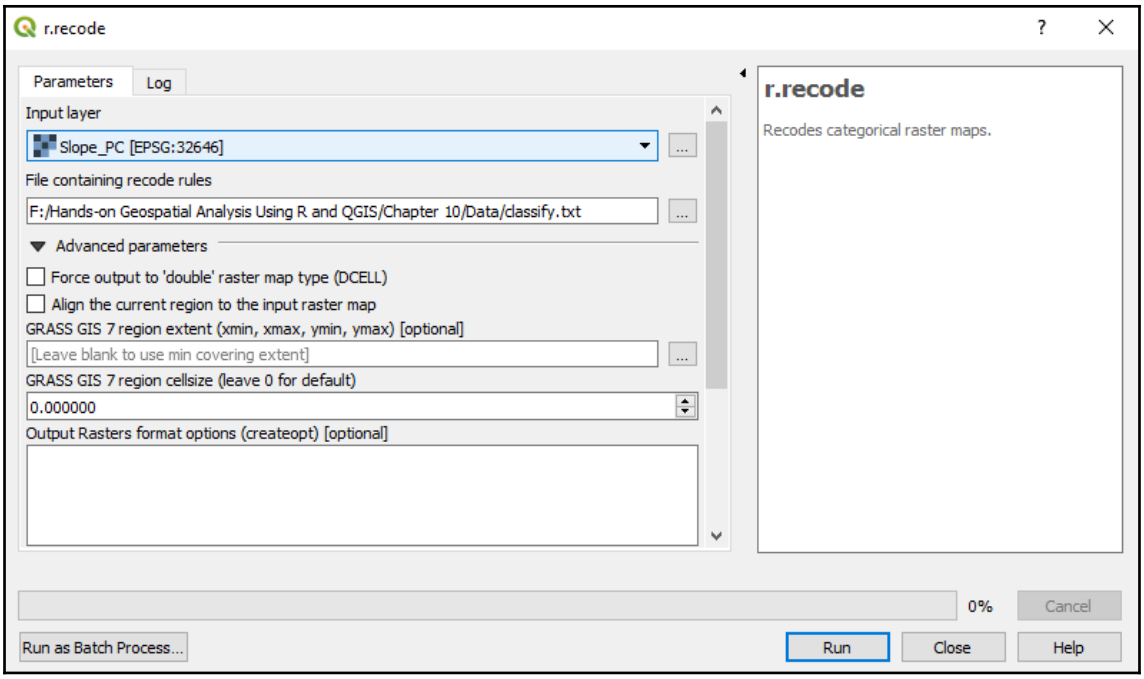

Point Sampling Tool
General
Fields
About
Layer containing sampling points:
Reprojected
Layers with fields/bands to get values from:
Reprojected : Longitude (source point)
Reprojected : Latitude (source point)
Slope_PC : Band 1 (raster)
Output point vector layer:
eospatial Analysis Using R and QGIS/Chapter 10/Data/slope_hazard.csv
Browse
Add created layer to the map
Status:
Complete the input fields and press OK...
OK
Close

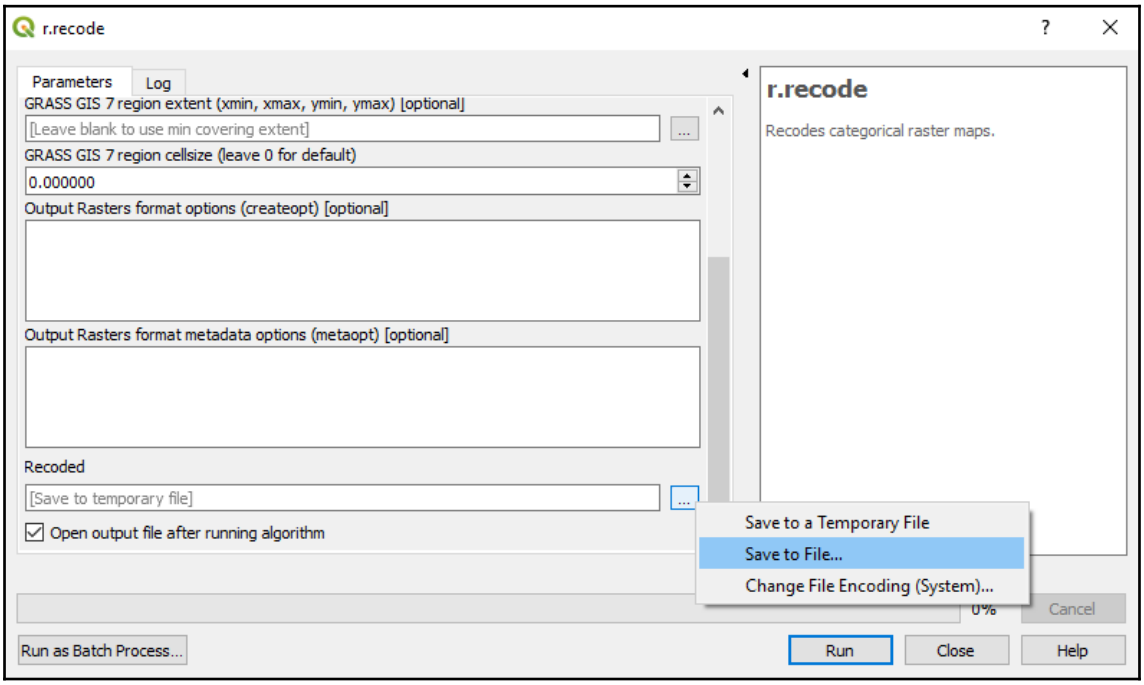
	A	B	C
1	Longitude	Latitude	Slope_PC
2	92.1068	22.5746	10.33463
3	92.2153	22.1879	4.51635
4	91.7879	22.4731	9.0781
5	92.2246	22.1826	3.67018
6	92.2284	22.1986	19.50911

