ANNEX 9

Manuals for Development and Operation of GIS Database for Monitoring DPM Action Plan, CBDRM and Disaster Education

The Project on Capacity Development
in Disaster Management in Thailand
(Phase-2)

Manuals for Development and Operation of GIS Database for Monitoring DPM Action Plan, CBDRM and Disaster Education

November 2013

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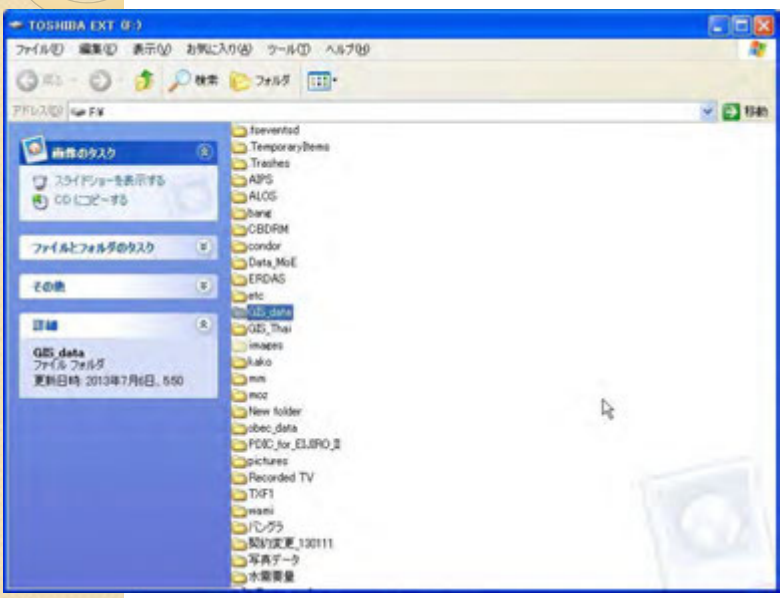
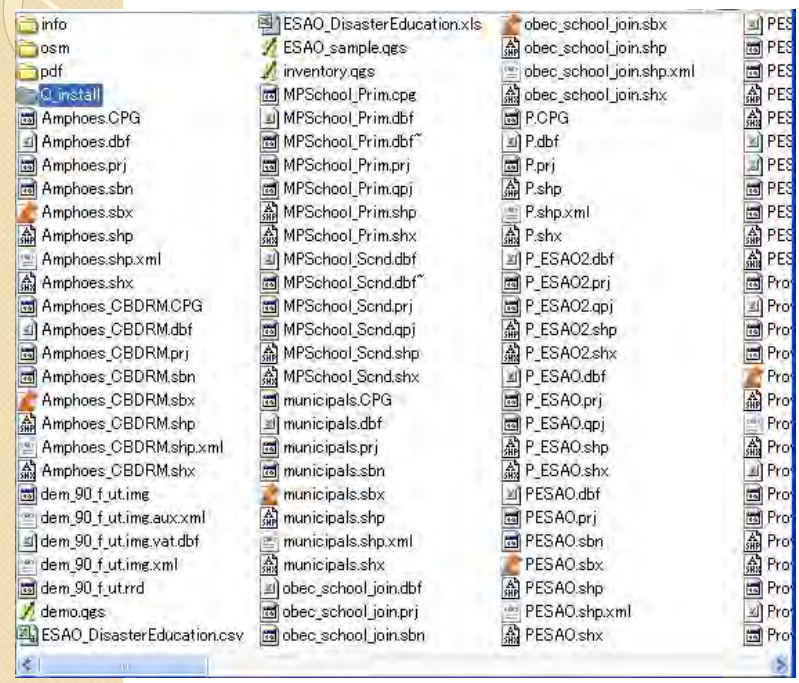
0. Installation of Quantum GIS

0.1 Data copy



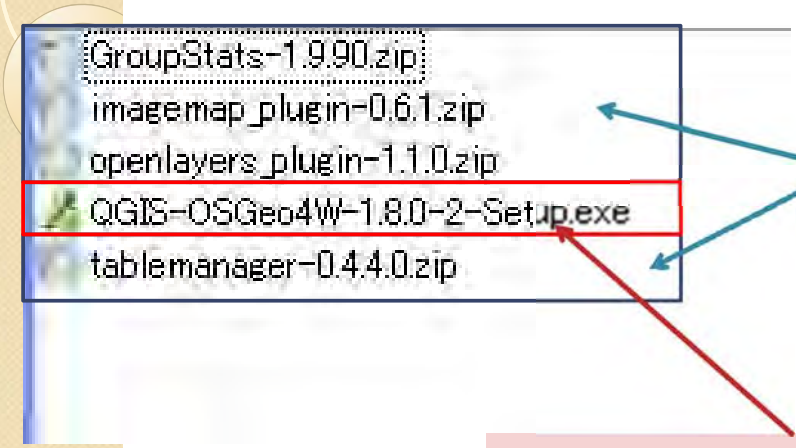
Copy "GIS_data" folder to your PC.



"GIS_data" folder contains GIS data (shape files and so on) and QGIS installer.

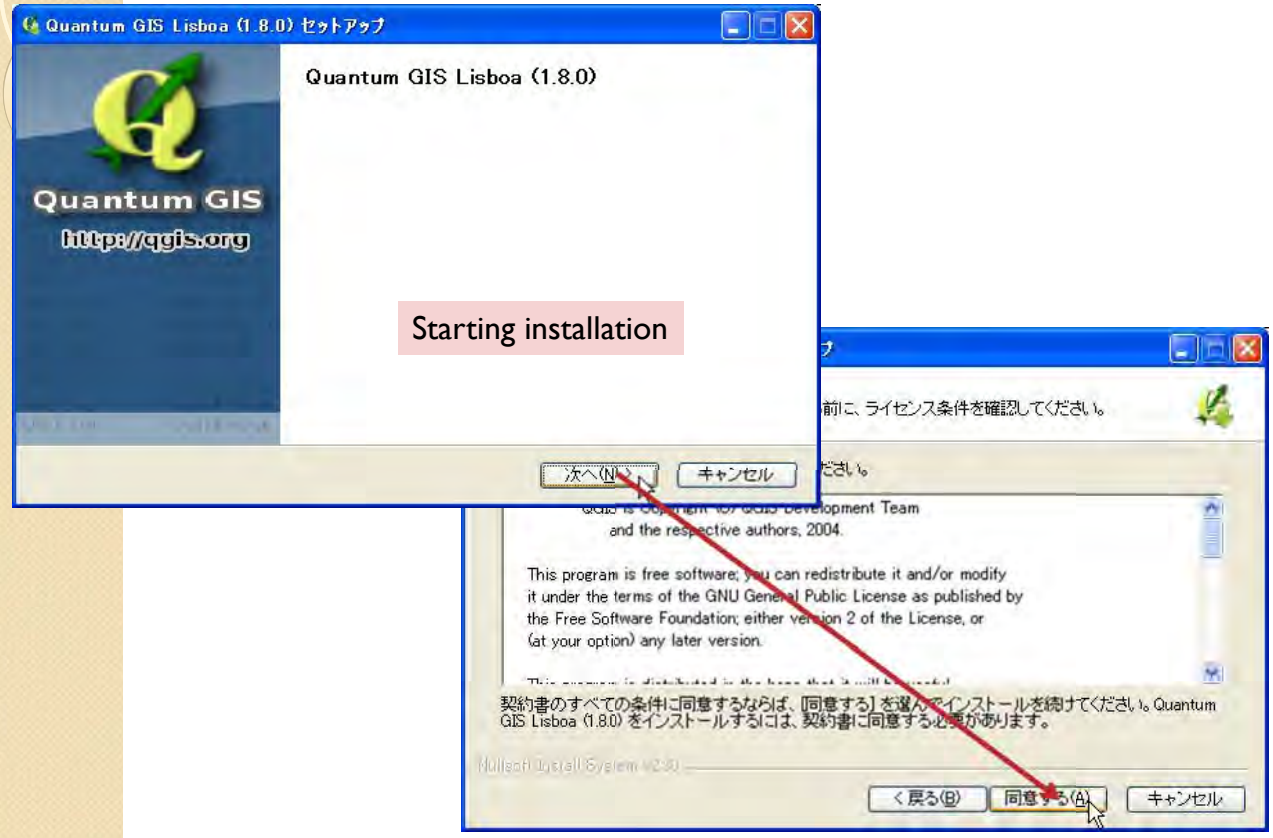
Open "Q_install" folder.

0.2 Installation (QGIS)

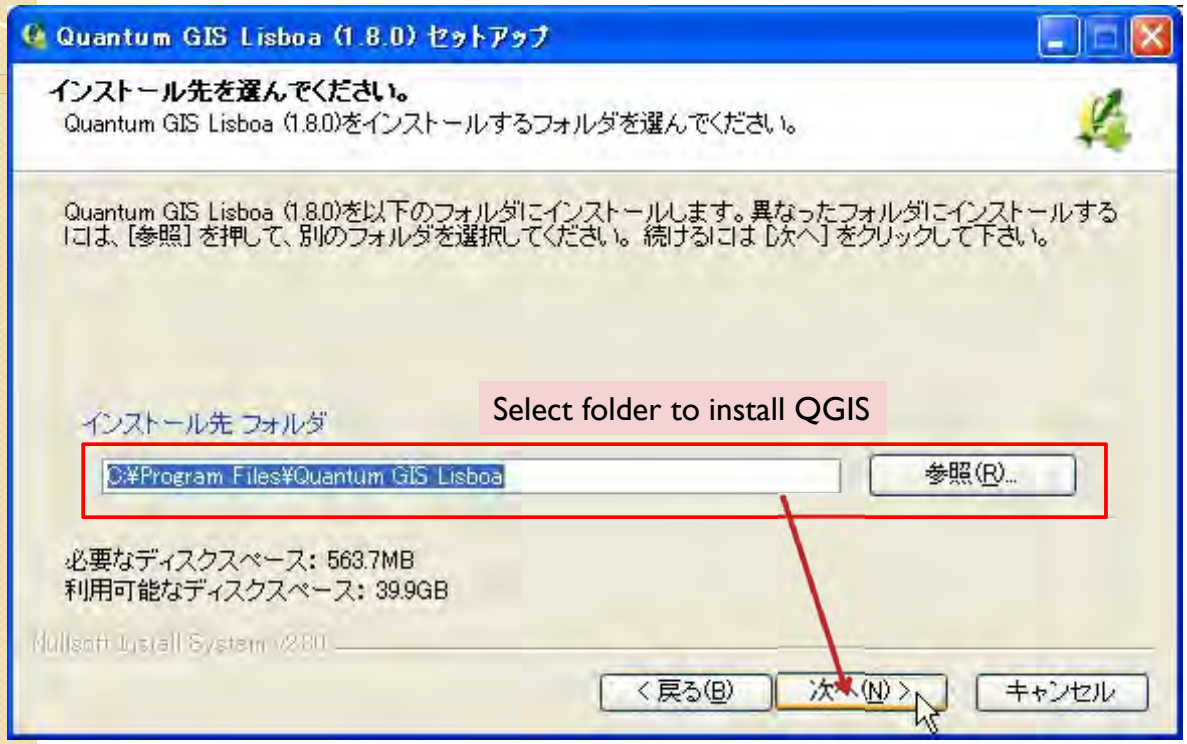


If you use windows 7 or later. In some case, it is necessary to install by administrator. Right click the QGIS installer and select "run as administrator".

0.2 Installation (QGIS)



0.2 Installation (QGIS)



0. Installation of Quantum GIS

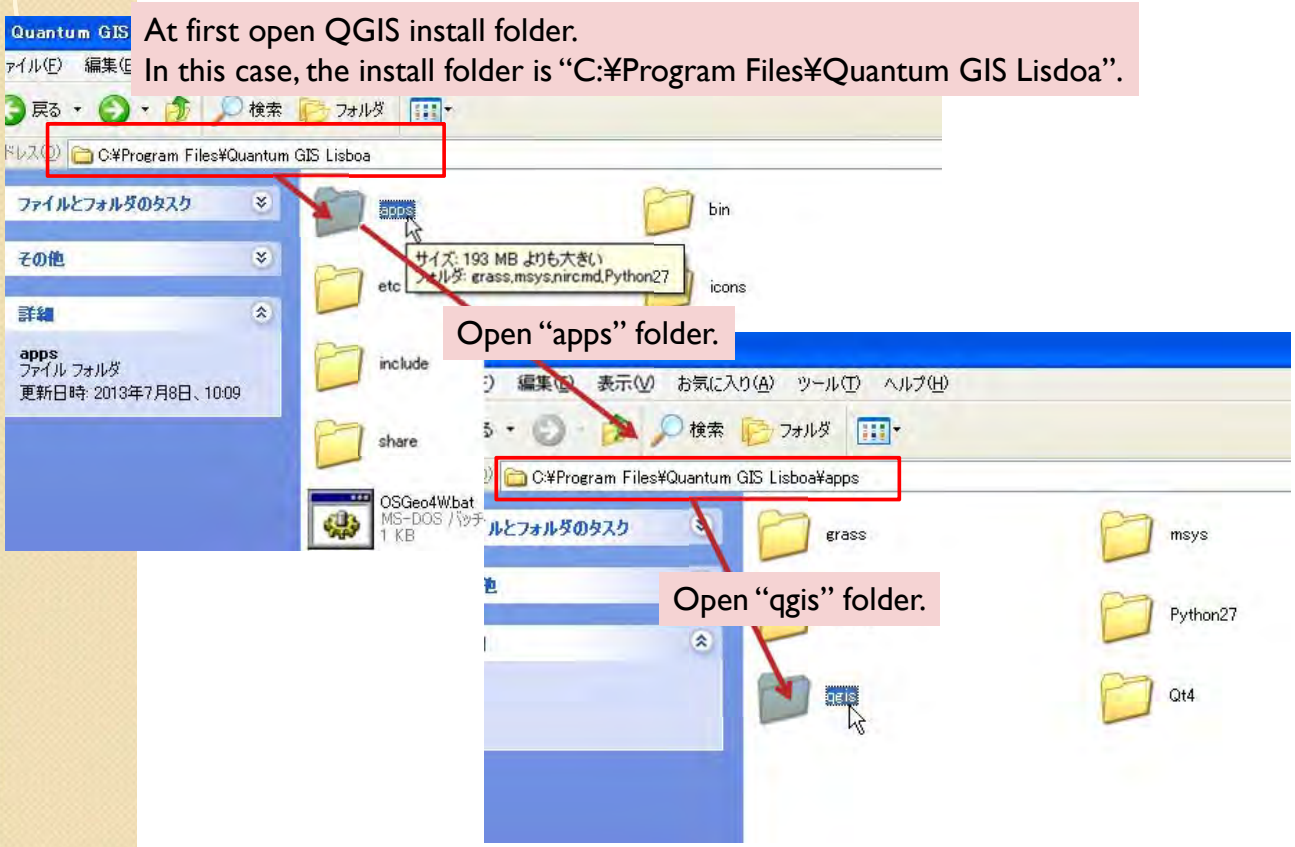
0.2 Installation (QGIS)

0. Installation of Quantum GIS

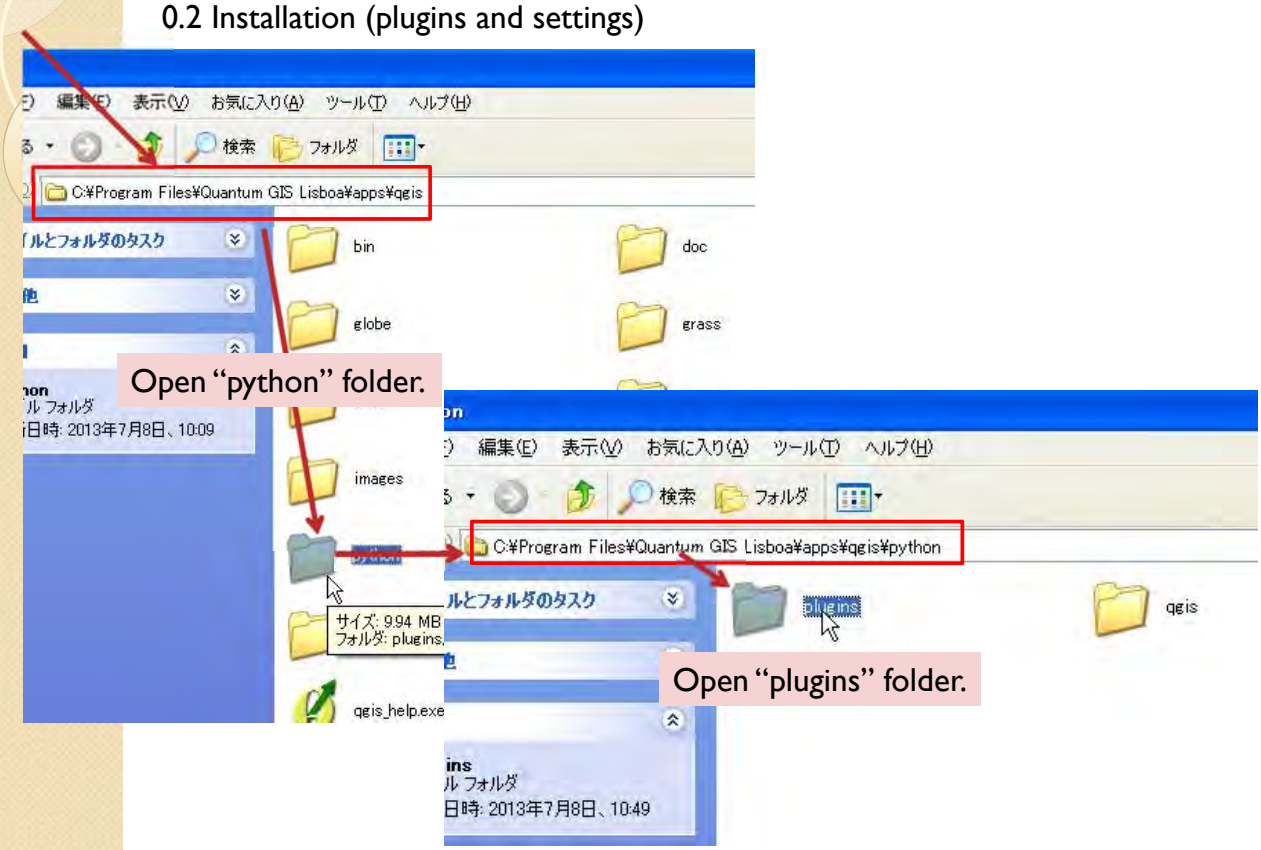
0.2 Installation (QGIS)

0. Installation of Quantum GIS

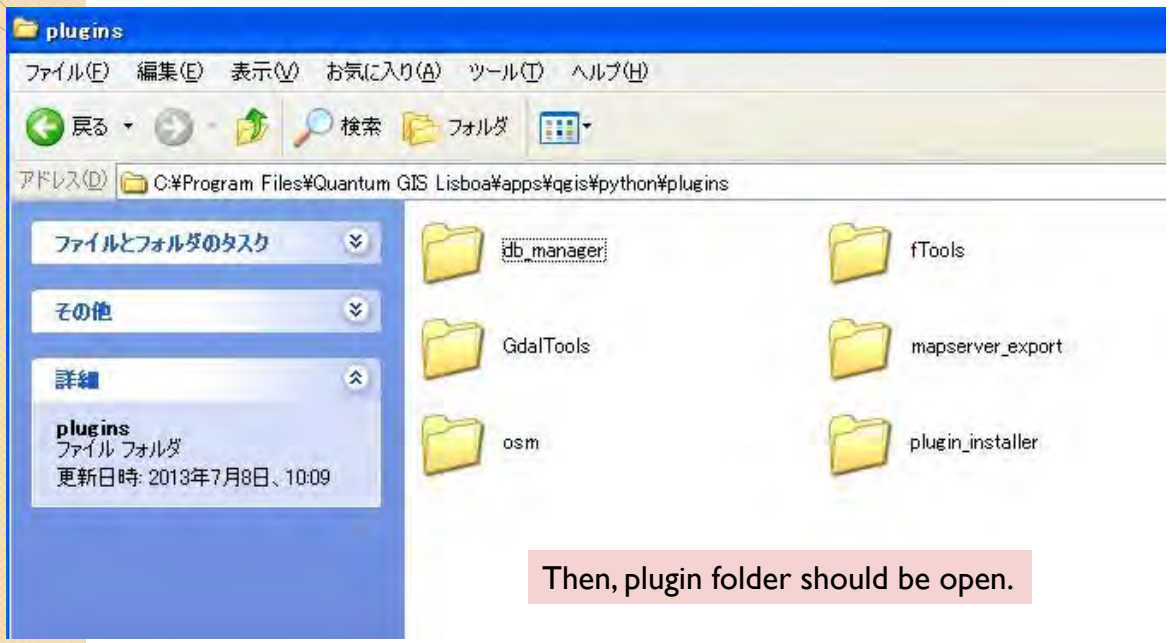
0.2 Installation (plugins and settings)



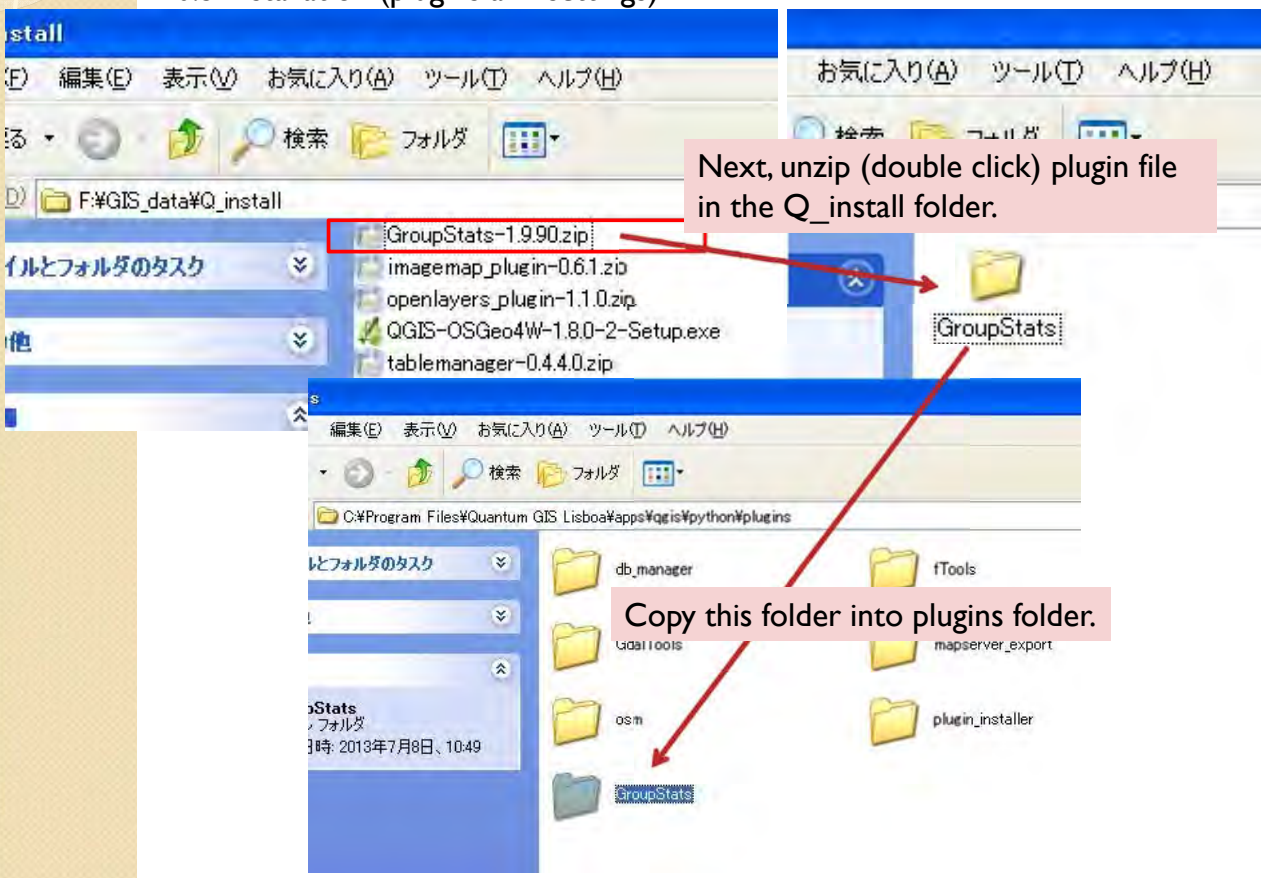
0.2 Installation (plugins and settings)



0.2 Installation (plugins and settings)

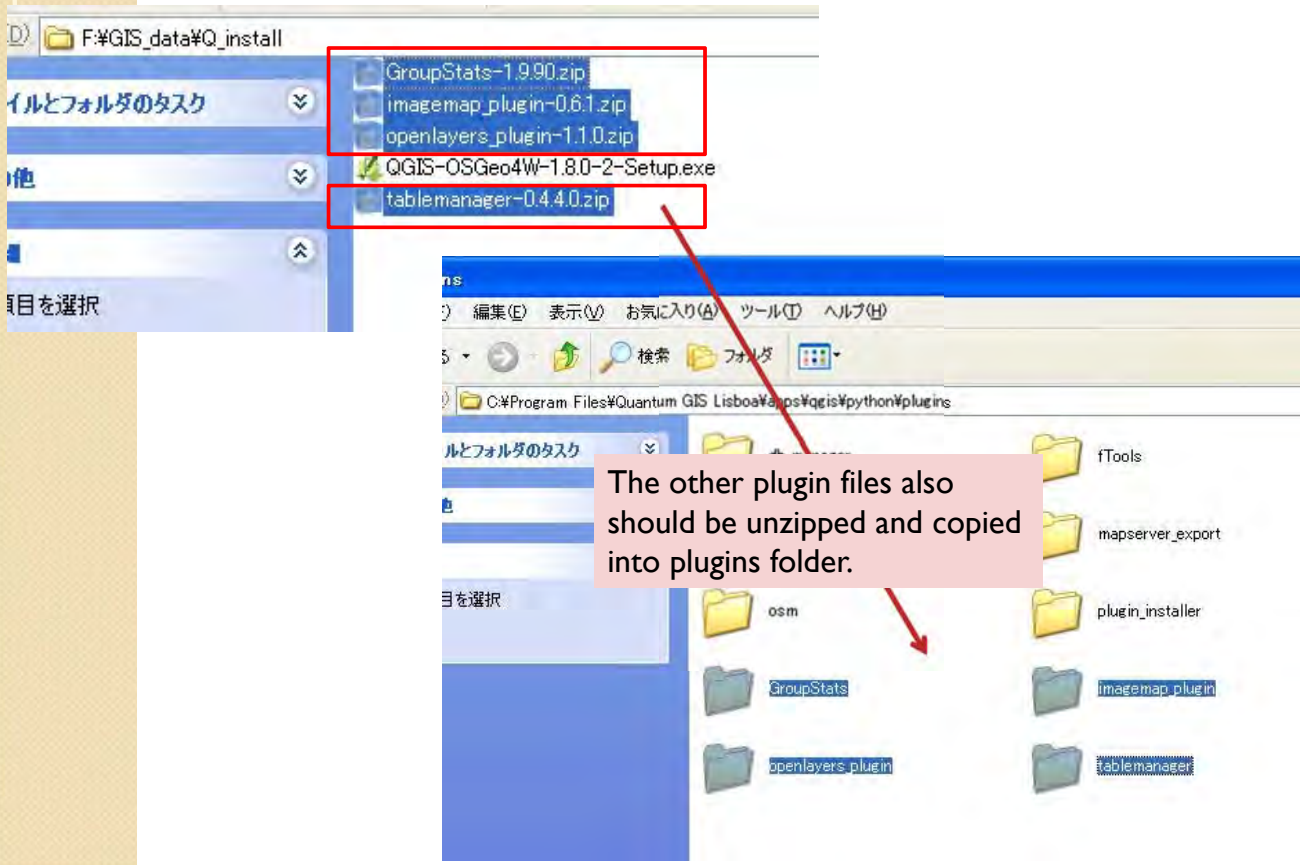


0.3 Installation (plugins and settings)



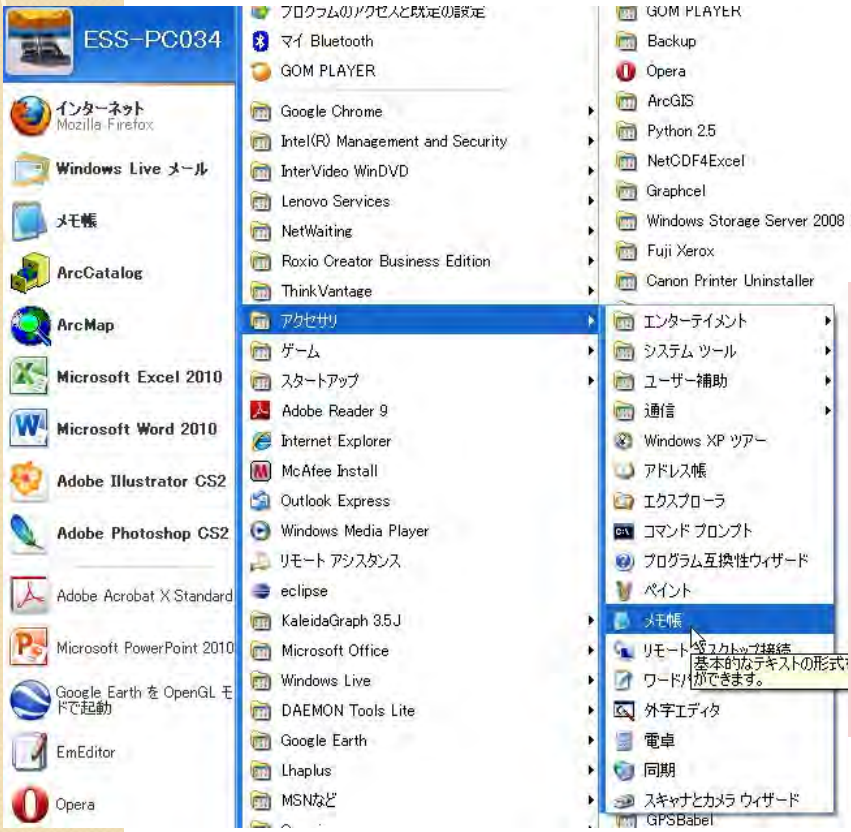
0. Installation of Quantum GIS

0.3 Installation (plugins and settings)



0. Installation of Quantum GIS

0.3 Installation (plugins and settings)

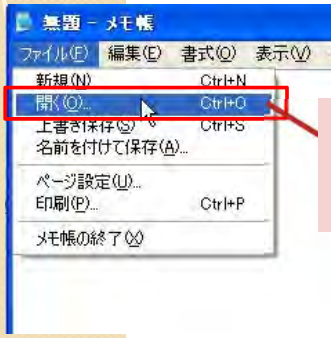


At the last of the setting, open "notepad".

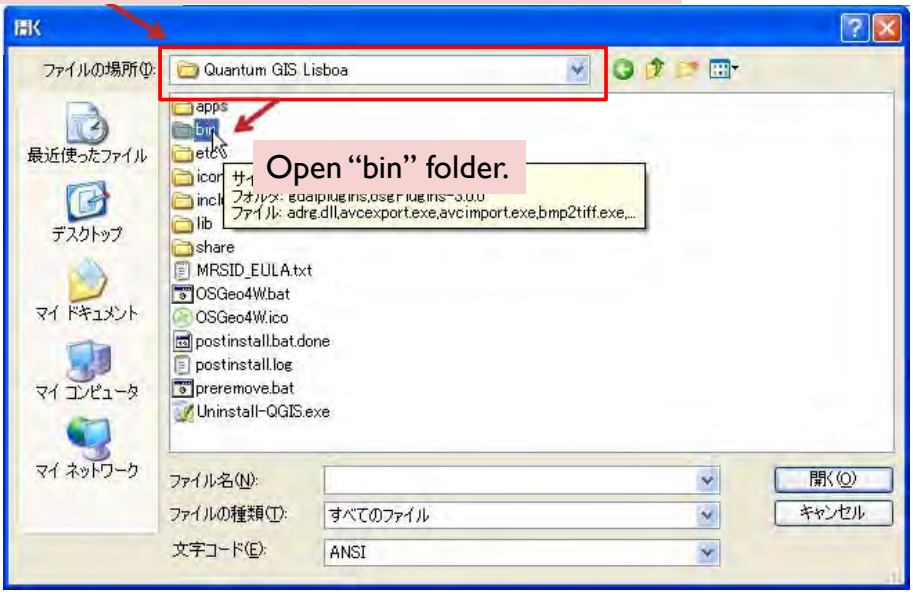
If you use windows 7 or later, in some case (ex. you install the program by "administrator" or into "program files" folder), it is necessary to open the "notepad" as administrator (right click "notepad" and select "run as administrator").

0. Installation of Quantum GIS

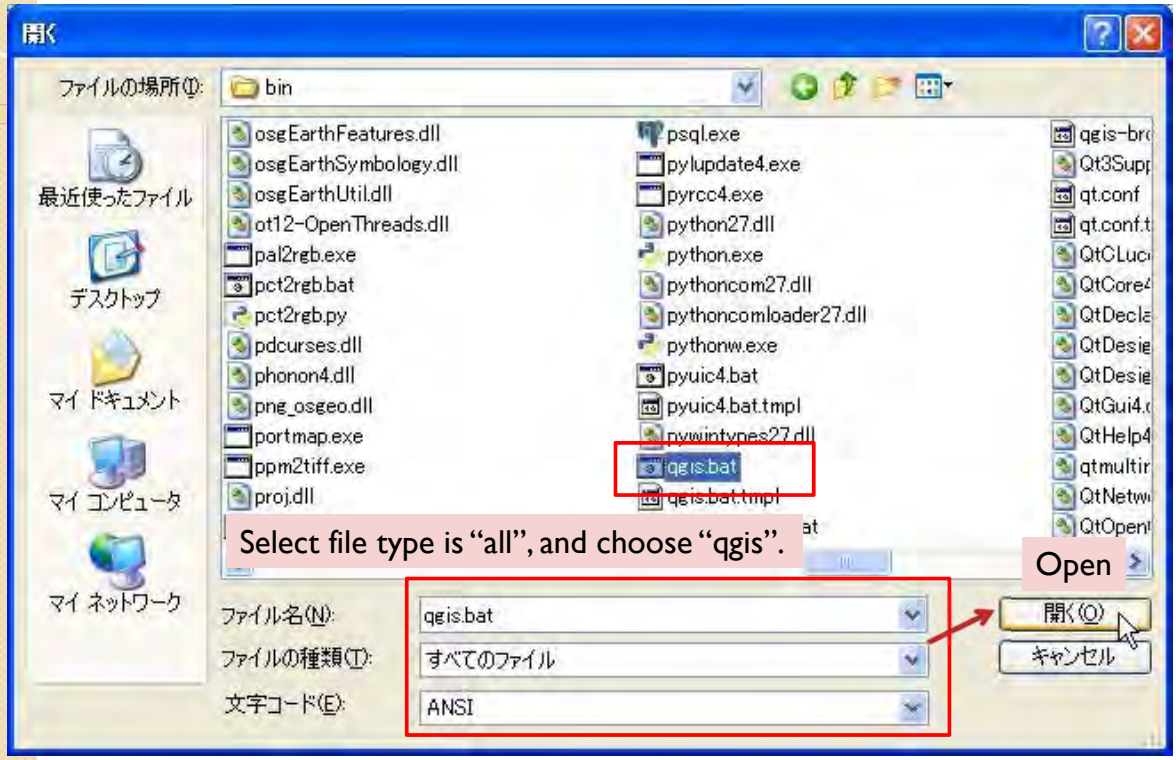
0.3 Installation (plugins and settings)



Select open file. Open QGIS install folder.
In this case, the install folder is
"C:¥Program Files¥Quantum GIS Lisdoa".

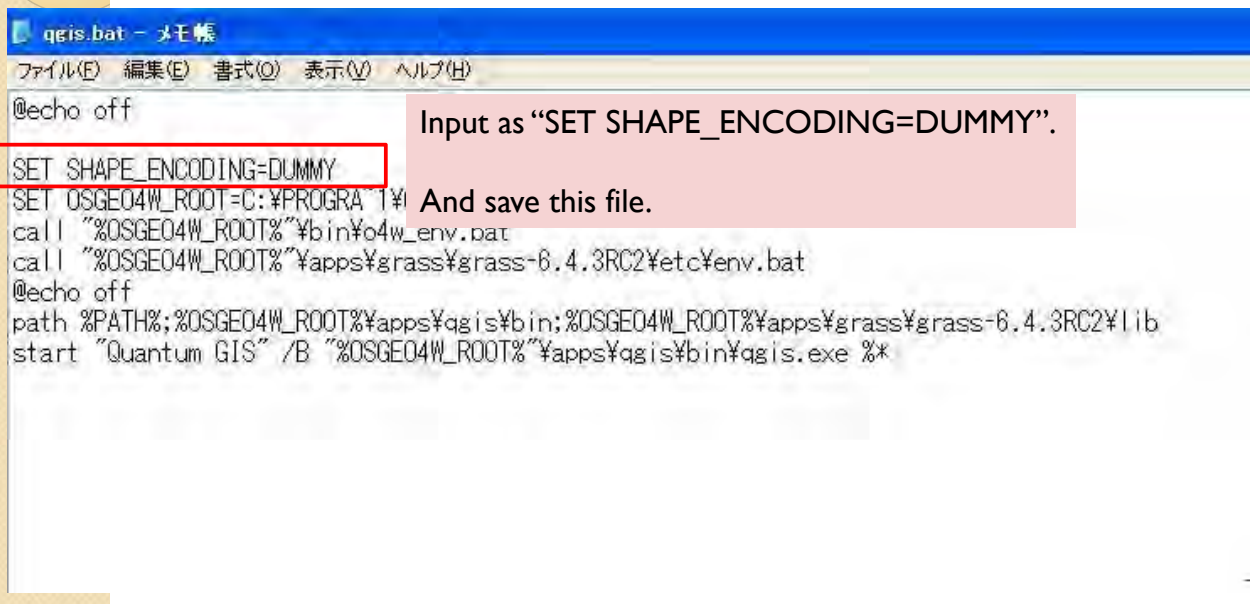


0.3 Installation (plugins and settings)



0.3 Installation (plugins and settings)

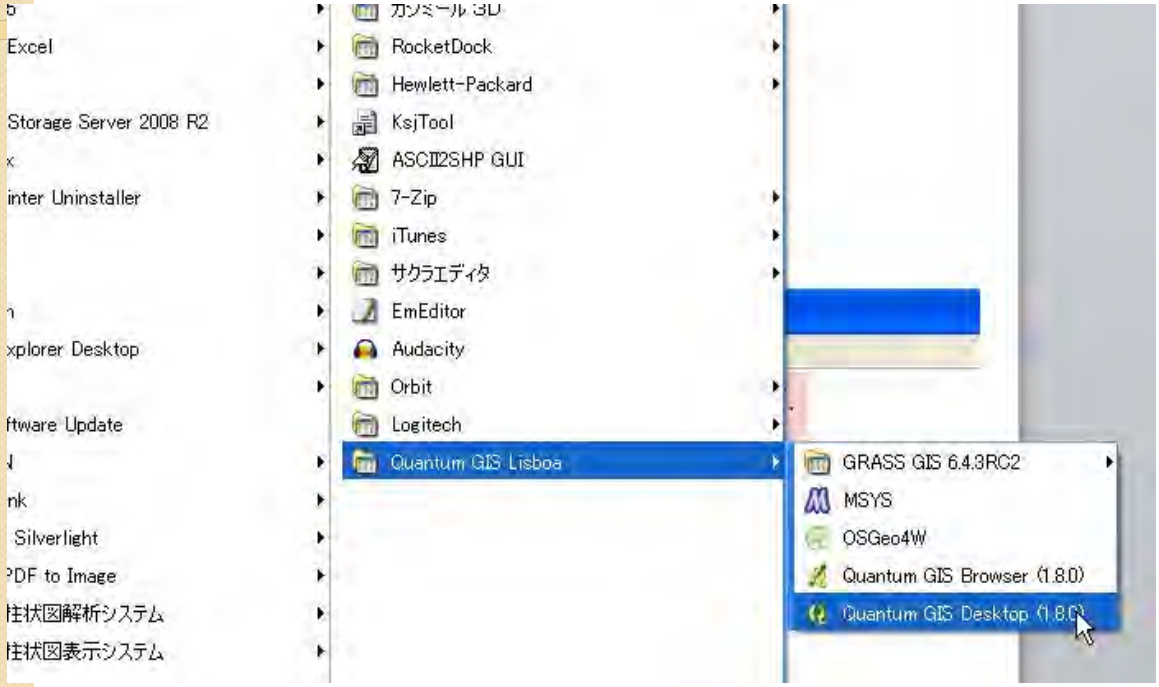
Then, the file is open.



0. Installation of Quantum GIS

0.3 Installation (plugins and settings)

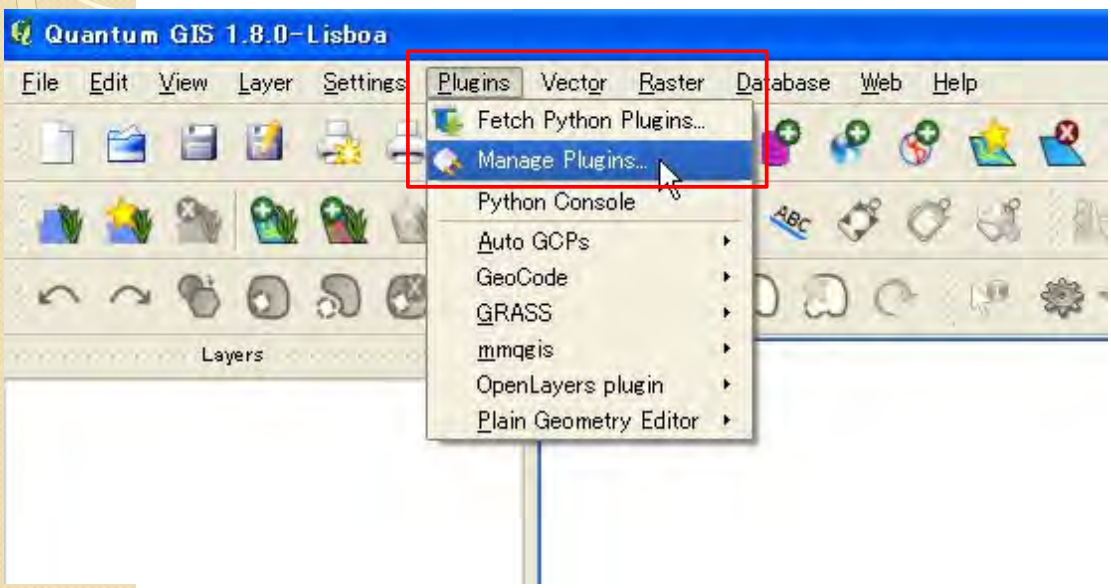
Now, you can start "Quantum GIS Desktop".



0. Installation of Quantum GIS

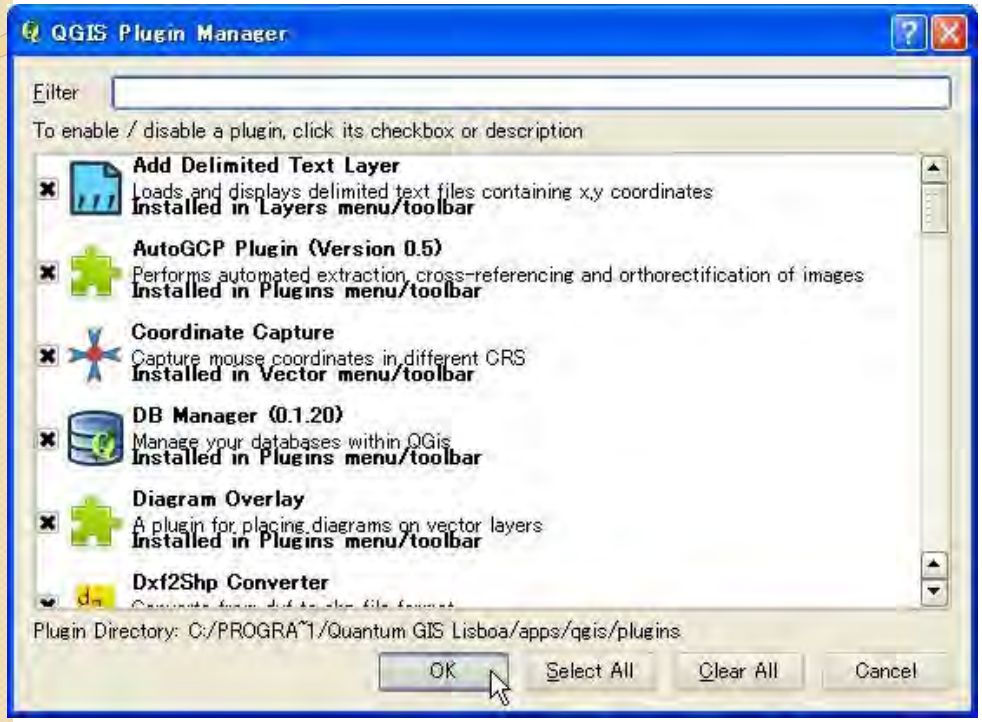
0.3 Installation (plugins and settings)

Click "Plugins" – "Manage Plugins".



0.3 Installation (plugins and settings)

Select all and click OK to enable plugins.



0. Installation of Quantum GIS

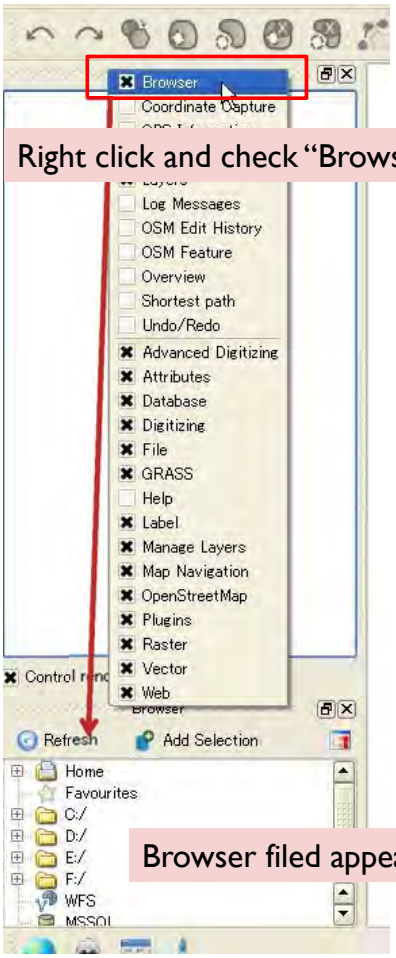
0.3 Installation (plugins and settings)

Right click and check "Browser" to show file browser.

Then, it is ready to use QGIS.

Official QGIS HP is below. You may find more information and plugins.

http://www.qgis.org/



Right click and check "Browser"

Browser filed appears

1. Constitution of GIS Data and How to Use GIS Software

1.1 GIS data and Outline of the Inventory map

What is GIS data ?

Geographical Information System (GIS) data is attribute database referenced to location information.

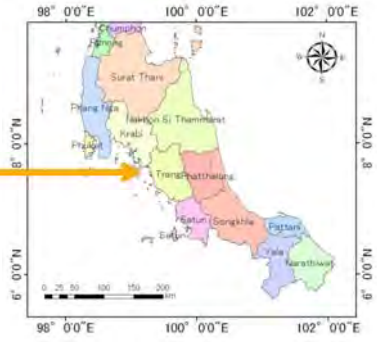
Example of GIS data…

Attribute		Location
…Province Name		…Longitude
…Population	⟷	…Latitude
…etc.		…Shape

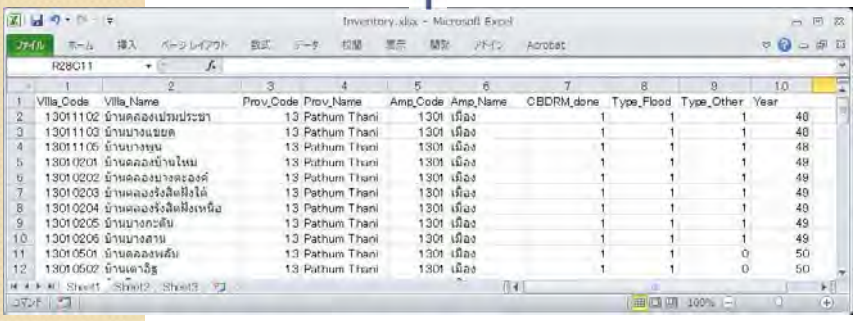
referenced

The points, lines and polygons are called "vector layer". Each vector layer has attributes such as ID number, name and so on.

The attributes are contained in the GIS database as "Attribute Table".



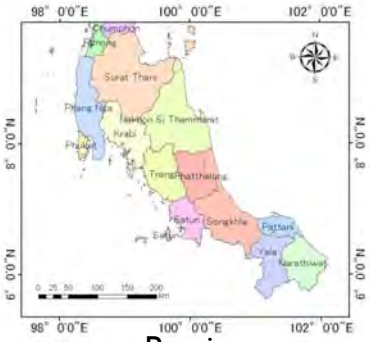
Integrate



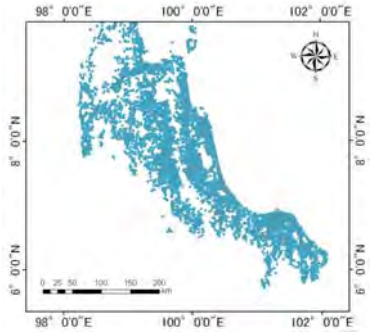
In order to make inventory map, inventory table (list of the CBDRM conducted village) will be integrated into the "attribute table".

Each GIS data is able to be overlaid on any other GIS data.

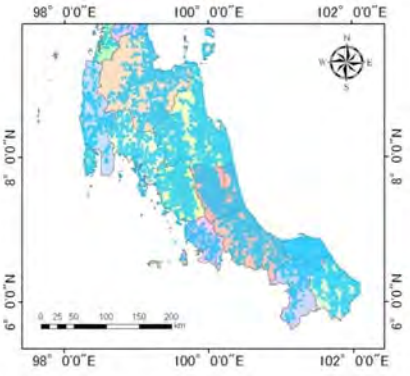
Inventory map may consists of some layers (Province map, Village map and so on).



Province



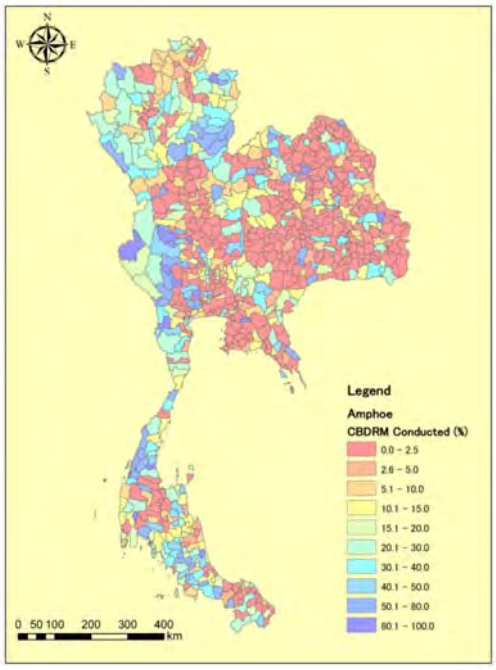
Village

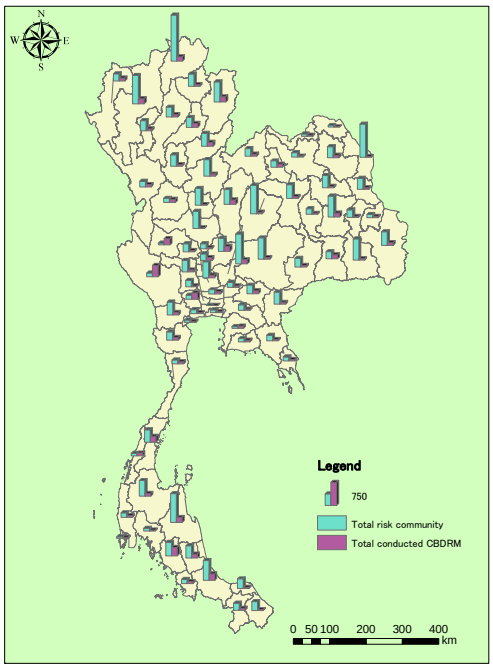


Overlay

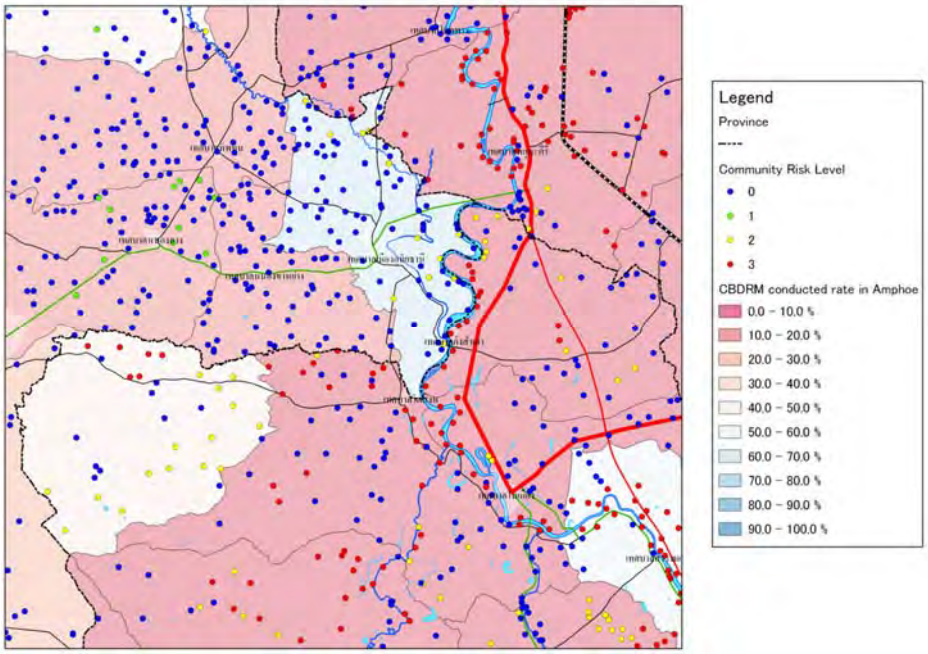
By using attribute table (including CBDRM conducted number of villages), enforcement rate chart and map can be created. The goal is to make inventory map as below.

The inventory maps are helpful to monitor the progress of project activities and useful to make future plan.





GIS enables to display multiple data into one map. Thus, you can easily recognize the progress and issues of the project activities.



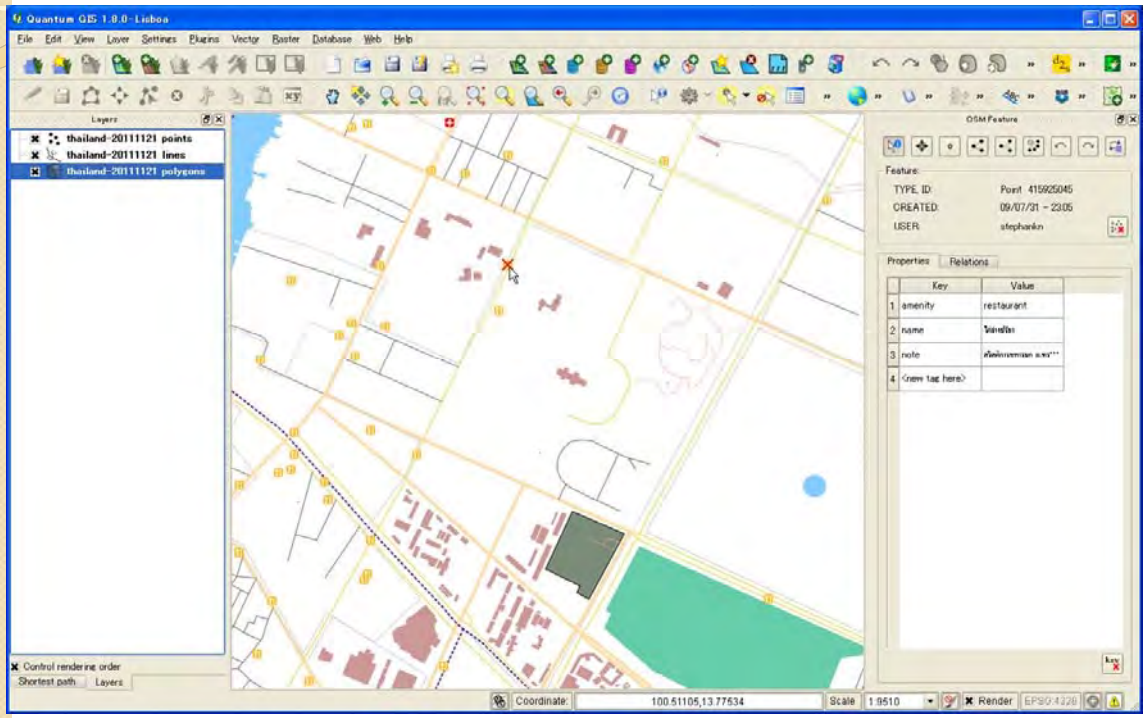
Ex) Red points are high risk communities. These are distributed in eastern and southern area, but the CBDRM conducted rate is relatively low in the area (red colored area).

You can judge that the CBDRM activities should be reinfoeced in the risky area.

1.2 Examples of GIS Software

Quantum GIS

Open source GIS software. Many functions and plugins are packaged.

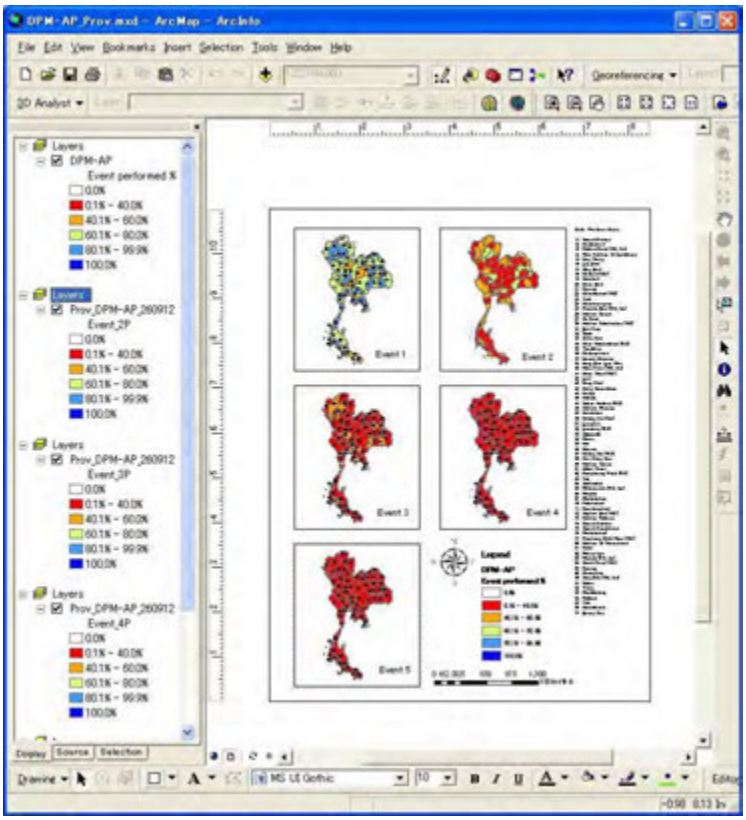


1.2 Examples of GIS Software

Arc GIS

Famous GIS software.

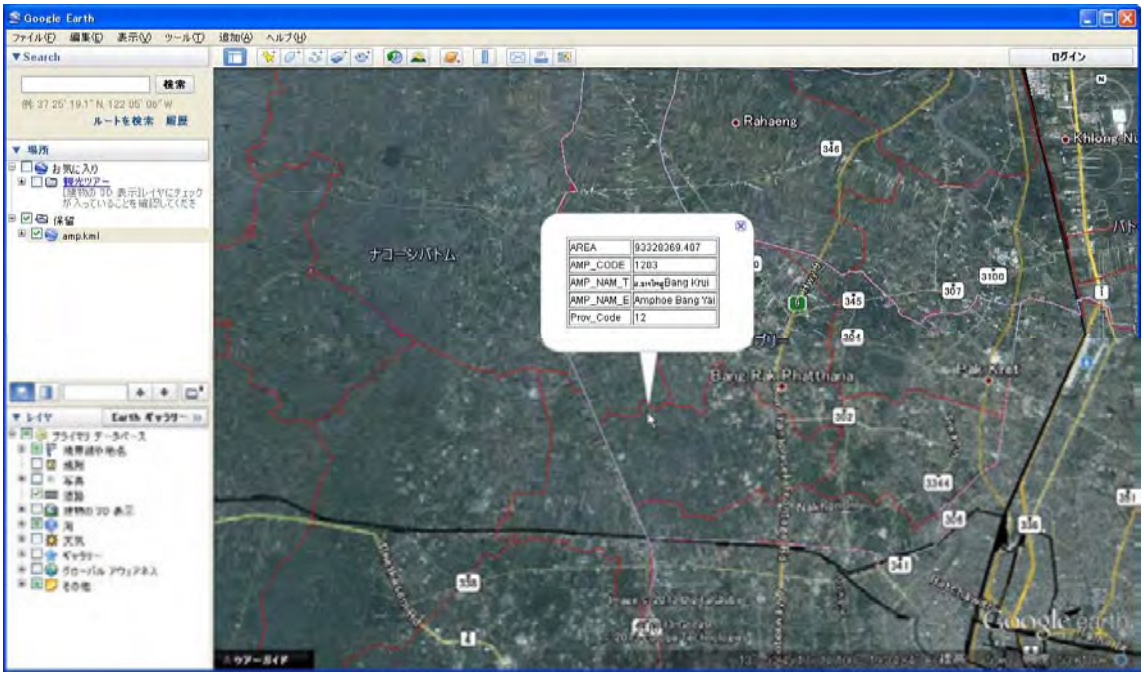
Too expensive…



1. Constitution of GIS Data and How to Use GIS Software

1.2 Examples of GIS Software

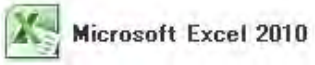
It is possible to export GIS data to kml file and display by Google Earth, Google Map and etc..



1.3 How to use GIS Software

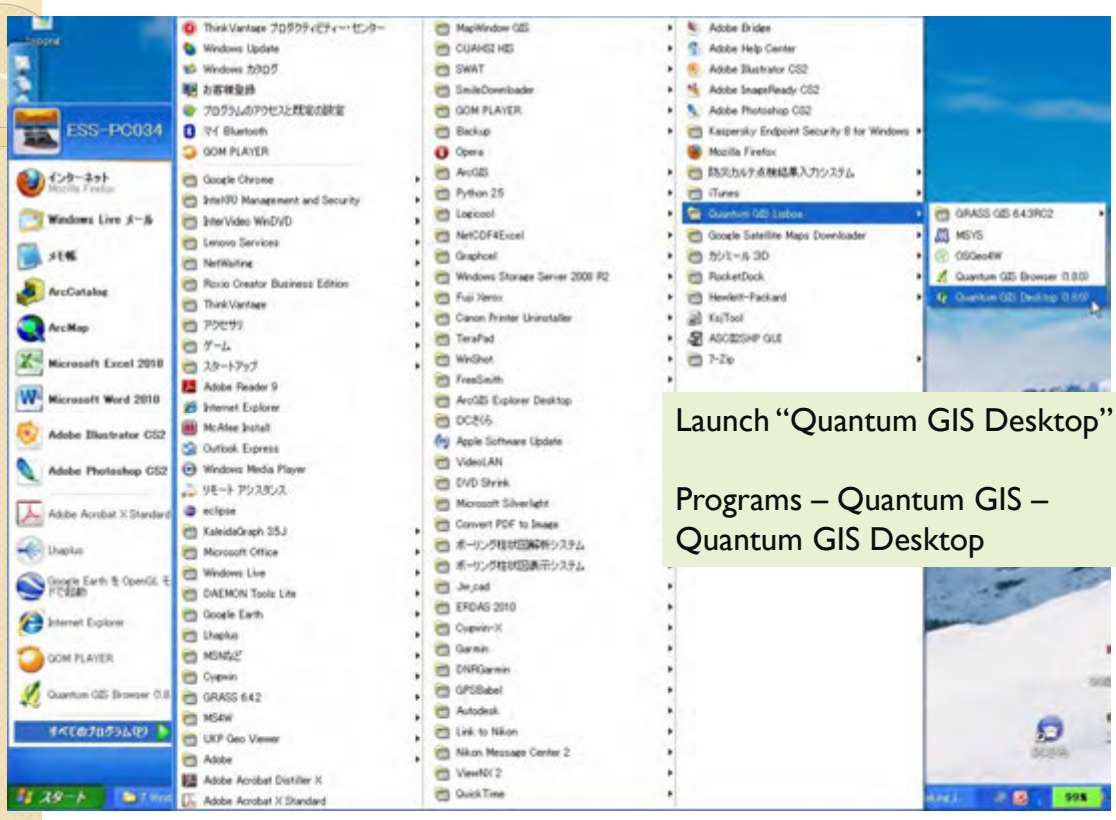
1) **Quantum GIS** 

GIS mapping software

2) **Microsoft Excel** 

for data input

1.3.1 Quantum GIS (GIS data mapping software)



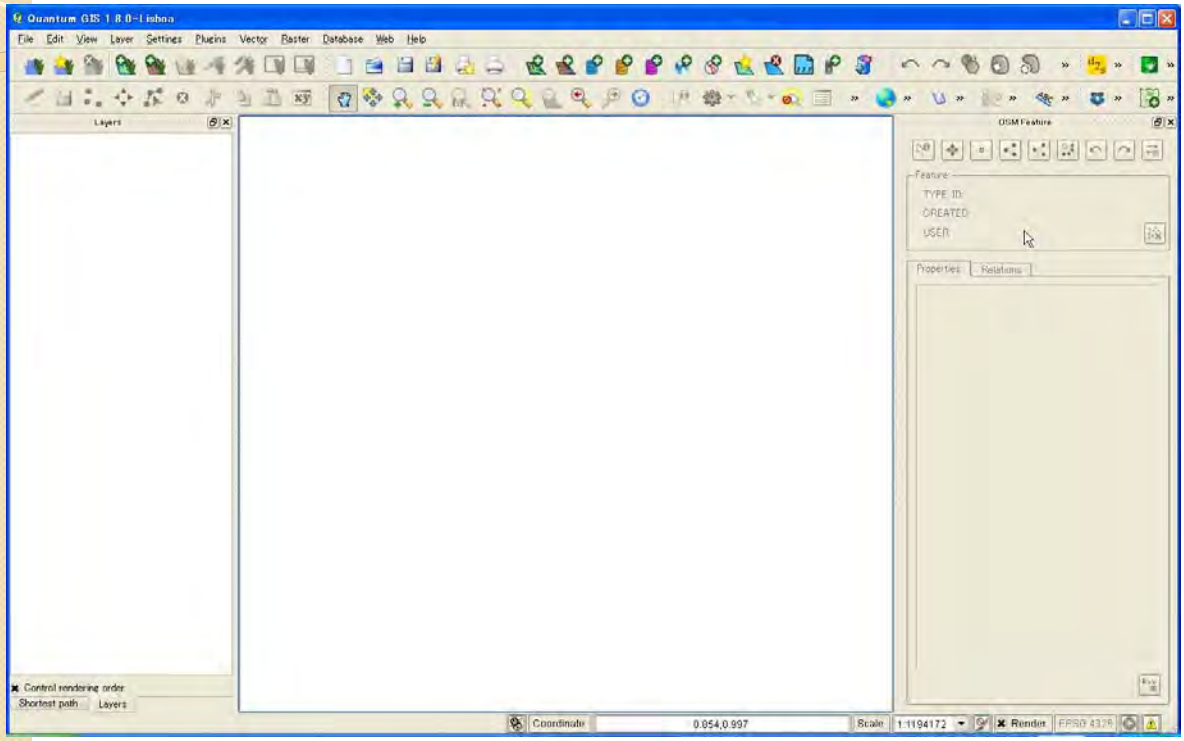
Launch "Quantum GIS Desktop"

Programs – Quantum GIS – Quantum GIS Desktop

1. Constitution of GIS Data and How to Use GIS Software

1.3.1 Quantum GIS (GIS data Mapping software)

The following window should appear.
GIS data has not been imported yet.

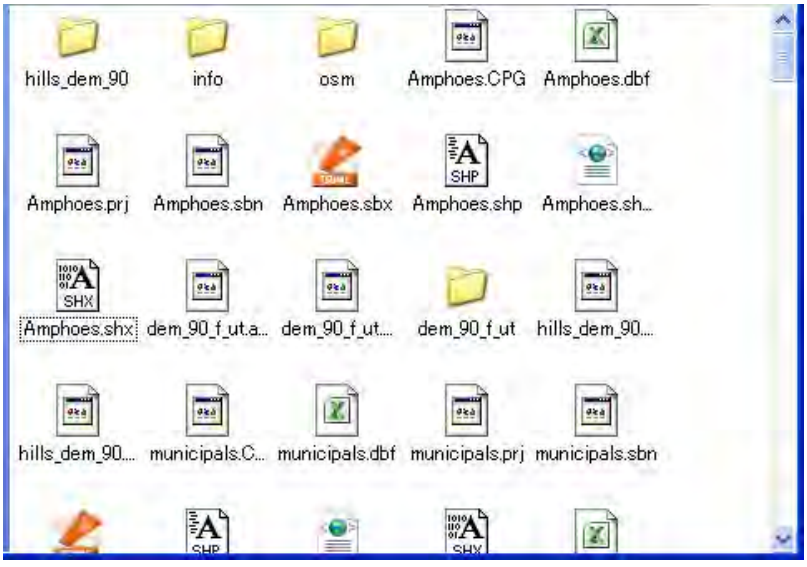


1. Constitution of GIS Data and How to Use GIS Software

1.3.1 Quantum GIS (GIS data Mapping software)

Kinds of GIS data

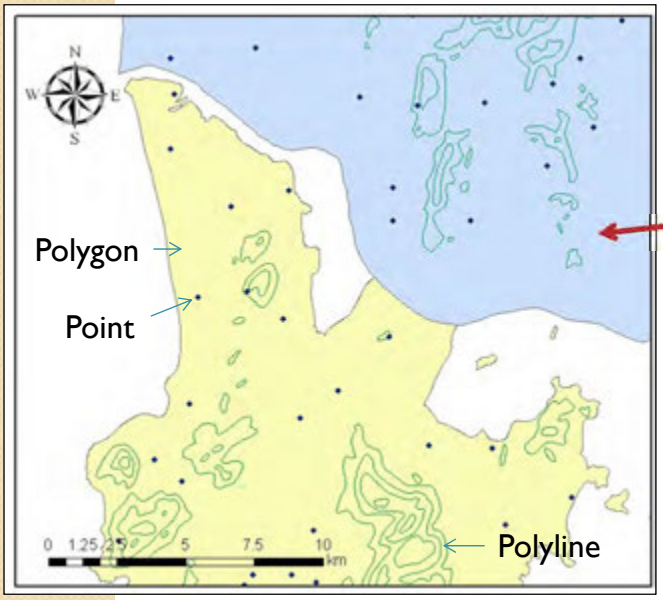
Open "C:¥GIS_data" folder.

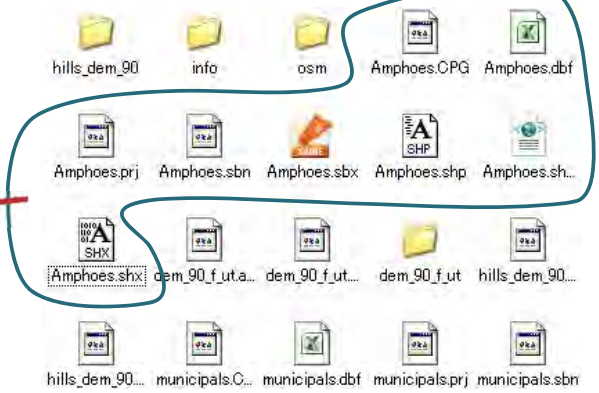


Kinds of GIS data

Shape files are vector data, such as village (point), province (polygon), contour (Polyline). Shape file consists of several files. Don't move or delete only a part of the file series.

shape file (vector data)





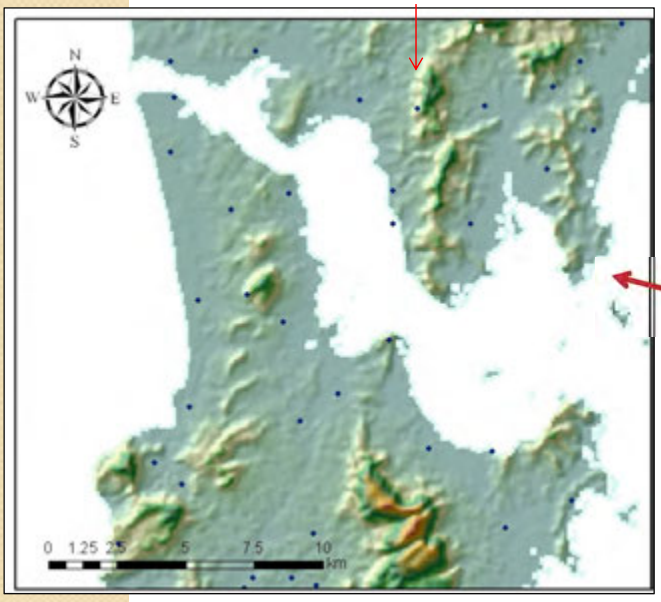
1. Constitution of GIS Data and How to Use GIS Software

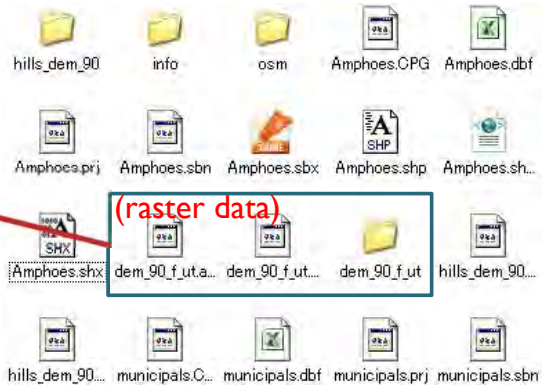
1.3.1 Quantum GIS (GIS data Mapping software)

Kinds of GIS data

Raster Datasets are image data, such as elevation, satellite image.

