The Basic Manual for the Printing Geologic Map using ArcView Ver. 10.0

Edition 0.8

JICA-GIS Project 2012

At GSD Zomba

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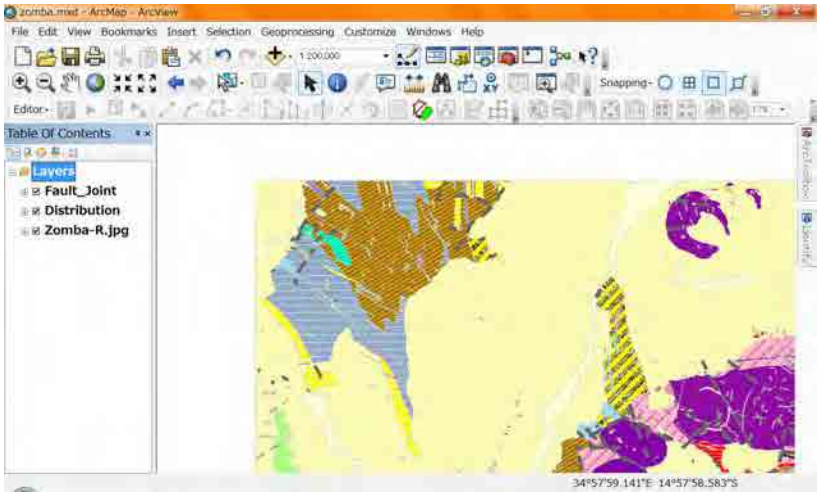
0. Set shape file for the printing

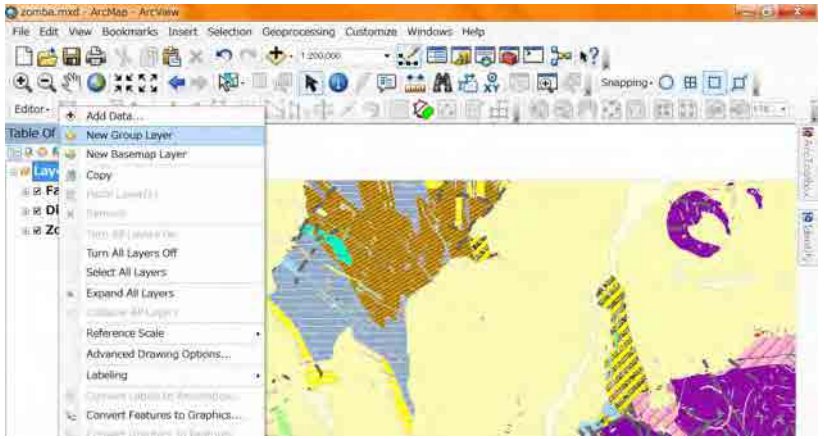
0-1. Set the environment for color setting

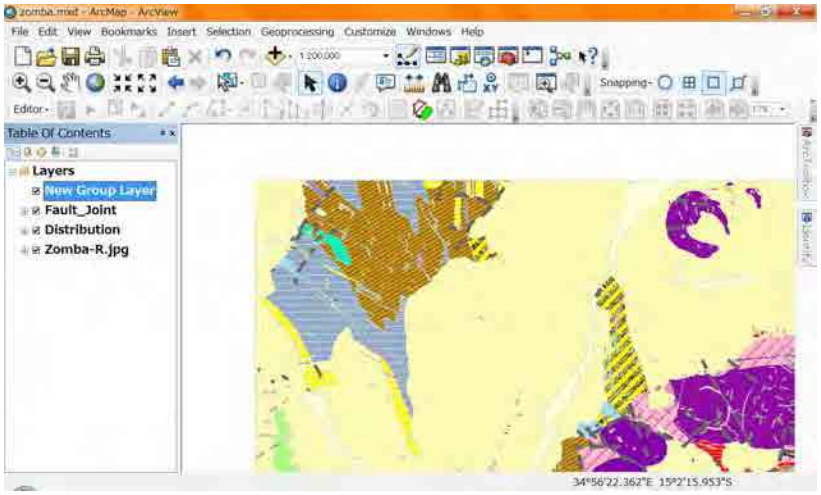
Add the data of polygon (Distribution) and polyline (Fault_Joint) and scanned image.

Image is put bottom. So you can not see the image by the polygon data covering.



Make a new group layer in the layer.

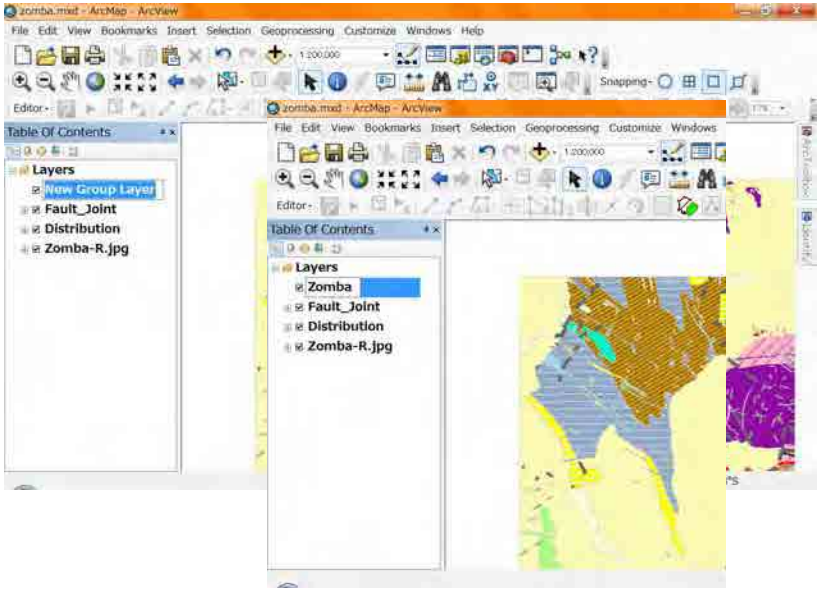




Change the group layer name. Under selected condition single click on the name.

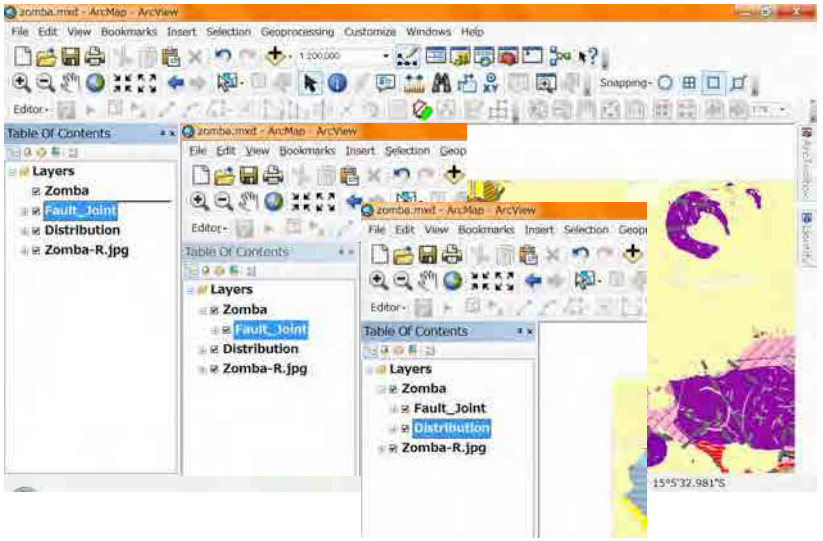
A rectangle apear and the name is changeable. Type new name then click the other

place or press “Enter Key”



Drag shepe files (polyline polygon) under the group layer (this case Zomba) one by

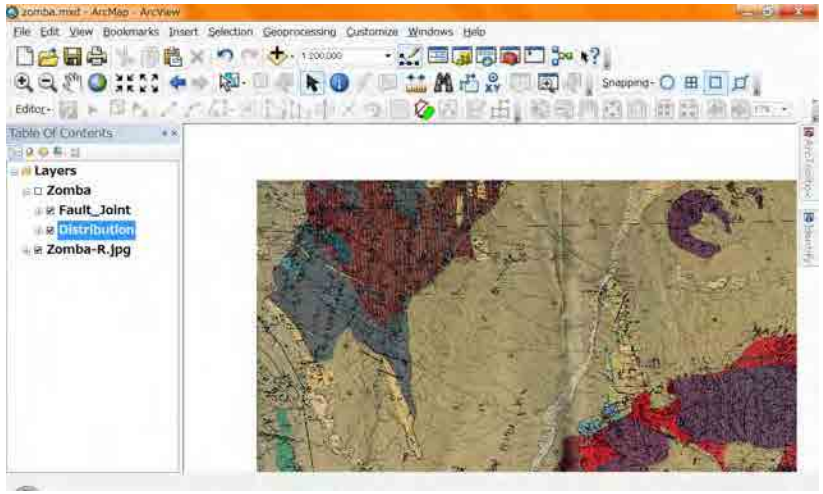
one.

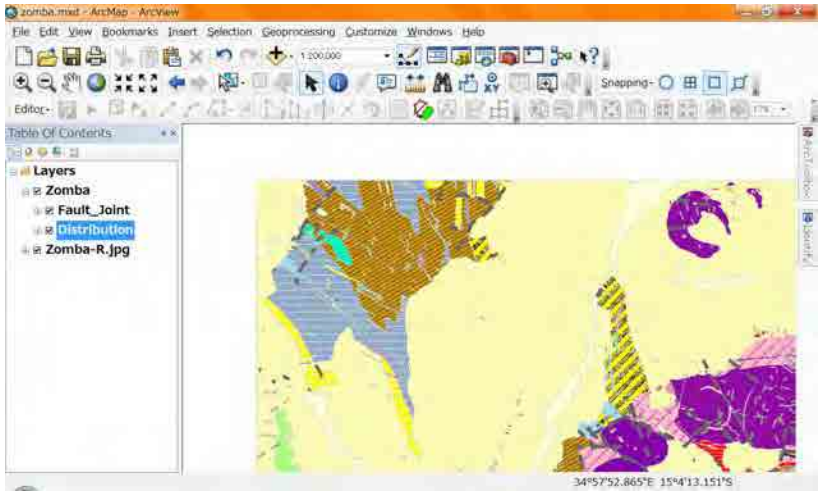


0-2. Show and hide the group layer

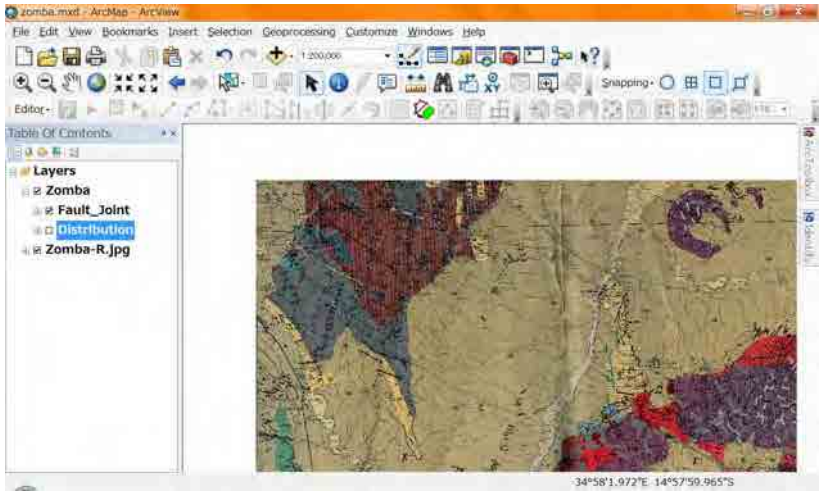
If you remove the check mark front of the group, layers belonging the group are hide.

Against it add the check mark front of the group, layers belonging the group are shown.





When add the check mark front of the group, you remove the check mark front of one layer that belongs the group, the layer (checkmark removed) is hide.

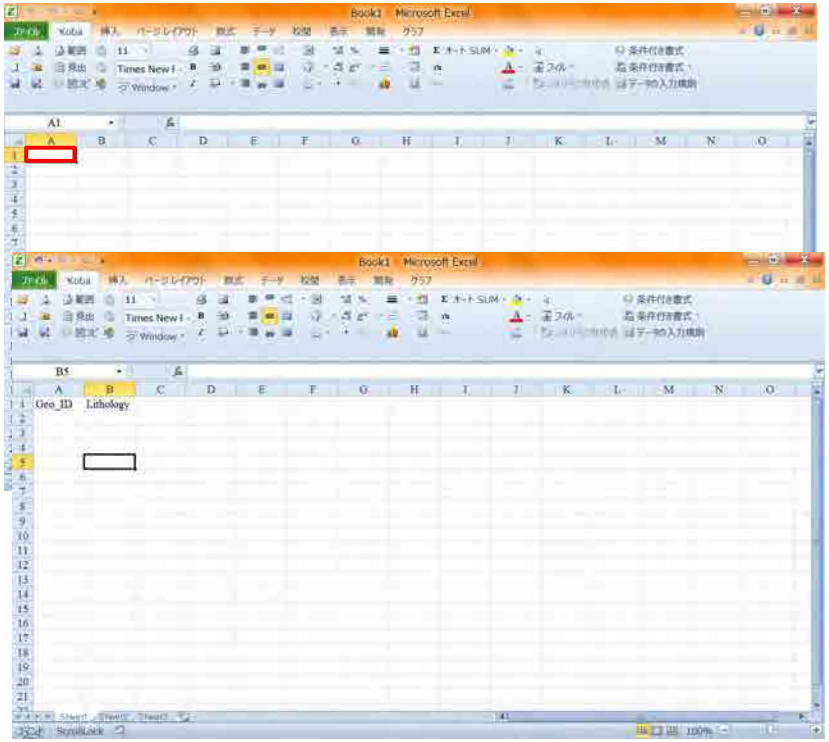


Now you can see and compare the both colors, scanned map and polygons.

0-3. Create the relation table between Geo_ID and Lithology.

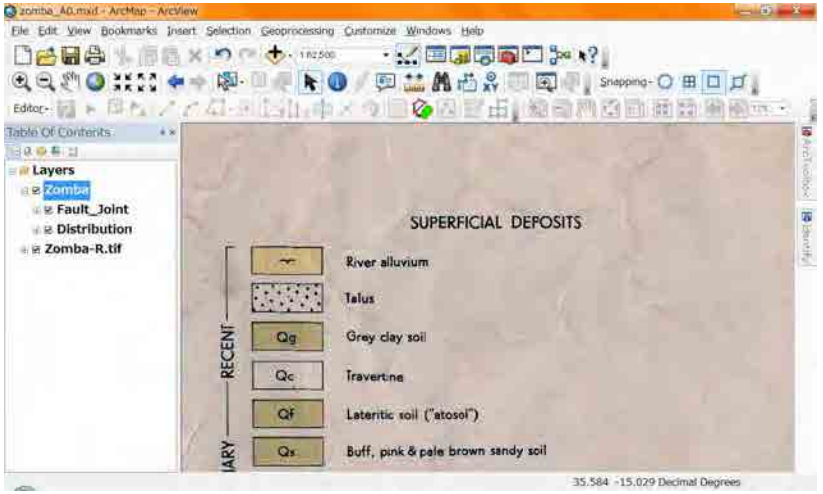
Start the Microsoft Excel from start button. (Sorry this Excel is Japanese version)

Input “Geo_ID” into the Cell “A1”. Input “Lithology” into the Cell “B1”.



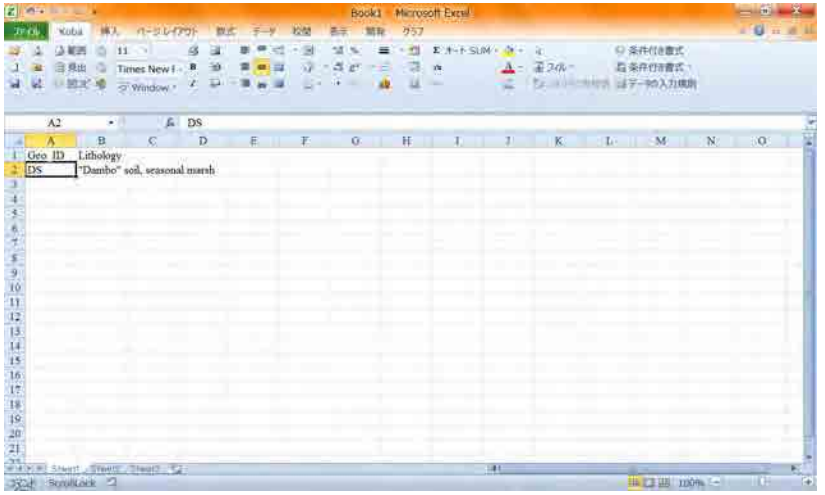
Back to the ArcGIS. See the legend of the scanned paper map.

Remember one pair of “Geo_ID” and its Lithology.

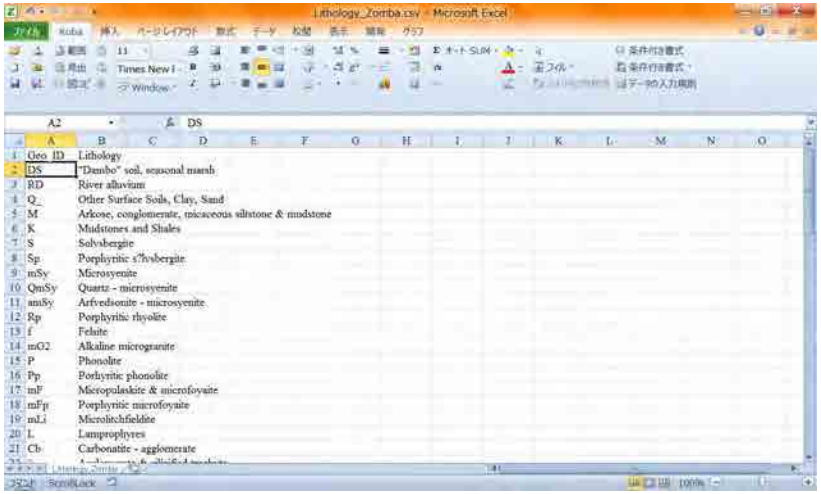


Go to the Excel, input these into second line (cell “A2” and cell “B2”)

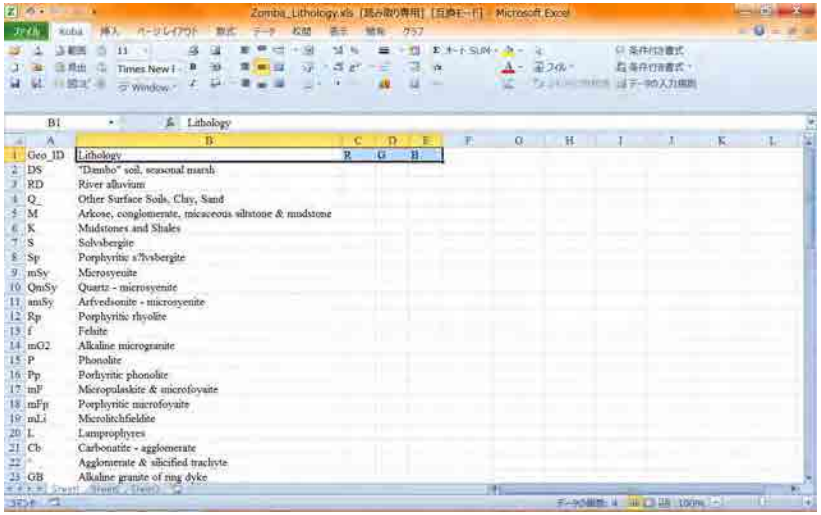
In this example DS and "Dambo" soil, seasonal marsh



Do in the same way for all Geo_ID and Lithology.



Input “R”,”G”,”B” into cell C1, D1, E1



Save the file, type as Excel Ver.97-2003, name as area_lithology.

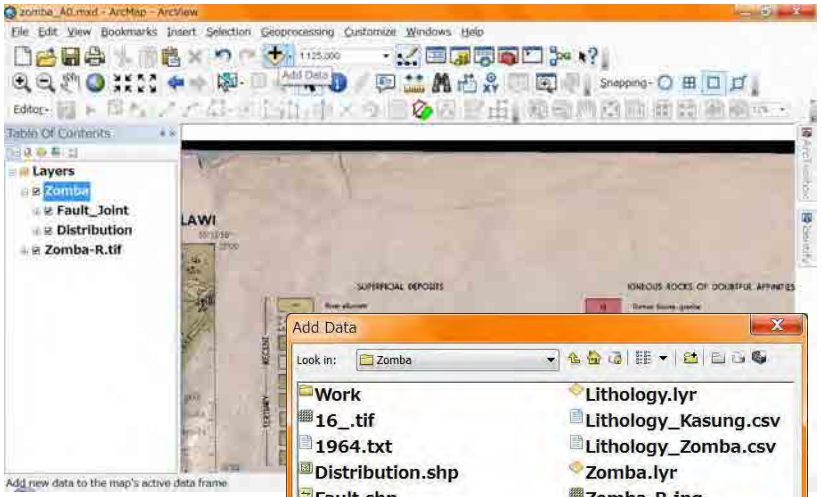
This figure uses Zomba area so the file name is Zomba_Lithology.xls

Save the same data as the other name also. The name is area_color.

This figure uses Zomba_Color.xls.

0-4. Add the relation table

Back to the ArcGIS again. Add data that saved Excel file.



Select the sheet name

you enterd those data.

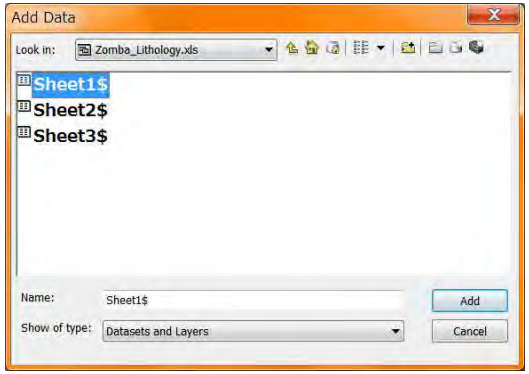
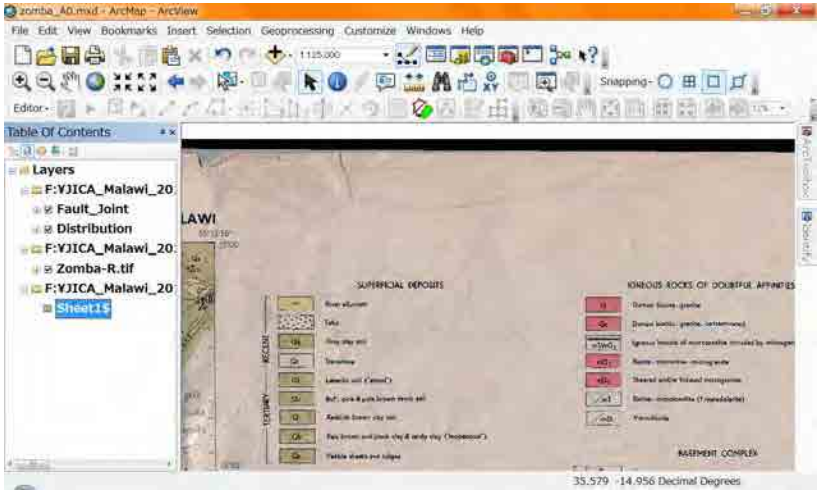
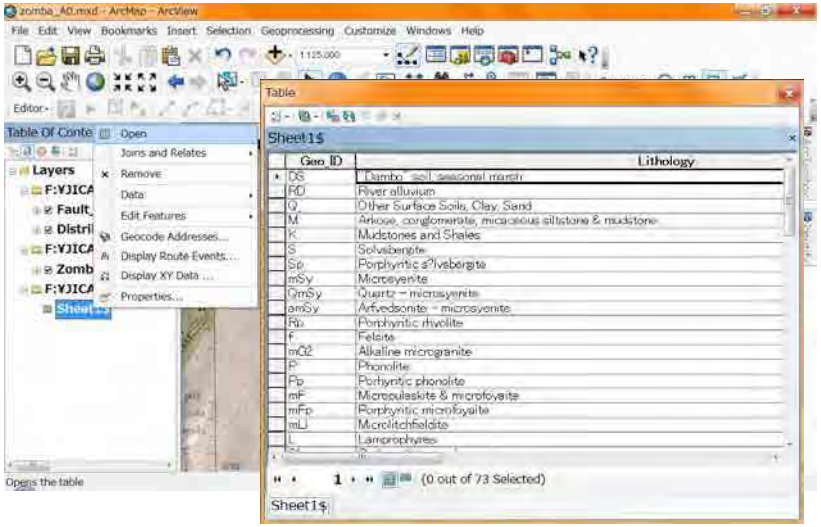


Table of contents window has changed from “List by drawing order” to “List by Source”. And the Excel sheet had added.



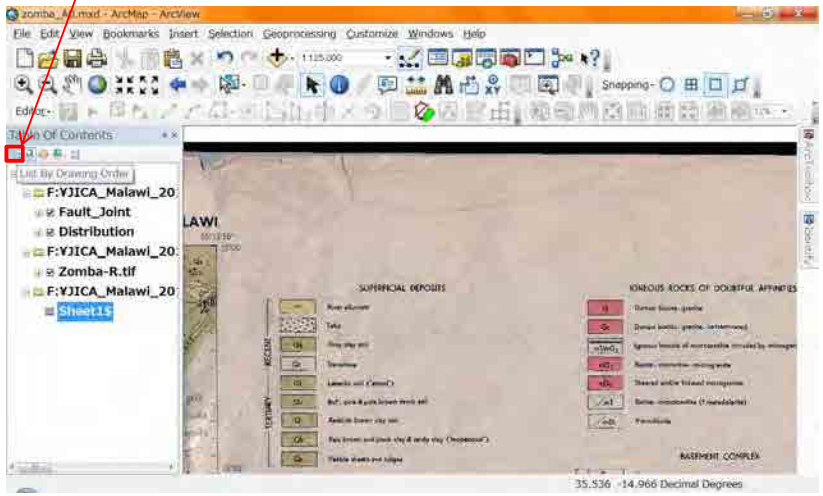
Open the table for the checking. Right click Request small menu On the name of the table, select “Open”. The table will apear.

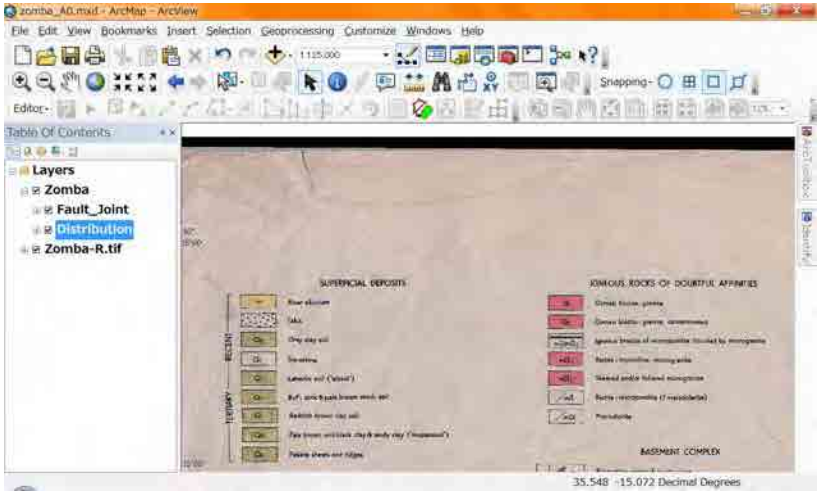


0-5. Join the shape file and relation table

Change table of contents window from “List by Source” to “List by drawing order”.

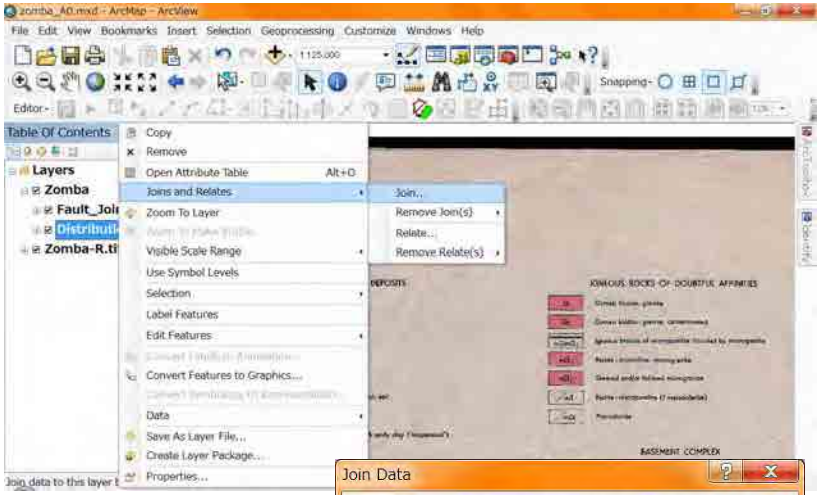
Click here.



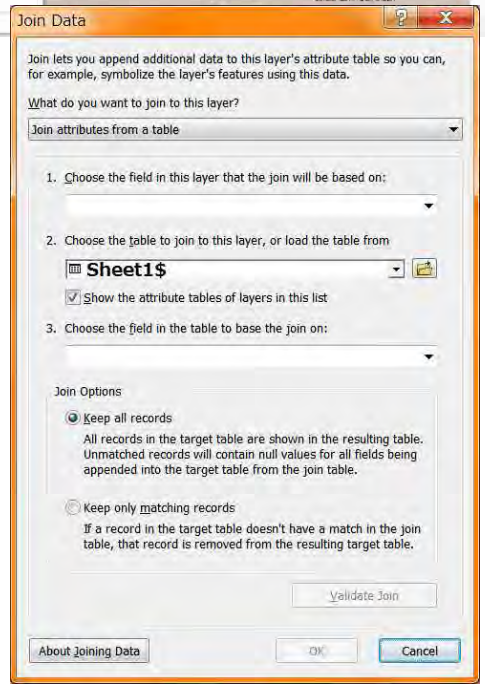


Right click
Request small menu

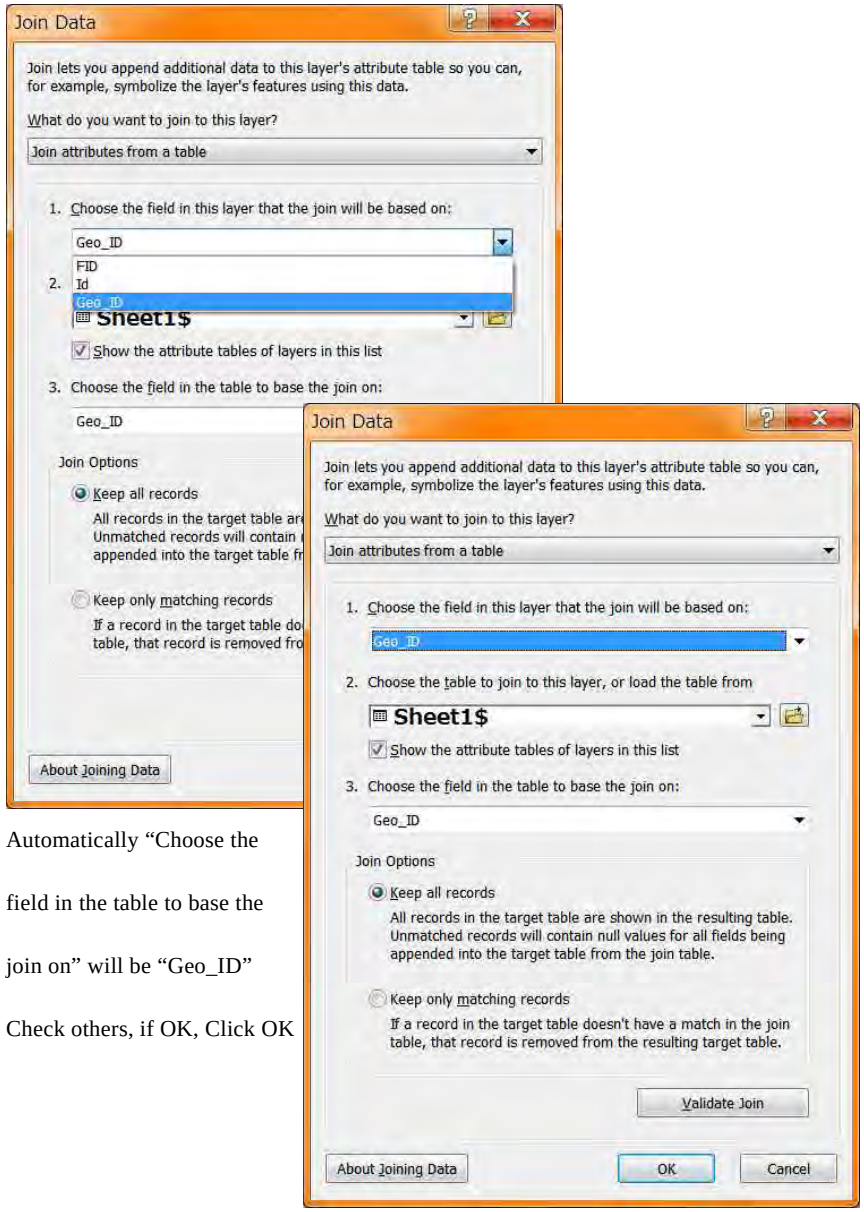
On the layer name (polygon Distribution), select “Joins and Relates”, “Join”.



Join Data window will appear



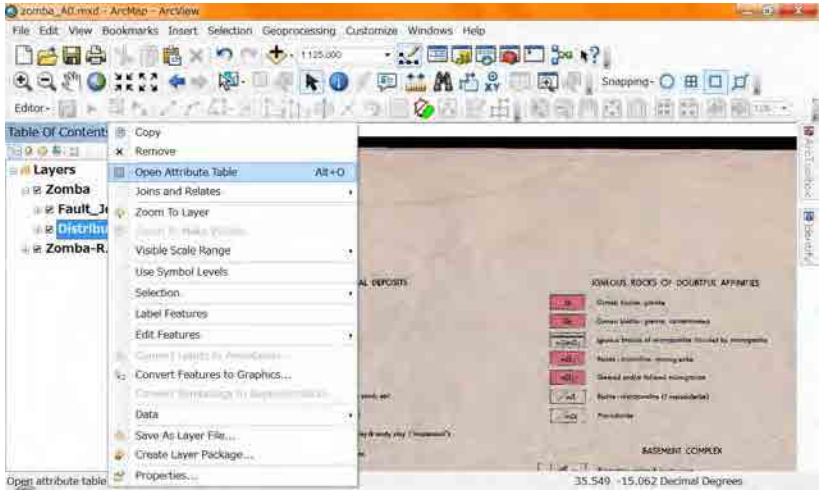
Select “Geo_ID” for “Choose the field in this layer that the join will be based on”.



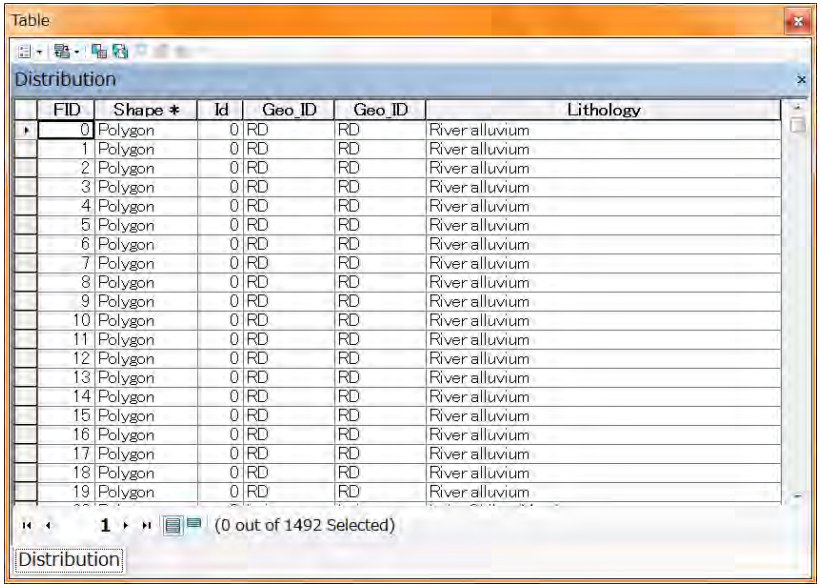
Automatically “Choose the field in the table to base the join on” will be “Geo_ID”

Check others, if OK, Click OK

Open attribute Table of the polygon (Distribution).



