

# **Centralized Geo-database and Mobile Field Data Collection**

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# Objective

To collect real-time field data with personal mobile phone

To construct centralized Web-based geo-database and store, retrieve and share the collected data



SIS Mobile Field GIS - Windows Internet Explorer

http://land.geo.tsukuba.ac.jp/sisfield/

Tree.jpg

RID	RID_000008
R_DATE	20101026_1225
X_POSITION	418398.79
Y_POSITION	3997569.46
TYPE	9
VALUE_01	220
ATTACHMENT	1
REMARK	This is No: 008
IMAGES	Tree.jpg

Total Record(s): 10

RID	R_DATE	X_POSITION	Y_POSITION	TYPE	VALUE_01	ATTACHMENT
① RID_000010	20101027_0956	418550.68	3997693.08	1	110	2
① RID_000009	20101026_1234	419571.47	3993899.47	6	210	0
④ RID_000008	20101026_1225	418398.79	3997569.46	9	220	1
① RID_000007	20101026_1230	418616.46	3997218.01	8	150	2
① RID_000006	20101026_1223	419530.08	3994481.38	4	160	0
① RID_000005	20101026_1219	419387.37	3994844.98	8	220	4

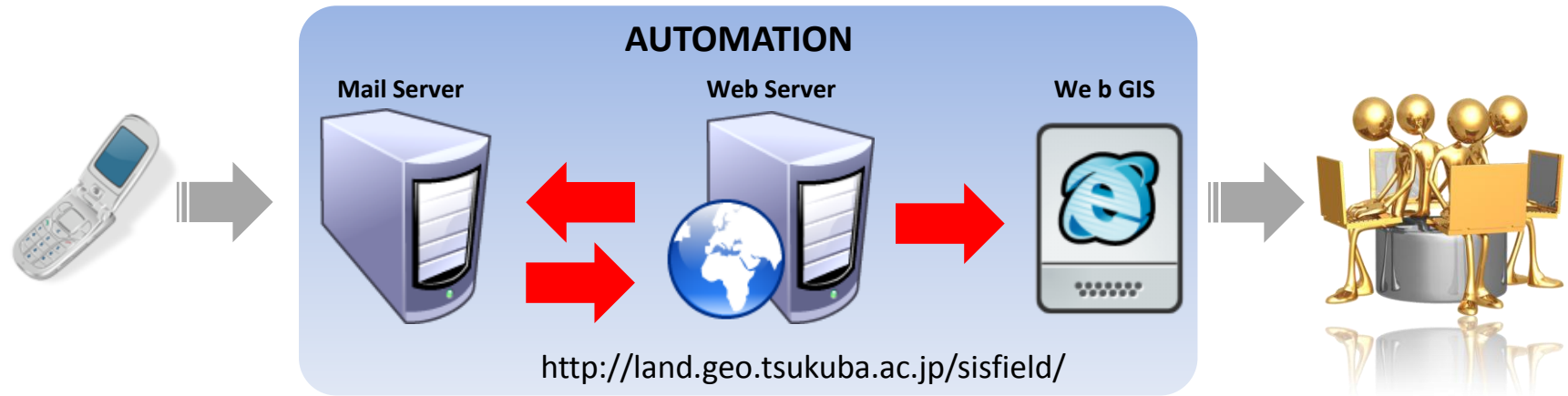
Map Projection: UTM Zone 54, WGS1984  
Format: X/Y/TYPE/VALUE/REMARK

Internet | Protected Mode: Off

<http://land.geo.tsukuba.ac.jp/sisfield/>

# Overview

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**What You Need is**

**GPS + Mobile Phone**

# How It Works

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Email                      xxxxx@xxxx.com  
Subject                    sis  
Attachment                Attach your photo (Optional)  
Body                        X\_Position/Yposition/Type/Value/Remarks

You need  
only 5 values  
in mail body

	RID	RID_000014
	R_DATE	20101124_1209
①	X_POSITION	419566.91
②	Y_POSITION	3993898.33
③	TYPE	temp
④	VALUE_01	30.2,7.4,190,urb
⑤	REMARK	Built-up area
	ATTACHMENT	1
	IMAGES	photo_ka.jpg

Output Format

## COORDINATES (1 & 2)

Set GPS Projection to UTM (WGS1984)

