

## Appendix 5

GIS operation guide (Hue)

# GIS Operation Guide

T.T. Hue Province

## Contents

### Object of Training Course

#### **Course 1 View**

- [1-1] Base Map
- [1-2] Add raster
- [1-3] Setting up raster property
- [1-4] Save layer status

#### **Course 2 Reclass**

- [2-1] Preparation
- [2-2] Reclass (Flood 2m)
- [2-3] Reclass (Flood 5m)
- [2-4] Raster to Polygon

#### **Course 3 Overlay**

- [3-1] Preparation
- [3-2] Intersect (Main Road and Flood 2m)
- [3-3] Intersect (Houses and Flood 2m)
- [3-4] Intersect (Point Data and Flood 2m)
- [3-5] Erase

#### **Course 4 Attribute Table (1)**

- [4-1] Preparation
- [4-2] Change Layer Display
- [4-3] Counting
- [4-4] Rename of Field
- [4-5] Field Calculator

#### **Course 5 Attribute Table (2)**

- [5-1] Field Calculator
- [5-2] Change Layer Display
- [5-3] Join Attribute from Table (Excel Data)

#### **Course 6 Application of Simulation Result**

- [6-1] Preparation
- [6-2] Intersect
- [6-3] Merge of Polygon
- [6-4] Calculate Geometry
- [6-5] Finalize

#### **Course 7 Conversion from Simulation Results of MIKE**

- [7-1] Add Excel Data
- [7-2] Export Data
- [7-3] Point Data to TIN
- [7-4] Tin to Raster
- [7-5] Import Layer File

#### **Course Additional 1 Add Point Shapefile from GPS**

- [A1-1] Add Point Data from Excel Table
- [A1-2] Change Coordination System from WGS84 to VN2000

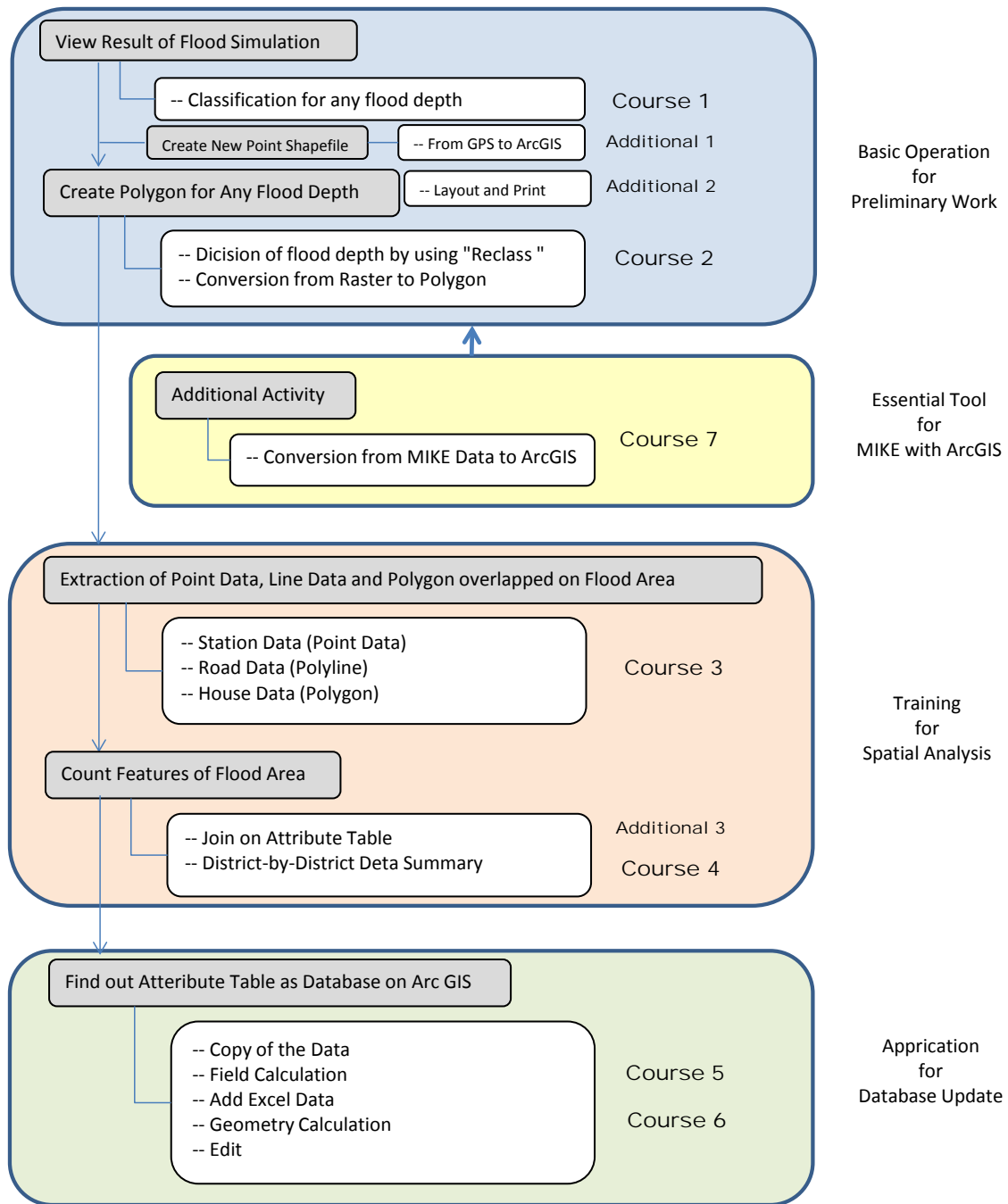
#### **Course Additional 2 Layout and Printing**

- [1] Mapfile
- [2] Page and Print Setup
- [3] Scale
- [4] Data Frame Setting
- [5] Layout of the Map
- [6] Printing

January 2012



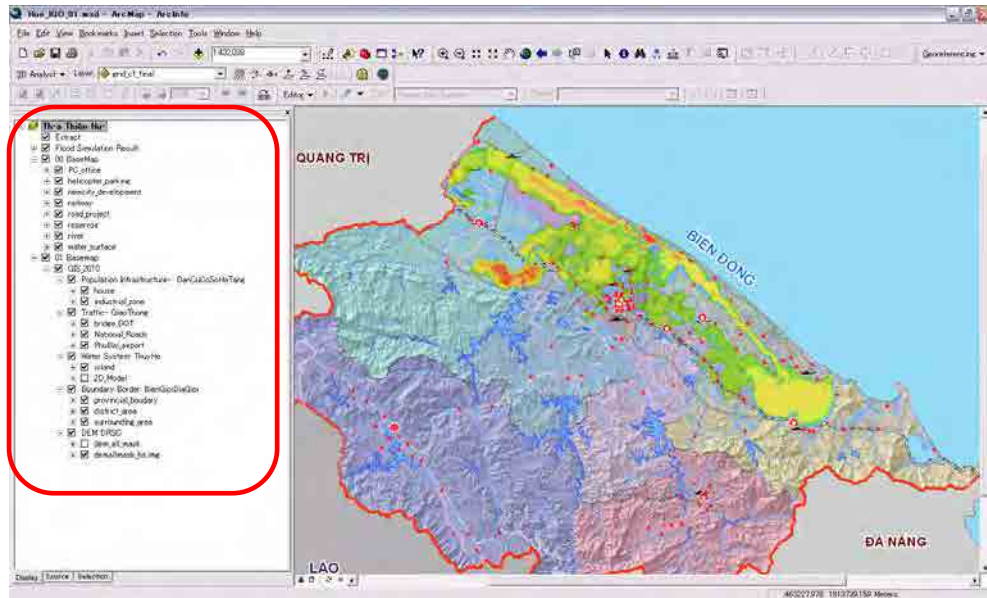
**Object of Training Course**



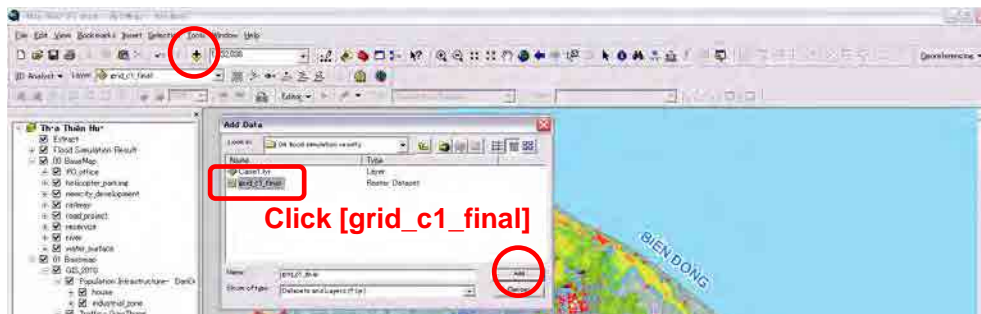
## Course 1 View

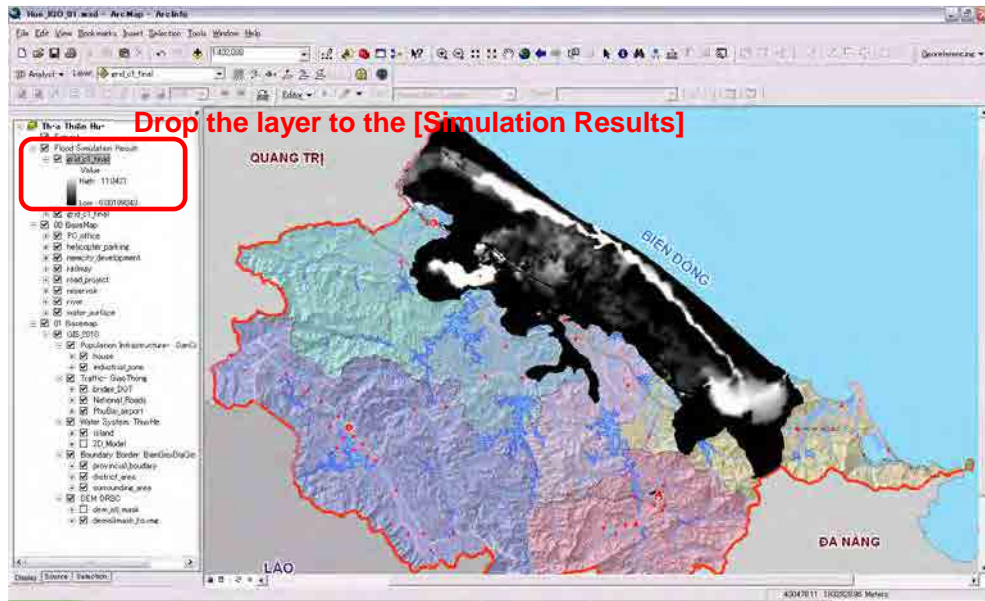
### 【1-1】 Base map

Confirm layers of T.T.Hue on the window.

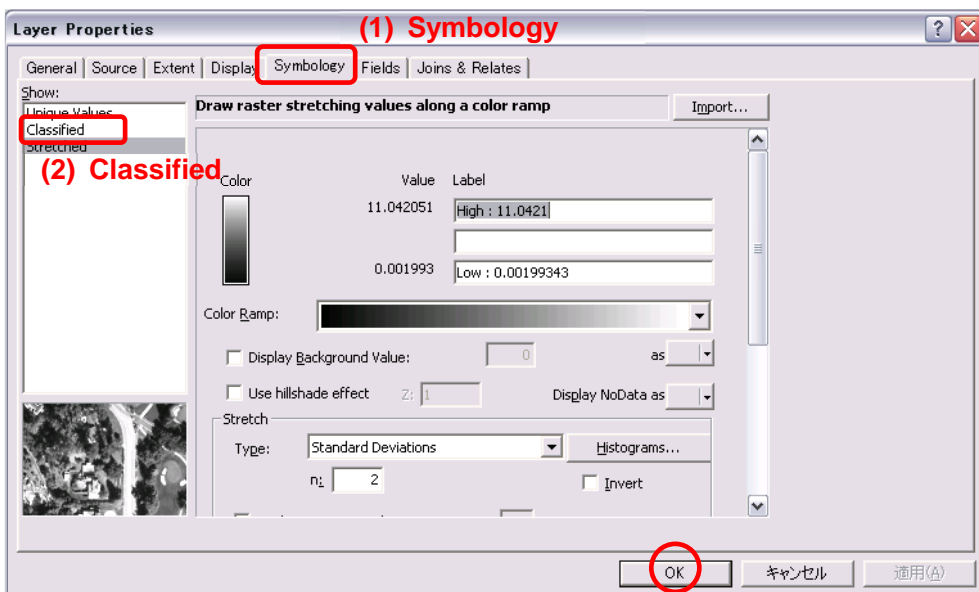
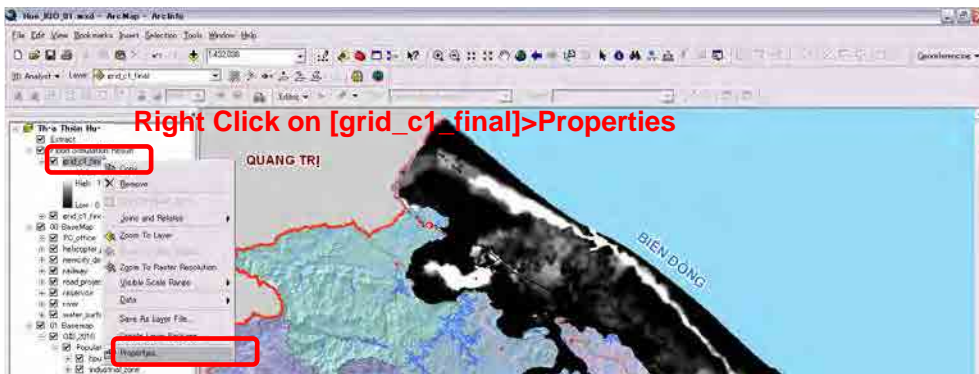


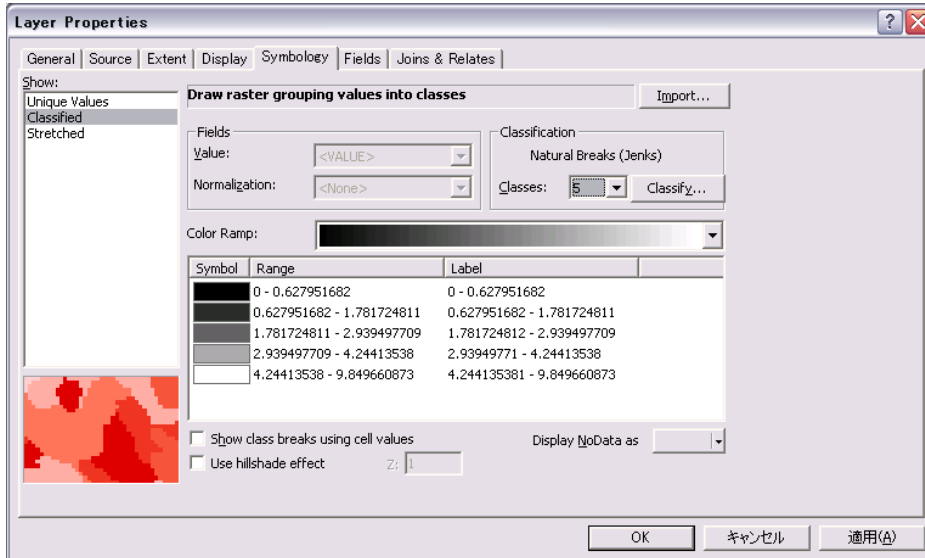
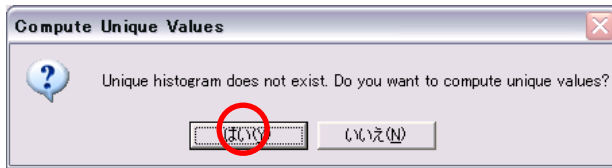
### 【1-2】 Add raster



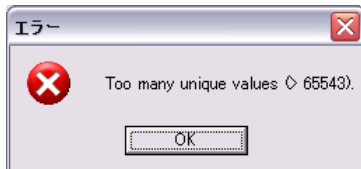


【1-3】 Setting up raster property

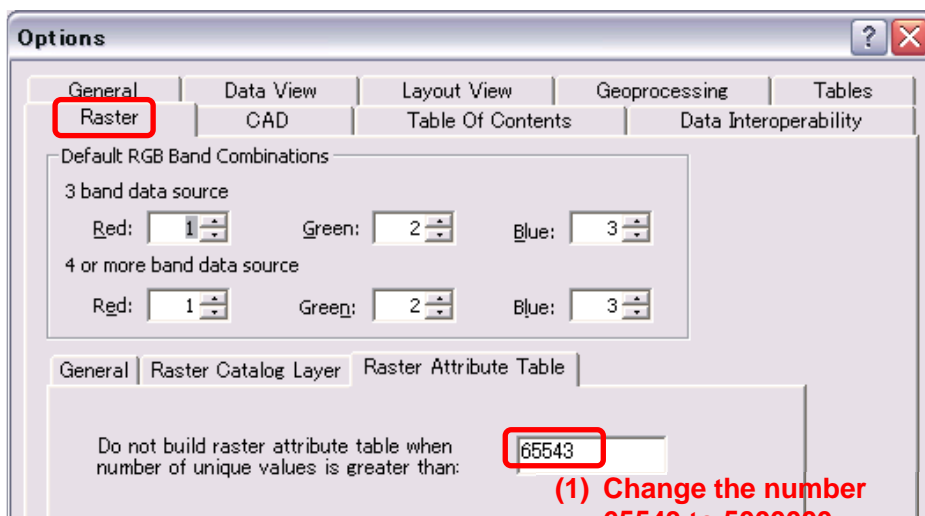


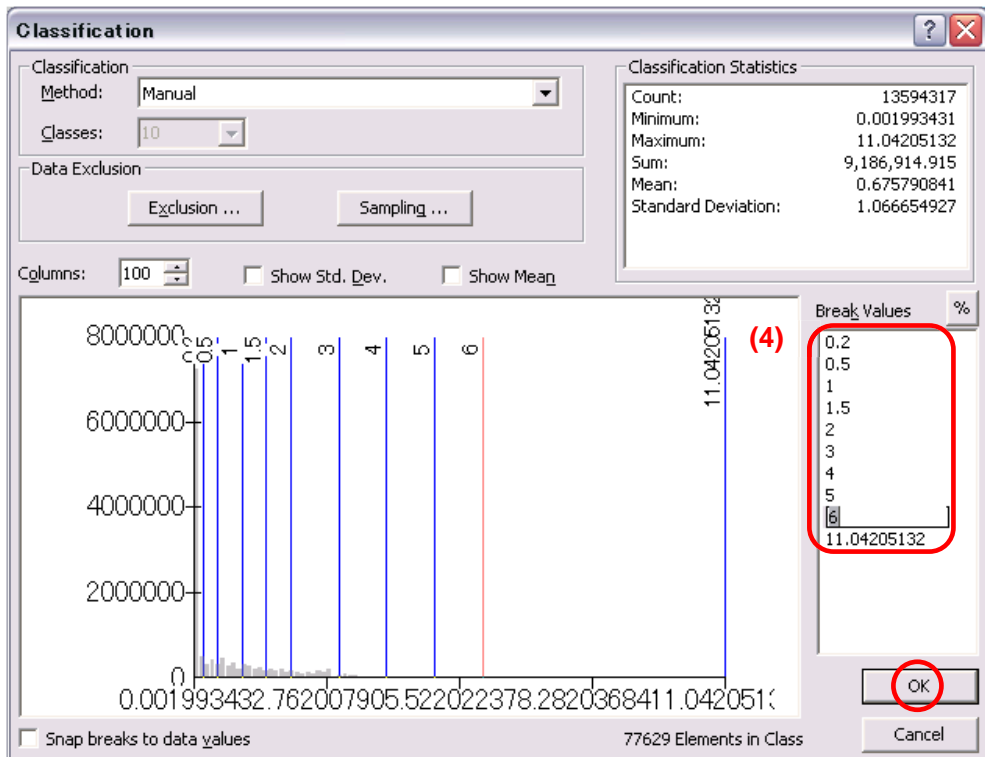
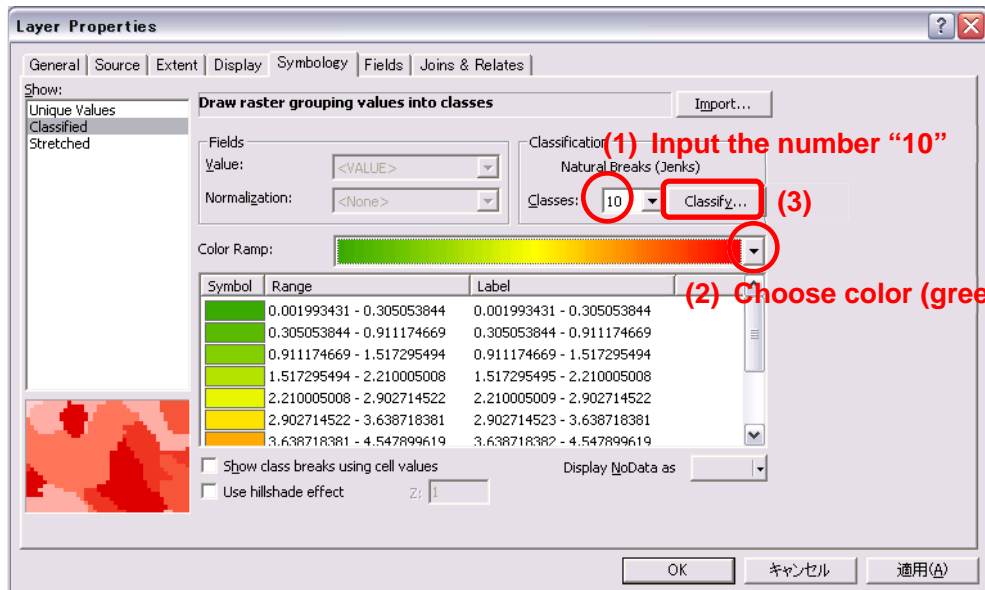


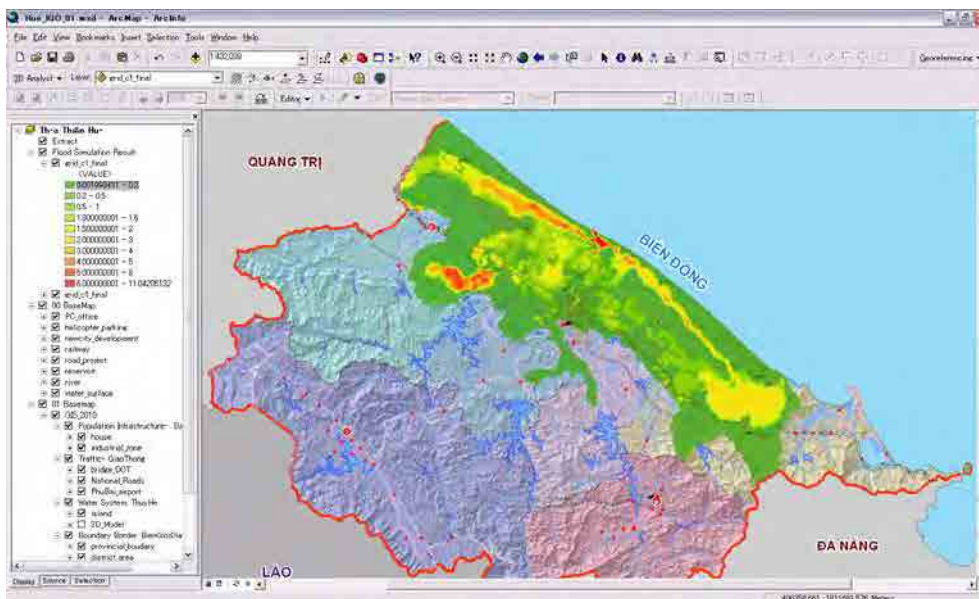
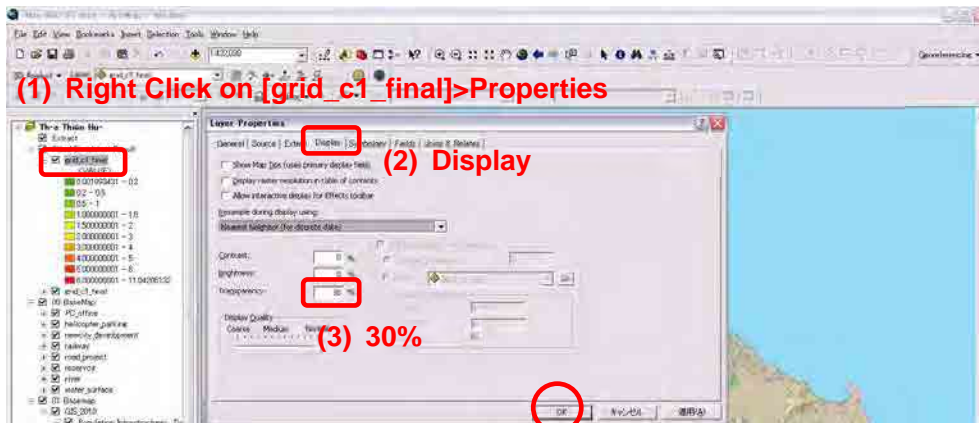
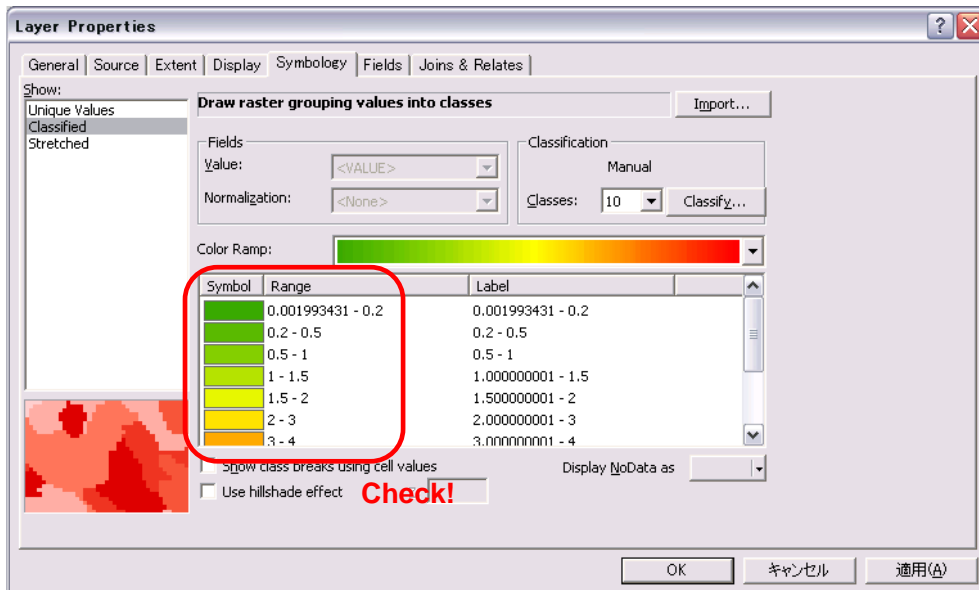
If this type of error is shown, you can change configuration.



Tools>Options>Raster

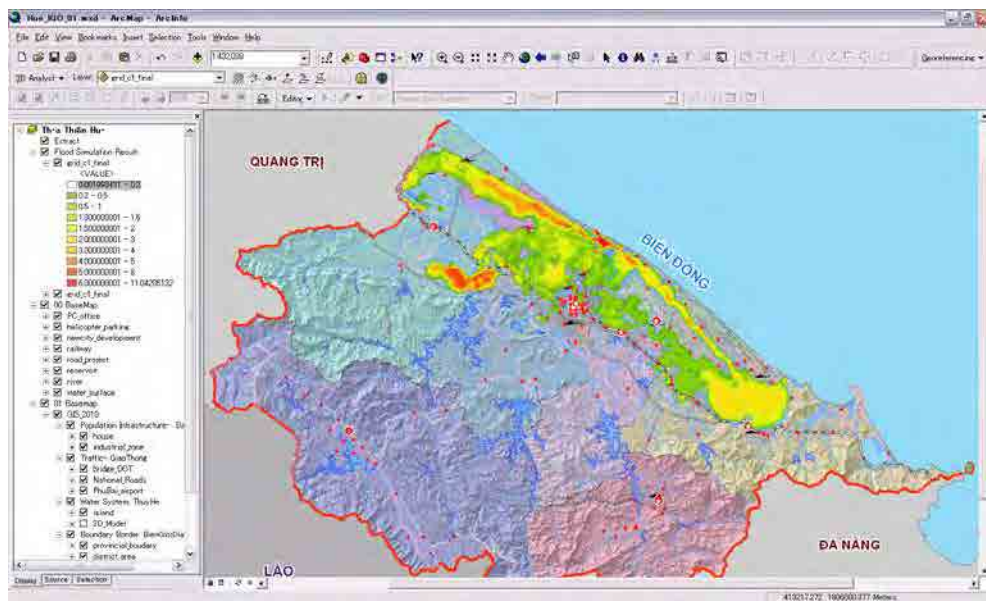
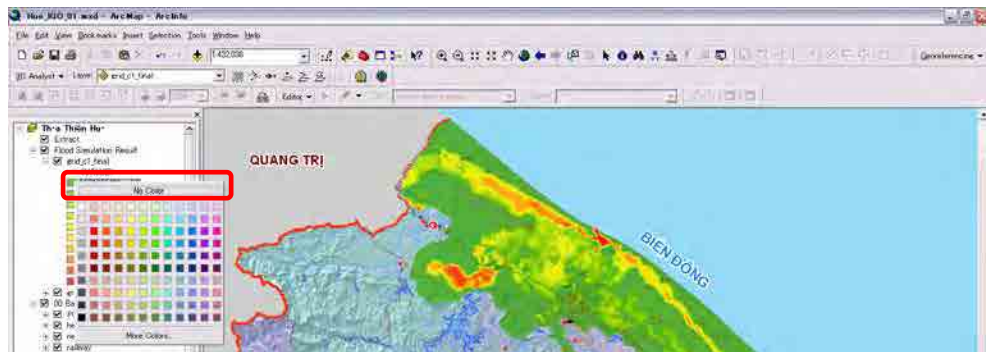






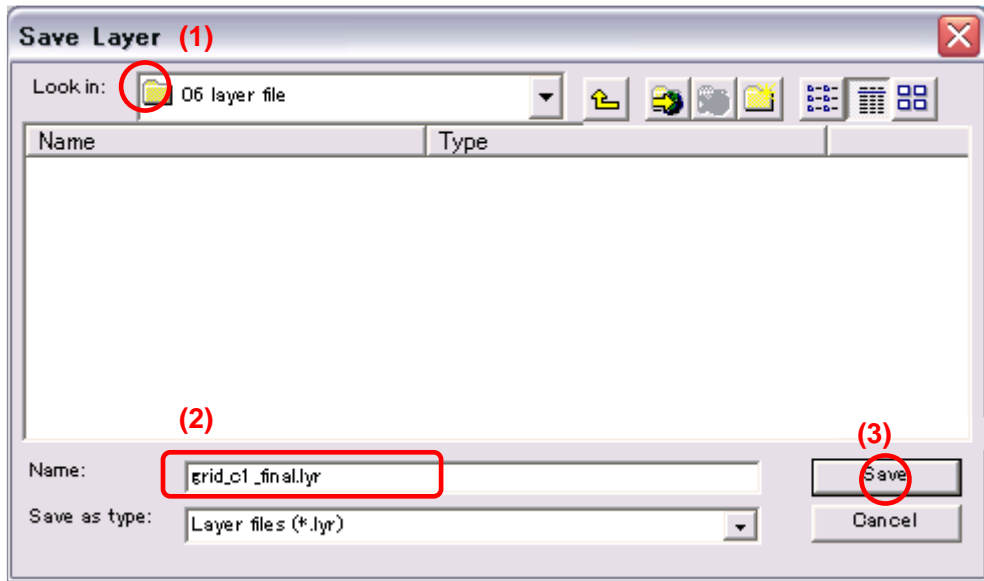


Remove “green” color on “0.001993431-0.2”



【1-4】 Save layer status

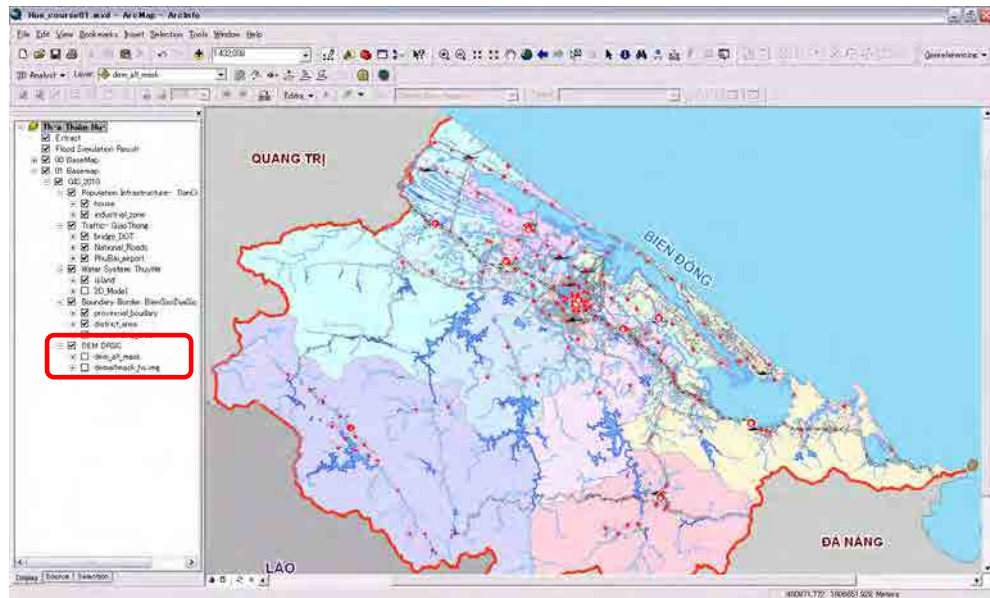




## Course 2 Reclass

### 【2-1】 Preparation

[Hide DEM Hill shade]

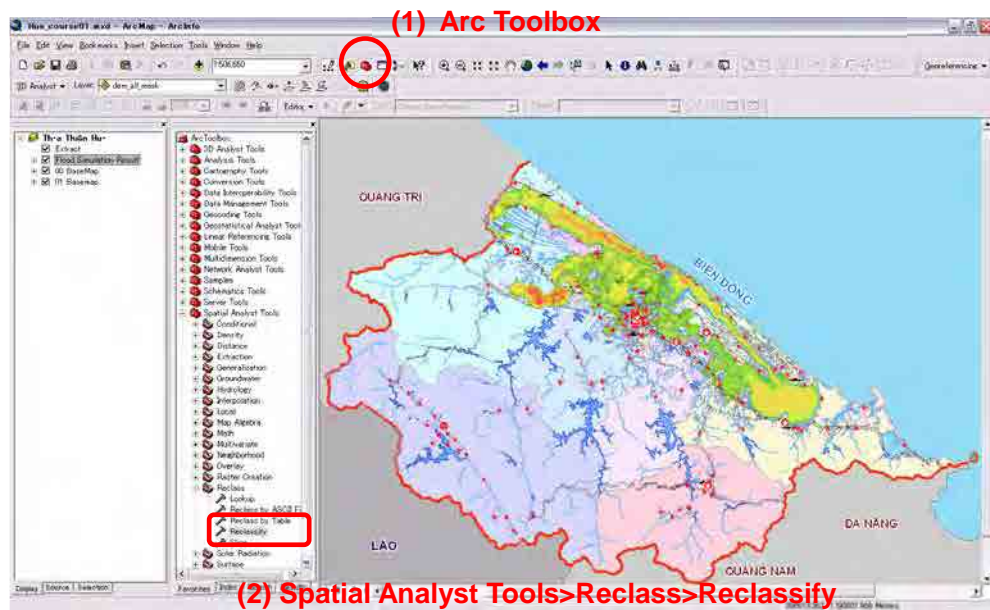


### 【2-2】 Reclass (2m)

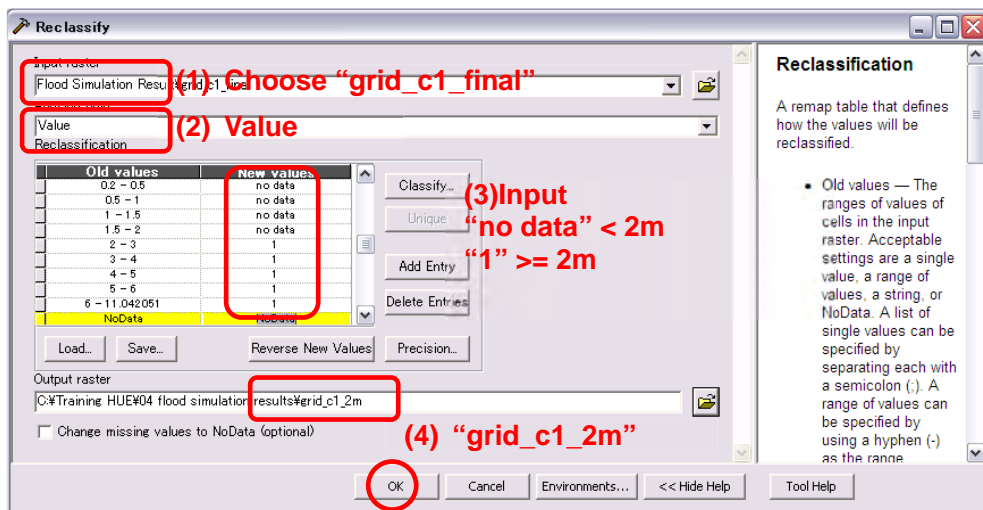
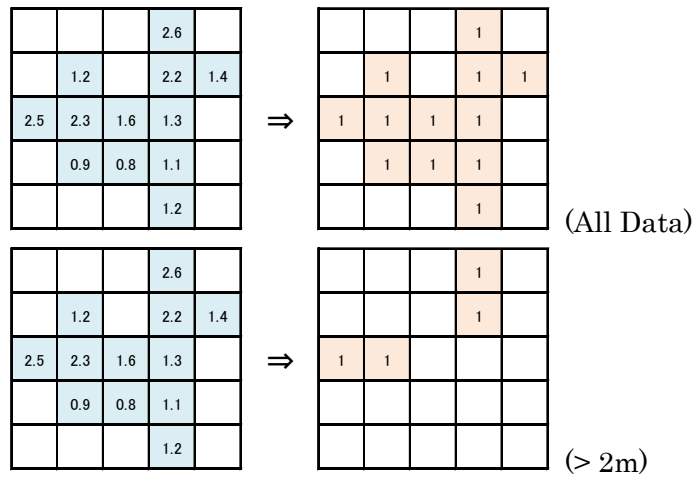
Let us extract 2m flooded area.