You can see the field “Lithology”.



Table

Distribution

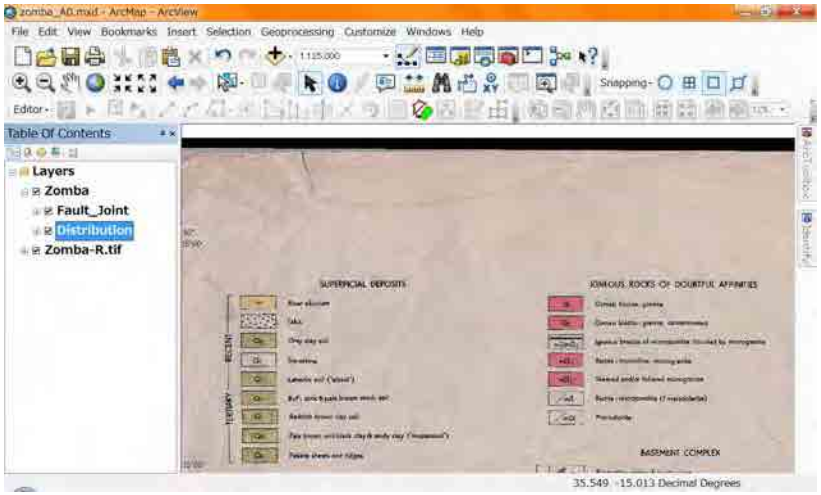
FID	Shape *	Id	Geo_ID	Geo_ID	Lithology
0	Polygon	0	RD	RD	River alluvium
1	Polygon	0	RD	RD	River alluvium
2	Polygon	0	RD	RD	River alluvium
3	Polygon	0	RD	RD	River alluvium
4	Polygon	0	RD	RD	River alluvium
5	Polygon	0	RD	RD	River alluvium
6	Polygon	0	RD	RD	River alluvium
7	Polygon	0	RD	RD	River alluvium
8	Polygon	0	RD	RD	River alluvium
9	Polygon	0	RD	RD	River alluvium
10	Polygon	0	RD	RD	River alluvium
11	Polygon	0	RD	RD	River alluvium
12	Polygon	0	RD	RD	River alluvium
13	Polygon	0	RD	RD	River alluvium
14	Polygon	0	RD	RD	River alluvium
15	Polygon	0	RD	RD	River alluvium
16	Polygon	0	RD	RD	River alluvium
17	Polygon	0	RD	RD	River alluvium
18	Polygon	0	RD	RD	River alluvium
19	Polygon	0	RD	RD	River alluvium

1 (0 out of 1492 Selected)

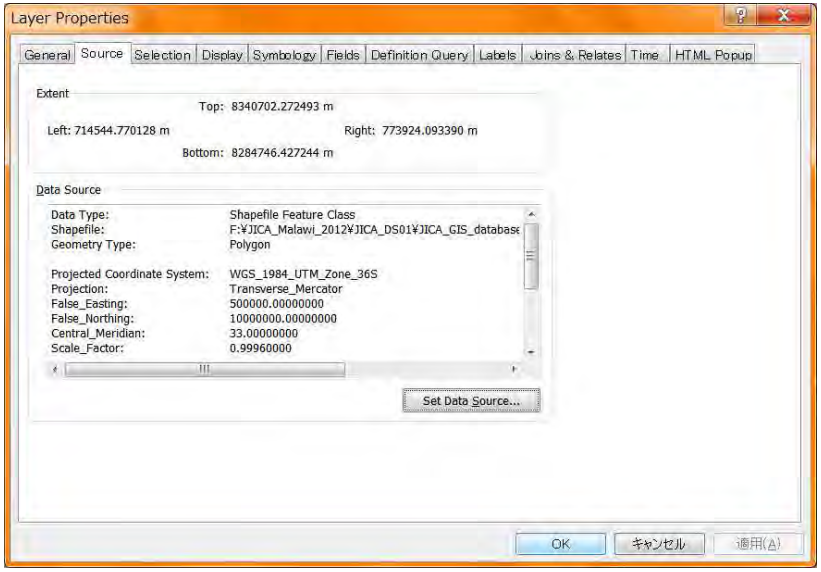
Distribution

0-6. Set Symbology

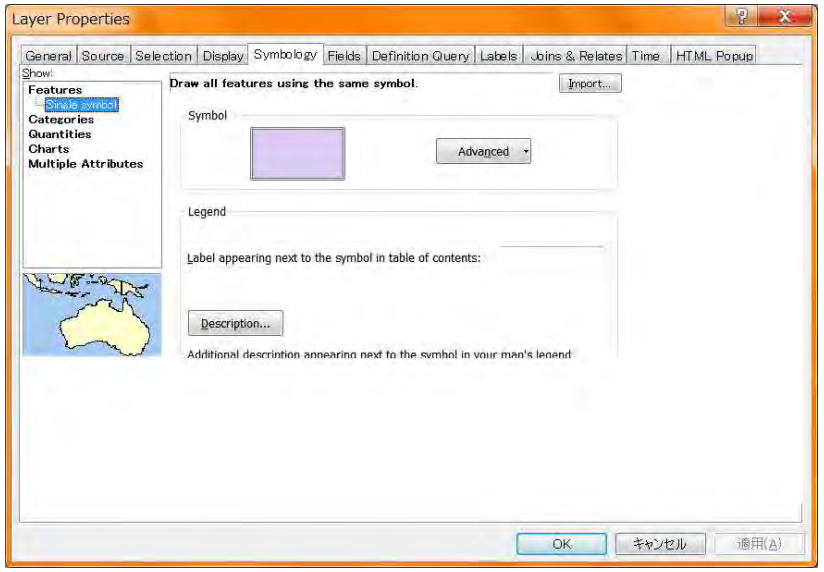
Double click on the layer (polygon Distribution).



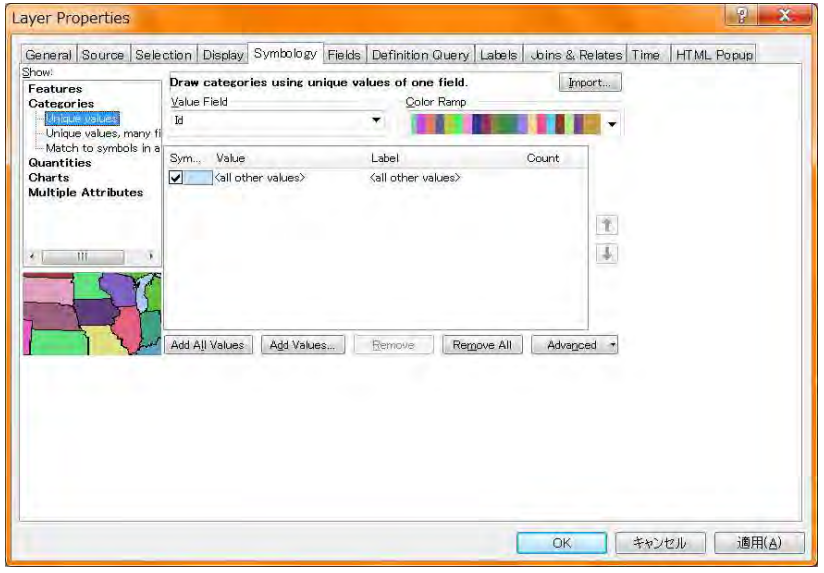
the Lyaer Properties window will appaer.



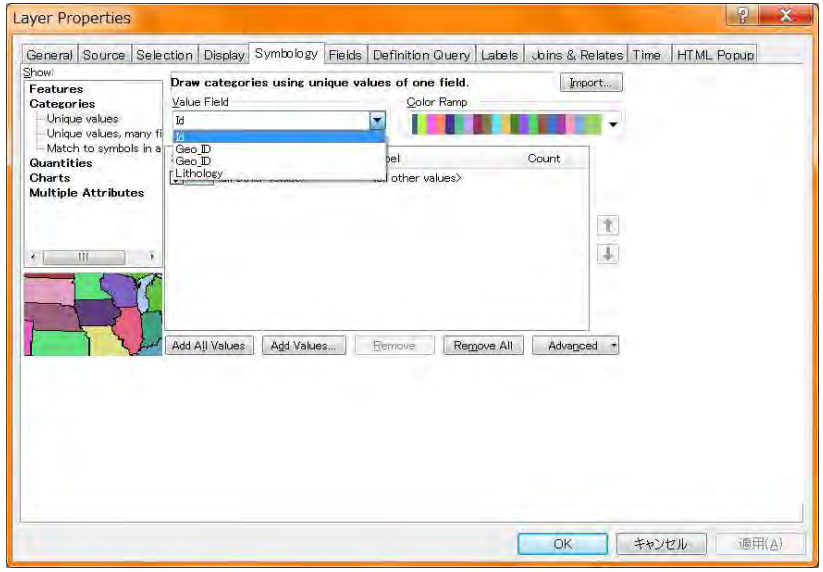
Select “Symbology” tab. Click “Categories”.



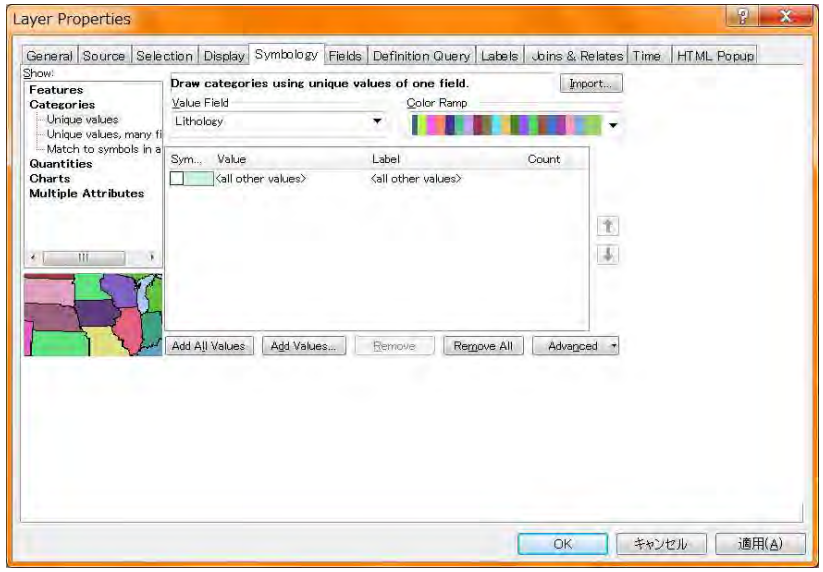
Select “Unique Values”.

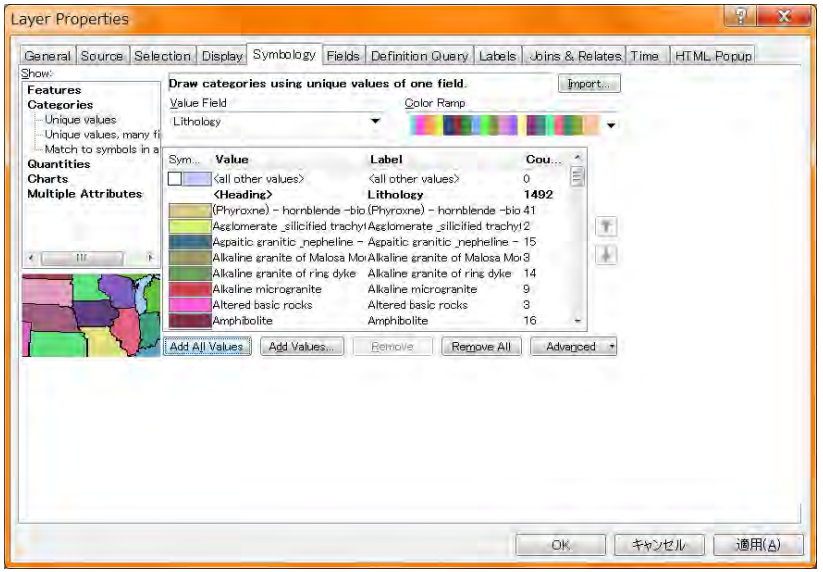


Select “Lithology” for “Value Field”.

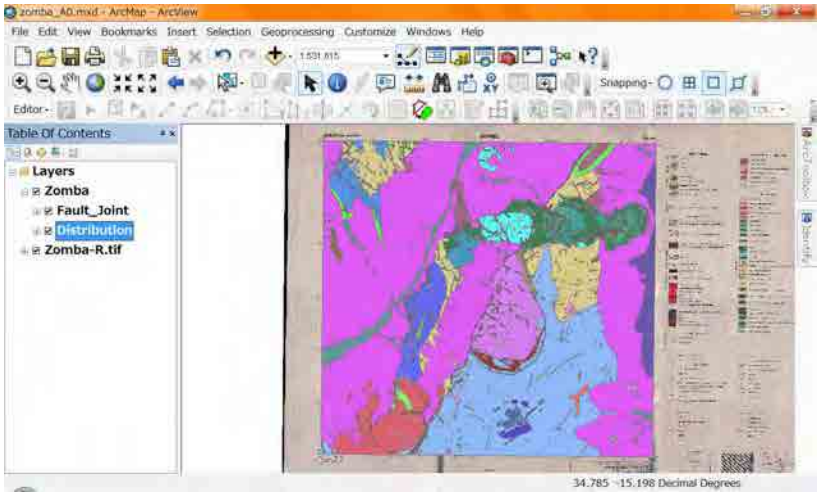


Remove check mark front of <all other values>. Click “Add All Values”.



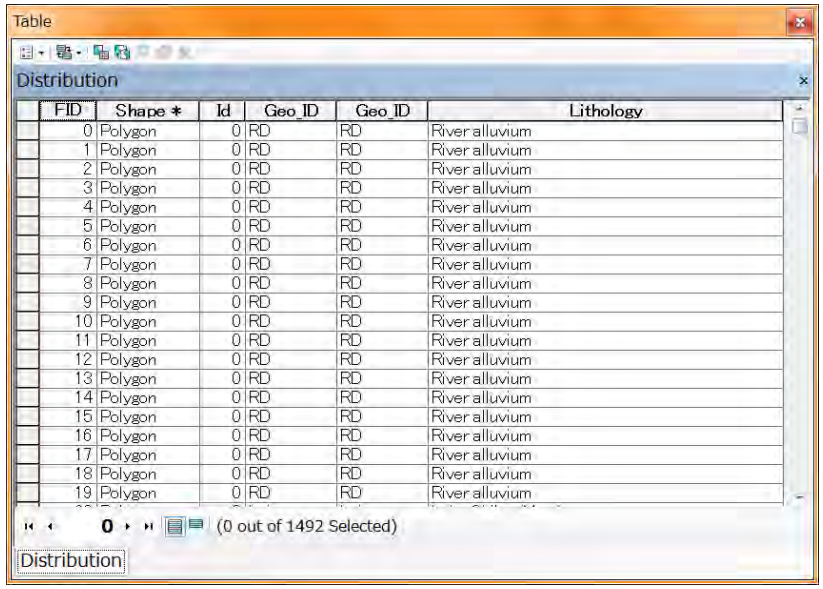


All lithology will be listed. Once click “OK”.



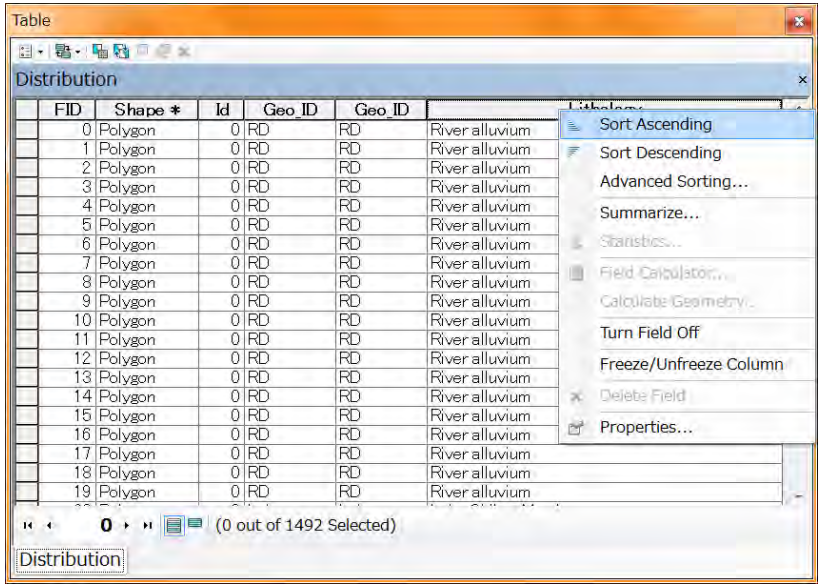
Each geologic unit will be painted by differrent color.

Open attribute table again.

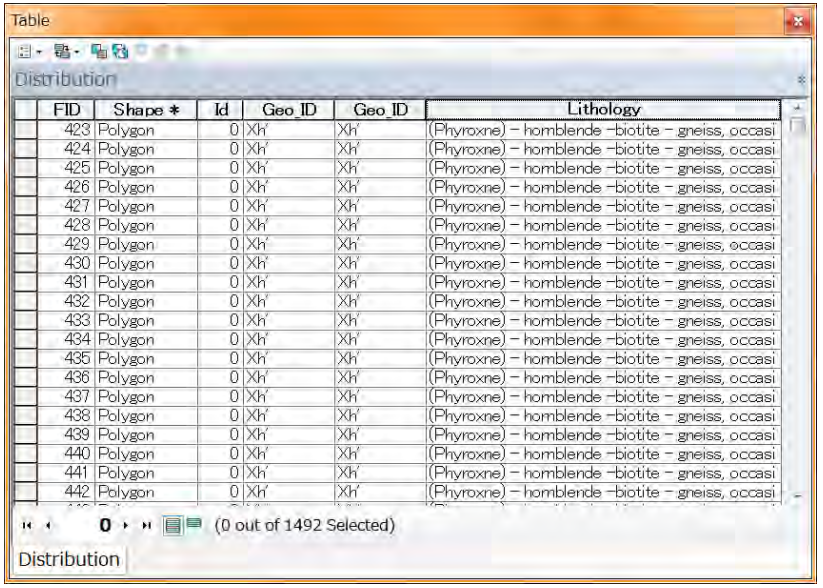


Right click
Request small menu

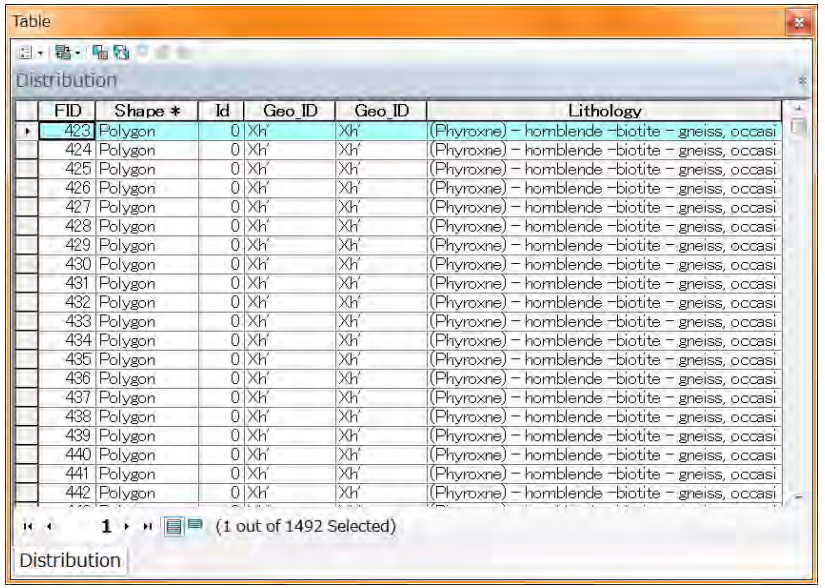
On the lithology select “Sort Ascending”.



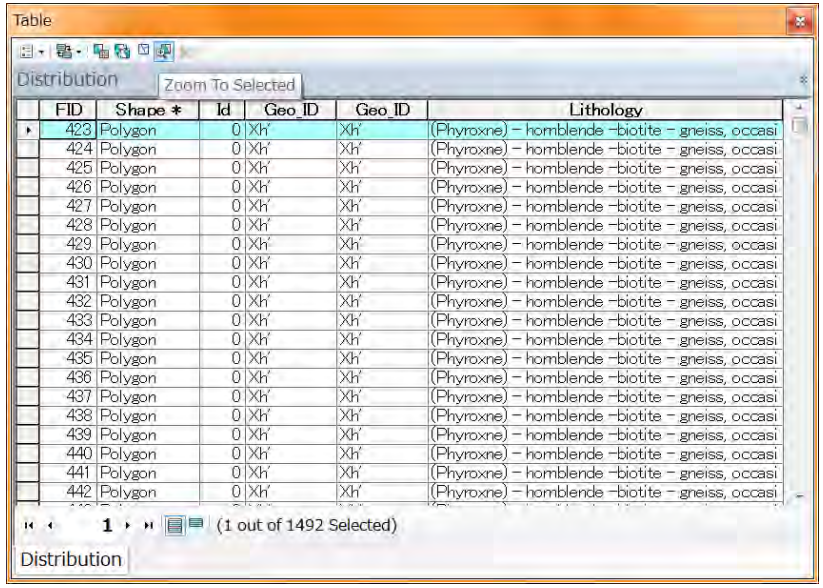
Data have been sorted.



Select the first lithology (in this figure (Phyroxne)- hornblende…)

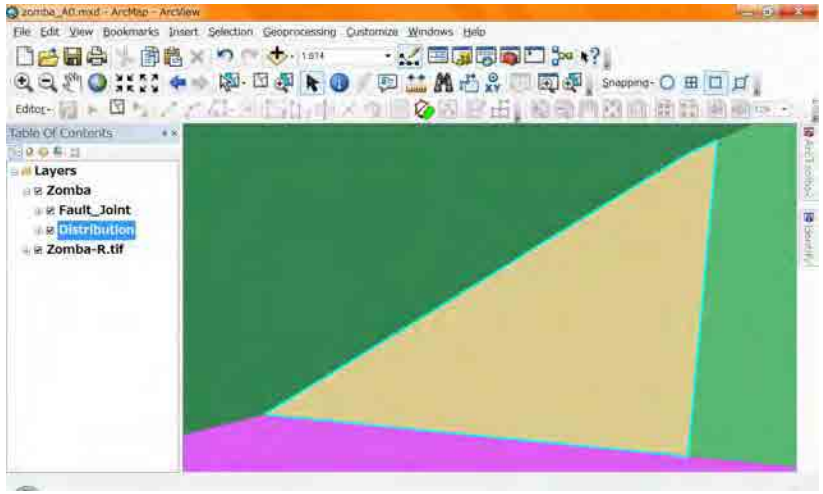


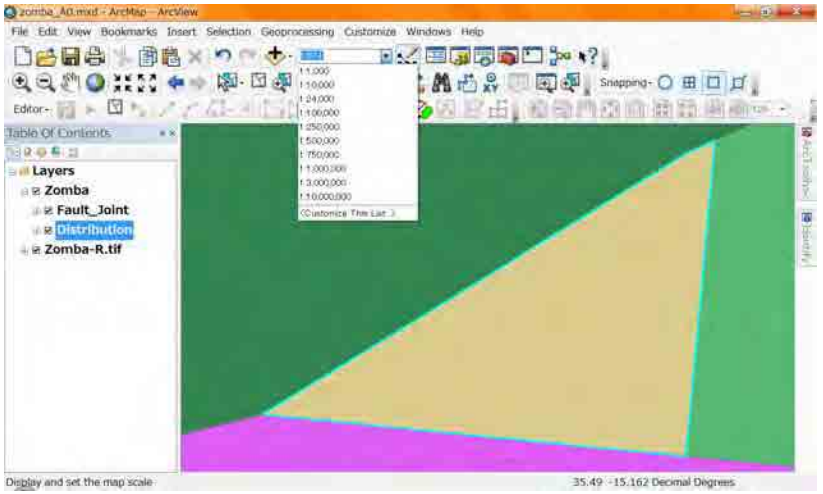
After selection click “Zoom To Selected”.



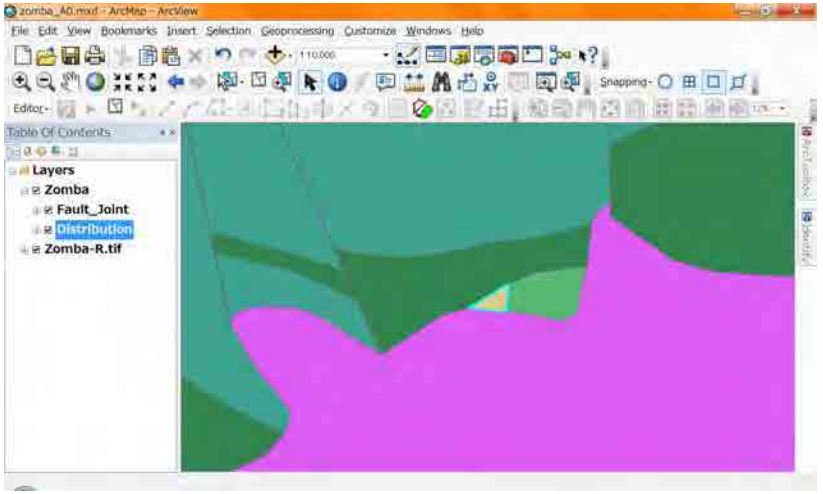
The polygon selected (Lithology is (Phyroxne)- hornblende…) is zoomed in the data

view window .



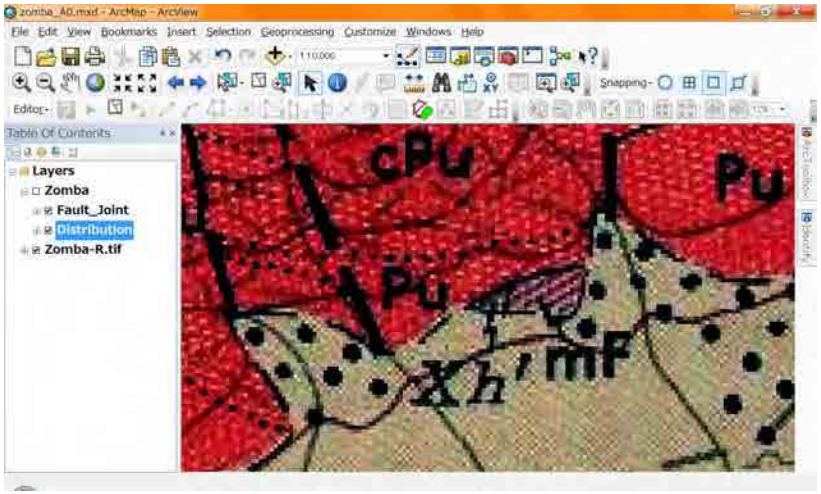


Select the scale near 10,000.

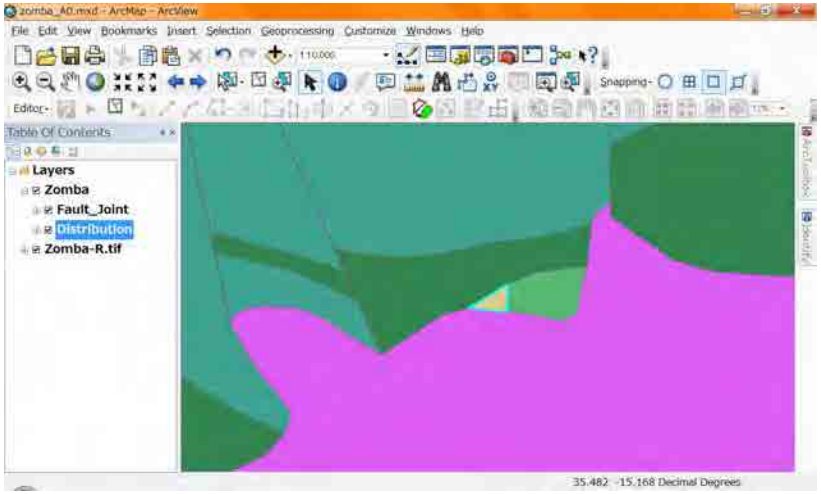


You remember the area selected.

Hide the Group layer. (remove check mark front of the area name “Zomba”)

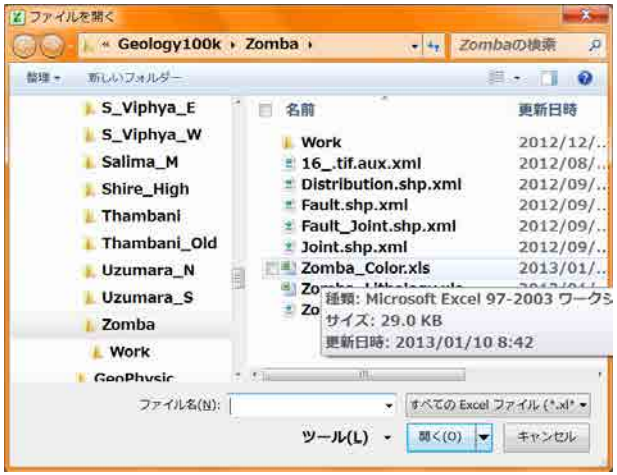


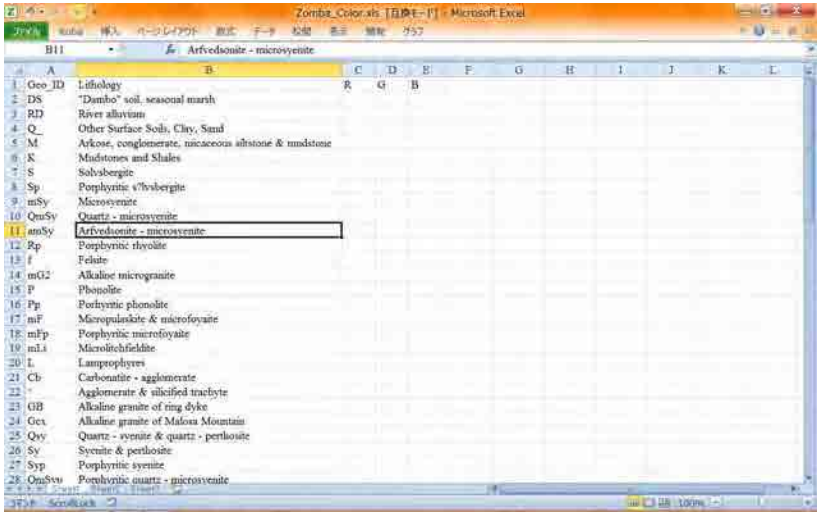
Remenber the color of the area (this case Xh' area). Show the group.



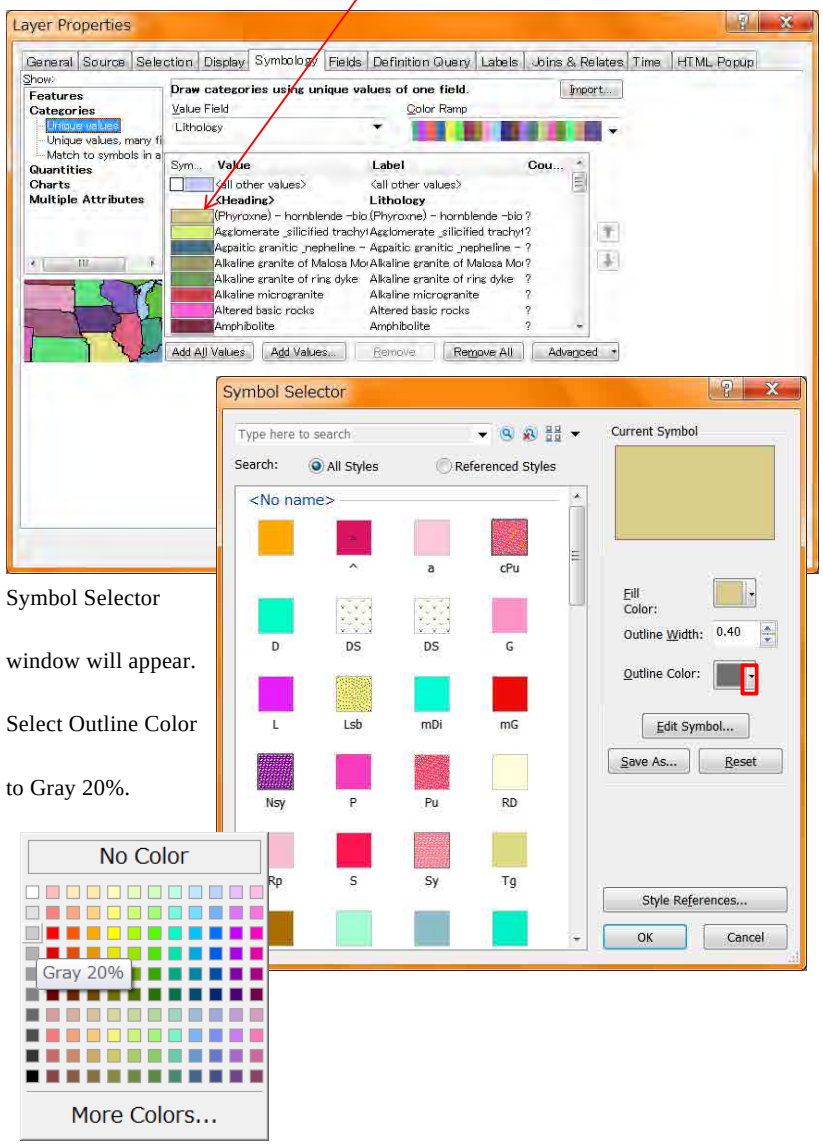
Double click on the layer (polygon Distribution) again.

Once go to Microsoft Excel, then open the file Area_Color.xls which you saved.





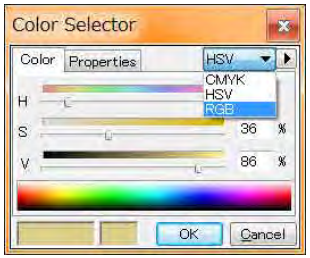
Double click on the color rectangle front of first lithology, (Phyroxne)-Hornblende…



Symbol Selector window will appear.

Select Outline Color to Gray 20%.

Select Fill Color to the color you remember using More Colors.



After selection of “More Colors” the Color Selector window will appear.

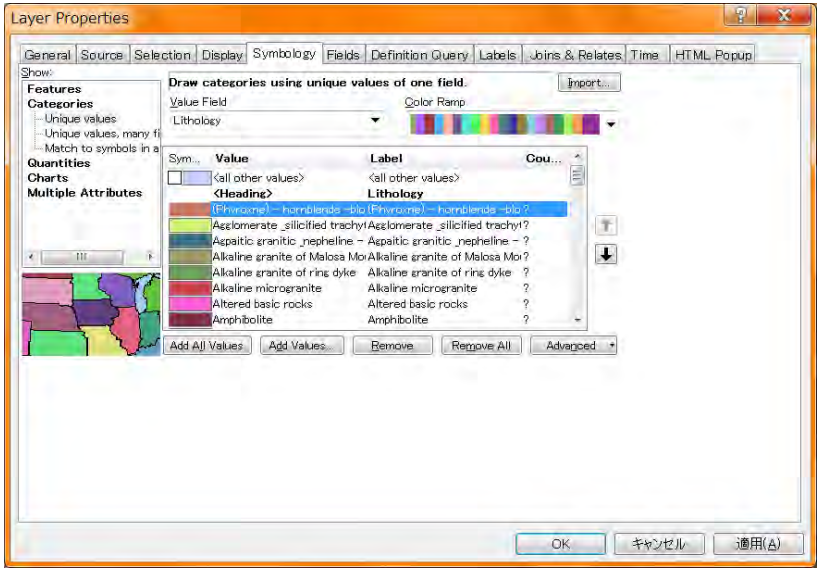
Select “RGB”.

Select each RGB value using slider or input number.

