



# **GEOVISUALIZATION TO URBANIZATION**

User Manual  
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Dr. Ko Ko Lwin  
Division of Spatial Information Science  
Faculty of Life and Environmental Sciences  
University of Tsukuba

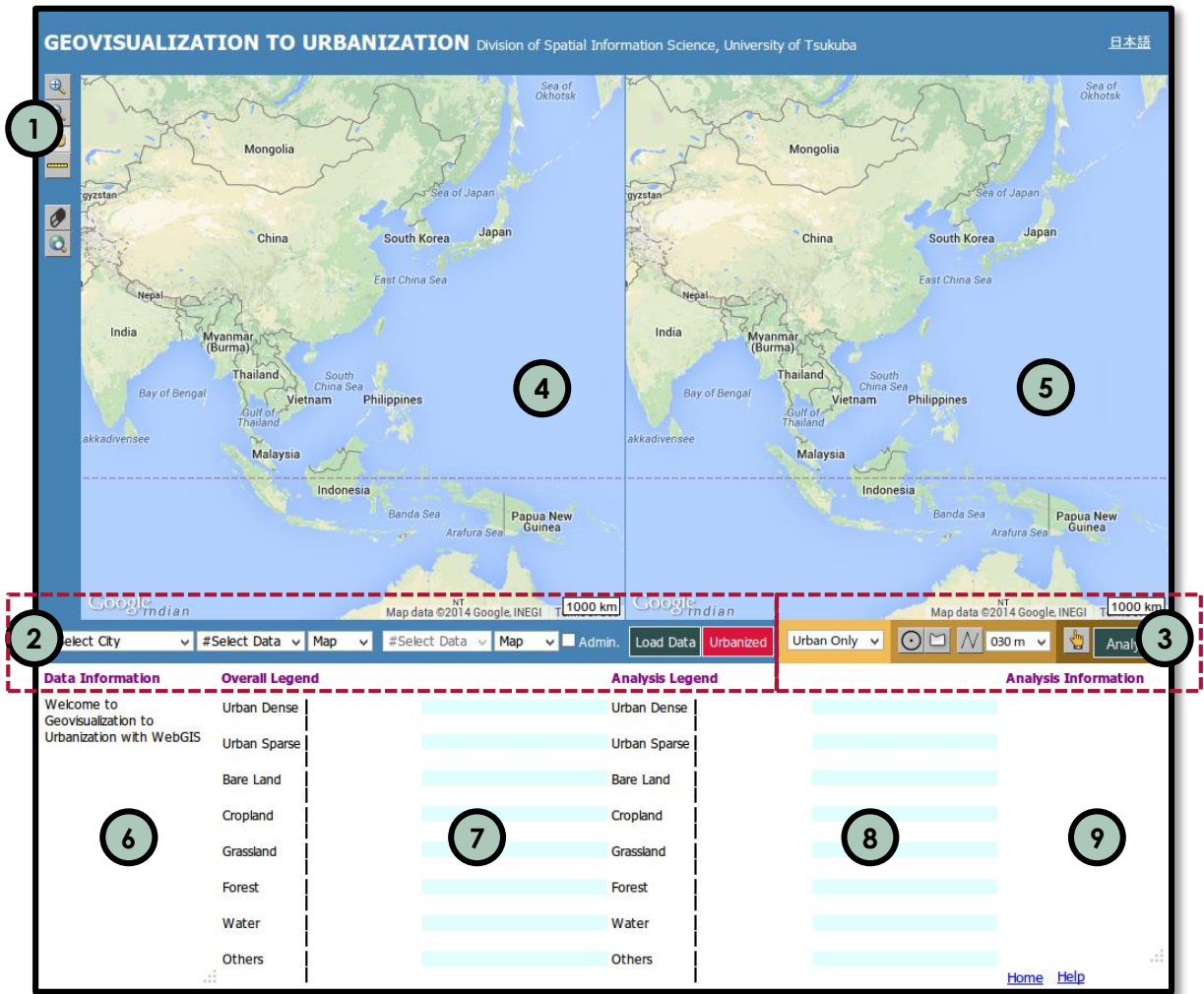


## **Geovisualization to Urbanization**

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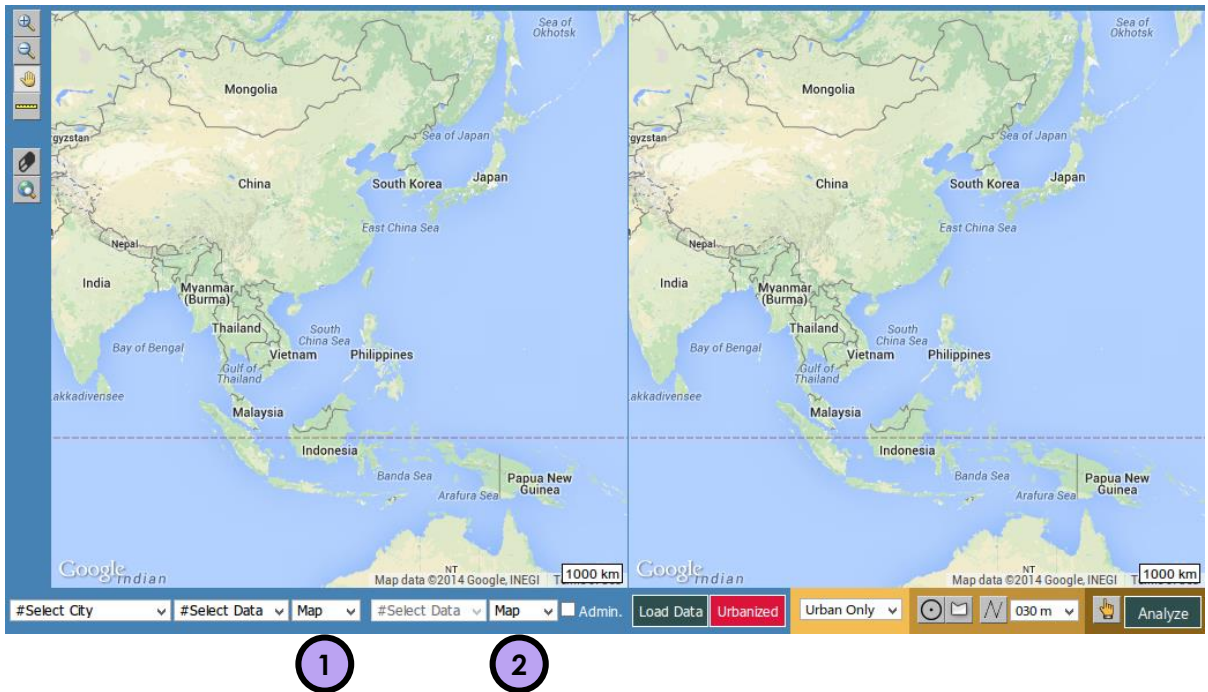
# 1. Graphical User Interfaces







Url: <http://land.geo.tsukuba.ac.jp/geovisualization>



- ① Map Controls
- ② Loading Data
- ③ Map Analysis Tools
- ④ Left View
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- ⑧ Analysis Legend
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## 2. Map Navigations



