This study surveys the available English-language literature and learning resources covering the field of Thai geography, and provides historical review of Thai geography education and an inventory of relevant, accessible materials for ASEAN and international undergraduate students, educators and researchers. We note that the discipline and context of Thai geography has shifted toward new technologies, particularly geographic information systems, and this has left a void in practical and accessible text for high school and undergraduate students in gaining broad and traditional knowledge of the field. Our study finds that the accessibility of introductory English-language texts on Thai geography is limited, and that existing texts appear mainly in the grey literature or widely dispersed across various disciplines of study. The paper provides a platform to help future researchers and to facilitate future production of English-language textbooks and other study materials in the field of Thai geography.

Keywords: ASEAN, English literature, geography education, Thai geography, Thailand

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Introduction and rationale

Geography has been a fundamental field of study in Thailand since the end of the 19th century (Winichakul, 1997), however, a review conducted by Martin and Ritchie (2018a) identified a gap in the currently-available English language literature and electronic resources for teaching introductory Thai geography at the undergraduate level. Based on the work of Martin and Ritchie (2018a), this paper sources Thai geography literature and research which are accessible in the English language, providing a historical review of Thai geography education and documenting useful resources for students, teachers, and researchers.

ASEAN and international contexts

The Association of South East Asian Nations (ASEAN) currently incorporates approximately 620 million diverse people across 10 countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam). With Thailand at the core of the ASEAN region, bordered on all sides by ASEAN countries and framed by regional and intra-regional geography around the Mekong basin, the country’s role in the ASEAN region is critical.

The push for international (English) curricula in universities is spurred by policies related to the development of the ‘ASEAN Community’ (ASEAN, 2016a), especially given that English is the official language of ASEAN and is also increasingly the main language of tertiary instruction globally, and especially in the sciences (Goh & Cleary, 1991; Drubin & Kellogg, 2012; Kirkpatrick, 2010a, b).
In defining the direction of education in ASEAN, UNESCO (United Nations Organization for Education, Science and Culture) Bangkok (2014) suggests that regional initiatives are currently moving towards shared regional qualifications, aiming to promote mutual recognition of qualifications and quality assurance within the region. In practice, educational mobility is an English language issue, and successful educational transformation in Southeast Asia requires well-guided policy reform efforts and programs (UNESCO Bangkok, 2014). In line with these initiatives, the ASEAN University Network (AUN), based at Thailand’s Chulalongkorn University, was established in 1995 as a consortium of Southeast Asian universities.

From an international perspective, Songkaeo and Yeong (2016) suggest looking at Southeast Asia as a common educational space in a way that acknowledges the diversity of higher education systems and cultures within the region, similar to the practices and guidelines for cooperation in higher education in Europe. Communication and collaboration among universities include new opportunities for international programs and credit transfer among institutions across the region. It is logical to suggest that there is a key role for English-based geographic education in ASEAN development.

**English as an operational language of ASEAN**

At the creation of ASEAN 1967, English was unofficially the *de facto* operational language, and in 2007, the ASEAN Charter ratified the formalization of English as the *lingua franca* under Article 34 (ASEAN Secretariat, 2008). The aim of Article 34 is for the tertiary-educated people of ASEAN to have a politically neutral common language (Kirkpatrick, 2010a, b).

However, the long-established role of English as a common *second* language does not necessarily mean the demise of first languages, and this paper does not attempt to argue the sociopolitical implications of incorporating English as a common language or the potential for language loss in the wake of English use in ASEAN’s development. Rather, we argue that English is already the shared second language throughout the ASEAN and international educational arena, and no less so in Thailand, where English-language international schools and university programs are expanding. Internationalization *de facto* involves English as a common language of instruction and communication (Kirkpatrick, 2010a, b), particularly in the sciences (Drubin & Kellogg, 2012). Many Thai universities have a policy of internationalization, increasingly adopting English as the language of instruction at undergraduate and graduate levels. While English may not be the official language of an academic course, department or faculty, it may be used or incorporated into the teaching and curriculum, including the writing of theses, and is essential for attending and participating in international conferences, publication in international journals, and for communication and collaboration with the international community (Goh & Cleary, 1991; Drubin & Kellogg, 2012).

In the case of secondary school and undergraduate geography education in ASEAN, Goh and Cleary (1991) note that important language differences include Singapore and the Philippines emphasizing English, Malaysia and Indonesia emphasizing Malay languages, and Thailand emphasizing Thai language. Such linguistic differences can constitute something of a barrier to greater cooperation between universities and individuals. English remains the scientific lingua franca in the region and globally, with no likely substitute forthcoming, and so the accessibility of English-language materials and sources is key to opening local fields of study to the broader international research community.
Thai and ASEAN geography education

Modern geography was first embraced in Thailand by King Mongkut (1804 – 1868), and his interest in the field provided impetus to the overall educational reform process in Thailand (Winichakul, 1997). The earliest known Thai geography textbook was written by the American Presbyterian missionary Rev. J. W. Van Dyke in 1874 (Winichakul, 1997), and in 1882, King Chulalongkorn (Rama V) established a special mapping school in Bangkok. By 1892, the Thai Ministry of Education, under Prince Damrong Rajanuphab, made geography a compulsory subject at the junior secondary level, and as suggested by Anderson (2016), the Thai administration of that period took on a conceptual ‘cartographic’ approach to developing and managing the country. Not long after, a new model of Thai geography text was established with the publication of Phumisat Sayam [Geography of Siam] (c. 1900) by W.G. Johnson (Winichakul, 1997).

In 1935, a Department of Geography and History was developed under the Faculty of Arts at Chulalongkorn University, and policy changes in 1972/1979 saw the official designation of the university’s free standing Department of Geography. At the time of writing, the department offers a Bachelor of Arts in Geography, Bachelor of Arts in Geography and Geoinformatics, and a Master of Arts in Geography and GIS.

A decade earlier, in 1964, the first independent Department of Geography in Thailand opened at the Faculty of Social Sciences, Chiang Mai University. At the time of writing, they offer a Bachelor of Science in Geography and a Master of Science in Geography and Geoinformatics. The department focuses on geography teaching and research, particularly the diversity of natural elements and human activities, including environmental management at the local level, Mekong countries, and international organizations (Department of Geography CMU, 2018). At the time of writing, the department’s programs are mainly in Thai, with international postgraduate programs in development (S. Saenprasert, Department of Geography, Chiang Mai University, pers. comm., Chiang Mai, 27 August 2018).

