NARCOTIC INCIDENTS IN NORTHERN THAILAND

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ABSTRACT: The problem of narcotic smuggling in Thailand has become a key issue nationwide which is defined in the master plan of country. Thailand border has been used not only to transport and transit mainly heroin and marijuana prior to final destination, but also to terminate amphetamine. Not surprisingly, the Office of Narcotics Control Board, Thailand reported that there are 1.2 million addicts. The northern border is discovered as the most critical area of drug trafficking since it is close to manufacturer together with topography conducive to smuggling. Therefore, this research aims to study geo-spatial related narcotic trafficking. Retrieval and relevant data of smugglers arrested were collected from 2010-2015 through local news media and implemented in geo-database format. Geo-statistics analysis of Moran I's autocorrelation and Hot Spots (Getis-Ord Gi*) was applied to investigate geo-spatial related drug smuggling. The results of Moran I's autocorrelation show that narcotic trafficking pattern is formed randomly as Moran's Index value of 0.0663 that showed in z-score and p-value are 0.7983 and 0.4247 respectively where the most of hotspots are occurred at sub-districts across neighboring country. Lastly, operational maps will be visualized along with physical aspects including transportation routes and land use in order to be deployed in enhancing military and defense decision making.

1. INTRODUCTION

Narcotic smuggling is a worldwide illegal business which consists of narcotic planting, production, distribution and chemical precursor as prescribed by law. (United Nations Office on Drugs and Crime, 2016) Narcotic control in Thailand has been operating for over decades (Narcotic Control Division, 2016) as such issue has been occurring in lengthy period of time. Although the preventive justice, the Narcotics Act or related laws and penalty for the dealers and addicts are provided, still narcotics are remained. At present, even Thailand is not considered as a source of production, but the tendency production, smuggling and the use of narcotic caused by the fact that Thailand is an important center of drugs transportation in South East Asia. It is also found that amphetamine (synthetic made of Methamphetamine and Caffeine) is wildly addicted while the number of Ice or Methamphetamine crystal addiction has been increased. (James, 2016) According to the statistic of criminal case on narcotics of the Royal Thai Police since 1997-2015, it reveals that the number of the offenders has increased annually, even there were less number of cases during 2003-2006, compared to the previous years. Such decline caused by the restriction of Measures for Suppression of Narcotic Offenders during a period of narcotic war which was one of the measures for Suppression of Narcotic stipulated by a Former Prime Minister and the restriction also caused the killing to cut the link. Afterwards, as the political change has replaced (Pierre, 2014), a number of cases has increased rapidly to the maximum number of 447,348 cases in 2013. Such rapid decline, together with, the change of Council of Ministers has turned to the civil war and such offenders' suppression focused on political agitators instead in order to maintain public order. A number of narcotic cases has declined until 2015, a number of cases was 280,146 (Office of the National Economics and Social Development Board, 2016) as the National Council for Peace and Order or NCPO has played a strict role in suppression of offenders and agitators in society and imposed the suppression of trafficking and narcotic addict rehabilitation as accelerated matters within 30 days, under the order of National Council for Peace and Order on the suppression and detention of narcotic. (Bureau of Technical Services, Secretariat of the house of representatives, 2014) The NCPO also encouraged narcotic issues as one of ASEAN cooperation and founded ASEAN Narcotics Cooperation Center or ASEAN-NARCO in Thailand as the center of protection of narcotic issues in ASEAN in order to solve narcotic issues potentially and conduct a cooperation on the development on information for narcotic issues monitoring in a form of network for the exchange of experiences, knowledge, situational assessment and associating of main information for narcotic issues monitoring. (Criminal press, 2015)

The situation of narcotics smuggling in Thailand mostly occurs in the border with its landscape that facilitated narcotic smuggling through the country. Even the suppression and detention of narcotic smuggling are stricter, 80% of the smuggling area is in the northern border of Thailand (Office of the Narcotics Control Board, 2013), particularly in Chiang Rai, Chiang Mai and Mae Hong Son, according to the fact that these areas are nearby narcotic storages of producers and also the powerful minorities mafia's area in neighbor country. (Office of the Public Sector Development Commission, 2016)