[Open the Arc Toolbox]

Spatial Analyst Tools>Reclass>Reclassify

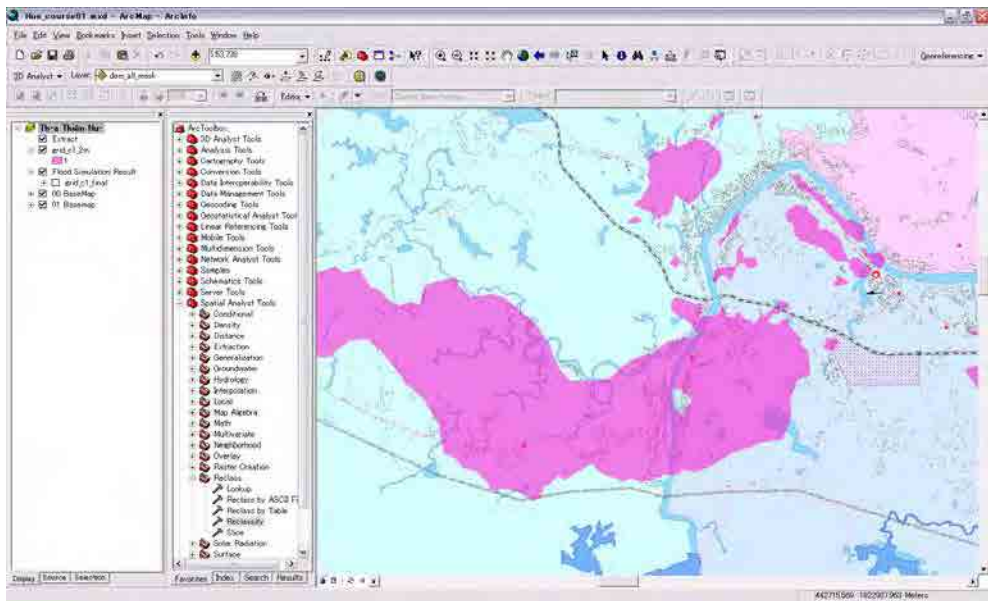
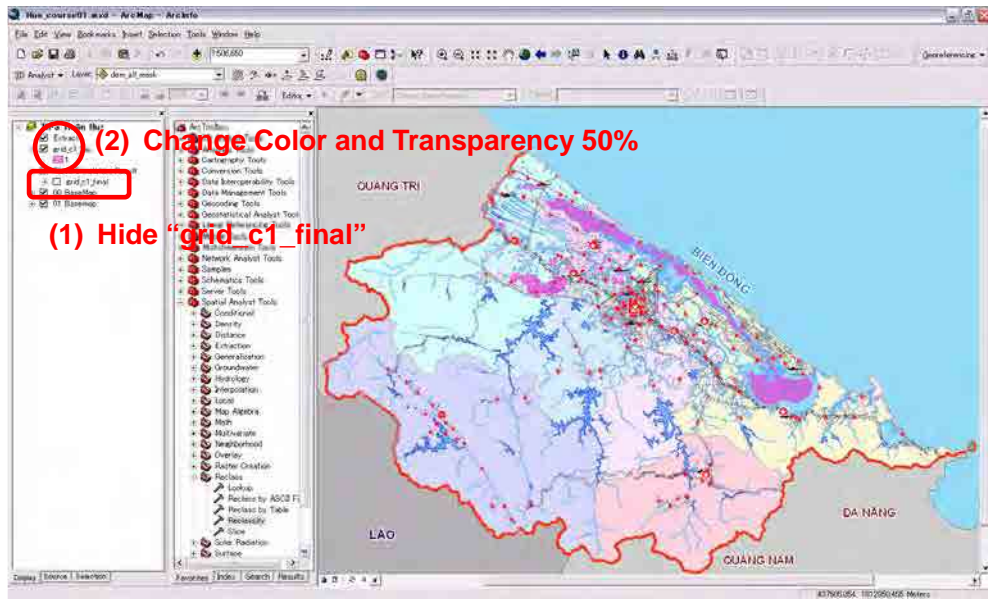


## Concept of "Reclassify" on DEM



[Hide “grid\_c1\_final”]

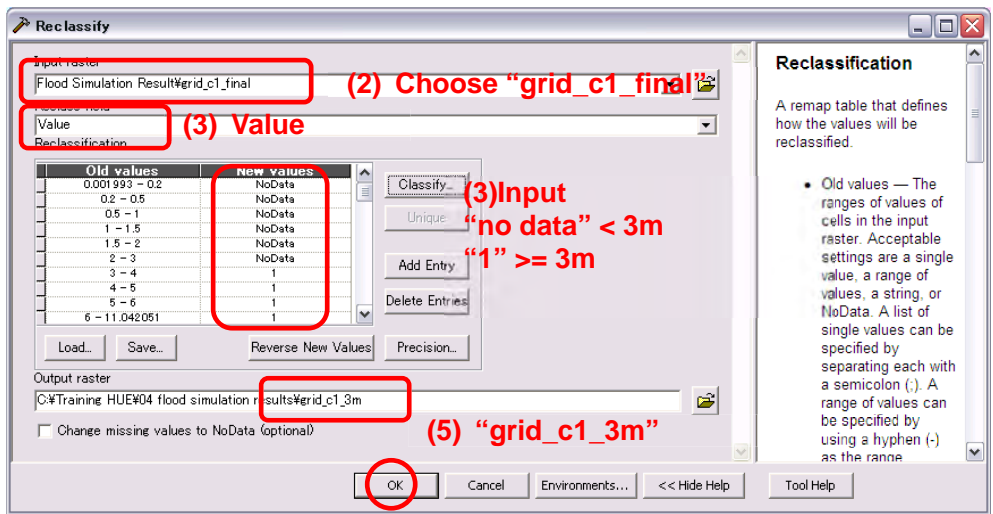
[Change color to blue and transparency 50% on “grid\_c1\_2m”]



Look at the map more carefully.

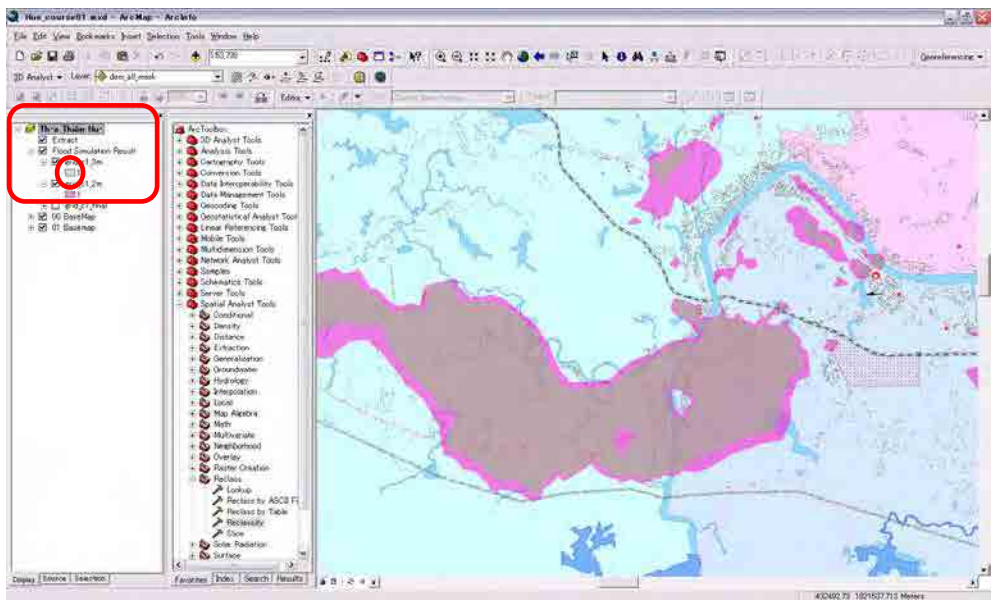
【2-3】 Reclass (3m)

***Let us try to extract more than 3m flood on “grid c1 final”.***



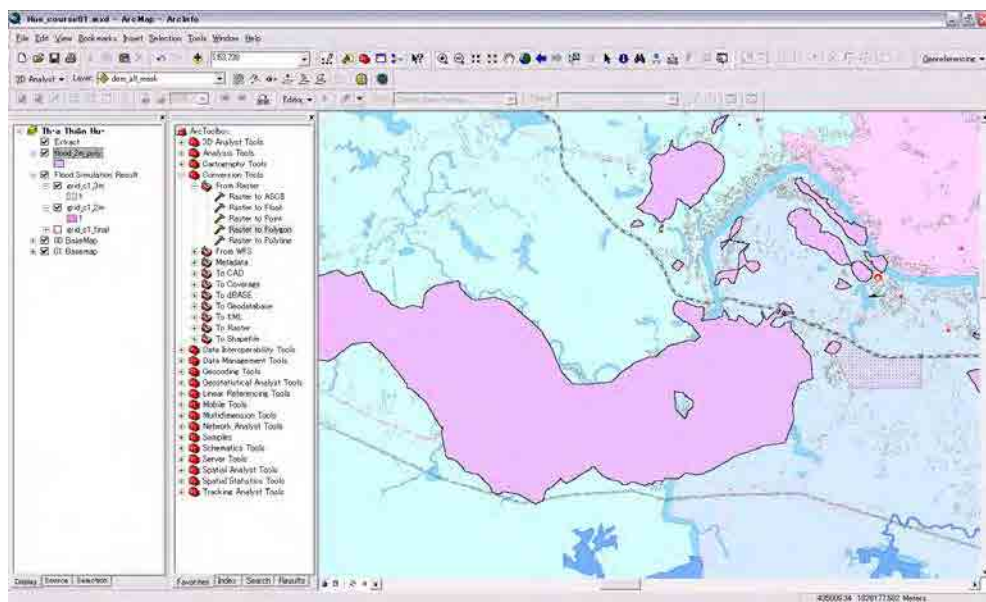
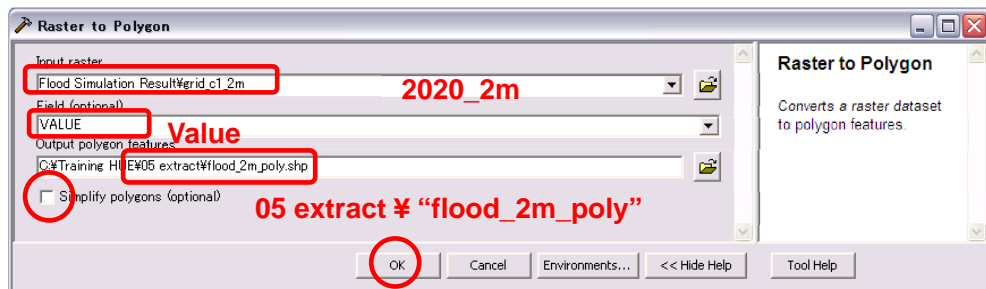
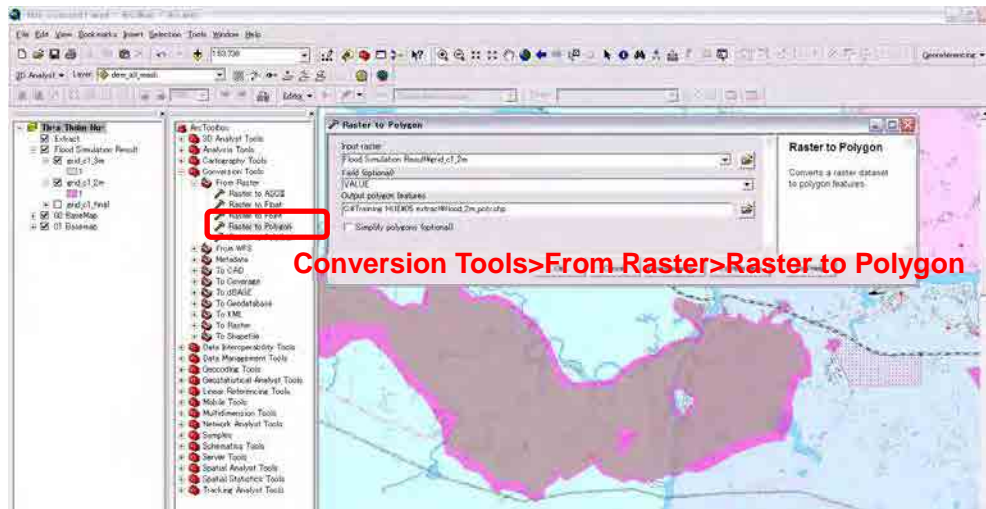
[Drop "grid\_c1\_2m" and "drid\_c1\_3m" layer to "Extract" group]

[Change transparency of "grid\_c1\_3m" to 50%.]



## [2-4] Raster to polygon

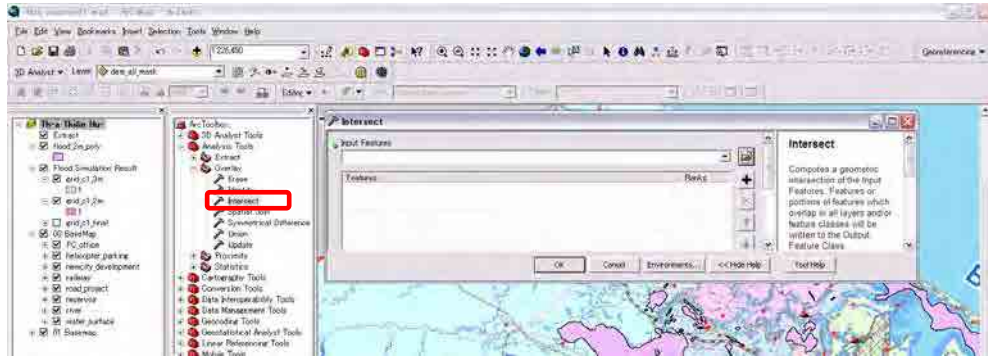
Conversion Tools>From Raster>Raster to Polygon



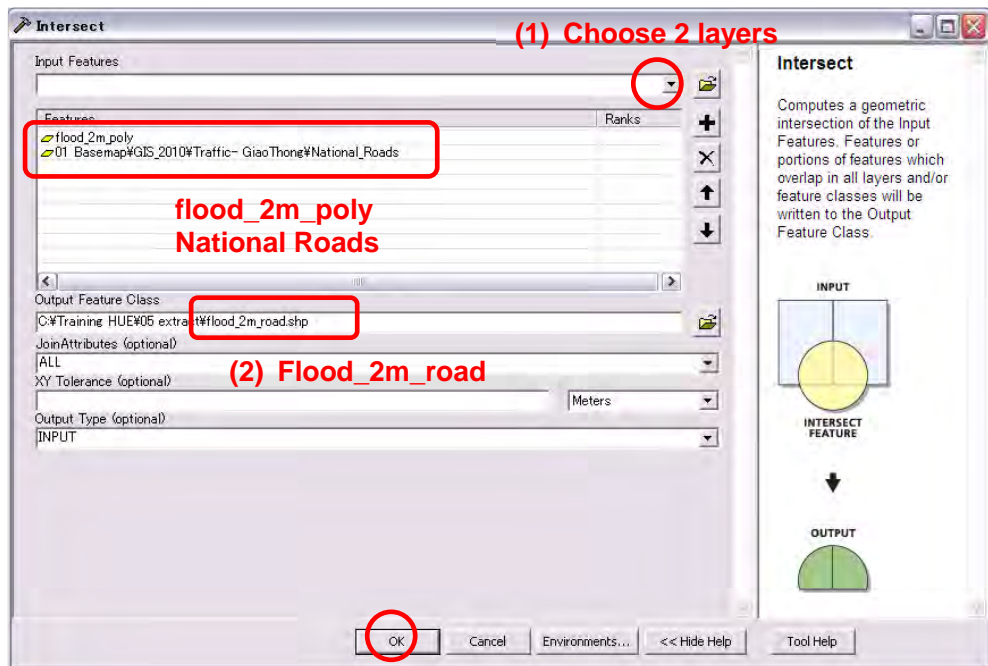
## Course 3 Overlay

### 【3-1】 Preparation

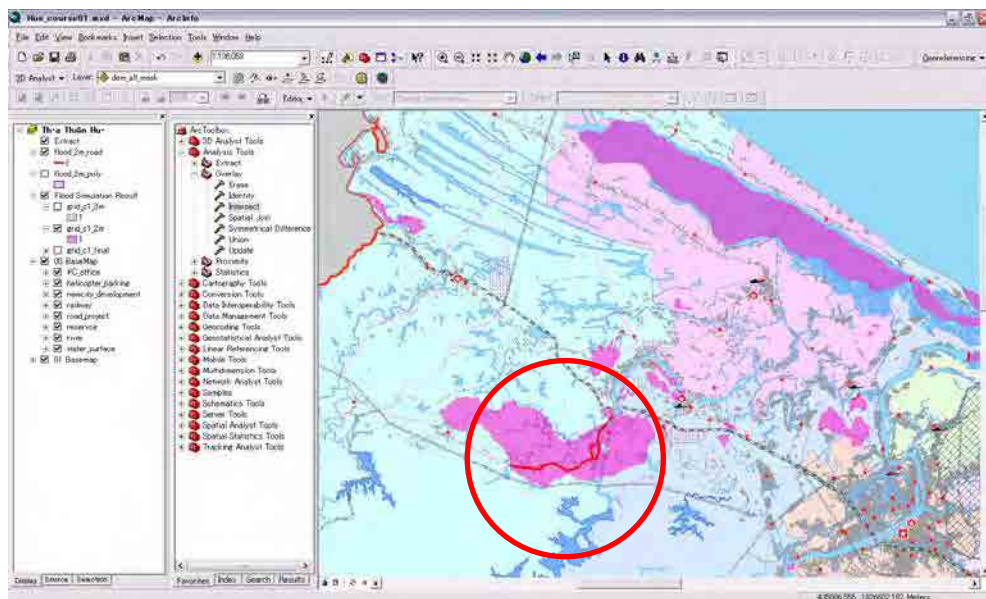
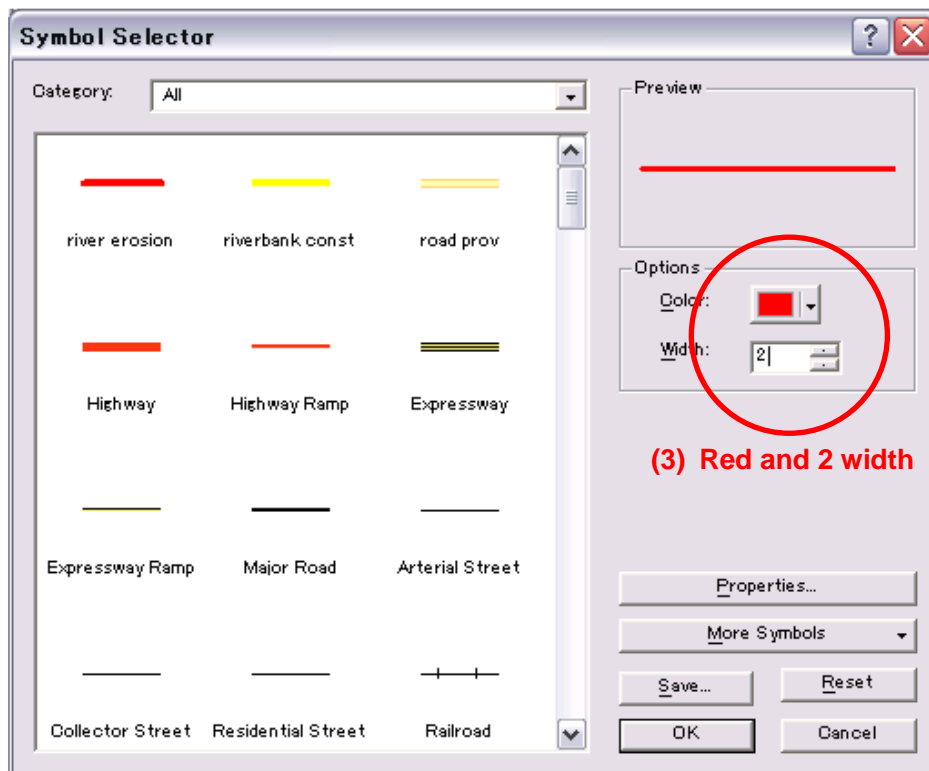
Analysis Tools > Overlay > Intersect



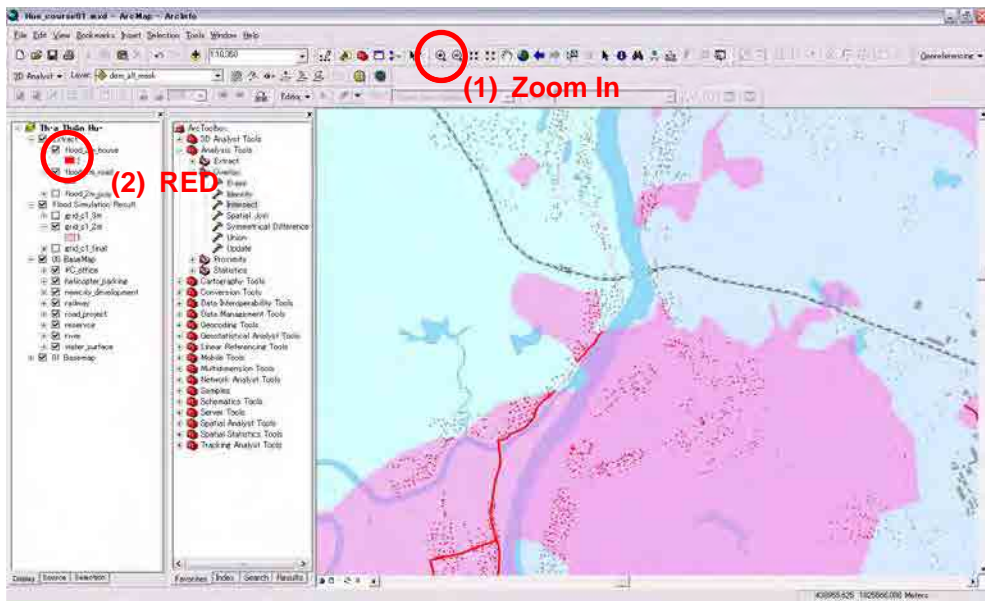
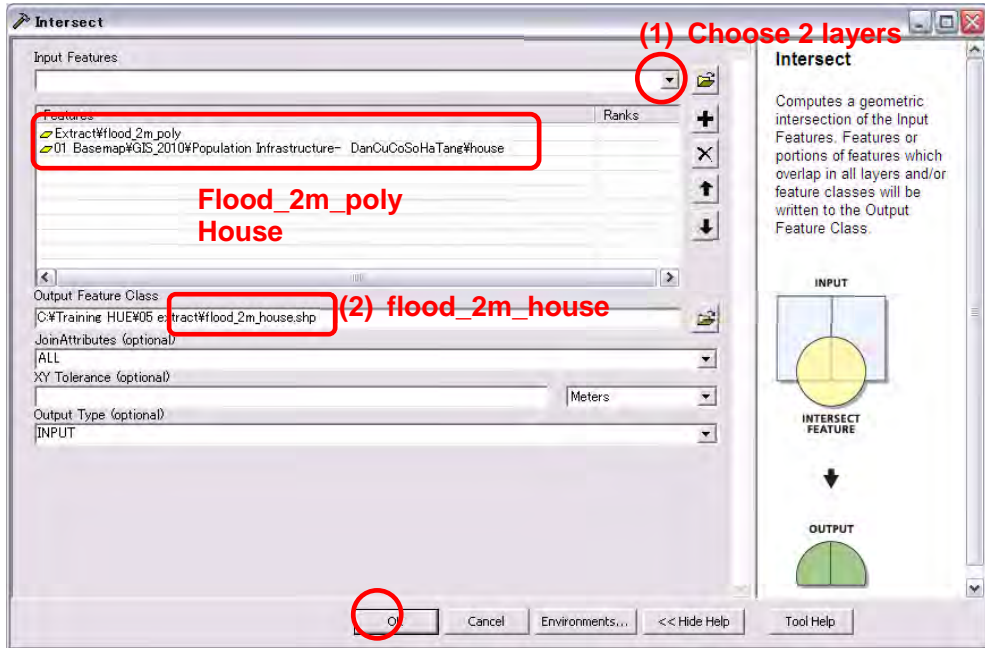
### 【3-2】 Intersect (Road and Flood 2m)



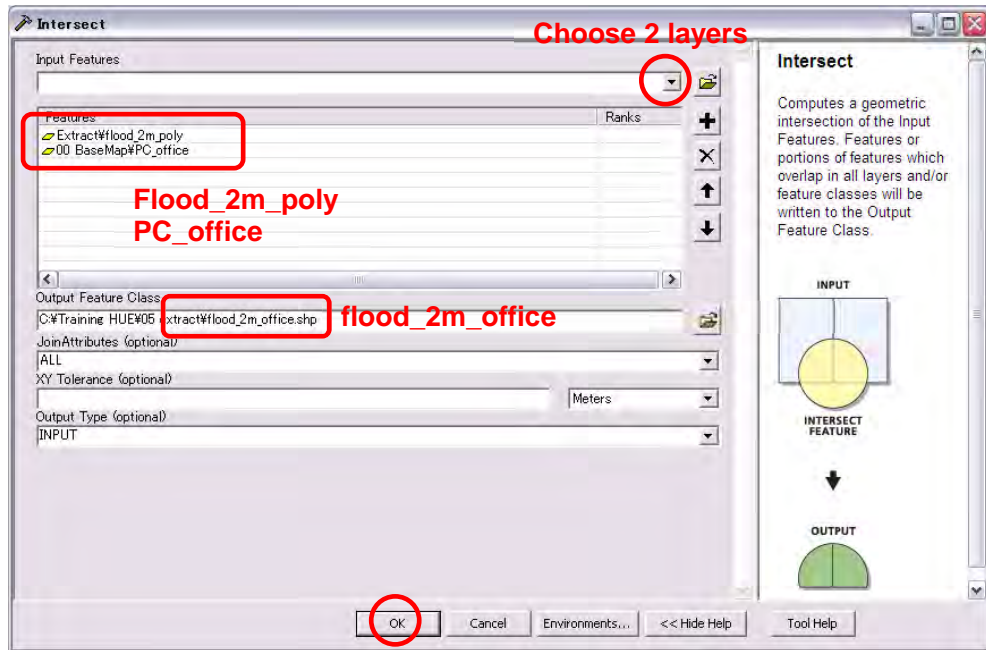




【3-3】 Intersect (Houses and Flood 2m)

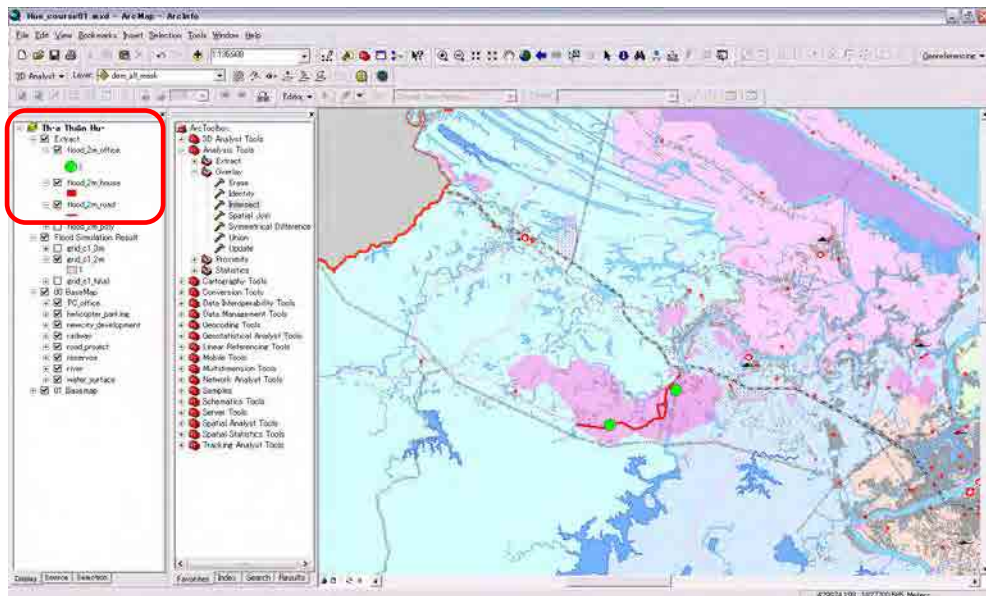


【3-4】 Intersect (Point Data and Flood 2m)



[Drop “station\_2m” to “Extract” group]