The Geographical Society of Thailand, currently based at the Faculty of Science and Technology, Nakhon Ratchasima Rajabhat University, was formed in 1975, in order to better promote research and the exchange of knowledge in geography. In the same year, the society published the first issue of the Journal of Geography (Geographical Journal), serving as a center for the work of Thai geographers and researchers. Currently, the journal is published in Thai only (see Appendix A). This is an accessibility issue driven by editorial policy.

In 1990, the Southeast Asian Geography Association (SEAGA) was organized as a scientific and educational society as an outcome of the first SEAGA Conference in Brunei Darussalam. The association was formally registered with Singapore’s Registrar of Societies in 2006 to promote the theories, methods, and practices of geography and geographic education in the region. Outcomes include proceedings, journals and books published in English, such as Learning Geography Beyond the Traditional Classroom: Examples from Peninsular Southeast Asia (Chang et al., 2018), offering discourse on teaching and learning geography in the ASEAN region through fieldwork, education material development and education technology.

Thai geography is taught as early as primary school and at the secondary school level throughout Thailand, with Thai as the language of instruction in government schools. Private international schools, which typically follow British, American, or other international curricula, along with some Thai government-run English program (EP) schools, offer some geography courses in English at secondary level for those able to afford the fees. However, there is no high school level geography textbook specifically on Thai geography in English.
Historically, the Thai language is also the medium of instruction for geography courses at the university level, and therefore geography education in Thailand has followed a broadly independent path when compared to other ASEAN countries, where geography education took on colonial influences, particularly in the use of colonial languages (Goh & Cleary, 1991). Therefore, while Thai geography education developed mainly through Thai language texts, Malaysia, Singapore and the Philippines picked up English as a legacy language from the former British and American colonial systems. Indonesia, although strongly influenced by the Dutch education system, saw English enter the curriculum as a science/technology/commerce second language after World War II, when the archipelago officially adopted Malaysian Malay and Bahasa Indonesia as national languages. A brief chronology of early institutional geography education development in ASEAN includes (modified from Goh & Cleary, 1991):

- 1920 Raffles College, Singapore (courses in English)
- 1935 Chulalongkorn University, Thailand (courses offered, and in 1972 a faculty founded, Thai language)
- 1949 University of Malaysia (Singapore) (courses offered mostly in Malaysian Malay)
- 1951 Gadjah Mada University, Indonesia (a department founded, and in 1963 a faculty founded, courses taught mostly in Bahasa Indonesia)
- 1964 Chiang Mai University, Thailand (a department founded, courses offered mostly in Thai)
- 1980 National University of Singapore (courses offered, primarily in English)
- 1985 Brunei, University of Darussalam (a department founded, with English as the primary working language)

The various Thai-language publications on human and physical geography which are direct translations of English textbooks offer little or no content on Thai geography per se. For example, Wittayarat (1980) edited a Thai translation of Arthur Strahler’s 1973 *Introduction to Physical Geography* under the Foundation for the Promotion of Social Sciences and Humanities Textbook Project. Such texts are beneficial for developing the field of study among Thais, increasing the range of knowledge and vocabulary that Thais have access to. These translations of classic texts provide a common reference point in interactions between Thai and international colleagues.

The field of geography, including Thai geography, is being constantly re-defined as new technologies develop, like many other disciplines. Rakariyatham (2016) emphasizes that Thai geography education and research should progressively include new technology without abandoning the foundational principles of the discipline. It is essential that future planners can make rational, informed choices based on the best available data, leading to optimal outcomes in Thai and ASEAN planning and development. For example, space and computer technologies have revolutionized geography and all the earth sciences; and with satellite technology and the development of remote sensing (RS) systems and geographic information systems (GIS), the boundaries of the field are inevitably expanding, redefining our understanding of the discipline of geography as well as of our world. GIS is crucial in identifying the sheer scale of environmental degradation in the ASEAN region, for example, in forestry, land clearance, and important changes in the littoral environment, including aquaculture, coral reefs, mangroves and seagrass beds.
Rakariyatham (2016) implies that foundational Thai geography education generally lags behind the development of geographical knowledge in terms of different periods of time and in the wake of new developments in science. Importantly in terms of university recruitment processes, the technological revolution has made geography much more attractive to students whose primary interests lie in mathematics, technology and information technology (IT). As a result, geography students at undergraduate level increasingly have interests in courses on IT, statistical analysis, and even courses focused on satellite design, GIS and other areas of mathematics and hard science.

Case experience in Thailand

Based on our experience at the Faculty of International Studies, Prince of Songkla University (PSU), Phuket Campus, we suggest that courses teaching geographical knowledge in English can be very helpful for encouraging interaction between ASEAN students and international students from further afield.

PSU Phuket is one of Thailand’s officially ‘international’ campuses, and Thai geography was introduced to the international undergraduate program in Thai Studies in 2009. Thai geography courses include Thai students alongside students from the ASEAN region, Australia, Germany, Japan and the United States, and the program also accommodates special international groups, based on need and foreign interest in the subject and region (Martin & Ritchie, 2018a).

For Asian students from countries outside Thailand, the Thai geography course at PSU-Phuket incorporates English for Effective Communication (EEC) as a key part of the curriculum. These classes attract an international audience, generally second language English speakers, and this trend is likely to increase over time and gradually spread to other disciplines. In particular, field-oriented education, such as teaching geography to an international class, requires a common language of instruction. The rationale includes recognizing geography as a foundational scientific discipline and path for vocabulary acquisition, and this is particularly relevant in the ASEAN university and international school context. The current course description for Thai geography at PSU Phuket emphasizes human and regional geography, includes fieldwork, and is based on the following course criteria:

- The geographical classifications, boundaries and characteristics of each region, including a basic understanding of the geologic processes responsible for regional landforms.
- The natural and human resources of Thailand at national, regional and local levels, including the border areas of neighbouring countries and spatial relationships.
- Social, economic and political geographies relevant to borders, trade, settlement, migration, rural and urban poverty, and livelihoods in Thailand.
- The historical geographies behind important tourist destinations in regions of Thailand.

