

**Landscape Planning and GIS**

'Applying information sciences to theories and methods in landscape planning'

Professor Carl Steinitz (GSD, Harvard University) & Mike Flaxman (USP, MIT)

**Monday, 20 November at Jinshinkan001 尽心館 001**

- 10.00 – 11.20 Introduction / Landscape Planning using GIS
- 11.30 – 12.00 Problem Definition
- 12.00 – 12.30 Assignment of Analysis Teams (10 Evaluation teams)
- 12.30 – 13.30 Lunch Break
- 13.30 – 14.30 Representation Model; Database
- 14.40 – 16.30 Basic GIS Operations for Process Modeling
- 16.30 – 18.30 Development of Process Models

**Tuesday, 21 November at Yushinkan421 有心館 421 (75名) Just 13:00-14:30 at 433&432**

- 9.00 – 12.30 Prepare Presentation
- 12.30 – 13.30 Lunch Break
- 13.30 – 15.30 Presentation of Process models & Maps (10 teams x 7 minutes)
- 15:30 – 16:00 Assignment of Change problem & design teams
- 16.00 – 18.30 Basic GIS Operations for change models & Final evaluation maps

**Wednesday, 22 November at Yushinkan441 有心館 441 (75名)**

- 9.00 – 12.00 prepare change models
- 12.00 – 13.00 Lunch Break
- 13.00 – 15.45 Basic Operation for impact models [by evaluation teams]
- 16.00 – 18.00 change- teams self-evaluate impacts  
revise change plan into final

**Thursday, 23 November at Seishinkan526 清心館 526 & 歴史都市防災研究センターカンファレンス**

- 9.00 – 11.00 self evaluate impacts [by evaluation teams]  
3D perspective of change models
- 11.00 – 14.30 Prepare Presentations  
including Lunch Break
- 14.30 – 17.00 Presentation and Discussion
  - Evaluation (10 Evaluation model teams x 4 minutes)
  - Plan (6 Change model teams x 8 minutes)
  - Impact (10 Evaluation model teams x 5 minutes)
- 17.00 – 18:00 Conclusion and Evaluation

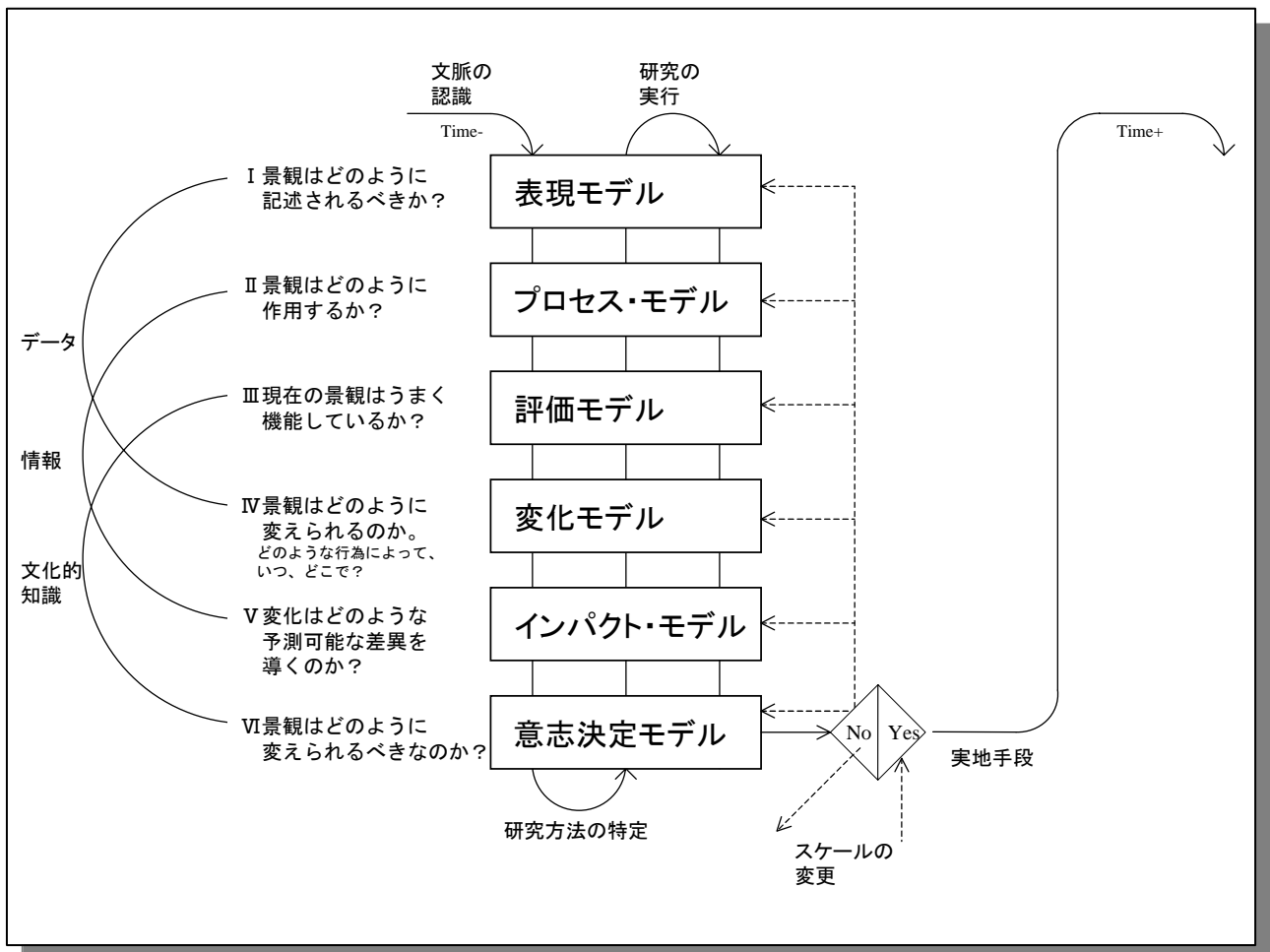
# OUTLINE of GIS WORKSHOP 2006 at RITSUMEIKAN UNIVERSITY

In this workshop, we will use GIS to support analysis, design and evaluation in a land use planning problem.

We will explore the core issue in landscape planning: 'DEVELOPMENT' versus 'CONSERVATION', and the conflicts that can arise between them.