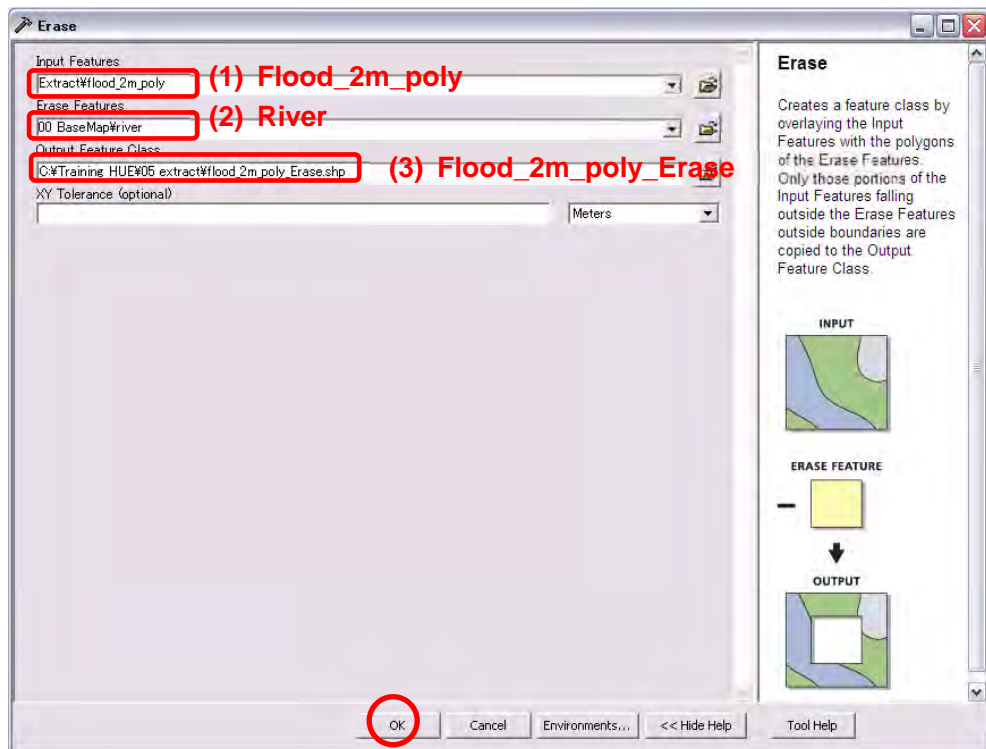
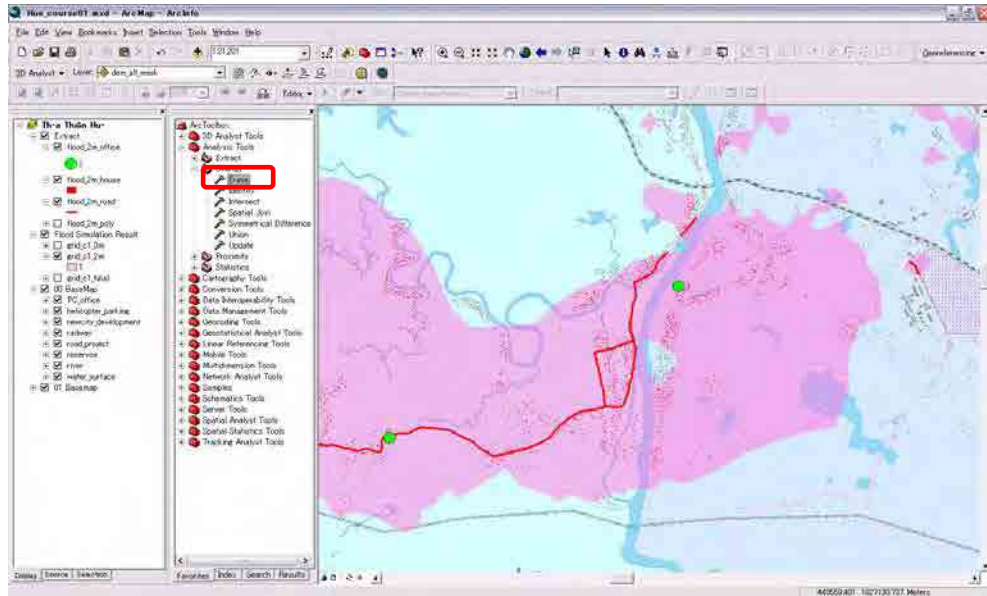
[Change color and symbol of the “flood\_2m\_office”]

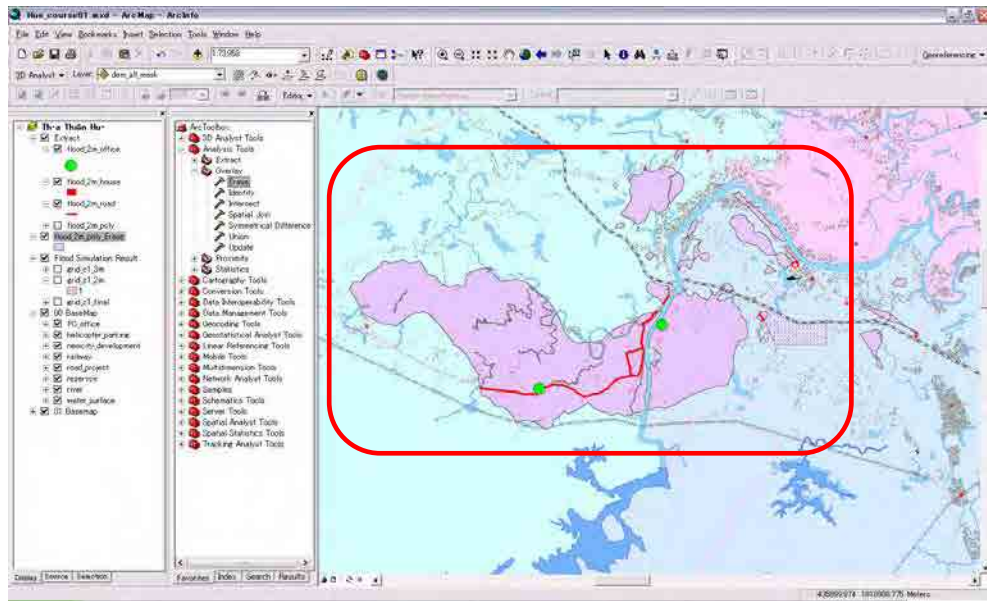


### 【3-5】 Erase

Analysis Tools>Overlay>Erase

[Zoom in to Thu Bon River]



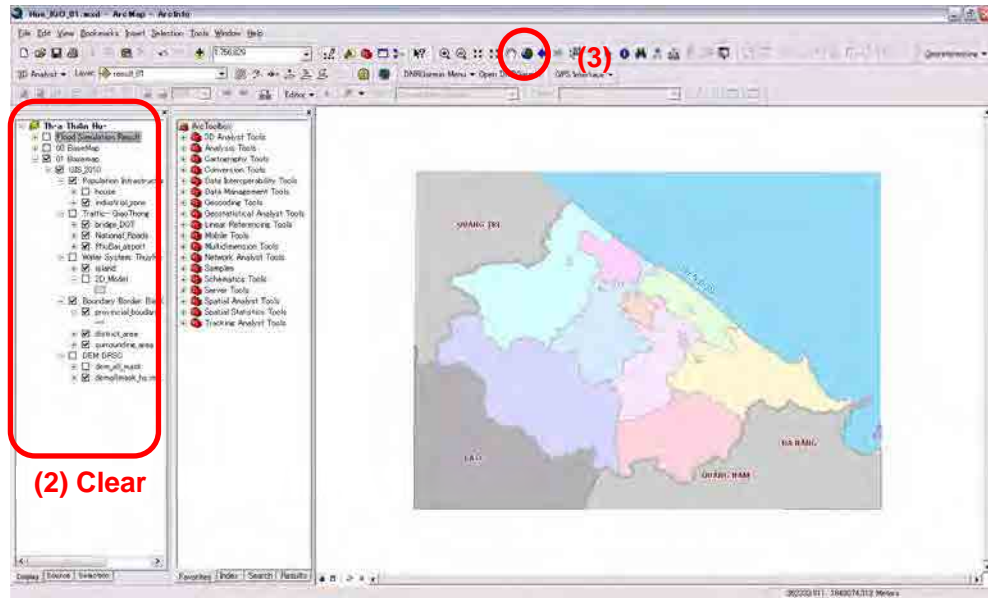


## Course 4 Attribute Table

### [4-1] Preparation

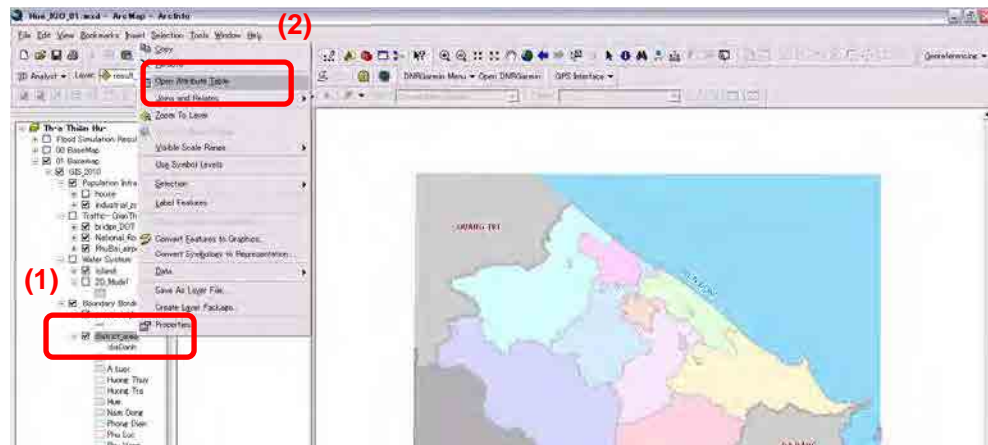
[Click the “Full Extent” button]

[Click off to clear data]



[Open Attribute Table]

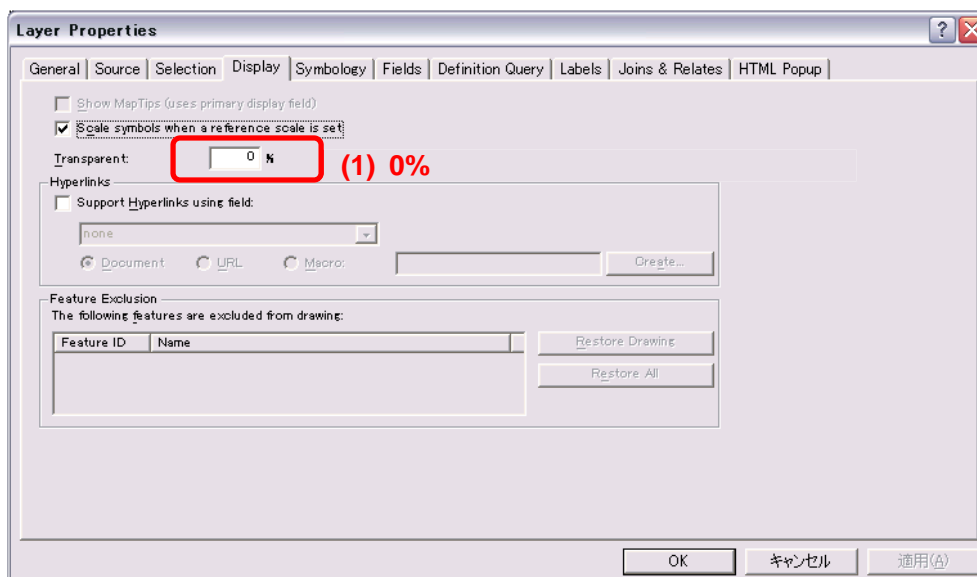
District\_Area3



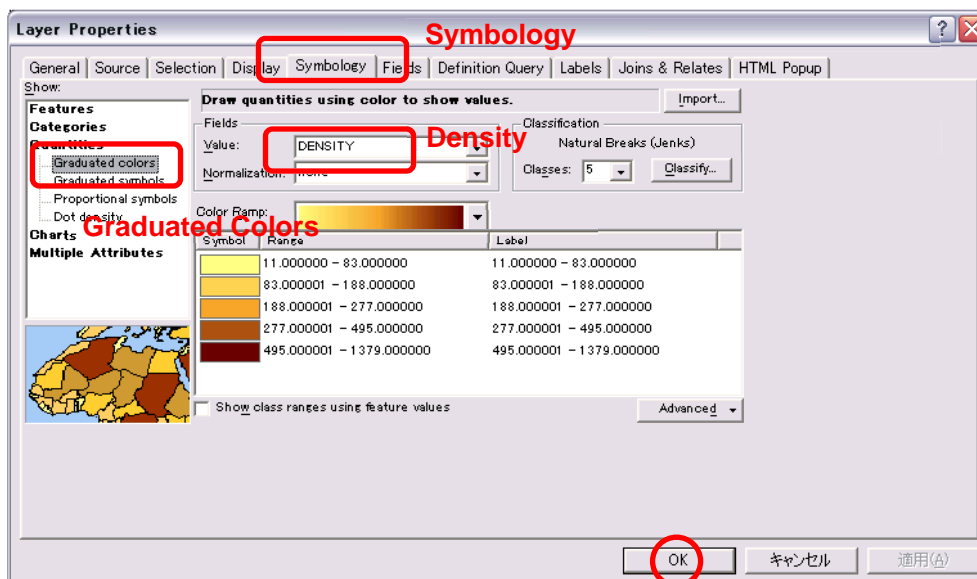
[Look at the Attribute Table]

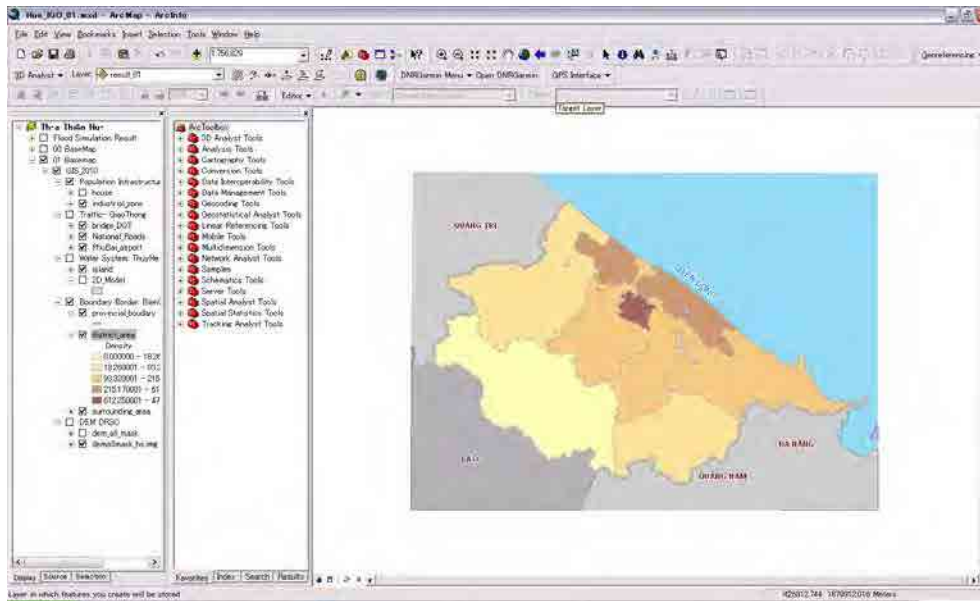
ID	Shape	OBJECTID	malhanhans	ngayThuaTh	ngayCapth	maBoiLuong	maBoiVinh	dahtuChen	diabanh	dienTich	Shape_Length	Shape_Area	Population	Density
1	Polygon	1	-HAU-	-HAU-	AD02	478	thanh anh	hu	70.89	62090.402440	7080516.9463	300094	4762.56	
2	Polygon	2	-HAU-	-HAU-	AD02	478	huynh	phong th	955.59	216455.013052	949157132.02	89029	92.32	
3	Polygon	3	-HAU-	-HAU-	AD02	477	huynh	gachng th	183.24	77708.099616	164117411.276	83538	511.59	
4	Polygon	4	-HAU-	-HAU-	AD02	478	huynh	phu vang	280.83	105568.314291	278417212.09	171363	612.25	
5	Polygon	5	-HAU-	-HAU-	AD02	479	thi xa	hitting thuy	480.26	100106.448898	458288943.214	98309	210.2	
6	Polygon	6	-HAU-	-HAU-	AD02	480	huynh	hitting tre	822.2	182468.802289	315860394.898	112027	215.17	
7	Polygon	7	-HAU-	-HAU-	AD02	481	huynh	al lth	1232.79	220860.910352	1224640530.97	22504	16.26	
8	Polygon	8	-HAU-	-HAU-	AD02	483	huynh	nam phong	652.09	145063.613265	647742350.411	45490	69.17	
9	Polygon	9	-HAU-	-HAU-	AD02	482	huynh	phu l th	729.31	5634.012278	1518000.57069	135225	0	
10	Polygon	10	0.0000	-HAU-	AD02	482	huynh	phu l th	729.31	194200.419425	711434164.852	138228	188.88	

[4-2] Change the Layer display



[Display the population density]

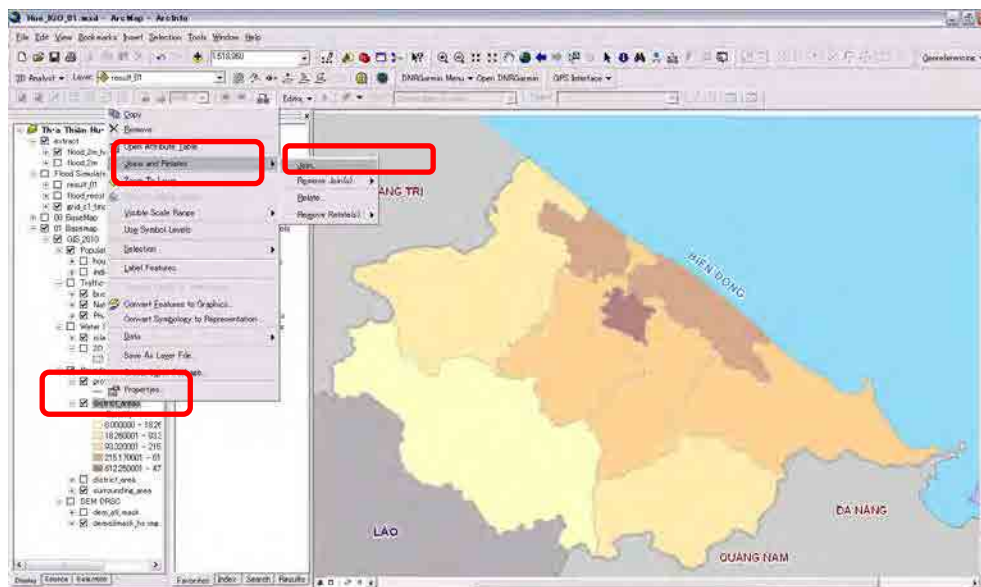




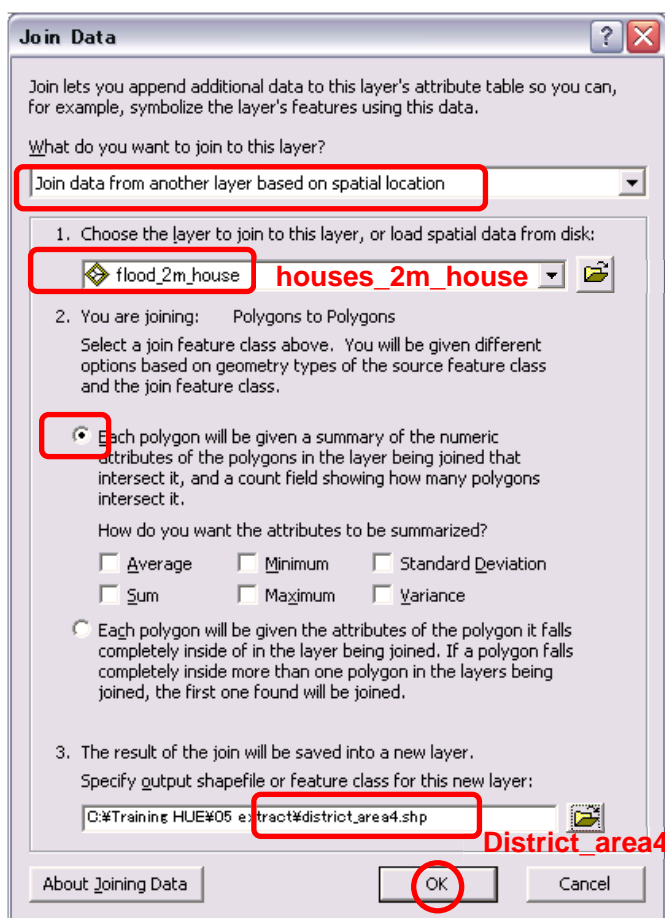
**[4-3] Counting**

[Open the “Join” command]

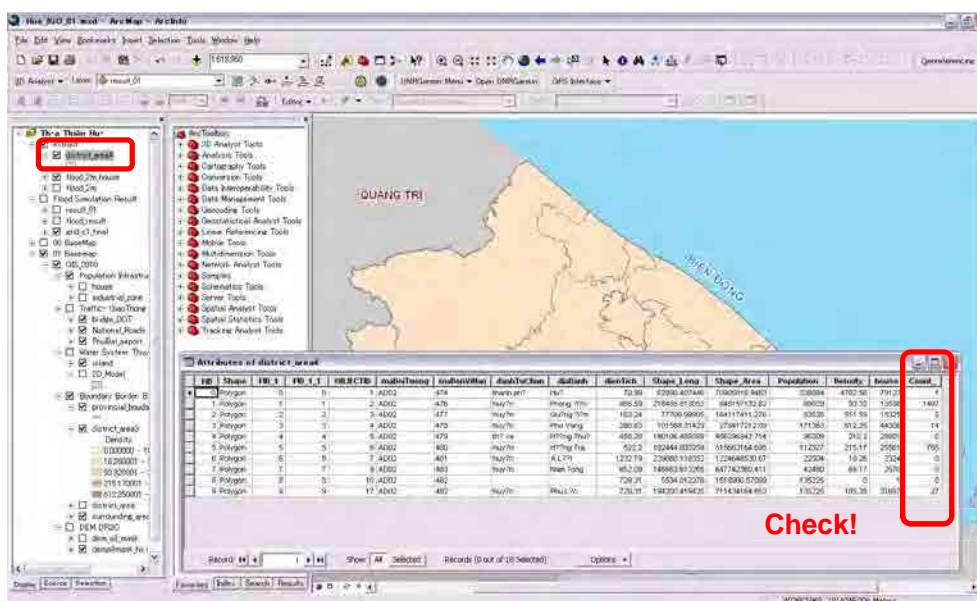
Properties>Joins and Relates>Join







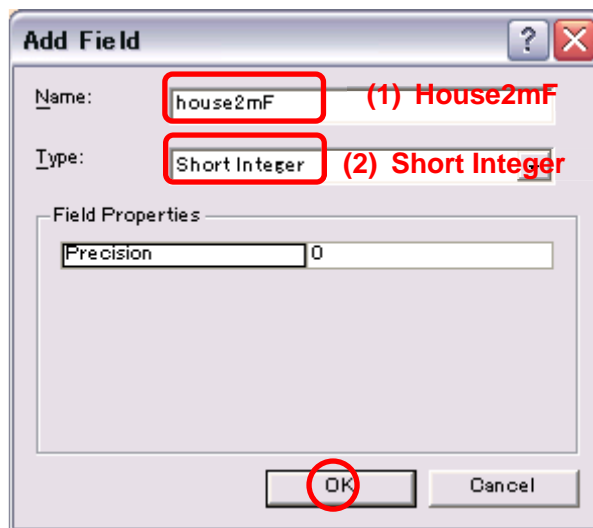
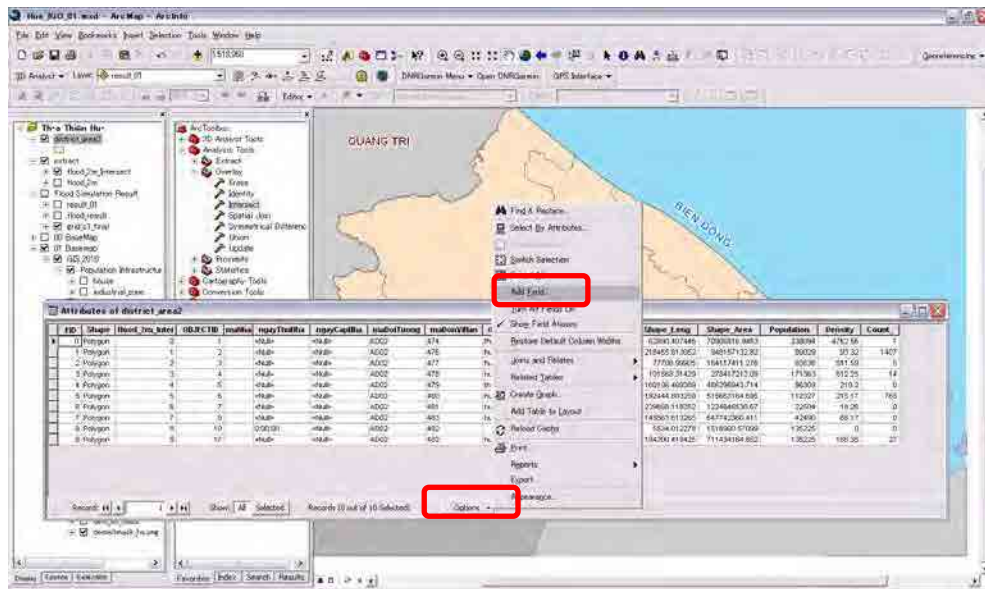
[Open the Attribute Table]



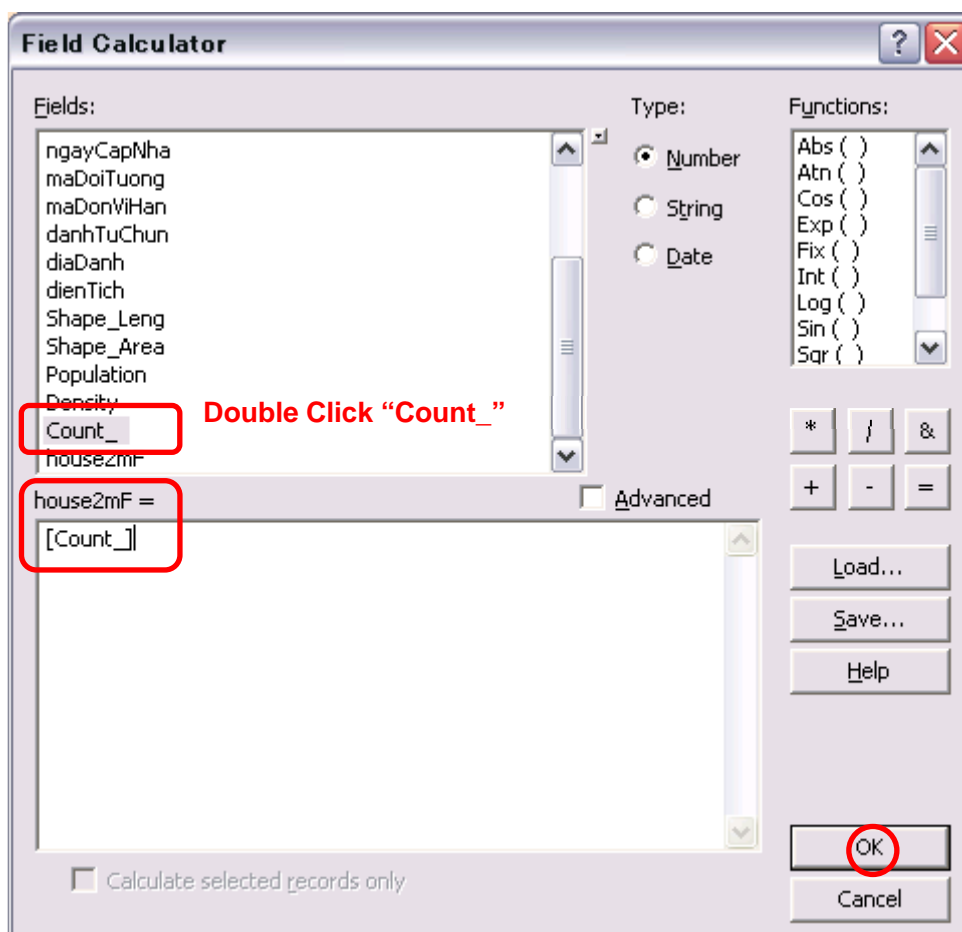
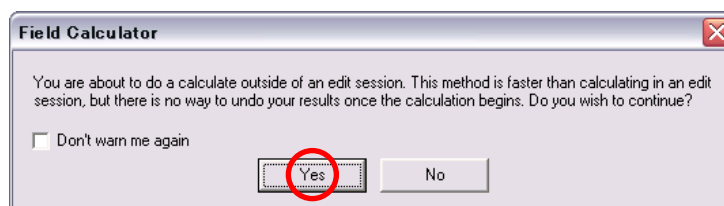
[4-4] Rename of the “Field”

[Open “Add Field”]

Options>Add Field



[4-5] Field Calculator  
 [Open “Field Calculator”]



Click Right on "Count\_"


ha	maBoiTuong	maDonVitan	danhTuChun	diaDanh	dienTich	Shape_Leng	Shape_Area	Population	Densit	Count_
AD02	474		thanh ph?	Hu?	70.99	62990.407446	70905916.9463	338094	4762.26	
AD02	476		huy?n	Phong ?n	955.59	216455.613052	946157132.62	69029	93.32	140
AD02	477		huy?n	Quang ?n	163.24	77708.99905	164117411.276	63536	511.59	
AD02	478		huy?n	Phu Vang	280.83	101568.31429	278417212.09	171363	612.25	1
AD02	479		th? xa	H?ng Thu?	456.26	160106.489369	456296943.714	96309	210.2	
AD02	480		huy?n	H?ng Tra	522.2	192444.803259	515663164.695	112327	215.17	76
AD02	481		huy?n	A L ?i	1232.79	239668.116352	1224646530.67	22504	18.26	1
AD02	483		huy?n	Nam ?ong	652.09	145863.613265	647742360.411	42490	65.17	1
AD02	482				729.31	5534.012278	1518900.57099	135225	0	
AD02	482		huy?n	Phu L?c	729.31	194200.419425	711434164.852	135225	185.35	2

at of 10 Selected) Options

- Sort Ascending
- Sort Descending
- Advanced Sorting...
- Summarize...
- Statistics...
- Field Calculator...
- Calculate Geometry...
- Turn Field Off
- Freeze/Unfreeze Column
- Delete Field**
- Properties...

Delete

**Confirm Delete Field** ✕

 Warning, deleting fields can not be undone.

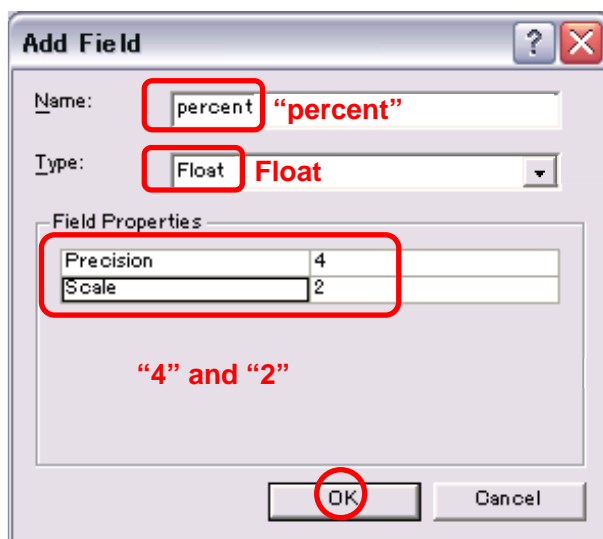
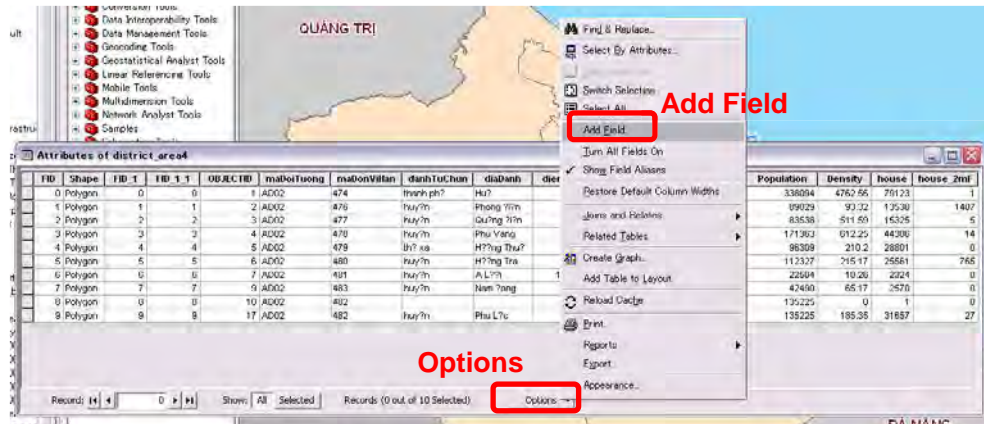
Are you sure you want to delete the currently selected field, 'Count\_'?

## Course 5 Attribute Table (2)

### [5-1] Field Calculator

Open “Field calculator”

[Add “New Field”]



### ***Keyword: Data Type***

Short Integer -- -32,768 ~ 32767

Long Integer -- -2,147,483,648 ~ 2,147,483,647

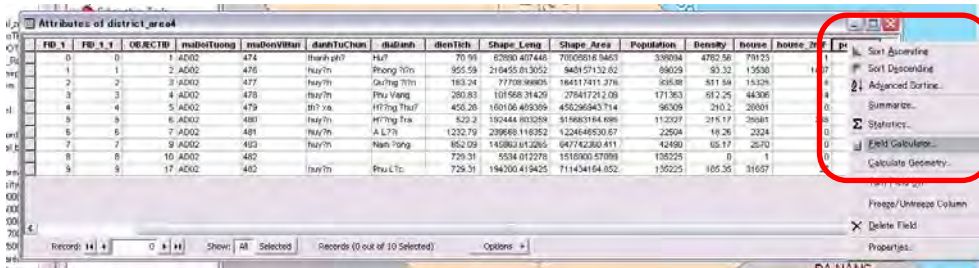
Float – Total Place (precision) 1~6, Decimal place (Scale) 1~6

Double -- Total Place (precision) 7~, Decimal place (Scale) 0~

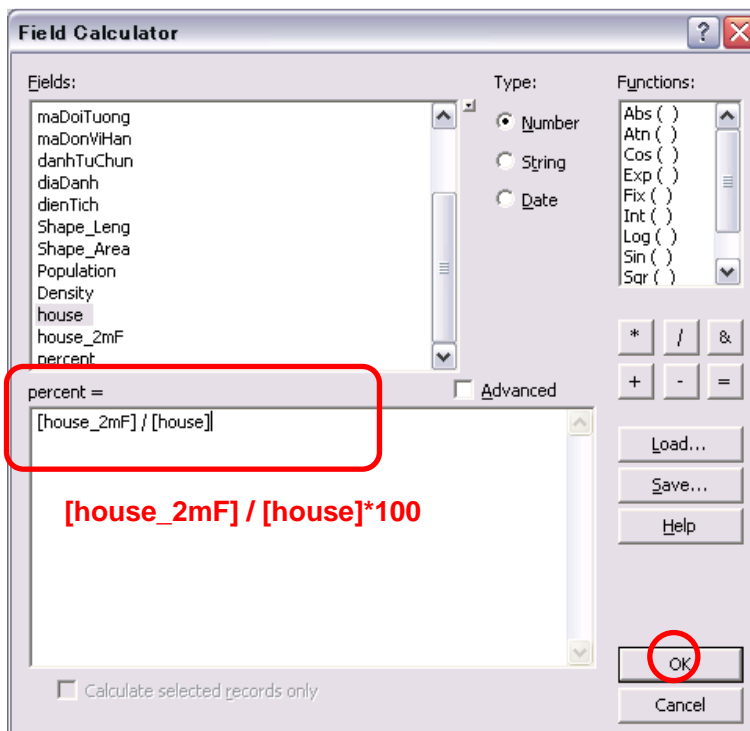
FID_1	FID_1_1	OBJECTID	maDoiTuong	maDonWiHan	danhTuChun	diaDanh	dienTich	Shape_Leng	Shape_Area	Population	Density	house	house_2mF	percent
0	0	1	AD02	474	thanh ph?	Hu?	70.99	62090.407446	70005916.9463	330094	4762.56	791.23		0
1	1	2	AD02	476	huy?n	Phong ??n	955.59	219455.813052	948157132.82	89029	93.32	13538	140	0
2	2	3	AD02	477	huy?n	Gu?ng ??n	163.24	77708.99905	164117411.276	83538	511.59	15325		0
3	3	4	AD02	478	huy?n	Phu Vang	280.83	101568.31429	278417212.09	171363	612.25	44306		0
4	4	5	AD02	479	th? xa	H?ng Thu?	458.28	160106.489389	456296943.714	96309	210.2	28801		0
5	5	6	AD02	480	huy?n	H?ng Tra	522.2	192444.803259	515663164.895	112327	215.17	25561	78	0
6	6	7	AD02	481	huy?n	A L?n	1232.79	239668.118352	1224646530.67	22504	18.26	2324		0
7	7	8	AD02	483	huy?n	Nam ?ng	652.09	145863.813265	647742360.411	42480	65.17	2570		0
8	8	10	AD02	482			729.31	5534.012278	1516900.57099	135225	0	1		0
9	9	17	AD02	482	huy?n	Phu L?c	729.31	194200.419425	711434164.852	135225	185.35	31657		0

Check!