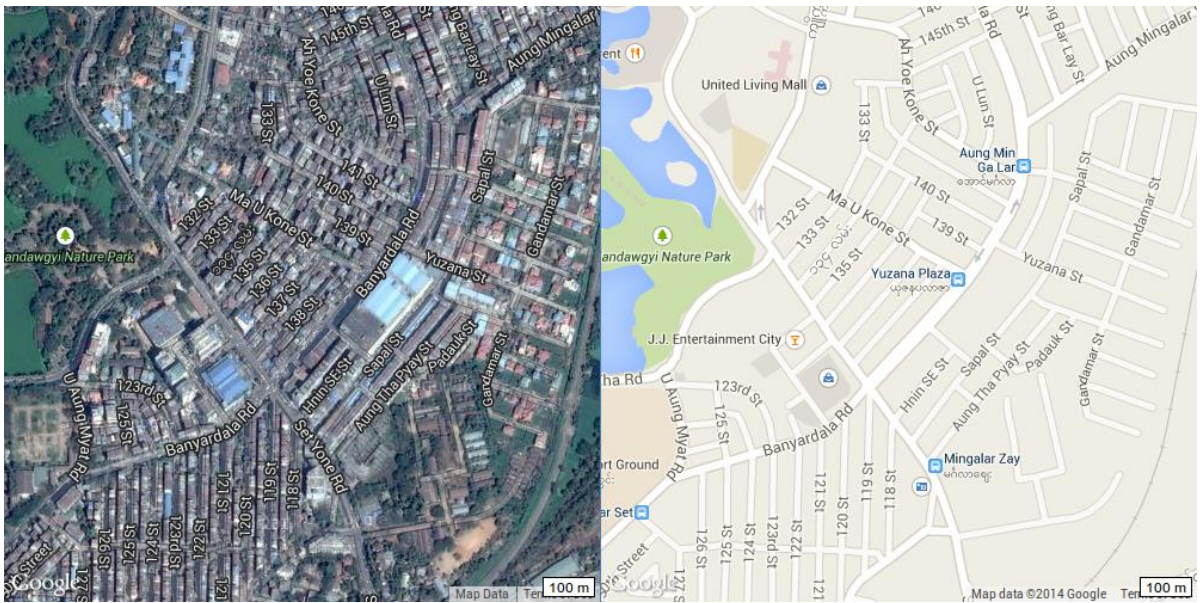
-  Zoom
-  Zoom Out
-  Pan/Move
-  Measure Distance
-  Clear All Graphics on the Map
-  Reset

- 1 Left View Google base map selector (Map/Hybrid/Aerial)
- 2 Right View Google base map selector (Map/Hybrid/Aerial)