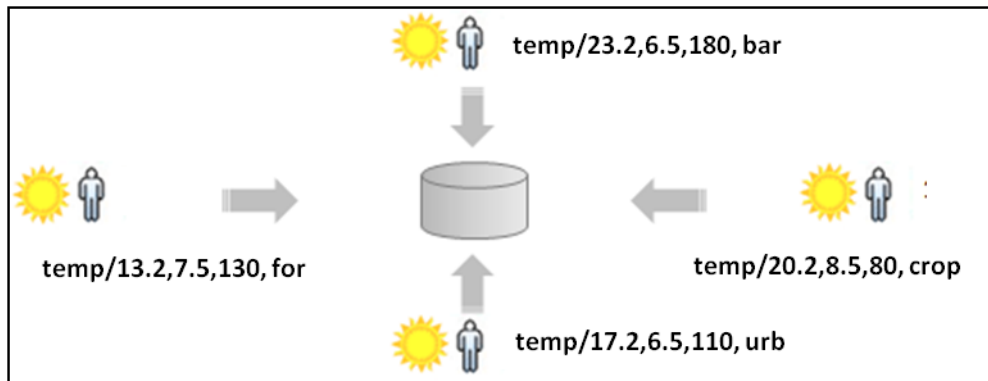
Type the X/Y coordinates values

419330.35/3995495.24

# How It Works

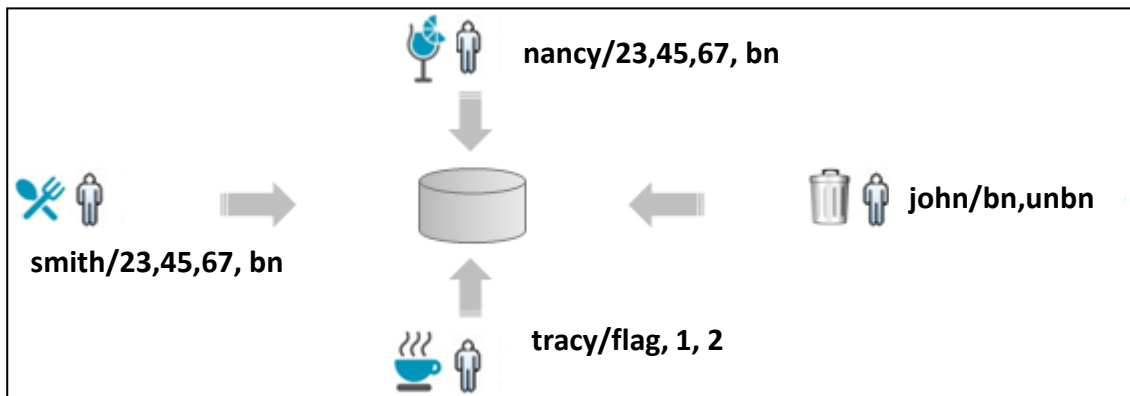
## MODES OF SURVEY

### Group Survey



- Collect one category by a group
- Set “**Type**” to “**temp**” for all persons

### Individual Survey



Collect different categories by individual  
Set the different code for each person.  
Type = john, Type = smith, etc.

## How It Works

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X_POSITION	Y_POSITION	TYPE	VALUE_01	REMARK
419566.91	3993898.33	temp	30.2,7.4,190,urb	Built-up area
419330.35	3995495.24	temp	26.3,5.4,180, wat	Pond
418874.66	3996773.69	temp	34.2,10.3,250,car	Car parking
418837.14	3994496.69	temp	31.5,3.2,183,urb	Urban area
418308.23	3994644.11	temp	30.2,5.6,230, grs	This is grass land
407388	3968759	sug	1,2	annai
47359	396808	sug	1,2	maku
407320	3968868	sug	1,2	poster



# How It Works

## VALUE

You have to plan ahead.

How many values (attributes) to be collected.

Put “,” (comma) between multiple values.

E.g.      Temperature  
            Win Speed  
            Win Direction  
            Land Use

23.87,6.2,180,bar

1

2

3

4

For empty value put 0 (Zero)



23.87,0,180,bar

1

2

3

4

**Complete form in mail body part**

419330.35/3995495.24/kk1/23.87,0,180,bar/Near the post office.

X

/

Y

/ TYPE/

VALUE

/

REMARK

23.87,6.2,180,bar



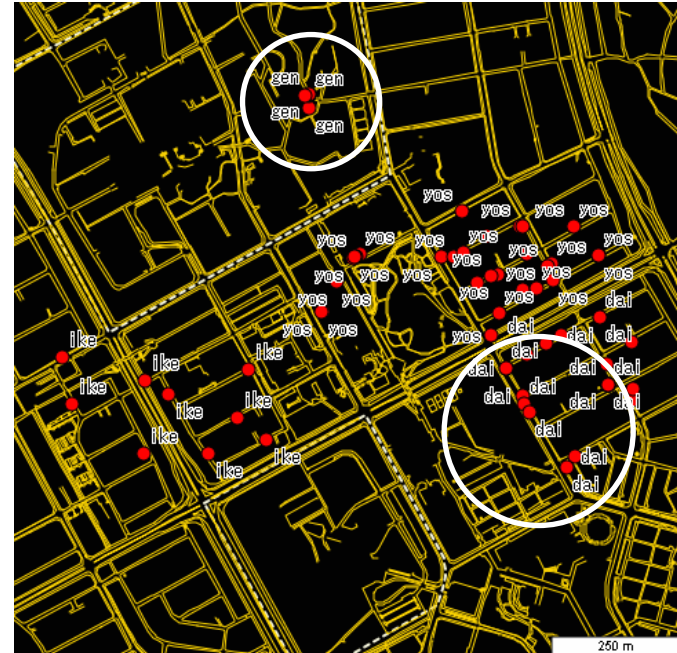
Temp	WinSpeed	WinDir	LandUse
32.6	12.2	194	Bareland
35.2	16.2	180	Bareland
28.3	13.2	270	Water
28.7	5.2	202	park
26.3	3.2	280	Forest
30.2	5.6	230	Grassland
31.5	3.2	183	Urban
34.2	10.3	250	Bareland
26.3	5.4	180	Water
30.2	7.4	190	Urban

