

GEOG 176C
GIS Applications
Spring 2017

Gengchen Mai

On behalf of BO YAN



TimeLine



Date	Topic	Text Chapter	Assignment
04/03/17	Class Objectives, Overview, and Ideas		
04/05/17	Geo-Data, VGI, and Applications		
04/10/17	Lightning talks (1)		<i>Lightning talk due</i>
04/12/17	Lightning talks (2)	4	Join/form a group
04/17/17	Data Entry and Editing		
04/19/17	The Internet as Application Platform	14	
04/24/17	GeoWeb & Spatial Data Infrastructures		
04/26/17	Project Management		
05/01/17	Proposals (1)		<i>Proposal & talk due</i>
05/03/17	Proposals (2)		
05/08/17	Proposals (3)		
05/10/17	Library Data (GS)		
05/15/17	Geospatial Knowledge Maps (GS)		
05/17/17	Multiple-point Geostatistics (GS)		
05/22/17	Linked Data (GS)		
05/24/17	The Future of GIS / GIScience	15	
05/29/17	Holidays		
05/31/17	Final presentations (1)		<i>Final presentation due</i>
06/05/17	Final presentations (2)		
06/07/17	Final presentations (3)		
06/08/17	spatial@ucsb.local2017 (optional)		<i>Final/poster report due</i>

Important informations



- Each group can have 3-4 people. Ideally, students from the same group are in the same lab session.
- Lab participation and your style of interaction during the labs will be graded by the TAs (up to 10 points).
- Project name, goals, and a brief outline of potentially used methods (no details required) are due **April 17, 9am** together with a list of project participants.
- Project proposal has to be 2300-2500 words long, single space, 12 point, with 1 inch margins , and submitted in PDF format. It should contain name of the project and all participants, list of data that you intend to use, list of methods that you intend to use, a clear motivation for your project, a research or application question that you try to address in the project, expected results, and an outline of potential difficulties and challenges. Due by **May 1, 9am**.

Important informations



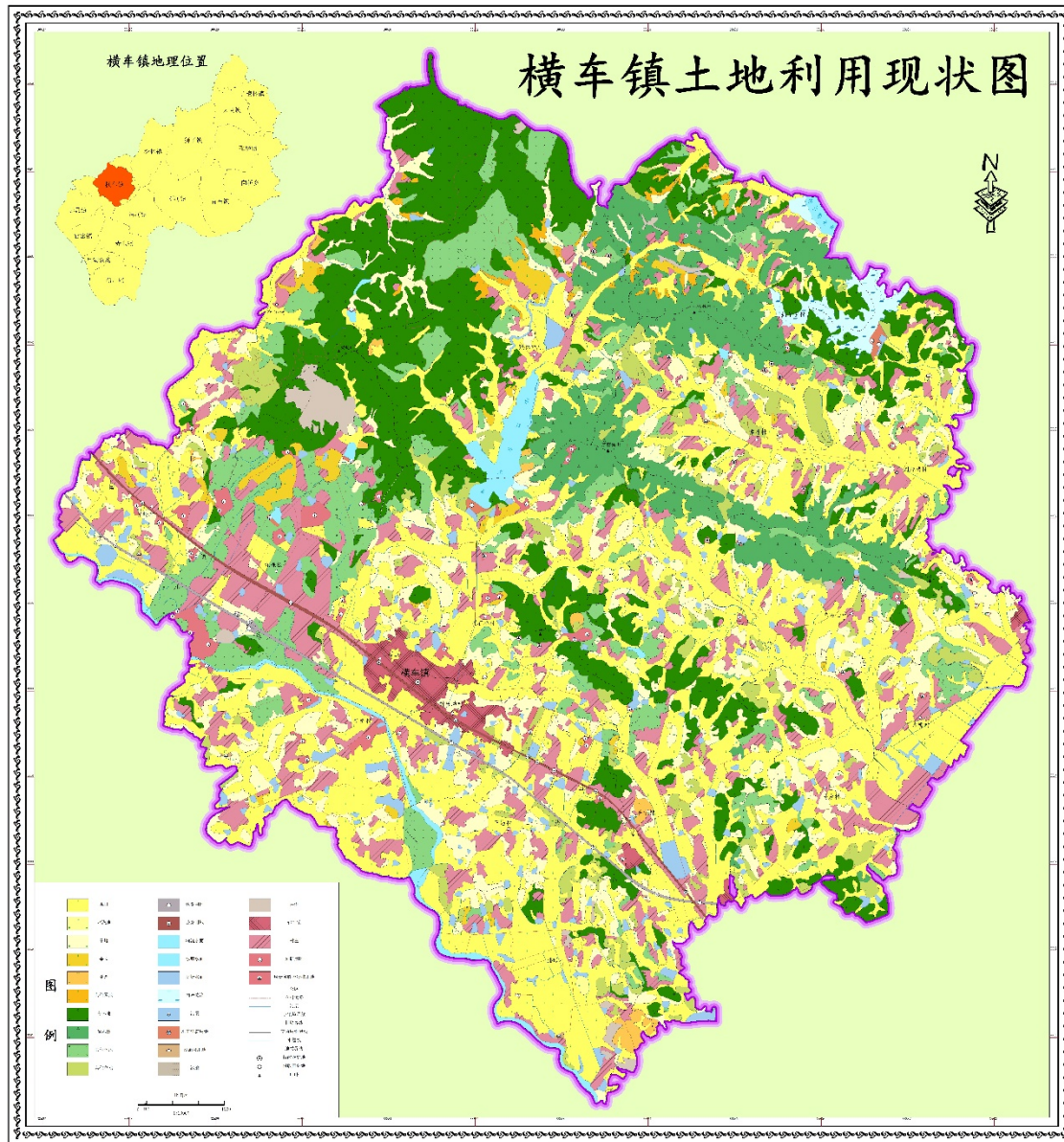
- 5-7 minutes proposal presentation. Slides due by **May 1, 9am**. The talks will be presented in class by 1-2 group members on **May 1, 3, and 8**.
- The final report has to be 3500-3700 words long. Due by **June 9, 9am**.
- 7-10 minutes final presentation. Slides due **May 31, 9am**. Presentation on **May 31, June 5 and June 7**.
- There will be a short written exam during the finals week.
- Poster session (optional) on **June 8**. Groups participating in poster sessions can submit their final report by **June 13, 9am**. Cost will be covered. The poster is worth up to 10 extra points.
- All slides must be in pdf format.