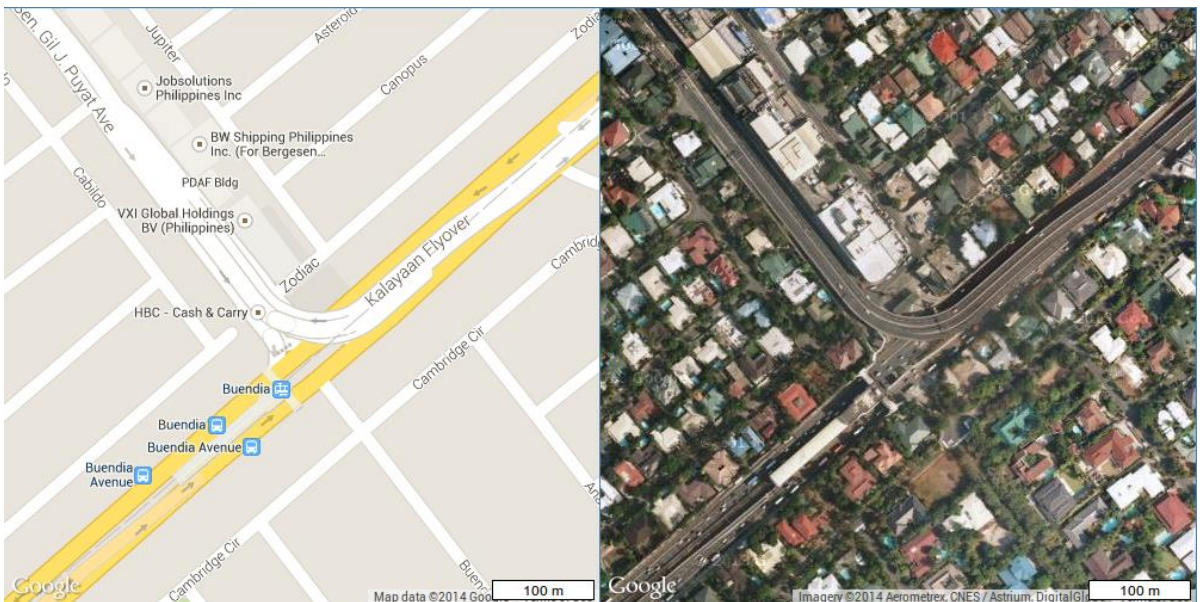


## Examples of Google basemap selections

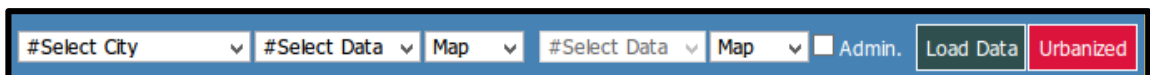
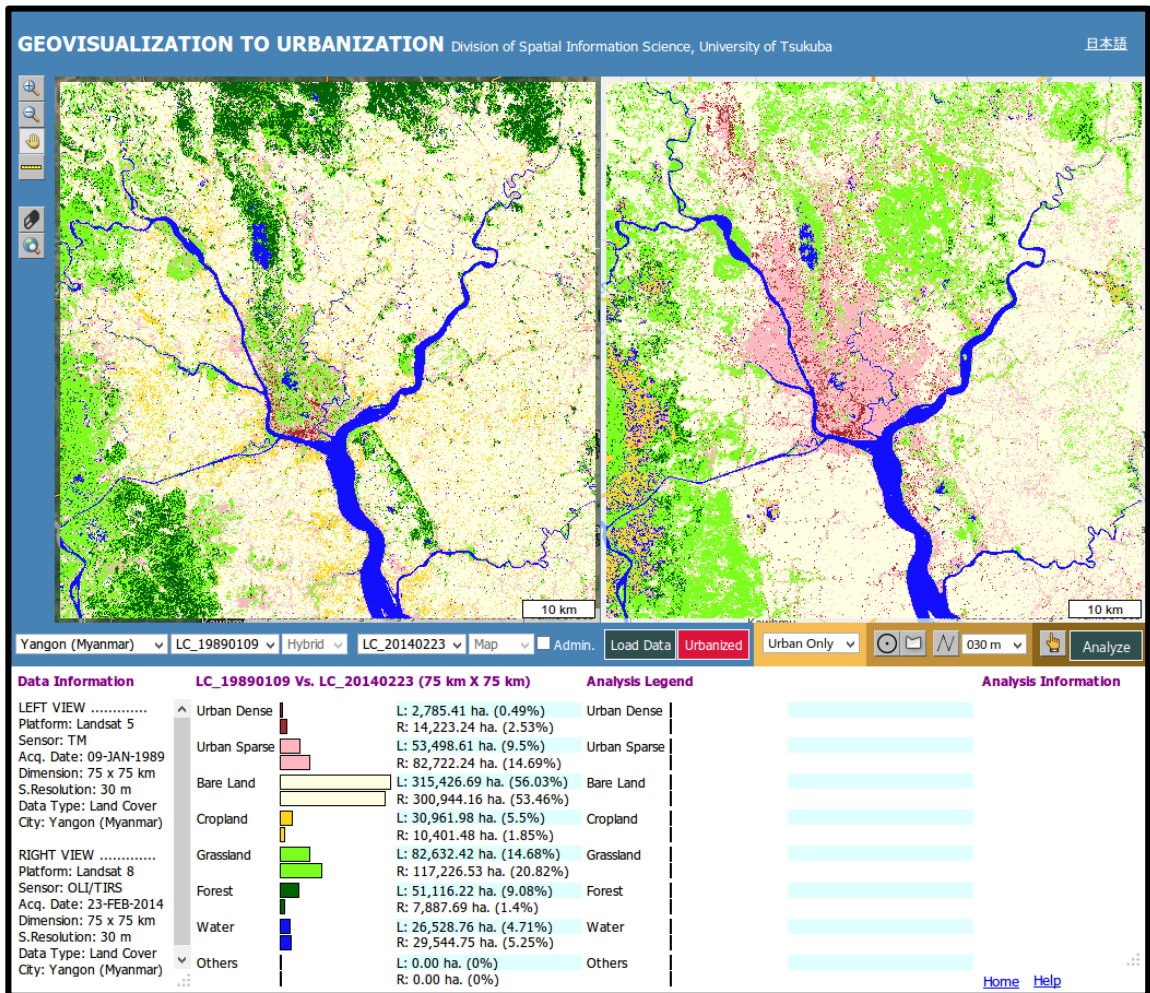
### Hybrid Vs. Map