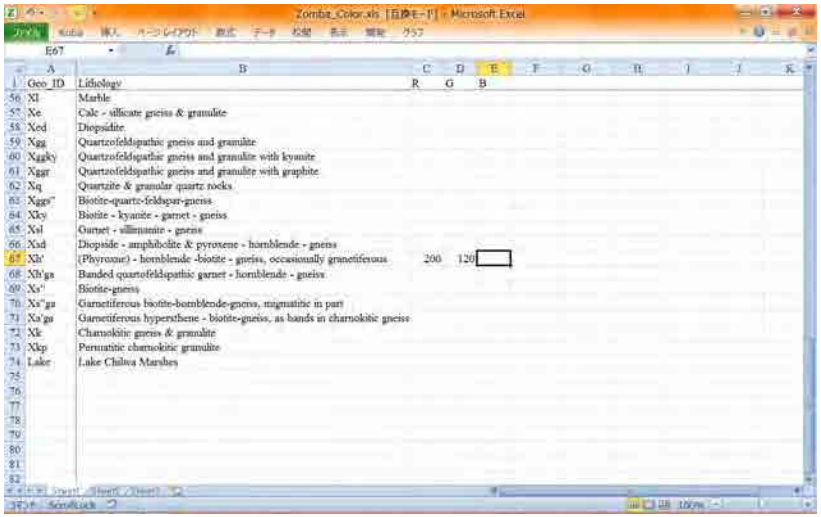
Remember each value.

After selection click “OK”.

The color rectangle front of first lithology has been changed.



Go to Microsoft Excel input RGB value into Area_Color.xls file.



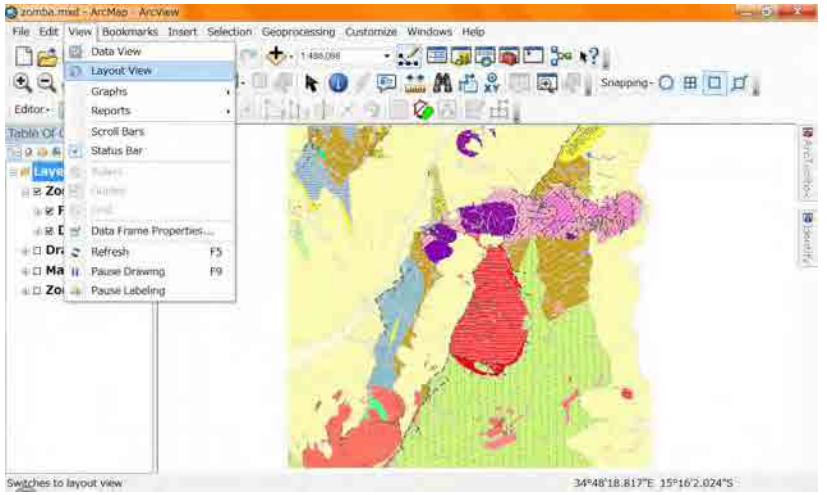
Do same way for the other lithologies also.

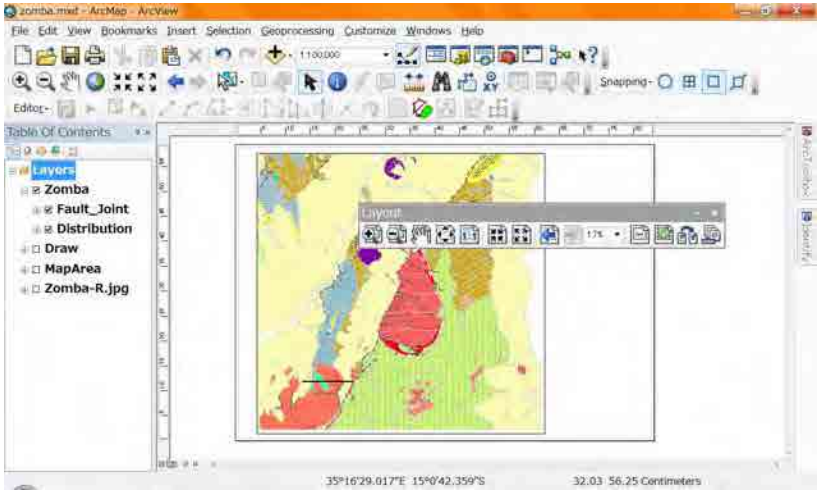
1. Data Frame in the Layout View

1-1. Change the view

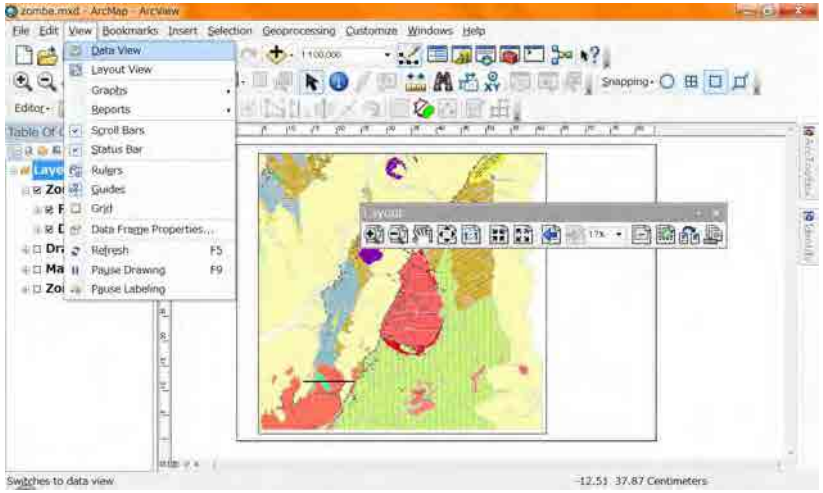
There are two modes of “Data View” and “Layout View” to show a map in ArcMap.

Mode is selected in pulldown list of “View” in Main Menu Toolbar.





Also you can change from “Layout View” to “Data View”.



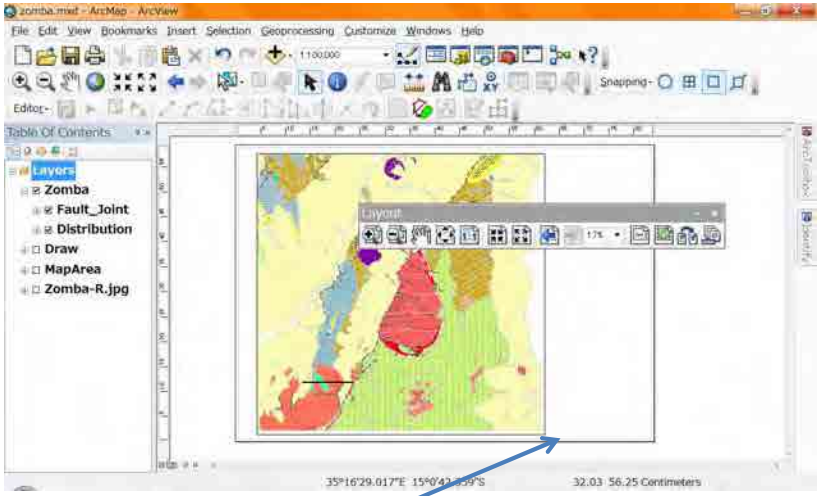
The purpose of each view is

・Data View : Brows the geographic data, edit, analyze and etc.

・Layout View : Design a layout for print

Create a legend, north arrow and map scale

Overlay figures and texts

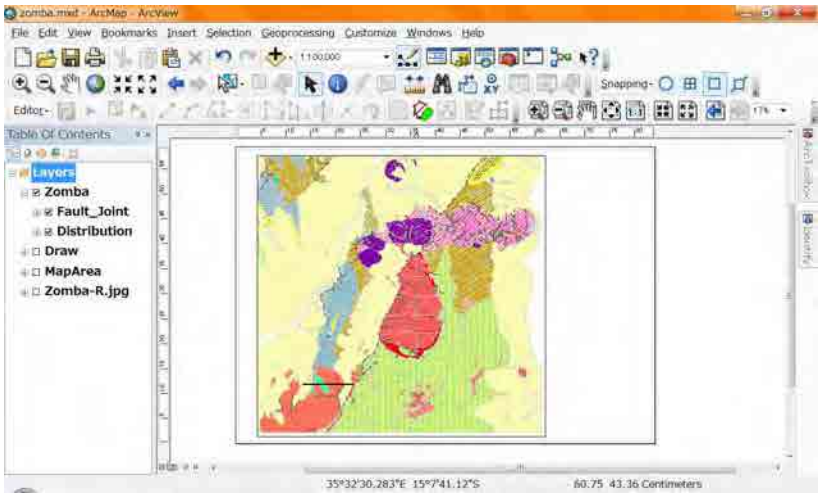


In the layout view you can see a rectangle, it means the paper size in your display.

Here in after we call this rectangle, “paper”.

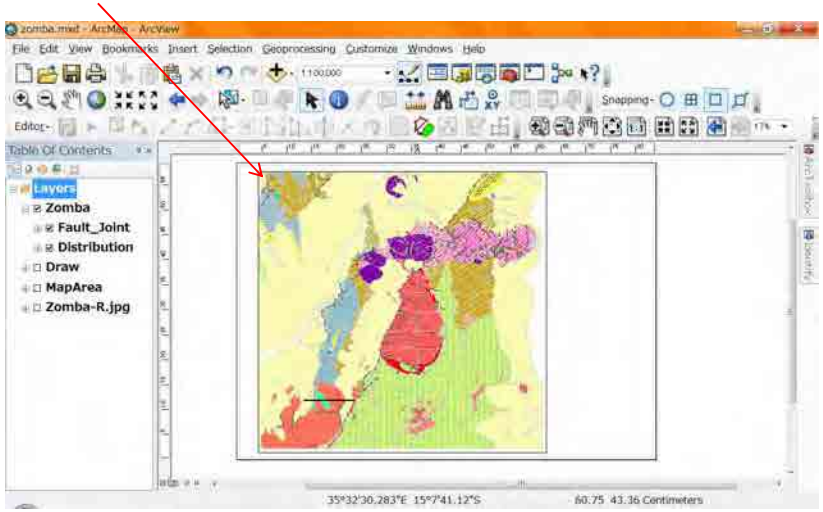
And you might find a new tool bar “Layout”. This tool bar is good for the layout view.

Move the tool bar beside the others.



1-2. Data Frame

After changing to the layout view, you add check mark in the table of contents, and use “zoom to layer”, you can see some map in paper in your display. This rectangle is data frame.



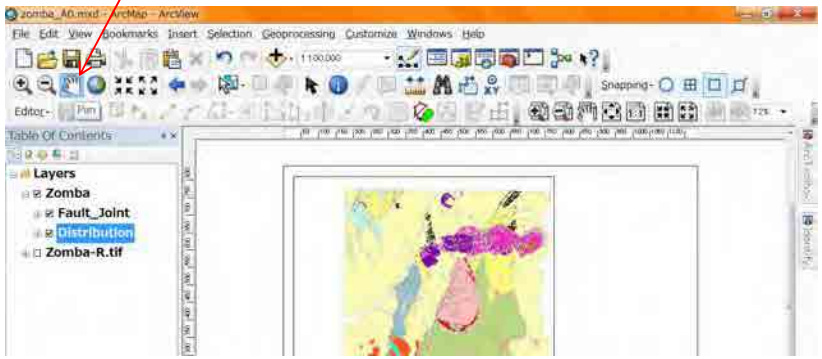
Data frame is a drawing map area in the paper. It seems a hole or a window.

Grasp this concept that the layout view has 2 planes which are a “paper” and a “Data Frame”.

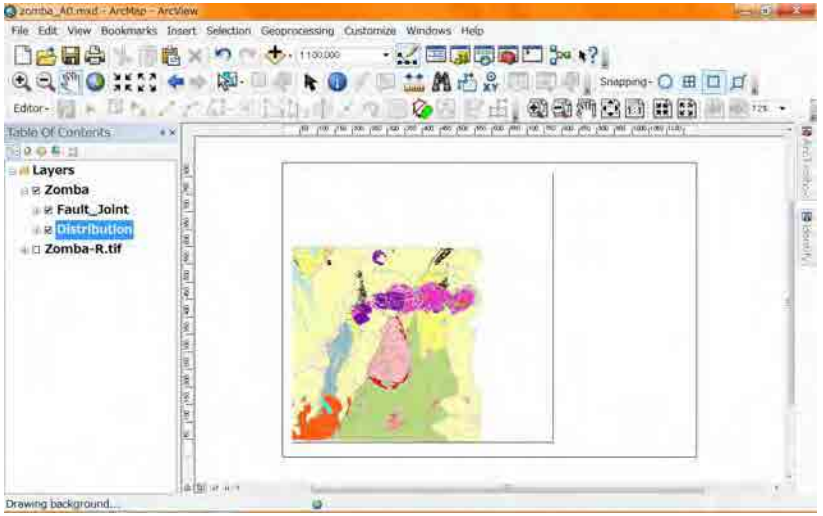
1-3. 2 kinds of Zoom and Pan

There are 2 kinds of “Pan”, one is used before.

You select “Pan” in your tool bar

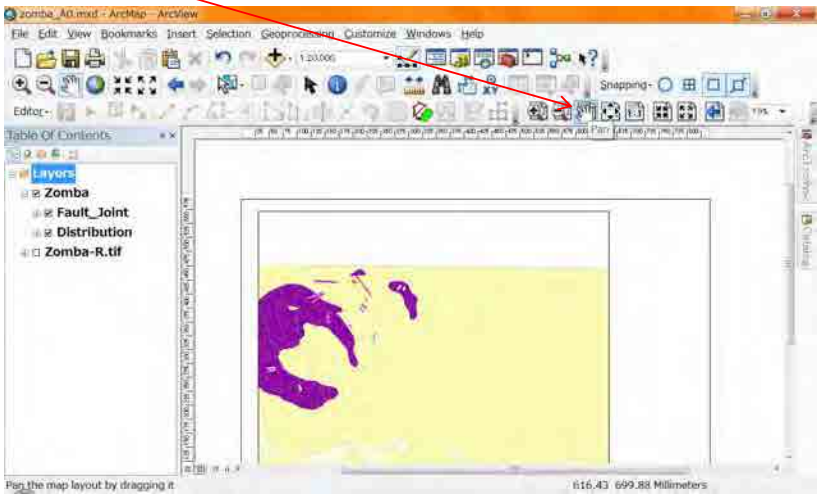


You can move the map in your data frame.

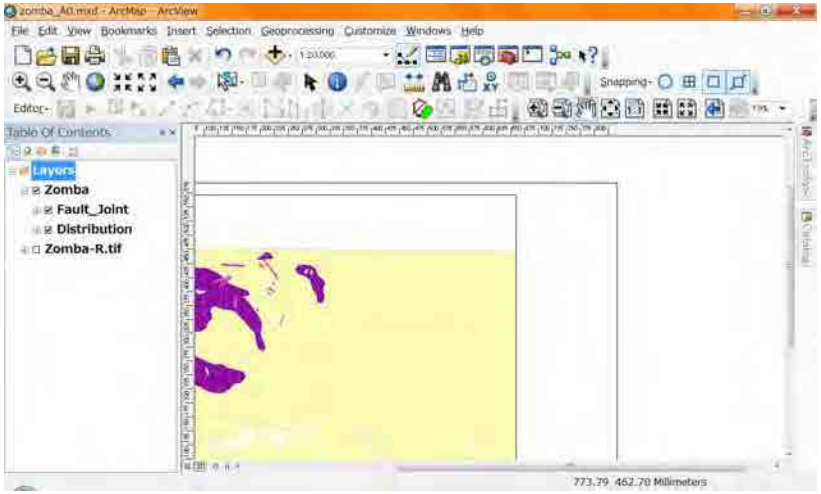


You can not use this “Pan” out of the data frame.

Another “Pan” is good for the Paper.



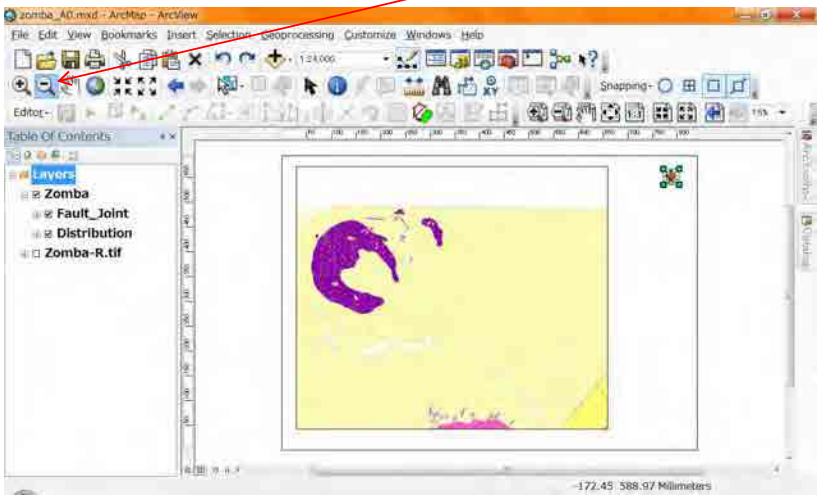
When you use this “Pan” the Paper will move in your Layout view.



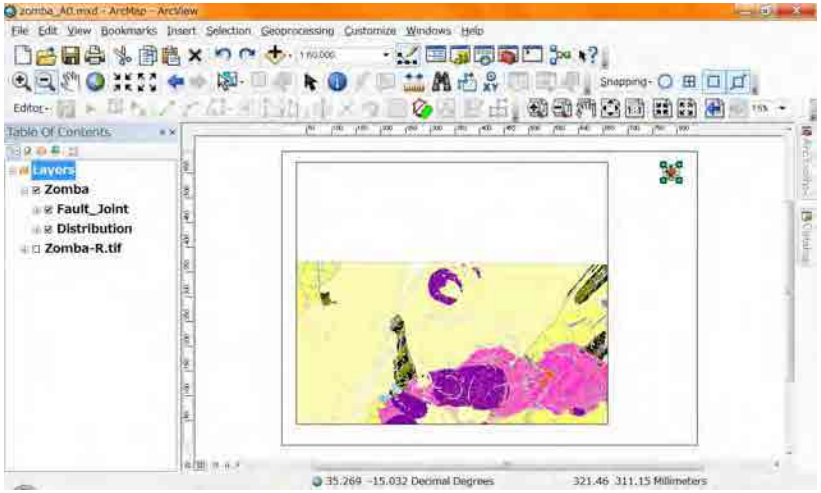
You can use this “Pan” in your Layout view.

About the “Zoom” also there are 2 kinds of Zoom in the Layout view.

One is good for the “Data Frame”. Once try to use “Zoom out” in the data frame.

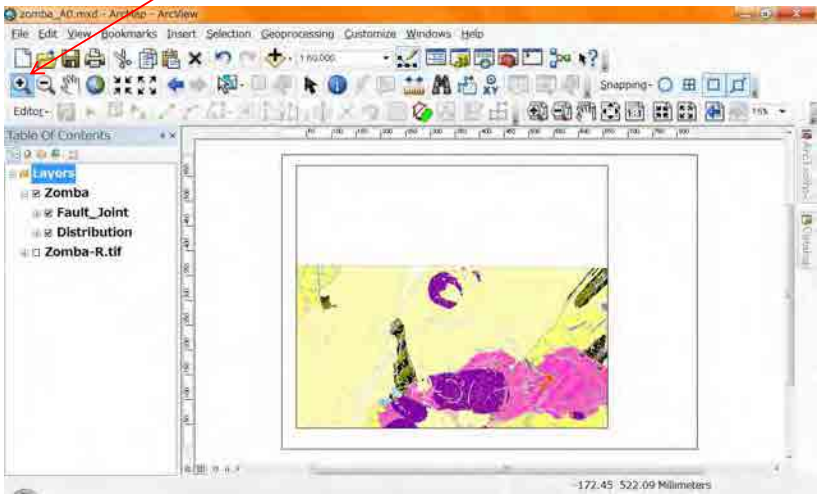


After selecting the “Zoom Out”, Click several times in the data frame.

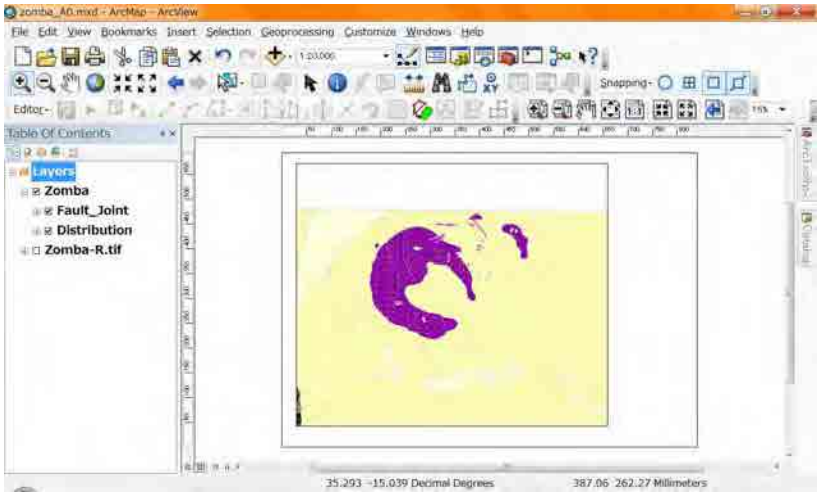


The map scale becomes smaller.

Next you use the “Zoom In” in the data frame.

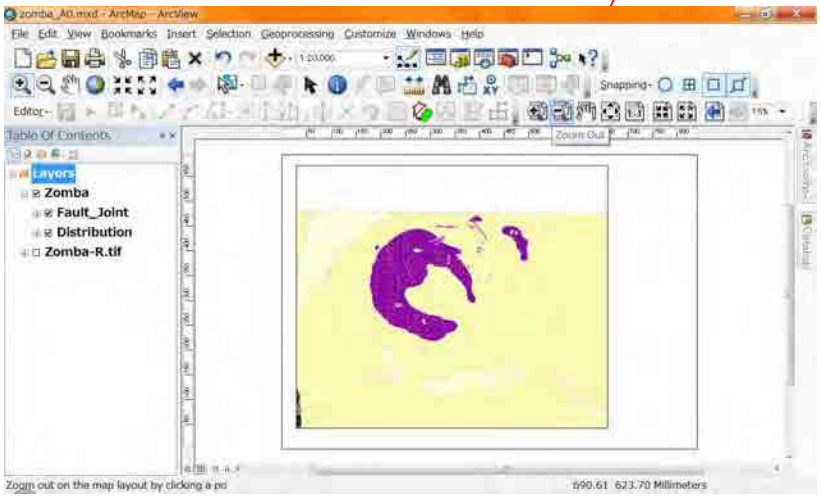


After selecting the “Zoom Out”, Click several times in the data frame.

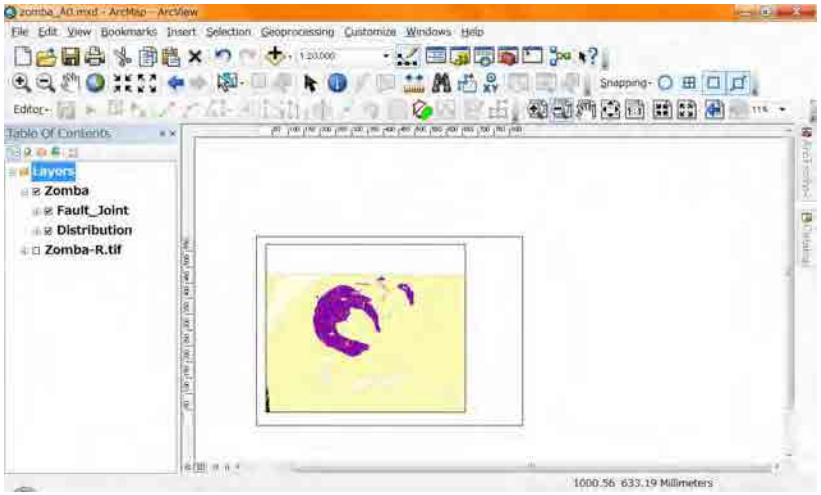


The map scale becomes bigger.

For the paper there are “Zoom Out” and “Zoom In”. Try to use “ZoomOut”.

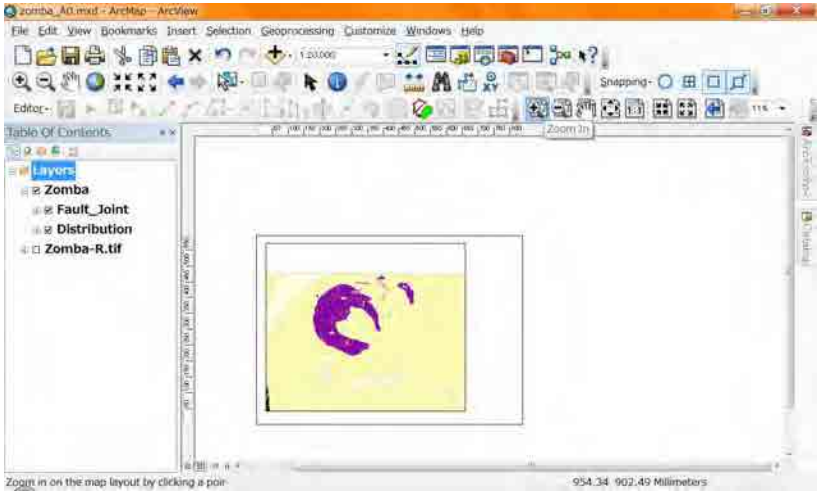


After selecting the “Zoom Out”, Click several times in the Layou View.

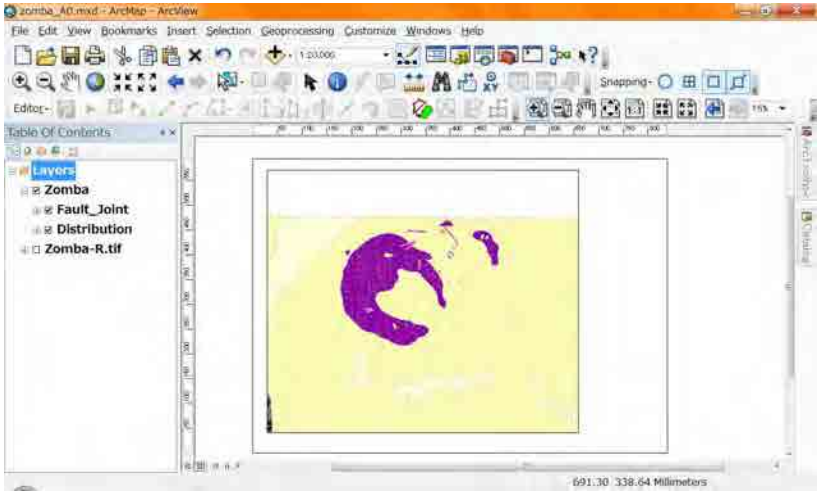


The paper seems smaller.

Next you use the “Zoom In” in the layout view.



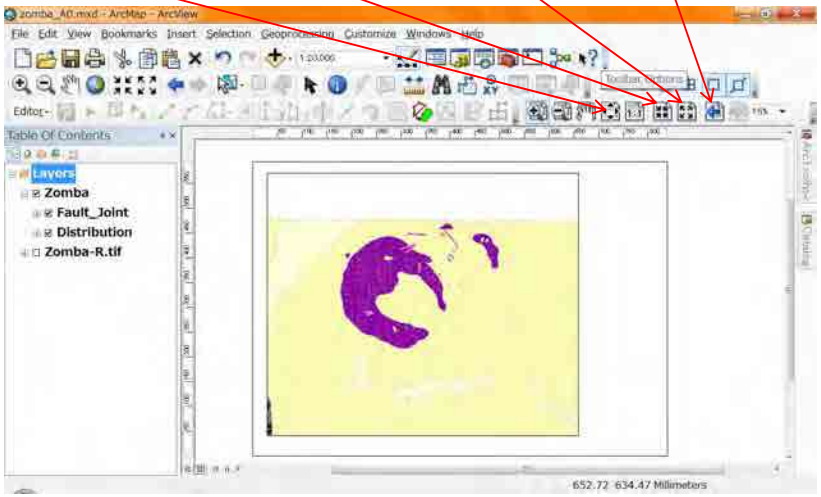
After selecting the “Zoom In”, Click several times in the Layou View.



The paper seems bigger.

For the paper there are other zooming tools.

“Zoom Whole Page” , “Fixed Zoom In” , “Fixed Zoom Out”, “Go back to extent”



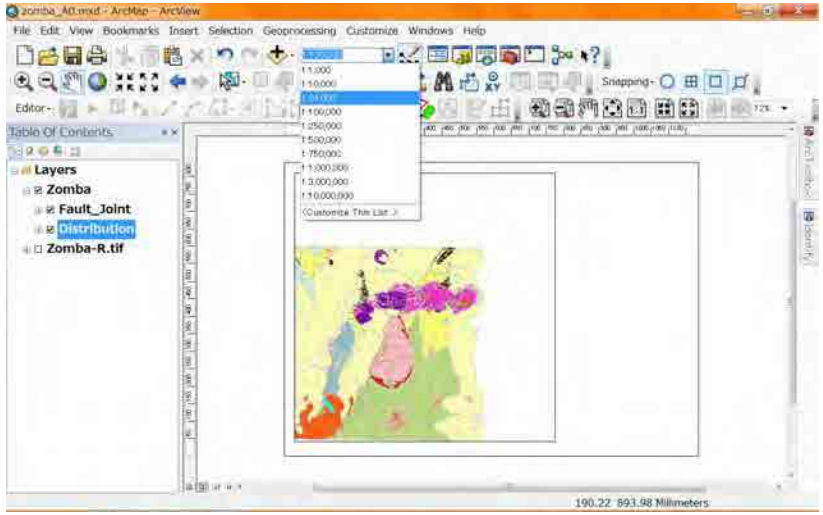
“Zoom Whole Page”: You can see the whole paper in your layout view with one click on the tool bar.

“Fixed Zoom In” and “Fixed Zoom Out”: Just one click on the tool bar, the paper seems smaller or bigger.

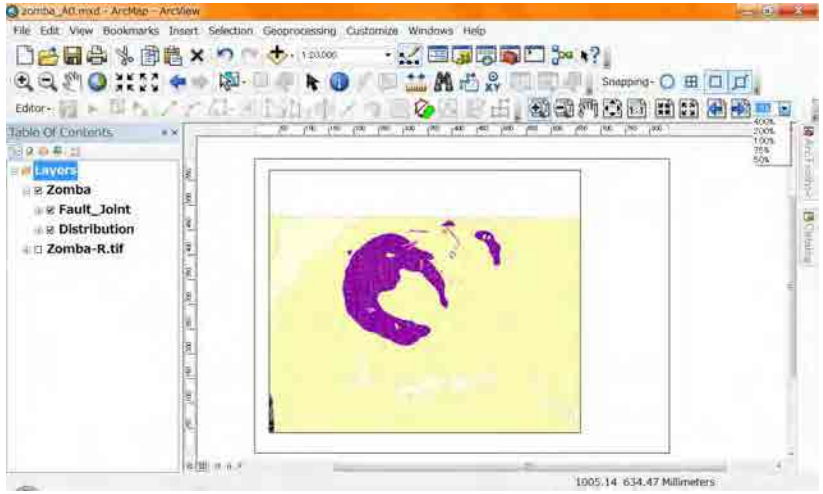
“Go back to extent”: Just one click on the tool bar, the layout view ie changed to the previous scene.

These are convinient for the paper in the layout view.

And also you can select the scale of the data frame. It is easyer the Zoom.



There is a similar selector for the paper. It is not so useful.



1-4. Set the paper size and orientation

Estimate the size of your geologic map and orientation from the paper map.

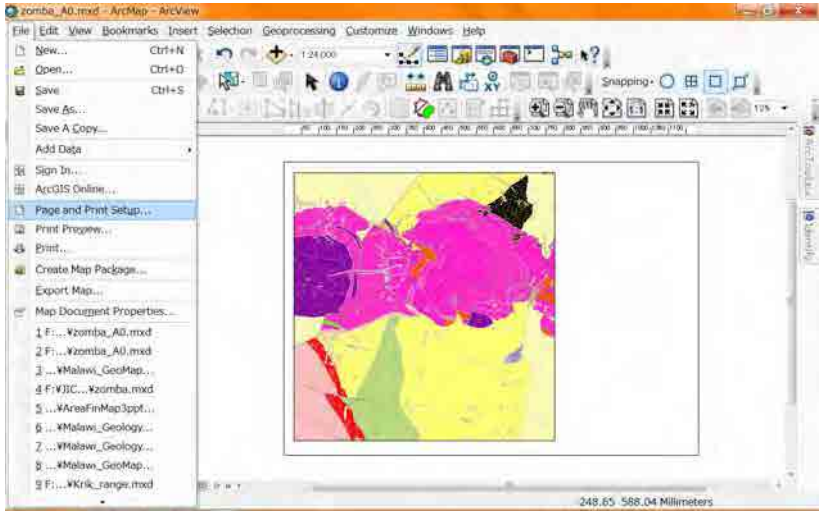
In this manual we use the size “A1” and orientation “Land Scape”. These came from the paper geologic map of “Zomba”.

If you estimate the paper size of your area “A0”, you read “A1” in this manual “A0”.

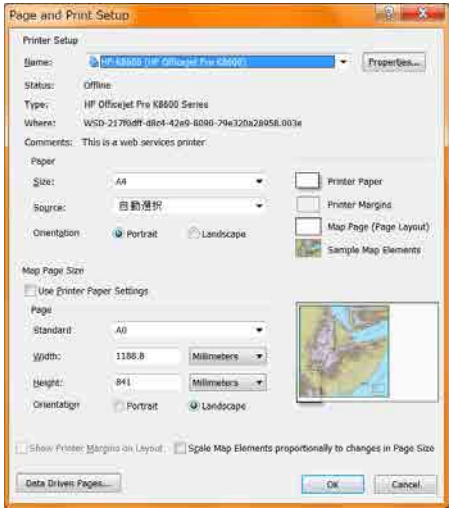
If you estimate the paper orientation of yours “Portrait”, you read “Landscape” in this manual “Portrait”.

For setting for printing paper, you can change from “File” in your main menu.

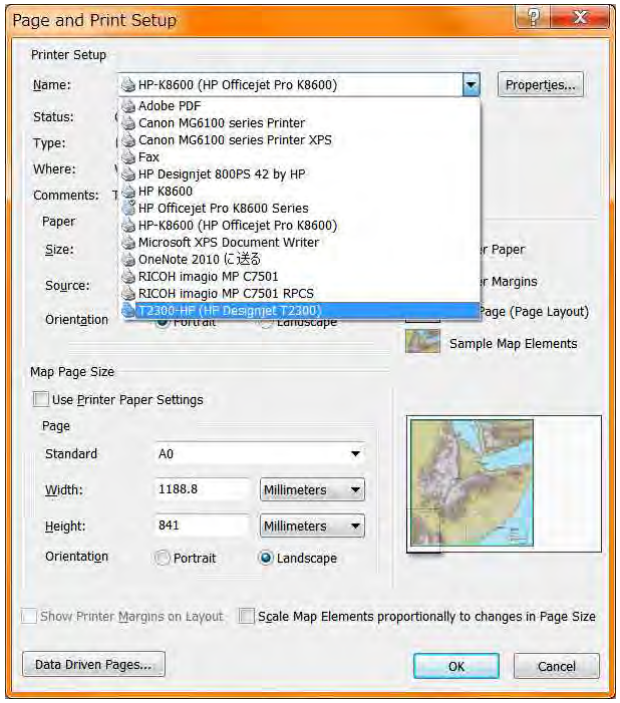
Select “Page and Print Setup”.



“Page and Print Setup” window will appair.

