Contents

	Page
บทคัดย่อ	V
Abstract	ii
Acknowledgements	ix
Contents	Х
List of tables	ii
List of figures	xiv
Chapter 1: Introduction	1
1.1 Rationale of Study	1
1.2 Thesis content	n C 2
1.3 Literature Review	4
Remote sensing data	4
Polygonal, block and pixel	5
Land-use cover and land-use code (LUCC)	6
Land-use change	7
Land-use change modeling	9
1.4 Objective	15
Chapter 2: Methodology	12
2.1 GIS data structure	16
2.2 Coordinate shifts (geometric correction)	21
2.3 Digitization concept	24
2.4 Digitization method	26

		Page
	2.5 Varying the grid density	29
	2.6 Graphical display	30
	2.7 Logistic regression	31
	2.8 Adjusting for spatial correlation	36
Chapter 3	: Results	37
	3.1 Land-use data from digital grid	37
	3.2 Land-use change Phuket Island 1967-2009	42
	3.3 Urbanization of Phuket Island	43
Chapter 4	: Discussion and Conclusion	47
	4.1 Digitization	47
	4.2 Land-use change on Phuket Island	47
	4.3 Urbanization of tourism areas on Phuket Island	48
	4.4 Concluding remarks	49
	4.5 Technique term of the computation of R program	50
	4.6 Suggestions	50
	4.7 Synthesis	51
Reference		52
Appendix		62
Progran	n command	62
Paper of	f publication I	84
Paper of	f publication II	98

136
121
103

Page



List of Tables

Table		Page
1	Coordinate shifts in Phuket Island based on information in Figure 6	23
2	Data structures for polygonal and digitalized data structure for plotID	
	397 in 2009	25
3	Data structures for 6×5 point rectangle with additional grid-points to	
	improve accuracy in small polygons (asterisked)	29
4	Classification	44
5	Result from logistic regression (1967-1975)	44
6	Result from logistic regression (1975-1985)	45
7	Result from logistic regression (1967-1975)	45
8	Result from logistic regression (1975-1985)	45

List of Figures

Fig	gure	F	' age
	1	File to illustrate thematic map from Thailand Department of land	
		Development	16
	2	Example of data structure of original form from MID file	17
	3	Data structure of MIF file in Coral Island (south of Phuket)	18
	4	Data in Figure 3 after restructuring & indexing as a relational	
		database table	20
	5	Map created from data in Figure 4 using Excel	21
	6	Geometric correction (in kilometer) of UTM coordinates position	23
	7	Thematic map of land-use in Coral Island	24
	8	Grid points in raster format for Coral Island in 2009	25
	92	Documentation for function <i>point.in.polygon()</i> in sp library for R	26
	10	Program commands for computing digitized land-use	27
	11	Varying grid for Coral Island containing extra grid-points	29
	12	Graphical display showing land-use change in Coral Island	
		from 2000 to 2009	30
	13	Data for small sample of 30 grid-points (30 hectares) selected from	
		Figure 12 and result from fitting logistic regression model	32
	14	Bar chart of percentages of land that changed to rubber plantation	33
	15	Data for Coral Island (424 hectares) and fitted logistic regression model	35
	16	Data for Coral Island (424 hectares), which separated to west and east	
		fitted logistic regression model	35

17	Loss and gain of land on Phuket Island from 1967 to 2009 (a-d)	38
18	Summary of occupation of land-use type of Phuket Island from 1967 to	
	2009 in the four types of groups (compare between North and South)	42
19	Path diagram of conceptual framework for analysis of land-use change	43
20	The bar chart shows percentages of urban land which denote 95%	
	confident interval from logistic regression model	46