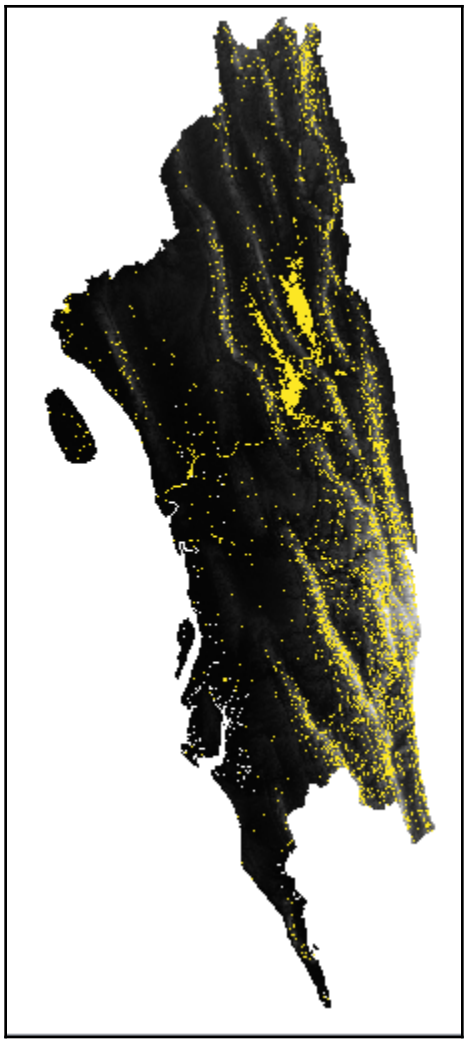
```
[1]  0.33273 23.58223
```

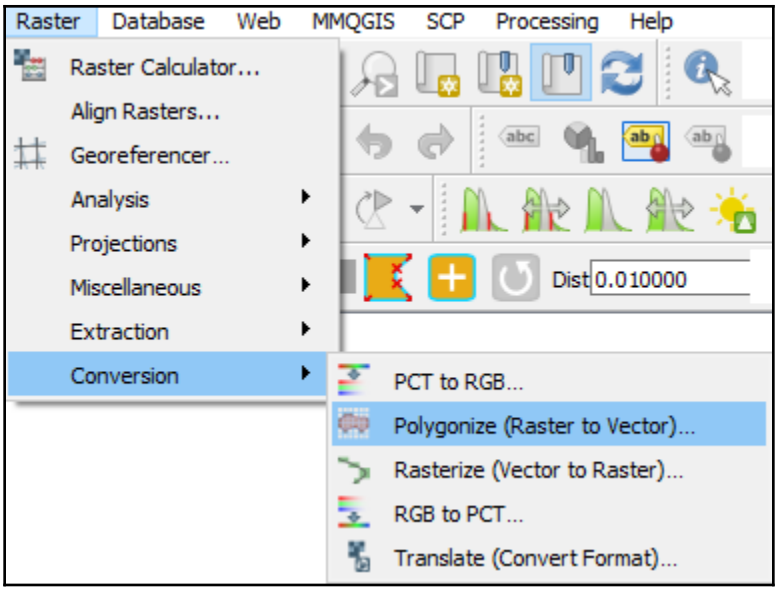
```
*:0.33273:0
0.33273:23.582223:NULL
23.582223:*:0
```