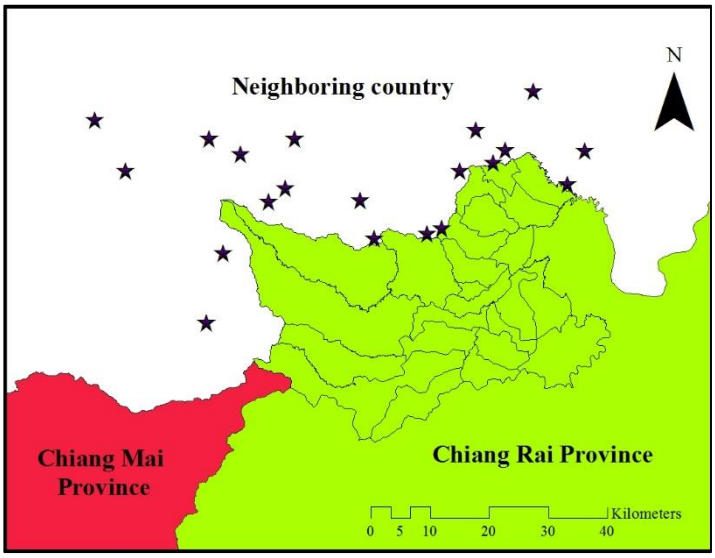

Figure 1 Narcotic storages of producers in neighbor country.

The National Security sector has applied GIS and remote sensing to the narcotic crops survey and monitoring such as opium in 17 provinces of the northern part which such applied technology let us know the narcotic planting areas, demand of planning in several villages and the supporting capitalists for planting in the outback (Office of the Narcotics Control Board, 2013). Toju, Henry, and Christain (2014) investigated criminal situation in Berlin which consists of 2 studies; firstly, questionnaire survey was carried out to question a number of 250 people and 66 police officers. The results demonstrated that the number of crime was high with a lack of potential in terms of management of the police officers because of an outdated analysis method and the information was not easily provided. Therefore, 80% of people are lack of trust in police officers' works. Secondly, it was the study of possibility in applying GIS for more potential criminal management. Such technology was employed in case analysis and illustrated in crime map format. Buffer zone analysis was applied so as to identify risk areas of crime incidents. The results revealed that the buffered area has a high level of crime without security guard provided while the patrol is necessary required at this buffered area. It also proved that GIS has more potential to provide a conclusion on the cause of crime. In addition, it is suggested that using of GIS for criminal management requires experts in such areas along with supporting facilities for spatial analysis. Langworthy and Le Beau (1992) studied on spatial characteristics of investigating crime evidence of police fencing sting operation which was an operation by both police officers and plain-clothes man disguising as a dealer and buyer of stolen cars or separated parts to achieve in arresting offenders, providing evidence and returning stolen possessions to the victims. The study area was Birmingham with information provided by case files of Alabama Police Department from October 1986 - February 1986 and time series analysis was applied. The results demonstrated that the measures were unsuccessful in terms of criminal control; additionally more possibilities of crime could be increased. Langworthy and Le Beau (1992) suggested that spatial analysis should be applied in order to analysis possible measures in the future. Elmes, Roedl, and Conley (2014) also defined the definition and concept on forensics investigation by using Geo-informatics in order to conduct an analysis and criminal plan for criminal suppression and lessen the incidents of crime. Remote sensing was used to specify the boundaries of crime incidents and to classify landuse patterns of such areas. GPS was employed to record crime locations and nearby landmarks in order to analyze together with the criminal boundaries. The use of Geo-informatics provides significant spatial data which consists of locations of crime scene and other data presenting in attribute table to be used in criminal investigation. Elmes, Roedl, and Conley (2014) as cited in Longley, and Le Beau (2005) also explained the concept of general spatial analysis in 6 types, consisting of Queries, Measurements, Transformations, Descriptive summaries, Optimization, and Hypothesis testing. The officers found such methods had an effect on operation and planning before the scene visit.