Methods and approach

Our approach was based on the resources actually available in Thailand, and seven distinct sources of information were initially identified:

i. An analysis of the sections relevant to Thailand in Rumney’s (2010) Scholarly Bibliography for the Geography of Southeast Asia, including atlases and graphic presentations,
books, monographs and texts, scholarly articles and book chapters, and theses and dissertations;
ii. A survey of the Thai Journal Citation Index Centre (TCI), which lists 850 Thai university and national journals, including 145 published in English;
iii. Thai library systems, searched though the Chunking Long Athakravisunthon Learning Resources Center, Prince of Songkla University;
iv. Academic databases, including ResearchGate and Google Scholar;
v. Major book publishers and retailers in Thailand, explored through searching books in print, websites, and enquiring at retail outlets, including Asia Books, Chulalongkorn University Book Center, River Books, SE-ED Book Center, Kinokuniya, and White Lotus;
vi. Communications and collaborations with international researchers and academics, including participation at international scientific conferences;
vi. Personal interactions with Thai and international students and faculty members while instructing courses in Thai geography since 2009.

By mining the above data sources, we were able to obtain 557 documents cited in Rumney’s (2010) section on Thailand (pp. 376 − 432), and more than 1000 other documents including books, journal papers, grey literature, online publications of key international environmental organizations, and publicly available documents produced by governmental departments and organizations under various Thai Ministries. We did not include hard-copy-only archival material in this survey, due to the difficulty of access such material presented for ourselves and would do so for other researchers.

Our analysis of Rumney’s (2010) Thailand section identified 61 entries in languages other than English (31 French, 28 German, and two in Japanese), and other titles which were translations from other languages. We found that 40 entries were redundant, appearing in more than one category, leaving 456 papers for review. The current study expands upon Rumney’s (2010) sub-disciplines (namely cultural and social geography, economic geography, general works, historical, urban, physical geography, and political geography) to include the six categories listed in the results section of our paper, and we have interpreted the scope of the category of physical geography in its broader sense, to include relevant resources in geology and geomorphology, as suggested by Harrison (2005).

The literature was jointly reviewed by the authors, based on the criteria expanded from Rumney (2010), and in manual searches for information on Thai geography. Materials were judged for inclusion or exclusion by the criteria discussed in Martin and Ritchie (2018a), based on relevance and potential contribution to the teaching of the geography of Thailand in English. We generally avoided citing difficult-to-obtain research, as doing so is often perceived as unhelpful and discouraging by undergraduates and other researchers. A broad overview of the resources we reviewed, including their potential and limitations, make up much of the results and discussion sections of this paper.

Our study takes account of the fact that in sciences such as physics, chemistry and biology, nearly all the material is available in books and peer-reviewed journals. Geography, and ASEAN geography in particular, needs to depend much more heavily upon grey literature. Most courses requiring real-world practical geographical research must depend to some extent on information found in grey literature, such as online sources, commissioned studies from the not-for-profit sector, and government reports.
Ability to use grey literature is an important generic academic skill (Martin & Assenov, 2012). Rumney (2010) did not refer extensively to grey literature.

Highly technical research in RS and GIS is beyond the scope of this paper, although discussion on its significance has been included in order to highlight the fact that GIS has revolutionized environmental monitoring and geography in general. Importantly, it has made geography a more attractive subject to those students whose primary interests are in computing, information technology and a global outlook. An important outcome of introducing remote sensing and GIS to students is that it provides a sense of scale of geographical impacts such as, for example, the environmental degradation throughout Southeast Asia, the forest depletion in Borneo and Sumatra, and the expansion of oil palm plantations, coastal mangrove deforestation, aquaculture and urbanization.

Outcomes of the study

We generated six broad categories of interest relative to the introductory study and development of Thai geography texts, based on the accessibility of academic resources, the types of literature we were able to identify, and the subdisciplines and areas of study represented in the literature and online. Subject areas may overlap in some cases.

- Grey literature and websites.
- Reports from governments and not-for-profit environmental organizations.
- Physical geography literature (including geomorphology and geology).
- Social science literature (including human, cultural, social, economic, political and historical geographies).
- Regional geography resources.
- Tourism geography, ecotourism and geotourism literature.

Grey literature and websites

While grey literature can prove useful, it is not always easy to access, particularly for the undergraduate student. Once accessed, it may be difficult to assess these materials consistently or decisively, in order to make effective use of them as teaching materials. Many references found on the internet or quoted in others’ written works do not meet accessibility criteria and are too ephemeral, and hence of limited value to future researchers reading the material (Martin & Assenov, 2012). Eligibility criteria for citable research must be carefully considered. Research must take account of the need to take advantage of grey literature for reference purposes but at the same time avoid too heavy reliance on ephemera (e.g., internet blogs, tourism websites, unpublished posters, PowerPoint files, etc.) as teaching material.

A considerable number of credible web resources do exist for developing Thai geography texts. Foremost are governmental departments under the authority of five Thai Ministries, namely the Department of Mineral Resources, National Statistical Office, Department of Marine and Coastal Resources, Department of National Parks, Department of Water Resources, Royal Forest Department, and the Thai Meteorological Department (See Appendix B for a shortlist of Thai governmental departments and websites relevant to the study of Thai geography).

Many rich sources of information can be located through foreign universities and colleges which have Asian or Thai studies programs accompanied with a website.
Several digital map collections and other resources from US universities are particularly useful:

- Calvin College, Grand Rapids, Michigan, *National Atlas Project, Thailand*
- University of Texas at Austin, *Perry-Castañeda Library Map Collection, Thailand*

Another range of issues arise when we are examining commercial-in-confidence materials, such as corporate intellectual property or confidential research documents. For example, studies on natural resources and their locations, prepared for mining companies or other private interest groups, are for the most part inaccessible to the general public, and in some cases involve very delicate economic and political issues (Martin & Assenov, 2012). Other examples may include reports prepared for petroleum and natural gas companies, port developments, tourist development proposals, and economic studies for corporate interests, including the impacts from industrial agriculture, such as oil palm plantations and aquaculture ponds. Commercial-in-confidence research is generally the least accessible form of grey literature. We can reasonably infer the existence of such material, having read allusions to it in specific documents, but it cannot and should not be confused with actual source material.