### Map Vs. Aerial



### 3. Displaying Land Cover Data



- 1
- 2
- 3
- 4

- 1 Select City
- 2 Select Land Cover for Left View
- 3 Select Land Cover for Right View
- 4 Click and load the data



Get the Land Cover information and overall map legend

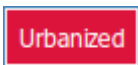
**Data Information**

LEFT VIEW .....  
 Platform: Landsat 5  
 Sensor: TM  
 Acq. Date: 09-JAN-1989  
 Dimension: 75 x 75 km  
 S.Resolution: 30 m  
 Data Type: Land Cover  
 City: Yangon (Myanmar)

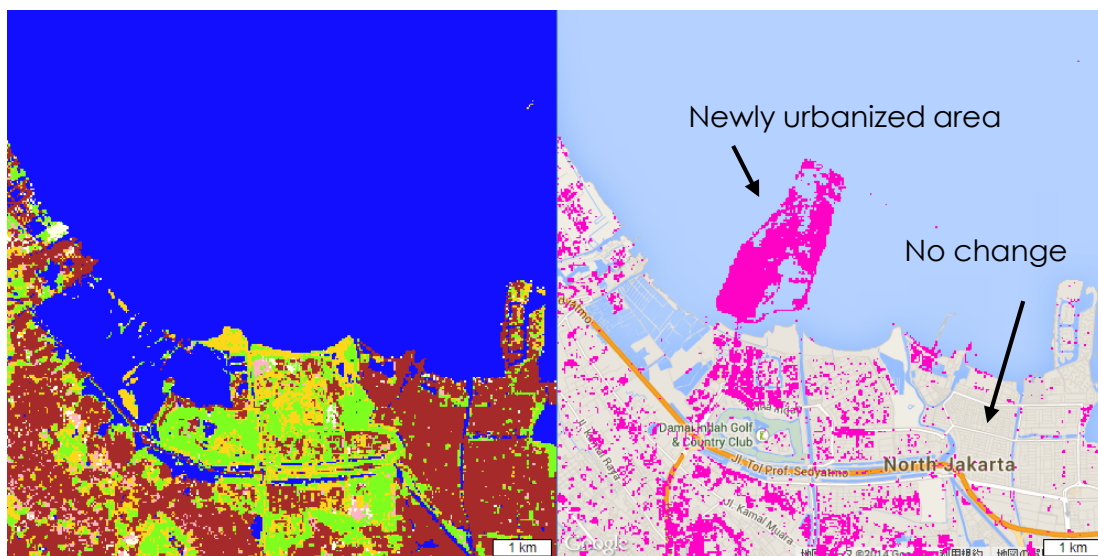
RIGHT VIEW .....  
 Platform: Landsat 8  
 Sensor: OLI/TIRS  
 Acq. Date: 23-FEB-2014  
 Dimension: 75 x 75 km  
 S.Resolution: 30 m  
 Data Type: Land Cover  
 City: Yangon (Myanmar)

**LC\_19890109 Vs. LC\_20140223 (75 km X 75 km)**

Urban Dense	L: 2,785.41 ha. (0.49%) R: 14,223.24 ha. (2.53%)
Urban Sparse	L: 53,498.61 ha. (9.5%) R: 82,722.24 ha. (14.69%)
Bare Land	L: 315,426.69 ha. (56.03%) R: 300,944.16 ha. (53.46%)
Cropland	L: 30,961.98 ha. (5.5%) R: 10,401.48 ha. (1.85%)
Grassland	L: 82,632.42 ha. (14.68%) R: 117,226.53 ha. (20.82%)
Forest	L: 51,116.22 ha. (9.08%) R: 7,887.69 ha. (1.4%)
Water	L: 26,528.76 ha. (4.71%) R: 29,544.75 ha. (5.25%)
Others	L: 0.00 ha. (0%) R: 0.00 ha. (0%)