# How It Works

## Real-Time Data Injection to Centralized Geo-database




Time-01



Time-02




# Get Attribute and Media Information



1 pond1.jpg

RID	RID_000013
R_DATE	20101124_1206
X_POSITION	419330.35
Y_POSITION	3995495.24
TYPE	temp
VALUE_01	26.3,5.4,180, wat
REMARK	Pond
ATTACHMENT	1
IMAGES	pond1.jpg

Total Record(s): 14

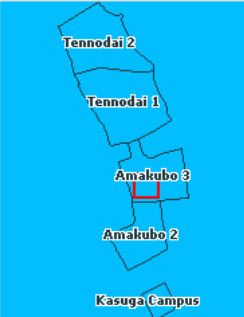


Laboratory of Advanced Research D

RID\_000013

60 m

**MOBILE FIELD GIS**



Tennodai 2  
Tennodai 1  
Amakubo 3  
Amakubo 2  
Kasuga Campus

Shop ☐ Building ☒

Road ☒ Image ☒

Bldg. Name ☐

Place Name ☒

RID  Label Field

	RID	R_DATE	X_POSITION	Y_POSITION	TYPE	VALUE_01
①	RID_000014	20101124_1209	419566.91	3993898.33	temp	30.2,7.4,190,
①	<b>RID_000013</b>	<b>20101124_1206</b>	<b>419330.35</b>	<b>3995495.24</b>	<b>temp</b>	<b>26.3,5.4,180,</b>
①	RID_000012	20101124_1146	418874.66	3996773.69	temp	34.2,10.3,250,
①	RID_000011	20101124_1132	418837.14	3994496.69	temp	31.5,3.2,183,
①	RID_000010	20101124_1110	418308.23	3994644.11	temp	30.2,5.6,230,
①	RID_000009	20101124_1053	419490.26	3996394.99	temp	26.3,3.2,280,


Map Projection: UTM Zone 54, WGS1984  
Format: X/Y/TYPE/VALUE/REMARK

Download Data

[Download Survey Data](#)

<http://land.geo.tsukuba.ac.jp/sisfield/>

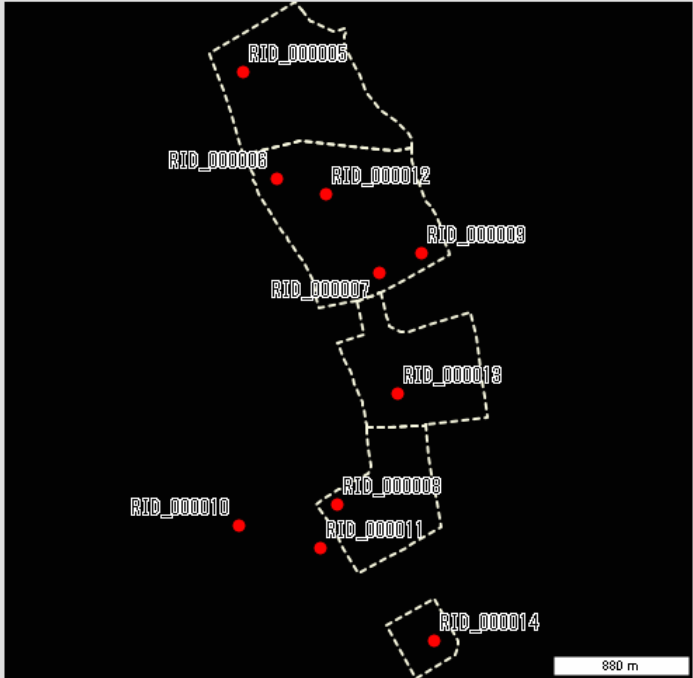
# Get Real-Time Information from Multiple Sites



1 pond1.jpg

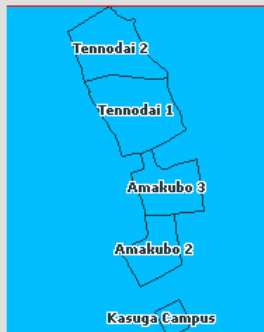
RID	RID_000013
R_DATE	20101124_1206
X_POSITION	419330.35
Y_POSITION	3995495.24
TYPE	temp
VALUE_01	26.3,5.4,180, wat
REMARK	Pond
ATTACHMENT	1
IMAGES	pond1.jpg