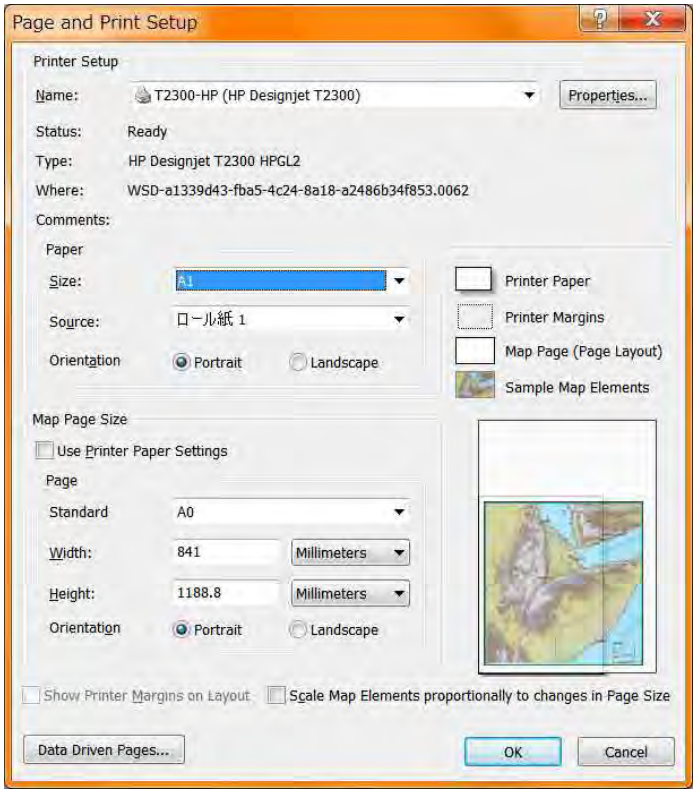


Select “T2300-HP” for name.



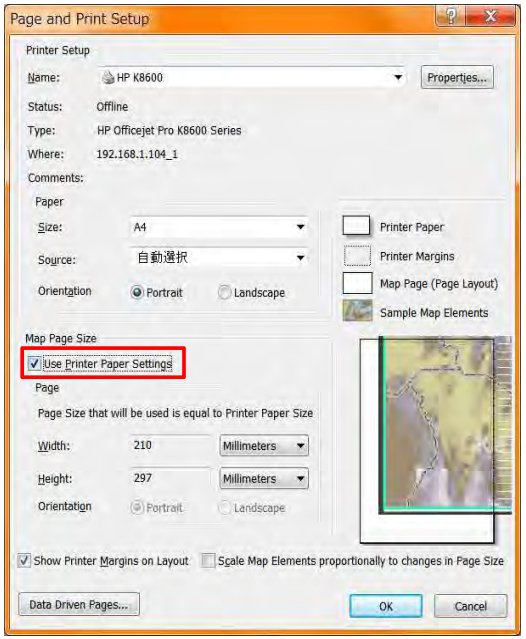
If you have the probrem about “T2300-HP” printer, You would better to select the others.

After selection of “T2300-HP”, You select paper size to “A1”.



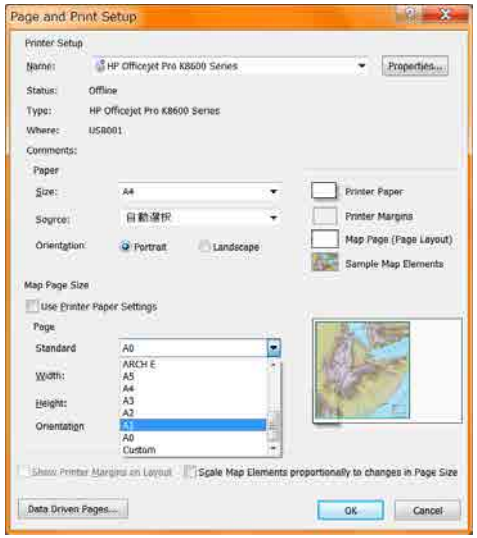
If you do not select “T2300-HP” you can not select the paper size “A0”.

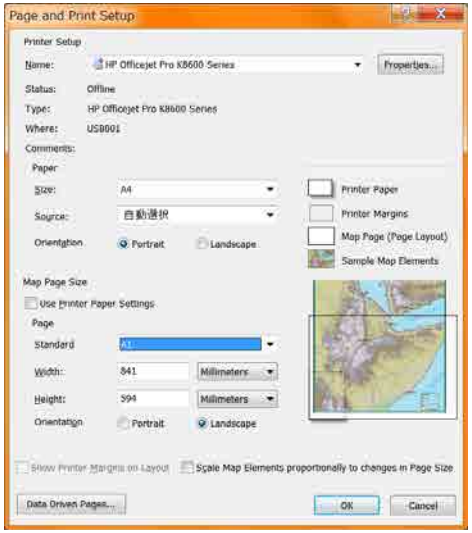
In this case, remove the check mark of “Use Printer paper setting”



After removing the check mark the line “Standard” will appear.

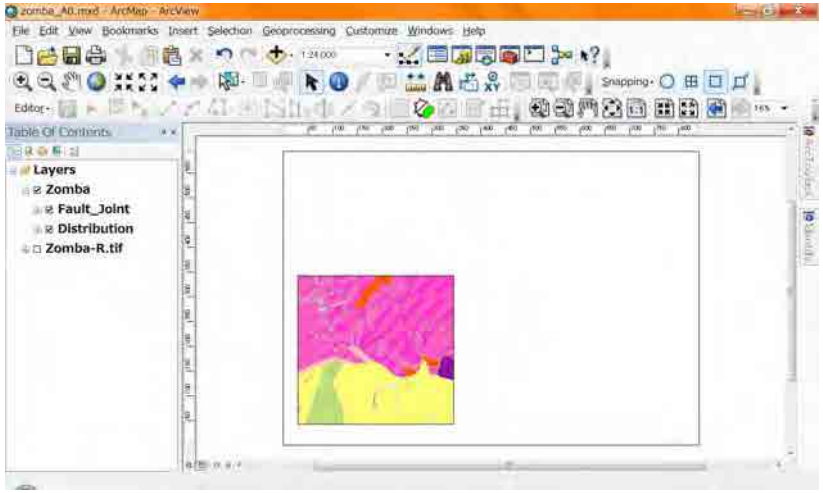
You can select “A1”.





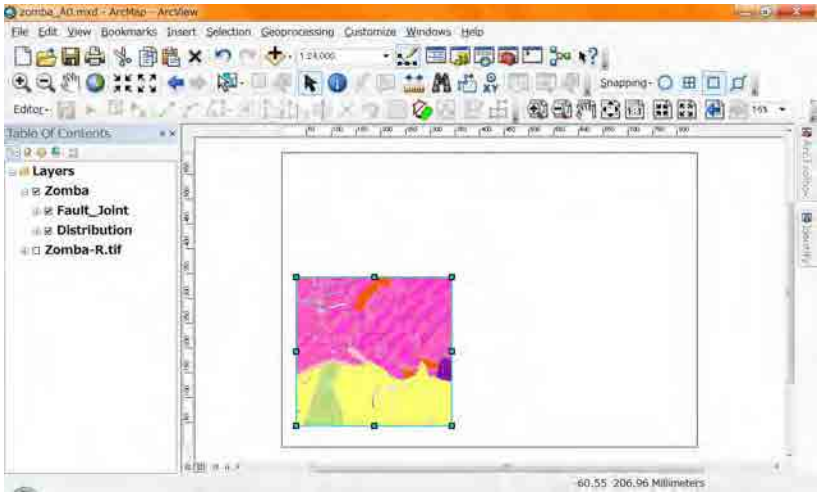
Then click “OK”.

The paper size and its orientation has been changed.

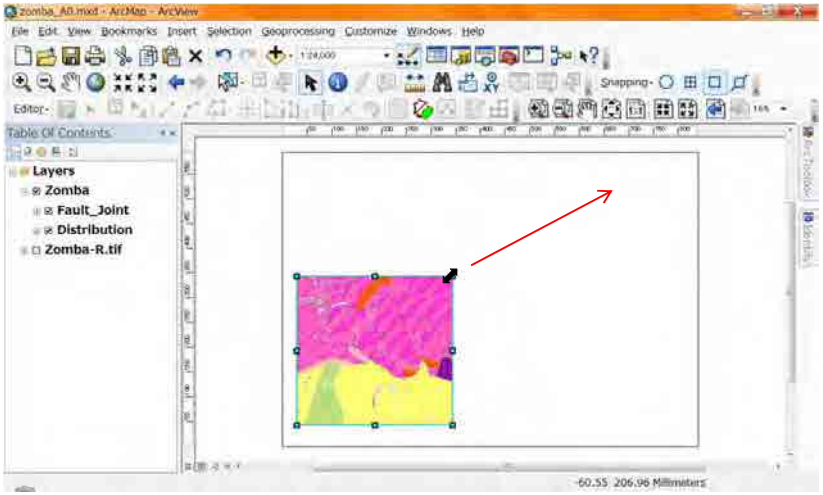


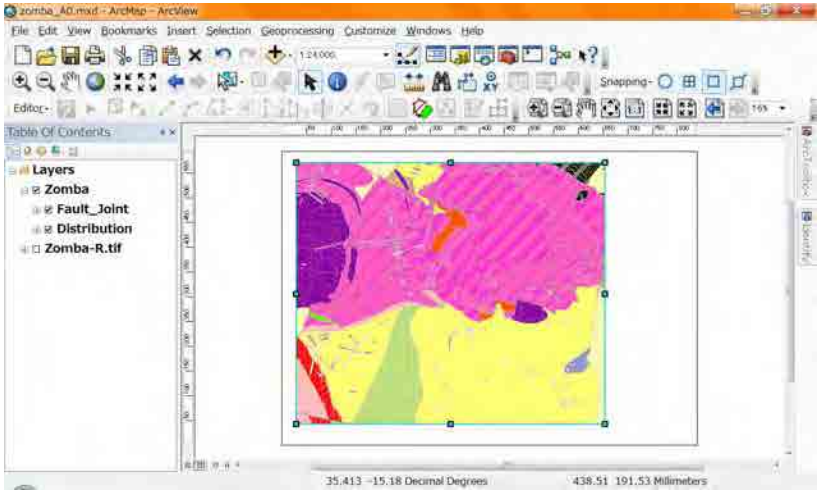
1-5. Set the Data frame size and position

Click on the data frame, 8 small rectangles will appear.



Under this condition, you can change the data frame size using drug these small rectangles.





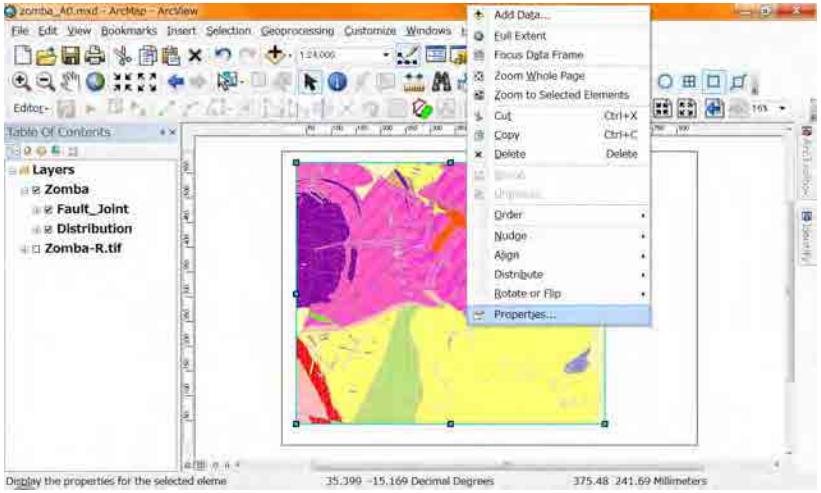
And you can move the data frame using drug inside of the data frame.

The other method for moving and changing the size of data frame is

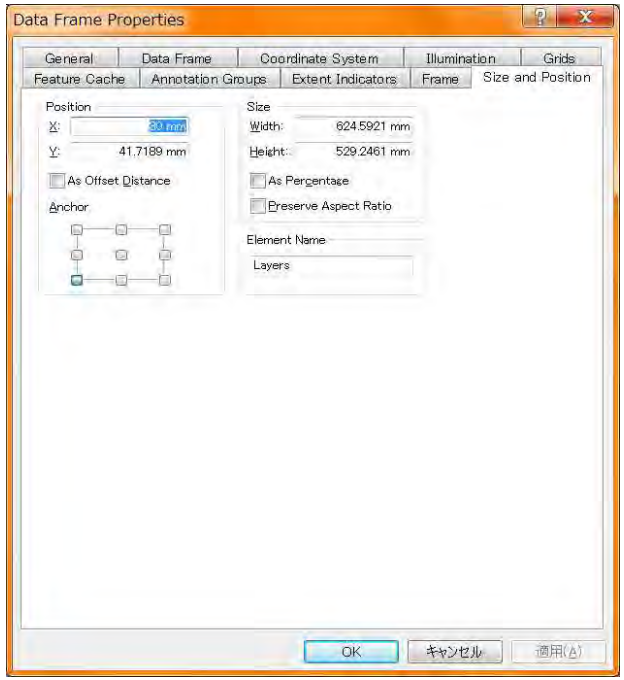
Right click
Request small menu

on the data frame, select “properties”, then the “Data Frame

Properties” window will appear.

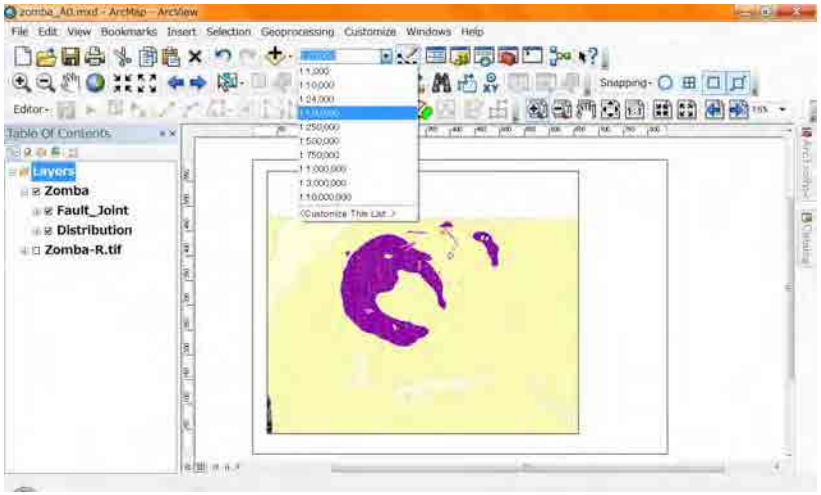


You can enter the value for possintion and size of tha data frame in the paper.

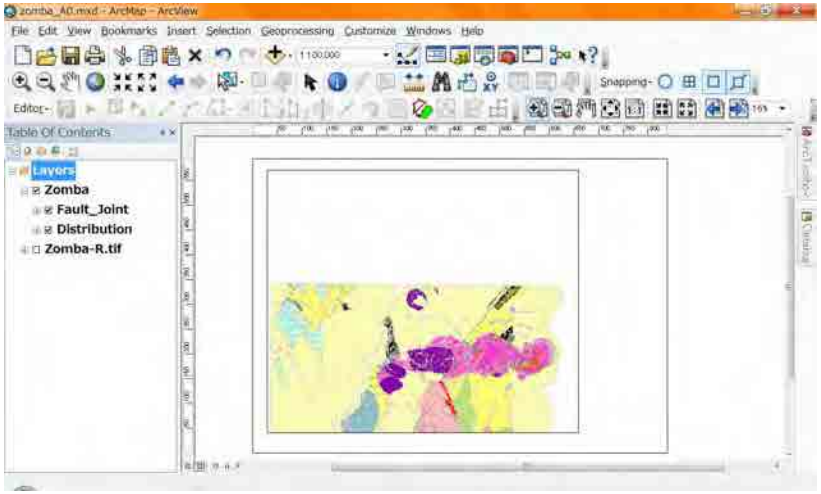


1-6. Set the Scale of the data frame

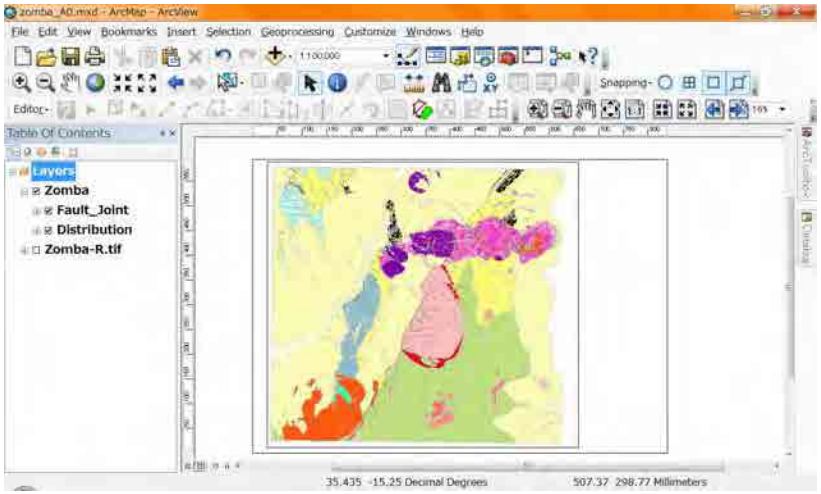
We will print the Map 1:100,000 scale Geologic Map, so select 1:100,000 scale.



The data frame (Map) scale has changed.

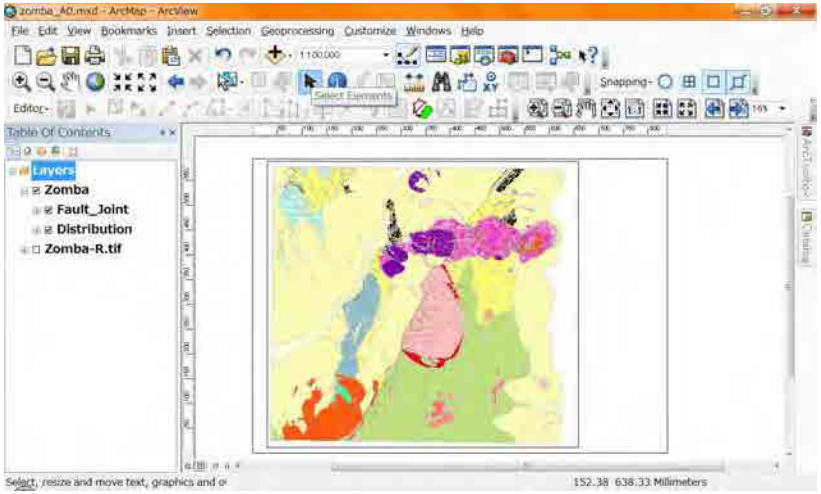


Move the map to good location using “Pan” for the data frame.



If you need changing the size of data frame, after selecting the tool “Select Elements”,

click the data frame, then the 8 rectangles appaer, set the data frame size.

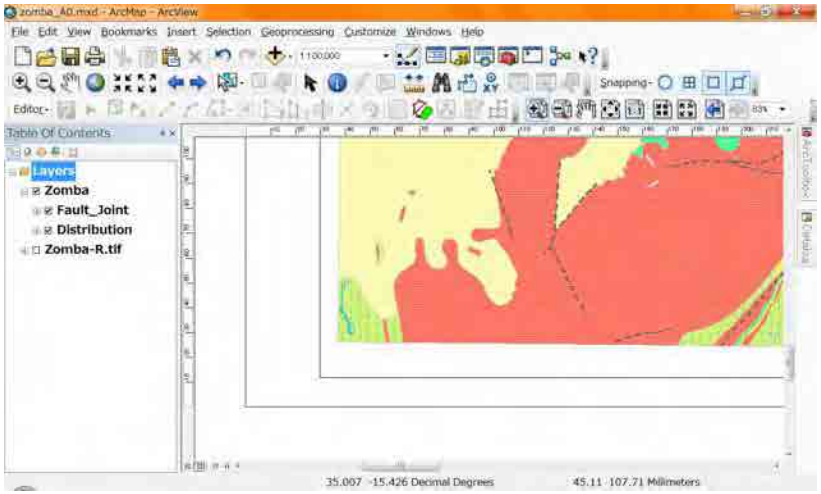


No need to be nurvous about the size of the data frame. It is enough to be bigger than

the map.

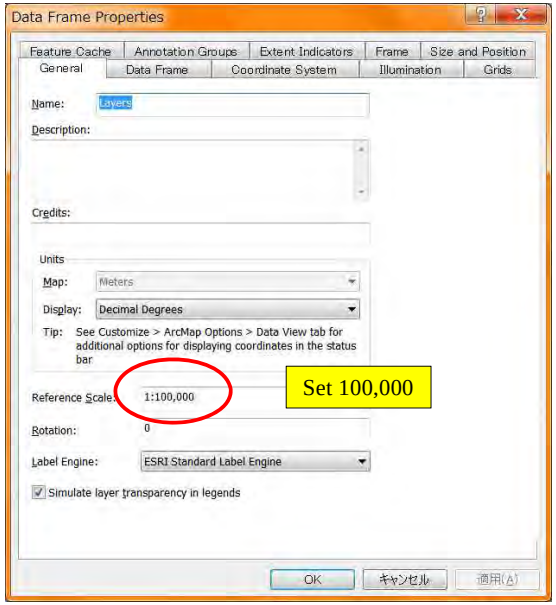
1-7. Set the Grids and the data frame for the Map

For this explanation the layout view is zoomed in the corner of the data frame.



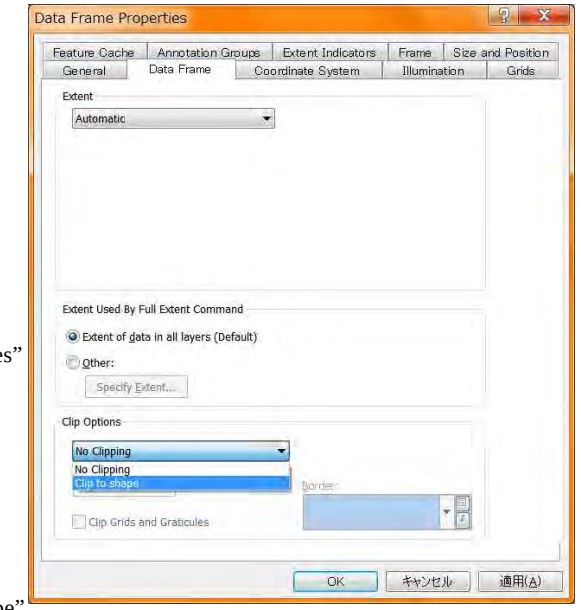
Double click on the “Layers” in the table of contents window which is “List by Drawing Order”

The “Data Frame properties” window will appaer. There is no default tab it will open as the same tab last time you used. Go to “Data Frame” tab.



Select “Clip to Shape” in the “Clip Option”

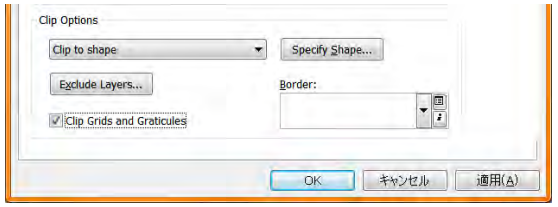
Add check mark for the “Clip Grids and Graticules”



The button “Specify Shape” will appaer.

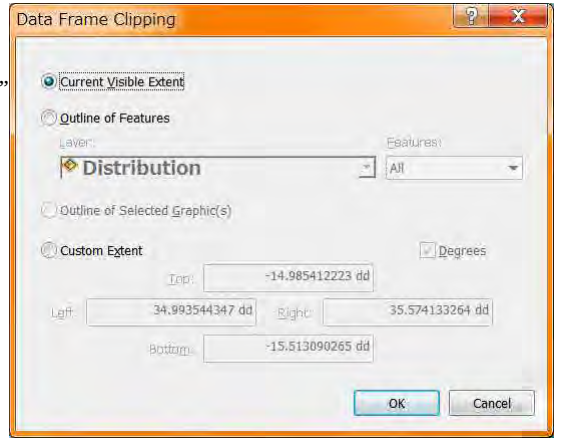
Click the Button.

The “Data Frame Clipping” window will appaer.



Select “Outline of Features”

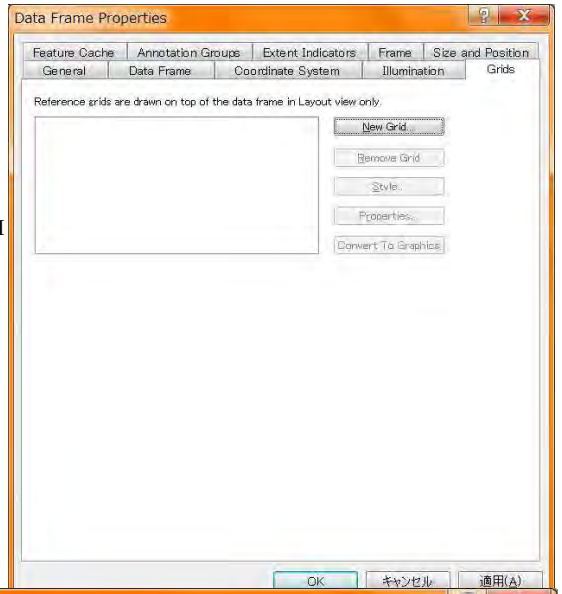
After selection select the Polygon shape file name (this example is “Distribution”) for the “Layer”. Click “OK”.



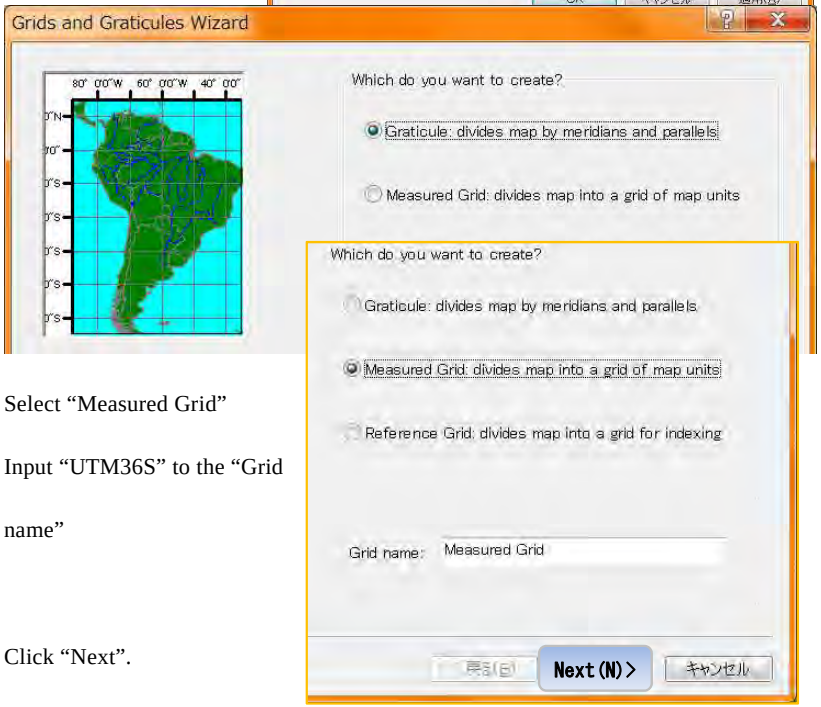
Go to the “Grids” tab.

Click “New Grid” for the adding grid of map.

This time we will add UTM grid.



The “Grids and Graticules Wizard” window will appaer.

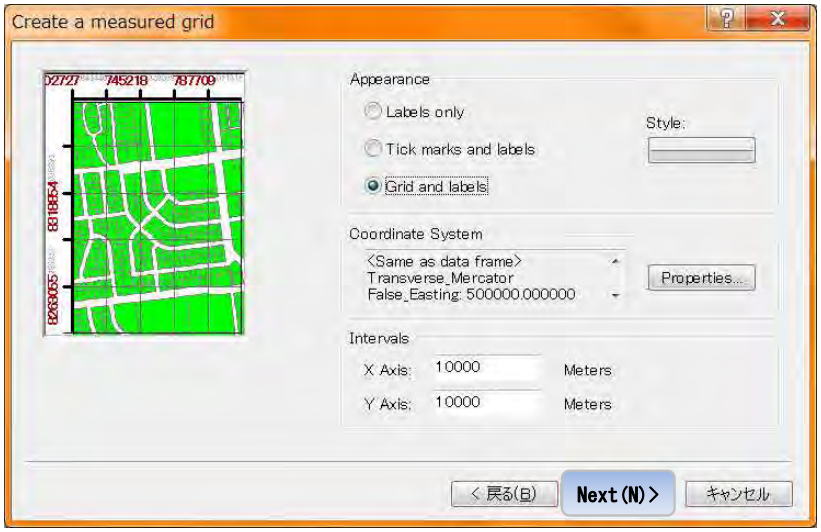


Select “Measured Grid”

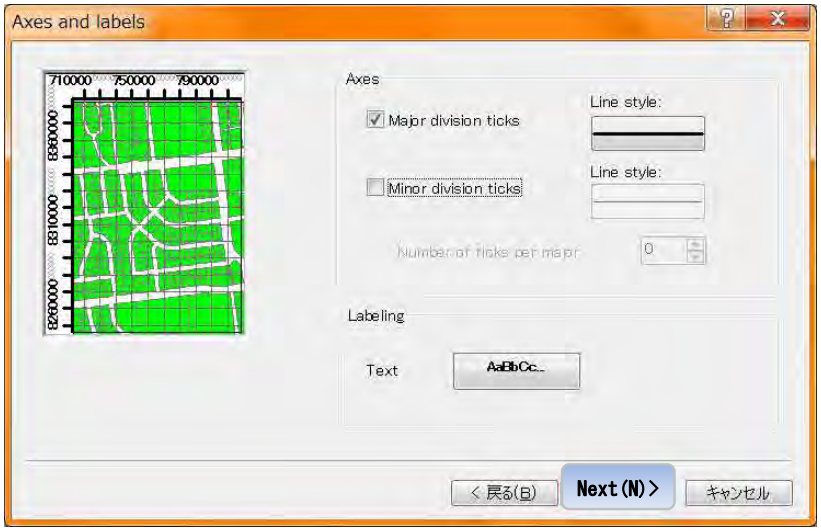
Input “UTM36S” to the “Grid name”

Click “Next”.

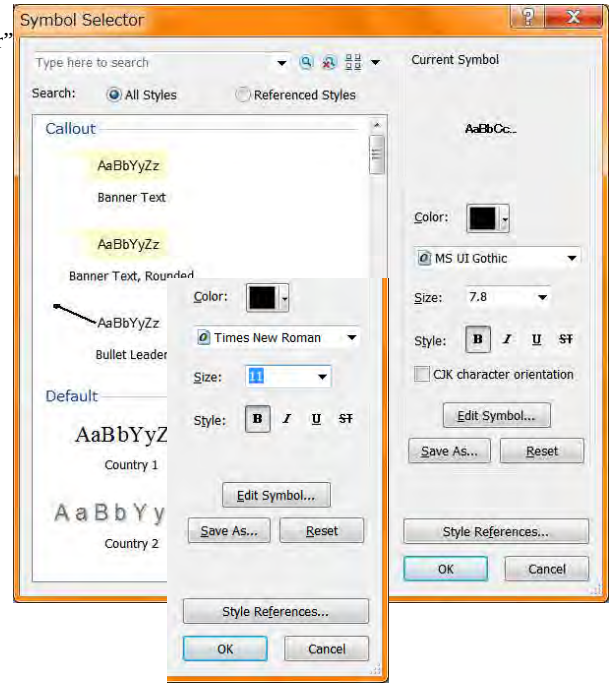
The window has changed. Select options as you like.

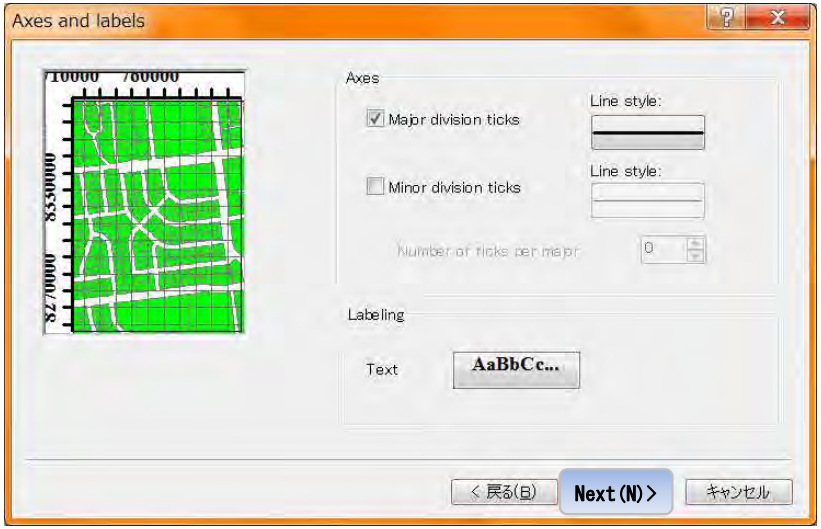


This example selects “Grid and labals” as “Appearance”, “10000” as “Intervals”of both axis. Click “Next”. Remove a check mark of “Minor division ticks”. Click the ”AaBbCc” button beside “Text” in the “Labeling”.



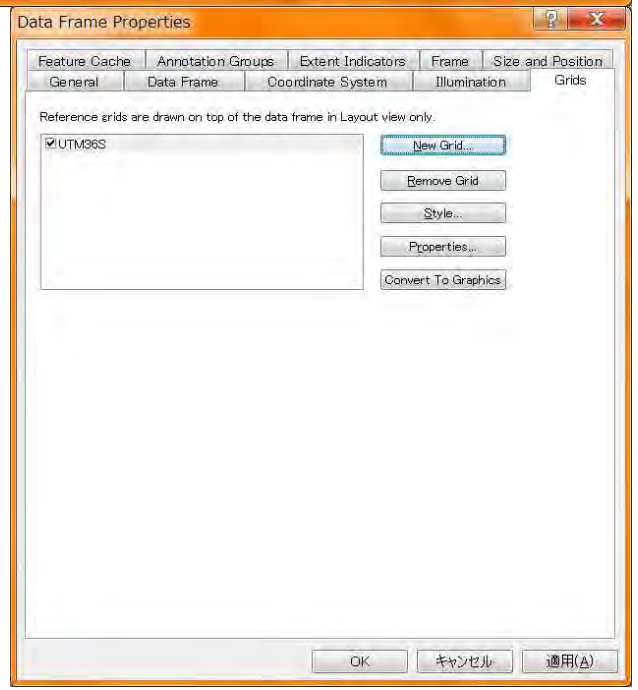
The “Symbol Selector” window will appear. Select option as you like. This example selects “Times New Roman” Size: 11, Bold. Click “OK”. The previous window appears, click “Next”.





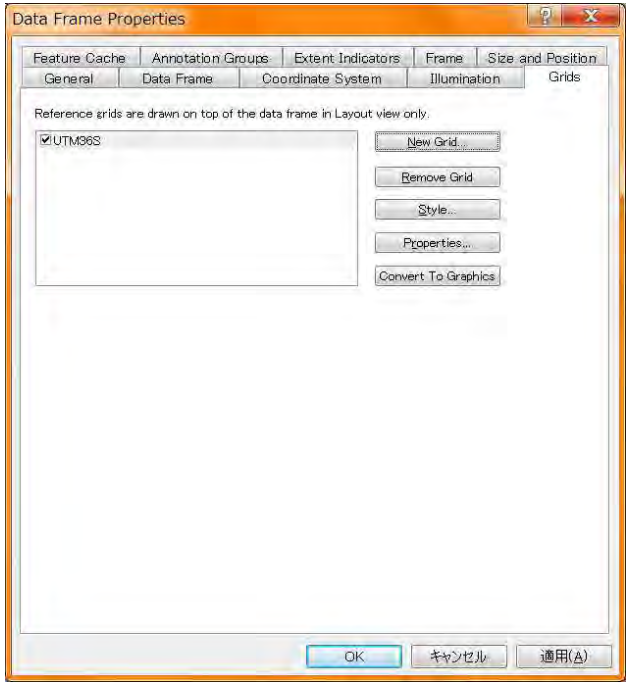
The window has changed. This example select the default option. Click “Finish”.

The “Data Frame Properties” window will appear. And “UTM36S” grid appers in the rectangle. The check mark means “Show” and “Hide” the grid.



So you can create the other grids for example “Graticule” similar as the “UTM36S”. If you create the others, they will appear in the rectangle.