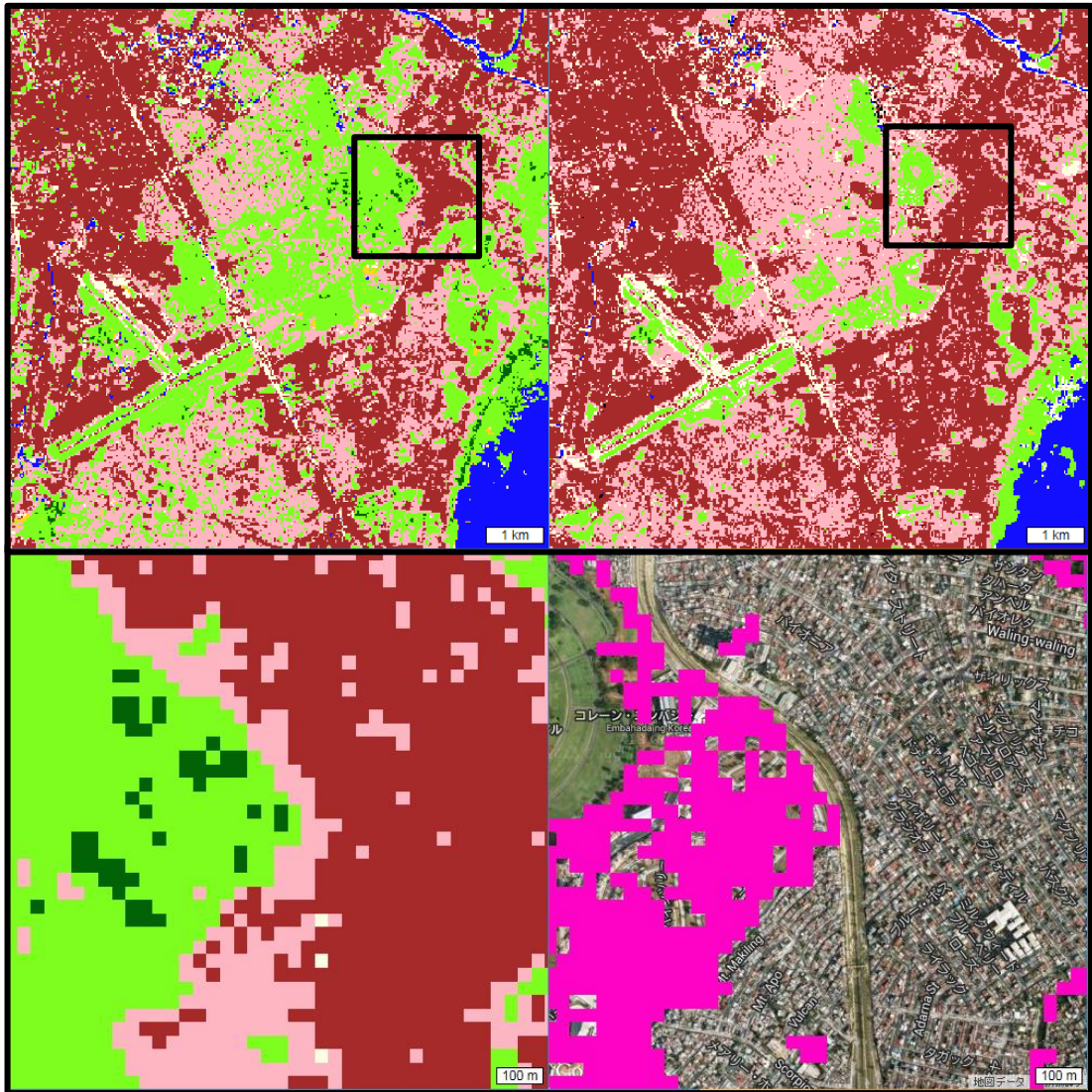


To display the newly urbanized areas, click the "Urbanized" button.  
 Note: It will work only two different dates in Left and Right views.