Suggestion about your project

- A project you can finish in 8-10 weeks (you do not need to do a project as complex as what I show here)
- It is highly recommended that one group should have a leader, and every one *should* participant in this project.
- Communicating with TA is important! Let me know your progress every week.
- Project type: GIS desktop Application, GIS Web Application, **Spatial Analysis/Statistic Research**
- **Data: Social Meida API, data.gov ...**
- Programming language: **Python (Arcpy)**, C, C++, C#, Java, R, Javascript, Matlab, PHP, (*ArcGIS Engine/ .NET*)
- GIS/RS software: ArcGIS, ERDAS, ENVI, QGIS, GeoDa, Fragstats, Supermap, AutoCAD, Coreldraw
- **Come up an idea and use some of them**

My Previous Project: Cartography

- ArcGIS



My Previous Project: Cartography



横车镇土地利用结构图

横车镇地理位置



说明

本图的制图区域只是横车镇的一部分地区，面积大约是整个横车镇面积的40%，但是包含了横车镇的镇政府及其周边城市化较高的地区，由于缺少横车镇制图区域内各个行政村人口数，本图采用下列方法计算各个行政村的城市人口数和农村人口数：

$$PCc = PCw$$

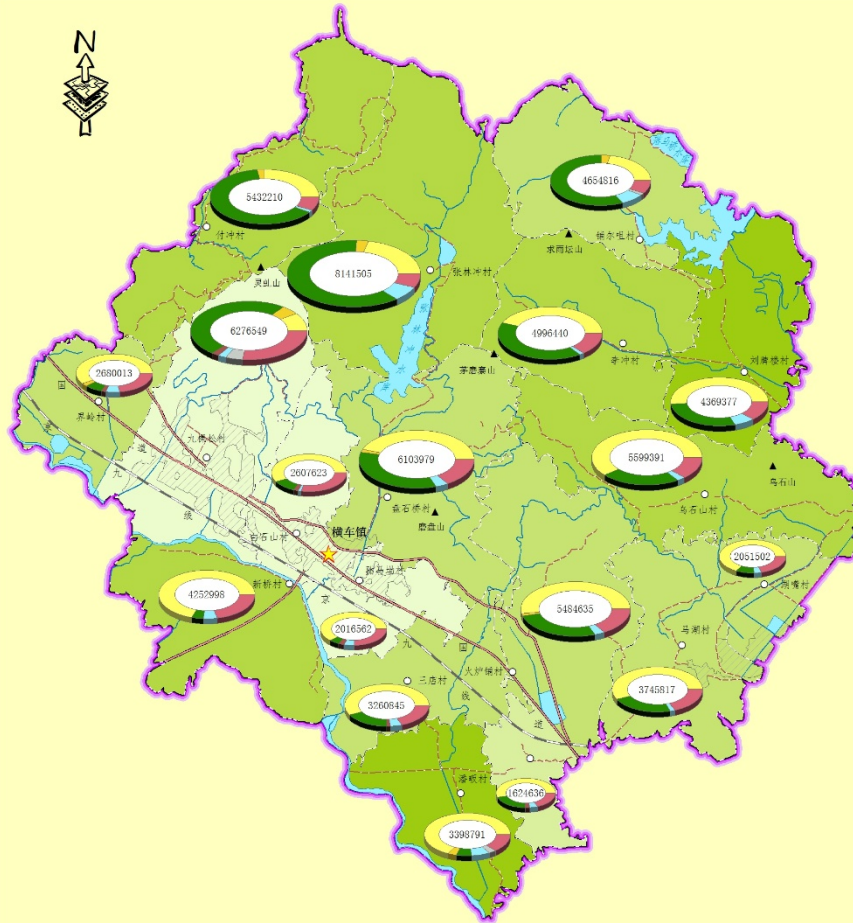
$$PAc = PAw * Ac / Aw$$

各个行政村的的城市、农村人口：

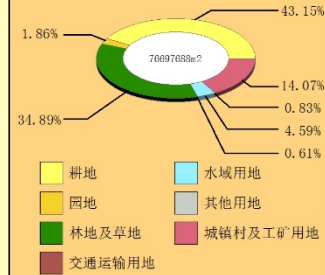
$$PCci = PCc * ACci / ACc$$

$$PAci = PAc * AACi / ACc$$

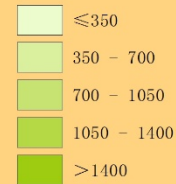
PCw, PAw: 横车镇城市、农村人口数；
 PCc, PAc: 制图区域城市、农村人口数；
 Aw, Ac: 横车镇、制图区域面积；
 PCci, PAci: 第i个行政村的的城市、农村人口数；
 ACc, AAC: 制图区域的建制镇、村庄总面积；
 ACci, AACi: 第i个行政村的建制镇、村庄图斑面积；



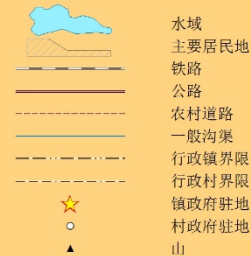
横车镇土地利用结构



人均耕地面积 (平方米/人)