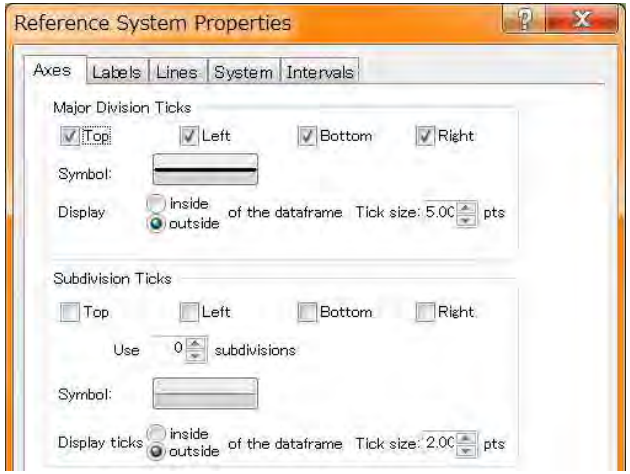
“UTM36S” is highlighted. If not single click on the name. After highlighting, Click “Properties” button.

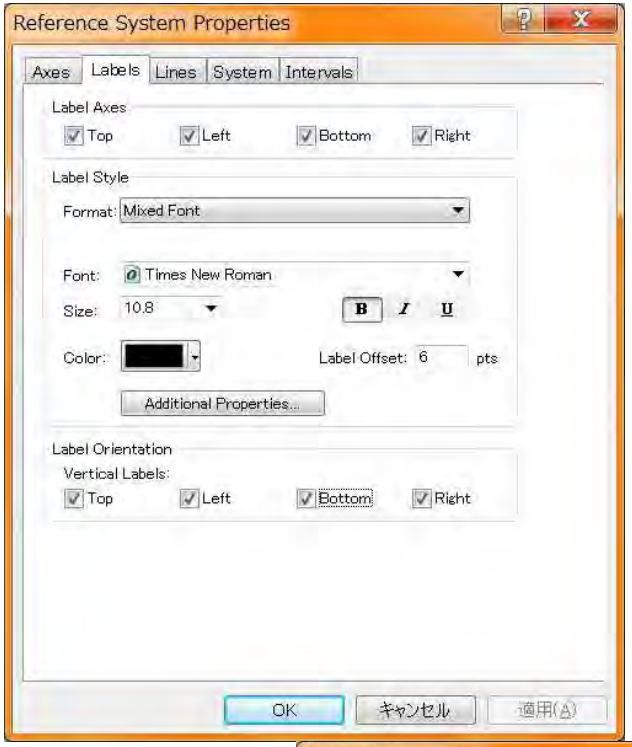


The “Reference System Properties” window will appaer.

There is no default tab it will open as the same tab last time you used.

Go to “Labels” tab.





Select options as you like.

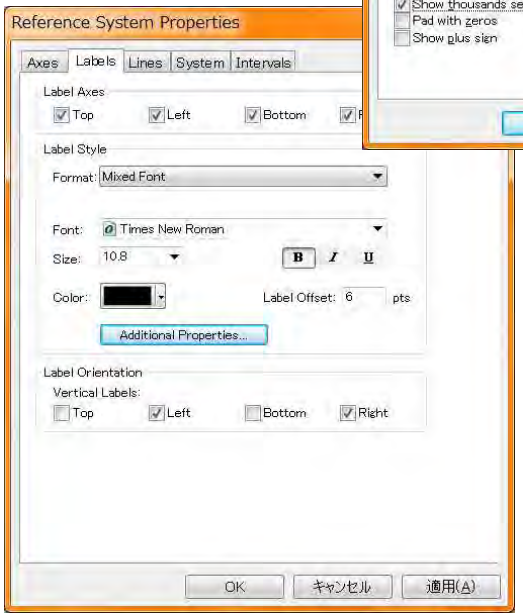
This example selects “Additional Properties” and remove check mark for “Top” and “Bottom” in the “Labels Orientation”.

After Ccicking “Additional Properties” button, the “Grid Label properties” window will appear. Select “Specify the number of digits in a grooup”. Click the “Number Format” button.

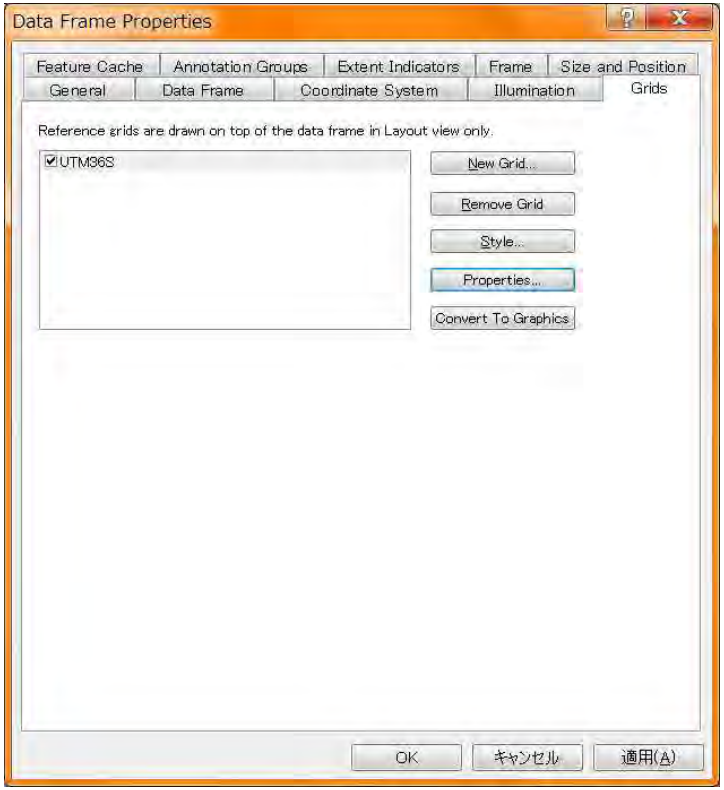
The other window “Number Format Properties” window will appear. Add a check mark for “Show thousands seperators”.

“OK”.

Click “OK”.

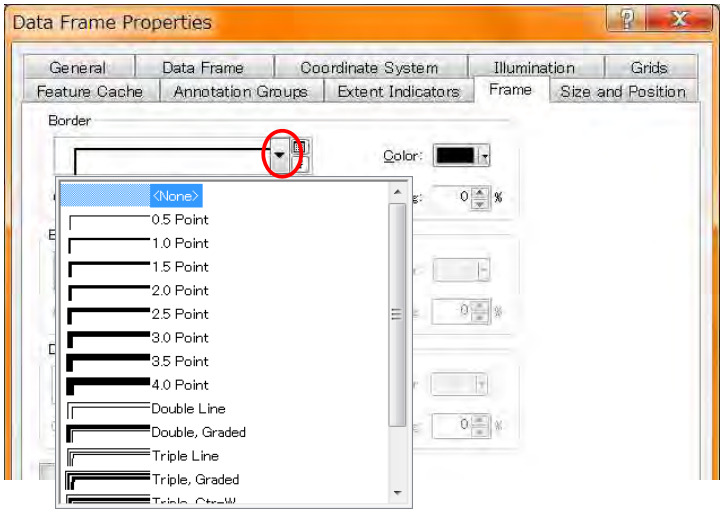


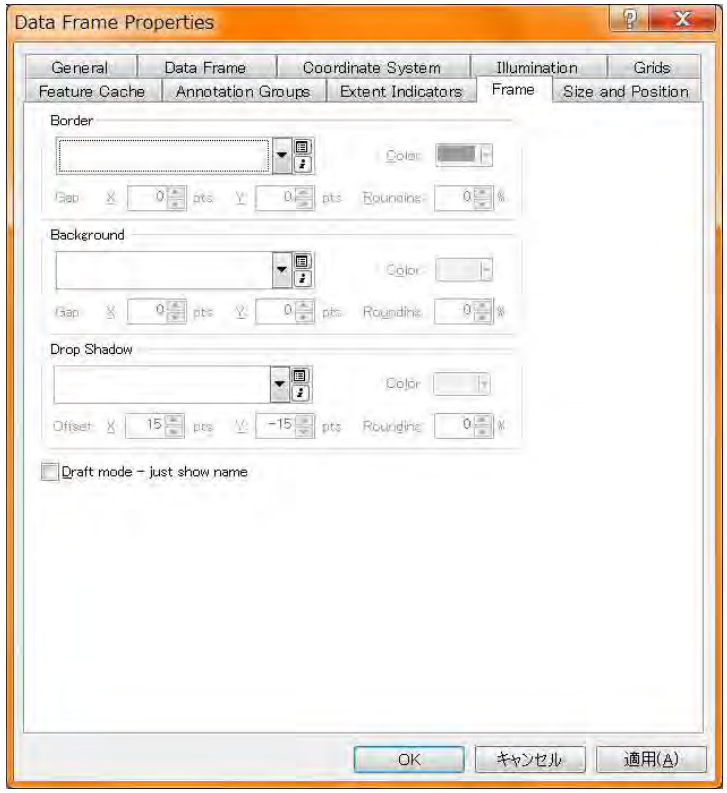
Click “OK”.



After returnning to the “Data Frame Properties” window, go to the”Frame” tab.

Select <None> for the “Border”.

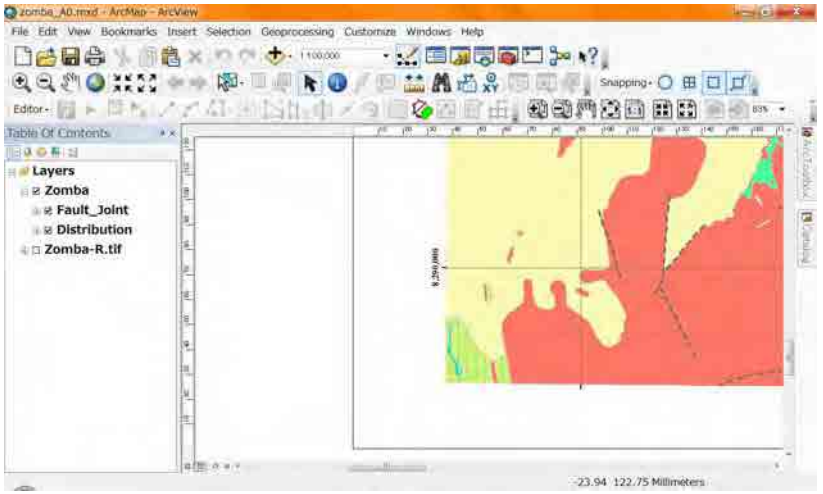




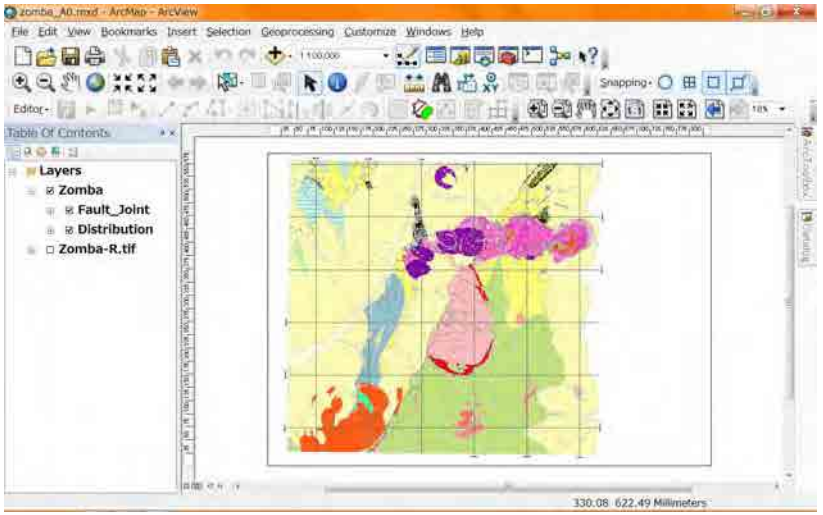
Click “OK” for the final.

See the edge of the map in your layout view.

There might be some grid lines and UTM numbers which writen with thousand separator.

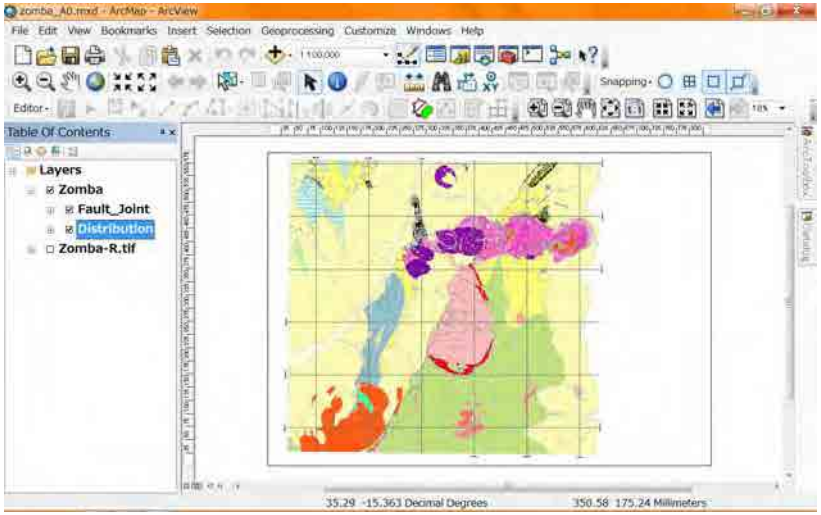


You use “Zoom Whole Page”, you can see the Whole Map.

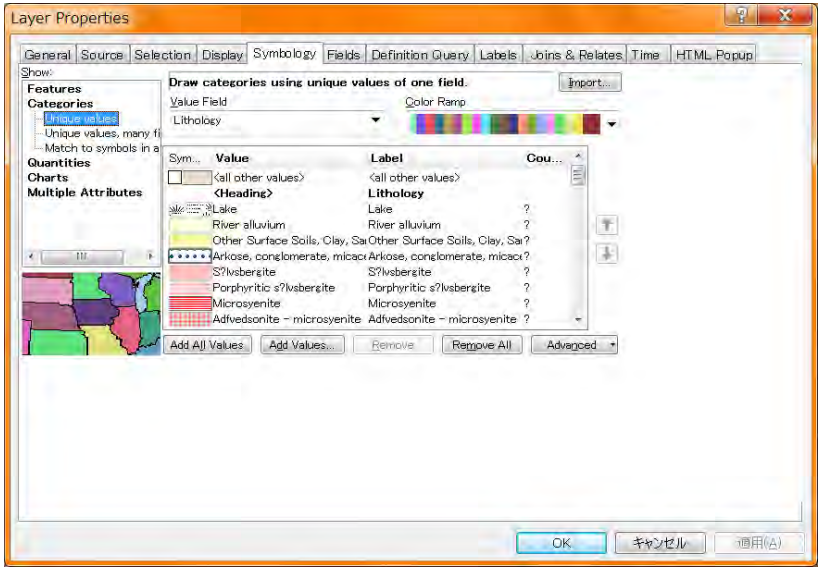


1-8. Set the Geo_ID for each geologic unit in the Map

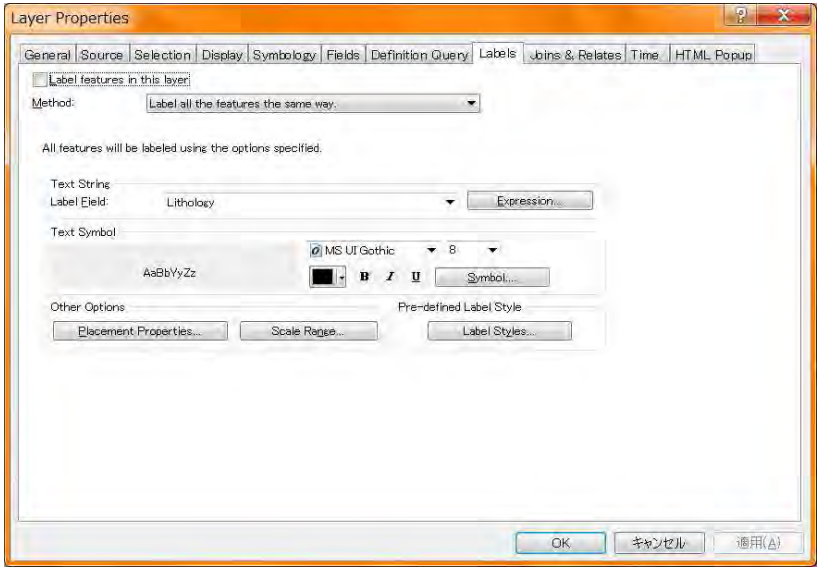
Double click on the name of polgon layer (Distribution).



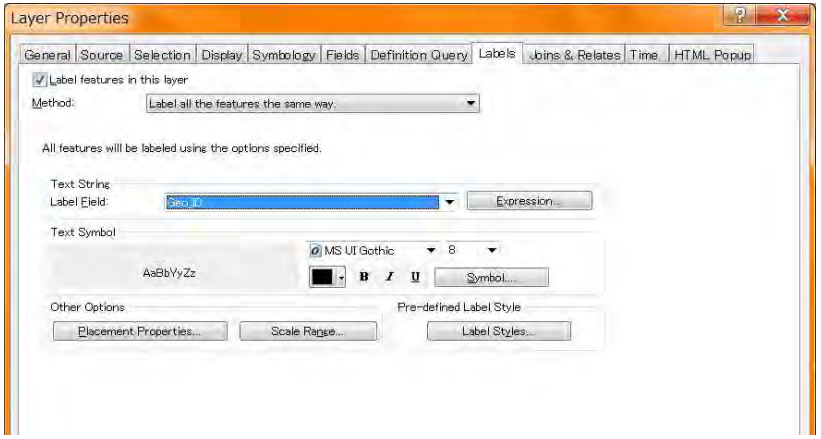
The “Layout Properties” window will appear. Tab “Symbology” may be selected.



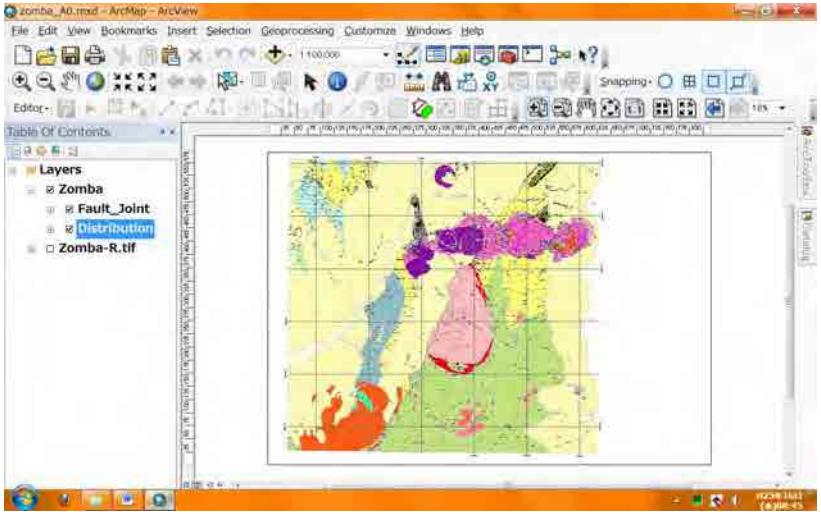
Select the tab “Labels”.



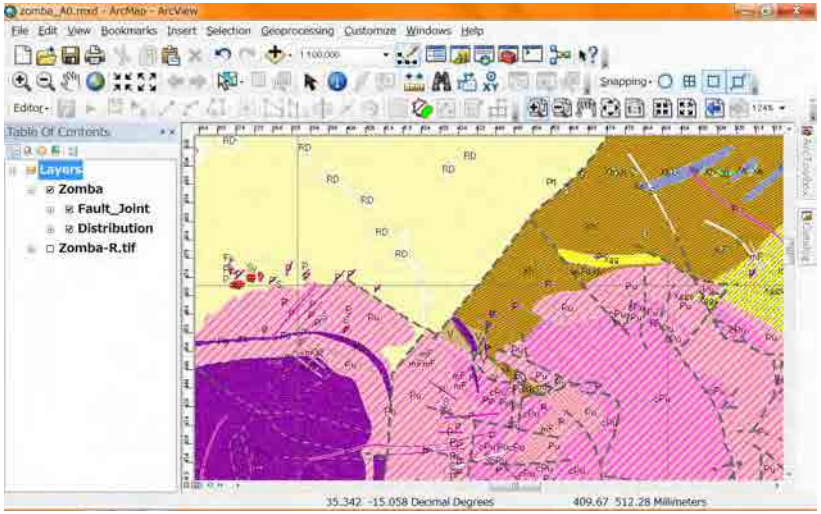
Add a check mark for “Label features in this layer”. Select “Geo_ID” for the “Label Field” in the “Text String”. There are 2 “Geo_ID”s in the selecter, the first one is better.



You can change the size and font of these text as you like. After setting click “OK”.



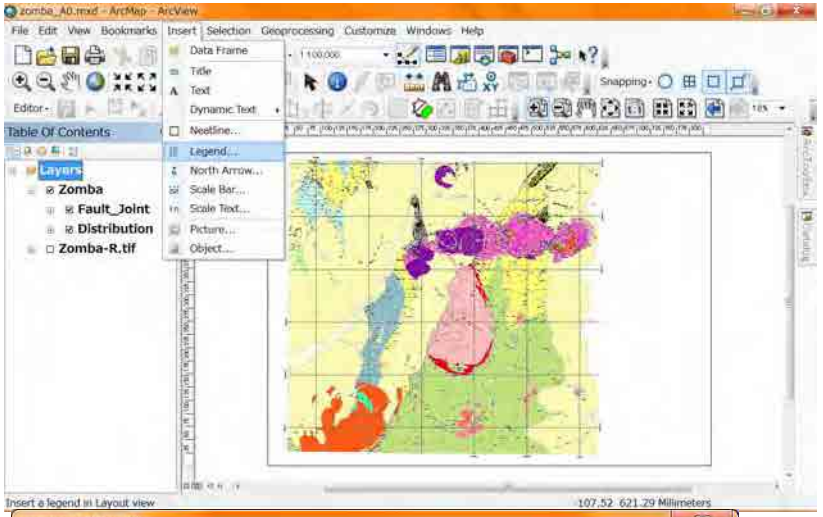
Zoom in.

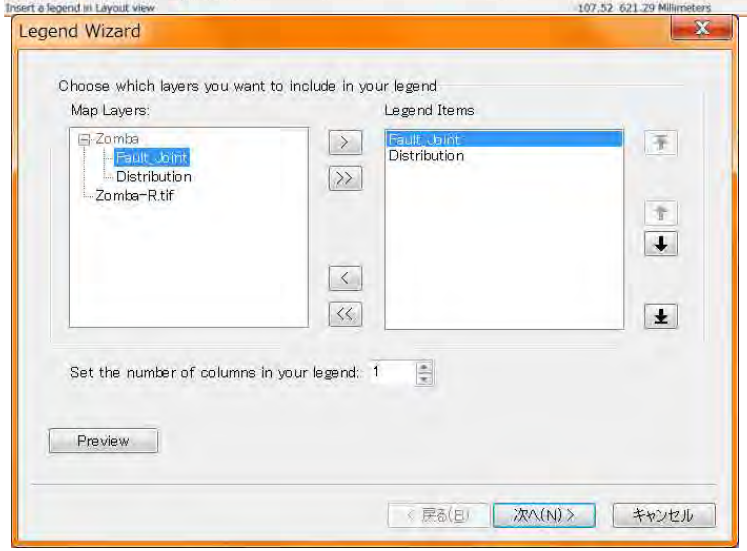


2. Additional parts of the Layout View

2-1. Legends for the Map

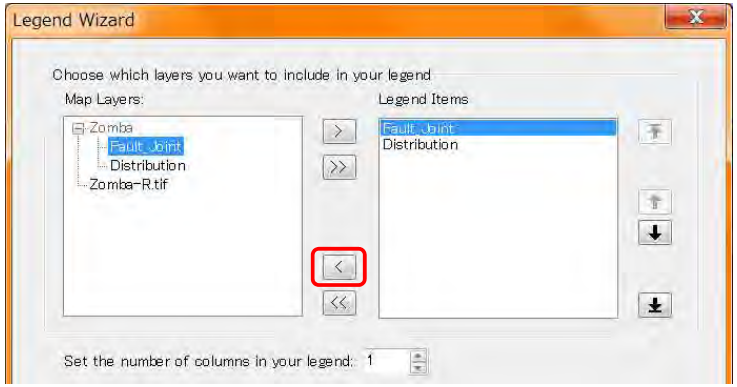
For adding legends, you select “Legend” from “Insert” in the “Main Menu” tool bar.

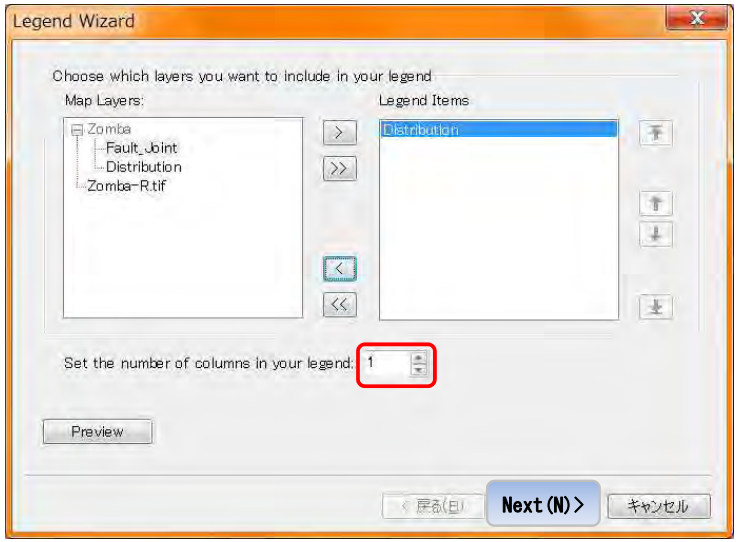




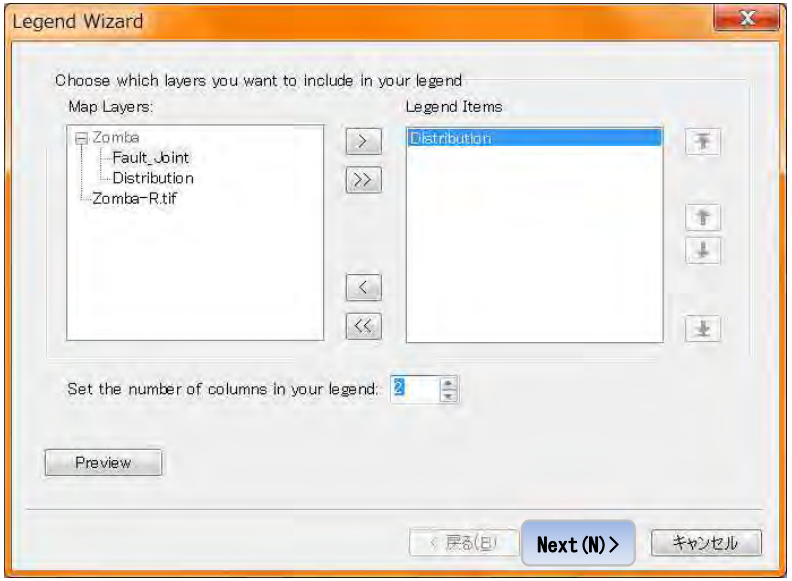
The “Legend Wizerd” window will appear. This manual select “Distribution” as the polygon shape file. So we like to remove “Fault_Joint” from Legend Items.

Select “Fault_Joint”, it will highlight. Then click single left arrow. It will remove.

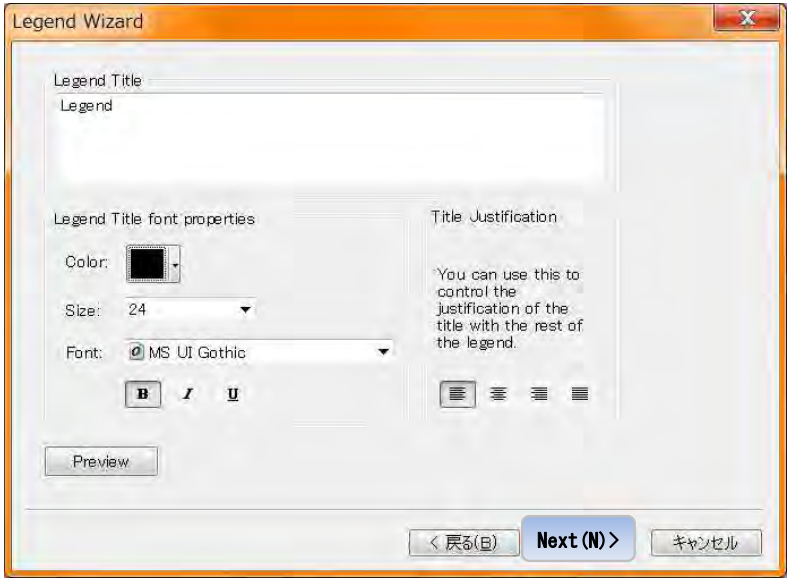




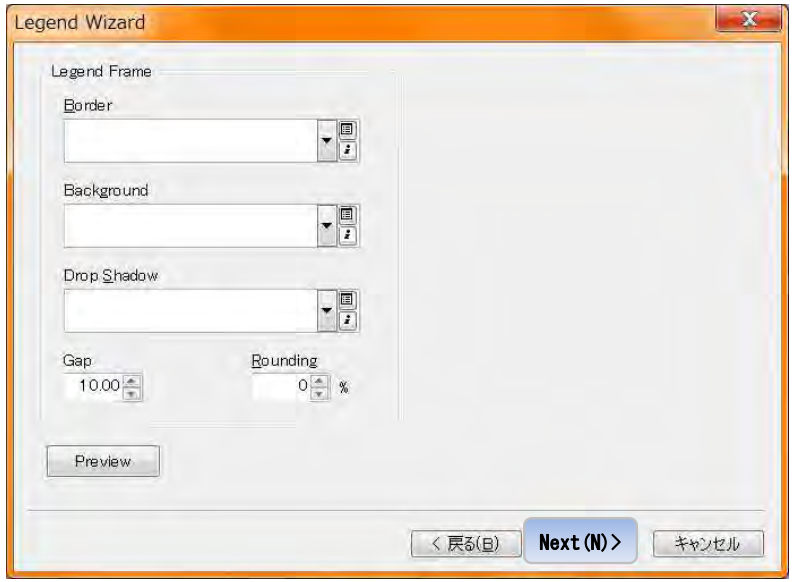
Set the number of cloumns in your legend. This example selects 2.



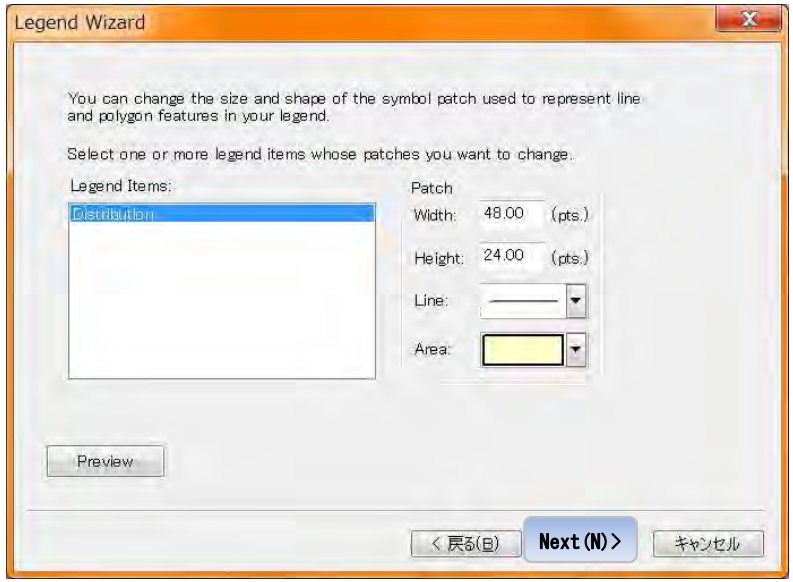
Click “Next”. The contents of the window has changed.



Edit the title of legend and select size, font of this text. Then click “Next”.

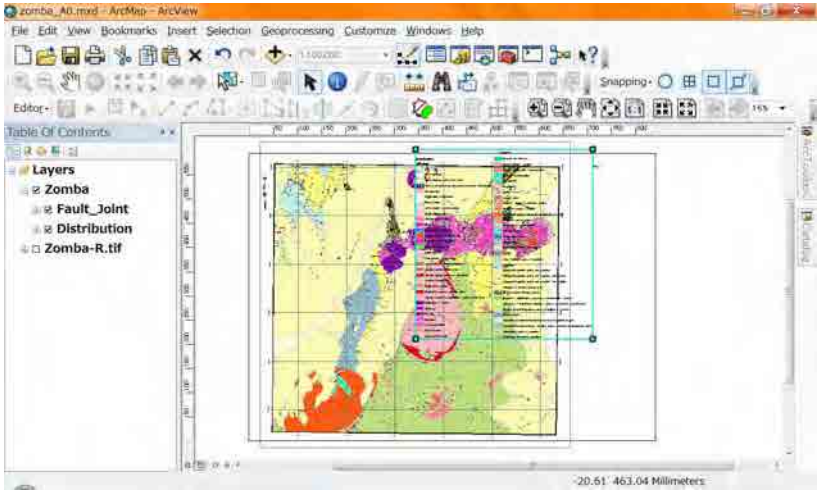


My recommendation is “ Null” for these 3 options. After selection click “Next”.



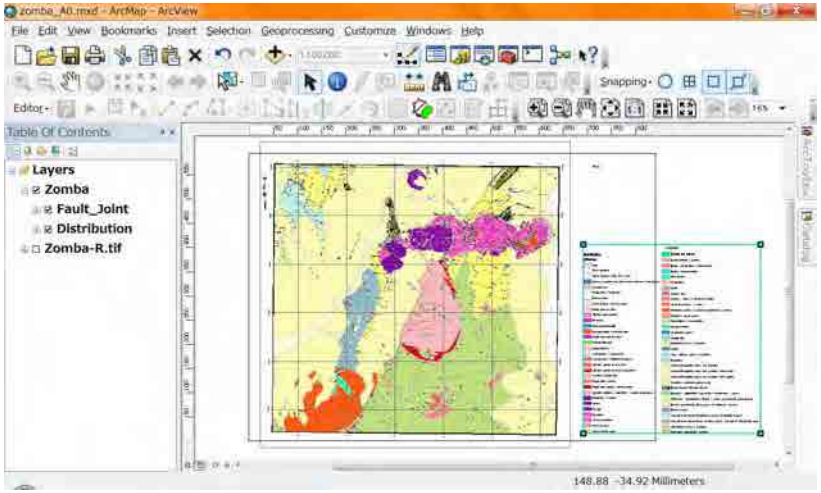
You can select the size and type of Patch. Click “Next”.

And you can set the intervals between each unit. Click “Finish”.

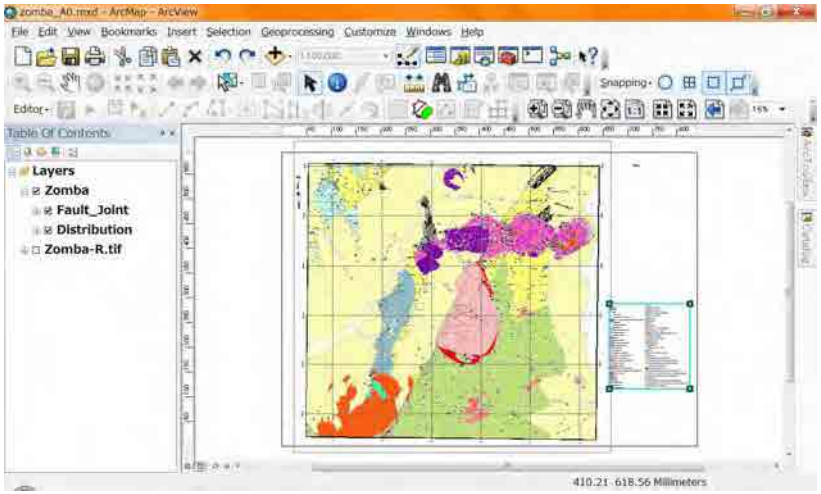


The legend appears. You can move as you like.