[Field Calculator]



To calculate “risk percentage” of “flood 2m”



Attributes of district\_area4

FID_1	FID_1_1	OBJECTID	maBoiTuong	maBonVhan	danhTuChun	diabanh	dienTich	Shape_Leng	Shape_Area	Population	Density	house	house_zmf	percent
0	0	5	AD02	474	thanh ph?	Hu?	70.99	62090.407446	70305916.9463	338094	4762.56	7917	1	0
1	1	2	AD02	476	huy?n	Phong ??n	955.59	216455.813052	948157132.82	89029	93.32	135	1407	10.39
2	2	3	AD02	477	huy?n	Qu?ng ??n	163.24	77708.99905	164117411.276	83536	511.59	153	5	0.03
3	3	4	AD02	478	huy?n	Phu Vang	280.83	101568.31429	278417212.09	171363	612.25	443	14	0.03
4	4	5	AD02	479	th? xa	H?ng Thu?	458.28	160106.489389	456266943.714	96309	210.2	268	0	0
5	5	6	AD02	480	huy?n	H?ng Tra	522.2	192444.803259	515663164.695	112327	215.17	258	765	2.99
6	6	7	AD02	481	huy?n	AL?n	1232.79	239688.118352	122466530.67	22504	18.26	23	0	0
7	7	9	AD02	483	huy?n	Nam ?ng	652.09	145663.613265	647742360.411	42490	65.17	25	0	0
8	8	10	AD02	482	huy?n		729.31	6534.012278	1516800.57099	13525	0	0	0	0
9	9	17	AD02	482	huy?n	Phu L?c	729.31	194200.419425	711434164.652	135225	185.35	316	27	0.09

Records: 14 | 0 | Show: All Selected | Records (0 out of 10 Selected) | Options

Check!

**[5-2] Change Layer Display**

Layer Properties

General | Source | Selection | Display | **Symbology** | Fields | Definition Query | Labels | Joins & Relates | HTML Popup

Show: **Quantities** (Graduated colors selected)

Draw quantities using color to show values.

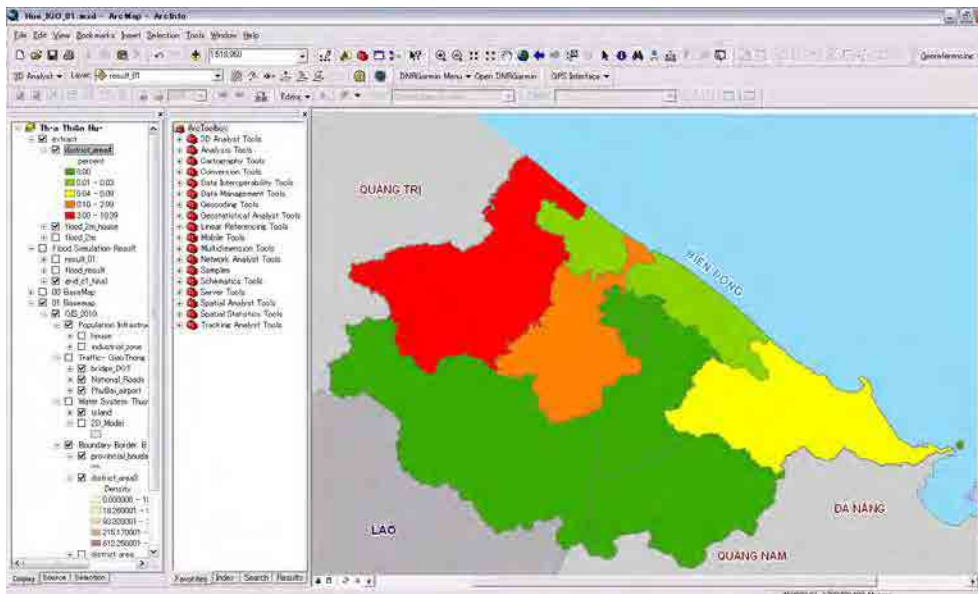
Fields: Value: percent

Classification: Natural Breaks (Jenks), Classes: 5

Symbol	Range	Label
[Green]	0.00	0.00
[Light Green]	0.01 - 0.03	0.01 - 0.03
[Yellow]	0.04 - 0.09	0.04 - 0.09
[Orange]	0.10 - 2.99	0.10 - 2.99
[Red]	3.00 - 10.39	3.00 - 10.39

Show class ranges using feature values

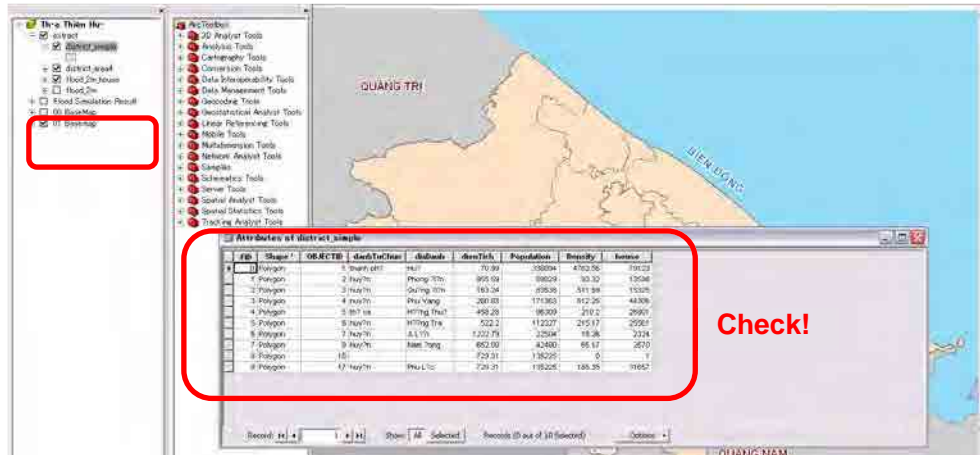
OK | キャンセル | 適用(A)



**[5-3] Join Attribute from Table (Excel Data)**

[Add “district\_simple” polygon]

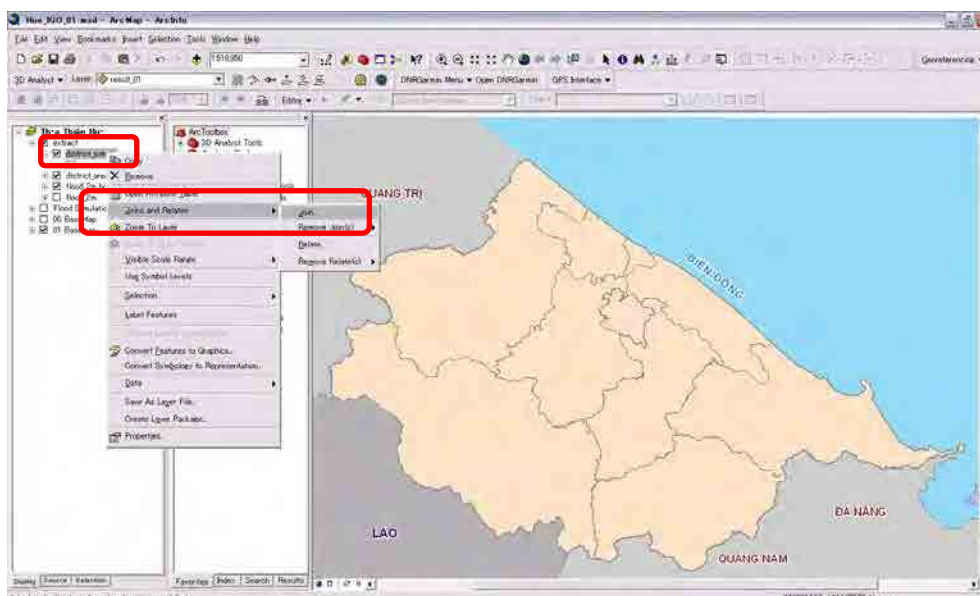
[Open Attribute Table of “district\_simple”]



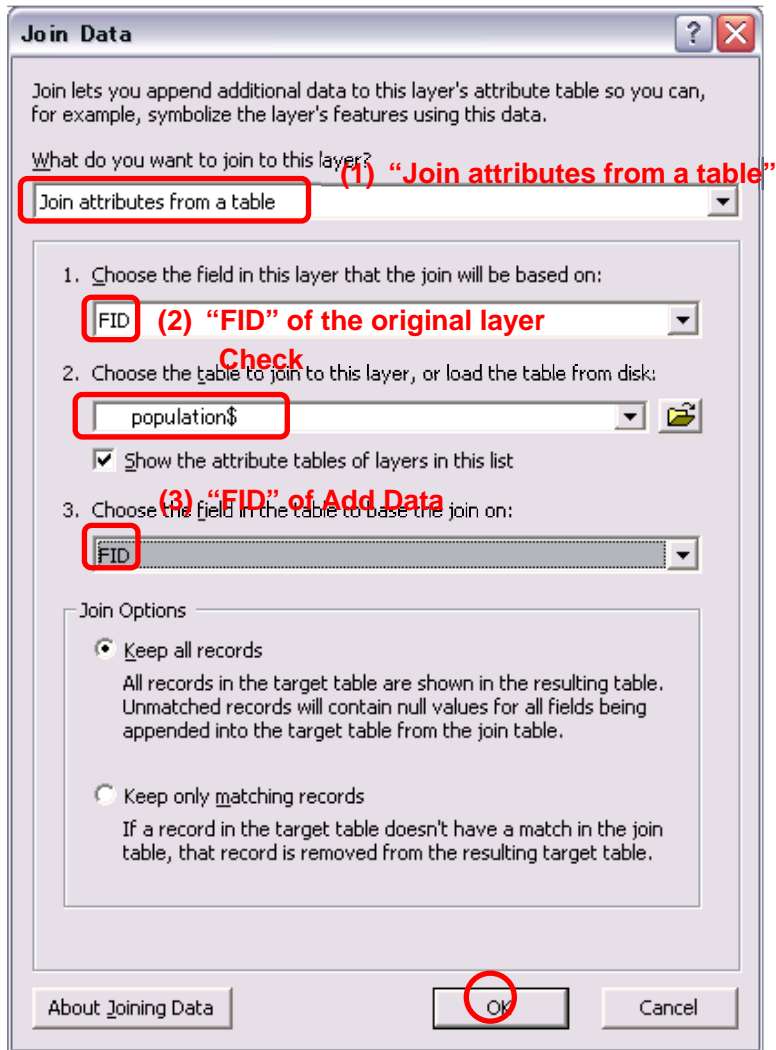
[To Update Database] This table is one of example on excel file.

FID	diaDanh	Popu 2015
0	Hue	350000
1	Phong Dien	90000
2	Quang Dien	80000
3	Phu Vang	180000
4	Huong Thuy	100000
5	Huong Tra	110000
6	A Luoi	30000
7	Nam Dong	50000
8		0
9	Phu Loc	140000

[Open Join of “district\_simple”] Joins and Relates>Join







**Attributes of district\_simple**

FID	Shape	OBJECTID	danhTuChun	diaDanh	dienTich	Population	Density	house	FID	diaDanh	Popu 2015
0	Polygon	1	thanh ph?	Hu?	70.99	338094	4762.56	79123	0	Hue	350000
1	Polygon	2	huy?n	Phong ?i?n	955.59	89029	93.32	13538	1	Phong Dien	90000
2	Polygon	3	huy?n	Qu?ng ?i?n	163.24	83538	511.59	15325	2	Quang Dien	80000
3	Polygon	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Vang	180000
4	Polygon	5	th? xa	H?ng Thu?	458.28	96309	210.2	28801	4	Huong Thuy	100000
5	Polygon	6	huy?n	H?ng Tra	522.2	112327	215.17	25561	5	Huong Tra	110000
6	Polygon	7	huy?n	A L?i	1232.79	22504	18.26	2324	6	A Luoi	30000
7	Polygon	9	huy?n	Nam ?ong	652.09	42490	65.17	2570	7	Nam Dong	50000
8	Polygon	10			729.31	135225	0	1	8	-Null-	0
9	Polygon	17	huy?n	Phu L?c	729.31	135225	185.35	31657	9	Phu Loc	140000

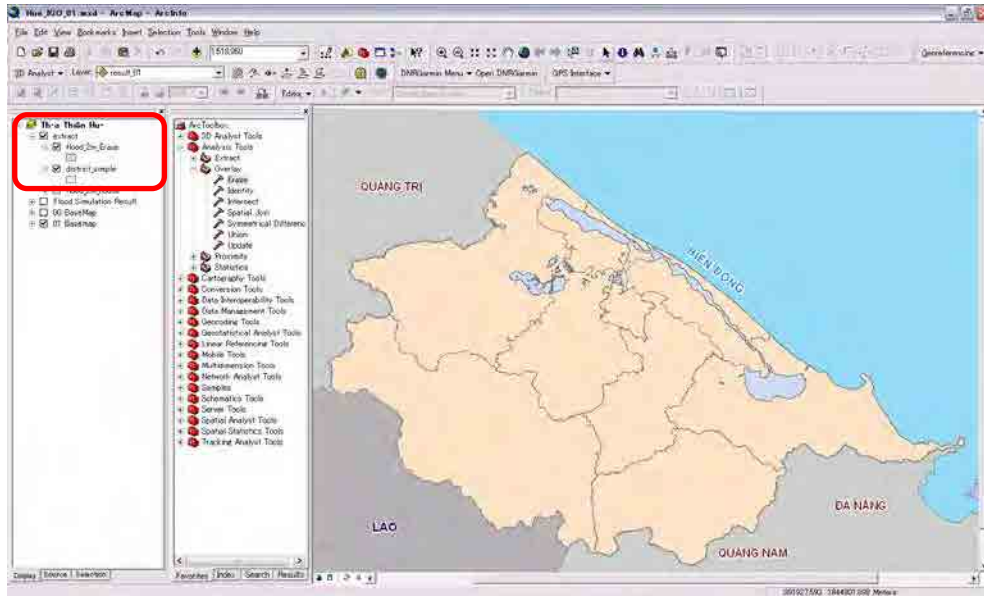
Record: 1 | Show: All Selected | Records (0 out of 10 Selected) | Options

Check

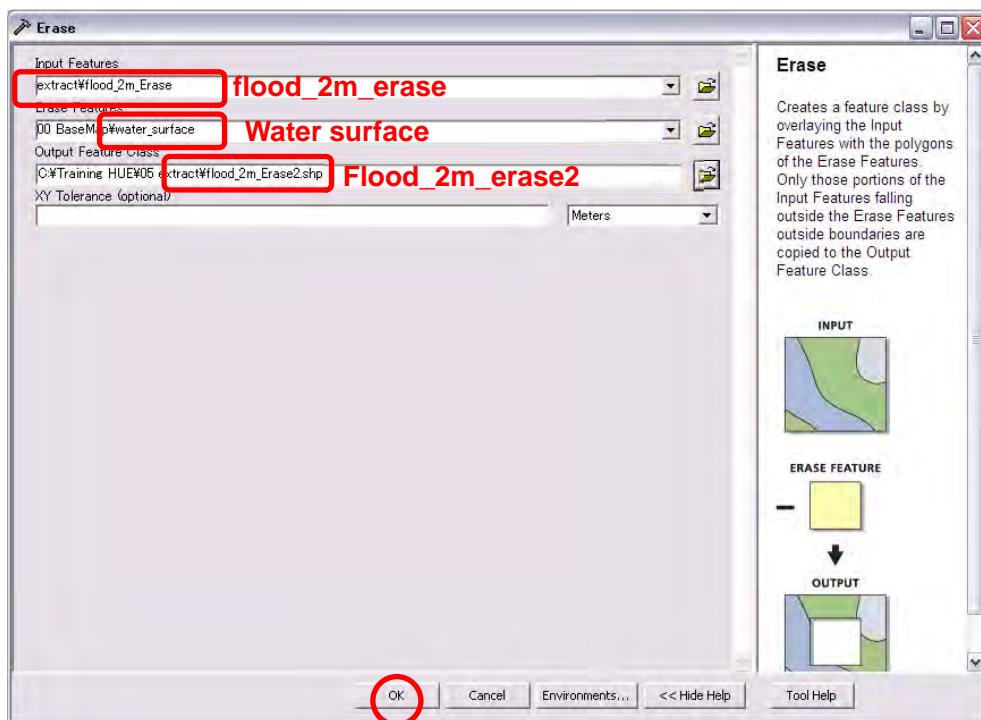
## Course 6 Application of the Simulation Result

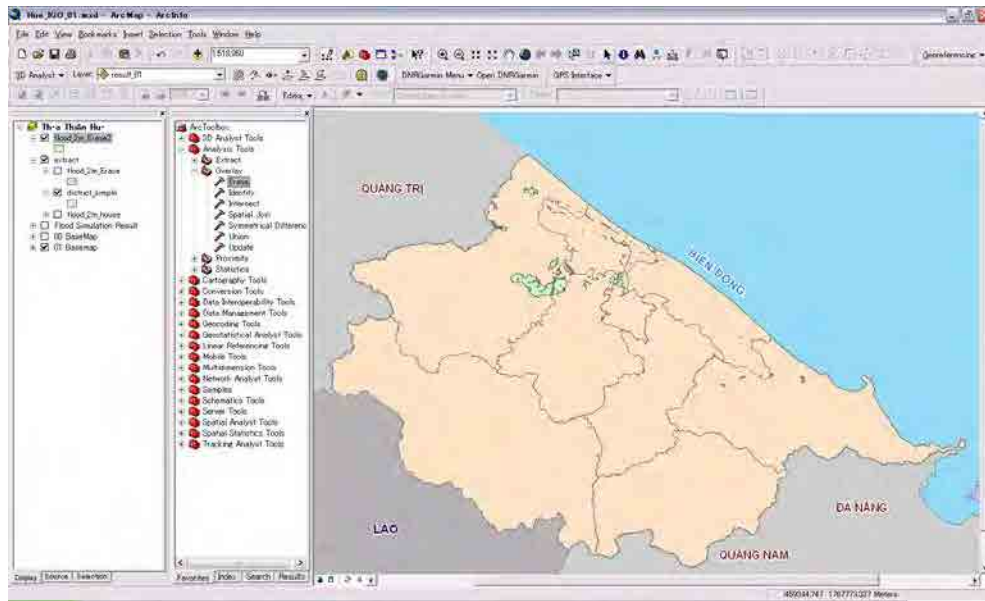
### [6-1] Erase

[Set 2 shape files “flood\_2m\_erase” and “district\_simple”]



Erase by water surface.

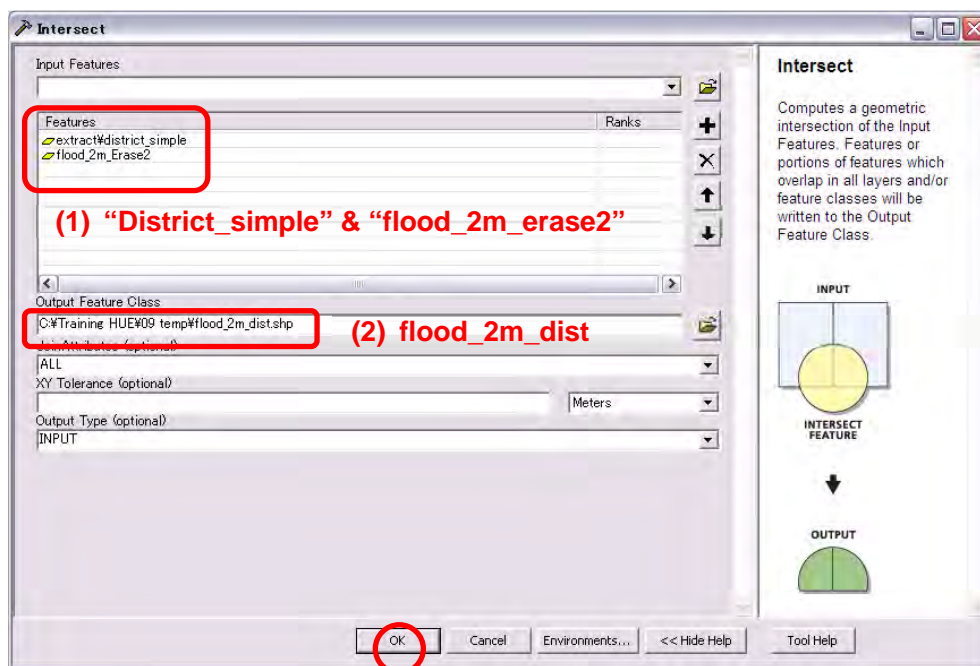




[6-2] Intersect

Let us extract flood areas district-by-district.

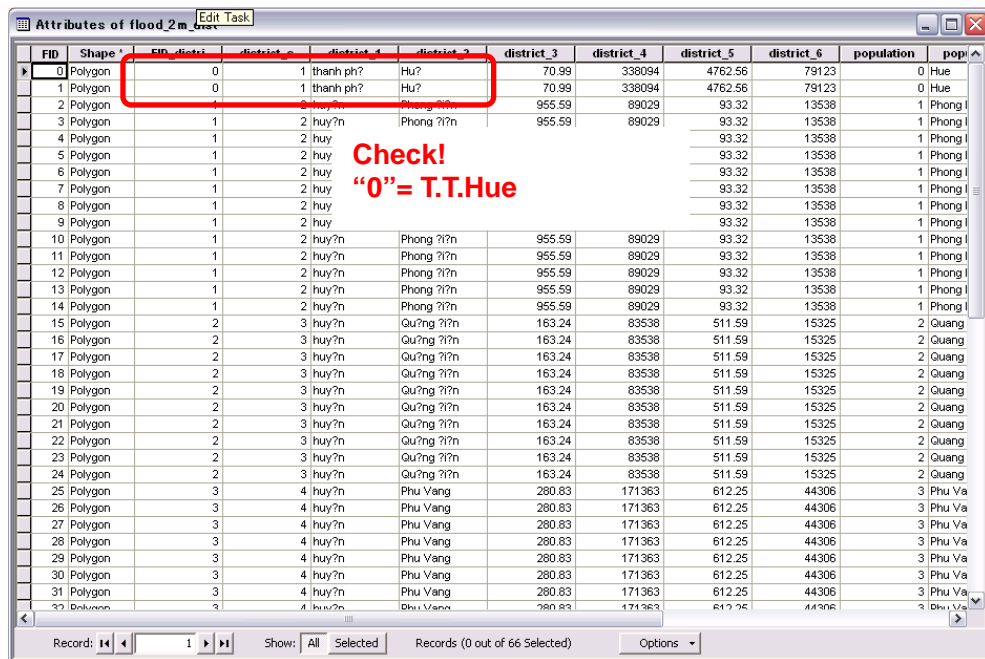
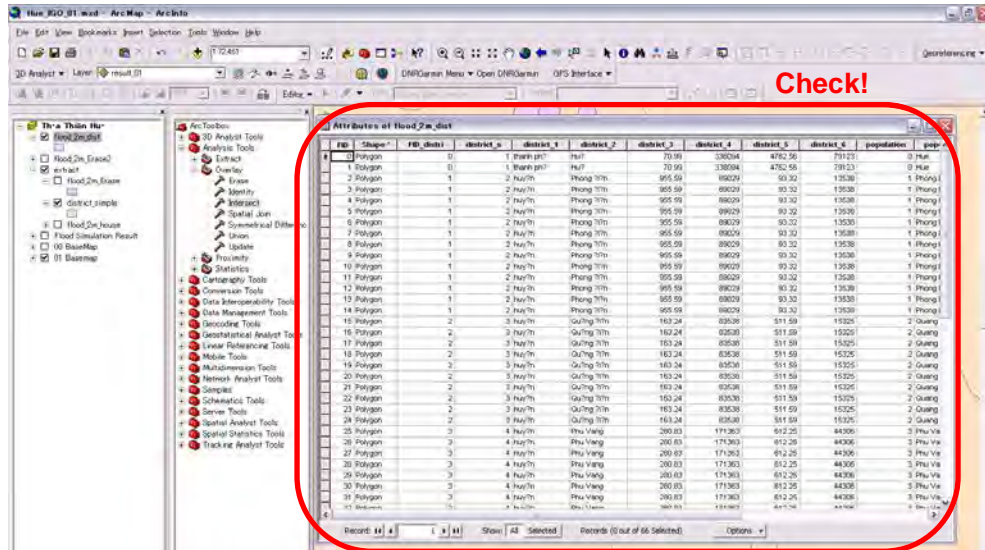
[Open the “Intersect” tool]



*Let us look at the map.*

### [6-3] Merge of Polygon

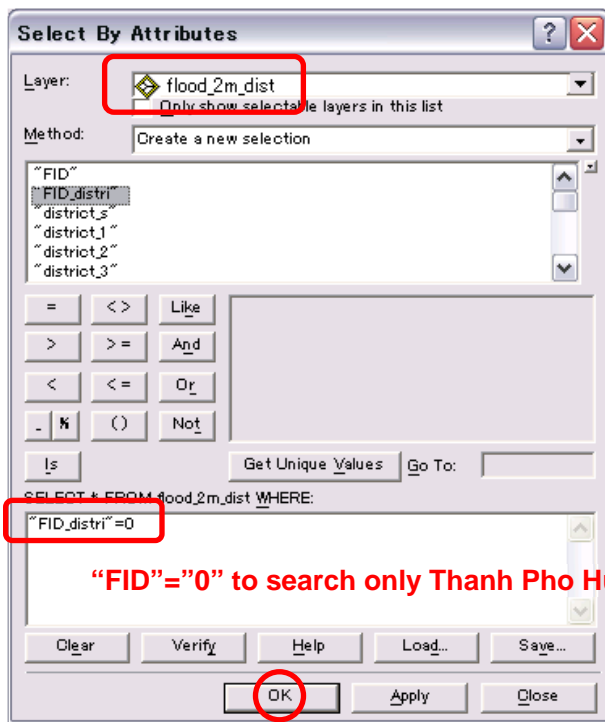
[Open the attribute table of “flood\_2m\_dist”]



[Select by Attributes...]

Selection>Select by attributes...





"FID"="0" to search only Thanh Pho Hue

Attributes of flood\_2m\_dist

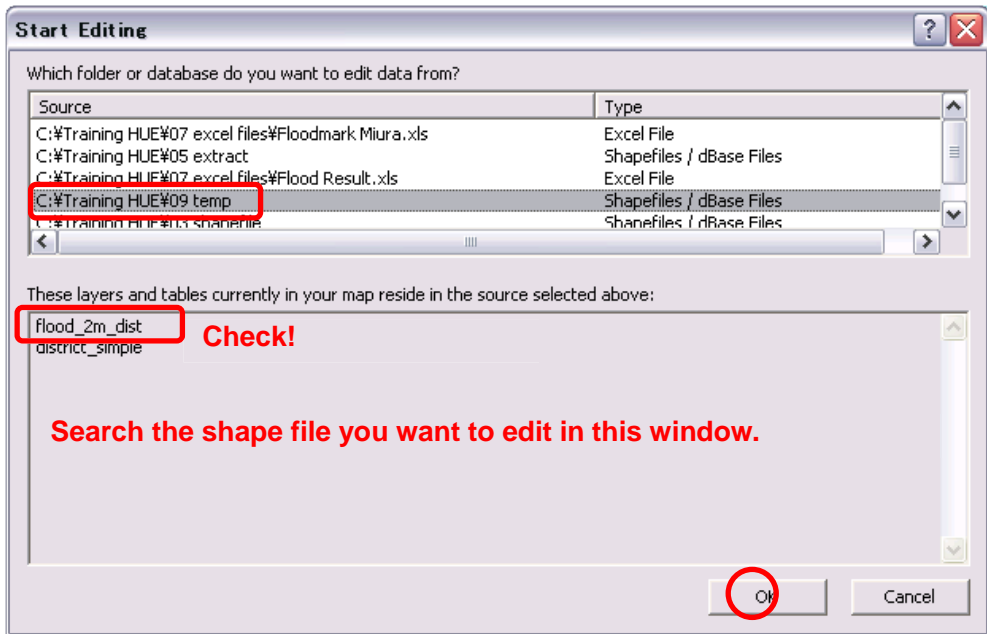
FID	Shape	FID_distri	district_s	district_1	district_2	district_3	district_4	district_5	district_6	population	popu
0	Polygon	0	1	thanh ph?	Hu?	70.99	338094	4762.56	79123	0	Hue
1	Polygon	0	1	thanh ph?	Hu?	70.99	338094	4762.56	79123	0	Hue
2	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
3	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
4	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
5	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
6	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
7	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
8	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
9	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
10	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
11	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
12	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
13	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
14	Polygon	1	2	huy?n	Phong ?i?	955.59	89029	93.32	13538	1	Phong
15	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
16	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
17	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
18	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
19	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
20	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
21	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
22	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
23	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
24	Polygon	2	3	huy?n	Qu?ng ?i?	163.24	83538	511.59	15325	2	Quang
25	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
26	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
27	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
28	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
29	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
30	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
31	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va
32	Polygon	3	4	huy?n	Phu Vang	280.83	171363	612.25	44306	3	Phu Va

Record: 1 | Show: All Selected | Records (2 out of 66 Selected) | Options

[Start Editing...]

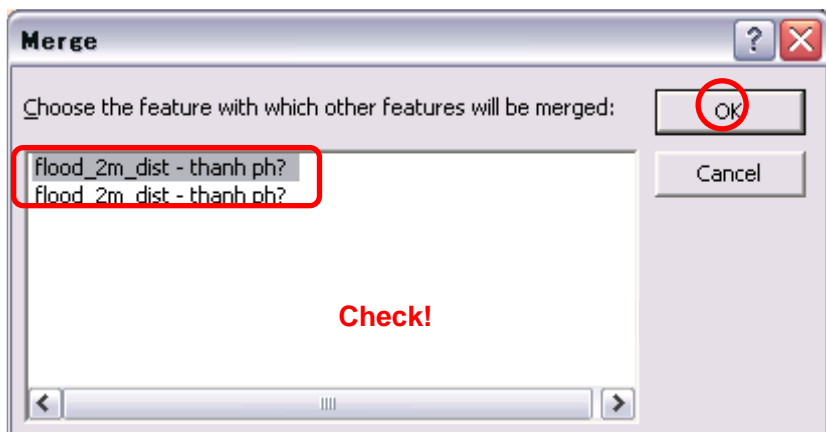
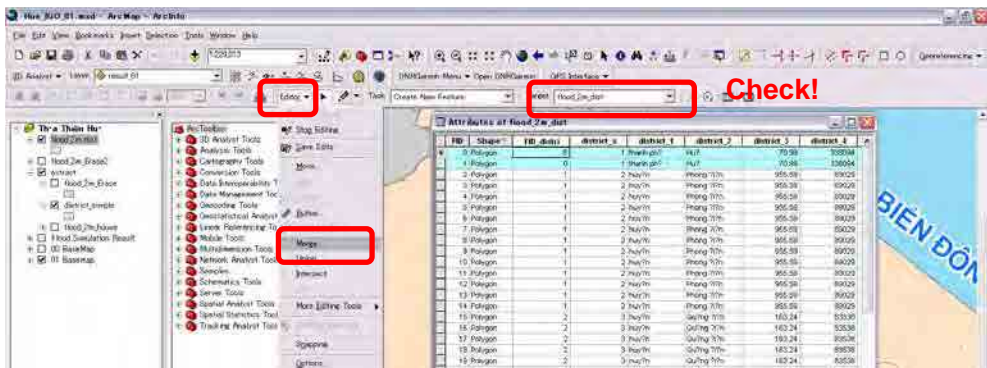
Editor>Start Editing





[Merge]

Editor>Merge



Attributes of flood\_2\_m\_dist

FID	Shape	FID_distri	district_s	district_1	district_2	district_3	district_4
0	Polygon	0	1 thanh ph?	Hu?	70.99	338094	
2	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
3	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
4	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
5	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
6	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
7	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
8	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
9	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
10	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
11	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
12	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	
13	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	

Check!

Please repeat this activity.

[“1”=Phuong Dien], [“2”=Quang Dien], [“3”=Phu Vang], [“5”=Phuong Tra], [“9”=Phu Loc]

Attributes of flood\_2\_m\_dist

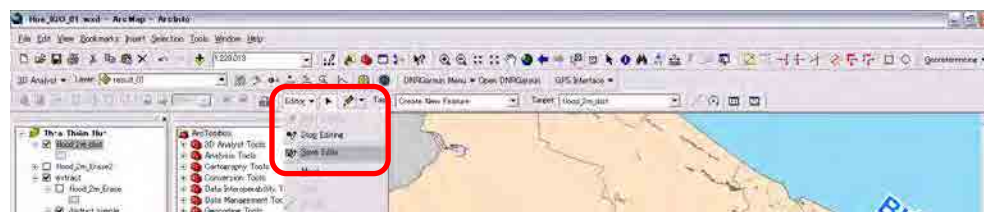
FID	Shape	FID_distri	district_s	district_1	district_2	district_3	district_4	district_5	district_6	population
0	Polygon	0	1 thanh ph?	Hu?	70.99	338094	4762.56	79123		0
2	Polygon	1	2 huy?n	Phong ?i?n	955.59	89029	93.32	13538		1
15	Polygon	2	3 huy?n	Qu?ng ?i?n	163.24	83538	511.59	15325		2
25	Polygon	3	4 huy?n	Phu Vang	280.83	171363	612.25	44306		3
34	Polygon	5	6 huy?n	H?ng Tra	522.2	112327	215.17	25561		5
61	Polygon	9	17 huy?n	Phu L?c	729.31	135225	185.35	31657		9

Record: 14 | Show: All Selected | Records (1 out of 6 Selected) | Options

Check!