Total Record(s): 14



880 m

**MOBILE FIELD GIS**



Tennodai 2  
Tennodai 1  
Amakubo 3  
Amakubo 2  
Kasuga Campus

Shop Building  
Road Image  
Bldg. Name  
Place Name

RID Label Field

	RID	R_DATE	X_POSITION	Y_POSITION	TYPE	VALUE_01
ⓘ	RID_000014	20101124_1209	419566.91	3993898.33	temp	30.2,7.4,190,
ⓘ	<b>RID_000013</b>	<b>20101124_1206</b>	<b>419330.35</b>	<b>3995495.24</b>	<b>temp</b>	<b>26.3,5.4,180,</b>
ⓘ	RID_000012	20101124_1146	418874.66	3996773.69	temp	34.2,10.3,250,
ⓘ	RID_000011	20101124_1132	418837.14	3994496.69	temp	31.5,3.2,183,
ⓘ	RID_000010	20101124_1110	418308.23	3994644.11	temp	30.2,5.6,230,
ⓘ	RID_000009	20101124_1053	419490.26	3996394.99	temp	26.3,3.2,280,

Map Projection: UTM Zone 54, WGS1984  
Format: X/Y/TYPE/VALUE/REMARK

**Download Data**

[Download Survey Data](#)

# **AFTER FIELD WORK**

1. Download Survey Data
2. Open in ArcGIS
3. Extract your own data
4. Format your data in ArcGIS
5. Visualize your data in ArcGIS

# 1. Download Survey Data

<http://land.geo.tsukuba.ac.jp/sisfield/>

	RID	R_DATE
ⓘ	RID_000014	20101124_1209
ⓘ	<b>RID_000013</b>	<b>20101124_1206</b>
ⓘ	RID_000012	20101124_1146
ⓘ	RID_000011	20101124_1132
ⓘ	RID_000010	20101124_1110
ⓘ	RID_000009	20101124_1053