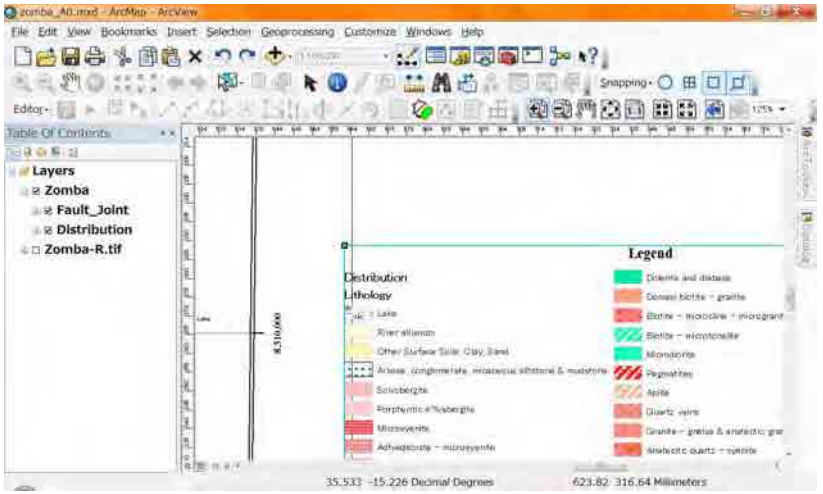
You can change the Size dragging the rectangle where is the corner of Legend.



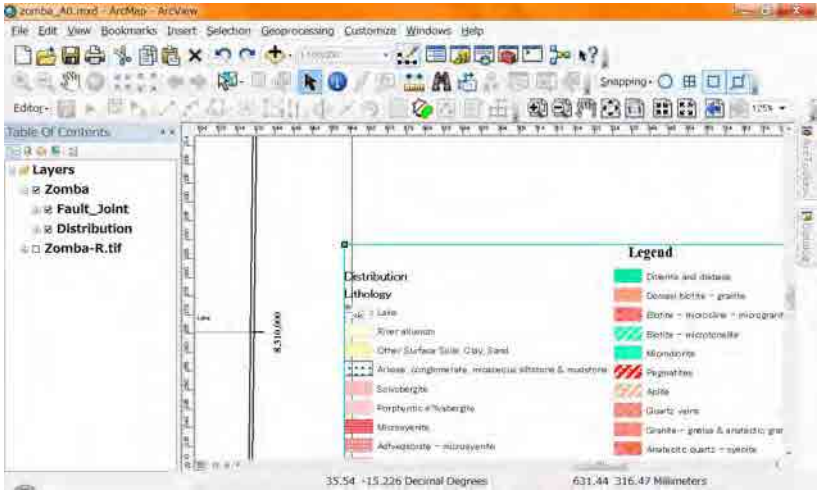
See in detail.

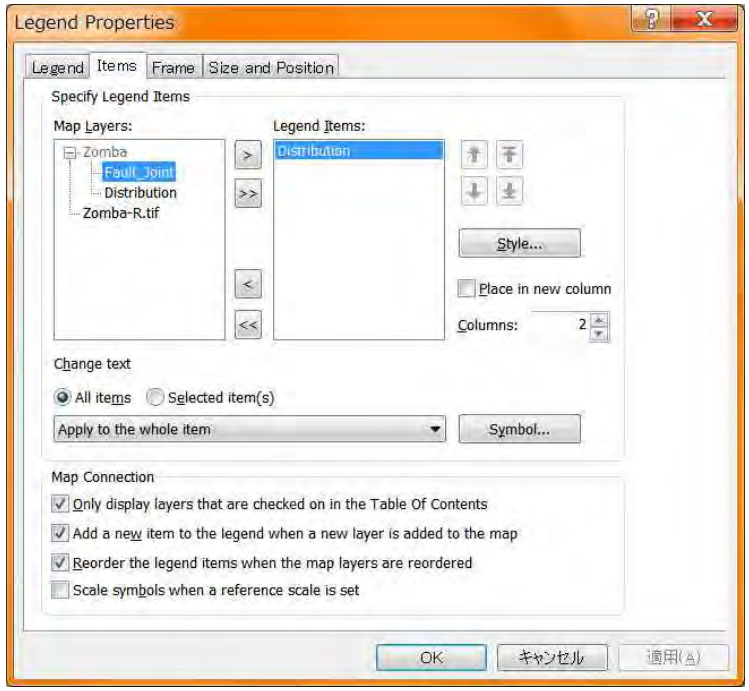


Use zoom in for the paper.



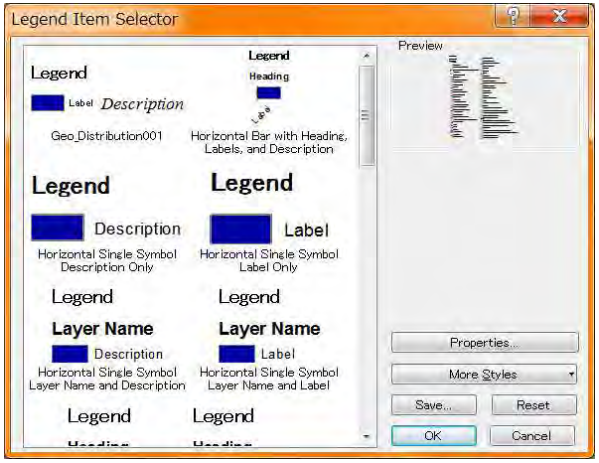
It is no need that the letters “Distribution” and “Lithology”. In this case use “Select Elements”. Double click or right click on the legend (if you did right click, select “properties”.





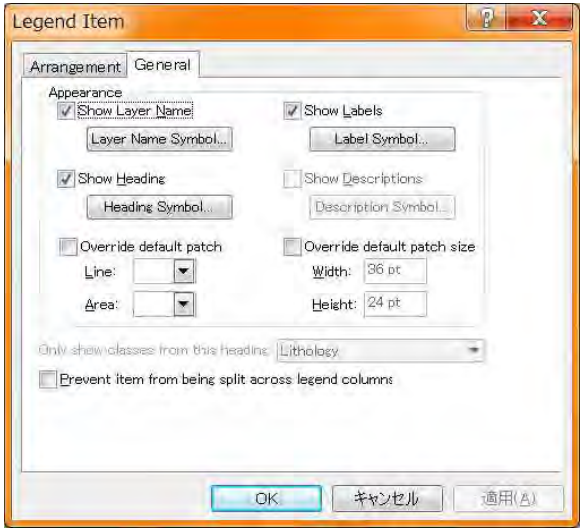
The window appears. If “Item” tab is not selected, select “Item” tab.

After highlighting the layer name (Distribution) click “Style” Button.



You can select from the selector. Or you can set each option by yourself using the

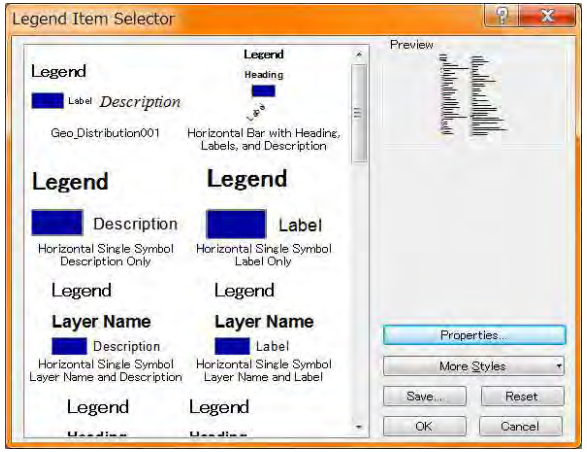
“Properties” button.

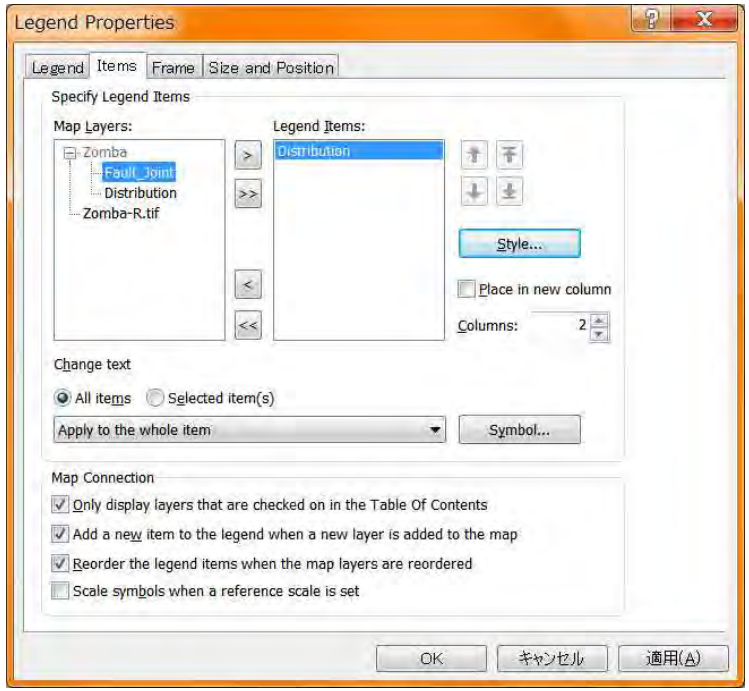


“Distribution” is the layer name. remove check mark of “Show Layer Name”.

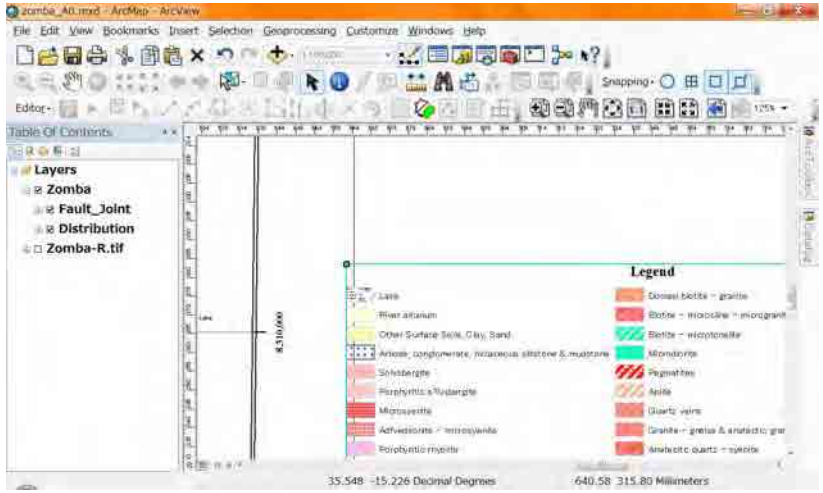
“Lothology” is the Heading. Remove check mark if “Show Heading”.

Then “OK”.





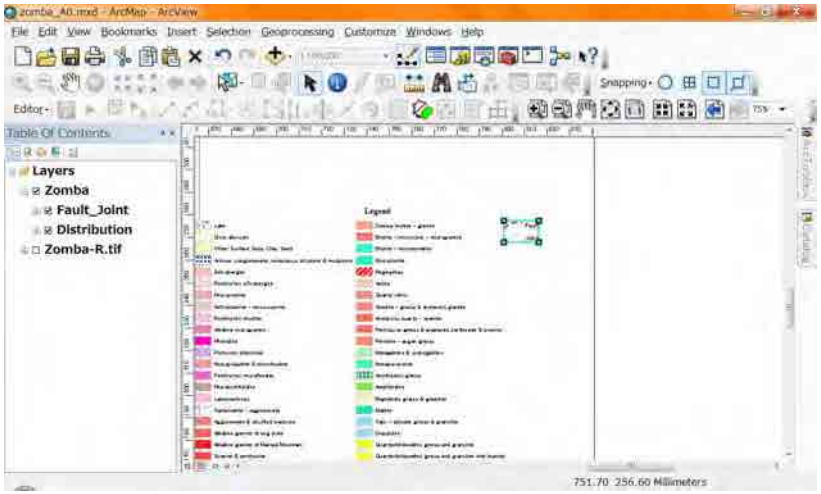
“OK”. They will hide.



Like this way, you can change the legend as you like.

You can put the legend not only one.

Do similar way for the Polyline Shape File (Fault_Joint).



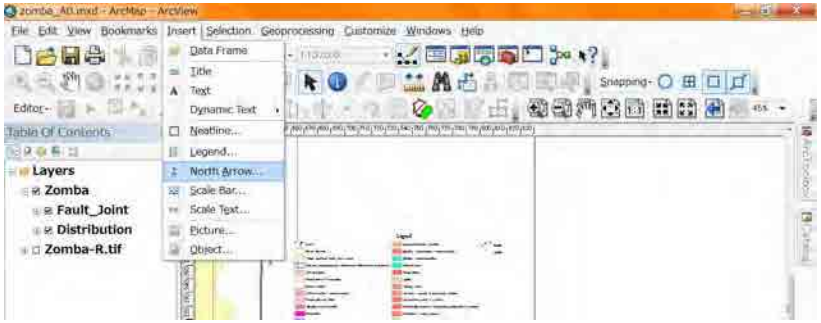
After creating the legends you can dhange many options later using Right click,

Properties.

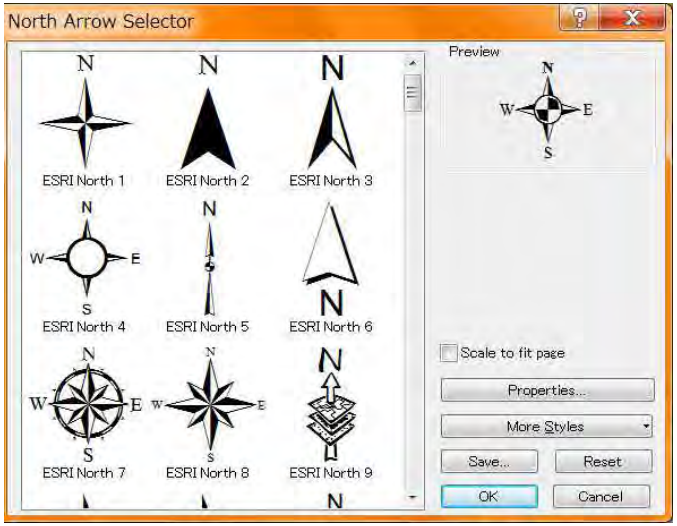
2-2. North arrow for the Map

You can add the north arrow in your map, using “Insert”, “North Arrow” in your

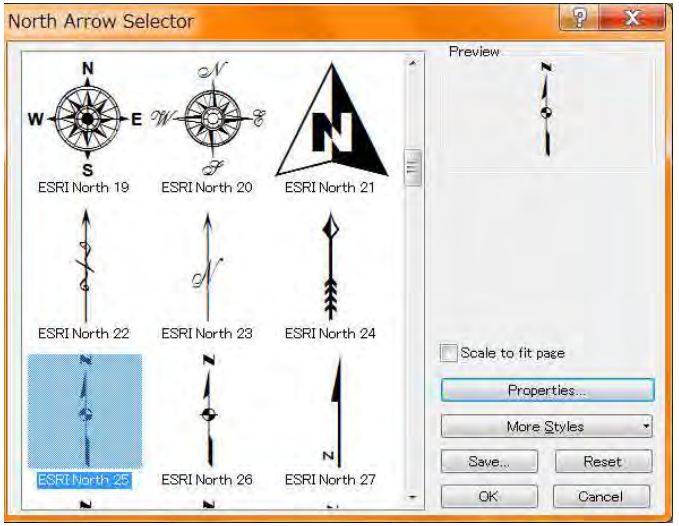
“Main Menu”.



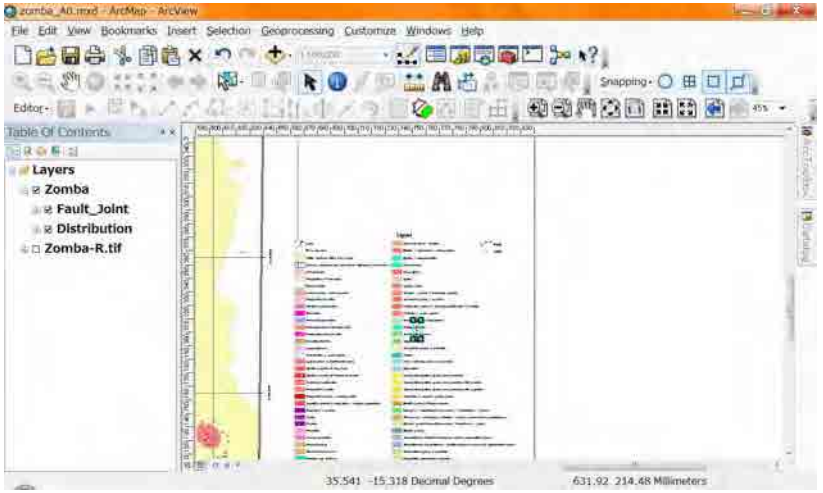
You can select one from the list.



This example selects “ESRI North25”



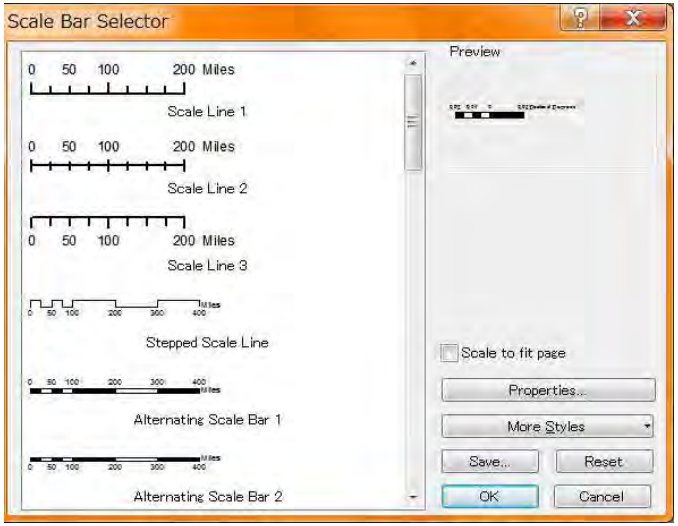
Click “OK”. It will appear in your map.



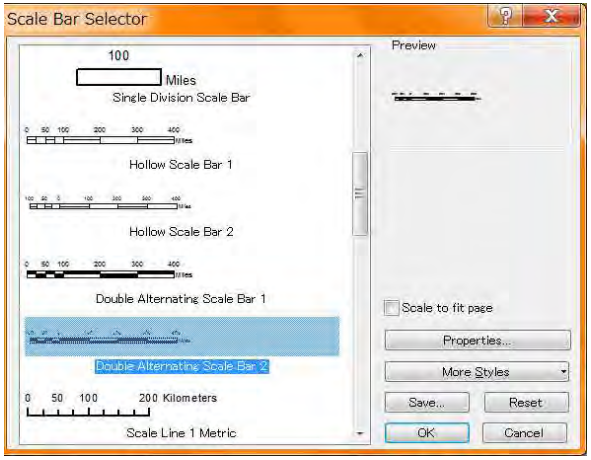
You can change the place and size of the north arrow as you like.

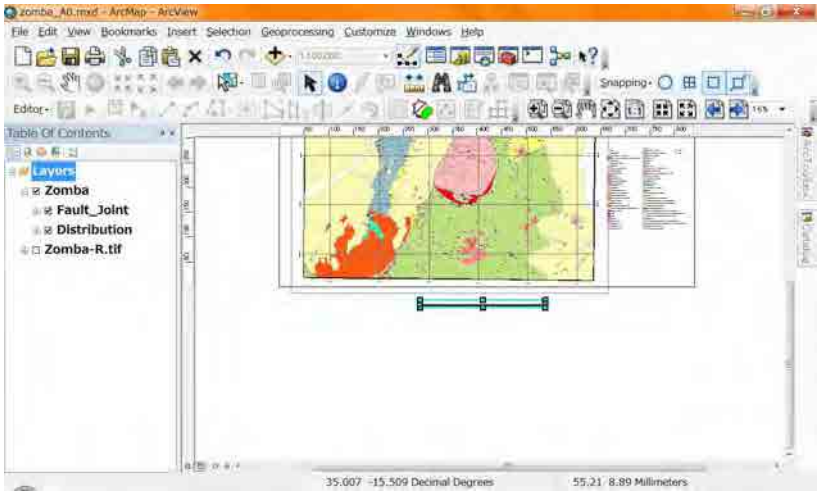
2-3. Scale bar for the Map

You can add the scale bar for your map also, using “Insert”, “Scale Bar” in your “Main Menu”.

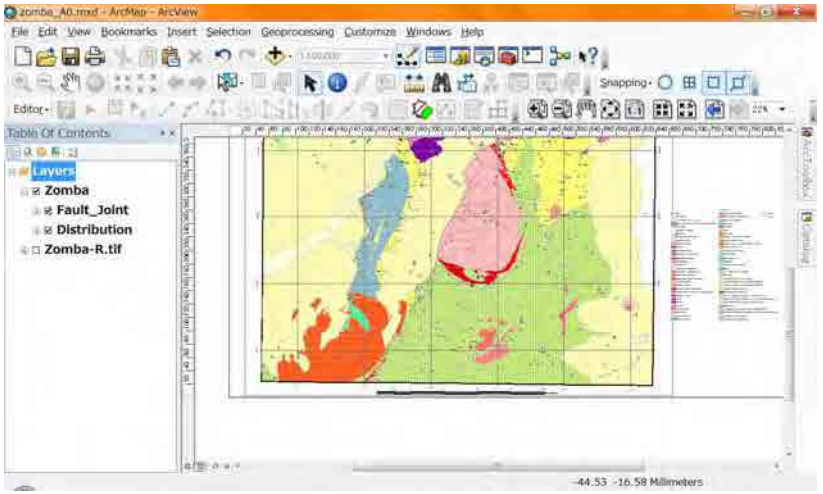


You can select one from the list. Many options you can change using “Properties” button. This example selects Double Alternating Scale Bar 2”.



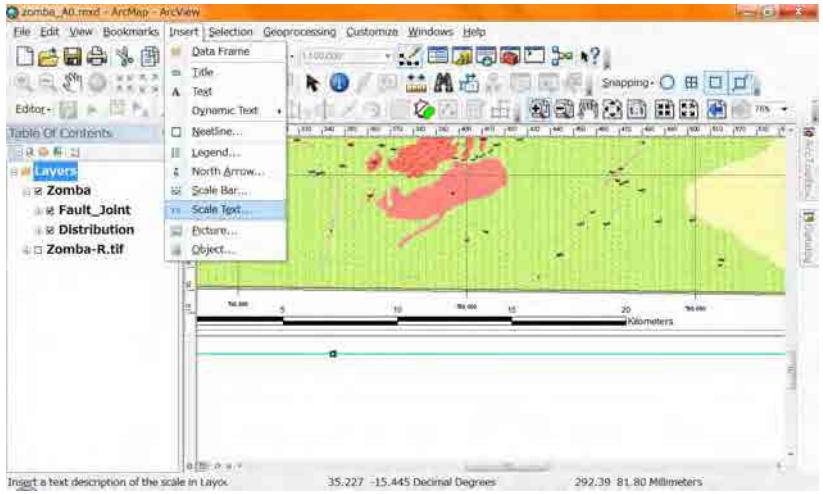


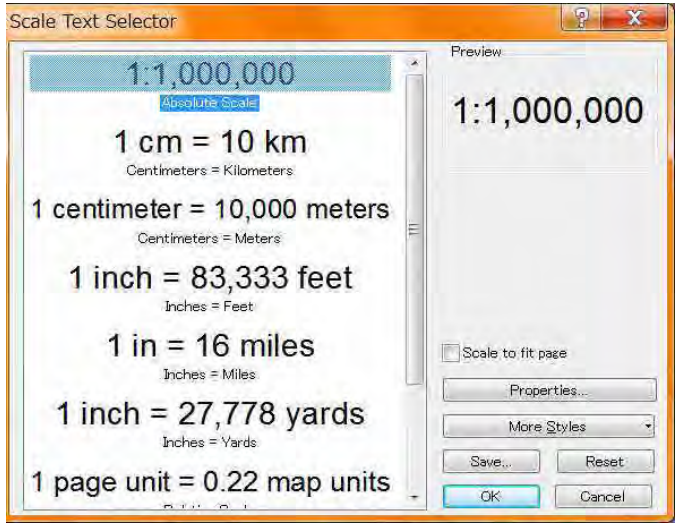
The scale bar appears. After appearance, you can change the size, position, properties as you like.



2-4. Scale text for the Map

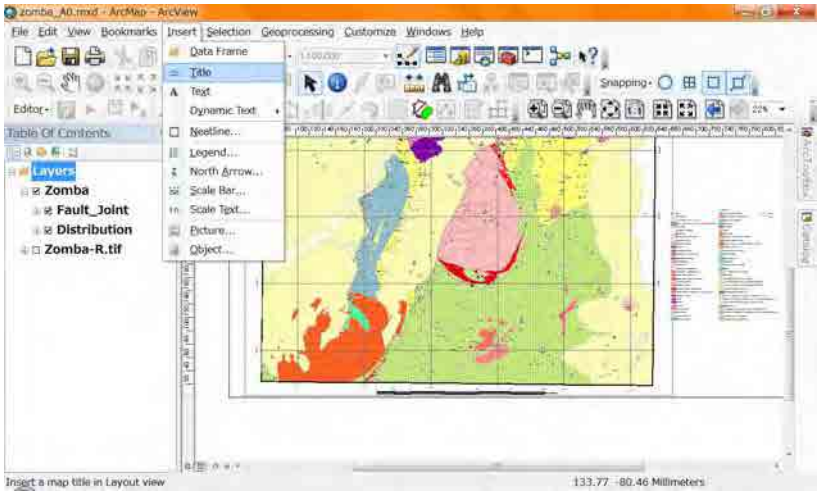
You can add the scale bar for your map also, using “Insert”, “Scale Bar” in your “Main Menu”. You can select one from the list.



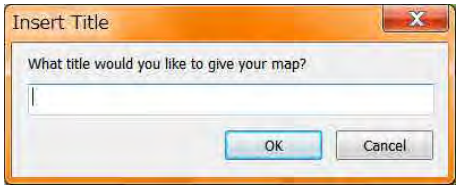


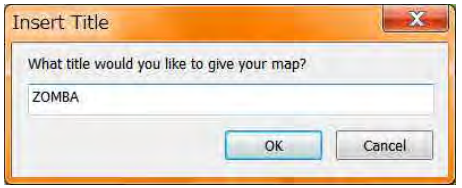
2-5. Title for the Map

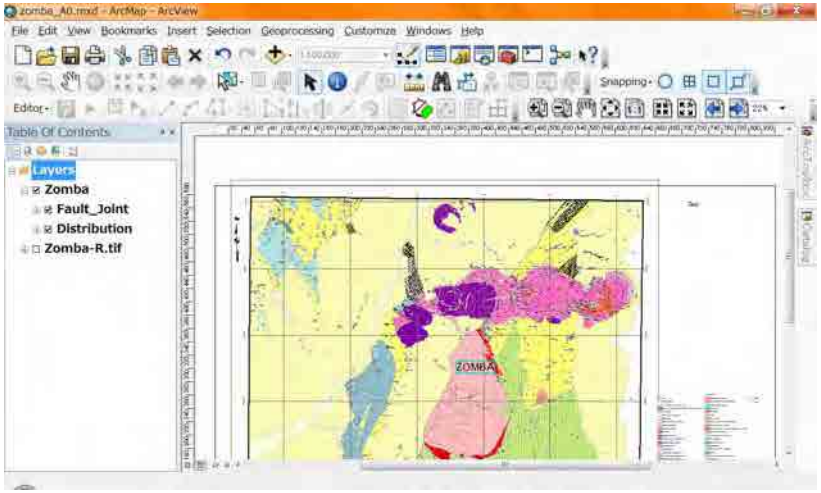
You can add the title for your map also, using “Insert”, “Title” in your “Main Menu”.



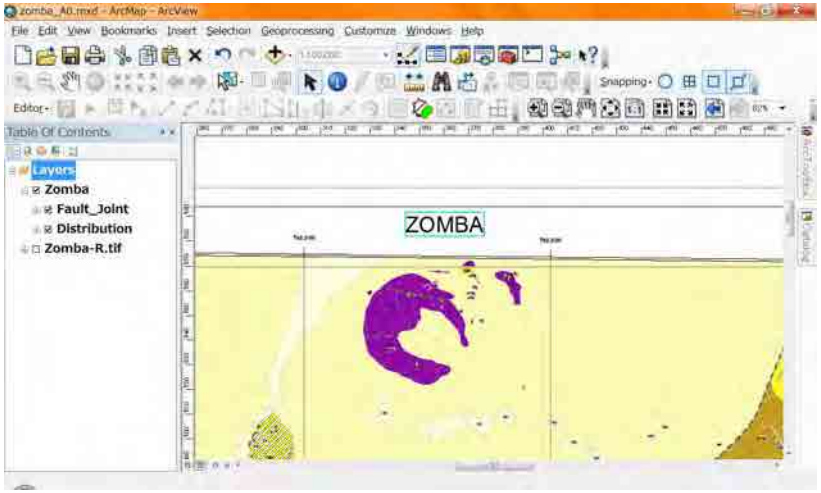
The new window for inserting a title. Input the title for your map. This example inputs “ZOMBA”. Click “OK” it will appear.





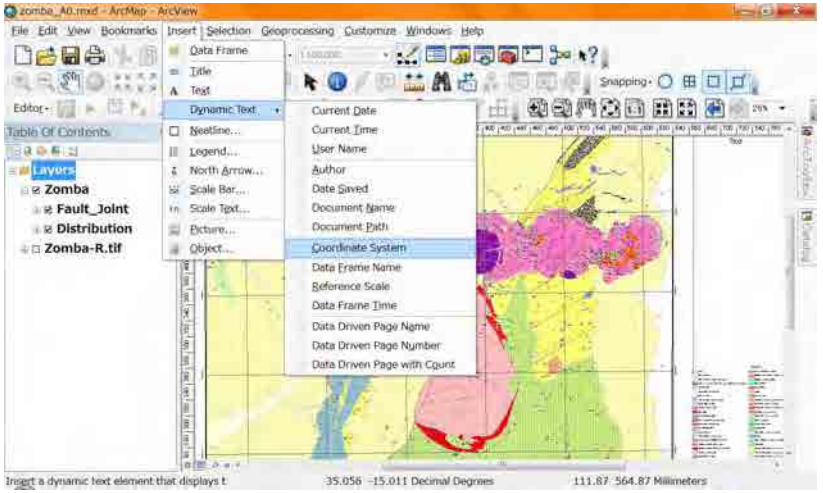


You can change the size, position, properties as you like.

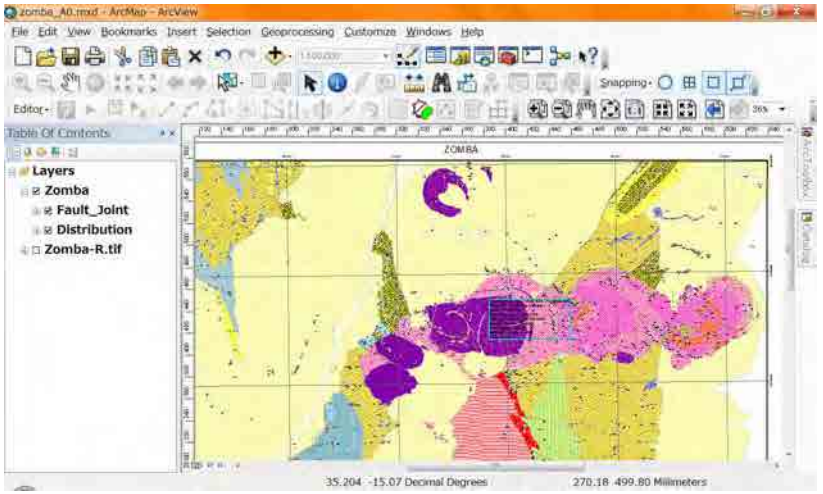


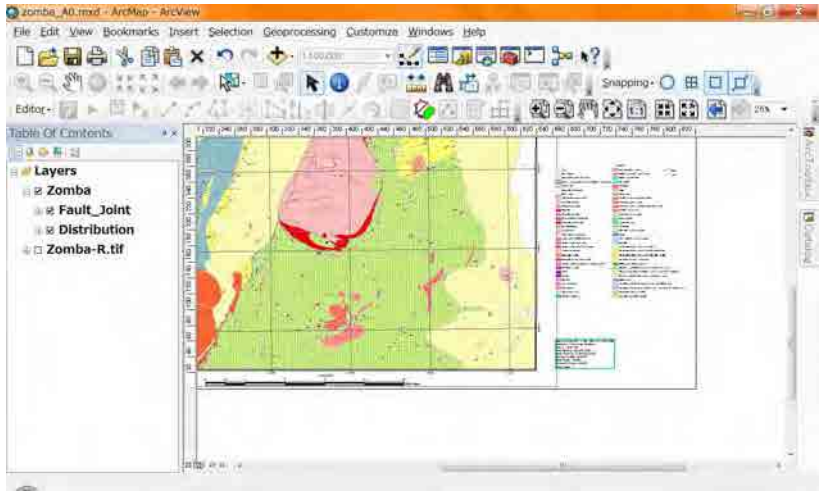
2-6. Coordinate system for the Map

You can add the Coordinate system for your map also, using “Insert”, “Title” in your “Main Menu”.



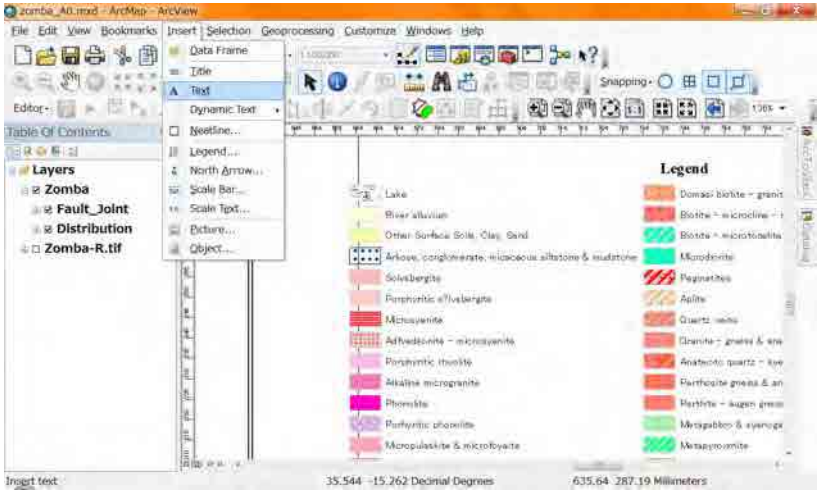
The texts of its Coordinate system in your map. You can move anyplace as you like.



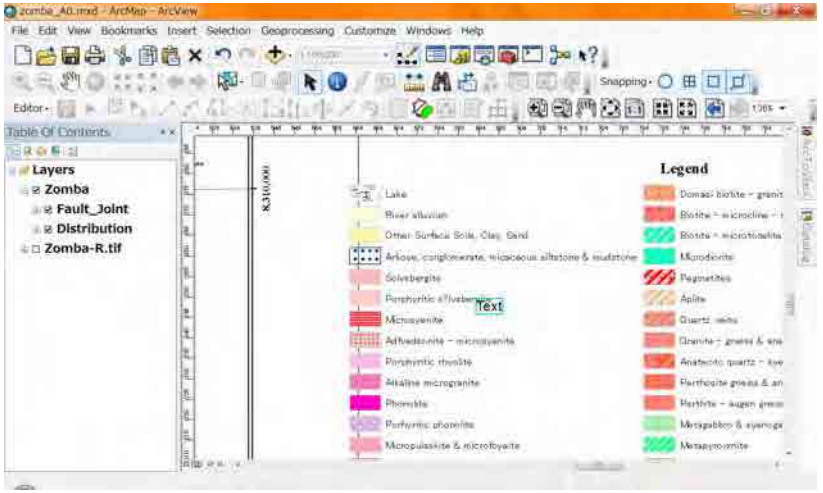


2-7. Text for the Map

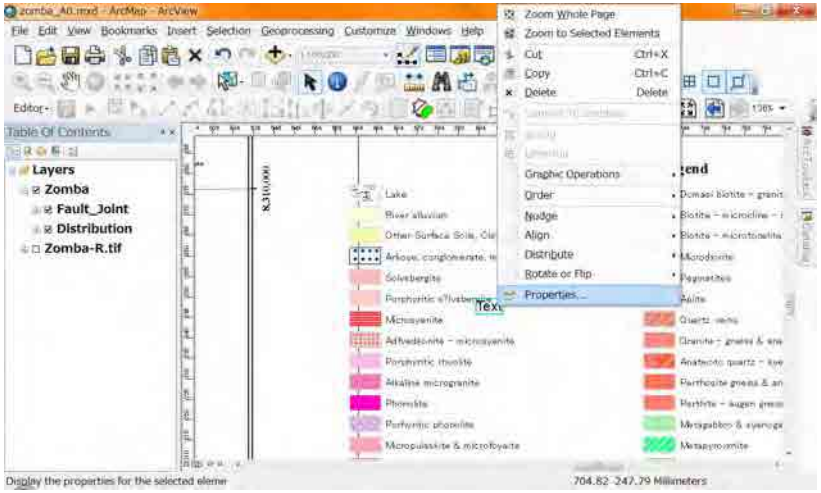
You can add any text on your map. In this example we put “Geo_ID” on the Legend of map. From main menu select “Insert”, “Text”.