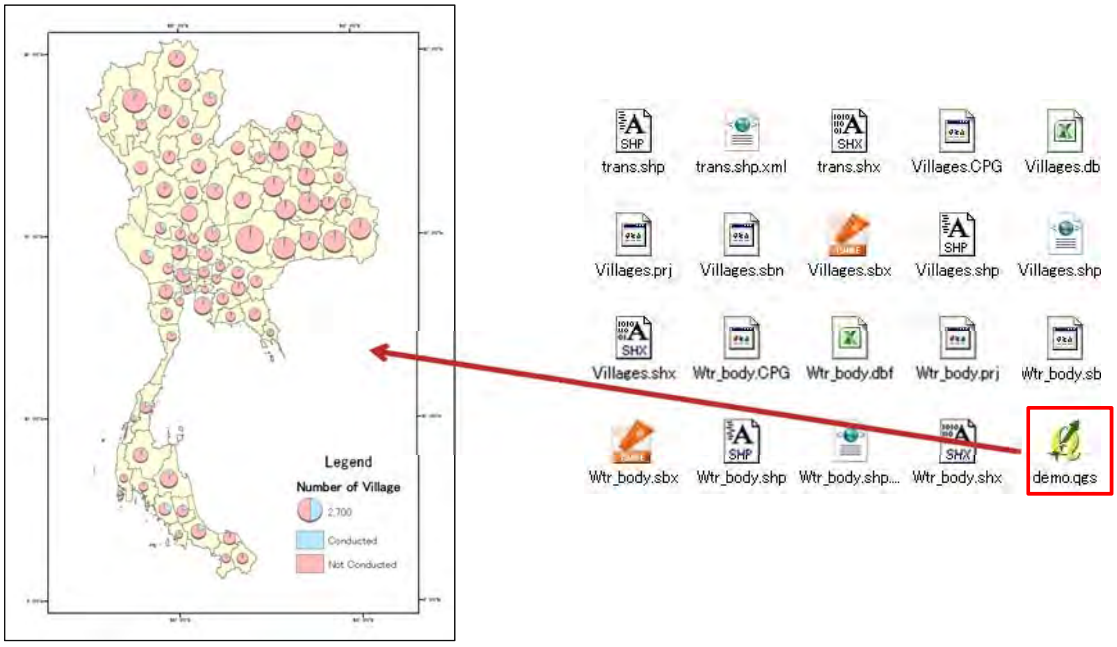
Elevation and topography





Kinds of GIS data

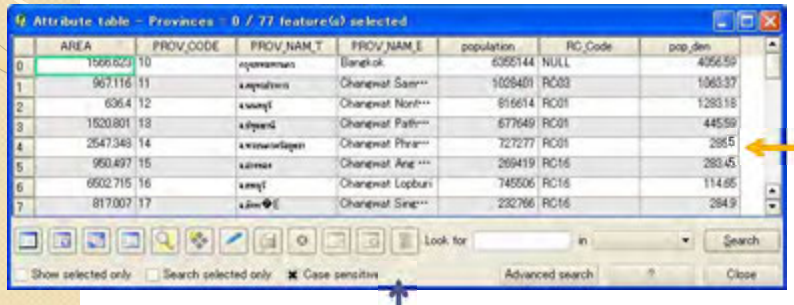
Qgis files(.qgs) are not GIS data file. These are configuration files of GIS mapping, such as color profile, chart setting and etc..

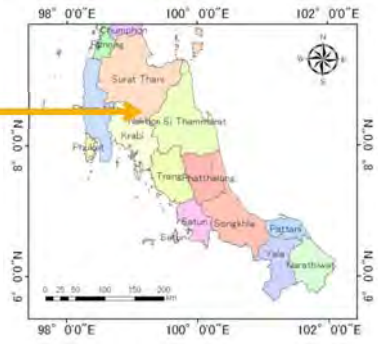


1. Constitution of GIS Data and How to Use GIS Software

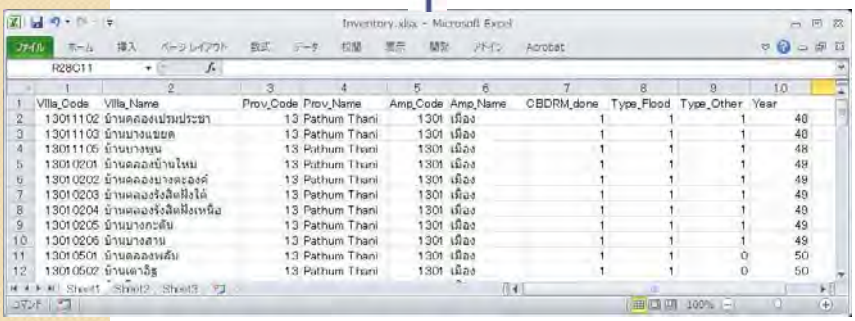
1.3.1 Quantum GIS (GIS data Mapping software)

It is able to load Excel files into GIS database.

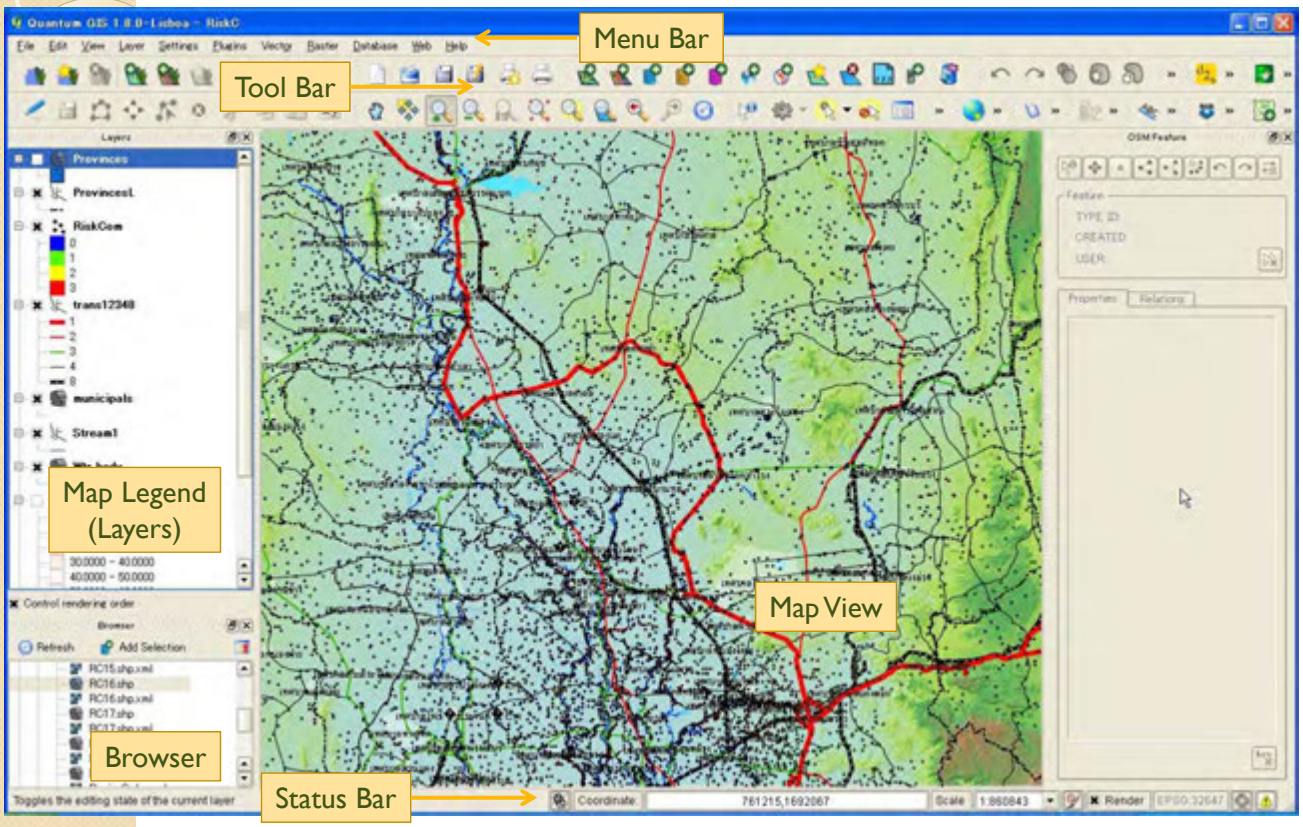




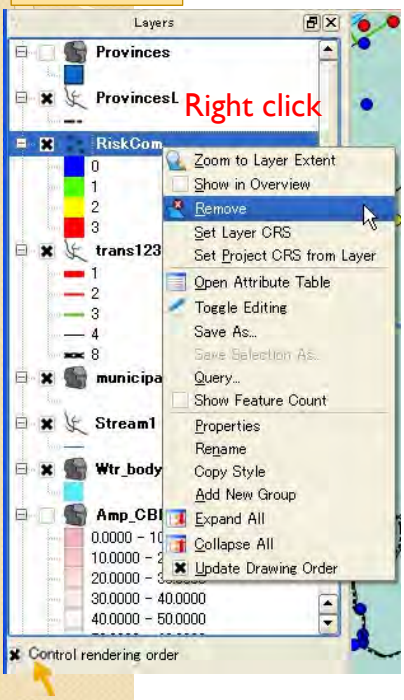
Integrate



Window layout of the QGIS is as below.



Map Legend (Layers)



Control shape order in the map

Explanation of sub windows and fields

1) Map Legend (Layers)

General controls for the map

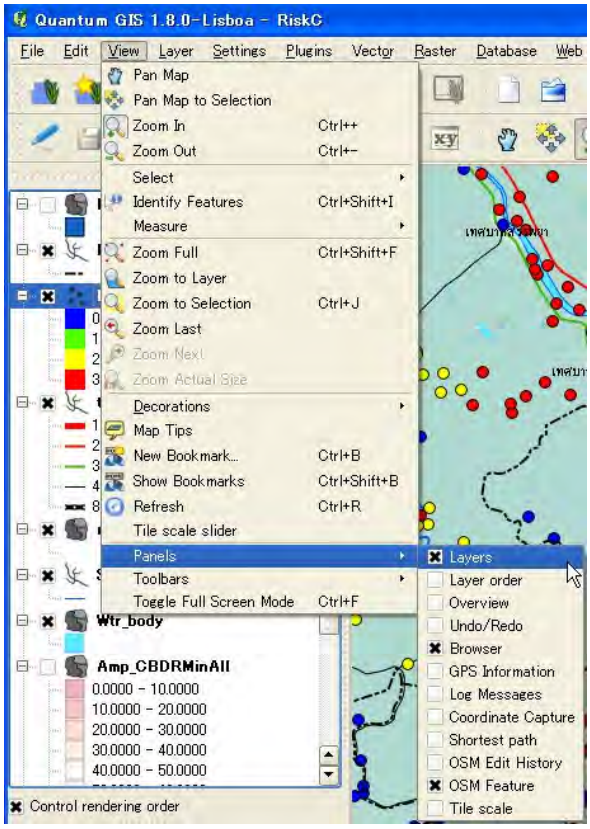
/ Adding GIS data
/ Indicating loaded GIS data.
/ Removing GIS data from QGIS (data files are not deleted, only disappear from this window)

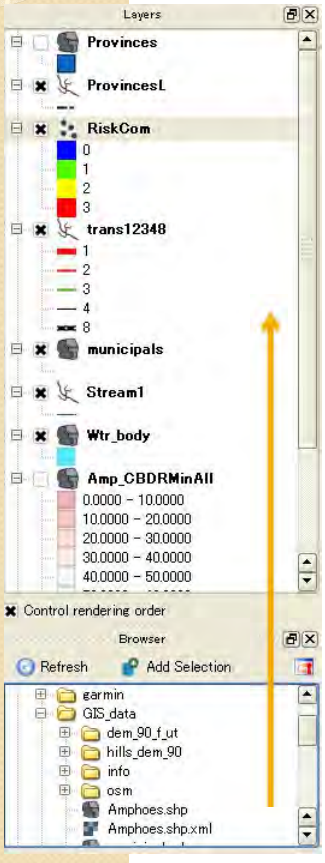
/ Change color profiles and chart settings of loaded GIS data
/ Make or clear labels

Explanation of sub windows and fields

1) Map Legend (Layers)

If "Layers" disappears in QGIS window, check menu bar [View] – [Panels] – [Layers]





Explanation of sub windows and fields

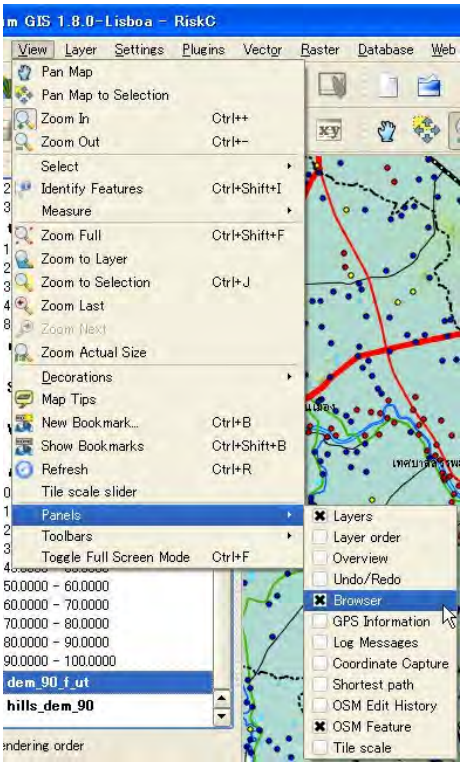
2) Browser

Add GIS data to the map

Drag to import data

If "Browser" disappears in QGIS window, check menu bar [View] – [Panels] – [Layers]

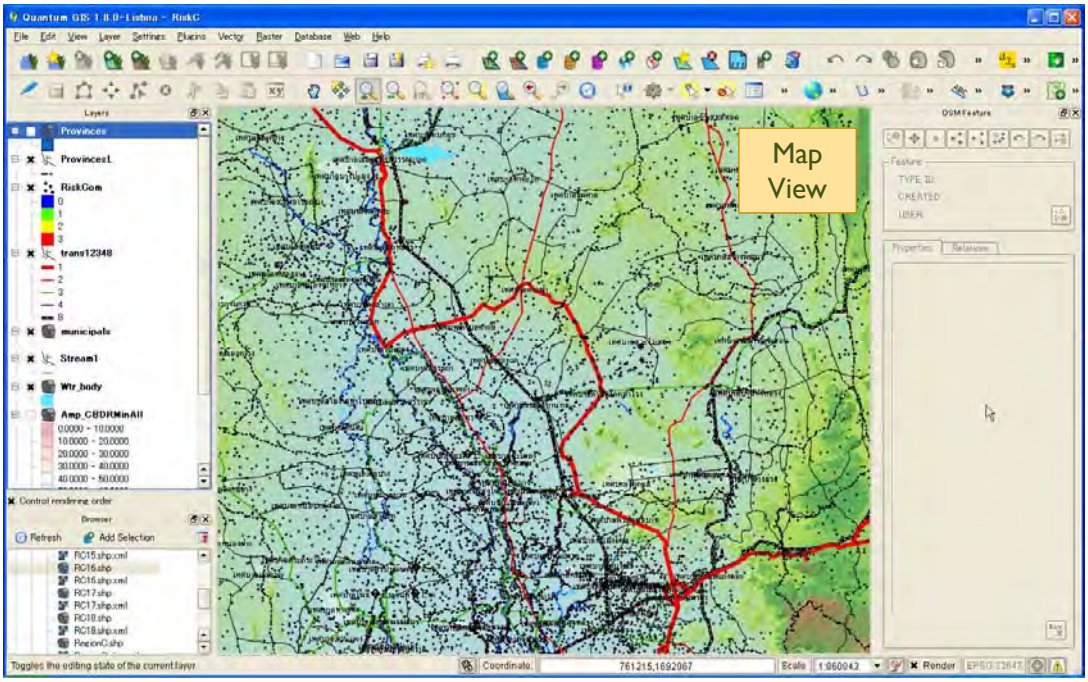
Browser



Explanation of sub windows and fields

3) Map View

Map View is a field to display GIS data.



Explanation of sub windows and fields

4) Tool bar

/ New Project

/ Open Project

/ Save Project

/ Save Project As

/ New Print Composer

/ Composer Manager

* Project files (Qgis file) are not GIS data file. These are configuration files of GIS mapping, such as color profile, chart setting and etc..

* Print Composer is layout canvas for print or export pdf or image files.

Explanation of sub windows and fields

4) Tool bar

/ Add Vector Layer
(point, line and polygon)

/ Add Raster Layer
(image data like satellite image)

/ Add another data formats file

/ Create New Shapefile Layer (Vector Layer)

/ Remove Layer (remove only from map, source data remains on folder)

1. Constitution of GIS Data and How to Use GIS Software
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Explanation of sub windows and fields

4) Tool bar

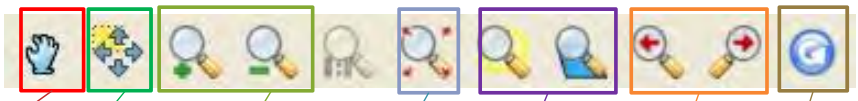
/ Toggle Editing
(Vector Layer)

/ Save Edits

/ Edit Tools

Explanation of sub windows and fields

4) Tool bar



/ Pan Map

/ Pan Map to Selected Feature

/ Zoom In and Out

/ Zoom Full Area of the Map

/ Zoom to Selected Feature or Layer

/ Zoom Last or Next

/ Refresh

1. Constitution of GIS Data and How to Use GIS Software
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Explanation of sub windows and fields

4) Tool bar

/ Feature Information

/ Feature Select and Deselect

/ Open Attribute Table

/ Measure Line, Area and Angle

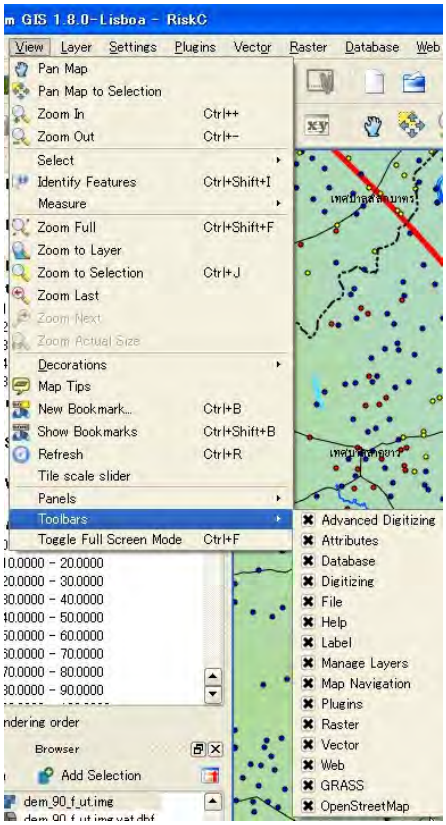
/ Map Tips

/ Bookmark Location

/ Annotation (Text Box)

Explanation of sub windows and fields

4) Tool bar



If these toolbars disappear in QGIS window, check menu bar [View] – [Toolbars]

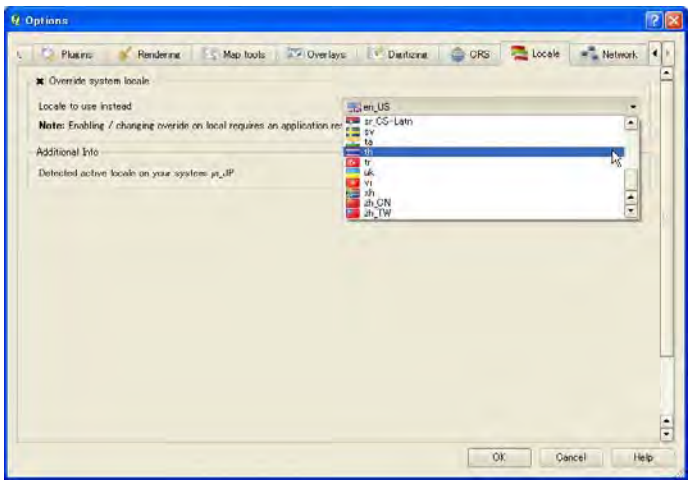
Locale Setting

You can choose Thai Language.

Select menu [Settings] – [Options] then, "option" window should appear.

Select "Locale" tab and "TH" from pull down field.

As a result, your QGIS should be indicated by Thai language.



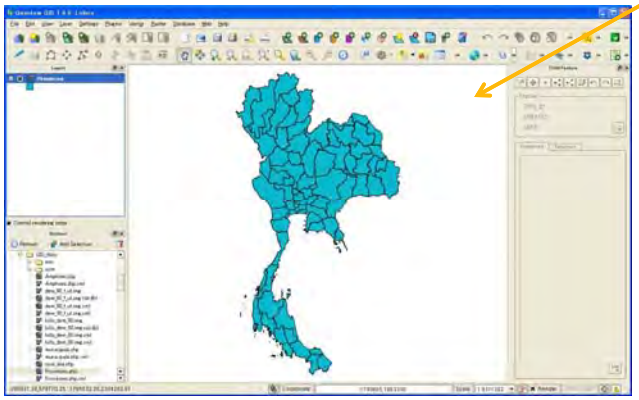
Add layers

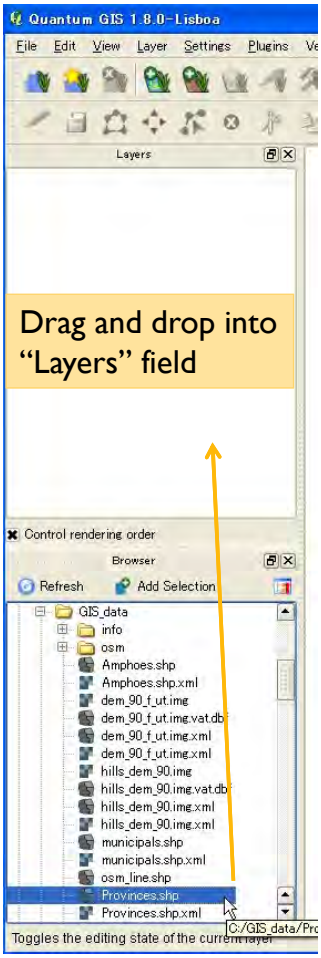
There are several ways to import GIS data to QGIS.

i. Add by "browser"

Choose "GIS_data" folder and select data you want to import in the "browser" field.

Drag and drop the file into "Layers" field, then the file should be shown in the map.





1. Constitution of GIS Data and How to Use GIS Software
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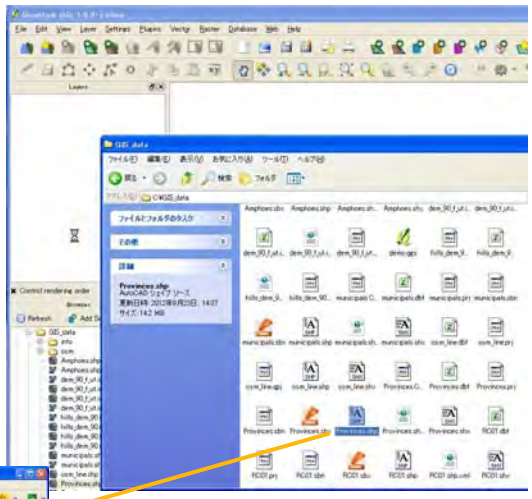
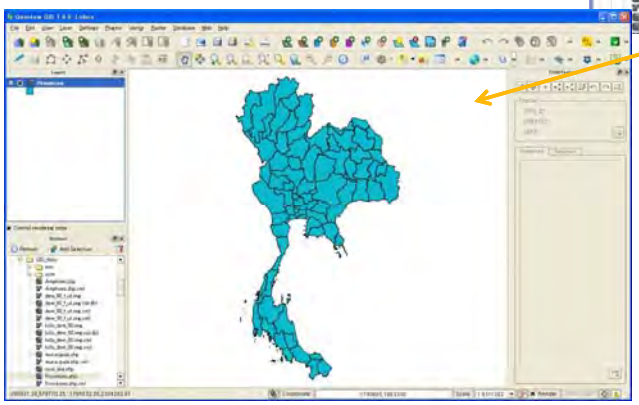
Add layers

ii. Add by explorer

You can drag and drop the file directly from folder window.



Drag and drop



Add layers

iii. Add by toolbar

/ Add Vector Layer
(point, line and polygon)

/ Add Raster Layer
(image data like satellite image)

/ Add another data formats file

/ Create New Shapefile Layer (Vector Layer)

/ Remove Layer (remove only from map, source data remains on folder)

1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

Add layers

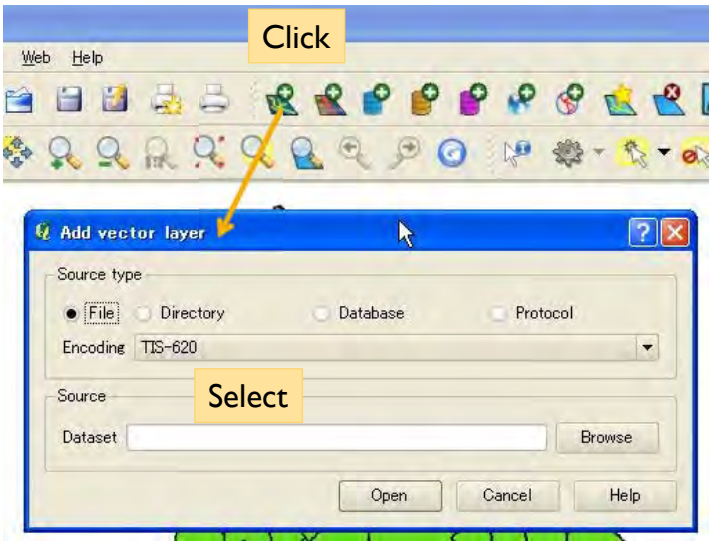
iii. Add by toolbar

Click "Add vector layer" and select file type (in this case "File").

Choose "Encoding" tab as "TIS-620" to import Thai language files.

Click "Browse" button to find data file (in this case, select "GIS_data" folder and shapefile).

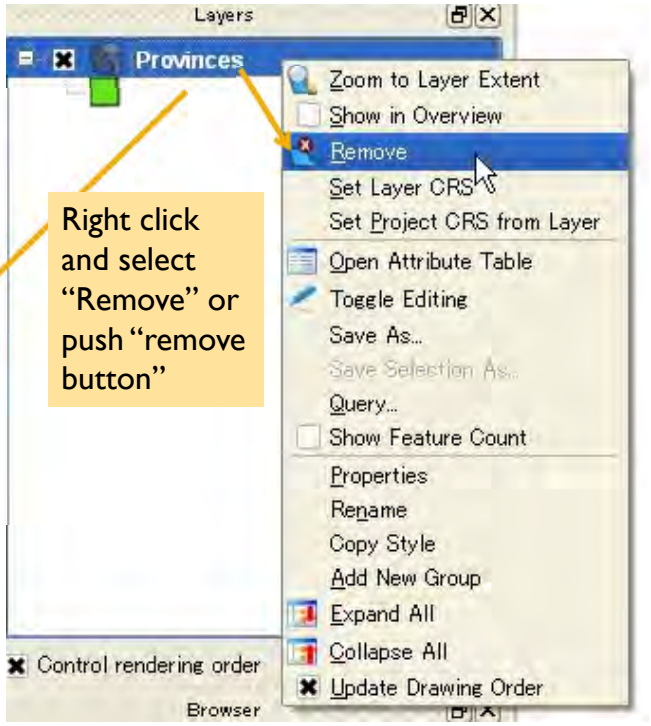
Finally, push "OK" to load the GIS data.



Remove layers

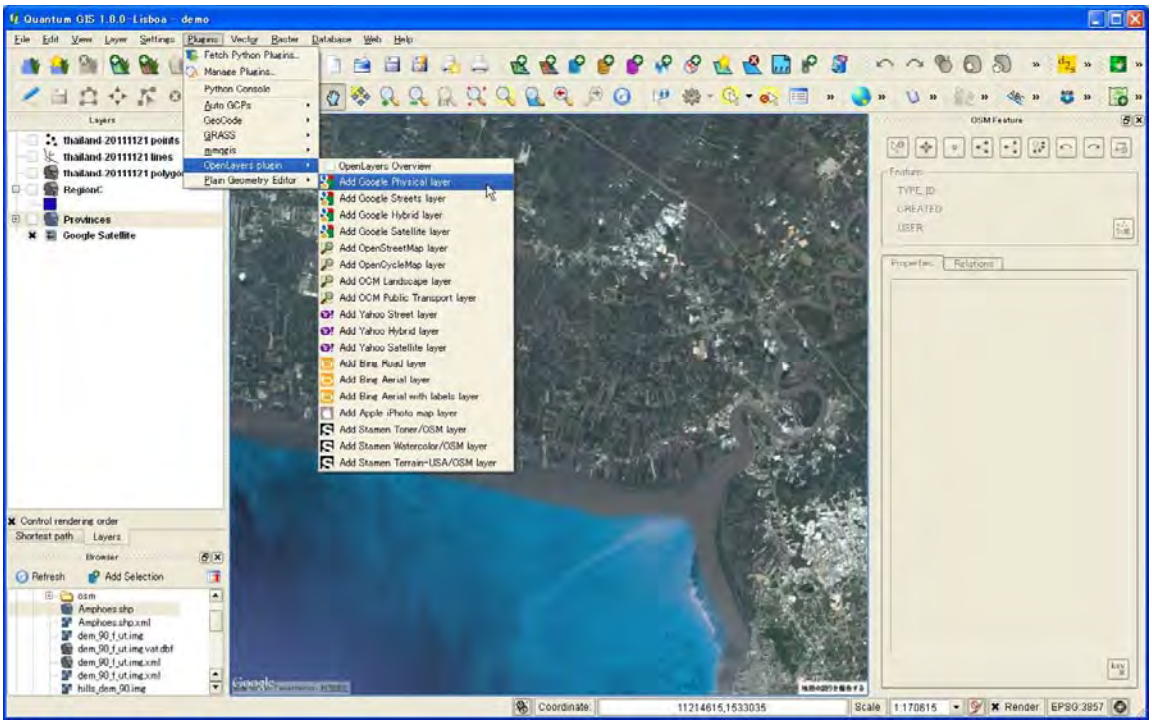
To remove features, right click and select "Remove".

Other way to remove features, select feature and push remove button in the toolbar.

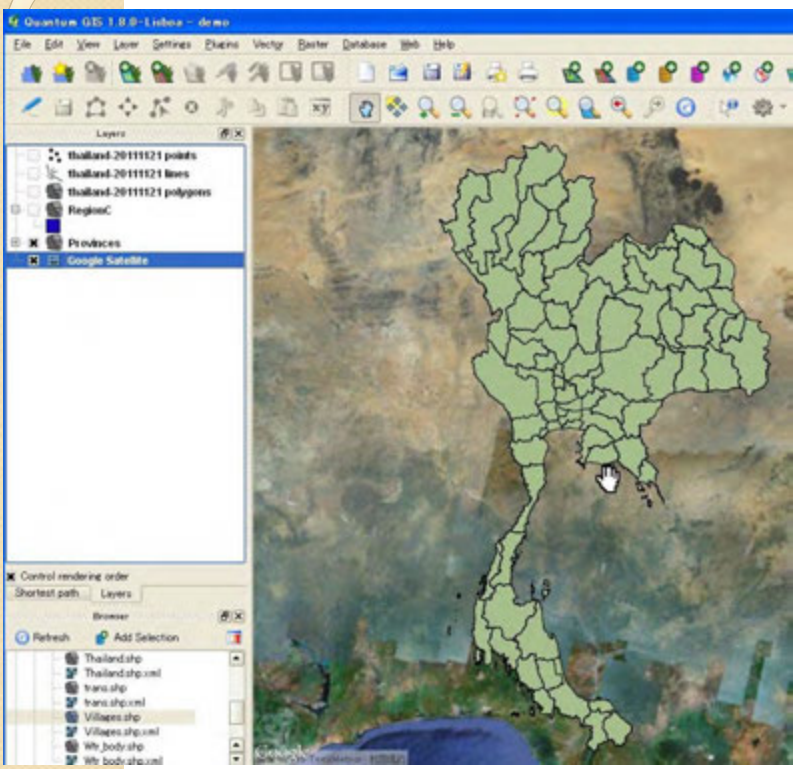


Add web map layer (online)

Online map layers are able to load into QGIS. (online connection is required)
Choose [Plugins] – [Open Layers Plugin] – [map name to load]
It is necessary to pay attention terms of use of online maps.



CRS (Coordinate Reference System)



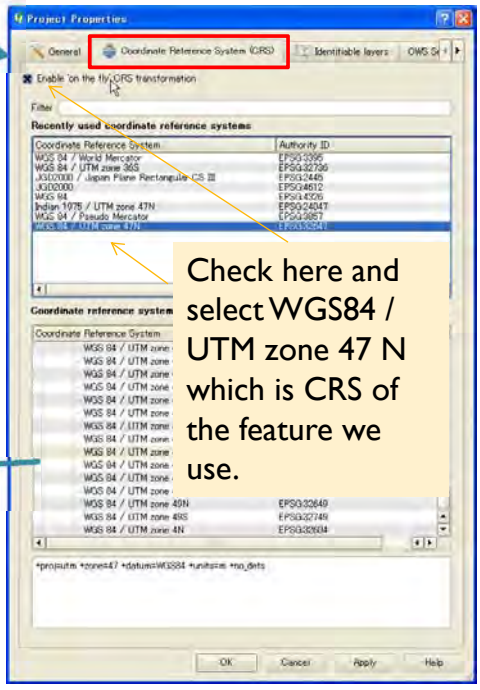
Each layer has CRS (Coordinate Reference System).
Ex.) Longitude and latitude

If the CRS of layers does not match, the layers is not displayed on correct position.

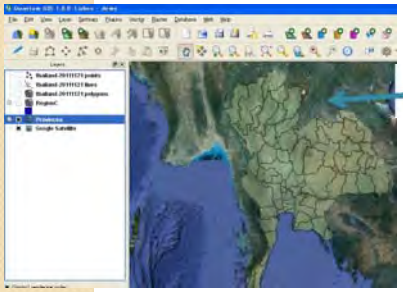
1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

CRS (Coordinate Reference System)

To solve this problem, select [Settings] – [Project Properties].
Then, property window will appear.



Select "Coordinate Reference System (CRS)" tab and check "Enable 'on the fly' CRS transformation. Then, you can find the layers move to correct position.

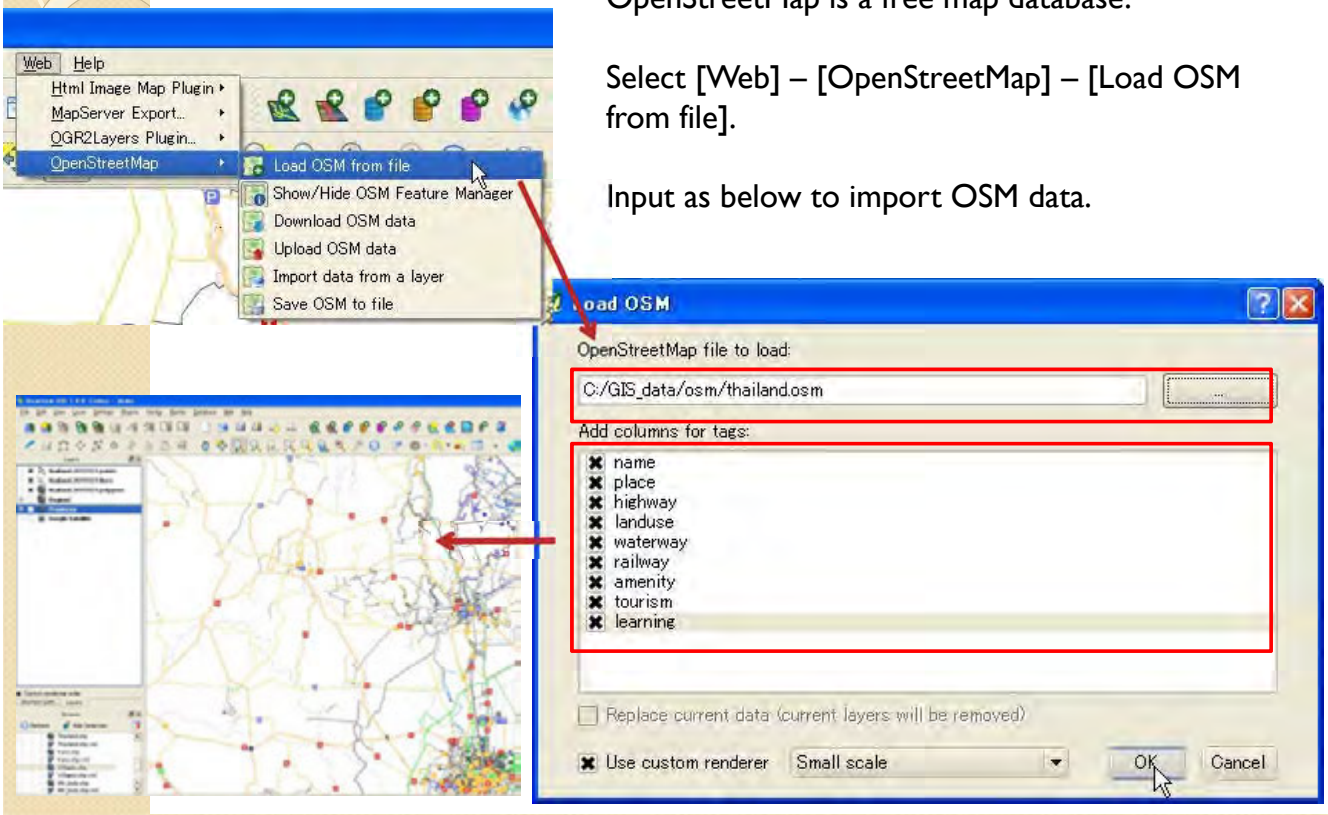


Open Street Map

OpenStreetMap is a free map database.

Select [Web] – [OpenStreetMap] – [Load OSM from file].

Input as below to import OSM data.

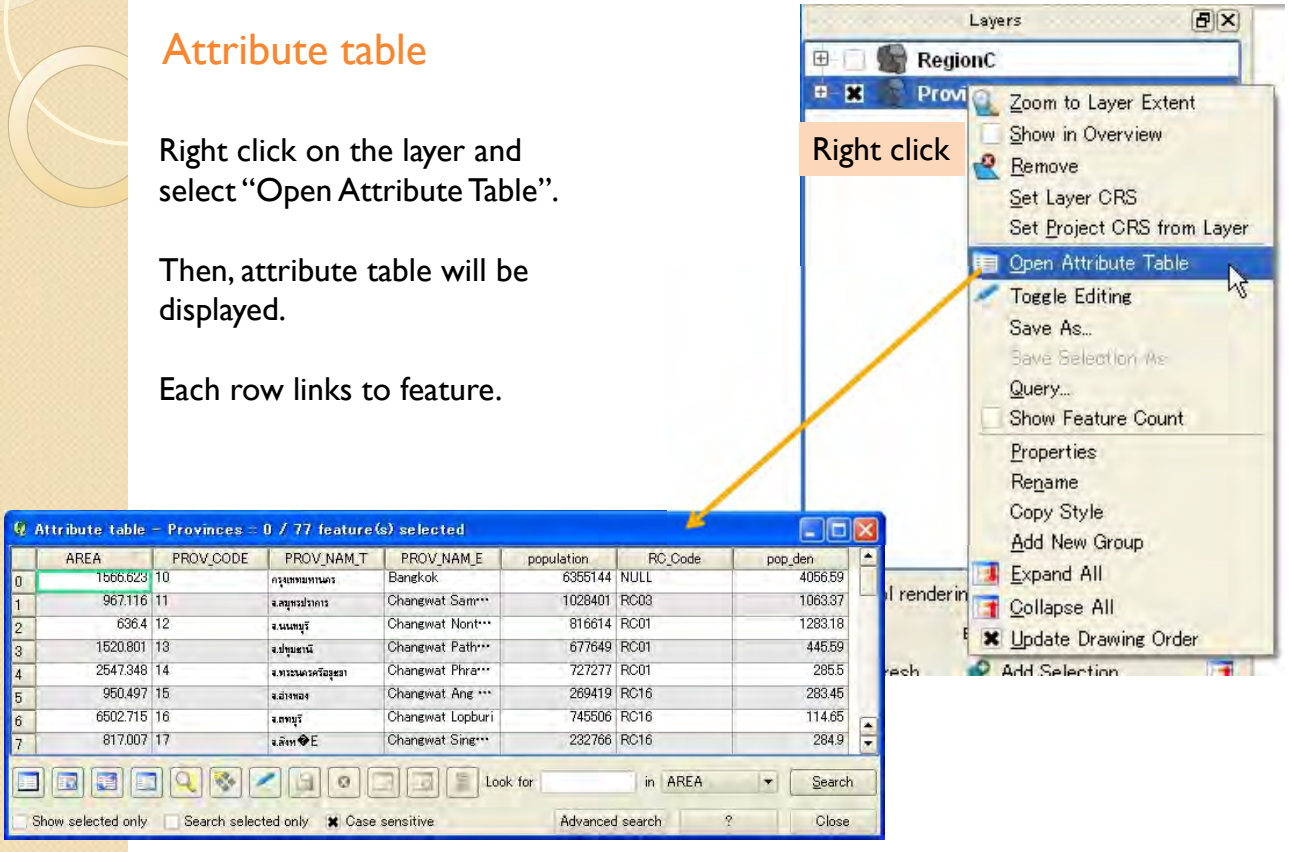


Attribute table

Right click on the layer and select "Open Attribute Table".

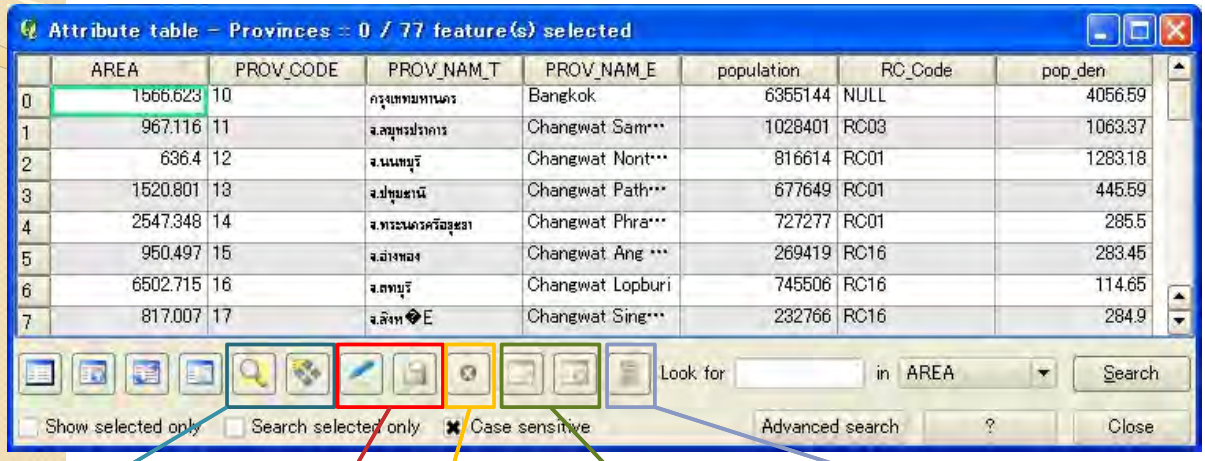
Then, attribute table will be displayed.

Each row links to feature.



Attribute table

Attribute table functions



Pan or zoom to selected feature

Delete selected features

Add and delete columns

Field calculator

Start/stop editing and save editing

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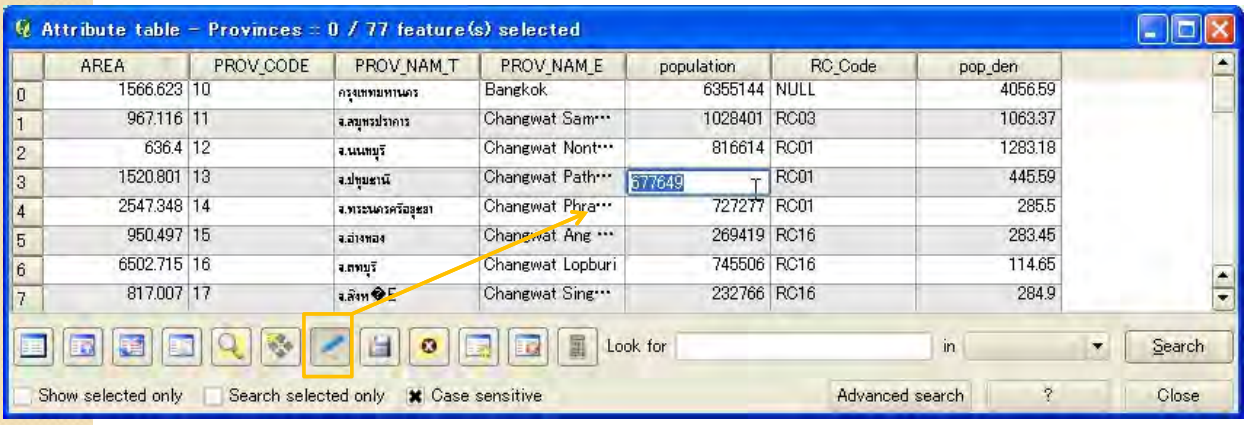
Attribute table

Editing

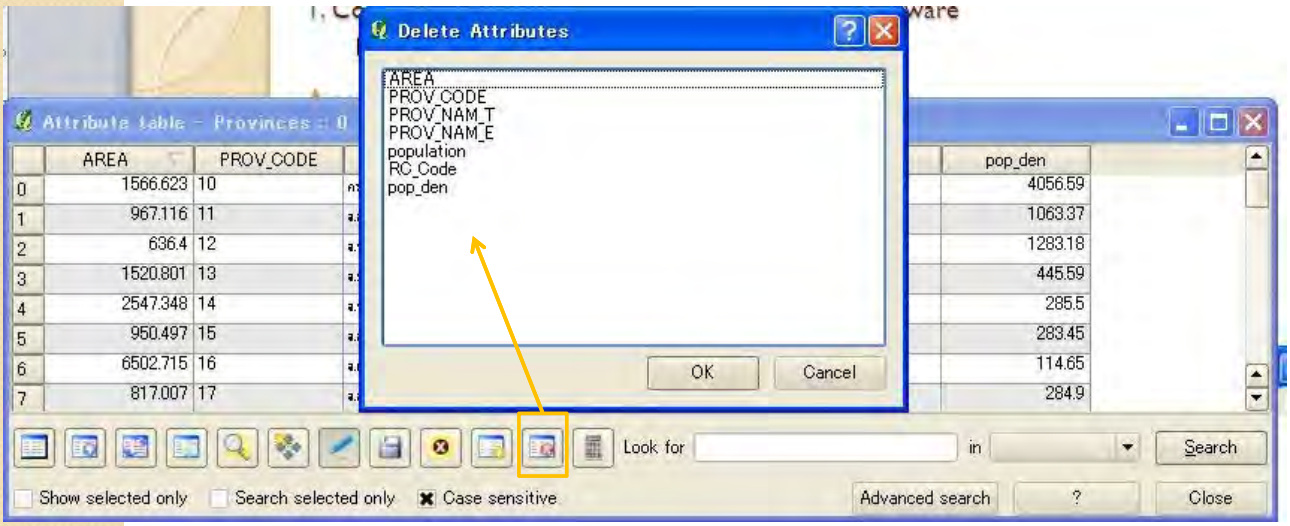
After "edit" button is pushed, it is possible to edit field values.



Attribute table

Delete column

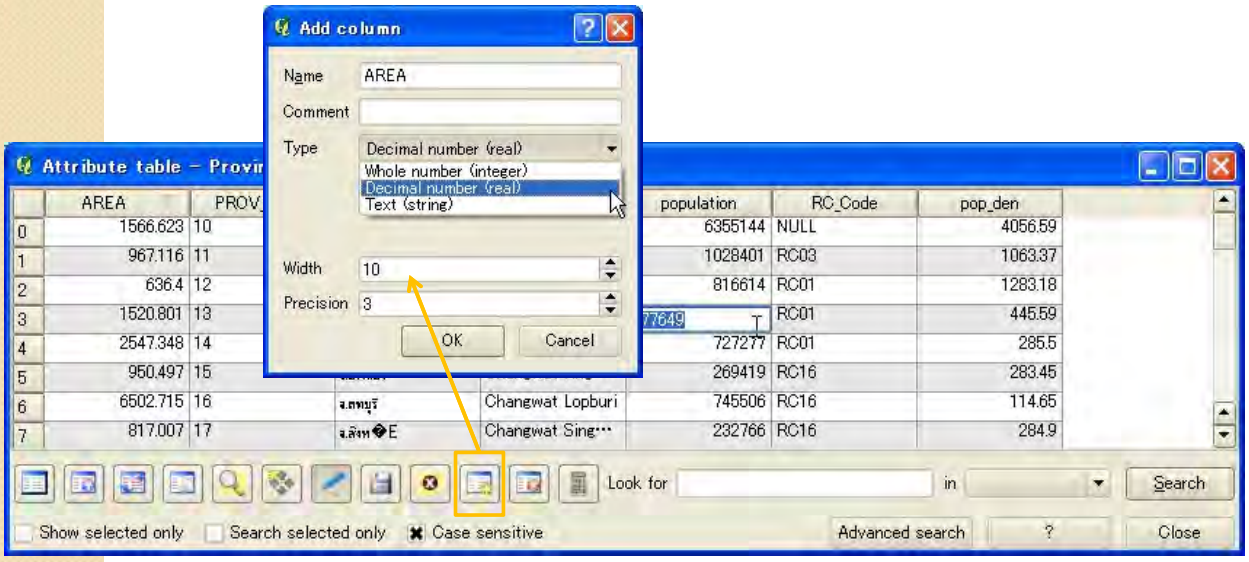
To delete column, push "delete column" button and select column name to delete.



Attribute table

Add column

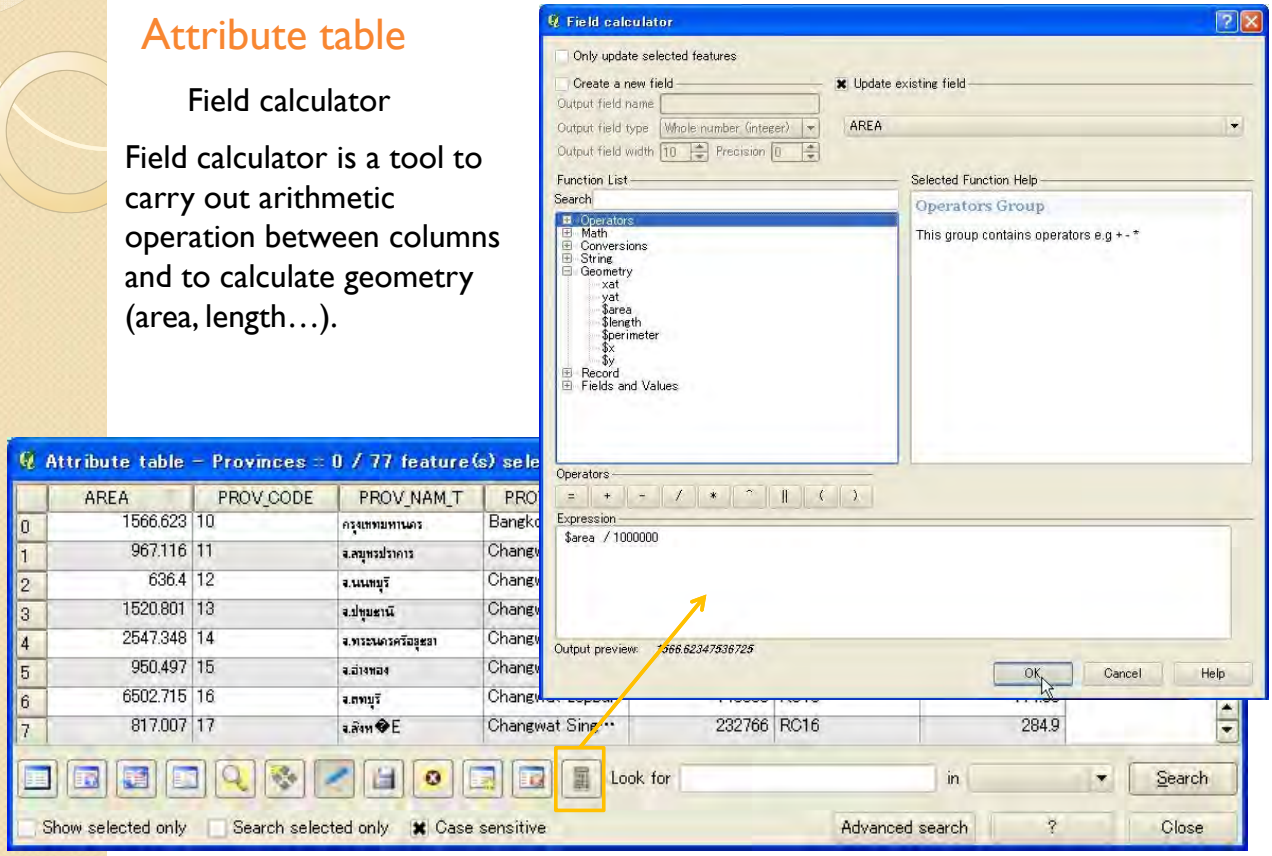
To add new column, push "new column" button and input column name, type, width (number of character) and precision (number of character under decimal point).



Attribute table

Field calculator

Field calculator is a tool to carry out arithmetic operation between columns and to calculate geometry (area, length…).

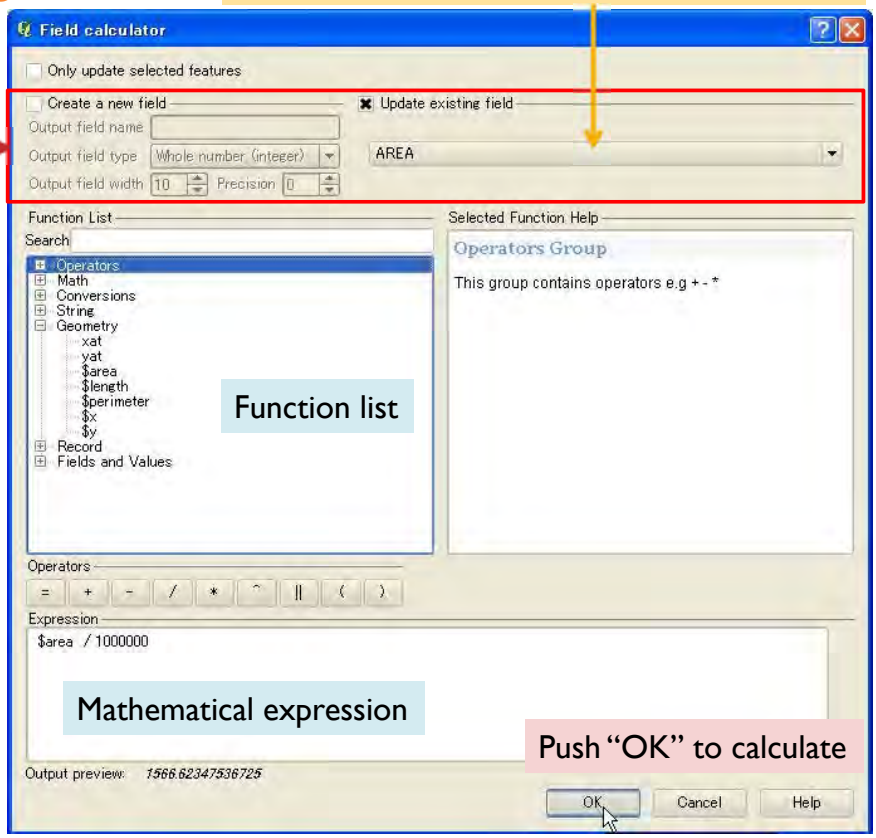


1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

Attribute table

Select column name to input calculated result

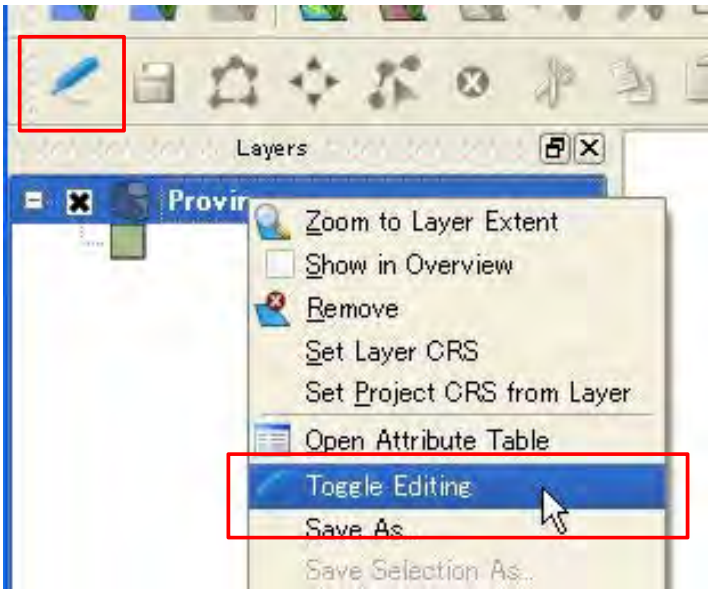
Choose creating a new field to input calculated result or update existing field



This expression means…
"$area" = area of feature (m^2)

Editing

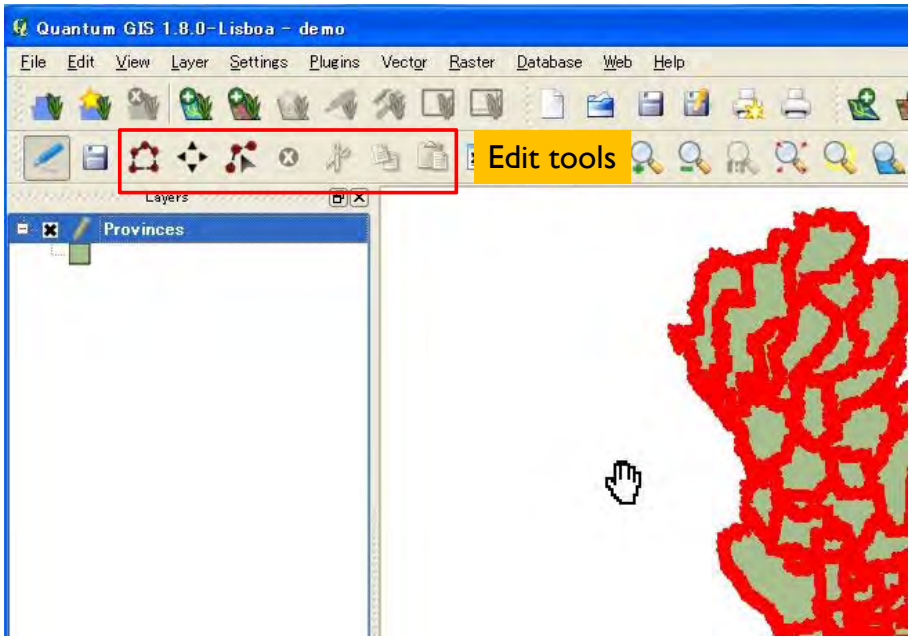
Other buttons to start editing are located at "Right click" – "Toggle Editing" or in toolbar.



1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

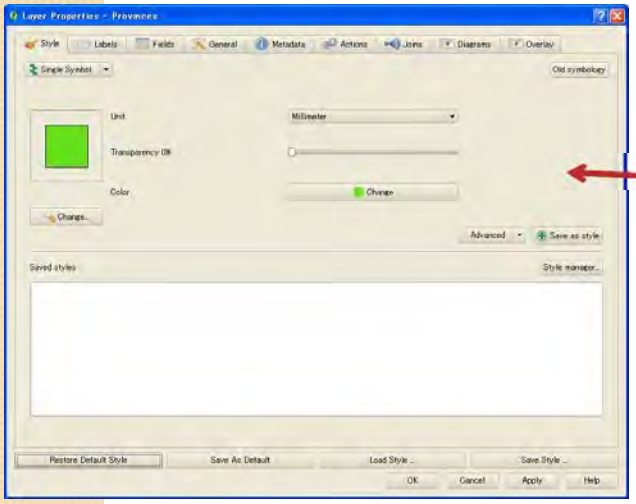
Editing

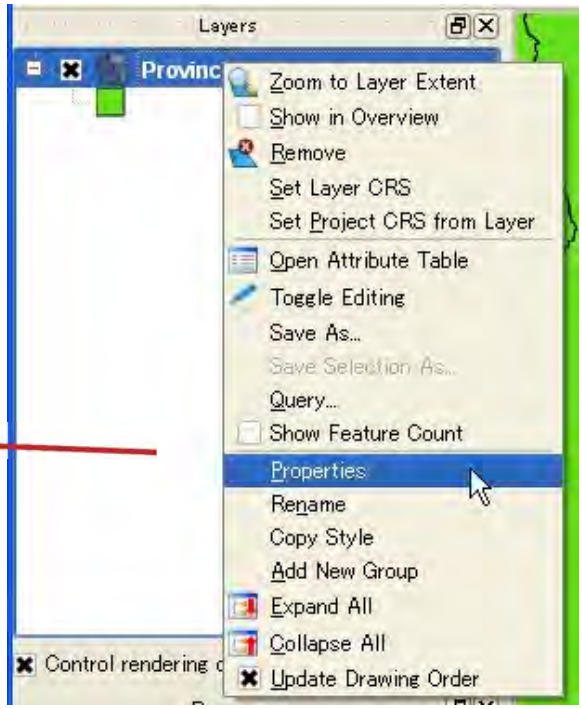
While "Edit" button is on, editable features get red.
You can use edit tools on the toolbar.



Properties of layers

Double click or right click and select "Properties" to show layer properties as below.





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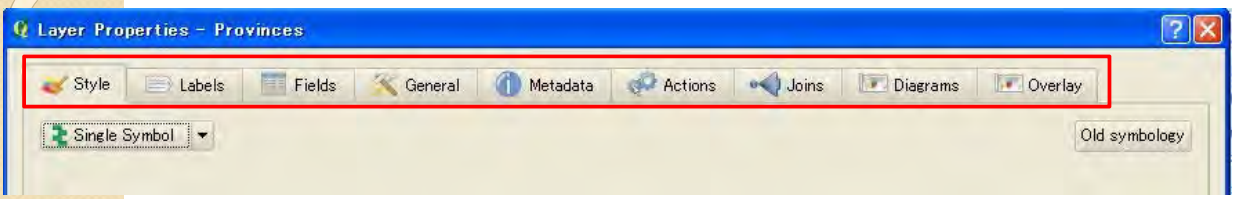
1.3.1 Quantum GIS (GIS data Mapping software)

Properties of layers



"Style" : color and symbol settings

"Labels" : label setting

"Fields" : add/delete attribute, set alias name of attribute

"General": change display name, CRS (Coordinate Reference System) and encoding. set "query" (screening display data… ex. population > 10,000)

"Metadata": general information of the layer

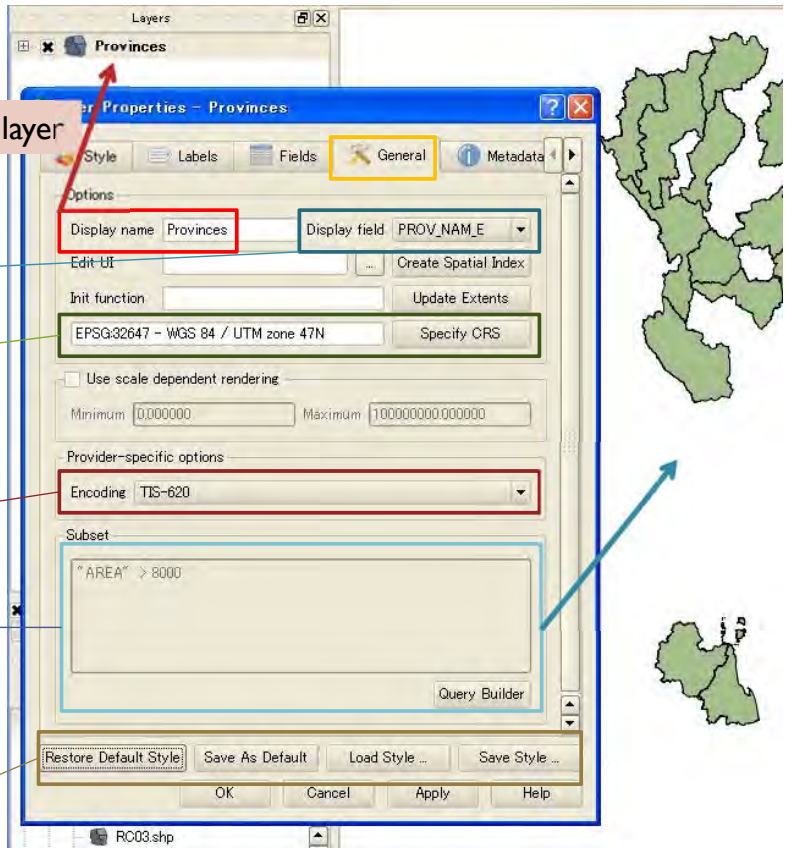
"Actions": set "actions"

"Joins" : join attribute table

"Diagrams": make text diagrams and pie charts

"Overlay": make pie charts and bar charts

Properties of layers – "General" settings tab



Display name on the layer

Primary attribute column

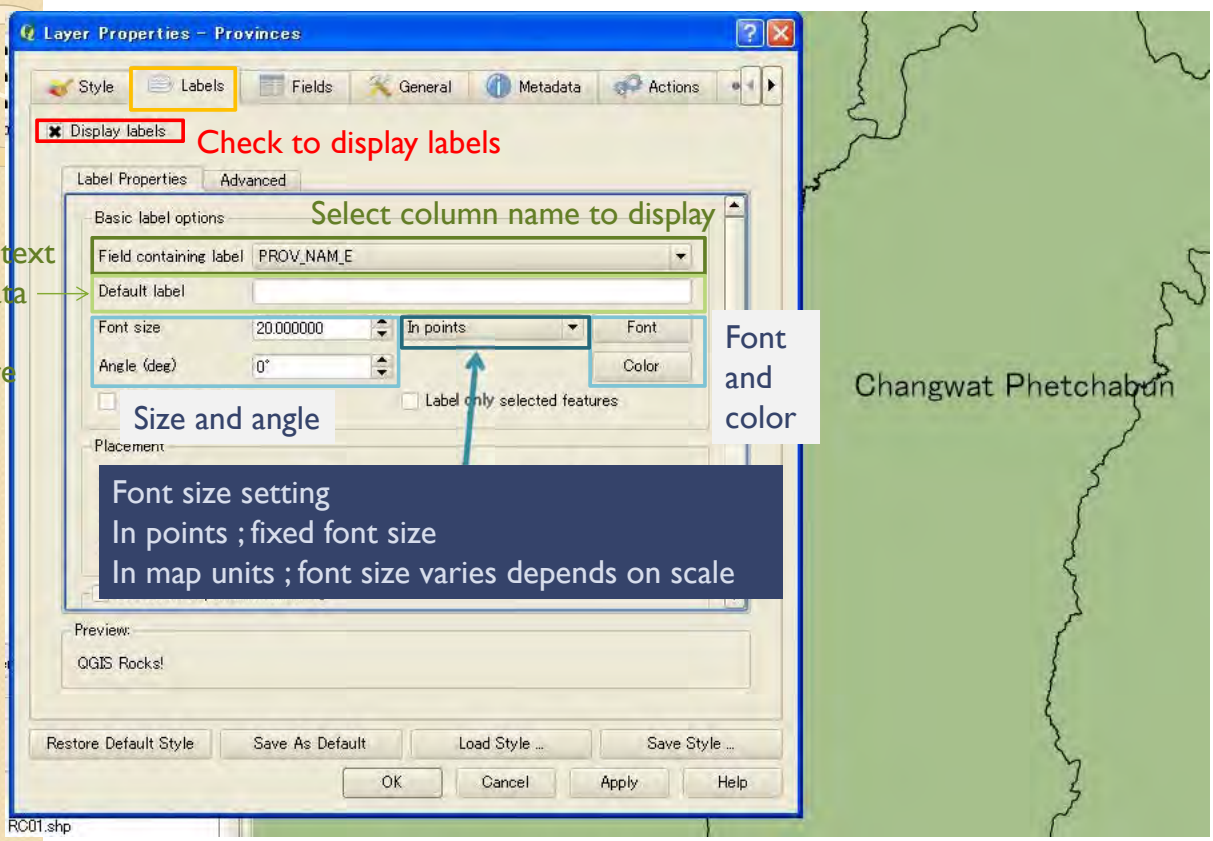
CRS (Coordinate Reference System) setting

Text Encoding (TIS-620 is for Thai language)

"query" (screening display data. This example means that if "AREA" column value is higher than 8000, then display feature)

You can restore these settings into style file and apply to other layer

Properties of layers – "Labels" tab



Check to display labels

Select column name to display

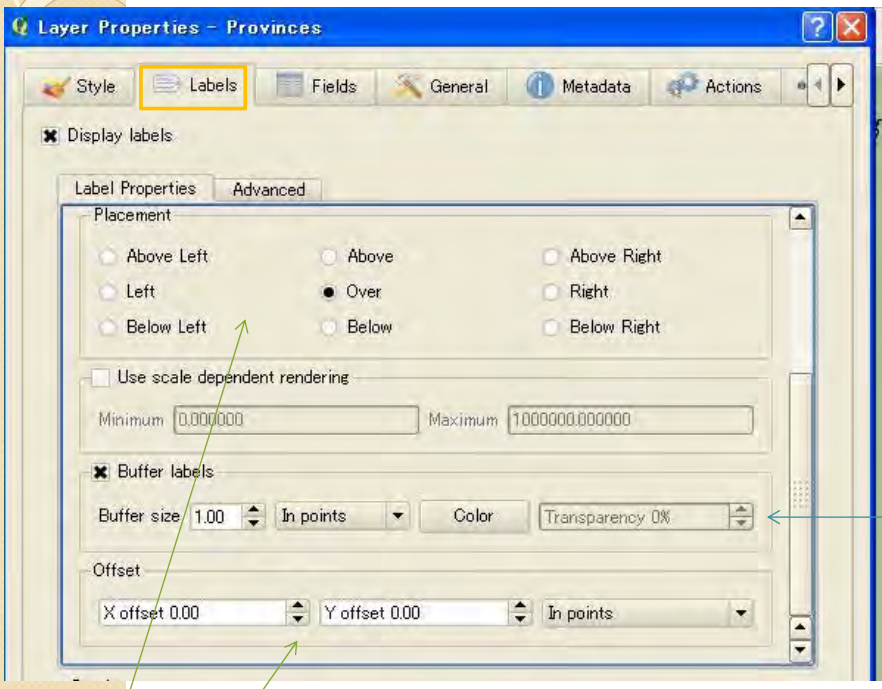
Input text for data blank feature

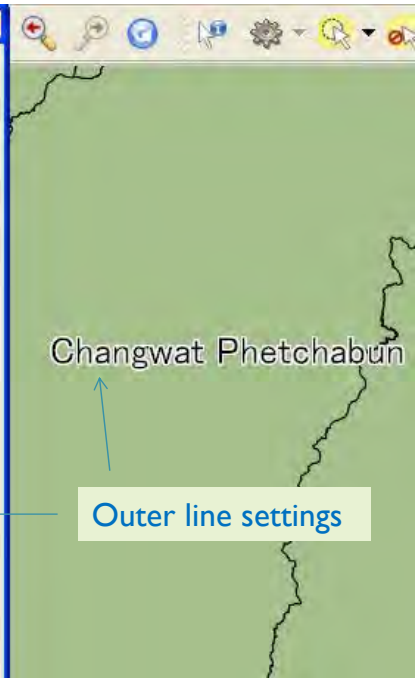
Font and color

Size and angle

Font size setting
In points ; fixed font size
In map units ; font size varies depends on scale

Properties of layers – "Labels" tab

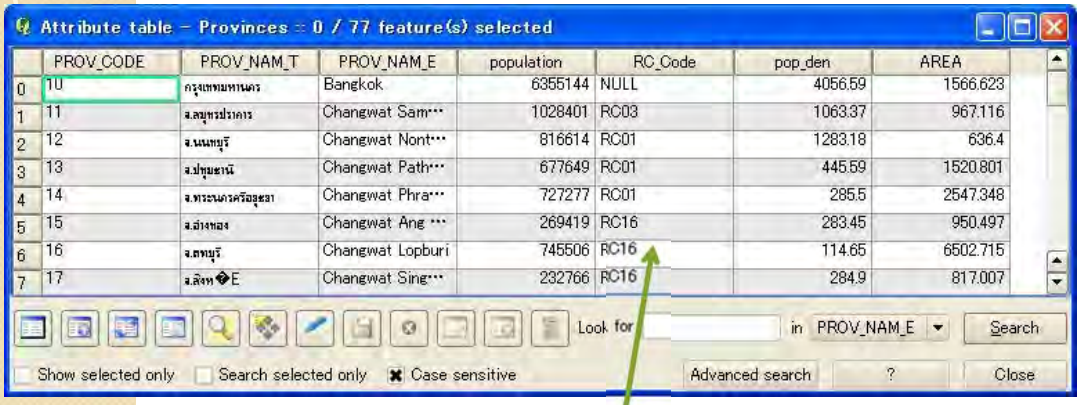


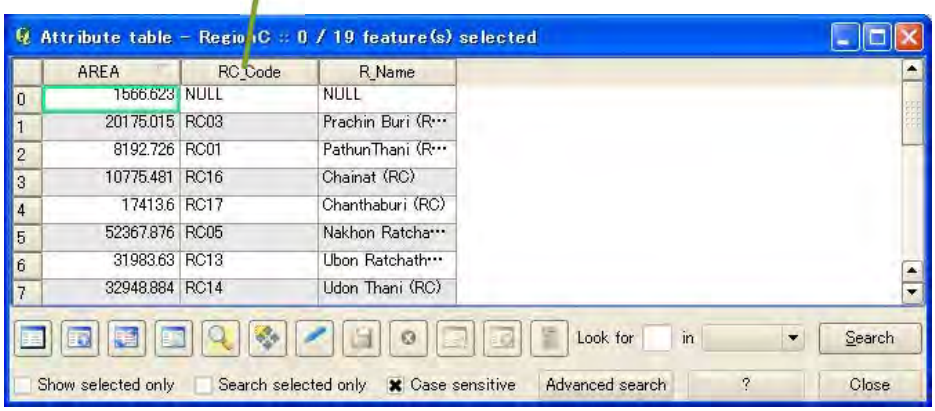


Outer line settings

Placement settings

Properties of layers – "Join" tab



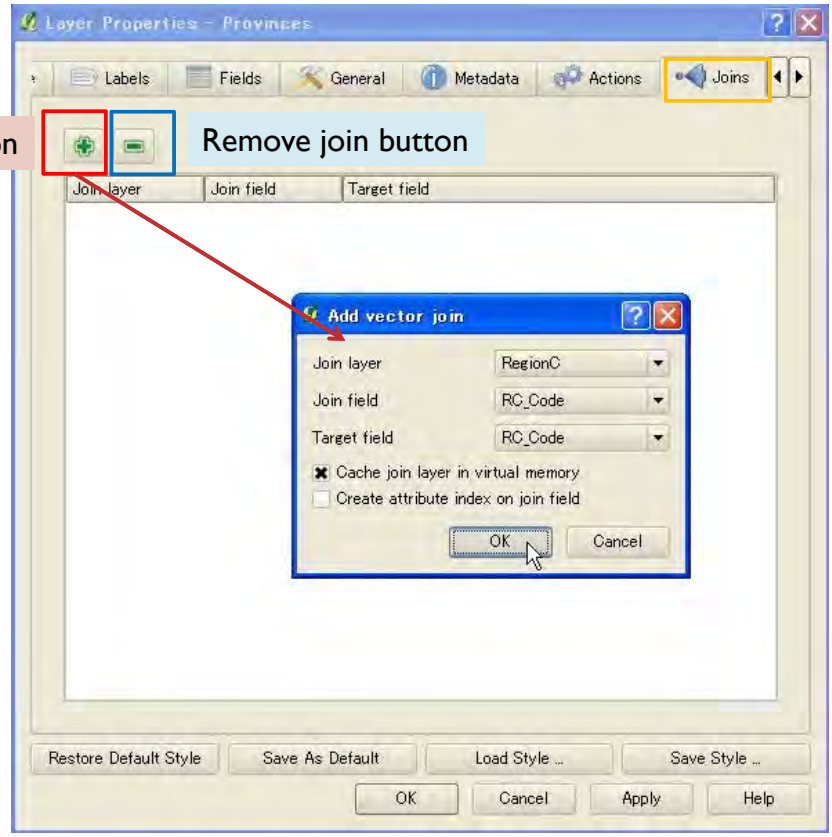


It is able to join plural attribute tables by using key column.