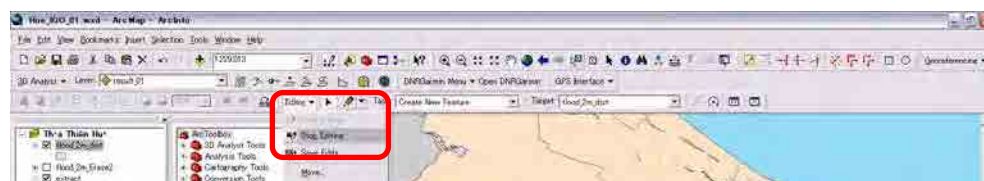
[Save Editing]

Editor>Save Editing

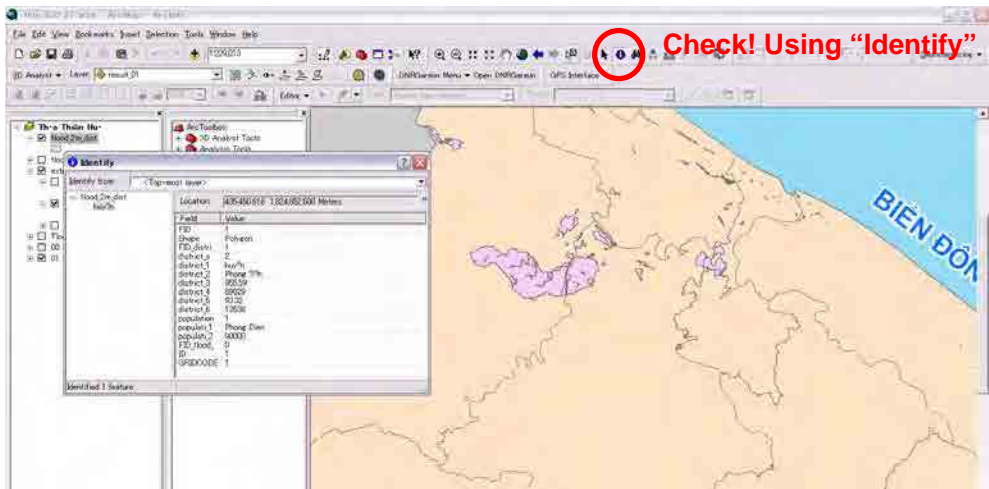


[Stop Editing]

Editor>Stop Editing



*Let us look at the map.*

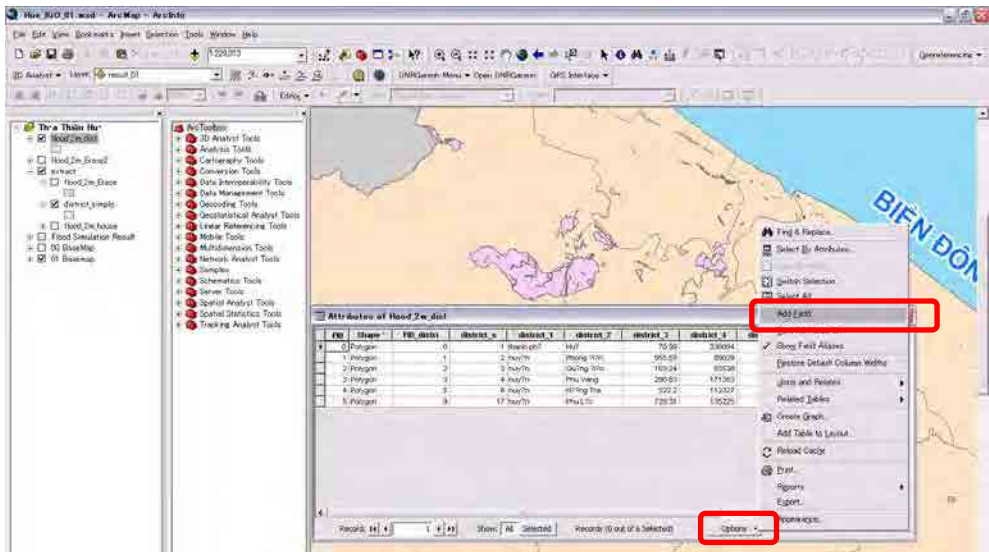


#### [6-4] Calculate Geometry

Open the "Attribute Table" of the flood\_2m\_dist layer.

[Add Field]

Options>Add Field

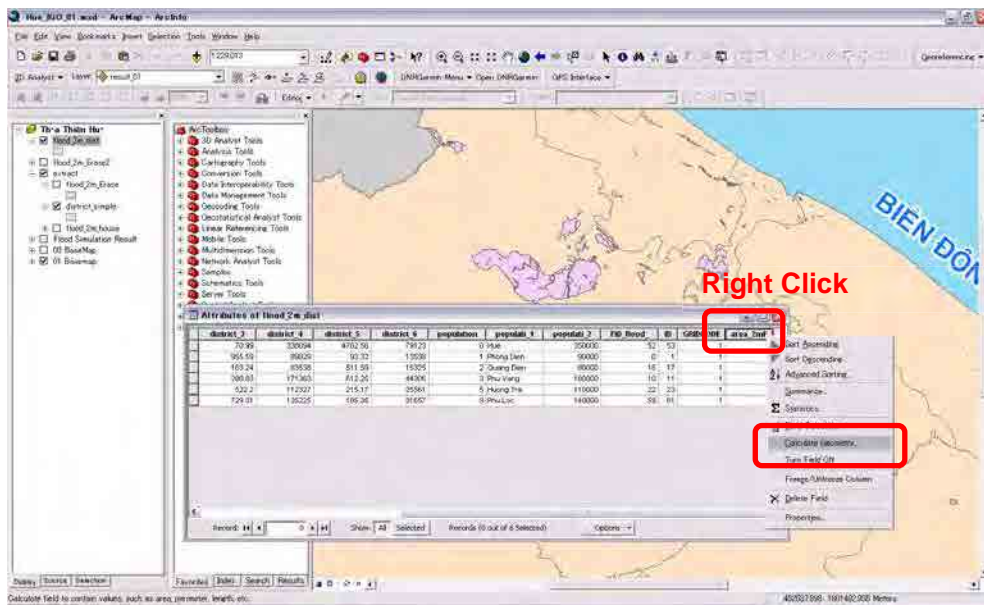






[Calculate Geometry]

Right Click on the Field>Calculate Geometry



**Calculate Geometry**

Property: **Area**

Coordinate System

Use coordinate system of the data source:  
PCS: dh10000

Use coordinate system of the data frame:  
PCS: dh10000

Units: **Square Meters [sq m]**

Calculate selected records only

Help OK Cancel

Attributes of flood\_2m\_dist

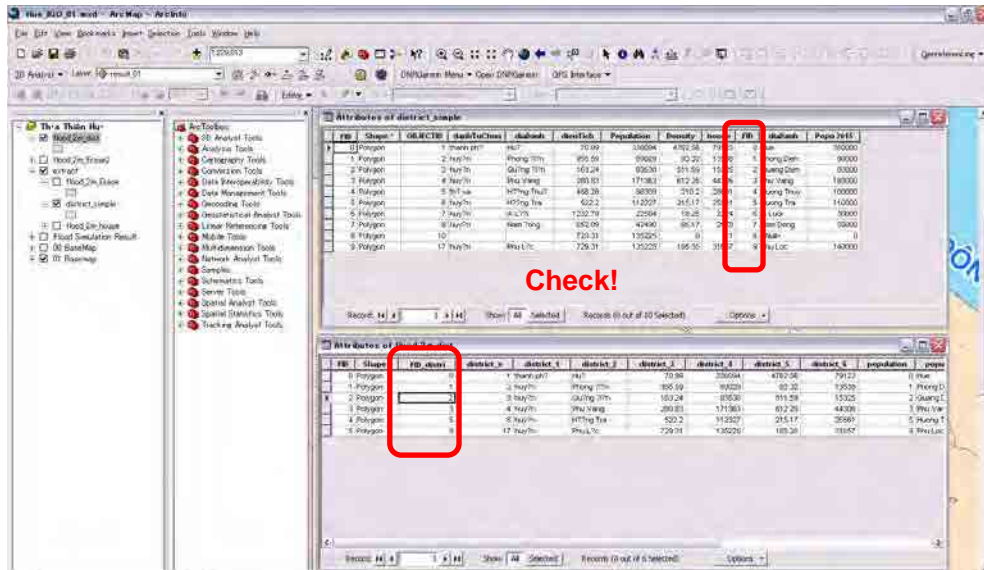
district_3	district_4	district_5	district_6	population	populati_1	populati_2	FID_flood_	ID	GRIDCODE	Area_2mE
70.99	338094	4762.56	79123	0	Hue	350000	52	53	1	362753
955.59	89029	93.32	13538	1	Phong Dien	90000	0	1	1	25156187
183.24	83538	511.59	15325	2	Guang Dien	80000	16	17	1	993776
280.83	171363	612.25	44306	3	Phu Vang	180000	10	11	1	103544
522.2	112327	215.17	25561	5	Huong Tra	110000	22	23	1	11442047
729.31	135225	185.35	31657	9	Phu Loc	140000	59	61	1	816846

Record: 14 | 0 | Show: All Selected | Records (0 out of 6 Selected) | Options

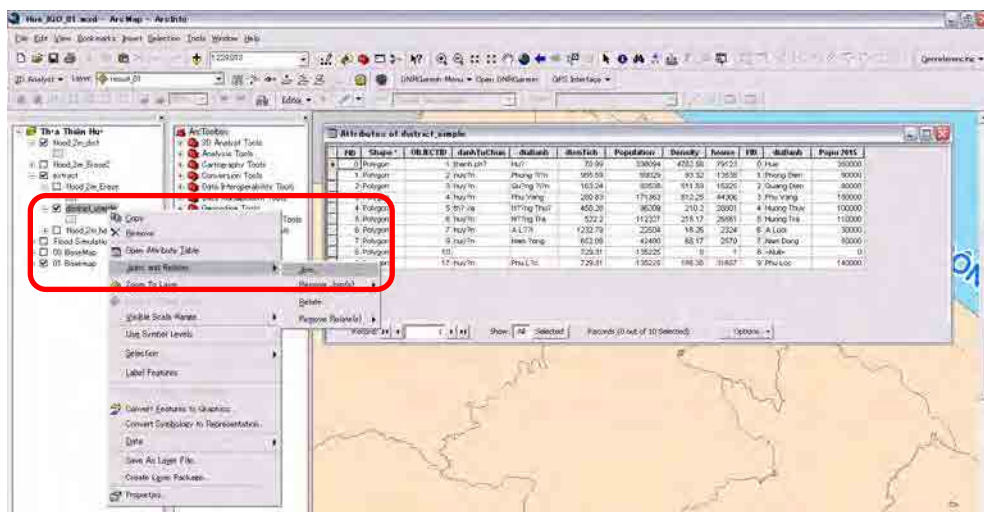
**Check!**

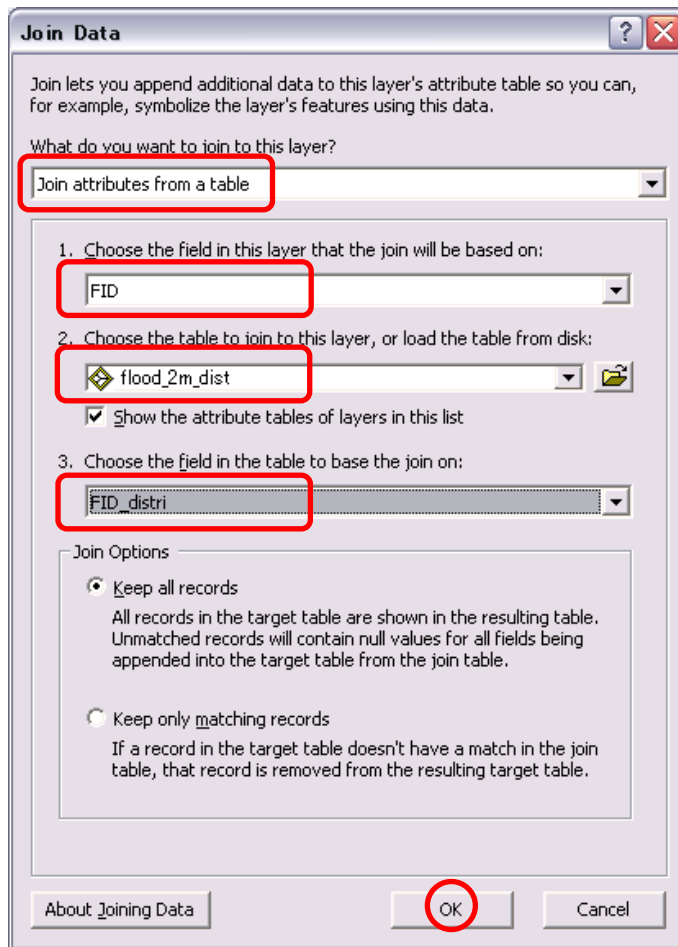
**[6-5] Finalize**

Open the attribute table of “flood\_2m\_dist” and “district\_simple” layer.



[Open “Join” on “district\_simple” layer]





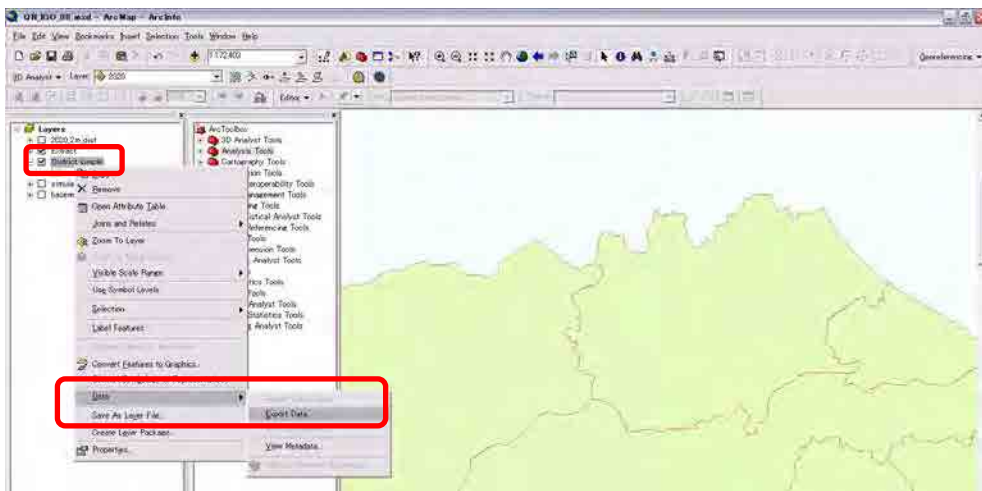
Attributes of district\_simple

district_6	population	populati_1	populati_2	FID_flood	ID	GRIDCODE	area_2mF
79123	0	Hue	350000	52	53	1	362753
13538	1	Phong Dien	90000	0	1	1	25156187
15325	2	Quang Dien	80000	16	17	1	993776
44306	3	Phu Yang	180000	10	11	1	103544
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
25561	5	Huong Tra	110000	22	23	1	11442047
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
31657	9	Phu Loc	140000	59	61	1	816846

Record: 1 | Show: All Selected | Records (0 out of 10 Selected) | Options

**Check!**

[Export Data from "district\_simple"]



**Export Data**

Export: All features

Use the same coordinate system as:

- this layer's source data
- the data frame
- the feature dataset you export the data into  
(only applies if you export to a feature dataset in a geodatabase)

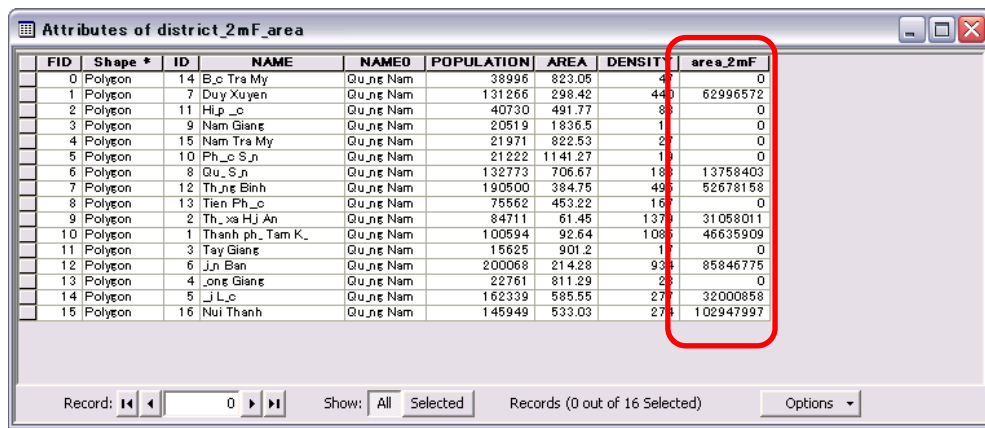
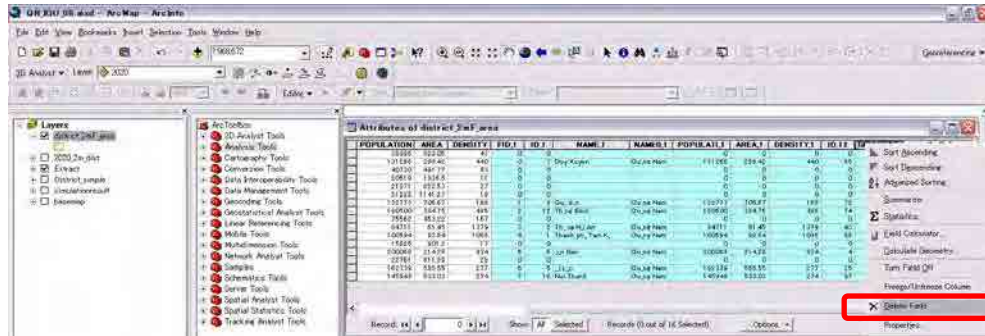
Output shapefile or feature class:

C:\Training\05 Extracted\#district\_2mF\_area.shp

**district\_2mF\_area**

OK Cancel

[Delete fields]



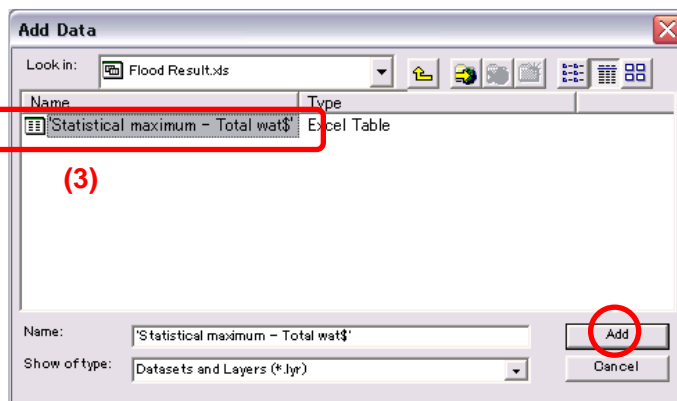
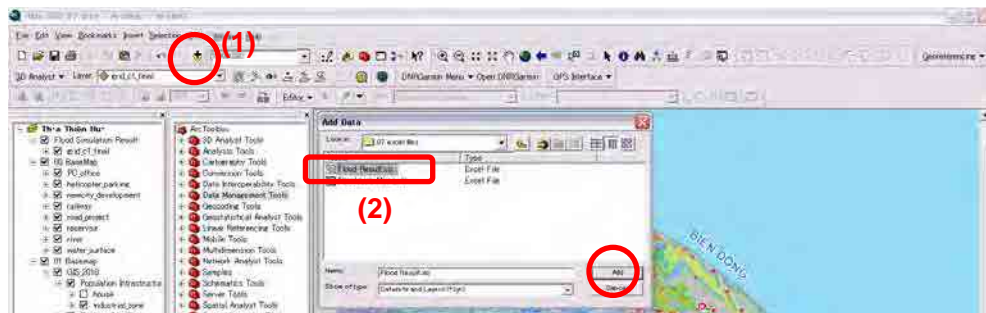
## Course 7 Conversion from Simulation Results of MIKE

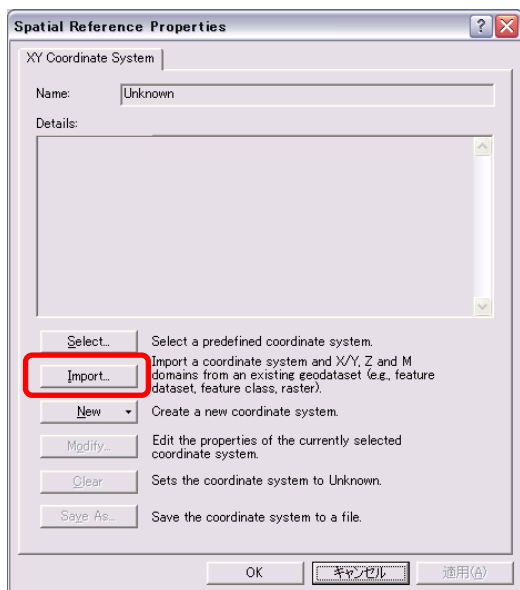
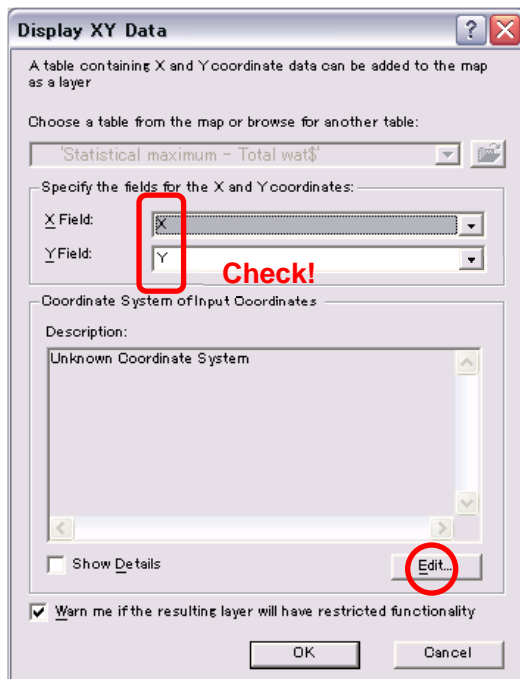
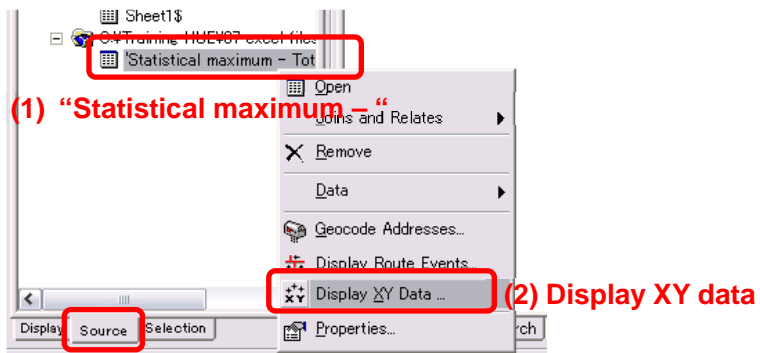
### [7-1] Add Excel Data

Open the “Flood result.xlsx”.

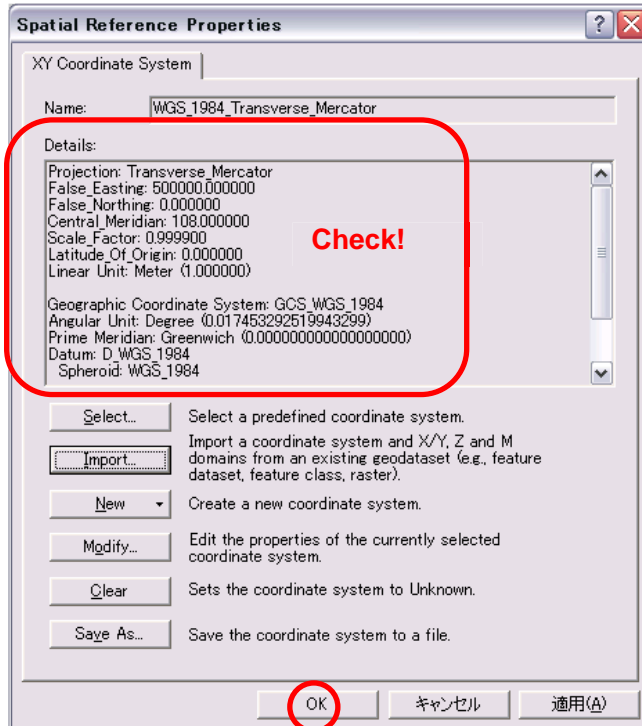
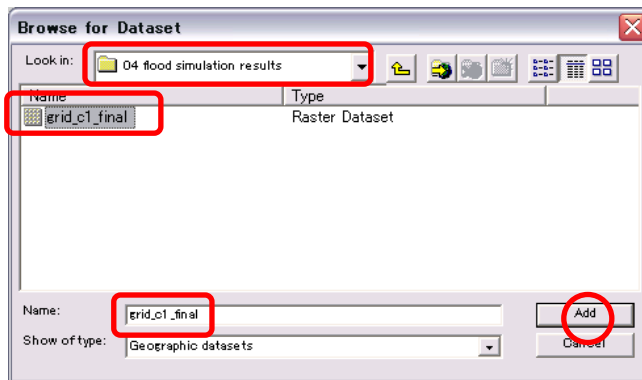
X	Y	Z	Depth	Check!
444005.9	1826142	6.298789	0.015756	
444100.1	1826111	5.99089	0.015756	
444021.7	1826160	7.107442	0.015756	
444333.8	1826002	5.557705	0.015756	
444283.6	1826037	5.821074	0.015756	
443668.1	1828252	2.377605	1.303079	
443462.5	1827619	4.040099	0.623622	
444198.6	1826086	5.799091	0.0173	
443979.1	1826182	7.769981	0.015756	
444115.3	1826129	6.520854	0.015756	
444072.4	1826153	7.204498	0.015756	
443883.2	1826246	8.864258	0.015756	
448650.5	1823471	2.601635	0.456396	
448854.5	1823988	2.07561	0.970245	
450408.6	1827645	0.911355	1.415193	
450491.3	1827700	0.700056	1.626304	

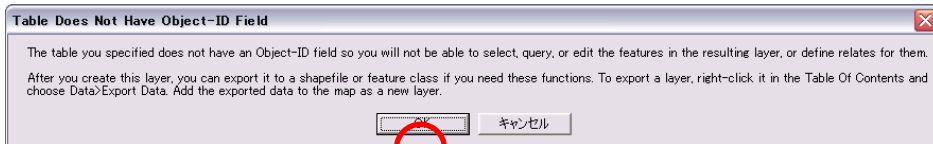
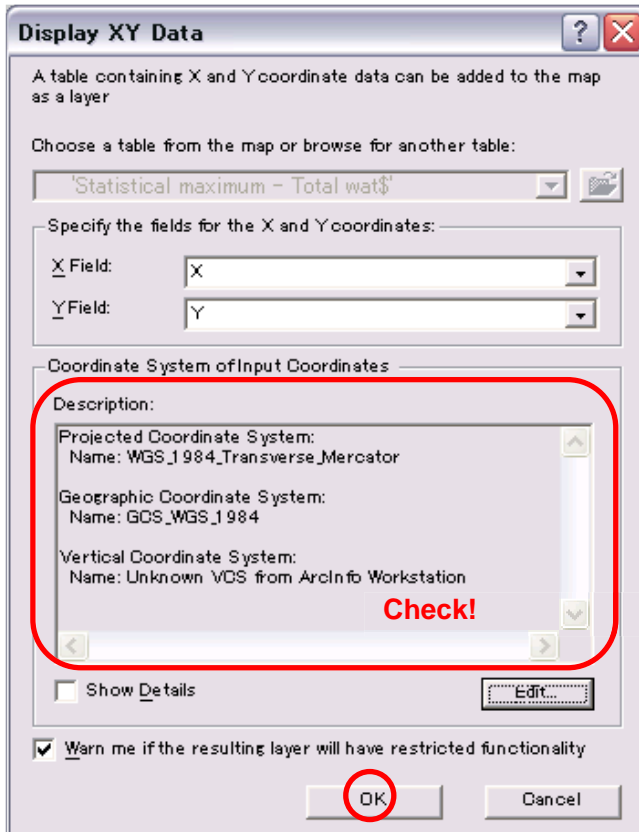
Add Data



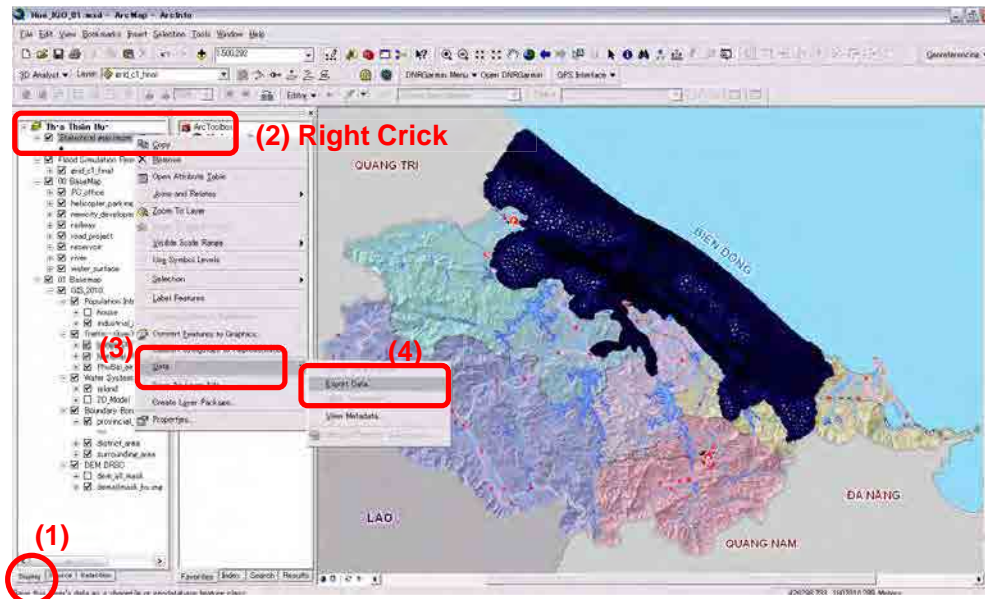


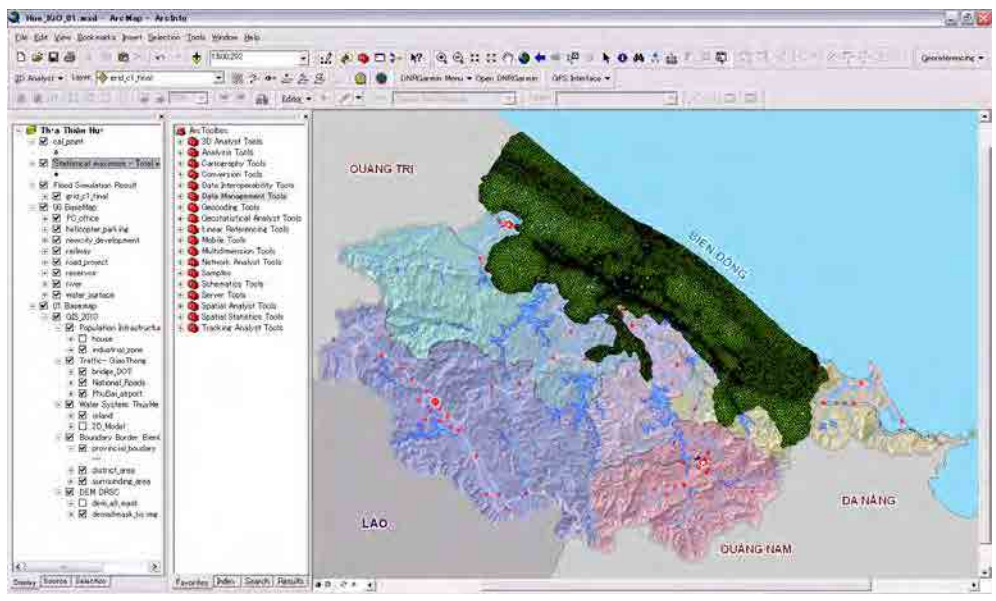
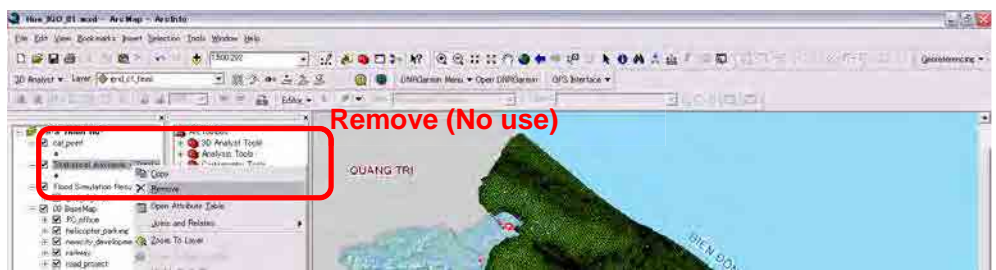
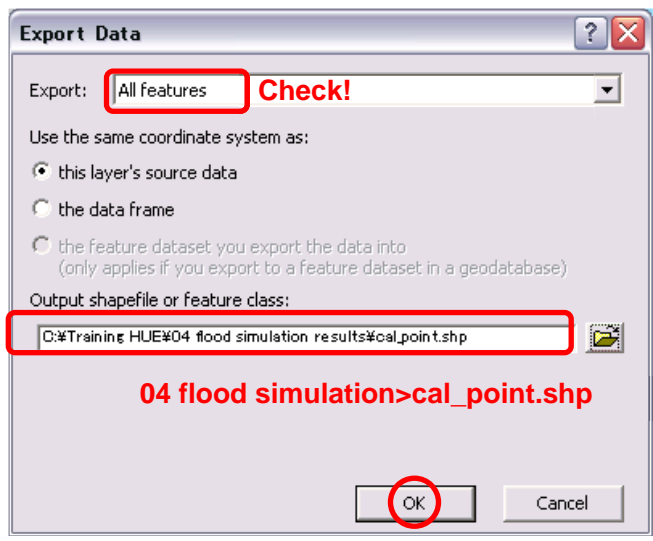