We will base the exploration on Steinitz's proposed Framework, which poses 6 questions which must be answered in all design and planning processes:

- REPRESENTATION      - How should the landscape be described?
- PROCESS                - How does the landscape operate?
- EVALUATION            - How well is the landscape operating?
- CHANGE                 - How might the landscape be altered?
- IMPACT                 - What impacts would the changes cause?
- DECISION              - How should the landscape be changed?



## SCENARIO

### “A Redevelopment Plan for Kyoto Media Content Industries”

Media content industries represent major new research and business opportunities of the 21st century. The city government of Kyoto has proposed as a matter of public policy to encourage these industries, but has not looked at the physical planning implications of this strategy. Unlike other cities, Kyoto must manage population shifts and new demands for land use within a very rich and complicated historical setting. This includes not only hundreds of famous temples, but also about twenty thousands of historic machiya, many of which are in poor condition and require restoration and adaptive re-use.

Your challenge in this workshop is to propose land use and development strategies which simultaneously meet these needs. For a given district of Kyoto, you must assess the current physical and social conditions from the perspective of content industries, and from that of the broader society. You must then find a site for a major new movie and game studio facility within your district. You must propose a land use and services strategy which meets the needs of the media content industries, by redeveloping particular areas and adding appropriate public services. Finally, you must propose a strategy for the restoration and adaptive reuse of as many as possible of the historic machiya in your area. If your district does not contain a significant number of quality historic structures, you should instead propose locations for new public parks and open space in areas which lack them.

In order to prepare for your design work, you will work in attractiveness and vulnerability modeling teams. These teams will design spatial indicators which assess both current and future conditions.

The existing land uses in the study area are as follows:

unit: cell

Value	Class Name	分類名	Kyoto	Area1	Area2	Area3	Area4	Area5	Area6	Area7
1	Forestlands	山林・緑地等	677,134	77,187	20,318	154,938	98,706	171,070	56,312	98,603
2	Paddy fields	水田	110,992	906	6,739	5,189	7,501	22,690	62,351	5,616
3	Crop fields	畑	54,024	3,849	4,674	1,050	5,968	12,893	19,972	5,618
4	Under construction	建設用地	7,998	321	888	0	47	4,181	2,388	173
5	Open spaces	空地	52,419	4,038	6,944	0	6,664	10,000	19,684	5,089
6	Industrial	工業	71,546	5,951	26,875	313	12,151	2,808	19,584	3,864
7	Low-rise housing	低層住宅	327,550	61,209	39,806	68,483	40,895	35,039	56,725	25,393
8	Congested low-rise housing	密集低層住宅	96,278	21,588	22,166	10	11,588	8,207	20,389	12,330
9	High-rise housing	高層住宅	58,700	9,372	8,017	4,254	6,589	8,811	16,511	5,146
11	Roads	道路	585,481	89,244	92,605	58,901	64,822	81,312	142,424	56,173
12	Parks	公園	78,481	15,505	19,833	2,111	12,013	7,329	18,155	3,535
13	Public facilities	公共施設	129,811	19,163	22,064	21,503	12,061	12,318	32,725	9,977
14	Rivers	河川	118,558	6,343	13,600	8,090	12,826	13,798	60,989	2,912
15	Special facilities	特殊施設	11,875	6,733	1,638	7	747	1,462	1,025	263
18	High-rise commercial	高層商業	27,980	4,924	8,842	2,256	2,867	1,622	5,576	1,893
19	Low-rise commercial	低層商業	39,700	11,624	9,799	3,132	3,898	2,264	6,279	2,704
			2,448,527	337,957	304,808	330,237	299,343	395,804	541,089	239,289

## PROCESS MODELS

In the first part, EVALUATION teams will analyze the key processes that lead to the evaluation of ATTRACTIVENESS to development and RISK to the landscape, from several points of view:

### RISK (Vulnerability)

**Team1 [VISU] LANDSCAPE VISUAL QUALITY:**

identify the places having good visibility of natural features

**Team2 [COST] COST OF REDEVELOPMENT:**

evaluate the economic cost of converting an area from existing uses

**Team3 [MACH] HISTORICAL ARCHITECTURE QUALITY:**

identify important machiya and other historical areas that need to be preserved

**Team4 [HAZA] RISK OF NATURAL HAZARD:**

identify places prone to earthquake, fire and flood hazards

**Team5 [NUIS] RISK OF NUISANCE TO EXISTING NEIGHBORHOOD:**

evaluate the social costs to existing neighborhoods from major redevelopment (for example noise, traffic and displaced uses)

### ATTRACTIVENESS

**Team6 [FLAT] LARGE SITES FOR MAJOR NEW FACILITIES:**

rank the capacity of areas to absorb major new facilities which require large building footprints

**Team7 [HIST] HISTORIC STREETS FOR FILMING:**

rank areas in terms of their potential for shooting historical period films

**Team8 [SCHL] SCHOOL:**

rank areas for suitability for a new school for performing arts and media content industries

**Team9 [COMH] COMMERCE AND HOTEL:**

rank places suitable for high density commerce and hotels

**Team10 [ECOL] ECOLOGICAL PROTECTION & RESTORATION:**

rank places in terms of their ecological importance, including opportunity for ecological restoration

Each evaluation team must produce a PROCESS MODEL, and a summary EVALUATION MAP showing locations of ATTRACTIVENESS / RISK in a map with five categories:

#### ATTRACTION

(0 = Not Applicable, Nodata)

1 = Lowest Attraction	Dark Red
2 = Relative low	Red
3 = Moderate	Yellow
4 = Relative High	Green
5 = Highest Attraction	Dark Green

#### RISK

(0 = Not Applicable, Nodata)

1 = Lowest Risk	Dark Green
2 = Relative low	Green
3 = Moderate	Yellow
4 = Relative High	Red
5 = Highest Risk	Dark Red

In general, there may be a conflict between 'Highest Attraction for Development', and 'Highest Risk to the Landscape'. Negotiating these conflicts is a central theme of landscape planning and design, and the CHANGE models below.