1. Constitution of GIS Data and How to Use GIS Software

1.3.1 Quantum GIS (GIS data Mapping software)

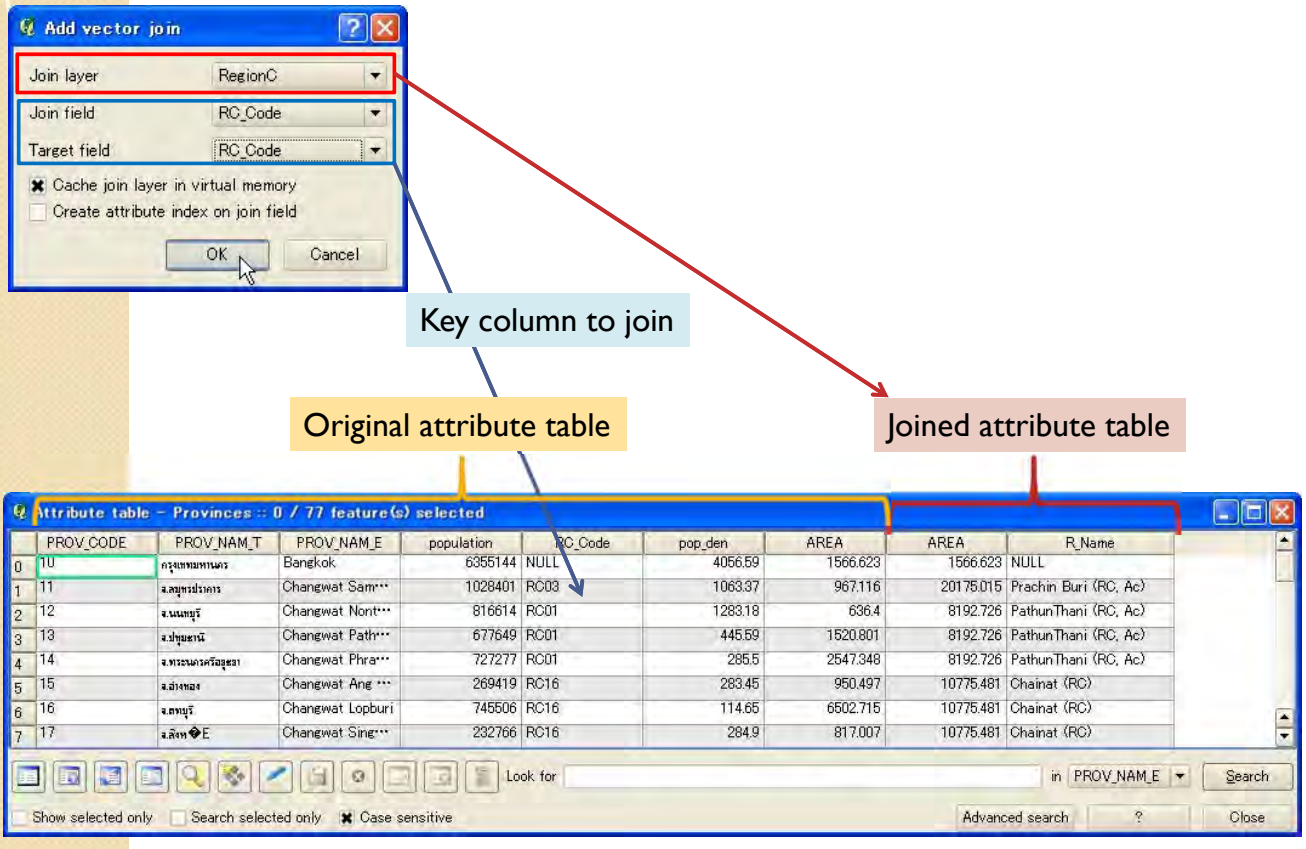
Properties of layers – "Join" tab



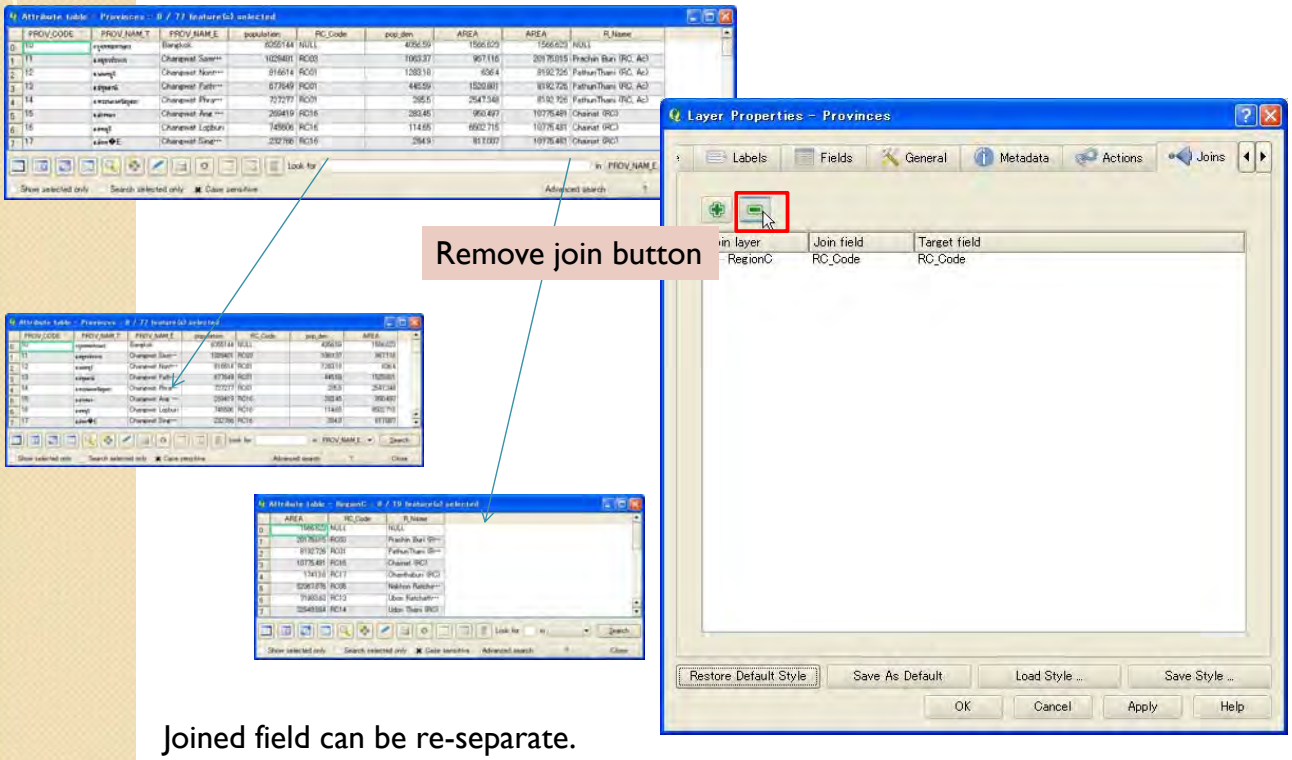
1. Constitution of GIS Data and How to Use GIS Software

1.3.1 Quantum GIS (GIS data Mapping software)

Properties of layers – "Join" tab

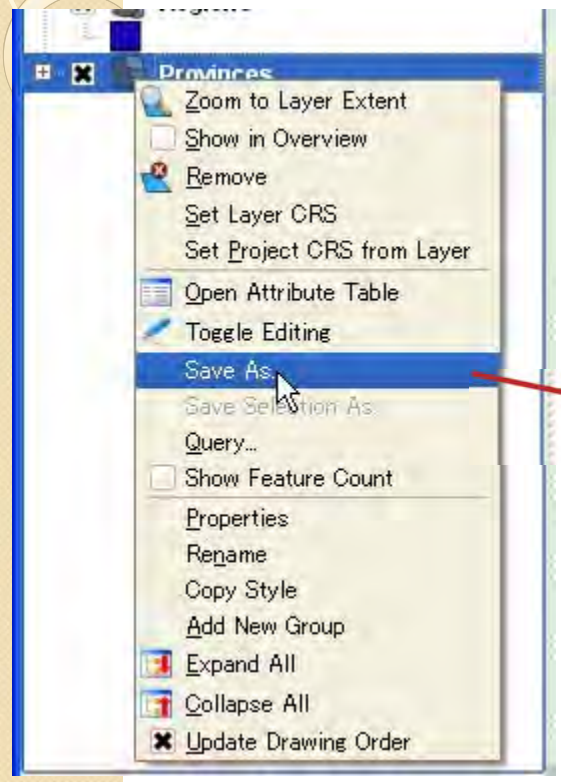


Properties of layers – "Join" tab



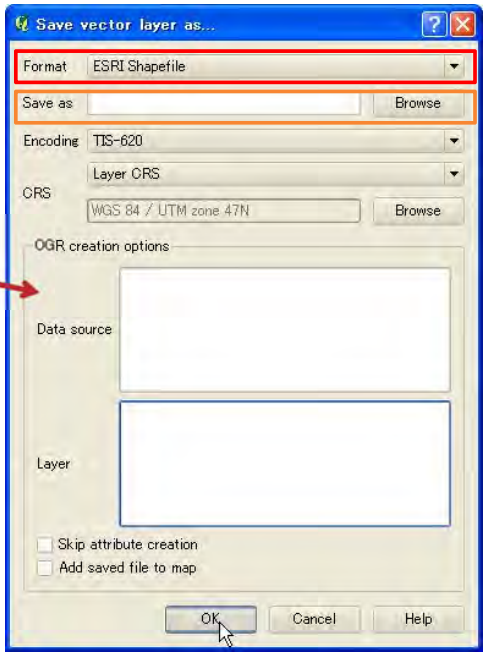
Joined field can be re-separate.

Properties of layers – "Join" tab



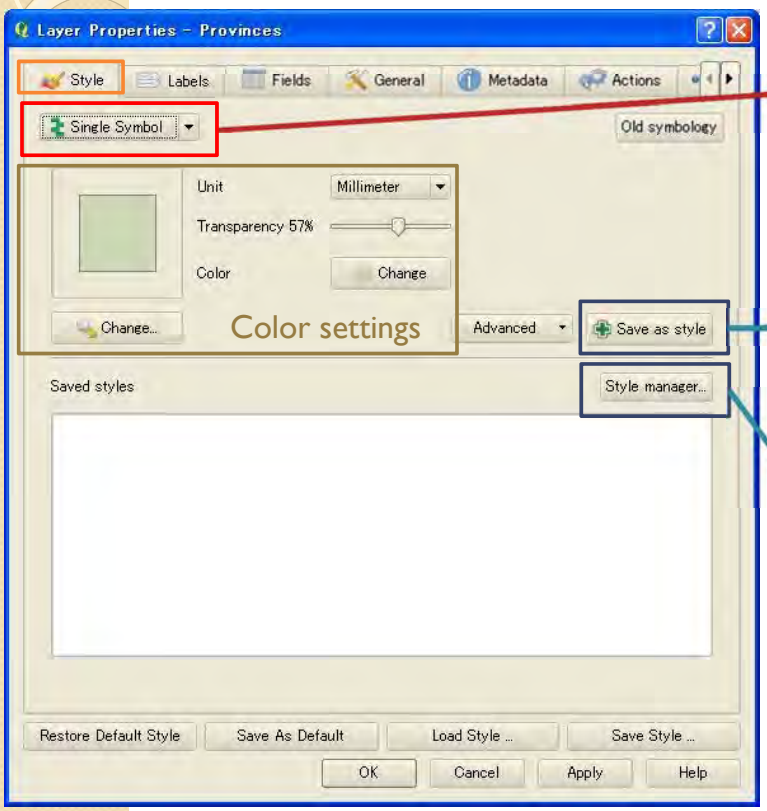
If you want to save completely joined attribute table, right click layer and select "save as" to save new file.

Select format
Input file name



Properties of layers – "Style" tab

"Style" tab is color setting tab.



Single Symbol : single color feature
Categorized : set color to each attribute column value
Graduated : set color to each range of attribute column value

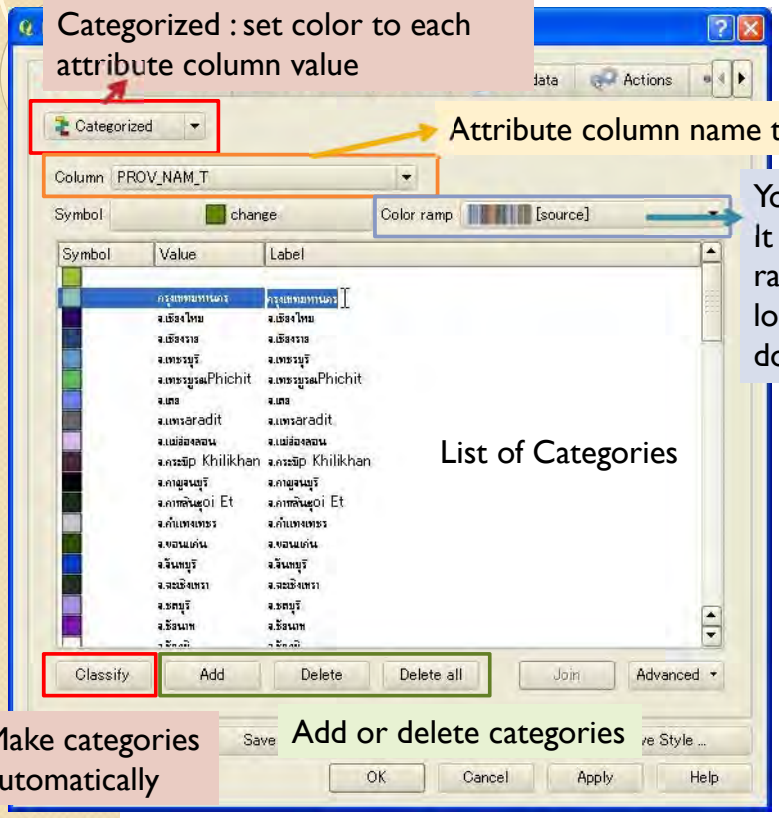
You can save settings as style file and apply same setting to other layers.

Load or manage saved styles.

1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

Properties of layers – "Style" tab

Categorized : set color to each attribute column value



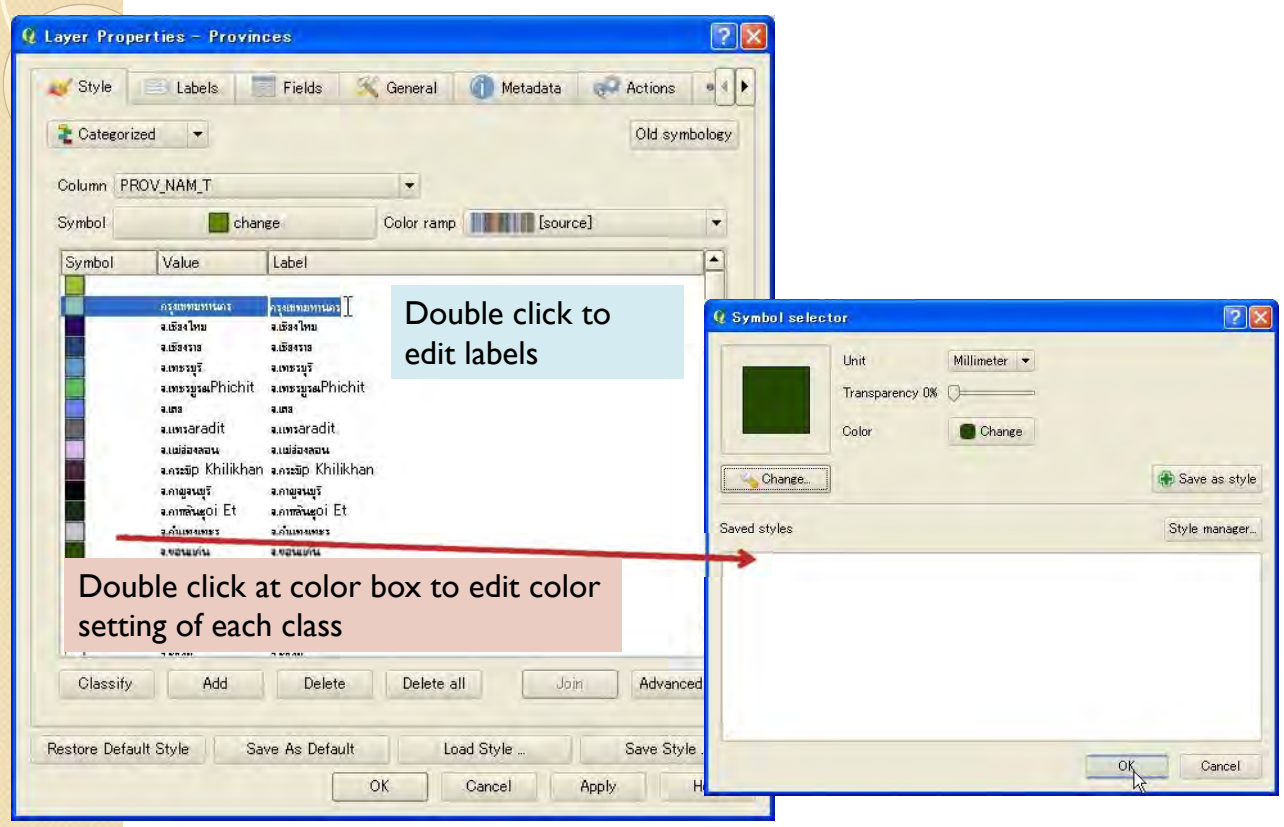
Attribute column name to set color

You can set color ramp here. It is able to make new color ramp by "New Color Ramp…" located at the bottom of pull down.

Make categories automatically

Add or delete categories

Properties of layers – "Style" tab



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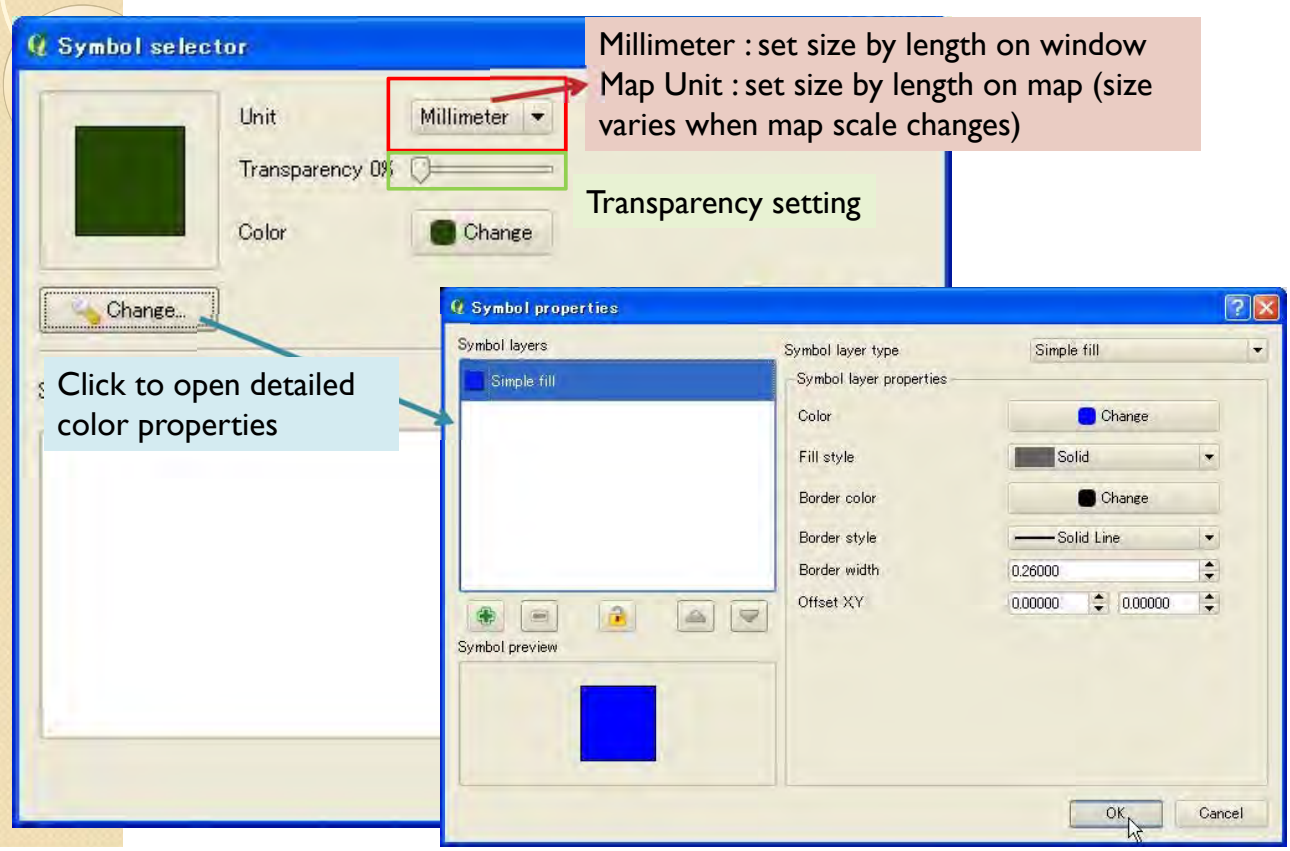
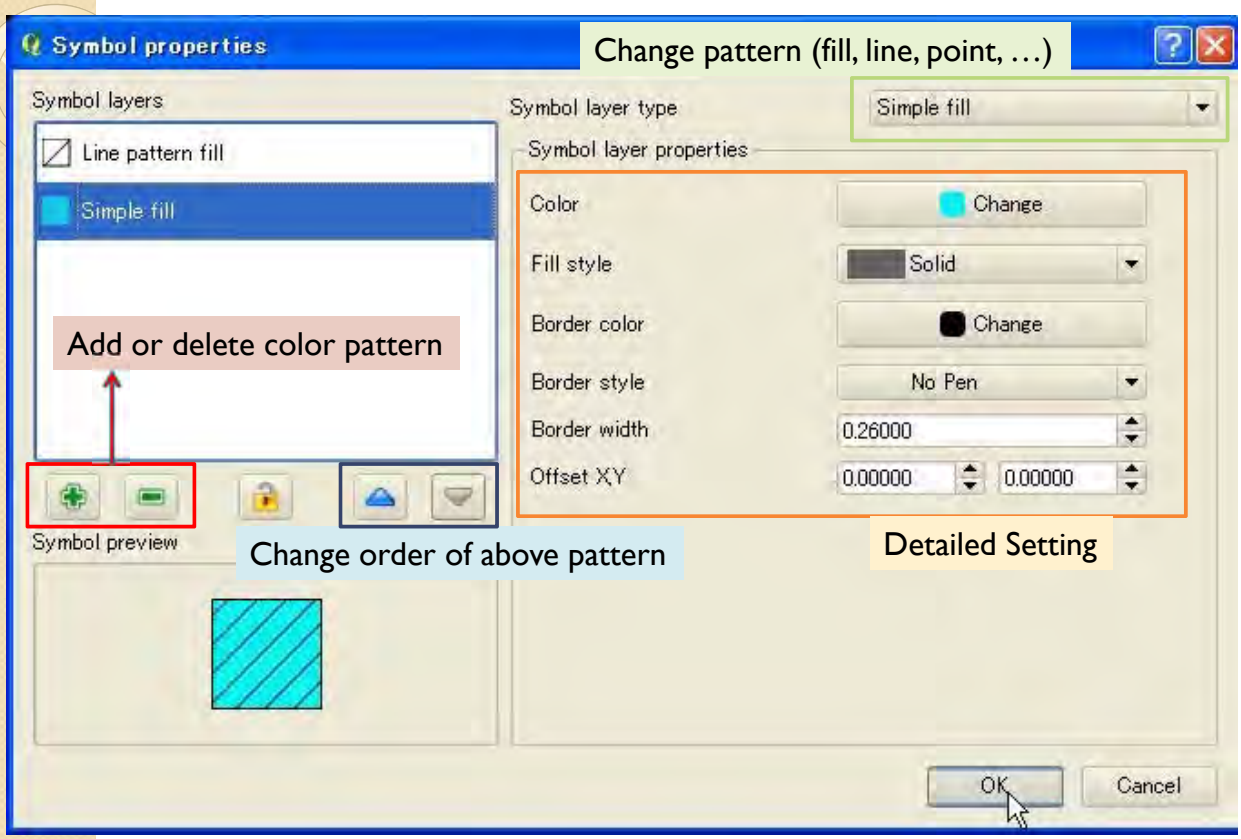
Properties of layers – "Style" tab

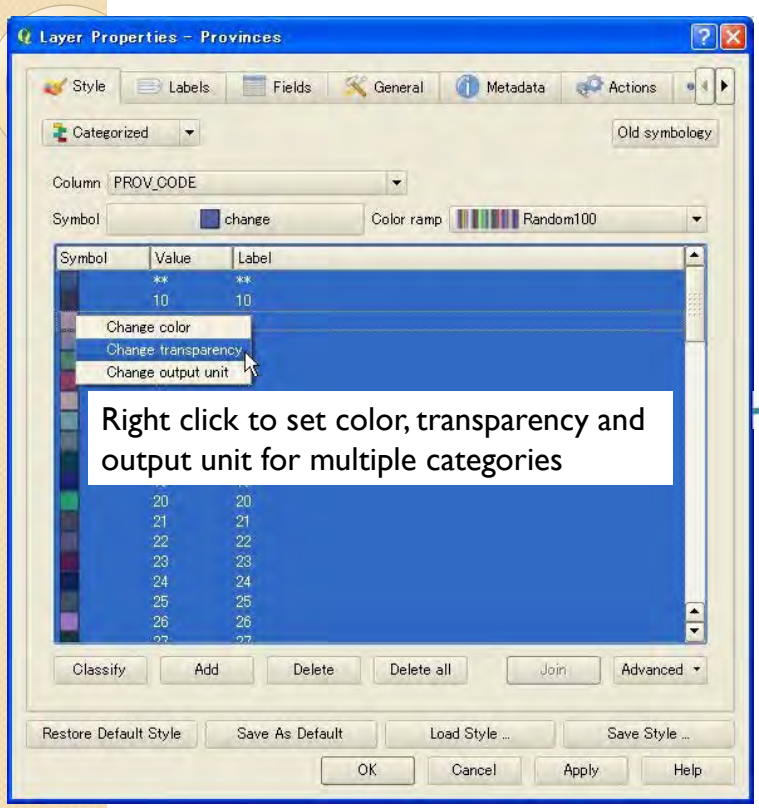


Properties of layers – "Style" tab

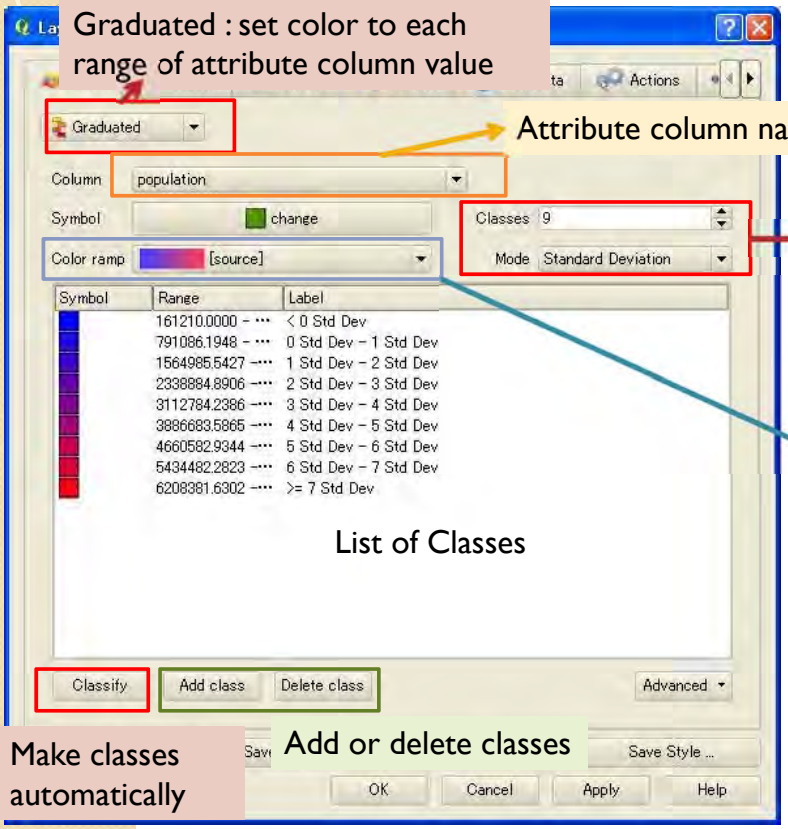


1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

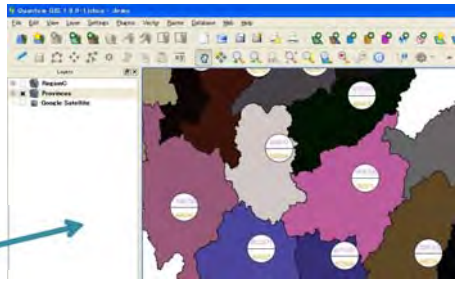
Properties of layers – "Style" tab

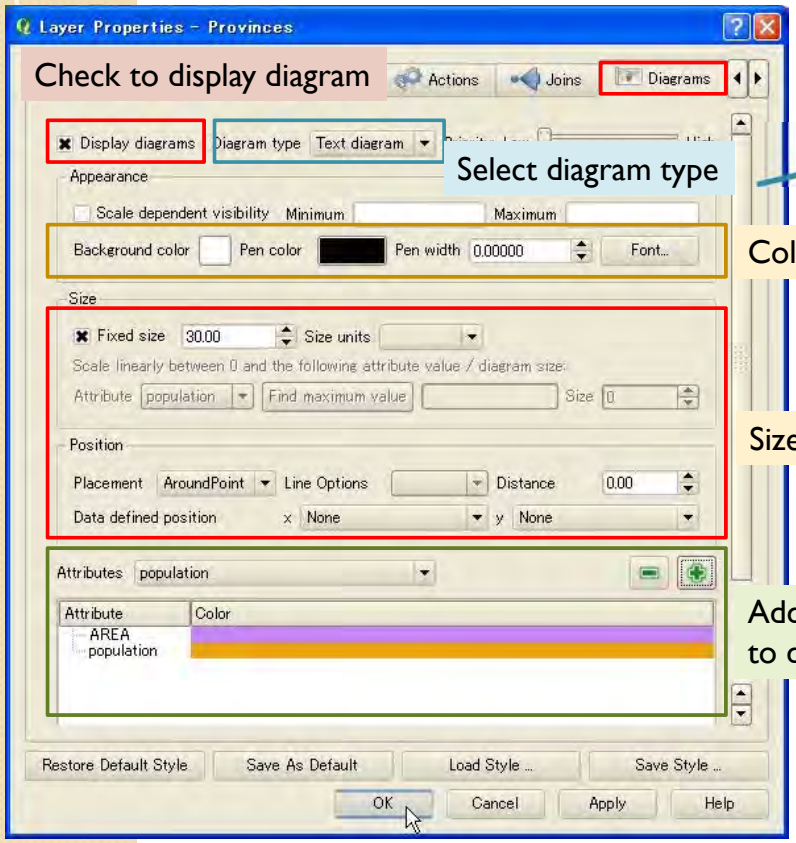


Properties of layers – "Style" tab

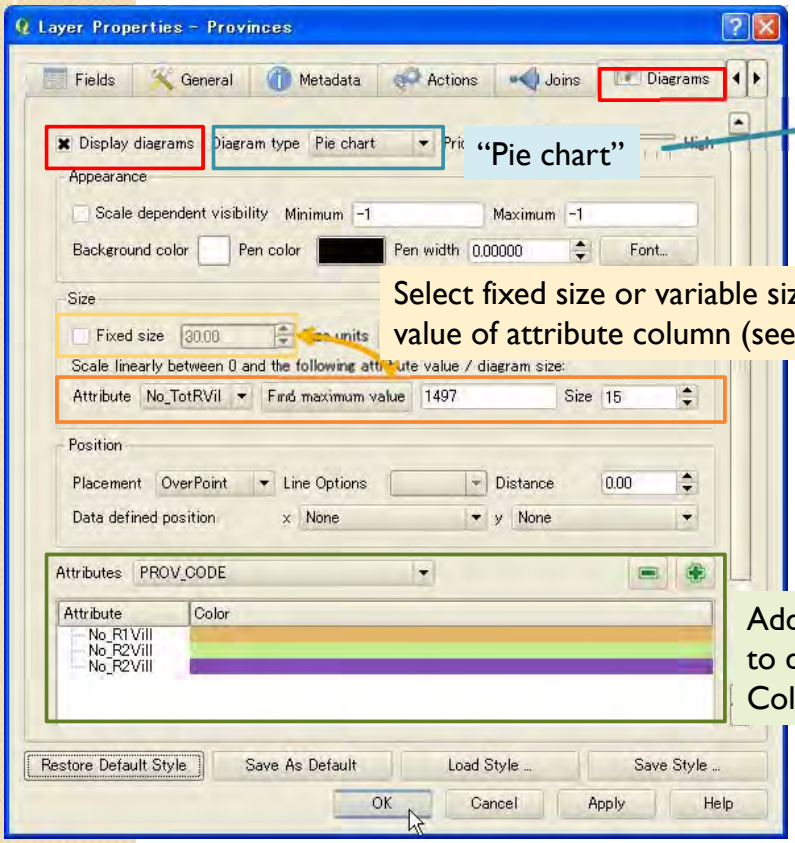


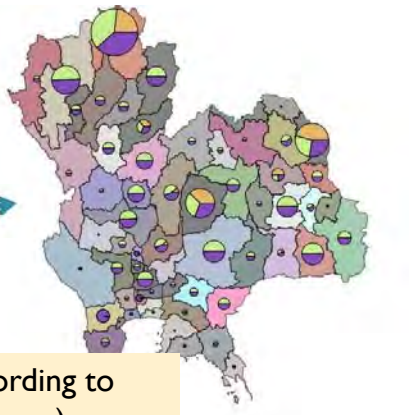
Properties of layers – "Diagram" tab





Properties of layers – "Diagram" tab





"Pie chart"

Select fixed size or variable size according to value of attribute column (see next page)

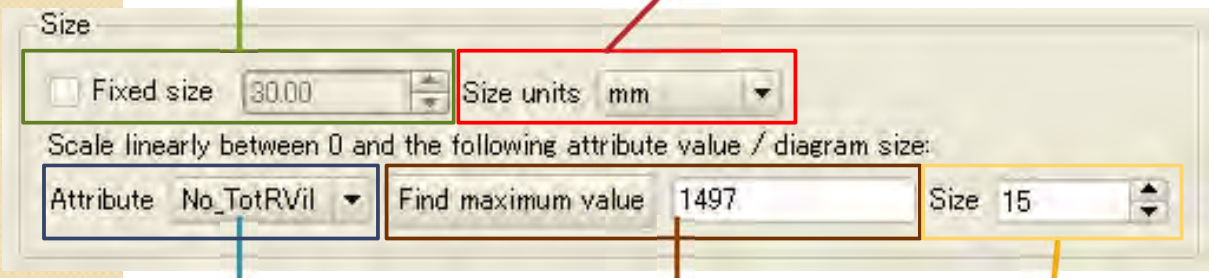
Add or delete attribute columns to display.
Color settings are also here.

1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

Properties of layers – "Diagram" tab

mm : set size by length on window
Map Unit : set size by length on map (size varies when map scale changes)

Set size and check here to use fixed scale

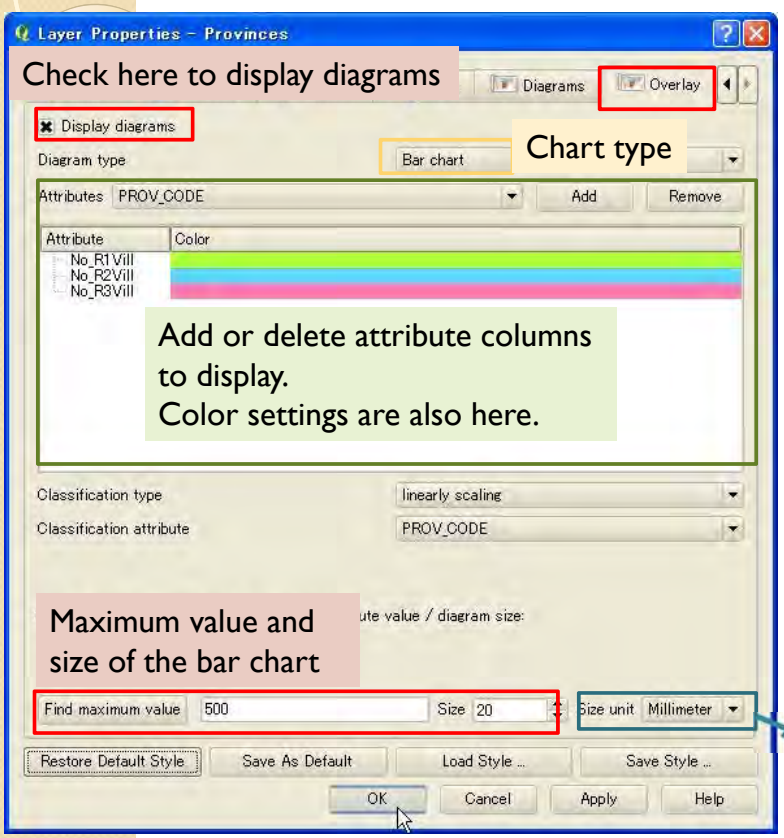


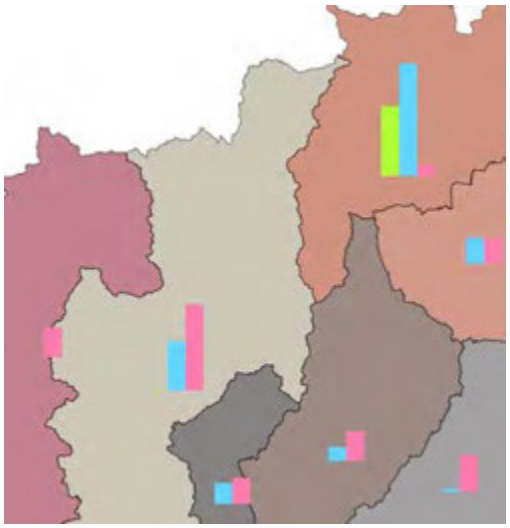
Select attribute column to determine size

Set maximum value of attribute column value

Set maximum size of pie chart

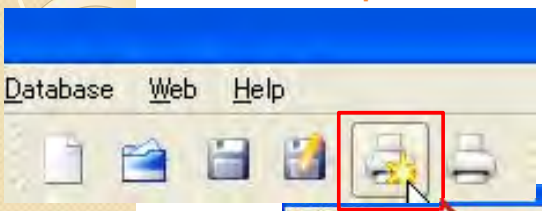
Properties of layers – "Overlay" tab



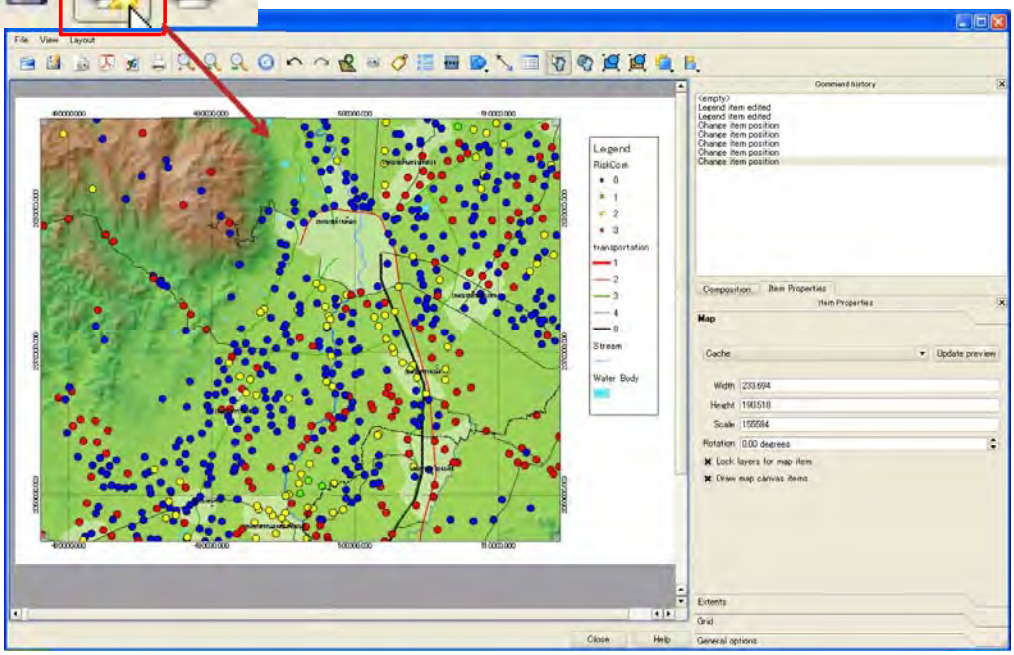


mm : set size by length on window
Map Unit : set size by length on map (size varies when map scale changes)

Print composer



Print composer is canvas window for print or export image file, such as pdf, jpg…



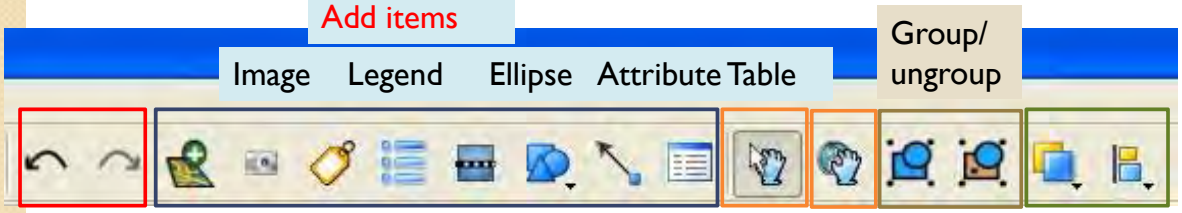
Print composer

Load and save

Export to file or print

Zoom in/out

Refresh canvas



Redo/undo

Map

Label

Scale bar

Arrow

Add items

Move item

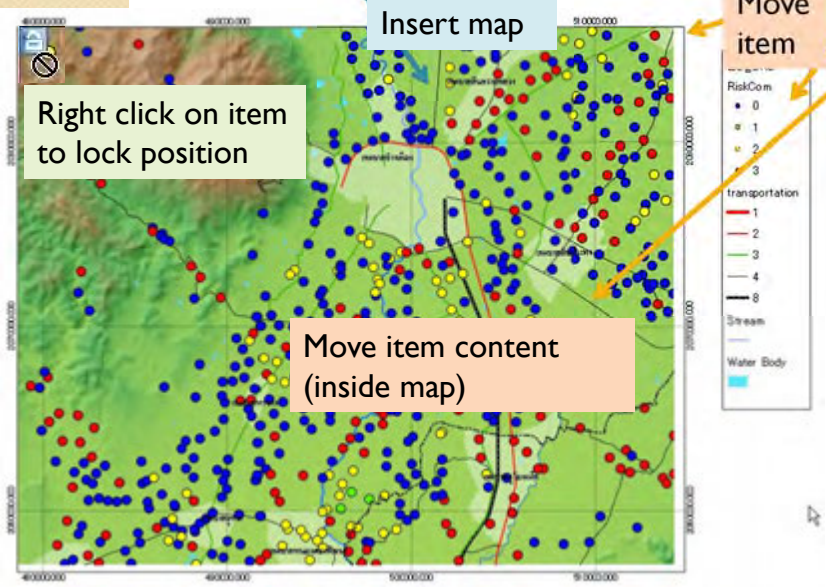
Move item content

Change item order and align

Print composer

Insert map

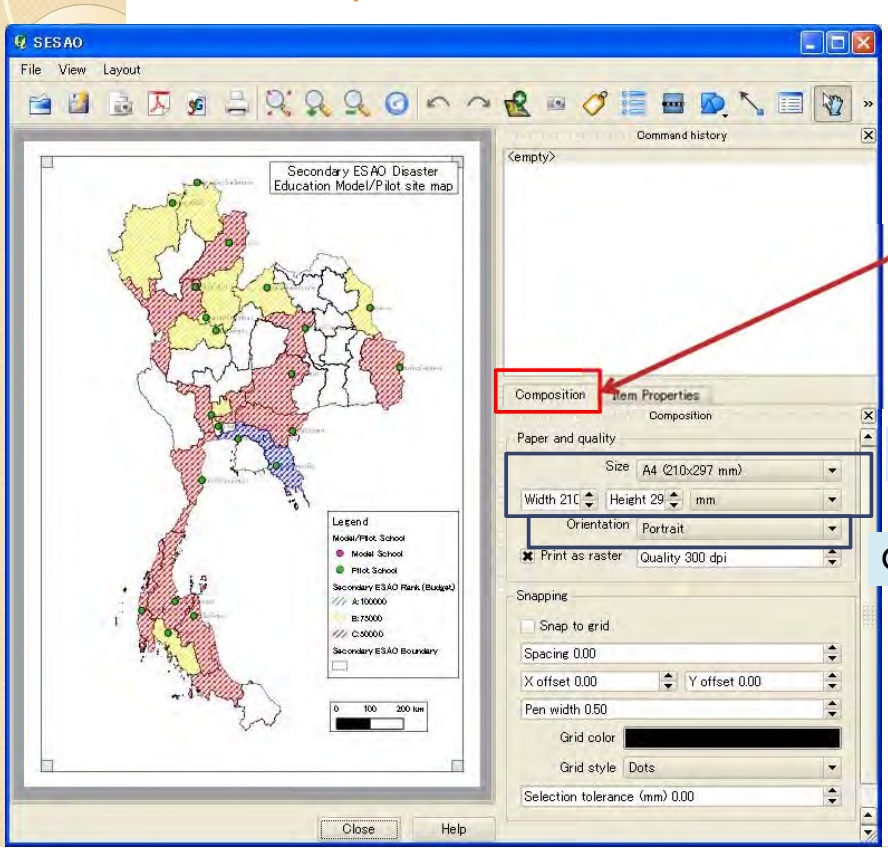
Move item



Right click on item to lock position

Move item content (inside map)

Print composer



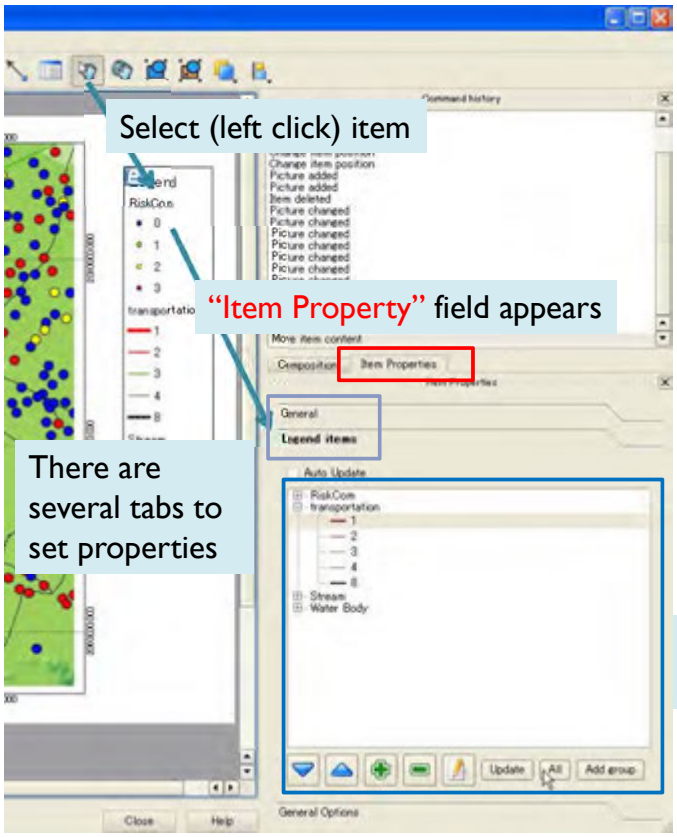
Composition tab is for General settings of the canvas

Size

Orientation

1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

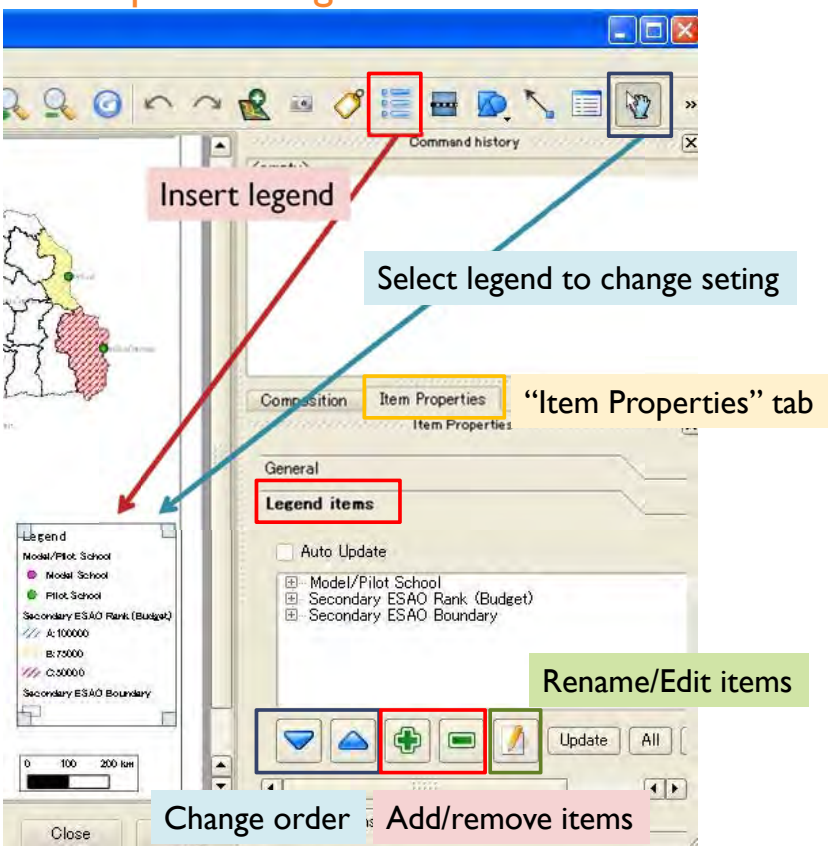
Print composer



When you select a item on canvas, property field appears at bottom of right side.
You can arrange several settings.

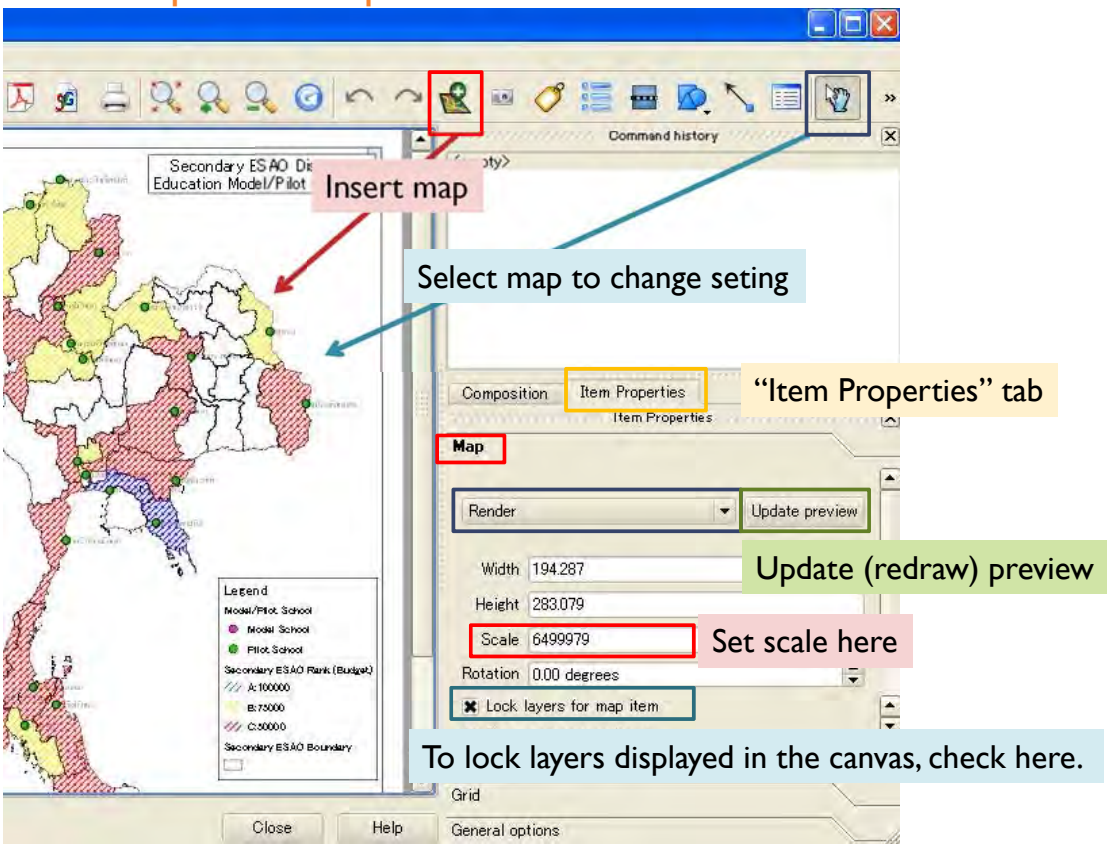
You can add, remove or edit legend items.

Print composer - Legend

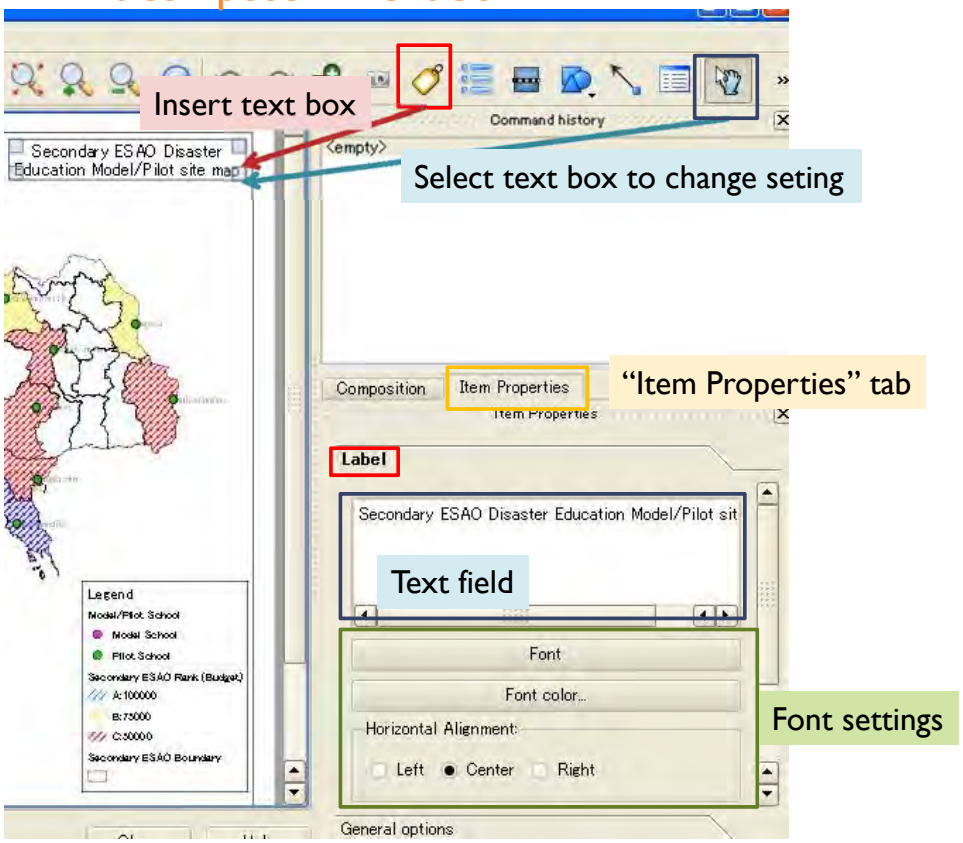


1. Constitution of GIS Data and How to Use GIS Software
1.3.1 Quantum GIS (GIS data Mapping software)

Print composer - Map

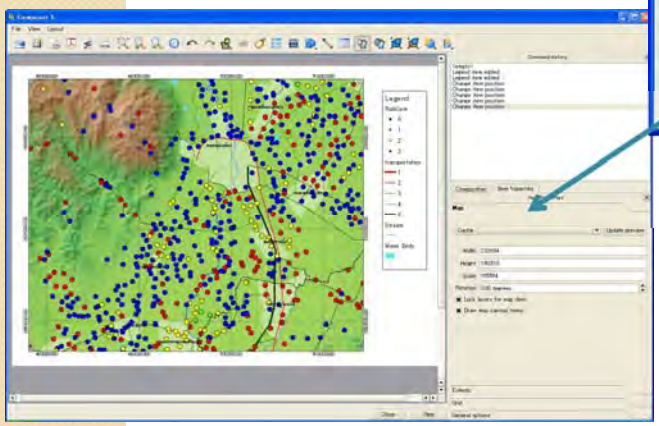


Print composer – Text box



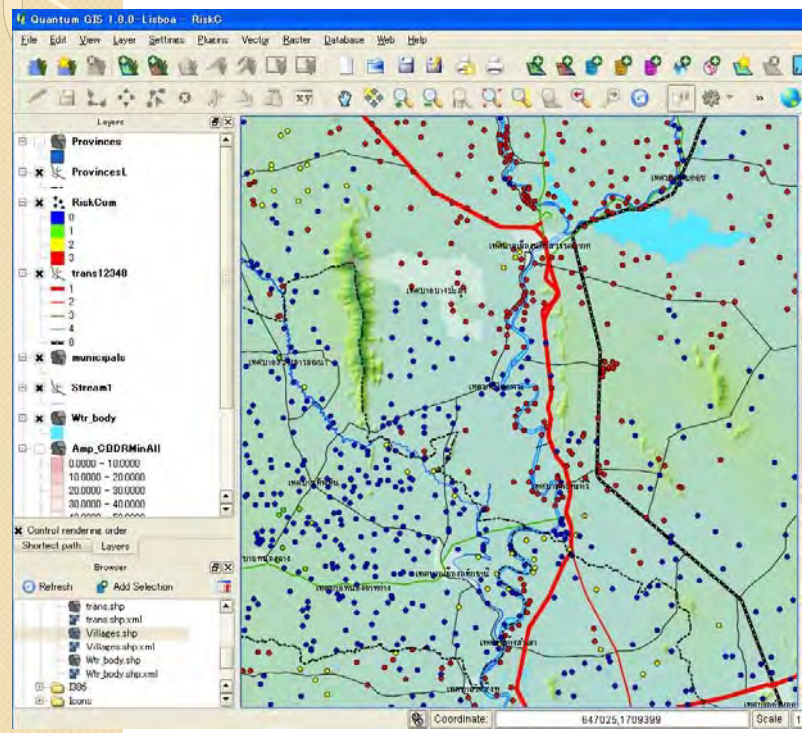
Print composer

You made composer once, you can reload the composer from this button. You also remove or rename the composer.



2. Making Inventory Maps (Risk Community)

2.1 Making risk community map



It is important to understand situation about risk community.

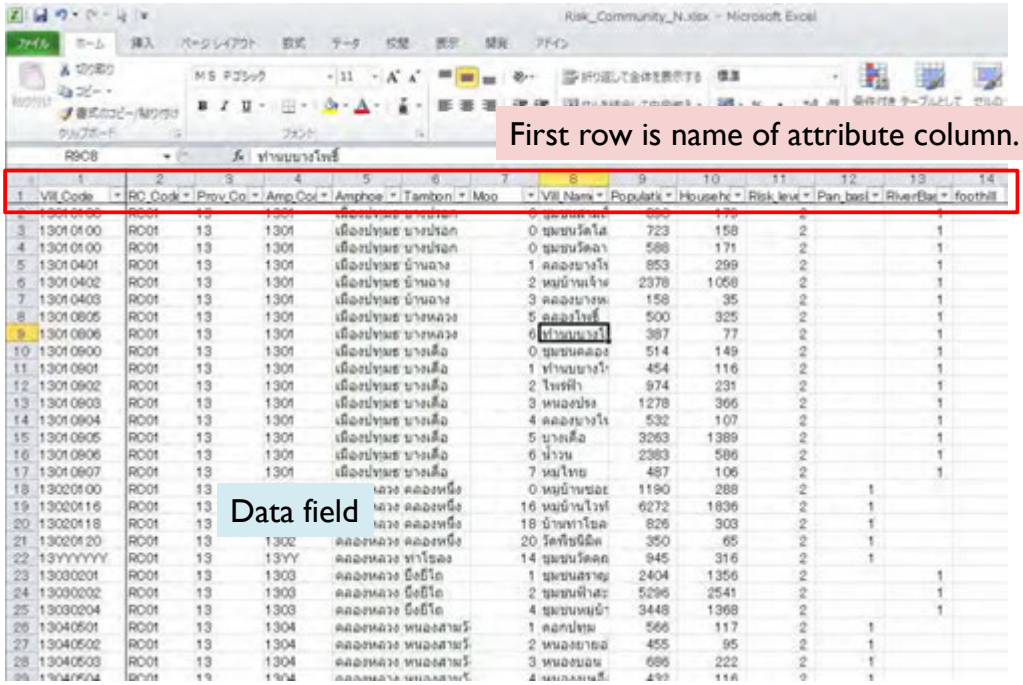
In this chapter, we make risk community map by using QGIS and Excel.

Source files
/ Risk_Community_N.xls
(list of risk community)

/ village (shape file)
/ provinces (shape file)
/ RegionC (shape file)
/ trans (shape file)
/ Wtr_body (shape file)
/ Stream (shape file)
/ thailand.osm (openstreetmap)
/ dem_90_u_ft (image file)

2.1.1 Make risk community shape file

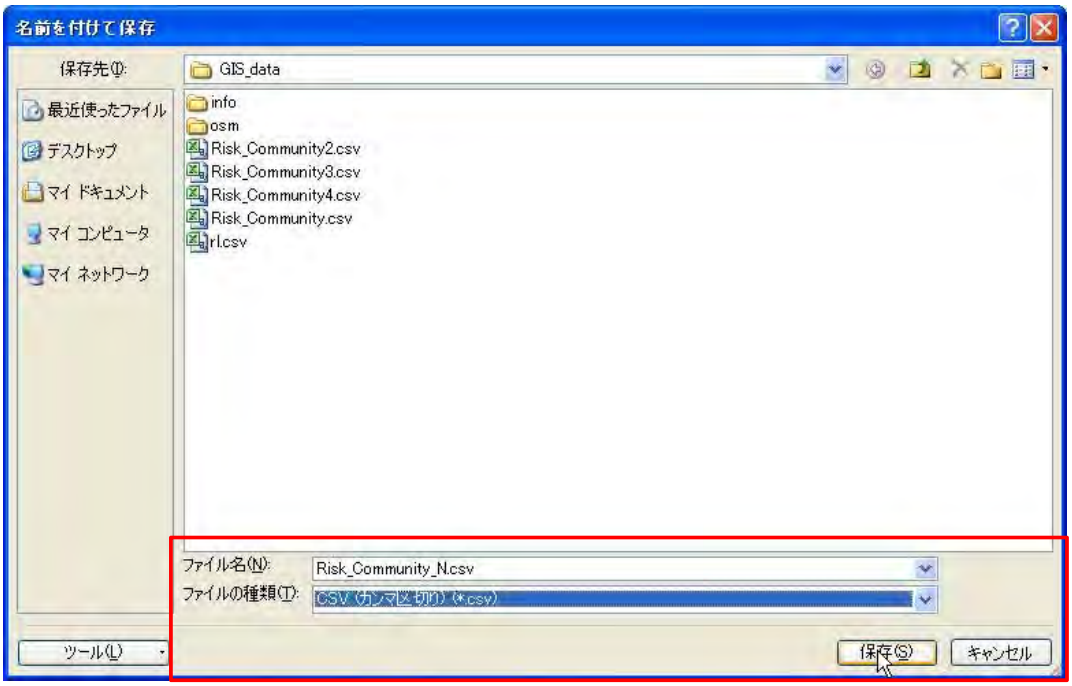
Risk_Community_N.xlsx is Excel format file. This file contains Risk community profiles (location, risk level population …).



2. Making Inventory Maps

2.1.1 Make risk community shape file

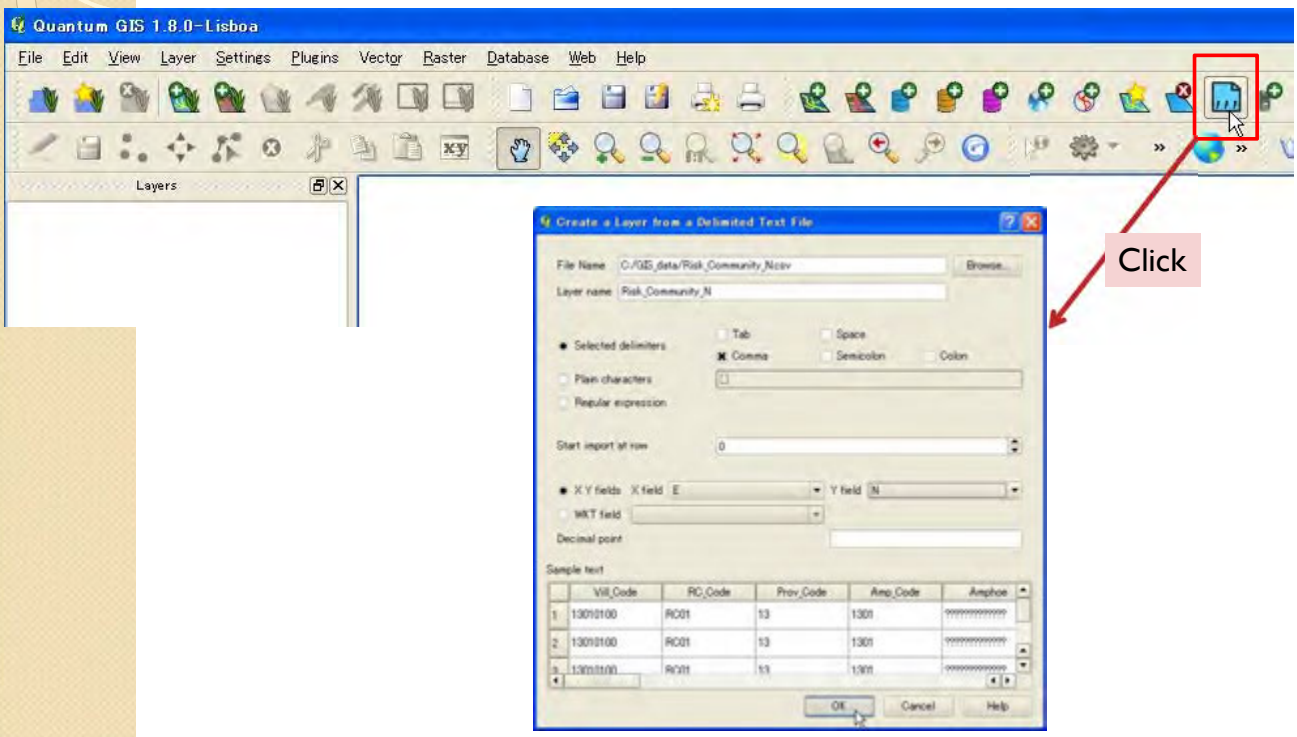
In order to import the Excel data, save the data sheet to "csv" format file.



2. Making Inventory Maps

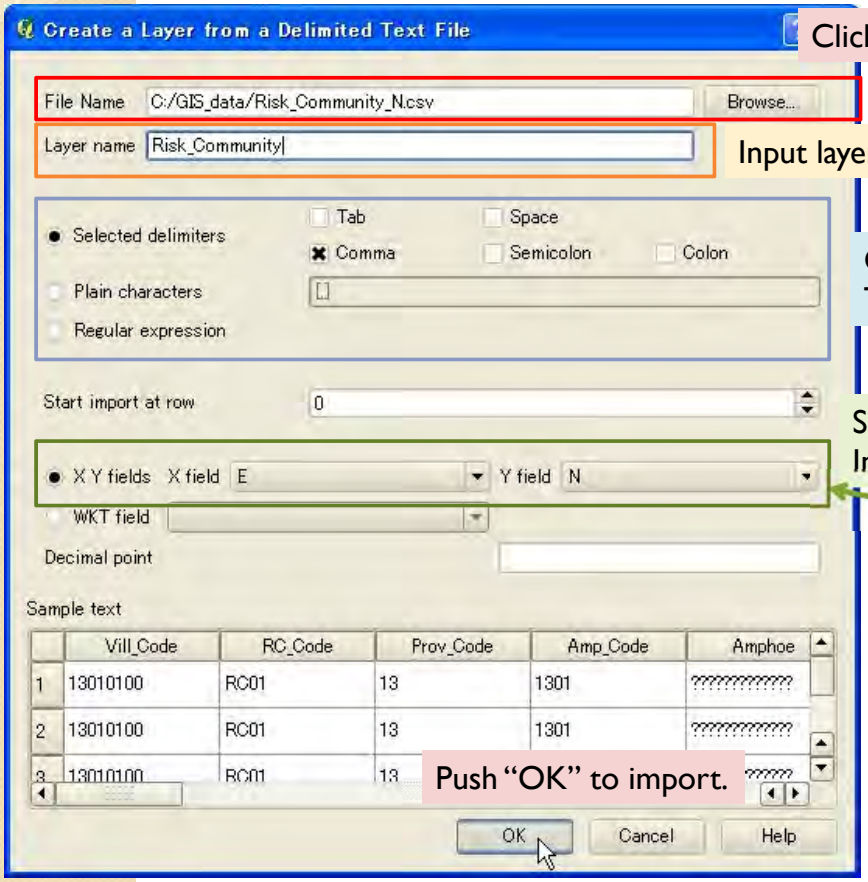
2.1.1 Make risk community shape file

Open QGIS and push "Add Delimited Text Layer" button to import the "csv" file.



2. Making Inventory Maps

2.1.1 Make risk community shape file



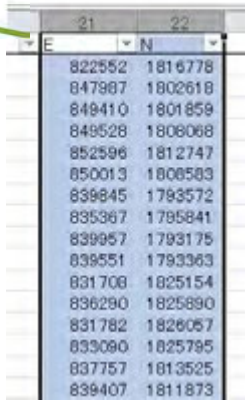
Click "Browse" to select csv file

Input layer name

Check "Comma".
This is delimiter of "csv" file.

