

Contents

	Page
บทคัดย่อ	(3)
Abstract	(4)
Acknowledgements	(5)
Contents	(6)
List of Tables	(8)
List of Figures	(9)
Chapter	
1. Introduction	1
1.1 The Importance of Rain	1
1.2 Objectives of Study	3
1.3 Relevant Theories and Research	4
2. Methodology	10
2.1 Study Design	10
2.2 Management of Data	10
2.3 Methods Used for the Statistical Analysis	11
2.4 Methods for Creating Geographical Maps	13
3. Statistical Analysis of Rainfall Data	15
3.1 Leap Year Days and Pattern of Missing Data	15
3.2 Distribution of Five-Day Totals	18
3.3 Overall Seasonal and Regional Patterns	20
3.4 One-way Analysis of Variance Results for each Station	23
4. Mapping of Rainfall Data	34
4.1 Maps of Average 5-day Rainfall	34
4.2 Maps of Average 5-day Rainfall in the Rainy Season	39
5. Conclusion and discussion	50
5.1 Conclusion and Discussion	50
5.2 Problems with the Data and the Analysis	51
5.3 Future Research	51

Bibliography	52
Vitae	54

List of Tables

Table	Page
3.1 Rainfall Measurements on February 29	16
3.2 Pattern of Missing Data by Station and Year	17
3.3 Overall Percentages of 5-day Periods with Missing Data at Each Station	17
3.4 Averages of Transformed Rainfall Totals in 5-day Periods at Each Station	20
3.5 Numerical Summaries of Transformed Rainfall Totals in 5-day Periods	22
4.1 Zero-adjusted Geometric Mean 5-day Rainfall Over 1982-2000 from Period 61 (Oct 28-Nov 1) to Period 70 (Dec 12-16) in Pattani Province	40
4.2 Observed 5-day Rainfall from Period 61 (Oct 28-Nov 1) to Period 70 (Dec 12-16) in Pattani Province in 2001	44

List of Figures

Figure	Page
3.1 Distribution of Rainfall in 5-day Periods	18
3.2 Distribution of Square Root of Rainfall in 5-day Periods	19
3.3 Distribution of Log(Rainfall+1) in 5-day Periods	19
3.4 Distribution of Log(Rainfall+1), Omitting 5-day Periods of no Rain	20
3.5 Plot of Back-transformed Rainfall Totals in 5-day Periods	21
3.6 Scatter Plot of Standard Deviations vs Means after Fitting One-way Anova	23
3.7 Normal Scores Plot of Residuals after Fitting One-way Anova	24
3.8 One-way Anova Results for Pattani & Yaring Rainfall	25
3.9 One-way Anova Results for Khok Pho & Khok Pho (SHS) Rainfall	27
3.10 One-way Anova Results for Nong Chik & Pattani Airport Rainfall	28
3.11 One-way Anova Results for Kapho & Mai Kaen Rainfall	29
3.12 One-way Anova Results for Thung Yang Dang & Mae Lan Rainfall	30
3.13 One-way Anova Results for Sai Buri & Panare Rainfall	31
3.14 One-way Anova Results for Yarang & Mayo Rainfall	32
3.15 Time Series Plots of Means of Transformed Rainfall Totals in 5-day Periods	33
3.16 Two-way Anova Results of Mean 5-day Rainfall	33
4.1 Map of Rainfall Recording Stations in Pattani Province	35
4.2 Range Map of Mean 5-day Rainfall in Pattani Province	35
4.3 Grid Map of Mean 5-day Rainfall in Pattani Province	36
4.4 Contour Map of Mean 5-day Rainfall in Pattani Province	37
4.5 Range Map of ZAG Mean 5-day Rainfall in Pattani Province	38
4.6 Grid Map of ZAG Mean 5-day Rainfall in Pattani Province	38
4.7 Contour Map of ZAG Mean 5-day Rainfall in Pattani Province	39
4.8 Range Maps of ZAG Mean 5-day Rainfall Over 1982-2000 from Oct 28-Nov 1 to Dec 12-16 in Pattani Province	41
4.9 Grid Maps of ZAG Mean 5-day Rainfall Over 1982-2000 from Oct 28-Nov 1 to Dec 12-16 in Pattani Province	42

4.10 Contour Maps of ZAG Mean 5-day Rainfall over 1982-2000 from Oct 28-Nov 1 to Dec 12-16 in Pattani Province	43
4.11 Range Maps of 5-day Rainfall from Oct 28-Nov 1 to Dec 12-16, 2001 in Pattani Province	45
4.12 Grid Maps of Observed 5-day Rainfall from Oct 28-Nov 1 to Dec 12-16 in Pattani Province in 2001	46
4.13 Contour Maps of Observed 5-day Rainfall from Oct 28-Nov 1 to Dec 12-16 in Pattani Province in 2001	47
4.14 Contour Map of ZAG Mean 5-day From Sep 3-7 to Dec 27-31	48