Map Projection: UTM Zone 54, WGS1984  
Format: X/Y/TYPE/VALUE/REMARK

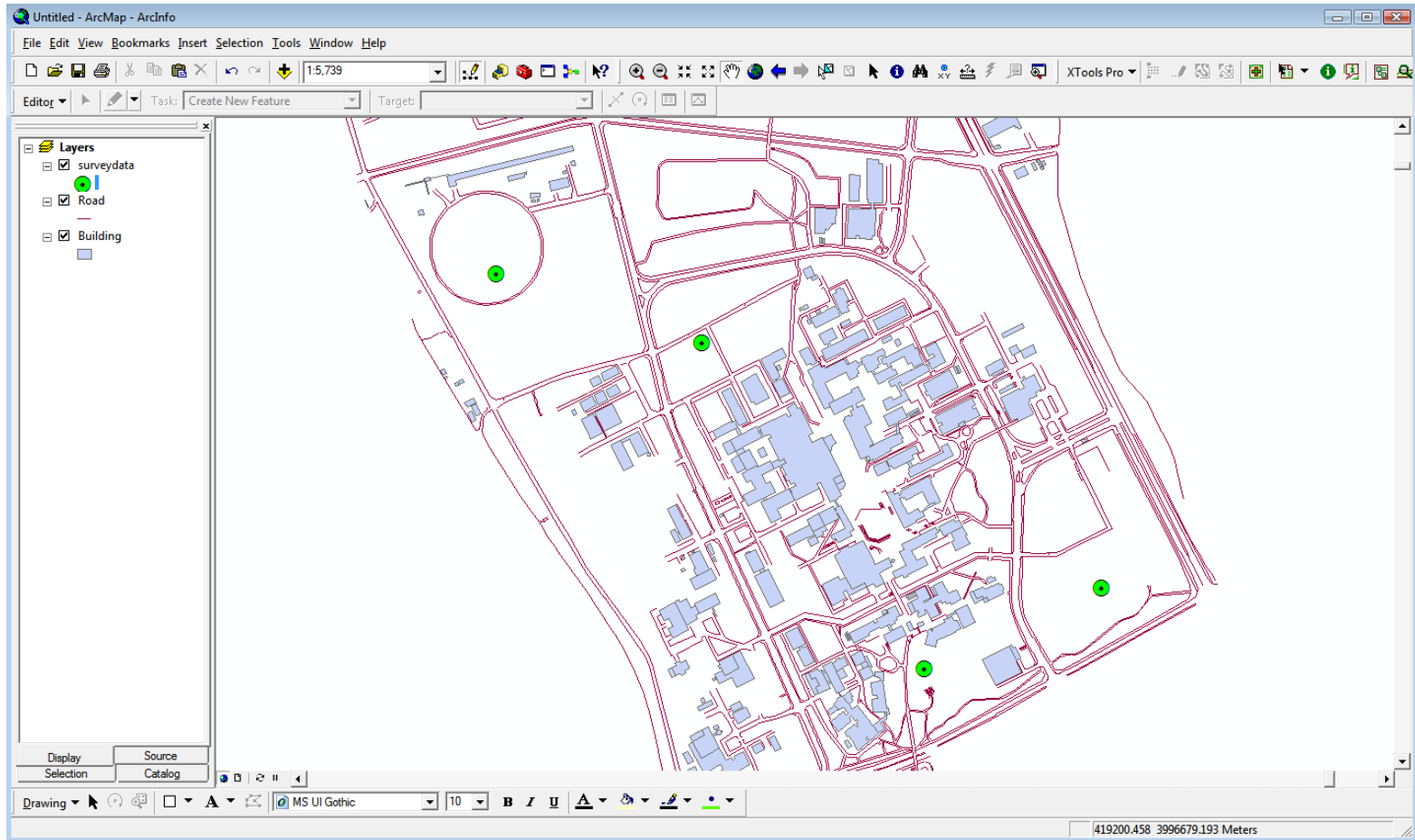
**Download Data**

[Download Survey Data](#)



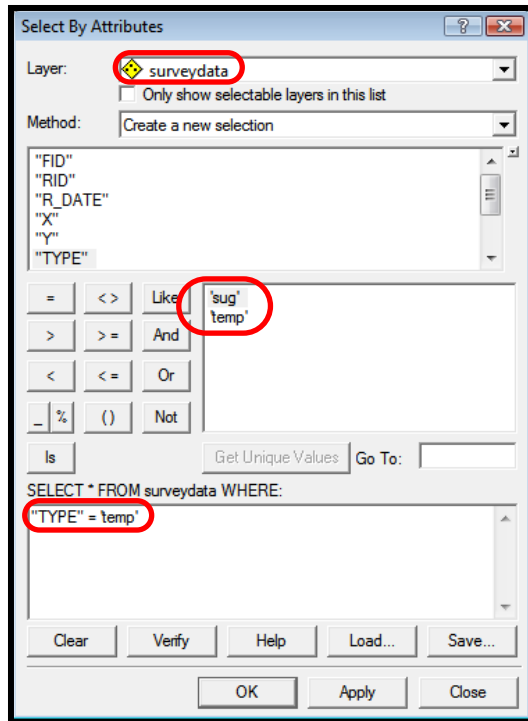
## 2. Open in ArcGIS

- Unzip
- Open in ArcGIS



### 3. Extract Your Own Data in ArcGIS

- Load other ancillary data (road, buildings, etc)
- Under main menu: **Selection > Select by Attributes ..**
- Select you map layer **"surveydata"**
- Click **"Get Unique Values"** button to see all values.
- Choose **"TYPE"** and click **"="** and double click on **"temp"** or your person name in TYPE field.
- Click **"Apply"**



To open Attribute Table:

Right click on **mysurvey** map layer and select **"Open Attribute Table"**

FID	Shape *	RID	R_DATE	X	Y	TYPE	VALUE_01	REMARK	ATTACHMENT	IMAGES
0	Point	RID_000001	20101123.1633	407320	3968866	sug	1.2	sug	1	IMG_0179.JPG
1	Point	RID_000002	20101123.1636	407320	3968866	sug	1.2	postar	1	IMG_0180.JPG
2	Point	RID_000003	20101123.1639	47359	3968808	sug	1.2	maku	1	IMG_0181.JPG
3	Point	RID_000004	20101123.1643	407388	3968759	sug	1.2	annai	1	IMG_0182.JPG
4	Point	RID_000005	20101124.1031	418336.68	3997566.44	temp	32.6,12.2,134	Dried crop land	1	AW020726.jpg
5	Point	RID_000006	20101124.1048	418566.28	3996879.18	temp	35.2,16.2,180	Agricultural test center	1	48W23e1.jpg
6	Point	RID_000007	20101124.1048	419217.74	3996271.3	temp	28.3,13.2,270	Near the pond	1	pine-tre.jpg
7	Point	RID_000008	20101124.1048	418943.3	3994777.07	temp	28.7,5.2,202	Kasuga koren	1	park.jpg
8	Point	RID_000009	20101124.1053	419480.26	3996394.99	temp	26.3,3.2,280	for	1	TN_forest.jpg
9	Point	RID_000010	20101124.1110	418308.23	3994644.11	temp	30.2,5.6,230	ers	1	173465_3.jpg
10	Point	RID_000011	20101124.1132	418937.14	3994496.69	temp	31.5,3.2,193	urb	1	191_3141.jpg
11	Point	RID_000012	20101124.1146	418874.66	3996773.69	temp	34.2,10.3,250	car	1	parking.jpg
12	Point	RID_000013	20101124.1206	419330.35	3995495.24	temp	26.3,5.4,180	wst	1	pond1.jpg
13	Point	RID_000014	20101124.1209	419566.91	3993898.33	temp	30.2,7.4,190	urb	1	photo_kaj.jpg

You will see only your data will be selected.