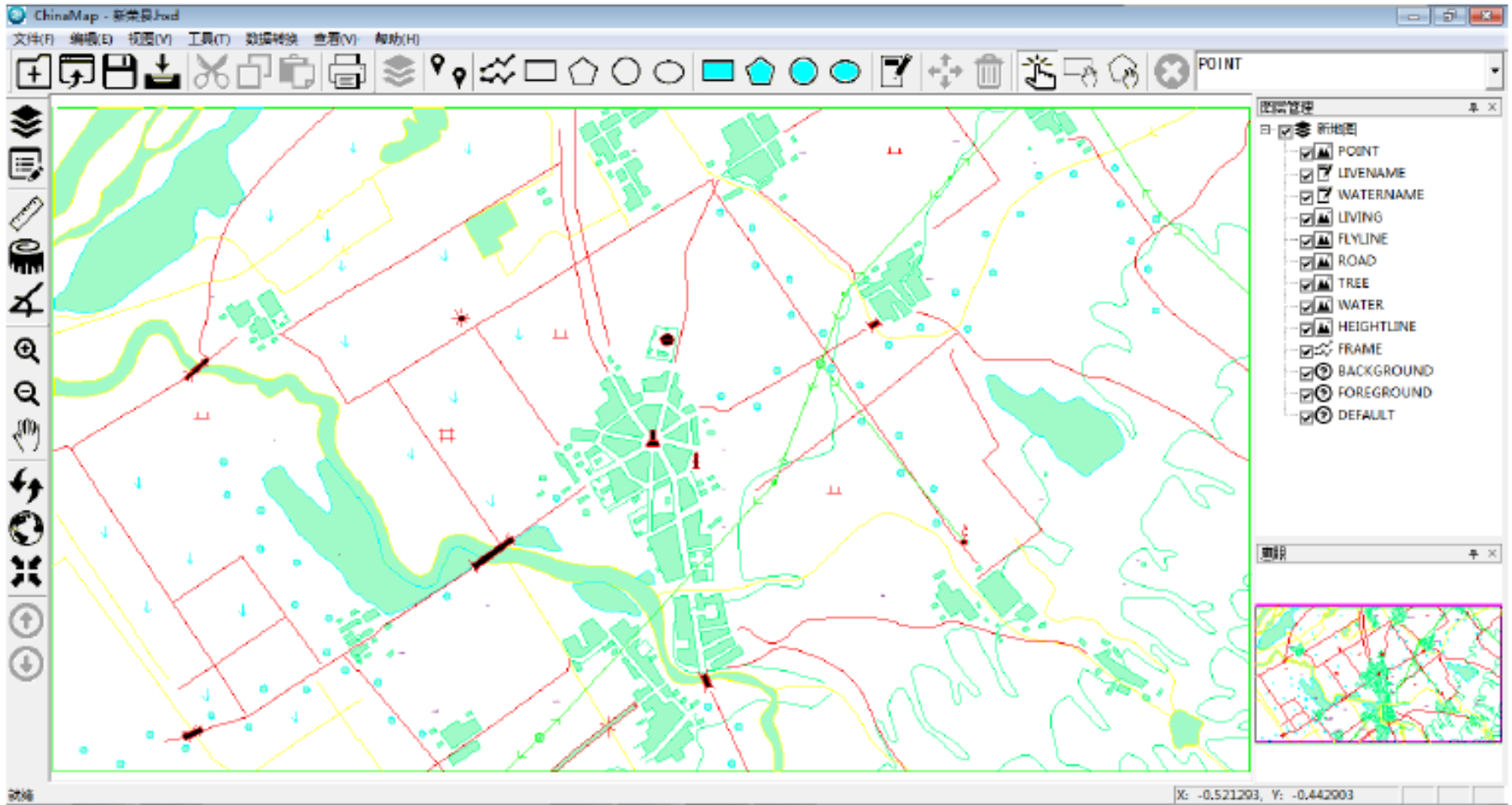
图例



比例尺 1:50000

My Previous Project:

- A small GIS application using MFC/C++



Analysis the data from dianping.com



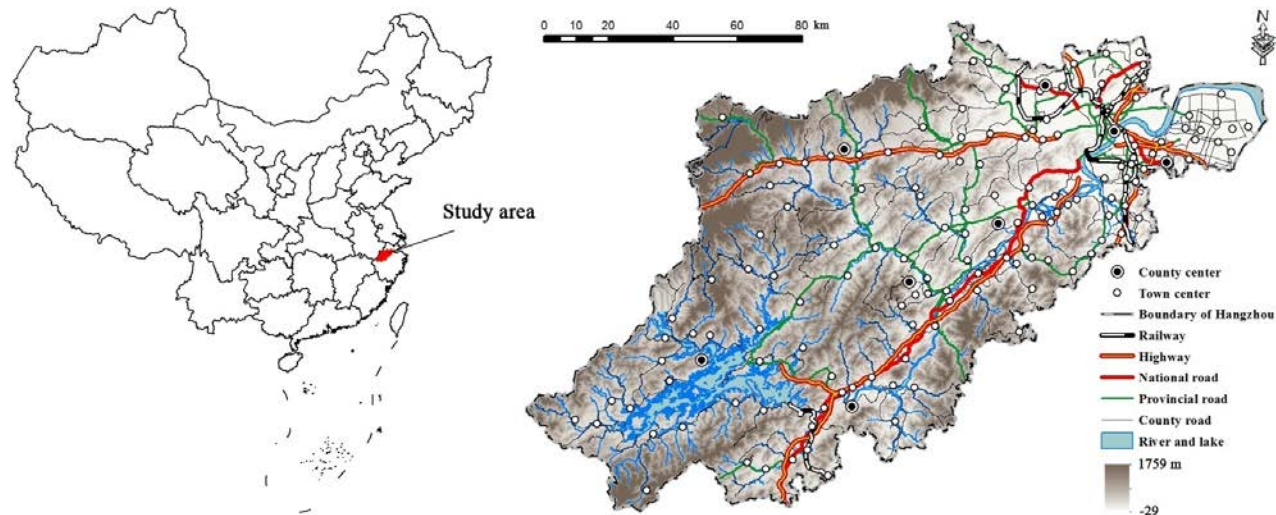
- Collecting the coordinate, check-in data , decoration grade, service grade, product grade of the restaurants in Hangzhou from dianping.com, calculating the quality value of each restaurants.
- Analysis the potential relationship between quality value and spatial distribution of these restaurants (path distance to nearest district, ATM, education centers, other POIs and service population)