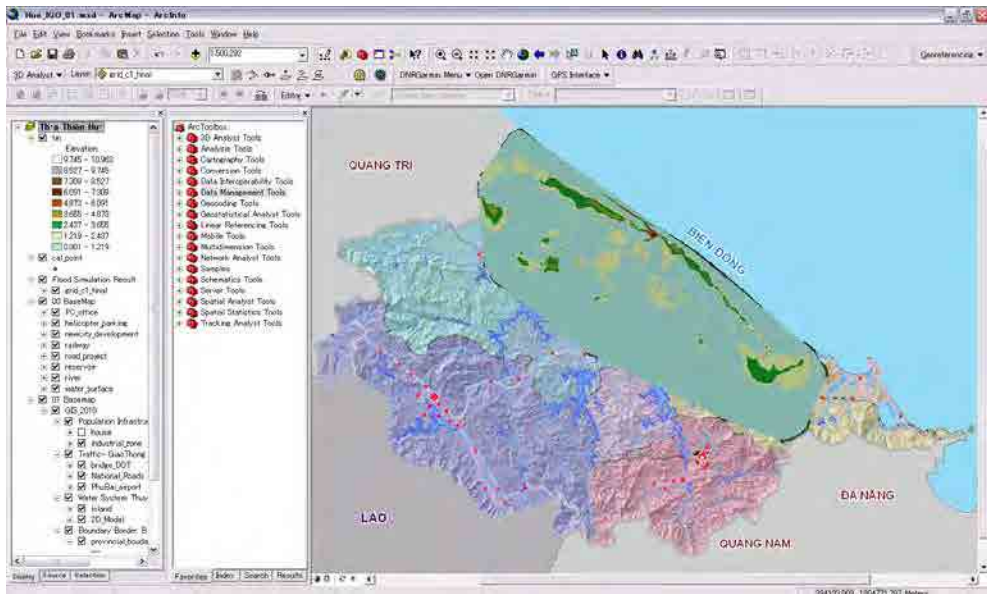
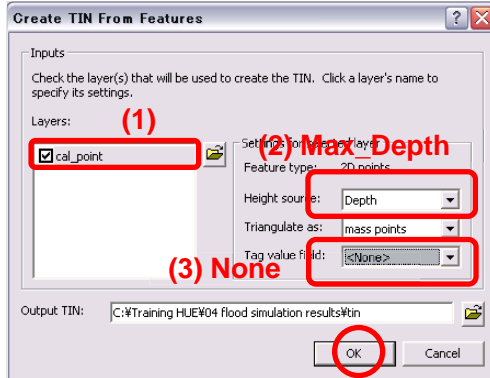
**[7-2] Export Data**





[7-3] Point Data to TIN

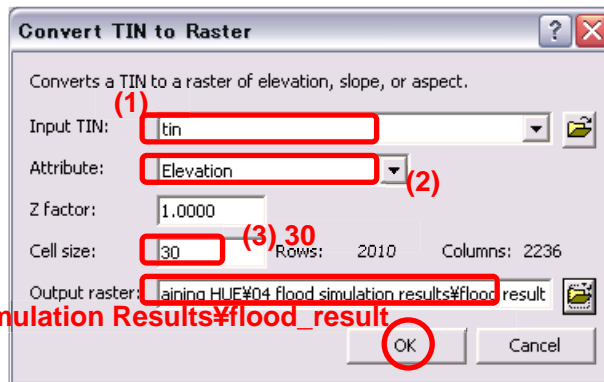
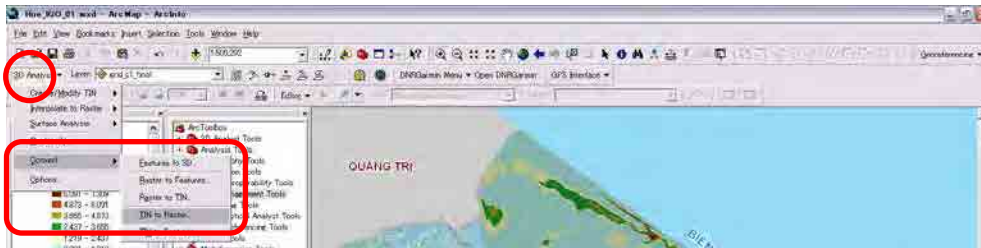
[Create TIN from Feature by using 3D Analyst]



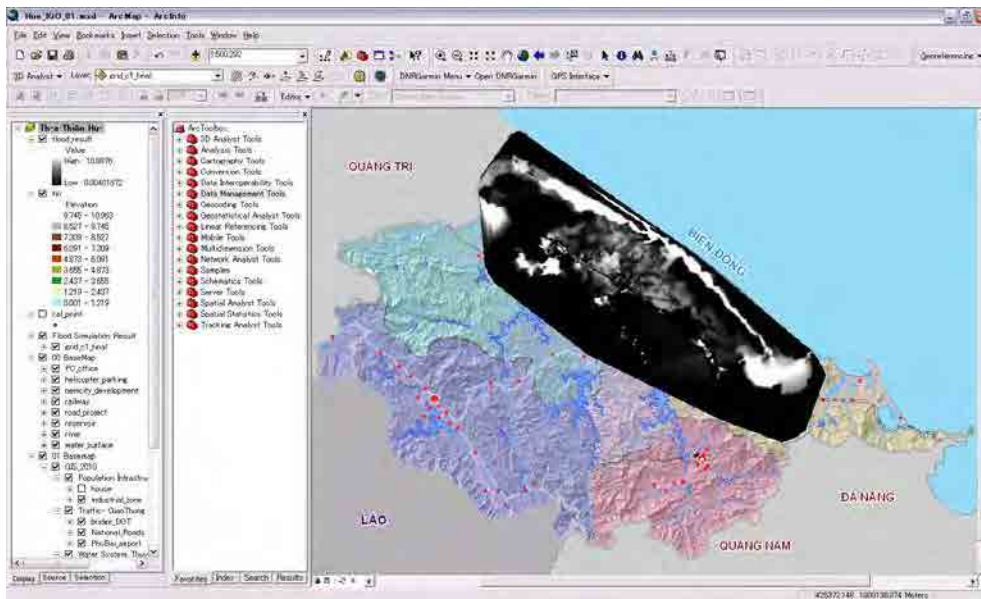
[7-4] TIN to Raster

[Click off the “cal\_point”]

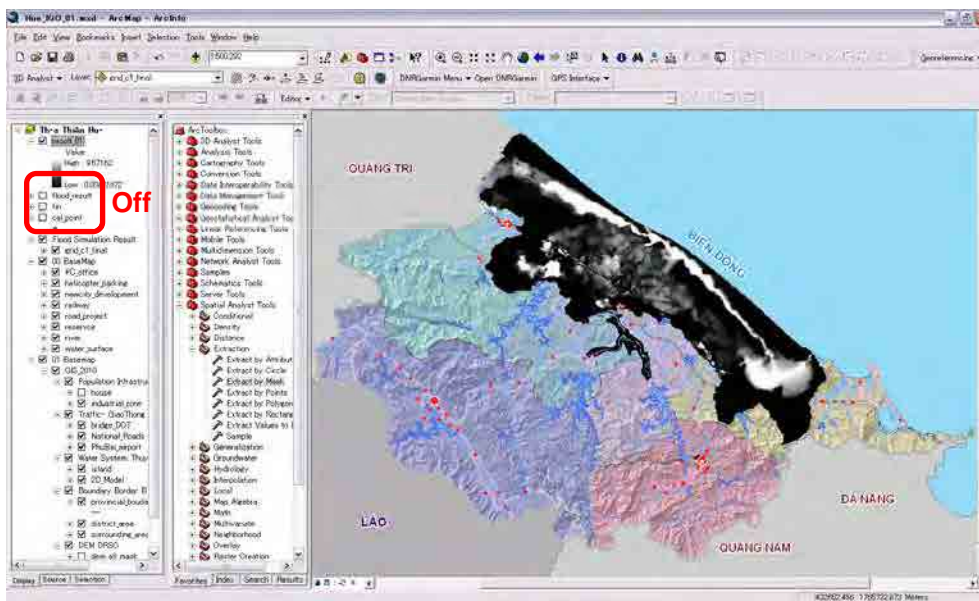
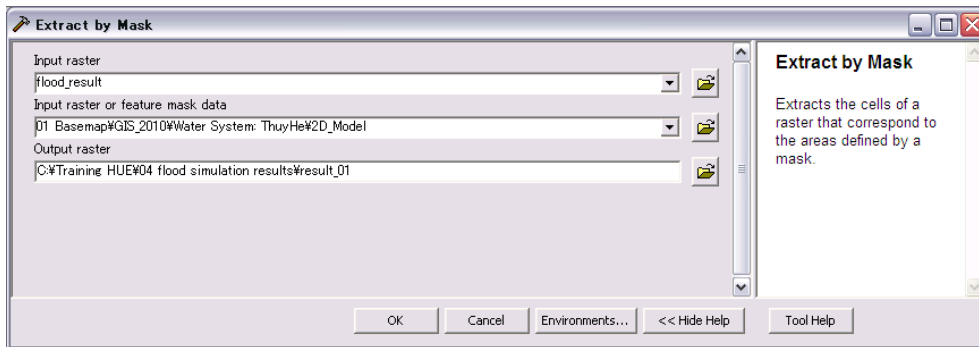
3D Analyst>Convert>Tin to Raster



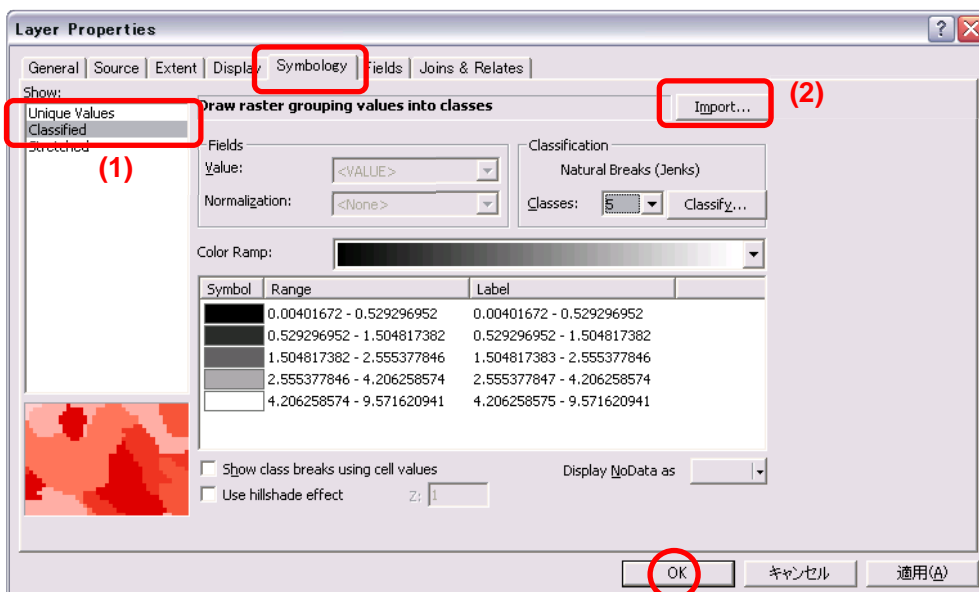
(4) 04 Flood Simulation Results#flood\_result

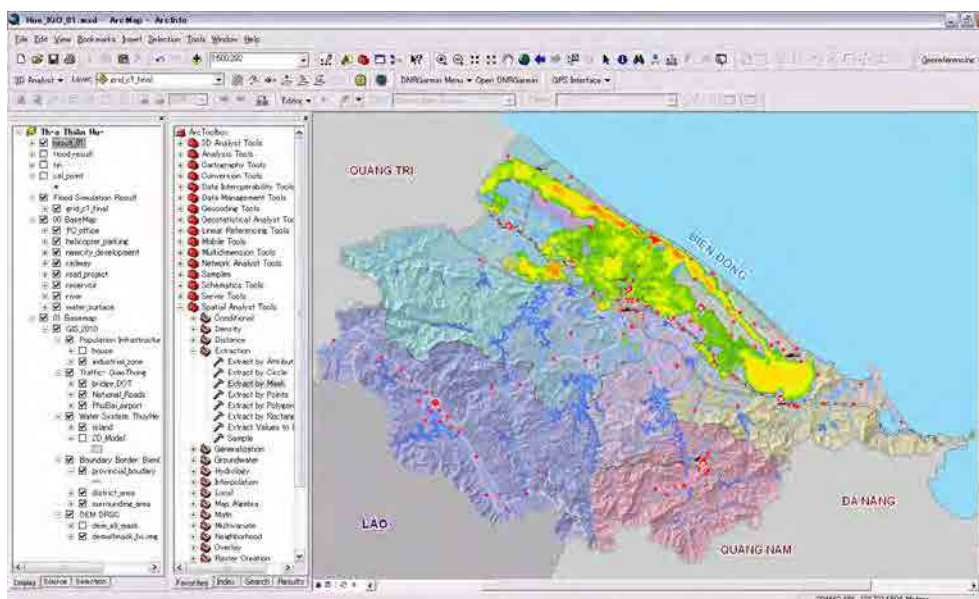
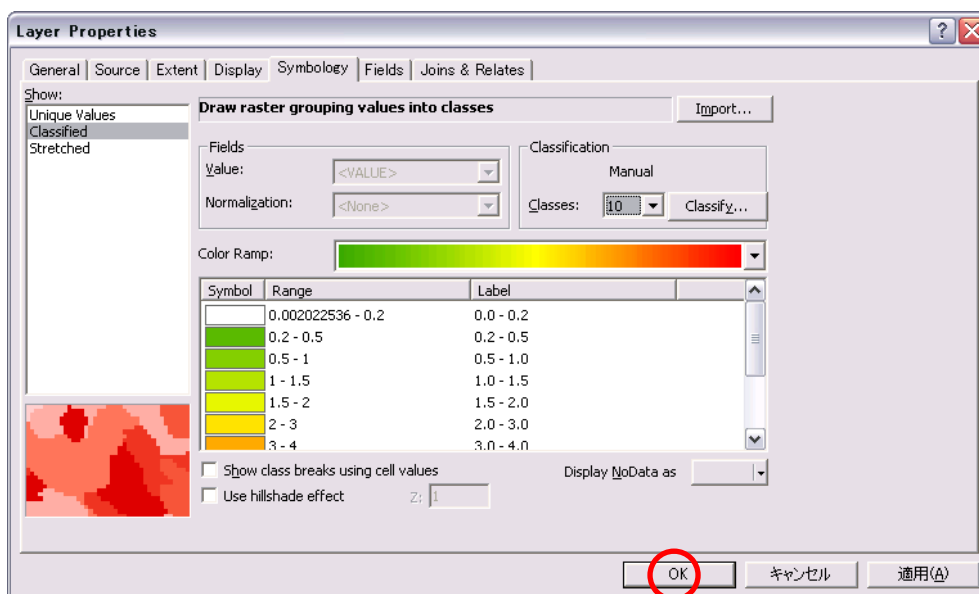
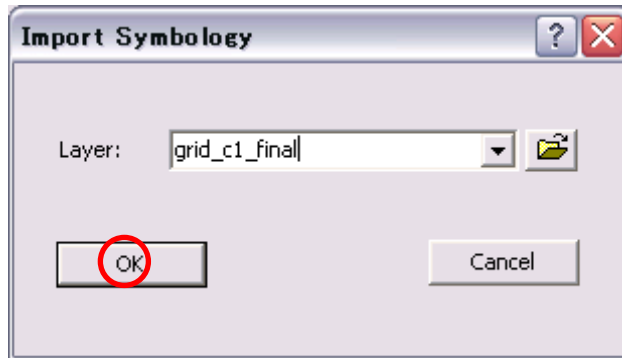


[Clip the 2D area] by Using “**Extract by Mask**” Tool.



[7-5] Import Layer File

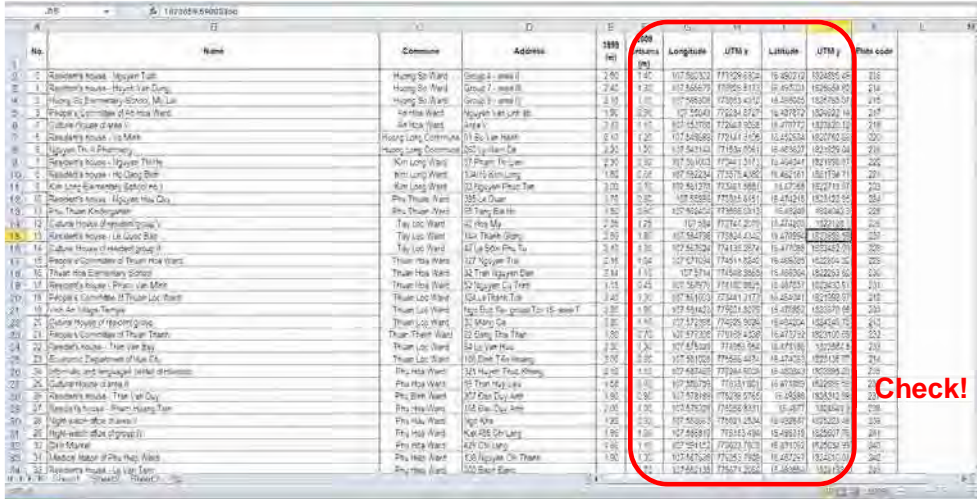




**Course Add-1 Add Point Shapefile from GPS**

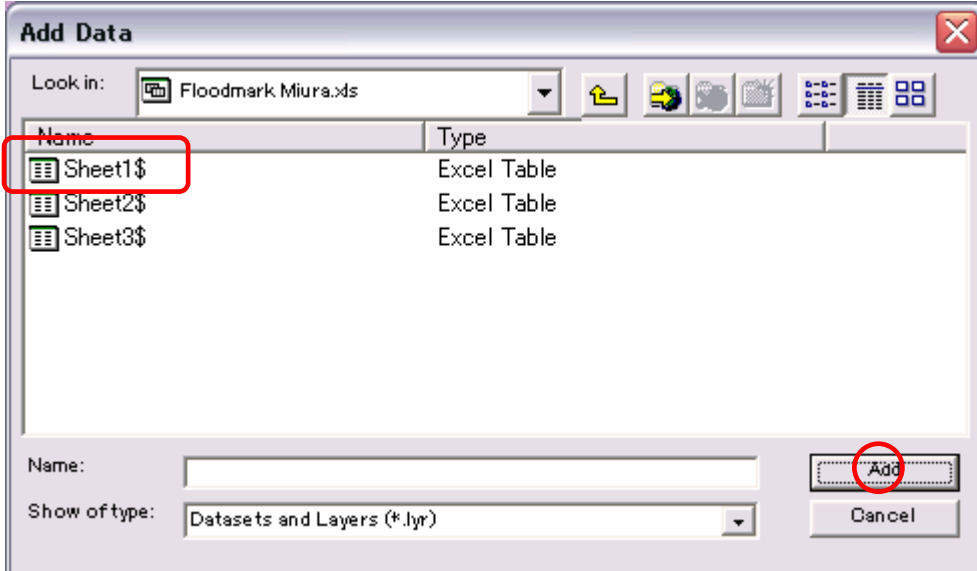
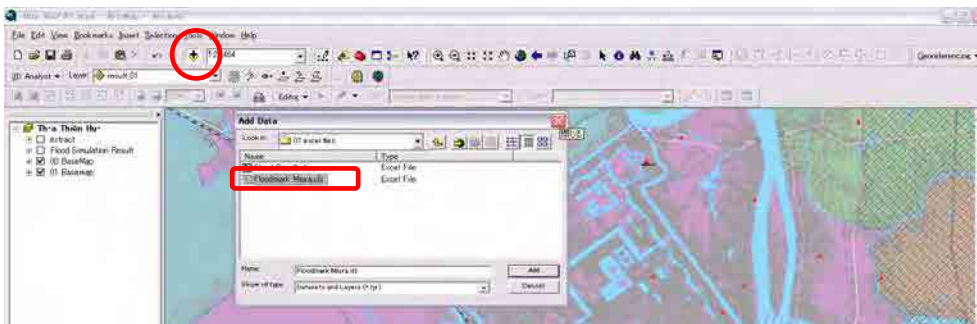
**[A1-1] Add point data from Excel Table**

Open the excel file of “Floodmark Miura.xlsx”.

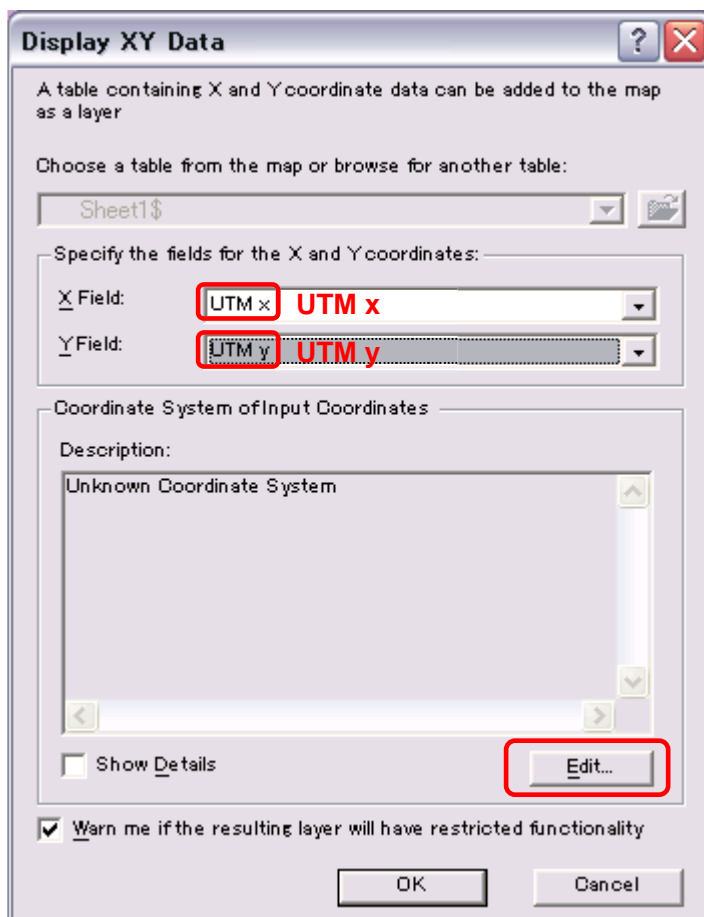
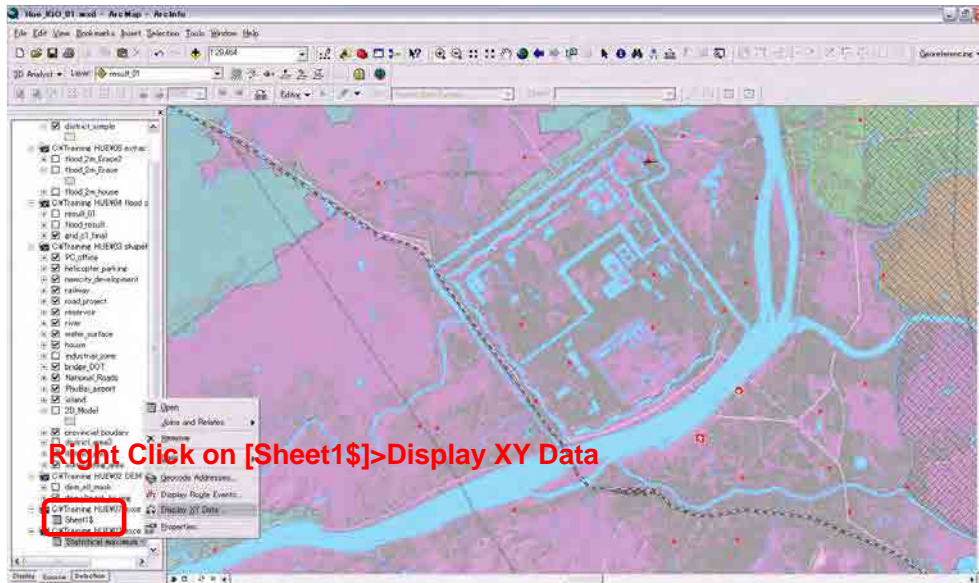


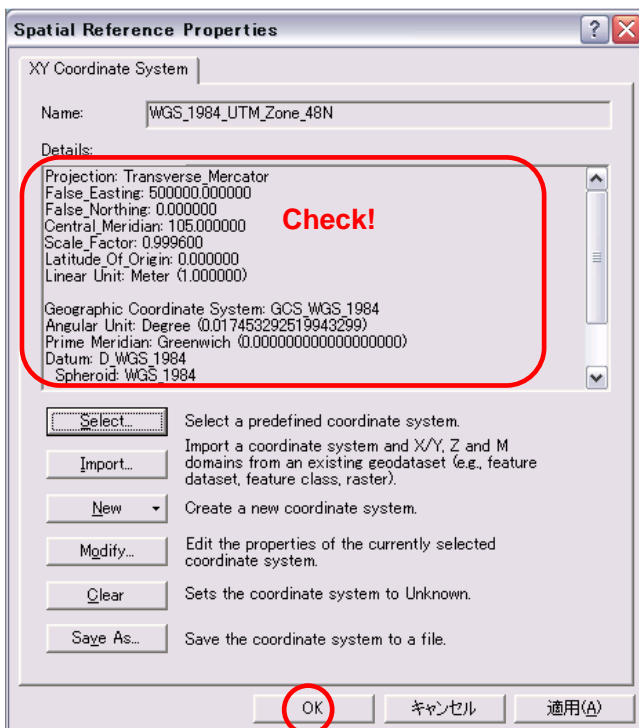
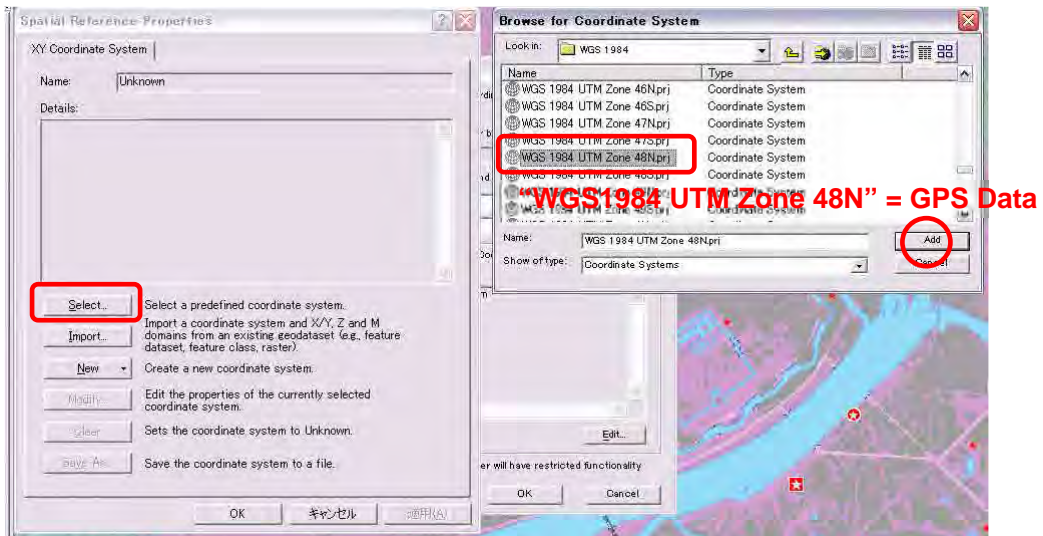
No	Name	Combine	Address	1983 (m)	2004 (m)	Elevation (m)	Longitude	UTM Y	Latitude	UTM X	Pubs code
1	Schools Hoa Kỳ - Nguyễn Tất Thành	Hưng Sơ Ward	Group 4 - area I	2.60	3.42	107.502303	171929.93024	15.483710	1034885.45	218	
2	Schools Hoa Kỳ - Nguyễn Văn Công	Hưng Sơ Ward	Group 7 - area B	2.45	3.20	107.505679	171929.93113	15.483532	1034839.05	219	
3	Hương Sơ Elementary School, M.L.Lee	Hưng Sơ Ward	Group 7 - area I	3.10	3.01	107.498309	171929.93114	15.483505	1034795.57	218	
4	People's Committee of An Hoa Ward	An Hoa Ward	Nguyễn Văn Lưu B	1.90	2.26	107.500603	171929.92721	15.483782	1034922.10	217	
5	Schools Hoa Kỳ - Trần Văn Ơn	An Hoa Ward	Group 1	2.70	3.15	107.497793	171929.92858	15.483772	1034921.15	218	
6	Secondary School - Lê Minh	Hưng Long Commune	71. Số 1, Lê Minh	0.45	1.20	107.548286	172141.21556	15.452534	1035760.50	325	
7	Nguyễn Văn A Pharmacy	Hưng Long Commune	82 Nguyễn Văn A	2.50	3.00	107.547100	171831.07641	15.482307	1034929.04	218	
8	Schools Hoa Kỳ - Nguyễn Tấn Huệ	Kim Long Ward	17 Phạm Tấn Huệ	2.20	2.90	107.501033	172261.31011	15.484541	1034939.07	205	
9	Schools Hoa Kỳ - Hồ Đăng Bính	Kim Long Ward	134 Nguyễn Đăng Bính	1.80	2.20	107.502234	171929.94095	15.483191	1034759.01	221	
10	Kim Long Elementary School (M.L.)	Kim Long Ward	33 Nguyễn Tấn Huệ	3.20	3.10	107.501870	171861.19941	15.473169	1034719.00	223	
11	Schools Hoa Kỳ - Nguyễn Hữu Châu	Phu Thuan Ward	385 Lê Duẩn	1.30	2.20	107.508580	171863.04551	15.474210	1034125.54	234	
12	Phu Thuan Kindergarten	Phu Thuan Ward	28 Tân Bành	1.80	2.90	107.509420	171869.03113	15.481649	1034432.00	229	
13	Schools Hoa Kỳ - Nguyễn Hữu Chí	Tây Lộc Ward	41 Hồ Chí Minh	2.20	1.20	107.507156	171861.00701	15.474200	1034188.00	225	
14	Schools Hoa Kỳ - Lê Quốc Sương	Tây Lộc Ward	14 Lê Quốc Sương	2.60	1.80	107.507290	171861.04252	15.473593	1034288.00	235	
15	Schools Hoa Kỳ - Lê Quốc Sương	Tây Lộc Ward	17 Lê Quốc Sương	3.45	3.35	107.507324	171861.05574	15.473594	1034482.00	236	
16	People's Committee of Truan Hoa Ward	Truan Hoa Ward	107 Nguyễn Tấn	2.00	1.90	107.507034	174511.05540	15.485205	1032954.20	209	
17	Truan Hoa Elementary School	Truan Hoa Ward	10 Trần Nguyễn Tấn	2.00	1.10	107.507114	174508.38650	15.485006	1032953.00	210	
18	Schools Hoa Kỳ - Phạm Văn Minh	Truan Hoa Ward	22 Nguyễn Lê Minh	1.15	1.45	107.507070	174511.05574	15.485011	1032953.50	211	
19	People's Committee of Truan Hoa Ward	Truan Hoa Ward	10 Lê Văn Tấn	2.40	1.90	107.507100	174511.11770	15.485011	1032950.00	210	
20	Schools Hoa Kỳ - Nguyễn Văn Thọ	Truan Hoa Ward	16 Nguyễn Văn Thọ	1.30	1.90	107.507100	174511.05574	15.485011	1032950.00	210	
21	Phu Thuan Kindergarten	Phu Thuan Ward	107 Nguyễn Tấn Huệ	1.80	2.90	107.509420	171869.03113	15.481649	1034432.00	229	
22	Schools Hoa Kỳ - Nguyễn Hữu Chí	Phu Thuan Ward	31 Lê Văn Tấn	1.80	1.90	107.507100	174511.05574	15.485011	1032950.00	210	
23	People's Committee of Truan Hoa Ward	Truan Hoa Ward	22 Nguyễn Lê Minh	1.80	2.20	107.507070	174511.05574	15.485011	1032953.50	211	
24	People's Committee of Truan Hoa Ward	Truan Hoa Ward	34 Lê Văn Tấn	2.00	1.90	107.507100	174511.05574	15.485011	1032950.00	210	
25	Department of Health Office	Truan Hoa Ward	110 Đường Trần Hưng Đạo	2.00	2.00	107.507100	174511.05574	15.485011	1032950.00	210	
26	Schools Hoa Kỳ - Nguyễn Văn Thọ	Phu Thuan Ward	120 Nguyễn Tấn Huệ	1.30	1.10	107.507100	174511.05574	15.485011	1032950.00	210	
27	Schools Hoa Kỳ - Nguyễn Văn Thọ	Phu Thuan Ward	15 Trần Nguyễn Tấn	1.60	1.10	107.507100	174511.05574	15.485011	1032950.00	210	
28	Schools Hoa Kỳ - Trần Văn Ơn	Phu Thuan Ward	37 Trần Văn Ơn	1.80	2.80	107.507100	174511.05574	15.485011	1032950.00	210	
29	Schools Hoa Kỳ - Nguyễn Văn Thọ	Phu Thuan Ward	10 Lê Văn Tấn	2.00	1.90	107.507100	174511.05574	15.485011	1032950.00	210	
30	High school - Hồ Chí Minh	Phu Thuan Ward	Ngã Năm	1.90	2.00	107.503600	174501.12044	15.493901	1032954.00	210	
31	High school - Hồ Chí Minh	Phu Thuan Ward	Khu 28 Hồ Chí Minh	1.90	1.90	107.503600	174501.12044	15.493901	1032957.00	211	
32	Schools Hoa Kỳ - Nguyễn Văn Thọ	Phu Thuan Ward	429 Trần Văn Ơn	1.30	1.40	107.507100	174511.05574	15.485011	1032950.00	210	
33	Medical School of Phu Thuan Ward	Phu Thuan Ward	10 Nguyễn Văn Tấn	1.80	2.00	107.507100	174511.05574	15.485011	1032950.00	210	
34	Schools Hoa Kỳ - Lê Văn Tấn	Phu Thuan Ward	100 Lê Văn Tấn	1.80	1.10	107.507100	174511.05574	15.485011	1032950.00	210	

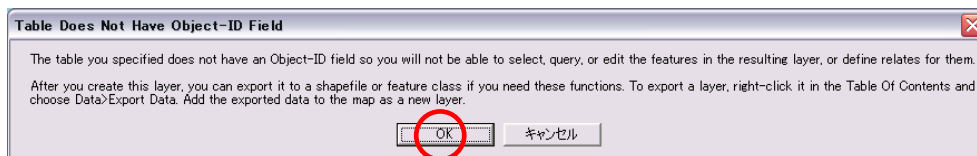
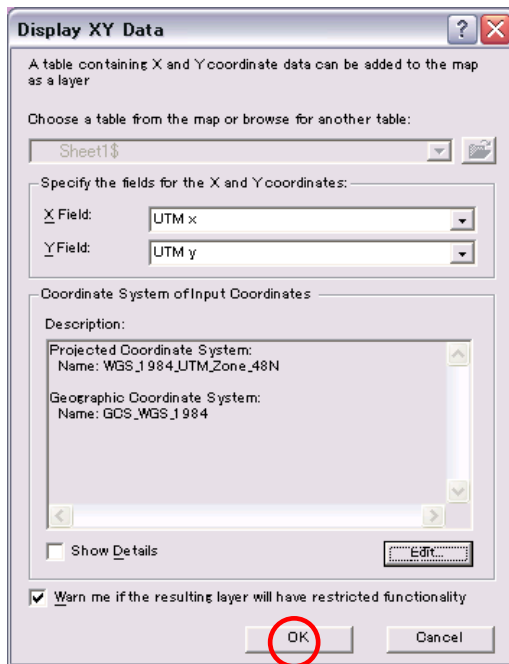
Check!