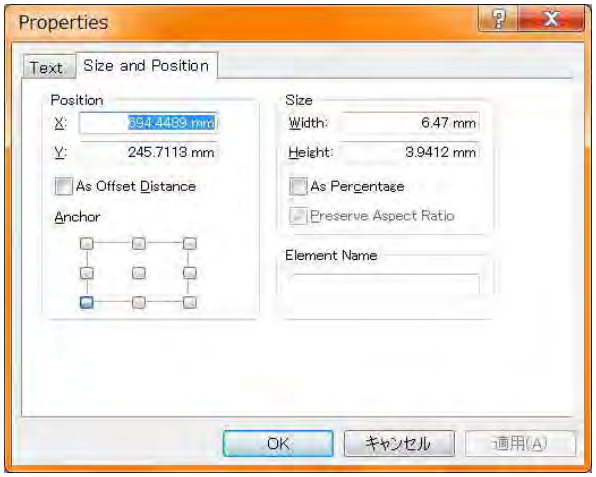
A “Text” will appear.

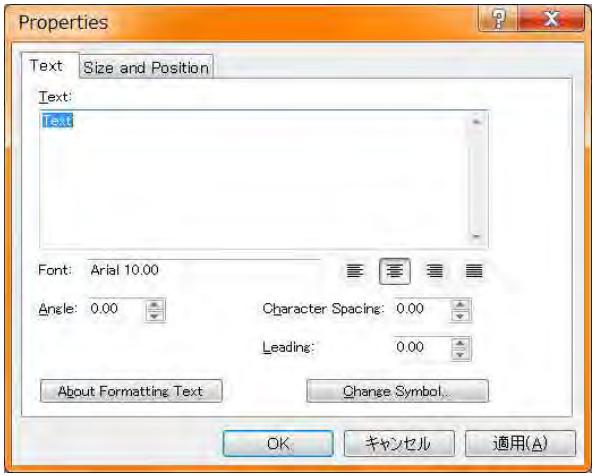


On the rectangle of “Text” right click, select “Properties”.

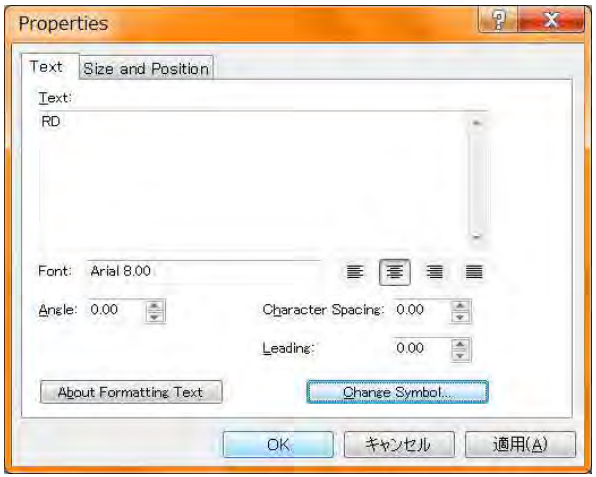


The “Properties” window will appear. Go to “Text” tab.

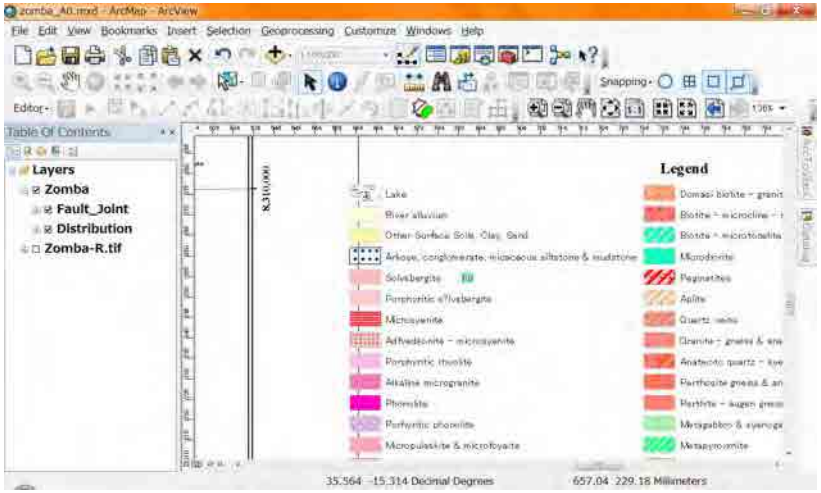




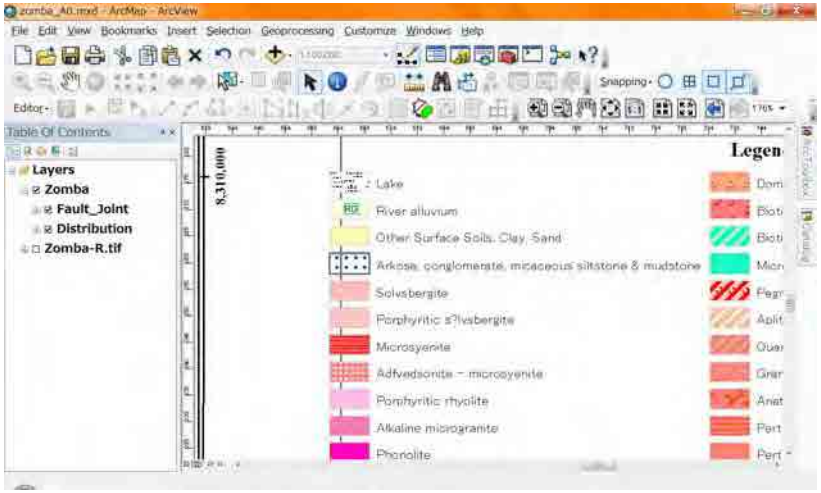
You can change the contents of the “Text”, Font, Size, others. Some options will change using “Avout Formatting Text” or “Change Symbol” button.



The text has changed.



You can move any place using “drag”.

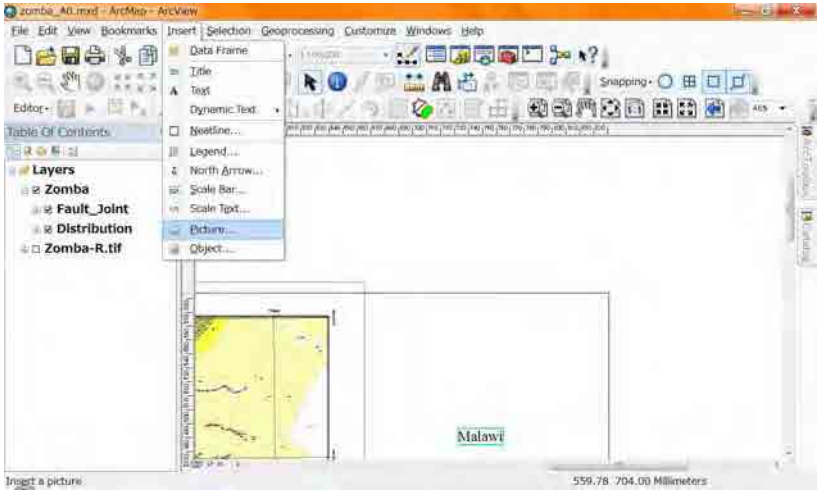


Do same way for the other lithologies also.

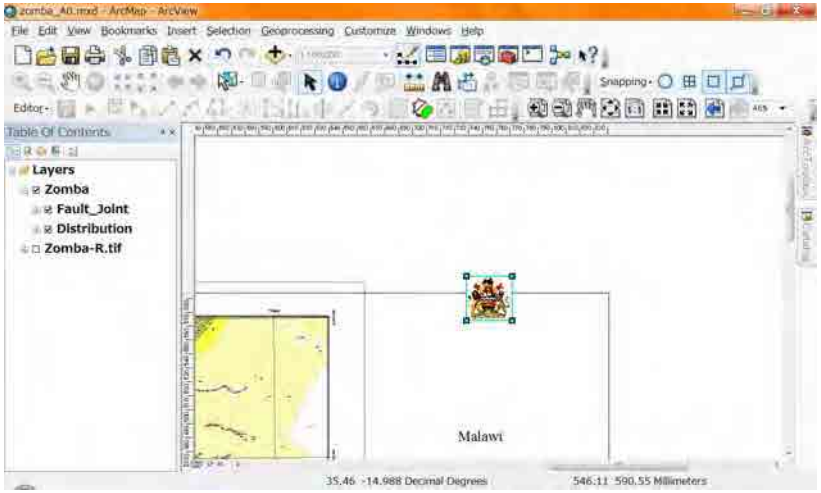
2-8. Picture for the Map

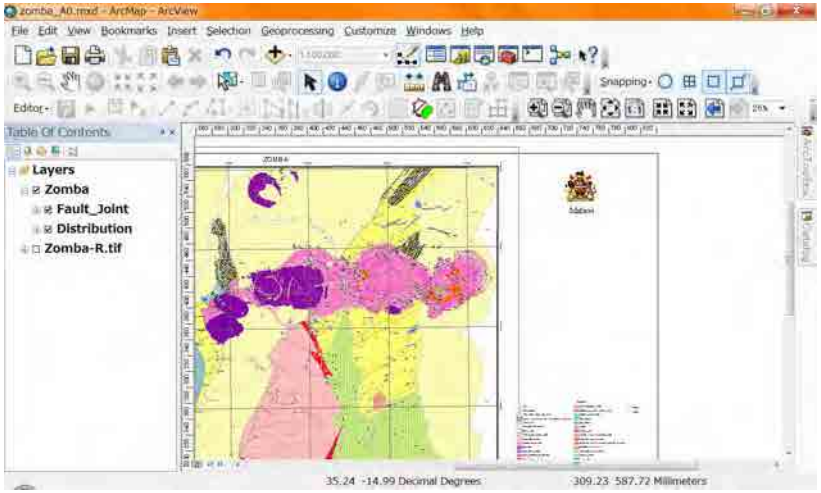
You can add images (type as GIF, TIF, JPG, BMP, etc.) on your map.

Probably you can understand where you start for the inserting a picture.

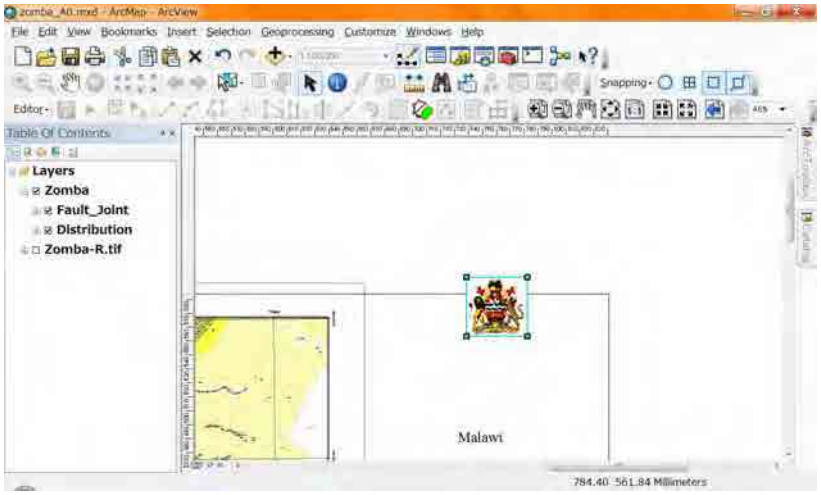


Select the file of picture which you like to inset.



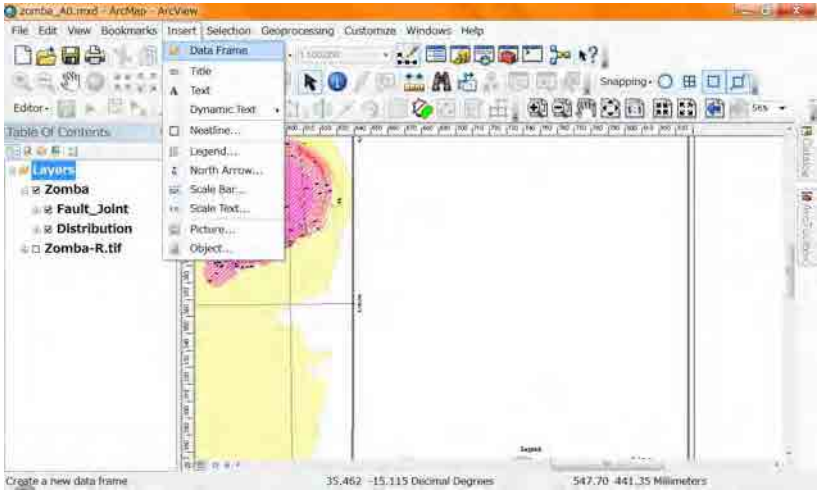


The picture will appear. You can change the size by the dragging corner rectangle.

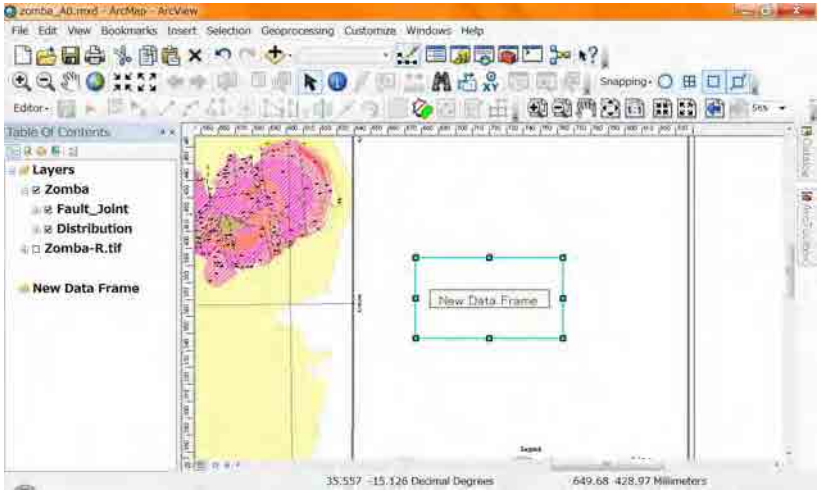


2-9. Additional Data frame

In your map you can put not only one “Data frame”. In this example the other “Data Frame” is put as the index map.

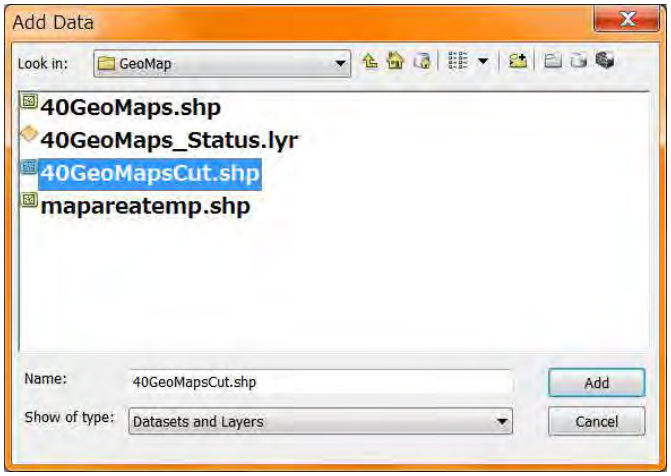


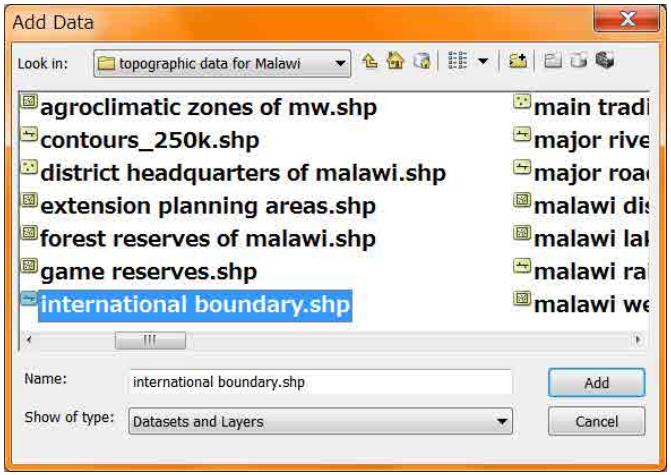
Select from main menu, “Insert”, “Data Frame”.



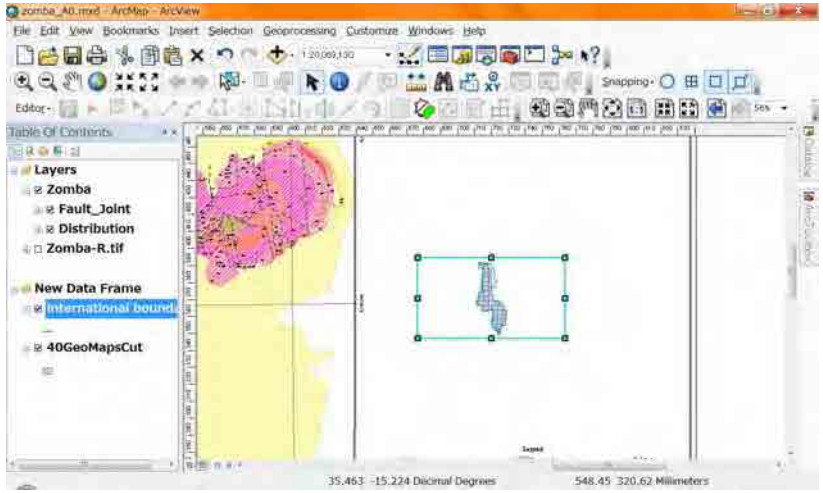
The empty “New Data Frame” will be there.

Add data for the “New Data Frame”.

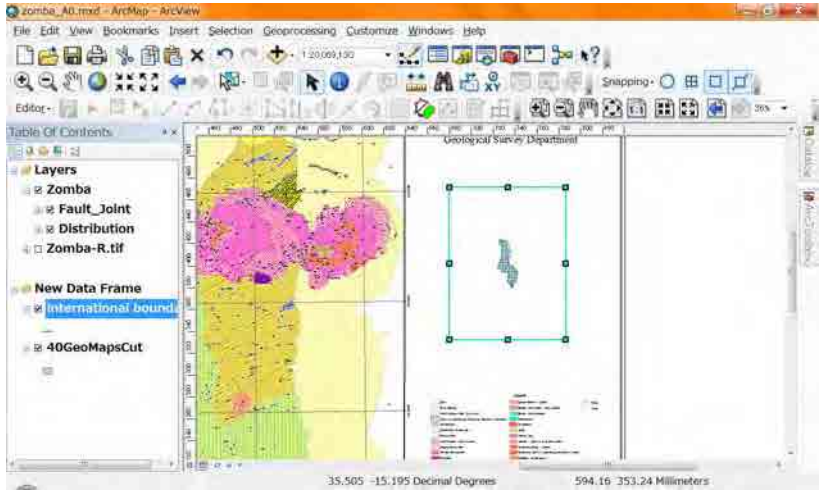




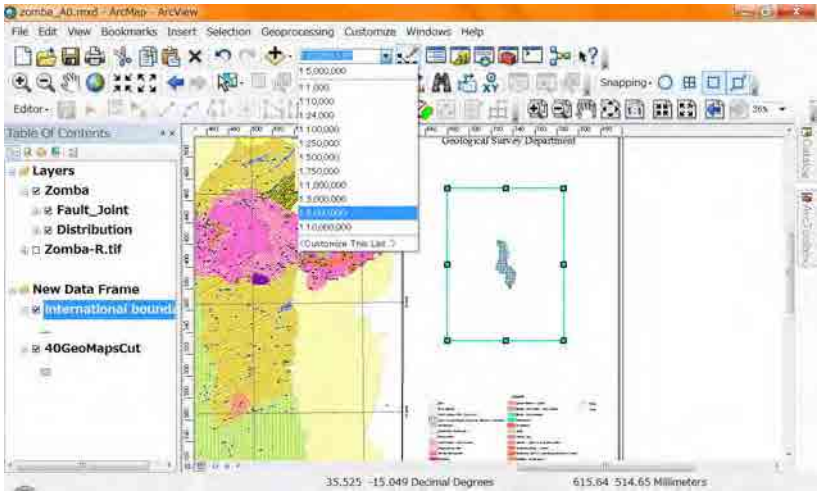
These maps will appear in the “New Data Frame”.



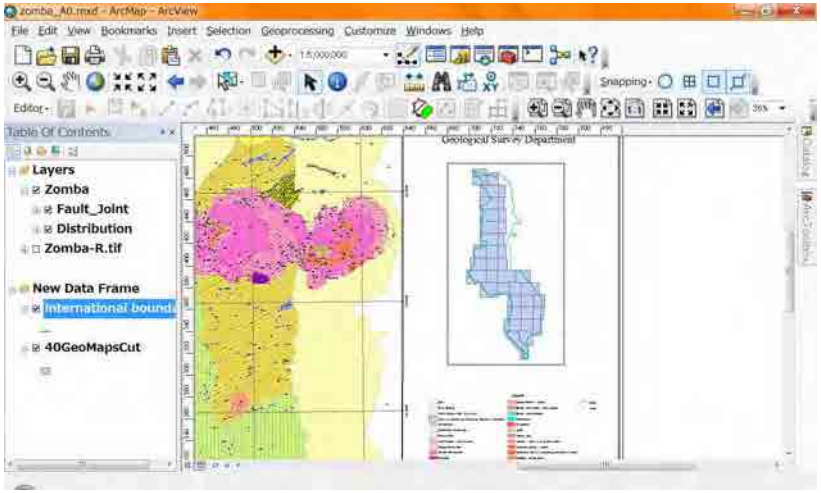
Set the position and size of the “New Data Frame”.



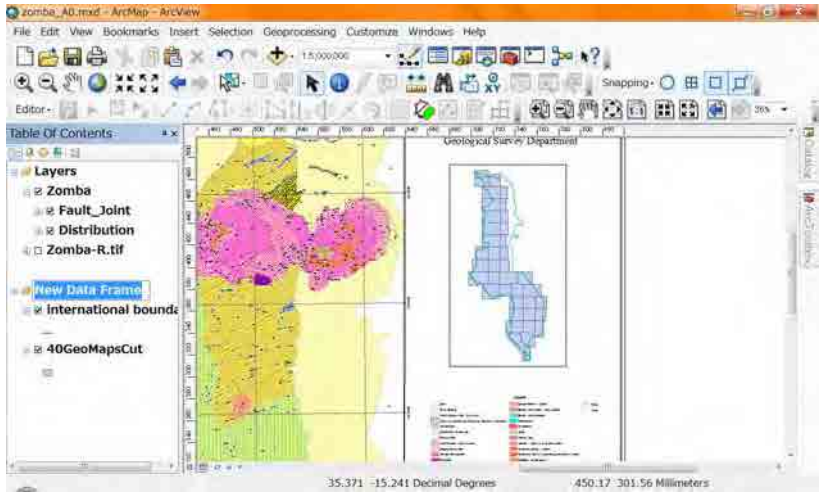
Set the scale for the “New Data Frame”. Watch carefully which data frame is selected.



Select good sacale.

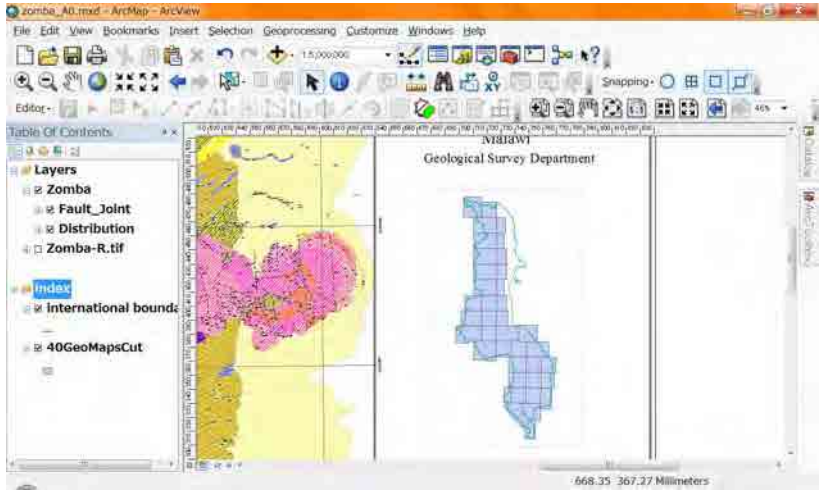


You can set all options about “New Data Frame”, include the name.



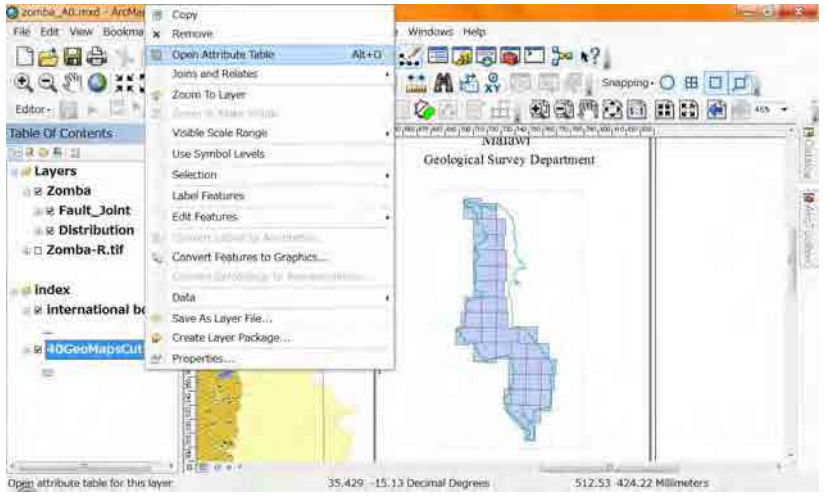
This time input “index” for the “New Data Frame”.

Set the other options as you like.

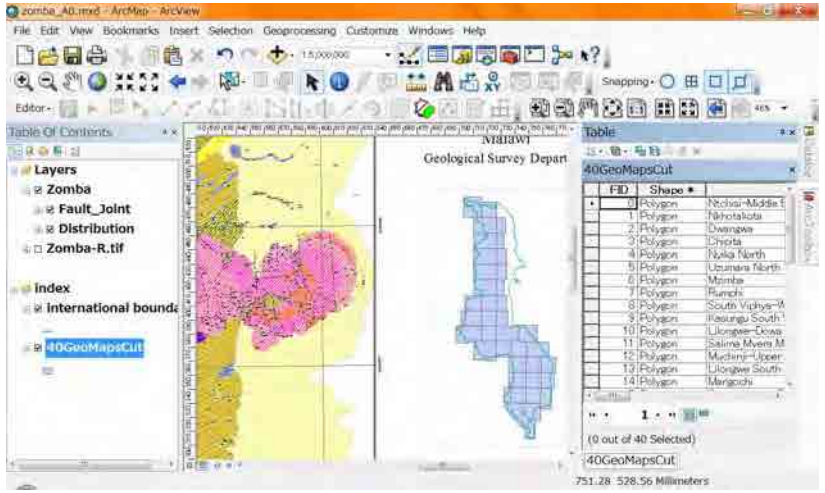


After settings of all options, right click on the layer name of Maparea

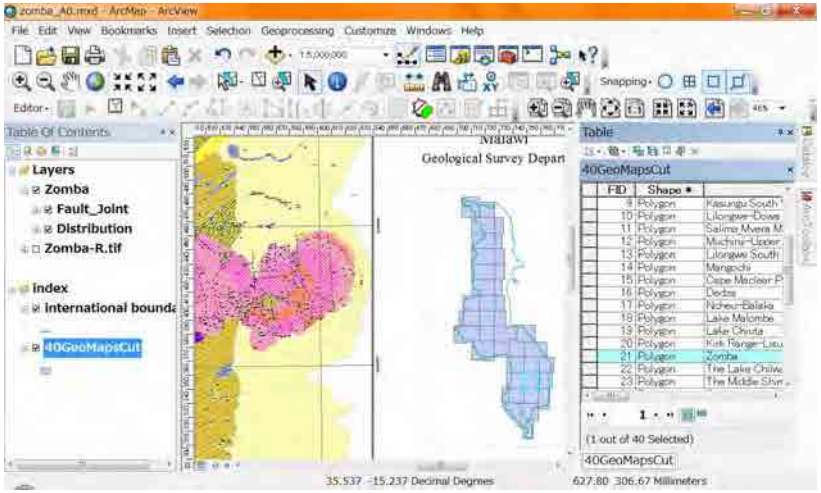
(40GeoMapsCut).



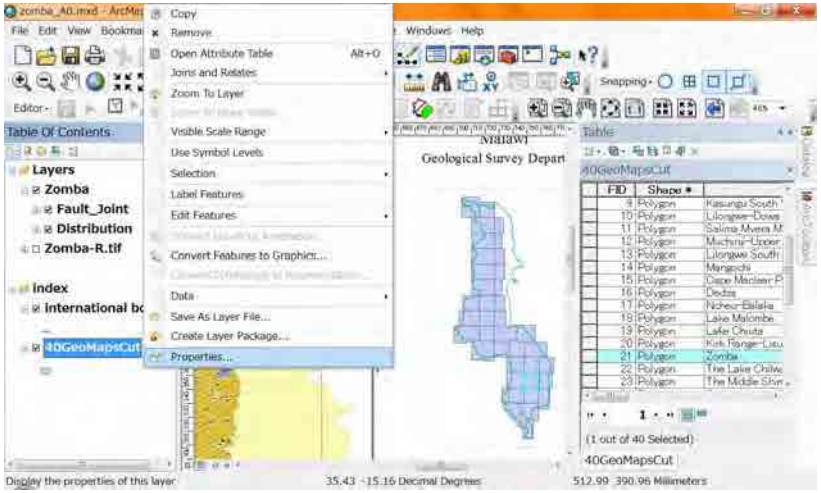
Select “Open attribute Table”. The “Table” window will appear.



Select the line that your map area (Zomba).

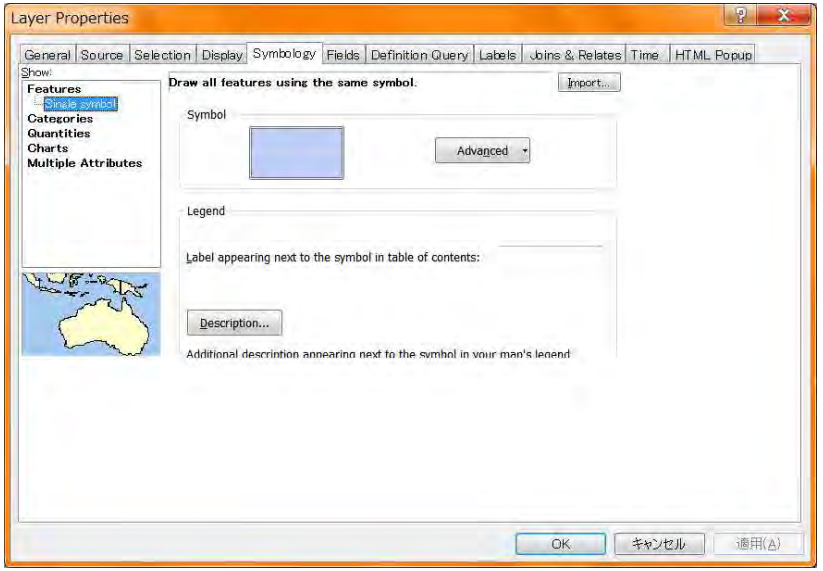


The map area is highligeted. But it is not enough.

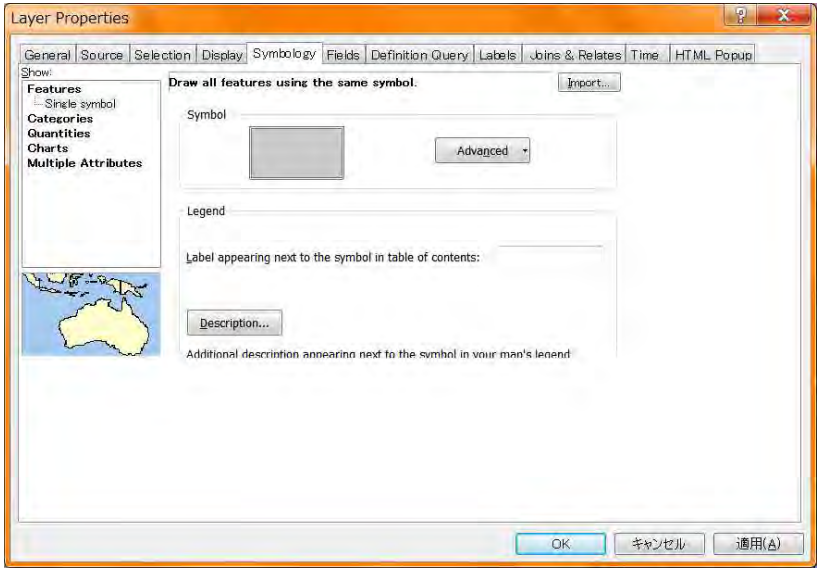


Right click on the layer name (40GeoMapsCut), select “Properties”.

And select “Symbology” tab.

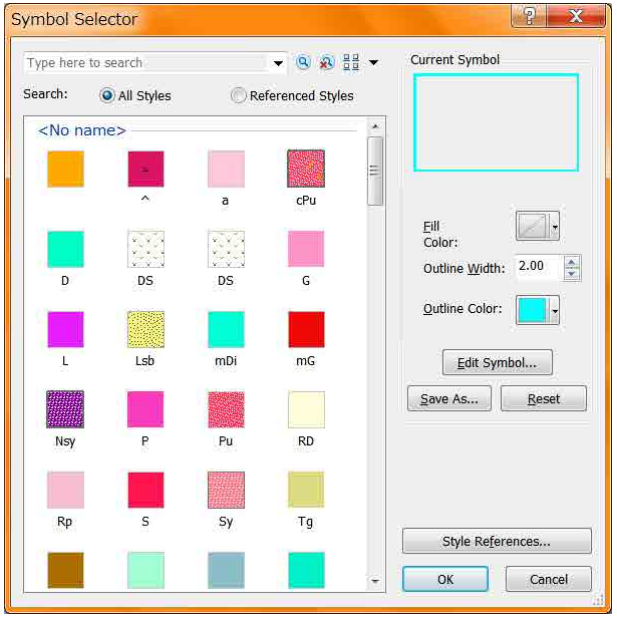


Set color light gray (20%)



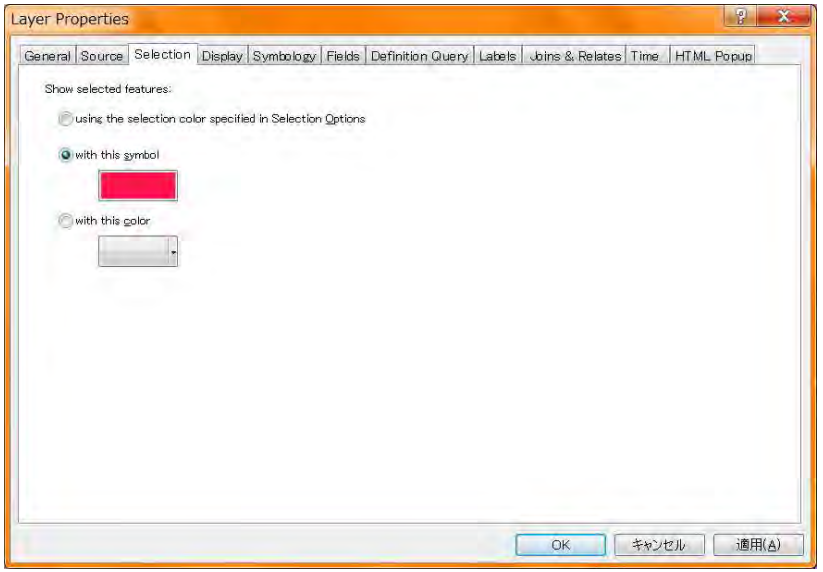
Select “Selection” tab.