In Thailand, Police Information System (POLIS) has been operated by police sectors which compile arresting data in all cases of the Royal Thai Police. Such system records criminal history, address and other personal information of the offenders such as bank account's number, car license and driver's license's number (Singpong, 2012). However, the system does not provide the locations of crime scenes or the locations of hiding shelters indicated by detective and also none of spatial analysis. Narcotics Information System for Province Agency (NISPA) has been operated by the Office of the Narcotics Control Board (ONCD). ONCD has assigned the system to other national defense and governmental sectors so that they are able to locate and record narcotic incidents. The data has been collecting into the system since 2013 while such logging in requires username and password for each section. The database of this system comprises the data of addicts/users, arresting/arrest warrant and seizure. The records of narcotic arrest cases include the information of

the date of incidents, permanent checkpoint areas, temporarily permitted areas and also the arrested area. The system is able to serve locations of cases in geo-referenced format but the attribute of its locations are not provided (Narcotics Suppression and Protection Center, Chiang Rai, 2012). Nevertheless, this system is unable to apply for spatial analysis as it is only a collective data in a form of database and shown in the adaptive program on central website, therefore, the summary report of data is the statistical analysis such as graph and percentage charge presenting in descriptive form. Criminal Record Information Management Enterprise System (CRIMES) has been used by the Royal Thai Police as a new system which substitutes for POLIS system. Other relative data for criminal case operation supporting of police officers was additionally provided in CRIMES such as civil registration, the Department of Land Transport, gun license and social security which compiled in the central investigation system in order to reduce the process of notification and arrest warrant. Investigation process is easier in case that the identification of offenders and car registration is provided (Local police station of Phrae, 2013). However, such system does not provide actual locations in geo-referenced format but it only provides navigation using GPS. Therefore, in this research Geo-Informatics were applied with the objectives as follows: (1) to conduct Geo-database on narcotic cases by collecting published arresting information from media (in descriptive form) which its information is manipulated to geographically referenced data; (2) to investigate a pattern of narcotic arresting scene in study area; (3) to discover the areas with high level and low level of narcotic arrest and; (4) to present the spatial analysis results in order to be easily understandable and lead to monitoring, tracking and operating of national security sectors.

2. MATERIALS AND METHODS

2.1 Materials

Data used in this research are: (1) data of narcotic cases retrieved from published press Hedlomnews[1], Chiangmai News[2], Matichon online[3], Thairath online[4], Daily News[5] and so on. Descriptive data were collected from 1 January 2011 to 31 December 2015 and; (2) administrative data of Chiang Rai province in 2012, were acquired from Landuse Condition Analysis Group, Land Use Planning and Policy Division, Department of Land, Thailand with scale of 1: 50,000.

2.2 Methods

The study area of this research is Mae Chan, Mae Fah Luang and Mae Sai District as the topography of such areas is covered with high mountains with dense jungle and suitable for narcotic smuggling both import and export. According to the study of the Office of the Public Sector Development Commission, 2016, such areas are closest to the production sources and storages of narcotics in neighboring country. Study period has taken 5 years. The methodology of this paper is in twofold; (1) a conducting of Geo-database of narcotic case arrest and; (2) Geo-statistical analysis to investigate pattern and hot spots of narcotic cases as shown in figure 2.

2.2.1 A Geo-database of narcotic case arrest was implemented. Firstly, the news of narcotic case arrest were gathered from different published sources and classified according to given data dictionary. Figure 1 illustrates the attribute table of narcotic data including locations of arrest (X,Y), date of arrest, operating time, scene of incidents, process of arrest, offenders, types and gender of the offenders, types of narcotic as evidence and attribute of narcotics, operating authorities and prosecution after arrest. Since the news of narcotic case arrest was classified, they were manipulated to geographic/spatial format using Google Earth Pro and Google Street View was used to identify accurate locations. For example as illustrated in Figure 3, a searching of Huay Nam Khun Village using Google Earth Pro, Huay Nam Khun Village was located at Moo 1, Mae Fah Luang sub-district. In contrast, the different location is found instead at Huay Rai Samakkee Village located at Moo 2, Mae Fah Luang sub-district using Google Street View (A) and a searching of Pang Saraphee Resort, located at Moo 6, Huay Krai sub-district, Mae Sai district was found at San Lid Mai Village which is located at Moo 8, Huay Krai sub-district by Google Street View (B). Also Ban Terd Thai School (C) which was situated at Moo 1 Mae Fah Luang sub-district, on the other hand it is discovered by Google Street View that Ban Terd Thai School is located at Terd Thai Wittayakom School (C1).