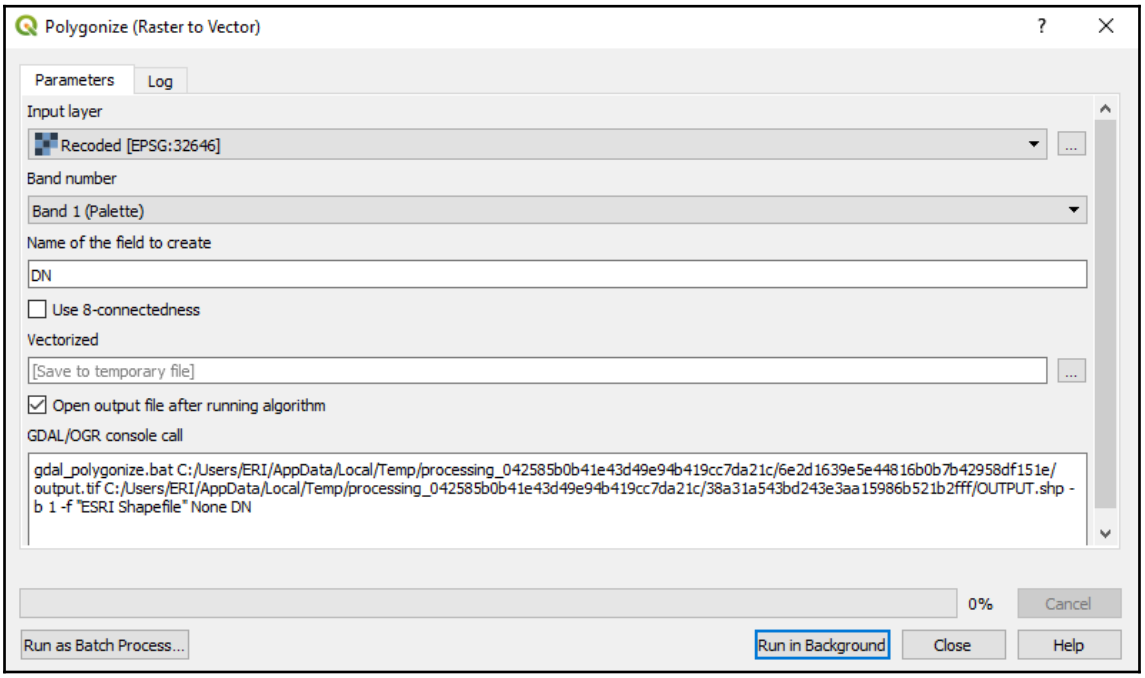


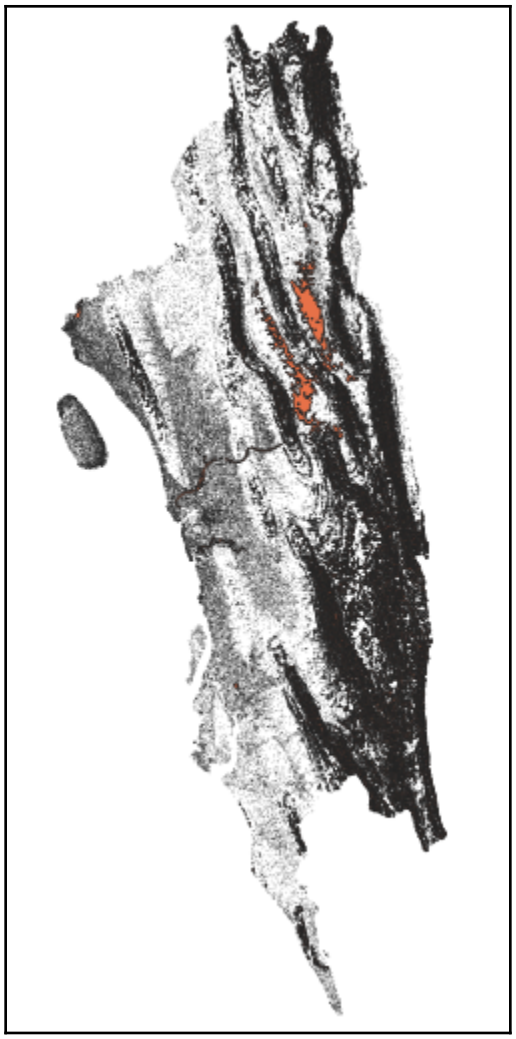

r.recode
Parameters
Log
Input layer
Slope_PC [EPSG:32646]
File containing recode rules
F:/Hands-on Geospatial Analysis Using R and QGIS/Chapter 10/Data/classify.txt
Advanced parameters
Force output to 'double' raster map type (DCELL)
Align the current region to the input raster map
GRASS GIS 7 region extent (xmin, xmax, ymin, ymax) [optional]
[Leave blank to use min covering extent]
GRASS GIS 7 region cellsize (leave 0 for default)
0.000000
Output Rasters format options (createopt) [optional]
r.recode
Recodes categorical raster maps.
0%
Cancel
Run as Batch Process...
Run
Close
Help