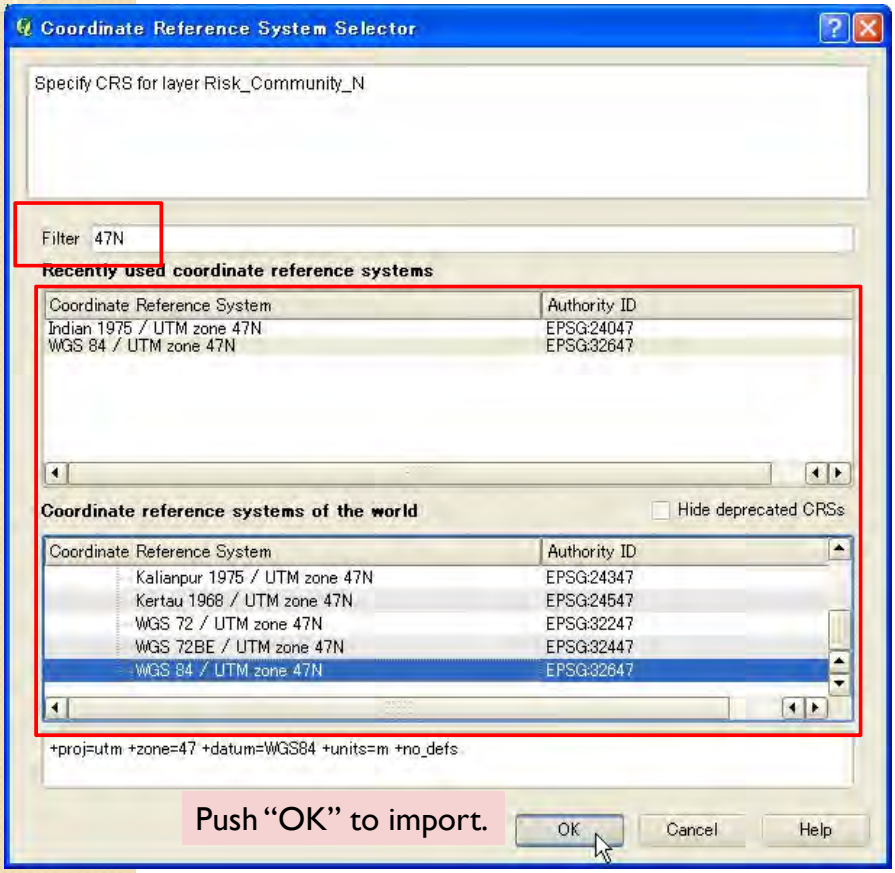
Select field of X-Y coordinate.
In this case, X is "E", Y is "N".

Push "OK" to import.



2. Making Inventory Maps

2.1.1 Make risk community shape file

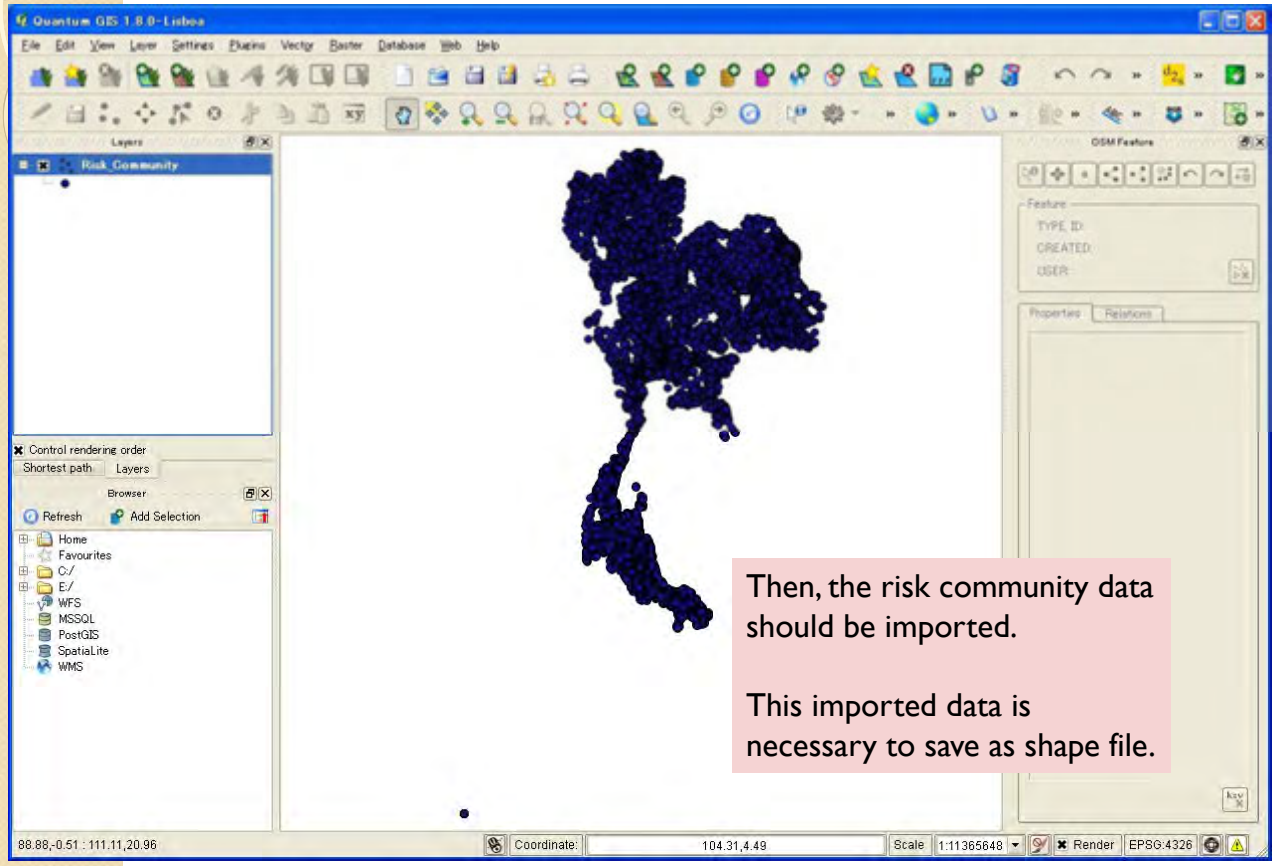


Next, set CRS (Coordinate Reference System) as "WGS 84 / UTM zone 47N".

Push "OK" to import.

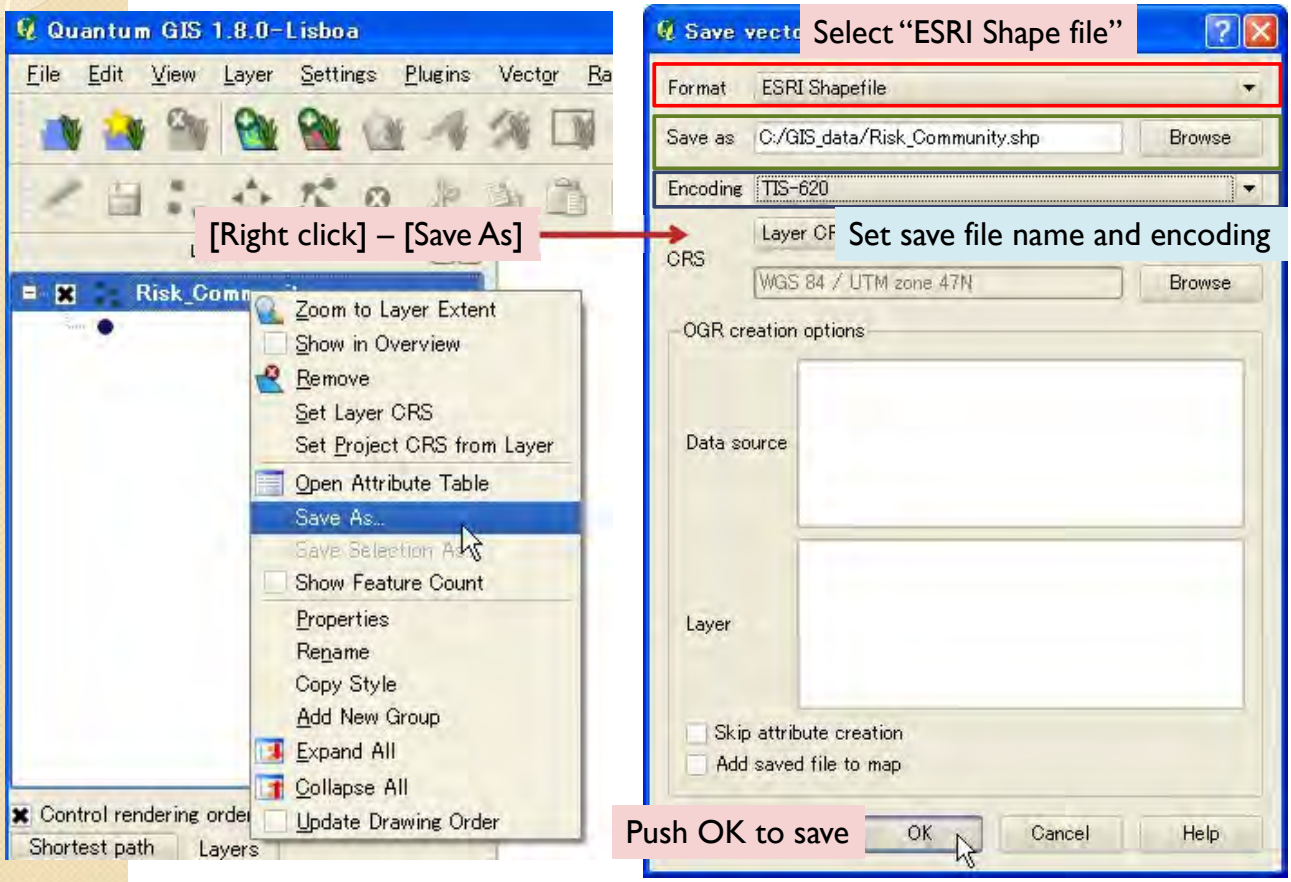
2. Making Inventory Maps

2.1.1 Make risk community shape file



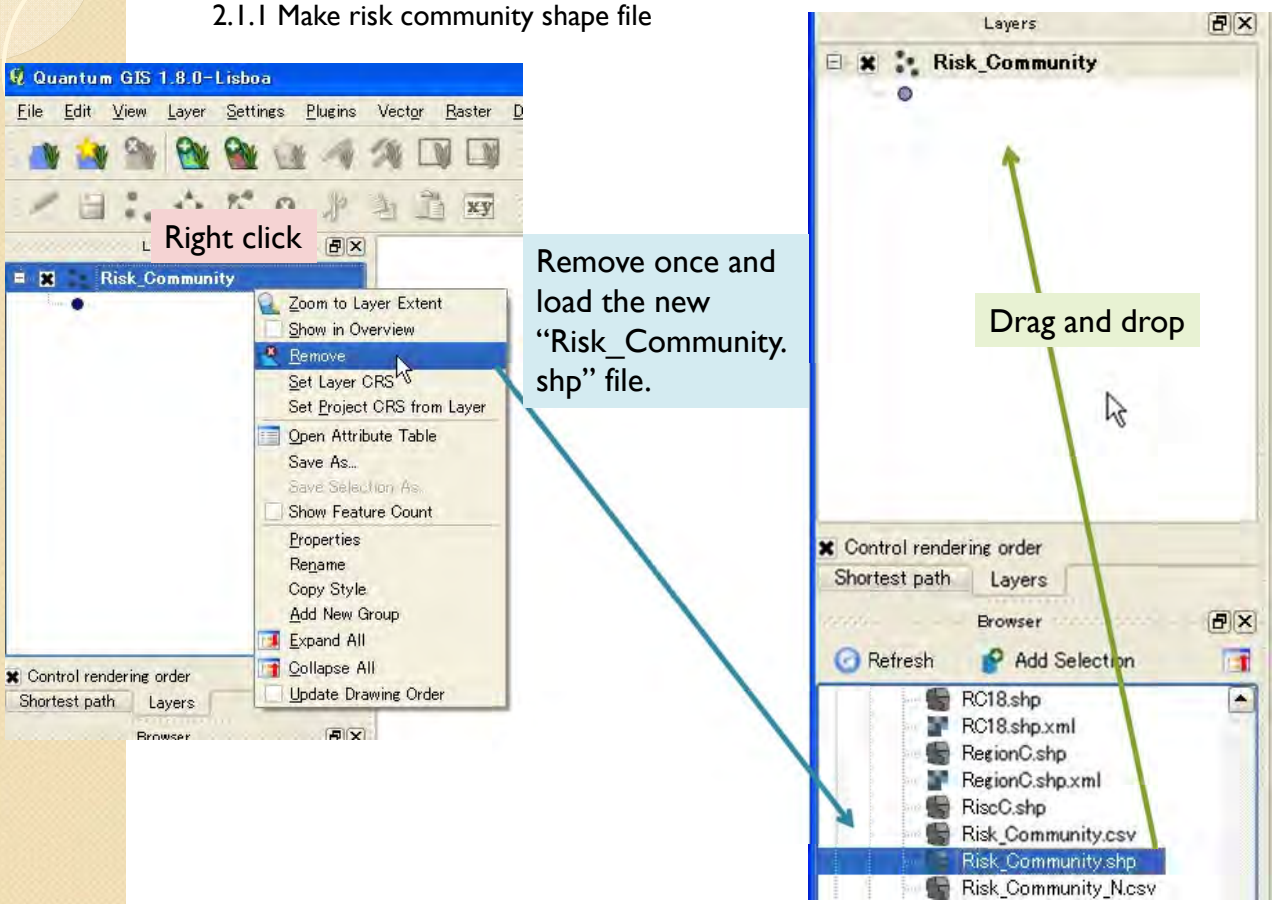
2. Making Inventory Maps

2.1.1 Make risk community shape file



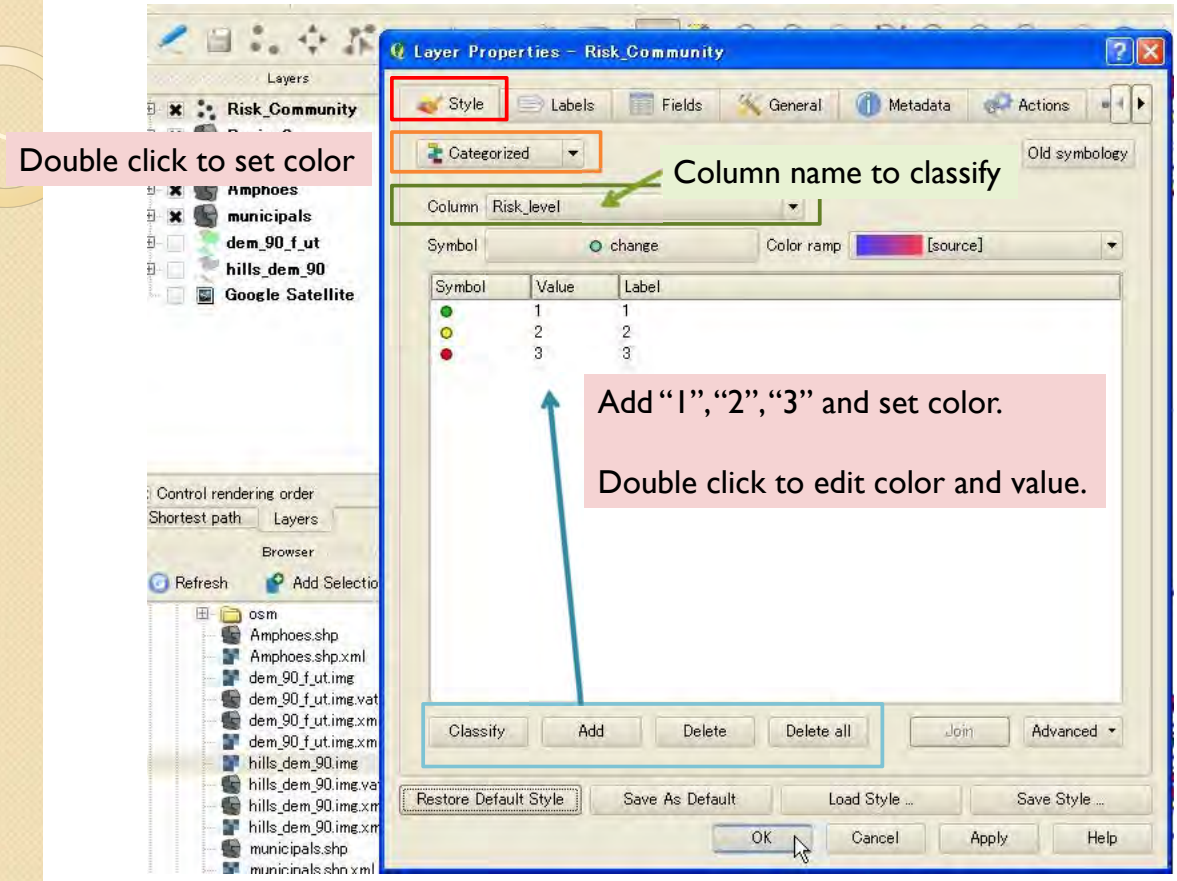
2. Making Inventory Maps

2.1.1 Make risk community shape file



2. Making Inventory Maps

2.1.1 Make risk community shape file



2. Making Inventory Maps

2.1.1 Make risk community shape file

Notes :

No location information communities are at "0, 0".

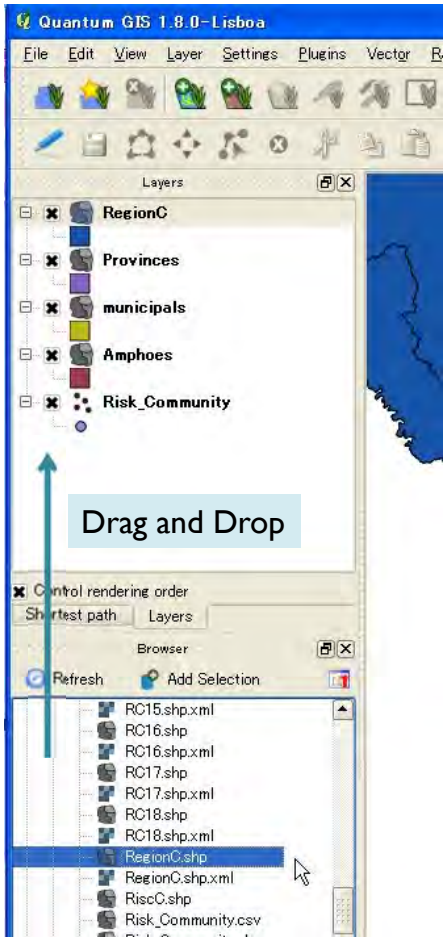
Other community location data are also imprecise. In addition, some risk communities are double counted in the list (Excel file). Some parts were removed, but it is not perfect. Please pay attention if you use this data.

2. Making Inventory Maps

2.1.2 Import administrative data

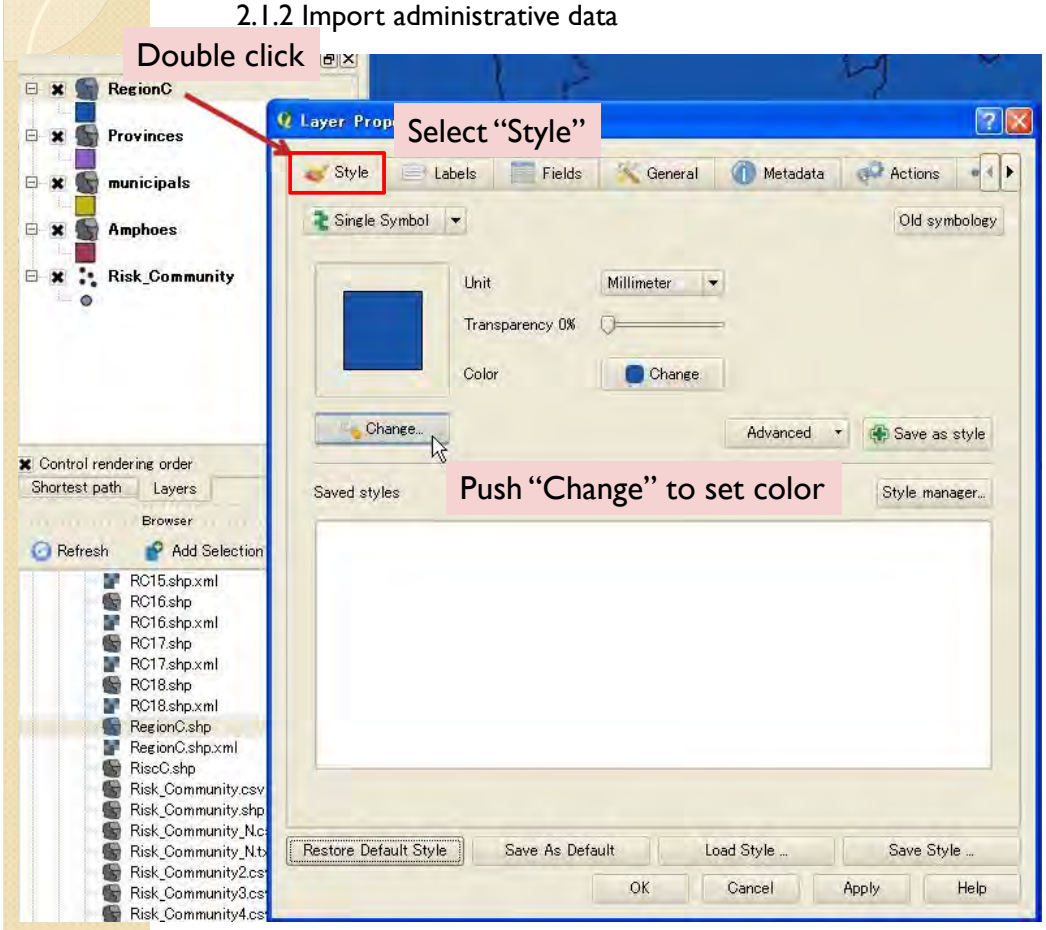
Import following administrative data from "GIS_data" folder.

/ RegionC.shp
/ Provinces.shp
/ municipals.shp
/ Amphoes.shp
/ Villages.shp



2. Making Inventory Maps

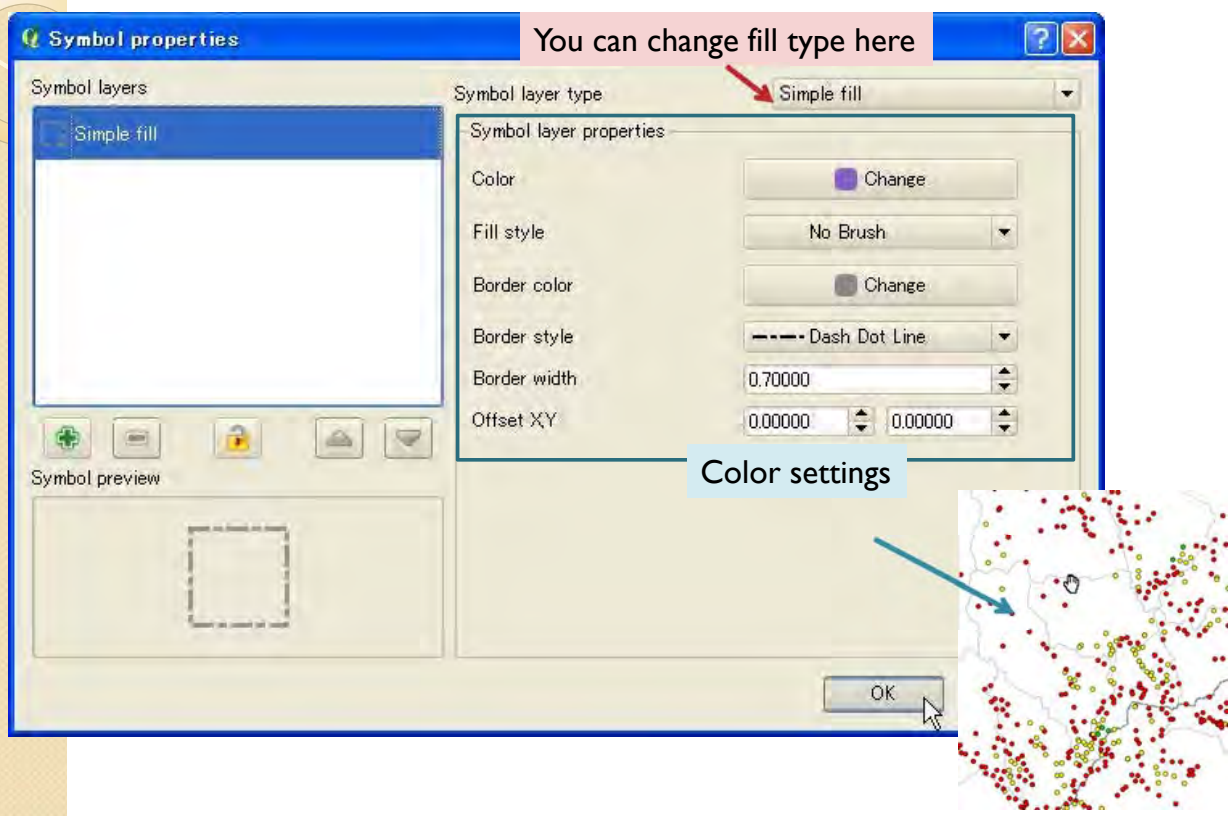
2.1.2 Import administrative data



Set colors at style tab as you like.

2. Making Inventory Maps

2.1.2 Import administrative data



2. Making Inventory Maps

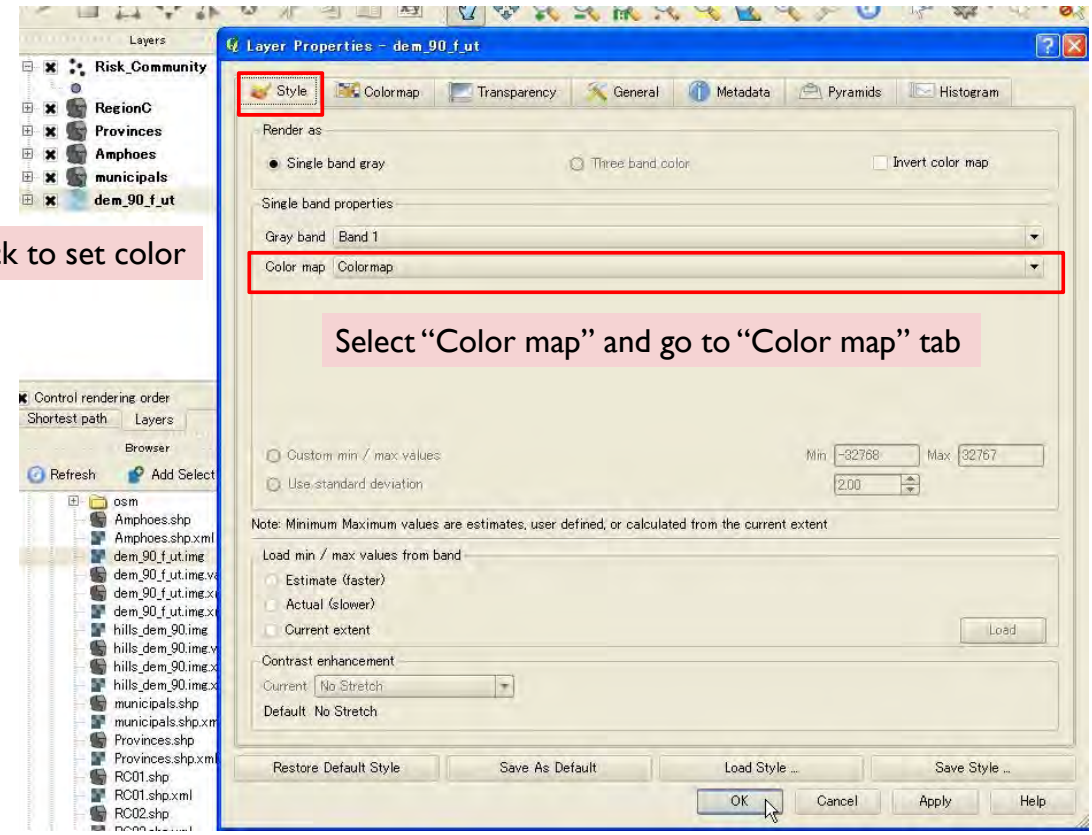
2.1.3 Import elevation data

Import "dem_90_f_ut" from "GIS_data" folder.

2. Making Inventory Maps

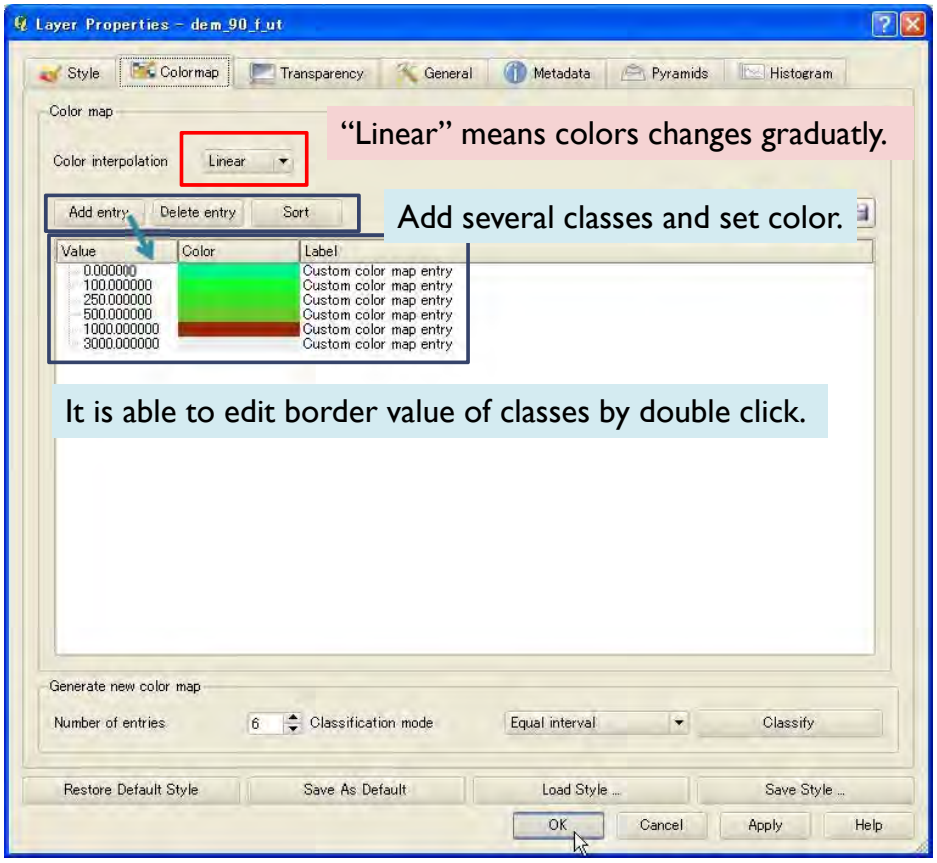
2.1.3 Import elevation data

Double click to set color



2. Making Inventory Maps

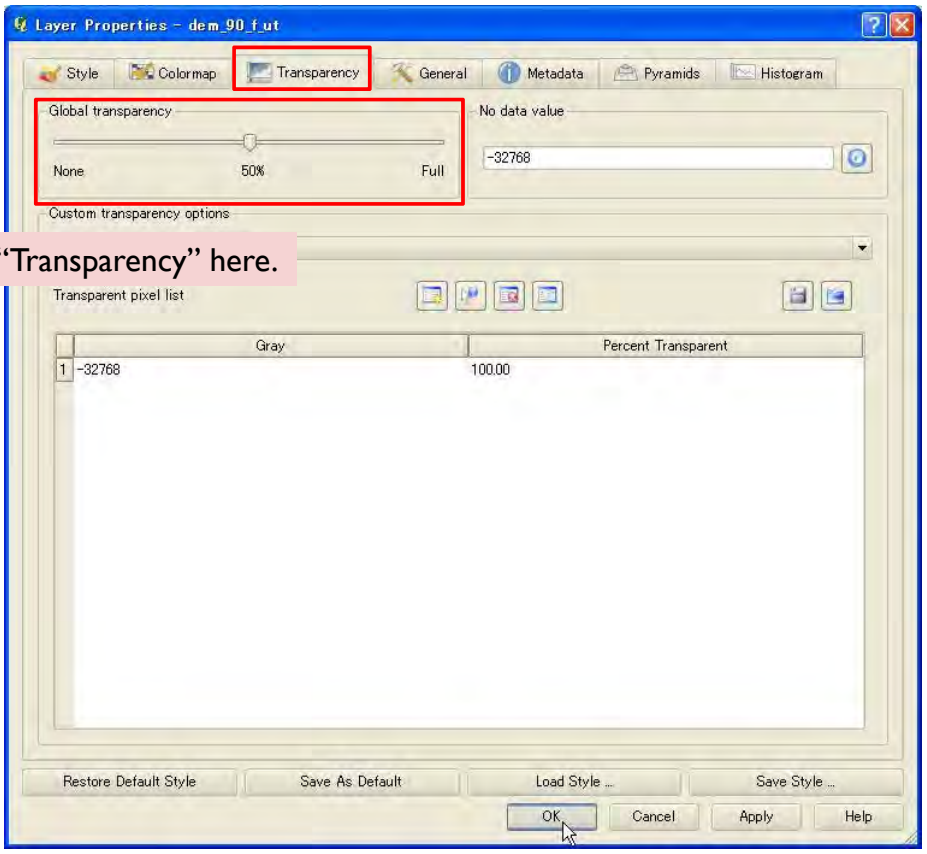
2.1.3 Import elevation data



2. Making Inventory Maps

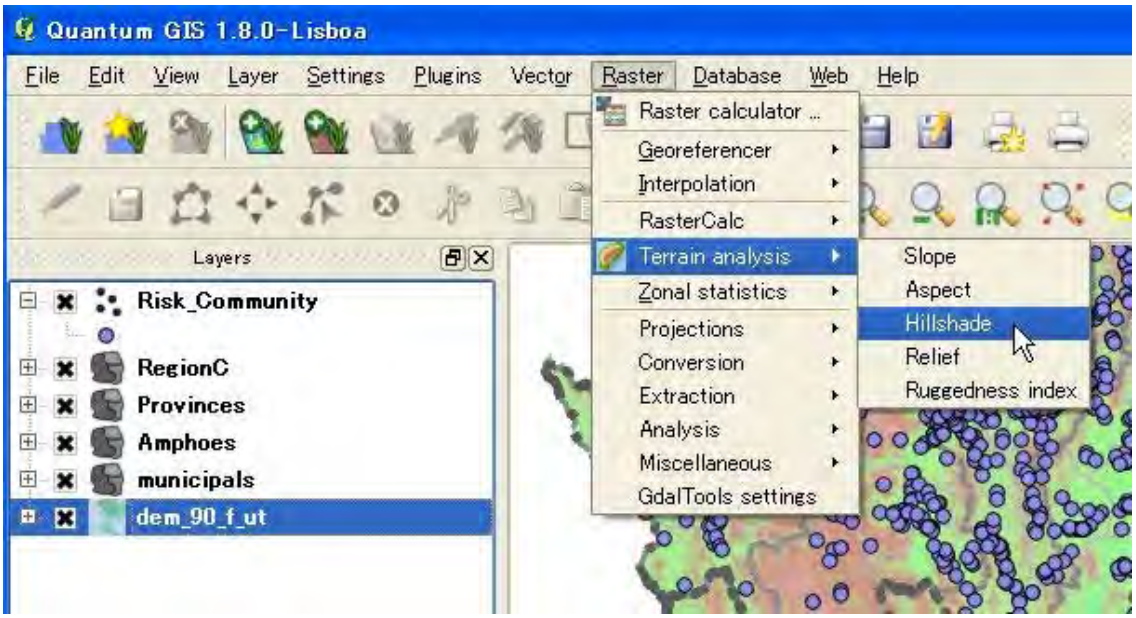
2.1.3 Import elevation data

It is able to set "Transparency" here.

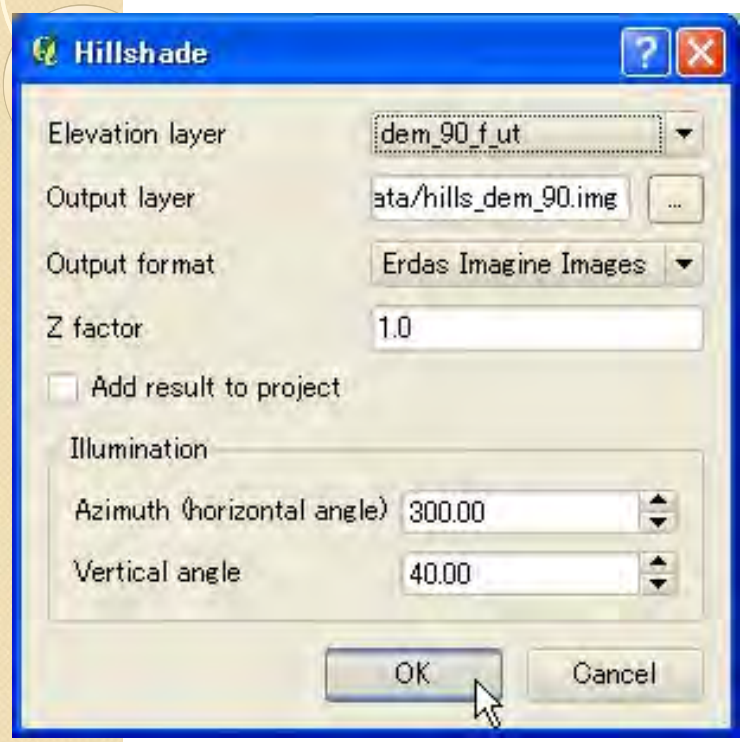


2.1.4 Making hill shade data

Select [Raster] – [Terrain analysis] – [Hillshade] to make hill shade.



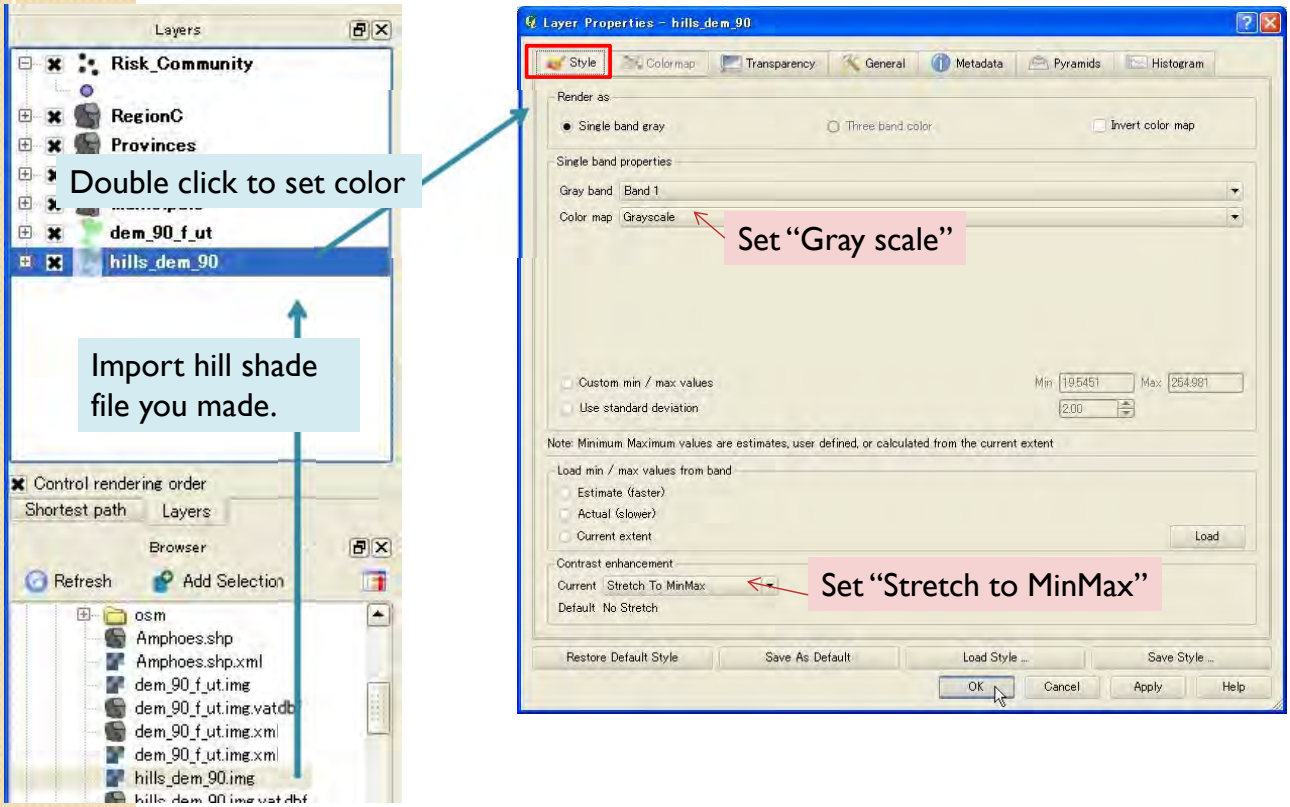
2.1.4 Making hill shade data



Select as these settings and push OK to make hill shade.

2. Making Inventory Maps

2.1.4 Making hill shade data

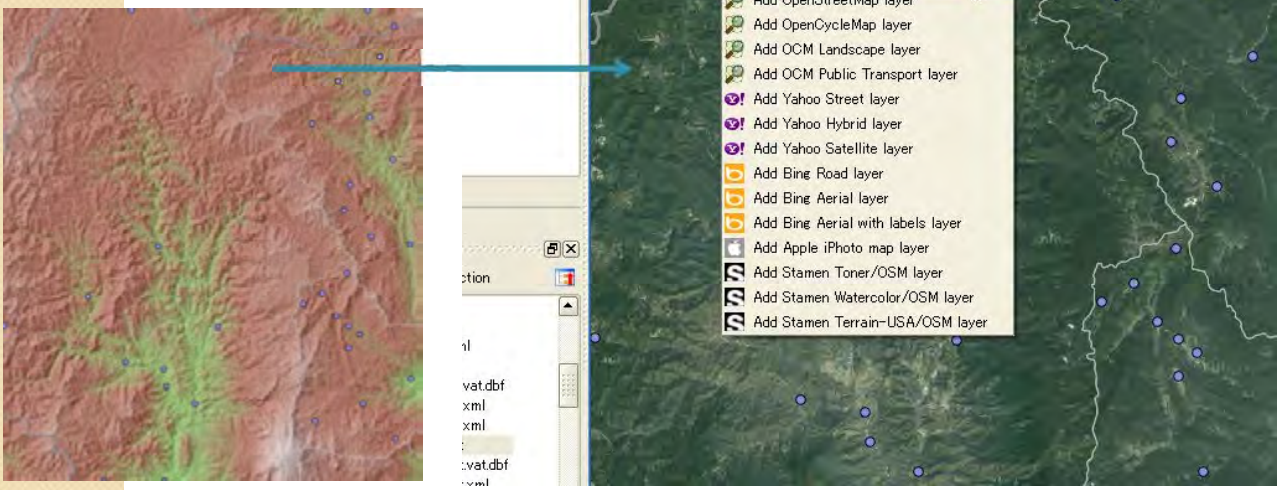


2. Making Inventory Maps

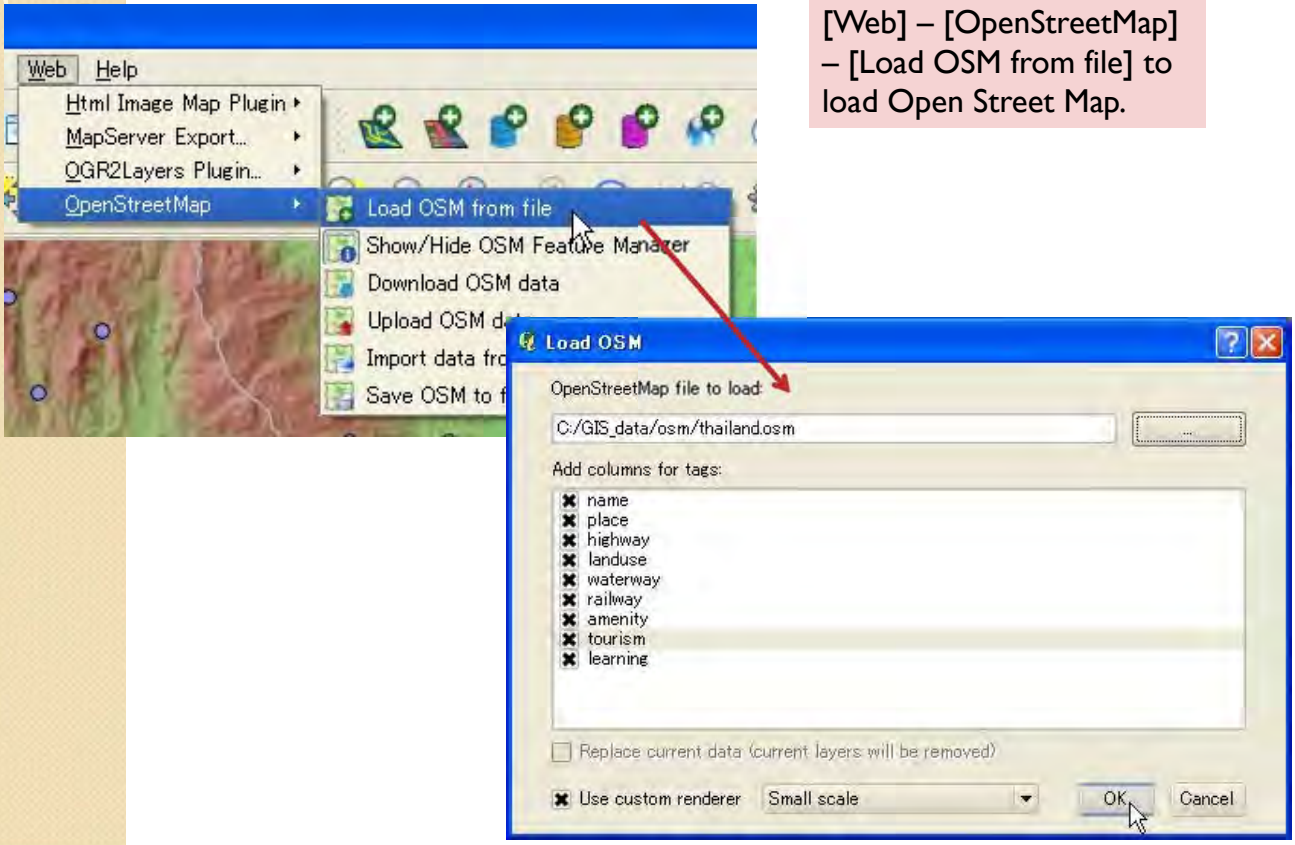
2.1.5 Import online Maps

Instead of the hill shade and elevation data, you can use online map when you use internet connection.

[Plugins] – [Openlayers plugin]



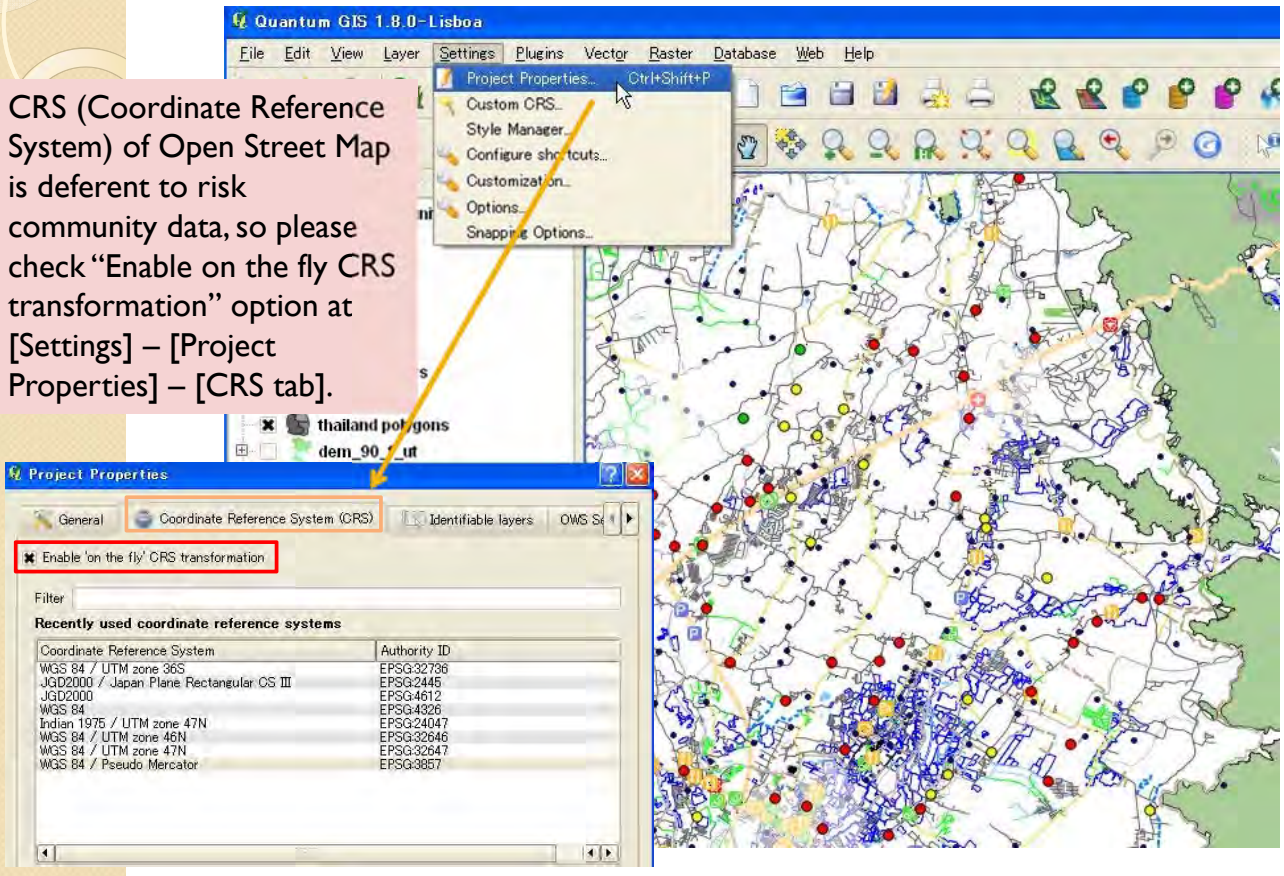
2.1.6 Import Open Street Map



[Web] – [OpenStreetMap] – [Load OSM from file] to load Open Street Map.

2. Making Inventory Maps

2.1.6 Import Open Street Map

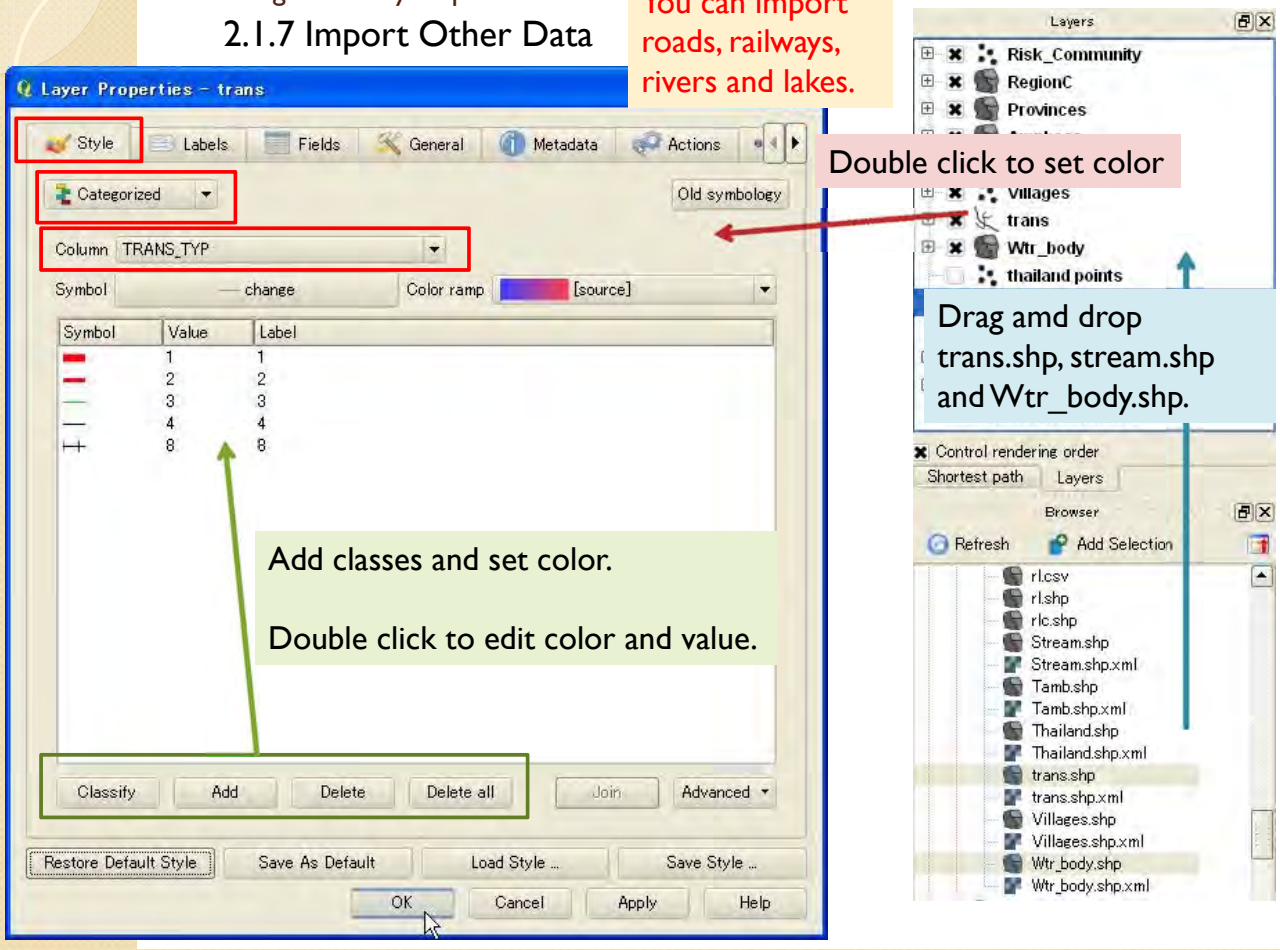


CRS (Coordinate Reference System) of Open Street Map is deferent to risk community data, so please check "Enable on the fly CRS transformation" option at [Settings] – [Project Properties] – [CRS tab].

2. Making Inventory Maps

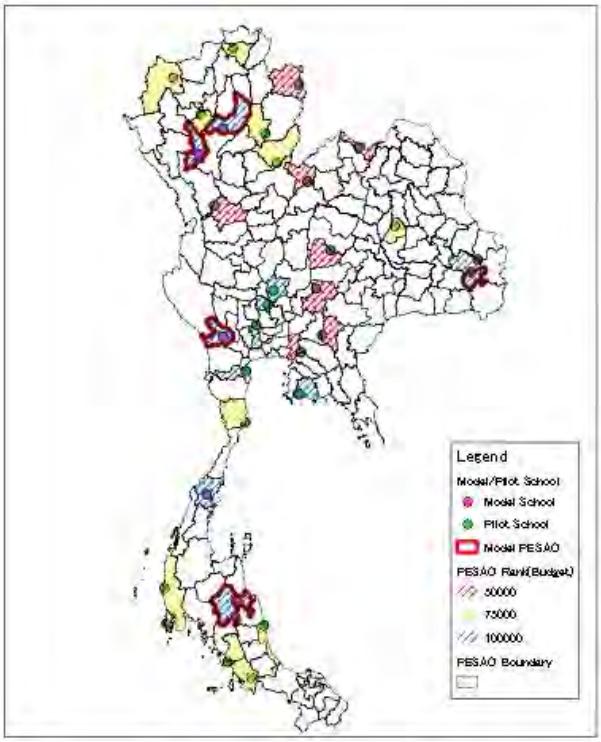
2.1.7 Import Other Data

You can import roads, railways, rivers and lakes.



3. Making Inventory Maps (Disaster Education)

3.1 Making model/pilot schools and ESAO map

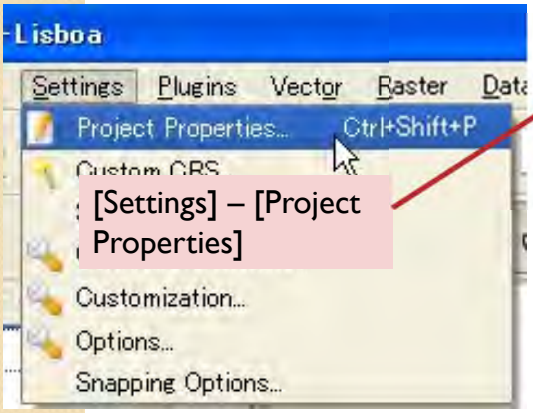


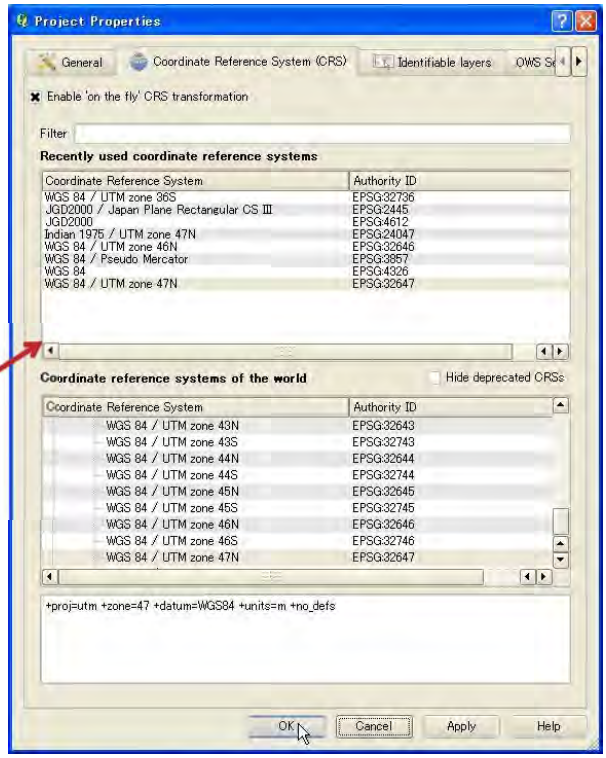
In this chapter, we make model/pilot schools and ESAO map by using QGIS and Excel.

1.Import Shape file (geographical data) and Excel file (disaster educarion information)
2.Integrate both into one shape file
3.Make coloring
4.Make inventory maps
5.Import and set color for risk area
6.Make risk area map with ESAO

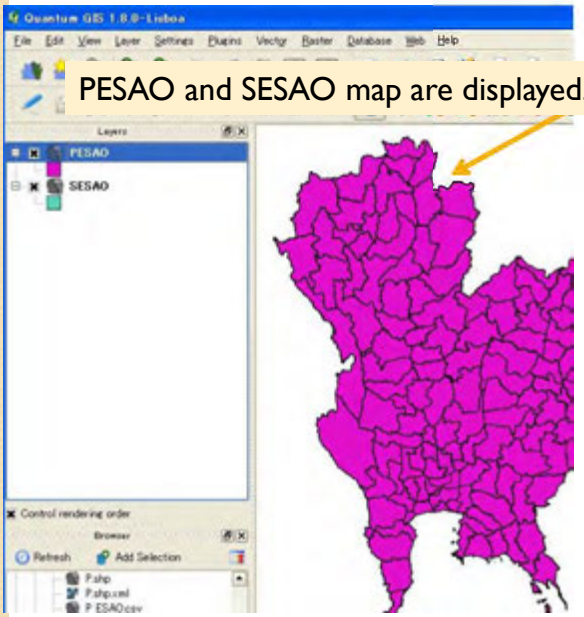
3.1.1 Import PESAO and SESAO file

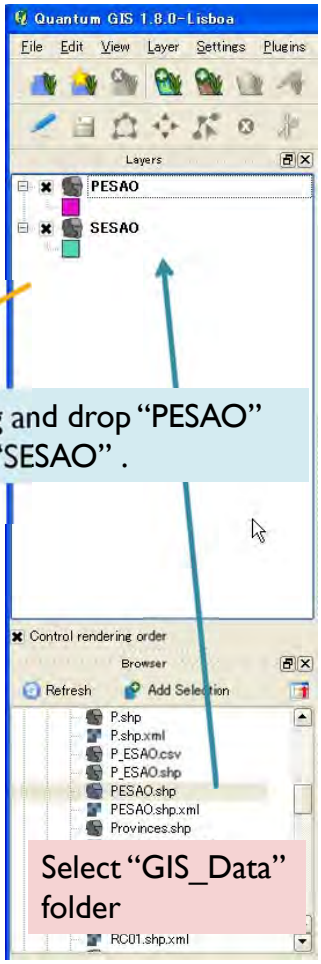
At first, make sure that Coordination Reference System (CRS) is set as WGS84 / UTM 47N and "Enable 'on the fly' CRS transformation" is checked.





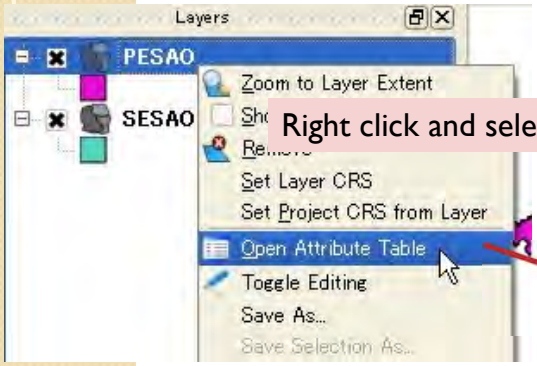
Select "GIS_Data" folder in the "Browser" field and drag and drop "PESAO" and "SESAO" file into "Layers" folder.



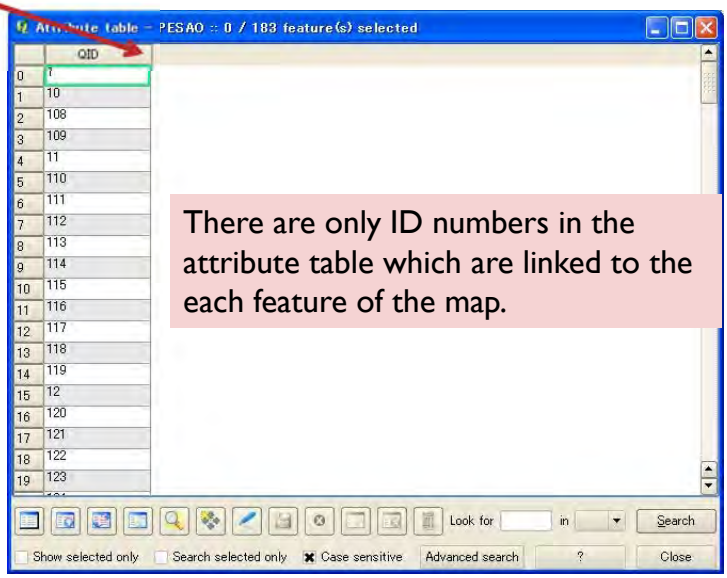


3. Making Inventory Maps

3.1.1 Import PESAO and SESAO file



Right click and select "Open Attribute Table"

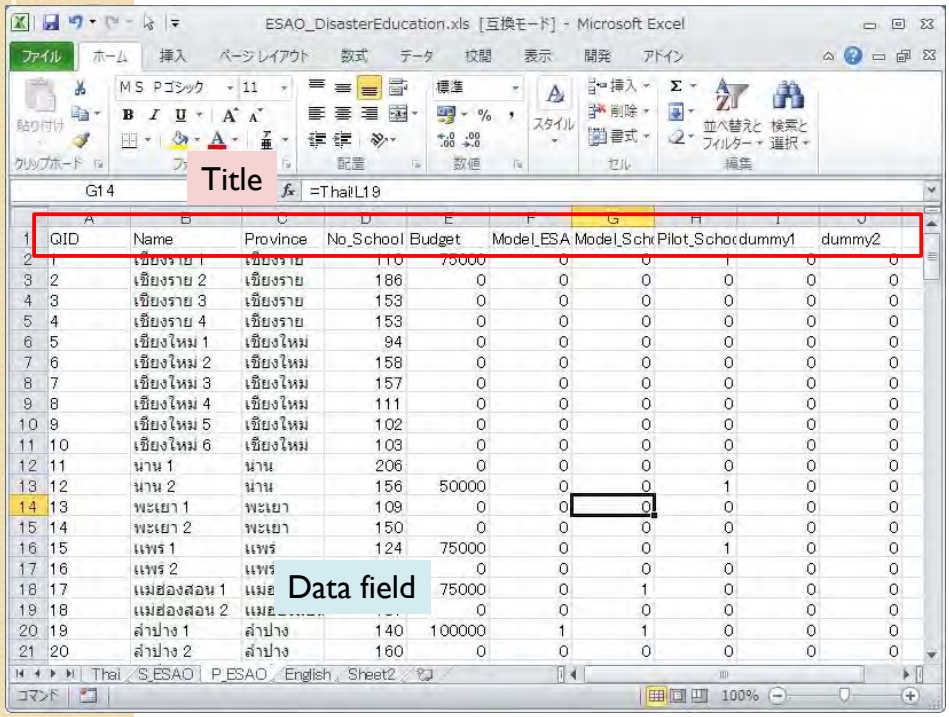


There are only ID numbers in the attribute table which are linked to the each feature of the map.

It is necessary to import ESAO data from Excel file.

3. Making Inventory Maps

3.1.2 Import PESAO and SESAO data from Excxel file



	A	B	C	D	E	F	G	H	I	J
1	QID	Name	Province	No_School	Budget	Model_ESA	Model_Sch	Pilot_Scho	dummy1	dummy2
2	1	เชียงราย 1	เชียงราย	110	75000	0	0	1	0	0
3	2	เชียงราย 2	เชียงราย	186	0	0	0	0	0	0
4	3	เชียงราย 3	เชียงราย	153	0	0	0	0	0	0
5	4	เชียงราย 4	เชียงราย	153	0	0	0	0	0	0
6	5	เชียงใหม่ 1	เชียงใหม่	94	0	0	0	0	0	0
7	6	เชียงใหม่ 2	เชียงใหม่	158	0	0	0	0	0	0
8	7	เชียงใหม่ 3	เชียงใหม่	157	0	0	0	0	0	0
9	8	เชียงใหม่ 4	เชียงใหม่	111	0	0	0	0	0	0
10	9	เชียงใหม่ 5	เชียงใหม่	102	0	0	0	0	0	0
11	10	เชียงใหม่ 6	เชียงใหม่	103	0	0	0	0	0	0
12	11	น่าน 1	น่าน	206	0	0	0	0	0	0
13	12	น่าน 2	น่าน	156	50000	0	0	1	0	0
14	13	พะเยา 1	พะเยา	109	0	0	0	0	0	0
15	14	พะเยา 2	พะเยา	150	0	0	0	0	0	0
16	15	แพร่ 1	แพร่	124	75000	0	0	1	0	0
17	16	แพร่ 2	แพร่	0	0	0	0	0	0	0
18	17	แม่ฮ่องสอน 1	แม่ฮ	75000	0	1	0	0	0	0
19	18	แม่ฮ่องสอน 2	แม่ฮ	0	0	0	0	0	0	0
20	19	ลำปาง 1	ลำปาง	140	100000	1	1	0	0	0
21	20	ลำปาง 2	ลำปาง	160	0	0	0	0	0	0

Open "ESAO_DisasterEducation.xls".

Table to import into GIS must be simple table like this figure.

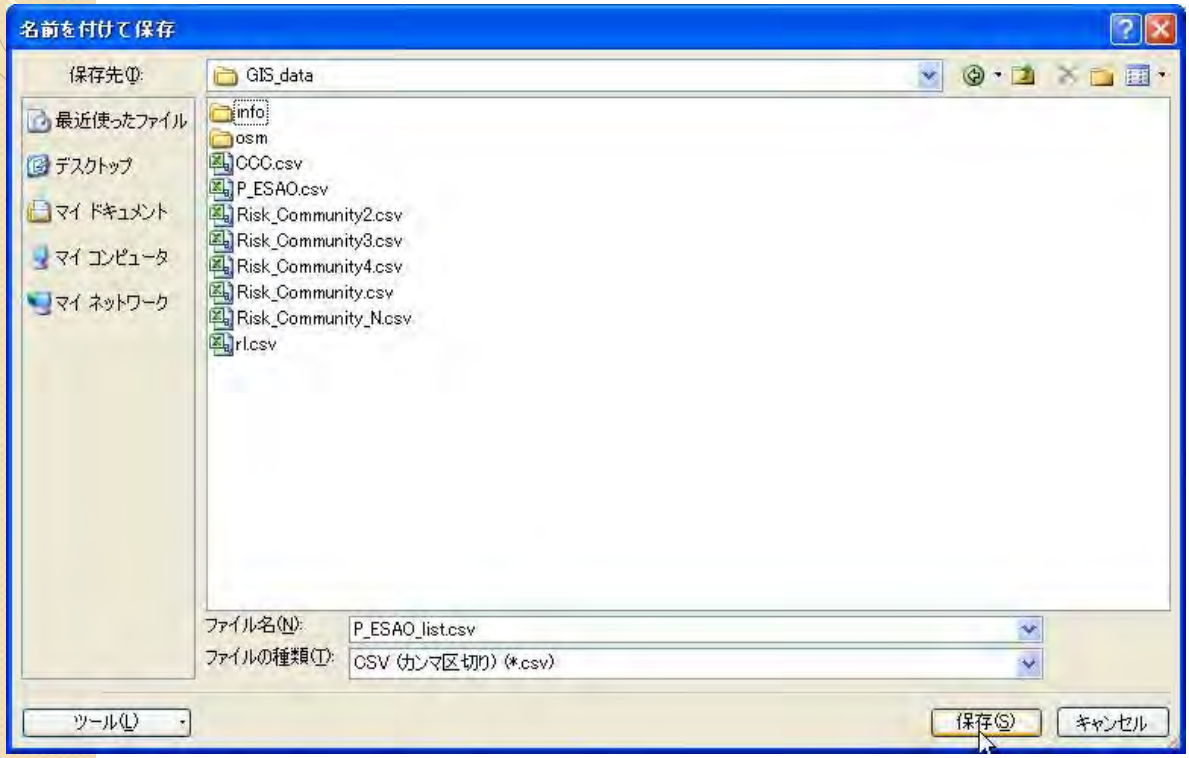
The first row is title of the attribute column. Write only alphabet and "_". Do not use " "(space), "-", "," …

Data field is below. Do not use ",".

3. Making Inventory Maps

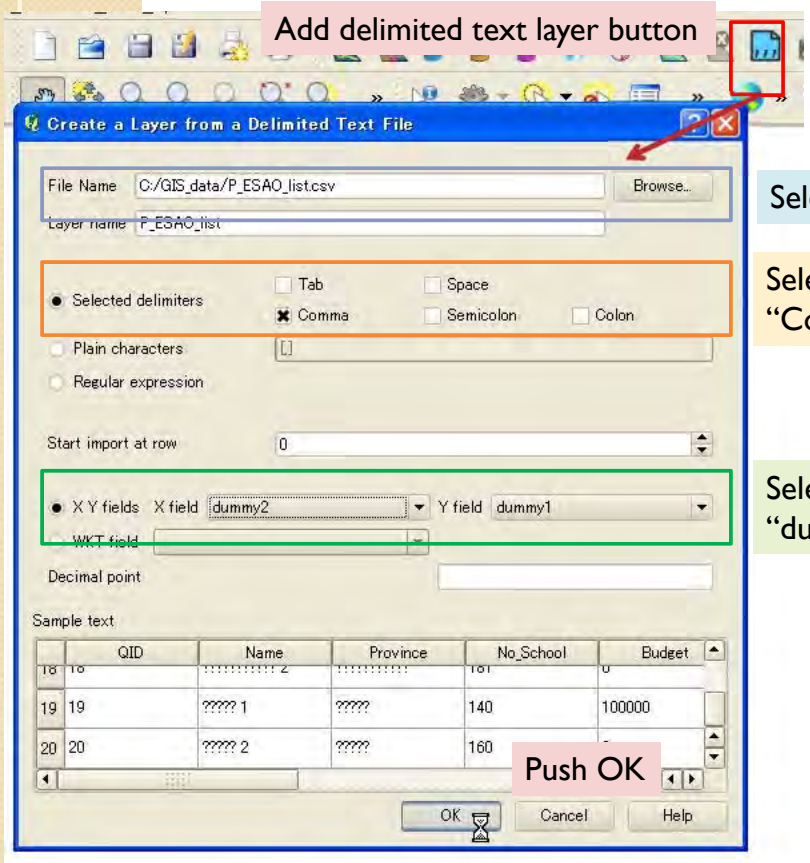
3.1.2 Import PESAO and SESAO data from Excxel file

Save "P_ESAO" and "S_ESAO" sheet as "P_ESAO_list.csv" and "S_ESAO_list.csv". Please use file format as "CSV (comma delimited)".



3. Making Inventory Maps

3.1.2 Import PESAO and SESAO data from Excxel file



Load the saved csv file by "Add delimited text layer" button.

Select file

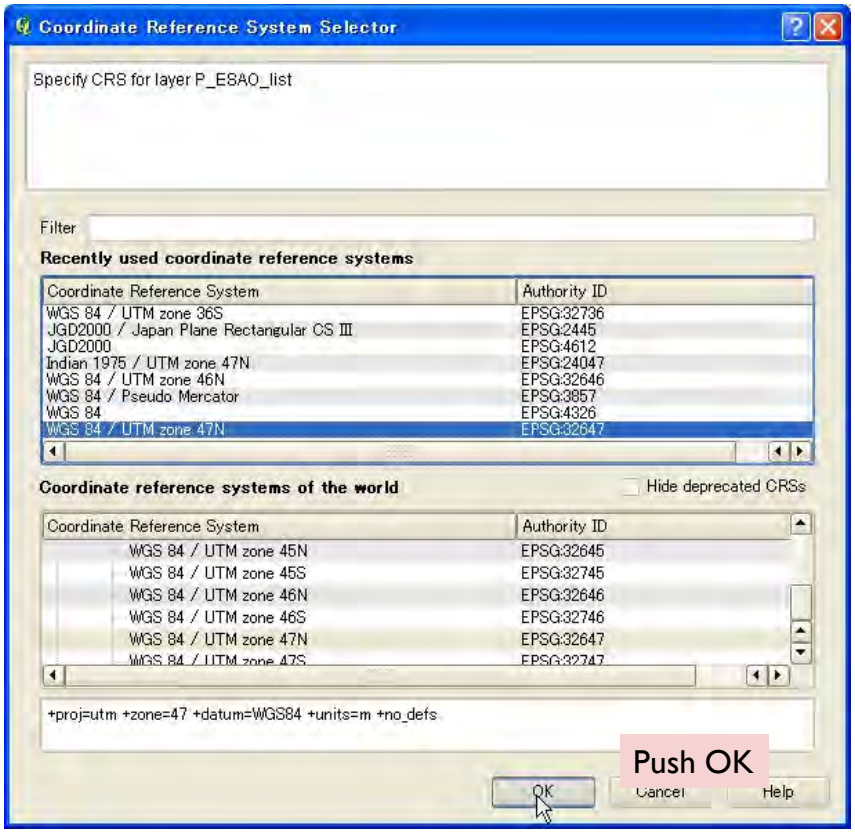
Select "Selected delimiters" and "Comma" only.