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[1] Hedlomnews into site : http://www.hedlomnews.com/
[2] Chiangmai News into site : http://www.chiangmainews.co.th/
[3] Matichon online into site : http://www.matichon.co.th/category/local/crime
[4] Thairath online into site : http://www.thairath.co.th/home
[5] Daily news into site : http://www.dailynews.co.th/crime

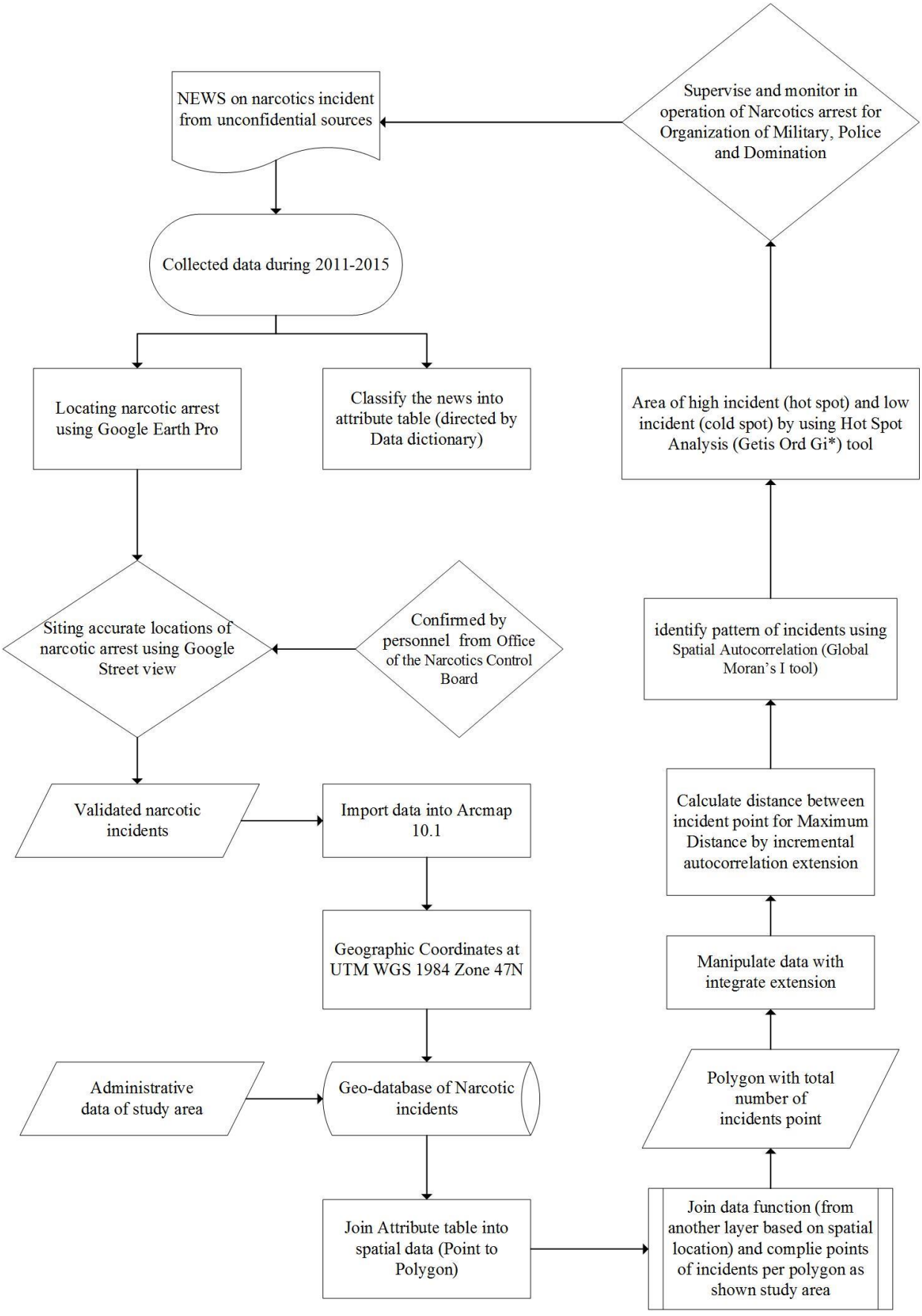

Figure 2 Conceptual framework of the study

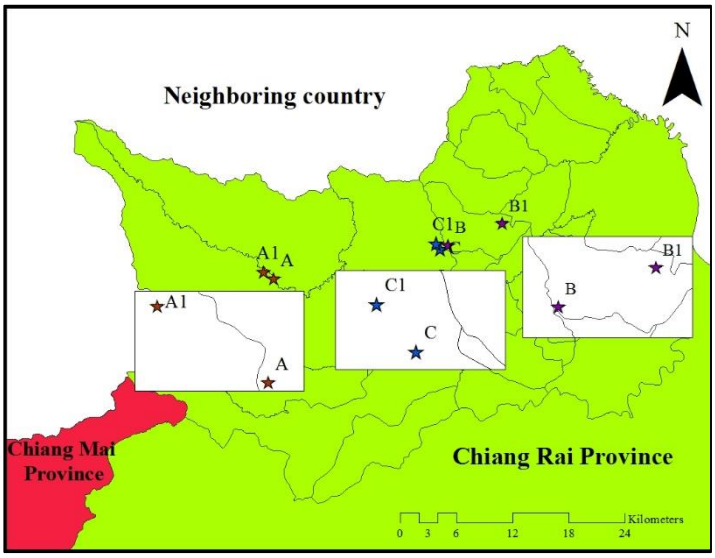

Figure 3 Locating an incident by Google Earth Pro and Using Google Street View function to identify an accurate location. The following locations were discovered by Google Street View function: (A) Location of Huay Nam Khun Village, located at Moo 1, Mae Fah Luang sub-district (B) Location of Pang Saraphee Resort, situated at Moo 6, Huay Krai sub-district, Mae Sai district and; (C) Location of Ban Terd Thai School is at Moo 1 Mae Fah Luang sub-district. In contrast, the inaccurate locations are A1, B1 and C1, searched by Google Earth Pro.

2.2.2 Geo-statistical Analysis was carried out by transferring the attribute table of classified narcotic arrest news to GIS Software ArcMap 10.1 so as to analyze the data together with administrative data. Moran's I spatial auto-correlation was applied to investigate pattern of incidents and the areas with high level and low level of arrest were studied using hot spot analysis with Getis Ord Gi* technique .The functions of Join with attribute (Point to Polygon) and join from another layer based on spatial location were used in order to compile and calculate the narcotic incidents per polygon of the study area. Afterwards, the distance between incident points was calculated for Maximum Distance in order to identify a pattern of incidents using Incremental Autocorrelation extension. The distance values retrieved were related to Z-score which were used in conceptualization, Fixed Distance Band. Moran's I analysis is variable comparison in any position with other variables in other positions that have normal distribution with Moran's Index value between -1 to +1. Further explanation is that positive value of Moran's Index shows a form of cluster and negative value presents randomly distributed pattern of incidents. Hot spot analysis with Getis-Ord Gi* technique was implemented in order to identify the areas with high level and low level of incidents in the study area, shown as GiZScore value. If GiZScore is higher than 1.96, it means that the areas contain high level of incidents. On the other hand, if GiZScore is lower than -1.96, it is illustrated that the areas have low level of incidents.