Example of newly urbanized area in Jakarta city between 2001-09-17 and 2014-09-13

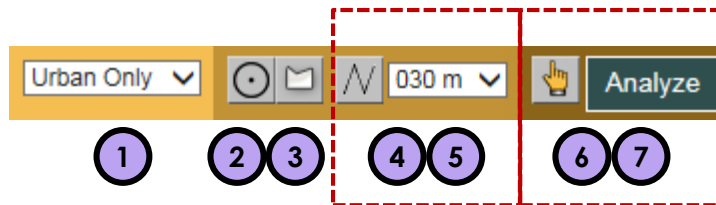
Various map combination to visualize the land cover changes



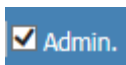
Example of newly urbanized area in Manila city (urbanized from grassland)




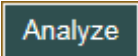
## 4. Analyzing Data



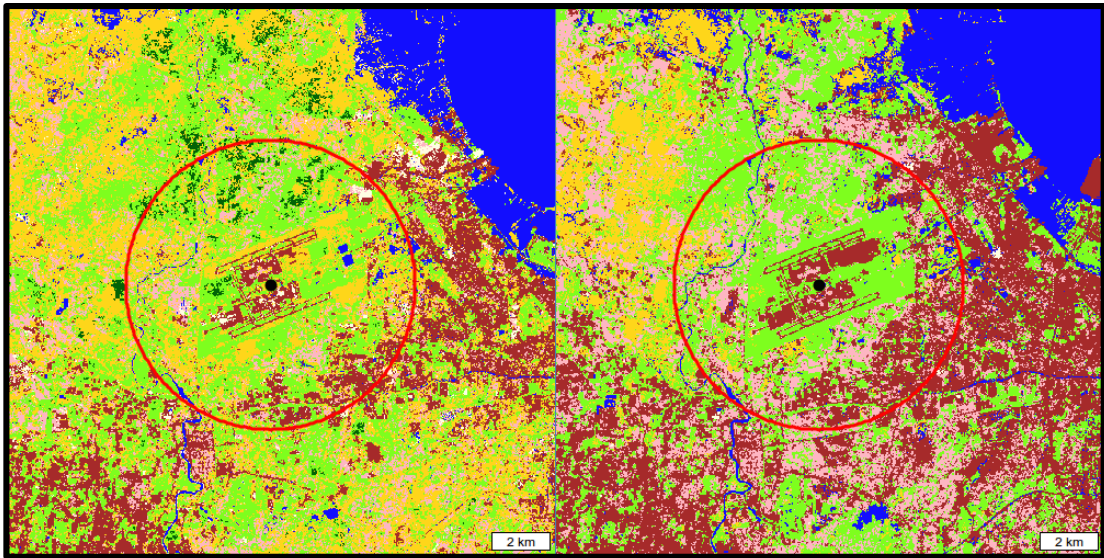
- 1 Select analysis land cover types (either urban only or all land covers)
- 2 Define a circle with specific radius to analyze the land cover change (Example: land cover change within 2 km of airport, railway station, downtown, etc.)
- 3 Define a polygon to analyze the land cover change (Example: land cover change specific planning zone, business district, etc.)
- 4 Define a line with specific buffered distance to analyze the land cover change (Example: land cover change along the river, specific transportation line, etc.)
- 5
- 6 To use this tool, please check the administration layer before loading the data.



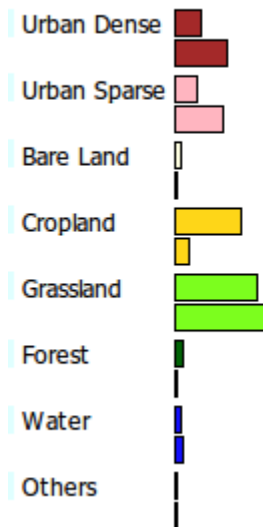
Use  tool to select the administration unit(s).

- 7 Click  button to analyze the land cover change.