**Reports by governments and not-for-profit environmental organizations**

Many of the not-for-profit sector reports are contemporary responses to disasters and environmental emergencies, such as the 2004 Indian Ocean Tsunami, the 2011 Thai floods, or concerns surrounding the development of dams throughout the Greater Mekong Subregion. Background and historical context in such reports can lack depth and accuracy.

The following eight organizations offer comprehensive studies in English relevant to Thai geography:

- **BOBLME**—The Bay of Bengal Large Marine Ecosystem Project
- **GMS**—Greater Mekong Subregion
- **ICEM**—International Centre for Environmental Management (Thailand)
- **IUCN**—The International Union for Conservation of Nature (Thailand)
- **MRC**—Mekong River Commission for Sustainable Development
- **UNESCO**—The United Nations Organization for Education, Science and Culture (Thailand)
- **US-Aid**—United States Agency for International Development (Thailand)
- **WWF**—World Wide Fund for Nature (Thailand)

We located and reviewed more than 300 governmental and not-for-profit sector reports, and although some of these studies are not specifically ‘geographical studies’, they are relevant to the field. Key areas of interest include mangroves, seagrasses, fisheries, turtles, dugongs, aquaculture, water pollution, coastal resources, coral reefs, marine debris, climate change, floods, tsunami, earthquakes, and social areas of concern surrounding urban and rural poverty, border issues, refugees, migration, and indigenous peoples. These materials open a pathway to teaching how to deal with the practicalities of grey literature.

The history and relationship between Thailand and the United States after World War II, particularly during the Vietnam War era, is significant to the field of study in terms of international contributions to the literature. The US Department of State
cooperatively produced several geographic surveys focused on geology and mineral deposits (see Brown et al., 1951; Andrews, 1965; Shawe, 1984). Additionally, Henderson (1971) compiled and revised a series of works to produce The Area Handbook for Thailand for U.S. military and other personnel, and this comprehensive 400-page report provides a window to the regional and human geography available at that time, much of which is still of value. Furthermore, Thailand was briefly (and largely only nominally) allied to the Japanese during World War II, and the Japanese produced some unique geographical materials of historical significance (in Japanese) during that time.

**Physical geography and geology**

Gupta (2005) provides an academically-oriented physical geography of Southeast Asia, aimed at graduate students and scholars. It is a comprehensive resource with authored papers, illustrations, and several in-depth studies on Thailand.

Of the 145 Thai university and national journals published in English and listed on the Thai Journal Citation Index Centre (TCI), relevant papers on physical geography are dispersed within the bodies of work which fall into other disciplines of study, particularly the earth sciences, natural sciences, and environmental sciences, making them relatively difficult to locate.

There are approximately 15 TCI-listed journals significant to the field of Thai physical geography. Publications in mainstream geography journals are evidence of the stature and maturity of locally-based work (Goh & Cleary, 1991). The three international journals listed below are evidence of increasing research in this area:

- *Environment and Natural Resources Journal*, first published in 2002 by the Faculty of Environment and Resource Studies, Mahidol University, covering environmental science and natural resource management, including climate change, coastal erosion, environmental modelling, remote sensing and GIS, and pollution.
- *Natural History Bulletin of the Siam Society*, first published in 1914 by the Siam Society, covering natural history, ecology, taxonomy, systematics, biogeography, evolution, geology, conservation, and natural resource management. It has an increasing international profile as a result of the improving standing of the natural sciences in Thailand.

Please refer to the Appendix A for further discussion on Thai language journals listed on the TCI, as well as information on the Geographical Society of Thailand’s ‘Geographical Journal’, and other significant Thai language resources.

Relevant English-language materials are more widely available and better established in the area of Thai geology, due in part to the international economic significance of the mineral and mining sectors in Thailand. The *Geology of Thailand*, by Ridd et al. (2011), provides a series of selected papers edited into chapters with a review of Thai geography, including an introduction to regional geography. A very useful mineralogy atlas is also available (UNESCAP, United Nations Economic and Social Commission for Asia and the Pacific, 2002). The role of plate tectonics in the formation of the geology of Thailand is well researched, and it should be noted that broadly speaking, these sources of literature assume detailed prior knowledge of the terms and concepts of geology and therefore are not appropriate for introductory or general readership. However, given the significant mineral resources found in Thailand
(UNESCAP, 2002), it may be important to consider some of the basic facts of Thai geology, which physically underpins the geography. Much of Thailand consists of ‘terrains’—a jumble of rocks that have been squeezed together, as also found in southwest Alaska. This causes the north-south alignment of Thai mountain ranges, such as the Thongchai, Tenasserim and Phuket ranges (see Figure 1).

Another point of entry into the field of Thai physical geography is the study of limestone karst topography. Approximately 18 per cent of Thailand’s land area is karst.

Figure 1. Relief and hydrological map of Thailand
Source: Produced by Steven A. Martin.
(Williams, 2008), with landforms such as caves, towers and aquifers. Karst features are studied in geology, hydrology, topography, the economics of geotourism, and tourism geography. Thailand has two World Heritage Karst Properties (Dong Phayayen-KhaoYai Forest Complex and the Thungyai-Hua Kha Khaeng Wildlife Sanctuaries) comprising four national parks and three wildlife sanctuaries (Williams, 2008).

Key texts on karst landscapes in Thailand include Dearborn (2004)’s global study and Caves of Northern Thailand (Sidisunthorn et al., 2006) which originates under the auspices of the National Research Council of Thailand (NRCT). Other relevant resources in this area include the indexing of karst caves and cave temples in Thailand, such as Dunkley (1995)’s Caves of Thailand, and Ellis (2017)’s Caves of Thailand, Vol.1 Eastern Thailand (first in a 4-part regional series). Both are featured on Caves and Caving in Thailand (SMCC, 2018), a comprehensive online resource offering a bibliography covering available literature about the caves, karst and limestone topography of Thailand.

In terms of tourism geography, tower karst, including the limestone cliffs and caves in Phang Nga Province in Southern Thailand, has become a significant draw card for international sightseers and ecotourism, contributing to significant tourism receipts and concomitantly increasing environmental issues (see Figure 2). Scholarly papers in this area are limited and focused mainly on geology (Martin, 2018; Martin & Ritchie, 2018a), with limited coverage of environmental and conservation concerns.