**TASKS [Each Evaluation Team]**

1. Create a PROCESS MODEL
2. Create an EVALUATION MAP, based on your process model, with values 1 - 5.
3. Name the map after the model, using the following grid names:  
EVAL\_VISU, EVAL\_COST, EVAL\_MACH, EVAL\_HAZA, EVAL\_NUIS;  
EVAL\_FLAT, EVAL\_HIST, EVAL\_SCHL, EVAL\_COMH, EVAL\_ECOL;

## CHANGE MODELS

Next, DESIGN TEAMS must make proposals for change

### CHANGE PLAN PROGRAM: REDEVELOPMENT to YEAR 2020

Find a site for a major new film and game studio, occupying a footprint of 1,000 10m grid cells (equivalent to 300m by 300m size). Your proposed site must be contiguous, with no intervening large streets. Adjacent, or within close proximity to your studio site, identify an outdoor shooting location including at least 400m of historic street frontage and surrounding 200m buffer for heights and competing uses. Also adjacent or in close proximity, identify a site for a new school for performing arts and media content industries. The school site should be at least 200m x 200m An environmental restoration area or park of footprint equivalent to the school site should also be allocated (this can be anywhere in the district).

Redevelopment may occur on the following land uses:

- 2: Paddy Fields
- 3: Crop Fields
- 4: Under Construction
- 5: Open spaces
- 6: Industrial areas (except major)
- 7: Low Rise housing
- 8: Congested low-rise housing
- 11 Roads (1 lane only)
- 19: Low Rise Commercial

The six design teams will each study one of six study areas, representing major districts in Kyoto

**Team1 [Area1]**

**Team2 [Area2]**

**Team3 [Area3]**

**Team4 [Area4]**

**Team5 [Area5]**

**Team6 [Area6]**

### CHANGE PLAN REQUIREMENTS

Each design team should allocate below NEW LANDUSES:

Code description	cell requirement
100 Studio Site	1,000 cells
110 Historic Filming	40 cells of historical street + 200m buffers
120 School	400 cells
130 New Park	400 cells

## TASKS [Each Design Team]

1. Discuss a framework or a vision of a development plan, based on your team's point of view, but also taking account locations of attractiveness and risk.

2. Create a proposed CHANGE PLAN (see the requirements below).

Save it as a grid, with grid values 100, 110, 120 and 130, using a name to indicate the design team, as follows:

PLAN\_REG1                      PLAN\_REG2 ...PLAN\_REG6

3. After each team has completed a proposal, it must be EVALUATED for IMPACT, against all of the 10 PROCESS MODELS (see the section IMPACT MODELS). Any areas of SEVERE or THRESHOLD impact must be modified or ameliorated. REVISED plans must be made, and re-evaluated for IMPACT.

4. All final proposals will be presented and compared, in a MATRIX of PLANS, MODELS and IMPACTS (and a decision of the 'best' will be made if possible.)

5. Finally, 3D perspectives of each final proposal should be showed using ArcScene.

## IMPACT MODELS

Next, each EVALUATION TEAM must develop an 'Impact Matrix', which assesses the impact of all development types on land in each of the various Evaluation Categories. There are five categories of Impact:

- 0 = Not Applicable / No Data
- 1 = Beneficial (Change is good for the resource)
- 2 = Compatible (No perceivable impact is caused)
- 3 = Moderate (Impact is repairable by natural processes)
- 4 = Severe (Impact is repairable by major engineering investment)
- 5 = Threshold (Irreparable impact damage is caused)

		Low Risk				High Risk
Code	New Landuse	EVAL_1	EVAL_2	EVAL_3	EVAL_4	EVAL_5
100	Studio					
110	Historic District					
120	School					
130	New Park					
140	Hotel/Commerce					

		Low Attractiveness				High Attractiveness
Code	New Landuse	1 Lowest	2 Low	3 Moderate	4 High	5 Very High
100	Studio					
110	Historic District					
120	School					
130	New Park					
140	Hotel/Commerce					

Field names indicate the risk/attractiveness categories in evaluation maps. Numbers in cells will indicate impact categories.

Note that Attractiveness and Risk Evaluations will require 'inverted' matrices:

An area of high attractiveness, when developed, produces a POSITIVE, or beneficial result; an area of high risk, when developed, produces a NEGATIVE result.

### NOTES:

The process of IMPACT ASSESSMENT is designed to evaluate the impacts of proposed new changes on the landscape, from a particular point of view (or set of points of view, together). In this workshop, it is based on THREE INPUTS:

- ◆ EVALUATION MAP (created based on the PROCESS model), which must be a grid with values from 1 to 5 (1 = LOW, 5 = HIGH Risk or Attraction)
- ◆ CHANGE PLAN, a new plan encoded in a grid with values from the Land Use Key (in our case, 100, 110, 120, 130, 140). ONLY NEW CHANGES SHOULD BE CODED.
- ◆ IMPACT MATRIX. This is a DataBase Table (.DBF File), which has one row for each land use, and columns for evaluations from 1 - 5. Use the template provide in the File 'impact\_eval.dbf'.

In each cell of the table is an impact, resulting from that land use on that evaluation, in categories from 1 - 5 (5 = THRESHOLD IMPACT.)



**TASKS [each evaluation team (impact assessment team)]**

1. Create Impact Matrix. Open 'impact\_eval.dbf', Start Editing, and fill in all cells inside the table with values from 1 - 5. Save edits, and EXPORT the table to save it under a new name, as follows:





IMPACT_VISU.DBF	IMPACT_COST.DBF	IMPACT_MACH.DBF	IMPACT_NUIS.DBF
IMPACT_HAZA.DBF			
IMPACT_FLAT.DBF	IMPACT_HIST.DBF	IMPACT_SCHL.DBF	IMPACT_COMH.DBF
IMPACT_ECOL.DBF			

2. IMPACT ASSESSMENT will be done using MODEL BUILDER, and IMPACT MAPS will be created.


3. Prepare a LAYOUT with the imported IMPACT MAPS for each of six plans. Make sure the label clearly states the name of the PLAN and the name of the EVALUATION.