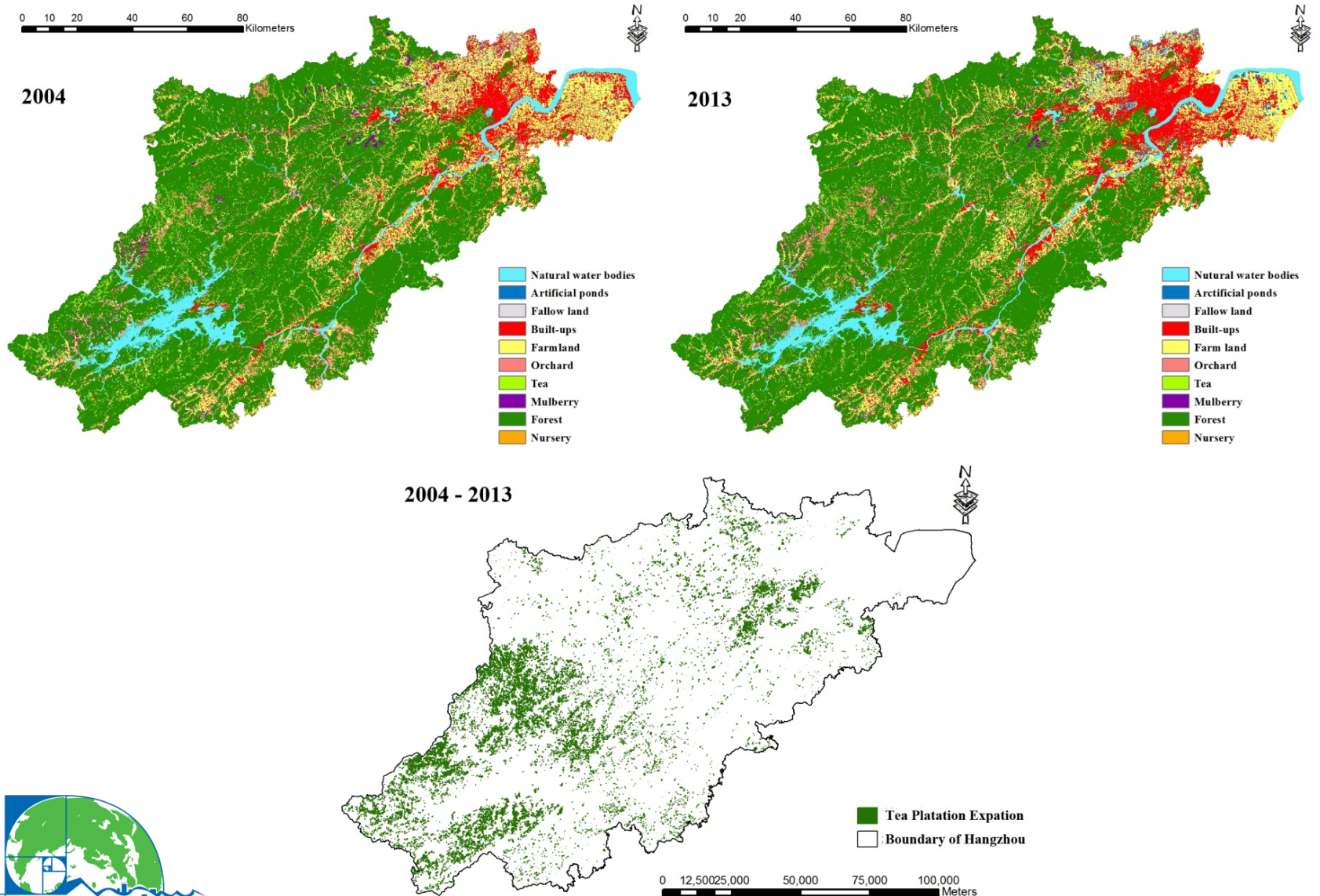
Undergraduate Thesis Project

Tea Plantation Expansion in Southeast of China: Process, Driving Forces & Ecological Effect