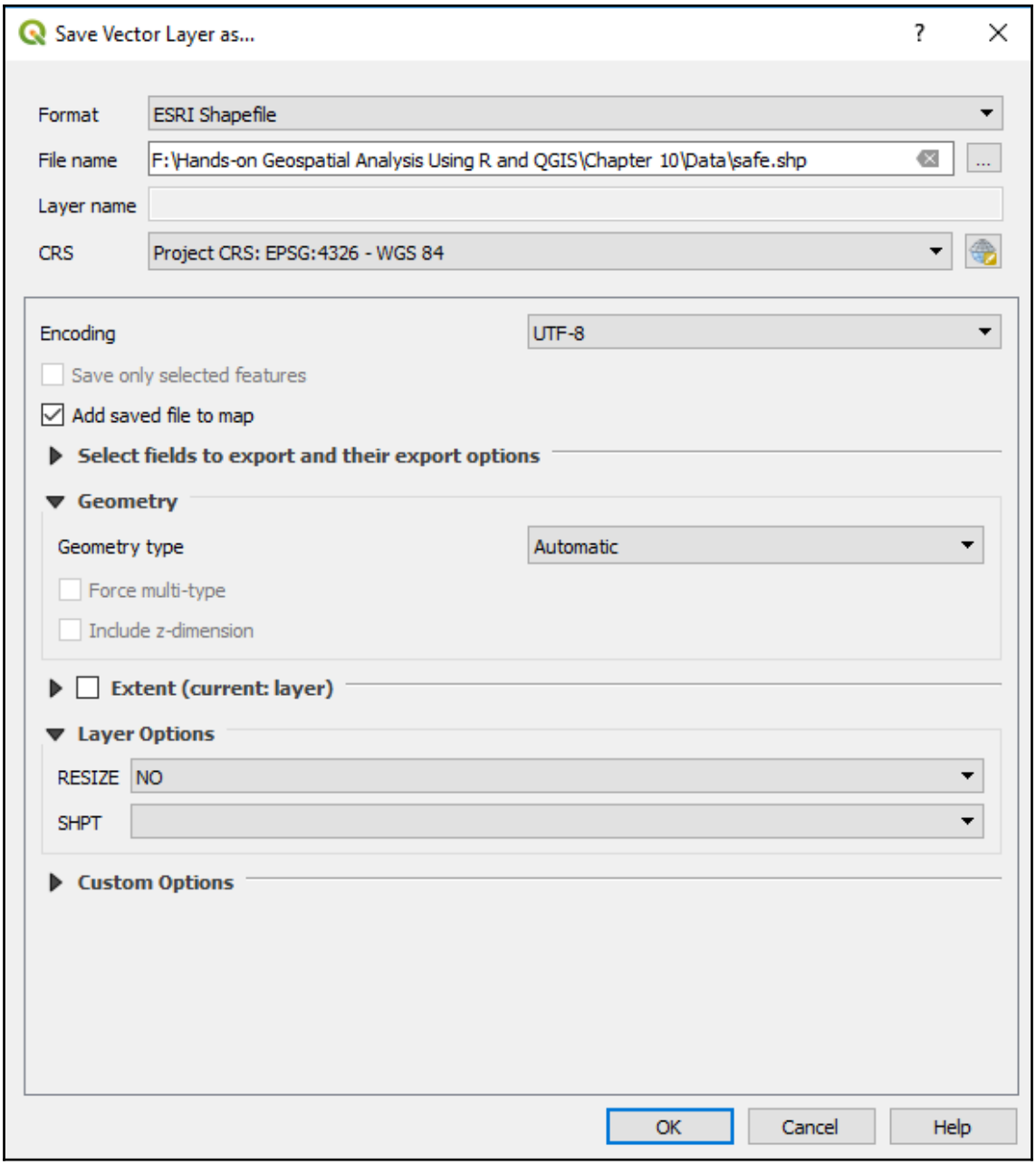

r.recode
Parameters
Log
GRASS GIS 7 region extent (xmin, xmax, ymin, ymax) [optional]
[Leave blank to use min covering extent]
GRASS GIS 7 region cellsize (leave 0 for default)
0.000000
Output Rasters format options (createopt) [optional]
Output Rasters format metadata options (metaopt) [optional]
Recoded
[Save to temporary file]
Open output file after running algorithm
Save to a Temporary File
Save to File...
Change File Encoding (System)...
r.recode
Recodes categorical raster maps.
0%
Cancel
Run as Batch Process...
Run
Close
Help