4. Task 2 and 3 is repeated for every revision in CHANGE PLANS.

## Presenting a plan

1. Aims
2. Concept (Diagram)
3.  (Map1) Existing land use:  $t = 0$  (at present)
4.  (Map2) Your change plan - Only
5.  (Map1+ Map2) Land use  $t = 20$  years (in future)
6.  (Map2) repeat if discussion

## Presenting Impact model

1. Theme
2. -Worst case
3. -Best case
4.  Map
5. (Advice)

**FINAL PRESENTATION of GIS WORKSHOP 2006  
RITSUMEIKAN UNIVERSITY  
14:30-17:30**

**at Conference Hall in Center for Disaster Mitigation of Urban Cultural Heritage**

1. Summaries of the workshop objectives, schedule and framework

2. Study area: Kyoto City (excluding Yamashina-ku)

**3. Presentation of Evaluations of Risk / [5 teams @ 4 minutes]**

**Team1 [VISU] LANDSCAPE VISUAL QUALITY:**

identify the places having good visibility of natural features

**Team2 [COST] COST OF REDEVELOPMENT:**

evaluate the economic cost of converting an area from existing uses

**Team3 [MACH] HISTORICAL ARCHITECTURE QUALITY:**

identify important machiya and other historical areas that need to be preserved

**Team4 [HAZA] RISK OF NATURAL HAZARD:**

identify places prone to earthquake, fire and flood hazards

**Team5 [NUIS] RISK OF NUISANCE TO EXISTING NEIGHBORHOOD:**

evaluate the social costs to existing neighborhoods from major redevelopment (for example noise, traffic and displaced uses)

**4. Presentation of Evaluations of Attractiveness / Development [5 teams @ 4 minutes]**

**Team6 [FLAT] LARGE SITES FOR MAJOR NEW FACILITIES:**

rank the capacity of areas to absorb major new facilities which require large building footprints

**Team7 [HIST] HISTORIC STREETS FOR FILMING:**

rank areas in terms of their potential for shooting historical period films

**Team8 [SCHL] SCHOOL:**

rank areas for suitability for a new school for performing arts and media content industries

**Team9 [COMH] COMMERCE AND HOTEL:**

rank places suitable for high density commerce and hotels

**Team10 [ECOL] ECOLOGICAL PROTECTION & RESTORATION:**

rank places in terms of their ecological importance, including opportunity for ecological restoration

## 5. The Development program and assumptions

### NEW LANDUSES:

Code	description	cell requirement
100	Studio Site	1,000 cells
110	Historic Filming	40 cells of historical street + 5 cell (50 m) buffers
120	School	400 cells
130	New Park	400 cells
140	Hotel & Commerce	50 cells

## 6. Presentation of Change Plans [6 teams @ 8 minutes]

- Objectives
- Major decisions and strategies
- Describe plan (Compact, other development and conservation)

Team1 [AREA 1]

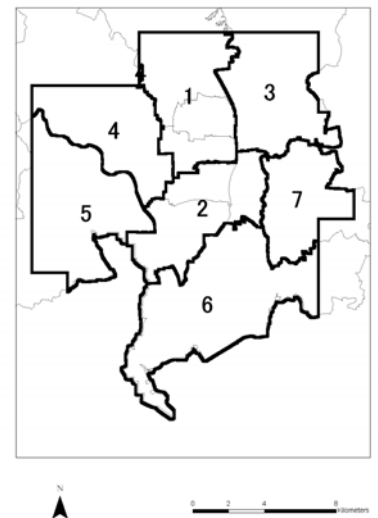
Team2 [AREA 2]

Team3 [AREA 3]

Team4 [AREA 4]

Team5 [AREA 5]

Team6 [AREA 6]



## 7. Comparative assessments of impacts [10 teams @ 5 minutes]

- Impact Maps of 1-6 plans
- Which plan is worst? - Why? (map & bar chart)
- Which plan is best? - Why? (map & bar chart)

## 8. Discussion

Questions and comments from Reviewers

## 9. Decision by Reviewers (Jurors)

Prof Kei MIZUNO (GS of Global Environmental Studies, Kyoto Univ.)  
 Prof Kan-ichiro MATSUMURA (Dept of Policy Science, Kwanseigakuin Univ.)  
 Professor Takahiko OHTANI (NPO Machiya)  
 Mr Katsuhide TAKAGI (Landscape & Town management Center)  
 Mr Hiroshi KAWAGUCHI (Kyoto City Office)  
 Ms Tess CANFIELD (Foreign Tourist)

## 10. Decision by Participants

## 11. Summary comments by Faculty

Yuzuru ISODA (Ritsumeikan Asia Pacific University)  
 Tomoki NAKAYA (Department of Geography, Ritsumeikan)  
 Keiji YANO (Department of Geography, Ritsumeikan)  
 Mike FLAXMAN (Department of Urban Studies and Planning, MIT)  
 Carl STEINITZ (Graduate School of Design, Harvard University)