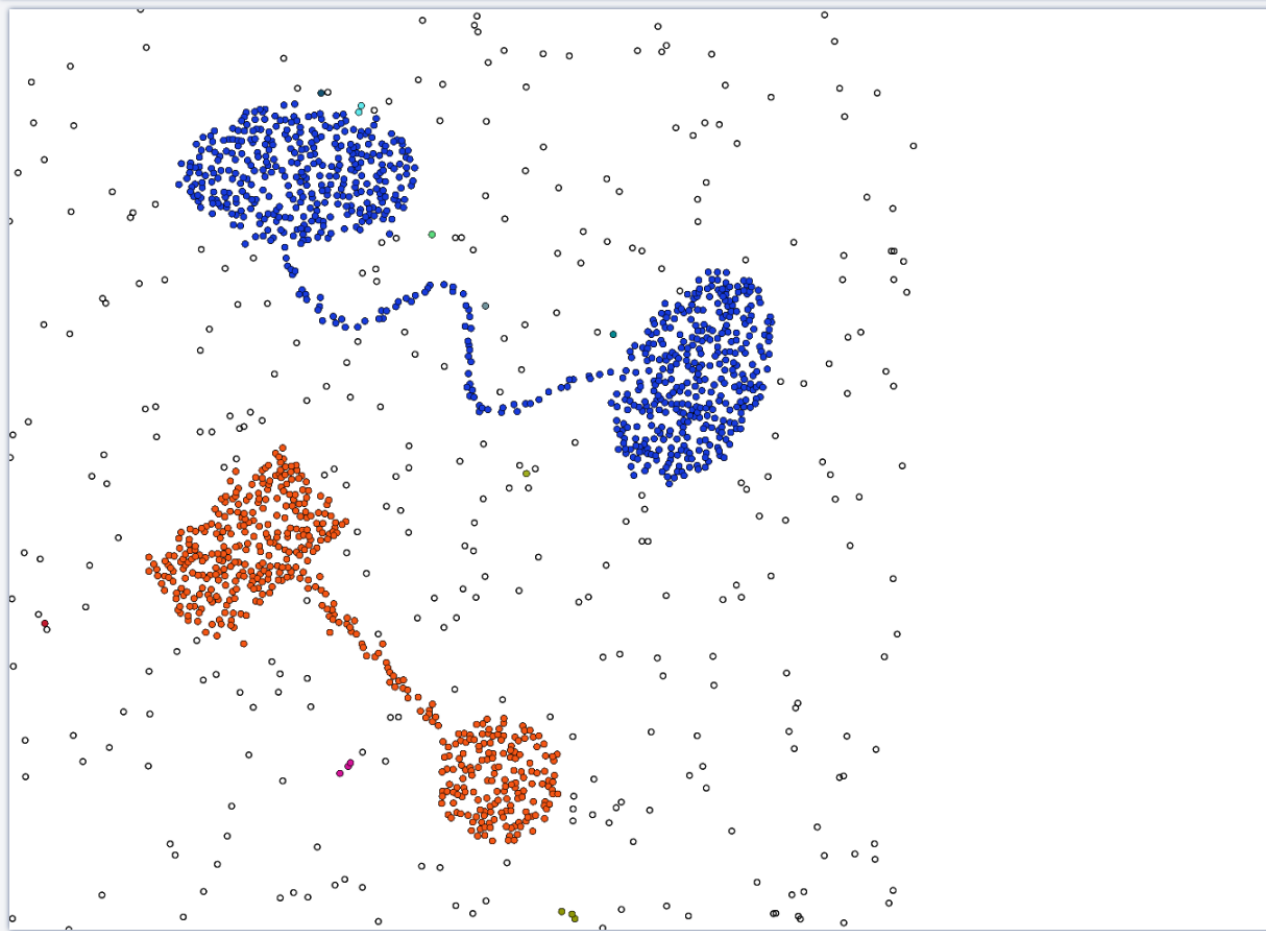
- **Spatial Analysis:**
- *Calculating the area of TPE according to slope, elevation, the distance to water bodies, every kind of roads, every kind of social centers.*
- **Study of Driving force (Socioeconomic indicators)**
- *Spatial lag regression (GeoDa) between socioeconomic factors and area of TPE of every counties in Hangzhou: population, incomes, public revenue & expenditure*
- **Ecological effect of TPE (Landscape Pattern Analysis)**
- *Spatial regression between area of TPE and rate of changes of 6 Landscape Matrics (FRAGSTAS): PD, ED ,LSI ,SHAPE, PAFRAC, AI*



LULC & Tea Plantation Expansion (TPE)



Data Mining: DBSCAN prototype



File Operation

Open Pts File: bridge_pt.txt

PointSet Name:

Select PointSet:

Clustering Operation

Eps:

MinPts:

Clustering Evaluation

Quality Evaluation

Efficiency Evaluation

KNN

KNN Plot

points ascending order by k-dis

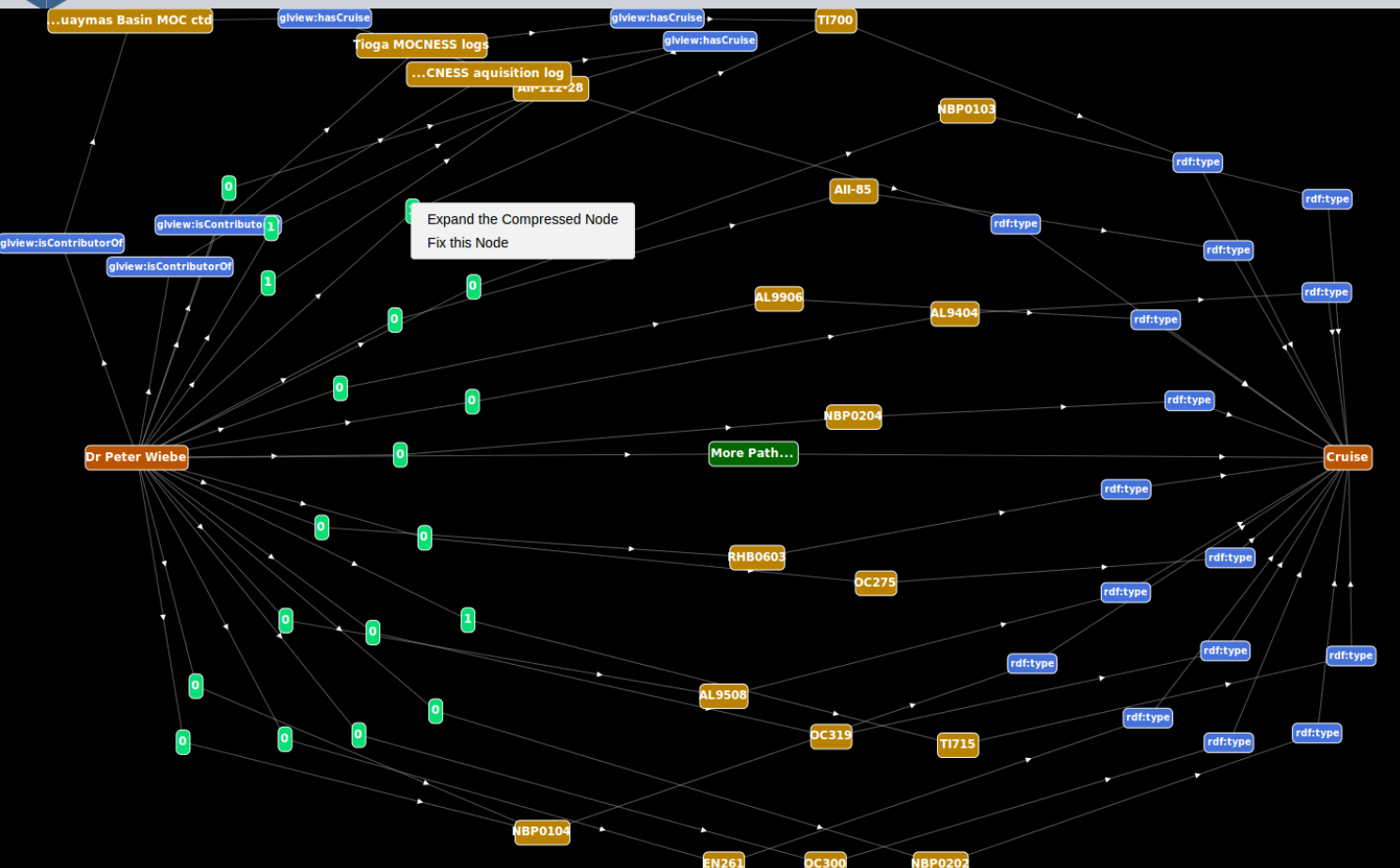
Semantic Web: Relationship Finder



EARTH CUBE

GeoLink: Researchers

Switch to a different view ▾



REL FINDER

Search Entity Relationship Finder

First Node

Type: Researchers

Select:

Second Node

Type: Cruises

Select:

Relationship Query Setting

Path Max Distance:

Max Num. of Paths:

Show TBox Relationship:

Relationship Query



Design & developed by STKO Lab

GeoLink: <http://demo.geolink.org/>

Semantic Web: Relationship Finder

EARTH CUBE GeoLink: Cruises

Switch to a different view ▾

Layer Legend: Cruises0

AL9508
<http://data.geolink.org/id/bcodmo/deployment/57373>

Property	Value
is glview:hasCruise of	Dataset: chlo_ bot AL9508
is glview:hasCruise of	Dataset: chlo_ bot AL9508
is glview:hasCruise of	Dataset: CTD_ MOC AL9508
is glview:hasCruise of	Dataset: fisheggs fr
is glview:hasCruise of	Dataset: fishlarvaeE
is glview:hasCruise of	Dataset: fishlarvaeK
is glview:hasCruise of	Dataset: MOC10_ al AL9508
is glview:hasCruise of	Dataset: MOC10dat AL9508
is glview:hasCruise of	Dataset: zoo_ cb_ m