Select "X Y fields" and "dummy1" and "dummy2".

Push OK

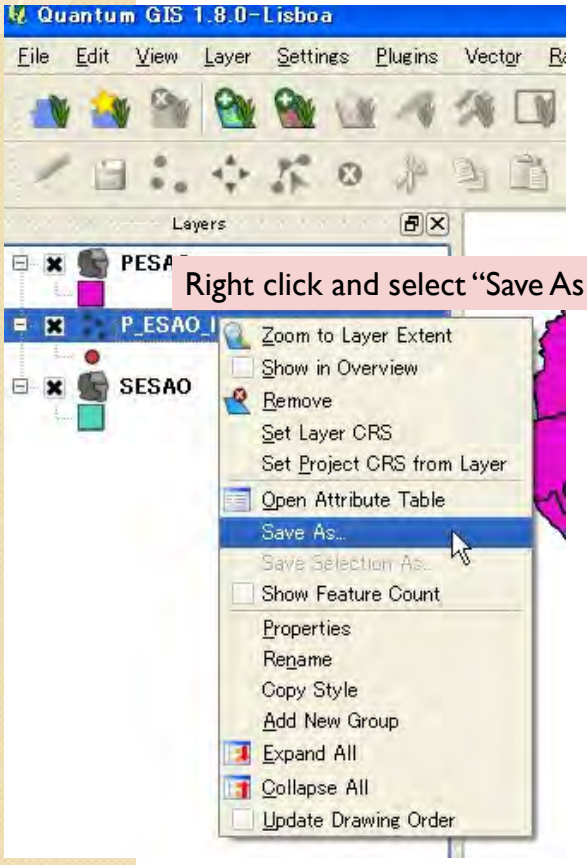
3. Making Inventory Maps

3.1.2 Import PESAO and SESAO data from Excxel file



3. Making Inventory Maps

3.1.2 Import PESAO and SESAO data from Excxel file

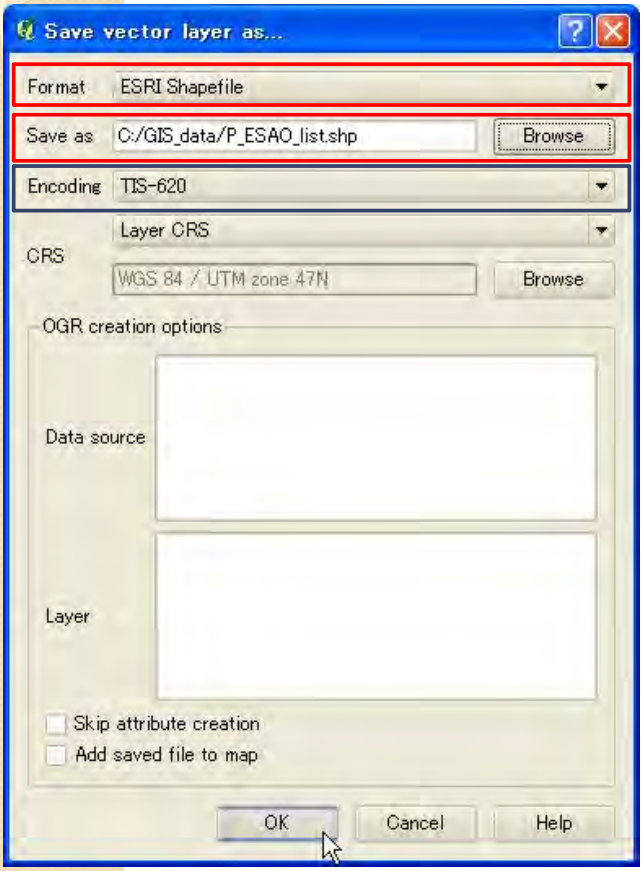


Then, the data will imported.

This is temporary layer, thus save this layer as new file.

3. Making Inventory Maps

3.1.2 Import PESAO and SESAO data from Excxel file



Select format and file name.

Select "Encoding" as "TIS-620" .

Push OK

3. Making Inventory Maps

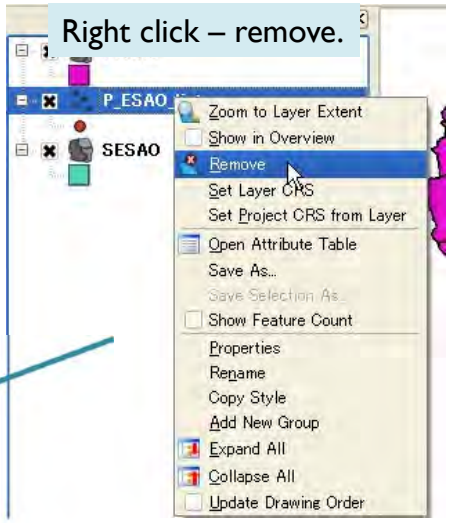
3.1.2 Import PESAO and SESAO data from Excxel file

Remove the temporary layer.

Click "Refresh" button of "Browser" field, and drag and drop "P_ESAO_list.shp" into "Layer" field.

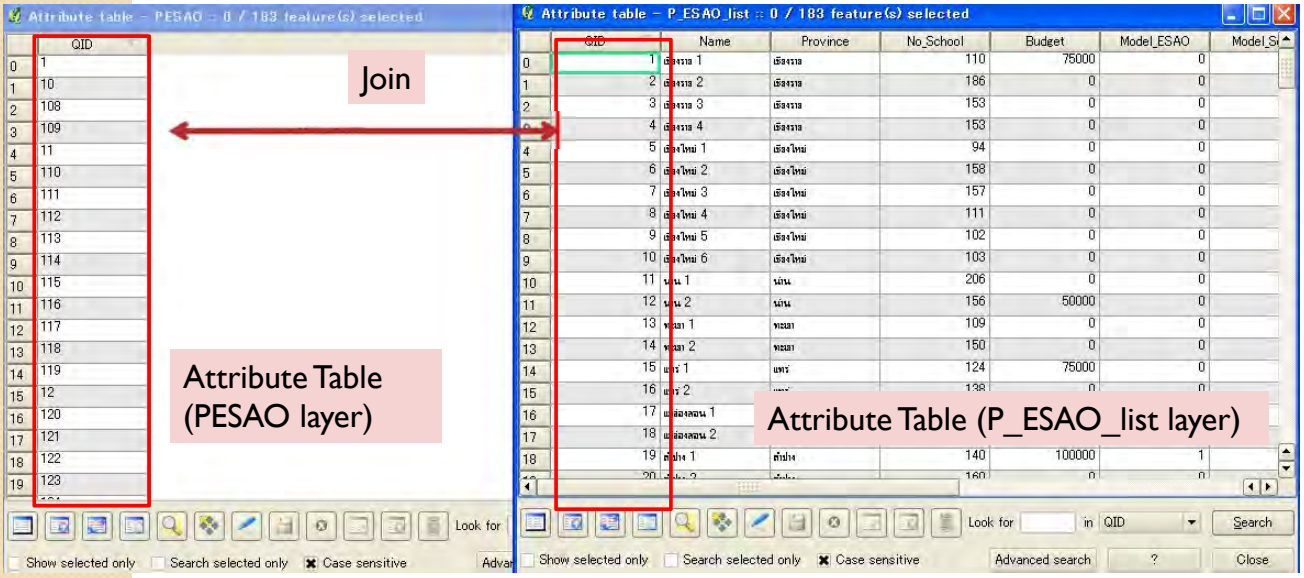
Click "refresh" and drag and drop "P_ESAO_list.shp".

Right click – remove.



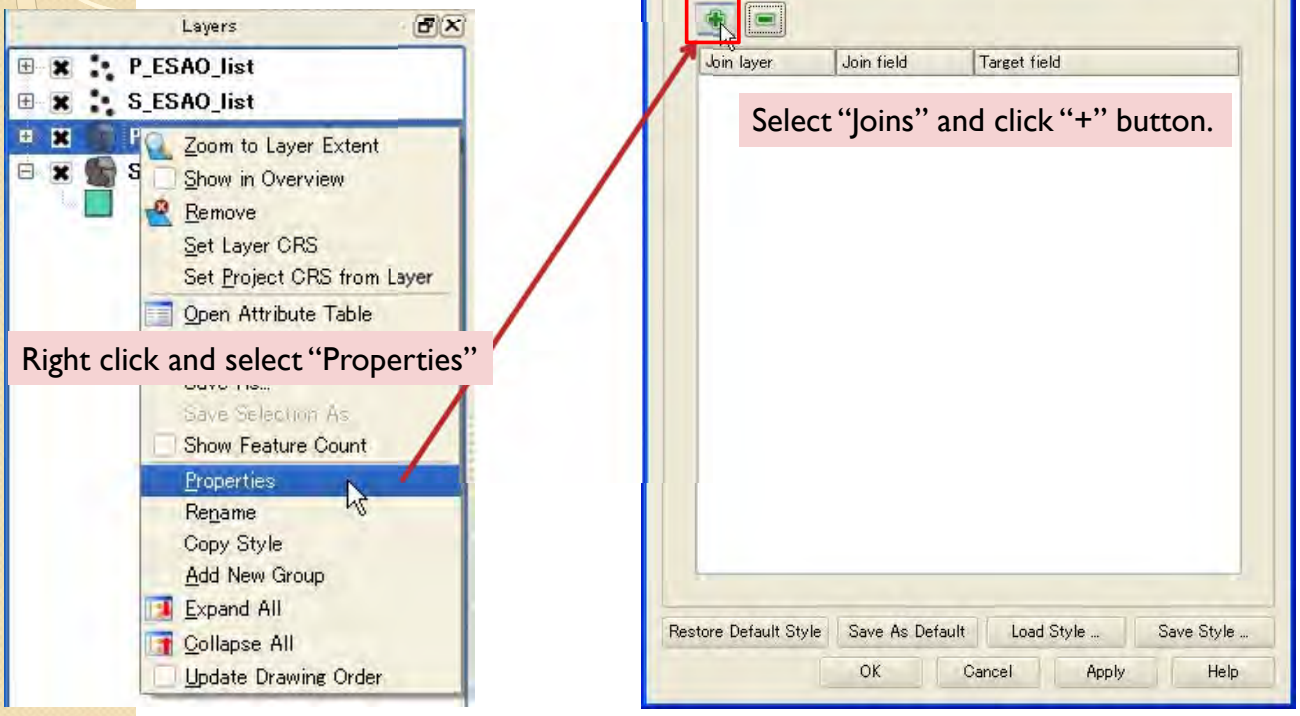
3.1.3 Join attribute table

In next step, attribute table of "P_ESAO_list" and "S_ESAO_list" will be joined into "PESAO" and "SESAO" layers.



3.1.3 Join attribute table

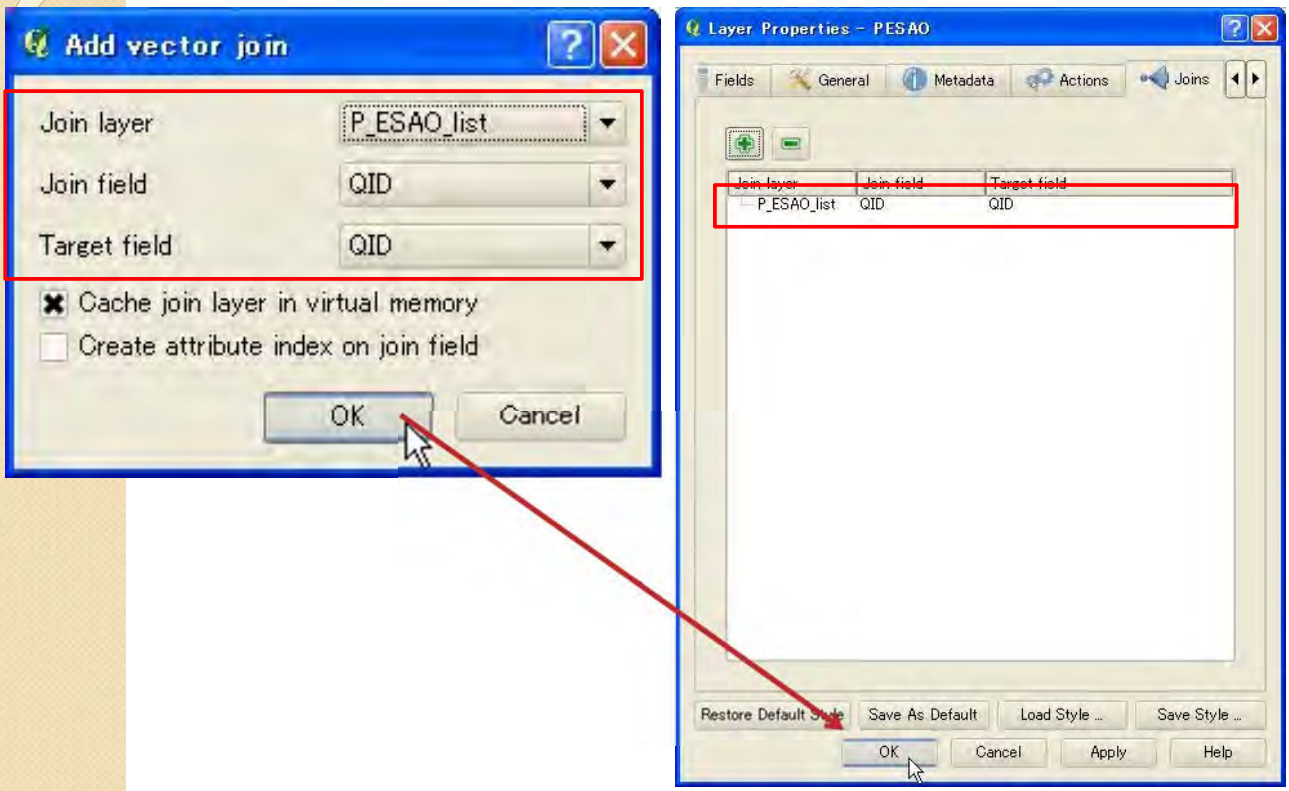
Open "Properties" window and select "Join" tab.



3. Making Inventory Maps

3.1.3 Join attribute table

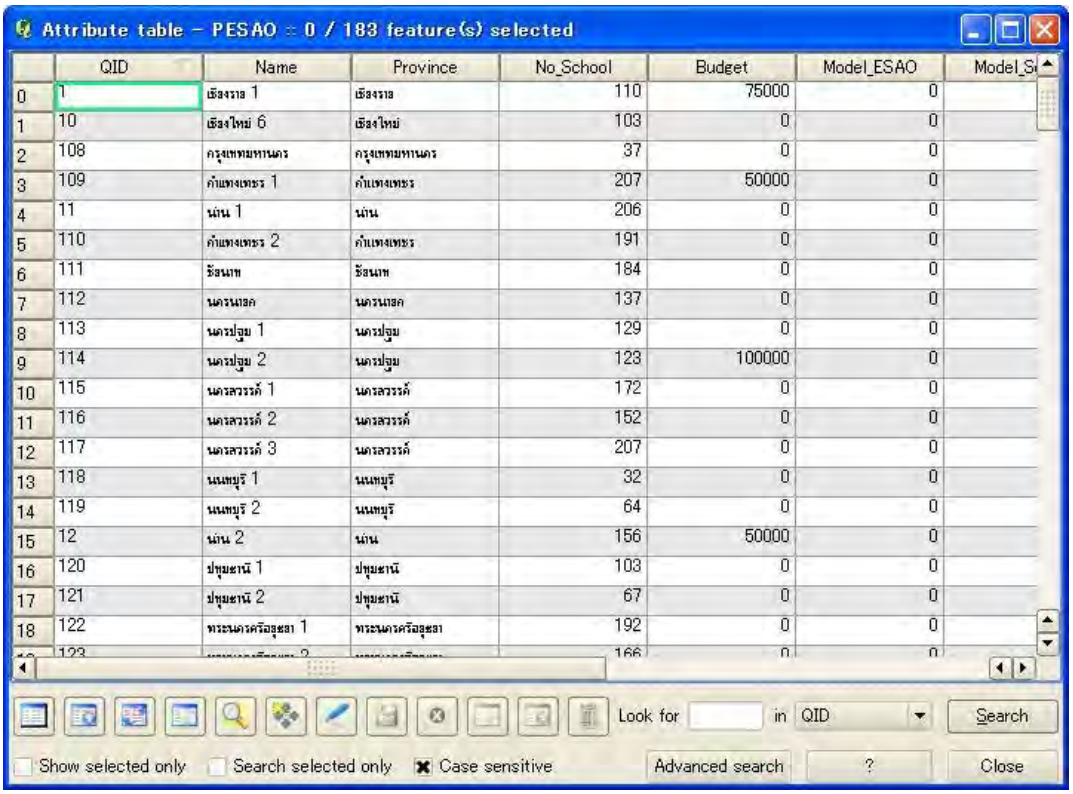
Select "Join layer", Join field" and "Target field".



3. Making Inventory Maps

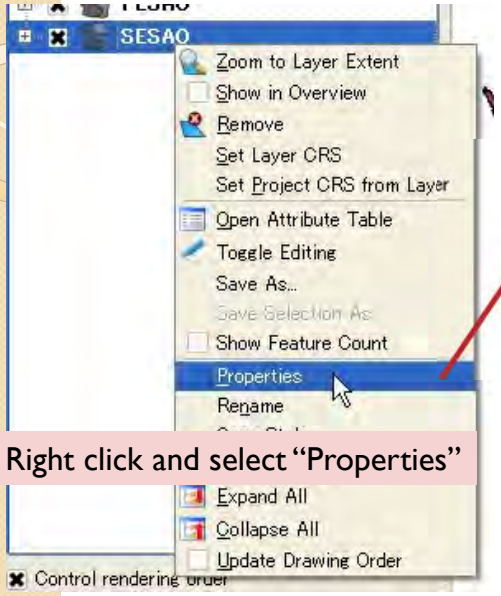
3.1.3 Join attribute table

Then, attribute table should be joined.

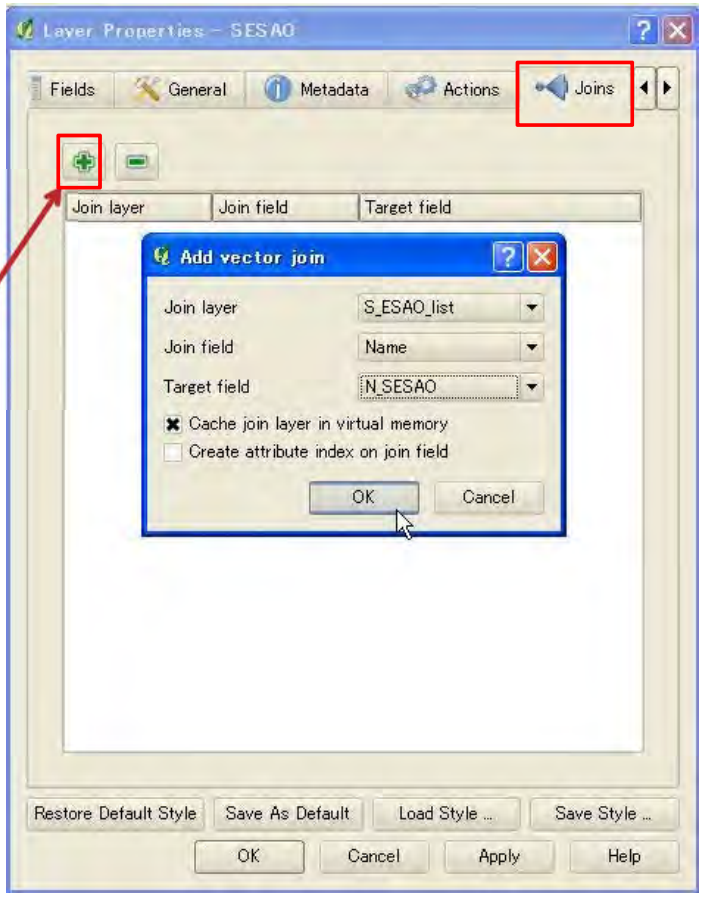


3. Making Inventory Maps

3.1.3 Join attribute table



Right click and select "Properties"



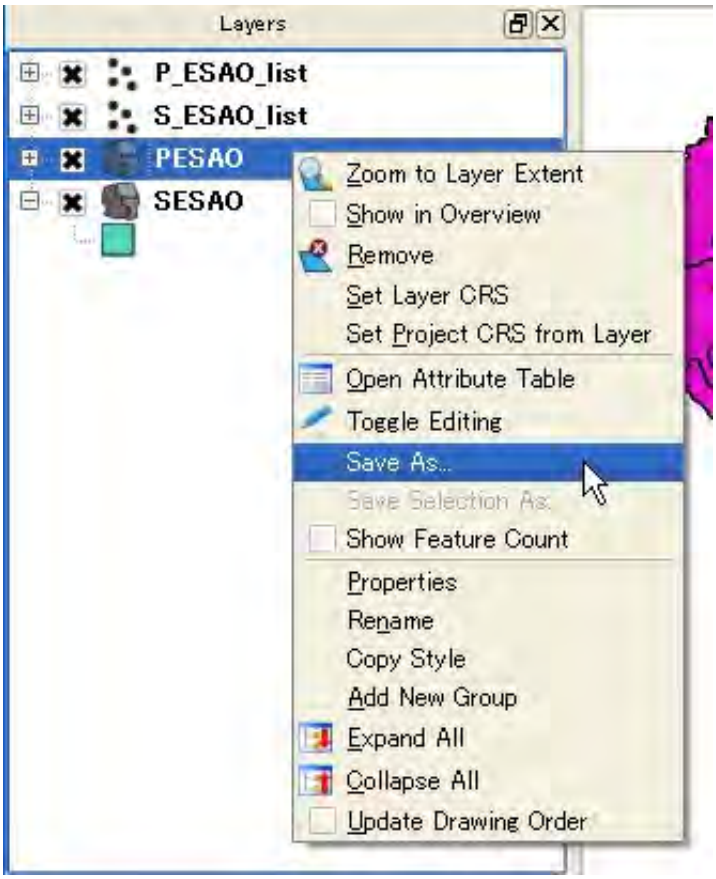
Join "SESAO" and "S_ESAO_list" also.

3. Making Inventory Maps

3.1.3 Join attribute table

The joined attribute table is re-separatable.

To make the joined attribute table permanent, save the "PESAO" and "SESAO" as new file.

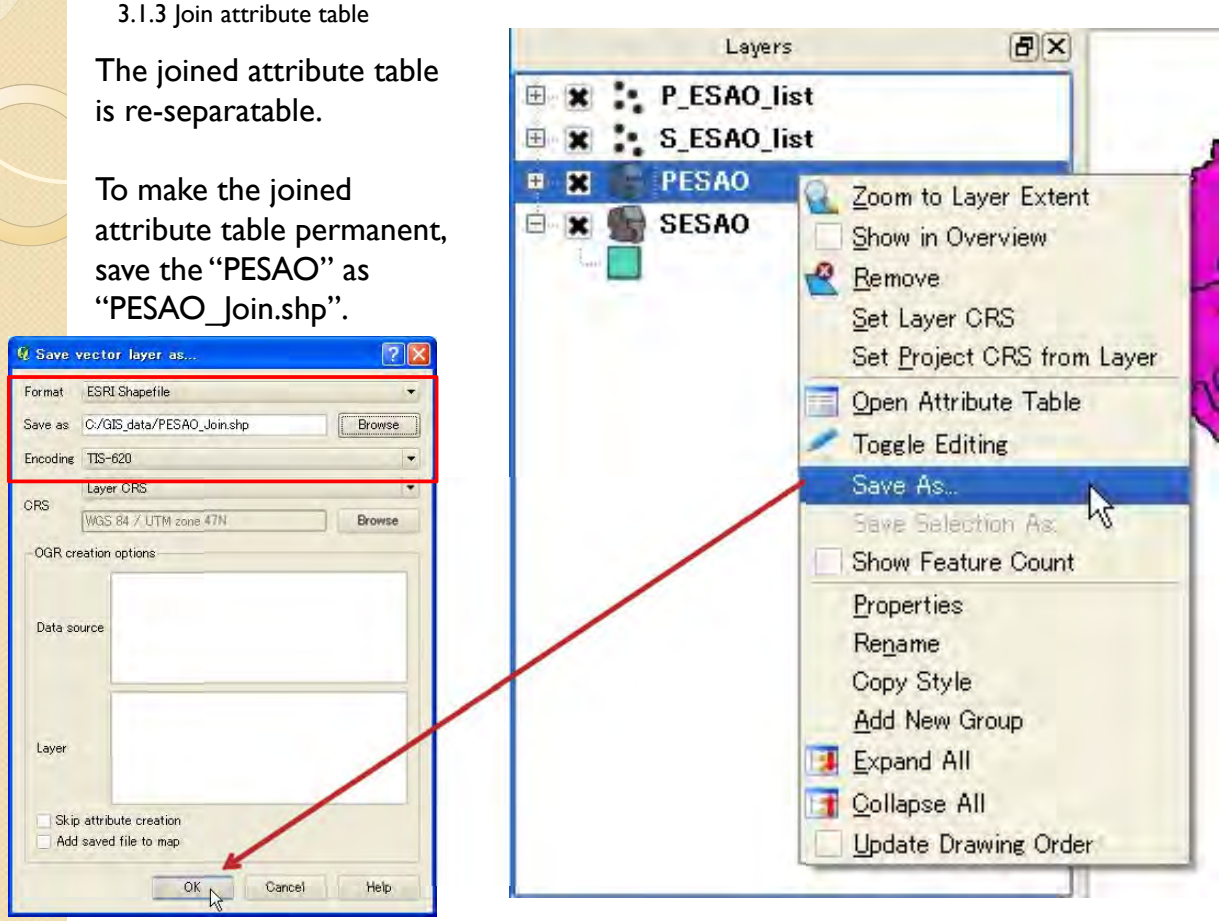


3. Making Inventory Maps

3.1.3 Join attribute table

The joined attribute table is re-separatable.

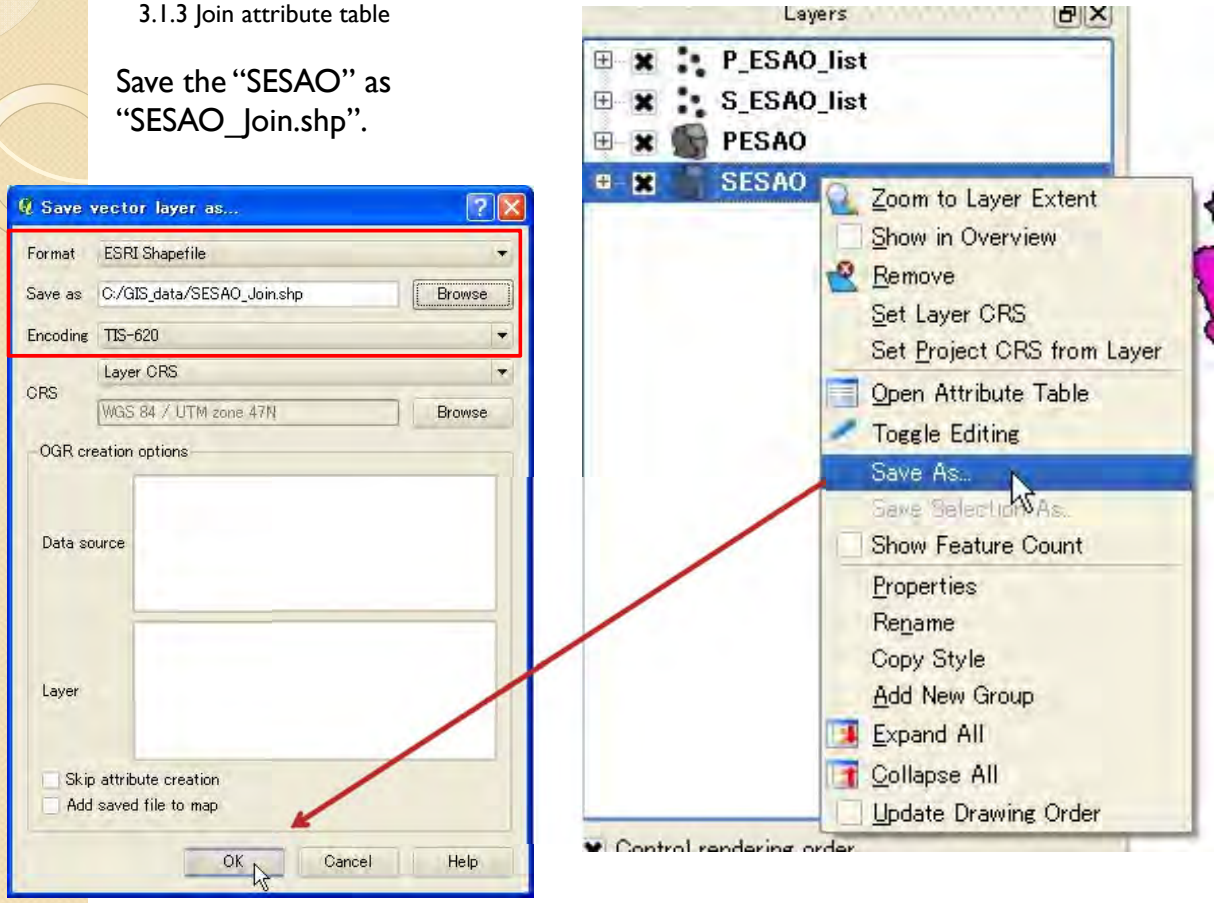
To make the joined attribute table permanent, save the "PESAO" as "PESAO_Join.shp".



3. Making Inventory Maps

3.1.3 Join attribute table

Save the "SESAO" as "SESAO_Join.shp".



3. Making Inventory Maps

3.2 Making PESAO map

3.2.1 Import data

Click "Refresh", and drag and drop "PESAO_Join" and "MPSchool_Prim" (pilot school data).

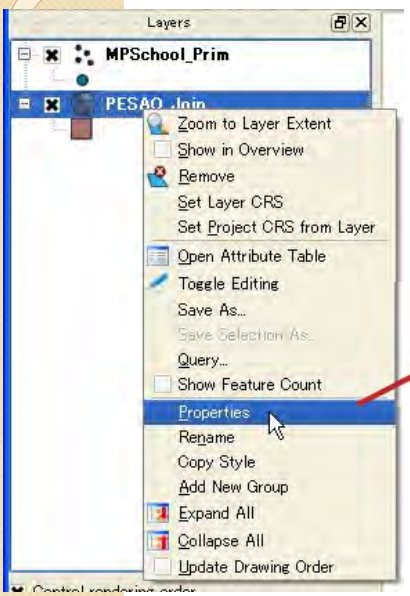
After you made joined shape files, "PESAO_Join" and "SESAO_Join", once, it is not necessary to remake these shape file. You can use these file directly to make inventory maps.

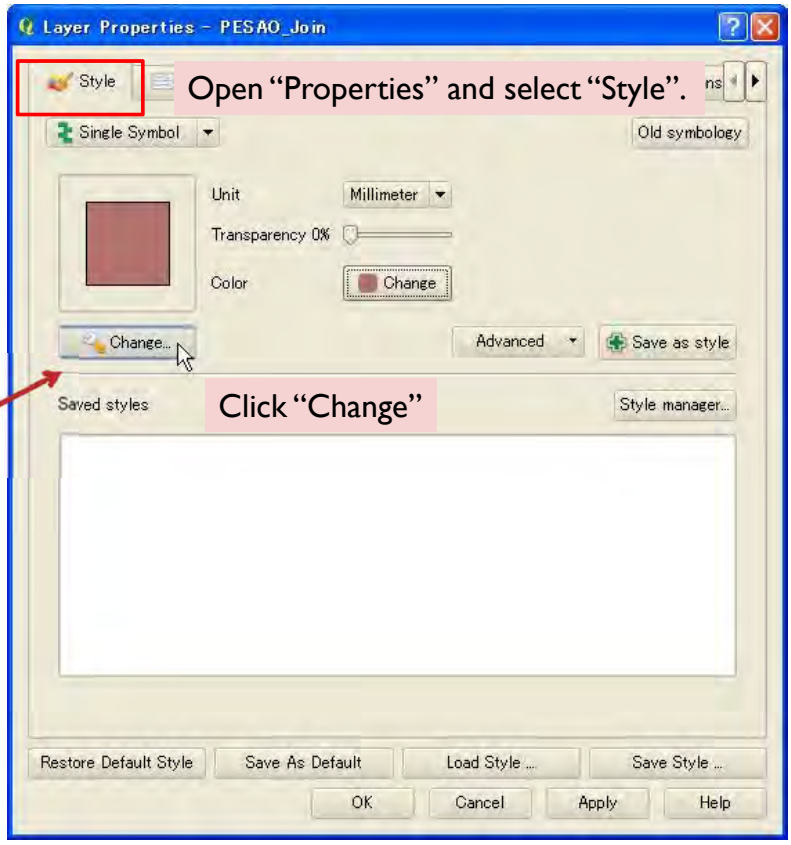
In case you want to update the data, it is required to remake or edit these files.

3. Making Inventory Maps

3.2.2 Color setting

Boundary of PESAO

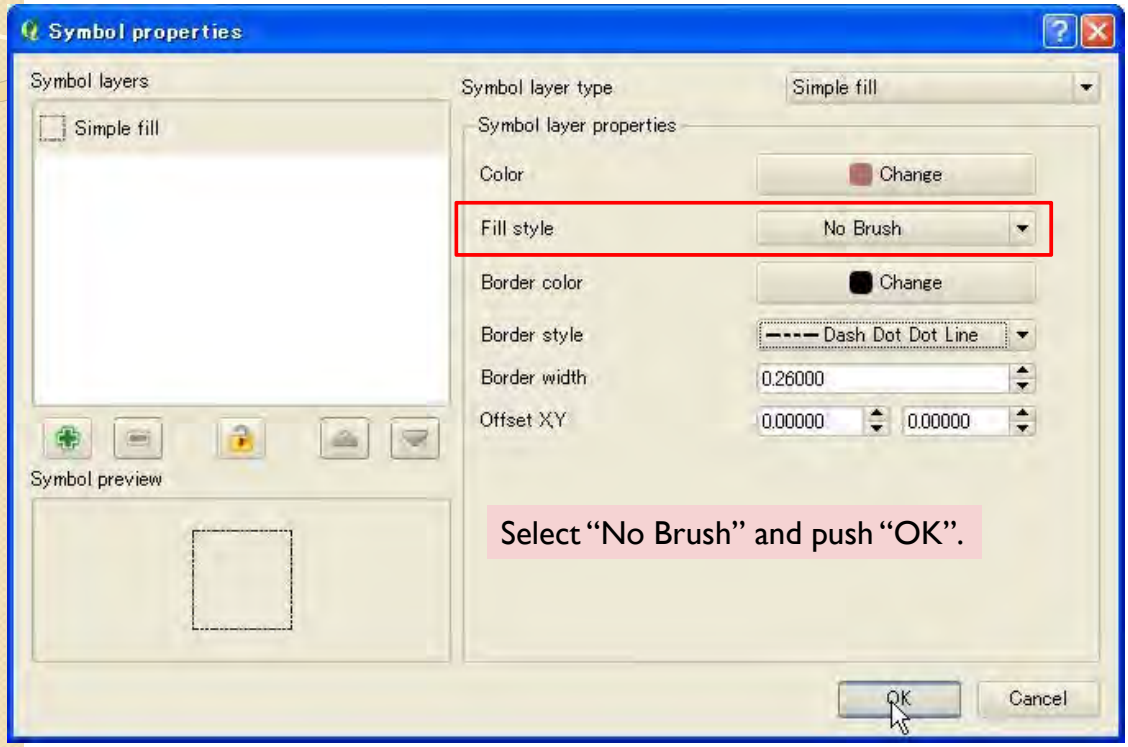




3. Making Inventory Maps

3.2.2 Color setting

Boundary of PESAO

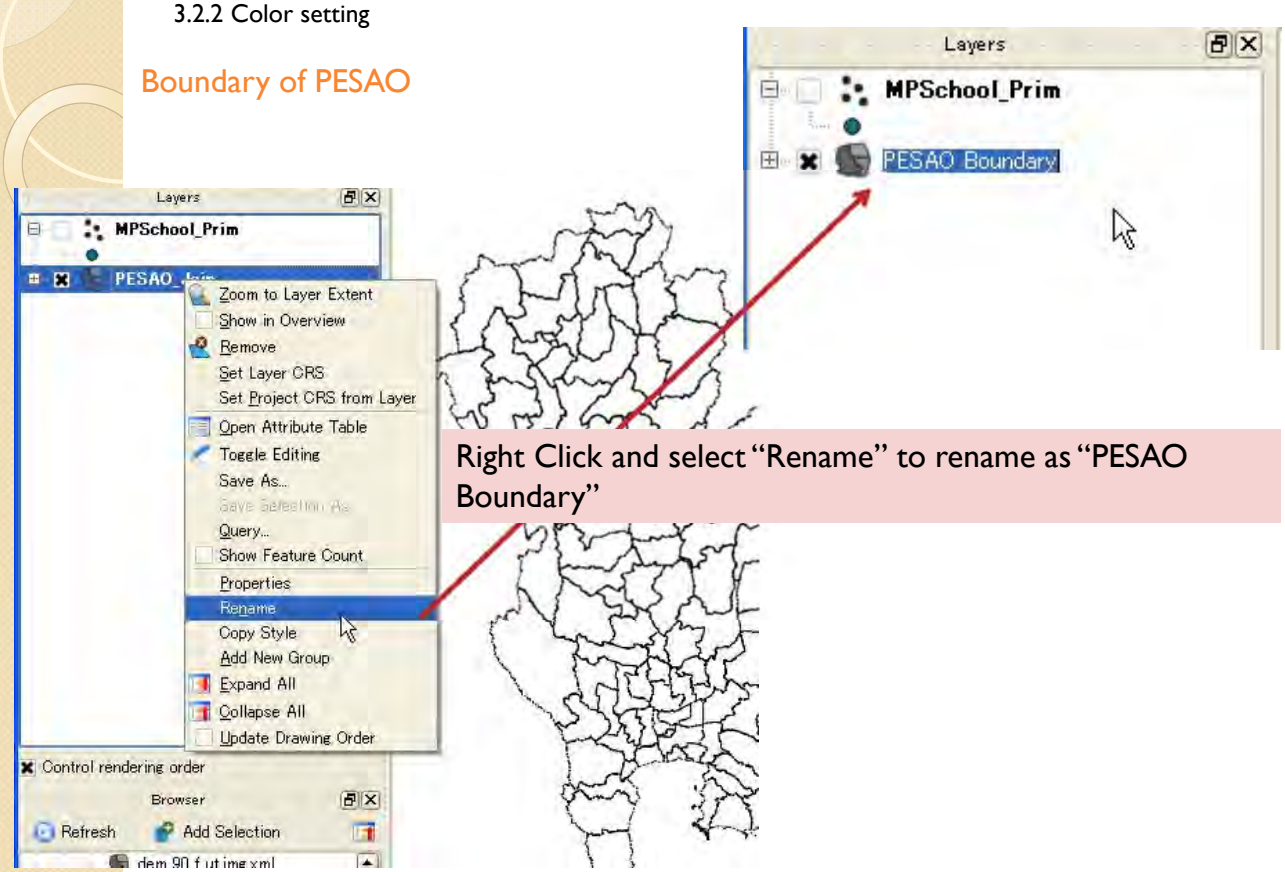


Select "No Brush" and push "OK".

3. Making Inventory Maps

3.2.2 Color setting

Boundary of PESAO



Right Click and select "Rename" to rename as "PESAO Boundary"

3. Making Inventory Maps

3.2.2 Color setting

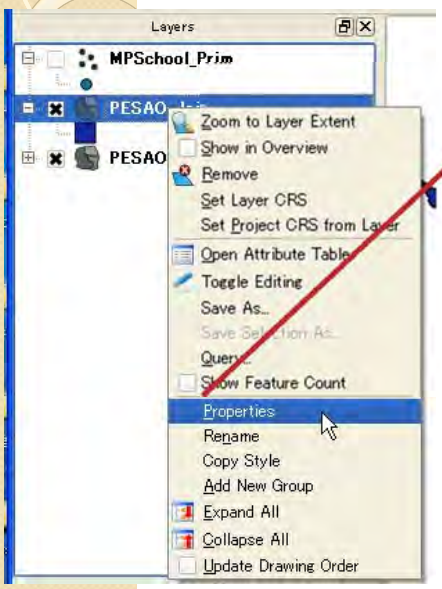
Model PESAO

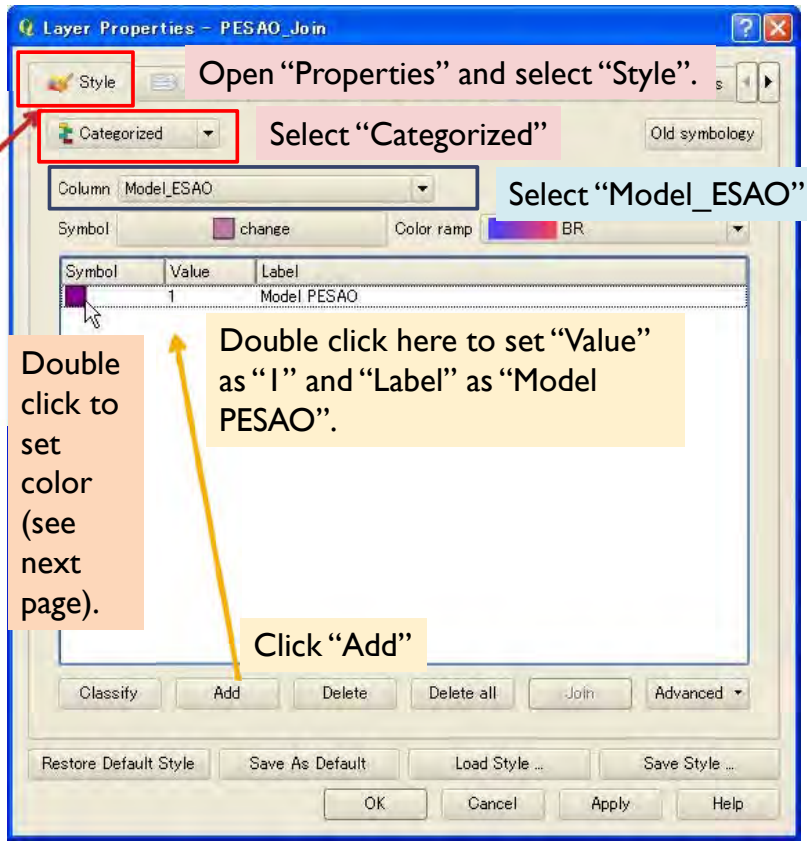
Drag and drop "PESAO_Join" again.

3. Making Inventory Maps

3.2.2 Color setting

Model PESAO

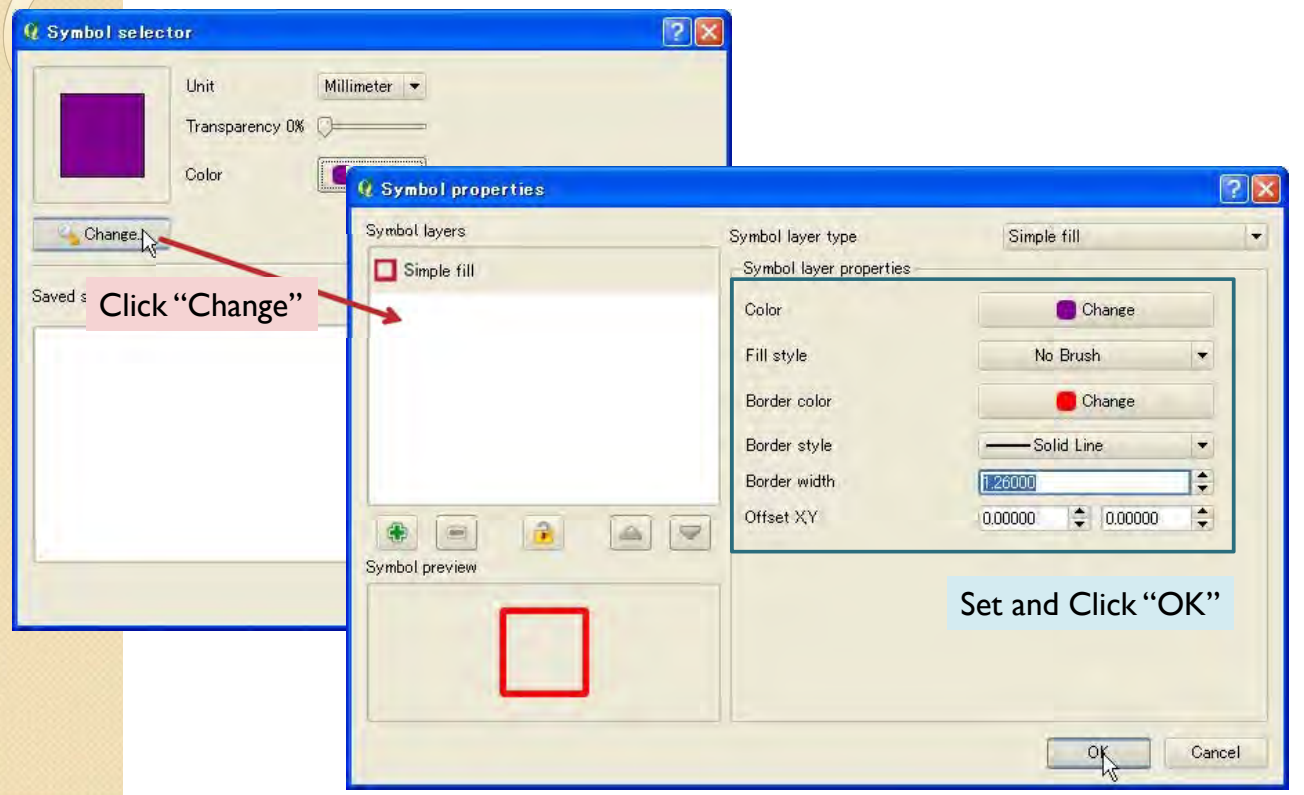




3. Making Inventory Maps

3.2.2 Color setting

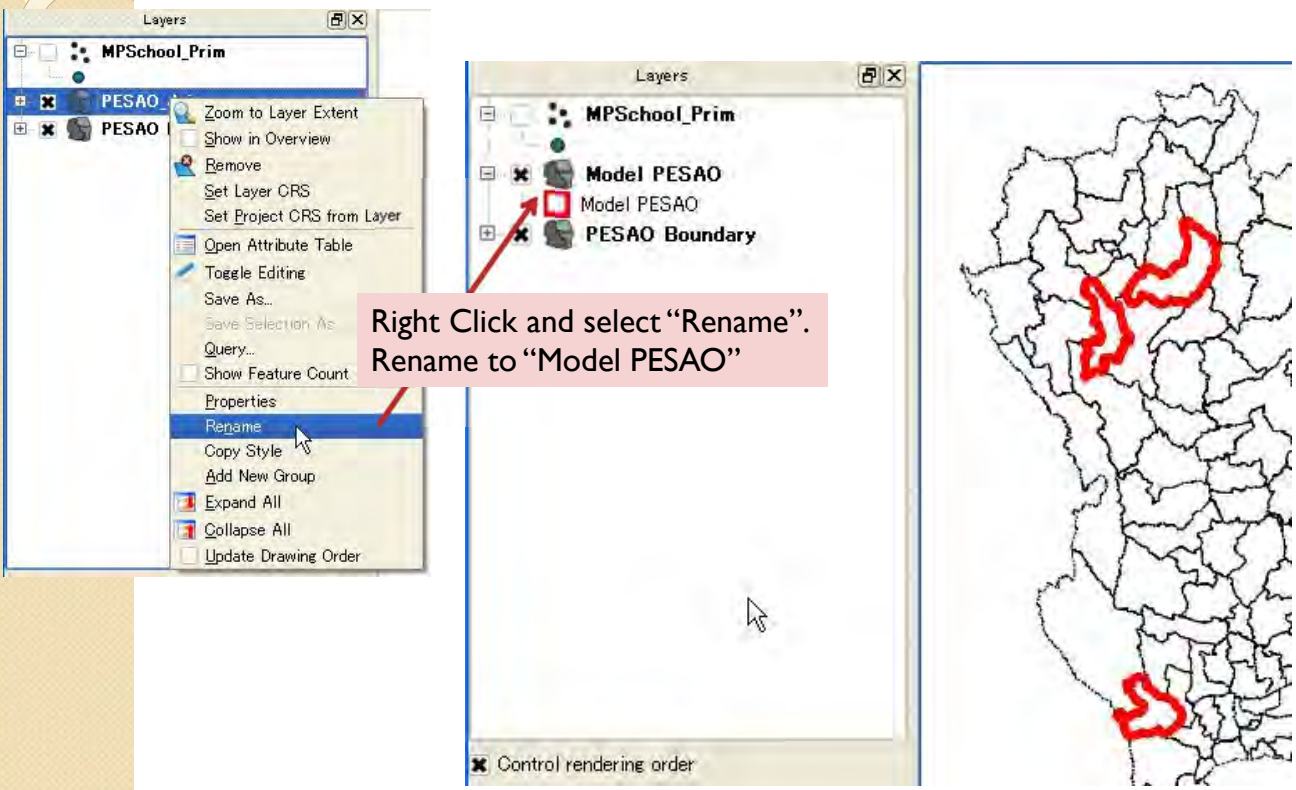
Model PESAO



3. Making Inventory Maps

3.2.2 Color setting

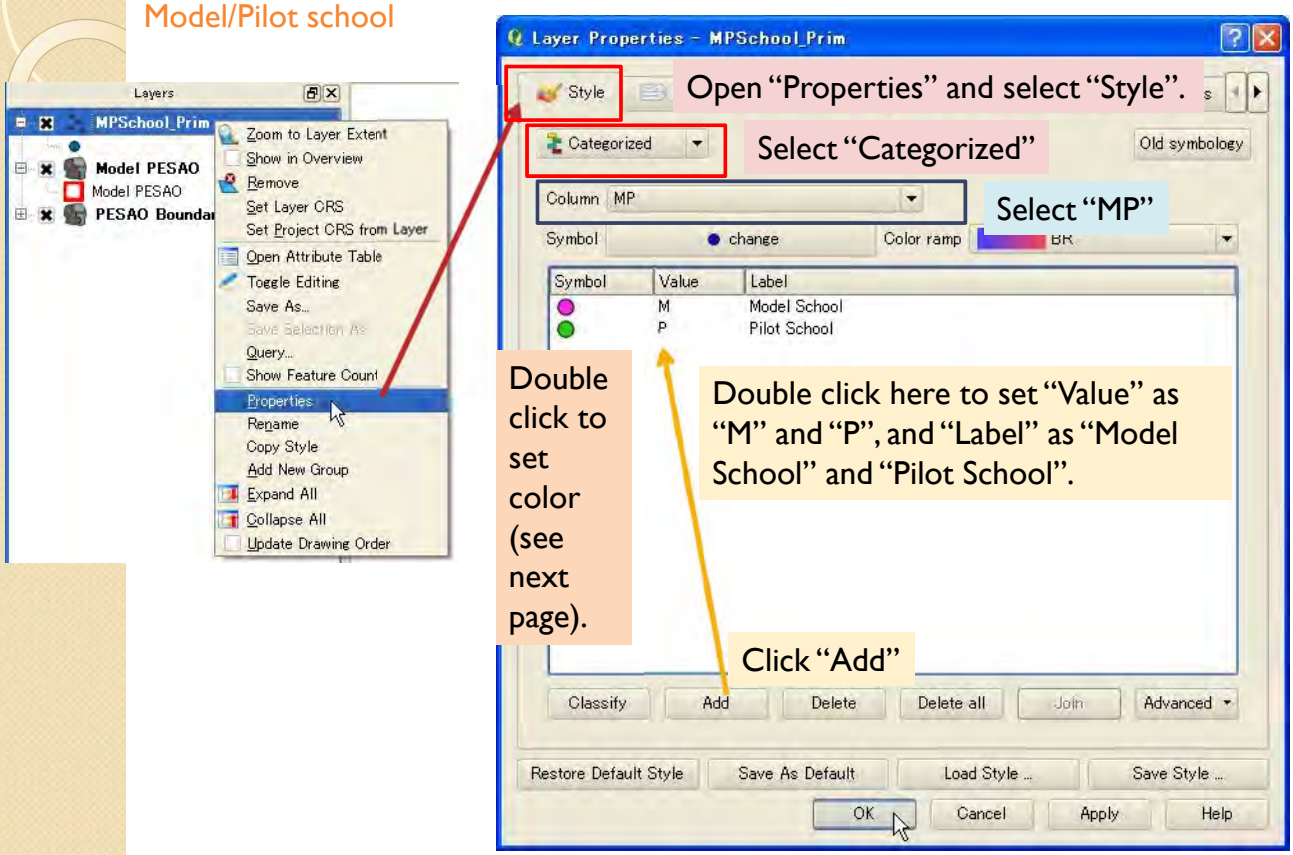
Model PESAO



3. Making Inventory Maps

3.2.2 Color setting

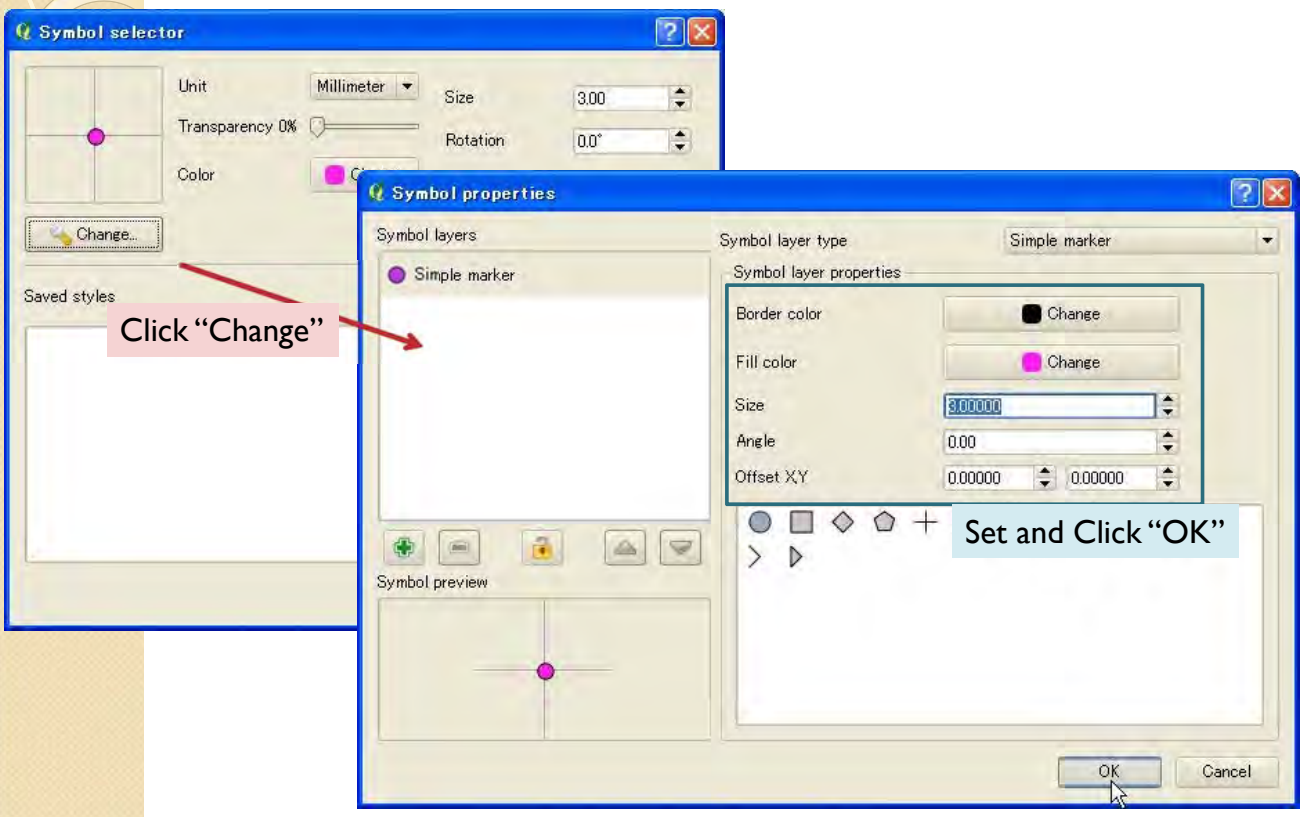
Model/Pilot school



3. Making Inventory Maps

3.2.2 Color setting

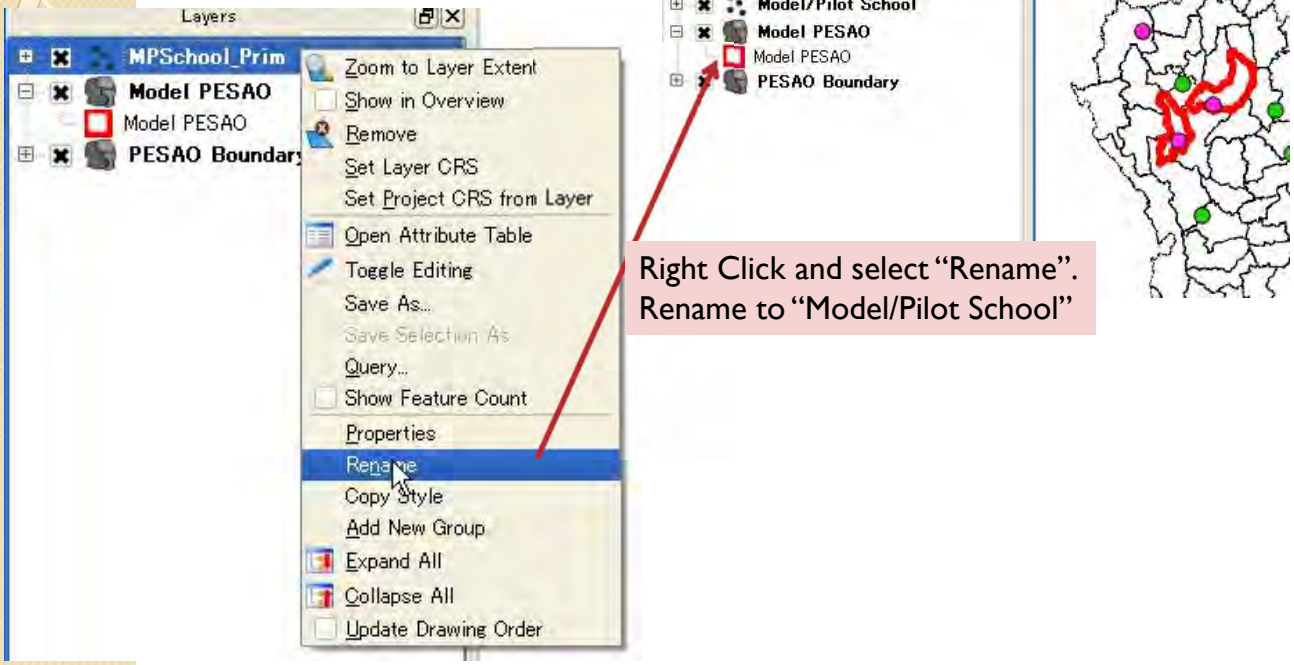
Model/Pilot school



3. Making Inventory Maps

3.2.2 Color setting

Model/Pilot school



3. Making Inventory Maps

3.2.2 Color setting

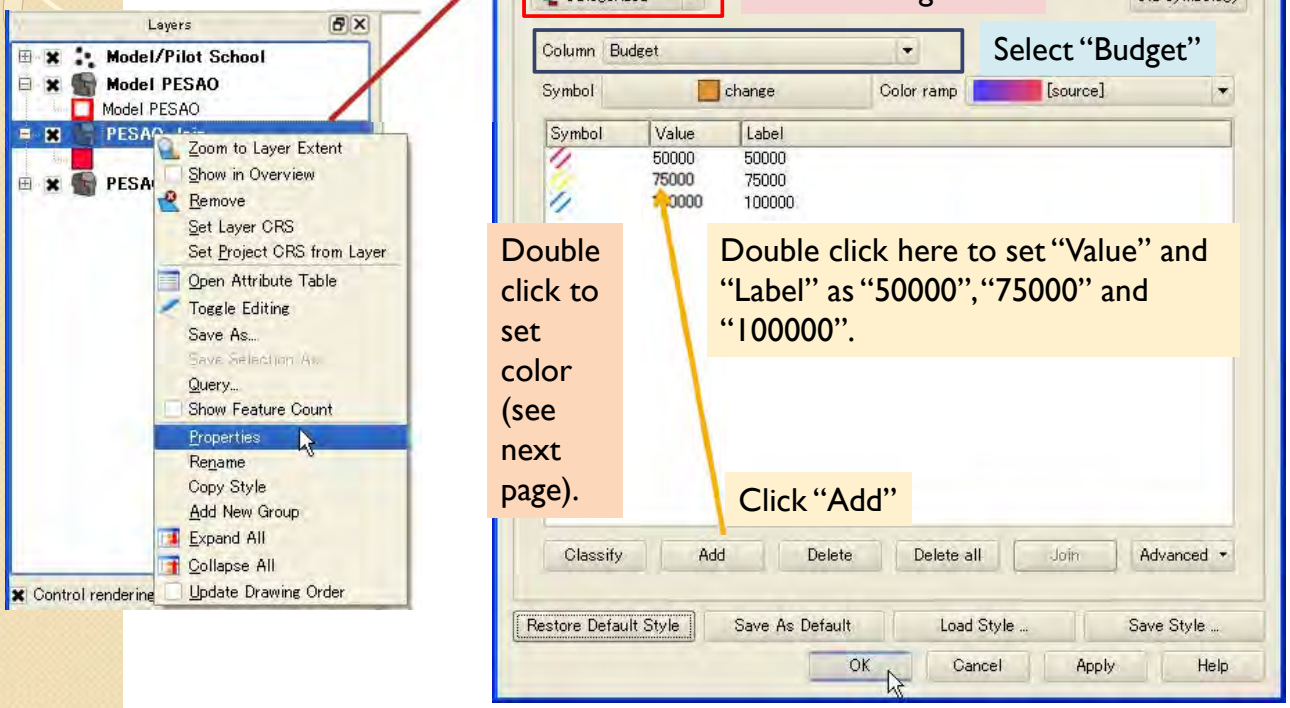
Model/Pilot school rank (budget)

Drag and drop "PESAO_Join" again.

3. Making Inventory Maps

3.2.2 Color setting

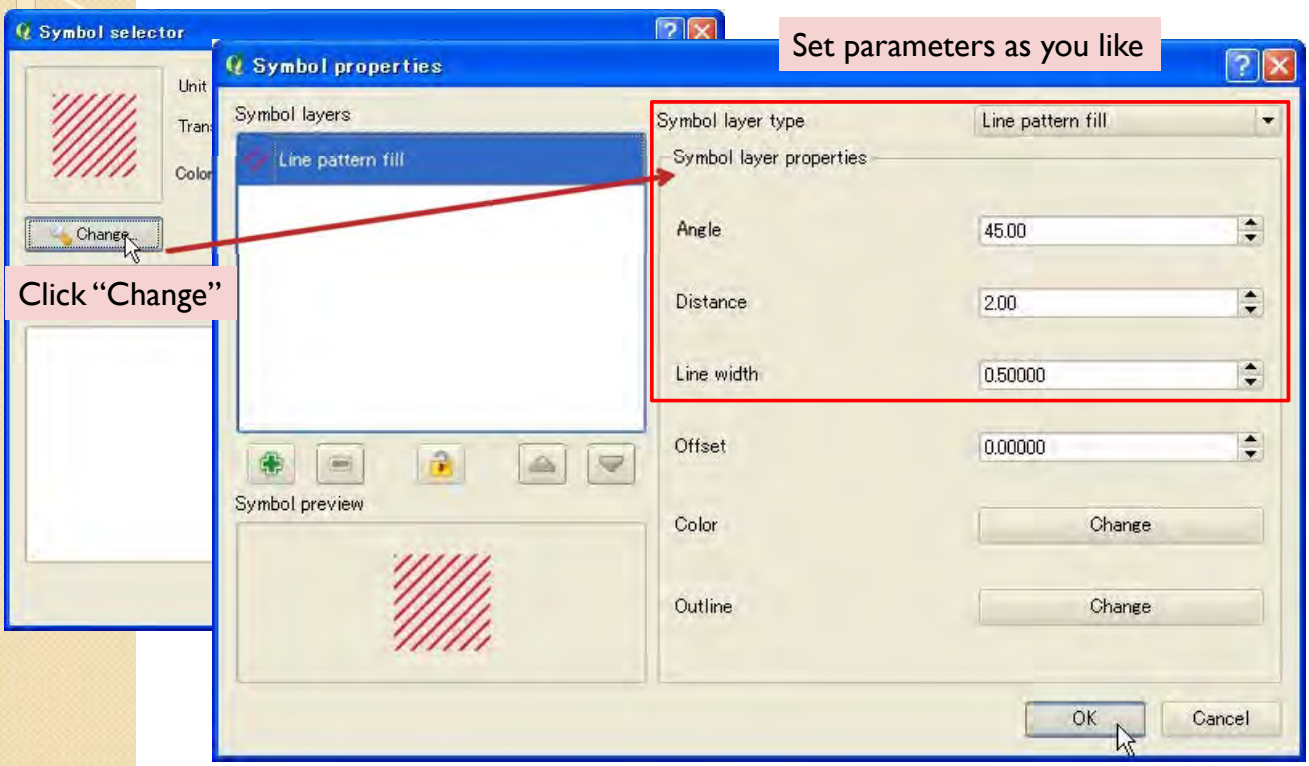
Model/Pilot school rank (budget)



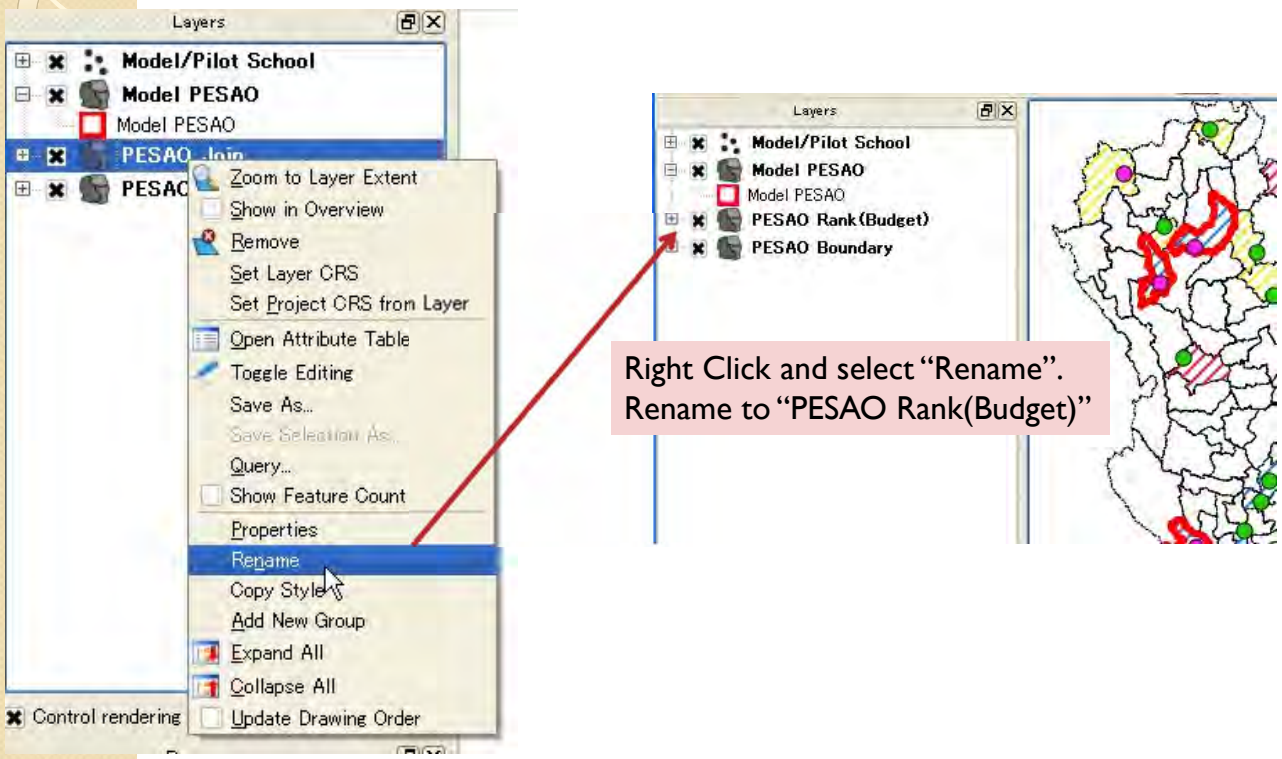
3. Making Inventory Maps

3.2.2 Color setting

Model/Pilot school rank (budget)



Model/Pilot school rank (budget)

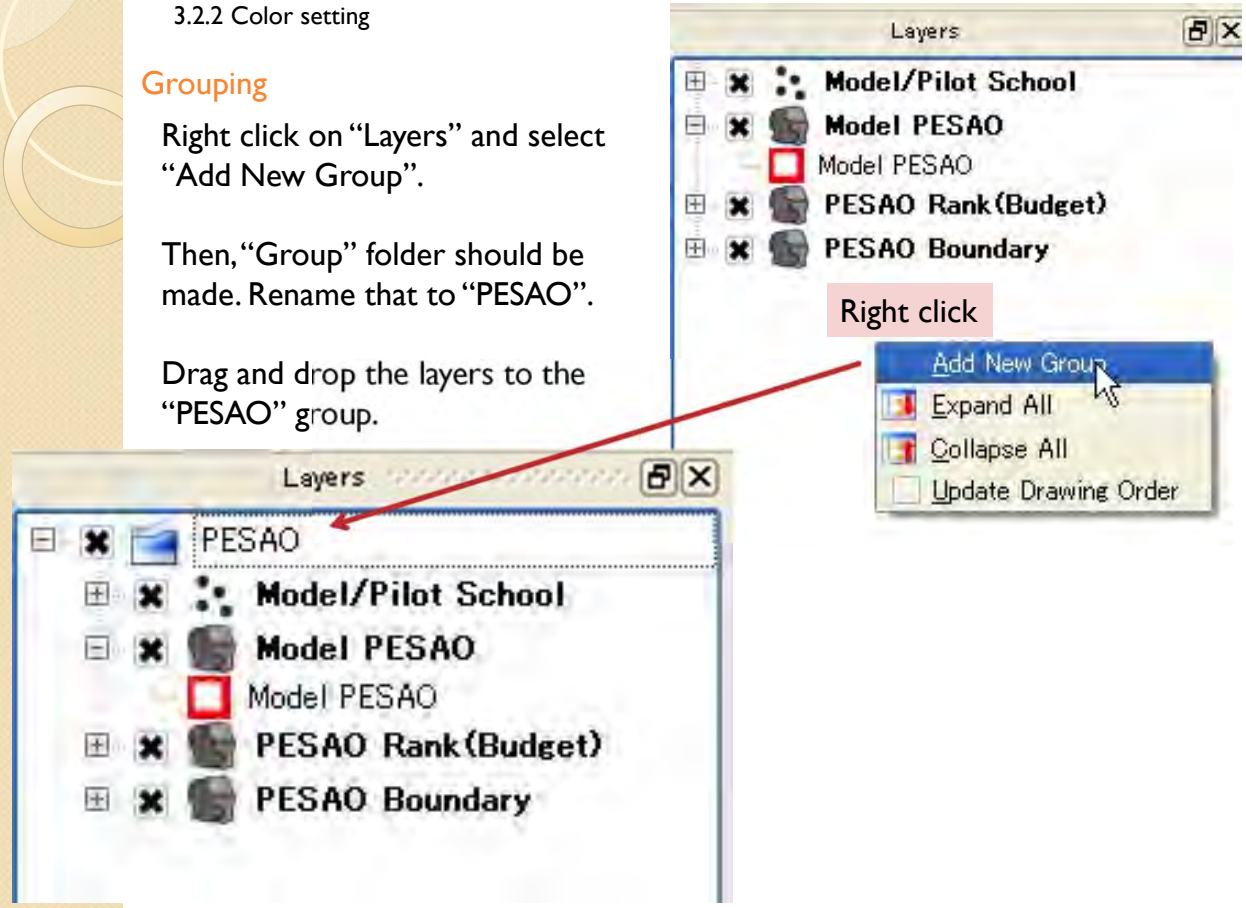


Grouping

Right click on "Layers" and select "Add New Group".

Then, "Group" folder should be made. Rename that to "PESAO".

Drag and drop the layers to the "PESAO" group.