# Kyoto2006 Data List

2006年11月15日

フォルダ名	ファイル名	形式	タイプ	説明	
01_SDF10000 数値地図10000のベクターデータ	all	shape	Line	数値地図10000の全ラインデータ	All of Line Data
	chuki	shape	Point	町丁名称などの注記	Annotations of Town Name
	gyosei	shape	Line	町丁目界	Boundary for Neighbourhood
	kijun	shape	Point	基準点	Reference Points
	road	shape	Line	道路中心線	Centerline of Road
	suibu	shape	Line	河川等の水域部	Water Area
	tatemono	shape	Point	建物の位置	Location of
	tetsudo	shape	Line	鉄道線	Railway Line
02_Image25000 数値地図25000(地図画像)	i25k523525	raster	Tiff	25000分の1地形図の地図画像(淀)	Map Image of 1:25000 Topographical Map, Yodo
	i25k523526	raster	Tiff	25000分の1地形図の地図画像(宇治)	Map Image of 1:25000 Topographical Map, Uji
	i25k523535	raster	Tiff	25000分の1地形図の地図画像(京都西南部)	Map Image of 1:25000 Topographical Map, Southwest-part of Kyoto
	i25k523536	raster	Tiff	25000分の1地形図の地図画像(京都東南部)	Map Image of 1:25000 Topographical Map, Southeast-part of Kyoto
	i25k523545	raster	Tiff	25000分の1地形図の地図画像(京都西北部)	Map Image of 1:25000 Topographical Map, Northwest-part of Kyoto
	i25k523546	raster	Tiff	25000分の1地形図の地図画像(京都東北部)	Map Image of 1:25000 Topographical Map, Northeast-part of Kyoto
03_SDF25000 数値地図25000(空間データ基盤)のベクターデータ	kyoto_DK	shape	Line	道路中心線(位置、名称、国道番号、高速道or一般道、有料or無料、幅員、橋、トンネル、雪覆い)	Centerline of Road
	kyoto_KK	shape	Line	河川(位置、名称、国or地方公共団体)	River (Location, Name, Administrator)
	kyoto_KO	shape	Point	公共施設の位置、名称(分類:学校、警察機関、厚生機関、国の機関、消防署、地方公共団体、病院、郵便局)	Point of Public Facilities (School, Police Station & Police Box, Public Health Center, Public Office, Fire Station, Local Municipal Office, Hospital, Post Office)
04_SDF2500 数値地図2500(空間データ基盤)のベクターデータ	eki	shape	Point	鉄道駅	Point of Railway Station
	mizu	shape	Polygon	河川等の水域部	Water Area
	road	shape	Line	道路中心線	Centerline of Road
	si_tyon	shape	Point	市区町村名称	Name of City, Town or Village
	tatemono	shape	Polygon	公共施設等の位置(位置、名称)	Location of Public Facilities
	tyomen	shape	Point	町丁目名称	Name of Neighbourhood
	zyouti	shape	Polygon	建物の敷地界ポリゴン	Polygons of Building Site
	05_Boundary 地区境界線	city_26	shape	Polygon	京都府の市区町村界ポリゴンデータ
kyoto11ku		shape	Polygon	京都市11区ポリゴンデータ	Boundary of 11 wards in Kyoto City
kyoto11school		shape	Polygon	京都市の学区界ポリゴンデータ	Boundary of School Attendance Unit in Kyoto City
06_Census 国勢調査	kyoto00a	shape	Polygon	京都市の2000年国勢調査・町丁目界ポリゴン	Boundary of Neighbourhood in Kyoto City in 2000
	dens_aged	raster	Tiff	65歳以上人口密度の10mグリッド・ラスターデータ	10m Grid Data of Aged Persons Density
	dens_pop	raster	Tiff	人口密度の10mグリッド・ラスターデータ	10m Grid Data of Population Density
	dens_setai	raster	Tiff	世帯密度の10mグリッド・ラスターデータ	10m Grid Data of Household Density
	9526taba1	dBASE	Table	1995年国勢調査の統計表(年齢別人口・男女合計)	Data Table of Population Census in 1995 (Population by age)
	0026tabb1	dBASE	Table	2000年国勢調査の統計表(年齢別人口・男女合計)	Data Table of Population Census in 2000 (Population by age)
	0026tabb2	dBASE	Table	2000年国勢調査の統計表(年齢別人口・男)	Data Table of Population Census in 2000 (Population by age: Male)
	0026tabb3	dBASE	Table	2000年国勢調査の統計表(年齢別人口・女)	Data Table of Population Census in 2000 (Population by age: Female)
	name26	dBASE	Table	町丁目名称一覧	List of Neighbourhood Name
	kihon2000	shape	Point	京都市の2000年国勢調査基本単位区のポイントデータ	Point of Census Basic Unit Blocks in Kyoto Pref. in 2000
	kihon26_2K	dBASE	Table	京都市の2000年国勢調査基本単位区の属性データ	Attribute Table of Census Basic Unit Blocks in Kyoto Pref. in 2000
	kihon1995	shape	Point	京都市の1995年国勢調査基本単位区のポイントデータ	Point of Census Basic Unit Blocks in Kyoto Pref. in 1995
	kihon26_95	dBASE	Table	京都市の1995年国勢調査基本単位区の属性データ	Attribute Table of Census Basic Unit Blocks in Kyoto Pref. in 1995
07_DEM10 地形	kyoaspect10m	raster	Tiff	10mグリッドの傾斜方向のラスターデータ	10m Grid Data of Slope Direction
	kyodem10m	raster	Tiff	10mグリッドの標高のラスターデータ	10m Grid Data of Elevation
	kyohillshade10m	raster	Tiff	10mグリッドの地形陰影ラスターデータ	10m Grid Data of Hillshade
	kyoslope10m_d	raster	Tiff	10mグリッドの傾斜角(単位:度)のラスターデータ	10m Grid Data of Slope (by degree)
	kyoslope10m_p	raster	Tiff	10mグリッドの傾斜角(単位:パーセント)のラスターデータ	10m Grid Data of Slope (by percent)
08_Landuse 土地利用	landuse	raster	Tiff	京都市内主要地域の土地利用データ	Landuse Data in Kyouto City
	landprice	raster	Tiff	京都市内主要地域の地価分布データ	The Price of Land
09_Station 鉄道駅	Kyoto_Eki	shape	Point	京都市内の鉄道駅のポイントデータ	Railway Stations in Kyoto City (Point)
	Kyoto_Eki_pol	shape	Polygon	京都市内の鉄道駅のポリゴンデータ	Railway Stations in Kyoto City (Polygon)
	Kyoto_Railway	shape	Line	京都市内の鉄道の線データ	Railway Lines in Kyoto City
	Eki_pass2001	shape	Point	2001年の関西圏の駅別乗降客数	Passengers of Railway Station in Kansai Metropolitan Area in 2001
10_Bus バス停	bus_service	shape	Point	バス停(運行本数・乗降客数)のポイントデータ	Point Data of Bus Stops with the number of Passengers and service
	bus_route	shape	Line	バス路線のラインデータ	Route of bus service
	vo_route	shape	Polygon	道路距離でポロノイ分割をしたもの(解像度5mのラスターを使用)	Voronoi Diagram with Road Distance
11_Machiya 京町家	machiya	raster	Tiff	対象家屋は町家であるか?	Whether machiya
	machiya_type	raster	Tiff	町家類型	Type of machiya
	machiya_occupied	raster	Tiff	空家か否か	Occupied/ Vacant
	machiya_BusinessUse	raster	Tiff	事業活用の有無	Whether use for business
	machiya_traditionality	raster	Tiff	意匠の保存状態(算出値)	Conservation class (derived)
	machiya_condition	raster	Tiff	構造上の建物状態	Condition class (derived)
	machiya_ConditionClass	raster	Tiff	(算出値)保存状態 X 建物状態	Machiya condition index (derived)
	studyarea_machiya	shape	Polygon	京町家調査地域のポリゴンデータ	Study area of Machiya reserch

## Explanatory Note of Layers

2006年11月15日

## 01 Landuse

1 Landuse (Point)		土地利用(点)	
File Name	landuse_p	Shape	Point
Folder	※08_Landuse※		
Value	Class Name	分類名	備考
1	Forestlands	山林・緑地等	
2	Paddy fields	水田	
3	Crop fields	畑	
4	Under construction	建設用地	
5	Open spaces	空地	
6	Industrial	工業	
7	Low-rise housing	低層住宅	
8	Congested low-rise housing	密集低層住宅	
9	High-rise housing	高層住宅	
11	Roads	道路	
12	Parks	公園	
13	Public facilities	公共施設	
14	Rivers	河川	
15	Special facilities	特殊施設	京都御苑等
18	High-rise commercial	高層商業	
19	Low-rise commercial	低層商業	