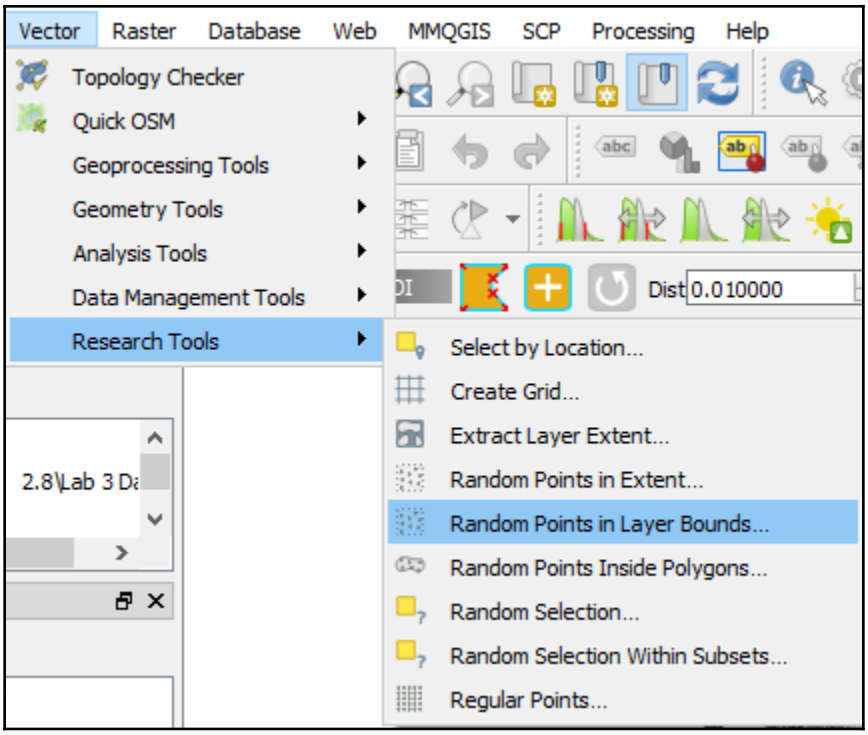


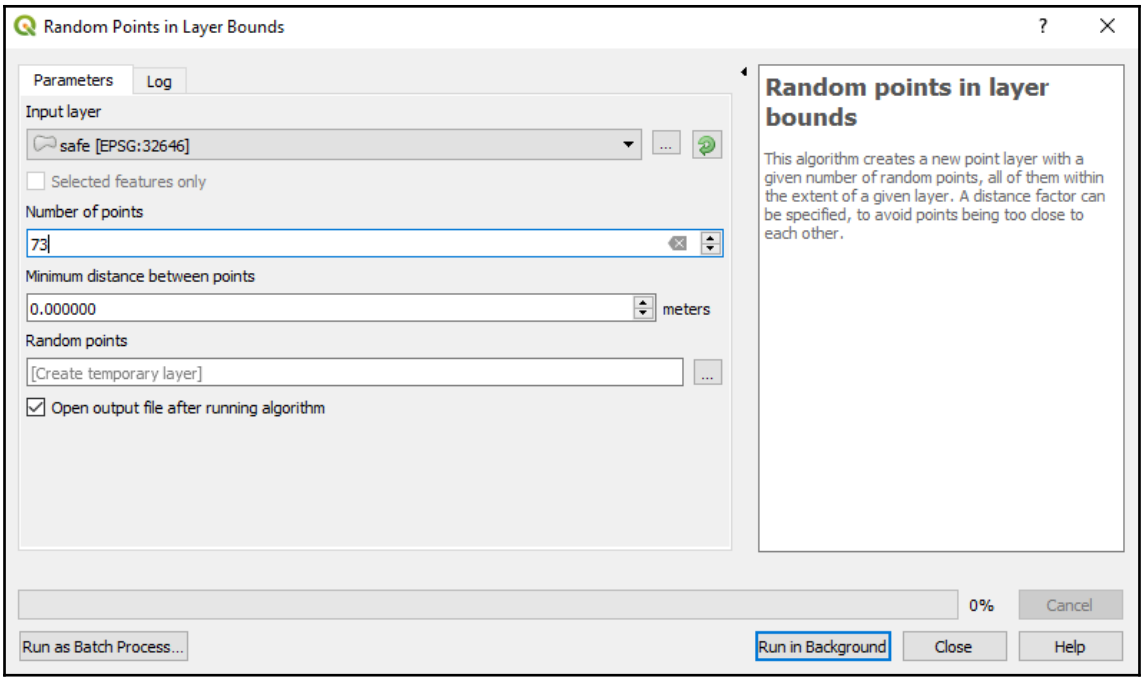

Raster
Database
Web
MMQGIS
SCP
Processing
Help
Raster Calculator...
Align Rasters...
Georeferencer...
Analysis
Projections
Miscellaneous
Extraction
Conversion
Dist 0.010000
PCT to RGB...
Polygonize (Raster to Vector)...
Rasterize (Vector to Raster)...
RGB to PCT...
Translate (Convert Format)...