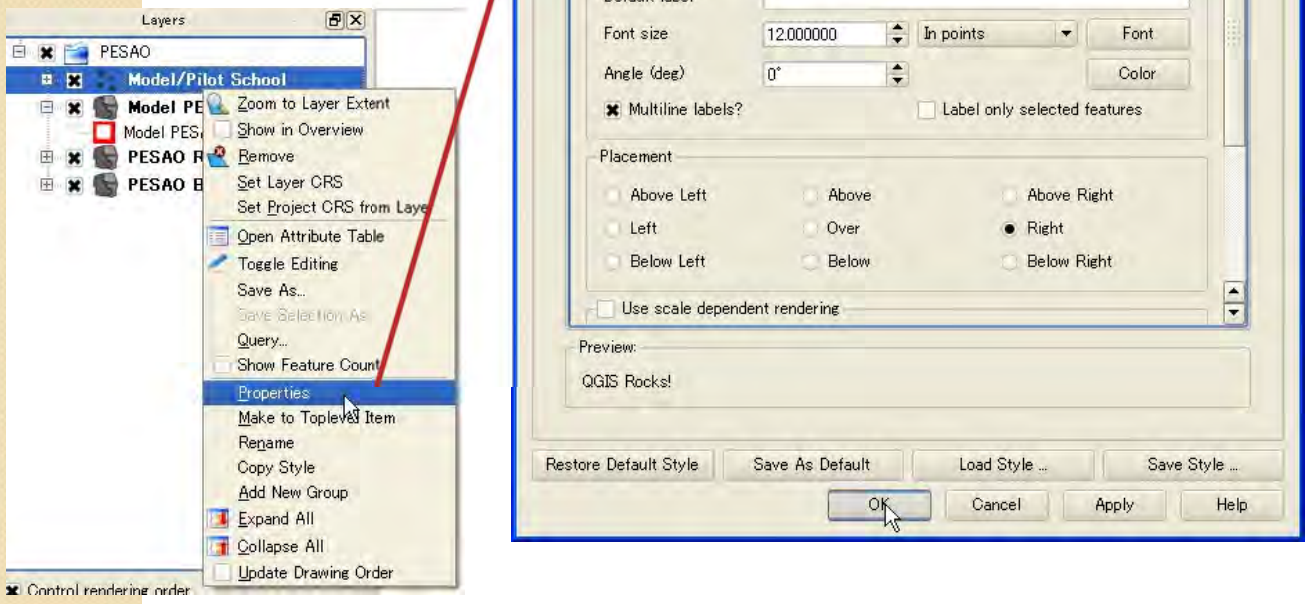


3. Making Inventory Maps

3.2.2 Color setting

Labeling for schools

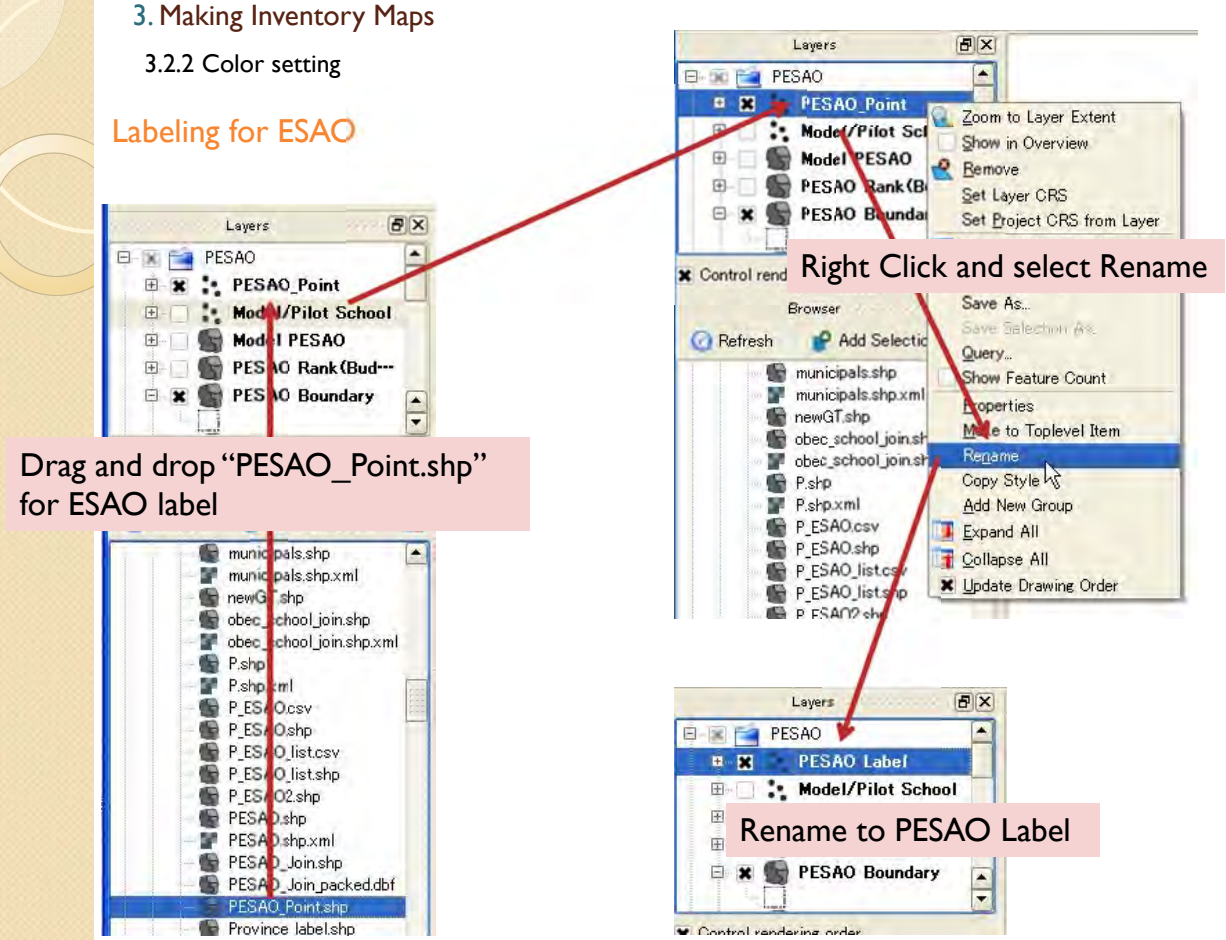
Open "Labels" tab in properties window. Check "Display labels" and select "Field containing label".



3. Making Inventory Maps

3.2.2 Color setting

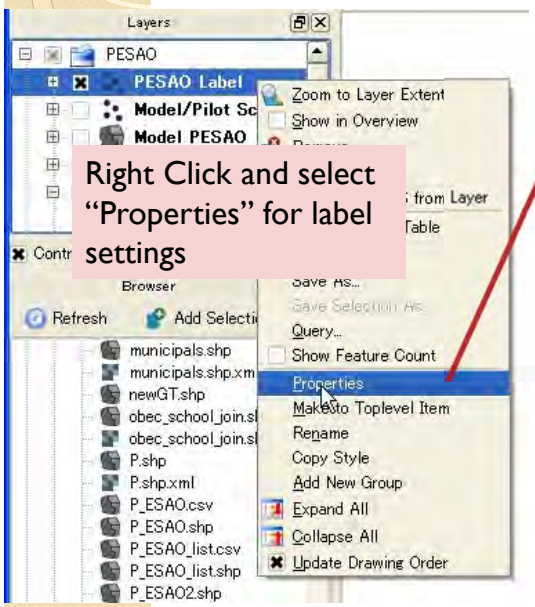
Labeling for ESAO



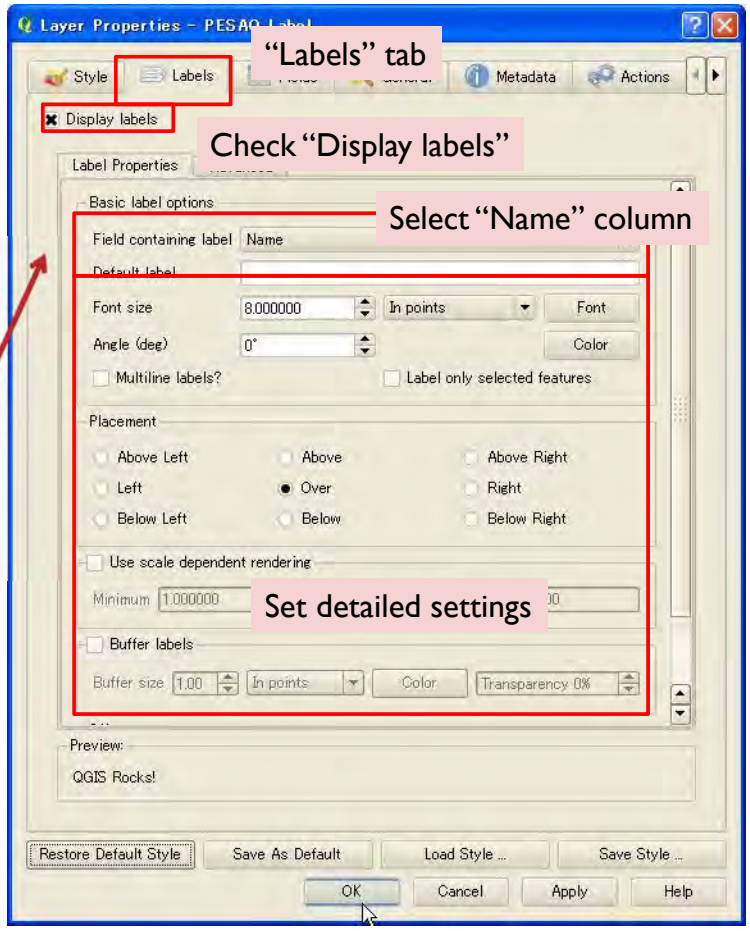
3. Making Inventory Maps

3.2.2 Color setting

Labeling for ESAO



Right Click and select "Properties" for label settings

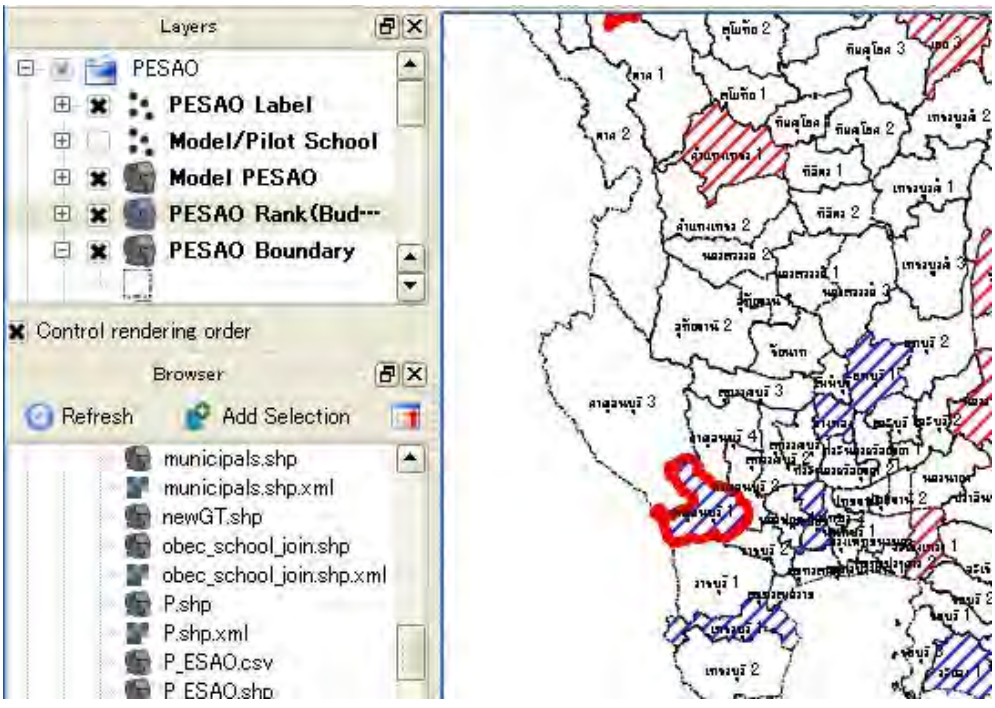


3. Making Inventory Maps

3.2.2 Color setting

Labeling for ESAO

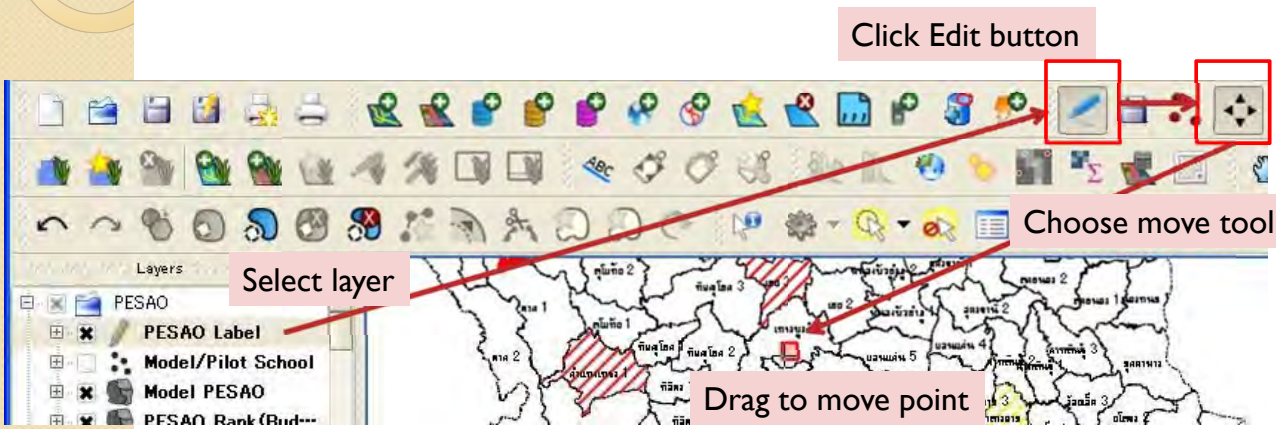
Then, you can see labels for ESAO.



3.2.2 Color setting

Labeling for ESAO

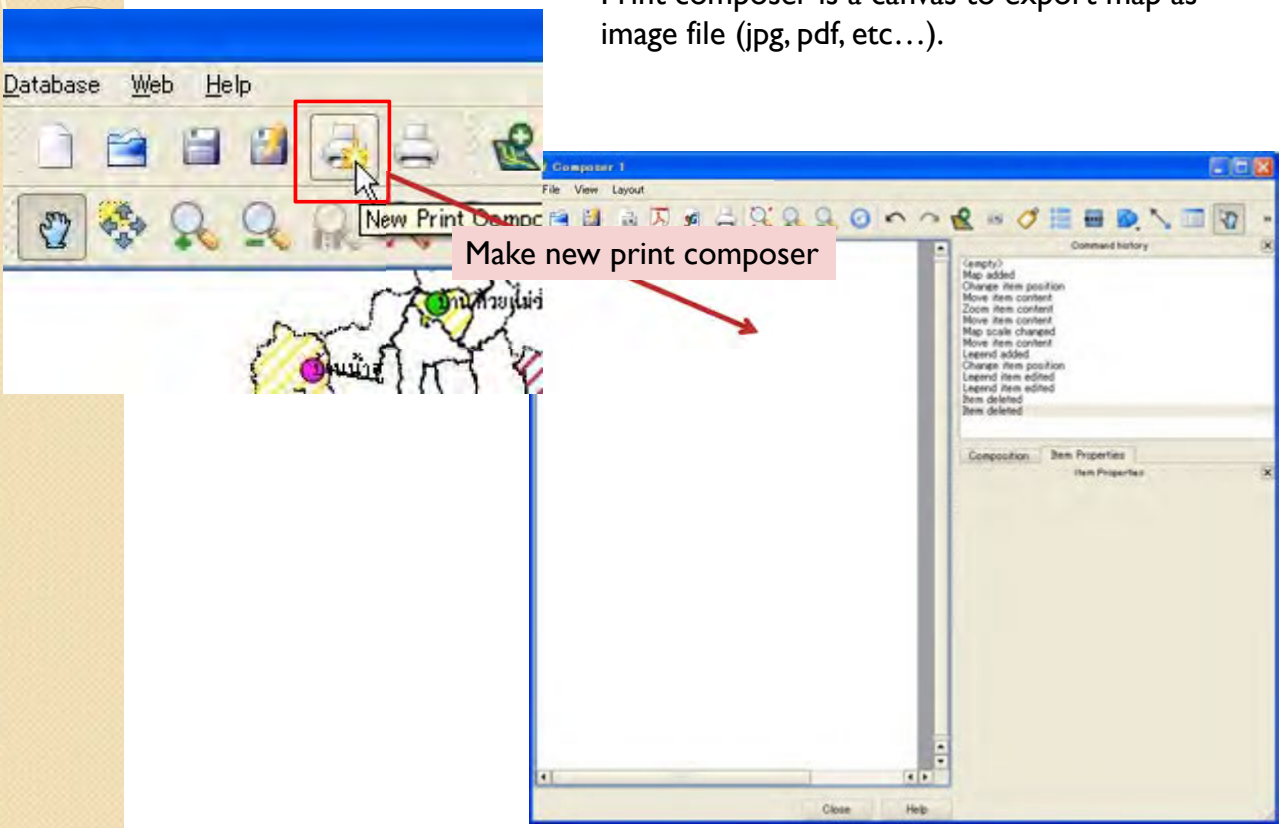
If there are some overlaps of the labels, you can move the points.



After you finish edit, re-click Edit button and save.

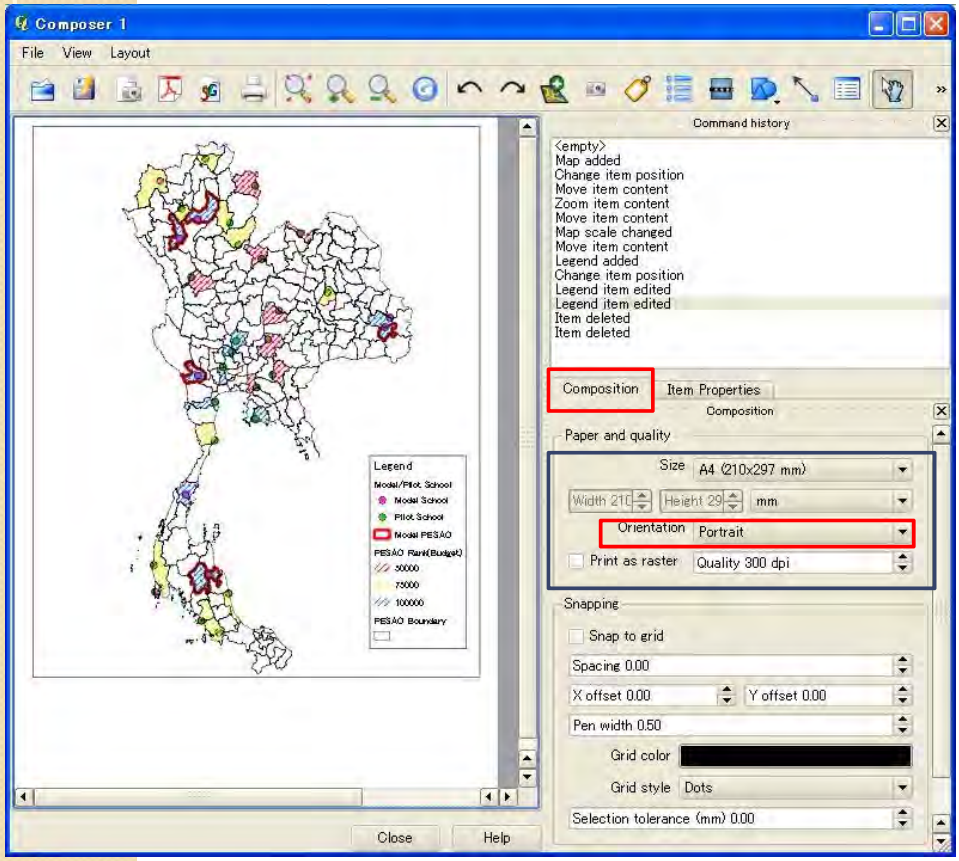
3.2.3 Print composer

Print composer is a canvas to export map as image file (jpg, pdf, etc…).



3. Making Inventory Maps

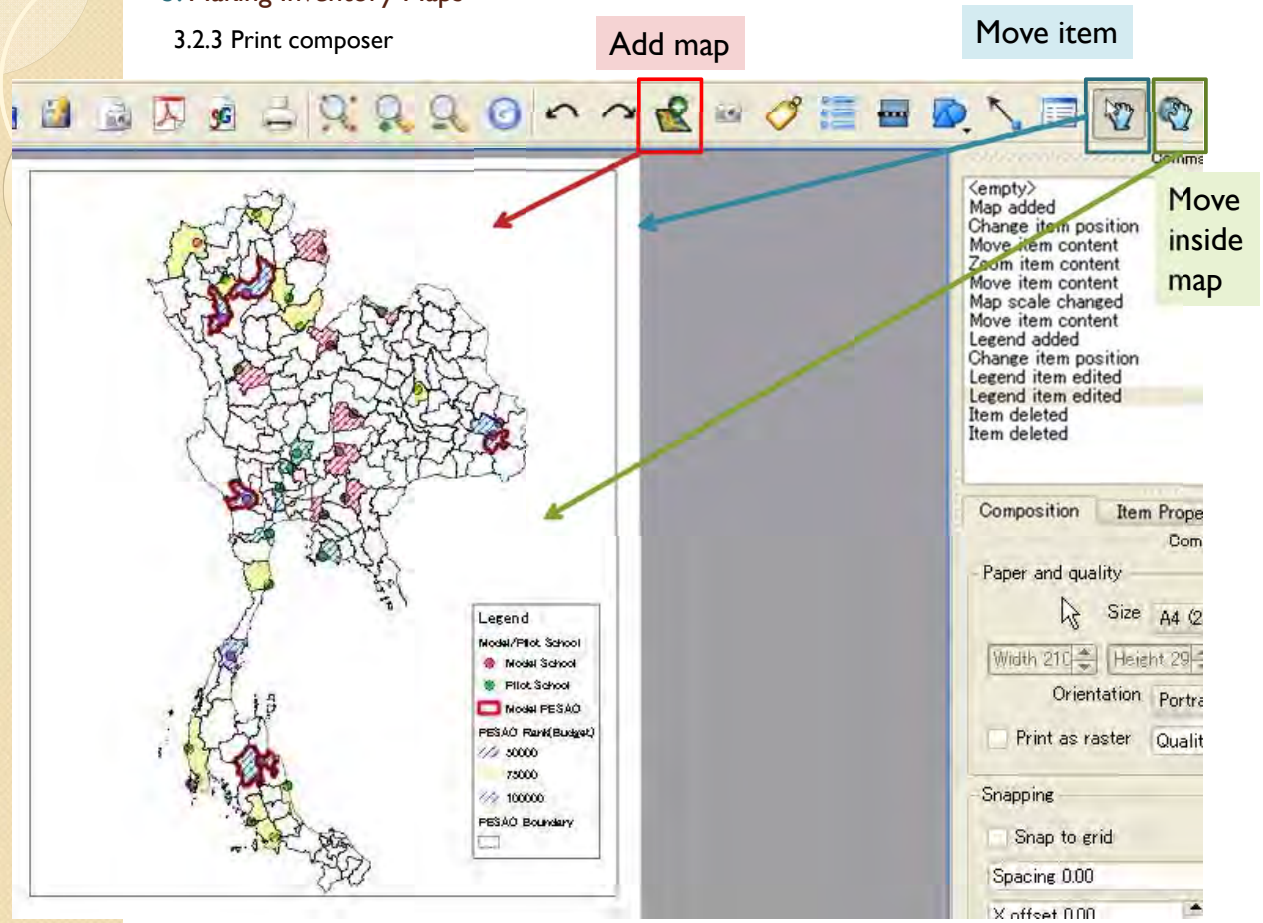
3.2.3 Print composer



Lower right tabs are properties for the canvas.

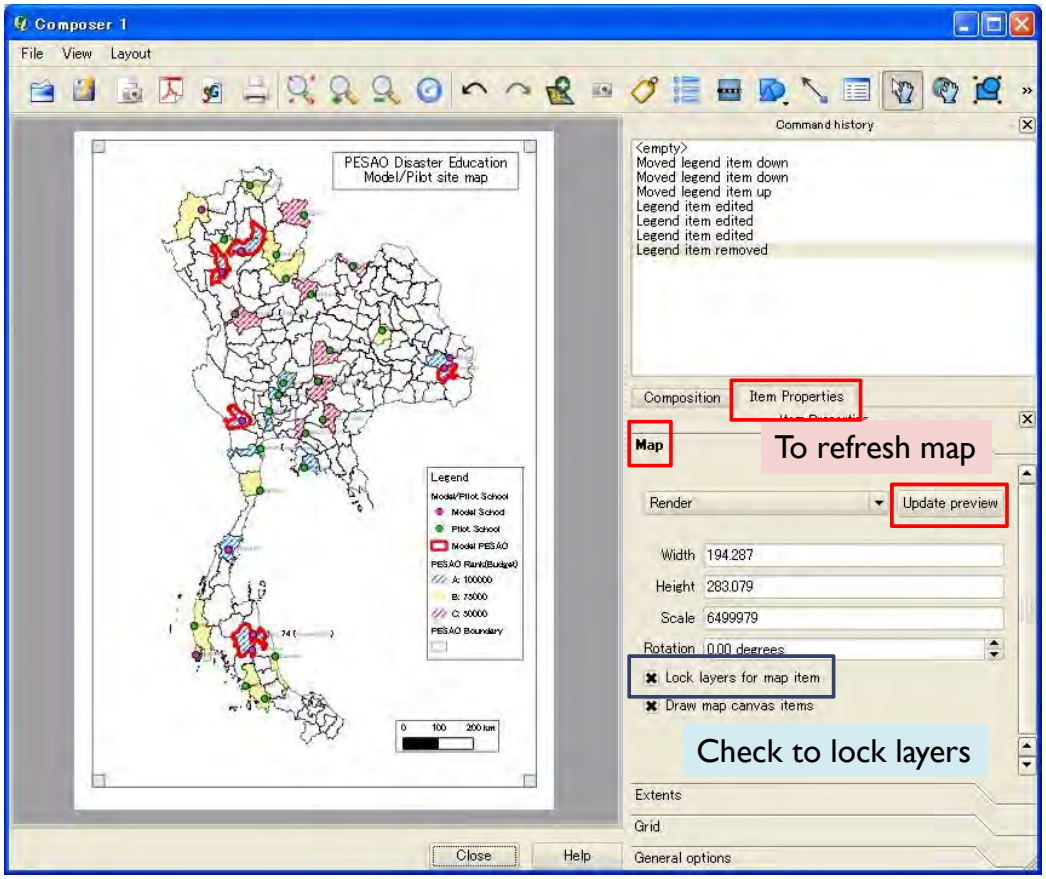
3. Making Inventory Maps

3.2.3 Print composer



3. Making Inventory Maps

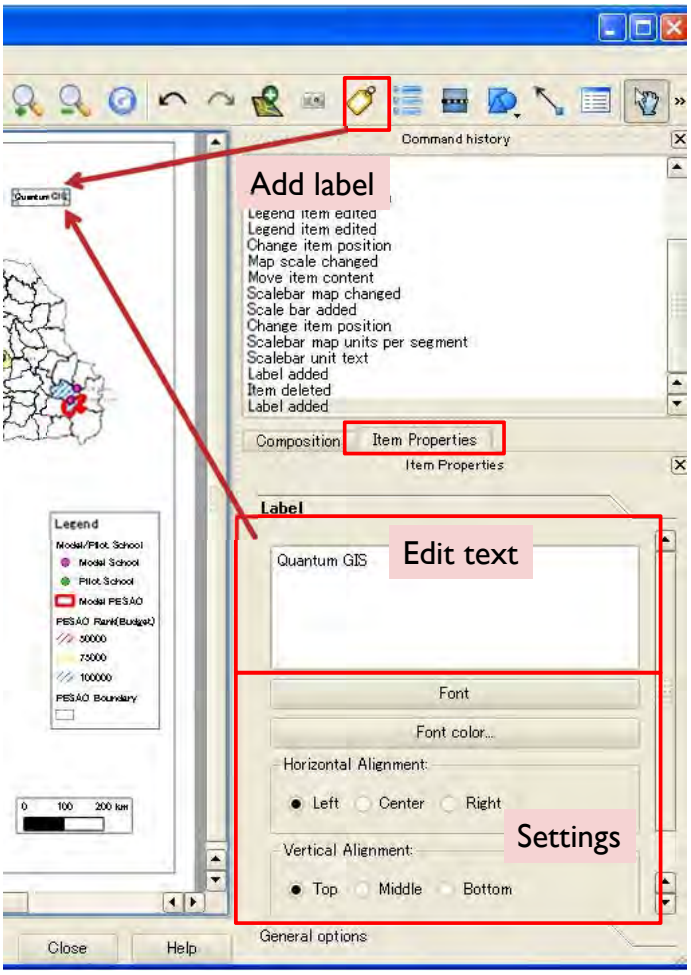
3.2.3 Print composer



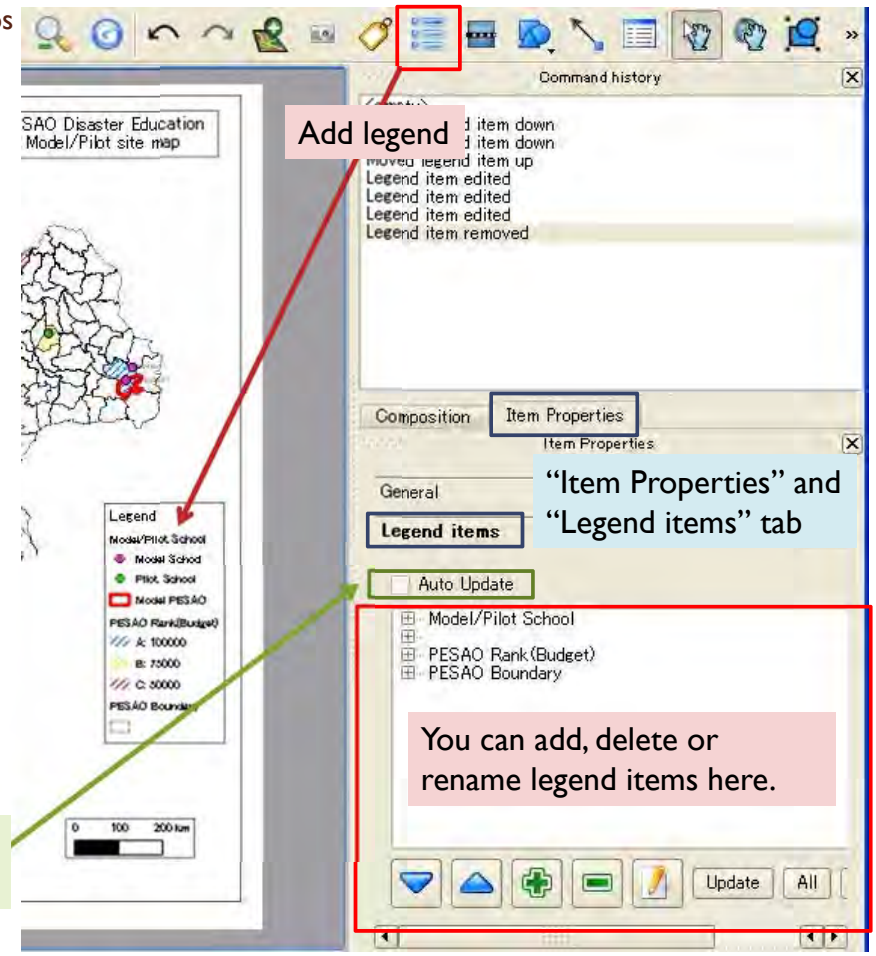
3. Making Inventory Maps

3.2.3 Print composer

Add label



Add legend



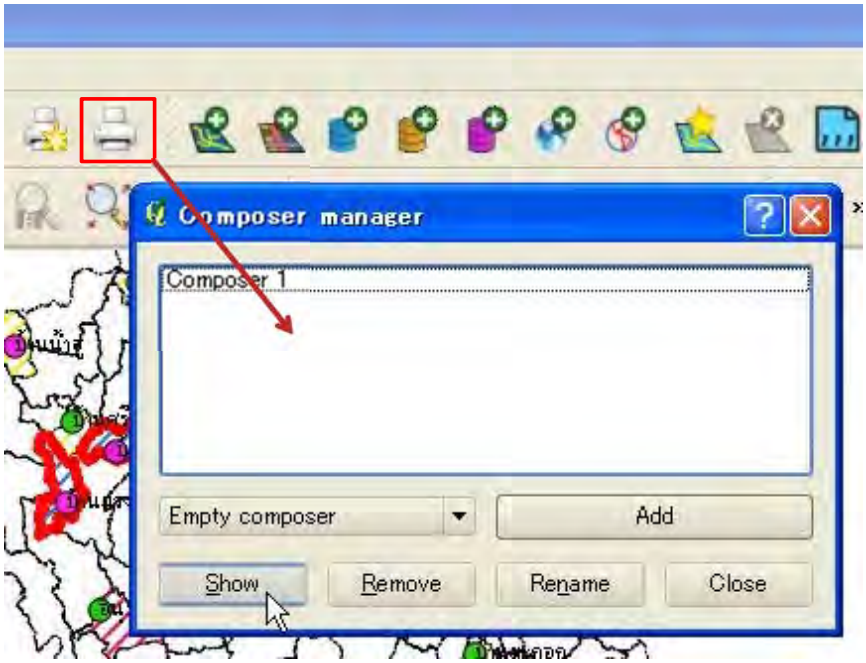
It is able to export map to file.

Export as image file

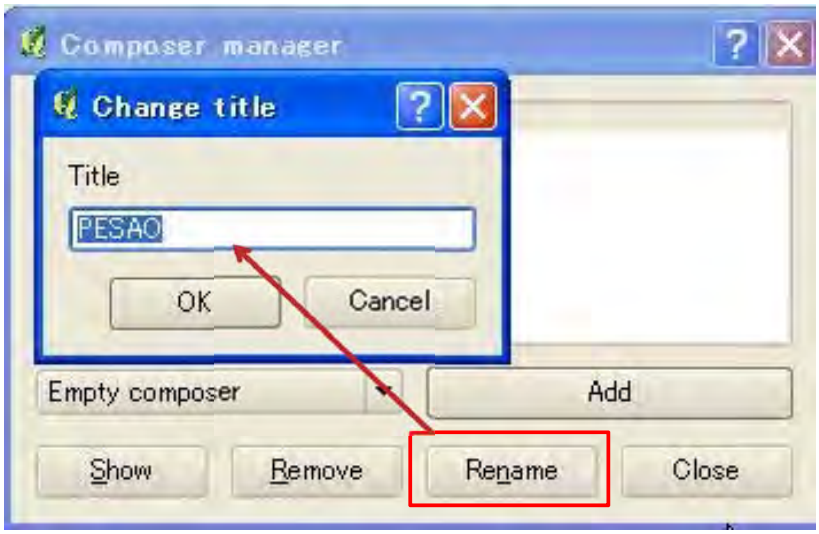
Export as pdf file

Print

After you made composer once, you can recall the canvas from this button.



It is able to rename the canvas.
Please rename the "Composer 1" to "PESAO".

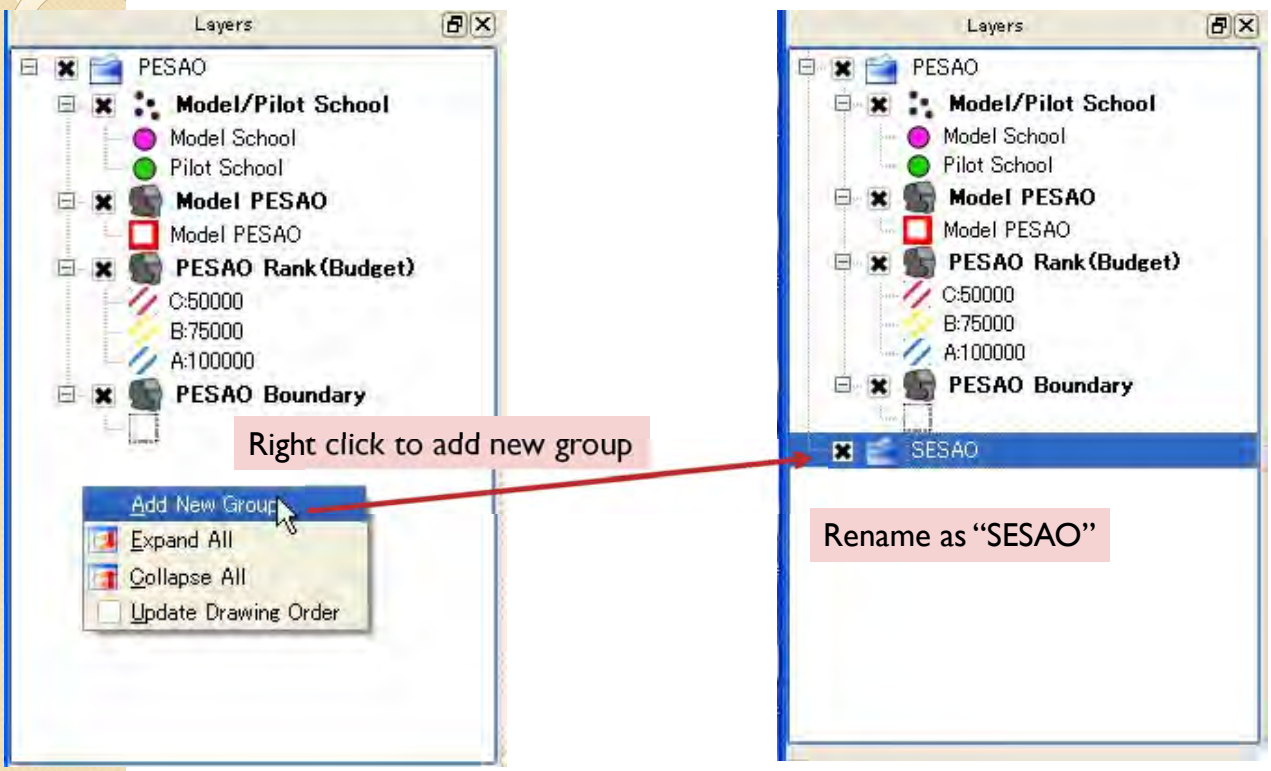


3.2.4 Save project

After you made map, please don't forget to save project.

3.3 SESAO map

3.3.1 Import data



3. Making Inventory Maps

3.3.1 Import data

Drag and drop "MPSchool_Scnd.shp" and "SESAO_Join.shp" into "Layers field.

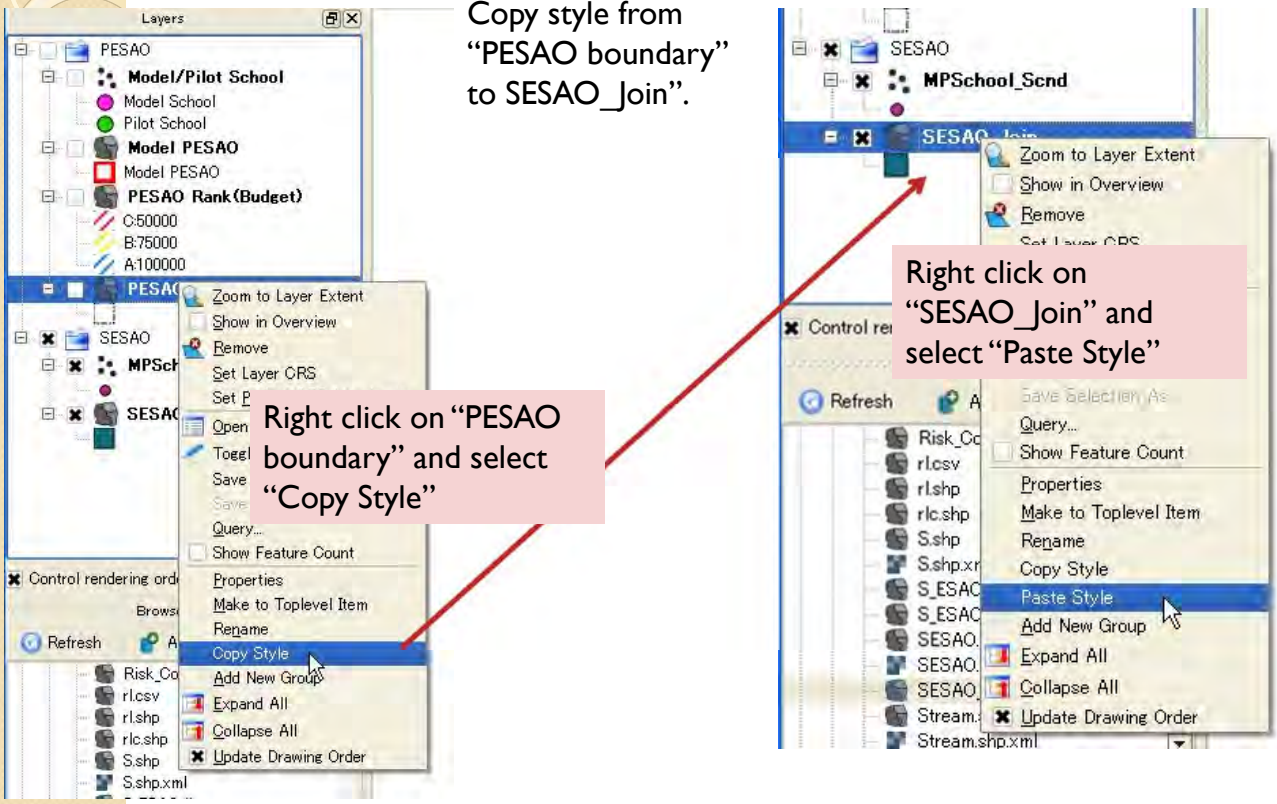
After these files are imported, please move these features to under "SESAO" group.

3. Making Inventory Maps

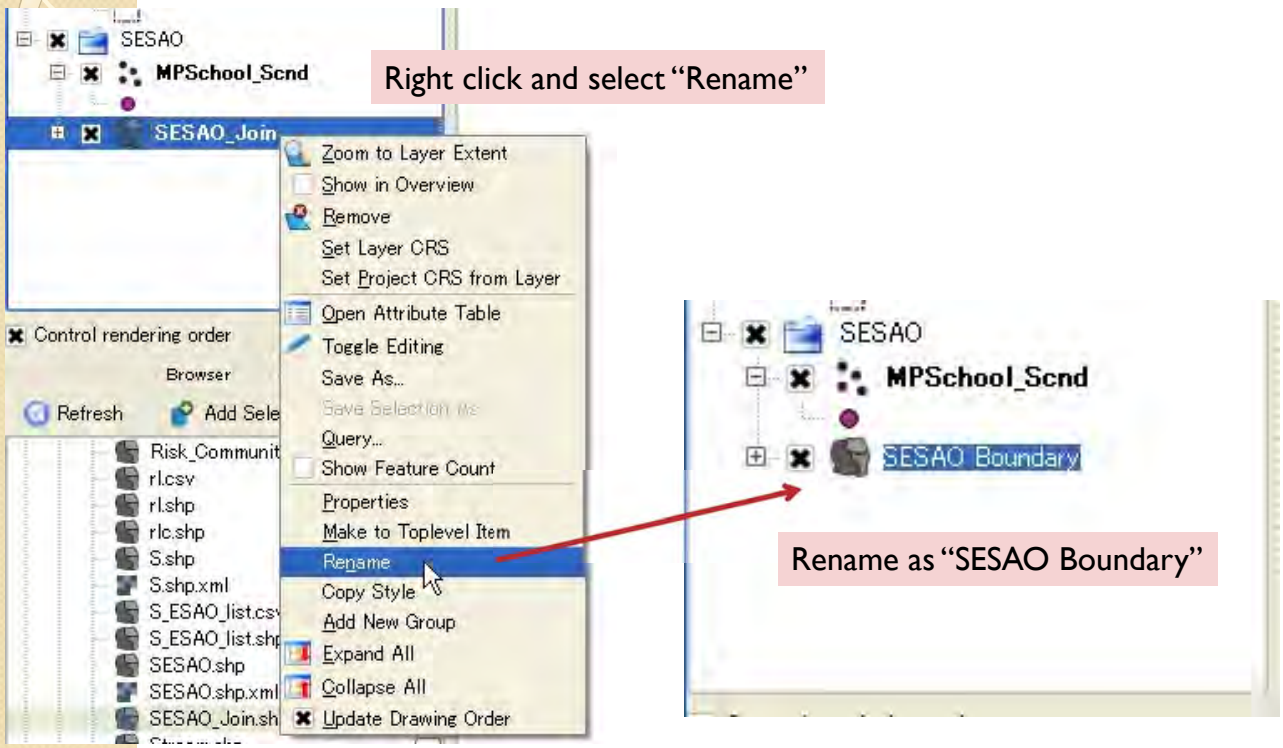
3.3.2 Color settings

SESAO boundary

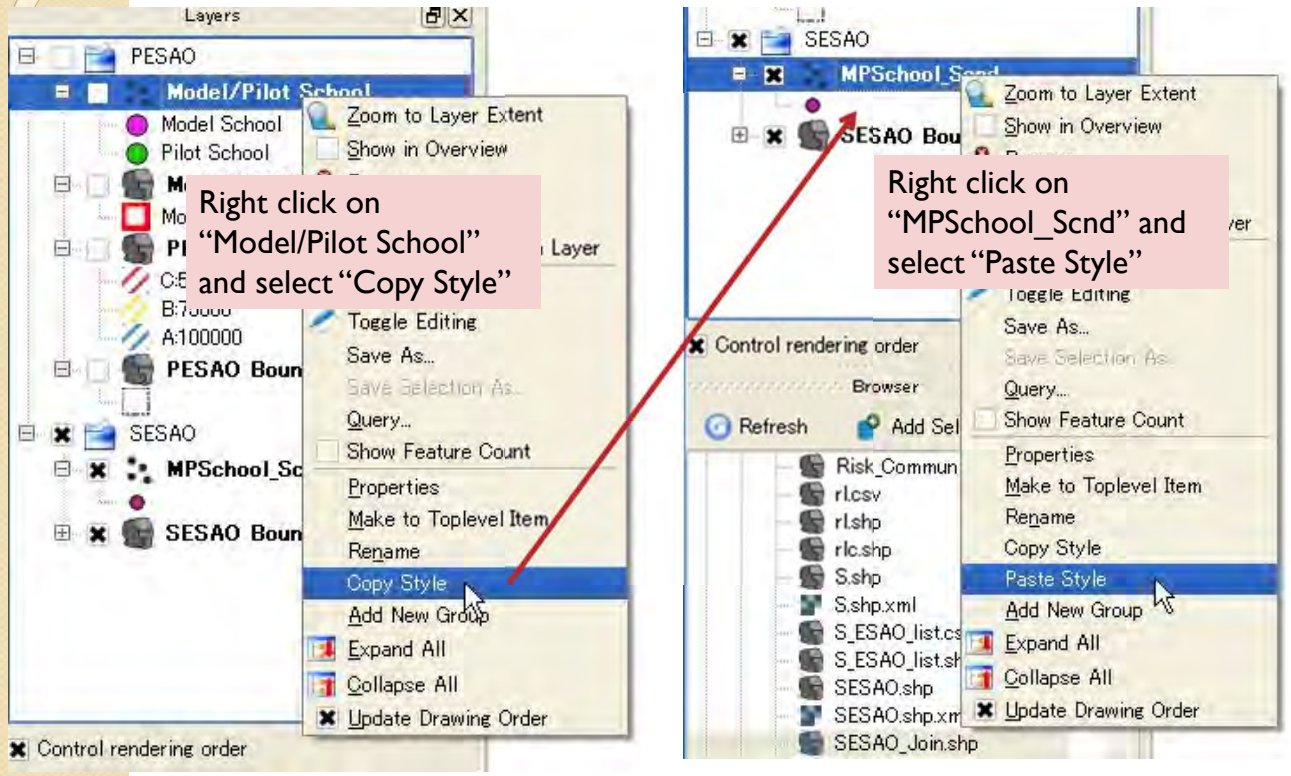
Copy style from "PESAO boundary" to SESAO_Join".



SESAO boundary



Model/Pilot schools

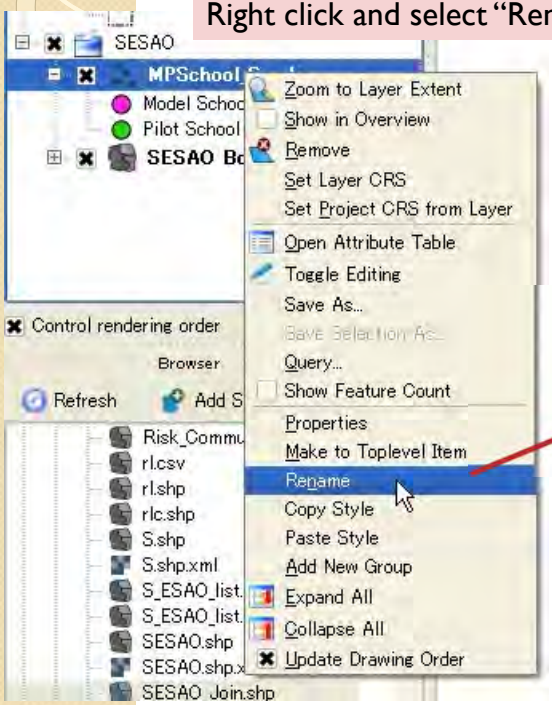


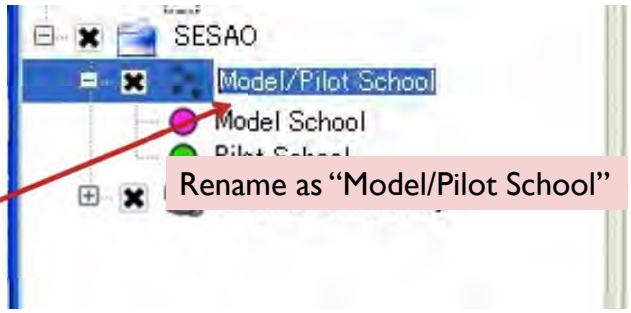
3. Making Inventory Maps

3.3.2 Color settings

Model/Pilot schools

Right click and select "Rename"





Rename as "Model/Pilot School"

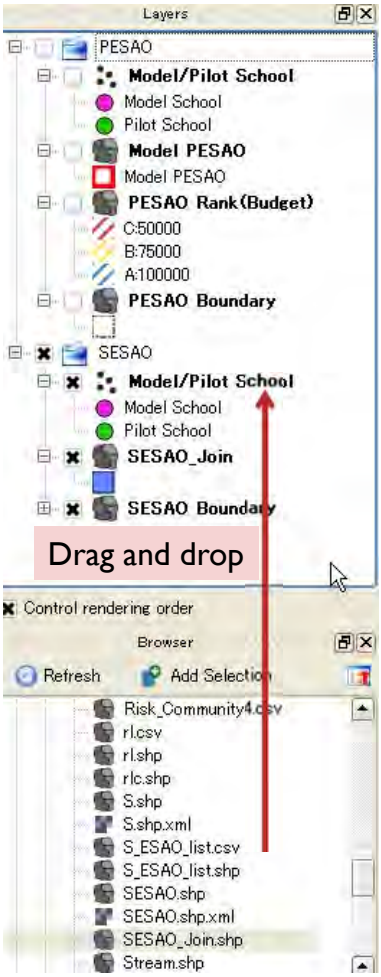
3. Making Inventory Maps

3.3.2 Color settings

Model/Pilot school rank (budget)

Drag and drop "SESAO_Join.shp" into "Layers field again.

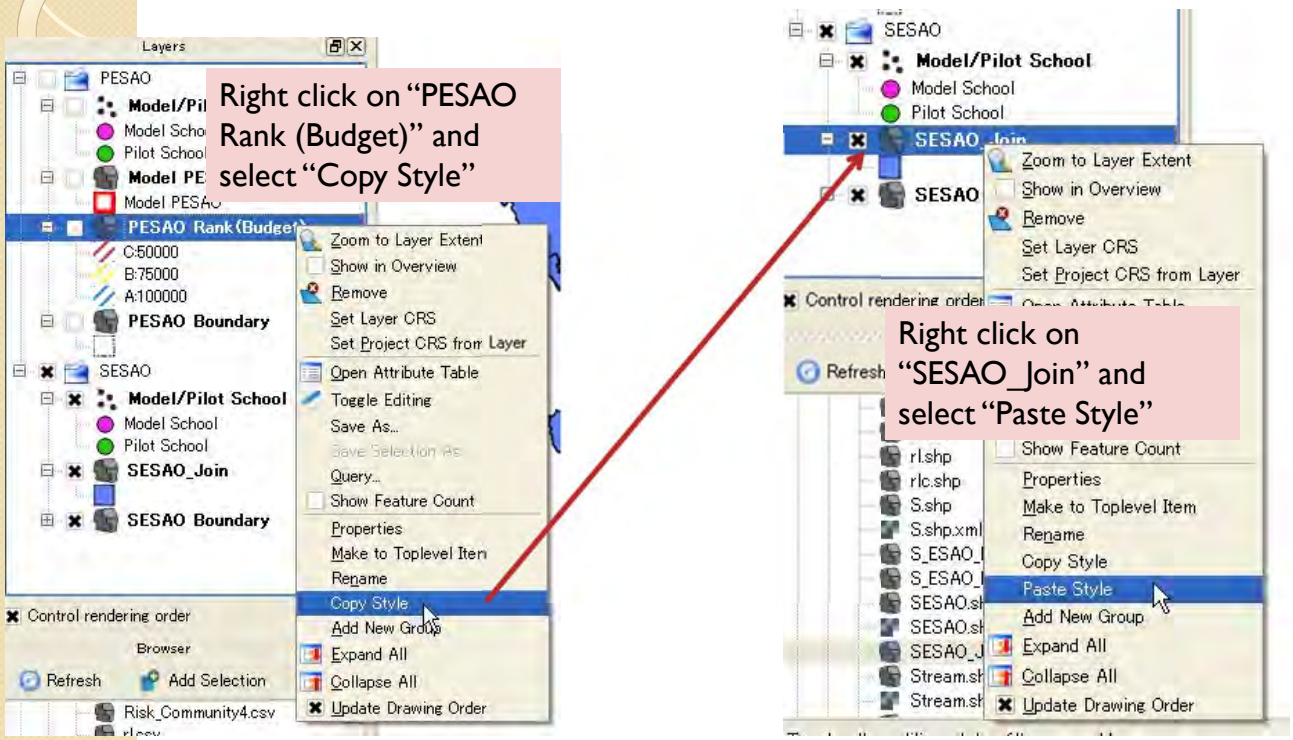
After these file is imported, please move these features to under "SESAO" group.



3. Making Inventory Maps

3.3.2 Color settings

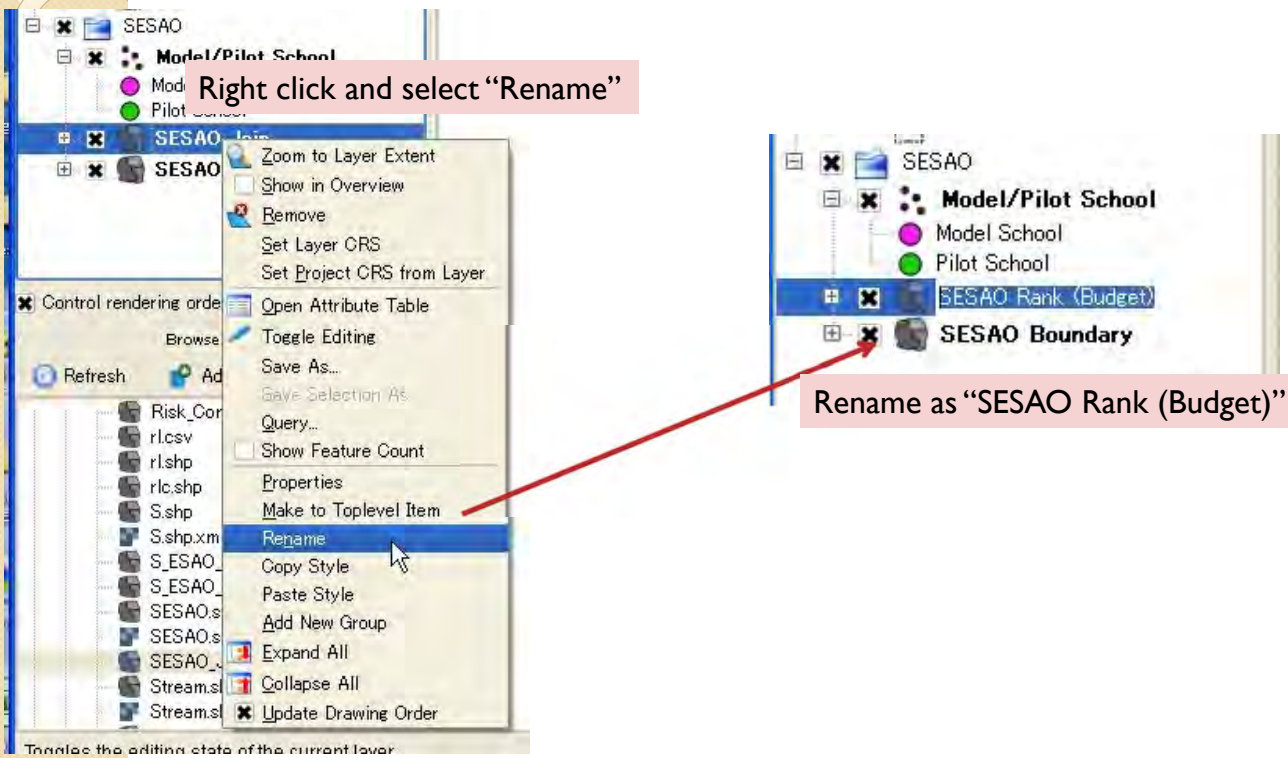
Model/Pilot school rank (budget)



3. Making Inventory Maps

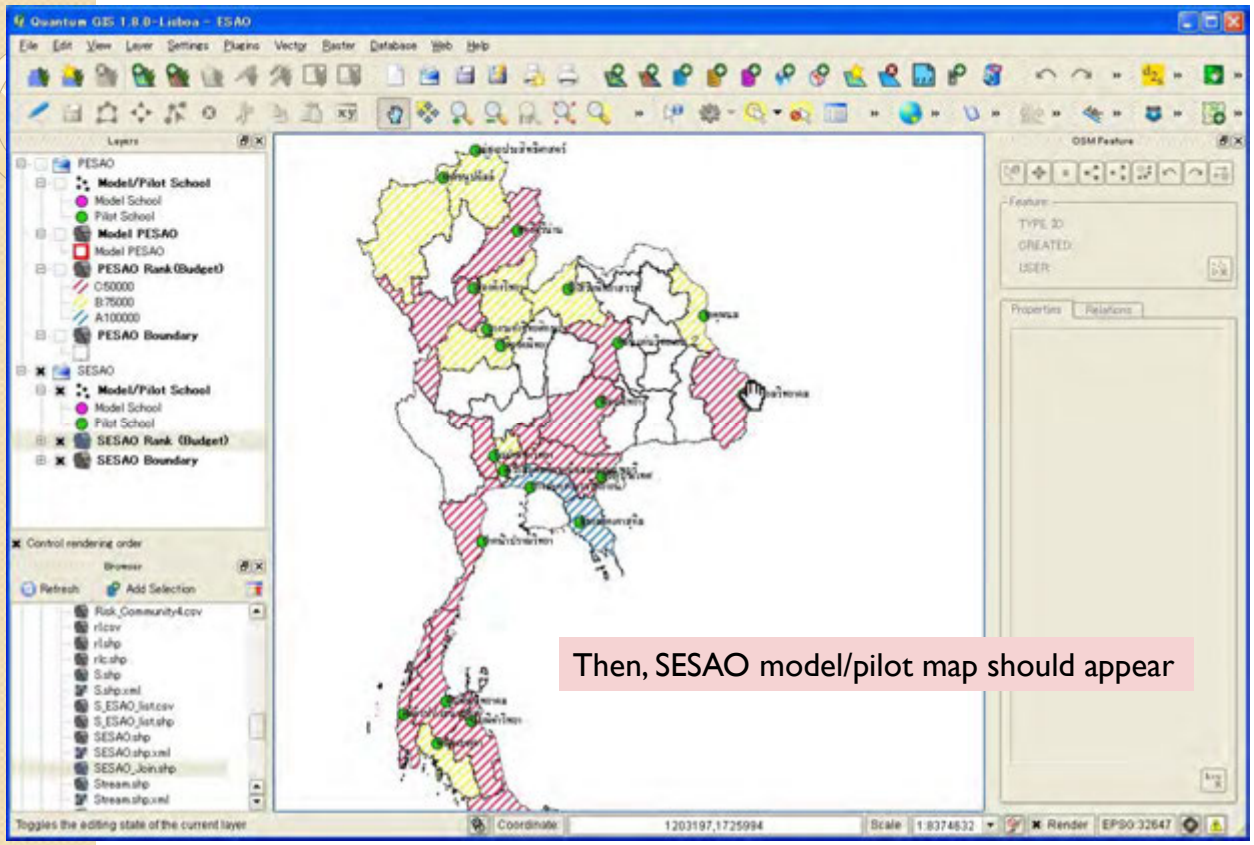
3.3.2 Color settings

Model/Pilot school rank (budget)



3. Making Inventory Maps

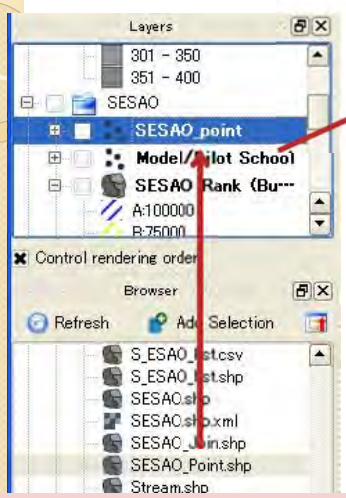
3.3.2 Color settings



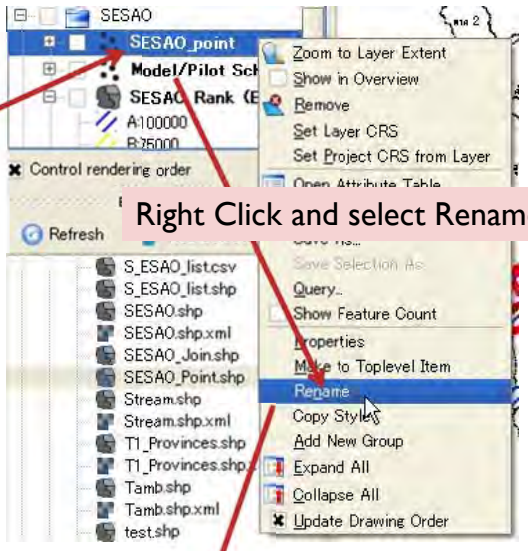
3. Making Inventory Maps

3.3.2 Color setting

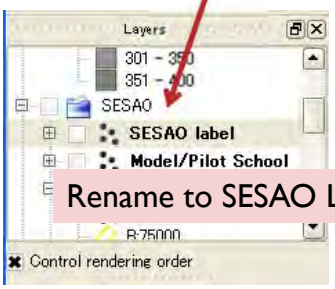
Labeling for ESAO



Drag and drop "SESAO_Point.shp" for ESAO label



Right Click and select Rename

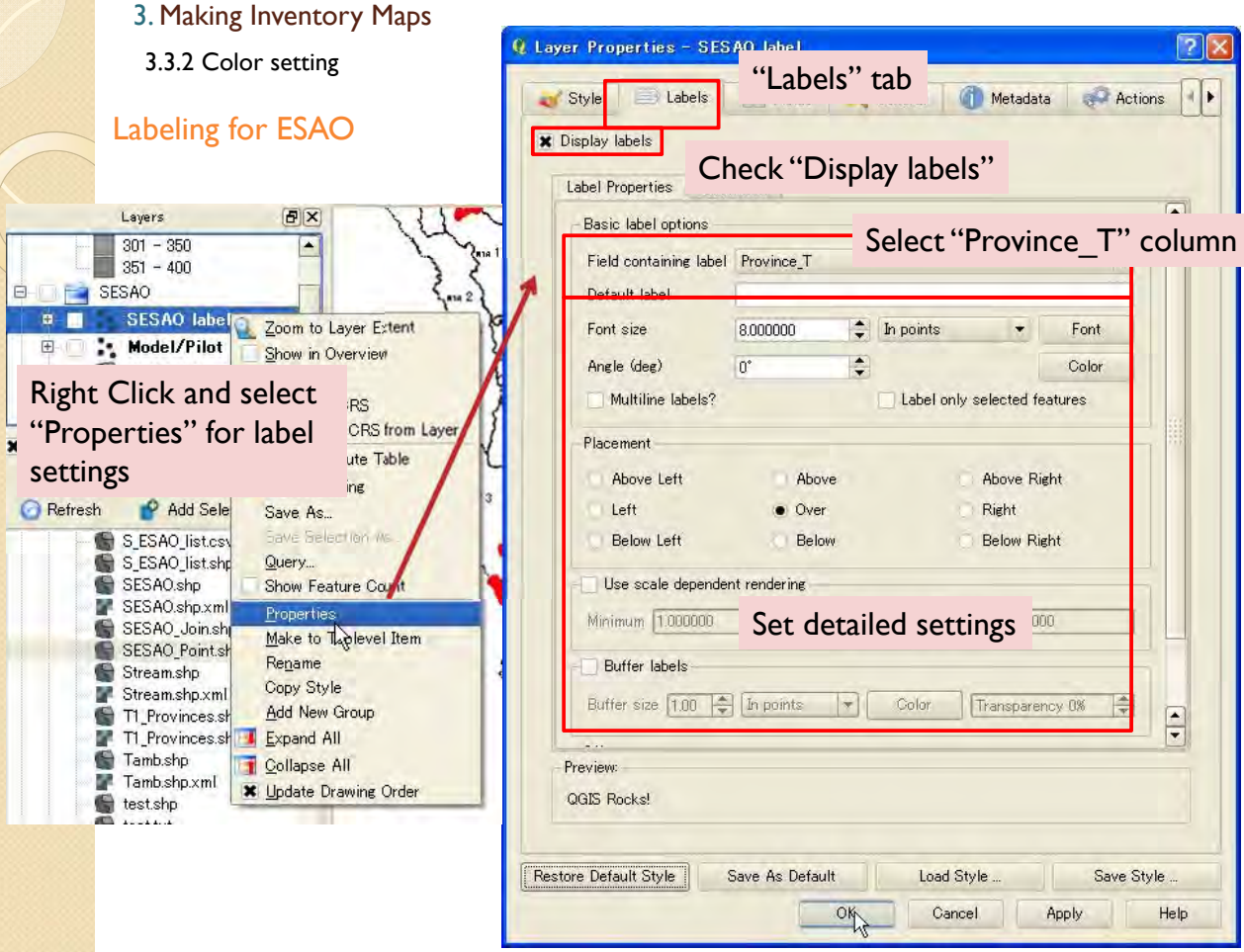


Rename to SESAO Label

3. Making Inventory Maps

3.3.2 Color setting

Labeling for ESAO

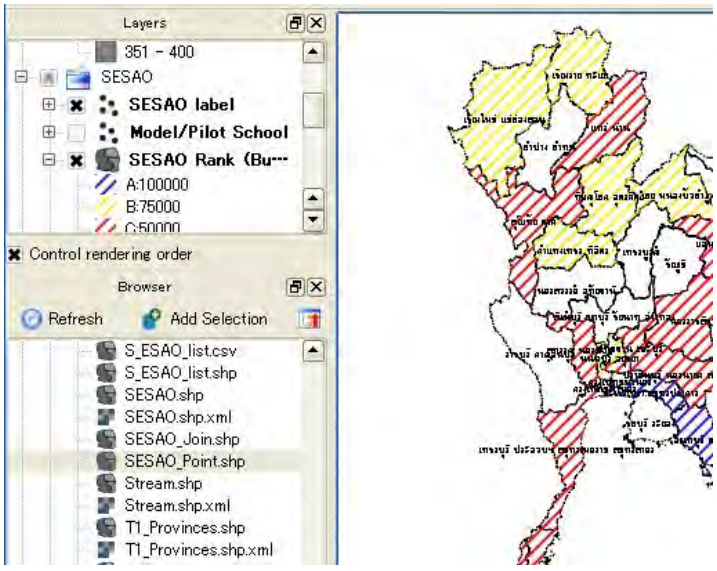


3. Making Inventory Maps

3.3.2 Color setting

Labeling for ESAO

Then, you can see labels for ESAO.

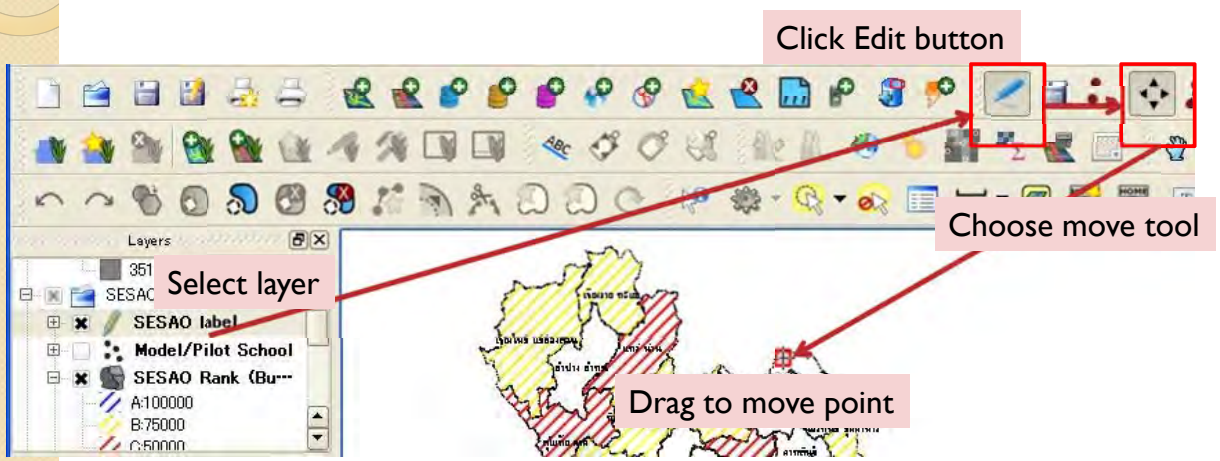


3. Making Inventory Maps

3.2.2 Color setting

Labeling for ESAO

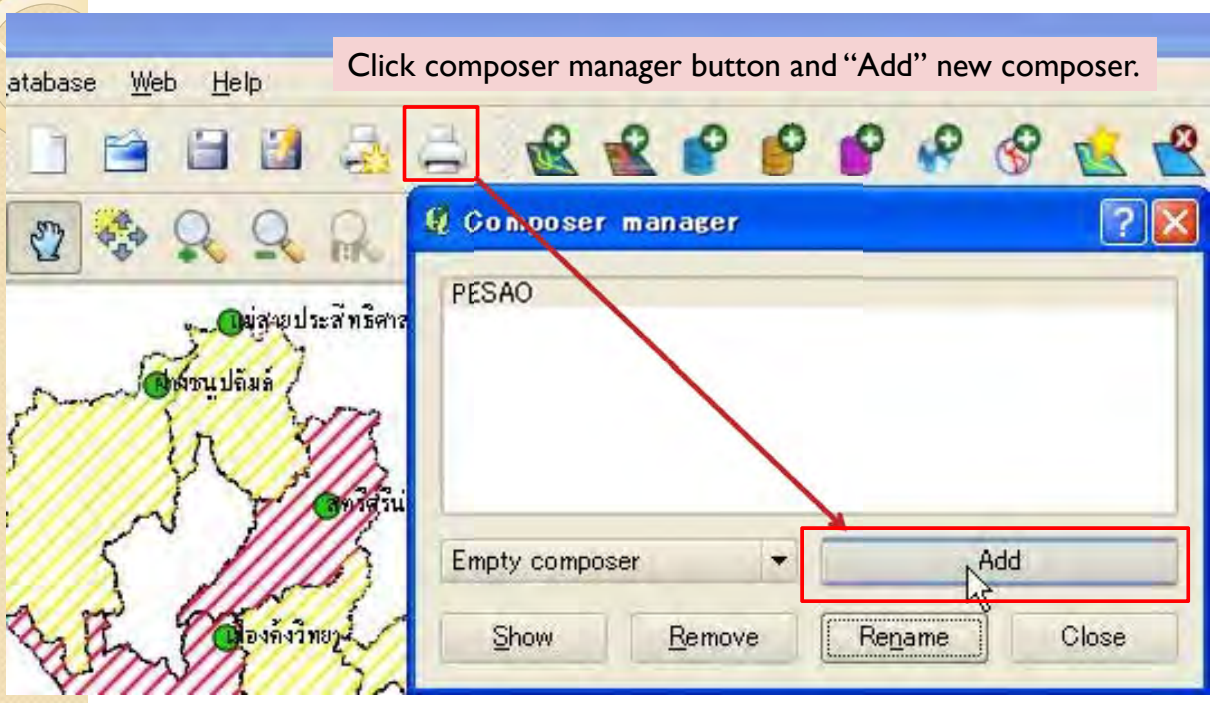
If there are some overlaps of the labels, you can move the points.



After you finish edit, re-click Edit button and save.