## 02 Use Zoning

3 Use Zoning		用途地域	
File Name	use_zone	GeoTiff	Raster Data (10m X 10m)
Folder	※13_Zoning※		
Value	Class Name	分類名	備考
1	Category 1 exclusive districts for low-rise residential buildings	第一種低層住居専用地域	
2	Category 2 exclusive districts for low-rise residential buildings	第二種低層住居専用地域	
3	Category 1 exclusive districts for medium-rise and high-rise residential buildings	第一種中高層住居専用地域	
4	Category 2 exclusive districts for medium-rise and high-rise residential buildings	第二種中高層住居専用地域	
5	Category 1 residential districts	第一種住居地域	
6	Category 2 residential districts	第二種住居地域	
7	Quasi-residential districts	準住居地域	
8	Neighborhood commercial districts	近隣商業地域	
9	Commercial districts	商業地域	
10	Quasi-industrial districts	準工業地域	
11	Industrial districts	工業地域	
12	Exclusively industrial districts	工業専用地域	

## 4 Height Restriction

3 Use Zoning		用途地域 & 高度制限	
File Name	height	GeoTiff	Raster Data (10m X 10m)
Folder	※13_Zoning※		
Value	Class Name	分類名	備考
1	10m height district	10m 高度地区	
2	15m height district	15m 高度地区	
3	20m height district	20m 高度地区	
4	31m height district	31m 高度地区	
5	45m height district	45m 高度地区	

## 3 Use Zoning

4 Height Restriction		高度制限	
File Name	zoning	Shape	Polygon
Folder	※13_Zoning※		
用途図番号	Type	分類	備考
1	Category 1 exclusive districts for low-rise residential buildings	第一種低層住居専用地域	
2	Category 2 exclusive districts for low-rise residential buildings	第二種低層住居専用地域	
3	Category 1 exclusive districts for medium-rise and high-rise residential buildings	第一種中高層住居専用地域	
4	Category 2 exclusive districts for medium-rise and high-rise residential buildings	第二種中高層住居専用地域	
5	Category 1 residential districts	第一種住居地域	
6	Category 2 residential districts	第二種住居地域	
7	Quasi-residential districts	準住居地域	
8	Neighborhood commercial districts	近隣商業地域	
9	Commercial districts	商業地域	
10	Quasi-industrial districts	準工業地域	
11	Industrial districts	工業地域	
12	Exclusively industrial districts	工業専用地域	

高度図番号	Type	分類名	備考
1	10m height district	10m 高度地区	
2	15m height district	15m 高度地区	
3	20m height district	20m 高度地区	
4	31m height district	31m 高度地区	
5	45m height district	45m 高度地区	
容積率	Class		備考
	50 ~ 700 %	Floor area ratio of building	
建ぺい率	Class		備考
	30 ~ 80 %	Building-to-land ratio	

## 03 Population

5 Density of population in 2000		2000年の人口密度	
File Name	dens_pop	GeoTiff	Raster Data (10m X 10m)
Folder	※06_Census※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	
6 Density of household in 2000		2000年の世帯密度	
File Name	dens_setai	GeoTiff	Raster Data (10m X 10m)
Folder	※06_Census※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	
7 Density of aged (age 65 & over) person		2000年の高齢者密度	
File Name	dens_aged	GeoTiff	Raster Data (10m X 10m)
Folder	※06_Census※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

## 04 Establishment

8 Density of establishment in 2001		2001年の事業所密度	
File Name	dens_est	GeoTiff	Raster Data (10m X 10m)
Folder	※14_Establish※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	
9 Density of employee in 2001		2001年の従業員密度	
File Name	dens_emp	GeoTiff	Raster Data (10m X 10m)
Folder	※14_Establish※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

## 05 Landprice

10 The Price of Land in 2006		2006年の地価	
File Name	landprice	GeoTiff	Raster Data (10m X 10m)
Folder	※08_Landuse※		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

## 06 Machiya (京町家)

11 machiya1: Whether machiya		町家か否か	
File Name	machiya	GeoTiff	Raster Data (10m X 10m)
Folder	※11_Machiya※		
Value	Class Name	分類名	備考
1	Yes	町家である	
12 machiya2: Type of machiya		町家類型	
File Name	machiya_type	GeoTiff	Raster Data (10m X 10m)
Folder	※11_Machiya※		
Value	Class Name	分類名	備考
1	Two-stories	総二階	
2	Mezannine	中二階	
3	Three-stories	三階建	
4	One-story	平屋	
5	Shimotaya	仕舞屋	
6	Fenced	塀付き	
7	With facade	看板建	
8	Other wooden (not machiya)	その他木造	町家でない戦前の木造家屋
-1	Unknown	類型不明	
-3	NA	未調査	

## 13 machiya3: Occupied or Vacant

13 machiya3: Occupied or Vacant		空家か否か	
File Name	machiya3_occupied	GeoTiff	Raster Data (10m X 10m)
Folder	※11_Machiya※		
Value	Class Name	分類名	備考

1	Occupied	空家でない	
2	Vacant	空家である	
-1	Unknown	不明	空家である可能性があるもの
-3	NA	未調査	

**14** machiya4: Whether use for business 事業活用の有無

File Name	<b>machiya_BusinessUse</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥11_Machiya¥</b>		
Value	Class Name	分類名	備考
1	Yes	あり	
2	No	なし	
-1	Unknown	不明	事業活用の可能性があるもの
-2	DNA	該当しない	空家の場合・建物が無い場合
-3	NA	未調査	

**15** machiya5: Conservation class (derived) 意匠の保存状態(算出値)

File Name	<b>machiya_traditionality</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥11_Machiya¥</b>		
Value	Class Name	分類名	備考
1	All remains	すべて残っている	保存箇所4つの場合(平屋の場合は保存箇所3以上)
2	some remain	いくつか残っている	保存箇所2・3つの場合(平屋の場合は保存箇所2)
3	one remain	ひとつだけ残っている	保存箇所1つの場合
4	none remain	まったく残っていない	保存箇所なし
-1	unknown	不明	
-2	DNA (not machiya type 1-5)	該当しない(町家類型が6以上または町家でない)	町家類型6以上、または町家でない場合
-3	NA	欠損	

