

CHAPTER I

INTRODUCTION

1.1 State of problems

Flood and landslide are the most common natural hazard in Nakhon Si Thammarat province, which caused damage to life and property. This has predicted to increase severity in the future. Nakhon Si Thammarat historical data shows that flooding and landslide occurred in years 1962, 1975, 1988, 1993, 2001, and latest in March 2011. Flooding and landslide each time caused damage to a lot of life, property and economic asset as shown in table 1-1

Table 1-1 Damage from flooding and landslide in Nakhon Si Thammarat province

DD/ MM/ YY	Victims	Death/ Casualties	Building Damage	Agriculture Damage (Rai)	Worth of damage (Bath)
22 Nov 88	-	700 / -	1,500	6,150	> 900,000,000
29 Nov 93	377,070	23 / 252	2,180	701,483	1,260,940,725
4 Nov 01	461,263	11 / 20	9,248	> 400,000	213,054,675
23 Mar 11	909,500	28 / -	> 30,000	580,816	> 3,000,000,000

Source : Thai Meteorological Department (2011)

Major cause of flooding and landslide in Nakhon Si Thammarat is from natural factor, which is the influence of monsoon throughout the year. This affects a high level of rainfall (2,381 mm). Long period of continuously heavy rainfall affects overload of natural drainage mechanism capacity, result in flooding or landslide occurrence.

Anthropogenic activities is also an important factor, including inappropriate land use (e.g. changes of forest area to rubber plantation). The result related to Abdollah Bennui research (1), indicates that decreasing of forest area to 22.4% during 1980-2004 is because of forest area conversion to rubber plantation and fruit orchard. When there is a heavy rainfall, water could quickly flow down from high to low land. Thammarat coastal zone changed during 1990-2004, rice paddy and

swamp area were also decreased continuously as a result of land use changes for building and transportation. These are one of the factors affects decline of drainage system ability (3).

It indicates that flooding and landslide in Nakhon Si Thammarat province tended to show more severity in the future. For this reason, this research aims to study of land use changes by using Remote Sensing, Geographic Information System combine with CA-Markov to track land use change during years 1994, 2005, 2011 and its trends in the future. Also, using land use changed data combines with potential surface analysis (PSA) was analyzed flood risk areas and landslide areas. This information would be more effectively used as guidelines to prevent and warning in the future.

1.2 Objectives

1. To study land use changed in Nakhon Si Thammarat province during years 1994-2011, and study trend of land use changed in year 2017.
2. To study flood risk areas in Nakhon Si Thammarat province.
2. To study landslide risk areas in Nakhon Si Thammarat province.

1.3 Scope of study

- 1.3.1 The study area covers Nakhon Si Thammarat province.
- 1.3.2 This research applies Geographic information system with CA-MARKOV Model to study land use changed in Nakhon Si Thammarat province during years 1994-2011, and its trend of land use changed in year 2017
- 1.3.3 This research applies Geographic information system and Potential surface analysis in order to study flood risk areas in Nakhon Si Thammarat province.
- 1.3.4 This research applies Geographic information system and Potential surface analysis in order to study landslide risk areas in Nakhon Si Thammarat province.

1.4 Expected result

1. Land use changed data in Nakhon Si Thammarat province during years 1994, 2005, 2011, and 2017.
2. Nakhon Si Thammarat flood risk map.
3. Nakhon Si Thammarat landslide risk map.

1.5 Conceptual framework

The conceptual framework is divided into 2 parts as follow.

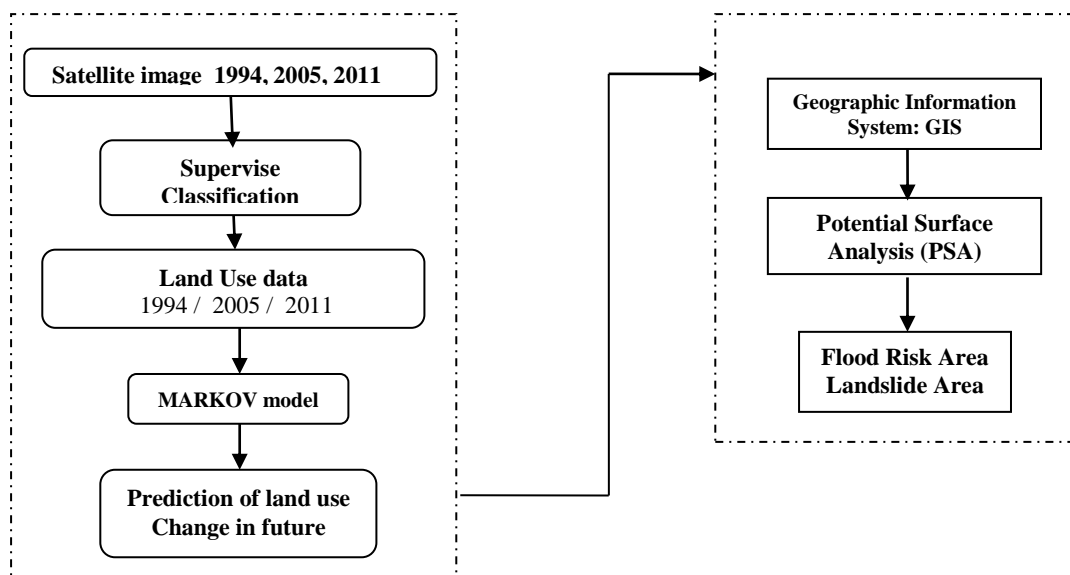


Figure 1-1 The conceptual framework