Right click on **mysurvey** map layer and select **"Data>Export Data"**

Save you data as **"mydata.shp"**

## 4. Format Your Data in ArcGIS

### (a) String Substitution

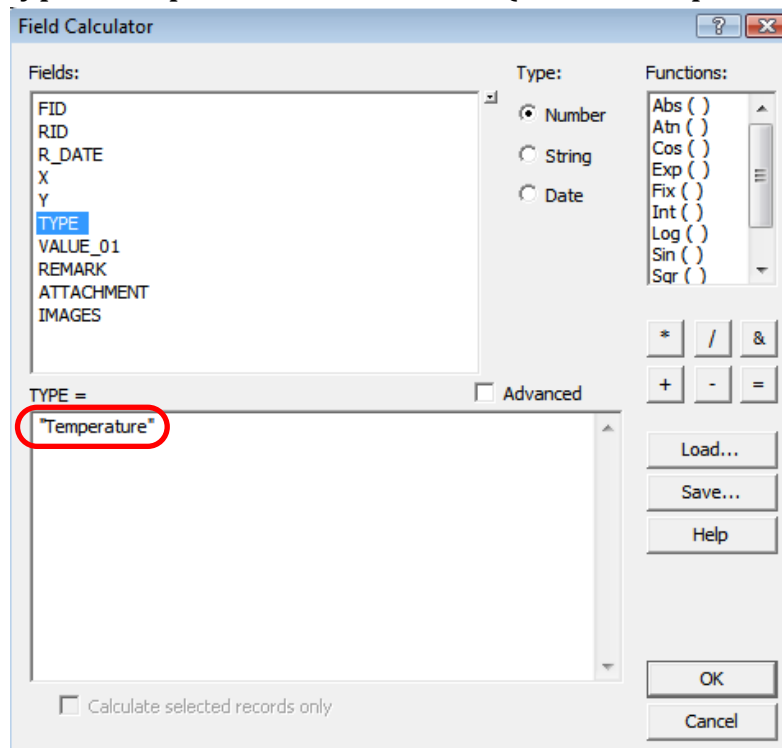
To substitute “temp” to “Temperature”

Open attribute table of “mydata.shp”

Click on “**TYPE**” column.

Right click on “**TYPE**” column again and select “**Calculator**”

Type “Temperature” in text box (You need to put Semi Column in both sides”)



X	Y	TYPE	VALUE_01	REMARK
418336.68	3997566.4	Temperature	32.6,12.2,194,bar	Dried crop land
418556.28	3996879.1	Temperature	35.2,16.2,180,bar	Agricultural test center
419217.74	3996271.1	Temperature	28.3,13.2,270,wat	Near the pond
418943.9	3994777.0	Temperature	28.7,5.2,202,park	Kasuga koren
419490.26	3996394.9	Temperature	25.3,3.2,280,for	Forest
418308.23	3994644.1	Temperature	30.2,5.6,230,ers	This is grass land
418837.14	3994496.6	Temperature	31.5,3.2,183,urb	Urban area
418874.66	3996773.6	Temperature	34.2,10.3,250,car	Car parking
419330.35	3995495.2	Temperature	25.3,5.4,180,wat	Pond
419566.81	3993898.3	Temperature	30.2,7.4,190,urb	Built-up area

All Selected Records (0 out of 10 Selected) Options



## 4. Format Your Data in ArcGIS

### (b) Columns Separation by Specific Character (,)

Add four columns in attribute columns.  
Click Option button in attribute table.

TYPE	VALUE_01	REMARK
Temperature	32.6,12.2,194,bar	Dried crop land
Temperature	35.2,16.2,180,bar	Agricultural test center
Temperature	28.3,13.2,270,wat	Near the pond
Temperature	28.7,5.2,202,park	Kasuga koren
Temperature	26.3,3.2,280,for	Forest
Temperature	30.2,5.6,230,ers	This is grass land
Temperature	31.5,3.2,183,urb	Urban area
Temperature	34.2,10.3,250,car	Car parking
Temperature	26.3,5.4,180,wat	Pond
Temperature	30.2,7.4,190,urb	Built-up area

0 rds (0 out of 10 Selected)

Options ▾

Do again for other three fields  
(WindSpeed, WinDir, LandUse)  
Set LandUse field to **“Text”** not “Double”

Select **“Add Field”** and Type **“Temp”** in Name field  
and set **“Double”**

Add Field

Name: Temp

Type: Double

Field Properties

Precision	0
Scale	0

OK Cancel

Temp	WinSpeed	WinDir	LandUse
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0	0	