Example of land cover change in 5 km radius of the airport between 2001-09-17 and 2014-09-13



### Analysis Legend



L: 935.55 ha. (11.7%)
R: 1,962.00 ha. (24.54%)
L: 792.45 ha. (9.91%)
R: 1,836.27 ha. (22.97%)
L: 129.96 ha. (1.63%)
R: 18.90 ha. (0.24%)
L: 2,569.23 ha. (32.14%)
R: 444.06 ha. (5.55%)
L: 3,193.56 ha. (39.94%)
R: 3,528.81 ha. (44.14%)
L: 238.86 ha. (2.99%)
R: 0.00 ha. (0%)
L: 136.08 ha. (1.7%)
R: 205.65 ha. (2.57%)
L: 0.00 ha. (0%)
R: 0.00 ha. (0%)

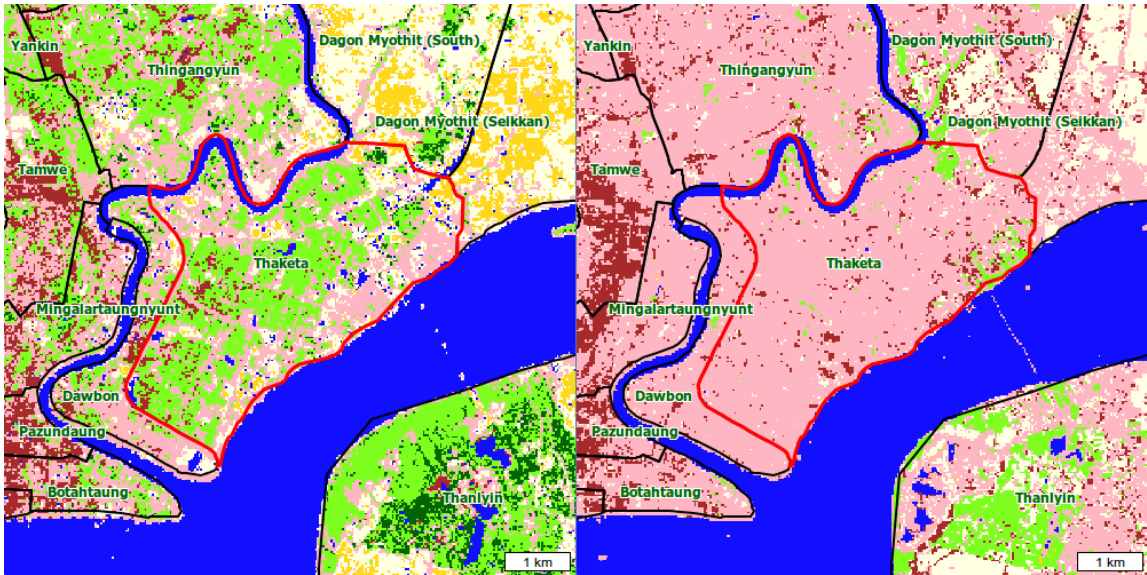
### Analysis Information

LEFT: LC\_20010917  
RIGHT: LC\_20140913

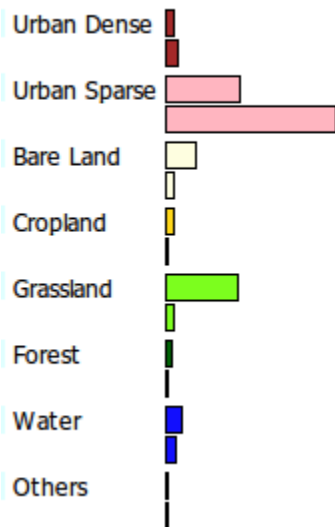
GEOMETRY: CIRCLE  
RADIUS: 5,044.83 m  
AREA: 7,995.06 ha.

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Example of land cover change in specific administration zone between 1989-01-09 and 2014-02-23



### Analysis Legend



L: 48.60 ha. (3.3%)
R: 71.64 ha. (4.86%)
L: 528.21 ha. (35.84%)
R: 1,242.54 ha. (84.32%)
L: 209.97 ha. (14.25%)
R: 44.91 ha. (3.05%)
L: 44.55 ha. (3.02%)
R: 0.36 ha. (0.02%)
L: 521.01 ha. (35.35%)
R: 51.48 ha. (3.49%)
L: 24.30 ha. (1.65%)
R: 0.00 ha. (0%)
L: 96.48 ha. (6.55%)
R: 61.56 ha. (4.18%)
L: 0.00 ha. (0%)
R: 0.00 ha. (0%)

### Analysis Information

SELECTED  
FEATURE(S).....  
Thaketa  
[1,473.67 ha.]  
  
TOTAL AREA:  
1,473.67 ha.

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