3. RESULT AND DISCUSSION

3.1 Geo-database of narcotic case arrest

According to Geo-database of narcotic case arrest of this study, it reveals that a number of arrests in 2011, 2012, 2013, 2014 and 2015 were 22, 19, 43, 23 and 18 cases, respectively as seen in figure 4. It also explains that the arrests in 2013 were the highest cases according to the study of Pierre (2014). It was found that such increase of arrests caused by the political change leading the officers to operate in terms of national security in order to suppress the agitators. Therefore, this attracted the dealers to have more opportunities to smuggle narcotics in chaotic period. As comparing the incidents in different period, it was discovered that the highest level of arrests were in February, July and December, as they attempted to avoid a strict exploration by police officers, soldiers, govern authorities during public holidays such as new year days and the blockade and strict blockade operation before propitious month which is 12 August (The Queen's day).

Table 1 Attribute table of news analysis for conducting Geo-database on narcotic cases.

X	Y	Date	Month	Year	Time_ Scence	Locale	Des_ scene	Offender	Type_ offender	Gender_ offender	Type_ exhibit	Exhibit	Officer	Actuation
572300.00	2228400.00	6	January	2013	12.10	Ban A-lae, Mae Salongnok, Mae Fah Luang District	5	A group of 4 narcotics dealers	0	0	1	230,000 tablets of amphetamine	1	3
572100.00	2228900.00	9	January	2013	09.00	Ban A-lae, Mae Salongnok, Mae Fah Luang District	11	A group of 1 narcotics dealers	0	0	1	50,000 tablets of amphetamine	1	3
589641.99	2235309.46	10	January	2013	11.50	Ban Mae Kham, Moo 3, Srikam, Mae Chan District	1	Mr. Surachai Promlikit	1	1	5	1,300,000 tablets of amphetamine and 20 Kg. of meth amphetamine	3	1
592355.79	2257779.22	10	January	2013	10.00	Room No. 10, After Glow Hotel Mae Sai, Moo 4, Ban Pa Yang Mai, Viang Pang Kham sub-district	6	Mr. Navaporn Roongpaisarnchai	1	1	1	98,000 tablets of amphetamine	2	1
592342.34	2258131.23	10	January	2013	10.00	No. A8 Bird Hotel Mae Sai, Moo 4, Ban Pa Yang Mai	6	Mr. Natthapon Inkaraked	1	1	1	98,000 tablets of amphetamine	2	1
592200.00	2247500.00	12	January	2013	18.00	Ban Tham Pla checkpoints, Moo 3, Pong Pha, Mae Sai District	1	Mr.Shiva shangkar subramaniam, Mr.haidaran ambalagan และ Mr.dencish subramaniam	3	1	6	2.2 Kg. of Heroine	4	1

3.2 Geographical statistics Analysis

According to the analysis of narcotics arrest within 5 years, it was found that the pattern of offenders was clustered in each sub-district of study area with Moran's Index of 0.299083, 95% of p-value (0.029601) and Z-score of 2.175389. The analysis of high and low incidents with Getis Ord Gi* was carried out. It was shown that high level of incidents was occurred in Viang Pang Kham sub-district, with a total number of 20 incidents. GiZScore of 2.106934 with 95% of p-value (0.035123) was found as seen in figure 5. The main reason is that the majority of Viang Pang Kham sub-district is high mountains with dense jungle and also close to neighboring country. This type of topology enhances in transportation of narcotic smuggling. The zero level of arrest was illustrated at Mae Kham and Chan Chwa Tai sub-districts. The landuse characteristics of these two districts are most of agricultural land and their topography are not suitable for narcotics smuggling without a connection to the border of neighboring country.