Four empty fields

## 4. Format Your Data in ArcGIS

### (b) Column Separation by Specific Character (,)

Click on **"Temp"** column and load Field Calculator again. Check **"Advanced"**

Type the following VB script in text boxes.

```
Dim tString() As String
tString=Split( [VALUE_01], ",")
```

```
tString(0)
```

VALUE_01	REMARK	ATTACHMENT	IMAGES	Temp
32.6,12.2,194,bar	Dried crop land	1	AW020726.jpg	32.6
35.2,16.2,180,bar	Agricultural test center	1	48#423e1.jpg	35.2
28.3,13.2,270,wat	Near the pond	1	pine-tree.jpg	28.3
28.7,5.2,202,park	Kasuga koren	1	park.jpg	28.7
26.3,2,280,for	Forest	1	TN_forest.jpg	26.3
30.2,5.6,230,ers	This is grass land	1	179465_3.jpg	30.2
31.5,3,2,183,urb	Urban area	1	181_8141.jpg	31.5
34.2,10.3,250,car	Car parking	1	parking.jpg	34.2
26.3,5.4,180,wat	Pond	1	pond1.jpg	26.3
30.2,7.4,190,wat	Built-up area	1	photo_kaj.jpg	30.2

32.6	12.2, 194, bar	32.6	12.2	194	bar
35.2	16.2, 180, bar	35.2	16.2	180	bar
28.3	13.2, 270, wat	28.3	13.2	270	wat
28.7	5.2, 202, park	28.7	5.2	202	park

Do again for other fields by changing the index

tString(1)

tString(2)

Trim(tString(3)) for text attribute field

Field Calculator

Fields:

Type:

Functions:

Pre-Logic VBA Script Code

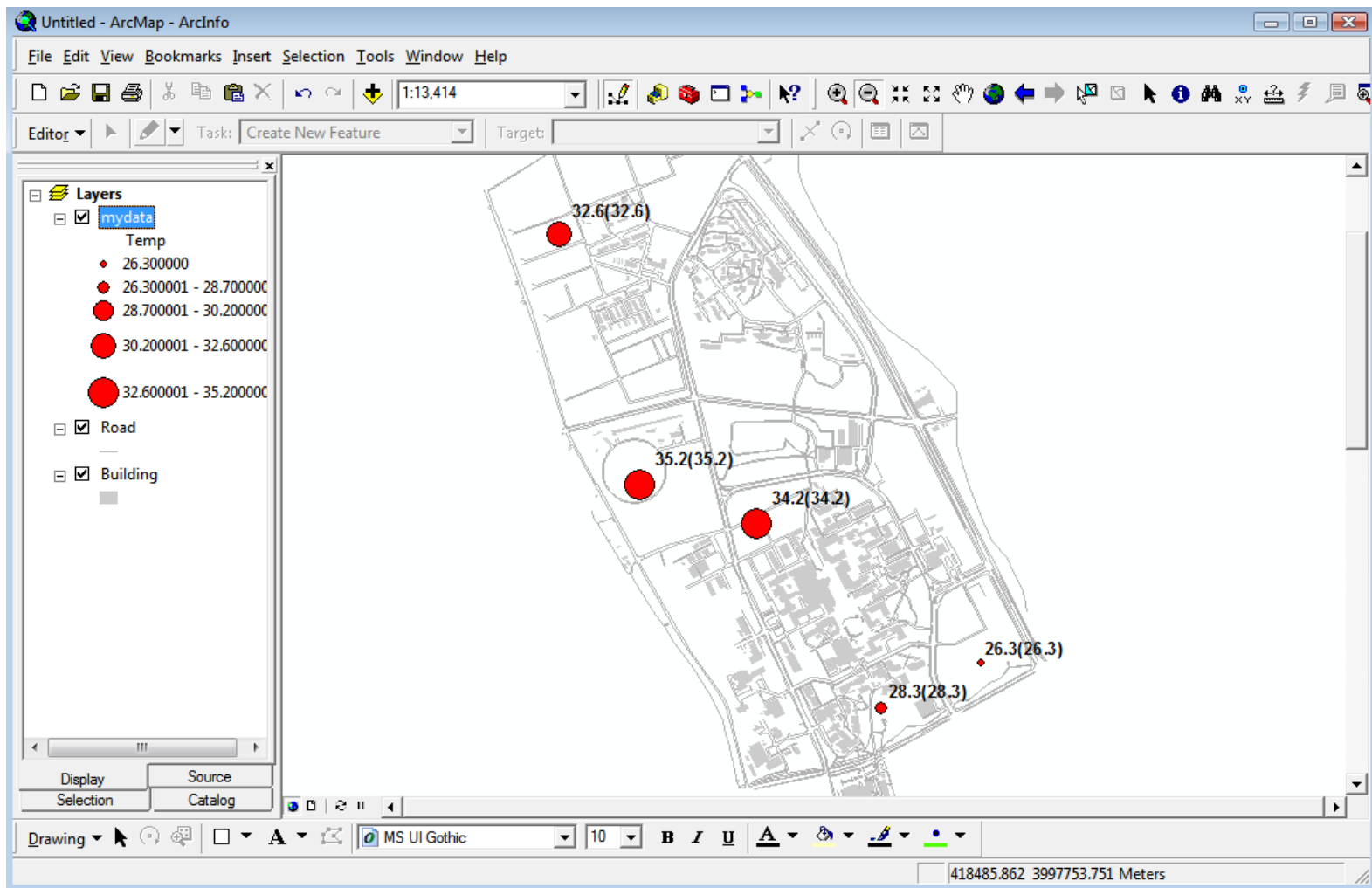
Advanced

Dim tString() As String  
tString=Split( [VALUE\_01], ",")