Social sciences and human geography
The social science literature offers the widest access to human and cultural geographies of Thailand. The sub-fields of social, economic, political and historical geography, as well as tourism geography, are particularly relevant and accessible. Discussion on the
shift of human geography education into the social sciences in recent decades (Driver, 2001) is beyond the scope of our paper, and our study focused mainly on literature employing the use of geographic methods to analyze and address real-world problems.

We were able to review several hundred international journal papers related to the socio-cultural and socioeconomic geography of Thailand and found that international social science and geography journals do feature relevant articles on Thai geography from time to time. Based on our analysis of international journals listed in Rumney (2010), Table 1 identifies journals with three or more publications on Thai geography. The list provides a first-call guide to geographical peer-reviewed papers on Thailand.

Table 1 identifies the combined publications (17 total) in the Singapore Journal of Tropical Geography and its antecedent, Journal of Tropical Geography, as the leading source of peer reviewed Thai geography research. The Journal of the Siam Society is also of particular interest with five historical geography publications attributed to L. Sternstein, beginning with the Historical Atlas of Thailand (Sternstein, 1964) and Krung-Kao: The old capital of Ayuttaya (Sternstein, 1965). A review of Sternstein’s work in Rumney (2010) indicates that he was the most published author in the field of Thai Geography with 37 publications, including 17 on the urban geography of Bangkok and a 1964 PhD dissertation.

Rumney reviewed literature from the 19th century up to 2010 and provided a snapshot of the history of geographical research in Thailand and Southeast Asia. From 2010, the literature has progressed to involve available grey and online resources, and in the areas of RS and GIS. Significant post-2010 contributions discussed in this paper include a general SE-Asian geography textbook (Weightman, 2011); a key publication on the geology of Thailand (Rid et al., 2011); a regional study of the geography of the Mekong River basin (Shrestha & Chongvilaivan, 2013); studies of the geography of development in Thailand (Rigg, 2012, 2016); online world geography resources (Glencoe/McGraw-Hill, 2014, 2018a, b); an important study of geography teaching in SE-Asia (Chang et al., 2018). Some of these studies are logical extensions of the works cited by Rumney (2010) but there was little mention of studies of geography teaching in SE-Asia in papers included in the Rumney references and the online world geography resource is a new innovation.

We surveyed all 145 Thai university and national journals listed on the Thai Journal Citation Index Centre (TCI) published in English, and found relevant content on

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<thead>
<tr>
<th>Journal</th>
<th>Thai geography publications</th>
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<tr>
<td>Journal of the Siam Society</td>
<td>14</td>
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<tr>
<td>Malaysian Journal of Tropical Geography**</td>
<td>11</td>
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<tr>
<td>Journal of Tropical Geography***</td>
<td>9</td>
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<tr>
<td>Singapore Journal of Tropical Geography</td>
<td>8</td>
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<tr>
<td>Geographical Journal</td>
<td>6</td>
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<tr>
<td>Geographical Magazine</td>
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<td>Geographical Review</td>
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<tr>
<td>Annals of Tourism Research</td>
<td>4</td>
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<tr>
<td>Journal of Geography</td>
<td>4</td>
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<tr>
<td>Journal of Biogeography</td>
<td>3</td>
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<td><strong>Total</strong></td>
<td><strong>71</strong></td>
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Notes: *Based on publications listed in Rumney (2010). **This journal is not currently active. ***An antecedent of the Singapore Journal of Tropical Geography.
human geography dispersed across disciplines of study, particularly social sciences. Among these, our research highlights three English language journals particularly relevant to the field of Thai social geography:

- **Journal of Population and Social Studies**, first published in 1998 by the Institute for Population and Social Research, Mahidol University, Thailand, includes international geography-related topics, featuring research in demography and population geography, with relevant studies on migration and urbanization.
- **Journal of the Siam Society**, first published in 1904, is an English language journal aimed at investigating the arts and sciences of Thailand and neighbouring countries, including historical geography and heritage studies; it is a high quality historical source of literature.
- **Social Science Asia**, first published in 2014, is the official journal of National Research Council of Thailand (NRCT), published in English. Subject matter includes anthropology, economics, education, history, human geography, political science, population studies, and sociology.

See the Appendix A for more detail regarding Thai language social science journals and other significant Thai language resources.

For human geography, a key publication is Kermel-Torres (2004)’s *Atlas of Thailand, Spatial Structures and Development*, employing thematic maps and discourse to illustrate Thai geography in 14 key areas: agriculture, changes in borders and frontiers, economics, education, industry, population, provincial centers, public facilities, regional migration and trade, social imbalances, tertiary (economy) sector, transportation networks, water and electricity production and supply. The UNESCAP (2002) atlas of the mineral resources of Thailand is useful for understanding mining activity in Thailand. One of the most significant works in historical Thai geography is *Siam Mapped: A History of the Geo-body of a Nation* (with English and Thai versions) which explores the Siamese understanding of territory and state before the delineation of geographic boundaries in the modern sense (Winichakul, 1997, 2000 a, b) (see section on Tourism Geography and Geotourism). Other social science oriented works of particular interest in Thai geography include Donner (1978) and Weightman (2011) (see below, Regional Geography), and those in the wider Southeast Asian developmental context, particularly Rigg (2002, 2012, and 2016).

Toponymy, or the study of place names, is somewhat absent from the literature, save for the documentation of various historical maps and atlases, such as Sternstein (1964, 1985), and difficult to access works, such as Smith’s (1946) *Geographical Nomenclature in Siam*, and the *Thai Geographical Dictionary*, attributed to Rajabhanditsatham (1963). Place names often provide clues about the background of a town or region in geographic context.

**Regional geography**

The natural and cultural geography of Thailand is commonly divided into sets of regions, each encompassing different sets of provinces (see Figure 3) (Donner, 1978; Winichakul, 1997; Kermel-Torres, 2004; Kratoska et al., 2005). Currently, much of the grey literature and media identify four regions (north, north-east, central and south) (TAT, 2016), while the Thai Meteorological Department (2016) recognizes five regions, although further dividing peninsular Thailand into southwestern and southeastern coastal areas.
Perhaps the most widely employed set of regional distinctions is provided by the Thai Geographic Committee, formalized in 1977 but dating to Credner (1935), which demarks six regions, namely: (1) the ethnolinguistically and culturally diverse ‘Northern region’; (2) the ‘Central region’, incorporating the historical capital and province of Sukhothai, and featuring Bangkok as a primate city and the central core of the country; (3) the ‘Western Region’ along the undeveloped mountainous western border with Myanmar; (4) the ‘Eastern Region’ between Bangkok and Cambodia, including the

Figure 3. Political/governance regions of Thailand.
Source: Produced by Steven A. Martin.
coastal provinces of the Eastern Gulf; (5) the ‘North-east region’ (Isaan), the only region which is consistently the same across all regional division systems, known for close linguistic and cultural ties with Laos and Cambodia; and (6) the ‘Southern region’, the only region that does not adjoin the central core region (see Figure 3).