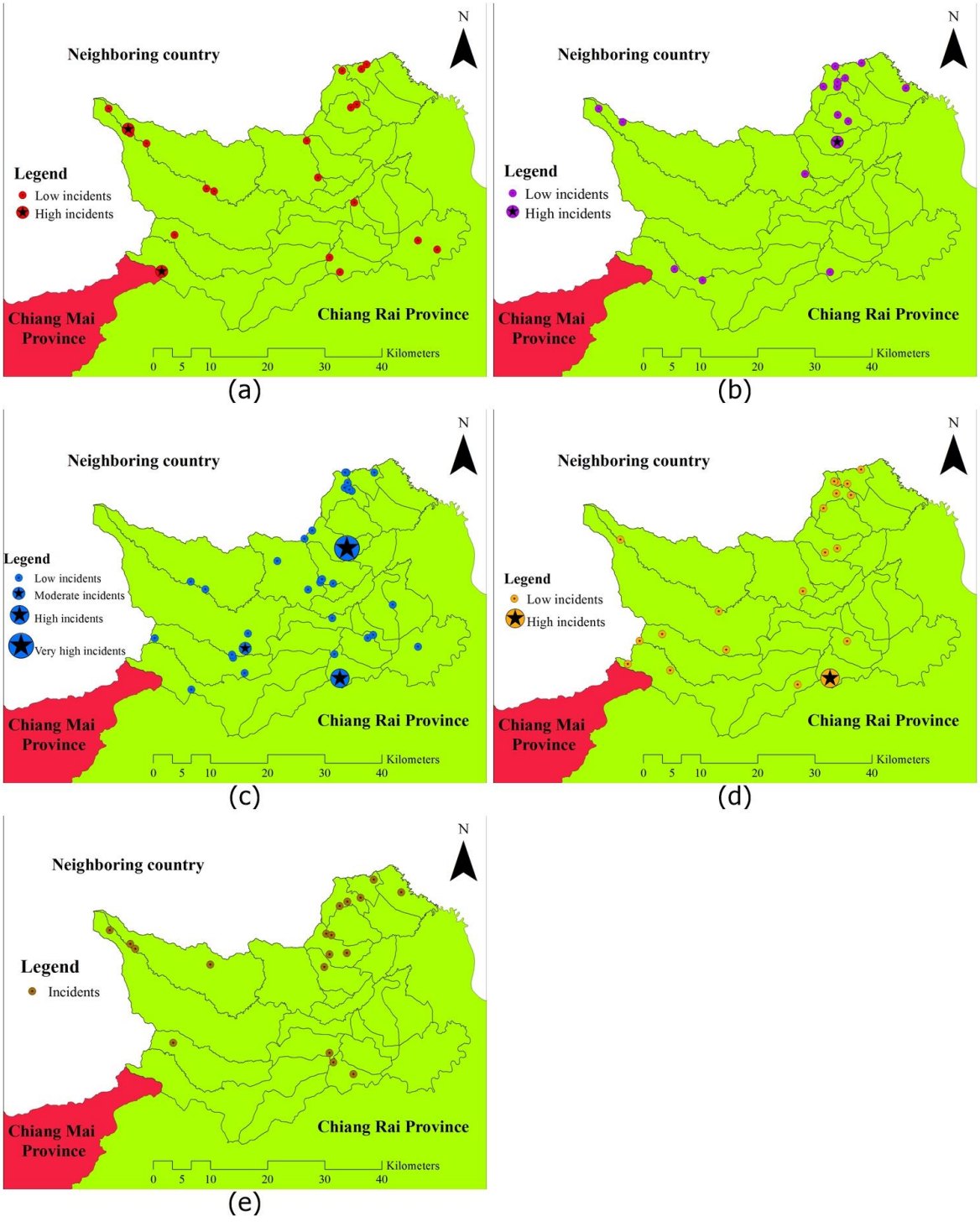

Figure 4 Narcotic incidents in study area; (a) 2011; (b) 2012; (c) 2013; (d) 2014; and (e) 2015