Temp =  
tString(0)

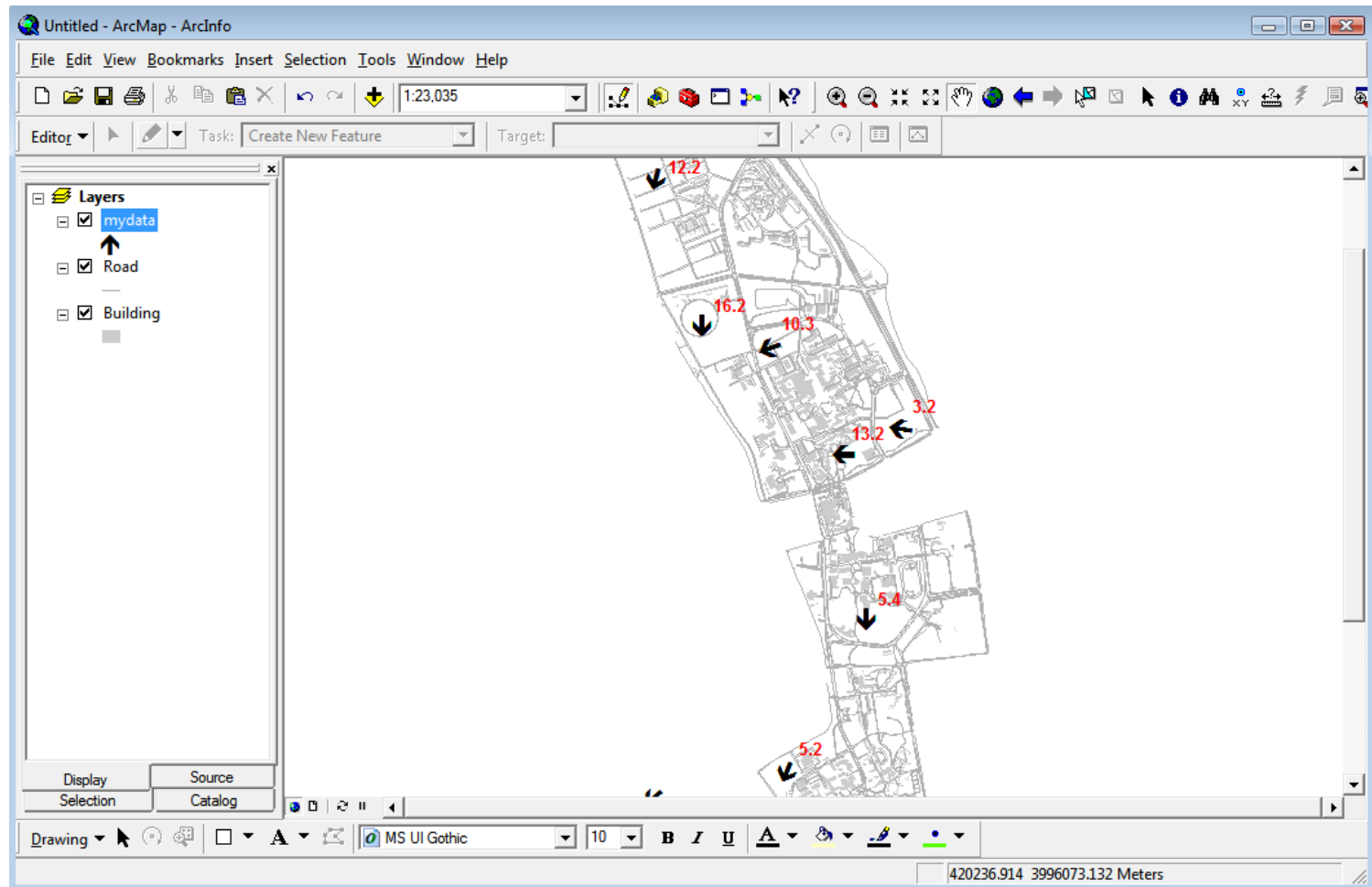
Calculate selected records only

## 5. Visualize Your Data in ArcGIS



Quantitative map of temperature

## 5. Visualize Your Data in ArcGIS



Map of wind speed and direction

**END OF DOCUMENT**