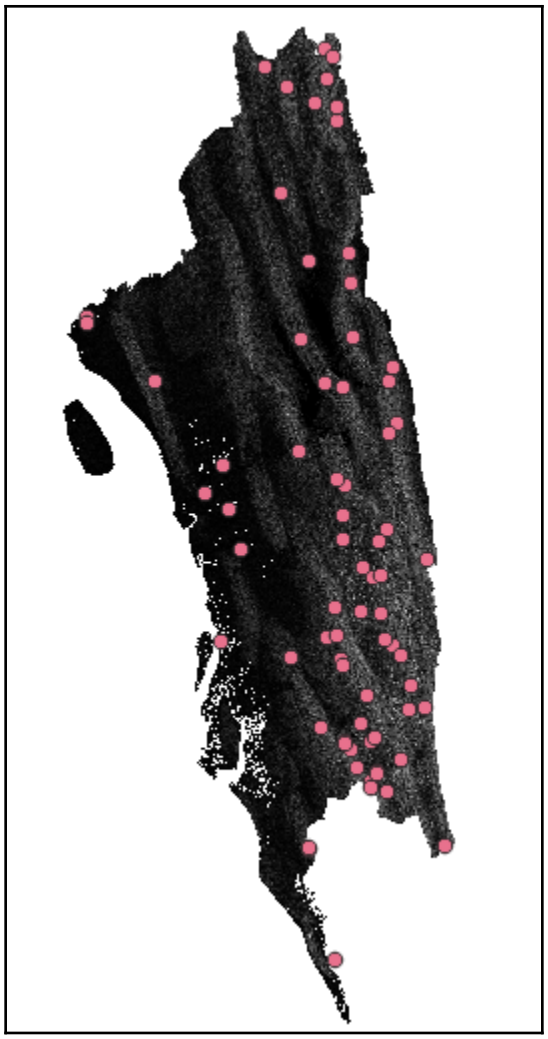

Polygonize (Raster to Vector)
Parameters
Log
Input layer
Recoded [EPSG:32646]
Band number
Band 1 (Palette)
Name of the field to create
DN
Use 8-connectedness
Vectorized
[Save to temporary file]
Open output file after running algorithm
GDAL/OGR console call
gdal_polygonize.bat C:/Users/ERI/AppData/Local/Temp/processing_042585b0b41e43d49e94b419cc7da21c/6e2d1639e5e44816b0b7b42958df151e/output.tif C:/Users/ERI/AppData/Local/Temp/processing_042585b0b41e43d49e94b419cc7da21c/38a31a543bd243e3aa15986b521b2fff/OUTPUT.shp -b 1 -f "ESRI Shapefile" None DN
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help

