

**Details for VIRTUAL COTS 2023 (Documentary, Papers, and Panel):**

**COTS2023 VIRTUAL EVENT 1**

**MONDAY OCTOBER 16, 2023 – FILM SCREENING** Register: <https://niu-edu.zoom.us/meeting/register/tZ0tcOGtgD0iHtSaFUHDOX46cDz7fXKInefm>

***About Us* (2020, 19.20 min); Produced by Chanintorn Pensute, Chiang Mai University**

The Story of "Deaw," a disabled student from Mae Hong Son province who came to Chiang Mai University to pursue higher education. Deaw and his friends will be the ones who lead us to explore Chiang Mai province, and notably Chiang Mai University. In reality, what should the university and the city of Chiang Mai improve to become an inclusive and accessible place for everyone truly?

**COTS2023 VIRTUAL EVENT 2**

**TUESDAY OCTOBER 17, 2023 – WATER POLLUTION IN THAILAND** Register: [https://niu-edu.zoom.us/meeting/register/tZckdeytrzoqHtPQxsDnR2EGsOK-dPJ\\_vCi](https://niu-edu.zoom.us/meeting/register/tZckdeytrzoqHtPQxsDnR2EGsOK-dPJ_vCi)

**Panel Abstract**

This panel will examine water pollution throughout Thailand. Surface water and groundwater in Thailand becomes polluted from a variety of different sources, such as from naturally occurring arsenic to emerging contaminants like microplastics and antibiotics. These pollutants enter Thai waterways due to human activity and urbanization. This panel will look at a variety of different pollution scenarios and will examine potential future solutions in order to protect this vital resource for all of Thailand.

**Organized by Melissa Lenczewski, Northern Illinois University**

**Paper 1: Groundwater Quality in Nakhom Pathom**

**Melissa Lenczewski, Northern Illinois University**

Groundwater is an invisible but vital freshwater resource, comprising 29% of total global freshwater. In Thailand, 70% of water is used for agriculture, positioning the nation as the world's leading rice exporter. However, groundwater pollution threatens agriculture, industry, and domestic use. Subsidence and saltwater intrusion are occurring in the central plains, Thailand's main groundwater reservoir. Meanwhile, urbanization and aquaculture drive contamination elsewhere. This study, a collaboration between Mahidol University and Northern Illinois University, examined emerging contaminants in Thai groundwater proximal to hog and poultry farms and waste sites in Nakhon Pathom province. Emerging contaminants such as antibiotics and microplastics are increasingly prevalent but understudied water pollutants. Antibiotics from animal operations and microplastics from agriculture, landfills, and other activities commonly enter groundwater. Groundwater samples were collected from existing monitoring wells in the study area in May 2023 and analyzed at Mahidol and NIU. Further research is needed on the fate and transport of these contaminants in Thai groundwater and environmental assessments of pollution sources. Groundwater quality research builds scientific capacity in Thailand through training opportunities for students and faculty. It also addresses issues such as managed aquifer recharge, transboundary water management, and water regulations. Protecting groundwater quality is essential for the agriculture industry, food security, and sustainable development in Thailand and beyond.

**Paper 2: Surface water and Groundwater Contamination from Illegal Dumping of Industrial Waste in Eastern Thailand; Achara Ussawarujikulchai, Mahidol University**

The Eastern part of Thailand is an area that has experienced continuous industrial development. Most recently, the development of the Eastern Economic Corridor (EEC), covering 3 provinces in the Eastern region; Chachoengsao, Chonburi, and Rayong. These 3 provinces have potential to accommodate the growth of industrial development. However, the problem of illegal dumping of industrial waste remains prevalent in the Eastern part of Thailand. It has the highest number of such cases in the country. The Pollution Control Department of Thailand has revealed that based on statistics gathered over the past 10 years (2012-2023), there have been a total of 79 cases. The highest number of these incidents, 45 in total, occurred in the Eastern part of Thailand. Despite Thailand having laws and regulations regarding industrial waste management, and the Eastern region has more waste processing facilities compared to other regions in the country, 802 from 2112 of the total in Thailand. Illegal dumping of industrial waste can lead to severe pollution of soil, surface water and groundwater resulting in adverse impacts on human health and the environment. Thus this article presents case study of illegal industrial waste dumping in the Eastern region of Thailand in the past. The details of the site remediation efforts and monitoring of surface water, soil, and groundwater in the affected areas will be presented. Additionally, the operational directions and roles and responsibilities of government organizations and related NGOs involved in the process are discussed. Keywords: Illegal dump, industrial waste, soil and groundwater contamination, Eastern Thailand