It is important to know the implied context of what is meant by phrases such as ‘the South’ (representing the international tourist destinations of Koh Phuket and Koh Samui), and ‘The deep South’ (Thai-ethnic Malay relations and inter-religious conflicts in the Muslim-majority provinces of Pattani, Narathiwat, and Yala, bordering Malaysia). These ‘regions’ are significant in understanding governmental, political and administrative dialog about the different areas of Thailand; it reflects the way the central government and administration tends to think about the Thai state. Figure 3 is in practical terms, a political and governance map of Thailand.

The development of regional and political geography, and governance of the Thai provinces, has evolved over time, dating back to the Ayutthaya Kingdom (1351 to 1767). Constant political restructuring occurred, often due to the influence of, and pressure from, neighbouring countries, especially the Burmese kingdom, and later the French and British colonial powers. New phases began with the formation of the constitutional monarchy in 1932, and the advents of World War II and the Vietnam War (Winichakul, 1997, 2000a, b).

Thai geography research often focuses on very specific sites or provinces within this framework, while other works are more regionally orientated, such as the Mekong sub-region or the regional divisions within Thailand. The Greater Mekong Sub-region inherently ties Thailand with border countries (Laos and Cambodia) through the inter-reliance of waterways and shared responsibility for resources, including fisheries, dams, flow regimes and flood patterns of the river (Shrestha & Chongvilaivan, 2013). Much of the research in this area is from the not-for-profit sector, such as the ICEM, ICUN, MRC, and WWF, including those focused on regional interdependence and sustainability with the development of small and large scale dams. Since the source of the Mekong is in China, the building of dams in Chinese territory has important geopolitical implications (Shrestha & Chongvilaivan, 2013). This leads to questions about the processes by which treaties on transnational watersheds are negotiated, and, perhaps more importantly for the people affected, how they are implemented in practice, and how this could be improved.

Other significant works in regional geography include Donner’s (1978) Five Faces of Thailand, which divides the nation into five geographic regions defined by their socio-economic dimensions (the result is a map very similar to Figure 3), while Weightman (2011) (chapters 15 and 16) offers a wide view on the geography of Southeast Asia, placing Thailand in a comparative context and as a hub in mainland Southeast Asia. A Bangkok-centered economy is described alongside metropolitan expansion and the burgeoning automobile manufacturing sector.

Based on our analysis of Rumney’s (2010) bibliography, Table 2 shows that 276 of the 557 works listed can be identified as case studies in a regional context, with the north and northeast regions most represented.

Additionally, there are many textbooks on world and regional geographies which provide information about Thailand. For example, World Geography, an online textbook by the National Geographic Society (Glencoe/McGraw-Hill, 2014) offers several chapters (chapter 29 and chapter 30) on Southeast Asia (Glencoe/McGraw-Hill, 2018a, b) which overview human and physical characteristics with sections on Thai geography. This type of basic reference text is useful for geographical comparisons of Thailand and
other ASEAN nations with the rest of the world. Significant Southeast Asia regional works include Chia (2003), Dwyer (1990), Harley and Woodward (1994), Kratoska et al. (2005), Rigg (1991, 2002), and Smith and Watson (1979).

Tourism geography and geotourism
Information on Thai tourism geography and geotourism is dominated by a trend toward developing websites for the tourism industry, and these are generally transient sources or grey literature. Websites vary widely in content and quality and are typically not critical of tourism development or its unanticipated and unplanned social and environmental consequences (Rigg, 1997).

With the launch of The Tourism Authority of Thailand (TAT)’s Amazing Thailand tourism campaign following the Asian financial crisis in 1997, private hospitality and tourism operators in Thailand have capitalized on the enigmatic nature of Thailand’s cultural and historical geography. Siamese culture has been in contact with the West for over 500 years, and has developed pre- and post-colonial viewpoints on Thai and regional geography, an understanding which Winichakul (1997) refers to as the geo-body of the Thai nation, that is, the Siamese understanding of territory and state before the delineation of geographic boundaries in the modern sense. Although Thailand (Siam) was never colonized, for much of the colonial era, it was a mutually convenient buffer state between British and French colonial interests. Before European intervention in the region, Thailand controlled large areas of land which are now independent countries as both provinces (e.g., Cambodia) and vassal states (e.g., Laos and the Southern Sultanates, some of which are now part of Malaysia and others Thai provinces). Thus, Thailand’s borders may in some senses be considered as Western ideological constructs (Winichakul, 1997). Old French maps demarking Thai borders continue to cause disputes in the region, affecting tourism, and in some cases, resulting in outbreaks of violence. Examples include the frequent and sometimes violent disputes between the Thai and Cambodian governments over ownership of the land surrounding the ancient temple at Khao Phra Viharn (known as Preah Vihear in Khmer), a popular tourism site in Si Sa Ket Province bordering Cambodia. There are also longstanding disagreements concerning Thailand’s Emerald Triangle, at the junction of Laos, Cambodia, and Thailand, in Ubon Ratchathani Province.

Because of the burgeoning tourism industry in Thailand, a great deal of research in this area is published in journal papers and books. Tourism papers and books rarely focus on geography per se, although studies may address human-environmental relationships and include a wide range of issues related to spatial development and the distribution of physical and cultural resources. Such materials often have a base in

<table>
<thead>
<tr>
<th>Thai region</th>
<th>Thai geography publications</th>
</tr>
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<tbody>
<tr>
<td>North</td>
<td>79</td>
</tr>
<tr>
<td>Northeast</td>
<td>73</td>
</tr>
<tr>
<td>Central/Bangkok</td>
<td>26/51</td>
</tr>
<tr>
<td>East</td>
<td>5</td>
</tr>
<tr>
<td>West</td>
<td>16</td>
</tr>
<tr>
<td>South</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>256</strong></td>
</tr>
</tbody>
</table>

*Based on the 6 regions of Thailand as discussed above (see Figure 3).
practical geography. Key areas of Thai tourism research include ecotourism, agrotourism, community-based tourism (CBT), the sustainability of coastal resources, and the impacts of tourism on people, place and economy. For example, recent studies on Phuket’s surf tourism industry examine coastal resources through a geographic lens (Martin, 2010 a, b, c, 2013; Martin & Assenov, 2015; Martin & Ritchie, 2018b).