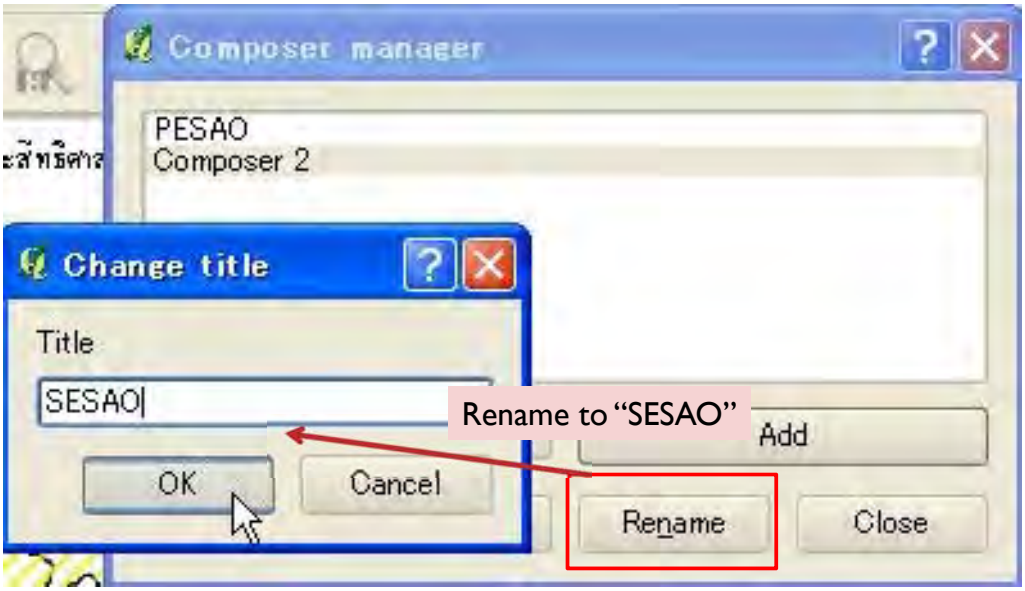
3. Making Inventory Maps

3.3.3 Print composer



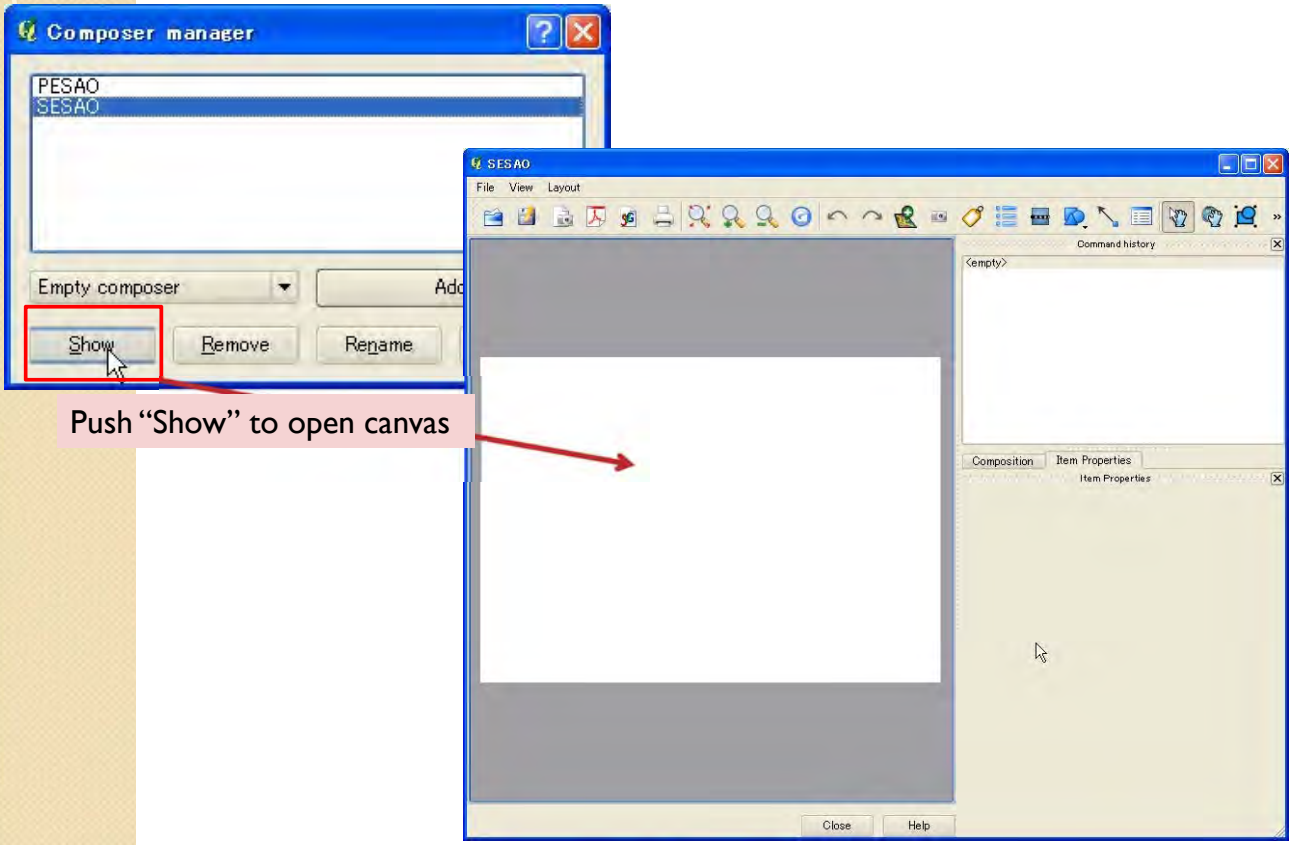
3. Making Inventory Maps

3.3.3 Print composer

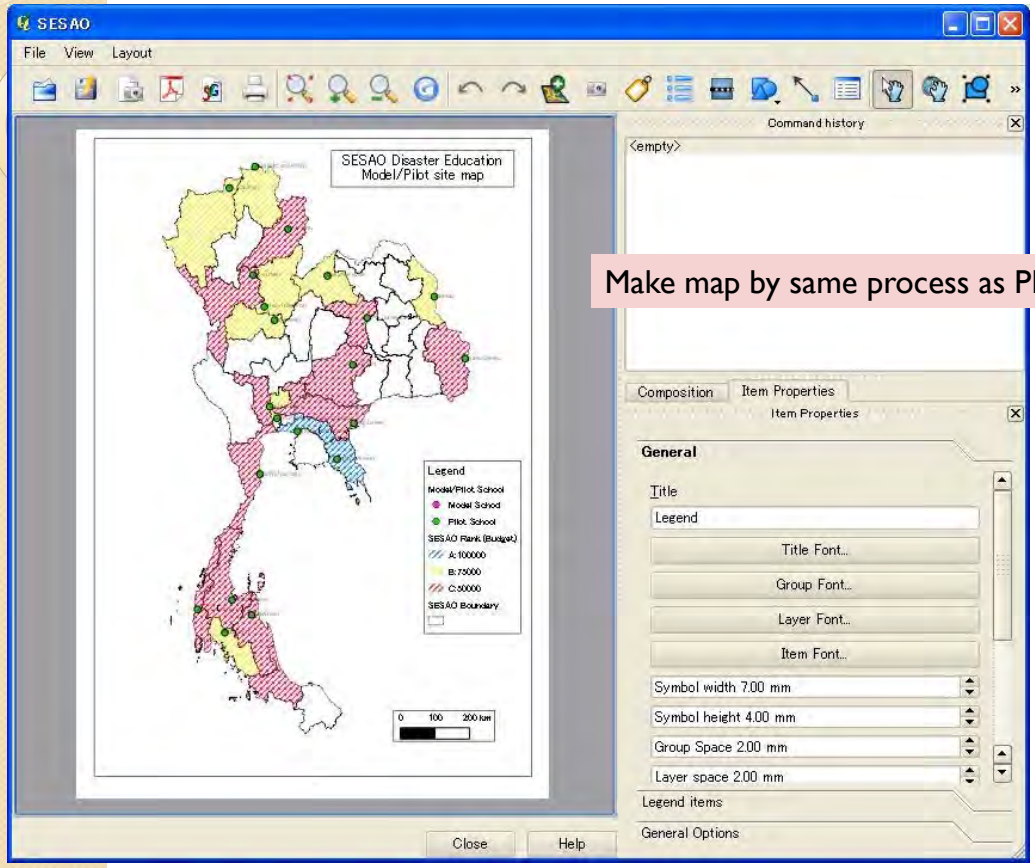


3. Making Inventory Maps

3.3.3 Print composer

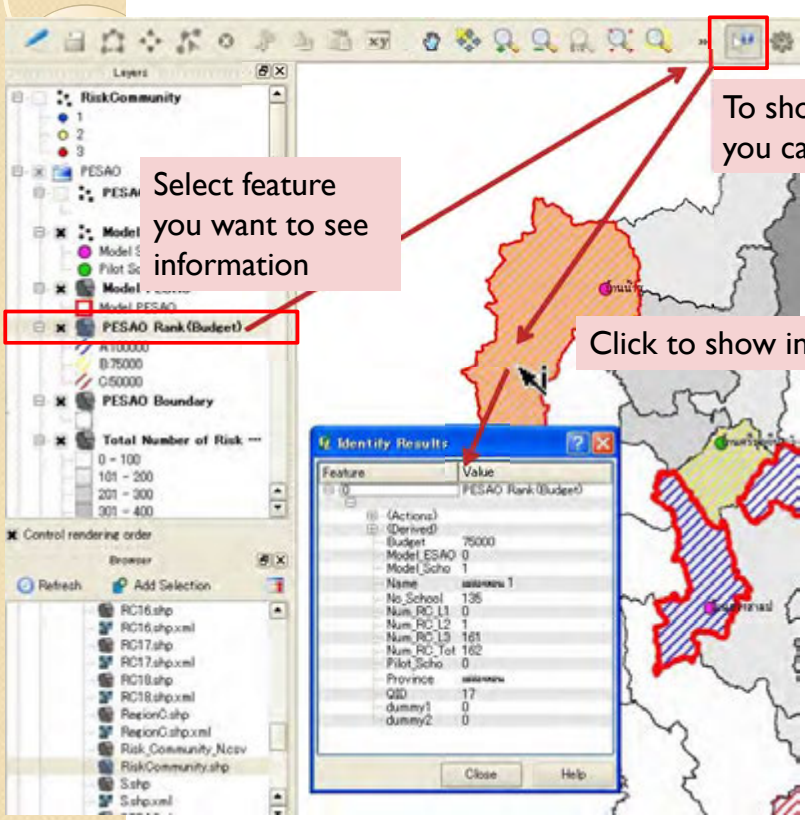


3.3.3 Print composer



Make map by same process as PESAO (3.2.3)

3.4 Indicate detailed information

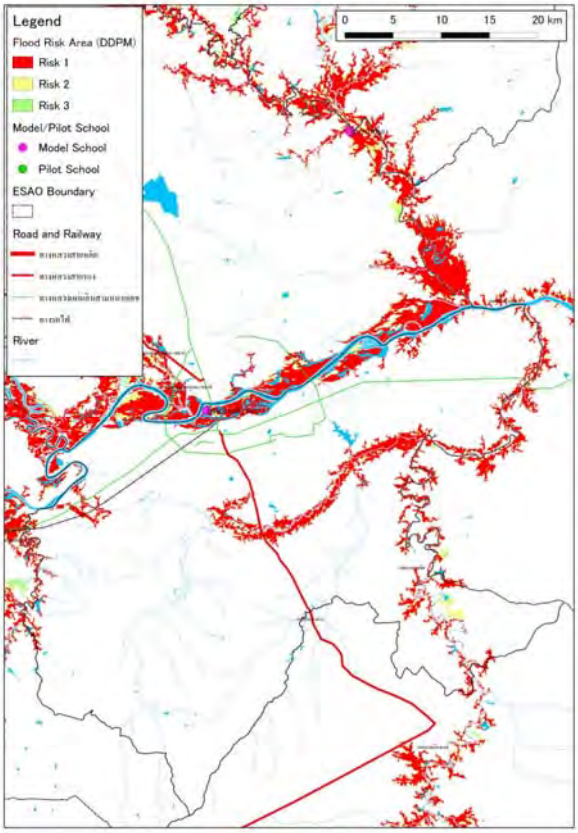


Select feature you want to see information

To show detailed information, you can use "Identify Features".

Click to show information

3.5 Making risk area with ESAO map



Risk area information shown with ESAO and pilot/model school location is helpful to understand relation between risk area and school or residence location.

In addition, this type of map will be able to be used to select pilot/model schools and to make action plans.

3.5.1 Total numbers of Risk community in ESAO

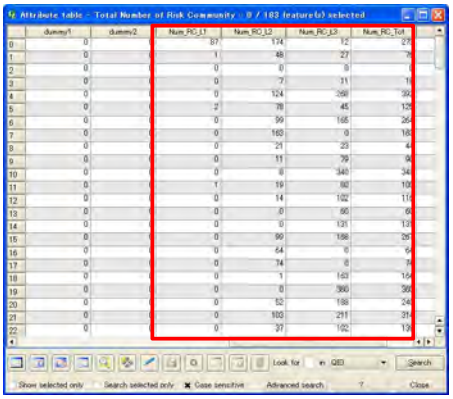
The ESAO file (PESAO_Join.shp or SESAO_Join.shp) contain data of total risk community numbers in each ESAO.

Explanation for the columns of attribution table of PESAO_Join.shp or SESAO_Join.shp.

"No_R1Vill" : numbers of risk level 1 communities
"No_R2Vill" : numbers of risk level 2 communities
"No_R3Vill" : numbers of risk level 3 communities (highest)
"No_TotRVill" : total (level 1-3) numbers of risk communities

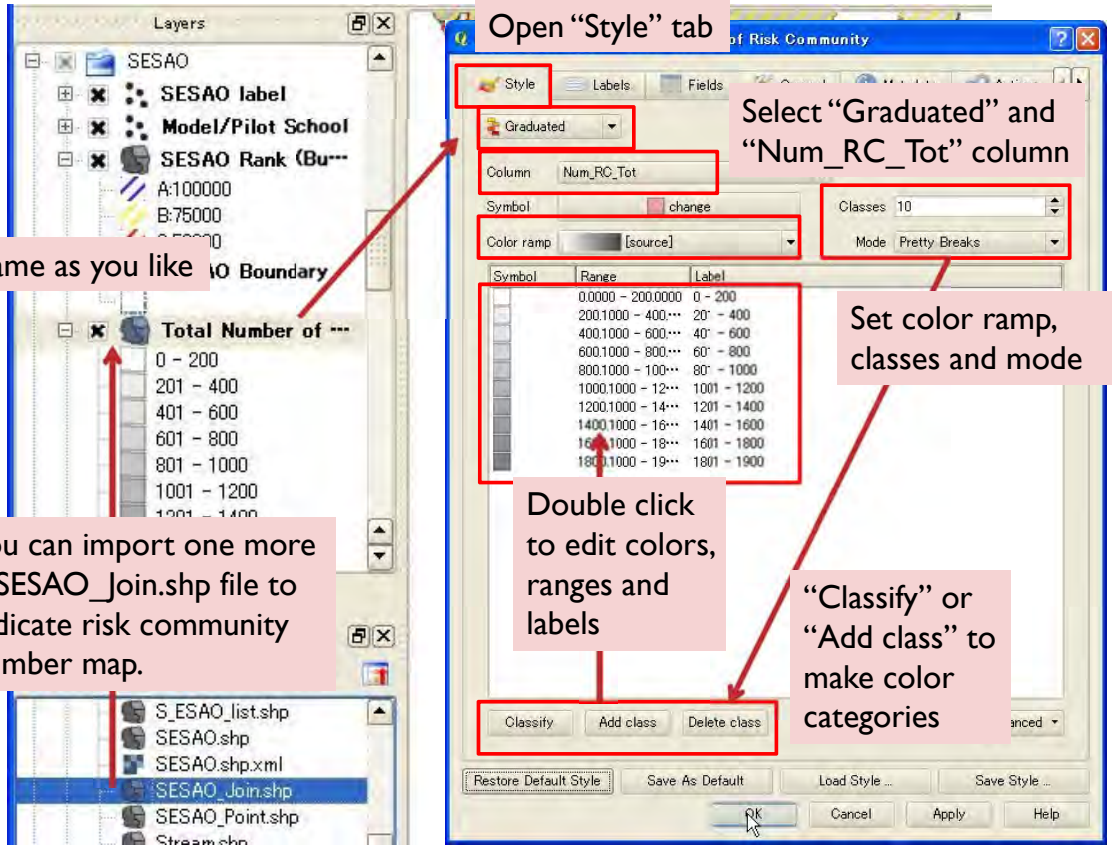
This total numbers of risk communities can be shown with ESAO map you made above.

You can compare the risk community and model/pilot ESAO.



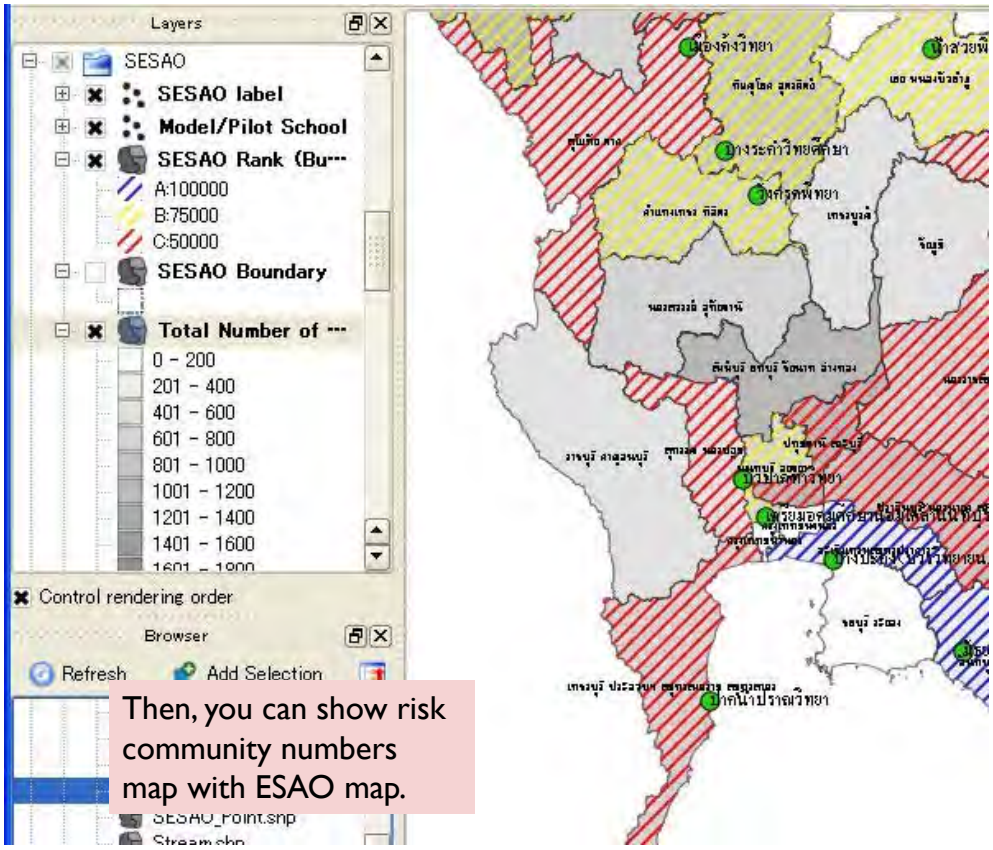
3. Making Inventory Maps

3.5.1 Total numbers of Risk community in ESAO

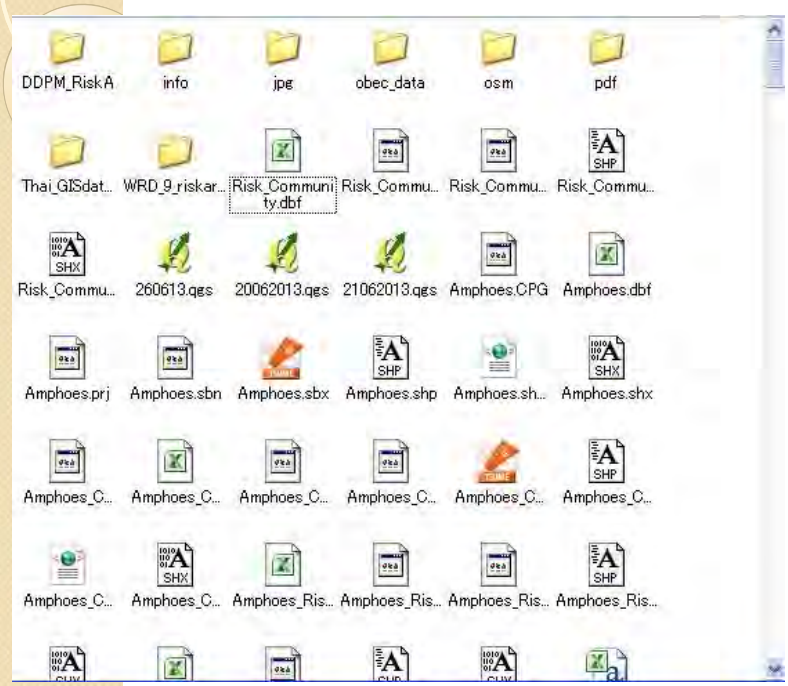


3. Making Inventory Maps

3.5.1 Total numbers of Risk community in ESAO

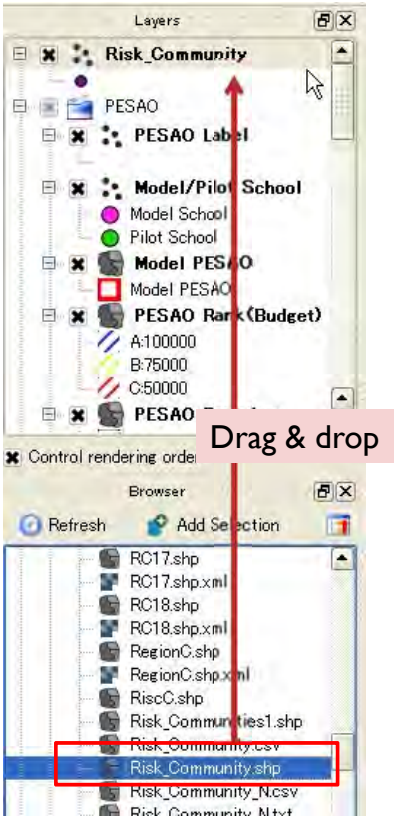


3.5.2 Other Risk area information



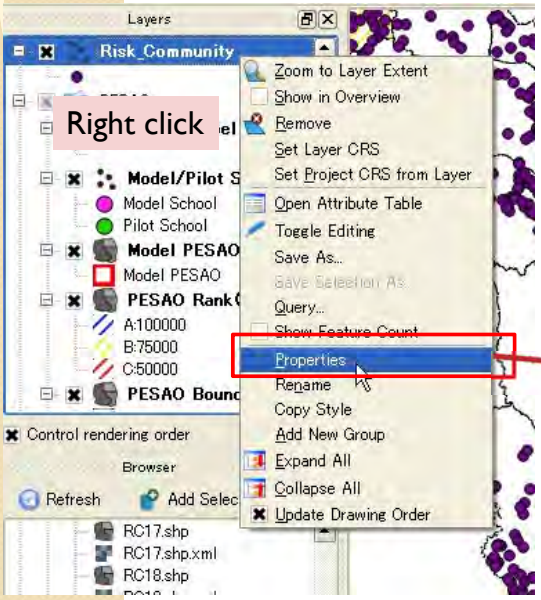
- Risk community "Risk_Community" shapefile (data from DDPM)
- Flood risk area "DDPM_RiskA" folder (data from DDPM)
- Sediment disaster risk area "WRD_9_riskarea" folder (data from WRD)

3.5.3 Risk community map

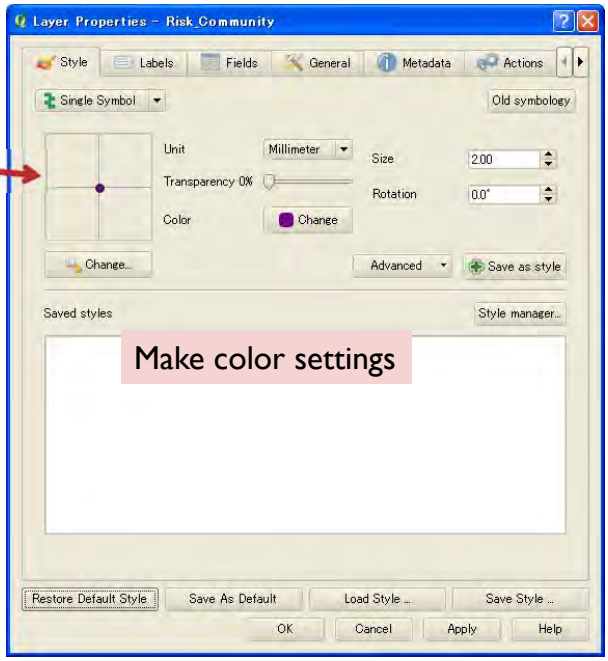


Import "Risk_Community" shape file from browser field.

3.5.3 Risk community map

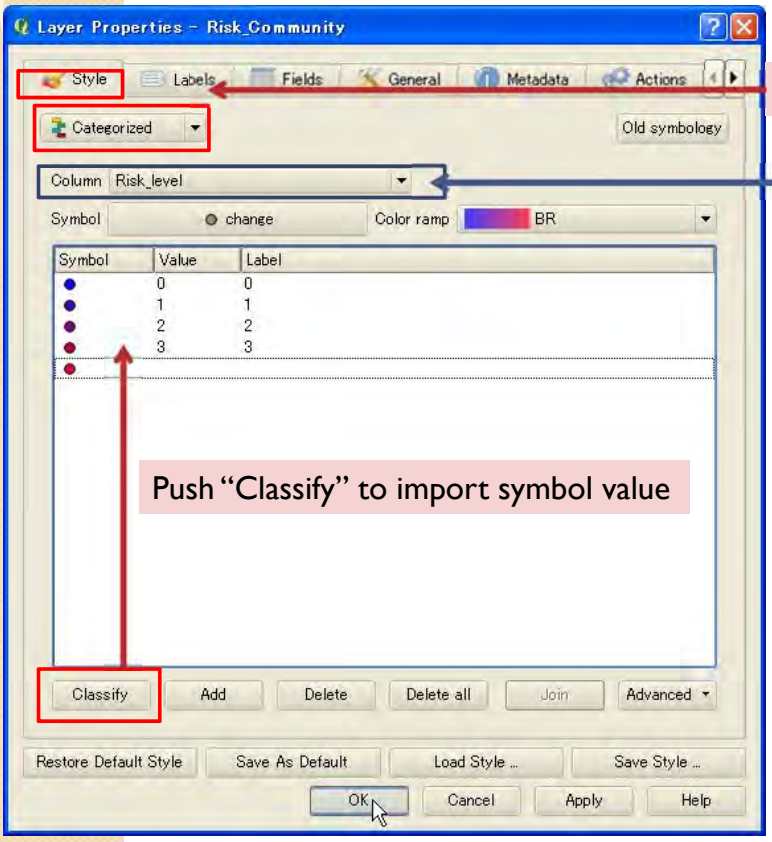


Right click and select "Properties"



3. Making Inventory Maps

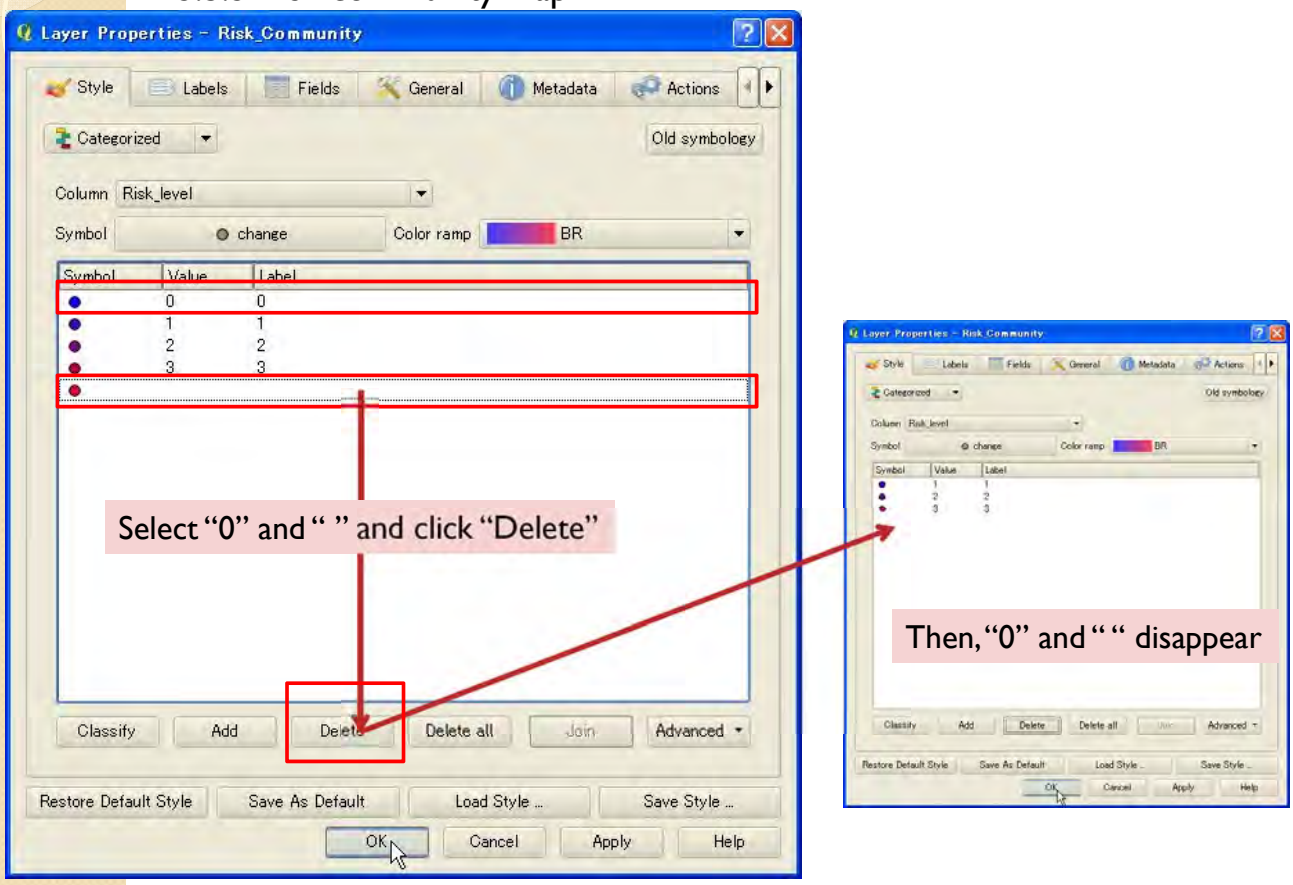
3.5.3 Risk community map



Select "Style" tab and "Categorized"

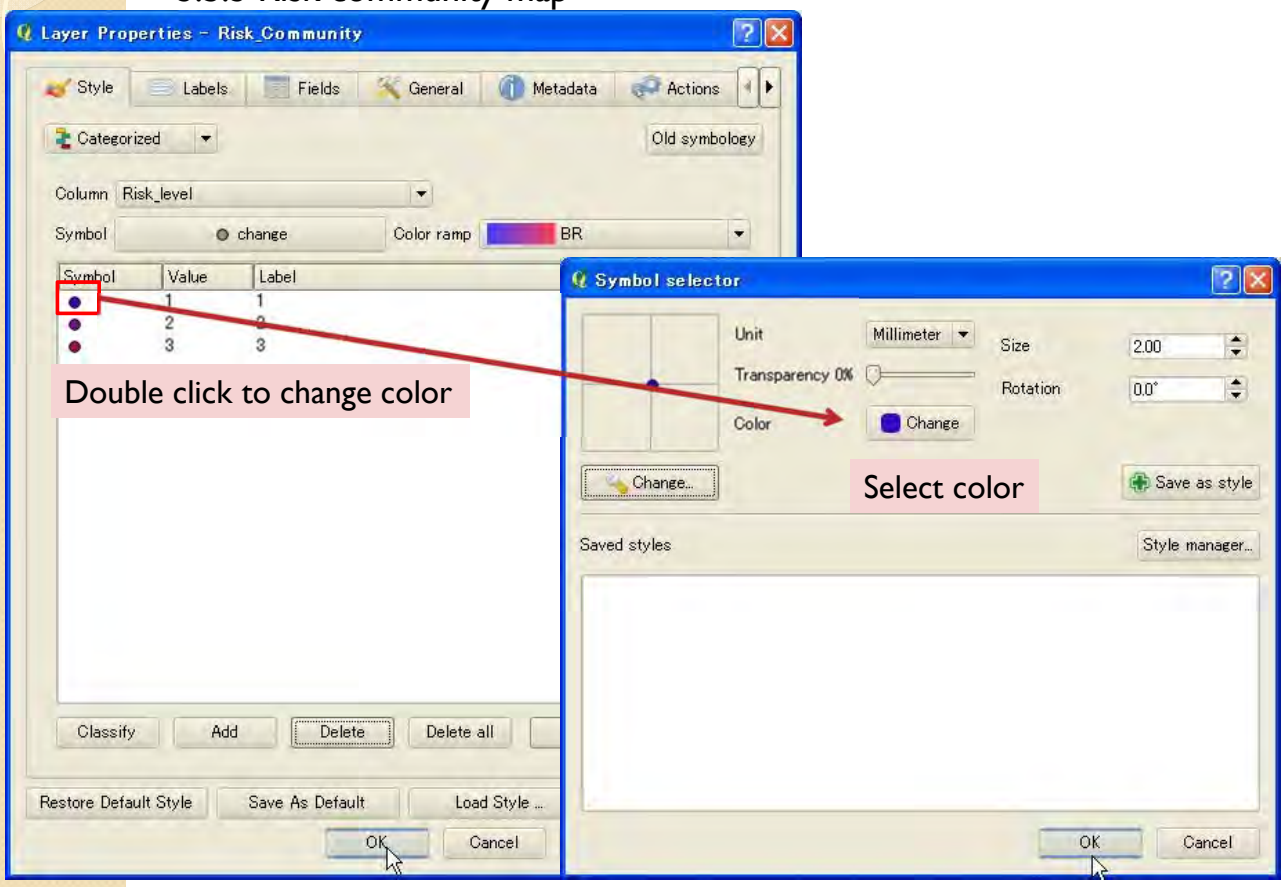
Target column is "Risk_level"

3.5.3 Risk community map

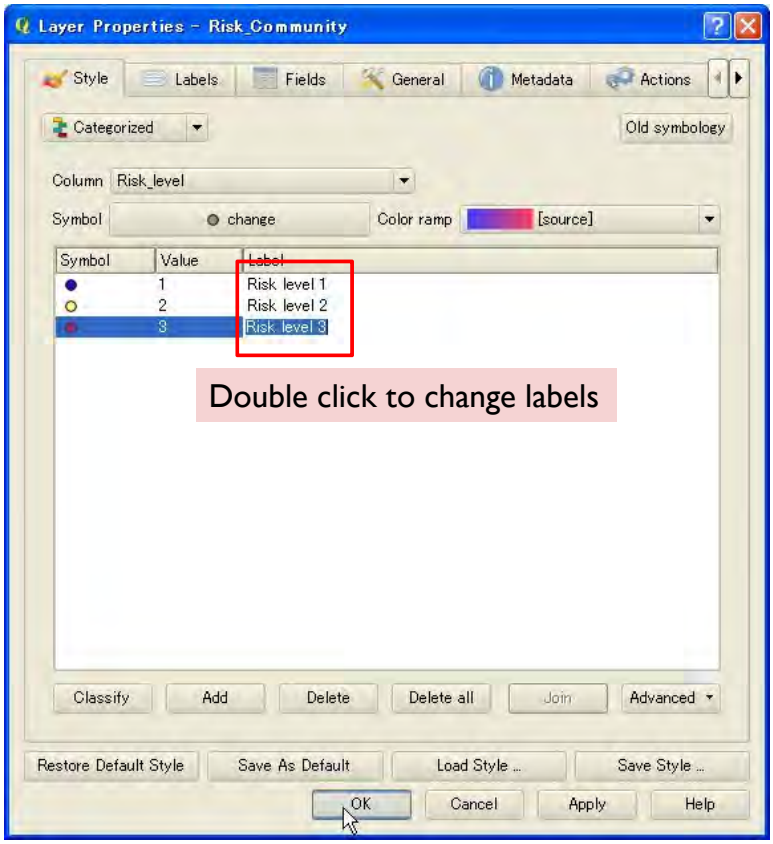


3. Making Inventory Maps

3.5.3 Risk community map



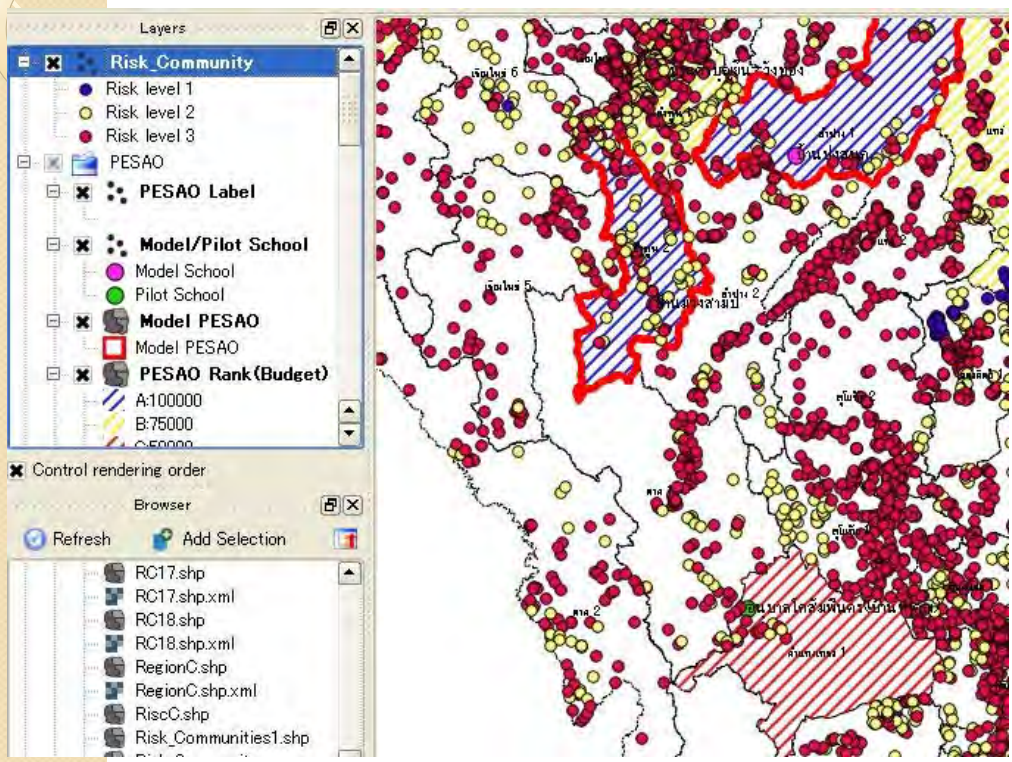
3.5.3 Risk community map



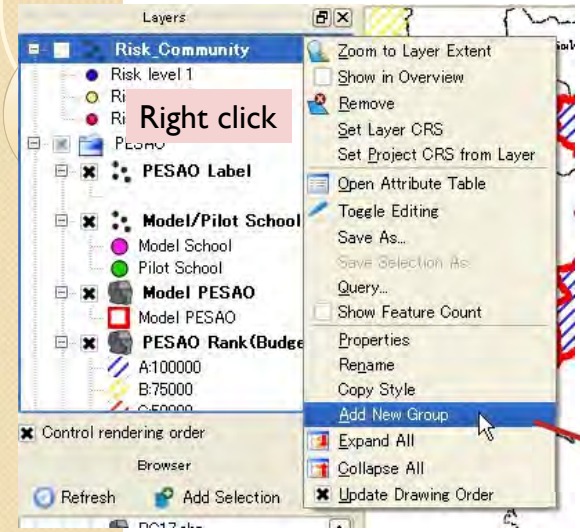
3. Making Inventory Maps

3.5.3 Risk community map

Then, you can see risk community locations.

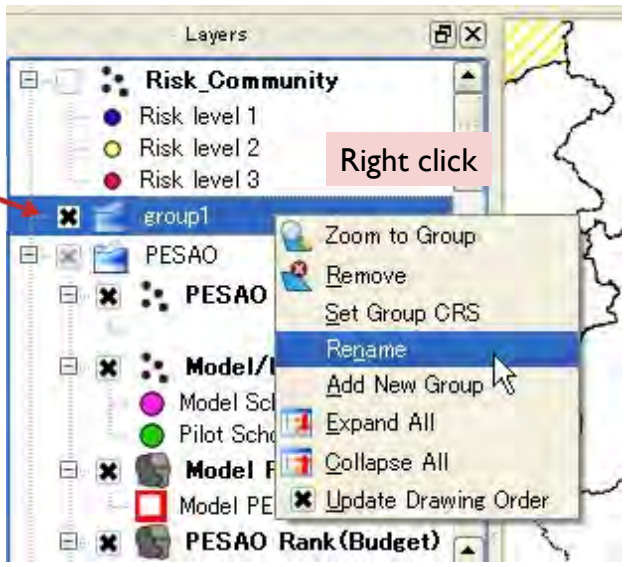


3.5.4 Flood risk area map



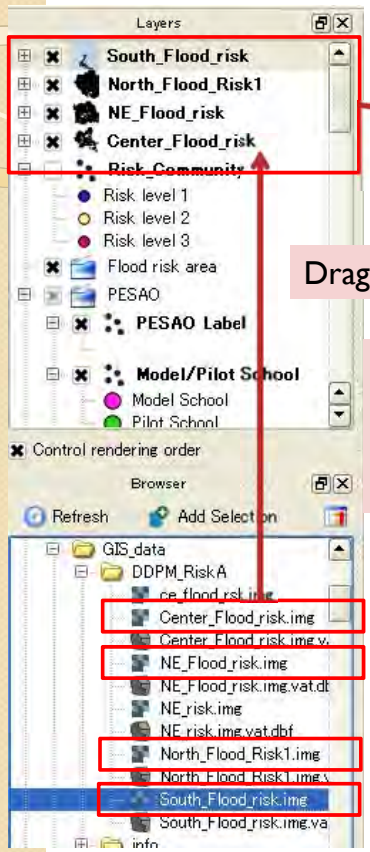
Right click and select "Add New Group".

And, right click and select "Rename" to Flood risk area.



3. Making Inventory Maps

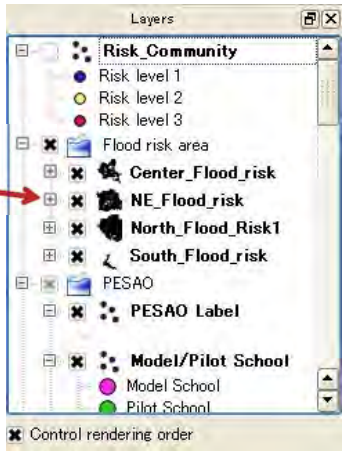
3.5.4 Flood risk area map



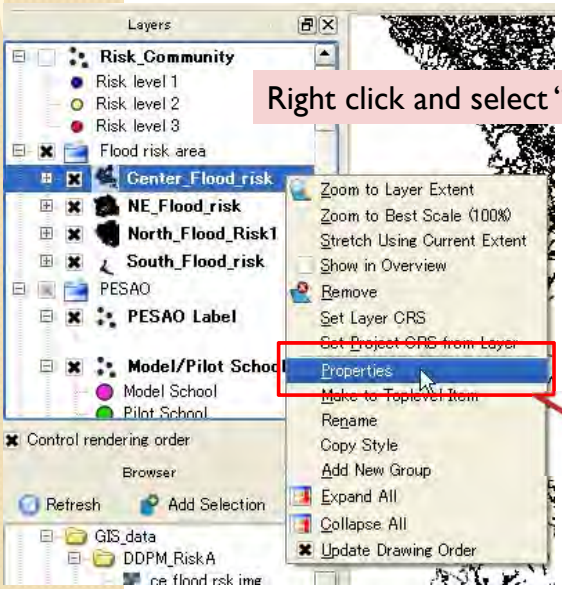
Move under the "Flood risk area" folder

Drag & drop

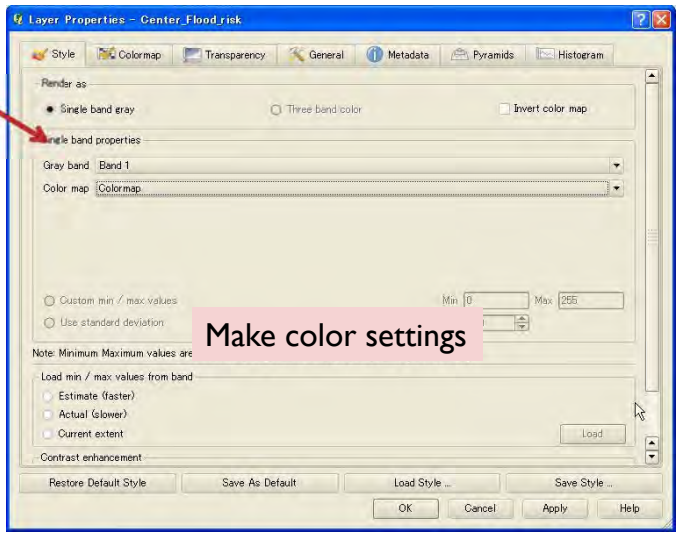
South_Flood_Risk
North_Flood_Risk
NE_Flood_Risk
Center_Flood_Risk



3.5.4 Flood risk area map



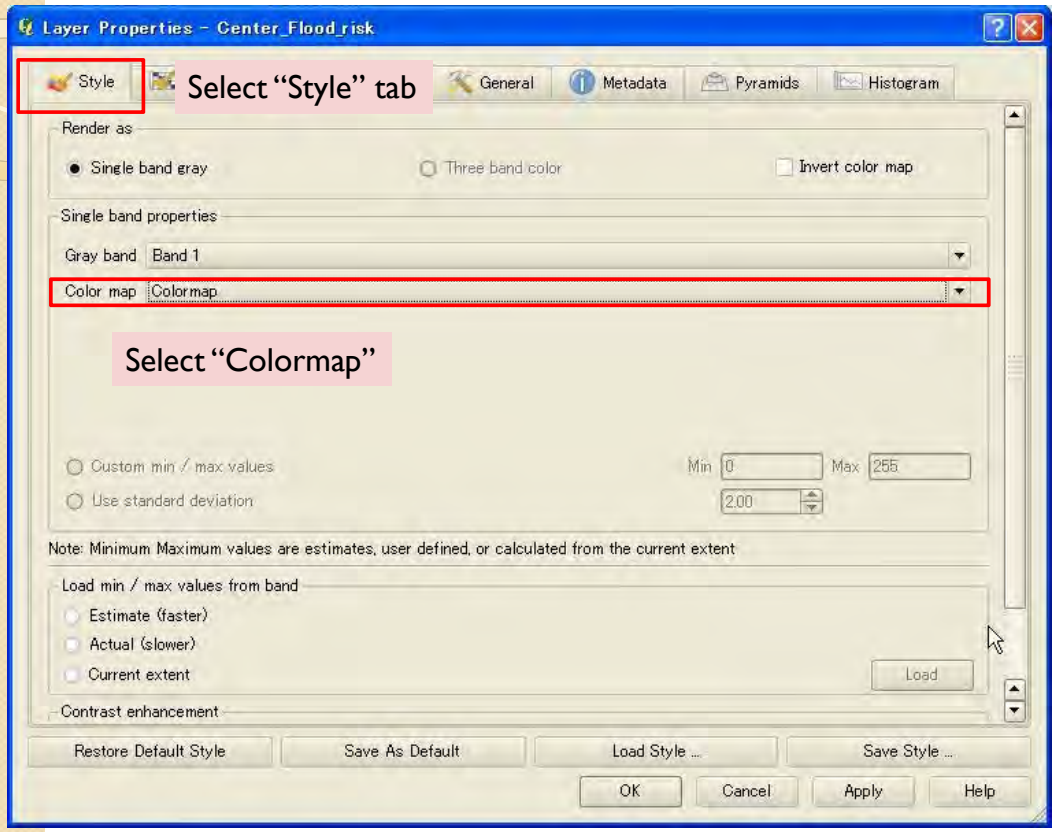
Right click and select "Properties"



Make color settings

3. Making Inventory Maps

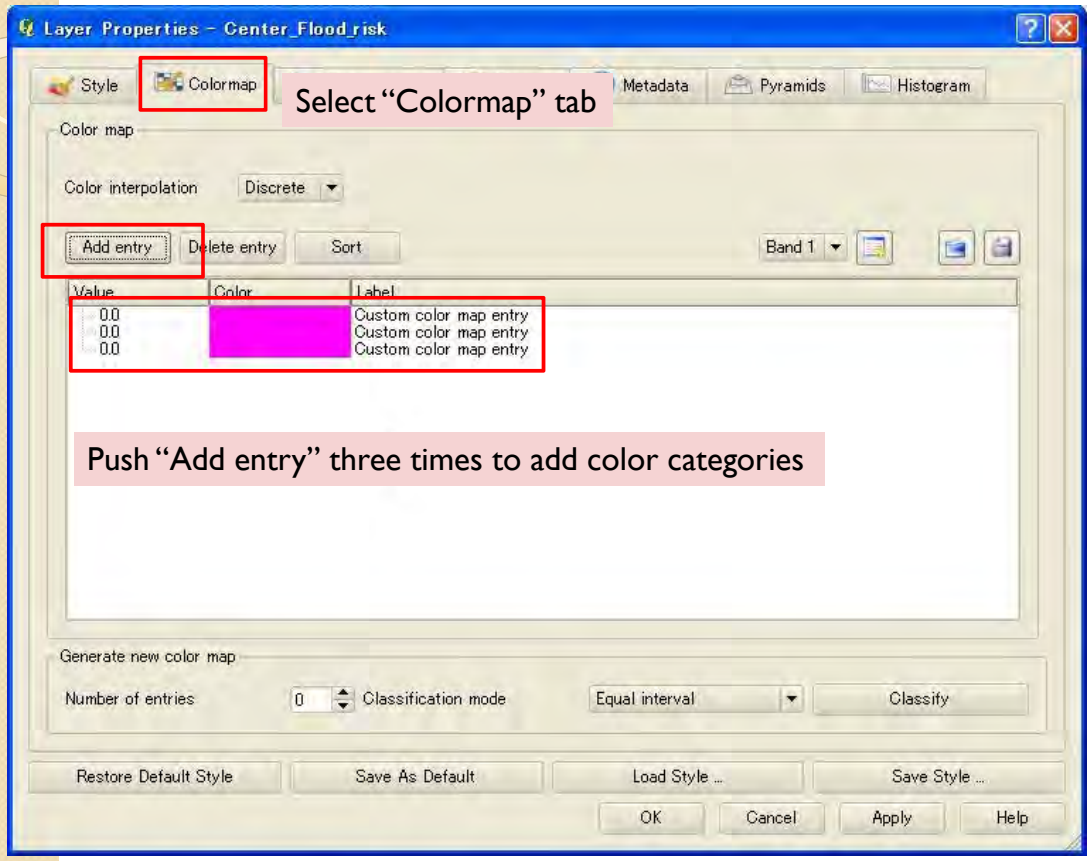
3.5.4 Flood risk area map



Select "Style" tab

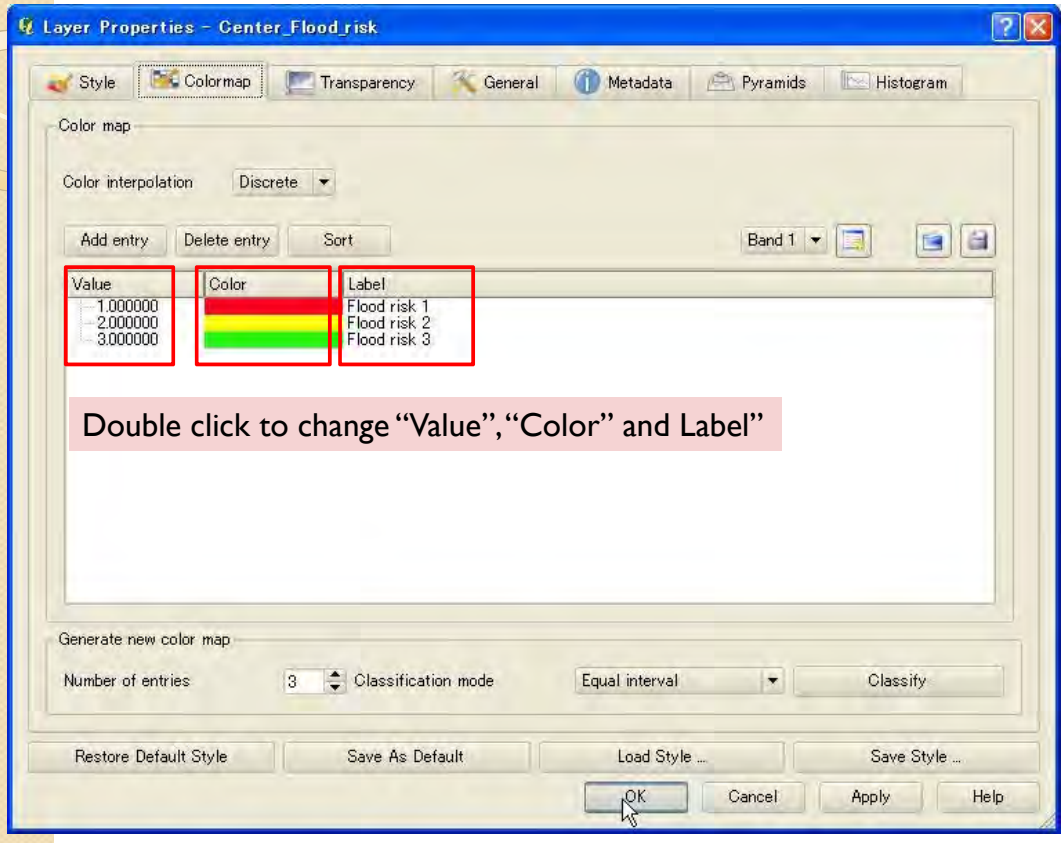
Select "Colormap"

3.5.4 Flood risk area map

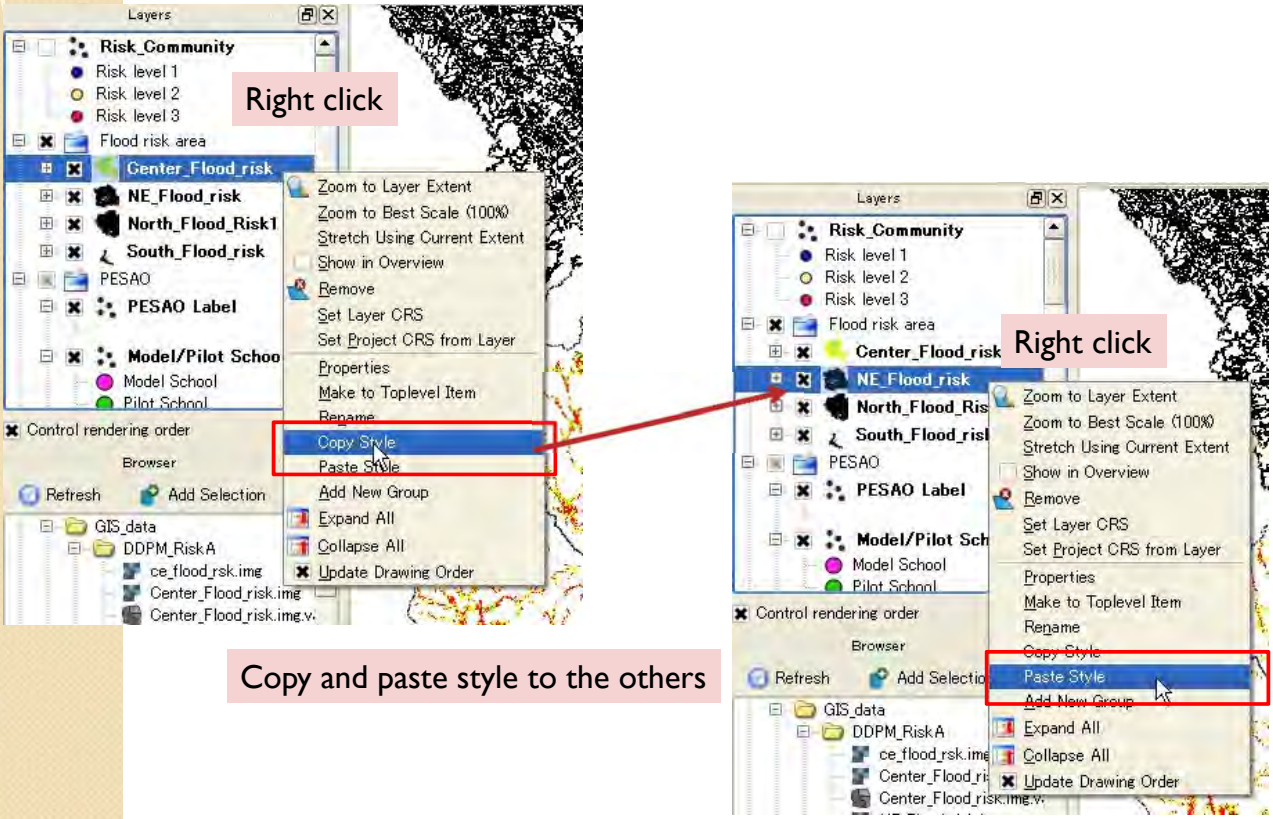


3. Making Inventory Maps

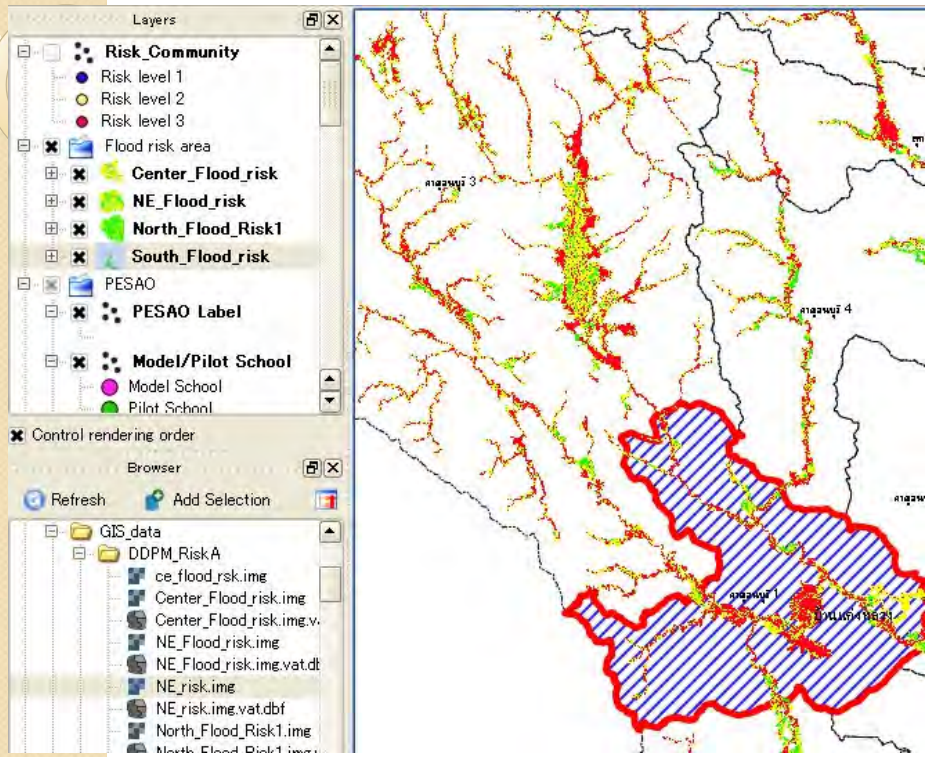
3.5.4 Flood risk area map



3.5.4 Flood risk area map

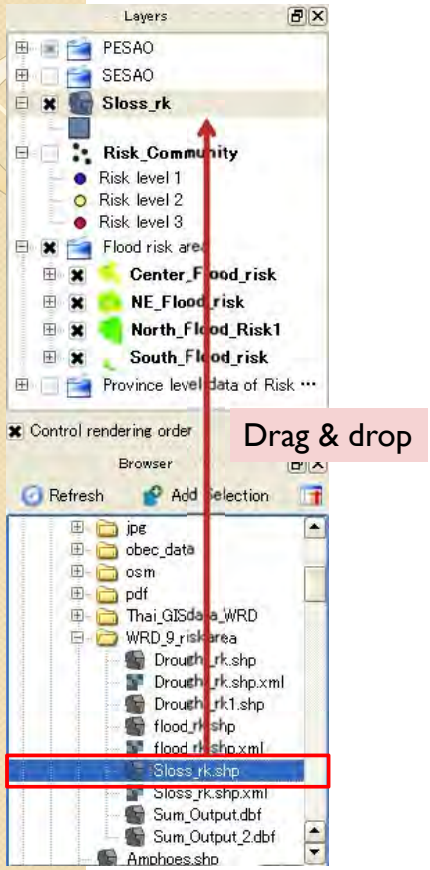


3.5.4 Flood risk area map



Then, you can see flood risk area

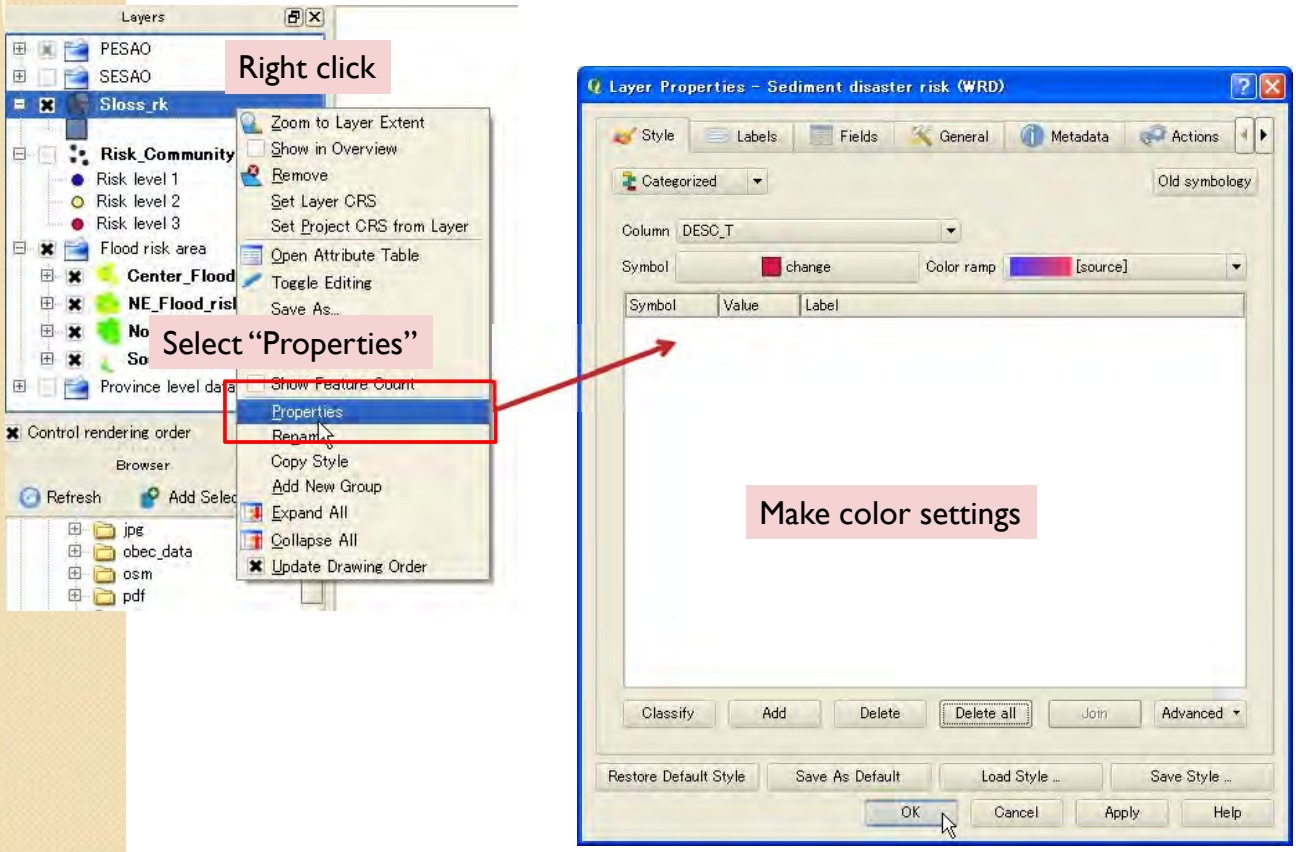
3.5.5 Sediment disaster risk area map



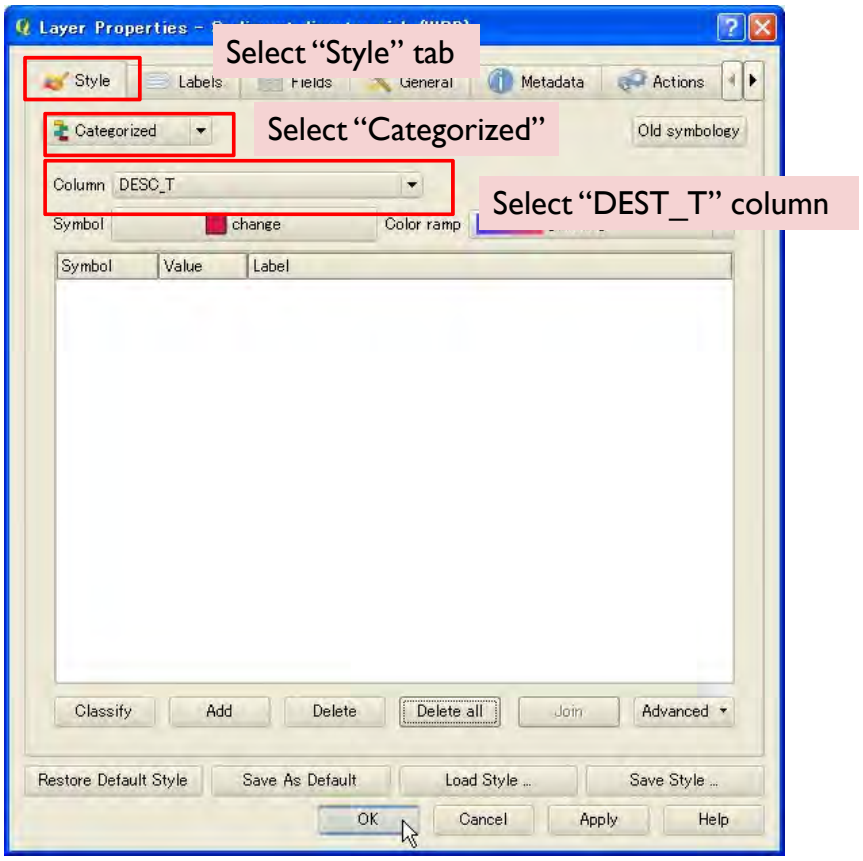
At first, import "Sloss_rk.shp"