**Paper 3: An Overview of the Groundwater Pollution Status of the Chiang Mai Basin, Northern Thailand**

**Schradh Saenton, Chiang Mai University**

Groundwater is an important source of water supply for domestic, agricultural, and industrial use in Thailand. An increase in population, urbanization, industrial, and agricultural growth has led to increasing demand for groundwater resources in many parts of the country where surface water supply is limited. Chiang Mai is one of the fastest-growing cities in Thailand where groundwater has been utilized extensively to meet the demand of the population, agriculture, and tourism economy. The Chiang Mai basin is an intermontane basin covering parts of the Chiang Mai and Lamphun provinces, Northern Thailand. Outside the municipal areas, most populations mainly rely upon the availability of groundwater. There has been a significant decline in groundwater levels especially in the south, north and northeast as a result of agricultural and population growth. Urbanized and agricultural areas have increased due to population growth causing a significant change in groundwater extraction.

Groundwater of the Chiang Mai-Lamphun basin is generally considered to be of good quality where total dissolved solids (TDS) (<500 mg/L), hardness (<200 mg/L), iron (<0.5 mg/L) and fluoride (< 1.0 mg/L) contents are within allowable limits. However, groundwater in northeastern and southern areas contains higher-than-drinking-standard iron and fluoride contents causing fluorosis disease. The groundwater in the eastern and southeastern parts of the Chiang Mai-Lamphun basin has been reported to have high TDS due to iron, manganese, calcium carbonate and other constituents causing a clogging of reverse osmosis (RO) system in public (local) water system. There were some groundwater contamination studies and reports on the pollution of microorganisms (E. coli) in groundwater wells of approximately

50-m deep indicating a lack of good practice on wastewater management. Contract-farmers disposed water-containing manure and dung above ground and eventually infiltrated and contaminated groundwater. This may be caused by a short-circuiting of poorly developed groundwater well where the base and upper parts of the well were not securely sealed. Lastly, shallow aquifers in the Northern Region Industrial Estates (NRIEs) in eastern part of the basin have been contaminated with chlorinated solvents such as tetrachloroethene and trichloroethene making groundwater unusable. The presence daughter products, dichloroethane and vinyl chloride, were also reported suggesting an existence of in-situ biodegradation.

**Paper 4: Hospital wastewater impacts on groundwater and Microplastics in hospital wastewater pollution in Thailand**

**Praewa Wongburi, Mahidol University**

**Preeyaporn Koedrith, Mahidol University**

Wastewater comes from several sources including agriculture, domestic, industries, human excretion, commercial sectors, pharmaceuticals, and healthcare units. Hospital wastewater (HWW) is different from wastewater discharged from other sources and is hazardous and infectious. HWW contains pharmaceutical residues, pathogens, chemical reagents, radionuclides, and other harmful matter. The contaminants presented in HWW include antibiotics such as Norfloxacin, Ofloxacin, Ciprofloxacin, Clofibric acid, and Carbamazepine, which can pose substantial risks to both human health and the environment. Thus, a hospital wastewater treatment system is crucial, especially its impacts on groundwater due to groundwater being one of the major sources for consumption in most rural areas. Several literatures have shown that HWW in Thailand may have a regulatory status for some hazardous substances while other contaminants have not been regulated and it is quite similar to domestic wastewater. The research outlines the current situation of HWW management and handling in Thailand and the impacts on groundwater in the study area and, finally, proposes the effective guidelines for HWWs management.

**Paper 5: Microbial Risk analysis of periurban canal, Bangkok**

**Parinda Thayanukul, Mahidol University**

**COTS2023 VIRTUAL EVENT 3**

**WEDNESDAY OCTOBER 18, 2023 – POLITICS & DIPLOMACY THROUGH THE AGES** Register:

<https://niu-edu.zoom.us/meeting/register/tZMrcu-vpzktH9Yc7SSTBKpY1pyM1d5zoCOk>

**Triumphs over Pheu Thai Landslide in Northeast Thailand: Understanding the Existence of Political Dynasties and Local Strongmen in the 2023 General Election**

**Suthikarn Meechan, Mahasarakham University**

The military-drafted constitution ensures that changes in the electoral system are difficult to process. The Thai general election in 2023 resulted in an unexpected lack of public support for all the pro-junta parties and a resounding victory for the Move Forward party at both constituency and national levels. The election results also heralded a substantial reduction in Pheu Thai seats in the northeast region which has been the most significant party voting base since 2001 and the stronghold of the redshirt movement. This article focuses on the political dynasties and strongmen in Northeast Thailand that have maintained or even increased their popularity in electoral districts despite intense competition. Case studies from Roi Et and

Khon Kaen Provinces are highlighted to examine the reasons for the failure of Pheu Thai's electoral strategy at the constituency level. Factors accounting for the success of opposing candidates are discussed, while similarities and differences between successful candidates in two selected provinces are highlighted. Results will enhance our understanding of the northeastern political landscape and the future way forward for Thai politics.