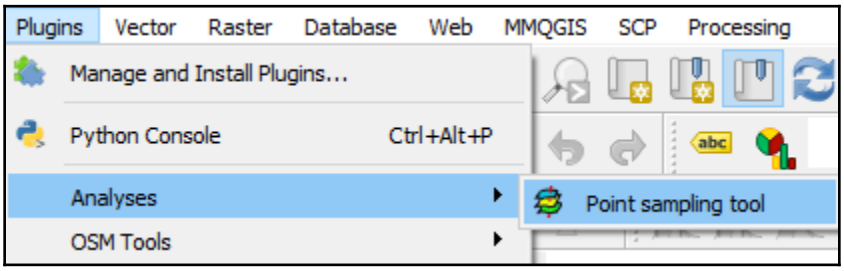


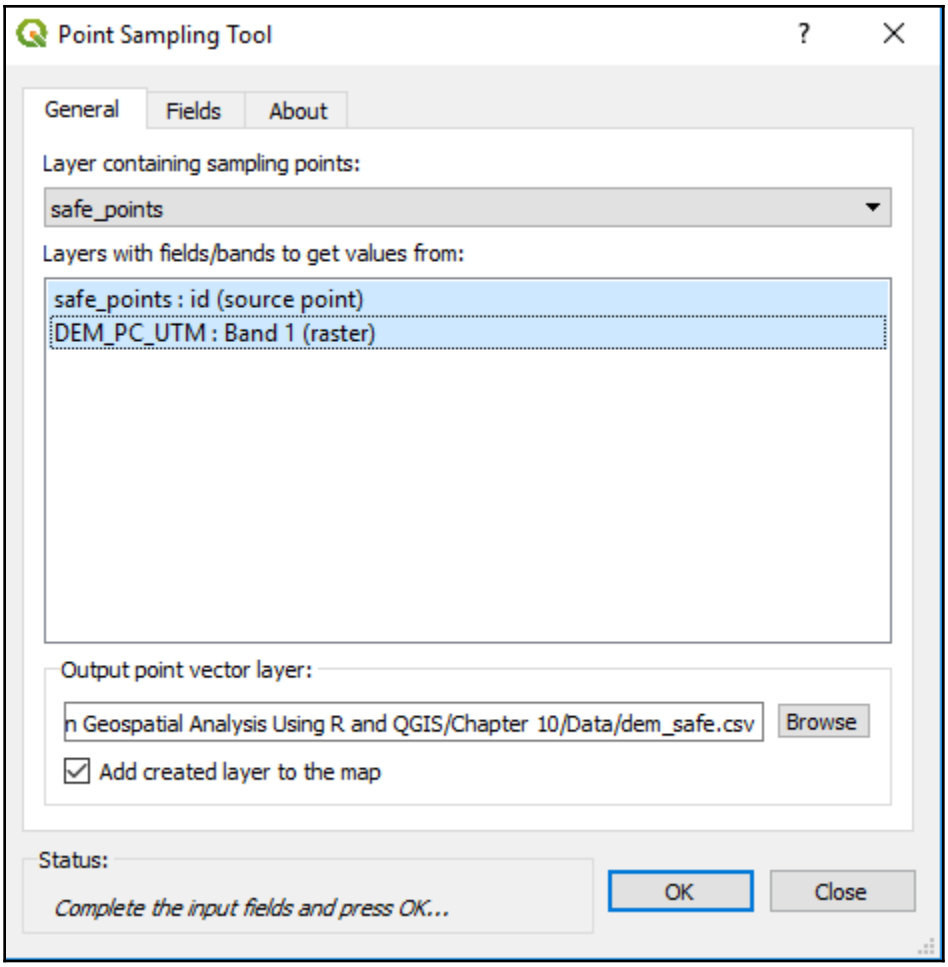

Save Vector Layer as...
Format
ESRI Shapefile
File name
F:\Hands-on Geospatial Analysis Using R and QGIS\Chapter 10\Data\safe.shp
Layer name
CRS
Project CRS: EPSG:4326 - WGS 84
Encoding
UTF-8
Save only selected features
Add saved file to map
Select fields to export and their export options
Geometry
Geometry type
Automatic
Force multi-type
Include z-dimension
Extent (current: layer)
Layer Options
RESIZE
NO
SHPT
Custom Options
OK
Cancel
Help


Vector
Raster
Database
Web
MMQGIS
SCP
Processing
Help
Topology Checker
Quick OSM
Geoprocessing Tools
Geometry Tools
Analysis Tools
Data Management Tools
Research Tools
Dist 0.010000
2.8\Lab 3 Da
Select by Location...
Create Grid...
Extract Layer Extent...
Random Points in Extent...
Random Points in Layer Bounds...
Random Points Inside Polygons...
Random Selection...
Random Selection Within Subsets...
Regular Points...


Random Points in Layer Bounds
Parameters
Log
Input layer
safe [EPSG:32646]
Selected features only
Number of points
73
Minimum distance between points
0.000000
meters
Random points
[Create temporary layer]
Open output file after running algorithm
Random points in layer bounds
This algorithm creates a new point layer with a given number of random points, all of them within the extent of a given layer. A distance factor can be specified, to avoid points being too close to each other.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help




Plugins
Vector
Raster
Database
Web
MMQGIS
SCP
Processing
Manage and Install Plugins...
Python Console
Ctrl+Alt+P
Analyses
OSM Tools
Point sampling tool



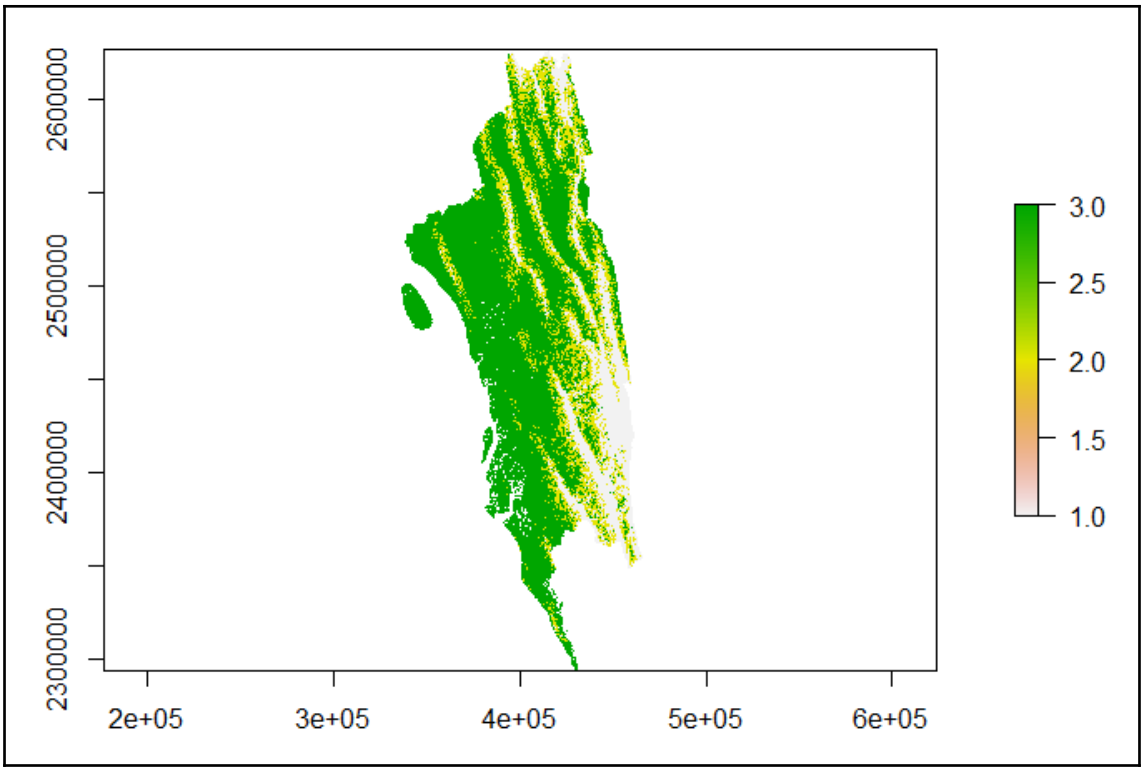
	DEM_PC_UTM	slope_PC	hazard
1	384	25.42593	0
2	110	33.32457	0
3	218	33.63253	0
4	96	28.33403	0
5	115	29.20467	0
6	381	23.96430	0