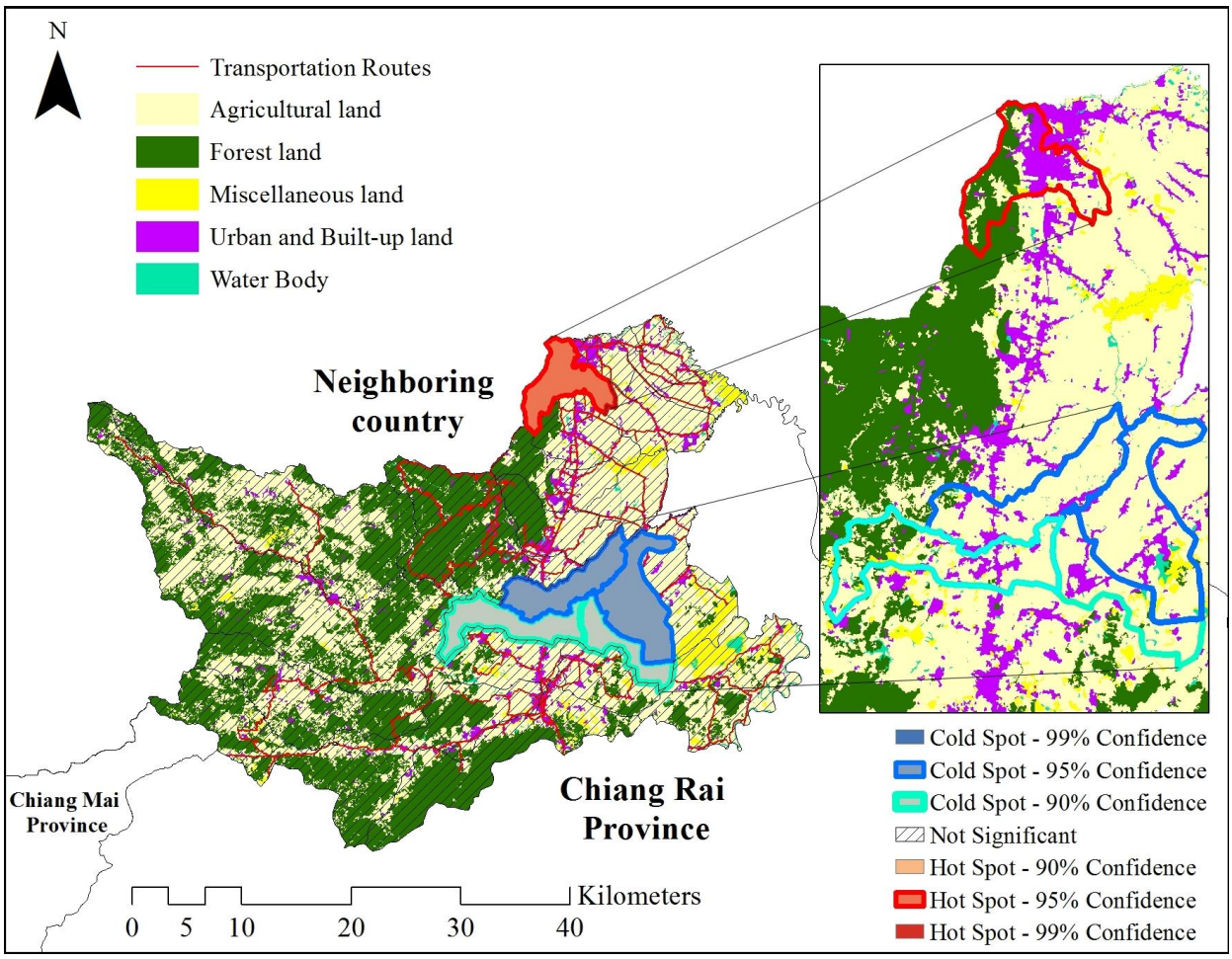

Figure 5 Hot Spot analysis result during 2011-2015 overlaid with transportation and land use

4. CONCLUSION

This investigation reveals that Geo-database comprises 125 arrest cases, categorized over 5-year period of the study. The pattern of incidents in the study area was clustered and the area with high level of arrest was found at Viang Pang Kham sub-district, while sub-districts with low level of arrest were shown at Mae Kham and Chan Chwa Tai. Geo-statistics can be used for predicting an accurate criminal possibility but arrest cases must be spatially geo-referenced correctly. Moreover, aerial photograph and satellite imagery could be further integrated into Geo-database to enhance in geo-spatial intelligent. Conclusively, in this investigation the Geo-database of narcotic arrest together with the results acquired from geo-statistical analysis can be beneficial in terms of national defense and security.

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