**EducationUSA Today and its Relevance in the Context of 190 years of U.S.-Thai Relations  
Alma Green, Public Engagement & Education Coordinator, United States Embassy,  
Bangkok, Thailand**

EducationUSA in Thailand advises Thai students, parents, school counselors, and teachers on the process of applying to study in the United States and on scholarship opportunities available through the government and private institutions. The Mission's strategic focus is to create a platform to increase the number and strength of self-sustaining university partnerships and continuous exchange between the U.S. and Thailand, that will support mission goals of enhancing cooperation, strengthening people-to-people ties, and elevating Thailand as a partner and regional leader.

**Eulenburg Expedition to Siam and its photography in 1861-1862  
Buerge Wilawan, University of Hamburg**

The Eulenburg Expedition was a diplomatic mission conducted by Friedrich Albrecht zu Eulenburg and established diplomatic and commercial relations with China, Japan and Siam. Some members of the mission recorded their experiences in Siam from October 1861-February 1862. Graf zu Eulenburg was granted a private audience with King Mongkut on 24 December 1861 and later on 27 December 1861 for the official audience of the diplomatic delegation. In total he spent 64 days in Siam, from 15 December 1861 - 18 February 1862. The arrival of Eulenburg expedition improved the image of the Siamese in European eyes. The good relationships were based on the foundations of understanding and generosity of Prussia and were sustained during the reign of King Chulalongkorn. Moreover, Prussian East Asia Expedition's arrival in friendship and the subsequent trade opened in Siam the door for many new experiences and products, thus improving the reputation of European. Surely, the records of the members in this expedition about cultures in Siam are partially influenced due to his European heritage from a more developed country. But nonetheless we get images of Siam during the early Bangkok period, in which way of live sometimes only provided nutrition of low quality even in the palace and among upper class society.

**The Elephant Statue of King Chulalongkorn: A Diplomatic History Between Thailand and Indonesia in the 19th Century**

**Fariz Ilham Rosyidi and Andri Setyo Nugroho, Airlangga University Alumni**

Thailand and Indonesia have wonderful diplomatic relations which are underway from past to present. The countries do not have a historical burden, in fact, both of them frequently have mutuality relations. For instance, A formal trip of King Chulalongkorn (Rama V) to Java in the last 19th century became one of the early significant evidence of ties between Thailand and Indonesia. At the time, there was a period called "The Age of Colonialisation", which affected both British and France wanting to colonise Siam because they have colonies on the border of Siam: British-Burma and French-Indochina. To anticipate those colonial activities through the sovereignty of Siam, His Majesty endeavour to reform Siam, one of them by conducting a prominent journey to Singapore and Java on 9th March to 15th April 1871

which has been recorded as the first visitation of a King's Siamese to go overseas. King Chulalongkorn as well as The Nobles of Siam also wanted to know how the Dutch as colonialist treated Javanese in The Dutch East Indies Government system. This research aims to comprehend what were King Chulalongkorn's activities as long as visited Java, particularly when King Chulalongkorn studied the bureaucracy in Batavia (Jakarta) and the railways system in Semarang. This research also applies a historical approach to analyse the primary and secondary data from Indonesian and Dutch literature. The result of this research will disclose why King Chulalongkorn presented an elephant statue as a treasure to The Dutch East Indies (Indonesia) in Bataviaasch Genootschap van Kunsten en Wetenschappen (BG) which is nowadays monumentalised 'Patung Gajah' located in front of The National Museum Indonesia, Merdeka Barat Street No.12, Jakarta. Literally, It becomes an important symbol of the early diplomatic history between Thailand and Indonesia, which is appropriate with soft power or cultural diplomacy as fundamental relations in Southeast Asia.