**16** machiya6: Condition class (derived) 構造上の建物状態

File Name	<b>machiya_condition</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥11_Machiya¥</b>		
Value	Class Name	分類名	備考
1	No repair needed	今後も使えそう	
2	Repair needed	今後修理が必要	
3	Repair needed immediately	今すぐ修理が必要	
-1	unknown	不明	
-3	NA	未調査	

**17** machiya7: Machiya condition index (derived) (算出値)保存状態 X 建物状態

File Name	<b>machiya_ConditionClass</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥11_Machiya¥</b>		
Value	Class Name	分類名	備考
1	Excellent	優良	保存状態=1 AND 建物状態=1
2	Good	良好	保存状態=2 AND 建物状態=1
3	Caution	検討	(建物状態=1 AND 保存状態>=3) OR (建物状態=2) OR ((町家類型=6 OR 町家類型=7) AND 建物状態 < 3)
4	Deteriorating	老朽	建物状態=3
-1	unknown	不明	
-2	DNA (not machiya)	該当しない(町家でない)	町家でない場合
-3	NA	欠損	

**18** Study Area of Machiya Reserch 京町家調査地域

File Name	<b>studyarea_machiya</b>	shape	Polygon
Folder	<b>¥11_Machiya¥</b>		

**07 Modern Architecture****19** Whether early modern architecture or not 近代建築

File Name	<b>modern_archi</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥16_Other¥</b>		
Value	Class Name	分類名	備考
1	Yes	近代建築である	

**08 MAPCUBE****20** Elevation of Ground Surface 建物上面も含めた高さのデータ

File Name	<b>build_dem</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥16_Other¥</b>		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

**09 10m DEM****21** 10m DEM 1: Elevation 10mメッシュ 標高

File Name	<b>kyodem10m</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥07_DEM10¥</b>		
Value	Class Name	分類名	備考

-	Numerical Data	連続値	
---	----------------	-----	--

**22** 10m DEM 2: Slope of surface (by degree) 10mメッシュ 傾斜(度)

File Name	<b>kyoslope10m_d</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥07_DEM10¥</b>		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	単位: 度 (by degree)

**23** 10m DEM 2: Slope of surface (in percent) 10mメッシュ 傾斜(パーセント)

File Name	<b>kyoslope10m_p</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥07_DEM10¥</b>		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	単位: パーセント (by percent)

**24** 10m DEM 3: Aspect 10mメッシュ 傾斜方向

File Name	<b>kyaspect10</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥07_DEM10¥</b>		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

**25** 10m DEM 4: Hillshade 10mメッシュ 地形陰影

File Name	<b>kyohillshade10</b>	GeoTiff	Raster Data (10m X 10m)
Folder	<b>¥07_DEM10¥</b>		
Value	Class Name	分類名	備考
-	Numerical Data	連続値	

**10 Road****26** Centerline of road 1 道路中心線 1 from 1:2500 Spatial Data Framework

File Name	<b>road</b>	shape	Line
Folder	<b>¥04_SDF2500¥</b>		

**27** Centerline of Road 2 道路中心線 2 from 1:25000 Spatial Data Framework

File Name	<b>Kyoto_DK</b>	shape	Line
Folder	<b>¥03_SDF25000¥</b>		

SHUBETSU	Type	備考
	一般道	Ordinary road
	高速道路	Express way
	石段	Stone stairway
	庭園路	Garden pathway
FUKUIN		備考
	1.5m未満	Less than 1.5m
	1.5m以上3.0m未満	1.5m ≤ < 3.0m
	3.0m以上5.5m未満	3.0m ≤ < 5.5m
	5.5m以上13.0m未満	5.5m ≤ < 13.0m
	真鍮道路	as actual

**28** Centerline of Road 3 道路中心線 3

File Name	<b>Kyoto_231</b>	shape	Polygon
Folder	<b>¥16_Other¥</b>		

L03	Type	分類	備考
1	Express way	高速自動車国道	
2	Urban express way	都市高速道路	
3	National highway	一般国道	
4	Principal local road (by Pref.)	主要地方道(都道府県)	
5	Principal local road (by Major City.)	主要地方道(指定市道)	
6	Prefectural road	一般都道府県道	
7	Ordinary road in Major City	指定市の一般市道	
9	Others	その他の道路	
0	unknown	未調査	

**L18** Class by width of road 道路幅類型 備考

1	13.0m and over	幅員13.0m以上
2	1.5m以上3.0m未満	幅員5.5m以上～13.0m未満
3	3.0m以上5.5m未満	幅員3.0m以上～5.5m未満
4	Less than 3.0m	幅員3.0m未満
0	unknown	未調査

**L19** number of traffic lane 道路幅 備考

1	1 lane	1車線
2	2 lanes	2車線
3	3 lanes	3車線
4	4 lanes	4車線
5	5 lanes	5車線
6	6 & over	6車線以上
0	unknown	未調査

**L20** Width of road 道路幅 unit: 0.1m**L26** Regulation of traffic 交通規制種別 備考

1	No regulation	規制なし
2	Passage prohibition	通行禁止(条件無)
3	Passage prohibition	通行禁止(条件付)
4	One-way traffic	一方通行(正方向、条件無)
5	One-way traffic	一方通行(逆方向、条件無)
6	One-way traffic	一方通行(正方向、条件付)

7	One-way traffic	一方通行(逆方向、条件付)	
8	One-way traffic	一方通行(正逆切替え有り)	
0	unknown	未調査	

**11 Railway**

<b>29</b>	Railway Stations (Point data)	鉄道駅(ポイント)	
File Name	<b>Kyoto Eki</b>	shape	Point
Folder	<b>¥09_Station¥</b>		

<b>30</b>	Passengers of Railway Station in 2001	鉄道駅の2001年乗降客数	
File Name	<b>Eki pass2001</b>	shape	Point
Folder	<b>¥09_Station¥</b>		

<b>31</b>	Railway Stations (Polygon data)	鉄道駅(ポリゴン)	
File Name	<b>Kyoto Eki pol</b>	shape	Polygon
Folder	<b>¥09_Station¥</b>		