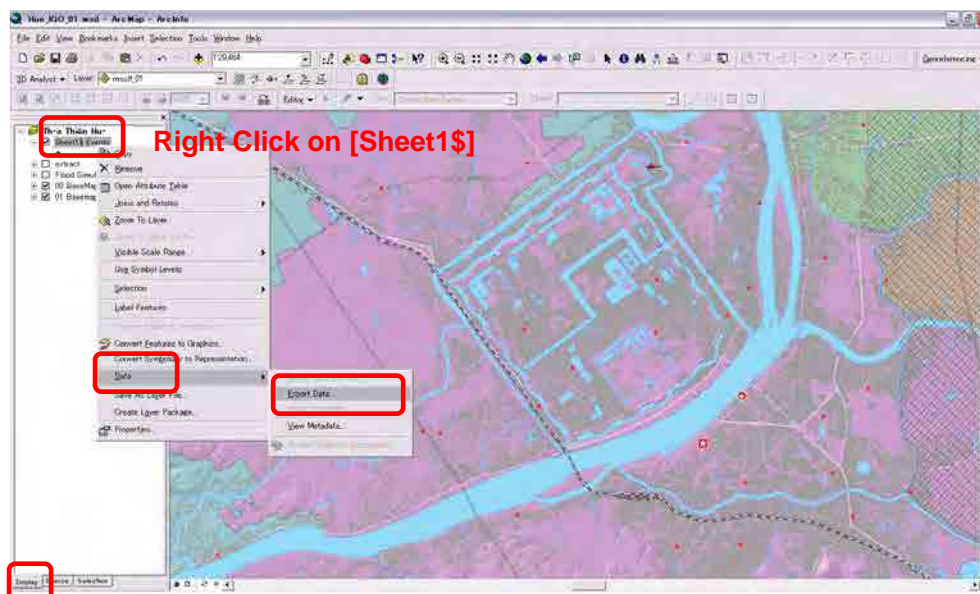


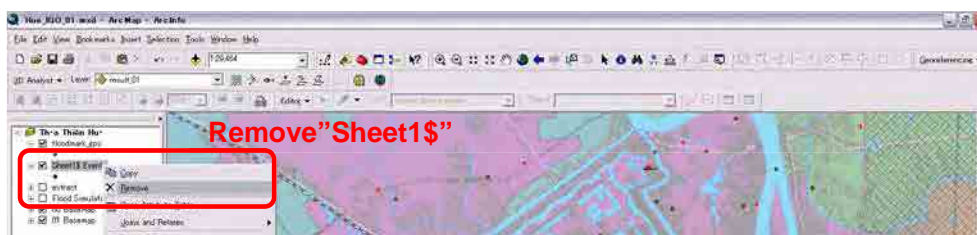
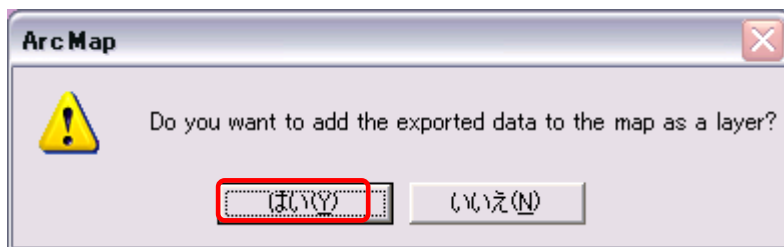
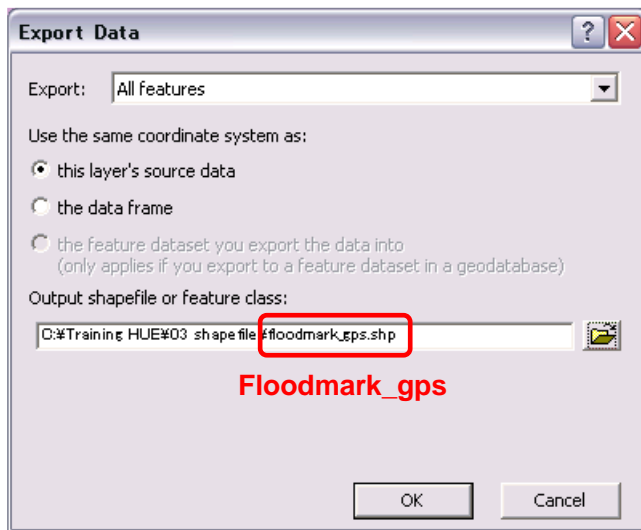






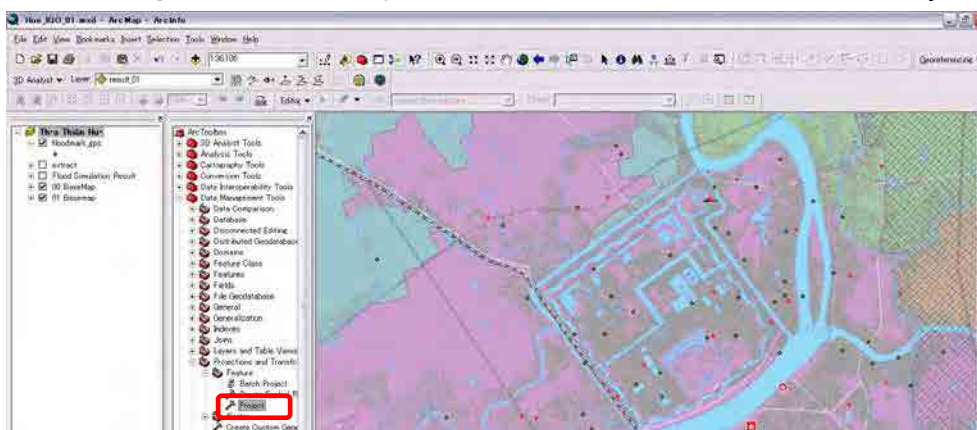
### Export Data of "Sheet1\$"

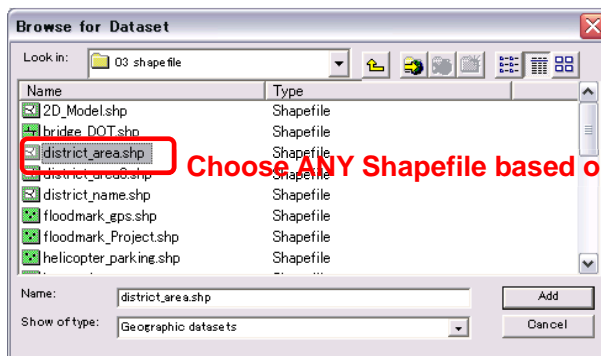
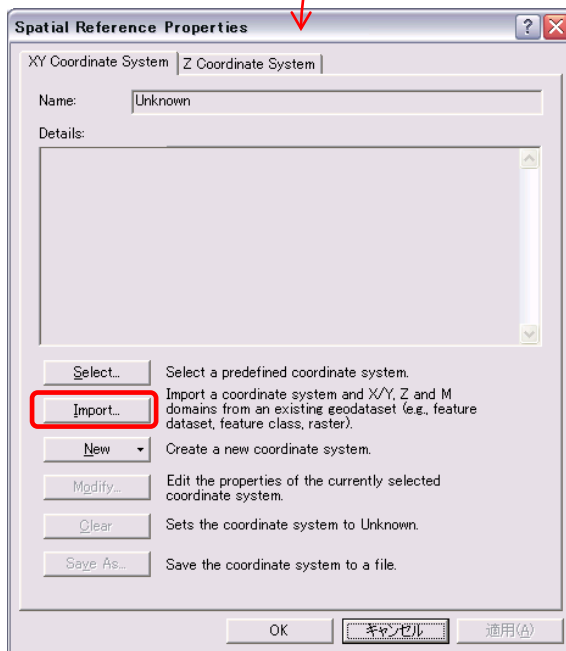
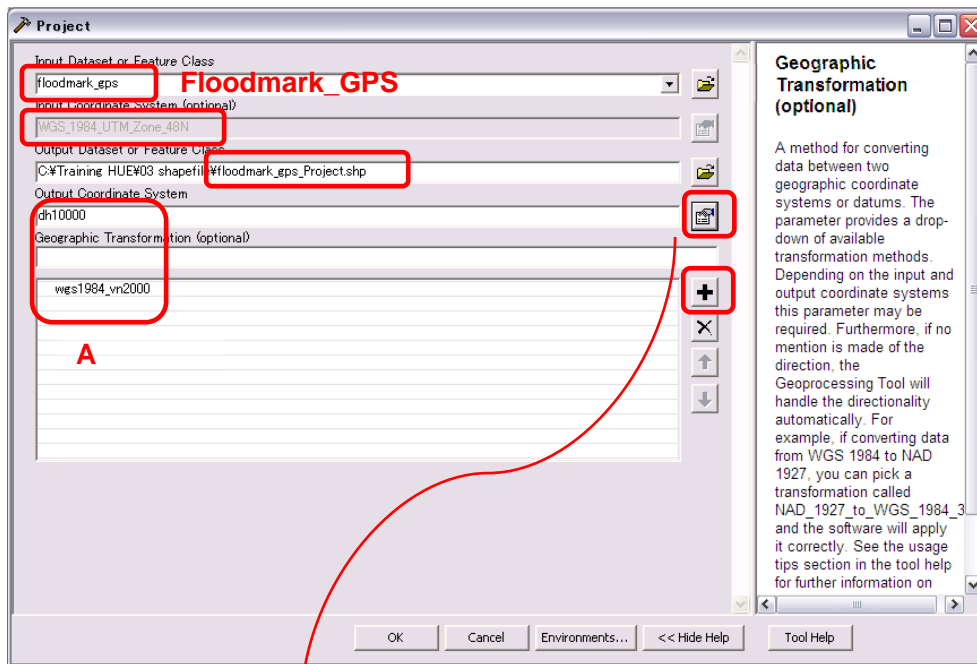


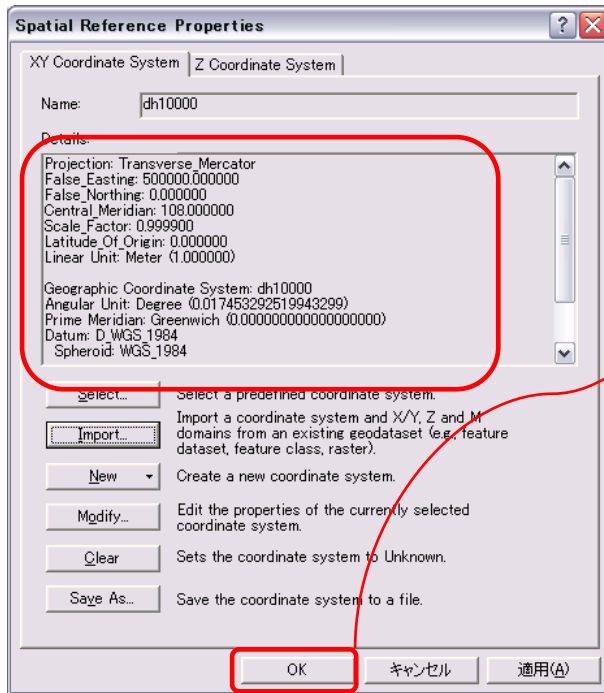


[A1-2] Change coordinate system from WGS84 to VN2000

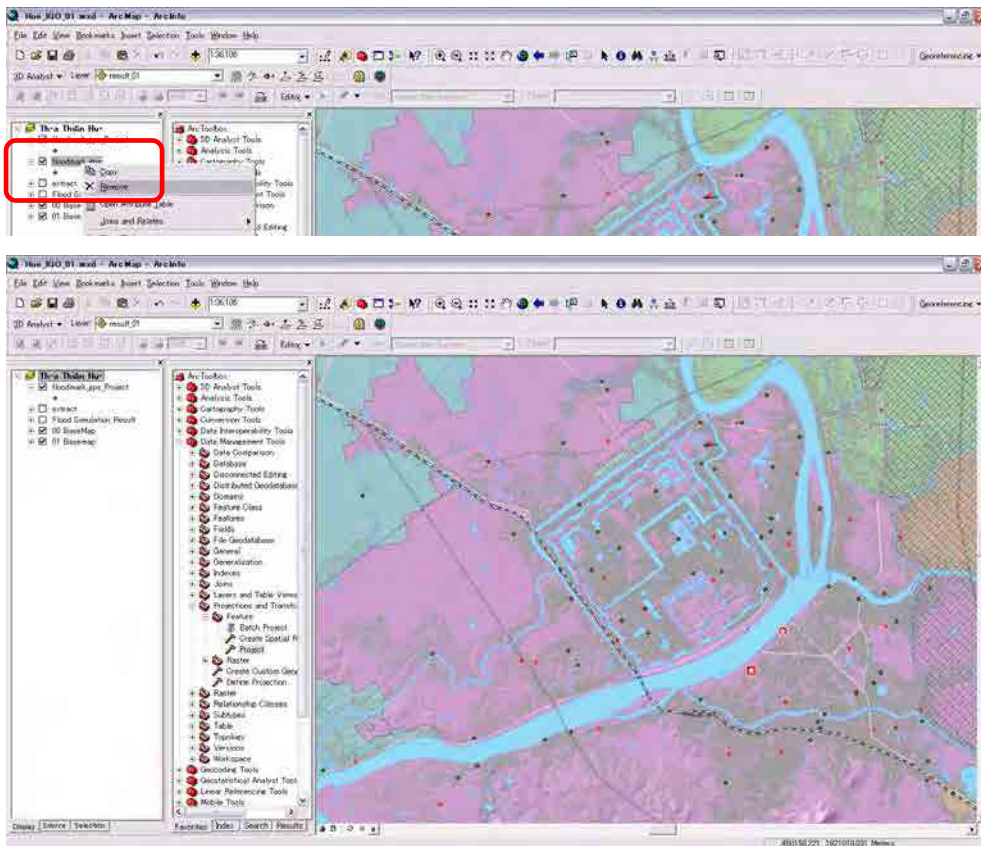
Data Management Tools>Projections and Transformation>Feature>***Project***







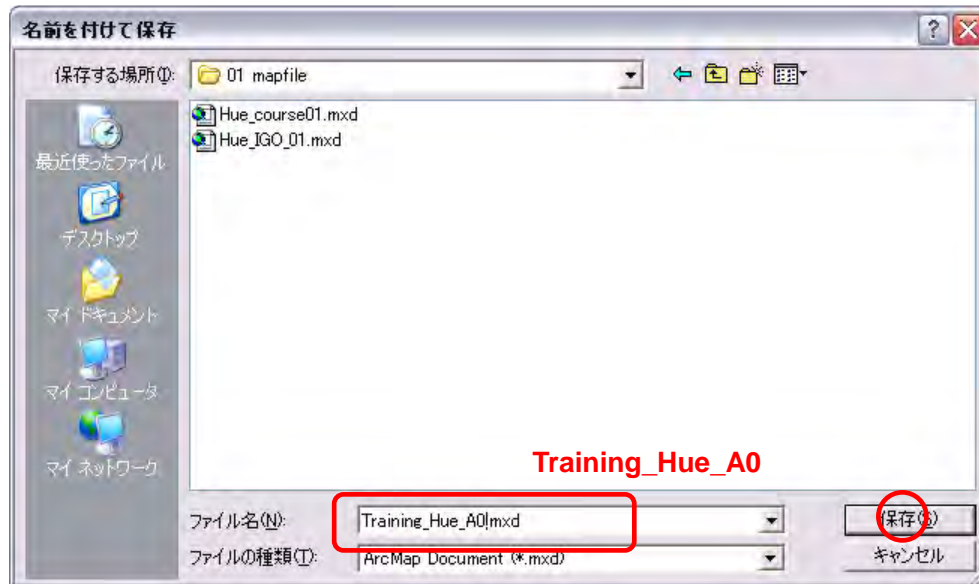
## Remove "Floodmark\_GPS"



## Course Add-2 Layout and Printing

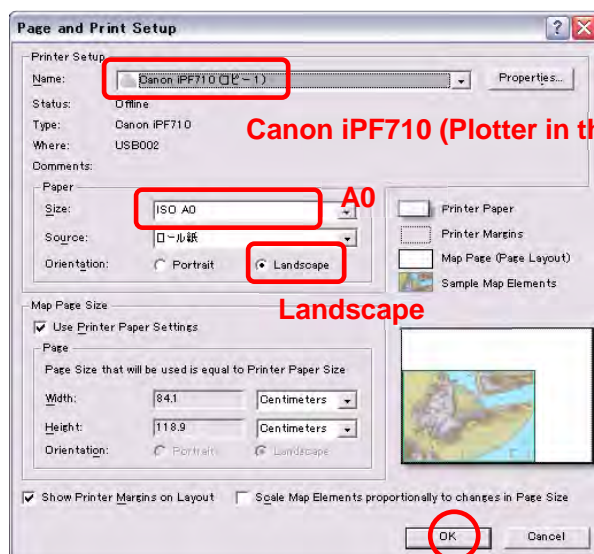
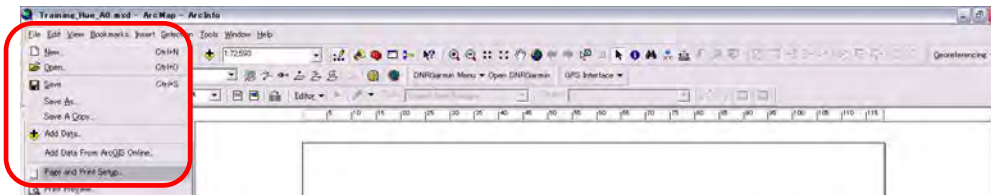
### 【1】 Mapfile

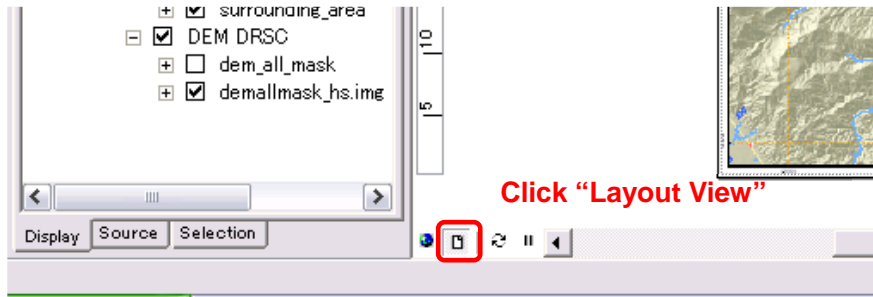
Save as “new mapfile” to layout this training case.



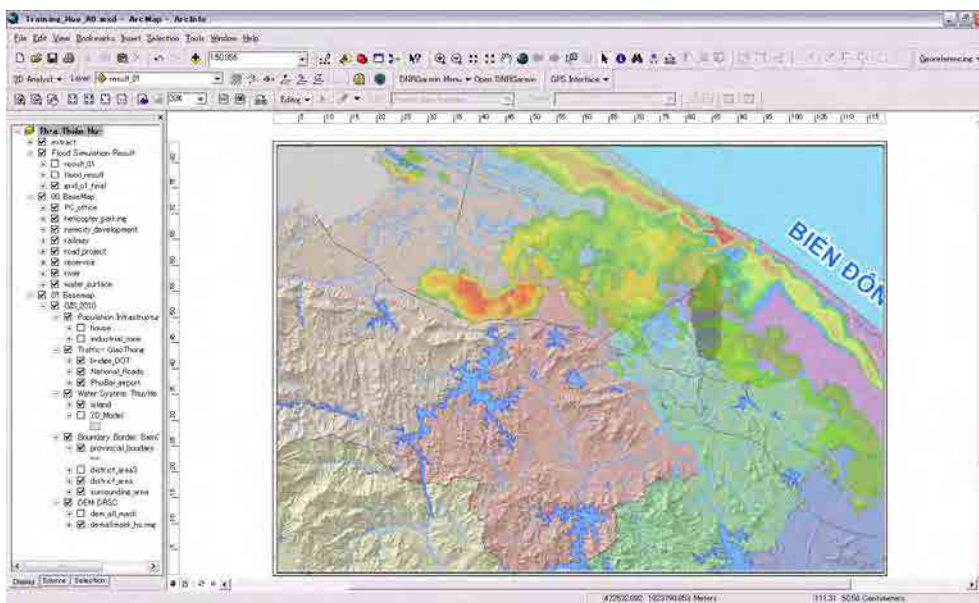
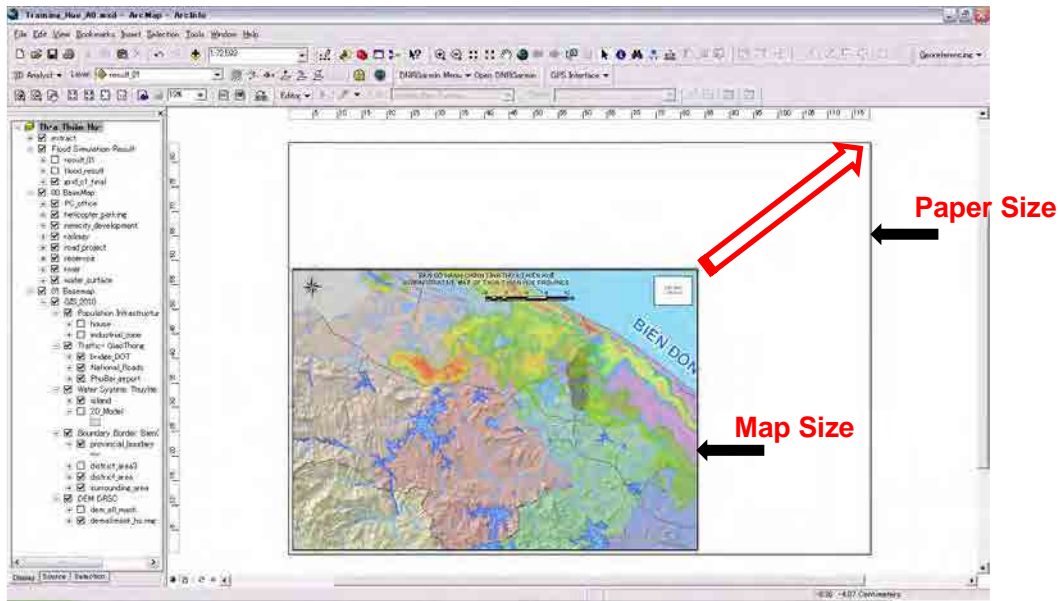
### 【2】 Page and Print Setup

File>Page and Print Setup





Adjust the map size to paper size.

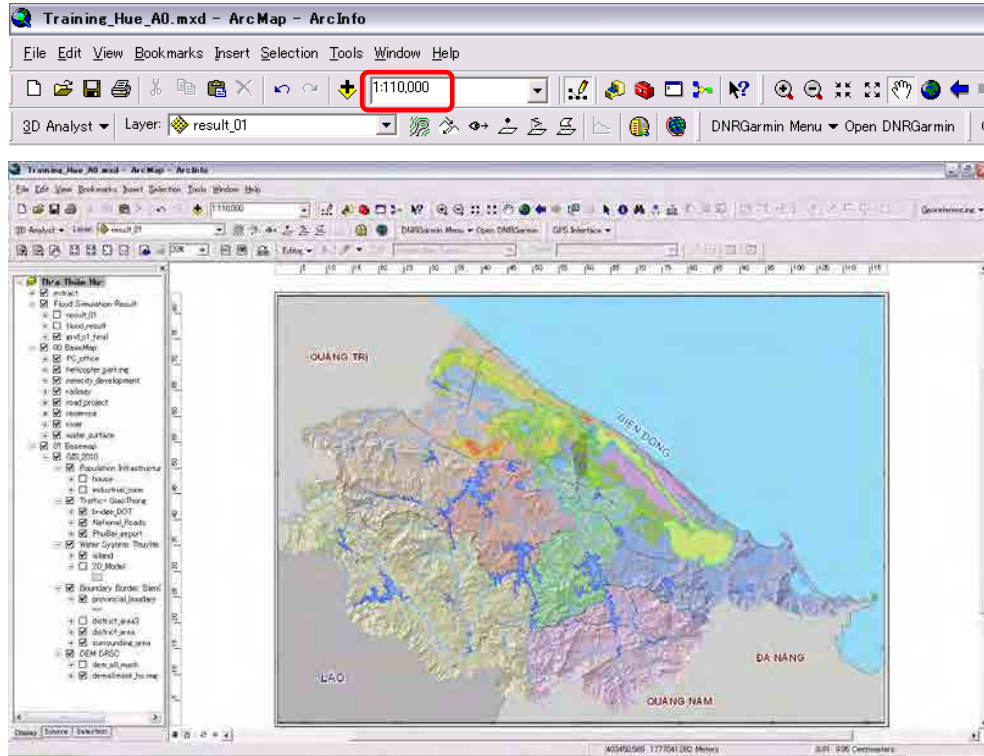




### [3] Scale

You can choose any scale on this command.

In this training you choose **“1:110,000”**.



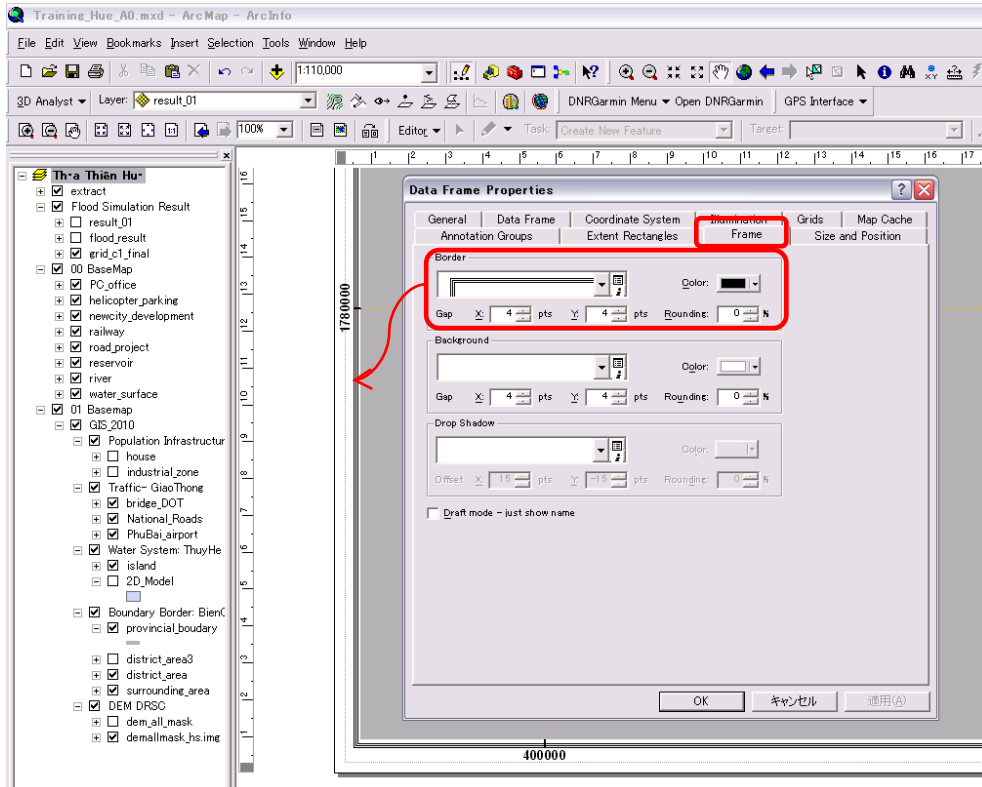
### [4] Data Frame Setting

Right click on the “Thua Thien Hue” data frame.

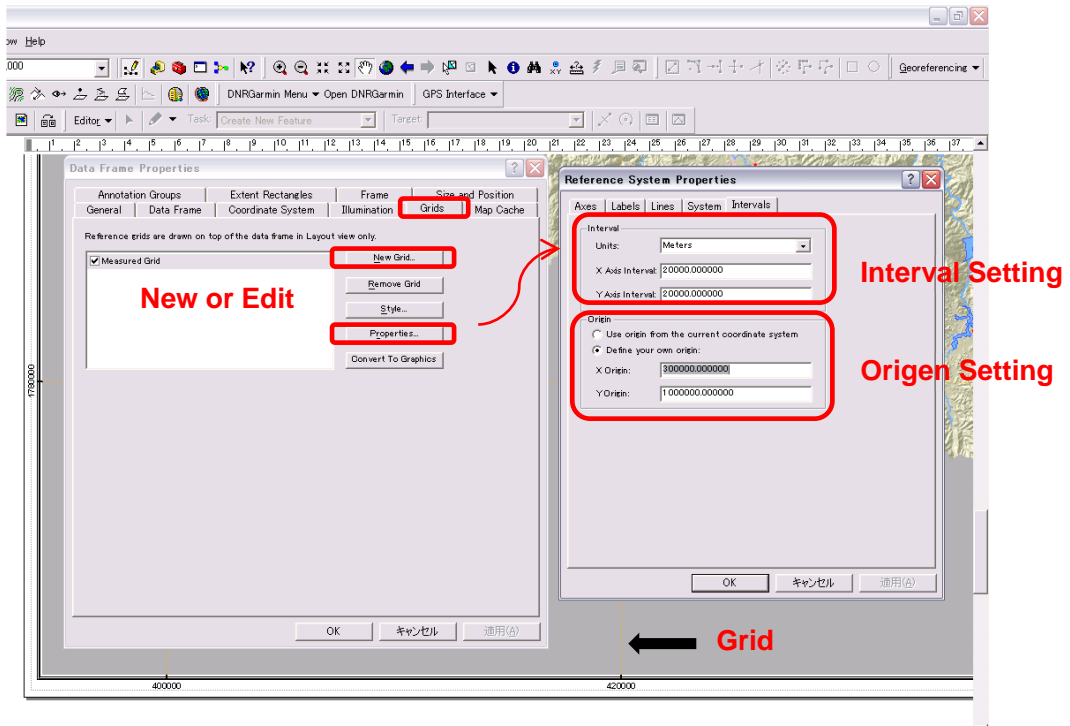
Right Click>Properties



## [Frame]



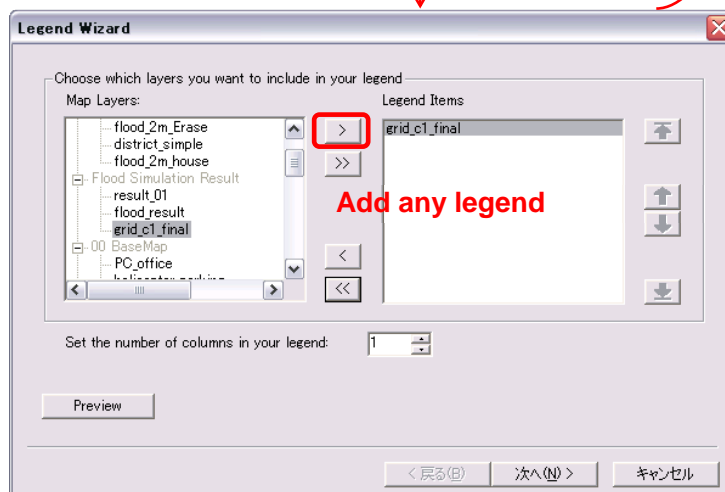
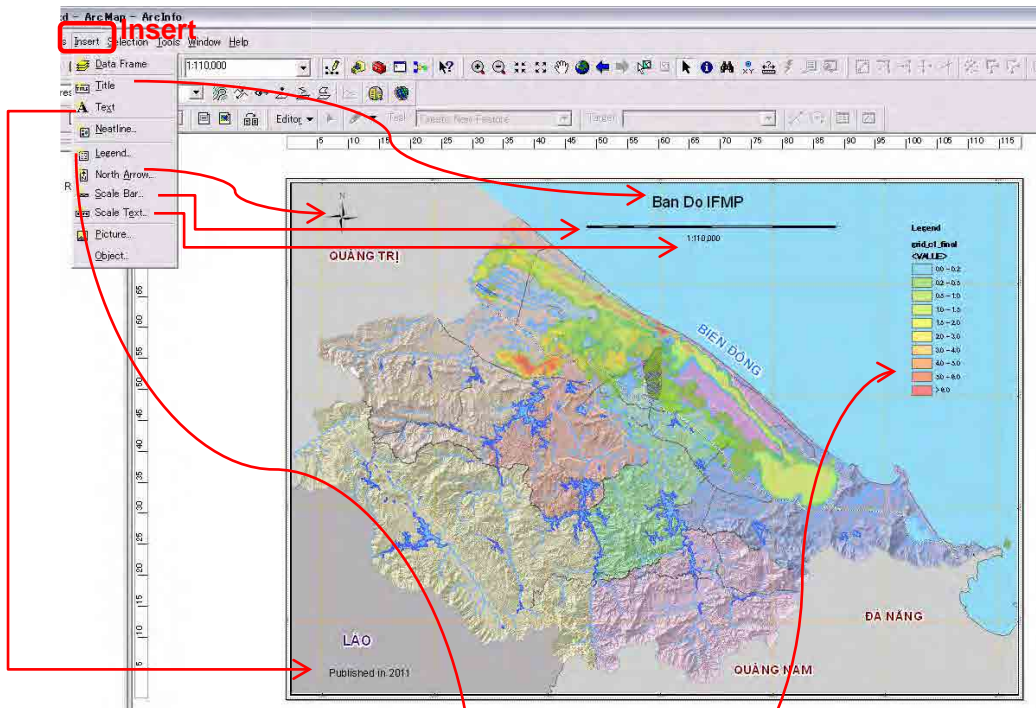
## [Grids]