#### **COTS2023 VIRTUAL EVENT 4**

**TUESDAY OCTOBER 19, 2023 – DIMENSIONS OF THAILAND TODAY** Register:

<https://niu-edu.zoom.us/meeting/register/tZUvc-ihqzgpHtK8trqc3OPGaqHA-ArZ5h5h>

#### **Genetic Conservation of Endangered Species of Bamboo in Loei Province, Thailand**

**Marisa Phiromtan De Bels, Loei Rajabhat University**

In my presentation, I will talk about my recent research on bamboo: covering the distribution of species across landforms; identification of species; and evaluation of genetic diversity. I will discuss plans for future research and the cultural importance of bamboo in conserving an endangered species, *Schizostachyum virgatum* ('hia' in local speech), used in making two bamboo wind instruments: the khaen and wot. These instruments are indigenous to Isan or Northeastern Thailand and neighboring Laos. This singular species grows chiefly in upland or mountainous areas among other species and along or near flowing streams. A pilot project in 2023 conducted jointly with my colleague Dr. Prayut and a research assistant was limited to the foothills and ridges of Dansai District in Loei Province. Future mapping and monitoring this one endangered bamboo species will be an indicator of the status of other bamboo species in the broader region. We have used GIS technology to construct a map—using data chiefly from our cell phones—showing the geographical coordinates, elevation, and distance to streams, which I will show in slides. Our future research plans include cataloging vernacular and scientific names of bamboo species; GIS mapping of different eco-geographical sites; collection of soil and leaf samples for laboratory analysis; GIS analysis of elevation, slope, seasonal temperature gradients and rainfall; and observations and notation of flowering and seeding cycles. Future plans also aspire to reforestation of bamboo species involving local communities; bamboo shoot collectors, buyers, sellers and consumers; and educating school children on the importance of bamboo and bioform conservation—and khaen and wot players.

#### **Phra Malai: A Guidebook to Merit Making**

**Bonnie Brereton, Chiang Mai University**

The Phra Malai narrative, which exists in various formats, dialects, and ritual settings, is often referred to as a sermon on the karmic effects of unvirtuous acts or sins. Descriptions of the suffering beings in the various hells and the misdeeds that led to such consequences have attracted the attention of artists, scholars, and Buddhist monks and laypeople. Yet, the basic

elements of the Phra Malai story, which are the same in every version, also include numerous mentions of acts of merit-making and their positive outcomes. These acts occur in the context of acts performed by laypeople in the human realm, those performed by deities in their past lives, and those performed by the future Buddha Maitreya (Thai: Phra Si Ariyya Metteyya). For example, in Tavatimsa Heaven, Phra Malai encounters a series of deities coming to worship the Chulamani Chedi, and is told the specific meritorious act performed in a previous life that resulted in this heavenly reward. Phra Malai also learns of the generous acts performed by Metteyya and their consequences for humanity. This paper will list each of these acts in its context and examine them in an effort to evaluate their relative weight on the karmic scale. It will also attempt to trace the source of these acts in earlier texts. My hope is that the tellings of the Phra Malai story will be seen more widely as a narrative with diverse elements, ritual contexts, and teachings.

### **The Soft but Durable Power of Molam: Survival During the COVID-19 Crisis**

**Prayut Wannaudom, Loei Rajabhat University**

Molam traditionally was a style of open-air, rural Isan male-female courtship singing accompanied by khaen background music. With the rise of mass marketing and “show business” influences, it has evolved over the past several decades to become a kind of traveling “culture industry.” During the period 2020-2022, however, it was severely affected by the COVID-19 crisis because the central government strictly forbade all types of public performances in order to prevent the spread of the deadly virus. In the Northeast there was an initial loss of \$170 million because all types of molam could not be performed. Thousands of molam band members were affected by the lockdown, resulting in a loss of employment and a huge increase in personal and corporate debt. To solve the immediate problem of lockdowns, molam companies used various social media platforms such as Facebook Live to set up closed groups, allowing fan clubs to transfer admission fees and donation money electronically into group accounts. There were also online sales of merchandise. Youtubers became TIKTOK content creators, working on music and short comedy shows, even if they were unable to appear on the public stage. It can be said that modern media has elevated and reshaped molam in a kind of Second Stage of evolution through the use of digital media—away from the analog media stage begun fifty years ago—to what it is today. The COVID-19 crisis was a new chapter in the life of molam that proves its ability to adapt and sustain itself as a durable cultural phenomenon. In the process, molam has moved from its humble village origins to the world stage. Thanks to the determination, adaptability, and creativity of molam performers and managers, there is no need to worry about its future. Molam uses its “soft power” to continue entertain and reflect social change in Isan and beyond.

### **A Snake and Ladder Game for Medical Microbiology and Immunology Learning: Can It Work? Mingkwan Yingkajorn, Prince of Songkla University**

Medical education is currently evolving at a rapid pace. Using game-based learning (GBL) as a supplemental strategy is an alternate way to raise student engagement and improve learning outcomes. Herein, we have developed a snake and ladder game that served as the activity at the end of the Medical Microbiology and Immunology modules. The design and principles of the game combine learning activities based on the general knowledge quiz with laboratory activities. In this study, 183 second-year medical students at Prince of Songkla University,

Thailand, were invited to participate and evaluated their perceptions of using the game through a Google form, which consisted of 7 statements with a 5-point Likert scale, following a formative assessment to analyze its impact on knowledge acquisition. The majority of students agreed that the rules were clear, the activities were enjoyable, the quiz was appropriate and not too challenging, and the game enhanced their understanding of the subject, motivated them to learn, and kept them engaged throughout. In terms of learning outcomes, we discovered a significant increase in knowledge acquisition comparing the pre-test and post-test scores. In conclusion, effective GBL has the potential to motivate students to study, promote self-evaluation, improve their academic performance, and provide diversity to the classroom environment.