SEARCH: AL9508 Search

Result Count: 1

AL9508

Map Result

Leaflet | © Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community

BCO-DMO DataONE Designed & developed by STKO Lab

GeoLink: <http://demo.geolink.org/>

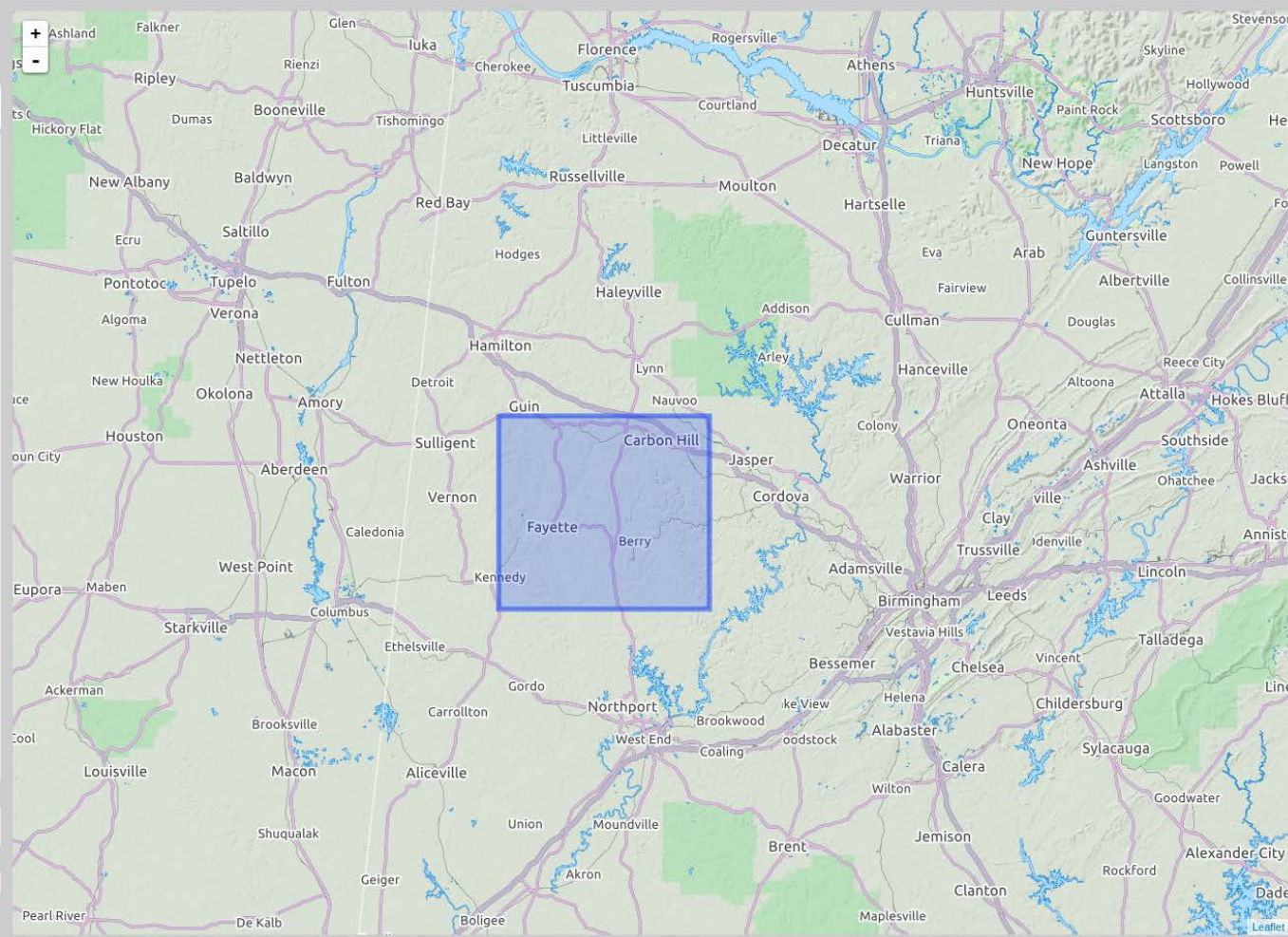
Semantic Web: ADL Gazetteer

ADL Linked-Data

Fayette County - Alabama - United States

<code>adlgont:geomType</code>	- "MultiPolygon"
<code>adlgont:hasAlternateName</code>	- "Fayette County"
<code>adlgont:hasDescription</code>	- ""
<code>adlgont:hasEntryDate</code>	- 11/5/1998, 4:00:00 PM
<code>adlgont:hasMARC034</code>	- "\$SdW0875848\$\$eN0335700\$\$fW0872323\$\$gN0333000"
<code>adlgont:hasMARC255</code>	- "\$\$c(W 87°58'48"--N 33°57'00"/W 87°23'23"--N 33°30'00")"
<code>adlgont:hasModificationDate</code>	- 2/24/2004, 4:00:00 PM
<code>adlgont:hasPrimaryName</code>	- "Fayette County"
<code>adlgont:hasQuantifiedName</code>	- "Fayette County - Alabama - United States"
<code>rdf:type</code>	- adlgont:country_2nd_order_division adlgont:place
<code>rdfs:label</code>	- "Fayette County"
<code>w3geo:lat</code>	- 33.725
<code>w3geo:long</code>	- -87.685001
<code>ago:hasGeometry</code>	- adlgeo:multipolygon/vw.com/bined_related-244#-87.9800033569335940.33.500000000000000/-87.3899993896484380.33.95000007629394530

not an object node



ESRI Linked Data Connector

Linked Data Relationship Finder from Location Features

Input wikidata location entities Feature Class
E:\UCSB_STKO_Lab\STKO Research\research\DBpedia-Search-plugin\test\propertyPath_2.gdb\SB

Relationship Degree
3

The first degree property direction
ORIGIN

The first degree property (optional)
sister city

The second degree property direction (optional)
ORIGIN

The second degree property (optional)
sister city

The third degree property direction (optional)
ORIGIN

The third degree property (optional)
sister city

The fourth degree property direction (optional)

The fourth degree property (optional)

Output Location
E:\UCSB_STKO_Lab\STKO Research\research\DBpedia-Search-plugin\test\propertyPath_2.gdb

Output Triple Store Table Name
SBPathQueryTripleStore

Output Feature Class Name
SBPathQueryLocation

The third degree property (optional)

No description available

OK Cancel Environments... << Hide Help Tool Help