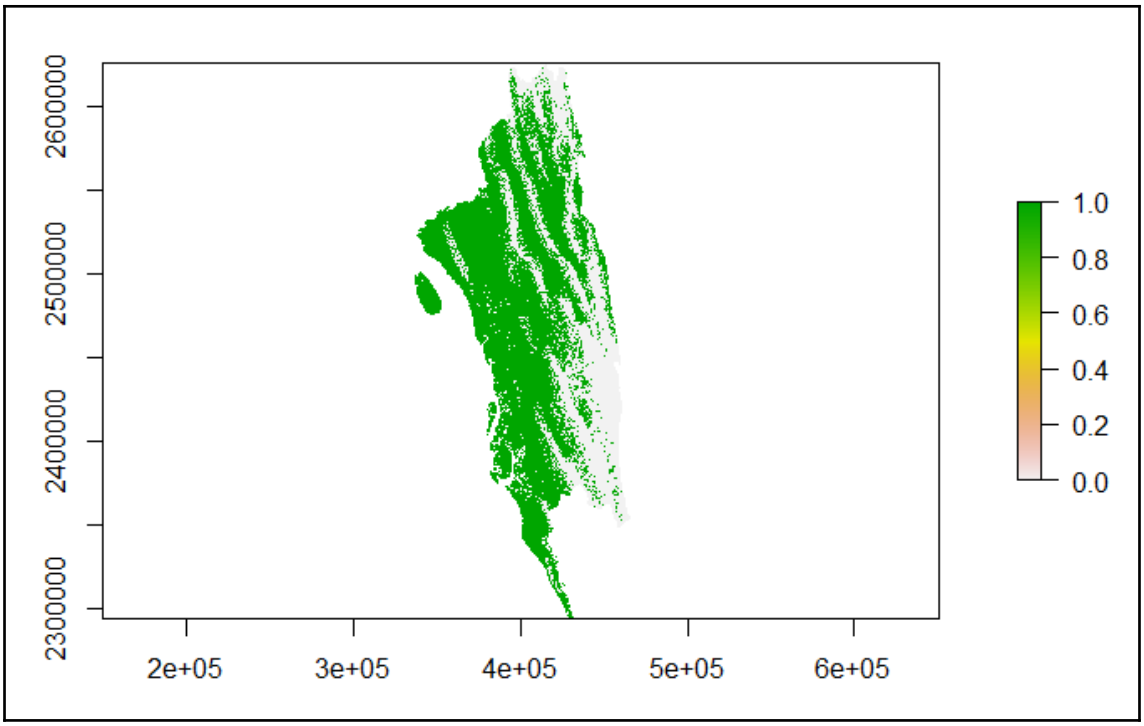
```
Call:
glm(formula = as.factor(hazard) ~ DEM_PC_UTM + Slope_PC, family = binomial,
    data = landslide)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5078  -0.4583   0.1160   0.5821   1.5567

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  3.111299   0.489978   6.350 2.15e-10 ***
DEM_PC_UTM  -0.010680   0.005182  -2.061 0.039293 *
Slope_PC    -0.123692   0.033394  -3.704 0.000212 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 202.40  on 145  degrees of freedom
Residual deviance: 106.62  on 143  degrees of freedom
AIC: 112.62

Number of Fisher Scoring iterations: 6
```

Decision

Truth		Do not reject H_o	Reject Ho in favor of H_A
	H_o true	True negative	False positive or type 1 error
	H_A true	False negative or type 2 error	True positive

```
pred_class  0  1
         0 64  9
         1  9 64
```


2600000
2500000
2400000
2300000
2e+05
3e+05
4e+05
5e+05
6e+05
3.0
2.5
2.0
1.5
1.0




```
  pred
     0  1
0 18  0
1  2 24
```

```
[1] 0.9545455
```