3. Making Inventory Maps

3.5.5 Sediment disaster risk area map

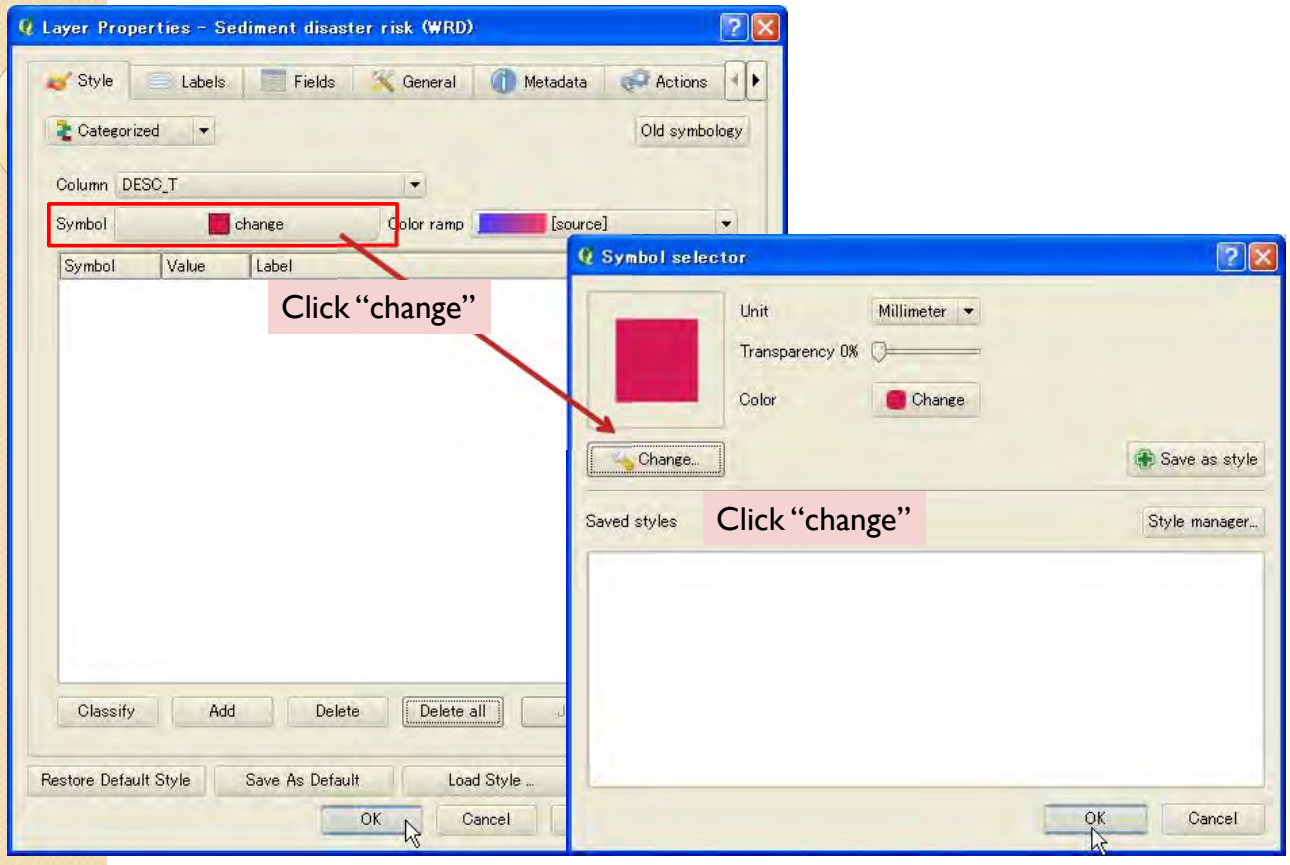


3.5.5 Sediment disaster risk area map

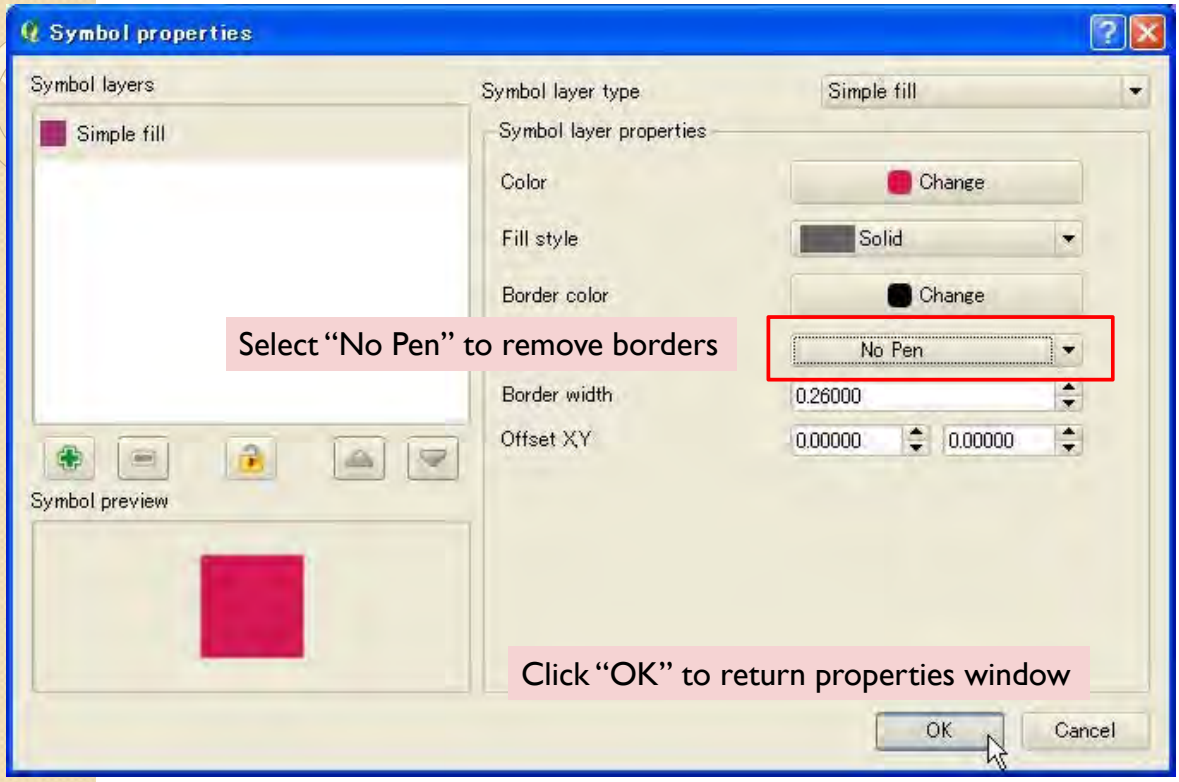


3. Making Inventory Maps

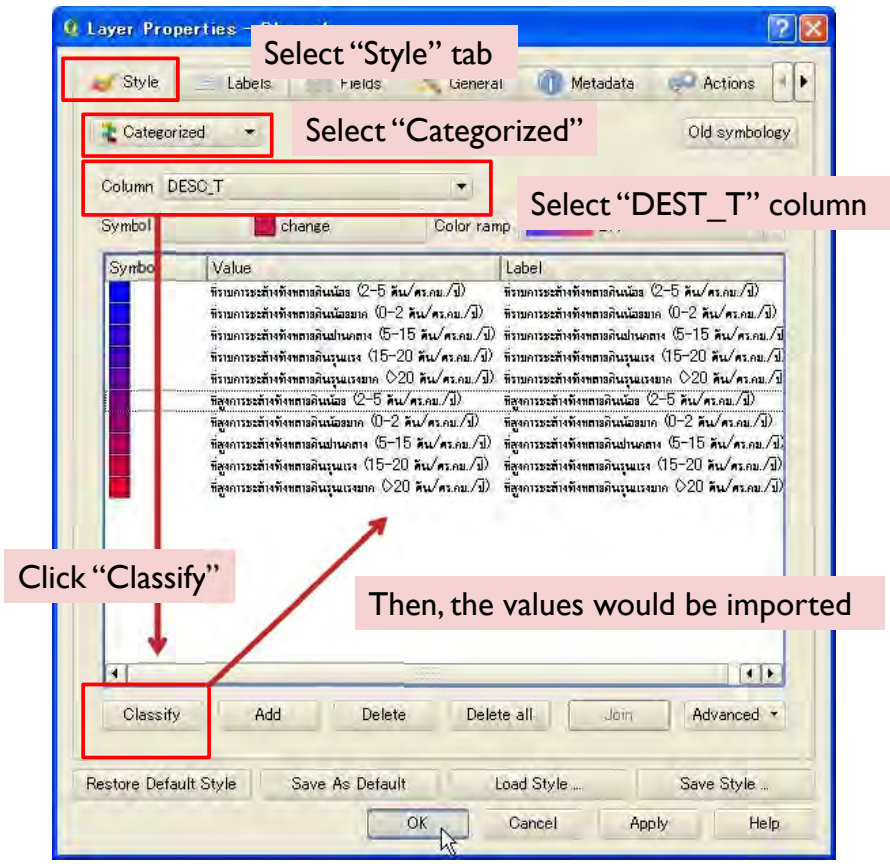
3.5.5 Sediment disaster risk area map



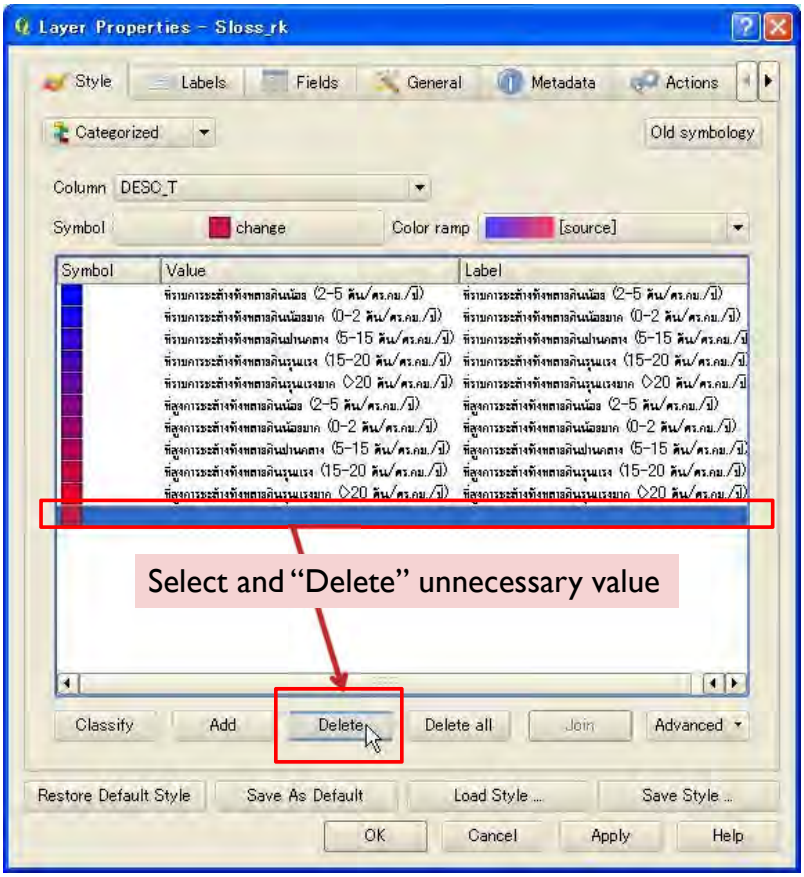
3.5.5 Sediment disaster risk area map



3.5.5 Sediment disaster risk area map

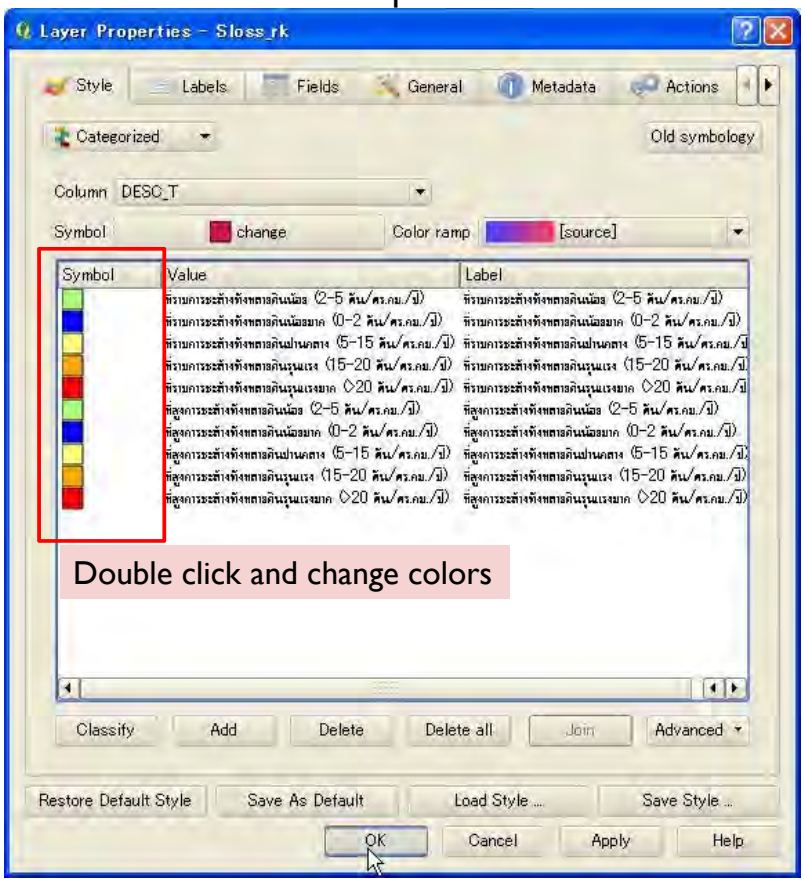


3.5.5 Sediment disaster risk area map

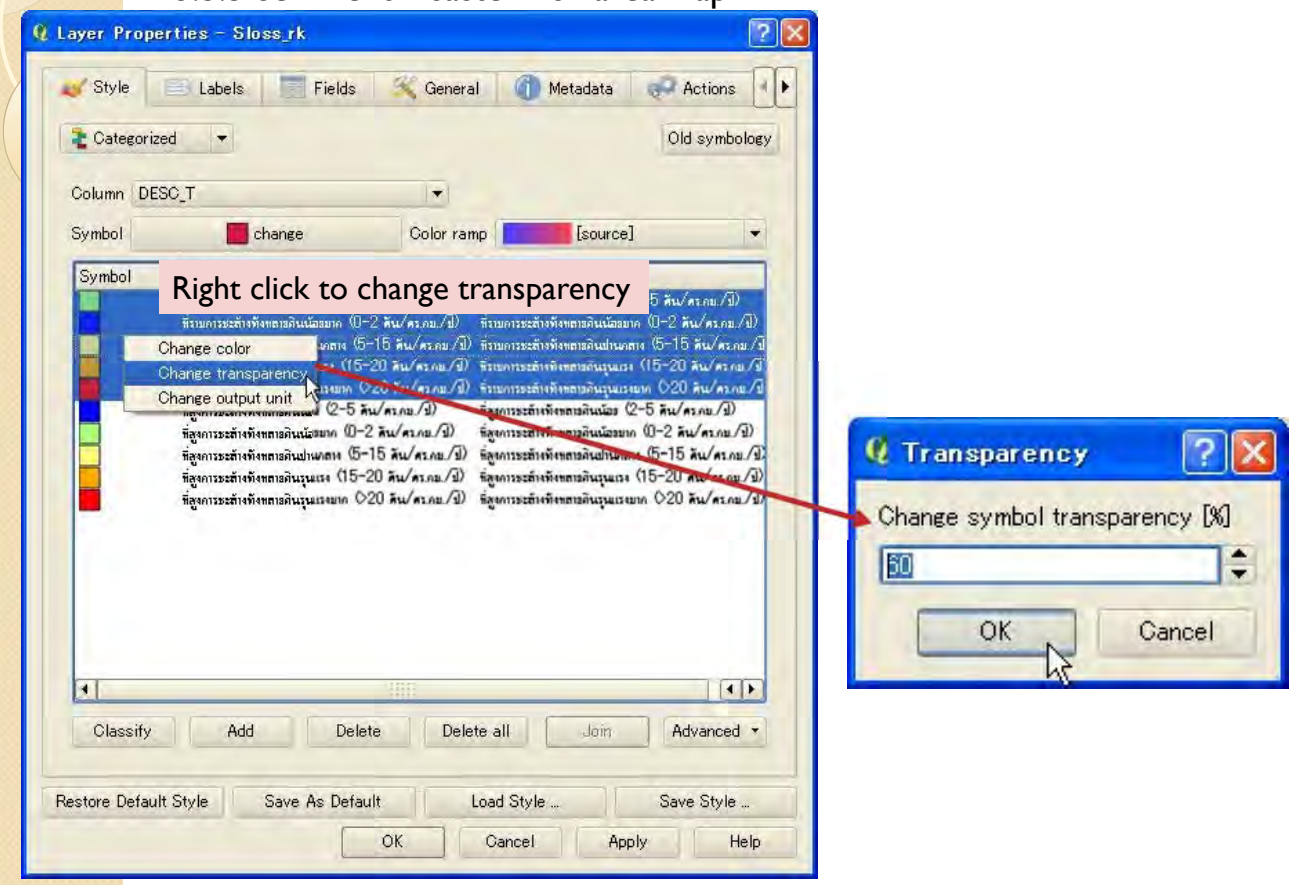


3. Making Inventory Maps

3.5.5 Sediment disaster risk area map

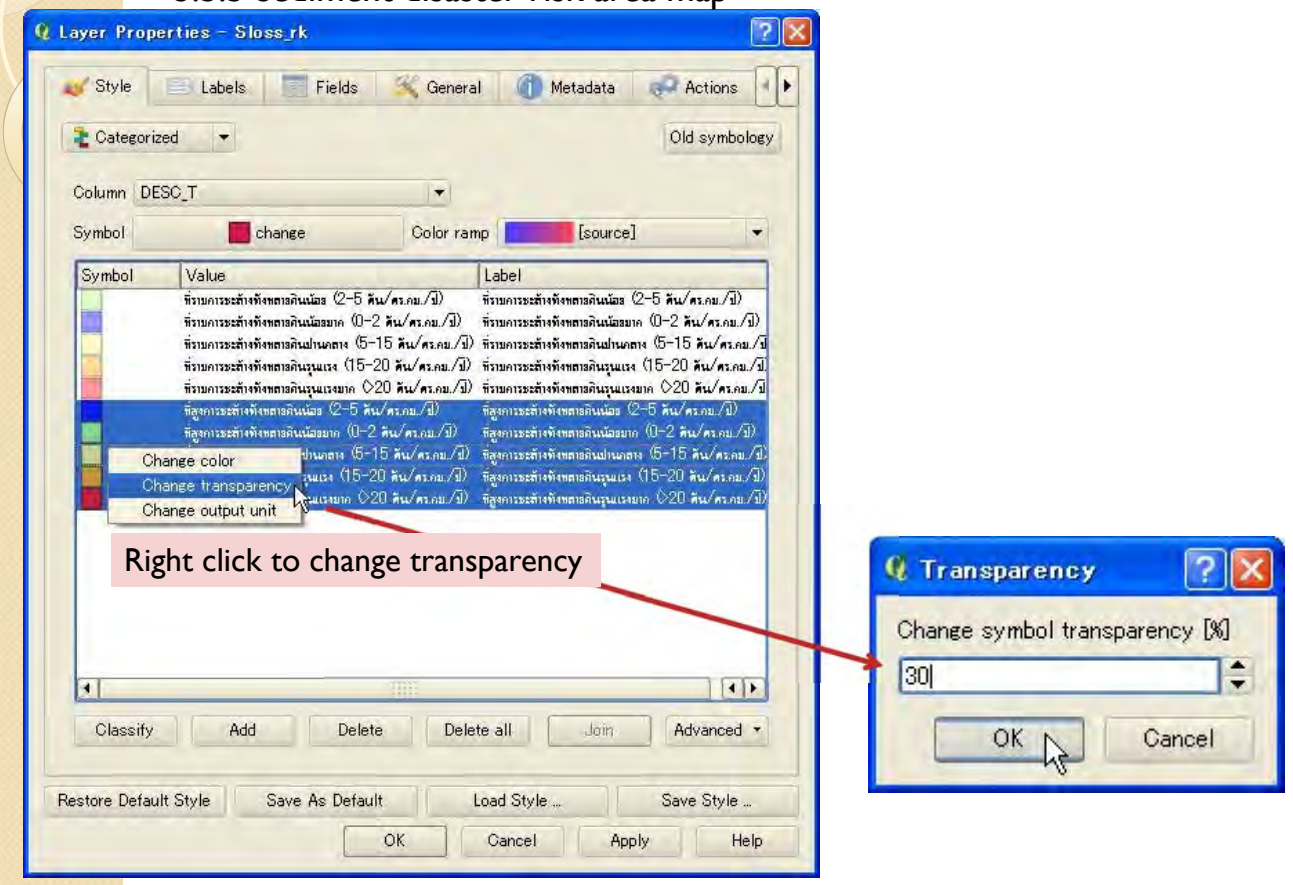


3.5.5 Sediment disaster risk area map

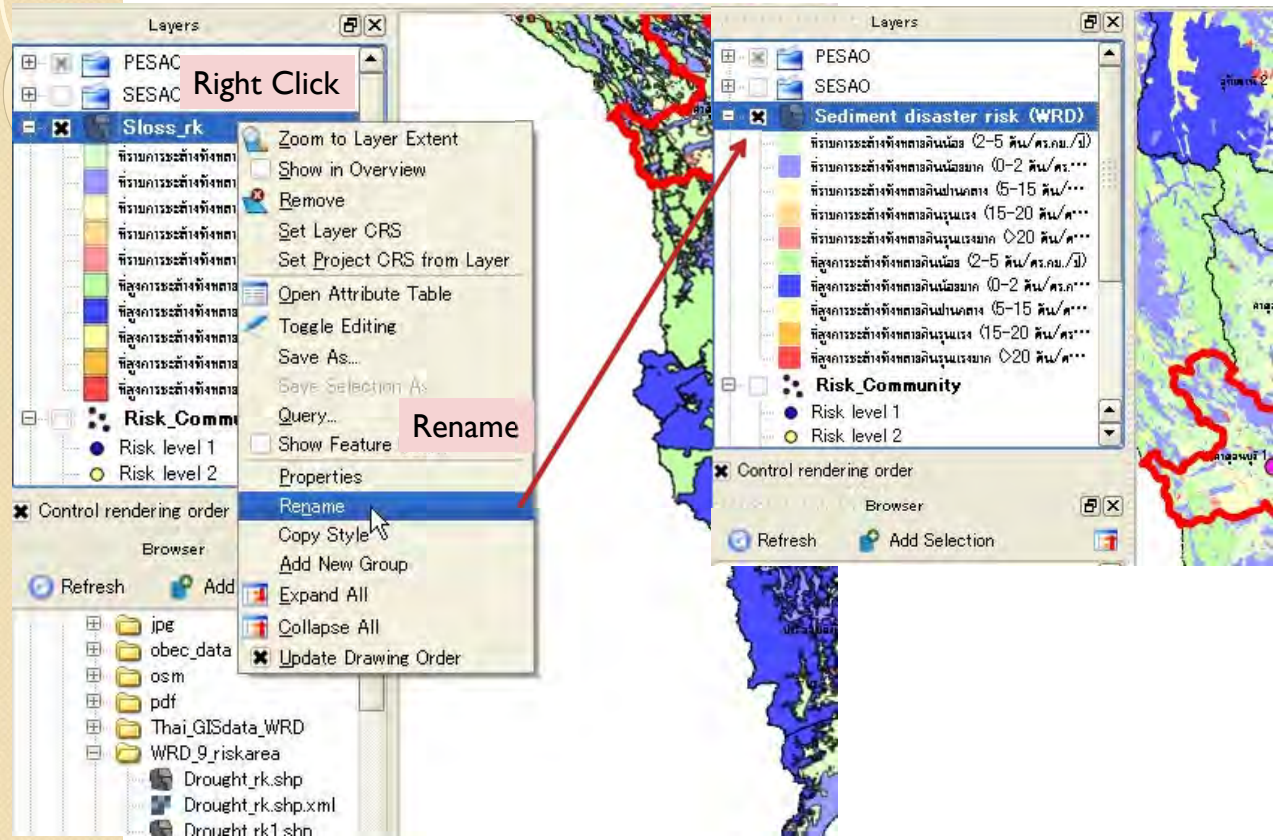


3. Making Inventory Maps

3.5.5 Sediment disaster risk area map

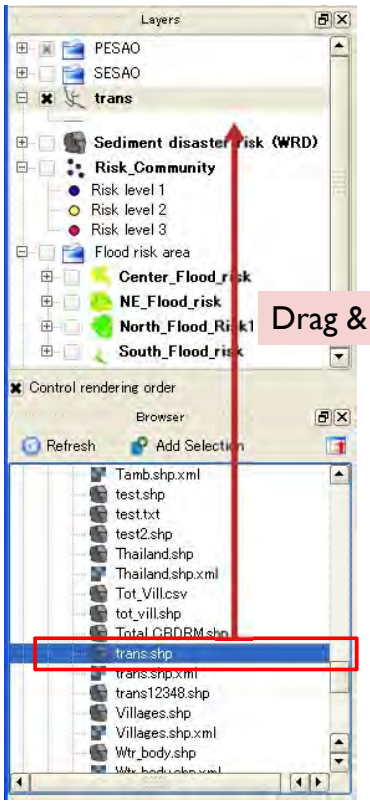


3.5.5 Sediment disaster risk area map



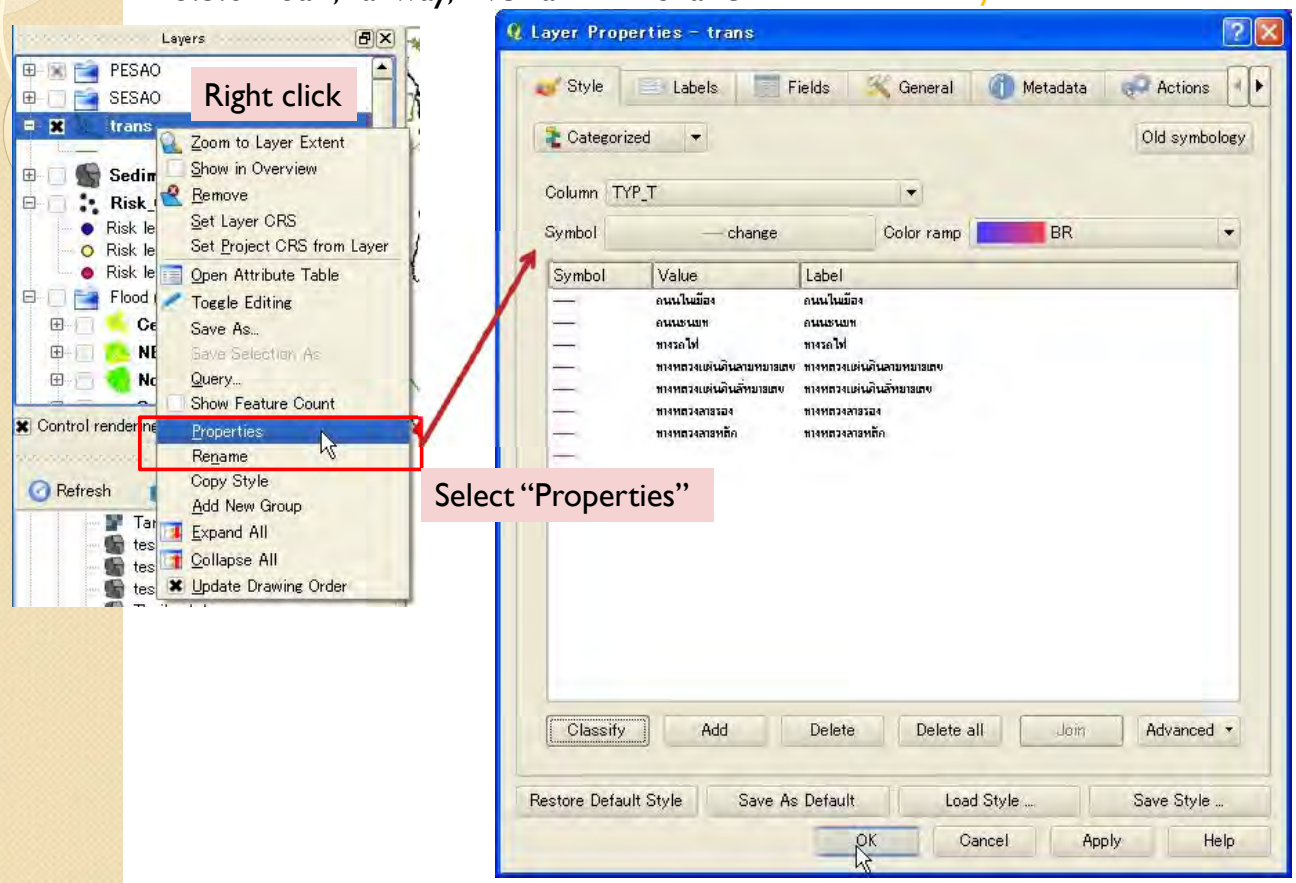
3.5.6 Road, railway, river and hill shade

Road and railway

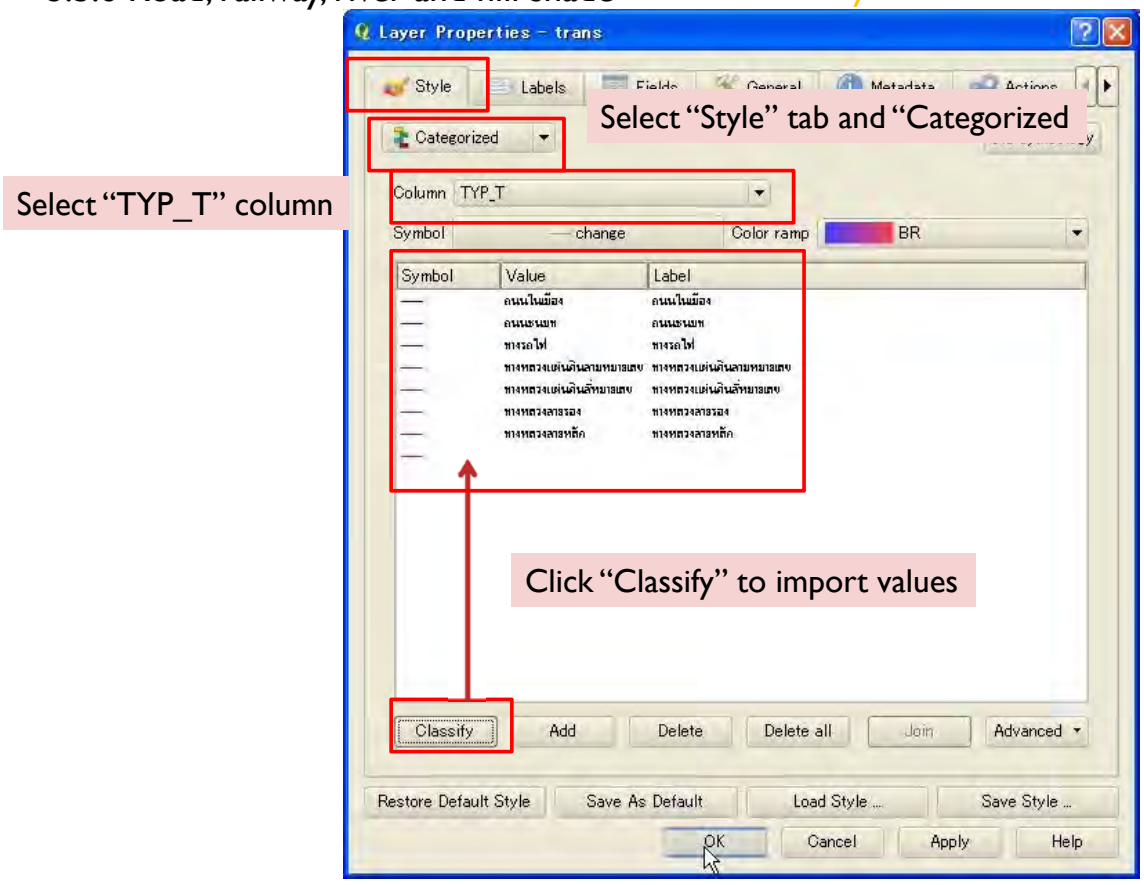


Import "trans.shp"

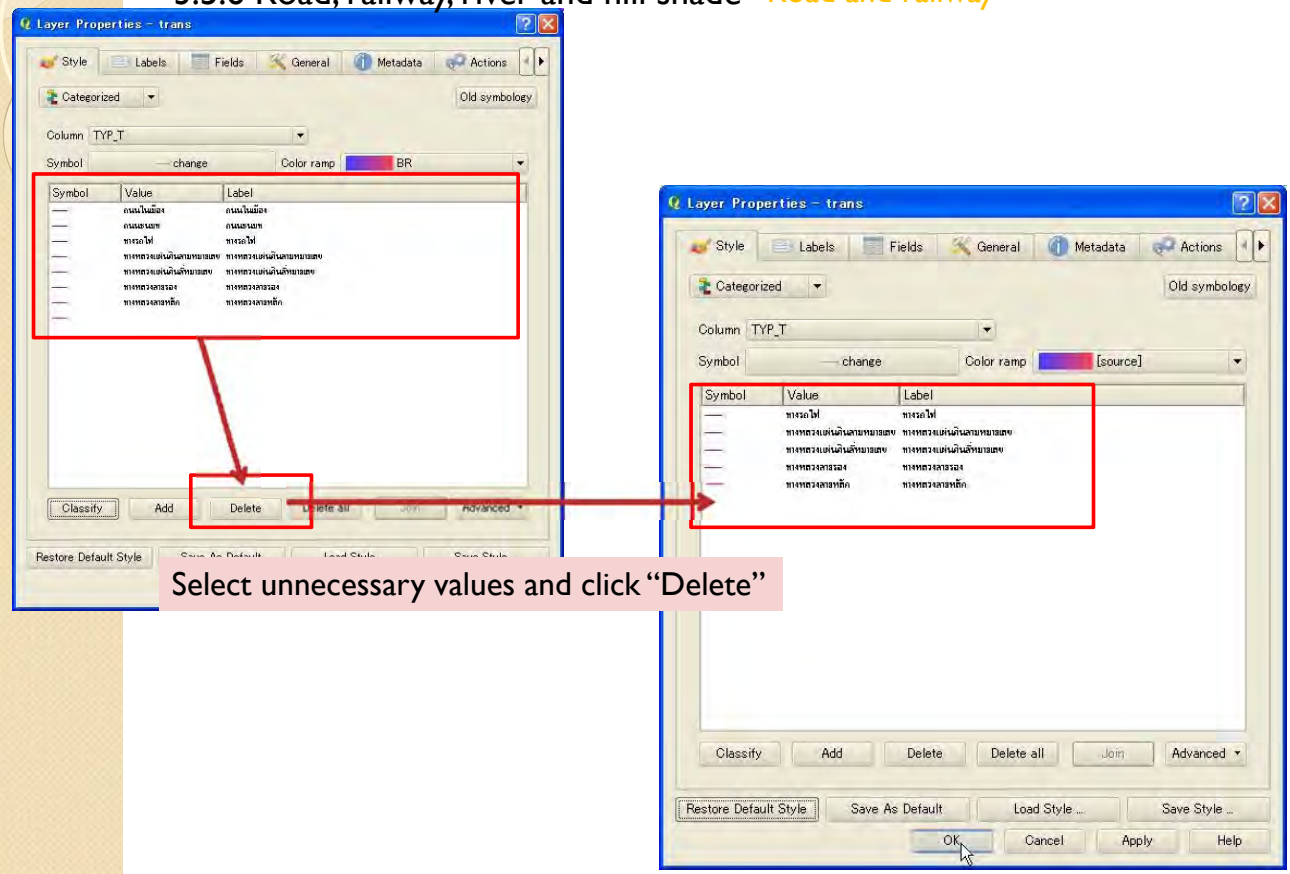
3.5.6 Road, railway, river and hill shade Road and railway



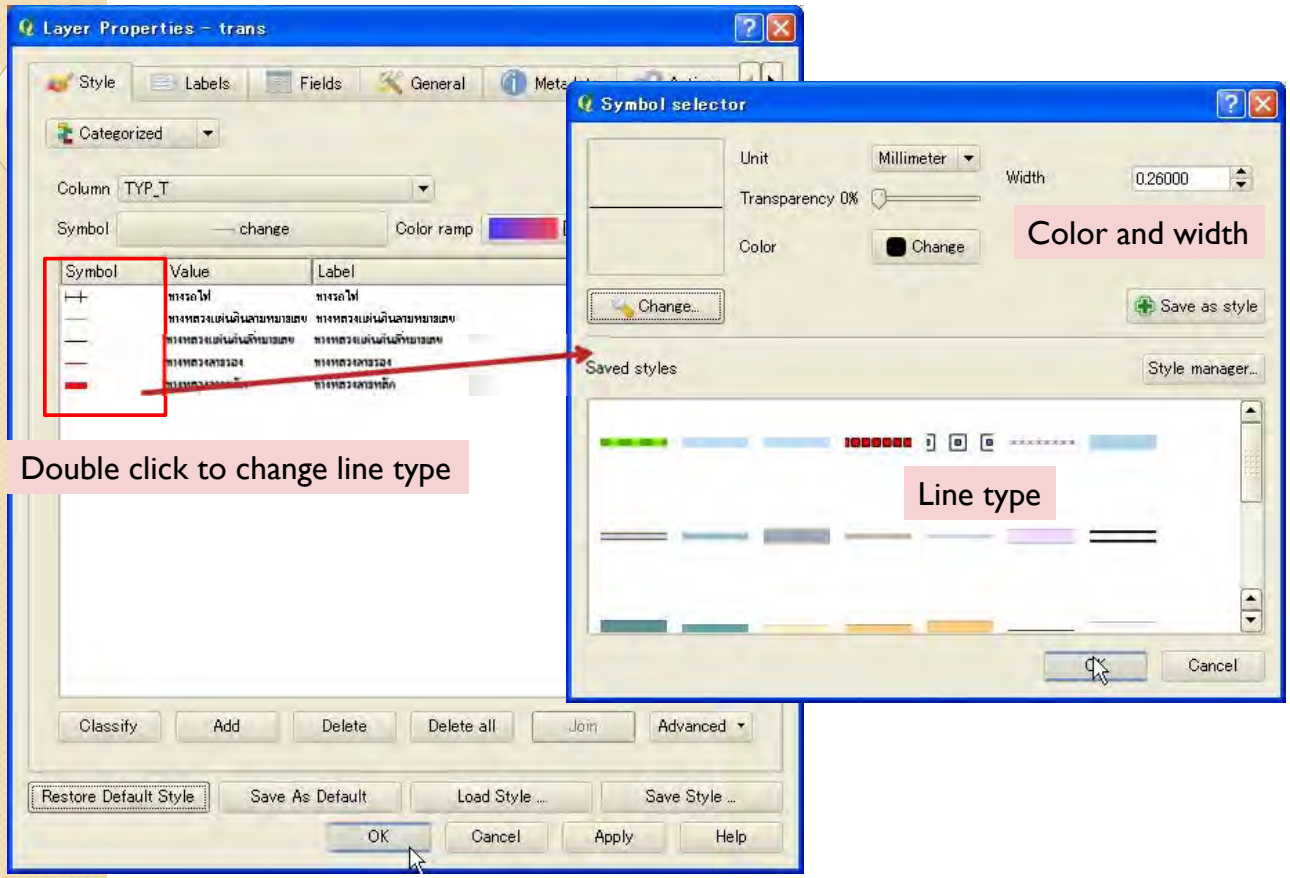
3.5.6 Road, railway, river and hill shade Road and railway



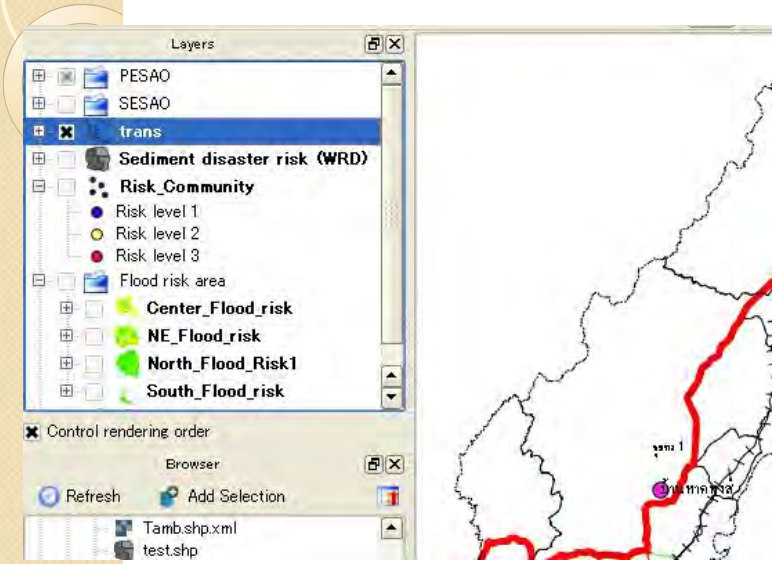
3.5.6 Road, railway, river and hill shade Road and railway



3.5.6 Road, railway, river and hill shade Road and railway

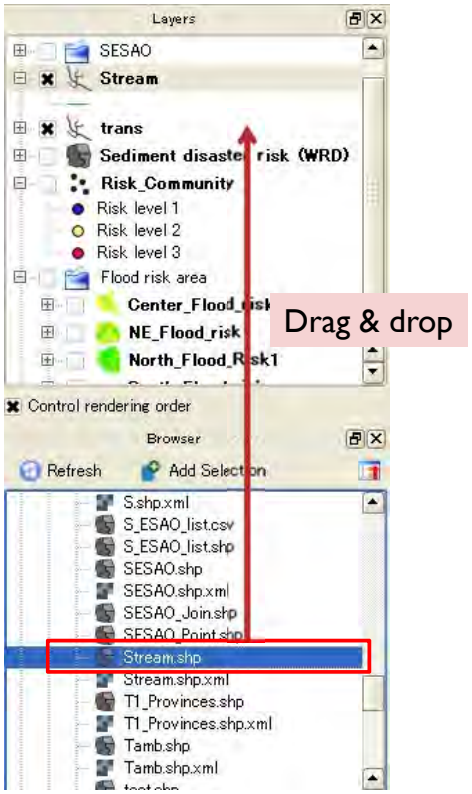


3.5.6 Road, railway, river and hill shade Road and railway



Then, you can see transportation map

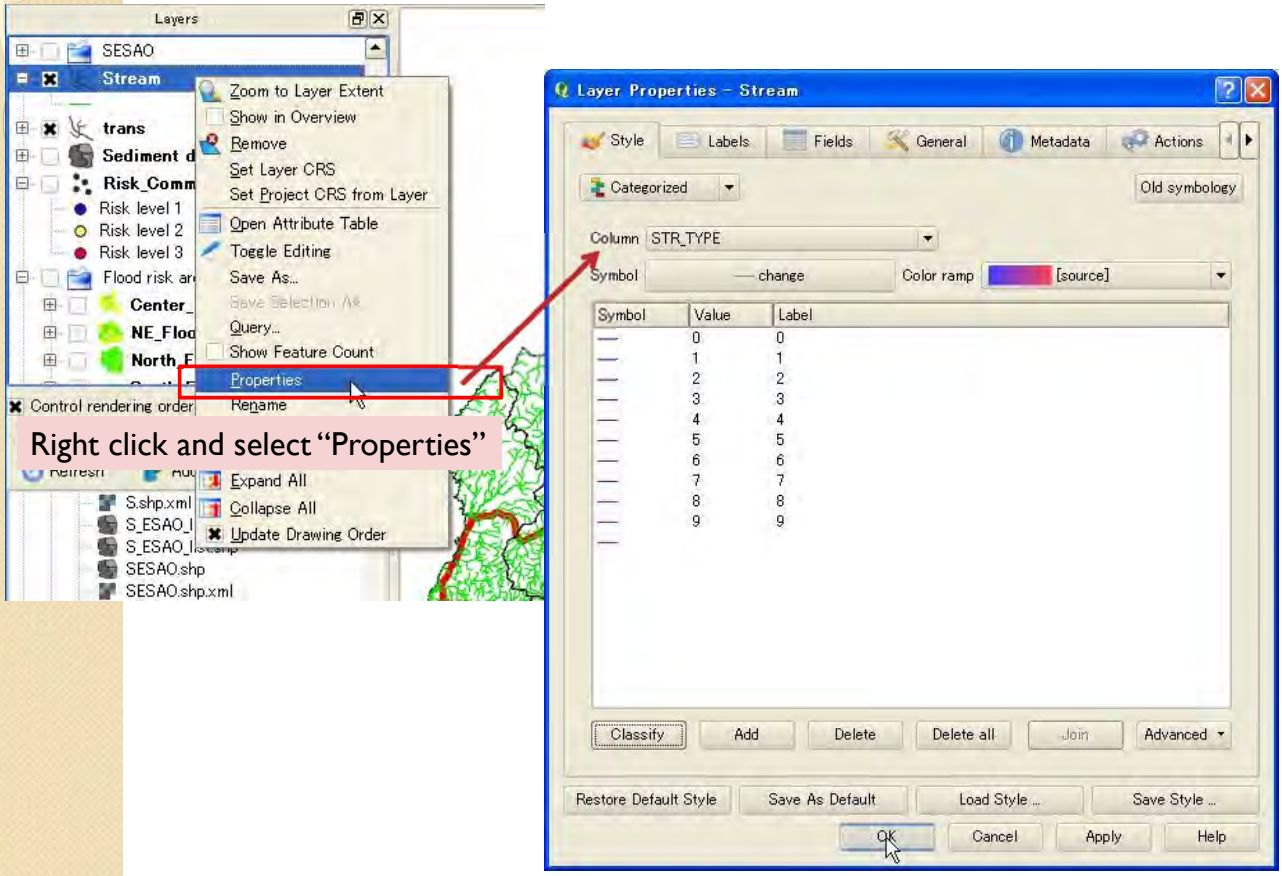
3.5.6 Road, railway, river and hill shade River



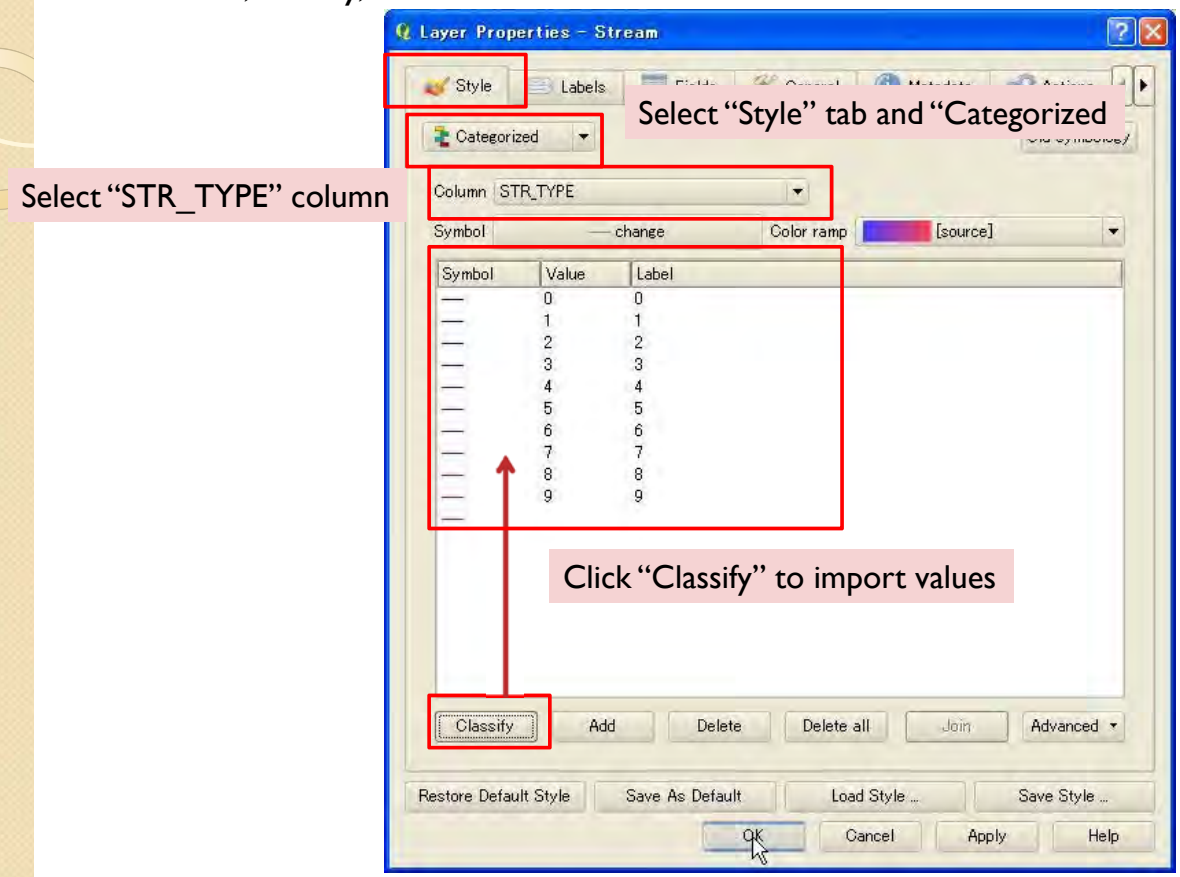
Drag & drop

Import “Stream.shp”

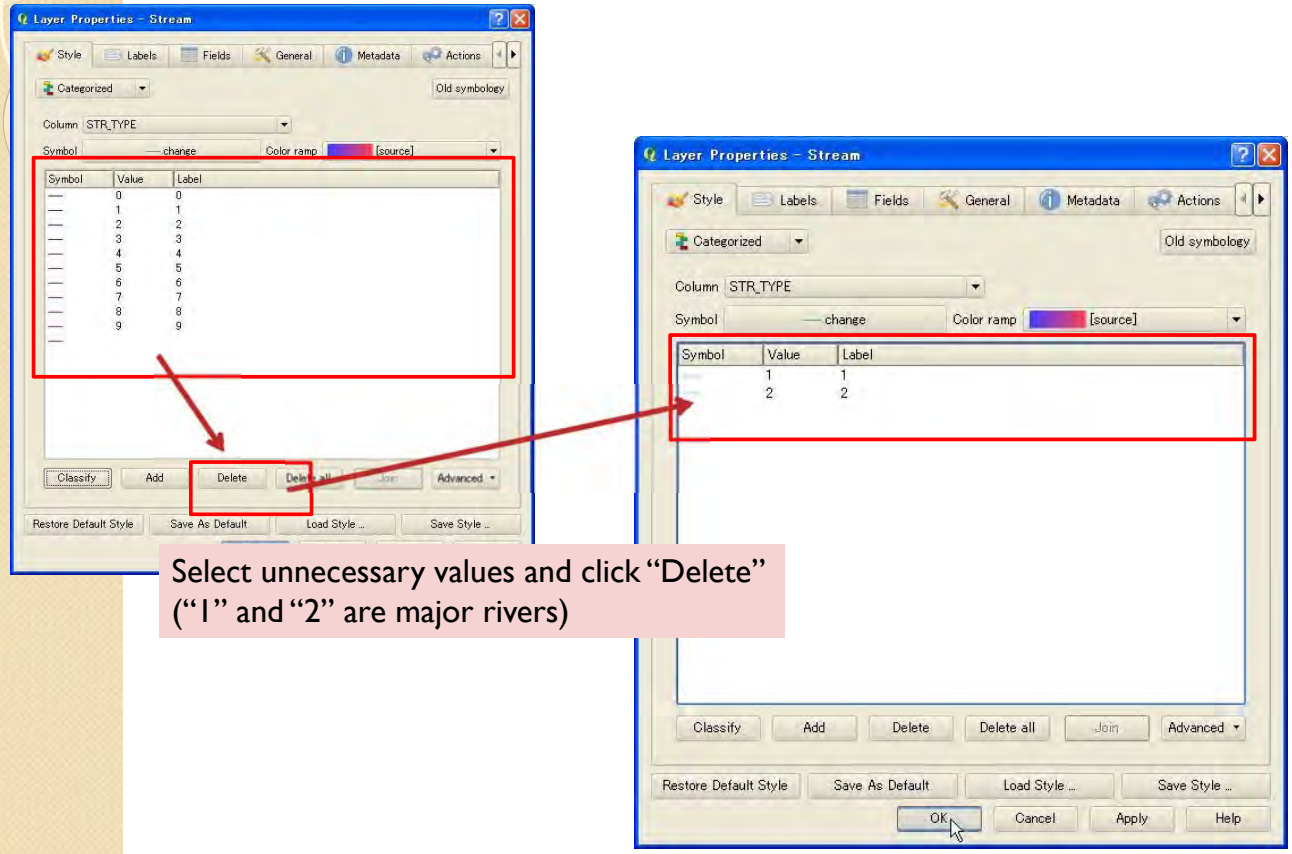
3.5.6 Road, railway, river and hill shade River



3.5.6 Road, railway, river and hill shade River

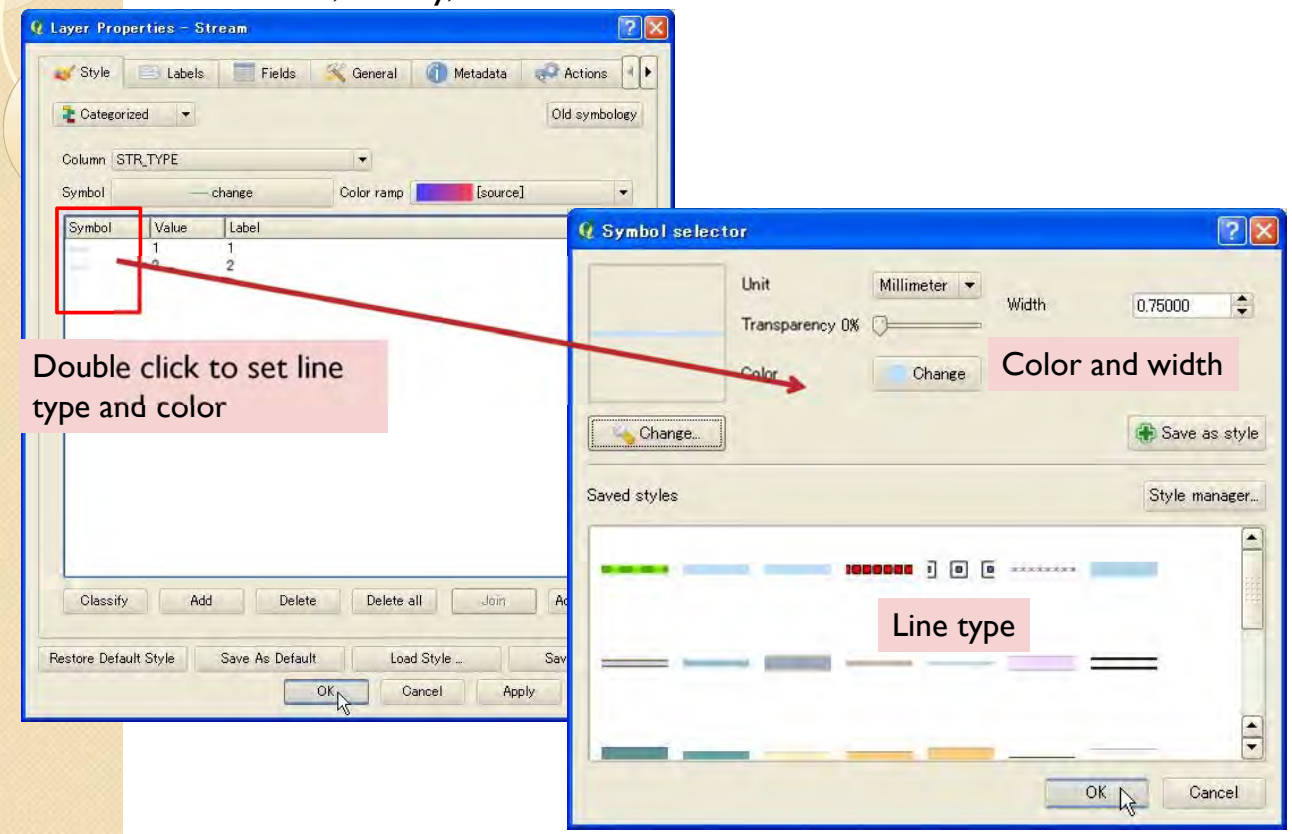


3.5.6 Road, railway, river and hill shade River



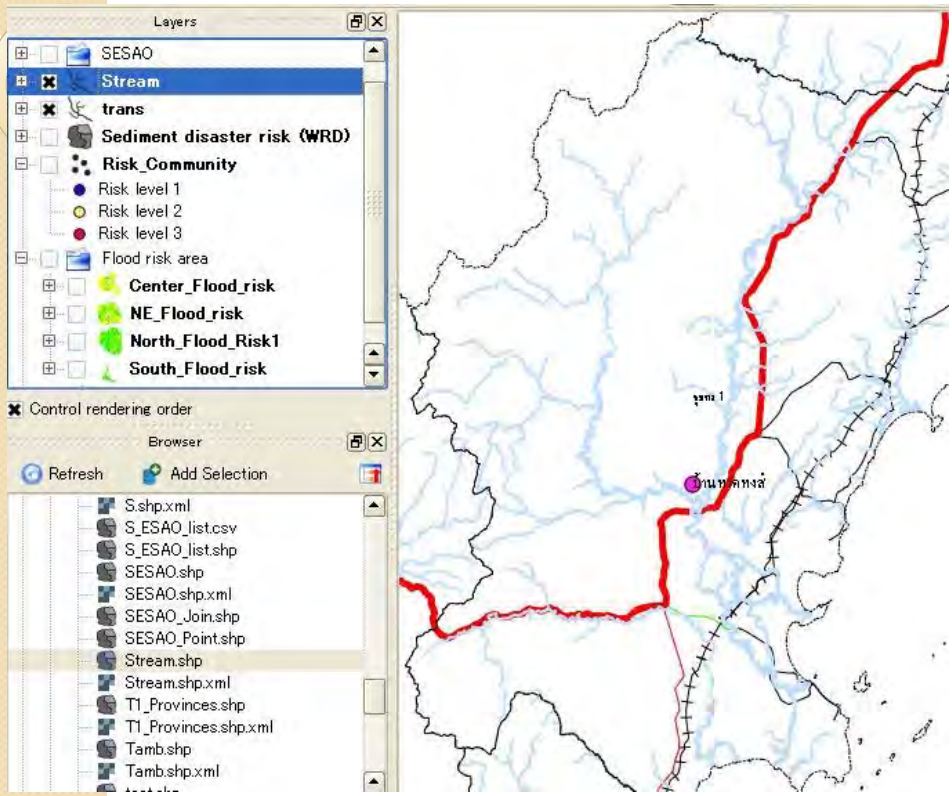
3. Making Inventory Maps

3.5.6 Road, railway, river and hill shade River



3. Making Inventory Maps

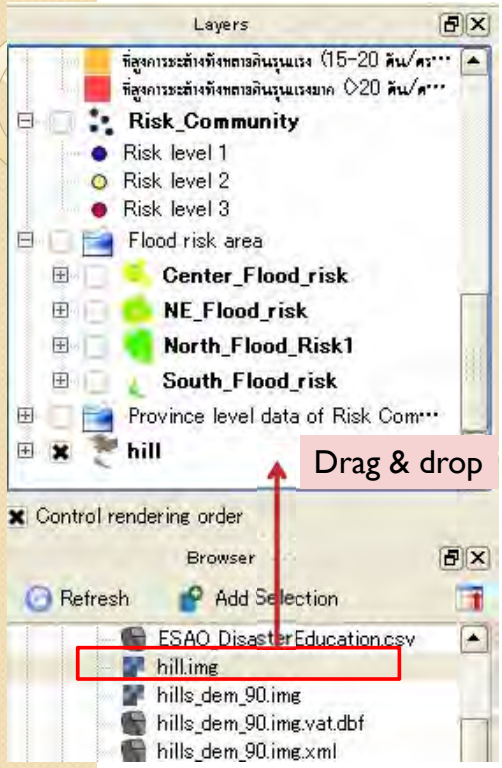
3.5.6 Road, railway, river and hill shade River



Then, river map is displayed.

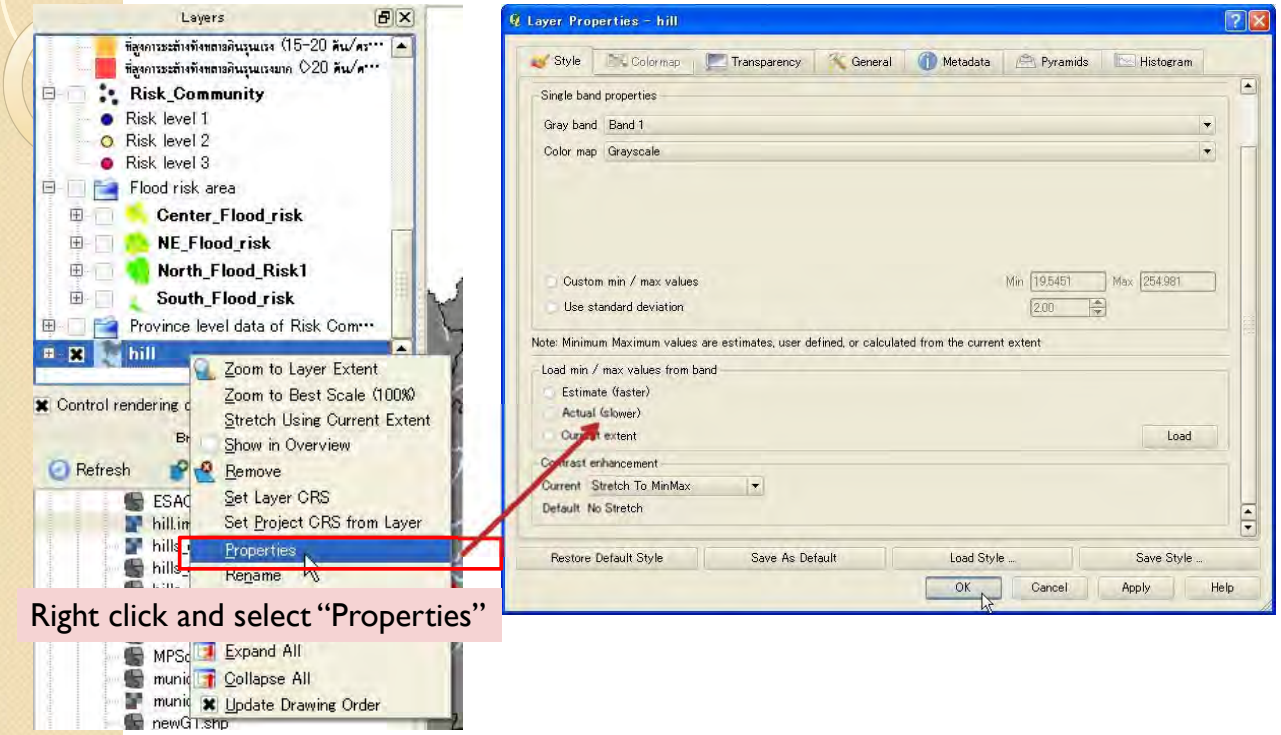
3. Making Inventory Maps

3.5.6 Road, railway, river and hill shade Hill shade



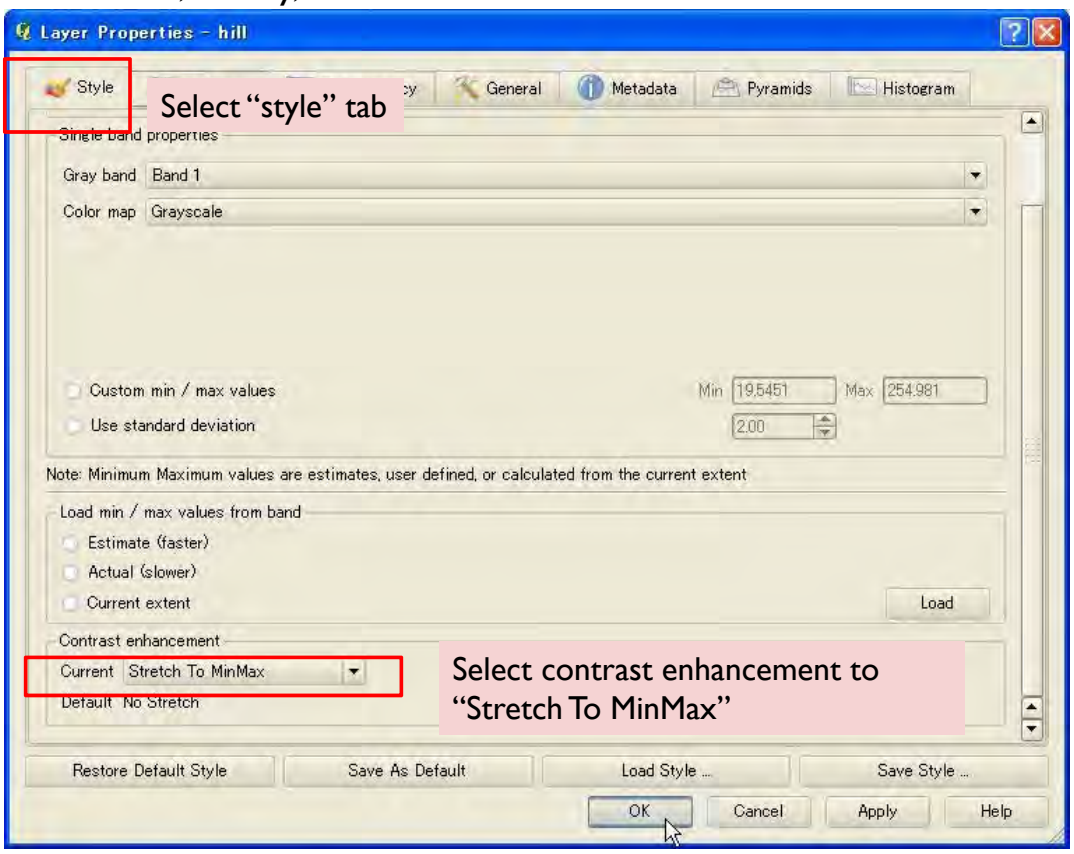
Import “hill.img”

3.5.6 Road, railway, river and hill shade Hill shade

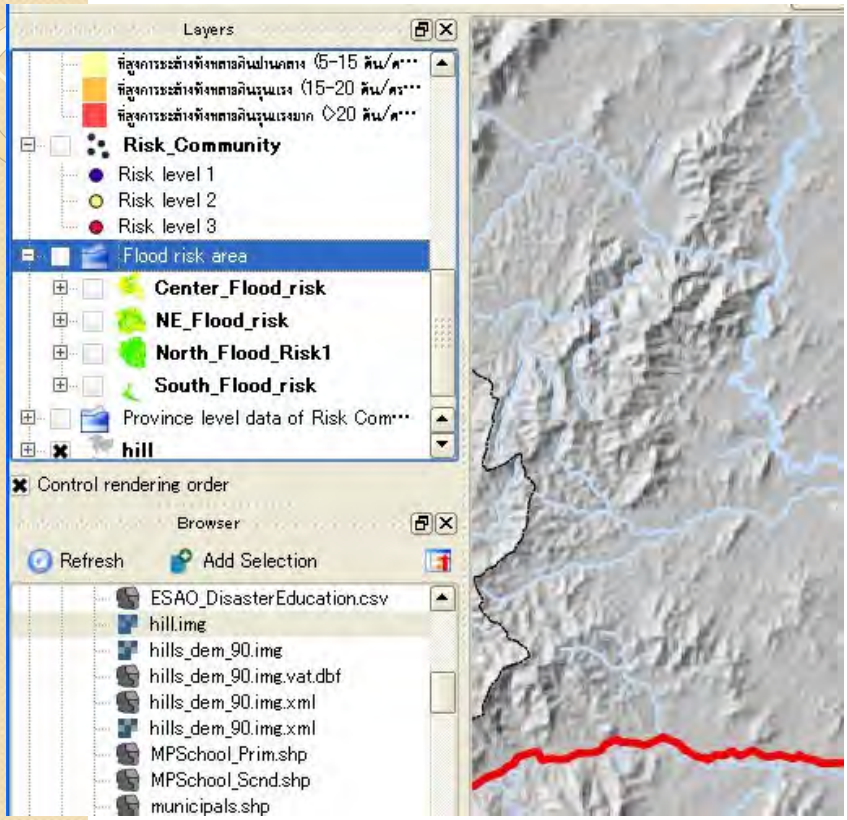


3. Making Inventory Maps

3.5.6 Road, railway, river and hill shade Hill shade

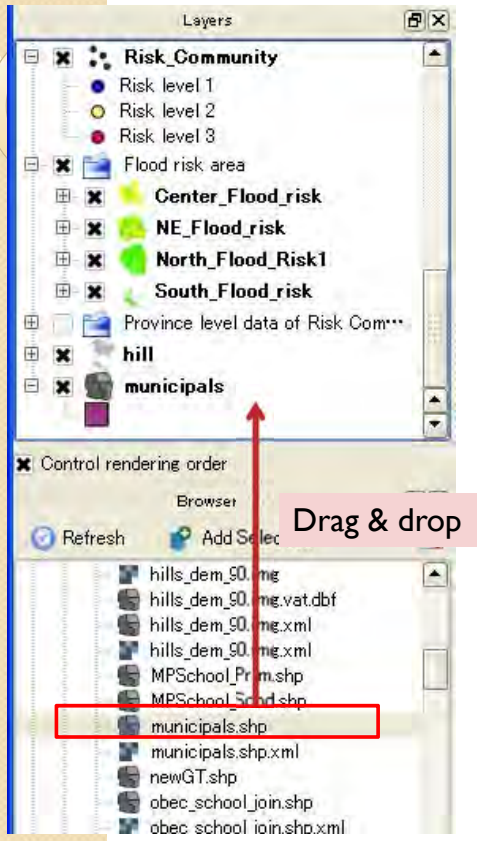


3.5.6 Road, railway, river and hill shade Hill shade



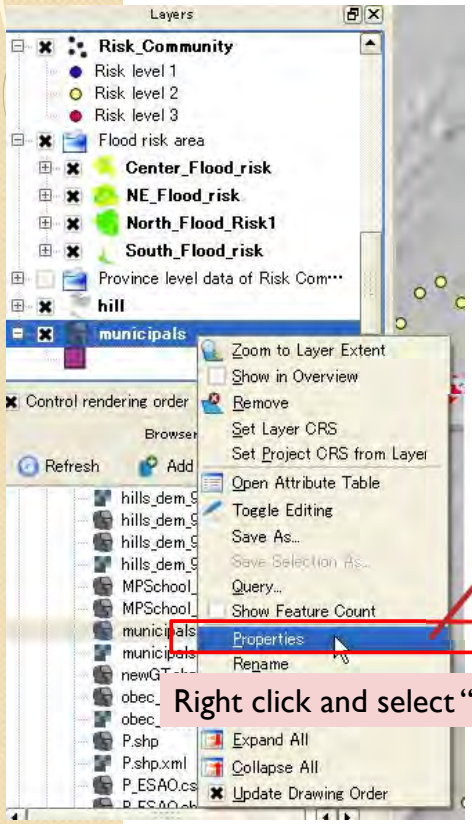
Then, you can display hill shade.

3.5.6 Road, railway, river and hill shade City labels

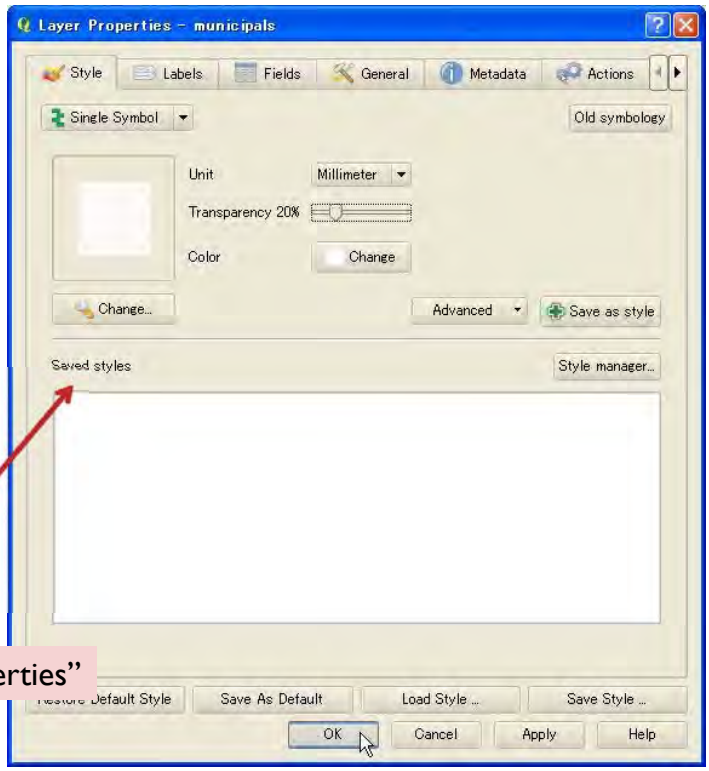


Import “municipals.shp”

3.5.6 Road, railway, river and hill shade City labels



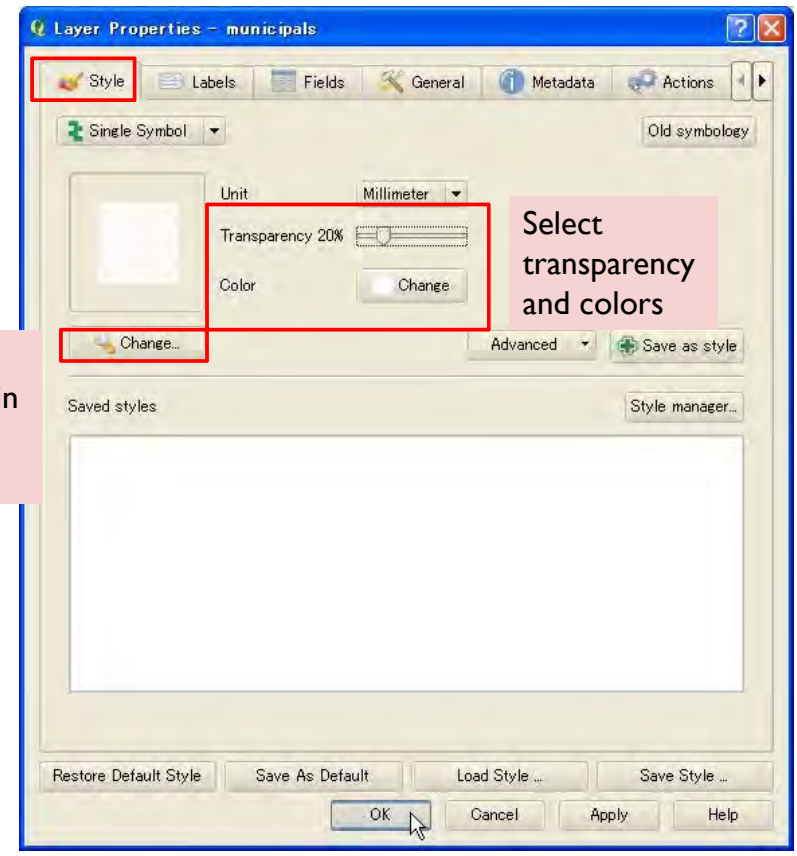
Right click and select "Properties"



3. Making Inventory Maps

3.5.6 Road, railway, river and hill shade City labels

Select "Style" tab



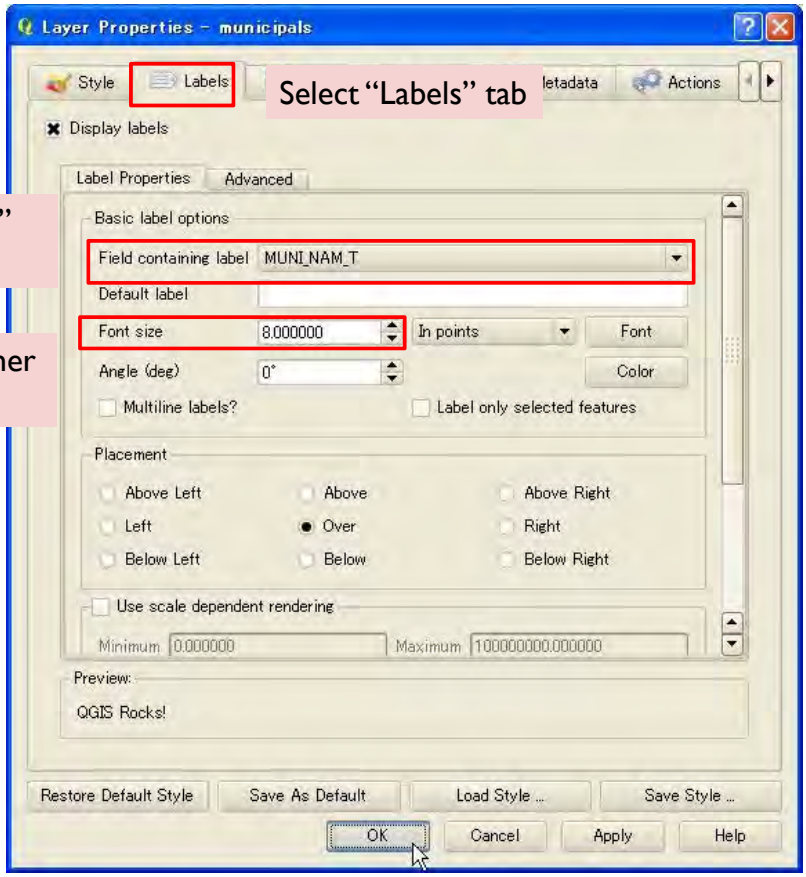
Select transparency and colors

If you want to change the color in detail, please click "Change" button.

3.5.6 Road, railway, river and hill shade City labels

Select "MUNI_NAM_T" column to display

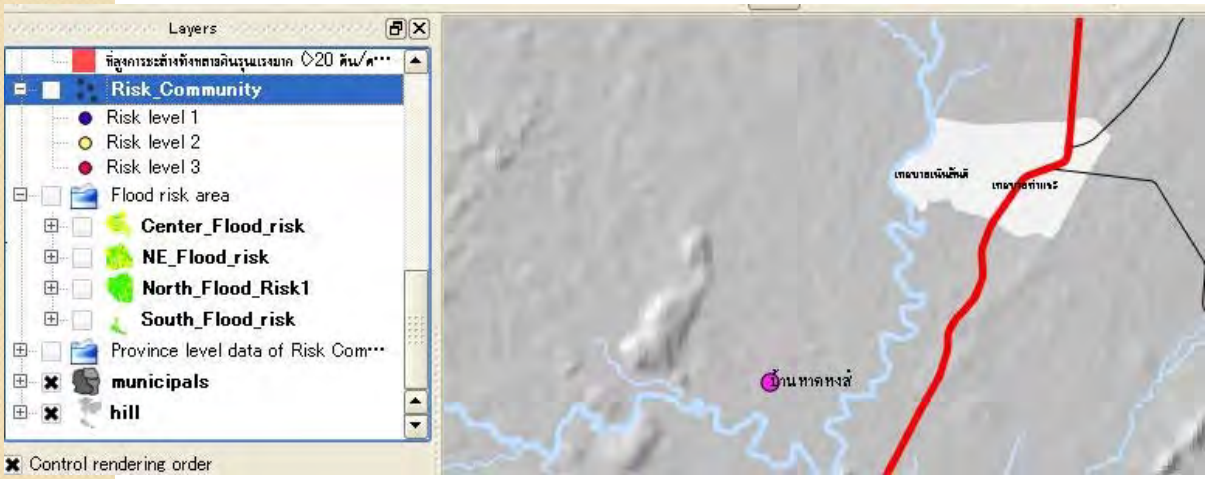
Font size and other settings here



3. Making Inventory Maps

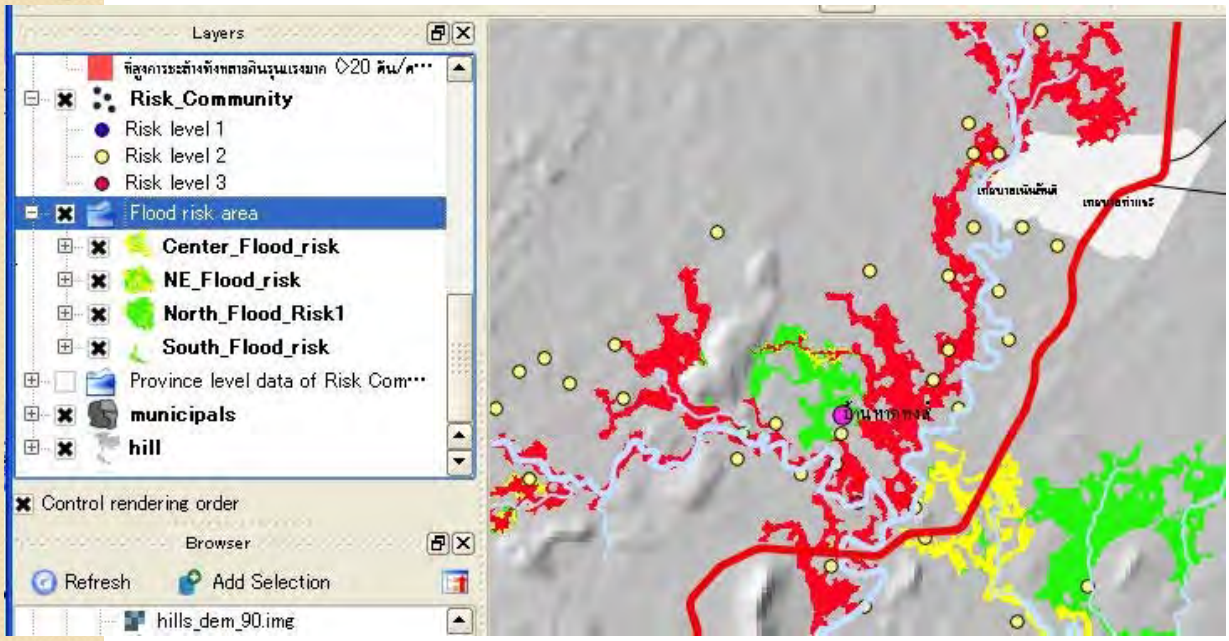
3.5.6 Road, railway, river and hill shade City labels

Then you can see cities.



3.5.7 Change order and display

You can change display order and layers.
The following example shows risk communities and flood risk area with pilot school. Such information is useful to understand risk area distribution and to make decision about disaster education action plan and pilot/model site.



3. Making Inventory Maps

3.5.7 Change order and display

Note: These information is one of indicators for disaster risk. Out of the indicated risk area do not mean actual no risk area.
The data of risk community still contains any wrong and missing locations.