<b>32</b>	Railway line	鉄道駅(ポリゴン)	
File Name	<b>Kyoto Railway</b>	shape	Line
Folder	<b>¥09_Station¥</b>		
L19	The number of traffic lane	道路幅	備考
1	Shinkansen line	新幹線	
2	JR lines	JR在来線	
3	Private railway lines	私鉄	
4	Private railway lines ( on street )	私鉄(路面)	
7	Subway	地下鉄	
8	Other	その他	

**12 Bus**

<b>33</b>	Location of bus stops	バス停[便数・乗降客数]	
File Name	<b>bus service</b>	shape	Point
Folder	<b>¥10_Bus¥</b>		
NAME	Name of bus stop	バス停の名称	
SERVICE	The number of service	上下運行本数	
PASSEN	The number of the passengers getting on and off	乗降客数	

<b>34</b>	Route of bus service	バス路線	
File Name	<b>bus route</b>	shape	Line
Folder	<b>¥10_Bus¥</b>		

<b>35</b>	Voronoi Diagram with Road Distance	バス停からの道路距離でポロノイ分割	
File Name	<b>vo_route</b>	shape	Polygon
Folder	<b>¥10_Bus¥</b>		

**13 Facilities**

<b>36</b>	Point of Public Facilities	公共施設の位置	from 1:25000 Spatial Data Framework
File Name	<b>Kyoto KO</b>	shape	Line
Folder	<b>¥03_SDF25000¥</b>		
SHURUI	Type	備考	
	学校	School	
	警察機関	Police Station & Police Box	
	厚生機関	Public Health Center	
	国の機関	Public Office	
	消防署	Fire Station	
	地方公共団体	Local Municipal Office	
	病院	Hospital	
	郵便局	Post Office	

<b>37</b>	Major Temples and Shrines	神社・仏閣	
File Name	<b>temple</b>	shape	Point
Folder	<b>¥16_Other¥</b>		

<b>38</b>	Location of convenience store	コンビニエンスストア	
File Name	<b>CVS</b>	shape	Point
Folder	<b>¥16_Other¥</b>		

<b>39</b>	Location of public facilities	公共施設等の位置	from 1:2500 Spatial Data Framework
File Name	<b>tatamono</b>	shape	Polygon
Folder	<b>¥04_SDF2500¥</b>		

<b>40</b>	Polygons of public space	公共用地の敷地界ポリゴン	from 1:2500 Spatial Data Framework
File Name	<b>zyouti</b>	shape	Polygon
Folder	<b>¥04_SDF2500¥</b>		

**14 Hazard**

<b>41</b>	Location of escape facilities	避難施設	
File Name	<b>escape_facility</b>	shape	Point
Folder	<b>¥15_Hazard¥</b>		

<b>42</b>	Location of active faults	活断層	
File Name	<b>active F</b>	shape	Line
Folder	<b>¥15_Hazard¥</b>		

<b>43</b>	Emergency Transport Routes	緊急輸送路	
File Name	<b>emergency</b>	shape	Line
Folder	<b>¥15_Hazard¥</b>		

<b>44</b>	Water area	水域	from 1:2500 Spatial Data Framework
File Name	<b>mizu</b>	shape	Polygon
Folder	<b>¥04_SDF2500¥</b>		

<b>45</b>	Inundation Areas of the Past Floods	過去の浸水区域	
File Name	<b>flooded</b>	shape	Polygon
Folder	<b>¥15_Hazard¥</b>		

<b>46</b>	Seismic Intensity Prediction	予想震度分布	
File Name	<b>eq_intensity</b>	shape	Polygon
Folder	<b>¥15_Hazard¥</b>		

**15 Others**

<b>47</b>	Name of City, Town or Village	市区町村名	from 1:2500 Spatial Data Framework
File Name	<b>si_tyon</b>	shape	Point
Folder	<b>¥04_SDF2500¥</b>		

<b>48</b>	Name of Neighbourhood	町丁目名称	from 1:2500 Spatial Data Framework
File Name	<b>tyomen</b>	shape	Point
Folder	<b>¥04_SDF2500¥</b>		

<b>49</b>	Centerline of river	河川中心線	from 1:25000 Spatial Data Framework
File Name	<b>Kyoto KK</b>	shape	Line
Folder	<b>¥03_SDF25000¥</b>		

<b>50</b>	Location of Daimonji five hills	五山送り火の位置	
File Name	<b>Gozanline polylie</b>	shape	Line
Folder	<b>¥16_Other¥</b>		

<b>51</b>	City block	街区	from 1:2500 Spatial Data Framework
File Name	<b>gaiku</b>	shape	Polygon
Folder	<b>¥16_Other¥</b>		

**16 Map Image**

<b>502-57</b>	Image of 1:25000 topographical map	1:25000 地形図の画像	
File Name	<b>I25k523525</b>	GeoTiff	淀 Raster Data
File Name	<b>I25k523526</b>	GeoTiff	宇治 Raster Data
File Name	<b>I25k523535</b>	GeoTiff	京都西南部 Raster Data
File Name	<b>I25k523536</b>	GeoTiff	京都東南部 Raster Data
File Name	<b>I25k523545</b>	GeoTiff	京都西北部 Raster Data
File Name	<b>I25k523546</b>	GeoTiff	京都東北部 Raster Data
Folder	<b>¥02_Image25000¥</b>		

**17 Kyoto City**

<b>58</b>	Point of census basic unit blocks in 2000	基本単位区別人口(2000年)	from poplation census 2000
File Name	<b>kihon2000</b>	shape	Point
Folder	<b>¥06_Census¥</b>		

<b>59</b>	Point of census basic unit blocks in 1995	基本単位区別人口(1995年)	from poplation census 1995
File Name	<b>kihon1995</b>	shape	Point
Folder	<b>¥06_Census¥</b>		

<b>60</b>	Boundary of Neighbour block with poplation c	町丁字別人口(2000年)	from poplation census 2000
File Name	<b>kyoto00a</b>	shape	Polygon
Folder	<b>¥06_Census¥</b>		

<b>61</b>	Boundary of 11 wards in Kyoto City	京都市11区の境界線	
File Name	<b>kyoto11school</b>	shape	Polygon
Folder	<b>¥05_Boundary¥</b>		

<b>62</b>	Boundary of School Attendance Unit in Kyot	学区界	
File Name	<b>kyoto11ku</b>	shape	Polygon
Folder	<b>¥05_Boundary¥</b>		