Travel guides aimed at the public often refer to physical features and human characteristics of Thai geography and are therefore relevant to the field. As with other countries, internationally-available published works of interest include Insight Guides, Lonely Planet, National Geographic Traveler, and Rough Guides.

Discussion

Although geographic education has a long history in Thailand, a great deal of the information available on Thai geography is grey literature of varying degrees of accessibility and ephemerality. Nonetheless, grey literature, and to some degree deliberately grey literature (commercially confidential and nationally confidential literature) are potentially significant as windows into a developing field of research where traditional academic materials may be limited or unavailable (Martin & Assenov, 2012). For example, in the developing area of English-language materials on Thai geography, web-based electronic maps, atlases and other sources of information can be vital.

Considerable potential exists for translating Thai materials into English and vice versa, but geographically literate personnel who are fluent in both languages to a technical level are needed for it to be done properly, and such personnel are extremely rare, due to the inherent difficulty in understanding the specialist vocabulary involved in both languages, combined with the very small number of people who have attained functional academic levels of fluency in both Thai and English.

Considering the ongoing technological advances occurring in the field of geography, our study finds much of the conventional published academic material on Thai geography to be out of date. However, the Thai government, and national Thai journals, such as those represented on the Thai Journal Citation Index Centre (TCI) and international journals, are increasingly addressing the knowledge gap, especially in Earth science technology. Nonetheless, regarding the dissemination of educational materials, our research identifies a knowledge gap in English texts on Thai geography for national and international readers, particularly at the high school and undergraduate level. Existing texts were found mainly in the grey literature, in case studies, or as broad studies of the Southeast Asian region. Graduate level material exist as studies for scholars, academics and professional geologists. Depending on how broadly we frame the field of human geography (e.g., inclusive of the subfields of history, economics or political science), there are a significant number of English language publications on Thailand. However, as many of these works are not framed as ‘geographic’ studies, they may not employ geographic methods of inquiry. Readers must piece together geographic themes by reading across disparate materials and resources.

Among the two wide sub-fields of geography, physical geography is under-represented in the literature, and this is particularly evident in terms of English language materials for high schools, international schools, and universities. While physical geography works do exist and are of sufficient interest to the field, many of these texts are highly academic studies in the fields of geomorphology, geology and plate tectonics, and may not be particularly applicable to undergraduates who are not geology students. UNESCAP (2002) is a very useful atlas of the distribution of mineral resources of Thailand.
Digital technologies in the earth sciences have pushed the boundaries of the field in new directions, including ‘Big data’. This has led to a number of consequences, two of which we discuss here. First, the discipline and context of geography has shifted toward new technologies, particularly remote sensing (RS) and geographic information systems (GIS), and this has caused universities and academics to re-think curriculum design and research outputs. The outcomes, while arguably progressive and positive, have also left a potential void in practical and accessible text for high school and undergraduate students in gaining broad and traditional knowledge of the field (Rakariyatham, 2016). To consider a detailed GIS image of a square kilometer of Thailand without tangible context is not intellectually accessible to the average undergraduate student reader. Consequently, traditional and generic methods and curriculum in geography education in Thailand have been somewhat left behind in academia. What geographers do professionally might not knit very well with the material that they teach undergraduates (Rakariyatham, 2016).

With the development of the internet and GIS, many institutions, including government agencies, universities and the not-for-profit sector have begun to move toward more digital and progressive forms of geographic inquiry and data storage. Thailand is no exception. For example, as an outcome of the 2003 appointment of the Thai National Committee on Geo-information, the National Spatial Data Infrastructure (NSDI) was set up to develop and implement the geographic policies, standards, technology and human resources necessary to use and share geospatial data across all levels of government, private organizations and academia (GISTDA, 2018)(See Appendix B).

In line with stated ASEAN policy, English is emerging as the common language among the tertiary-educated subgroup of the ASEAN Community. Despite being founded in 1967, ASEAN (Minh, 2013; ASEAN 2016a, b; AUN, 2016) has only very recently begun to implement tangible developments relevant to higher education; for example, the policy to teach STEM (Science-Technology-Engineering & Medical) in English is only now being implemented and MRA (Mutual Recognition Arrangements) are of very recent date. ASEAN-sponsored graduate and post-doctoral programs for students of ASEAN member countries are forthcoming. There is great scope for student exchange within ASEAN, and while increasing year-by-year, it started from a very low level (ASEAN 2016a, b; AUN, 2016) and for a long time was hindered by the lack of MRA.

Although it is only briefly addressed in this paper, a comprehensive understanding of how and to what degree other ASEAN nations have developed geography curricula could prove useful for Thailand-based researchers. Further research comparing English language geography texts among ASEAN nations and accounting for colonial legacies, such as Indonesia, Malaysia, Singapore, and the Philippines, is needed (Chang et al. 2018; Goh & Cleary, 1991; Weightman, 2011).

Thai geography education resources could be developed to boost global interest in Thai and international studies, providing a tool for relationship-building and encouraging synergy among education systems across ASEAN. A successful international Thai geography textbook could have a domino effect, encouraging the development of ASEAN-oriented standard geography texts for other ASEAN countries.

Conclusions and recommendations

The purpose of this paper was the sourcing and review of available Thai geography literature and learning resources in English; it has presented a comprehensive
documentary of relevant accessible materials for students, educators and researchers. The study has provided a historical review of Thai geography education and developed a resource guide deliberately oriented toward ASEAN and international readership.

The research identified the limitations of introductory English texts on Thai geography, wherein existing accessible information sources typically appear as Wikipedia pages, tourism websites, and other grey literature. Published texts were found to be somewhat outdated, and/or fragmented across various disciplines of study in the social science literature, or were rigorous academic papers in the earth sciences, such as geology, or specialized in new, highly-technical areas, such as satellite remote sensing and geoinformatics which may be too technical for many undergraduates to easily follow.