Click Here!

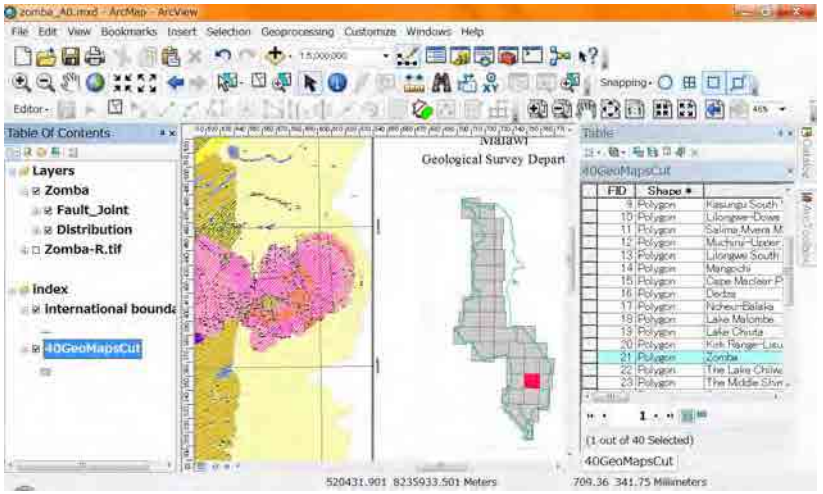


Click Rectangle of “with this symbol”.

After appearance of “symbole Selector”, select reddish color.

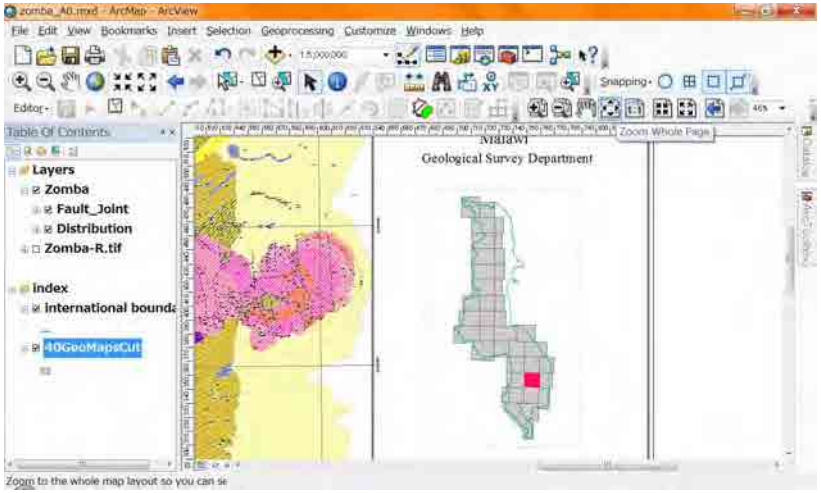


Then click “OK”. The color of selected area (Zomba) has changed.

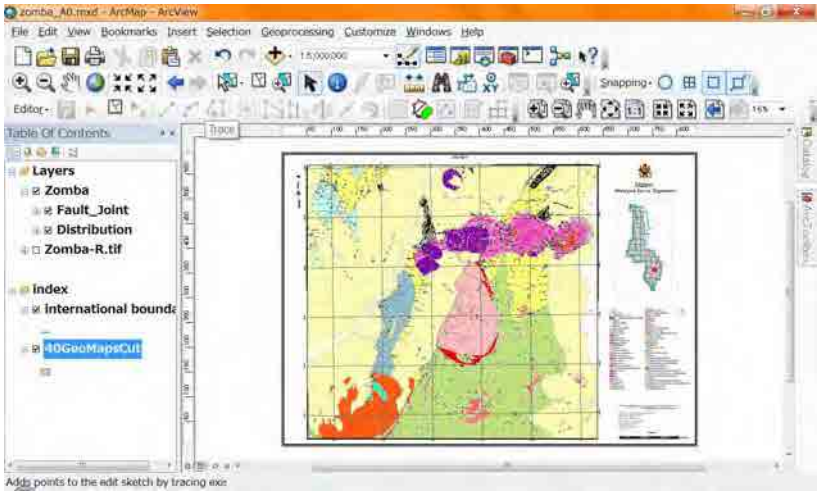


Close the “Table” window.

Use “Zoom whole Page”.



You can see the whole map.



3. Print out

4-1. Printing method

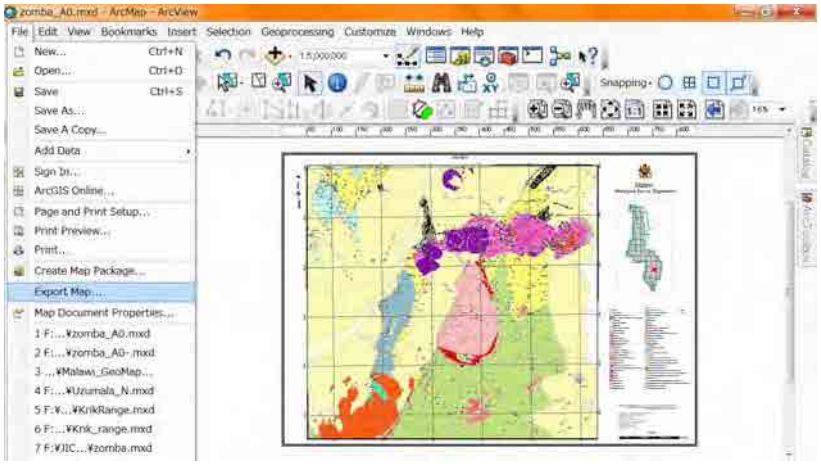
There are 2 kinds of method for printing maps. One is through Local Area Network (LAN). The setting of LAN is severe and nervous. The connection may be cut easilly. It is not steady method. Another method is using USB flash memory. In your computer printed data is saved to the memory, you carry and put it to the big printer(T2300-HP). This manu reccomends.

4-2. Save the data (Export Map)

Prepair the USB flash memory for the printing. Put it into your USB slot in your computer. In your computer display you might see the USB flash memory. Comfirm it.

After comfirming, go to “ArcMap”, comfirm the layout view. Then select “File”,

“Export Map” in the main menu.



The “Expot Map” window will appear. Select the location of the USB flash memory.

It should be in the “computer”.

Set the resolution. This munual recommends 300 – 600 dpi.

You set the higher dpi, the size of file is the bigger.

For the training 300 dpi enough. And set the file name , then click “Save”. It will be

saved.

4-3. Print at the big printer (T2300-HP)

Turn on the printer.

Put your USB flash memory form your PC into the big printer (T2300-HP).

Select print.

Select USB Drive

Select the file name you saved.

Start

4. Layer file

4-1. Outline of the layer file

MXD file saves data that the location of shape file, the symbology, etc.. But it is limited in the file. If you like to use these combinated shape files and their colors, it is good for the layer file.

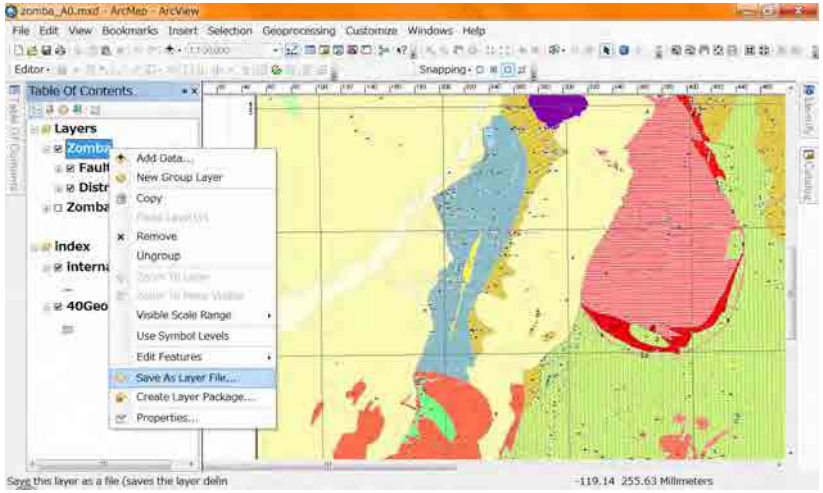
It contains these following data in the layer file.

* Name and relative locations of shape files.
* Symbology (Color setting) of each shape file
* Combination of shape files.
* Layer groups. ,etc.

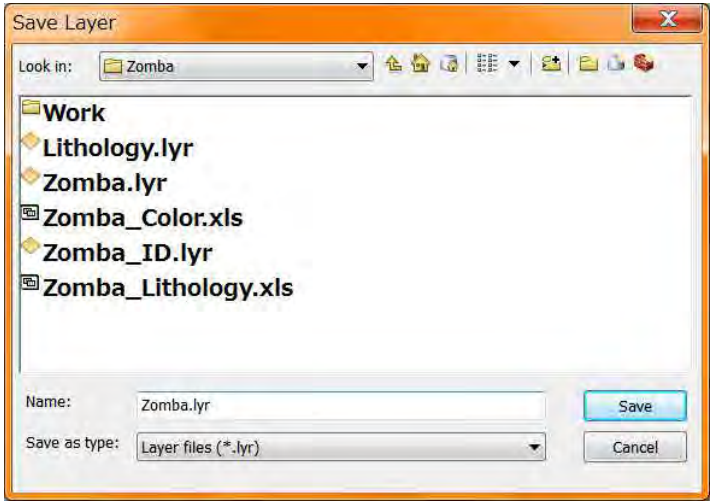
You can save these data as a layer file.

4-2. Save as a layer file

Right click on the group layer. Select “Save as a layer file”.

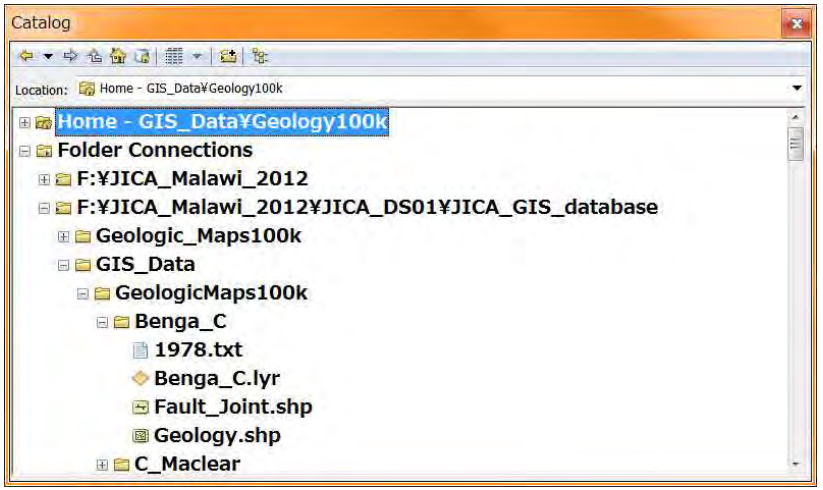


The window has appeared.



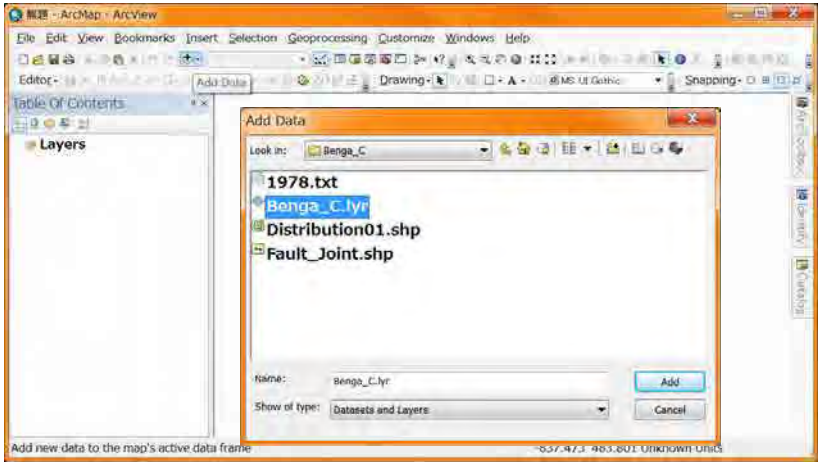
You select the location of the layer file. For your remainding it is good the location is same as these shape files (Fault_Joint, Distribution).

After setting the file name, click “Save”.

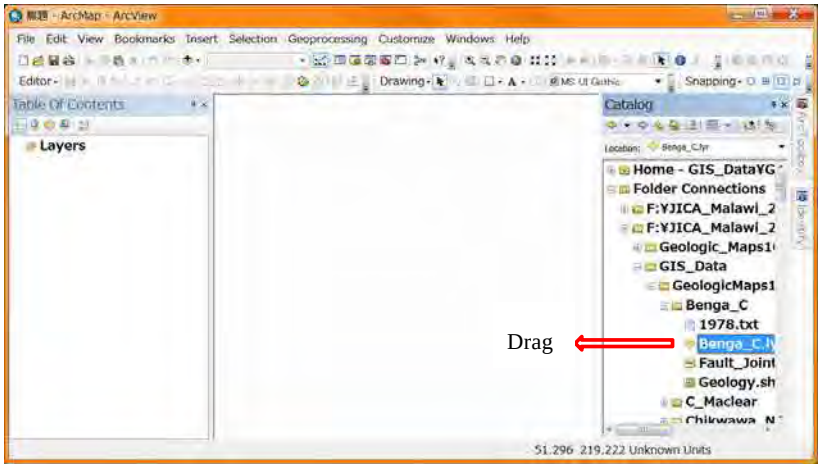


4-3. Add a layer file

Add the layer file same way as a shape file.



or



巻末資料 6　GIS データベース管理のマニュアル

裏白

Administration Manual for the Database HDD

Edition 0.3

JICA-GIS Project 2012

At GSD Zomba

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1. Equipment

The GIS database is saved in 2 Hard disk drives connected Local Area Network, those have been provided. The purpose of 2 drives is the protecting from accidental deletes or unexpected changes. One drive is for saving, another is for backup. Usually one drive for saving is turned on and used. The GIS database update is permitted only the administrator who is nominated by the director of GSD, the administrator has to copy the update data from the drive for saving to another backup drive soon. The database users have to copy necessary data from the drive for saving to each PC for analyzing the data or creating maps.

Buffalo technology Link Station Duo LS-WV 4.0TL/R1

2. Structures

2.1 Structure of Local area network

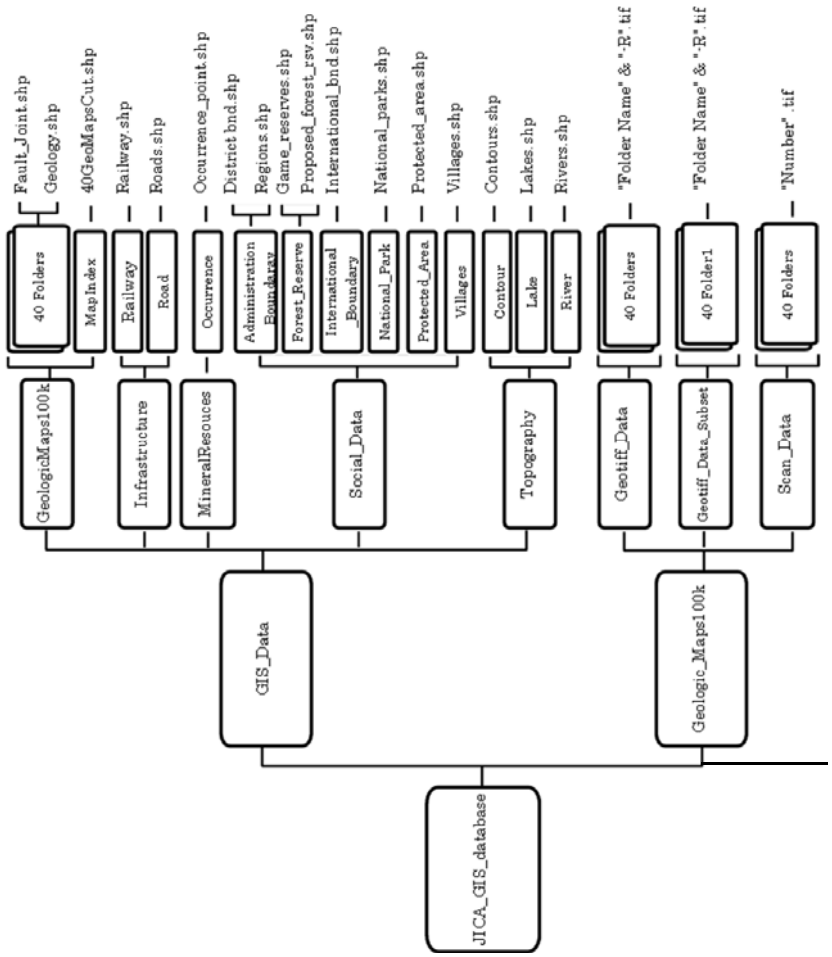
Hard disk drives connected Local Area Network. IP addresses in the network are shown in the table.

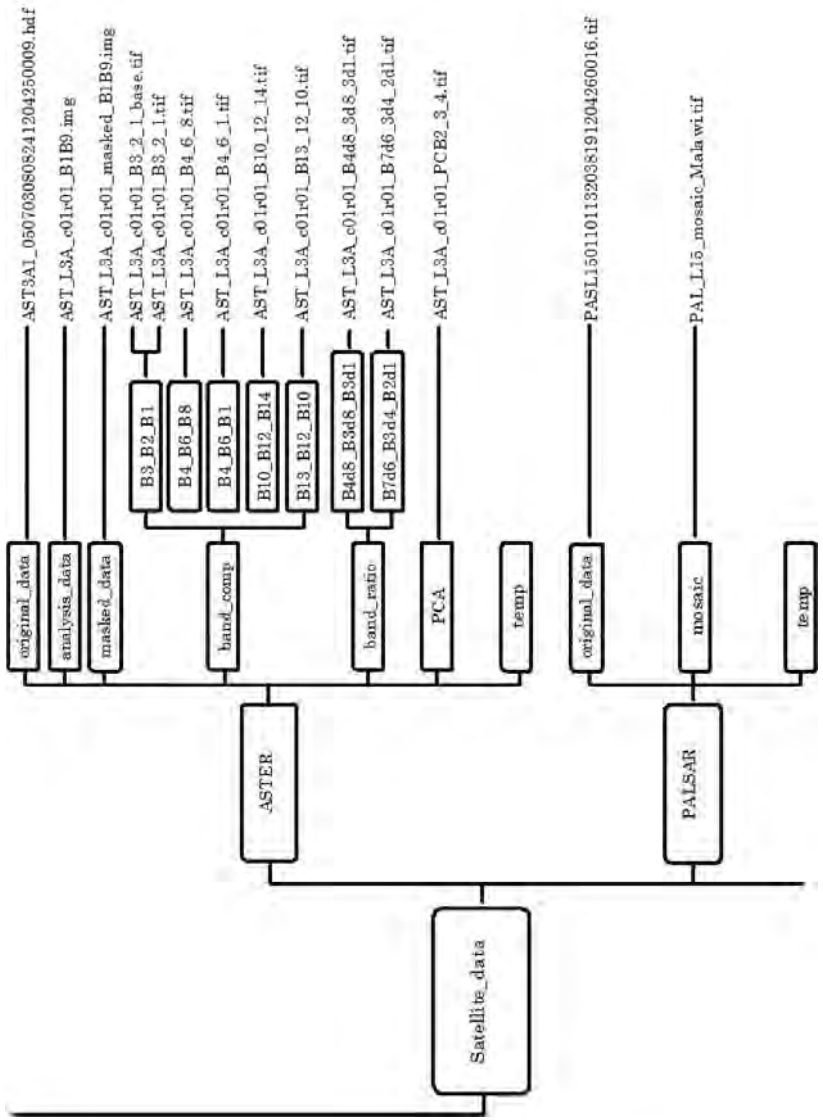
IP and MAC Address of PC, HDD and Printer

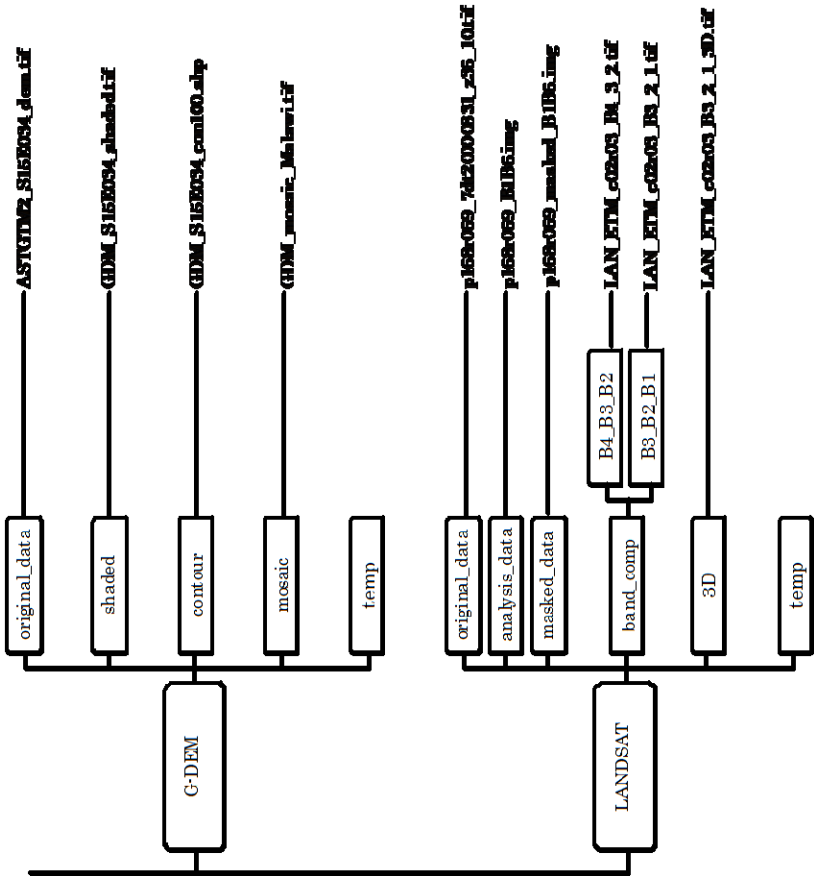
Host Name	Item	IP Address	MAC Address
JICA-PC01	Computer	192.168.1.51	E0-69-95-D0-11-C3
JICA-PC02	Computer	192.168.1.52	E0-69-95-FA-2A-F2
JICA-PC03	Computer	192.168.1.53	38-60-77-FA-B8-35
JICA-PC04	Computer	192.168.1.54	38-60-77-FA-B6-6D
JICA-PC05	Computer	192.168.1.55	38-60-77-FA-B6-77
JICA-DS	HDD	192.168.1.101	4C-E6-76-FD-10-CE
JICA-DS_BACKUP	HDD	192.168.1.102	4C-E6-76-FD-1B-6F
T2300-HP	A0 Printer	192.168.1.103	EC-9A-74-64-40-42
HP-K8600	A3 Printer	192.168.1.104	00-1C-C4-F3-5F-96

2.2 Structure of Directories

The name of root directory (top folder) is “JICA_GIS_database”. There are three sub directories, “GIS_Data”, “Geologic_Maps100k” and “Satellite_data” under the root directory.







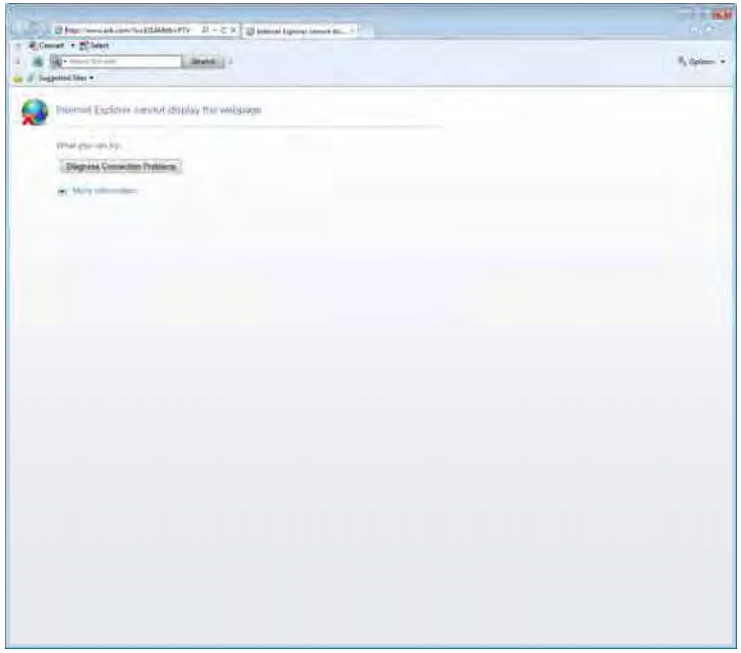
3. Operating

3.1 Outline

Only one drive (JICA-DS) for saving is usually turned on and used. Only the administrator who is nominated by the director of GSD can update GIS database in the drive for saving and immediately has to copy the update data to another drive (JICA-DS_BACKUP) for backup. The database users have to copy necessary data from the drive (JICA-DS) for saving to each PC and then will process the data or create maps.

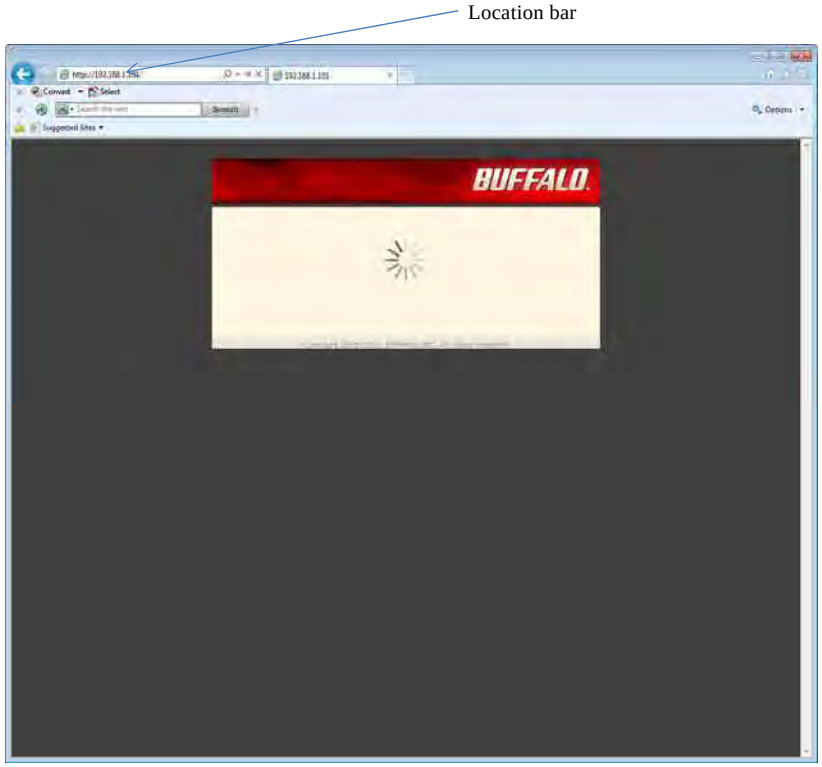
3.2 Administration of HDD

For the administration of HDD (JICA-DS or JICA-DS_BACKUP), the internet explorer will be used connecting each HDD from PC.



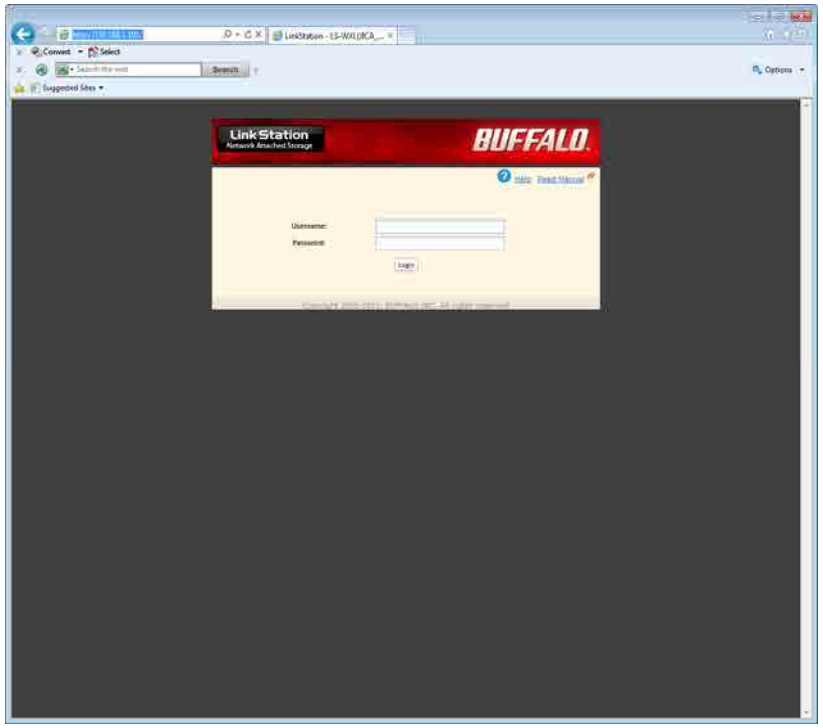
After starting the internet explorer, enter the address to the location bar. For connecting to the JICA-DS, the address is “http://192.168.1.101/”. For connecting to the JICA-DS_BACKUP, the address is “http://192.168.1.102/”.

Then press the enter key.



After a few seconds, the page requests the user name and password.

The default user name and its password were known by the director of GSD.

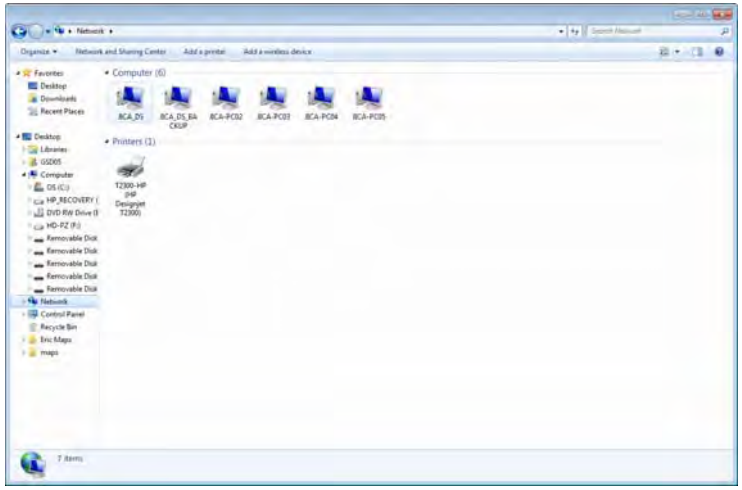


Enter user name and its password. After then click “login”.

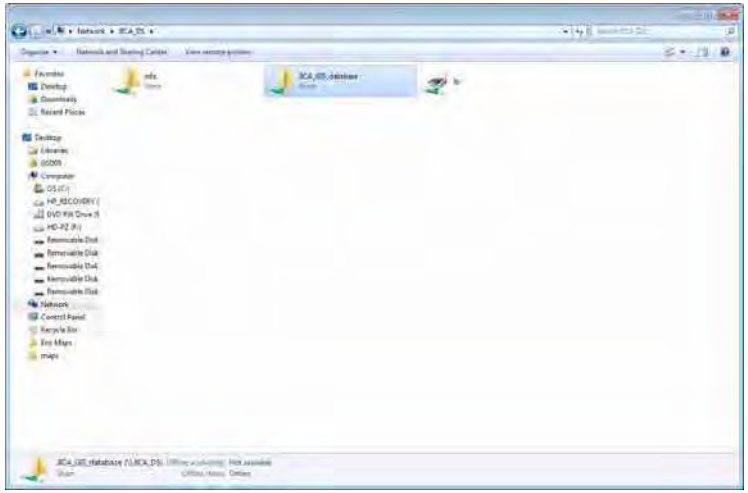
After login, you can administrate each HDD.

3.3 Usage of database

The database users have to copy necessary data from the drive (JICA-DS) for saving to each PC and then will process the data or create maps. For copy those data you have to connect JICA-DS using the network (Local Area Network). Click JICA-DS in the “Network” in the windows explorer.



The folder named “JICA_GIS_database” will appear. Click it.



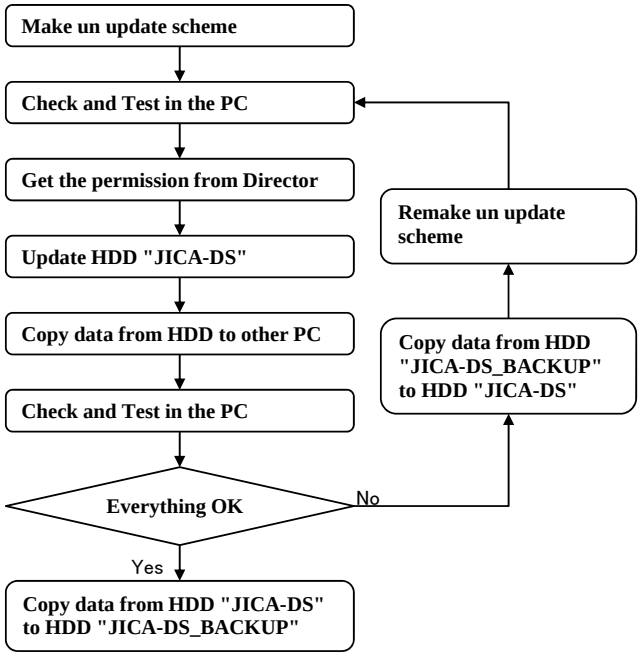
The small window named “Windows Security” will appear and the window requests the username and its password. The default username and its password are same as “3.2 Administration of HDD” and director of GSD knows them.

Enter username and password. If those are collect, you can open the folder. In the folder, there are three sub directories, “GIS_Data”, “Geologic_Maps100k” and “Satellite_data”. You will copy your necessary data to your computer referring the figure of Structure of Directories (page 3-5).

When you finish the copying data, turn off the HDD (JICA-DS) before you use those data.

3.4 Update database

Before the updating database, the HDD “JICA-DS” and one PC are turned on their power, and are connected to the LAN (Local Area Network). Updating the database has to be followed the following flow chart.



There are 3 important matters on the updating.

The first is a getting permission. This database is one of GSD’s assets. For updating it is necessary to get director’s permission. The 2nd is “Check and Test”. For the protecting data lose, “Check and Test” shall be done safely. The last is “Backup”. There is a backup HDD named “JICA-DS_BACKUP”. When the HDD “JICA-DS” is updated successfully, all data shall be copied to the HDD “JICA-DS_BACKUP”.

3.5 Restore database

There is a backup HDD named “JICA-DS_BACKUP” for the protecting from accidental deletes or unexpected changes. The data stored in the HDD named “JICA-DS_BACKUP” is completely same as the data stored in the HDD named “JICA-DS”.

The HDD “JICA-DS_BACKUP” is not turned on its power usual, when it is necessary to restore data in the HDD “JICA-DS it will be turned on the power.

Before the restoring database, two HDD (“JICA-DS” and “JICA-DS_BACKUP”) and one PC are turned on their power, and are connected to the LAN (Local Area Network). The restoring database is executed on the following steps.

1. Check the existing data in the HDD named “JICA-DS_BACKUP”
2. Delete all data in the HDD named “JICA-DS”
3. Copy all data from the HDD named “JICA-DS_BACKUP” to the HDD named “JICA-DS”