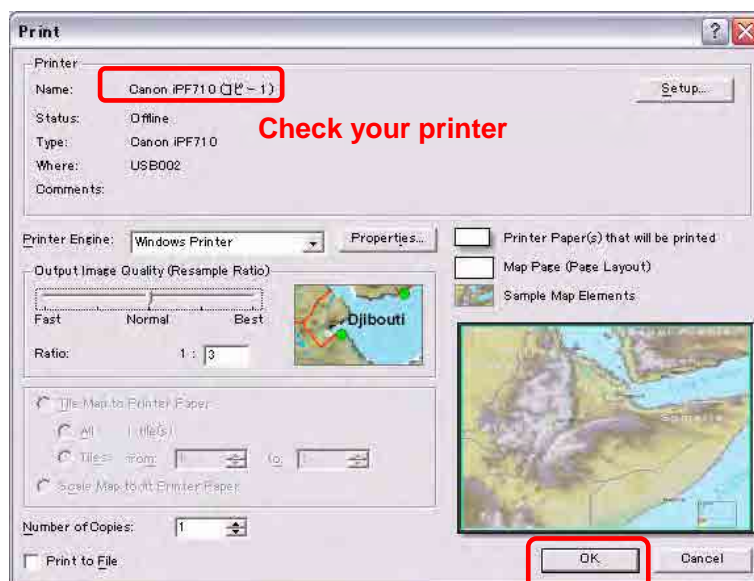
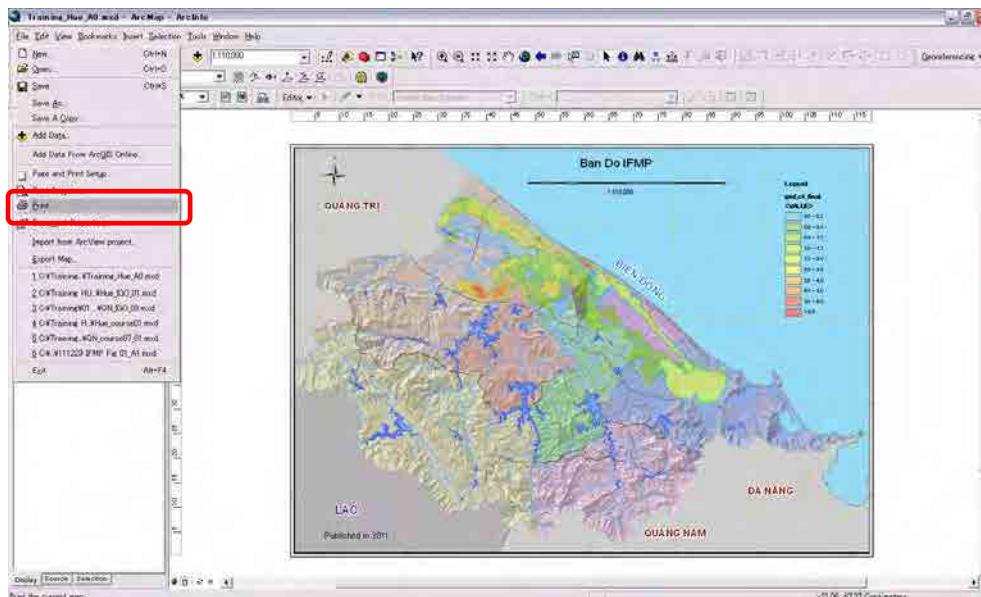
## [Layout Toolbar]



## [5] Layout of the Map



[6] Printing  
File>Print

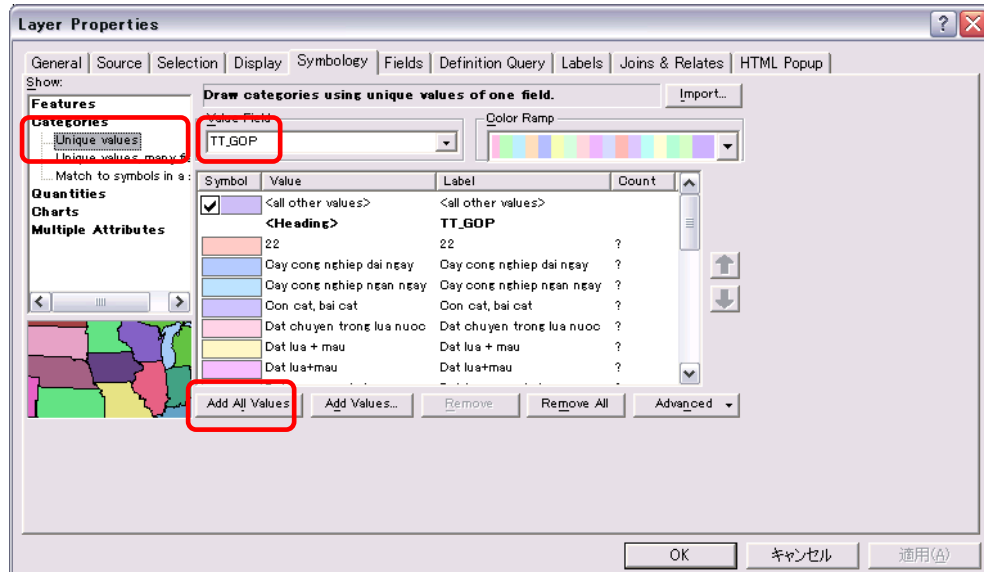
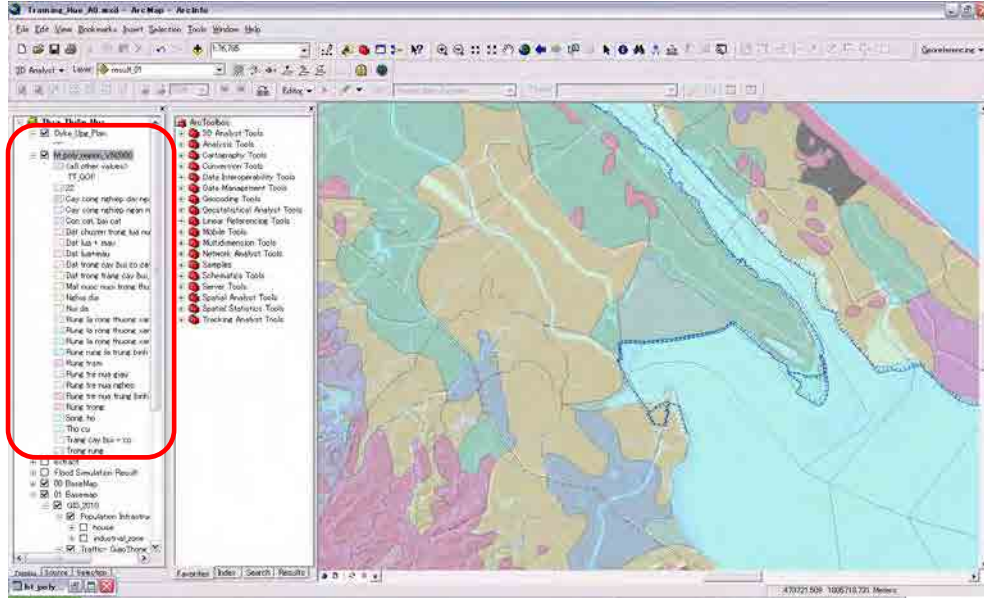


## Course Add-3 Dyke and Land Use

### [1] Preparation

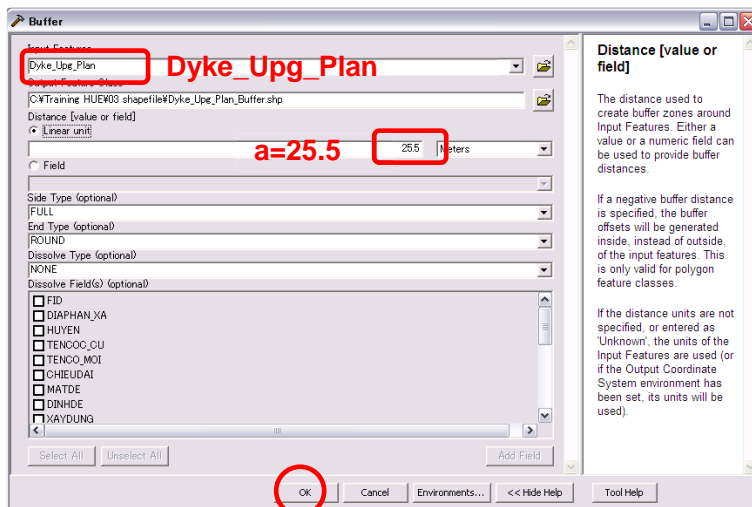
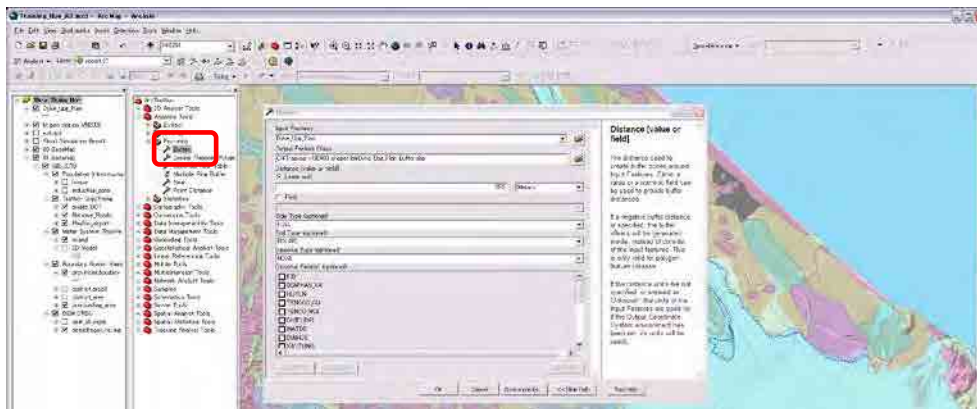
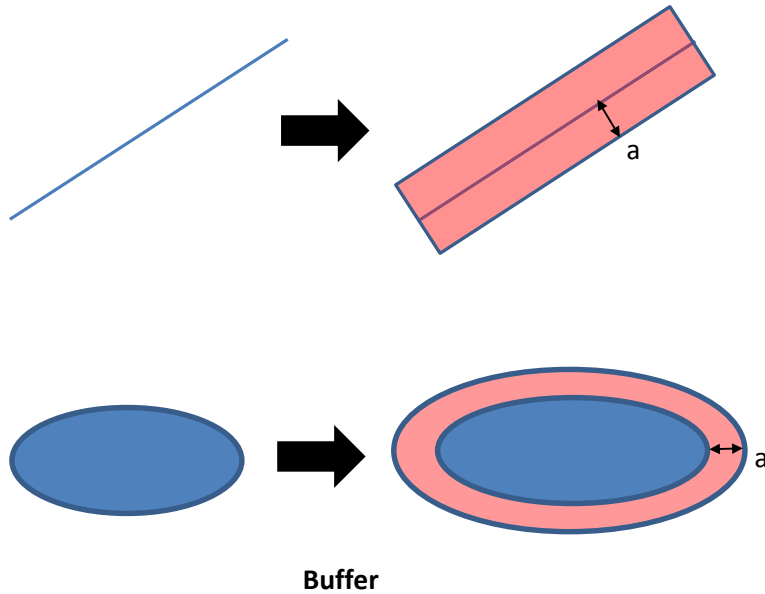
Add “Dyke\_Upg\_Plan” line data.

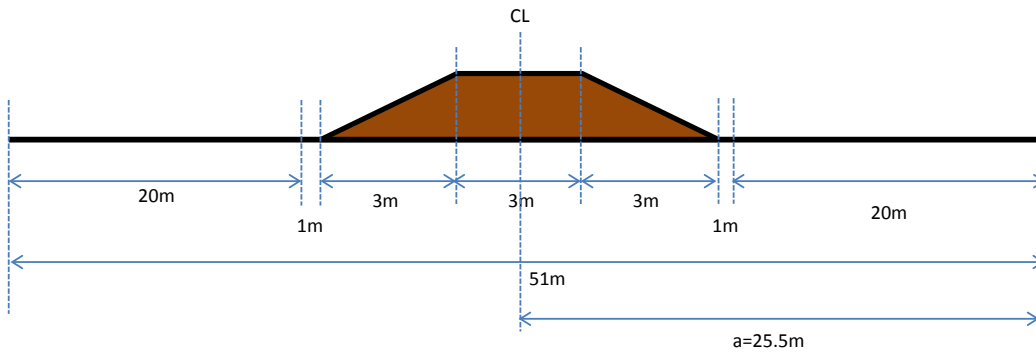
Add “ht\_poly\_region\_VN2000” polygon data.



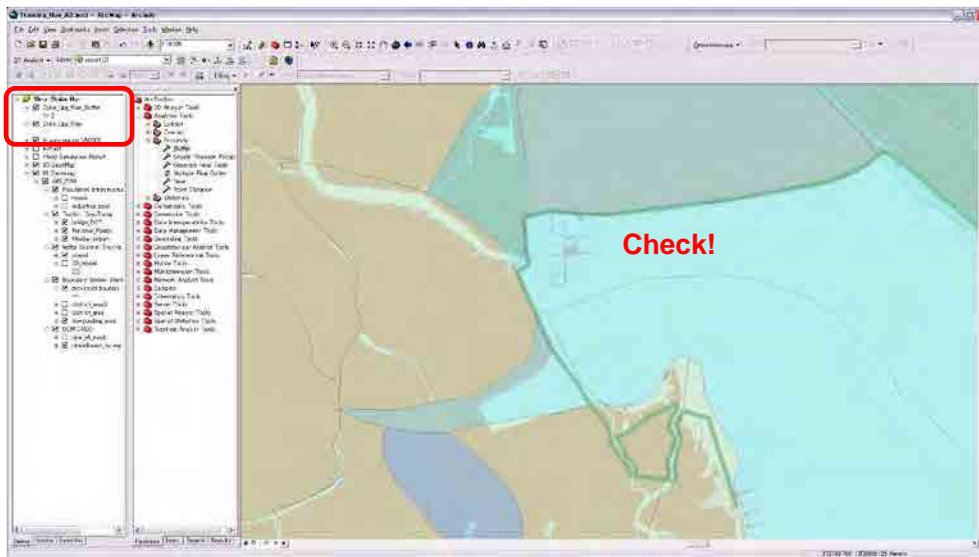
## [2] Buffer

Arc Toolbox>Analysis Tools>Proximity>Buffer

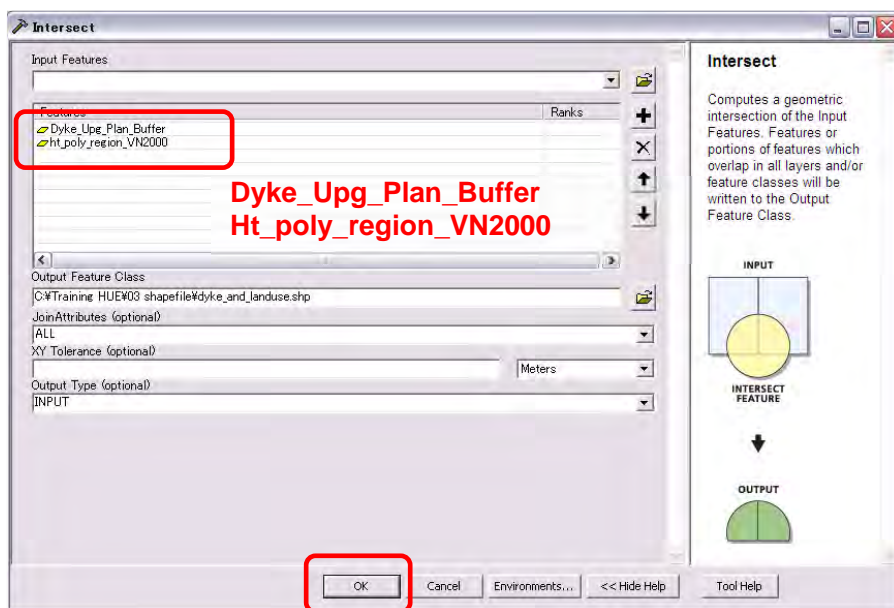




Change Color and Line of “Dyke\_Upg\_Plan” and “Dyke\_Upg\_Plan\_Buffer”  
And Zoom in.



### [3] Intersect



#### [4] Attribute Table

Open attribute Table of Land Use layer, "ht\_poly\_region\_VN2000".

FID	Shape	AREA	TYPE	TYPE_GOP	TT_GOP	KY_HIEU	LOAI_RUNG
0	Polygon	92570.7	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
1	Polygon	17958.5	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
2	Polygon	61819.1	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
3	Polygon	13485.9	22	0	Rung trong	22	Rung trong
4	Polygon	226306.2	22	0	Rung trong	22	Rung trong
5	Polygon	17835.2	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
6	Polygon	3009.0	28	0	Tho cu		Dat tho cu
7	Polygon	17480.9	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
8	Polygon	13894.8	28	0	Tho cu		Dat tho cu
9	Polygon	285024.7	28	0	Tho cu		Dat tho cu
10	Polygon	32652.2	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
11	Polygon	764756.1	1	0	Dat chuyen trong lua nuoc	1	Dat nong nghiep
12	Polygon	856792.7	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
13	Polygon	26419.7	28	0	Tho cu		Dat tho cu
14	Polygon	40934.0	2	0	Dat lua + mau	2	Dat nong nghiep
15	Polygon	42018.0	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
16	Polygon	686696.4	28	0	Tho cu		Dat tho cu
17	Polygon	785174.1	10	0	Rung la rong thuong xanh ngheo	10	Rung go tu nhien
18	Polygon	10298.2	28	0	Tho cu		Dat tho cu
19	Polygon	14501.1	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
20	Polygon	19068.7	10	0	Rung la rong thuong xanh ngheo	10	Rung go tu nhien
21	Polygon	258320.2	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
22	Polygon	17950.4	28	0	Tho cu		Dat tho cu
23	Polygon	14773.9	28	0	Tho cu		Dat tho cu
24	Polygon	239490.3	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
25	Polygon	32517.8	31	0	Song, ho		Song ho
26	Polygon	19367.9	28	0	Tho cu		Dat tho cu
27	Polygon	17455.6	2	0	Dat lua + mau	2	Dat nong nghiep
28	Polygon	289000.8	10	0	Rung la rong thuong xanh ngheo	10	Rung go tu nhien
29	Polygon	27185.8	28	0	Tho cu		Dat tho cu
30	Polygon	46105.9	28	0	Tho cu		Dat tho cu
31	Polygon	64545.7	31	0	Song, ho		Song ho
32	Polygon	22010.9	26	0	Con cat, bai cat	26	Con cat, bai cat ven bien
33	Polygon	15540.4	2	0	Dat lua + mau	2	Dat nong nghiep
34	Polygon	12542.5	28	0	Tho cu		Dat tho cu
35	Polygon	13564.5	22	0	Rung trong	22	Rung trong

The column "TYPE" is best ID to identify land use.

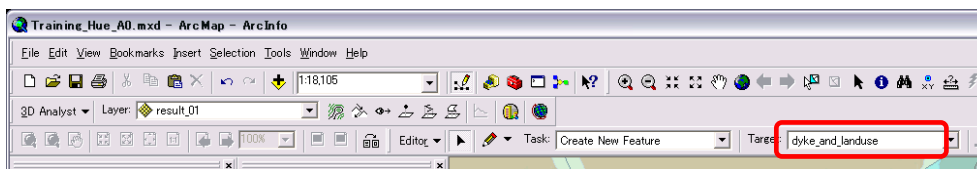
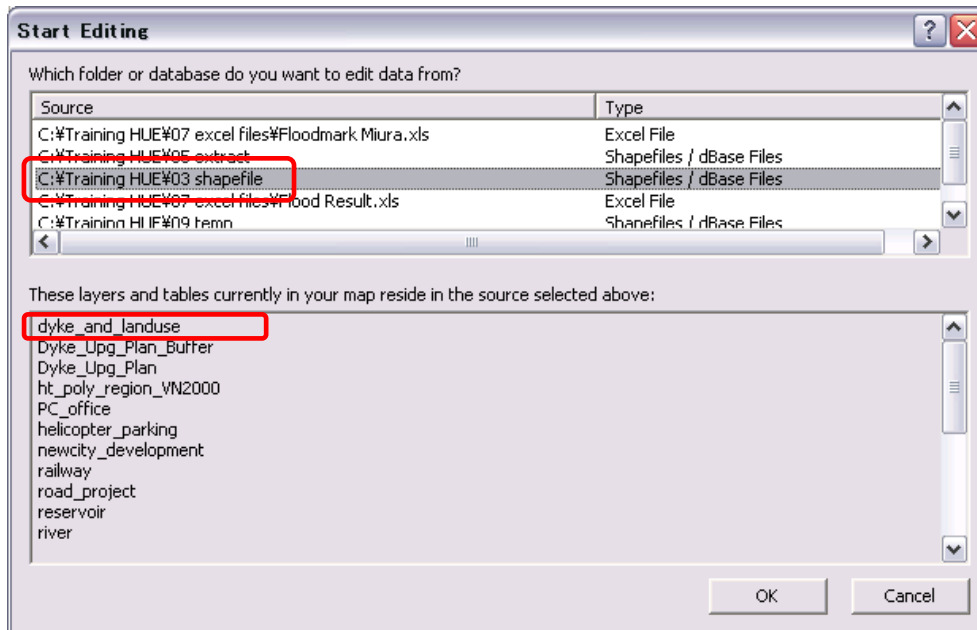
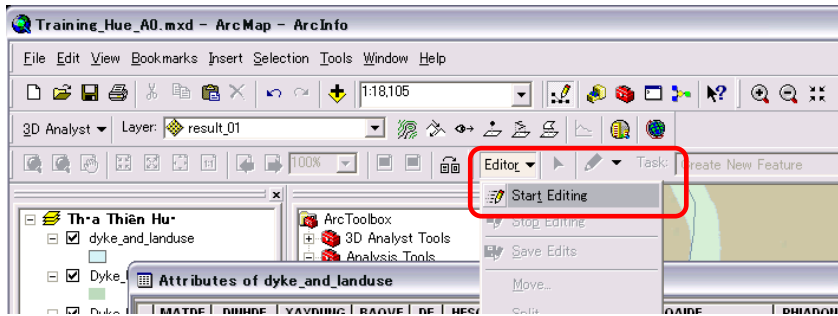
#### [5] Merge

Open attribute table of "dyke and landuse".

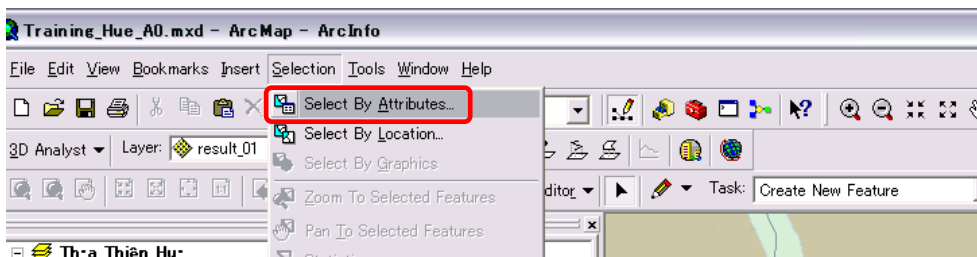
NAME	OWNER	ADDRESS	HAUSE	RES	MAR	CAUSE	FINANCE	TRAFFIC	INCREASE	TRAINING	SALARY	TRUCK	ROAD	AGE	SEX	JOB	TYPE	TT_GOP	KY_HIEU	LOAI_RUNG
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

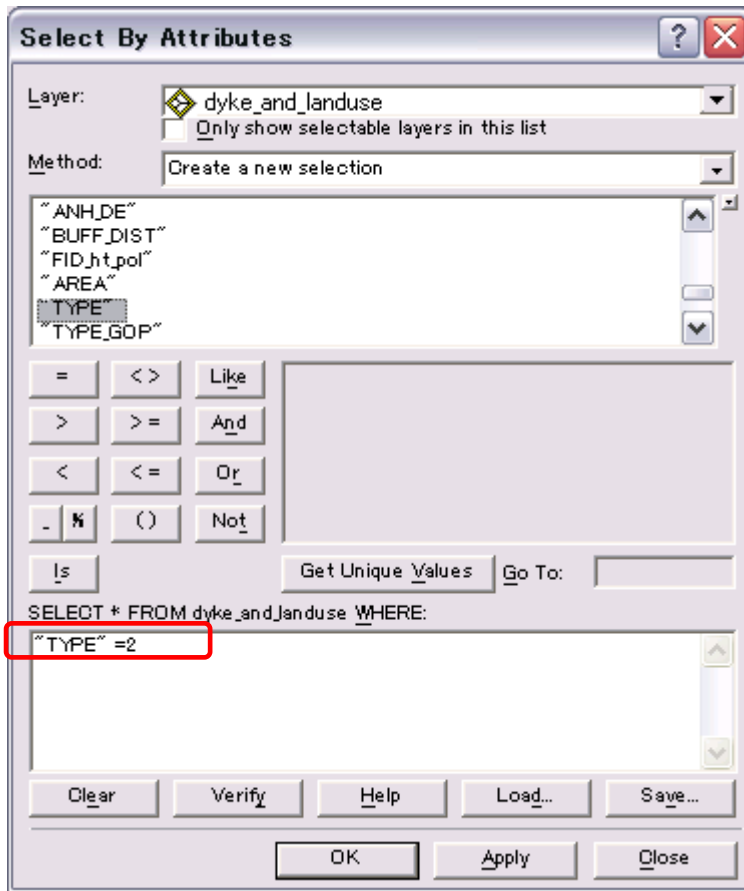


## Start Editing

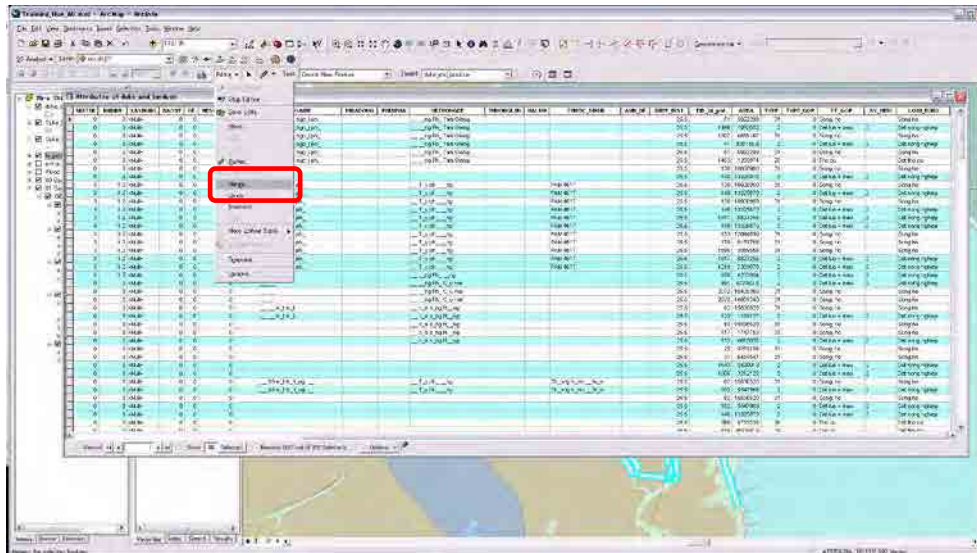


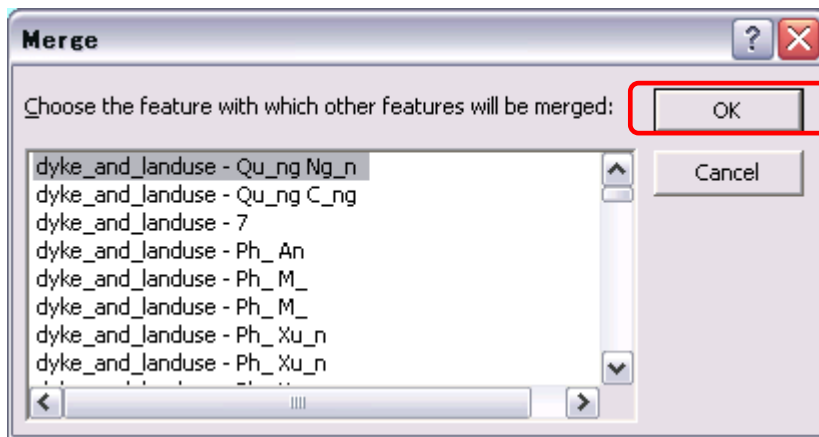
## Select By Attribute





## Merge





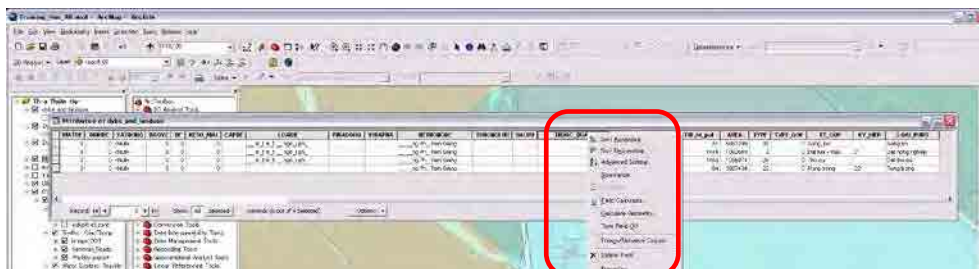
Continue merging by using the columns “22”, “28”, “31”.

MATXE	BMSE	XAVING	BAVO	DE	RESO_MAS	CAPE	LOAME	PHANONG	PHAPHA	NETHONGE	THONGKUM	HALUM	THUOC_HUAN	AMBE	DIEM_DIST	FB_M_pos	AREA	TYPE	TYPE_GOP	TY_GOP	KY_HSP	LOAM_PING
0	0-Huab	0	0	0			...PH...-...PH...		...PH...	Tan Giang						25.5	51	3852209	21	0	Dang Ho	Dang Ho
0	0-Huab	0	0	0			...PH...-...PH...		...PH...	Tan Giang						25.5	1445	1092655	2	0	Dai An + Mao	Dai An + Mao
0	0-Huab	0	0	0			...PH...-...PH...		...PH...	Tan Giang						25.5	1452	1289574	20	0	Thi Cu	Thi Cu
0	0-Huab	0	0	0			...PH...-...PH...		...PH...	Tan Giang						25.5	64	2897424	22	0	Hung Trong	Hung Trong

**Save Edits and Stop Editing.**

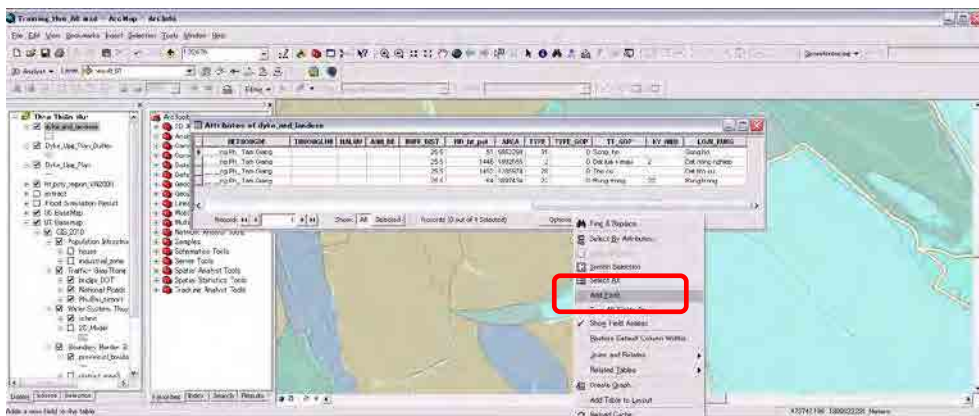


**Delete Unnecessary Fields.**



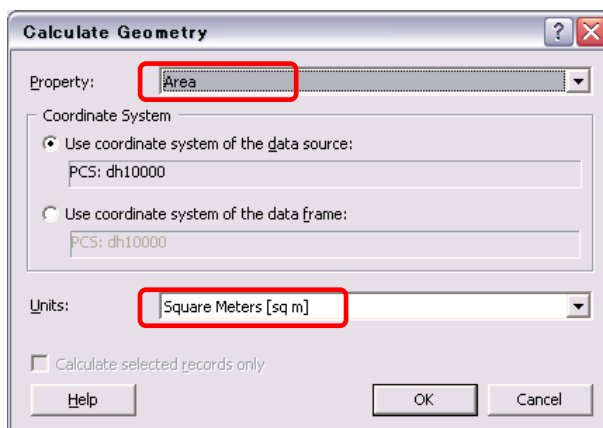
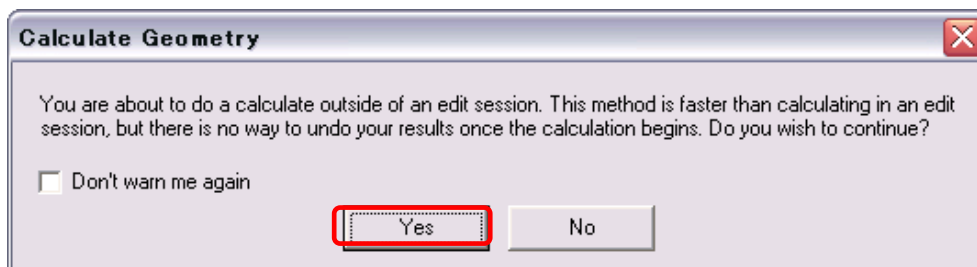
[6] Calculate Geometry

**Add Field.**





### Calculate Geometry



Attributes of dyke\_and\_landuse

THUONGLUU	HALUU	AHH_DE	BUFF_DIST	FID_ft_pol	AREA	TYPE	TYPE_GOP	TT_GOP	KY_HIEU	LOAI_RUOI	dyke_land
			25.5	51	5853299	31	0	Song, ho		Song ho	3754778
			25.5	1446	1092655	2	0	Dat lua + mau	2	Dat nong nghiep	3026680
			25.5	1453	1285974	28	0	Tho cu		Dat tho cu	619601
			25.5	64	3897434	22	0	Rung trong	22	Rung trong	71429

Record: 14 | 0 | Show: All Selected | Records (0 out of 4 Selected) | Options