We have established a case for a standardized and concise English language text of the geography of Thailand, preferably as an ASEAN initiative. Existing Thai-language geography journals should endeavor to bridge the gap by increasing the number of English language papers, translating their papers into English and publishing bilingually, or by featuring special editions in English. English-language Thai geography literature has the potential to make a significant contribution to Thai, ASEAN and international geography education and research, benefiting not only students and teachers, but improving governmental planning and public and private development strategy. We must also account for the significance and influence of Thailand as an ASEAN core country, bordered on all sides by ASEAN countries. Publications should be made more readily available to university libraries inside and outside of Thailand and ASEAN.

Some examples of English-language geography journals in the region currently include:

- *Indonesian Journal of Geography*, founded in 1961, offering topics of geographical importance, including physical geography, development geography, geographic information science, cartography and remote sensing;
- *Philippine Geographical Journal*, founded in 1953, serving as an outlet for scholarly articles in geographical, spatial and socioeconomic topics;
- *Singapore Journal of Tropical Geography* (and antecedents), founded in 1953, contributing topics on physical and human environments and development issues from geographical viewpoints.

Our study recommends further content analysis in order to better identify contributions to the field of study alongside emergent areas of research and best practices. In this way, Thai geography can move beyond a national context, foster a better international standing of the Kingdom, and serve to address the ever-increasing complexity of human-environmental relationships faced in Thailand and throughout the ASEAN Community.

**Acknowledgements**

Given the limitations of locating the grey literature and foreign language materials, and despite the best efforts of the authors, we apologize in advance to any researchers whose works were not incorporated into our study. We would like to extend thanks to many friends and colleagues at the Prince of Songkla University, Phuket Campus, who reviewed this paper. In particular, we are grateful to Peter Coan, Faculty of International Studies, for his review and editing, and Sirinda Osiri at the Faculty of International Studies, Department of Thai and ASEAN Studies, for her help.
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References


Kirkpatrick A (2010b) *English as a lingua franca in ASEAN: A multilingual model (Vol. 1)*. Hong Kong University Press, Hong Kong.


Songkaeo T, Yeong LH (2016) THF Literature Review: Defining higher education issues and challenges in southeast Asia/ASEAN within the international context. The Head Foundation, Singapore.
Appendix A: Thai geography books and journals

Thai books

Although Thai literature is not generally accessible to English speaking audiences, it is a vital component to the field.

Our research located nine Thai books on Thai geography published as early as 1963, and clearly, this list is by no means exhaustive. Three highly relevant works produced after the turn of the century have been reviewed and summarized with the help of Thai colleagues at Prince of Songkla University and listed here as an annotated bibliography.


Boonchai (2006) provides an overview of the study of geography in Thai aimed mainly at secondary school students. The research includes an overview of Thailand’s physical and regional geography. Of particular interest, the book identifies Thai aquifers and references the Department of Mineral Resources (DMR) website and other academic resources.


Aiemchareon and Aiemnor (2008) published Geography, an overview of Asian geography commonly used in first and second year Thai high school education. The book includes a chapter identifying six key areas in Thai geography: economics, society and culture, population, physical geography, interaction and environment, and the preservation of natural resources.


Aiemchareon et al. (2010) provides an illustrated geography in terms of an atlas with images and maps which illustrate and overview physical and human features and resources of the country, including agricultural, hydrology, mineral resources, and transportation. The book includes a map-based historical geography of the Kingdom and a discussion on each of Thailand’s 77 provinces (or more precisely, 76 provinces, plus Bangkok representing a special administrative area structured as a province).

Thai journals and the Thai Journal Citation Index Center—Thailand Citation Index (TCI)


As discussed in this paper, of the 850 Thai university and national journals listed on the Thai Journal Citation Index Centre (TCI), 705 are primarily in Thai. As with those published in English, relevant papers on geography are scattered within various disciplines of study, particularly the earth sciences and social sciences.

However, Thai language journals are an important source of information relevant to Thai geography, covering remote sensing, geoinformatics, and other technological advances in the field of study. Many Thai journals require authors to provide English abstracts. For example, the Journal of Geoinformation Technology, published at the Faculty of Geoinformatics, Burapha University, offers papers in fields of geospatial science,
including geographic information systems (GIS), remote sensing (RS) systems, and global positioning systems (GPS).

- http://geo.buu.ac.th/?page_id=1102&lang=en

**The Geographical Society of Thailand and the Geographical Journal**

The Geographical Society of Thailand, based at the Faculty of Science and Technology, Nakhon Ratchasima Rajabhat University, was formed in 1975 in order to better promote research and the exchange of knowledge in all geography subjects, both domestically and internationally. Publication of geography knowledge is core to the association, and in 1975, the *Journal of Geography (Geographical Journal)* was set up and dedicated to the field of study, serving as a center for the work of Thai geographers and researchers, and promoting knowledge exchange and geographic professions.

- http://geography.or.th/
- http://geography.or.th/journals/
- http://www.thaigeographer.com

**Chiang Mai University, Faculty of Social Sciences, Department of Geography**

The *Journal of Social Sciences* published by the Faculty of Social Sciences, Chiang Mai University, regularly features Thai social science and geography papers for Thai language readers. The journal also functions as a publication outlet for the Department of Geography, including special issues on geography. For example, the 2009 issue: *Geography and change in Lanna* which offers downloadable English abstracts.


**Appendix B: Governmental departments and organizations under the Thai ministries**

**Ministry of Agriculture and Cooperatives**
Office of Agricultural Economics


**Ministry of Information and Communication Technology**
Meteorological Department


National Statistical Office

- http://web.nso.go.th/
Ministry of Natural Resources and Environment
Department of Groundwater Resources

Department of Marine and Coastal Resources
  - http://www.dmcr.go.th/home

Department of Mineral Resources

Department of National Parks, Wildlife and Plant Conservation

Land Development Department

Royal Forest Department

Ministry of Science and Technology
Geo-Informatics and Space Technology Development Agency (Public Organization)

Ministry of Tourism and Sports
Tourism Authority of Thailand
  - https://www.tourismthailand.org/